FINAL REPORT ON

STUDY ON ANALYSIS OF TARIFF ORDERS & OTHER ORDERS OF STATE ELECTRICITY REGULATORY COMMISSIONS

Submitted to:

FORUM OF REGULATORS

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ABBREVIATIONS

AAD: Advance Against Depreciation
A&G: Administration and General
ABT: Availability Based Tariff
AC: Average Cost
ADB: Asian Development Bank
AEGCL: Assam Electricity Grid Corporation Limited
AERC: Assam Electricity Regulatory Commission
APCPDCL: Central Power Distribution Company of Andhra Pradesh Limited
APDRP: Associated Power Development and Reform Programme
APEPDCL: Andhra Pradesh Eastern Power Distribution Company Limited
APER Act 1998: Andhra Pradesh Electricity Reform Act 1998
APERC: Andhra Pradesh Electricity Regulatory Commission
APGCL: Assam Power Generation Corporation Limited
APGENCO: Andhra Pradesh Power Generating Company
APGPCL: Andhra Pradesh Gas Power Corporation Limited
APNPDCL: Northern Power Distribution Company of Andhra Pradesh Limited
APSEB: Andhra Pradesh State Electricity Board
APSPDCL: Southern Power Distribution Company of Andhra Pradesh Limited
APTRANSCO: Transmission Company of Andhra Pradesh Limited
APR: Annual Performance Review
AR: Average Revenue
ARR: Aggregate Revenue Requirement
ASEB: Assam State Electricity Board
AT&C: Aggregate Transmission and Commercial
ATPS Chachai: Amackantak Thermal Power Station Chachai
BDPP: Brahampuram Diesel Power Plant
BERC: Bihar Electricity Regulatory Commission
BEST: Brihan Mumbai electric Supply and Transport
BMR: Bombai Metropolitan Region
BPL: Below Poverty Line
BRPL: BSES Rajdhani Power Limited
BSEB: Bihar State Electricity Board
BSHPC: Bihar State Hydro Electric Power Corporation
BST: Bulk Supply Transmission
BYPL: BSES Yamuna Power Limited
CI: Convergence index
CA: Chartered Accountant
CAC: Commission Advisory Committee
CAEDCL: Central Assam Electricity Distribution Company Limited
CAG: Comptroller and Auditor General
CAGR: Compound Annual Growth Rate
CCL: Central Coalfields Limited
C-DAC: Centre for Development of Advanced Computing
CEA: Central Electricity Authority
CEO: Chief Executive Officer
CERC: Central Electricity Regulatory Commission
CESC: Calcutta Electric Supply Company
CGHS: Co-operative Group of Housing societies

CGRF:Consumer Grievance and Redressal Forum
CGRO:Circle Grievance Redressal Officer
CGS: Central Generating Station
CI: Convergence Index
CISF: Central Industrial Security Force
CoS: Cost of Service
CPI: Consumer Price Index
CPSU: Central Power Sector Undertakings
Crs/Cr: Crore
CRISIL: Credit Rating Information Service of India Limited
CSEB: Chhattisgarh State Electricity Board
CSERC: Chhattisgarh State Electricity Regulatory Commission
CSGS: Central Sector Generating Stations
CWIP: Capital Works In Progress
DA: Dearness Allowance
DERC: Delhi Electricity Regulatory Commission
DFID: Department For International Development
DISCOMs: Distribution Companies
DMRC : Delhi Metro Rail Corporation
DPC: Dubai Power Company
DPL: Durgapur Projects Limited
DPR: Detailed Project Report
DPSCL: Dishergarh Power Supply Company Limited
DSM: Demand Side Management
DTL: Delhi Transco Limited
DTR: Distribution Transformer
DVB: Delhi Vidyut Board
DVC: Damodar Valley Corporation
EA 2003: Electricity Act 2003
EC: Employer Cost
EHV: Extra High Voltage
ERCs: Electricity Regulatory Commissions
ERLDC: Eastern Regional Load Dispatch Center
FAC: Fully Allocated Costs
FACT: Fully Allocated Cost Tariffs
FAR: Fixed Asset Register
FCA: Fuel Cost Adjustment
FCC: Financial Completion Certification
FOCA: Fuel and Other Cost Adjustment
FOR: Forum of Regulators
FPA: Fuel Price Adjustment
FY: Financial Year
GCV: Gross Calorific Value
GDP: Gross Domestic Products.
GEB: Gujarat Electricity Board
GENCO: Generation Companies
GERC: Gujarat Electricity Regulatory Commission
GFA: Gross Fixed Asset
GIS: Geographic Information Systems
GoA: Government of Assam

GoAP: Government of Andhra Pradesh
GoC: Government of Chhattisgarh
GoG: Government of Gujarat
GoHP: Government of Himachal Pradesh
GoI: Government of India
GoM: Government of Maharashtra
GoMP: Government of Madhya Pradesh
GoNCTD: Government of National Territory of Delhi
GoWB: Government of West Bengal
GPF: General Provident Fund
GSECL: Gujarat State Electricity Corporation Limited
GSHR: Gross Station Heat Rate.
GT: Gas Turbine
GUVNL: Gujarat Urja Vikas Nigam Limited
HDFC: Housing Development Corporation of India
HEP: Hydro Electric Power
HERC: Haryana Electricity Regulatory Commission
HINDALCO: Hindustan Aluminum Company
HoldCo: Holding Company
HP: Horse Power
HPERC: Himachal Pradesh Electricity Regulatory Commission
HPSEB: Himachal Pradesh State Electricity Board
HQ: Head Quarter
HV: High Voltage
HT: High Tension
HVDS: High Voltage Distribution System
Indal: Indian Aluminium Company
IP: Indraprastha Power
IPPs: Independent Power Producers
IT: Information Technology
ITA: Indian Television Association
JKSERC: Jammu & Kashmir State Electricity Regulatory Commission
JKSPDC: Jammu and Kashmir State Power Development Corporation Limited
JKPDD: Jammu & Kashmir Power Development Department
JKSPDC: Jammu & Kashmir State Power Development Corporation
JSEB: Jharkhand State Electricity board
JSERC: Jharkhand State Electricity Regulatory Commission
KDPP: Khozikode Diesel Power Plant
KERC: Karnatka Electricity Regulatory Commission
KGPS: Kawas gas Power Station
KSEB: Kerela State Electricity Board
KSERC: Kerela State Electricity Regulatory Commission
KTPS: Kolghat Thermal Power Station
KW: Kilowatt
Kwh: Kilowatt hour
LAEDCL: Lower Assam Electricity Distribution Company Limited
LTA: Leave Travel Allowance
LTIS: Low Tension Industrial Service
LTPS: Lakwa Thermal Power Station
LV: Low Voltage

MAHADISCOM: Maharashtra State Electricity Distribution Company
MBS: Metering, Billing and Collection
MBM: Multi Buyer Model
MCD: Muncipal Corporation of Delhi
MEDA: Maharashtra Electricity Development Agency
MERC: Maharashtra Electricity Regulatory Commission
MeSEB: Meghalaya State Electricity Board
MIS: Management Information System
MLHT: Mixed Load High Tension
MNP: Minimum Need Program
MoP: Ministry of Power
MoU: Memorandum of Understanding
MP: Madhya Pradesh
MPECS: Mula Pravara Electric Co-operative Society
MPERC: Madhya Pradesh Electricity Regulatory Commission
MPMKVVCL: M.P Madhya Khestra Vidhyut Vitran Company Ltd.
MPP: Malavalli Power Plant
MPPGCL: MP Power Generating Company Limited
MPPKVVCL: M.P Paschim Khestra Vidhyut Vitran Company Ltd.
MPPTCL: MP Power Transmission Company Ltd.
MPSEB: Madhya Pradesh State Electricity Board
MRI: Meter Reading Instruments
MSEB: Maharashtra State Electricity Board
MSEDCL: Maharashtra State Electricity Distribution Company Limited
MSECL: Maharashtra State Electricity Transmission Company Limited
MU/MUs: Million Units
MW: Mega Watt
MYT: Multi Year Tariff
NABARD: National Bank for Agricultural and Rural Development
NDPL: North Delhi Power Limited
NEDCAP: Non-Conventional Energy Development Corporation of Andhra Pradesh
NEEPCO: North Eastern Electric Power Company
NFA: Net Fixed Assets
NHPC: National Hydro Power Corporation
NJPC Naphtha Jhakri Power Corporation
NLC: Neyveli Lignite Corporation
NPC: Nuclear Power Corporation
NREB: Northern Region Electricity Board
NRLDC: Northern Region Load Dispatch Centre
NRPC: Northern Region Power Committee
NTPC: National Thermal Power Corporation
NTPS: National Thermal Power Station
NVVN: NTPC Vidhyut Vyaapar Nigam Limited
O&M : Operations and Management
OA: Open Access
OCFA: Original Cost of Fixed Assets
OECF: Overseas Economic Cooperation Funds
OERC: Orissa Electricity Regulatory Commission
OTEC: Ocean Trend Energy Conversion
OTS: One-Time Settlement

PCC: Physical Completion Certificate
PF: Power Factor
PFC: Power Finance Corporation
PGCIL: Power Grid Corporation of India Limited
PGRO: Principle Grievance Redressal Officer
PIUs: Power Intensive Industrial Units
PLCC Systems: Power Line Carrier Communications System
PLF: Plant Load Factor
PLR: Prime Lending Rates
PMGY: Pradhan Mantri Gramodaya Yojana
PMR: Pune Metropolitan Region
PPA: Power Purchase Agreements
PPC: Power Purchase Cost
PPCL: Pragati Power Corporation Limited
PPFCA: Power Purchase and Fuel Cost Adjustments
PPS: Pragati Power Station
PPSP: Purulia Pumped Storage Projects
PSEB: Punjab State Electricity Board
PSERC: Punjab State Electricity Regulatory Commission
PTC: Power Trading Corporation
PTCUL: Power Transmission Corporation of Uttaranchal Limited
PTPS: Patratu Thermal Power Station
PTW: Public Tube Well
PW: Public Water
PWW: Public Water Work
R&M: Repair and Maintenance
RBI: Reserve Bank of India
REC: Rural Electrification Corporation
REL: Reliance Energy Limited
RERC: Rajasthan Electricity Regulatory Commission
RESCOs: Rural Electric Supply Companies
RGGVY: Rajiv Gandhi Grameen Vidyutikaran Yojana
RIMS: Regulatory Information Management Systems
RoCE: Return on Capital Employed
ROE: Return On Equity
RPH: Rajghat Power House
RPO: Renewable Purchase Obligation
RPS: Renewable Purchase Specification
RST: Retail Supply Tariff
RWA: Resident Welfare Association
S&LP: Security and Loss Prevention
SAC: State Advisory Committee
SBI: State Bank of India
SEBs: State Electricity Boards
SED: State Electricity Duty
SERC(s): State Electricity Regulatory Commissions
SHPS: Sikidri Hydel Power Station
SHR: Station Heat Rate
SHRELCOP: Singur Haripal Rural Electric Co-operative Society
SIP: Small Industrial Plant

SLP: Single Light Point
SRS: Software Requirement Specification
STPS Sarni: Satpura Thermal Power Station, Sarni.
STQC: Standardization Testing Quality Certification
STW: Shallow Tube Well
SVRS: Special Voluntary Retirement Scheme
T&D: Transmission and Distribution Losses
TAI: Tea Association of India
TDL: Transmission and Distribution Loss
TERI: The Energy and Resources Institute
TERC: Tripura Electricity Regulatory Commission
THDC: Tehri Hydro Development Corporation
TISCO: Tata Iron and Steel Co Ltd
TNERC: Tamil Nadu Electricity Regulatory Commission
TOD: Time Of Day
ToU: Time of Use
TPC: Tata Power company
Tradco: Trading Company
TRANSCO: Transmission Companies
TSAs: Transmission Service Agreements
TSECL: Tripura State Electricity Corporation Limited
TVNL: Tenughat Vidyut Nigam Limited
UAEDCL: Upper Assam Electricity Distribution Company Limited
UCPTT: Unified Common Pool Transmission Tariff
UERC: Uttarakhand Electricity Regulatory Commission
UGC: Upper Ganga Canal
UI: Unscheduled Interchange
UJVNL: Uttarakhand Jal Vidyut Nigam Ltd
UP: Uttar Pradesh
UPCL: Uttarakhand Power Corporation Limited
UPERC: Uttar Pradesh Electricity Regulatory Commission
UPPCL: Uttar Pradesh Power Corporation Limited
UPPTCL: Uttar Pradesh Power Transmission Corporation Limited
UPRVUNL: Pradesh Rajya Vidyut Utpadan Nigam Limited
UREDA: Uttarakhand l Renewable Energy Development Authority
VCA: Variable Cost Adjustment Formula
VRS: Voluntary Retirement Scheme
VSS: Voluntary Service Scheme
VSTPS: Vindhyachal Super Thermal Power Station
WBERC: West Bengal Electricity Regulatory Commission
WBPDCL: West Bengal Power Development Corporation Limited
WBREDA: West Bengal Renewable Energy Development Authority
WBSEB: West Bengal State Electricity Board
WBSEDCL: West Bengal State Electricity Distribution Company Limited
WBSETCL: West Bengal State Electricity Transmission Company Limited
WPI: Wholesale Price Index

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CHAPTER 1 : INTRODUCTION

1. Background

The Forum of Regulators (FOR), which has been constituted by the Government in terms of Section 166 (2) of the Electricity Act, 2003 (the Act), is responsible for harmonization, coordination and ensuring uniformity of approach amongst the different Electricity Regulatory Commissions across the country. In pursuance of that objective, one of the important functions of FOR is to analyze the tariff orders of Central Commission and State Commissions and compile the findings emanating from such analysis, highlighting especially the efficiency improvements of the power utilities. In line with this, the Forum has appointed CRISIL Risk & Infrastructure Solutions Limited (CRIS) to analyze tariff orders and other related orders pertaining to Generation, Transmission and Distribution; as issued between FY 05 to FY 09; while focusing on the following key aspects:

- Tariff Rationalization,
- MYT – Base Line Data,
- Wheeling Charges & Transmission Charges : Separation and Rationalization,
- Subsidy Payment and its Treatment in Tariff, and
- Power Purchase Cost.

2. Scope of Work

The Scope of Work includes analyzing the following tariff aspects:

2.1 Regulatory approach for revenue requirement including parameters such as:

- Sales mix/demand estimation (consumer category-wise);
- Process of procurement of power/fuel;
- Assessment of technical and commercial loss (for transmission and distribution system);
- Investment/Capex approval criteria – basis and linkage with loss reduction, system upgradation and reliability;
- Debt –Equity ratio;
- Depreciation;
- Rate of return - Compilation and analysis of the approach (RoE or RoCE) followed by different SERCs in fixation of tariff;
- Interest on loan;
- Norms on working capital requirement;
- Cost of foreign exchange risk;
- Operation and maintenance;

- Bad debts;
- Renovation and modernization (R&M) (not periodic overhauls);
- Power purchase cost including quality and operational criteria for recovery of fixed cost, variable cost and incentive.

2.2 Tariff Rationalization

- Rationalization of generation & transmission tariff;
- Trend of consumer category-wise tariffs;
- Status of notification of roadmap for reduction of cross-subsidies by SERCs;
- Status of cross subsidy reduction and compliance of the tariff policy requirement that tariffs should be within ± 20 % of the average cost of supply in States;
- Revenue gap – year-wise gap between approved Aggregate Revenue Requirement (ARR) and actual revenue realization;
- Gap between Cost of Supply and Tariff;
- Year-wise Profit/losses etc.

2.3 MYT – Base Line Data

- Multi Year Tariff framework, its implementation;
- Comparison of uncontrollable and controllable factors defined by different SERCs;
- Base line data considered for MYT Control Period;
- Regulatory effectiveness with respect to (i) resultant efficiency gain (ii) sharing mechanism and (iii) target and achievement of loss reduction trajectory.

2.4 Wheeling Charges & Transmission Charges

- Status of notification of separate transmission and wheeling charges;
- Analysis of charges being levied in kind at different voltage levels;
- Trend of rationalization of these charges;
- Status of Open Access charges and cross-subsidy surcharge, other than transmission and wheeling charges, and trend of rationalization of such charges;
- Whether the transmission charges for DISCOMs & other Open Access consumers are same, if not, difference of such charges.

2.5 Subsidy Payment and its treatment in tariff

- Approach and format of communicating the requirement of subsidy by SERCs;

- Status of advance payment of subsidy by State Governments;
- Whether SERCs are notifying the tariff without subsidy, which is to be payable by a consumer in the event subsidy is not paid by the State Government;
- Status of consumer category wise/overall subsidy;
- Year-wise subsidy booked and received by different utilities.

2.6 Power Purchase Cost

- Compilation and analysis of power purchase cost by State Utilities on different parameters such as peak, off peak, fuel source, short-term, long-term etc;
- Year-wise quantum of power drawn under UI & treatment of the cost in ARR.

2.7 Status of Regulations issued by SERCs under Section 181 of the Electricity Act, 2003, Regulatory process including public participation and timeliness of Tariff Orders, Status of implementation of Time of Day (ToD) metering and tariff & to identify major areas of deficiency or gap in regulation of tariff.

3. Outline of approach

3.1 Sourcing the Tariff Orders issued between FY 05 to FY 09

The tariff orders for the aforementioned period were primarily sourced from the websites of SERCs. A state wise library of all such tariff orders was created duly segregating the generation, transmission and distribution tariff orders.

3.2 Developing the format for data capture

A tabular format capturing different elements of the tariff order in summary form was developed. The format covers all the aspects, as listed in the scope of work described above, and enables year-to-year comparison of regulatory decisions against such aspects.

3.3 Review of tariff orders and compilation of findings (state-wise)

The tariff orders pertaining to a state were reviewed and the gist of regulatory approach / decisions was captured in the format, as mentioned above. Key data such as growth of sales, energy losses, rate of depreciation, return on equity, R&M expense as a % of gross fixed assets (GFA), average revenue realization, wheeling charge, cross subsidy charge etc are analyzed and appropriately compiled in the format.

3.4 Detailed Report and Executive summaries (state-wise)

The findings emanating from review and analysis of tariff orders pertaining to a state are reported in a standardized format with trends pertaining to key aspects such as sales growth, tariff rationalization duly captured. Good practices followed by the SERC too have been identified and reported. An executive summary bringing out the regulatory approach/ decisions to key tariff aspects while also capturing the extent of reduction in energy losses, tariff rationalization carried out in the state has also been attempted.

3.5 Inter-state comparison of trends in tariff and other key parameters

Post finalization of state-wise analysis of tariff orders, an inter-state comparison against key performance parameters has been attempted.

4. Coverage of the study

A total of 24 SERCs covering a span of five years (FY 05 to FY 09) are covered in this study.

5. Data Constraints

The study faced a number of data constraints in fully covering the scope of work, as aforementioned. An indicative list of such data constraints is mentioned below:

- A complete data set on proposed, approved and actual sales (actual - in the subsequent tariff order) is not available.
- Full description on the methodology of estimating of energy losses and the approach for setting targets for reducing such losses is not available.
- Consumer category wise revenue at the approved levels is not available.
- True-up information w.r.t. different components of the revenue requirement are not captured.
- Data on consumer category wise subsidy or the subsidy actually received by the utility is not documented.
- Roadmap for reduction of Cross subsidy

6. Key issues studied as part of the analysis

6.1 Regulatory approach for revenue requirement

S.No.	Parameter	Key issues Analyzed
1	Generation	➢ Key operational parameters that are looked into: o Plant Load Factor o Station Heat Rate o Auxiliary Consumption o Coal Transit Loss o Landed cost of Fuel (in case of thermal stations) ➢ What criteria has been used by the SERC to ascertain the foregoing parameters - CEA norms, past trends, operational

S.No.	Parameter	Key issues Analyzed
		parameters guaranteed by the manufacturer, benchmarking with other generating stations, independent studies?
1	Sales estimation	➢ What kind of trend analysis carried out for estimating sales? ➢ Application of correction factors including taking into account the impact of any industrial policy/ social schemes launched by the state governments (such as issuing connections for agriculture pump-sets, low income/ below poverty line domestic consumers, etc) ➢ Any regression analysis that may have been carried out. ➢ Data capture in terms of sales trend, consumer category-wise contribution in the total sales
2	Power Procurement	➢ Methodology for estimation of power availability from different sources including the central generating stations (CGS), Independent Power Producers (IPPs), Captive Power Plants (CPPs), bilateral trade/ banking/ power exchange and Unscheduled Interchange (UI) drawls. ➢ Criteria adopted by the SERCs for determining the costs – tariff orders issued by CERC, tariff filings by the PSUs owing the CGS, costs actually incurred by the distribution utilities, PPAs, etc.
3	Energy losses in the system	➢ Whether Transmission and Distribution (T&D) losses have been segregated? ➢ Is collection efficiency being tracked separately or through the composite AT&C loss measure? ➢ What's the measure of target setting – Distribution losses or AT&C losses? ➢ How is the consumption of unmetered categories estimated? ➢ What's the basis of target setting for different years? ➢ What has been the actual loss reduction?
4	O&M expense	➢ Basis/ index used for escalation of employee cost. ➢ Item-wise assessment vis-à-vis gross assessment? ➢ Impact of pay commission(s)/ wage revisions? ➢ Productivity indicators used for benchmarking with other utilities? ➢ What's the approach for estimating the R&M – yearly escalation factor based on certain price index or R&M expense linked with a certain percentage of gross fixed assets (GFA)? ➢ What kind of items in A&G has been questioned by the SERC? ➢ What index/ escalation factor used for approving the A&G?
5	Depreciation	➢ What's the basis of depreciation rate used by the SERC – rates

S.No.	Parameter	Key issues Analyzed
		specified by the CERC or average depreciation rate as shown in the books of accounts? ➢ Are there different rates of depreciation for old assets and new assets?
6	Interest	➢ Has there been a loan wise assessment while calculating interest on loans? ➢ What loans have been disallowed by the SERC and on what basis? ➢ What's the benchmark for calculating the interest rate on long term loans? ➢ Any stipulations on re-financing loan(s)? ➢ Norms for computation of working capital and the benchmark interest rate specified by the SERC?
7	Capital expenditure	➢ Criteria of evaluating the different capex schemes proposed by the utilities – any impact assessment of such investments on efficiency improvement/ reliability of supply or cost-benefit analysis in that regard carried out by the Commission while approving such capex. ➢ How has the Capital-Works-in-Progress dealt with – is there any interest or return allowed on the amount till such time the asset is commissioned and thereby capitalized?
8	Debt-Equity Ratio and Return on Equity/ Capital	➢ Debt –Equity ratio specified by the SERC? ➢ Is equity amount allowed on actuals or normatively capped at a certain percentage of the total capital? ➢ Are reserves included in calculation of equity amount? ➢ Secondly, what's the return allowed by SERC and on what basis has the same been determined?

6.2 Tariff Rationalization

The study captures the movement in generation, transmission and distribution tariffs, as approved by SERCs during the period FY 05 to FY 09. The extent of tariff rationalization carried out at the retail level has been captured in terms of calculating average realization for each consumer category as a % of average cost of supply while also capturing consumer category-wise tariff levels vis-à-vis average cost of supply in absolute terms over the study period (FY 05 to FY 09). Such analysis has been carried out separately for tariffs fixed by the SERC after taking into account the subsidy amount subject to availability of such information in the tariff order. This has been carried out to gauge the State's performance in the context of NTP's stipulation of fixing retail tariffs within ± 20% of the average cost of supply.

6.3 MYT – Base Line Data

The study documents which all states have launched the MYT tariff, and for each state, it captures the base year and the control period, uncontrollable and controllable factors, true-up mechanism and the basis for estimating the baseline data – accounts of the utility, independent study, trajectory approved in pervious orders. On what basis has been the T&D loss levels approved for the control period?

6.4 Wheeling Charges & Transmission Charges

The study looks into if transmission and wheeling charges have been segregated by the SERC. The study also captures if such charges have been fixed by the SERC at different voltage levels. What's the difference between long term open access and short term open access charges, and if the long term open access charge is the same for the incumbent distribution utility and any long term open access customer? How's the cross-subsidy surcharge determined by the SERC and trends witnessed against the same?

6.5 Subsidy Payment and its treatment in tariff

The study essentially captures the amount of subsidy provided by the State Government year-on-year and the consumer categories eligible for the same should the data in that regard is available in the state. It also captures if the SERC has notified separate tariffs – one without taking into account the subsidy amount and the one without it in the tariff order. Further, it also captures SERC's stipulation on the manner of subsidy payments in line with Section 65 of the Act.

6.6 Power Purchase Cost

The study captures the overall regulatory approach to power purchase cost, and wheresoever such distinctions as peak, off peak, fuel source, short-term/ UI drawls, long-term etc have been taken into account by the SERC – the same have been adequately documented.

7. Synopsis of findings of the study

7.1 Regulatory Approach to Revenue Requirement

A prudent estimation of revenue requirement forms the basis of tariff determination. In this regard, the regulatory approach to critical elements of cost structure of the utilities and to various operational and investment efficiencies have been studied, and practices across different SERCs are indicatively narrated below.

While approving generation tariff, the SERCs have followed different approaches during different years for estimating energy availability from a power plant and estimating the fuel cost. A mix of CEA norms, CERC norms, past performance, benchmarking with other power plants of same fuel type & vintage and performance guarantee given by the manufacturer are followed by SERCs for approving generation tariff. This is supplemented by application of correction factors on account of plants under construction and their expected date of commissioning or plants going for renovation and modernization (R&M). Many SERCs have approved an independent formula for pass through of fuel costs with different frequencies for adjustments.

For estimating sales, the SERCs have primarily followed the compounded annual growth rate (CAGR) approach taking into account the last five years or three years data. This has further been improved upon by applying correction factors. For instance, HPERC took into consideration the pending applications for new connections from major industries and also the implication of open access in the LT Industry. In Chhattisgarh, the SERC factored in the new pump-set connections and the BPL connections that were to be issued on account of governmental directives. In Assam, the SERC also factored leading indicators like sales per consumer and sales per KW while approving the sales for metered category. There are certain SERCs like Delhi, Punjab, Rajasthan, Madhya Pradesh and Karnataka which largely followed CAGR approach for estimating sales for metered categories.

Accurately measuring the T&D losses and thereafter specifying a reduction target is an important component of the whole exercise of revenue requirement. Key issue in estimation of T&D losses is the presence of large un-metered consumption in which regard different SERCs have followed different approaches. In Gujarat, the SERC has adopted a 1700 kWh/HP/annum as the normative level of consumption in case of agriculture to arrive at the distribution losses. In Punjab, the SERC considered agriculture consumption @ 1700 kWh/kW/year. In Rajasthan, the SERC allowed higher norm of 1945/units/KW/year considering the average consumption of flat rate consumers had increased. In Chhattisgarh, the SERC assessed sales to un-metered single light point (SLP) consumers by assuming consumption of 15 units per month per connection and sales to un-metered agriculture consumers based on 18% load factor. In Karnataka, the SERC has considered 682 units per month per irrigation pump in case of agriculture to arrive at the distribution losses. In Madhya Pradesh, the SERC has allowed 100units per month per HP for permanent un-metered agricultural consumers and 130 units per month per HP for temporarily consumers. In Maharashtra, SERC has followed a different approach where the SERC had computed the zone-wise consumption norm for metered agricultural consumers and applied the same for assessing the consumption for un-metered agricultural consumers.

As regards target setting for loss reduction, under the MYT approach, Gujarat has specified a 2% reduction every year for PGVCL, which has the highest loss level with around 39% share in the total agricultural sales in the state, and a 1% reduction every year for the remaining three state-owned DISCOMs. In HP, the basis adopted by the SERC for approving the T&D loss levels has been the five year trajectory set out in FY 03 under the MoU signed between the GoHP and GoI, which mandates 1% percent reduction every year from FY 03. In fact, while setting out the target loss level under the MYT framework, the SERC has considered the same approach of 1% reduction for the base year (FY 08) while fixing up the target T&D loss level of 16.5%. While states like Gujarat and HP have set out a 1% target for reduction, other states have set out a larger reduction target – for instance, in Orissa, the SERC has set out a 3% reduction year on year for all the DISCOMs in the MYT control period and in Maharshtra, 4% reduction target year on year basis for MSEDCL had been approved. In Rajasthan, the SERC laid down the trajectory for loss reduction - 4% per year for the period FY 05 to FY 08, this was revised each year, as the DISCOMs failed to achieve the 4% loss reduction. In UP too, the SERC spelt out a trajectory to reduce the distribution loss level by 3% year-on-year basis between FY 02 to FY 06, however, as the DISCOMs were not able to continuously achieve the loss reduction target in FY 03 and FY 04, the SERC retained the target loss level of 27.4% (for FY 05) for the subsequent years. In Kerala, the loss reduction trajectory follows a decreasing trend - 3 % for FY 05, 2.72% for FY 06, 1.76% for FY 07, 1.83% for FY 08 and 1.63% for FY 09. In Punjab, the SERC had fixed a three year T&D loss reduction trajectory, which mandates 1.25% percent reduction every year from FY 05.

Employee costs have typically been determined by applying an escalation factor based on certain index. For instance, HPERC has given 75% weightage to consumer price index (CPI) and 25% weightage to wholesale price index (WPI) while calculating the escalation factor for employee costs. DERC has given 55% weightage to consumer price index (CPI) and 45% weightage to wholesale price index (WPI) while calculating the escalation factor for employee costs. MERC and MERC have considered consumer price index (CPI) for estimating employees cost. UPERC has given 60% weightage to wholesale price index (WPI) and 40% weightage to consumer price index (CPI) while calculating the escalation factor for employee costs. In Rajasthan, the escalation is based on the ratio of wholesale price index (WPI) in the preceding and the current year. PSERC had applied WPI increase over the employee costs as determined in the base year

While some SERCs like have ascertained all the items such as basic pay, dearness allowance, etc for arriving at the employee costs, others have benchmarked it on overall basis with utilities of other states (no. of employees per 1000 consumers, employee cost per kWh, etc) and accordingly approved the costs. In Kerala, the SERC allowed the actual DA and the additional expenditure on account of new recruitments to fill up the essential vacancies. SERCs like Haryana, Orissa and Assam have considered all the components while estimating the employees cost.

R&M expenses have by and large been estimated as a % of gross fixed assets (GFA) with different SERCs approving different levels of these percentages. In fact, it has varied from one year to the other for the same state. For instance, in HP, this percentage was 1.9, 1.0, 0.6 and 1.0 for FY 06, FY 07, FY 08 and FY 09 respectively. In Chhattisgarh, this percentage was 5.07 and 4.9 for FY 07 and FY 08 respectively. In Punjab, it had been in the range of 1.8 to 2%. In Kerala, it had been in the range of 1.17 to 1.46. In Delhi, it had been from each DISCOM ranging from 2.82% to 3.70%. Whereas the state of AP has used a mix approach for approving the R&M expense as a % of gross fixed assets. APERC has considered 2.5% of R&M for the assets created prior to March 31, 2002 and 1.25 to 2% for the assets created post March 31, 2002.

The approach towards depreciation has predominantly been guided by the norms specified by the CERC with exceptions of some SERCs going by the depreciation as provided for in the books of accounts. For instance, GERC approved depreciation based on rates specified by CERC while fixing annual revenue requirement. However, tariff for the base year under the MYT framework was approved based on depreciation, as per accounts of the utility. In HP too, while the SERC considered asset wise depreciation rates, as prescribed by CERC in FY 06, an average depreciation rate for the remaining years has been taken based on the audited account of the respective preceding year. In Chhattisgarh, the existing assets are depreciated according to CERC defined rates but the new assets have been depreciated at relaxed rates of 4% because new additions mainly involve refurbishment of old plants which may not have the same life. As regards depreciation allowed on assets created out of consumers' contribution, grants such as APDRP, while some SERCs have taken a considerate view others have not allowed depreciation on any such asset. For instance, Delhi and Assam has not allowed depreciation on such assets. Chhattisgarh allowed it for FY 06, it disallowed the same for FY 07 and FY 08. While most of the SERCs have stopped allowing advance against depreciation (AAD) in line with Clause 5.3(c) of the National Tariff Policy, some SERCs, for instance, Gujarat, Rajasthan, Delhi and Karnatka continue to provide for the same.

The return on equity (RoE) has been in the range of 14 to 16% with some exceptions. For instance, in Himachal Pradesh, the RoE for generation, transmission and distribution has been kept uniform at 14%, 14% and 16% respectively for all the years from FY 06 to FY 09. In Chhattisgarh and Uttarakhand, it has been kept uniform at 14% for all the three segments (generation, transmission and distribution). In Orissa, it's 14% for generation and 16% for distribution. In Rajasthan, the distribution companies have been allowed 11% on the short term loans (equal to post tax return allowed) only while no return was allowed to the transmission utility and generation utility except RoE @11% for the new generation projects. In Kerala and Punjab, while during the initial years of the study period, the SERC allowed return at the rate of 3% on the Net Fixed Assets, they switchover to the Return on Equity approach with RoE@14% (Kerala since FY 06 and Punjab since FY 07). In Delhi, the SERC provided RoE @ 16% to the DISCOMs during the years FY 05 to FY 07. Subsequently, for the years FY 08 and FY 09, the SERC switched over to RoCE approach with rate of RoE fixed at 14% for the wheeling business and 16% for the retail supply business separately; the cost of debt was computed based on the outstanding loans of the DISCOMs – overall, the RoCE approved by the SERC varied between 10 to 10.5%. In case of Andhra Pradesh, the SERC had provided a return of 16% on Net Capital Base and an additional 0.50% on the approved loans. However, the same was revised to RoCE approach considering a RoE of 14% and 16% in computation of WACC for Distribution business and Retail Supply Business, respectively.

7.2 Tariff Rationalization

One of the key objectives of setting up the SERCs is rationalization of tariffs. This is a critical activity, as the tariff structure is marked by high levels of cross subsidies and no. of consumer categories/ slabs. The Act and the NTP issued there under thrust upon reducing the subsidy with tariff progressively reflecting the cost of supply of electricity. The NTP mandates the SERC to notify roadmap within six months with a target that latest by the end of year 2010-11 tariffs are within ± 20 % of the average cost of supply. Most of the SERCs have taken initiatives for reducing the cross subsidy and rationalizing the no. of consumer categories/ slabs while also creating new consumer categories, as and when required. However, a clear roadmap with milestones to bring down the cross subsidy levels to within ± 20 % of the average cost of supply has not been notified by any SERC. Also, at the end of FY 09, the cross subsidy levels still remain high as compared to the aforesaid NTP target of ± 20 %. For instance, in HP, while the SERC has increased the tariffs of domestic and agriculture categories; at the end of FY 09, the agriculture and non-domestic category still continues to pay about 20% and 150% of the average cost of supply respectively (the 20% no. for agriculture is netted of the subsidy amount allocated for this category). In Uttarakhand, at the end of FY 09, the agriculture and non-domestic category still continues to pay about 20% and 120% of the average cost of supply respectively. In Delhi, at the end of FY 07 (consumer category wise revenue at proposed tariffs is not available in the subsequent tariff orders), the agriculture and non-domestic category still continues to pay about 40% and 145% of the average cost of supply respectively. In Andhra Pradesh, the agricultural consumers and HT industrial consumers still continues to pay 4% and 140% of the average cost of supply respectively. In Kerala, the SERC has not increased the consumer tariff except for FY 08, therefore, at the end of FY 09, the agriculture and industrial category still continues to pay about 25% and 150% of the average cost of supply respectively. In Punjab, at the end of FY 09, the agriculture (with Govt. subsidy) and industrial category still continues to pay about 65% and 125%

of the average cost of supply respectively. In Madhya Pradesh, at the end of FY 09, the agriculture and non domestic still continues to pay about 72% and 148% of the average cost of supply respectively. In Maharashtra, at the end of FY 09, the agriculture and non domestic still continues to pay about 40% and 170% of the average cost of supply respectively.

7.3 MYT – Baseline data

The Multi Year tariff (MYT) framework has been mandated by the Act, which has been further reinforced by the NTP stipulating thereof that the framework should be adopted with effect from April 1, 2006. It further specifies that the framework should feature a five-year control period with the initial control period may be of 3 year duration for transmission and distribution if deemed necessary by the Regulatory Commission on account of data uncertainties and other practical considerations. It states that in cases where operations have been much below the norms for many previous years the initial starting point in determining the revenue requirement and the improvement trajectories should be recognized at "relaxed" levels and not the "desired" levels. Furthermore, uncontrollable costs would include (but not limited to) fuel costs, costs on account of inflation, taxes and cess, variations in power purchase unit costs including on account of hydro-thermal mix in case of adverse natural events. An indicative snapshot of MYT regulations, as issued by different states, is tabulated below:

MYT Feature	HP	Delhi	Karnataka	MP	Orissa
First Year	FY 09	FY 08	FY 08	FY 07	FY 04
Control period	3 years	4 years	3 years	3 years & 4 years (DISCOMs)	5 years
First MYT Order	Issued two months later to the start of control period	11 months delay from the start of first year of Control Period	Delay of more than a year	Order Issued before the start of MYT period (Mar 31, 2006)	In Orissa MYT Order has been passed much earlier to notification of Tariff Policy by GoI in 2006
Data considered for the Base year	Trued value for FY 07 and revised estimates for FY 08	Based on audited accounts of the previous year with certain correction factors	FY 07 (Previous Year)	Based on the historical trends	Based on audited accounts of the previous year (FY 03)
Uncontrollable Parameters	Sales , Revenue & Power Purchase Cost	Power purchase quantum and cost, Sales & Revenue	Power Purchase Cost, Expenses on account of inflation & Taxes on Income	Fuel cost, Cost on account of inflation, Taxes & Cess, Power Purchase variations in units and cost & Any uncontrollable variations	Power Purchase, Fuel Cost Changes, Inflation & Exchange rate variations

MYT Feature	HP	Delhi	Karnataka	MP	Orissa
Controllable Parameters	T&D Loss, O&M cost, Interest cost, RoE, Depreciation, and Non Tariff Income	AT&C , O&M ROCE (to be trued up at the end of Control period) & Depreciation (to be trued up at the end of Control period)	Distribution Losses, O&M, Interest and Financing Charges, Return On Equity, Depreciation & Non-Tariff Income		-Network & Financing Cost - AT&C Loss
Incentive Sharing mechanism	Profits arising from achieving loss level better than specified in the loss reduction trajectory shall be shared in the ratio of 2/3rd with the licensee and 1/3rd in the contingency reserve for the first control period	50% will be given to Licensee and 50% will be passed on the consumers/	Savings on account of T&D losses shall be shared between the distribution licensee and the consumers in the ratio of 70:30 during the first Control Period	50% will be given to Licensee and 50% will be passed on the consumers/users	Incentive: $1/3^{rd}$ will be given to shareholders,$1/3^{rd}$ will be given to consumer in form of reduction in electricity bills as rebate & $1/3^{rd}$ will be in tariff balancing reserve

7.4 Wheeling Charges & Transmission Charges

Separate notification of transmission and wheeling charges is essential for enabling open access. In this regard, the NTP stipulates that wheeling charges should be reasonably determined and these should be based on the same principles as laid down for intra-state transmission charges including average loss compensation of the relevant voltage level. Regarding cross subsidy surcharge, the Policy stipulates that such surcharge needs to be determined in a manner that while it compensates the distribution licensee, it does not constrain introduction of competition through open access. It further specifies a formula for computation of surcharge and mandates that the surcharge should be brought down progressively at a linear rate to a maximum of 20% of its opening level by the year FY 11. From our review of tariff orders, it is found that only few SERCs have notified the wheeling charges separately. For instance, HPERC has approved the transmission and wheeling charges separately in the Tariff Orders for FY 07 and FY 09, specifying thereof that in addition to the charges the transmission and distribution losses, as applicable, would be borne by the beneficiary without indicating such losses at different voltage levels. HPERC, however, has not specified cross subsidy charge in its orders till FY 09. In Delhi, the SERC has provided for allocation of each element of the revenue requirement into wheeling and retail supply business, and have accordingly determined wheeling and retail supply tariffs separately in its MYT Orders. In Assam and Rajasthan, the SERC has determined wheeling charges while approving loss levels at different voltages (33 kV, 11 kV and LT) that would be applicable to the open access consumers. Besides, the SERCs have also specified the cross subsidy surcharge that would be applicable to eligible consumer categories based on cost to serve model.

7.5 Subsidy Payment and its treatment in tariff

Section 65 of the Act provides that no direction of the State Government regarding grant of subsidy to consumers in the tariff determined by the SERC shall be operative if the payment on account of subsidy is not made to the utilities and the tariff fixed by the SERC shall be applicable from the date of issue of the tariff order in that regard. The NTP mandates SERCs to ensure compliance of this provision of law to ensure financial viability of the utilities, and mandates the SERCs to determine the tariff initially without considering the subsidy commitment by the State Government and the subsidised tariff shall be arrived at thereafter considering the subsidy by the State Government for the respective categories of consumers. However, minimum information has been captured in the tariff orders regarding the subsidy payments by the State Governments. There are very few SERCs who have notified tariffs taking into account the subsidy, as the state governments typically decide upon the subsidy levels and consumer categories once the tariff is notified by the SERC. In Gujarat, the state government has allocated Rs. 1100 Crs. for agriculture consumers which are distributed among the different DISCOMs in proportion to the consumption by pumpsets in each DISCOM. Government of Punjab provided subsidy of Rs. 1115.18 Crs, Rs. 1541.61 Crs, Rs. 2119.10 Crs and Rs. 2479.76 Crs for FY 06, FY 07, FY 08 and FY 09 respectively.

7.6 Power Purchase Cost

Costs on account of power purchase form a significant proportion of the revenue requirement, and SERCs have dealt with this issue in great detail in their tariff orders. Availability and costs has been determined for each source of power purchase. Besides accounting for firm allocations from CGS and contracted capacities with IPPs & CPPs, the SERCs have also approved short term power purchases. For instance, HPERC allowed banking during the winter months, as proposed by HPSEB, in its tariff orders for FY 07 to FY 09. In addition, HPERC also approved market purchase of 169 MUs and 137 MUs to meet the deficit during FY 08 and FY 09 respectively. In Delhi too, the SERC approved power purchase from such sources as bilateral, intra-state and banking in line with the following costs for FY 08 and FY 09:

- Bilateral : Previous year trends
- Banking : Normative rate of Rs. 4.00 per unit
- Intra State : Normative rate of Rs. 2.75 per unit

8. Structure of the Final Report

The Final Report has been organized into the following key chapters:

- The second chapter draws a comparison between different states against select tariff parameters such as energy losses, cross subsidy levels in terms ± 20% average cost of supply, open access surcharges, etc
- The third chapter provides executive summaries of all the states duly covering the approach followed by different SERCs for revenue requirement, trends in tariff rationalization and other such aspects as wheeling & transmission charges and subsidies provided by the state governments.
- Annexure A: provides detailed analysis for each state duly covering generation, transmission and distribution tariff orders.

CHAPTER 2 : REVIEW OF KEY FINDINGS

Status of Reforms & Regulatory Framework in the State

A study has been undertaken to analyze the approach adopted by the SERCs in the past five years Tariff Orders of the respective 23 States. Certain key issues that are typical of every state viz. sales estimates/ forecast, un-metered agriculture sales, power purchase, T&D loss, employee cost, state subsidy etc. have been treated differently across these States with certain approaches carrying greater rationale over others. In the subsequent section, we discuss and bring out the learnings from our review of the Tariff Orders and have attempted a comparison of various approaches followed by the SERCs.[1]

1. Demand/ Sales Estimation

1.1 Unmetered Sales:

Since many States have still not achieved 100% metering at the end consumer level, determination of unmetered consumption (specifically for agricultural consumers) becomes critical. It has been observed, SERC have followed different methodology/norms for determining the agricultural consumption. For instance, SERCs like PSERC have determined norm based on sample studies as well as on basis of metered agriculture connections, whereas Haryana has estimated unmetered sales based on the Average Load Factor of metered sales.

A comparison of various approaches and the SERCs following the respective approach is summarized in table below:

Particulars	Approach - 1	Approach - 2	Approach - 3	Approach – 4
Details of the Approach	Estimation based on information available from meteres fixed on LV side of distribution transformers for measuring consumption of	Based on normative level of consumption (with some correction factor to account for additional connections, rainfall, etc)	Based on Average Load Factor for metered connections	As proposed by the Distribution Licensee

[1] While the Main Report documents the regulatory approach, as evolved during the review period i.e. FY 05 to FY 09; for the purpose of comparison across different states, we have resorted to the FY 09 data. In the absence of FY 09 tariff order, tariff order for the previous year has been taken into account.

Particulars	Approach - 1	Approach - 2	Approach - 3	Approach – 4
	agricultural consumers			
SERCs following the respective approach	APERC KERC	BERC GERC MPERC MERC (zone wise consumption norm) PSERC RERC UPERC UERC	CSERC HERC AERC	MSERC TERC WBSERC

Apart from the above mentioned SERCs, some of the SERCs like DERC, HPERC, JKERC and JERC estimate the energy sales in the unmetered category based on CAGR method as utilized for metered category. However, the quantum of energy sales to unmetered category is negligible in these States.

Snapshot of Different Approach of Few SERCs

Andhra Pradesh has been estimating unmetered agriculture consumption based on information available from meters fixed on LV side of Distribution Transformers primarily catering to the agricultural pumpsets for working out a consumption norm. This consumption norm is further utilized for a more realistic estimation of unmetered agricultural consumption.

In Maharashtra, MERC has been approving agricultural consumption based on the recorded consumption of sample metered consumers after filtering for abnormal records, viz., zero connected load, average billing, negative consumption, high connected load, etc., for all the zones. Further, the data was analyzed to work out a zone-wise consumption norm in hrs/hp/annum which was subsequently utilized for projecting zone wise metered and unmetered agricultural consumption. The exercise of sample study was undertaken by the utility as per the direction of MERC.

PSERC in its first Tariff Order for FY 02-03 had fixed norm for agricultural consumption at 1700 kwh/kw/year. The norm was fixed considering the norms adopted by other SERCs, results of sample meter study conducted by the Board, the World Bank report on the issue undertaken in Haryana and a study conducted by the Punjab Agricultural University earlier as well as the fact that FY 02-03 was substantially a drought year. Subsequently, the Commission had revised this norm in each of the Tariff Order based the actual consumption, monsoon failure, projections of the Board and reasonable increase over approved figure of previous year. However, for FY

08 and FY 09, PSERC had provided for 5% increase on the estimated consumption for previous year. However, the estimated consumption was adjusted for non-functioning sample meters, average per day supply for agricultural consumers and new connections to be released for estimation of agricultural sales.

KERC has consistently applied correction factors while approving the sales of un-metered categories. For estimation of agricultural consumption, KERC has considered new pump installations proposed by Govt., number of hours of supply, target set, TERI report, and sample study conducted by the DISCOMs. Since KERC had directed the DISCOMs to regularize all the irrigation sets in earlier order, sales to unauthorized irrigation sets was disallowed.

1.2 Metered Sales Forecast:

Many of the SERC's use a mix of short-term or medium-term CAGR approach for estimation of category wise metered sales and further use correction factors for any major variance i.e. DERC, CSERC, GERC, etc. Few of the SERCs like HERC use Average Load Factor (ALF) for estimation of sales.

A comparison of various approaches and the SERCs following the respective approach is summarized in table below:

Particulars	Approach – 1	Approach – 2	Approach - 3
Details of the Approach	Estimation of sales considering indicators like sales per consumer and sales per KW	CAGR (for small, medium and long term) approach along with correction factor to account for any State/ Central Govt schemes, pending connections, etc	As proposed by the Distribution Licensee
SERCs following the respective approach	AERC UPERC HERC (Average Load Factor)	BERC CSERC DERC GERC HPERC JKERC JERC KERC APERC KSERC MPERC MERC OERC PSERC RERC UERC	MSERC TERC WBSERC

Snapshot of Different Approach of Few SERCs

AERC had estimated the sales in its FY09 Order considering parameters like number of consumers, connected load and energy sales and computed leading indicators like sales per consumer and sales per KW for previous three years. Averages of these indicators were applied to the closing level of consumers and connected load for previous year for estimation of energy sales in various categories.

UPERC estimated the sales of various consumer categories by considering expected growth in the number of consumers, the specific consumption level per consumer and the connected load for the year. The total sale thus arrived at, has then been adjusted to some econometric parameters (correction factors) like GDP composition, growth of the state, plan targets, income elasticity of demand, household size and population growth etc. The Commission also analyzed division-wise data and then normalized the forecasted data to ensure consistency with the compilation of division-wise sales data.

SERCs like AERC and APERC had also directed the distribution utilities to provide sales forecast for each category of consumers at each operation section/division level to undertake a more accurate estimate of sales.

2. AT&C and T&D Loss

2.1 AT&C vs. T&D Loss

Some of the states are still following T&D losses as compared to AT&C losses. The reasons for this are lack of information/data with regard to collection efficiency as well as technical & commercial loss estimates.

2.2 Methodological for baseline losses

Even though there has been an improvement in the estimation of base level loss levels in various States in India, in many/some states it is still area of concern. This is primarily because of unmetered consumption, estimate of slab-wise consumption and commercial loss assessment. Further, segregation between past arrears and real time arrears remains an area of concern.

2.3 Methodology for target settings

For the DISCOMs in Delhi, DERC has been approving AT&C loss targets based on the trajectory set as per the Policy Direction Period i.e. upto FY 07. Subsequently, DERC implemented the MYT framework in Delhi and specified a target AT&C loss level to be achieved at the end of the Control Period along with a minimum loss level and incentive loss level for each year in the MYT Order. An incentive/ disincentive sharing mechanism to encourage reduction of AT&C loss was also laid down. The improvement in AT&C losses have been witnessed across the DISCOMs in Delhi with each DISCOM achieving a higher reduction in loss levels as compared to the approved loss levels. Similarly in the State of Himachal Pradesh, HPSEB has been able to achieve/ over-achieve the T&D loss target fixed by the SERC as per the long-term trajectory set out in FY 02-03. It is observed that in both the States, SERCs have not deviated or revised the long-term AT&C/ T&D loss reduction target. However, in Punjab, PSERC has not revised the long-term trajectory even though the distribution utility was not able to achieve the loss level target.

In other States like Rajasthan, Bihar, etc., the SERCs have revised the loss level trajectory because of certain factors like increase in unmetered agriculture consumption, impact of notification of rural electricity policy by Government of India, recommendation of Abraham Committee, etc.

In Madhya Pradesh, MPERC approved a loss trajectory for the period FY 07 to FY 10. However, the State Government in accordance with the provisions of National Electricity Policy and National Tariff Policy notified annual milestones for distribution losses to be achieved by the three Distribution Companies. In line with the State Government notification, MPERC revised the distribution loss trajectory in FY 08 Order.

MERC, based on analysis of the technical and commercial loss and circle-wise distribution loss, had set out a loss reduction target of 4% per year for the MYT Control Period while also directing the MSEDCL to target poorly performing divisions and attempt to reduce the losses on a priority in such divisions, using 'ABC[2]' analysis. Further, MERC did not reduce the power purchase cost on account of the approved trajectory of reduction of distribution losses but had considered additional revenue through the additional sales, while determining the revenue gap. Table below summarizes the approach followed by the SERCs while approving the loss reduction target:

[2] In case of ABC analysis, priority is given to divisions with higher level of losses as compared with other divisions. Appropriate measures are undertaken to reduce losses in divisions with higher loss levels

Particulars	Parameter	Approach - 1	Approach - 2	Approach – 3
SERC	**(Details as per latest Tariff Order)**	**Fixation of Long-term Trajectory set by SERC**	**Revision of Loss Level Trajectory each Year**	**Annual fixation of Loss Level based on Past Trends/ Proposed Capex**
Andhra Pradesh	Distribution	Yes		
Assam	T&D			Yes
Bihar	T&D		Yes	
Chhattisgarh	T&D		Yes	
Delhi	AT&C	Yes		
Gujarat	Distribution	Yes		
Haryana	Distribution			Yes
Himachal Pradesh	T&D	Yes		
Jharkhand	T&D			Yes
Jammu & Kashmir	AT&C			Yes
Karnataka	Distribution	Yes		
Kerala	T&D			Yes
Madhya Pradesh	T&D		Yes	
Maharashtra	T&D		Yes	
Meghalaya	AT&C		Yes	
Orissa	AT&C	Yes		
Punjab	T&D	Yes		
Rajasthan	T&D		Yes	
Tripura	AT&C			Yes
Tamil Nadu	AT&C	Yes		
Uttar Pradesh	T&D		Yes	
Uttarakhand	AT&C	Yes		
West Bengal	Distribution		Yes	

It is also noted that some States have set targets for T&D loss and collection efficiency separately, whereas some states have set AT&C losses. However, in this regard, impact of Power purchase and risk sharing under MYT becomes an area of debate. For instance, in Delhi, one of utility was able to achieve overall AT&C loss levels because of higher collection efficiency (greater than 100%) but T&D loss levels were not achieved. The SERC, at the time of true-up, has approved the total power purchase cost based on the actual T&D loss levels.

Snapshot of Different Approach for Loss Targets for Transmission Business of Few SERCs

In Maharashtra for approving transmission loss in FY05 the Commission engaged Central Power Research Institute (CPRI) to undertake load flow analysis study on data available and assess optimum transmission loss level in the MSETCL transmission network.

APERC has also specified an incentive mechanism for reduction in transmission losses beyond the lower value of target range in its MYT Order. The Commission has specified an upper and lower range for transmission losses. This would incentivize the transmission utility to further reduce the transmission losses and provide a degree of regulatory certainty during the MYT period.

3. Power Procurement Planning & Purchase Cost

It has been observed that majority of the SERCs have followed the CERC Tariff Orders while approving the cost of power from central generating stations. SERCs have also approved short term power purchase through UI/bilateral purchases to meet the energy deficit in the state. Some of the SERCs have also directed the utility to purchase certain quantum of power through renewable. But none of the SERC has issued specific directions to the utility for the power procurement through short-term /medium term / long-term procurement through Case I / II bidding to meet the energy deficit. A brief description of the power purchase approach as followed by different SERCs is summarized below:

DERC has been approving power purchase from market sources including banking and bilateral for meeting the deficit power and power requirement during peak hours. The Commission has also been encouraging DISCOMs to enter into banking arrangements with other States with a view to reduce the reliance over costly power during peak hours.

HPERC recognizes banking and short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and has considered the same while estimating the power purchase cost in the ARR. Besides, the Commission has encouraged micro hydel by considering the same as another source of power purchase.

In Chattisgarh, Commission in its tariff order for FY07 and FY08 has specified price band for short-term power purchase during different periods of the day, i.e. peak, off- peak and normal hours. The Commission has also specified that the rate of power purchase from traders should not higher than maximum ceiling rate approved by the Commission. Commission has also directed CSEB to purchase power of 25 MW and above from CPP up to one year period on the basis of competitive bidding.

Since the demand – supply gap has increased in the state of Maharsahtra, MERC introduced concept of costly power and non-costly power in FY07 and FY08, such that the average hours of load shedding was determined by allocating non-costly power to all the categories, The costly power (costing above Rs. 4 per unit) was then allocated to consumer categories and region and an additional ASC was collected from the consumers in proportion to the relief from load shedding made possible due to purchase of costly power. MSEDCL has considered power available from various sources including State Generating Stations, State share in Central Generating Stations, IPPs, etc. The SERC has also estimated the power available from non conventional sources like wind and co-generation plants. Considering the demand supply gap in the State, the SERC had also approved UI power but with clear instruction to tap the UI source in order mitigate the hardship faced by the consumers on account of the same. A summary of the SERCs that have approved UI as a source of power for meeting the demand-supply gap in the respective State for FY 09 is tabulated below:

Particulars	Consideration of UI power in the Tariff Order	Units Considered in FY 09 (in MUs)	Remarks
Andhra Pradesh	No		
Assam	Yes	18	
Bihar	Yes	400	Net underdrawal
Chhattisgarh	Yes	127	Net Underdrawal (For FY08)
Delhi	No		
Gujarat	No		
Haryana	Yes	2000	Including Bilateral and UI
Himachal Pradesh	No		
Jharkhand	Yes	NA (400MUs proposed by Board)	Overdrawal from TVNL Plant for FY07
Jammu & Kashmir	Yes	105	Overdrawal (includes banking and UI)
Karnataka	No		
Kerala	Yes	392	Overdrawal
Madhya Pradesh	Yes	5600	Overdrawal (FY 08)
Maharashtra	Yes	1000	Overdrawal (FY 08)
Meghalaya	NA		

Particulars	Consideration of UI power in the Tariff Order	Units Considered in FY 09 (in MUs)	Remarks
Orissa	No		
Punjab	Yes	898	Overdrawal
Rajasthan	No		
Tripura	NA		
Uttar Pradesh	No		
Uttarakhand	Yes	227.64	Overdrawal (FY08)
West Bengal	No		

Power procurement cost is the primary cost of any distribution business. In this regard, proactive power procurement planning becomes critical. It is noted that many states are purchasing power through trading without having approval of the same in the tariff orders. For instance, a significant amount of power was purchased by MP through trading, which was not approved during the tariff determination process, and therefore, could have put strain on the working capital requirement of the utility. It is also important to note that option and possibility of purchasing power through competitive bidding could help in optimizing this cost and therefore, power procurement planning by distribution utility would become useful. Generation capacity addition (including IPPs) would also get boost & faster execution with the promotion of Case I/ II bidding by the distribution utilities. It is highlighted that a number of independent power plants that are in the pipeline are not being developed faster due to lack of Power Purchase Agreements (PPAs). PPAs can be signed only through the Case I/ II bidding. It is therefore important that Case I/ II bidding is encouraged and price discovered under the competitive bidding is accepted by the utilities in spirit.

4. Operation & Maintenance Cost

Majority of the SERCs have been approving each component i.e. employee cost, R&M and A&G cost of the O&M cost separately under the ARR regime. Under this approach the SERCs have been approving each component i.e. employee cost and A&G expense by considering an inflation factor over previous year approved/ actual costs and R&M cost as a percentage of the gross fixed assets. Few of the SERCs have also separately estimated each sub-component of the employee and A&G cost in an effort to have more realistic estimates. However, the approach for estimation of the O&M cost has been divergent across SERCs.

SERCs	Framework	Method of Estimation	Remarks
Andhra Pradesh	MYT Framework	Consolidated approval of O&M	However, considering the fairly wide variations in O&M performance levels, APERC projected the independent elements of the O&M expenses for the Control Period without considering CPI / WPI approach
Assam	MYT Framework	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	R&M expense has been approved considering an escalation over previous year R&M expense
Bihar	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Chhattisgarh	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Delhi	MYT Framework	Consolidated approval of O&M	Escalation factor for Employee and A&G has linked to CPI and WPI (55:45), while A&G has been computed as % of GFA
Gujarat	MYT Framework	Consolidated approval of O&M	CPI/WPI index has not been utilized for the purpose of estimation of each parameter
Haryana	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Himachal Pradesh	MYT Framework	Consolidated approval of O&M	Escalation factor for Employee and A&G has linked to CPI and WPI (75:25), while A&G has been computed as % of GFA
Jharkhand	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	Disallowance of pension corpus fund proposed by JSEB
Jammu & Kashmir	ARR	R&M and A&G Cost has been approved in a consolidated manner while employee cost has been approved separately	
Karnataka	MYT Framework	Consolidated approval of O&M	Escalation factor for increase in O&M expense has been linked to CPI and WPI (70:30)
Kerala	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Madhya Pradesh	MYT Framework	Consolidated approval of O&M	Norms based on metered consumers, metered sales and 33&11kV network length

SERCs	Framework	Method of Estimation	Remarks
Maharashtra	MYT Framework	Consolidated approval of O&M	Escalation factor for increase in various parameters has been linked to CPI and WPI
Meghalaya	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	As proposed by the MeSEB
Orissa	MYT Framework	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Punjab	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	However, PSERC has not approved any increase in employee cost on account of Pay Commission, Actual DA paid, etc
Rajasthan	MYT Framework	Consolidated approval of O&M	Escalation factor for increase in O&M expense has been linked to CPI. Additional 3% of value of assets was approved as part of O&M
Tripura	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Uttar Pradesh	ARR	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	
Uttarakhand	ARR	Consolidated approval of O&M	Escalation of 4% to account for inflation was considered apart from increase in employees, additional cost, etc
West Bengal	MYT Framework	Separate approval for each parameter of O&M i.e. Employee, R&M and A&G expense	

Further, it has been observed that the SERCs have not considered the variations on account of Dearness Allowance and Pay Commission Revisions as uncontrollable while considering the employee/ O&M cost as controllable parameter.

Snapshot of Different Approach of Few SERCs

APERC has approved R&M costs @2.5% corresponding to old assets (Gross Block as on 31st March 2002) and @1.25% to 2% for new assets (Additions to the Gross Block during 2002-03 onwards.

KSERC has taken into account external factors such as the wage revision, DA announced by the State Govt, etc while approving the employee costs. KSERC has approved the escalation in the range of 3% to 5% in respect of basic salaries and 5% increase in the terminal benefits. Commission has also allowed the actual DA paid by the KSEB along with the arrears. The additional expenditure on account of new recruitments to fill up the essential vacancies has also been approved by the Commission.

Under the MYT framework, majority of the SERCs have moved towards approval of consolidated O&M cost primarily linked to CPI & WPI index. The key issue in consolidated approval of O&M expense is the base year which has remained a matter of debate in various States. While SERCs like MERC have revised the O&M expenses for the control period after availability of audited accounts, DERC has clearly mentioned in the MYT Regulations that no review in the approved O&M expenses would be undertaken even if the estimates are based on provisional numbers of the base year.

Another point of variation in approval of consolidated O&M cost is the weightage of CPI and WPI considered for escalation of O&M costs in the Control Period. While HPERC has used a 75:25 weightage of CPI and WPI, DERC has used a 55:45 weightage and UPERC has given 40:60 weightage CPI & WPI.

5. Capital Expenditure

While Capital expenditure is one of the most important criteria's in determination of the ARR of any utility, the approach of the SERCs have been divergent for approval of the capex. While few of the SERCs undertake a detailed scheme wise capex approval for the ensuing year i.e. MERC, DERC, OERC, etc.; other SERCs like UERC, either do not approve any capex in the Order or approves the same as proposed by the utility with true-up in the subsequent order.

Snapshot of Different Approach of Few SERCs

The details of capital expenditure exceeding Rs.10 Crs are required to be submitted to MERC for approval as per Regulation 71 of the MERC (Terms & Condition of Tariff) Regulations 2005. DPR of such schemes is to be submitted separately with details regarding the scheme and cost benefit analysis of the same. The schemes with capital expenditure less than Rs. 10 Crs i.e. Non-DPR schemes do not require prior approval and such capital expenditure is approved along the ARR for the respective year.

DERC had approved capital expenditure based on detailed analysis of the proposed capital expenditure after considering scheme-wise analysis, actual & approved capex in past years and cost benefit analysis of each scheme. In the MYT Order, the investment plan was approved at a normative level considering actual investment made during the past years and assessing system requirement for the ensuing period. However, the DISCOMs have undertake prior approval for all schemes which amount to more than Rs. 2 Crs by submitting DPR and cost benefit analysis to the Commission.

6. Depreciation

Depreciation as approved by SERCs is primarily based on an average rate of depreciation in absence of actual category wise asset breakup. While most of SERCs i.e. HERC, Maharashtra, etc. shifted to the depreciation rate as prescribed in Appendix II to CERC (Terms and Conditions of Tariff) Regulations, 2004 (applicable from FY 05 to FY 09) along with advance against depreciation, some of the SERCs like APERC continue to follow the MoP specified depreciation rates.

The depreciation rates followed by various SERCs at the time of tariff determination are summarized below:

Particulars	Approach – 1	Approach – 2	Approach – 3	Approach – 4
Details of the Approach	MoP specified Depreciation rates	CERC prescribed Depreciation Rates	SERC specified Depreciation Rates as per the Tariff Regulations	Actual Depreciation Rate for previous year
SERCs following the respective approach	APERC HERC OERC (pre 1992 norms notified by GoI)	BERC GERC HPERC JKERC KSERC MPERC UPERC KERC	AERC CSERC (as proposed by utility in FY08) DERC MERC RERC UERC WBSERC	JSERC PSERC (as per books of account of PSEB)

Another point of divergence in approval of depreciation is with respect to capitalization of new assets. Some of the SERC's consider the half yearly depreciation for new assets while others provide for depreciation of assets capitalized at the time of true-up.

Most of the SERCs like DERC, APERC, CSERC, HERC do mention about disallowance of depreciation expense on assets created from consumer contribution, grants, etc in the Tariff Orders each year. However, some of the SERCs like Bihar remain silent on the treatment of depreciation on assets created from consumer contribution, grants, etc while SERCs like HPERC has been approving depreciation on assets created out of consumer contribution in each of its Order.

7. Interest and financing cost (including ROCE)

Most of the states are approving cost of financing based on normative debt-equity ratio and ROE & interest rates.

Most of the SERCs are following a Return on Equity approach for approval of reasonable return. However, the rate of return approved is not consistent across the SERCs. While few of the SERCs are approving the RoE for distribution business similar to transmission and generation RoE as specified by the CERC, other SERCS have linked the rate of return to the performance of the utility (Assam).

Also, SERCs which have implemented MYT framework in their respective State are not consistent in their approach for providing reasonable rate of return. While SERC's like APERC and DERC have considered RoCE under the MYT framework, KERC has continued with the RoE approach. A list of SERCs following similar approach for reasonable return has been summarized below:

Particulars	Approach - 1	Approach – 2	Approach – 3
Details of the Approach for Distribution Licensees	**Return on Equity**	**Return on Capital Employed**	**No Returns**

Particulars	Approach - 1	Approach – 2	Approach – 3
Details of the Approach for Distribution Licensees	**Return on Equity**	**Return on Capital Employed**	**No Returns**
SERCs following the respective approach	AERC - 6% CSERC - 14% GERC - 14% HPERC - 16% JSERC - 14% KERC - 14% KSERC - 14% MPERC - 14% MERC - 16% MSERC - 14% OERC - 16% PSERC - 14% RERC - 11% UERC - 14% WBSERC - 14%	APERC - 16% (RoE) DERC - 16% (RoE)	BERC JKERC UPERC HERC (negative capital base)

It is observed that majority of the SERCs are following the Return on Equity approach for approval of reasonable return. SERCs like PSERC has been providing RoE considering the accumulating losses of the PSEB and disallowance of Return on Equity may further push the utility in to further losses. RERC had approved the interest of 11% on short term loans, which was equal to post tax return allowed on the equity capital of the DISCOM as per Terms and Conditions of RERC Tariff Regulations.

8. Bad Debts

The low levels of attention on the collection efficiency have led to increase in bad and doubtful debts in the books of the utilities. Few of the SERCs like Delhi have shifted to approval of AT&C loss targets in order to induce the utilities to focus on collection of energy bills while others (UERC, AERC, etc) have been approving a percentage of ARR/ Revenue/ Outstanding bad debts as a pass through in the ARR. Other SERCs like HERC does not provide for any provisioning for bad debts as the same puts additional burden on the honest consumers who pay their dues regularly.

Therefore, the approach for provisioning of bad debts has not been consistent even in each of the Tariff Order issued during FY 05 to FY 09 by the SERC. A number of SERCs have directed the utilities to carry out proper analysis of the outstanding dues and frame clear and transparent policy for classification of bad and doubtful debts including provision for the write-offs.

In FY 05, AERC had disallowed provision for bad debts in view of the fact that ASEB has not written off the bad debts in its books of account. However, in FY 06 AERC approved 2.5% of the ARR to be set aside as provision for doubtful debts considering the collection drive undertaken by the distribution licensees involving waivers as incentives for payment. In the Orders, AERC had approved 1% of the total revenue as provision for bad debts.

Though UERC disallowed provisioning on bad debts for FY 06 and FY 07, it approved a provisioning of 1.5% against Bad Debts in the FY 08 & FY 09 Orders.

BERC has not provided any provision for bad debts for ARR computation. However, the Commission had directed the Board in FY 07 to issue notices to all defaulters for clearing the dues within a specified period and based on the status of recovery of dues, make out a proposal to write off of bad debts.

KERC & PSERC does not approve any provisioning for bad and doubtful debts at the time of determination of the ARR, but considers the same at the time of true-up based on the actual.

Particulars	Approach – 1	Approach – 2	Approach - 3	Approach - 4
Details of the Approach	No Provisioning for Bad Debt	Provisioning based on Actual bad debts at the time of true-up	Provisioning as % of approved ARR	Provisioning as % of approved Revenue from sale of power
SERCs following the respective approach	APERC DERC HERC JKERC JSERC TERC UPERC	BERC KERC PSERC WBSERC (with ceiling of 0.5% of revenue)	AERC (1%)	CSERC (1%) GERC (0.1%) MPERC (1%) MERC (1.5%) OERC (2%) UERC (1.5%)

9. Tariff Rationalization

As per Section 61 of the Act, the Commission should determine tariff in a manner that the tariff progressively reflects the cost of supply of electricity and also reduces cross subsidies. One of the key objectives of setting up the SERCs is rationalization of tariffs. This is a critical activity, as the tariff structure is marked by high levels of cross subsidies and no. of consumer categories/ slabs. The Act and the NTP issued there under thrust upon reducing the subsidy with tariff progressively reflecting the cost of supply of electricity. The NTP mandates the SERC to notify roadmap with a target that latest by the end of year 2010-11 the tariffs are within ± 20 % of the average cost of supply. Most of the SERCs have taken initiatives for reducing the cross subsidy and rationalizing the no. of consumer categories/ slabs while also creating new consumer categories, as and when required. However, a clear roadmap with milestones to bring down the cross subsidy levels to within ± 20 % of the average cost of supply has not been notified by SERCs. Also, at the end of FY 09, the cross subsidy levels still remain high as compared to the aforesaid NTP target of ± 20 %.

Majority of the SERCs are currently considering the Average Cost of Supply for determination of tariff in each category in absence of voltage wise/ category wise information availability from the distribution licensees. However, a few of the SERCs like APERC and AERC have shifted to voltage wise Cost of Supply for determination of each category of consumer. A summary SERCs following different approaches for determination of tariff across consumer categories is summarized in table below:

Particulars	Approach - 1	Approach – 2	Approach – 3
Details of the Approach	Tariff determined based on Average Cost of Supply	Tariff determined based on Voltage wise / Category wise Cost of Supply	Any Other Approach like marginal increase/ etc
SERCs following the respective approach	WBSERC UERC MERC KERC CSERC GERC BERC KSERC TERC MPERC UPERC OERC PSERC PSERC RERC JSERC DERC	AERC APERC HPERC	JKSERC – Average realization of previous year MeSERC

It has been observed that majority of the SERCs have been consistently stressing on NTP target of cross subsidy to be in the range of +/- 20% in the Tariff Orders. However, no fixed timeframe with regard to the same has been specified by the SERCs. A comparison of the category-wise Tariff Realization as percentage of Cost of Supply for various States for FY 09 is summarized below:

State	FY 09			
	Domestic	Agricultural	Non Domestic/ Commercial	HT Industry
Andhra Pradesh (FY 08)	88%	4%	214%	140%

State	FY 09			
	Domestic	Agricultural	Non Domestic/ Commercial	HT Industry
Assam	80%	72%	130%	110%
Bihar	52%	27%	116%	101%
Chhattisgarh (FY 08)	58%	54%	145%	115%
Delhi (FY 07)	76%	41%	145%	129%
Gujarat	82%	27%	129%	144%
Haryana	80%	6%	100%	100%
Himachal Pradesh	50%	20%	154%	111%
Jharkhand (FY 07)	42%	48%	155%	124%
Jammu & Kashmir (FY 08)	31%	46%	53%	60%
Karnataka	100%	17%	162%	129%
Kerala	59%	26%	150%	155%
Madhya Pradesh	92%	72%	148%	128%
Maharashtra	100%	40%	170%	120%
Meghalaya	NA	NA	NA	NA
Orissa	76%	NA	128%	122%
Punjab	93%	73%	138%	126%
Rajasthan	90%	41%	131%	99%
Tamil Nadu	NA	NA	NA	NA
Tripura	NA	NA	NA	NA
Uttar Pradesh	71%	49%	96%	137%
Uttarakhand	69%	24%	123%	116%
West Bengal	NA	NA	NA	NA

It is observed that the Commercial and Industrial categories continue to cross-subsidize the Domestic and Agricultural consumers. However, SERCs like AERC, CSERC, KERC, HPERC, etc have made efforts to reduce the cross-subsidy element for the Industrial consumers either by considering lower increase in industrial tariffs compared with tariffs of subsidized categories or higher reduction in tariffs of industrial consumers in case of a revenue surplus. In FY 07, CSERC reduced the tariff of small and large industrial consumers by 7% and 10%, respectively in an effort to reduce the cross-subsidy in the State. Similarly, in Himachal Pradesh, the percentage of tariff realization from small industrial and non-domestic consumers has declined from 154% and 180% in FY 07 to 124% and 154% in FY 09, respectively.

Few States like Maharashta, Uttarakhand, Orissa, etc have notified tariff for industrial category within the NTP provision of +/-20%. However, in few States like Haryana and Rajasthan, the average realization from industrial consumers is approx 100% of the average Cost of Supply primarily due to no revision in tariffs by the respective SERC.

In States like Maharashtra and Karnataka, 100% recovery of average Cost to Supply in the Domestic Category is being done by the way of tariffs notified by the respective Commission. SERCs like APERC, MPERC, PSERC, RERC are also approving domestic tariff to recover approx 90% of the average Cost of Supply.

Few of the practices in tariff determination are mentioned in the table below:

Cost of Supply

APERC as per the provisions of the Electricity Act, 2003, computes the category-wise CoS at the time of determining the tariff across various categories. In the Tariff Orders, APERC also computes the amount of cross-subsidy available from other categories and apportion the same to subsidized categories before arriving at the gap required to be met from Government subsidy/ increase in tariffs.

Considering the demand – supply gap in the State, MERC issued a load shedding protocol based on the contribution of load by different geographical regions, i.e., major urban areas, other urban areas, and rural areas and an Order relating to uniform load shedding hours to be applicable within the State. Since selected consumer categories were to benefit from reduced load shedding by the way of purchase of power from costlier sources, MERC introduced an Additional Supply Charge (ASC) on consumers benefiting from the reduced load shedding.

PSERC has defined a road map for reduction of cross subsidy prevalent in the consumer categories and further divided the roadmap into two phases. In the first phase, PSERC shall determine tariff so that it progressively reflects combined average cost of supply per unit and the cross subsidy is eliminated over a period of 10 years from the date of issue of PSERC Tariff Regulations. In the second phase, PSERC shall consider moving towards the category-wise cost of supply as a basis for determination of tariff.

Tariff Rationalization

KERC has undertaken tariff rationalization in its Orders and has made visible efforts for reducing the cross subsidy levels. In view of the revenue surplus in FY 07, KERC had reduced the energy charges by 15 to 20 paisa for industrial and commercial consumers. In FY 08, KERC further reduced the tariff for commercial and industrial consumers with a view to bring the tariffs closer to the cost to serve. The domestic tariffs were maintained at similar levels as notified in FY 07. Another key measure undertaken by KERC was the introduction of differential tariff in the MYT Order. The differential tariff was implemented with a view to encourage competition and efficiency amongst the DISCOMs which would further put pressure on other DISCOMs to wheel out the inefficiencies in their operations.

Though, none of the States have been able to achieve the NTP norm of +/- 20% of the average cost of supply for each of the consumer category, AERC and PSERC has made efforts for aligning tariff with the average cost of supply. In Punjab, the Commission has increased agricultural tariff during the period FY 05 to FY09 resulting in approx 73% recovery of the average Cost to Supply. Industrial tariffs have increased at a CAGR of 3% during this period as compared with 5% increase in agricultural tariff.

Segregation of Wheeling and Retail Supply Business ARR

As a step towards encouraging open access within the State, many SERCs have framed a methodology for segregation of Distribution Licensee ARR into Wheeling and Retail Supply Business ARR. However, due to lack of clear segregation of various expense parameters, SERC's have followed divergent approach. While few of the SERCs have considered segregation of each expense parameter based on the nature of the expense, others have considered all expenses except power purchase and transmission expense as part of wheeling business. A brief summary of the SERCs which have undertaken the segregation of Retail and Wheeling ARR and the methodology applied for the same is provided below:

Particulars	Segregation of Retail and Wheeling ARR	Approach for segregation of Retail and Wheeling ARR	Separate Approval for SLDC ARR
Andhra Pradesh	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been booked under wheeling charges	Yes
Assam	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been apportioned as per the nature of the cost head	Yes
Bihar	No		No

Particulars	Segregation of Retail and Wheeling ARR	Approach for segregation of Retail and Wheeling ARR	Separate Approval for SLDC ARR
Chhattisgarh	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been booked under wheeling charges	No
Delhi	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been apportioned in the ratio of assets in each business	Yes
Gujarat	No		No
Haryana	No	However, for the purpose of computing Wheeling Charges, the Commission had considered 8% of total ARR towards Wire Business	Yes
Himachal Pradesh	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been apportioned as per the nature of the cost head	No
Jharkhand	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been booked under wheeling charges	No
Jammu & Kashmir	No		No
Karnataka	Yes	Each expense has been apportioned between Distribution and Retail Supply business based on appropriate assumption	No
Kerala	No		No
Madhya Pradesh	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been booked under wheeling charges	Yes
Maharashtra	Yes	Each expense has been apportioned between wire and retail supply business based on appropriate percentage (upto meter wire business meter n beyond retail supply business)	Yes
Meghalaya	No		No
Orissa	Yes	Wheeling charges is calculated basing on network & finacing cost and SLDC charges	Yes
Punjab	No		No
Rajasthan	No		Yes

Particulars	Segregation of Retail and Wheeling ARR	Approach for segregation of Retail and Wheeling ARR	Separate Approval for SLDC ARR
Tripura	No		No
Uttar Pradesh	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been apportioned as per the nature of the cost head	Yes
Uttarakhand	No		No
West Bengal	Yes	Power purchase cost, transmission charges and SLDC charges form part of Retail business while all other expenses have been booked under wheeling charges	Yes

10. Wheeling Charges & Transmission Charges

As per the Section 62 (b) and 62 (c) of Electricity Act 2003, SERCs are required to fix the transmission and wheeling charges for using the system. Open access consumers are further required to pay for transmission losses in kind and cross-subsidy surcharges. Though, most of the SERCs approved the wheeling charges to be paid by long-term and short-term open access consumers, availability of accurate voltage wise system loss levels has been the major constraint for the determination of wheeling charges. Also, the approach for segregation of cost in wheeling and retail business by each SERC has not been consistent. While DERC segregates the O&M expenses, interest cost, depreciation, etc based on the assets in wheeling and retail business, APERC has considered all expenses other that power purchase cost and transmission charges as part of wheeling business.

Particulars	Computation of Transmission Open Access Charges	Computation of Wheeling Open Access Charges	Computation of Wheeling Charges at different Voltage levels	Computation of Cross subsidy Surcharge	Cross Subsidy Surcharge FY 09* (Rs. /kWh)	
					33KV	132/220 KV
Andhra Pradesh	Yes	Yes	Yes	Yes	NA	NA
Assam	Yes	Yes	Yes	Yes	0.18	1.09
Bihar	Yes	Yes	Yes	Yes	0.80	1.76
Chhattisgarh	Yes	Yes	Yes	Yes	0	0
Delhi	Yes	Yes	Yes	Yes *	0.72 to 0.92	0.97 to 1.19

* SERC has issued separate Order for computation of these charges

Particulars	Computation of Transmission Open Access Charges	Computation of Wheeling Open Access Charges	Computation of Wheeling Charges at different Voltage levels	Computation of Cross subsidy Surcharge	Cross Subsidy Surcharge FY 09* (Rs. /kWh)	
					33KV	132/220 KV
Gujarat	Yes	Yes	Yes	Yes	0.51	0.51
Haryana	Yes	Yes	No	NA	NA	NA
Himachal Pradesh	Yes	Yes	No	NA	NA	NA
Jharkhand	Yes	Yes	No	No	NA	NA
Jammu & Kashmir	No	No	No	No	NA	NA
Karnataka	Yes	Yes	Yes	Yes	0.20 to 0.78	0.52 to 0.93
Kerala	Yes	Yes	Yes	Yes *		
Madhya Pradesh	Yes	Yes	Yes	Yes	0.62	0.84
Maharashtra	Yes	Yes	Yes	Yes	0	0
Meghalaya	No	No	No	No	NA	NA
Orissa	Yes	Yes	No	No	1.21 to 1.82	1.76 to 2.63
Punjab	Yes	Yes	No	Yes	0	0
Rajasthan	Yes	Yes	Yes	Yes	0.38	0.55
Tripura	No	No	No	No	NA	NA
Uttar Pradesh	Yes	Yes	Yes	Yes	0	0
Uttarakhand	Yes	No	No	No	NA	NA
West Bengal	Yes	Yes	No	Yes	NA	NA

Snapshot of Different Approach of Few SERCs

Additionally, MERC has computed wheeling charges and wheeling loss at various voltage levels (33kV, 22/11 kV and LT level) to facilitate open access within the State.

KERC had laid down a road map for implementation of open access in three stages within the State of Karnataka. The transmission and wheeling charges for open access consumers were determined in cash and kind. The open access charges were determined for each

* SERC has issued separate Order for computation of these charges

DISCOM separately considering the distribution loss and ARR for the respective DISCOM. In FY08 order, KERC also determined separate cross-subsidy surcharge for each DISCOM to factor the differential tariff approved for each DISCOM.

11. Government Subsidy

Various State Governments provide subsidy support to safeguard the interest of agricultural and below poverty line domestic consumers. Though, the State Govt either provides the amount of subsidy allocated in the budgetary support or as determined by the respective SERC, the subsidy support is not received in time as stipulated in the EA, 2003. Many SERCs do not clearly provide the details of the subsidy support required or budgeted by the State Govt in the tariff orders i.e. DERC, RERC, KSERC, etc. Also, tariff for the subsidizing categories has not been provided as per the provisions of Section 65 of the Electricity Act.

Few of the SERCs like APERC, PSERC and KERC are following the provisions of the Electricity Act with regard to the tariff approval for subsidized categories and specifying tariffs including and excluding Govt subsidy. Table below summarizes the details regarding Government subsidy as available in the latest Tariff Order issued by SERC.

SERCs	Tariff Structure (Single Part/ Two Part)	Applicability of Govt. Subsidy prevalent in the Consumer Retail Tariff	Agriculture Consumption forming significant quantum of Total Sales (>20% agri sales)	Tariff notified by the SERC*	Directive issued by SERC for non payment of Subsidy
Andhra Pradesh	Two Part Tariff	Applicable (Agriculture, Domestic)	Yes (31%)	Both Inclusive and Exclusive of Subsidy	Yes
Assam	Two Part Tariff	Not Applicable	No (0.8%)	Exclusive of Subsidy	NA
Bihar	Two Part Tariff	Applicable (Revenue subsidy)	No (11%)	Inclusive of Subsidy	No
Chhattisgarh	Two Part Tariff	Applicable (Agriculture, BPL)	No (8%)	Exclusive of Subsidy	No
Delhi	Two Part Tariff	Applicable (Domestic, Agriculture)	No (0.2%)	Exclusive of Subsidy	No
Gujarat	Two Part Tariff	Applicable (Agriculture)	Yes (31%)	Inclusive of Subsidy	No
Haryana	Single Part Tariff	Applicable (Agriculture)	Yes (28%)	Inclusive of Subsidy	No
Himachal Pradesh	Two Part Tariff	Applicable (Domestic, Agriculture)	No (0.5%)	Exclusive of Subsidy	No
Jharkhand	Two Part Tariff	Applicable	No (2%)	Inclusive of Subsidy	No

SERCs	Tariff Structure (Single Part/ Two Part)	Applicability of Govt. Subsidy prevalent in the Consumer Retail Tariff	Agriculture Consumption forming significant quantum of Total Sales (>20% agri sales)	Tariff notified by the SERC*	Directive issued by SERC for non payment of Subsidy
Jammu & Kashmir	Two Part Tariff	Applicable (All categories)	No (4%)	Inclusive of Subsidy	No
Karnataka	Two Part Tariff	Applicable (Agriculture, Kutir Jyoti Consumers)	Yes (33%)	Both Inclusive and Exclusive of Subsidy	Yes
Kerala	Two Part Tariff	Applicable	No (2%)	Exclusive of Subsidy	No
Madhya Pradesh	Two Part Tariff	Applicable (Domestic, Agriculture)	Yes (29%)	Exclusive of Subsidy	No
Maharashtra	Two Part Tariff	Applicable (Agriculture)	Yes (25%)	Exclusive of Subsidy	No
Meghalaya	Two Part Tariff	Not Applicable	NA	Exclusive of Subsidy	No
Orissa	Two Part Tariff	Not Applicable	Segregation between consumer category not provided in the Order	Exclusive of Subsidy	NA
Punjab	Single Part Tariff	Applicable (Agriculture, Domestic SC, BPL)	Yes (31%)	Exclusive of Subsidy	No
Rajasthan	Two Part Tariff	Applicable (Agriculture, BPL, Kutir Jyoti)	Yes (33%)	Exclusive of Subsidy	No
Tripura	Two Part Tariff	Govt subsidy requested but no response till the time of issuance of tariff order	NA	Exclusive of Subsidy	No
Uttar Pradesh	Two Part Tariff	Applicable (Agriculture, Rural Domestic, Departmental Employees)	No (15%)	Inclusive of Subsidy	No
Uttarakhand	Two Part Tariff	No mention of Govt subsidy in Tariff Order	No (4.1%)	Exclusive of Subsidy	No
West Bengal	Two Part Tariff	Not Mentioned	No (11%)	Exclusive of Subsidy	No

** Inclusive of subsidy would imply that the Government subsidy (whether in the form of lumpsum subsidy amount or per unit subsidy for specific category of consumers) has been deducted while approving the Retail Tariff for each category of consumer.*

Detailed Approach of Few SERCs:

Considering the high levels of subsidy support by Govt of Karnataka, KERC in each of its tariff order has specified two sets of tariffs (i.e. with and without subsidy support) for the subsidized category as per the Sec 65 of the Electricity Act and has given clear instructions to the DISCOMs to charge rates excluding subsidy in case the DISCOMs does not receive the subsidy support in advance.

PSERC before ascertaining the tariffs seeks government stand on the amount of subsidy demarcated for agriculture consumption and free units to SC category. Further, PSERC works out the total revenue from the consumer tariffs considering the subsidy of State Govt. In the Orders, PSERC has approved agricultural tariff including and excluding Govt. subsidy. The tariff for agricultural consumers has been increased consistently by Rs. 42/BHP/month in the last four years (FY 06 to FY 09). The tariff approved for the FY 09 without the Govt. subsidy was Rs. 250/BHP/month.

States like AP and Punjab, where agriculture consumption is significant, SERCs have clearly defined the subsidy requirement under this category as well as factored the subsidy commitment by the State Government. Moreover, both the SERCs have notified the tariff for each category with and without subsidy support which gives the flexibility to the utility to charge full cost tariff in case of non-payment of subsidy by the Government.

Also, APERC approves the tariff including and excluding subsidy in each of the tariff orders. Also, APERC has issued/ reiterated directive for reverting to the full cost tariff in case the GoAP does not pay subsidy in advance on monthly basis.

12. MYT Framework

With regard to the Electricity Act, 2003 and National Tariff Policy, the MYT framework should be adopted by the SERCs with effect from April 1, 2006 in order to provide predictability in tariff setting process and reduce regulatory risk. A total of 11 SERCs have shifted to the MYT framework inspite of issues on data accuracy and adequacy. Also, the segregation of various ARR parameters into controllable and uncontrollable by each SERC along with the time frame for true-up is not comparable. Other issues with regard to the implementation of the MYT framework have been the base year and the timely issuance of the MYT Order. DERC issued the first MYT Order for the control period FY 08 - FY 11 which was delayed by approx. 11 months.

SERCs like HPERC and GERC that are following the MYT framework have true-up controllable parameters inspite of recognizing them as controllable parameters under the regulations. However, DERC has clearly segregated controllable and uncontrollable parameters along with firm time frames for true-up of each parameter. At the time of true-up for first year of the control period, DERC has true-up uncontrollable parameters while keeping the controllable parameters fixed as approved in the MYT Order.

13. Key Parameters

1.1 Status of Reforms & Regulatory Framework in the State

State	Status Of Reforms	Regulatory Ratemaking	Tariff Orders issued for all the years (FY 05 to FY 09)
Andhra Pradesh	Un-bundled	MYT Framework	NO
Assam	Un-bundled	MYT Framework	Yes
Bihar	Bundled	ARR	NO
Chhattisgarh	Un-bundled	ARR	NO
Delhi	Un-bundled	MYT Framework	Yes
Gujarat	Un-bundled	MYT Framework	NO
Haryana	Un-bundled	ARR	Yes
Himachal Pradesh	Bundled	MYT Framework	Yes
Jharkhand	Bundled	ARR	NO
Jammu & Kashmir	Bundled	ARR	NO
Karnataka	Un-bundled	MYT Framework	NO
Kerala	Bundled	ARR	Yes
Madhya Pradesh	Un-bundled	MYT Framework	Yes
Maharashtra	Un-bundled	MYT Framework	NO
Meghalaya	Bundled	ARR	NO
Orissa	Un-bundled	MYT Framework	Yes
Punjab	Bundled	ARR	Yes
Rajasthan	Un-bundled	MYT Framework	Yes
Tamil Nadu	Bundled	ARR	NO
Tripura	Bundled	ARR	NO
Uttar Pradesh	Un-bundled	ARR	NO
Uttarakhand	Un-bundled	ARR	Yes
West Bengal	Un-bundled	MYT Framework	NO

A state wise comparative analysis of select parameters considered for determination of Aggregate Revenue Requirement (ARR) and thereby tariff by the State Electricity Regulatory Commissions (SERC) has been done as tabulated below:

1.2 Approved Loss Level for Distribution Company for FY 07 to FY 09 (in %)

DISCOMs/Utility-State-wise	Parameter	FY 07	FY 08	FY 09
Andhra Pradesh				
APCPDCL	Distribution	18.90%	16.90%	15.90%
APEPDCL	Distribution	17.10%	15.80%	15.10%
APNPDCL	Distribution	19.90%	18.00%	17.10%
APSPDCL	Distribution	17.30%	15.90%	14.90%
Assam				
LAEDCL	T&D	23.88%	21.60%	21.50%

DISCOMs/Utility-State-wise	Parameter	FY 07	FY 08	FY 09
CEADCL	T&D	30.52%	26.55%	27.00%
UAEDCL	T&D	28.78%	28.35%	25.50%
Bihar	T&D	41.40%		38.00%
Chhattisgarh	T&D	33.81%	32.54%	
Delhi				
BRPL	AT&C	31.10%	26.69%	23.46%
BYPL	AT&C	39.95%	34.77%	30.52%
NDPL	AT&C	31.10%	22.03%	20.35%
Gujarat				
DGVCL	Distribution	19.90%	15.59%	14.45%
MGVCL	Distribution	21.60%	21.09%	15.00%
PGVCL	Distribution	36.50%	30.22%	30.00%
UGVCL	Distribution	25.10%	16.95%	16.00%
Haryana				
UHBVNL	Distribution	30.50%	28.50%	26.00%
DHBVNL	Distribution	30.50%	28.50%	26.00%
Himachal Pradesh	T&D	18.50%	17.50%	15.75%
Jharkhand	T&D	36.67%		
Jammu & Kashmir	AT&C		59.00%	
Karnataka				
BESCOM	Distribution	20.50%	21.35%	20.40%
CESC	Distribution	22.00%	24.10%	23.10%
GESCOM	Distribution	27.05%	31.00%	30.50%
HESCOM	Distribution	25.00%	25.00%	24.00%
MESCOM	Distribution	15.00%	16.15%	16.05%
Kerala	T&D	20.45%	19.55%	17.92%
Madhya Pradesh				
MPPKVVC (East)	T&D	34.50%	32.50%	29.50%
MPPaKVVC (West)	T&D	30.00%	28.50%	27.00%
MPMKVVC (Central)	T&D	43.00%	40.00%	37.00%
Maharashtra				
MSEDCL	T&D	34.97%	31.70%	22.50%
TPC	T&D	2.93%	2.93%	2.93%
REL	T&D	11.52%	11.50%	10.75%
BEST	T&D	11.50%	11.00%	10.50%
Meghalaya	AT&C	36.80%	35.62%	
Orissa				
NESCO	AT&C	36.08%	33.26%	29.00%
WESCO	AT&C	32.32%	28.00%	28.00%
SOUTHCO	AT&C	37.69%	34.20%	34.60%
CESU/CESCO	AT&C	40.37%	35.60%	32.84%

DISCOMs/Utility-State-wise	Parameter	FY 07	FY 08	FY 09
Punjab	T&D	20.75%	19.50%	19.50%
Rajasthan				
Ajmer	T&D	34.08%	35.00%	32.00%
Jaipur	T&D	29.51%	28.50%	23.90%
Jodhpur	T&D	31.29%	33.00%	30.00%
Tamil Nadu	AT&C			19.3%
Uttar Pradesh				
Agra	T&D	29.10%	29.10%	29.10%
Lucknow	T&D	22.40%	22.40%	22.40%
Meerut	T&D	29.10%	29.10%	29.10%
Varanasi	T&D	26.70%	26.70%	26.70%
Uttarakhand	AT&C	30.17%	24.32%	22.32%
West Bengal				
CESC	Distribution	15.75%	15.36%	15.11%
DPL	Distribution	6.50%	6.50%	6.10%
DPSC	Distribution	5.74%	5.60%	5.54%
WBSEDCL	Distribution	23.00%	19.53%	18.75%

1.3 Employees Cost Per unit of Energy Sales for DISCOMs/Bundled Utility (Rs./Kwh)

State	FY 06	FY 07	FY 08	FY 09
Andhra Pradesh (O&M)	0.24	0.24	0.23	
Assam	1.02	0.92	0.96	1.20
Bihar		1.21		1.08
Chhattisgarh	0.56	0.74	0.63	
Delhi	0.35	0.33	0.28	0.30
Gujarat	0.18	0.20	0.18	0.22
Haryana	0.29	0.26	0.28	0.30
Himachal Pradesh		0.88	0.80	0.80
Jharkhand			0.51	
Jammu & Kashmir (PDD)			0.51	0.60
Karnataka (O&M)	0.36	0.41	0.35	0.34
Kerala	0.86	0.76	0.88	0.86
Madhya Pradesh (O&M)		0.56	0.54	0.51
Maharashtra		0.33	0.34	0.29
Meghalaya				0.40
Orissa	0.36	0.34	0.34	0.36
Punjab	0.62	0.62	0.60	0.59
Rajasthan (O&M)	0.32	0.30	0.29	0.30
Tamil Nadu	NA	NA	NA	NA

State	FY 06	FY 07	FY 08	FY 09
Tripura		1.19		
Uttar Pradesh		0.22	0.19	0.20
Uttarakhand (O&M)		0.29	0.38	0.44
West Bengal	0.39	0.40	0.31	0.33

Note: Incase of AP, Karnataka, MP, Rajasthan & Uttrakhand, SERC has approved Consolidated O&M Cost

1.4 Approved Average Cost of Supply for the DISCOMs//Utility for the period FY 05 to FY 09 (Rs./Kwh)

State	FY 06	FY 07	FY 08	FY 09
Andhra Pradesh	2.76	2.57	2.67	
Assam	4.36	4.42	4.42	4.41
Bihar		5.00		4.62
Chhattisgarh	3.45	3.20	2.98	
Delhi	4.05	4.18	4.99	4.70
Gujarat	3.73	3.71	3.74	3.80
Haryana	3.48	3.86	4.07	4.14
Himachal Pradesh	2.92	2.54	3.13	3.18
Jharkhand		3.30		
Jammu & Kashmir			4.89	5.30
Karnataka		3.20	3.31	3.69
Kerala	3.15	2.98	2.91	3.29
Madhya Pradesh		3.49	3.60	3.65
Maharashtra (MSEDCL)		3.52	3.75	3.81
Meghalaya			1.99	1.79
Orissa	2.74	2.95	2.95	2.72
Punjab	3.05	3.28	3.20	3.30
Rajasthan	4.16	3.52	3.92	4.71
Tamil Nadu	NA	NA	NA	NA
Tripura		3.05		
Uttar Pradesh		3.66	3.90	4.06
Uttarakhand	2.35	3.10	3.08	3.09
West Bengal	3.69	3.31	3.32	3.88

1.5 Consumer Tariffs As Percentage of Approved Average Cost of Supply

State	FY 09			
	Domestic	Agricultural	NDNC/ Comm	HT Industry
Andhra Pradesh (FY 08)	88%	4%	214%	140%
Assam	80%	72%	130%	110%
Bihar	52%	27%	116%	101%

State	FY 09			
	Domestic	Agricultural	NDNC/ Comm	HT Industry
Chhattisgarh (FY 08)	58%	54%	145%	115%
Delhi (FY 07)	76%	41%	145%	129%
Gujarat	82%	27%	129%	144%
Haryana	80%	6%	100%	100%
Himachal Pradesh	50%	20%	154%	111%
Jharkhand (FY 07)	42%	48%	155%	124%
Jammu & Kashmir (FY 08)	31%	46%	53%	60%
Karnataka	100%	17%	162%	129%
Kerala	59%	26%	150%	155%
Madhya Pradesh	92%	72%	148%	128%
Maharashtra	100%	40%	170%	120%
Meghalaya	NA	NA	NA	NA
Orissa	76%	NA	NA	122%
Punjab	93%	73%	138%	126%
Rajasthan	90%	41%	131%	99%
Tamil Nadu	NA	NA	NA	NA
Tripura	NA	NA	NA	NA
Uttar Pradesh	71%	49%	96%	137%
Uttarakhand	69%	24%	123%	116%
West Bengal	NA	NA	NA	NA

CHAPTER 3 : EXECUTIVE SUMMARIES OF STATES

1. Andhra Pradesh – Executive Summary

- **Introduction**

As per the provisions of the Andhra Pradesh Electricity Reform Act 1998, the erstwhile Andhra Pradesh State Electricity Board was unbundled into Andhra Pradesh Power Generation Corporation (APGENCO) and Transmission Corporation of Andhra Pradesh Limited (APTRANSCO). The distribution assets of APTRANSCO were later transferred to four distribution companies i.e. Eastern Power Distribution Company of A.P Limited (APEPDPCL), Central Power Distribution Company of A.P Limited (APCPDCL), Northern Power Distribution Company of A.P Limited (APNPDCL) and Southern Power Distribution Company of A.P Limited (APSPDCL).

The sales mix in Andhra Pradesh has been dominated by industrial and agriculture consumers, which together form approximately 65% of the total sales. As per the provisions of the Andhra Pradesh Electricity Reform Act, APTRANSCO was given the responsibility of bulk power purchase and supply in the State. Thereafter, the PPAs were allocated to the DISCOMs. In terms of regulatory ratemaking, APERC followed the ARR approach till FY 06 and shifted to MYT framework from FY 07 onwards with a control period of three years.

- **Annual Revenue Requirement**

➢ The approved and proposed transmission losses for APTRANSCO is tabulated below:

Particulars (in %)	FY 07	FY 08	FY 09
Approved			
Lower Value of the Band	4.35%	4.20%	4.10%
Average Transmission Loss	4.45%	4.30%	4.20%
Upper Value of the Band	4.55%	4.40%	4.30%
Projected			
Lower Value of the Band - Projected	4.20%	4.10%	4.00%
Average Transmission Loss	4.50%	4.40%	4.30%
Upper Value of the Band	4.80%	4.70%	4.60%

➢ The Commission had also specified an incentive mechanism for reduction in transmission losses beyond the lower value of target range.

➢ APERC has been uniformly approving the sales projections of the DISCOMs after detailed scrutiny. Disallowances on account of proposed sales in few categories have been made in the tariff orders. In FY 06, considering that the forecast made by DISCOMs were at aggregate category level, APERC directed the DISCOMs to forecast sales for each category of consumer at division/ section level.

- With regard to the unmetered agriculture consumption, the same has been estimated based on information available from meters fixed on LV side of sample distribution transformers for measuring the consumption.
- APERC has been approving distribution loss targets for the DISCOMs considering the loss levels proposed by the DISCOMs for FY 05 & FY 06 Orders. However, for the MYT Period, APERC had approved the distribution losses after excluding EHT sales. Further, the envisaged capital expenditure by the DISCOMs was also considered while approving the loss targets for each of the DISCOM. A comparison of proposed vis-à-vis approved distribution losses for each DISCOM is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Distribution Loss	19.20%	17.20%	---	---	---
Proposed Distribution Loss	19.20%	17.40%	---	---	---
Loss Trajectory under MYT Control Period					
APCPDCL					
Approved Distribution Loss	---	---	18.90%	16.90%	15.90%
Proposed Distribution Loss	---	---	18.90%	17.10%	16.30%
APEPDCL					
Approved Distribution Loss	---	---	17.10%	15.80%	15.10%
Proposed Distribution Loss	---	---	17.10%	16.30%	15.80%
APNPDCL					
Approved Distribution Loss	---	---	19.90%	18.00%	17.10%
Proposed Distribution Loss	---	---	19.90%	18.80%	17.90%
APSPDCL					
Approved Distribution Loss	---	---	17.30%	15.90%	14.90%
Proposed Distribution Loss	---	---	17.30%	16.50%	15.70%

- APTRANSCO was responsible for the power purchase from various sources upto FY 06. The DISCOMs were required to pay to APTRANSCO for the power purchase cost as per the Bulk Supply Tariff (BST) determined by APERC based on the average cost of power including transmission and ULDC charges. However, in FY 07, the GoAP notified the transfer of PPAs to the DISCOMs.
- While determining availability from various sources, APERC primarily considered the proposed quantum of power from various sources like APGENCO, CGS, non-conventional energy sources by the DISCOMs. For FY 08, APERC had also approved power purchase from bilateral sources. Cost from various sources is determined based on the A.P. Power Coordination Committee estimates and CERC orders. The cost of bilateral purchases was considered based on previous year actual cost of Rs. 6.35 per unit.
- Further, APERC had also approved the rate of DISCOM-to-DISCOM (D-to-D) transfer of energy at an average per unit fixed cost of purchases from all power stations plus a marginal variable cost of a generation plant.
- APERC had revised its approach to consolidated approval for O&M expenses in the MYT Order as compared with the earlier approach of approval of individual components of

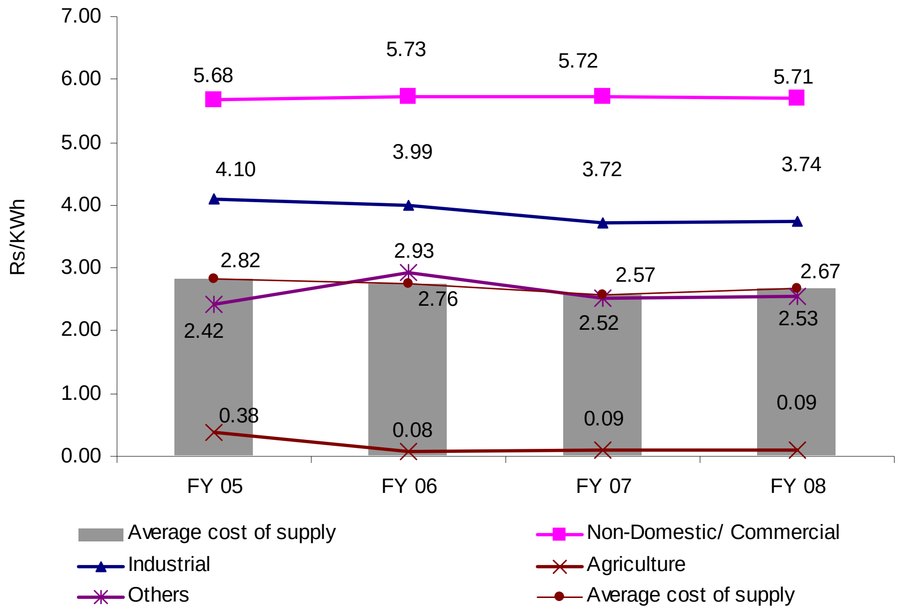
O&M expense i.e. Employee, R&M and A&G expense for the DISCOMs. With regard to the estimation of employee cost, impact of additions to/retirement of employees, increases in the basic pay and dearness allowance for the current and the ensuing years had also been taken. Considering the fairly wide variations in O&M performance levels, the Commission projected the independent elements of the O&M expenses for the Control Period without considering CPI / WPI approach. For the MYT Period, APERC estimated the R&M costs @2.5% of old assets and @1.25% to 2% for new assets.

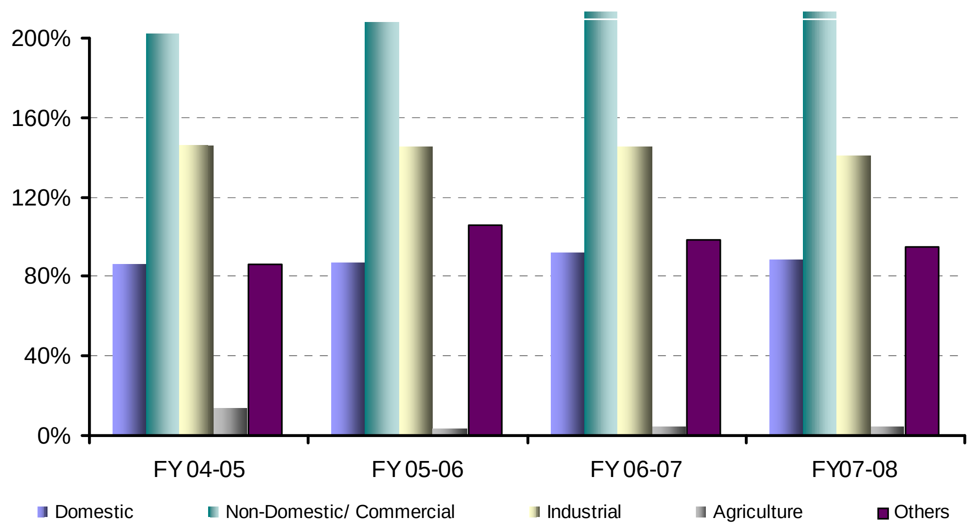
- With regard to depreciation, APERC has been consistently approving the same based on MoP determined depreciation rates on the opening GFA. The DISCOMs had proposed CERC specified depreciation rates for the MYT Control Period. However, considering that the CERC was to come up with the revised rates of depreciation for generation and transmission, the Commission had continued with the MoP depreciation rates for the MYT Period.
- For FY 05 & FY 06, interest cost was approved after review of the loan-wise details. For MYT Control Period, the Commission had taken effect of interest cost in the RoCE by computing the average cost of debt. The average cost of debt for the Control Period was determined considering the repayment schedule and interest rate for outstanding loans and prevailing interest rate for new loans at a normative debt to equity ratio of 75:25.
- APERC has computed normative working capital requirement in each of the Tariff Orders from FY 05 to FY 09. Working capital requirement forms part of the Rate Base during the MYT Control Period for approval of interest cost on working capital requirement.
- The Commission had been approving a return on Net Fixed Assets for FY 05 & FY 06 which was later revised to RoCE for the MYT Control Period. A summary of the return approved by APERC in each order during FY 05 to FY 09 is summarized below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approach	Return on Net Fixed Assets	Return on Net Fixed Assets	RoCE	RoCE	RoCE
Rate of Return	16% on NFA + 0.5% on approved Loans	16% on NFA + 0.5% on approved Loans	WACC, with RoE@16%	WACC, with RoE@16%	WACC, with RoE@16%

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





- It is clear from the above that non-domestic and industrial consumers continue to cross subsidize the domestic and agricultural categories. As regards NTP stipulation of $\pm$20%, while tariff for domestic and agriculture category has remained about 80% and 4-10% of the average cost of supply, respectively, the non-domestic and industrial categories continue to pay more than 120% of the cost of supply.
- APERC in the tariff orders issued during FY 05 to FY 09 has taken steps to rationalize the tariff of subsidizing categories and align the same with the cost of supply for the respective categories. Considering the cross subsidy and subsidy from GoAP, the agricultural categories continue to pay below the cost of supply.
- APERC utilizes the category-wise CoS model to fix tariffs for various categories of consumers. For the treatment of revenue gap/surplus in each of the tariff order, APERC's

approach has been primarily to compute the fully allocated cost for subsidized categories after adjusting for the cross subsidy available from subsidizing categories. The fully allocated cost is notified to the GoAP. However, the GoAP had provided subsidy to meet the balance gap in order to maintain the tariff of the subsidized category.

- Time of Day (ToD) metering has not been introduced by APERC in the tariff orders for FY 05 to FY 09.

- **Multi Year Tariff**

- APERC had introduced MYT Framework in Andhra Pradesh from FY 07 onwards with a control period of three years. The controllable factors for distribution utilities approved by the SERC in its regulations are:
  - O&M Expense
  - ROCE
  - Depreciation
  - Non-tariff income

  Uncontrollable factors consist of:
  - Power purchase cost
  - Taxes on income

  With regard to the sharing of gains and losses, APERC shall consider aggregate gains or losses for the Control Period as a whole. However, the Regulations allow for sharing of the gains and losses from the Retail Supply Business of the distribution licensee on yearly basis for the first Control Period.

  For the transmission utility, the Regulations provide for incentives based on reduction of transmission losses beyond the lower value of the target range and average variable cost of energy saved. No penalty shall be imposed on the transmission licensee incase of actual losses being higher than the target range for the first Control Period.

- **Transmission & Wheeling charges**

- Since APTRANSCO was responsible for the bulk supply trading business in the State upto FY 06, a Bulk Supply Tariff was determined by APERC in the Tariff Orders of APTRANSCO for FY 05 & FY 06. However, the Commission had also computed transmission charges to be paid by all long-term consumers who access the transmission network for the contracted capacity with APTRANSCO.

- In the Order for FY 07 to FY 09 (MYT), APERC had provided the methodology for computation of transmission charges to be recovered from the long-term transmission network users. Long-term users would be charged on a monthly basis considering the ratio of the entitled capacity to the total entitled capacity of all the long term transmission customers. Further, users of the network shall bear transmission losses in kind.

- In each of the Tariff Order, APERC has approved the wheeling charges and distribution losses at each voltage level on a per unit basis to be paid by the open access consumer. The wheeling charges and distribution losses for each DISCOM is indicated in table below:

	FY 05			
Particulars	**APNPDCL**	**APEPDCL**	**APSPDCL**	**APCPDCL**
Wheeling Charges (in paisa/unit)	58	49	60	45
Voltage Level Losses (%)				
33kV	6.4%	8.0%	6.0%	6.4%
11kV	13.6%	13.6%	12.6%	13.6%
LT	24.3%	22.1%	21.6%	22.7%

	FY 06			
Particulars	**APNPDCL**	**APEPDCL**	**APSPDCL**	**APCPDCL**
Wheeling Charges (in paisa/unit)	60	47	56	46
Voltage Level Losses (%)				
33kV	6.07%	7.11%	5.66%	5.78%
11kV	12.90%	13.11%	11.92%	12.28%
LT	23.05%	21.30%	20.44%	20.50%

Wheeling Charges (Rs. kVA/ month)	**FY 07**			**FY 08**			**FY 09**		
Licensee	**33kV**	**11kV**	**LT**	**33kV**	**11kV**	**LT**	**33kV**	**11kV**	**LT**
APCPDCL	35.25	100.27	142.22	36.63	103.58	146.10	38.82	109.91	155.41
APEPDCL	11.68	58.78	39.90	11.81	59.16	237.20	12.10	60.66	244.01
APNPDCL	25.66	94.04	205.09	25.98	95.18	207.45	27.35	100.17	218.24
APSPDCL	26.19	115.17	161.23	25.76	113.06	158.30	25.90	113.82	159.59

Distribution Losses	**FY 07**			**FY 08**			**FY 09**		
Licensee	**33kV**	**11kV**	**LT**	**33kV**	**11kV**	**LT**	**33kV**	**11kV**	**LT**
APCPDCL	4.21%	6.46%	8.16%	4.00%	6.13%	7.75%	3.81%	5.84%	7.38%
APEPDCL	6.10%	4.42%	6.71%	5.92%	4.29%	6.52%	5.28%	4.19%	6.36%
APNPDCL	5.45%	5.83%	8.67%	5.18%	5.55%	8.24%	4.92%	5.27%	7.83%
APSPDCL	4.85%	5.33%	7.27%	4.67%	5.13%	7.00%	4.49%	4.93%	6.72%

- **Subsidy**

➢ The GoAP provides subsidy mainly for Domestic, Agriculture and RESCOs categories of consumers. APERC, after distributing the cross-subsidy amount available to the subsidized categories in proportion to the difference between the prevailing rate and the CoS, determines the gap and the tariff for respective categories to cover the gap. The fully allocated cost tariffs are communicated to the GoAP. The GoAP decides the levels to which the fully allocated cost tariffs in respect of the subsidized categories are to be reduced and makes good the resultant gap in the revenue requirement by way of subsidy.

- The subsidy amount agreed to be paid by the GoAP each year is summarized in table below:

Particulars	FY 05	FY 06	FY 07	FY 08
GoAP Approved Subsidy (Rs. Crs)	1303.27	1599.48	1351.67	1047.72

- APERC had clearly directed the DISCOMs to revert back to the full cost tariff fixed by the Commission in case the subsidy is not paid on monthly basis in advance by the GoAP.

2. Assam – Executive Summary

- **Introduction**

The Assam State Electricity Board (ASEB) was unbundled with five successor companies i.e. one generation (Assam Power Generation Company Limited or APGCL), one transmission (Assam Electricity Grid Corporation Limited or AEGCL) and three distribution utilities (Lower Assam Electricity Distribution Company Limited (LAEDCL), Central Assam Electricity Distribution Company Limited (CAEDCL) and Upper Assam Electricity Distribution Company Limited (UAEDCL)) on December 10, 2004.

The sales mix in Assam is dominated by domestic consumers followed by industrial (small and large), which together form about 72% of the total sales. The total generation capacity of APGCL is 354MW comprising of gas-based (72%) hydel (28%) generating stations. In terms of regulatory ratemaking, Assam followed the Annual Revenue Requirement (ARR) approach. AERC had proposed to adopt the MYT framework in FY 08; however, due to non availability of reliable data decided to adopt the principle of MYT in a cautious manner.

Annual Revenue Requirement

- As regards operational parameters of generation, AERC had approved PLF for APGCL plants in the FY 05 and FY 06 order as proposed by APGCL on account of low availability of gas. However, with the AERC (Terms and Conditions for Determination of Tariff) Regulation, 2006 in place, the Commission has been approving the PLF in line with the regulations. While approving the auxiliary consumption for FY 05 & FY 06, AERC has considered the high energy consumption in gas booster compressor and open cycle mode of operation. For FY 07, FY 08 and FY 09, auxiliary consumption for all the three plants has been approved as per the APGCL's claim. With regard to SHR, AERC has considered operating mode of the plant, its load pattern, design SHR and past trends while approving the same.
- The Commission had approved incentive of 25 paisa/kWh on overachievement of the target PLF for all generating plants in line with the AERC (Terms and Conditions for determination of Tariff) Regulations, 2006.
- Transmission losses for AEGCL during the period FY 07 to FY 09 have been approved considering losses for the previous year, factoring for errors in loss computation on account of non-availability of proper meters at some feeders and directives issued in the previous year Tariff Orders. The approved and actual transmission losses for AEGCL is tabulated below:

Particulars	FY 06	FY 07	FY 08	FY 09
Approved	8.55%	6.50%	6.10%	5.82%
Actual/Trued-up	6.31%	7.26%	6.10%	

- AERC had approved sales for FY 05 & FY 06 considering higher availability of power due to commissioning of new generating station, mitigation of the constrained transmission network and consumption pattern of the consumers. For FY 07 & FY 08, AERC had considered six months actual and balance estimated sales based on higher sales growth in previous years and sales information in the form of sales database. In FY 09, AERC revised its approach and estimated the sales in a fairly exhaustive manner considering parameters like number of consumers, connected load and energy sales and computed leading indicators like sales per consumer and sales per KW for last three years. Averages of these indicators were applied to the closing level of consumers and connected load for previous year to estimate the energy sales for FY 09.

- With regard to the T&D loss level, AERC approved the T&D loss as proposed by ASEB with a view that in case the actual loss level was greater than the approved loss level, the financial risk would be with ASEB. For FY 06, FY 07 & FY 08, the Commission had approved the loss targets as proposed by the DISCOMs. T&D loss targets for FY 09 were set based on the proposed investments and loss study conducted by DISCOMs. In the true-up for FY 06 & FY 07, AERC has approved lower of the actual and approved T&D loss for each DISCOM.

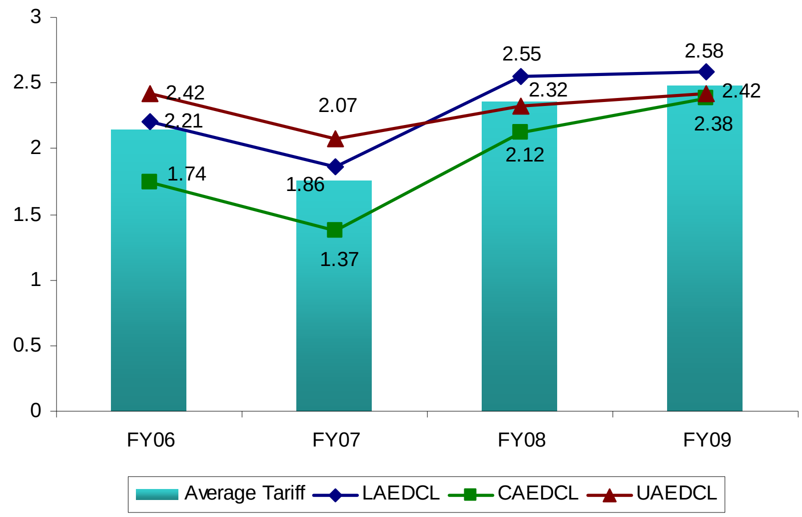
- Further, AERC had also specified mechanism for incentive/ disincentive for over/ under achievement of the target T&D levels. In case of a reduction of 1.5% in T&D loss by each DISCOMs, 50% of the surplus on account of distribution loss reduction will go to the Development Fund and the balance is to be refunded to the consumers. Additionally, incase of a loss reduction higher than 1.5%, the DISCOMs could retain the entire amount of surplus revenue. A comparison of proposed vis-à-vis the approved losses for each DISCOM is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Losses (%)	36.50%*				
LAEDCL		25.38%	23.88%	21.60%	21.50%
CEADCL		32.02%	30.52%	26.55%	27.00%
UAEDCL		30.28%	28.78%	28.35%	25.50%
Actual Losses (%)	39.90%#				
LAEDCL		31.12%	29.20%		
CEADCL		31.00%	35.60%		
UAEDCL		34.35%	35.00%		
Trued Up (%)					
LAEDCL		25.38%	23.88%		
CEADCL		31.00%	30.52%		
UAEDCL		30.28%	28.78%		

* The approved level of losses for ASEB

- Post the unbundling ASEB was assigned the role of bulk purchaser and supplier of electricity in Assam. The bulk supply tariff at which the ASEB Trader sells power is determined by the AERC. The available power is allocated based on the estimated sales and T&D losses of the DISCOMs for the respective year. Assam being one of the major states in North East India, enjoys adequate allocation from various Central generating stations. The power purchase cost is determined based on the CERC Orders for CGS plants, tariff as per PPAs for IPPs, and tariff approved for APGCL. Any revenue from sale of surplus power is adjusted to the total cost of power purchase.

- However, the DISCOMs were required to pay to ASEB for power purchase cost as per bulk supply tariff determined by the AERC. AERC has been approving differential bulk tariff for the DISCOMs based on the consumer mix, losses and cost structure of each DISCOM Therefore, the bulk supply tariff for each DISCOM is computed in a manner that each DISCOM is able to cover its cost and earn a fair return under a uniform retail tariff policy of GoA. The graph below shows the BST rates approved by the Commission for each of the DISCOM during FY 06 to FY 09.



**Note: Figures in Rs./Kwh*

- AERC has approved each component i.e. Employee Cost, R&M expense and A&G expense of O&M expense separately. For FY 06 to FY 09, the Commission had either considered the employee cost as proposed by the DISCOMs or computed the same based on previous year actual employee cost. Factors like proposed new manpower recruitment, merger of Dearness allowance into basic pay, improved productivity, rise in cost of living, etc. was considered by the Commission while approving the employee cost. Similarly, R&M expense was also determined based on the claim of DISCOMs in the initial tariff orders and was approved considering an escalation over previous year actual R&M expense in the later orders.

- AERC has not given any approval for capital expenditure during FY 06 to FY 08. However, for FY 09, the Commission did not approve the investment plan of the DISCOMs due to incomplete details on project schemes i.e. commission date, project cost, terms of loan, capitalization scheme, etc. In FY 09 tariff order, AERC approved a 2-Stage approval process for capital expenditure including “in-Principle Clearance” followed by “Final Approval during the Tariff Determination Process and / or ARR Review”.

- In absence of details on assets capitalized by the DISCOMs, the Commission had not approved any capitalization upto FY 08. In FY 09 order, AERC revised its methodology and directed DISCOMs to provide physical completion certificate along with financial completion certificate within 60 days of completion of work.

- For FY 05 & FY 06, AERC had approved the depreciation to the extent of loan repayment as information relating to asset register, value of assets that had been fully depreciated and breakup of the different categories of assets was not available. In the subsequent orders, the Commission had computed depreciation based on the value of the assets as per final transfer scheme and depreciation rates as per AERC tariff regulations.

- With regard to the interest cost, AERC has followed a consistent approach of scheme-wise analysis of outstanding loans and approval of interest cost based on weighted average interest cost. Interest on consumer deposits has been provided in each order from FY 06. Working capital requirement has been computed at normative basis and interest rate equal to short-term PLR of SBI has been considered for approving the interest on working capital in each of the tariff order.

- AERC had approved Return on Fixed Assets @3% in the FY 05 tariff order of ASEB. However, post the unbundling, AERC revised its approach from Return on Fixed Assets to Return on Equity. AERC has linked the return to the performance of the utility. The return provided to each utility is tabulated below:

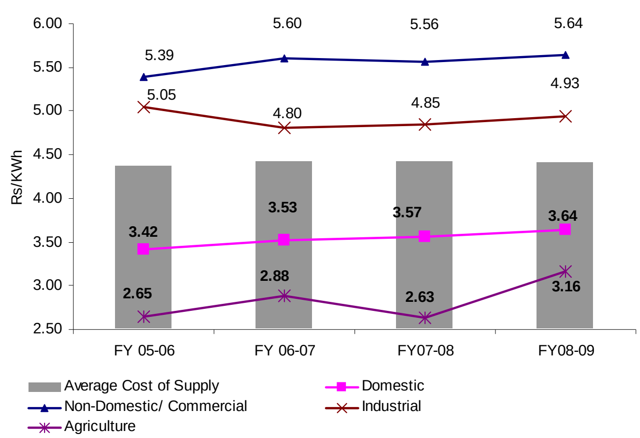
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Rate of Return	RoFA	RoE	RoE	RoE	RoE
APGCL		0%	7%	7%*	7%*
AEGCL	3%	0%	7%	14%	14%
DISCOMs		0%	3%	7%	7%

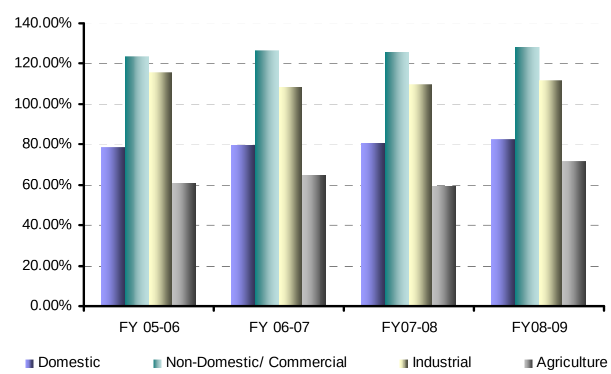
**14% RoE is provided for hydel plant*

- AERC has been allowing for provisioning of bad and doubtful debts to DISCOMs @1% of the ARR in line with the Regulations. However, for FY 06, AERC had approved provisioning at 2.5% of the ARR considering the collection drive undertaken by the DISCOMs involving waivers as incentives for payment.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





- The graphs above illustrates that the realization from commercial and industrial categories continue to cross-subsidize the domestic and agriculture categories during the period FY 06 to FY 09. As regards NTP stipulation of ±20%, the tariffs of cross-subsidized categories like domestic and agricultural has been increased to bring them closer to CoS. However, average tariff of commercial category continue to remain greater than 20% of the average CoS.

- AERC has initiated the computation of cross-subsidy for each category of consumer based on the Cost of Supply. The Commission also envisages a gradual reduction of cross subsidy so as to bring the tariffs within +/- 20% of the average cost of supply by 2011-12 as specified in the NTP. Further, iAERC has also introduced segregation of cost at different supply voltage in FY 09 tariff order to facilitate adoption of open-access in the State.
- AERC introduced ToD charge for the categories of H.T industries, Tea, coffee & rubber and Oil & coal in FY04. In absence of adequate sample of data on the pattern of consumption during different periods of day by different categories the ToD metering could not be extended to other consumer categories. AERC conducted a study to ascertain the effectiveness of ToD metering and considered the findings of the survey while designing ToD tariff rate in the order for FY 09.
- In its tariff orders, AERC has stressed on the usage of renewable sources of energy to meet the high consumption during peak hours. In order to encourage consumers to switch over to solar water heating system, the Commission had introduced a monthly rebate of Rs. 30 to all consumers who have installed such solar water heating systems. This rebate was further increased to Rs 40/- per month to encourage more consumers to shift to renewable sources of energy.

- **Transmission & Wheeling charges**

- AERC has adopted energy charges (per unit basis considering the approved net energy) from FY 06 to FY 09 for recovery of transmission costs as metering for recording demand of distribution licensee did not exist to support the introduction of demand charges.
- In the Tariff Order for FY 07 to FY 09, AERC has determined transmission and SLDC charges to be paid by all consumers of the transmission network (66 KV and above) including loss. Similarly open-access consumers using the network below 66 KV are required to pay the wheeling charges as determined by AERC in addition to transmission charge. The transmission charges for long-term and short-term open access consumers as determined by AERC is summarized below:

Particulars	FY 07	FY 08	FY 09
Long-term transmission customer (Rs. / kW / month)	Rs 198.42	Rs.210.24	Rs. 319.95
Short-term transmission customer (Rs. / MW / day)	Rs. 6404	Rs. 6912	Rs.10519

- In FY 07 & FY 08, AERC had computed the wheeling charge, cross subsidy and additional surcharge payable for open access consumers using the network below 66kV. The cross-subsidy has been determined based on the estimated cost of supply to different categories of consumer and tariff for the respective category. Further, AERC approved cross-subsidy surcharge based on the cost of supply model and considering segregated wheeling charges at different supply voltages in FY 09. The approved cross-subsidy surcharge is summarized below:

Particulars (Rs./kwh)	FY 07	FY 08	FY 09
LT Commercial Supply	NA	NA	0.10
LT general Supply	1.53	0.06	0.99
Public Water Works	1.69	0.77	1.30
Bulk Govt, Educational Institution	0.63	0.46	1.02
Other Bulk Supply	0.47	0.38	0.11
HT Industries-1	0.42	0.47	1.09
HT Industries-II	0.40	0.35	0.18
Tea, Coffee and rubber	1.50	1.48	0.71
Oil and Coal	0.81	0.41	0.08
HT Irrigation	0.12	0	0.32

- The wheeling charges approved for FY 07 and FY 08 for each DISCOM comprise of charges at different voltages (33 kV, 11 kV and LT) and losses in kind up to the respective voltage level at which the wheeled energy will be applicable to the open access consumers.

- **Subsidy**

- GoA had been allowing subsidy to maintain the tariffs at the levels as desired by GoA with respect to the subsidized categories. GoA confirmed the financial support for Rs 110 Crs and Rs 76 Crs for FY 04 and FY 05, respectively as financial support to ASEB. However, in the subsequent orders, GoA has not provided any subsidy to restrict the increase in tariff proposed by AERC.

3. Bihar – Executive Summary

- **Introduction**

The Bihar State Electricity Board (BSEB) operates as a bundled utility in the state of Bihar. The sales mix in Bihar is dominated by domestic consumers followed by industrial which together form about 59% of the total sales. Bihar has a total generating capacity of 540 MW. The two generating stations namely, Barauni TPS and Muzaffarpur TPS have a generating capacity of 320 MW and 220 MW. But almost all the units of both the stations are shut down and the present generating capacity of BSEB is 220 MW provided by Unit-6 and Unit-7 of Barauni TPS which are also running under deteriorated condition. In terms of regulatory ratemaking, Bihar followed the Annual Revenue Requirement (ARR) approach.

The Bihar Electricity Regulatory Commission (BERC) became functional in Aug, 2005 and has issued two Tariff Orders (FY 07 & FY 09) till 2008-09.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, BERC did not specify any norms for approval of PLF and SHR. The PLF was approved taking into account the actual PLF for the past year and past performance of a generating station while also considering the renovation and modernization (R&M) programme, as proposed by BSEB. The Commission approved gross and net generation for FY 07 based on the actual generation details from April 2006 to August 2006 but for FY 09, the Commission approved gross and net generation same as projected by the BSEB.

➢ BERC has followed the CAGR of past 2 years and 3 years and increase in number of connections for sales estimation. Besides, SERC has also applied correction factors on account of one time settlement schemes, Rajeev Gandhi Grameen Vidyutikaran Yojna, growth in industries across India, etc.

➢ The Commission has adopted 2000 kWh/kW/annum as the normative level of consumption in case of agriculture, which is based on ground water level in Bihar. Moreover, Commission has also considered the impact of addition in connected load during the year as well as increase in number of users that would restore supply under One Time Settlement (OTS) scheme on the agricultural sales.

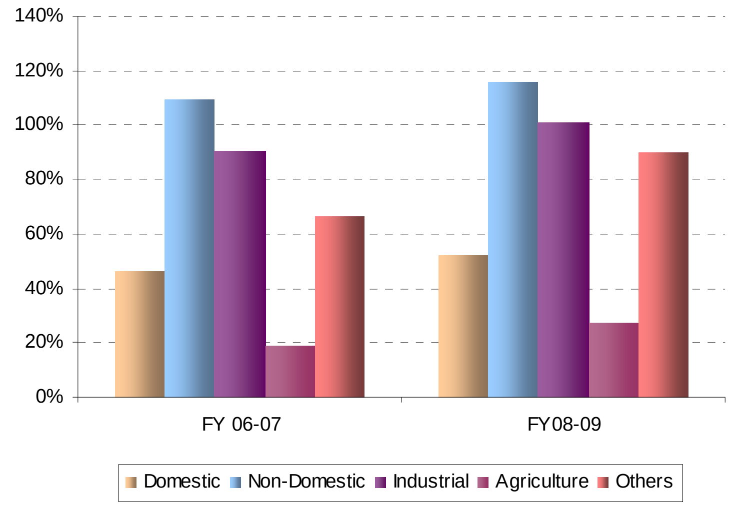
➢ The Commission has assessed baseline T&D losses by deducting the metered energy sales and assessed energy sales of un-metered categories from the total energy available. BERC has revised the baseline data and reduction targets in the Tariff Order for FY 09 as BSEB was not able to achieve reduction targets set by the Commission for FY 07. In FY 09, the Commission set reduction target of 3% over the estimated T&D losses of FY 08 (41.40%). The loss trajectory fixed in the Tariff Order for FY 09 for the ensuing years (FY 09 to FY 12) was in line with the recommendations of Abraham Committee. A comparison of proposed vis-à-vis the approved losses is tabulated below:

Particulars	FY 07	FY 09
Approved in the Tariff Order	41.40%	38%
Proposed by the Utility	36.00%	40.50%
Actual (Not trued up)	42.61%	----

- The quantum of energy available from CGS and other stations is based on BSEB's share in each of the stations. The energy availability from thermal stations is worked out at 80% Plant Load Factor (PLF) which is a norm fixed by the CERC and the availability from the hydel stations is based on the allocation to the state and energy drawals during earlier years. In addition to CGS and IPPs, the Commission recognizes short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and has considered the same while estimating the power purchase cost for FY 09. BERC has approved Rs. 4/unit for the UI purchase during FY 09.
- BERC has consistently approved the employees cost as projected by the Board for FY 07 and FY 09. BERC has considered an annual escalation in salaries and allowances (4.33% to 6.75%) as well as made provisions towards terminal benefits while approving the employees cost.
- The Commission has followed a mix of yearly escalation and a certain percentage of gross fixed assets (GFA) being 1.12% and1.47% for FY 07 and FY 09 respectively for approving R&M expenses..
- BERC primarily took into account the CERC norms while approving depreciation for FY 07 and FY 09.
- BERC has not been consistent in its approach while approving the interest cost. In the FY 07, BERC has disallowed certain loans taken from State Govt. to meet revenue short-fall and pay power purchase bills of CGS as well as short-term loans. However, for FY 09 the Commission has approved interest cost as proposed by BSEB. BERC has also not specified any norms while approving the interest cost on working capital.
- The Commission has not approved any Rate of Return nor has the Board proposed any rate of return.
- BERC has not provided any provision for bad debts for ARR computation. However, the Commission had directed the Board in FY 07 to issue notices to all defaulters for clearing the dues within a specified period and based on the status of recovery of dues, make out a proposal to write off of bad debts.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:



- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of $\pm$20%, tariff for domestic and agriculture category has remained about 52% and 27% of the average cost of supply respectively.
- Commission has increased the consumer tariffs in the state to meet the approved revenue gap of Rs. 184.78 Crs and Rs. 33.47 Crs for FY 07 and FY 09 respectively. While approving the tariff, the Commission had followed the average cost of supply in the absence of relevant data for working out consumer category-wise cost of supply. The Commission, had therefore, proceeded to rationalize the tariff with marginal increase in tariff for different categories.
- The average cost of supply approved by the Commission from FY 07 to FY 09 has decreased by 8%. This has been mainly because of increase in energy sales on account of greater availability of power from CGS though generation from BSEB owned stations have reduced drastically.

Approved by BERC	FY 07	FY 09
Total Energy Sale (MUs)	3973	5127
Surplus Energy Sale (MUs)	365	500
Total ARR (Rs Crs)	2170	2600
Avg Cost of Supply (Rs/kwh)	**5.00**	**4.62**
Avg Realisation from Sale of Power(Rs/kwh)	**3.20**	**3.37**
Realization from Govt. Grant (Rs/kwh)	**1.66**	**1.28**
Avg. Realization from Regulatory Assets (Rs./kwh)	**0.14**	**0.00**
(Gap)/ Surplus	**0.00**	**0.03**

- BERC introduced time of day (TOD) tariff in its Tariff Order for FY 09 making it applicable for HT consumers except Railway traction. BERC has also directed the BSEB to undertake pilot study for installation of pre-paid meters and develop a scheme to introduce prepaid metering

- **Transmission & Wheeling charges**

- In the Tariff Order for FY 09, transmission charges are calculated for long term and short term open access consumers. The short term open access transmission charge is 1/4th of the long term charges.

Type	Computation of Transmission charges	Transmission charges
Long-term	Transmission ARR / (Average transmission capacity X 12)	Rs.1,48,878 /MW/Month
Short-term	Transmission ARR x 0.25) / (Average transmission capacity X365)	Rs. 1,224 /MW/Day

- Wheeling charges are determined in cash as well as in kind. The charges in kind are essentially the system losses depending on the voltage level at which the consumer is drawing electricity. The Commission has approved wheeling charges based on the approved ARR for Distribution function. Wheeling Charges have been calculated at 33 kV and 11 kV Voltage level.
- BERC has approved cross subsidy surcharge for open access consumers for the year FY 09 as per the formula recommended in the National Tariff Policy The table below provides details about the cross subsidy surcharge approved by SERC.

Particulars	(Ps./kWh)
For 132 kV consumers	175.74
For 33 kV consumers (other than HTSS)	142.34
For 11 kV consumers (other than HTSS)	112.77
For HTSS consumers 33 kV	80.34
For HTSS consumers 11 kV	26.70

- **Subsidy**

- For FY 07 and FY 09, the Commission had approved subsidy support of Rs.60 Crs per month from Government of Bihar for payment of energy bills of NTPC i.e. an amount of Rs.720 Crs each for both the years. The Commission, however, did not specify the mode of payment for the subsidy.

4. Chhattisgarh – Executive Summary

- **Introduction**

  Chhattisgarh State Electricity Board (CSEB) was unbundled w.e.f 1st January 2009 into Chhattisgarh State Power Generation Company Ltd. (Generation Utility), Chhattisgarh State Power Transmission Company Ltd. (Transmission Utility), Chhattisgarh State Power Distribution Company Ltd. (Distribution Utility) and a holding and trading company, though the final accounts and opening balance sheet of the companies are yet not finalized. The sales mix in Chhattisgarh is dominated by Industrial (HT & large) followed by Domestic consumers, which together form about 71% of the total sales. The generation mix is dominated by coal (93%) followed by hydro and Cogeneration (7%). In terms of regulatory ratemaking, Chhattisgarh followed the Annual Revenue Requirement (ARR) approach.

  Though the Commission has issued MYT Regulations in 2008 but due to reasons like lack of baseline data on various efficiency parameters (for e.g. voltage-wise T&D losses), no energy audit to determine transmission and distribution losses, the Commission in the tariff order for FY 08 had decided to introduce MYT from FY 10.

Annual Revenue Requirement

- As regards operational parameters of generation, CSERC followed the past performance of power plants, CERC/ CEA norms, vintage, capacity of the units, performance guaranteed by refurbishment agency and maintenance plans as proposed by CSEB. The PLF was approved taking into account the CERC Normative PLF, past performance of a generating station and PLF guaranteed by refurbishment agency while also considering the maintenance plans, as proposed by CSEB. With respect to the Station Heat Rates (SHR) and auxiliary consumption, CSERC considered the past performance of the units, guaranteed performance parameters after refurbishment, vintage and capacity of the units and CEA report on "Technical Standard on Operation Norms for Coal/Lignite Fired Thermal Power Stations" issued during December 2004. But in FY 08, since the plants were not able to meet target SHR the Commission approved SHR at FY 07 approved level.
- CSERC also has in place a fuel cost adjustment formula, which is used to pass through the increase in fuel costs on half yearly basis.
- The transmission losses, as approved by CSERC, are tabulated below:

Particular	FY 06	FY 07	FY 08
Transmission Loss (%)	3.71%	3.93%	4.03%

- CSERC has followed long term CAGR (5 years) and growth rates (YoY) for previous years for sales estimation of metered categories. Besides, the SERC has also applied correction factors on account of pending applications for new connections in LT categories, State government directive to add about 1 lakh new BPL consumers, release of 25,000 new pump connections to the agricultural consumers in the year, etc.

- The energy sales in respect of un-metered BPL connections was approved as 30 units per month per consumer and for flat rate (un-metered) agriculture consumption based on 15-18% load factor.
- To compute the baseline T&D loss, CSEB deducted consumption of metered consumers and un-metered consumers (assessed consumption of BPL and agricultural consumers) from the input of energy into the transmission system. This methodology was accepted by the Commission for computation of base line loss level for the FY 06. In FY 07, CSERC specified trajectory with 2.7% and 3% loss reduction for FY 07 and FY 08 respectively. As CSEB was not able to achieve the targets during FY 07, the Commission relaxed T&D targets for FY 08. A comparison of proposed vis-à-vis the approved T&D losses is tabulated below:

T&D Losses	FY 06	FY 07	FY 08
Approved in the Tariff Order	35.81%	33.81%	32.54%
Proposed by the Utility	35.81%	34.51%	34.54%
Actual (Not Trued-up)	36.19%	35.54%	

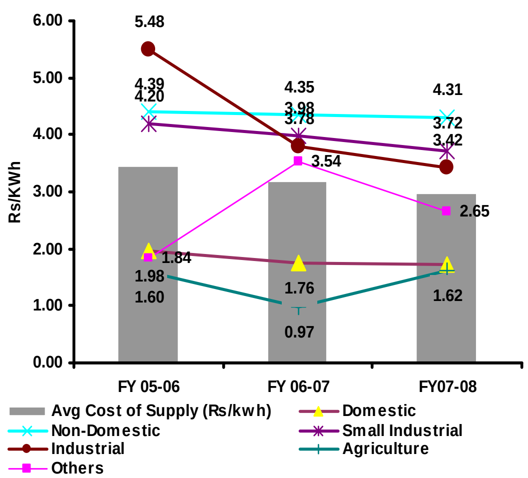
- CSERC ordered the CSEB to follow merit order dispatch (MOD) principle while purchasing power subject to the Nuclear Power Corporation (NPC) power plant and purchase on the basis of the PPA/single part tariff being considered as must run power plants. Commission had also directed the Board to purchase 5% of the total energy requirement from biomass based non-conventional energy plants.
- In addition to CGS and IPPs, the Commission recognizes short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and has considered the same while estimating the power purchase cost in the ARR. Short-term purchase/traders had been approved by the Commission based on the actual cost of power purchase in the previous year/past months. Commission had approved 810 MUs (Rs. 4.83/kWh) and 761 Mus (Rs. 4.73/kwh) for the FY 07 and FY 08 respectively.
- CSERC took into account uncontrollable factors such as the wage revision, dearness allowance etc while approving the employee costs. The escalation factor considered by the Commission in FY 06 and FY 07 was higher than the escalation factor used during FY 08. However, Commission has not specified any norms for approving the employees cost.
- The Commission had approved R&M as a certain percentage of gross fixed assets (GFA), which was 5.09% and 4.90% for FY 07 and FY 08 respectively. CSERC also made special provision of Rs. 30 Crs towards renovation of 6000 distribution transformers in FY 07. A&G cost was approved considering an escalation factor of 10% and 4.5% for FY 07 and FY 08 respectively.
- CSERC had calculated depreciation on straight line method and had considered depreciation rates (based on CSERC Tariff Regulations) at 3.35% for generation function, 3.5% for transmission function and 3.63% for distribution function for FY 07. However, in the FY 08, the Commission allowed depreciation rates as proposed by CSEB which was lower than that approved in FY 07 (Generation at 2.49%, Transmission

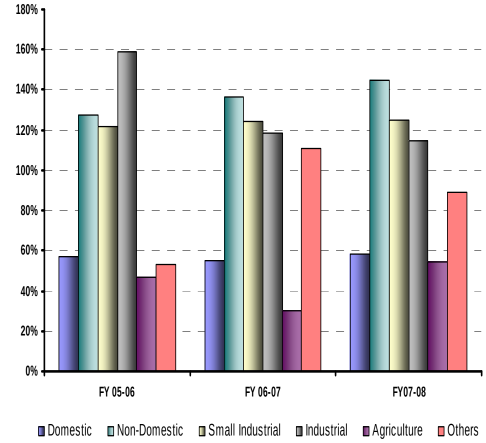
at 2.22% and Distribution at 1.02%). In terms of the treatment of depreciation on assets created out of consumer contribution and grants, the Commission had allowed it for FY 06, it disallowed the same for FY 07 and FY 08. Advance against depreciation has not been considered by SERC.

- Broadly, the Commission allowed the interest on loans as proposed by the Board. In the FY 08, Commission had disallowed certain interest cost but on the other hand had approved interest cost on loans which were pending from the past years due to lack of funds. Commission has considered an interest rate of 11% on the new loans and weighted average rate of long term interest approved by the Commission amounts to 8.8%. SERC has also provided for interest on security deposit. CSERC had not made any provision for the interest on working capital for the period FY 06 to FY 08.
- The Commission for the FY 06 allowed return on net worth for CSEB because equity base of CSEB was very low (Rs.23 Crs). For FY 07 and FY 08, Commission had adopted return on equity at 14% as the parameter for allowing return. The reasonable return on equity @ 14% has been allowed on the full equity as on April 1, 2005, and on the normative equity (30%) employed in the capital expenditure made on or after April 1, 2005. On the amount of equity employed on or after 01-04-2005 over and above 30%, the reasonable return of 8.5% paid by CSEB on its debt.
- CSERC had approved 2.5% of revenue from sale of power as provision for bad and doubtful debts for the FY 06. This was brought down to 1% in FY 07 and FY 08, which was as per the CSERC Tariff Regulations.

- **Tariff**

- The trend of tariff rationalization, as carried out by SERC, and the trend of reduction in cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of ±20%, while tariff for domestic and agriculture category has remained about 55-60% and 30-55% of the average cost of supply, the non-domestic and industrial pay close to about 120%-140% of the average cost of supply.
- In FY 07 and FY 08, Commission arrived at revenue surplus and utilized the revenue surplus to reduce the cross subsidy. CSERC has used average cost of supply to determine tariff for all three years i.e. FY 05, FY 07 and FY 08. Although the Commission has not been able to lay any road map for reduction in cross-subsidy, because of lack of base-line data, there has been consistent effort by the Commission to reduce cross-subsidy by way of reduction in average cost of supply and reduction in the tariffs for subsidizing categories of consumers.
- CSERC introduced time of day (TOD) tariff in its Tariff Order for FY 06 keeping it optional for HT consumers. However, the Commission made it compulsory for all the HT consumers later in FY 08 to flatten the load curve during peak hours.

- **Multi Year Tariff**

- CSERC has yet not adopted the MYT framework due to lack of baseline or proper historical data on various efficiency parameters, especially voltage-wise T&D losses.

- **Transmission & Wheeling charges**

- CSERC had approved the transmission and wheeling charges separately in the Tariff Orders for FY 07 and FY 08. Transmission charges are calculated for long term and short term open access consumers. The short term open access transmission charge is 1/4th of the long term charges.

Type	FY 07	FY 08
Long-term	65,639 Rs./MW/Month	63030 Rs./MW/Month
Short-term	540 Rs./MW/Day	518 Rs./MW/Day

- Wheeling charges have been determined in cash as well as in kind. Wheeling charges have been calculated only at 33kV level by dividing distribution cost at 33kV level (assumed at 35% of the total distribution cost) by energy input to 33kV system.

Year	Wheeling Charges (Paise / kWh)	Distribution loss level
FY 07	17	6%
FY 08	15	6%

- CSERC has been calculating the cross subsidy surcharge by deducting the average cost of supply from the average tariff of subsidizing consumer category (eligible for Open access). The tariffs for HT subsidizing consumers were brought down in this tariff order for FY 08 resulting in reduction in cross-subsidy .The table below provides details about the cross subsidy surcharge approved by the SERC.

Cross Subsidy Surcharge	EHT Consumers (at 132/220 KV)	HT Consumers (at 33 KV)
FY 07 (Rs/kWh)	0.68	0.55
FY 08 (Rs/kwh)	0.65	0.38

- **Subsidy**

➢ In Chhattisgarh, subsidy support is prevalent for two consumer categories viz. domestic and agriculture. In the Tariff Orders issued between FY 06 and FY 08, subsidy support has been approved for BPL consumers and agriculture consumers belonging to Scheduled Caste and Scheduled Tribe up to 5 HP. Moreover, Commission had also directed the Board to bill the consumers as per the tariff schedule pending the decision on the quantum of subsidy to be paid by the Govt. In all the Tariff Orders for the period FY 06 to FY 08 the details of actual subsidy booked and received by the CSEB was not available.

5. Delhi – Executive Summary

- **Introduction**

Post the notification of Delhi Electricity Reform Rules, 2001 by the GoNCTD on 20th November, 2001, the erstwhile Delhi Vidyut Board (DVB) was unbundled into two generation companies i.e. Indraprastha Power Generation Company Limited (IPGCL) and Pragati Power Corporation Limited (PPCL), one transmission company i.e. Delhi Transco Limited (DTL) and 4 distribution companies viz. i.e. BSES Rajdhani Power Limited (BRPL), BSES Yamuna Power Limited (BYPL), North Delhi Power Limited (NDPL) and New Delhi Municipal Council (NDMC).

The sales mix in Delhi has been dominated by domestic followed by non-domestic/ commercial consumers, which together form more than 75% of the total sales. The total generation capacity of IPGCL & PPCL is 995MW comprising of coal-based (38%) and gas-based (62%) generating stations. As per the provisions of the Transfer Scheme, DTL was given the responsibility of bulk power purchase and supply in Delhi upto FY 07. Thereafter, the PPAs were allocated to the DISCOMs in the ratio of the energy requirement. In terms of regulatory ratemaking, DERC followed the ARR approach till FY 07 and shifted to MYT framework from FY 08 onwards with a control period of four years.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, DERC had approved PLF for IPGCL & PPCL plants during FY 05 to FY 07 based on the generation targets specified by CEA. For the MYT Control Period, DERC had approved the PLF as per the operation norms prescribed in MYT Regulations which were specified considering the vintage of the plants and actual performance in the past years. Similarly, the auxiliary consumption during the period FY 05 to FY 09 for each plant was approved based on the vintage of the plants and operational performance in the past years. With regard to SHR, DERC has considered draft PPA between the TRANSCO and IPGCL in absence of design heat rate information. In case of GT and Pragati stations, SHR has been approved based on normative SHR.

➢ An incentive of 25 paisa/kWh on overachievement of the target PLF for all generating plants from the FY 06 Tariff Order in line with the CERC (Terms and Conditions of Tariff) Regulations, 2004 has been provided.

➢ DERC has primarily considered the past year actual intra-state transmission losses for approving the target losses for DTL. The approved and actual transmission losses for DTL is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved DTL Losses	1.69%	1.70%	0.72%	0.95%	0.95%
Actual/ Trued-up Losses	1.78%	0.72%	0.95%	-	-

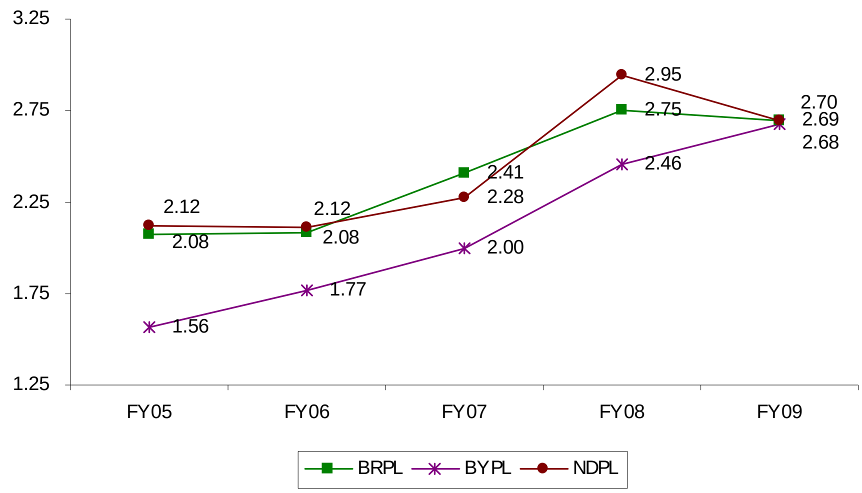
➢ The consumers in Karnataka are categorized under two category i.e. metered consumers and un-metered consumers. The Commission has been uniformly estimating the sales to various metered categories of consumers based on the CAGR for short-term (2 years) to medium-term (5 years), claim of the DISCOMs and previous year growth rates.

- In the FY 05 to FY 09 Orders, DERC has been following a uniform approach for estimating the sales to the various categories by considering short term (3 years), medium term (6 years) and long term (9 years) CAGR on previous year sales for Delhi State as a whole. Subsequently, the total sale assessed has been then allocated to each of the DISCOMs in proportion of their share in the total actual sales for each category in the previous year/s.
- Since the privatization of the distribution function in the State, DERC has been approving AT&C loss targets for the DISCOMs based on the trajectory set for the Policy Direction Period i.e. upto FY 07. An incentive sharing mechanism was also set in the transfer scheme to encourage the DISCOMs to reduce the loss in the State. In the MYT Regulations, DERC specified a target AT&C loss level to be achieved at the end of the Control Period and each year target was approved in the MYT Order. A comparison of proposed vis-à-vis trued-up AT&C losses for each DISCOM is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Approved in the Tariff Order	42.70%	36.70%	31.10%	26.69%	23.46%
Trued up by SERC	40.64%	35.53%	29.92%	27.51%	-
BYPL					
Approved in the Tariff Order	50.70%	45.05%	39.95%	34.77%	30.52%
Trued up by SERC	50.12%	43.89%	39.03%	30.23%	0.00%
NDPL					
Approved in the Tariff Order	40.85%	35.35%	31.10%	22.03%	20.35%
Trued up by SERC	33.79%	26.52%	23.73%	18.29%	-

- It is observed that the DISCOMs have been able to over-achieve the targets set by DERC in the tariff orders for FY 05 to FY 08. One major reason for improvement in AT&C losses has been the incentive mechanism stipulated by the Commission for loss reduction beyond the targeted loss level.
- During the Policy Direction Period i.e. upto FY 07, DTL was responsible for the power purchase from the various sources. The DISCOMs were required to pay to DTL for the power purchase cost as per the Bulk Supply Tariff (BST) determined by DERC based on the paying capacity of each DISCOM. The gap of DTL on this account was met by the GoNCTD from the support planned as per the Policy Direction. Post the policy direction period the PPAs were allocated to the DISCOMs based on the ration of energy drawl in the previous year.
- While determining availability from various sources, DERC also considers power requirement from bilateral and banking arrangements to meet the energy gap in peak hours. The cost of bilateral purchases is considered based on previous year actual cost and a normative cost of Rs. 4 per unit for banking arrangements. DERC does not consider energy drawl under UI but the same is considered at the time of true-up of power purchase cost.
- Any revenue from the sale of surplus power is deducted from the total power purchase cost of the DISCOMs leading to variation in per unit power purchase cost of each

DISCOM. The average cost of power purchase (in Rs./kwh) for each DISCOM is illustrated in the Graph below:



- DERC had revised its approach to consolidated approval for O&M expenses in the MYT Order as compared with the earlier approach of approval of individual components of O&M expense i.e. Employee, R&M and A&G expense for the DISCOMs In FY 05, the DISCOMs had introduced Special Voluntary Retirement Scheme (SVRS) the expenses for which has been appropriated on a tariff neutral principle by amortizing the SVRS expense over next 2-3 years through savings in employee costs. O&M expense approved for the MYT Period had been linked with the CPI and WPI index and further adjusted for efficiency factor and impact of Sixth Pay Commission.
- For FY 05, FY 06 & FY 07, a detailed analysis of the proposed capital expenditure has been undertaken by DERC considering scheme-wise approval, actual & approved capex in past years and cost benefit analysis of each scheme. However, in the MYT Order, DERC had approved the investment plan at a normative level considering actual investment made during the past years and assessing system requirement for the ensuing period. DERC has also directed the DISCOMs to take prior approval for all schemes which amount to more than Rs. 2 Crs by submitting DPR and cost benefit analysis.
- Asset capitalization is considered on normative basis for the determination of ARR. DERC has been approving 100% capitalization of previous year CWIP and 50% capitalization of new investments.
- For FY 06 to FY 09, DERC has approved the depreciation for DISCOMs based on the average of opening and closing value of assets approved in the respective year and weighted average rate of depreciation as per Annexure II of the CERC (Terms and conditions of Tariff) Regulations, 2004. AAD has been approved wherever the cumulative repayment in a particular year exceeded the cumulative depreciation in that year.
- For FY 06 & FY 07, interest cost was approved after review of the loan-wise details. For approval of interest on new loans, prevailing interest rates and repayment schedule was considered by DERC. For FY 08 and FY 09 (MYT Period), the Commission has taken

effect of interest cost in the RoCE by computing the average cost of debt for each DISCOM. The average cost of debt for the Control Period was determined considering the repayment schedule and interest rate for outstanding loans and prevailing interest rate and terms & conditions for new capex and working capital loans.

- DERC has computed normative working capital requirement in each of the Tariff Orders from FY 05 to FY 09. The norms of the WC requirement were revised in the MYT Regulations considering the transfer of PPAs to the DISCOMs. Interest expense on working capital requirement was not provided during FY 05 to FY 07 considering the cash available from the allowed non-cash depreciation expense.
- The Commission has followed diverse approach for each of the business for the computation of reasonable return. A summary of the return approved by DERC in each order during FY 05 to FY 09 is summarized below:

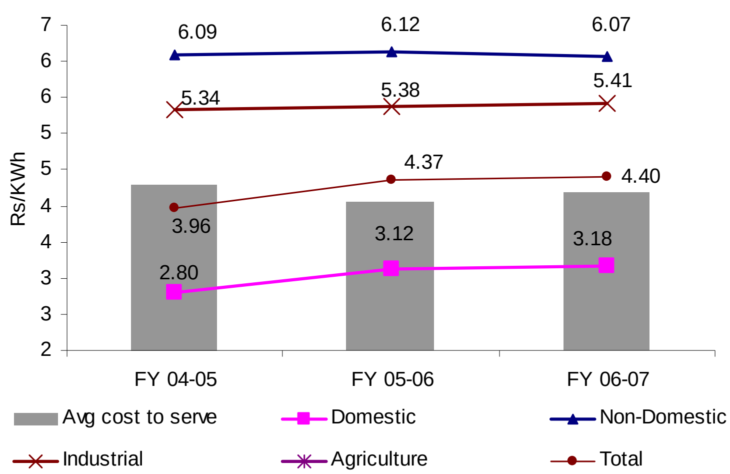
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Generation	RoE (16%)	RoE (14%)	RoE (14%)	RoE (14%)	RoE (14%)
Transmission	16% of Capital Base	16% of Capital Base	16% of Capital Base	Return on Capital Employed (14% RoE)	Return on Capital Employed (14% RoE)
Distribution	RoE (16%)	RoE (16%)	RoE (16%)	Return on Capital Employed (16%* RoE)	Return on Capital Employed (16%* RoE)

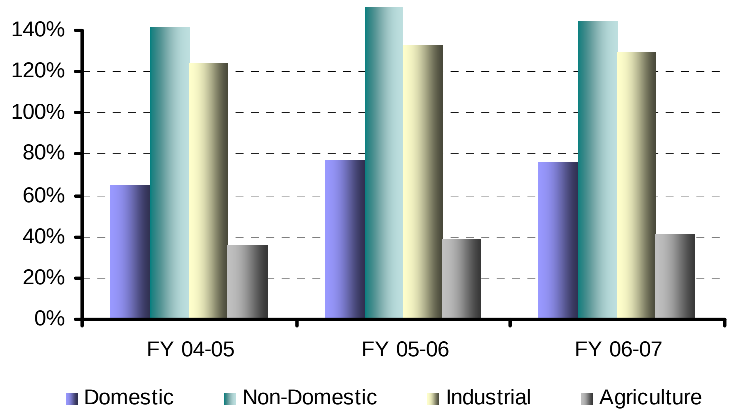
**including supply margin*

- DERC has not provided for any provisioning for bad and doubtful debts while determining the ARR for the DISCOMs for FY 05 to FY 09.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





Note: FY 08 & FY 09 average realization from each category cannot be determined in absence of category-wise revenue in the MYT Order

- It is clear from the above that non-domestic and industrial consumers continue to highly cross subsidize the domestic and agricultural categories. As regards NTP stipulation of ±20%, while tariff for domestic and agriculture category has remained about 60-80% and 30-40% of the average cost of supply, respectively, the non-domestic and industrial pay have been paying more than 120% of the cost to serve.
- DERC in the tariff orders issued during FY 05 to FY 09 has taken steps to rationalize the tariff and reduce the cross subsidy. However, no road map for reduction in the cross-subsidy has been envisaged by the Commission.
- For the treatment of revenue gap/surplus in each of the tariff order, DERC's approach has varied as per the requirement. In FY 05, the Commission had used a mix of options to bridge the revenue gap through increase in tariff of certain categories and creation of regulatory assets. In FY 06, DERC had hiked the tariff of all categories to meet the revenue gap. The surplus computed for FY 07 was utilized for the purpose of amortization of regulatory asset while the gap of FY 08 was adjusted in revenue surplus of FY 09 and FY 10.
- Time of Day (ToD) metering has not been introduced by DERC in the tariff orders for FY 05 to FY 09.

- **Multi Year Tariff**

- DERC had introduced MYT Framework in the State of Delhi from FY 08 onwards with a control period of four years. The controllable factors approved by the SERC in its regulations are:
  - AT&C loss level
  - O&M
  - ROCE (to be trued up at the end of Control period)
  - Depreciation (to be trued up at the end of Control period)

Uncontrollable factors consist of:

- o Power purchase quantum and cost
- o Sales
- o Revenue

➢ DERC has also stipulated a mechanism for sharing of incentive/disincentive as follows:

- o In the event of overachievement beyond the target incentive AT&C loss level, DISCOM shall be allowed to retain 50% of the additional revenue resulting from such better performance and the balance 50% shall be utilized for the purpose of tariff fixation
- o In case of underachievement as compared to the minimum AT&C loss levels (20% reduction), the entire shortfall in revenue will be to the account of DISCOM

- **Transmission & Wheeling charges**

➢ Since DTL was responsible for the bulk supply trading business in the State upto the end of Policy Direction Period i.e.FY 07, a Bulk Supply Tariff was determined by DERC in the Tariff Orders of DTL for FY 05, FY 06 & FY 07.

➢ In the Order for FY 08 & FY 09 (MYT), DERC has provided the methodology for computation of transmission charges to be recovered from the long-term transmission network users. Long-term users would be charged on a monthly basis considering the ratio of the entitled capacity to the total entitled capacity of all the long term transmission customers. As per the regulations, the short-term open access transmission charge would be 1/4th of the long-term charges determined on a daily basis.

➢ The Regulations also allow the transmission licensee to retain 25% of the charges collected from the Short Term Open Access customers and adjust the balance 75% towards in the transmission service charges payable by the long term transmission customers.

➢ In the MYT Order, DERC has segregated the ARR of the DISCOMs into Wheeling and Retail Supply business as a first step towards facilitation of open access in the State. Subsequently, DERC has approved the wheeling charges and distribution losses at each voltage level on a per unit basis to be paid by the open access consumer. The wheeling charges and distribution losses for each DISCOM is indicated in table below:

Wheeling Charges *(Paisa/ Unit)*	**FY 08**			**FY 09**		
Particulars	**BRPL**	**BYPL**	**NDPL**	**BRPL**	**BYPL**	**NDPL**
Above 66kV level	0.00	0.00	0.00	0.00	0.00	0.00
At 33/66kV level	7.66	7.96	9.32	9.03	10.40	10.55
At 11kV level	32.80	34.13	40.90	38.07	43.89	45.33
At LT level	62.19	70.71	72.71	70.82	87.52	80.66
Average	**54.65**	**64.64**	**64.58**	**62.10**	**79.75**	**71.75**

Losses (%)	**FY 08**			**FY 09**		
Particulars	**BRPL**	**BYPL**	**NDPL**	**BRPL**	**BYPL**	**NDPL**

Losses (%)	FY 08			FY 09		
Particulars	**BRPL**	**BYPL**	**NDPL**	**BRPL**	**BYPL**	**NDPL**
Loss at 66kV level	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Loss at 33/66kV level	4.50%	4.50%	3.00%	4.00%	4.00%	3.00%
Loss at 11kV level	15.37%	15.37%	15.37%	13.51%	13.51%	13.51%
Lossat LT level	28.85%	36.70%	23.13%	25.63%	32.54%	21.66%
Overall	**25.95%**	**34.11%**	**21.24%**	**22.88%**	**29.99%**	**19.75%**

- With regard to the cross-subsidy and additional surcharge applicable on the open access consumers, DERC has not computed the same in the tariff order. The same would be approved from time to time in line with the provisions of the DERC (Terms and Conditions of Open Access) Regulations 2005.

- **Subsidy**

- Initially the Government had committed an amount of Rs. 3450 Crs as transitional support to be provided to the DISCOMs by way of subsidized Bulk Supply Tariff (BST) charged by the Transco. A subsidy support of Rs.690 Cr and Rs.138 Cr has been received in FY 05 and FY 06, respectively on account of BST.

- Inspite of a support by the GoNCTD, a tariff hike was proposed in FY 06 to meet the revenue gap. In view of the widespread protest, the GoNCTD had provided for a direct subsidy to the DISCOM to neutralize 50% hike in domestic tariff and 100% hike in agricultural tariff which the Government continued to provide upto FY 09.

6. Gujarat – Executive Summary

- **Introduction**

The Gujarat Electricity Board (GEB) was unbundled with seven successor companies (one generation, one transmission, four distribution and one holding) coming into existence w.e.f 1st April 2005. The sales mix in Gujarat is dominated by agriculture followed by industrial (small and large), which together form about 75% of the total sales. The generation mix is dominated by coal (76%) followed by hydro (12%) and gas (5%). In terms of regulatory ratemaking, Gujarat followed the Annual Revenue Requirement (ARR) approach till FY 08 and the MYT was launched with effect from FY 09.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, GERC followed the past performance of power plants, CERC/ CEA norms, and benchmarking the performance with generating stations of other utilities. The PLF was approved taking into account the capacity, age, technology and past performance of a generating station while also considering the renovation and modernization (R&M) programme, as proposed by GSECL. However, while approving the PLF for the MYT control period, the SERC has considered the actual PLF for the past three years. With respect to the Station Heat Rates, GERC besides its own regulations, took into account CEA norms and the performance of the units in other states particularly the 210 MW series, the R&M programme of the units and the directions of the Appellate Tribunal wherein it directed that "the station heat rate has to be allowed considering the vintage and present condition of the station in view of the CEA recommendations and treatment given by CERC for similarly placed stations". For approving the SHR for the MYT control period, the Commission has accepted the projections of the GSECL for the time being but had directed to carry out a study to establish exact correlation of SHR with age, size, technology, PLF, type and quality of fuel.

➢ GERC has approved incentive of 25 paisa/kWh on overachievement of the target PLF (80%) for thermal generating plants. In case of hydro plants, incentive is payable, when the capacity index (CI) exceeds 90% for purely run-of-river power plants and 85% for run-of-river power plants with pondage or storage. GERC also has in place a fuel cost adjustment formula, which is used to pass through the increase in fuel costs on quarterly basis.

➢ The transmission losses, as approved by GERC, are tabulated below:

Particulars	FY 06	FY 07	FY 08	FY 09
Transmission Loss (%)	4.39%	4.27%	4.35%	4.09%

➢ GERC has followed the CAGR of past 3 years and 5 years and year-on-year sales growth for sales estimation. Besides, the SERC has also applied correction factors on account of Jyoti Gram scheme, higher than expected industrial growth, etc.

➢ Agriculture has the largest share in the overall sales mix for DISCOMs in Gujarat followed by industrial consumers. The SERC has adopted 1700 kWh/HP/annum as the normative level of consumption in case of agriculture, which is based on the findings of Mishra Committee, to arrive at the distribution losses. A comparison of proposed vis-à-vis the approved losses is tabulated below:

DGVCL	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	21.40%	19.90%	15.59%	14.45%
Proposed by the Utility	17.78%	16.33%	15.59%	14.45%
MGVCL				
Approved in the Tariff Order	23.60%	21.60%	21.09%	15.00%
Proposed by the Utility	20.09%	18.11%	21.09%	15.39%
PGVCL				
Approved in the Tariff Order	41.00%	36.50%	30.22%	30.00%
Proposed by the Utility	37.85%	33.66%	30.22%	30.30%
UGVCL				
Approved in the Tariff Order	28.60%	25.10%	16.95%	16.00%
Proposed by the Utility	24.94%	21.76%	16.95%	16.31%

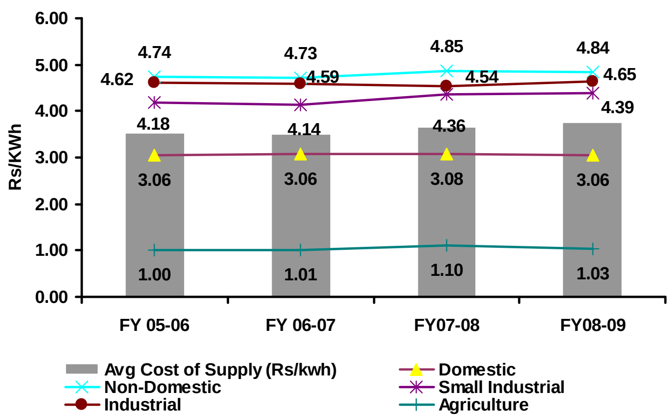
- For the MYT control period, the SERC has specified trajectory of 1% loss reduction per year for each of the DISCOM except PGVCL that has a large proportion of agriculture sales, it was set out at 2% per year.
- GERC ordered the DISCOMs to follow merit order dispatch (MOD) principle while purchasing power subject to the Nuclear Power Corporation (NPC) power plant at Tarapore and hydro power plant at Kadana being considered as must run power plants.
- GERC took into account external factors such as the implementation of Pay Commissions, merger of dearness allowance in the basic pay, etc while approving the employee costs. For the MYT control period, in case of generation, GERC has approved the escalation of O&M expenses at 4.2% in respect of PPA based stations and 4% in respect of other stations in line with CERC norms. In case of distribution, the SERC approved 6% increase over the actual employee cost of FY 08 while also considering the payment of arrears due to the 6th Pay Commission, the recovery of which was divided into FY 09 and FY 10 in 60:40 ratio.
- Other O&M expenses such as R&M and A&G were escalated based on the costs actually incurred in the previous year. In case of transmission, as part of A&G expense, the SERC also allowed Rs.114 Cr in full as claimed by GETCO for the ‘E-Urja’ project being undertaken for electronic database management.
- GERC primarily took into account the CERC norms while approving depreciation (Generation - thermal stations - 3.51% to 3.66%, Generation - hydel stations - 2.68% to 2.77%, Transmission - 3.78%, Distribution - 3.58% to 3.64%) for FY 06 to FY 08. For the FY 09, depreciation was considered as per the books of accounts of utilities. Advance against depreciation has been allowed by the SERC wherever the cumulative repayment up to a particular year exceeded the cumulative depreciation up to that year.

- For the MYT control period, the SERC worked out the actual average rate of interest for the past years and assumed a margin for the market fluctuation while approving the interest rate of 10% per annum with 10 years repayment period based on which the interest charges for the control period were determined. The SERC has also provided for interest on security deposit.
- Post unbundling, in the absence of equity capital allocated to successor entities, GERC allocated the equity based on the depreciated capital assets. In case of generation - for the PPA based generating stations, the Return on Equity was allowed as per the PPA, which is 11.75%. For other generating stations, the SERC had approved 13% RoE, which has been increased to 14% for the MYT control period. In transmission, the SERC limited the RoE to 10%, which was increased to 14% for the MYT control period. In distribution, the RoE allowed was 7% for the period FY 06 to FY 08, as against the 14% specified in the GERC regulations, in order not to increase the revenue gap. However, this too was increased to 14% in FY 09.
- GERC had approved 0.4% of revenue from sale of power, as provision for bad and doubtful debts, for the FY 06 and FY 07. This was brought down to 0.1% except for PGVCL in which case it was 0.2% while fixing up the norms for the MYT control period.

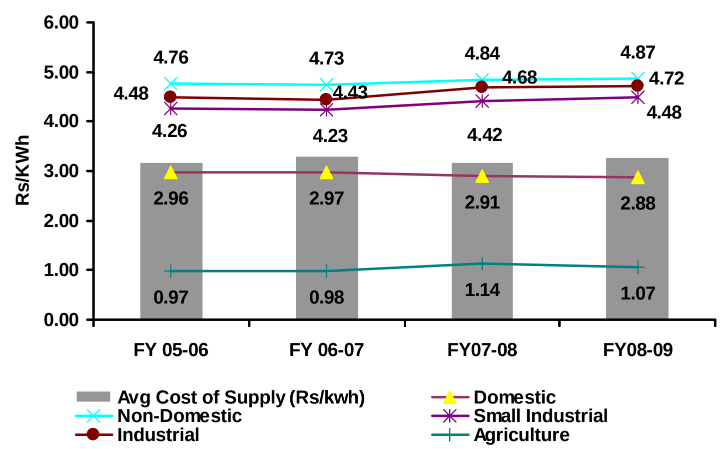
- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:

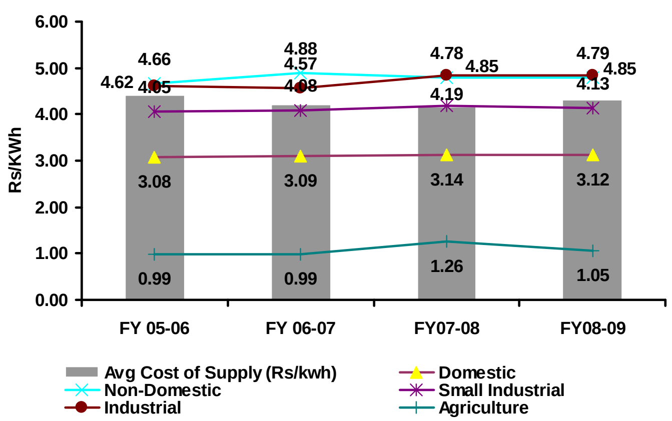
PGVCL



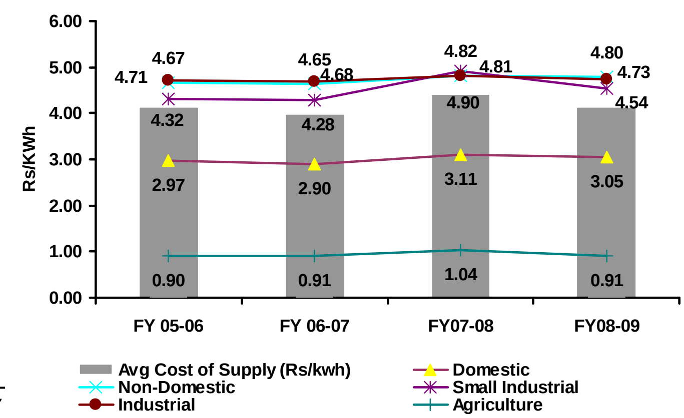
UGVCL

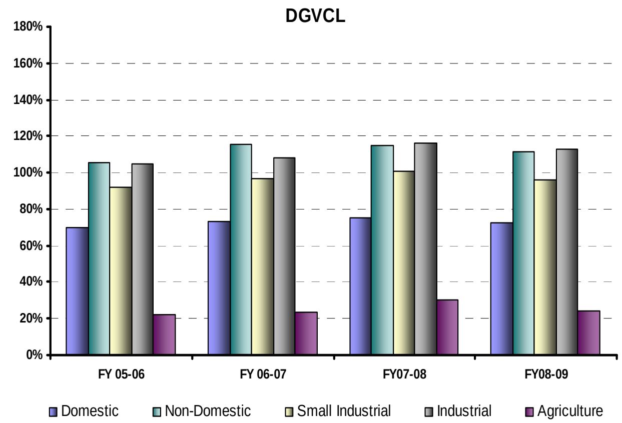


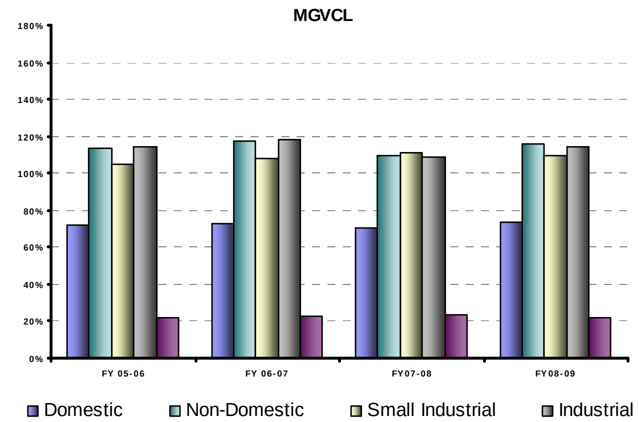
DGVCL



MGVCL




DGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture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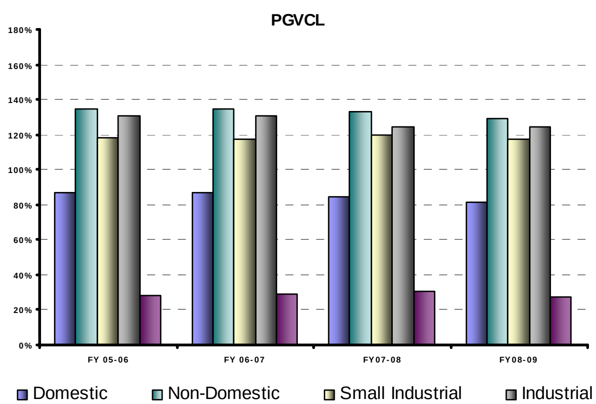
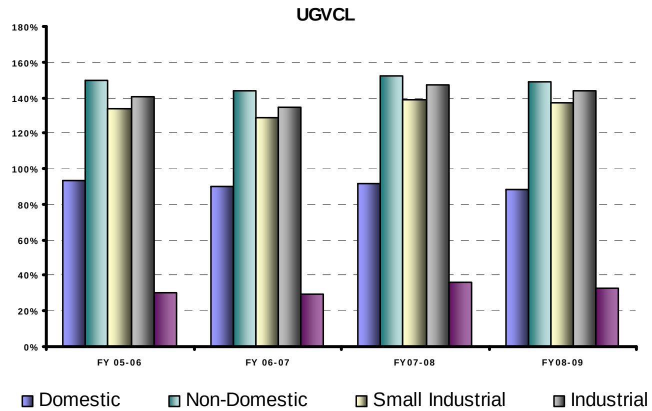
Non-Domestic
Small Industrial
Industrial


PGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial


UGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial

- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of ±20%, while tariff for domestic and agriculture category has remained about 70-80% and 20-30% of the average cost of supply respectively, the non-domestic and industrial pay about 120% of the cost in case of DGVCL & MGVCL and about 140% and 150% in case of PGVCL and UGVCL respectively.
- While not adjusting the tariff for full recovery of revenue gap, as projected for the FY 08, the Commission suggested the DISCOMs to improve their efficiency by reducing system losses through effective metering and billing. In the MYT Order too, GERC had increased the tariff in some of the categories but that was not sufficient to meet the revenue gap estimated by the Commission for different years of the control period (FY 09 to FY 11).
- GERC introduced time of use (ToU) tariff in its Tariff Order for FY 07 making it applicable for HT consumers with contract demand of 500 kVA & above and for the water works with connected load of 50 HP. It approved additional energy charges (75 paise per unit) for the HT consumers during peak hours and provided discount to the waterworks consumers during the off peak hours (30 paise per unit) and night hours (75 paise per unit). These charges have also been approved without any revision for FY 08 and FY 09 as well.

- **Multi Year Tariff**

- GERC introduced MYT tariffs from FY 09 onwards with control period for three years. The controllable factors approved by the SERC in its regulations are:
  - Variations in capital expenditure on account of time and/ or cost overruns / efficiencies in the implementation of a capital expenditure project not attributable to an approved change in scope of such project, change in statutory levies or force majeure events;
  - Variations in technical and commercial losses, including bad debts;
  - Variations in the number or mix of consumers or quantities of electricity supplied to consumers;
  - Variations in working capital requirements;
  - Variation in expenses like O&M expenses, employee cost, A&G, expenses, Interest & Finance Charges, Return on Equity, Depreciation, and Non-tariff income;
  - Failure to meet the standards specified in the Standards of Performance Regulations, except where exempted in accordance with those Regulations; and
  - Variations in labour productivity.

  Uncontrollable factors consist of:
  - Force Majeure Events;
  - Changes in law, judicial pronouncements and Orders of the Central Government, State Government or Commission;
  - Economy-wide influences, such as unforeseen changes in inflation rate; and
  - Market-interest rates, taxes and statutory levies

- **Transmission & Wheeling charges**

➢ Transmission charges are calculated for long term and short term open access consumers. The short term open access transmission charge is 1/4th of the long term charges and it is available only for selected block of hours in a day.

➢ Wheeling charges are determined in cash as well as in kind. The charges in kind are essentially the system losses depending on the voltage level at which the consumer is drawing electricity.

Year	Wheeling Charges	LT level loss	HT level loss	Combined Loss
FY 07 (Rs/MW/Day)	2459	9.51%	10.01%	18.57%
FY 08 (Rs/MW/Day)	2205			
FY 09 (Paise / kWh)				
11 kV	13.48			
400 V	44.93			

➢ GERC has been calculating the cross subsidy surcharge based on the average cost of supply, and took into account the provisions of the National Electricity Policy and the National Tariff Policy. The table below provides details about the cross subsidy surcharge approved by the SERC.

Particulars	FY 06	FY 07	FY 08	FY 09
Cross Subsidy Surcharge (Rs/kWh)	1.80	1.35	1.00	0.51

- **Subsidy**

➢ The State Government of Gujarat provides agriculture subsidy of Rs. 1100 Cr per year to the DISCOMs in proportion to the consumption by pump sets in each DISCOM. The SERC notifies tariff factoring in the aforesaid subsidy amount.

7. Haryana – Executive Summary

- **Introduction**

The erstwhile Haryana State Electricity Board (HSEB) was unbundled into two corporate bodies namely Haryana Power Generation Company Limited (HPGCL) for the Generation of Power and Haryana Vidyut Prasaran Nigam Limited (HVPNL) for the Transmission & Distribution of power within the state of Haryana. Subsequently, the activity of distribution and retail supply of power was transferred to Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL). In June 2005, in line with the notification of GoH, the trading business was transferred from HVPNL to HPGCL.

The sales mix in Haryana has been dominated by agriculture followed by industrial (small and large), which together form about 59% of the total sales in the State. The two DISCOMs contribute approximately equally to the overall sales in the State. While the agricultural consumption of UHBVNL is higher, the industrial consumers contribute the maximum share in DHBVNL sales. HPGCL has a total installed capacity of 2195.5 MW dominated by coal-based generating stations contributing 97% of the installed capacity. In terms of regulatory ratemaking, HERC is consistently following the ARR approach for determination of tariff during FY 05 to FY 09.

- **Annual Revenue Requirement**

- As regards operational parameters like PLF, auxiliary consumption and SHR of generation plants, HERC has followed a uniform approach. For older plants past year performance has been considered while for newer plants CERC norms have been applied for approving the operational parameters. R&M programme for older plants was also factored while approving the operation parameters.

- HERC has been approving coal transit losses considering the high losses for previous years but has directed HPCGL in each order to reduce the coal transit losses to national norm of 0.8% to non-pithead generating stations.

Coal Transit Losses	FY 05	FY 06	FY 07	FY 08	FY 09
FTPS	3%	3%	2.5%	2.5%	2.5%
Other Coal-based Plants	3%	3%	2.5%	2%	2%

- Prior to FY 07, HERC had approved FPA in FY 06 after processing the petition filed by HPGCL. Subsequently, HERC had directed HPGCL to recover the fuel price adjustment from the DISCOMs based on FPA formula prescribed by CERC on a quarterly basis.

- HERC has been primarily reviewing the previous year actual and approved transmission loss level for HVPNL while approving the target transmission loss for the ensuing year. The approved transmission loss is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	4.62%*	4.50%*	4.40%*	2.60%	2.10%

**overall losses considering inter-state and intra-state losses*

- The power sector in Haryana had seen a growth of 13% in overall sales during FY 05 to FY 09, with non-domestic and industrial category growing at a CAGR of 22% & 17%, respectively during this period. However, energy sales in the State of Haryana had been largely dominated by agriculture category sales (28%) to agricultural category of which more than 50% is unmetered.
- The Commission has been following a uniform approach of sales estimation based average Annual Load Factor (ALF) for past years and projected connected load for each category. The energy sales have been adjusted for to the extent of volume of power available from various sources.
- For estimation of the metered agricultural sales, HERC has considered the Average ALF which was based on the trends in the volume of sales in metered agricultural category and the connected load. With regard to the estimation of sales for unmetered agricultural consumers, ALF of the metered agricultural consumers has been considered by the Commission.
- The approach followed by the Commission for approval of distribution loss levels has been inconsistent. While the target loss for FY 05 was based on reduction achieved in the past years, the loss targets for FY 08 and FY 09 were linked to the high capital expenditure proposed by the DISCOMs. In FY 07, HERC had approved a higher loss target as compared to the proposed distribution losses considering the reduction in past years.
- A comparison of proposed vis-à-vis the approved losses for each DISCOM is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
UHBVNL					
Proposed by the Utility	31.50%	29.00%	29.00%	28.50%	26.00%
Approved in the Tariff Order	29.36%	32.30%	30.50%	28.50%	26.00%
DHBVNL					
Proposed by the Utility	30.25%	31.00%	30.50%	28.00%	26.00%
Approved in the Tariff Order	30.34%	32.30%	30.50%	28.50%	26.00%

- Haryana being an energy deficit State, HERC has been approving the power purchase from all sources including CGS (NHPC, NPC and NTPC), State generating stations, Shared Projects, IPPs (Magnum) and other sources. HERC had disallowed short-term purchases for FY 05 to FY 07 considering the high cost for short-term power. However, in view of the demand-supply gap, short-term purchases was approved in FY 08 & FY 09 based on the past trends and short-term agreements submitted by HPGCL. The rate for short-term purchases has been considered based on previous year average purchase rates i.e. Rs. 3.77 & Rs. 4.70 per unit for FY 08 & FY 09, respectively.
- HERC has been uniformly approving the individual components of O&M expense i.e. Employee, R&M and A&G expense while determining the ARR for DISCOMs during FY 05 to FY 09. Employee cost is determined based on latest available audited accounts with appropriate escalations. R&M expense for the DISCOMs is linked as a percentage of

GFA for each year upto FY 08. For FY 09, HERC had approved R&M expense @3% of the GFA considering higher cost in previous years.

- Approval for capital expenditure during FY 05 to FY 07 was provided based on the scheme-wise details for which borrowing details were submitted by the DISCOMs. However, the approach was revised to a detailed analysis along with scheme-wise approval based on the performance of the DISCOMs in the execution of capex plans during the previous years. Capitalization has been considered in based on normative basis i.e. 70% of the approved capex is capitalized in the first year while remaining in the second year.
- Deprecation has been provided as per the MoP specified depreciation rates on the value of assets as per the latest audited accounts after excluding the assets funded out of the consumer contribution and rent earning assets.
- HERC has approved interest cost after review of loan-wise details. In absence of information regarding utilization of the loan amounts, the Commission had disallowed the interest on unutilized. Further, interest on consumer's deposit has also been allowed. Working capital requirement has been computed as one month of ARR while the average rate of borrowing has been considered for the purpose of approving interest on working capital for FY 05 to FY 09.
- HERC has been approving differential return to all utilities as summarized below:

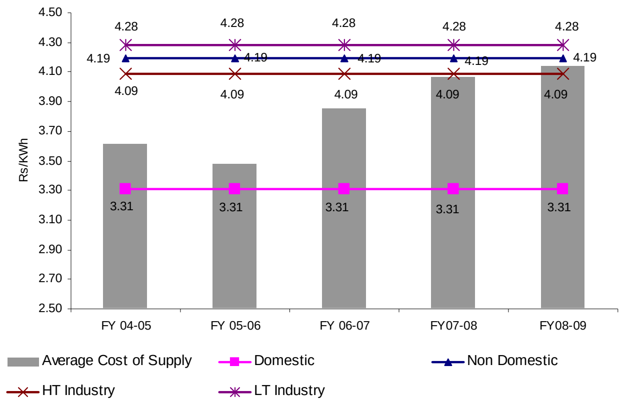
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Reasonable return for HPGCL	ROE (5%)	ROE (8%)	ROE (10%)	ROE (12%)	ROE (14%)
Reasonable return for HVPNL	Return on Capital Base (0%)	Return on Capital Base (0%)	Return on Capital Base (0%)	ROE (8%)	ROE (8%)
Reasonable return for UHBVNL & DHBVNL	Return on Capital Base (0%)	Return on Capital Base (0%)	Return on Capital Base (0%)	Return on Capital Base (0%)*	Return on Capital Base (0%)

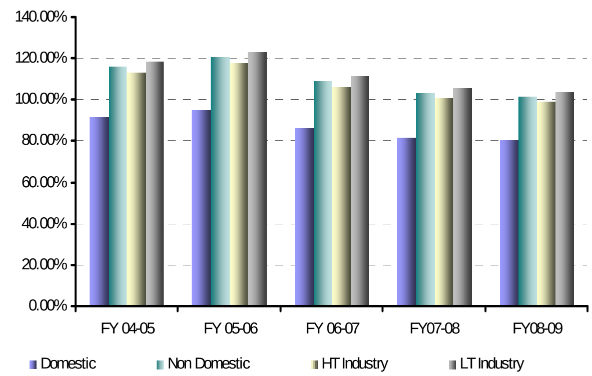
** For UHBVNL a return of 0.5% on the interest loans had been allowed as per the order of Hon'ble ATE.*

- HERC did not allow any return for FY 05 to FY 07 as the DISCOMs had not claimed the same in their petition. For FY 08 & FY 09, the capital base was negative leading to no returns.
- No provisioning for bad and doubtful debts while determining the ARR of the DISCOMs considering that it would put additional burden on the honest consumers who pay their dues regularly.

- **Tariff**

- The Commission has consistently approved a single part tariff structure in each of the tariff orders issued during FY 05 to FY 09 comprising of energy charges for all the categories of consumers except unmetered agricultural consumers which are billed on flat tariff.
- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





- The tariff has not been increase for any consumer category during the five years. With the increase in average cost to serve, the cross-subsidy available from subsidizing categories has reduced while the cross-subsidy requirement for subsidized categories has increased.
- As there has been no increase in tariff in the past five years, the revenue gap for FY 05 was met by creation of regulatory asset. For FY 06 & FY 07, the subsidy amount was adequately high to cover the increase in gap. However, for FY 08, the Commission had proposed an additional improvement in distribution loss by 2.5% to cover the gap after considering the GoH subsidy. For FY 09, HERC had to bridge the revenue gap partially through improvement in distribution loss and the balance gap was left untreated.

- **Multi Year Tariff**

- HERC has mentioned its intention for introducing MYT Framework in the State of Haryana in its tariff orders. With this regard HERC has been issuing directives for submission of MYT proposal which has not been complied with by the utilities.

- **Transmission & Wheeling charges**

- ARR for HVPNL for FY 05 and FY 06 comprised of transmission business and bulk supply business. Therefore, the Commission had computed the transmission charge for long-term consumers by allocating the various cost parameters between the two businesses. HERC approved a demand charge per kW per month to be recovered from the DISCOMs. For subsequent years, the transmission tariff has been determined in similar manner.
- Charges from short-term open access consumers has been approved on a per unit transmission rate based on the total approved cost divided by approved sales in the respective year. Additional, the Commission has specified a deduction in energy against the transmission losses for open access customers in each of the tariff order for FY 05 to FY 09.

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Transmission Tariff for long-term transmission customers (Rs./ kW/ month)	77.43	76.44	74.73	120.85	114.13

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Transmission Tariff for short-term open access customers (Paisa/KWh)	0.14	0.14	0.14	Rs 1007/ MW/ Day	0.19
Losses in kind to be applicable of short-term open access consumers	4%	4%	4%	2.6%*	2.1%*

**since HERC has not mentioned on the transmission losses applicable to open access consumers, the same have been retained in line with the approved transmission losses for long-term consumers*

- In the FY 08 tariff order, HERC has approved 25% of the transmission charges collected by HVPNL from short-term open access consumers to be retained and the balance to be adjusted towards reducing the transmission charges of the long-term transmission customers.

- In the FY 09 tariff order, HERC has also computed wheeling charges applicable to open access consumers in the tariff order of DISCOMs. In absence of data on segregated cost for distribution business, HERC had approved 8% of the total ARR of the DISCOMs allocable to the distribution business and 6% distribution losses based on the CEA norms. Wheeling charge of 40 paisa per unit has been computed (considering losses to be paid in cash). Further, HERC has also approved the cross subsidy surcharge for open access consumers based on category-wise consumer tariff and respective cost to serve. The same is summarized below:

Particulars (Rs. /kWh)	Average CoS (paise/unit)	Average Realisation (Paise/Unit)	Cross Subsidy (Paise/Unit)
HT Industry	318	409	91
Street Lighting	394	415	21
Railway Traction	287	396	110
Bulk Supply (Except Bulk Domestic)	317	409	92

- **Subsidy**

- Subsidy support from the GoH has been made available to the DISCOMs throughout the period FY 05 to FY 09. GoH has been providing subsidy support against the consumption of energy by the agricultural consumers in the State. Each year, the GoH announces the amount of budgetary subsidy it intents to provide to the State consumers which is utilized by HERC to fill up the approved revenue gap. The budgetary subsidy for each year is summarized below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Budgetary Subsidy (Rs. Crs)	1102.50	1256.00	1464.88	1873.82	1681.98

8. Himachal Pradesh – Executive Summary

- **Introduction**

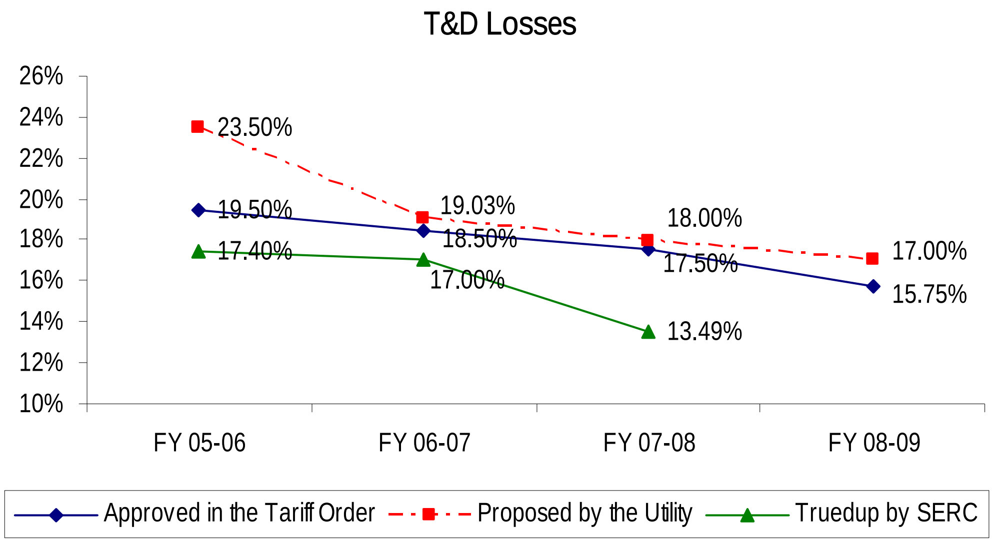
➢ The Himachal Pradesh State Electricity Board (HPSEB) operates as a bundled utility in the State of Himachal Pradesh. In terms of regulatory ratemaking, HP has recently, from FY 09, made transition from Annual Revenue Requirement (ARR) approach to the Multi Year Tariff (MYT) framework. The first MYT control period is for 3 years from FY 09 to FY 11.

- **Annual Revenue Requirement**

➢ The Commission has followed different methodologies for estimation of energy generation from HPSEB's hydro plants ranging from targets set out by CEA in one year to moving average and simple average of the past generation data in other years. This was however, supplemented by application of correction factors taking into account the plants under construction and their Commissioning schedule and R&M works being carried out by HPSEB.

➢ The Commission has considered CAGR with Long term (10 years) & Short term (3 years) across various consumer categories including agriculture for approving energy sales. Besides, the Commission took into consideration the pending applications for new connections from major industries and also the implication of open access in the LT Industry that led to reduction of certain load. A review of actual energy sales vis-à-vis the energy sales approved by the Commission shows a moderate under estimation of 8%, 3% and 0.8% during FY 06, FY 07 and FY 08 respectively, which signifies close estimation of the energy sales carried out by the Commission.

➢ The basis adopted by the Commission for approving the T&D Loss levels has been the five year trajectory set out in FY 02-03 under the MoU signed between the GoHP and GoI, which mandates 1% percent reduction every year from FY 02-03. While setting out the target loss level under the MYT framework with a three year control period (FY 09 to FY 10-11), the Commission considered the same approach of 1% reduction for the base year (FY 08) while fixing up the target T&D loss level of 16.5%. The Commission has further set a T&D loss reduction trajectory of 0.75%, 0.75% and 0.5% for FY 09, FY10 and FY11 respectively to reach a loss level of 14.5% by the end of the Control Period. However, based on the actual loss level being at 13.49% during FY 08, the Commission revised the MYT loss reduction trajectory to bring down the losses to 12.49% by the end of control period instead of 14.50% approved earlier.

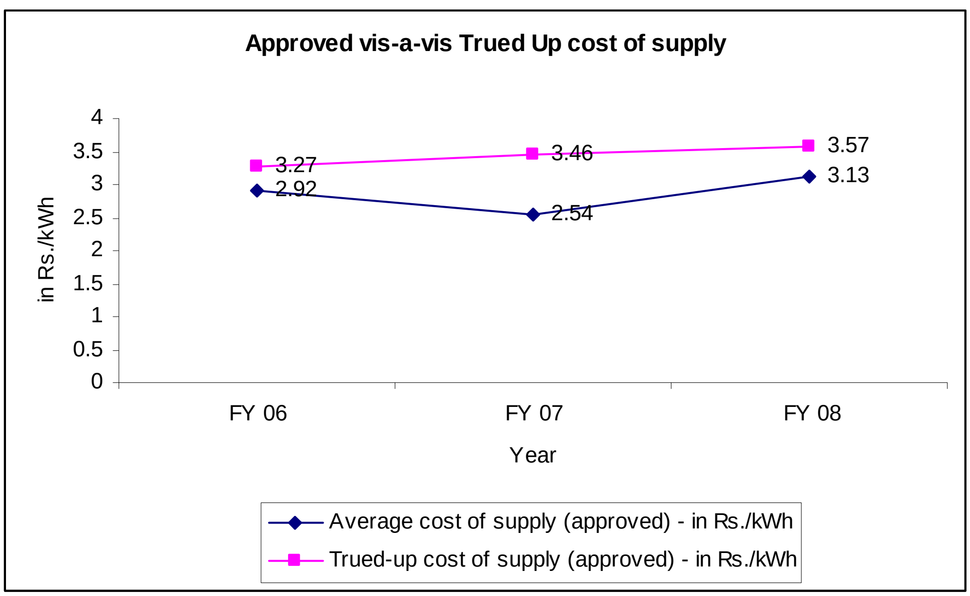


- It is clear from the above that the performance of HPSEB in reduction of T&D losses despite operating in difficult terrain merits appreciation. The HPSEB has largely been in conformance with the trajectory set by the Commission and it has even over-achieved in certain instances. MYT framework has not been applied in the true spirit primarily because of the revision of T&D loss trajectory in the middle of the control period with no incentive provided to the Board for over-achievement of T&D loss level set out by the Commission.
- In addition to CGS and IPPs, the Commission recognizes banking and short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and has considered the same while estimating the power purchase cost in the ARR. Besides, the Commission has promoted micro hydel by considering the same as another source of power purchase. A comparison of approved vis-à-vis trued up power purchase cost shows that the Commission under-estimated the actual power purchase cost – e.g. the approved power purchase cost in FY 08 was Rs.2.37/kWh whereas the trued up amount is Rs.2.92/kWh.
- The Commission has approved the employee cost in line with the inflation wherein 75% weightage has been considered for Consumer Price Index (CPI) while 25% has been considered for Wholesale Price Index (WPI). The Commission has not considered the DA increments, as proposed by the Board, for calculating the tariff whereas it did allow the actual DA paid out by the Board in the True-up Order for FY 07 and FY 08 as per the Appellate Judgment.
- The Commission has followed a mix of yearly escalation (by 5%) and approving R&M as a certain percentage of gross fixed assets (GFA), which was 1.9%, 1%, 0.6% and 1% for FY 06, FY 07, FY 08 and FY 09 respectively.
- While the Commission considered asset wise depreciation rates, as prescribed by CERC in FY 06, an average depreciation rate for the remaining years has been taken based on the audited account of the respective preceding year. In terms of the approach followed by the Commission on treatment of depreciation on assets created out of consumer

contribution, grants, APDRP funds, the Commission has largely taken a considerate view.

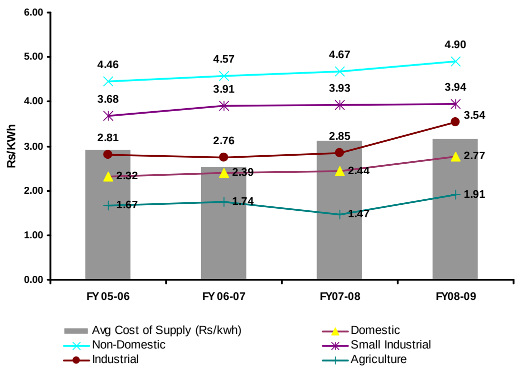
- Broadly, the Commission disallowed interest on loans that were taken to meet the revenue expenditure and loans for new projects for which the Detailed Project Report was not submitted to the Commission. Also, interest was disallowed on Capital Works-in-Progress in line with the philosophy of allowing interest or return on equity only on capitalized assets.
- The Commission has uniformly for all the years adopted Return on Equity (RoE) as the parameter for allowing return. The rate of return on equity for generation, transmission and distribution has been kept uniform at 14%, 14% and 16% respectively for all the years from FY 06 to FY 09.
- Broadly, capital expense was allowed by the Commission when the Board provided the requisite details including a scheme wise break up. The Commission disapproved any such loans as part of the financing plan submitted by the Board, against which grants could be mobilized.
- The Annual Revenue Requirement has substantially increased in the state of HP and the increase is primarily attributable to two factors viz. power purchase cost and employee cost. The power purchase cost in turn has risen mainly due to increase in the tariff of central generating stations and free power share of Government of HP. As for the employee cost, the Commission has time and again issued directions for the HPSEB to improve manpower planning thereby reducing cost, however, HPSEB has not been able to manage its employee cost any better owing to complex inherent issues. Overall, the Commission has been rather conservative in its approach while approving the ARR. The ARR trued-up by the Commission for FY 06 and FY 07 has seen an increase over the earlier approved ARR by about 43% and 48% respectively which is substantial.

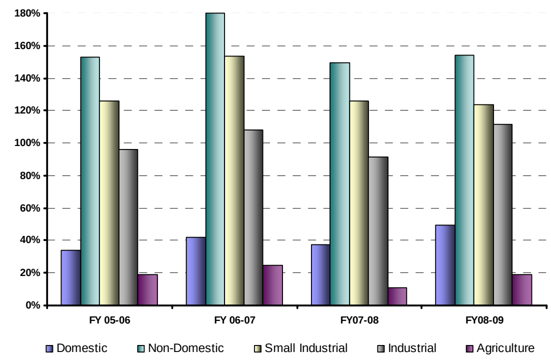
- **Approved vis-à-vis Trued up cost of supply**



- **Tariff rationalization**

➢ The trend of tariff rationalization, as carried out by the Commission, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of cost of supply is shown below:





➢ Non-domestic and small industrial consumers have been paying more than the average cost of supply while cross subsidizing agriculture and domestic categories. Large industrial consumers are paying below the average cost of supply, which is actually in contrast to many states where industrial tariff tend to higher than the cost of supply.

➢ As regards the categorization of consumers, the Commission has from time to time created categories and sub-categories within the broad category of large supply consumers based on various bands of power consumption and applicable tariff. For instance, the Commission has created a new category named PIU in FY 07 which has been later withdrawn in FY 09 and a new band of power consumption for HT and EHT category has been proposed. Such an approach by the Commission, especially without consulting the Board may lead to underestimation and overestimation of ARR and thus fluctuation in tariff which is undesirable.

➢ Though the Commission in the last few tariff orders has intended to reduce cross-subsidisation but a clear road map for reduction in cross-subsidies has not been provided for any of the year from FY 06 to FY 09.

- **Subsidy**

➢ The subsidy support from the Government is primarily available to domestic and agriculture consumers. The subsidy has been considered on per unit basis while computing revenue for each of the consumer category. The Commission's approach has been different from one year to the other. For FY 06, the Commission worked out two scenarios, one indicating the tariff applicable to domestic consumers at existing level of subsidy and the other specifying the increased subsidy support that will be required if the impact of tariff hike for were to be neutralized. The tariff notified by the Commission for FY 07 to FY 09 was inclusive of the subsidy but did not have directions for charging full tariff to the subsidized consumer category in case of non-receipt of subsidy from the Govt.

➢ The quantum of subsidy provided by the state government has increased each year in the previous years and this has off set the tariff hike in these categories, due to which the effective domestic and agriculture tariffs have remained unchanged in the state for the last 7 years.

- **Transmission & Wheeling Charges**

➢ HPERC has approved the transmission and wheeling charges separately in the Tariff Orders for FY 07 and FY 09.

Particulars (Rs/kWh)	FY 07	FY 08	FY 09 *
Transmission Charges	0.236	NA	106.94 Crs
Wheeling Charges	1.38	NA	0.75

➢ The Annual Transmission Service Charge for FY 09 are divided between beneficiaries of the Transmission System on monthly basis based on the Allotted Transmission Capacity and the transmission losses are borne by the beneficiaries. Apart from the wheeling charges, distribution losses approved by the Commission would be borne by the beneficiary in kind.

➢ HPERC had not specified/ indicated cross subsidy charges in any of the Tariff Orders issued between FY 06 to FY 09. However, Commission had mentioned in the MYT Order for FY 09 that a separate Order will be issued on the transmission charges applicable to any open access customer.

- **MYT Framework**

➢ HPERC has very recently adopted the MYT framework. The table given below lists the key features of the MYT framework being adopted in the state of HP.

Particulars	
First Year of MYT	FY 08-09
Time frame for the control period	3 years, FY 08-09 to FY 10-11
Issuance of the MYT Order	Two Month delay from the start of first year of Control Period
Base year considered for MYT projections	Trued up values of FY 06-07 & revised estimates of FY 07-08
Uncontrollable Parameters	Sales & Power Purchase Cost
Controllable Parameters	- O&M - Interest Cost - Return on Equity - Depreciation - Non Tariff Income & - Other Business Income
Time frame for truing up under MYT Regime	Projections for Control Period will be revised once the audited accounts for FY 08 will be avialable
Time frame for truing up under MYT Regime	At the end of each Financial Year
Base line data	T&D : Based on the Past Performance & estimated loss level of 16.5% for FY 08
Incentive / disincentive sharing mechanism in case of over /under achievement of controllable target	At the end of Control Period except O&M cost

9. Jammu & Kashmir – Executive Summary

- **Introduction**

Power Development Department (JKPDD), Government of Jammu & Kashmir is the sole transmission and distribution utility in the State, and is a deemed licensee under Section 6A of the Jammu and Kashmir Electricity Act, Smvt 1997. Initially, it was the sole entity handling generation, transmission and distribution of electricity in the State. Later the Jammu & Kashmir State Power Development Corporation (JKSPDC) was established in 1989 to handle the generation function in the State.

After the issuance of the Regulations for tariff filings, JKPP took more than two years to file its first tariff petition on November 14, 2006 which was later admitted by the Commission on December 21, 2006. JKERC has issued two Tariff Orders (FY 08 & FY 09) for JKPDD and only one Tariff Order for FY 09 for JKSPDC. Before the issuance of first Tariff Order in FY 08, the tariff remained unchanged since April 1, 1999 and the gap between revenue expenditure and revenue receipts was being met by the State Government.

The sales mix in J&K is dominated by domestic consumers followed by small industrial which together form about 53% of the total sales. JKSPDC owns and operates 19 hydel power stations with a total installed capacity of 308 MW. In terms of regulatory ratemaking, J&K followed the Annual Revenue Requirement (ARR) approach.

- **Annual Revenue Requirement**

- As regards operational parameters of generation, the Commission had approved auxiliary consumption for all the plants at 0.50% except for USHP-II at 0.70%. The Commission, had, however not specified any norms for the approval of auxiliary consumption.

- JKERC had taken CAGR of energy sales for past 3 years while approving the sales for metered as well as un-metered category for FY 08. Besides, the SERC has also applied correction factors on account of level of metering in the state, etc. For FY 09, Commission had not approved the category-wise sales as the relevant details were not available.

- JKERC arrived at the T&D loss level of 50.7% for FY 07 and approved the loss reduction by further 4% based on the recommendations of the Abraham Committee. The basis adopted by the Commission for approving the base level T&D Loss was based on the power purchase quantum and approved sales for FY 07. The Commission had not specified any T&D loss levels for FY 09 in the absence of reliable and consistent sales data.

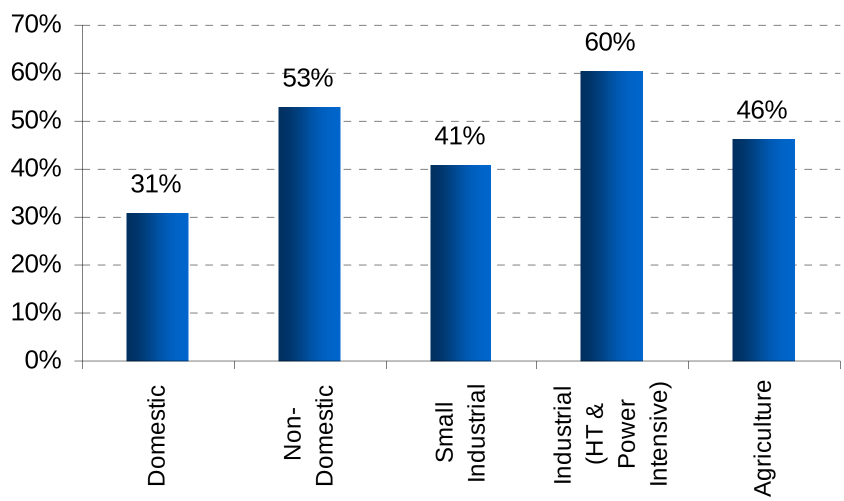
- In addition to CGS and IPPs, the Commission recognizes banking and short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and had considered the same while estimating the power purchase cost in the ARR. The Commission had approved UI charges for FY 08, on the basis of average UI charges paid for the period FY 03 to FY 07, which were Rs.156.37 Crs.

- JKERC has considered the annual escalation (10%), impact of external factors (DA Paid), and benchmarking with other utilities having similar geographical area for approving the employees cost.

- Other O&M expenses were escalated based on annual increase over the actual O&M expenses incurred by the JKPDD for the previous year. For JKSPDC, the Commission had approved the O&M expenses as per the Regulation specifying 1.50% of the capital cost of the project from the COD and had subsequently escalated at 4% per annum.
- JKERC had followed a consistent approach while approving the depreciation for JKPDD for FY 08 and FY 09. Commission had applied average depreciation rate of 3.60% considering the average fair life of 25 years and a residual value of 10%. The Commission had approved depreciation at an average depreciation rate of 2.57% for the hydel plants.
- The interest rates approved by the Commission for FY 07 and FY 08 for Market Borrowings, loans from LIC and loans from REC, were 11.98%, 14.61% and 11.45% respectively. For FY 09, the Commission had approved Interest cost to be same as that approved for FY 08 since the utility had not filed the details of loan and interest payments. The SERC had approved the normative working capital at 10.25% rate of interest for FY 08 while no provision was made for working capital for the FY 09.
- JKERC had not approved any Rate of Return nor did JKPP proposed any rate of return. However, for JKSPDC, Commission had approved ROE at 14% on Normative Equity. The RoE has been calculated on equity deployed which is a maximum of 30% of project cost as arrived by the Commission by applying the maximum ceiling of Rs.5.5 Cr. Per MW and proportionately adjusting for any subsidy received.
- The Commission has not provided any provision for bad debts for tariff computation.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:



- It is clear from the above that the average realization from all the consumer categories is far less than the average cost of supply. The tariff for the domestic consumer is lower than the tariff for the agricultural consumers. The table below shows that all the consumer categories are subsidized and the state of J&K is heavily dependent on the subsidy to meet its ARR.

Particulars	Average cost of supply (Rs./kwh)	Average Tariff (Rs./kwh)	Subsidy (Rs./kwh)	Subsidy(%)
Domestic	4.89	1.51	3.38	69.1%
Non-Domestic / Commercial	4.89	2.59	2.30	47.0%
Irrigation / Agriculture	4.89	2.26	2.63	53.7%
Public Lighting	4.89	3.47	1.42	29.0%
LT Industrial	4.89	2.00	2.89	59.1%
HT Industrial	4.89	2.72	2.17	44.3%
HT Industrial For Power Intensive Industries	4.89	3.49	1.40	28.6%
LT Public Water Works	4.89	3.30	1.59	32.5%

- The Commission had calculated the average cost of supply for FY 08 since details for voltage-wise cost of supply were not available. In FY 08, there was a tariff increase in all the categories, though the increase was not sufficient to meet the revenue gap for JKPDD. JKERC had approved revenue gap for both the years but has not suggested any recovery mechanism to meet the revenue gap.
- JKERC had expressed its desire to introduce Time of Day tariff for certain consumer categories and had directed the JKPDD to submit a detailed implementation plan for implementation of Time-of-Day tariff.

- **MYT Framework**

- The Commission did not specify in either of the Tariff Orders about the implementation of MYT regime in the state.

- **Transmission & Wheeling charges**

- JKERC had not computed the transmission and wheeling charges for open access customers in the state.

- **Subsidy**

- The Jammu & Kashmir Government had signed a tripartite Memorandum of Understanding (MoU) with the Ministry of Finance and the Planning Commission, Government of India in August 2006, to receive grants worth Rs 3,900 Crs over 3 financial years (FY 07 to FY 09). This reform grant has been linked to performance based benchmarks such as reduction in T&D losses, increase in revenue realizations, etc. It has also been linked to the filing of the Annual Revenue Requirement before the SERC and the subsequent issue of tariff orders.
- The details of subsidy/grant actually received during the said years were not available in the Tariff Orders.

10. Jharkhand – Executive Summary

- **Introduction**

The Jharkhand State Electricity Board (JSEB) operates as a bundled utility in the state of Jharkhand. The sales mix in Jharkhand is dominated by industrial followed by domestic consumers which together form about 77% of the total sales. JSEB has a generation capacity of 900 MW comprising of 85% thermal generating stations and balance 15% hydro stations. Tenughat Vidhyut Nigam Limited (TVNL), another generating company in Jharkhand has one coal-based generating plant with an installed capacity of 420 MW. In terms of regulatory ratemaking, Jharkhand has followed the Annual Revenue Requirement (ARR) approach. However, till date only two tariff orders for JSEB for year FY04 and FY 07 has been issued. JSERC has also issued three Tariff Orders for TVNL for FY 05, FY 06 and FY 08.

- **Annual Revenue Requirement**

➢ Since the plants of JSEB were old and operating at sub-optimal levels, JSERC had approved low PLF for the thermal unit. However, the approved PLF (40%) was much higher than the actual PLF of 9.1% for FY 07 (upto Jan). As regards other operational parameters like auxiliary consumption and SHR, JSERC followed the CERC norms considering that the inefficiencies of the board cannot be passed on to the consumer. For approving the PLF for TVNL, JSERC considered the Regulations, planned capital works during the year and PLF of past years. CERC norms were followed for approval of auxiliary consumption and SHR.

➢ In absence of adequate and reliable detailed data on load research, circle-wise consumption for different categories of consumers including un-metered category and the number of hours of supply to various categories of consumers, JSERC had estimated sales for FY 07, based on the approved level of sales for FY04 and CAGR of sales between FY01 and FY04. Since the sales estimate of JSERC was close to the sales estimated by the Board, JSERC had approved the proposed sales for FY 07.

➢ JSERC approved an overall T&D loss level of 36.67% for FY 07 as against the proposed 42.50% considering the favorable consumer mix (industrial and railway) of the State. JSERC had also directed the Board to formulate a task force for supervising the T&D loss in the State and report various efforts undertaken by the Board to reduce losses on a quarterly basis to the Commission.

➢ Since most of the year had elapsed; JSERC had approved power purchase cost based on the actual power purchase cost and merit order dispatch after considering the transmission constraints and contractual obligations from various sources. JSERC had disallowed the power purchased by JSEB from West Bengal State Electricity Board (WBSEB) in FY 07 due to lack of infrastructure to wheel power to Pakur District. Since WBSEB power was the costliest power amongst other sources, JSERC had disallowed the proposed power purchase cost from WBSEB.

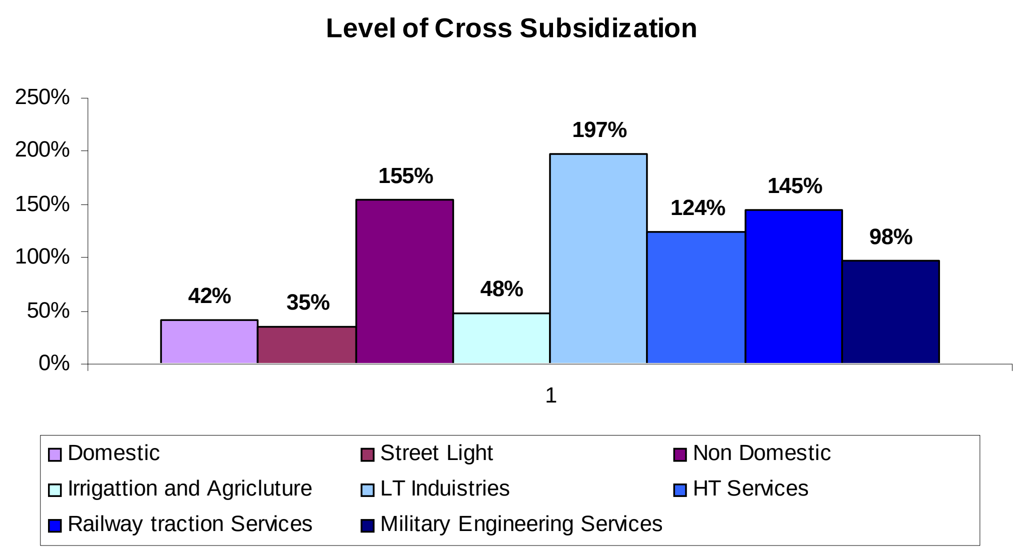
➢ With regard to the approval of O&M expenses for FY 07, JSERC had approved the components of O&M expenses separately. JSERC benchmarked several parameters of employee productivity with those in other states. However, due to data constraints and lack of details submitted by JSEB, JSERC had approved the employee cost based on

FY04 approved employee cost. Also, in view of Supreme Court judgment that pension liability of all retiree before the reorganization of erstwhile combined Bihar to rest with Bihar, JSERC disallowed the pension corpus fund of Rs.60 Crs proposed by JSEB.

- JSERC approved depreciation based on actual depreciation rate of 5.11% for FY 05 considering JSEB did not maintain any Fixed Asset Register and had not submitted any details on asset-wise break up. JSERC also directed the Board to provide data related to fixed assets and maintain an asset register classifying assets on the basis of JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations.
- Interest cost on the outstanding loans was disallowed by the Commission in FY 07 considering the huge cash and bank balances lying with the Board. However, JSEB clarified that the Cash in hand and Bank exists due to discrepancy in reconciliation between the field units and headquarter. Pending reconciliation and clarification, the Commission did not approve any interest cost and directed JSEB to submit the audited annual accounts for the previous years.
- Working capital requirement was approved too meet the shortfall in revenue collection by 5% and short-term PLR of SBI was provided on the same.
- JSERC had approved RoE for generation, transmission and distribution @14% in accordance with the JSERC regulation for FY 07.
- JSERC had not allowed any provisioning for the bad and doubtful debts in line with the JSERC (Terms and conditions for distribution tariff) Regulations, 2004.

- **Tariff**

- Since one order has been issued for JSEB during FY 05 to FY 09, the trend of tariff rationalization and cross subsidy cannot be captured. However, the average realization from each category as a % of average cost of supply is shown below:



- It is clear from the above that non-domestic, LT and HT industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of ±20%, the tariff for domestic and agriculture category has remained about 40-50% of the average cost of supply while the industrial and non-dometic tariff is more than 120% of the average cost of supply.
- JSERC had introduced the Time of Day charge in FY04 Order to offer rebate for power consumption during off-peak hours through the application of concessional night time tariff for HT industrial with connected load above 100 kVA as part of their tariff structure. In FY 07, JSERC directed JSEB to conduct a study on the feasibility and potential savings that will accrue from the introduction of ToD tariffs for categories of LT industrial consumers.

- **Transmission & Wheeling charges**

- In FY 07, JSERC determined the wheeling charges from approved distribution cost to encourage open access within the State. In order to bifurcate JSEB ARR into distribution and retail supply business, JSERC divided the total approved Distribution ARR equally between the two functions in absence of any information submitted by JSEB. Subsequently, JSERC apportioned the total Wheeling ARR to total units approved for sales and computed a wheeling charge of 15.60 Paisa per kWh.

11. Karnataka – Executive Summary

- **Introduction**

The erstwhile Karnataka Electricity Board (KEB) was unbundled and corporatised into a Transmission & Generation Company called Karnataka Power Transmission Corporation Ltd (KPTCL) and a Generating company called Visvesvaraya Vidyuth Nigam Ltd (VVNL), on 1st April, 2000. Thereafter, KPTCL was further unbundled into 5 independent companies effective from 1st June 2002, with one transmission company namely KPTCL and four distribution Companies namely Bangalore Electricity Supply Company Ltd (BESCOM), Mangalore Electricity Supply Company Ltd (MESCOM), Hubli Electricity Supply Company Ltd (HESCOM) and Gulbarga Electricity Supply Company Ltd (GESCOM). In 2005, another DISCOM namely Chamundeshwari Electricity Supply Corporation (CESC) has been established by bifurcating MESCOM.

The sales mix in Karnataka has been dominated by agriculture followed by industrial (small and large), which together form about 58% of the total sales. Further, BESCOM caters to the majority share of sales in Karnataka (more than 50%) followed by HESCOM (approx 18%). The total installed capacity of the State owned generating company i.e. Karnataka Power Corporation Ltd (KPCL) is 5509 MW comprising of thermal (38%) and hydro (68%) plants. In terms of regulatory ratemaking, KERC followed the ARR approach till FY 07 and shifted to MYT framework from FY 08 onwards with a control period of three years.

- **Annual Revenue Requirement**

➢ KERC has been primarily reviewing the previous year actual transmission loss level for KPTCL while approving the target transmission loss for the ensuing year. The approved transmission losses for KPTCL is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	4.18%	4.18%	4.06%	4.06%	4.03%
Actual	4.18%	4.33%	-	-	-

➢ The consumers in Karnataka are categorized under two category i.e. metered consumers and un-metered consumers. The Commission has been uniformly estimating the sales to various metered categories of consumers based on the CAGR for short-term (2 years) to medium-term (5 years), claim of the DISCOMs and previous year growth rates.

➢ Agriculture has the largest share in the overall sales mix for DISCOMs in Karnataka and considering that the majority sales to agricultural consumers is unmetered, the methodology used by the SERC is fairly comprehensive. Under the ARR regime, the Commission had considered the number of installation and their average consumption level of past years for estimating the sales to unmeterd consumers. However, in the MYT Order, KERC had approved the sales based on the CAGR for growth of installations & energy consumption followed by adjustments on account of number of factors including population, Government policies, number of hours of supply, TERI report, sales proposed by the DISCOMs, etc. During the period, the total approved energy sales by the Commission have increased at a CAGR of 14%.

- For approving the distribution losses during FY 06 & FY 07, KERC had reviewed the actual loss levels at an aggregate level as well as losses in towns/cities and the areas excluding town/cities for each DISCOM. Moreover, the Commission had considered the loss reduction roadmap for the State furnished to CEA for approving the loss level for each DISCOM. In the MYT Odrer, KERC has revised the baseline loss level as the DISCOMs were not able to achieve reduction targets approved for FY 07. Subsequently, the distribution loss targets was set for each DISCOM based on the roadmap furnished to CEA for the loss reduction in the State, LT loss level as recommended by TERI and proposed investment for the Control Period. A comparison of proposed vis-à-vis the approved losses for each DISCOM is tabulated below:

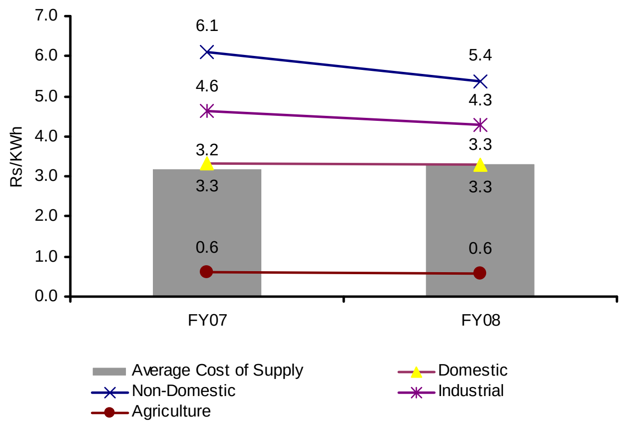
Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM				
Approved in the Tariff Order	21.00%	20.50%	21.35%	20.40%
Proposed by the Utility	-	22.17%	24.41%	23.50%
CESC				
Approved in the Tariff Order	25.03%	22.00%	24.10%	23.10%
Proposed by the Utility	-	23.06%	25.85%	23.79%
GESCOM				
Approved in the Tariff Order	27.05%	27.05%	31.00%	30.50%
Proposed by the Utility	-	28.21%	32.26%	31.00%
HESCOM				
Approved in the Tariff Order	26.37%	25.00%	25.00%	24.00%
Proposed by the Utility	-	25.51%	27.51%	26.51%
MESCOM				
Approved in the Tariff Order	15.36%	15.00%	16.15%	16.05%
Proposed by the Utility	-	15.00%	16.14%	16.04%

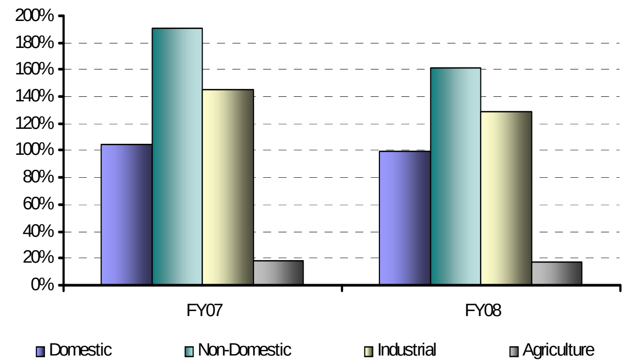
- KERC follows the merit order dispatch (MOD) principle while purchasing power subject to the VVNL Yelahanka Diesel Plant, NPC power plant, Tail-Race Projects, etc being considered as must run power plants. While approving the power purchase cost, the Commission has not made a provision for short term market purchases/ UI purchases to meet the peak demand / energy shortages. However, KERC has approved the UI purchases made by DISCOMs during the true-up exercise.
- The per unit cost of power purchase for BESCOM and MESCOM is higher than the other DISCOMs considering the allocation of costlier sources of power to them by the GoK based on the favorable consumer mix in the distribution area of BESCOM and MESCOM.
- KERC had revised its approach to consolidated approval for O&M expenses in the MYT Order as compared with the earlier approach of approval of individual components of O&M expense i.e. Employee, R&M and A&G expense for the DISCOMs. Though, KERC had considered pay revisions for approving the employee cost for FY 07, any past year pay revision arrears were disallowed considering that pay revision should be compensated by employee productivity. O&M expense approved for the MYT Period was linked with the CPI and WPI and further adjusted for growth in consumers and efficiency factor.

- O&M for KPTCL during the MYT Control Period was approved based on the average O&M cost per bay and per ckt Km for the past four years. Inflation factor comprising of CPI & WPI has been used for escalation of O&M expenses.
- Approval for capital expenditure has been provided based on the scheme-wise details submitted by the DISCOMs. However, the capitalization of assets is considered in the subsequent ARR determination for the purpose of computing depreciation, return and interest cost.
- KERC had been providing deprecation as per the MoP specified depreciation rates on the opening value of GFA. Though, depreciation rates as per KERC MYT Regulations were to be utilized for the purpose of determining depreciation, the Commission had to follow diverse approach for each DISCOM in absence of availability of adequate information. Advance against depreciation has been allowed by the SERC during the MYT period wherever the repayment in a particular year exceeded the depreciation in that year.
- Interest cost had been approved after review of the loan-wise details. The Commission had disallowed any interest cost on the new loans for proposed capital expenditure in the ensuing year for FY 06 & FY 07. However, in the MYT Order, interest on new loans on the proposed capital investment at normative debt amount of 70% was approved by KERC in accordance with the order of the Hon’ble ATE.
- KERC was approving interest on unsecured loans in the FY 06 & FY 07 order instead of separately computing the working capital requirement and interest on the same. However, this approach was revised in the MYT Order to determination of normative working requirement and interest as per short term PLR of SBI on the same.
- The Commission has followed a consistent approach for approval of reasonable return to the transmission and distribution utilities. A Return on Equity of 12% upto FY 06 and 14% thereafter on the opening equity has been approved for both transmission and distribution utilities.
- No provisioning for bad and doubtful debts while determining the ARR of the DISCOMs. However, KERC has proposed to consider the same at the time of true-up based on audited accounts.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:





- It is clear from the above that non-domestic and industrial consumers continue to highly cross subsidize the agricultural categories. As regards NTP stipulation of ±20%, while tariff for domestic category remain close to 100% the non-domestic and industrial pay more than 150% and 120%, respectively of the average cost to serve. In view of the cross subsidization and subsidy received from GoK, the agricultural category is being charged at less than 20% of the average cost to serve.
- Considering the GoK provides large amount of subsidy to the agricultural and unmetered consumers like Kutir Jyoti, the Commission has not made major changes in the tariff for the recovery of the revenue gap. KERC has rationalized the tariff across categories each year primarily to reduce the burden on subsidizing categories and load it partially on the subsidized category. However, KERC has not provided any road map for reduction in cross subsidy
- KERC specifies two sets of tariff for the subsidized category in the Tariff order i.e. including and excluding subsidy. The Commission had been providing clear directions to the DISCOMs to apply the tariff excluding subsidy in case of non-receipt of subsidy from the GoK on time.
- As a first step towards reflection of efficiency in the tariffs of the DISCOMs, KERC had introduced the differential tariff in FY 08 for the State by making readjustment of the subsidy allocation among the DISCOMs. The tariff of BESCOM consumer categories has been approved at lower rates vis-à-vis tariff in for other DISCOMs.
- KERC has been determining Time of Day (ToD) tariff in its tariff orders since FY 06 for the HT & LT categories of consumers for better demand side management. A differential ToD tariff has been approved for each category of consumer. The Commission has also provided the flexibility to the consumers for adoption of ToD tariff.

- **Multi Year Tariff**

- KERC has introduced MYT Framework in the State of Karnataka from FY 08 onwards with a control period of three years. The controllable factors approved by the SERC in its regulations are:
  - Targets (for which the trajectory has been stipulated)

- Operation & Maintenance expenses
- Employee Cost
- Admn.& General expenses
- Interest & Finance Charges
- Return on Equity
- Depreciation
- Non-tariff income

Uncontrollable factors consist of:

- Power Purchase Cost
- Expenses on account of inflation
- Taxes on Income

➢ KERC has also approved a mechanism of sharing of incentive/ disincentive wherein any incentive on account of overachievement in loss level would be shared between the distribution licensee and the consumers in the ratio of 70:30 while the loss would be entirely to the account of the distribution licensee. However, the Commission has exempted the DISCOMs from any incentive/disincentive mechanism for the first year of the Control Period.

- **Transmission & Wheeling charges**

➢ The transmission tariff for FY 05 to FY 07 has been computed based on per unit basis considering the approved net energy delivered at the interface points for long-term transmission customers. However, for the long-term and short-term open access consumers the transmission charges has been computed based on per MW capacity allocation.

➢ In the MYT Order for FY 08 & FY 09, the Commission has approved similar transmission tariff to be applicable on DISCOMs as well as long-term open access transmission customers based on capacity allocation. Short-term open access transmission charge is 1/4th of the long term charges and it is applicable based on the time.

➢ The Commission has implemented the open access in three stages within the State by approving transmission and wheeling charges in cash and kind to be recovered from the long-term and short-term open access customers. The charges in cash and kind are determined for each DISCOM separately.

DISCOMS	FY 06 & FY 07			FY 08		
	33 kV/11kV	LT	Total	HT	LT	Total
BESCOM	5.50%	8.26%	13.76%	4.06%	9.74%	13.80%
				7.81%	11.71%	19.52%
GESCOM	5.12%	7.70%	12.82%	6.01%	8.69%	14.70%
HESCOM	8.59%	12.88%	21.47%	12.54%	7.62%	20.16%

DISCOMS	FY 06 & FY 07			FY 08		
	33 kV/11kV	LT	Total	HT	LT	Total
MESCOM	5.86%	8.80%	14.66%	6.22%	7.66%	13.88%

Wheeling charge *(Paisa per unit)*	FY 06 & FY 07		FY 08	
DISCOMs	**HT**	**LT**	**HT**	**LT**
BESCOM	10.58	24.68	6	14
MESCOM	16.44	38.37	16	36
HESCOM	13.35	31.15	20	47
GESCOM	13.58	31.70	17	38

- Further, KERC had also computed a common cross-subsidy surcharge in the FY 06 order which was applicable for the open access consumers. However, in the MYT Order, KERC had determined a differential cross-subsidy surcharge for the DISCOMs considering the different levels of realization and cost structure.

Surcharge *(Paisa/Kwh)*	**FY 06 & FY 07**	**FY 08**	
DISCOMs		**66 kV and above level**	**33kV/11kV level**
BESCOM	115	93	78
CESCO		52	20
GESCOM		86	67
HESCOM		66	22
MESCOM		62	34

- KERC has proposed to levy 80% of the above surcharge computed by the Commission to encourage open access in the State. The table below provides details about the cross subsidy surcharge for each DISCOM.

- **Subsidy**

- GoK had been committing to pay 18 units per month at the cost of supply for the Kutir Jyoti category during FY 06 to FY 09. Every year the GoK announces the subsidy it intends to provide to the power sector. Accordingly, the Commission proceeds to allocate the subsidy to BJ/KJ installations and the balance amount of subsidy to IP sets. The table below summarizes the total subsidy support proposed by the GoK for power sector:

Particulars	FY 06	FY 07	FY 08
Subsidy support by GoK (Rs. Crs)	1726.30	1780.61	1780.00

12. Kerala – Executive Summary

- **Introduction**

Kerala State Electricity Board (KSEB) was constituted in 1957 as per section-5 of the Electricity Supply Act 1948. Since its inception, the KSEB is operating as a bundled utility and has been responsible for the generation, transmission and supply of electricity in the State of Kerala. The sales mix in Kerala is dominated by domestic consumers followed by industrial (HT and large), which together form about 70% of the total sales. The generation mix is dominated by hydro (95%) followed by diesel (5%). In terms of regulatory ratemaking, kerala followed the Annual Revenue Requirement (ARR) approach.

- **Annual Revenue Requirement**

➢ KSERC considered the inflow data of the past ten years and had worked out the monthly average of the past 10 years to determine the availability from own hydel plants. Commission had also taken into account the present level of storage, hydel generation schedule, inflow during the year and the storage maintainable at the beginning of each water year. Though the diesel plants did not fall under the merit order, the Commission had allowed the generation from these plants for meeting the peak load and the load requirements during the summer months. For approving the variable cost, the Commission has accepted the projections of the KSEB.

➢ KSERC has followed the CAGR of past 3 to 4 years and year-on-year sales growth for sales estimation. Besides, SERC has also applied correction factors on account of increase in number of connections, backlog applications to be serviced on a time bound manner, etc.

➢ Commission in all the Tariff Orders had approved the T&D loss level targets for the Board but for the FY 09, the Commission had also approved the AT&C loss target considering 98% collection efficiency. Commission had considered the actual/estimated loss level achieved by the Board in the previous year while approving the loss level for the year. The Commission had been proactive in reducing Distribution loss in the state and had given directions which include strengthening of Anti-Power Theft Squad, speedy replacement of faulty meters and computerization of billing, energy audit, encouraging the HT/EHT consumers to improve power factor, etc. A comparison of proposed vis-à-vis the approved losses is tabulated below:

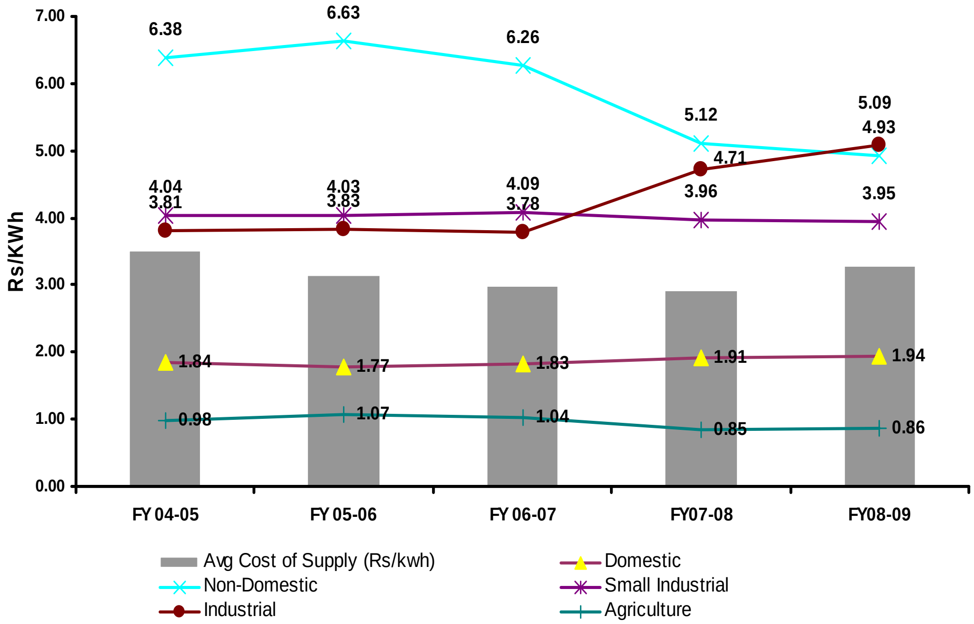
T&D Losses	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	24.45%	21.89%	20.45%	19.55%	17.92%
Proposed by the Utility	25.31%	22.59%	21.58%	19.72%	18.48%
Actual claimed by Utility	24.95%	22.96%	21.55%		

➢ KSERC ordered the KSEB to follow merit order dispatch (MOD) principle while purchasing power subject to the Nuclear stations MAPS and Kaiga being considered as must run power plants. In addition to CGS and IPPs, the Commission recognizes short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and has considered the same while estimating the power purchase cost in the ARR.

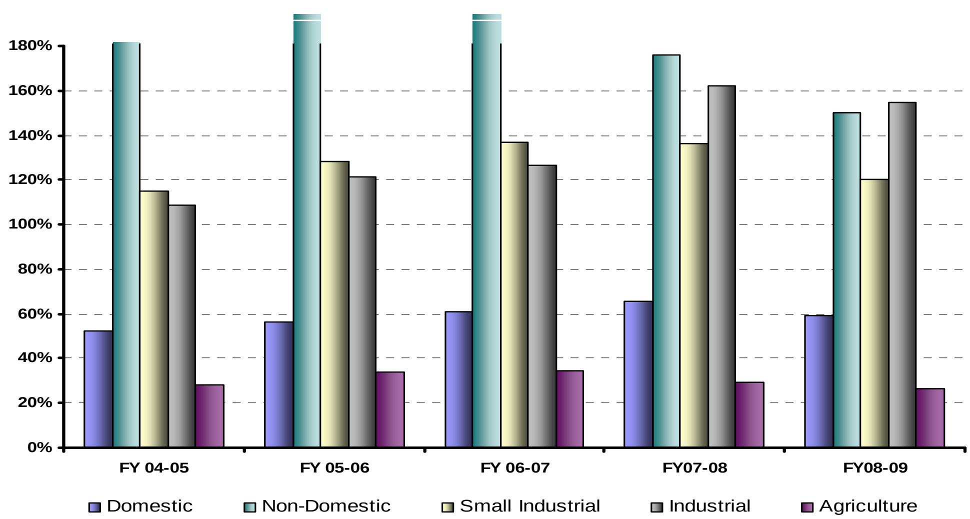
- KSERC took into account external factors such as the wage revision, DA announced by the State Govt, etc while approving the employee costs. KSERC has approved the escalation in the range of 3% to 5% in respect of basic salaries and 5% increase in the terminal benefits. Commission has also allowed the actual DA paid by the KSEB along with the arrears. The additional expenditure on account of new recruitments to fill up the essential vacancies has also been approved by the Commission.
- The Commission has followed a mix of yearly escalation (in the range of 6% to 30%) and a certain percentage of gross fixed assets (GFA) being 1.17%, 1.17%, 1.25% and 1.46% for FY 06, FY 07, FY 08 and FY 09 respectively for approving R&M expenses.
- KSERC primarily took into account the CERC norms while approving depreciation for FY 06 to FY 09.
- Broadly, the Commission has considered the approved capital expenditure, the amount of borrowing and the repayments made for arriving at the interest cost of the year. The SERC has also provided for interest on security deposit. Commission has allowed the interest on working capital as proposed by the KSEB with certain disallowances but has not specified any norms for computing interest on working capital. The Commission also directed KSEB to utilize the security deposits from the consumers and amount available in PF account for working capital requirement.
- KSERC has allowed a statutory return of 3% on the capital base at the beginning of the year for FY 05. For the rest of the period (FY 06 to FY 09), the Commission has uniformly adopted Return on Equity (RoE) of 14% as the parameter for allowing return.
- KSERC had not approved the bad and doubtful debts for the FY 05 because the Commission did not want to penalize genuine consumers due to inefficiency of the Board and the undue advantage taken by unauthorized or illegal consumers. However, Commission had made a provision for bad and doubtful debts for the rest of the years (FY 06 to FY 09) but had not specified norms for such approval.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:



7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
Rs/KWh
6.38
6.63
6.26
5.12
5.09
4.93
4.71
4.04
3.81
4.03
3.83
4.09
3.78
3.96
3.95
1.84
1.77
1.83
1.91
1.94
0.98
1.07
1.04
0.85
0.86
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture



180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture

- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of ±20%, while tariff for domestic and agriculture category has remained about 50-60% and 20-30% of the average cost of supply, non-domestic and industrial pay above 180% and 120% of the average cost of supply respectively.
- During the period FY 05 to FY 09, Commission has not increased the consumer tariff in the state except for the FY 08. Though there was a revenue gap during the FY 05 and FY 06 but the same was approved to bridge through State Govt. subsidy. In the FY 07, Commission had determined a revenue surplus but the same was not utilized for the tariff rationalization in the absence of consumer category-wise cost of service. The revenue surplus for FY 08 was utilized by the Commission for truing-up the revenue gap for the period FY 03 to FY 05. Commission had considered minimum tariff increase in FY 08 for majority of consumers, reduction in cross subsidy among highly skewed category of consumers (Commercial) etc.
- Though the Commission in the Tariff Order for FY 08 has reduced the tariff for LT commercial category but a clear road map for reduction in cross-subsidies has not been provided for any of the year from FY 05 to FY 09.
- In Kerala, the Commission has made it mandatory for the HT/EHT consumers to install TOD meters. All EHT consumers (except Railway Traction) and all HT/Deemed HT consumers (except Cinema theatres, drinking water supply pumping stations of Kerala Water Authority, Corporations, Municipalities and Panchyats) are billed on differential pricing .Also in case of HT/Deemed HT consumers having only one shift during day time and if they shift the working time to off peak time, they will not be eligible for incentive.

- **Multi Year Tariff**

- Commission in the Tariff order for FY 08, directed the Board to submit a detailed Multi Year Tariff petition for FY 09 with complete supporting data. The Board did not comply with the same.

- **Transmission & Wheeling charges**

- Commission has not computed the transmission and wheeling charges for the open access consumers in the Tariff Orders issued between FY 05 to FY 09. However, the Commission had given directive to KSEB to submit a detailed proposal on principles of determination of wheeling charges.

- **Subsidy**

- The Government provides subsidy to the KSEB by cash as well as by retention of electricity duty. Commission had not computed the consumer category-wise subsidy required but had considered a fixed amount of subsidy while computing the revenue gap for the period FY 05 to FY 06. KSERC had not considered subsidy support form the Govt. for fixing the tariff for FY 07 to FY 09.

13. Madhya Pradesh – Executive Summary

- **Introduction**

The Madhya Pradesh Electricity Board (MPSEB) was unbundled and the functions of Generation, Transmission and Distribution were transferred to five entities. The O&M agreement between the MPSEB and the five entities came to an end and the entities began to function independently from 1st June, 2005. The sales mix in the Madhya Pradesh is dominated by Agriculture(28%) followed by Domestic(25%) which is closely followed by Industrial (small and large) 24%, which together account for approx. 75% of the total sales. The generation mix comprises of generation only by coal and hydro. Coal accounts for (71%) and Hydro accounts for (29%).In terms of regulatory ratemaking, Madhya Pradesh followed the Annual Revenue Requirement (ARR) approach till FY 06 and the MYT was launched with effect from FY 07.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, MPERC followed the past performance of power plants, CERC/ CEA norms, and benchmarking the performance with generating stations of other utilities. The PLF was approved taking the past performance maintenance schedule of the units and targets set by the Commission through its earlier orders. For MYT control period PLF was approved as per the norms and principles elaborated in MPERC (Terms and Conditions of Generation Tariff) Regulations 2005.With respect to Station heat Rate the Commission approved it based on the past trend, the recommendation of CEA and CERC's existing norms. For MYT control period Commission approved SHR based on its Terms and Conditions of Generation Tariff Regulations 2005.

➢ MPERC had approved an incentive formula for the Hydro stations wherein the incentive was allowed if the capacity index was more than the normative level i.e. above 90% for purely run of the river and above 85% for storage type stations. For Thermal stations Commission allowed an incentive for actual generation in excess of generation based on target PLFs as approved for the year. Incentive was payable at a flat rate of 25.0 paise/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to target Plant Load Factor. MPERC also has in place a Variable Cost Adjustment formula, which is used to pass through the increase in fuel costs subject to Commissions approval.

➢ The SERC computed Transmission losses, as per the moving averages of the scheduled losses of the last 52 weeks for FY 08 and for the FY 09 the Inter state transmission losses were calculated separately for eastern region and western region stations . Transmission Losses as approved by MPERC, are tabulated below:

Transmission Loss	FY 06	FY 07	FY 08	FY 09
Transmission Loss (%)	5.22%	5.00%	4.90%	4.90%

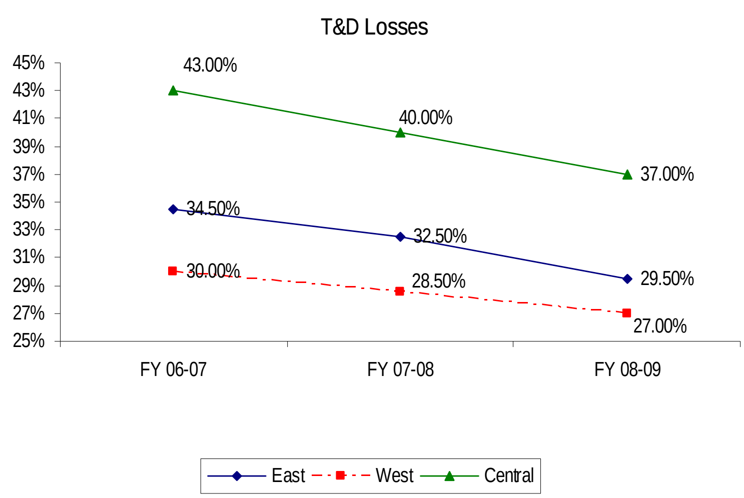
➢ MPERC for metered categories analyzed the past trends and at times considered the CAGR of past 5 year sales. The Commission has not pruned the sales and has accepted the sales projections of the DISCOMs. For unmetered Domestic category SERC came up with norms to project their demand. The norms followed were :

Assessed units for un-metered domestic connections (units per connection per month)	
Urban	Rural
77	38, 30 for FY 09

- Agriculture has the largest share in the overall sales mix for DISCOMs in Madhya Pradesh. The SERC had directed the MPSEB to conduct a study based on scientific methods to arrive at a reliable estimate of load factor for agriculture sales. MPERC came up with the set of norms and followed them for FY 08 and FY 09 for agriculture consumers in Urban and Rural areas. The norms followed were:

Assessed units for un-metered agriculturalconnections (units per HP per month)	
Permanent	Temporary
100	130

- For Distribution losses the Commission in the earlier years due to lack of any set target had accepted the actual distribution losses but later on the state government came out with annual milestones for distribution losses for the period FY 07 to FY 11. The graph below shows a comparison of approved Distribution Losses.



- MPERC revised the allocated generating capacities as per revised allocation notified by the GoMP and in the TO of FY 09 it considered the MP's share of power in bilateral stations as well which it was not considering before. The East DISCOM was allocated 30.76%, West was allocated 36.49% and Central was allocated 32.74% of the Total capacity (as per TO FY 09). The Commission allowed DISCOMs to make short term power purchases at an approved MP Tradeco rate. The DISCOMs were allowed to sell surplus energy to other DISCOMs (intra state) with short fall. The rate for such sale was based on the Monthly Pooled Cost of Power. The Commission further directed that any surplus left after Intra state trading was to be used for external trading and the revenue earned would be adjusted against the power purchase cost. The table below gives details about the short term power purchase of each DISCOM.

Short term Power purchase	FY 07	FY 08		FY 09	
		MUs	Cost/unit	MUs	Cost/unit
East	Wind 5 MU @ Rs 2.75/unit Other sources 484.34MU @ Rs.1.539/ unit	879.1	1.84	1164.44	2.44
West		551.6		1382.48	
Central		1312.41		1033.06	

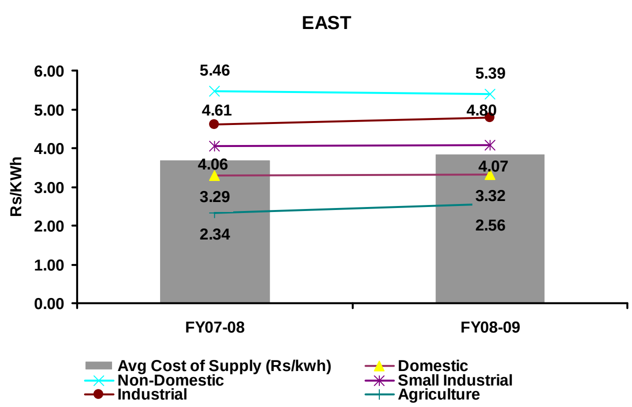
- For the earlier two tariff orders the MPERC had segregated the O&M expenses and had worked out each component by applying escalation rates. The employee expenses for the FY 05 were escalated by 7% and DA rates applicable to MPSEB employees had been considered at 61% of Basic and Additional Pay for FY 05.The terminal benefits were also considered .For the true up of FY 06, the Commission carried out a benchmarking exercise of the O&M expenses of state with that of other states and came out with the conclusion that MP DISCOMs had spent less as compared with the distribution companies in other States. For MYT control period as per norms O&M should be based on the metered consumers, metered sales and 33 &11 KV network length. For MYT Control period Commission for the time being determined normative O&M expenses for FY 08 and FY 09 only on the ckt-km of HT lines and transformation capacity existing as on 31st March 2006 and 31st March 2007 respectively and for other two determinants of normative O&M expenses i:e metered consumers and metered sales the Commission considered them at the end of year before previous year.
- Post Unbundling for MYT control period Commission considered CERC rates while approving depreciation (Generation - thermal stations - 3.51% to 3.66%, Generation - hydel stations - 2.68% to 2.77%, Transmission - 3.78%, Distribution - 3.58% to 3.64%) based on their blocks of assets. The assets which had already been depreciated upto 90% were not considered for FY 08 to FY 09. Advance against depreciation had not been allowed by the SERC.
- For interest on Loans the Commission has followed the policy of mapping loans with the Fixed Assets and CWIP in order to identify the debt and equity eligible for earning Interest and Return. The Loans which the Commission had not been able to map had been taken as working capital loans. For MYT Control period interest had been allowed only on such debt at the weighted average interest rate of all loans as on 31st March of the year before previous for which audited balance sheet was available. The interest on working capital for Wheeling Activity was based on 1/6th of annual requirement of inventory for previous year, 1/12th of O&M Expenses, 2 months of average wheeling charges. For interest on working capital for Retail Sale Activity the norm followed was 1/6th of annual revenue requirement of inventory for previous year, Receivables equivalent to 2 months of average billing Less 1/12th of the power purchase expenses and Consumer Security Deposit.
- The Commission allowed interest on Consumer Security Deposit @ of 6%. Interest on Working capital for MYT control period was segregated into interest for Wheeling and Interest on WC for Retail activity. For the year FY 08 the Commission allowed interest on

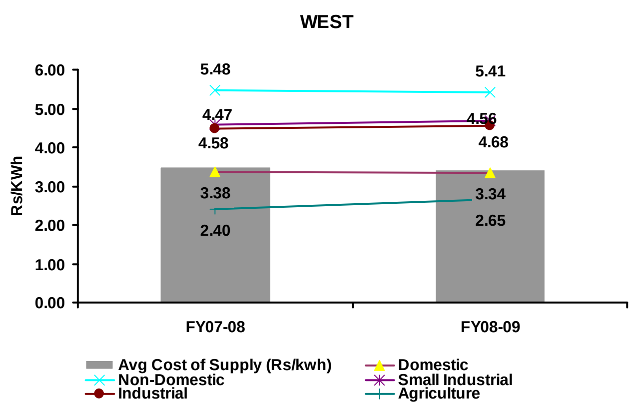
working capital for wheeling and retail sale @ 12.75%. For the year FY 09 the same was 14.25%.

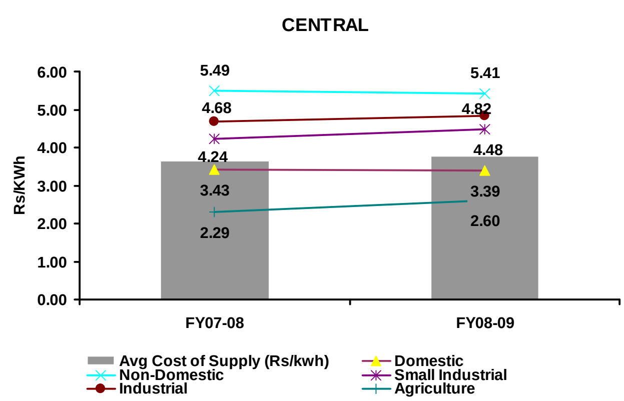
- Pre unbundling and for FY 06 in case of DISCOMs the Commission approved Return @ 3%of GFA. For MYT control period for DISCOMs, GENCO and TRANSCO Commission approved return of 14% on Equity. For GENCO the Commission did not give Return on Rana Pratap Sagar and Jawahar Sagar projects as they are in Rajasthan.
- MPERC had approved the provision for bad debts limited to 1% of total projected sales revenues as per the provisions of its regulations. The sales revenue was worked out using the approved sales forecast and the final tariff rates.

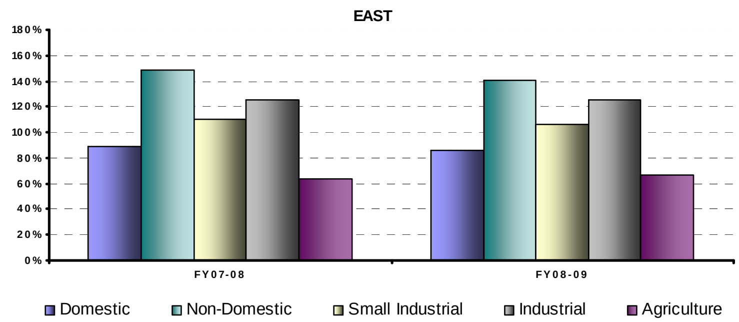
- **Tariff**

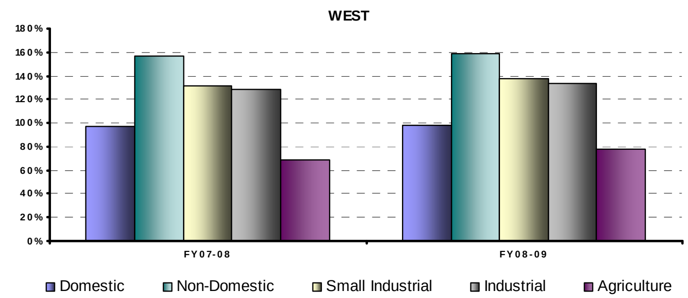
- MPERC had carried out a thorough analysis of the Cross subsidy in the state and has made a concerted effort for the reduction in cross subsidy by increasing tariffs for categories which were being subsidized. The Analysis made by the Commission showed that the cross subsidy has been reducing in state and the state is near achieving NTP +- 20% mark. The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:

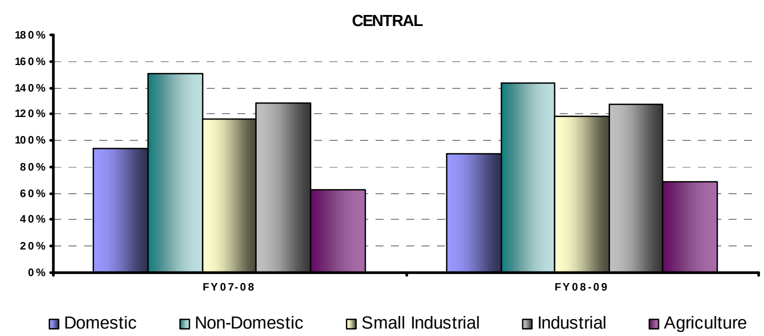


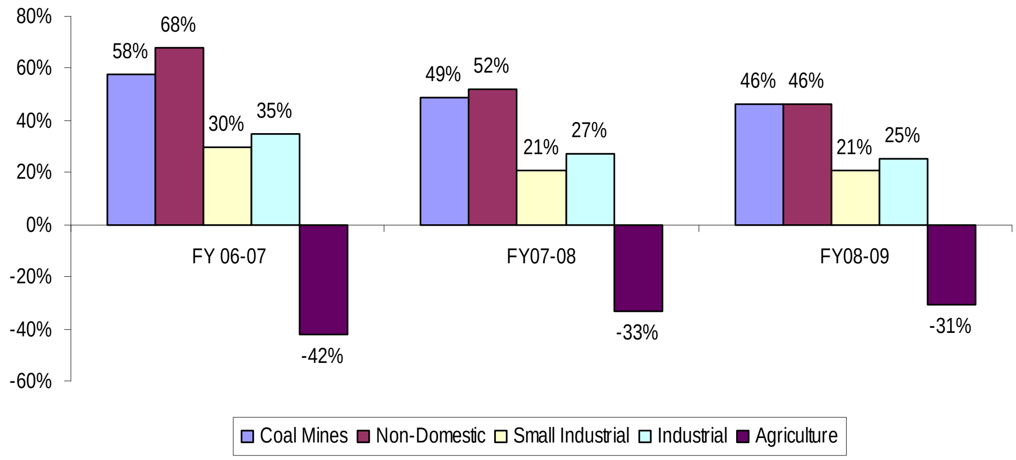





EAST
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


WEST
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


CENTRAL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture



- The graph above shows the categories which have been subsidizing and the ones which are being subsidized. The Commission's analysis showed a gradual reduction in cross subsidization in the state.
- In FY 07, Commission filled up the combined gap of Rs. 328.61 Crs, by increasing tariffs thus leaving a gap of Rs. 9.50 Crs. For FY 08, the Commission did not direct the DISCOMs about the means of covering gap and directed them that their position would be reviewed while truing up for FY 08. The Commission had changed the tariff structure for the year. In the year 2008-09 the Commission while calculating the gap included the effects of true up of MP Genco for the period June 05 to March 06 and true up of MP DISCOMs for the period June 05 to March 06. There was tariff increase in the year 2008-09. All of these led to revenue surplus in case of all the DISCOMs.
- In the State of MP, Time of Day tariff exists and the Commission has fixed Time of Day surcharge for four hours (From 6PM to 10PM) and rebate for eight hours (10PM to 6AM next day).

- **Multi Year Tariff**

- MPERC directed the utilities to introduce MYT and directed them to file their first MYT tariff order from FY 07 to FY 09. The DISCOMs could furnish the relevant information only for FY 07 and not for the rest of the years. Thus, the Commission revised the Control period from FY 07-09 to FY 08 to 10 in case of DISCOMs. The Commission did not revise the estimates as asked by utilities and categorically mentioned that any midterm revision in the norms defeats the purpose of MYT frame work.

- **Transmission & Wheeling charges**

- Transmission charges are calculated for long term and short term open access consumers. The short term open access transmission charge is 1/4th of the long term charges. The Commission further calculated charges for short term access consumers consuming power for different set of blocks. The transmission charges were also calculated for power from non conventional sources. The transmission charges for non conventional sources were shared between the Government of MP and the non-conventional energy generators in the ratio of 2:1.

Table: Approved Transmission Tariff

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Total Transmission capacity (MW)	5563	6011	7220	8170
Transmission charges to Long Term open access customers (Rs./MW/Day)	2276.34	2728.73	2454.93	2254.99
Transmission charges to Short Term open access customers (Rs./MW/Day)	569.09	682.18	613.73	563.75
Transmission Charges payable fo Non-conventional energy (Rs./unit)	0.42	0.51	0.45	0.42

- The Commission calculates the Wheeling ARR separately. In the Terms and Conditions of tariff regulations for 2005 the Commission has segregated the components in wheeling and retail activities. The Wheeling charges for the MYT control period could not be calculated as per the regulations due to lack of segregation of some components therefore the Commission adopted an adhoc measure to arrive at Wheeling ARR for the control period.

Particulars	East	West	Central
Wheeling ARR for FY 08 (Rs. Crs)	470.24	608.36	432.24
Wheeling ARR for FY 09 (Rs. Crs)	503.29	605.34	456.24

- **Subsidy**

- The Government of MP provided tariff subsidy to the DISCOMs. The subsidy was provided to un-metered consumers for domestic and agricultural categories, both for urban and rural areas. In the True up order for FY 05 the DISCOMs notified receiving a revenue subsidy of Rs.293.63 Crs and in true up order of FY 06, the DISCOMS notified receiving revenue subsidy of Rs.418.6 Crs.. Nothing about subsidy was mentioned in MYT tariff order for FY 08-10.

14. Maharashtra – Executive Summary

- **Introduction**

The Maharashtra State Electricity Board (MSEB) was restructured into four entities – MSPGCL (Generation), MSETCL (Transmission), MSEDCL (Distribution) and MSEB Holding Company through a state government order in June 2005. Besides, there are two privately-owned vertically integrated utilities viz. Tata Power Company (TPC) and Reliance Energy Limited (REL) with 2027 MW and 500 MW of generating capacity respectively who distribute power in the city of Mumbai. In addition to TPC and REL, BEST supplies electricity to a limited area in the city of Mumbai. There are 16 major consumer categories in the state with sales mix dominated by industrial and agriculture categories. The retail tariffs are different for different DISCOMs due to differences in their revenue requirement, consumption mix, LT:HT ratio, etc. The tariff orders for FY 05 and FY 06 were not issued by MERC due to the ongoing process of unbundling in the state; however, orders for TPC and REL were issued for the same years. Further, the Commission followed the Annual Revenue Requirement approach till FY 07 and shifted to MYT framework from FY 08 with a control period of three years spanning till FY 10.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, MERC estimated the average availability of MSPGCL's power plants in the last 3 years and accordingly set out the target PLF for FY 07 by considering 95% loadability for all the stations. For the MYT control period, MERC has approved the availability projections, as provided by MSPGCL, and the stations for which MSPGCL had projected availability of less than 80%, the Commission had considered the availability of 80%. PLF was determined at 95% loadability. In its MYT order, MERC clarified that in case the achieved availability for a thermal station is less than 80% on a monthly basis, it shall deduct the recovery of Annual Fixed Charges during the truing-up. In terms of incentives, MERC has approved incentive of 25 paisa/kWh on overachievement of the target PLF (80%). In case of Uran Gas based station, considering the short supply of gas, MERC approved the availability, as projected by MSPGCL, for recovery of full fixed charges.

➢ As regards station heat rate (SHR), MERC considered the CEA's guidelines for units which are less than 200 MW and more than 25 years old, which prescribe a 10% deviation from the design heat rates. For units of sizes 200 and 500 MW and above, SHR has been approved as per its own tariff regulations. For the control period, the Commission benchmarked the unit-wise heat rate achieved by MSPGCL thermal stations with the heat rate of other thermal power stations of similar vintage. The Commission had then taken a heat rate degradation of 0.2% per annum for approving heat rate during the control period. Coal transit loss and specific oil consumption for the coal-based stations were approved at 0.8% and 2 ml/kWh respectively for the control period despite the actual levels, as proposed by the utility being on the higher side.

➢ Regarding fuel costs, MERC approved the utilisation of washed coal and imported coal, as proposed by MSPGCL. It included other costs such as lubricants, chemicals and water charges, as part of the variable costs while estimating the energy charges. No escalation in price of fuel was considered while estimating the revenue requirement, as the same was being taken care of through a separate fuel cost adjustment formula.

- MERC engaged Central Power Research Institute (CPRI) to study transmission loss in the MSETCL network, which arrived at a transmission loss level of 4.45% for FY 05. Considering certain limitations in the CPRI study and also the norms adopted in other state transmission systems, MERC approved 4.6%, as the transmission loss for FY 05 and FY 06. This was further increased to 4.85% for FY 07 and the MYT control period. The transmission losses, as approved by MERC, are tabulated below:

Particulars	FY 06	FY 07	FY 08	FY 09
Transmission Loss (%)	4.60%	4.85%	4.85%	4.85%

- MERC developed a transmission pricing framework in June 2006, as per which the intra-state transmission system shall comprise of the composite transmission network of MSETCL, TPC, REL and any other transmission licensee, in future, and cost of each would together form the pooled cost to be recovered from the Transmission System User (TSU) in proportion of its share in the 'peak demand' during each month of the previous year. This would however be replaced by contribution to Co-incident Peak Demand' (CPD) once adequate metering is in place.
- The sale mix is dominated by Industrial category (44%) followed by agriculture (25%) and domestic (18%). MERC has determined the sales for various distribution licensees separately and as per the area of distribution, consumer mix, past trends of sales, prevailing demand-supply gap and restricted demand. For MSEDCL, unmetered agriculture sales were determined based on consumption norm of 1318 hours/HP/year, which was further based on recorded consumption of metered consumers.
- Based on a thorough analysis of the technical and commercial loss and circle-wise distribution loss, MERC has set out a loss reduction target of 4% per year for the MYT control period while also directing the MSEDCL to target poorly performing divisions and attempt to reduce the losses on a priority in such divisions, using 'ABC' analysis. The Commission did not reduce the power purchase on account of the approved trajectory of reduction of distribution losses but has considered additional revenue through the additional sales, while determining the revenue gap. The table below shows the comparison of approved and trued-up distribution losses for FY 05 through FY 09.

Particulars	FY 05	FY 07	FY 08	FY 09
MSEDCL				
Approved Distribution loss		34.97%	31.7%	22.50%*
Trued-up		30.2%	26.20%	
TPC				
Approved Distribution loss	2.4%	2.93%	2.93%	2.93%
Trued-up	2.39%	2.30%	NA	
REL				
Approved Distribution loss	12.5%	11.52%.	11.50%	10.75%
Trued-up	12.1%	12%	11.00%	
BEST				
Approved Distribution loss		11.5%	11.00%	10.50%
Trued-up		11.90%	11.00%	

**Projected based on the revised loss for FY 08.*

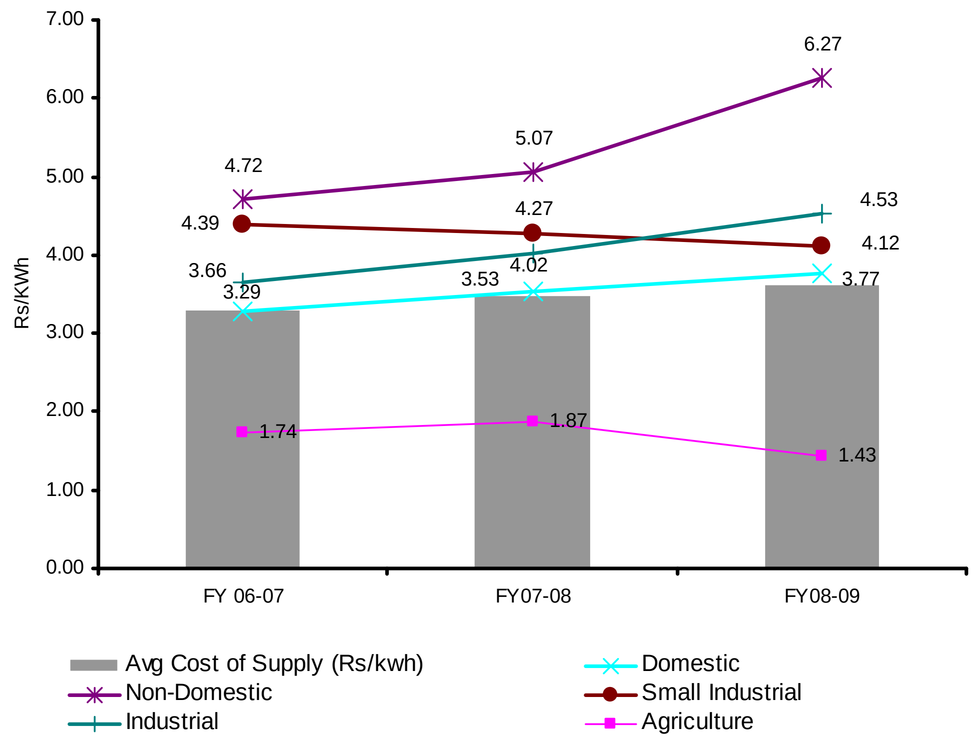
- Besides estimating the power purchase cost of CGS and IPPs, MERC has been projecting bilateral purchase and UI drawals as a source of power purchase, however, it notes that such sources as UI drawls cannot be considered as a fixed source and it should be tapped only to meet the demand-supply gap.
- As regards O&M expenses, in generation, MERC considered R&M, A&G and employee expenses separately till FY 06 subsequent to which i.e. in FY 07, the Commission switched over to approving the O&M expense in lumpsum. For the control period, the Commission considered the O&M expenses approved in FY 07 as the base amount and applied an escalation rate of 5.38% on account of increase in Wholesale Price Index (WPI) – 60% weight and Consumer Price Index (CPI) – 40% weight. In transmission and distribution, MERC however, continues to estimate the O&M expenses item-wise. The employee costs have been estimated taking into account the past trends and the CPI Index while also factoring in the effect of wage revision and Voluntary Retirement Scheme from time to time. The R&M expense has been estimated taking into account the average of its percentage of opening GFA for the past five years. For the control period, R&M expense has been approved considering the inflationary impact (based on the increase in WPI). A&G expense too has been approved based on past trends in the actual levels and the inflationary increases (WPI and CPI).
- For each of the years during FY 05 to FY 09, MERC has approved capital expense based on a detailed review of each scheme. Schemes with capital expense of less than Rs. 10 Cr do not require prior approval of the Commission while those with Rs.10 Cr and above need to be submitted with DPR along with cost benefit analysis.
- As regards depreciation, in generation, MERC took into account the average of the depreciation rates in the last 3 years for approving depreciation for FY 06. For the MYT control period, the Commission has followed its tariff regulations. Overall, depreciation, as a % of GFA shows a downward trend from 5.17% in FY 06 to 3.3% in FY 09, as approved by the Commission. While certain amount of Advance against Depreciation (AAD) was approved in FY 07, no such approval was made during the control period. In transmission too, MERC approved the depreciation based on average of the depreciation rates in the last 3 years - 5.99% of GFA for FY 06, which has been reduced to 3.13% in FY 09. For the MYT control period, the Commission has followed its tariff regulations, and it also provided for AAD throughout the control period.
- MERC did not allow any interest cost to be charged, as part of the ARR, until the asset is capitalized and is declared under commercial operation. Instead all such interest expenses that are incurred while capital works are in progress have been allowed to be capitalized. For the control period, MERC approved interest cost @ 10.5% for the new loans based on the rate of interest at which loans have been recently disbursed by PFC/REC to other state utilities and the weighted average interest cost of existing loans. For TPC, MERC approved interest cost @8.9% (IDFC loan), as proposed by TPC. For REL, this was approved @ 8%. For interest on working capital, the prime lending rate (PLR) of SBI has been used as a benchmark.
- For FY 06, the return to MSPGCL and MSETCL was allowed @ 4.5% of NFA. For the remaining years including the control period, return has been allowed in terms of

RoE@14%. For DISCOMs, return has been allowed based on RoE@16% except for BEST who was allowed interest on internal funds @ 6% for FY 07 in line with a judicial order, which, however, was replaced by RoE@16% for the subsequent years.

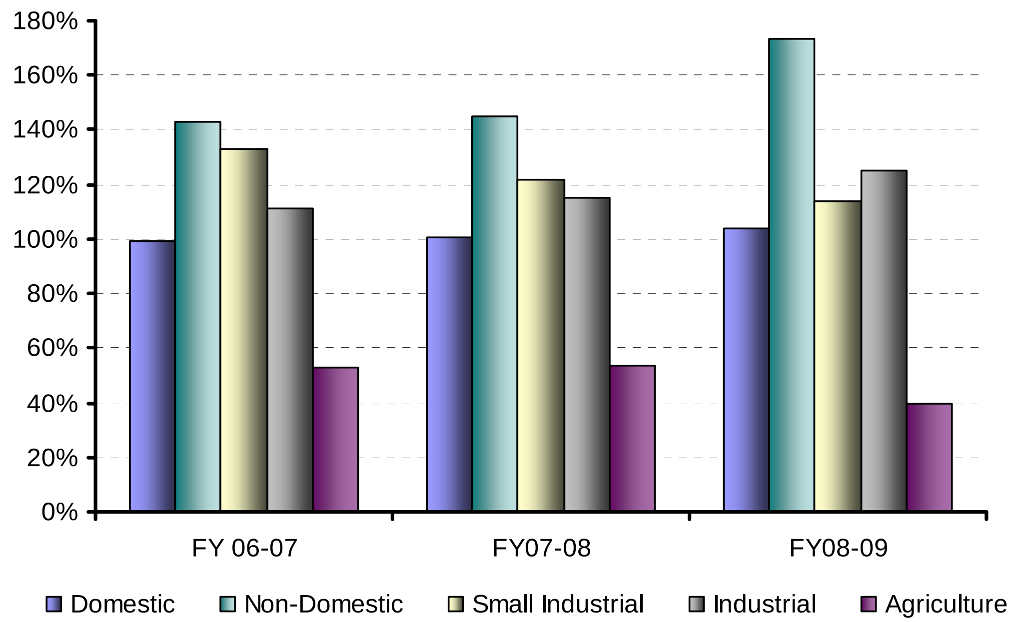
- Regarding bad debts, in case of MSEDCL, this has been approved @1.5% of billing amount. For TPC, MERC approved it, as proposed by TPC, as the same was less than the normative level. For REL, a provision of 5% of receivables was approved as bad debts in FY 05, which was brought down to 1.5% for the subsequent years.
- MERC allows contribution to contingency reserves. For MSETCL, it was approved @ 0.5% of the opening GFA over the control period.

- **Tariff**

- The trend of tariff rationalization, as carried out by MERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below*:



**Since the tariff for all the Licensees are not uniform, the tariff and average cost of MSEDCL has been considered for the above analysis*



- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture consumers with domestic consumers paying close to the average cost of supply. The average realization from non-domestic category is very high and has increased during FY 07 to FY 09 leading to higher cross subsidization by this category. As regards NTP stipulation of +/-20%, tariff for agriculture category still remains about 40% of the average cost of supply while non-domestic is paying close to 180%. Overall, there has been no specific reduction in cross subsidy but the tariff has been increased for all the categories (except a few categories like railways, public water works, agriculture, etc) to meet the average cost to serve.

- MERC has undertaken a number of initiatives for tariff rationalization while initiating new measures to control the demand-supply gap including introduction of time of day (ToD) tariffs to even LT categories. It has been reducing the fixed charges while increasing the energy charges across different consumer categories so that the consumer bills are directly linked to consumption. It introduced new tariff categories such as multiplexes and shopping malls (with sanctioned load more than 20 kW) and new slabs such as domestic consumers with consumption above 500 units per month with relatively higher tariffs.

- To promote hydel generation, MERC approved a single part (energy based) differential peaking tariff to provide economic signals to generating companies to maximise hydel generation during peak period and thereby reduce utilization of hydro resources during the non peak hours. Peaking tariff has been based on the least cost alternative source of power available, if such hydel generation is not available in those hours. For the non-peak hours, MERC has adopted the highest variable cost of thermal generating stations available for MSEDCL on long-term basis including MSPGCL stations as well as Central Generating stations.

- **Multi Year Tariff**

- MERC introduced MYT tariffs from FY 08 onwards with control period for three years. The controllable factors approved by the SERC in its regulations are:
    - Capital Expenditure on account of time and/or cost overruns/efficiencies in the implementation
    - Technical & Commercial Losses including bad debts
    - Consumer Mix in case of presence of more than one Distribution licensee within a area and availing open access by existing consumer
    - Working Capital Requirements
    - Standards specified under SOP Regulations
    - Labour Productivity

  Uncontrollable factors consist of:
    - Force Majeure Events
    - Changes in law, judicial pronouncements and Orders of the Central Government, State Government or Commission
    - Economy-wide influences, such as unforeseen changes in inflation rate, market interest, rates, taxes and statutory levies
    - Cost of power generation and/or power purchase due to the circumstances specified in Regulation 25 (i.e. matters related to short term power purchase)

- **Subsidy**

  Subsidy provided to each category of consumers has not been provided in the tariff orders. However, the Commission in its MSEDCL Tariff Order for FY 09 mentioned about the receipt of around Rs. 1706 Cr of the total subsidy amount of Rs 1829 Cr from the State Government during FY 08.

- **Additional Supply Charge for Costlier Power**

  MERC introduced the concept of costly power and non-costly power in FY 07 and FY 08, such that the average hours of load shedding was determined by allocating only non-costly power to all categories. The costly power (costing above Rs. 4 per kWh) was then allocated to consumer categories and regions, and an Additional Supply Charge (ASC) was collected from the consumers in proportion to the relief from load shedding made possible due to the costly power purchase. This approach was, however, stopped in the 2nd year of MYT period i.e. FY 09.

15. Meghalaya – Executive Summary

- **Introduction**

Meghalaya State Electricity Board (MeSEB) is a bundled utility and yet to transit from Annual Revenue Requirement (ARR) to the Multi Year Tariff (MYT) regime. MeSEB filed its first tariff order for FY 08 after the formation of Meghalaya State Electricity Regulatory Commission (Determination of Tariff) Regulation, 2006.

At present, Meghalaya has a total generation capacity of 185.2 MW which is purely Hydel. The capacity is expected to increase with commissioning of certain projects that are underway.

The Commission, despite being relatively new and with paucity of data has applied its best judgement in approval of ARR for the utility as well as necessary inferences from other states.

- **Annual Revenue Requirement**

➢ The Commission, in its orders, had approved expenses for most of the parameters as proposed by MeSEB.

➢ However, one of the major components was approved lower than originally claimed by the MeSEB. The Commission had approved higher generation considering better rainfall for the year. Accordingly, due to the need to procure less energy at market price, the Commission approved a cost of Rs.146.87 Crs as against an earlier estimated procurement cost of Rs. 224.56 Crs.

➢ In FY 08, the Commission had approved AT&C losses as proposed by MeSEB. The board also accepted the trajectory for reduction in T&D and AT&C losses from FY 07 to FY 12 as proposed by the Commission:

T&D and AT&C loss reduction trajectory approved by the Commission (%)

Description	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12
T&D loss	33.95	28.41	24.42	20.05	15.69	11.32
AT&C loss	36.80	35.62	31.29	26.68	22.05	15.11

➢ For FY 09, the Board proposed AT&C losses at 40.60% (reduction of 0.39% over the actual AT&C loss of FY 08), but the Commission approved a AT&C loss level with a reduction of 2% over the actual loss of 40.99% for FY 08.Due to the need to procure less energy at market price, the Commission approved a cost of Rs.146.87 Crs as against an earlier estimated procurement cost of Rs. 224.56 Crs. A power purchase cost of Rs 218.68 Crs had been approved by the Commission in FY 09.

➢ The Commission had approved employee cost, A&G expense, R&M expense and depreciation as proposed by the board in FY 09. However, again no details of the approach for calculating these expenses are provided in the tariff order.

➢ The Commission has uniformly for all the years adopted Return on Equity (RoE) as the parameter for allowing return. The rate of return on equity for the board has been kept uniform at 14% for all the years.

- The Annual Revenue Requirement approved by the Commission for FY 09 was substantially higher by about 70%, from Rs.277.60 Crs in FY 08 to 465.73 Crs in FY 09.

- **Tariff**

- For FY 08, though the board proposed tariff increase for all the categories ranging from 90% to 120%, but the Commission maintained the existing differential rates of tariff for each consumer category and rationalized the demand/fixed charge required to be levied for a two part tariff.

- **Subsidy**

- In FY 08, State government grant was available for rural electrification in the state and the same was deducted from the total ARR to arrive at net revenue requirement of the board. In FY 09, however, no subsidy support was available to any consumer category in the state.

16. Orissa – Executive Summary

- **Introduction**

Orissa was one of the first states that saw the unbundling of the State Electricity Board. Orissa State Electricity Board (OSEB) was unbundled in phases. In the first phase two corporate entities namely Grid Corporation of Orissa Limited (GRIDCO) and Orissa Hydro Power Corporation Limited (OHPC) were established in April 1995.The distribution was privatized in FY 99 wherein four Distribution Companies namely Central Electricity Supply Company of Orissa Limited (CESCO), North Eastern Electricity Supply Company of Orissa Limited (NESCO), southern Electricity Supply Company of Orissa limited (SOUTHCO) & Western Electricity Supply Company of Orissa Limited (WESCO) were incorporated. After separation of Distribution business, GRIDCO was left with electricity Transmission and Bulk Supply/Trading activities and was also discharging the functions of State Load Despatch Center (SLDC).After the enactment of EA, 2003 in keeping with statutory requirements of the Electricity Act requiring separation of trading and transmission functions into two separate entities, the State Govt incorporated Orissa Power Transmission Corporation Limited (OPTCL) to take over the transmission, STU/SLDC functions of GRIDCO.

So, currently in the state there exist four DISCOMs, OHPC which owns the hydro generation plants, OPGC which owns thermal generation plants, GRIDCO which is carrying on the business of bulk purchase and bulk supply of electricity and OPTCL which is the State Transmission Utility.

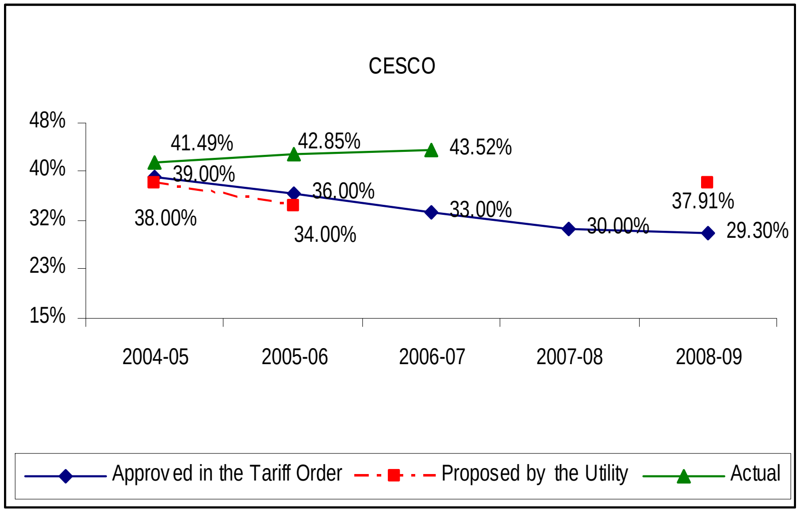
The sales mix in Orissa is dominated by LT voltage consumers (49-43%) followed by EHT voltage consumers (29-35%). The LT category is further dominated by domestic consumption. GRIDCO's power procurement from internal sources in FY 09 comprised of hydro generation from OHPC (46%), generation from Talcher Thermal Power Plant (25%), Generation from thermal power plants of OPGC (23%) and that from CGP's and renewable sources (3% each). In terms of regulatory ratemaking, Orissa followed the MYT approach.

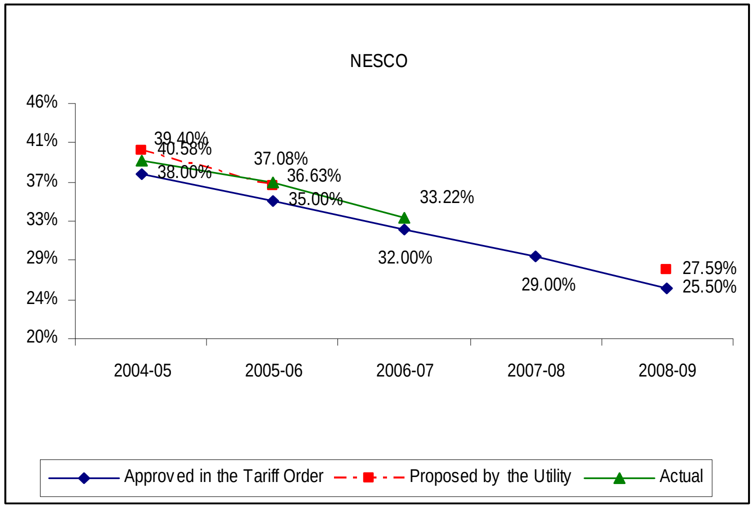
- **Annual Revenue Requirement**

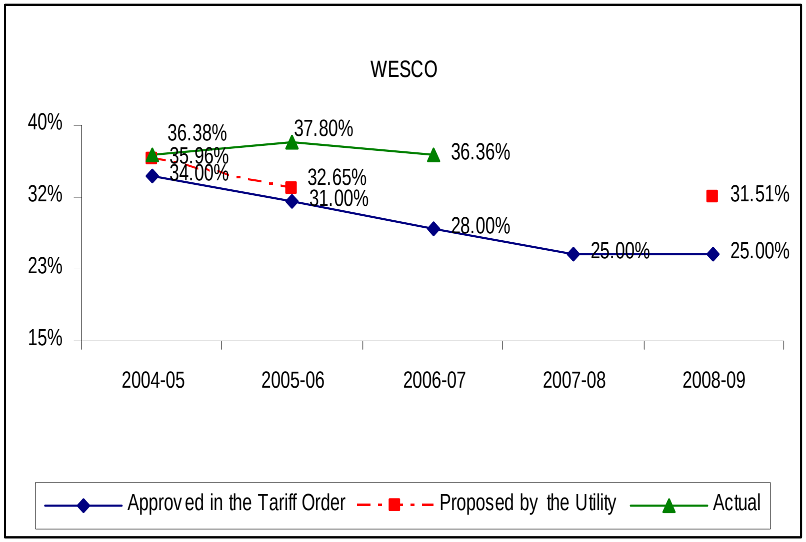
➢ OPGC is the thermal power generating company in the state but it does not file its ARR. The operational parameters of OPGC are governed by PPA between GRIDCO and OPGC. The Talcher Thermal Power Station (TTPS), an NTPC station comes under the purview of CERC. For OHPC hydro stations auxiliary consumption was taken as 0.5% of gross generation. The generation from OHPC stations was arrived at by analyzing the rainfall pattern in the catchment area years for the past four years and the same was compared to the energy generated during the normal hydrology year.

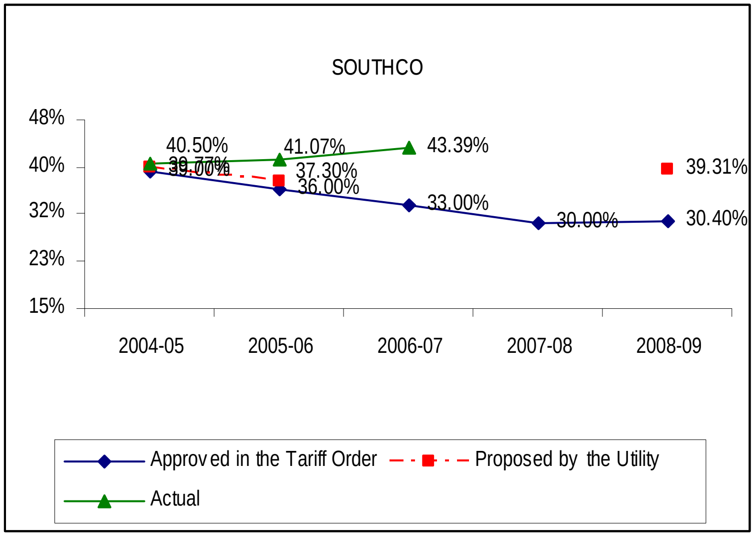
➢ OERC has taken in consideration the past trends of the sales and had applied correction factors for individual DISCOMs e.g. net effect of reduction and addition to sales in case of NESCO because of reduction of contract demand of JINDAL Ltd and addition to sales because of increased HT sales had been considered by the Commission. The Commission also took into account the electrification of villages under RGGVY and BGJY schemes while projecting higher sales.

- The Commission uses AT&C loss for determining the performance of the distribution companies. However, the distribution loss is taken into consideration in assessing sale from year to year while determining the Annual Revenue Requirement. The Commission had set a long term trajectory for the MYT control period from FY 04 to FY 08 wherein the Commission directed to reduce loss by at least 3% per annum till FY 08. The Commission allows incentive for improvement in AT&C losses. The Commission has devised a sharing mechanism for the same. The graphs below show the approved, proposed and actual T&D losses of the Commission.


CESCO
48%
40%
32%
23%
15%
41.49%
42.85%
43.52%
39.00%
36.00%
33.00%
30.00%
29.30%
38.00%
34.00%
37.91%
2004-05
2005-06
2006-07
2007-08
2008-09
Approved in the Tariff Order
Proposed by the Utility
Actual


NESCO
46%
41%
37%
33%
29%
24%
20%
39.40%
40.58%
38.00%
37.08%
36.63%
35.00%
33.22%
32.00%
29.00%
27.59%
25.50%
2004-05
2005-06
2006-07
2007-08
2008-09
Approved in the Tariff Order
Proposed by the Utility
Actual


WESCO
40%
32%
23%
15%
36.38%
35.96%
34.00%
37.80%
32.65%
31.00%
36.36%
28.00%
25.00%
31.51%
25.00%
2004-05
2005-06
2006-07
2007-08
2008-09
Approved in the Tariff Order
Proposed by the Utility
Actual


SOUTHCO
48%
40%
32%
23%
15%
40.50%
39.77%
39.00%
41.07%
37.30%
36.00%
43.39%
33.00%
30.00%
39.31%
30.40%
2004-05
2005-06
2006-07
2007-08
2008-09
Approved in the Tariff Order
Proposed by the Utility
Actual

- SERC computed Transmission losses, based on the actual loss of the subsystem during the past 10 months. The Commission also takes into account the addition of transmission assets during the year. There has been variation in the loss because of the dependence of transmission loss on system configuration and power flow requirements at different load centres. Transmission Losses as approved by OERC during FY 07- FY 09, are tabulated below:

Transmission Loss	FY 07	FY 08	FY 09
Approved	4.00%	5.00%	4.50%
Proposed	4.49%	5.00%	5.00%

- GRIDCO, the Bulk supplier in the state purchases power on merit order basis. The hydro generation purchase from the state is computed based on the design energy of the stations, and from the state thermal generation is being considered as per norms of the PPA or CERC guidelines. Drawal from the CGPs has been maximised as well. Availability from the Eastern Region CGS has been considered as per the allocation of shares in these stations and the applicable CERC Regulations. The estimate for purchase of power is estimated on the basis of actual purchase made during the previous financial year.

Particulars (in MUs)	FY 06	FY 07	FY 08	FY 09
Total Orissa (Internal Gen.)	12277	12396	12439	12720
Hydro(Central)	215	244	398.56	465.7
Thermal (Central)	4363	2775	4702	5275
Total Power Purchase by GRIDCO	**16855**	**15415**	**17539**	**18460**

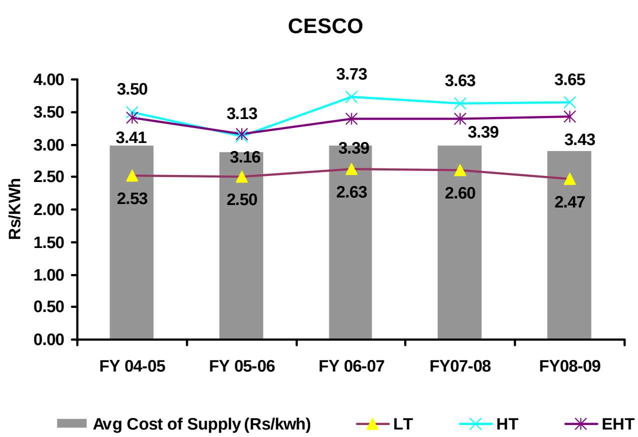
In order to give boost to the renewable energy, the Commission has approved power procurement from renewable sources at the rates proposed by GRIDCO. The Commission has not considered the power to be purchased and revenue to be earned from trading of surplus power to outside states.

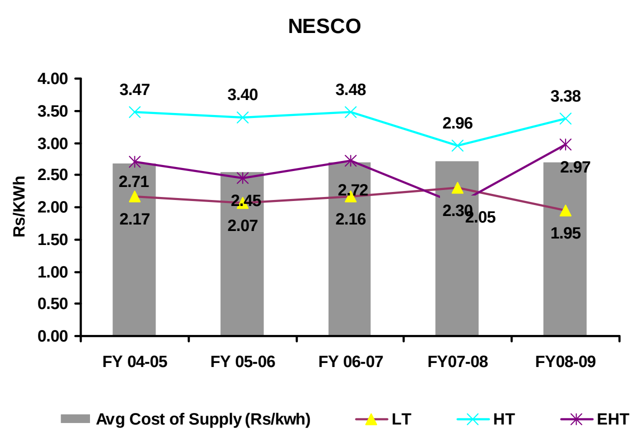
- For O&M, the Commission segregated the expenses into three components. The Commission determined the base year values for the control year based on the audited accounts for previous year. The base year values of Basic Pay and Dearness Allowance were escalated to account for annual salary increments and inflation. In the year FY 08, Government of Orissa had notified merger of 50% of DA into the Basic Pay as Dearness Pay and the same was factored by the Commission. For other O&M expenses like R&M the Commission took the latest audited accounts as base figures and applied 5.4% on the opening gross asset value. For A&G expenses, the Commission has been taking the escalation factor of 7% year on year.
- The depreciation has been calculated based on the pre-92 rates which were substantially low in comparison to post-94 rates linked to the life of the assets. This was done to keep in abeyance the impact of revalued cost of assets on the tariff.
- The interest on loans taken by GRIDCO for distribution assets which were transferred to Commission is recovered by means of Bulk Supply tariff. For APDRP schemes, the Commission approved interest only on receipt of documented proof. The Commission has considered the interest outgo on the security deposit as a component of ARR.

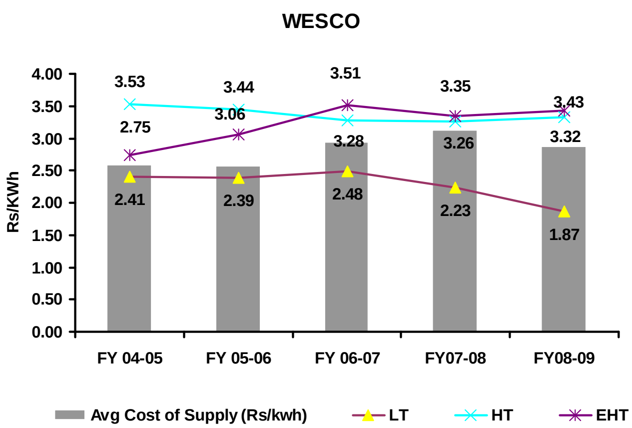
- The Commission has calculated the working capital as the difference between the approved collection efficiency and the revenue excluding bad debt and has approved interest on working capital @ 10%.
- The Commission has consistently allowed 2.5% of the total sales revenue towards provision for bad and doubtful debts.
- The Commission allowed 16% pre tax Return on Equity (RoE) to the Commission for all the years. For OPTCL, the Commission did not approve return on the grounds that returns would be allowed once the sector becomes viable. Though via a later notification return was allowed in respect of the new projects Commissioned after 01.04.2006. For OHPC stations, the Commission from FY 06 to FY 08 allowed ROE on old stations at 12% on OHPC's own investment. In case of UIHEP, the Commission had allowed ROE at 14% in line with CERC norms. For FY 09 the Commission allowed 14% RoE on old stations on OHPC's own investment and on Government equity for UIHEP.
- The Commission has not allowed the recovery of Past losses or regulatory assets for any of the years. So, a major chunk of disallowance in the ARR proposed has come because of the disallowance of past loss or regulatory asset.

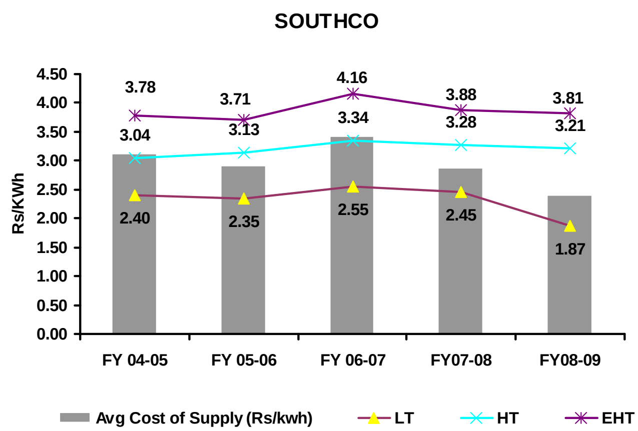
- **Tariff**

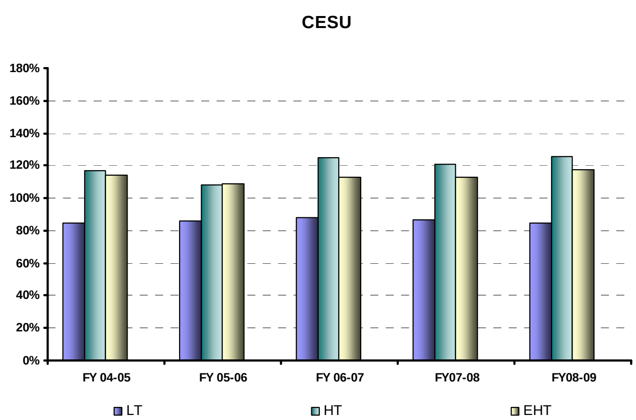
- In the state of Orissa there is Uniform Retail supply tariff across the DISCOMs. The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:

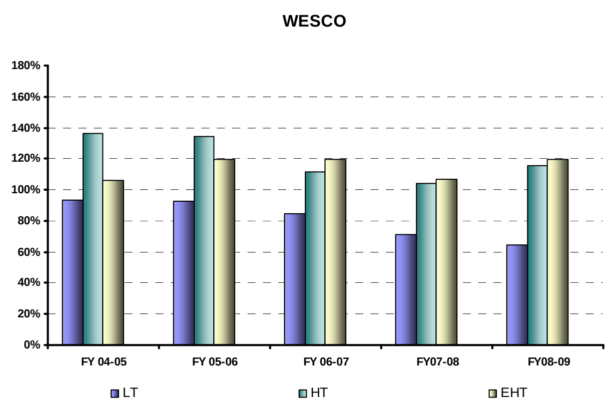


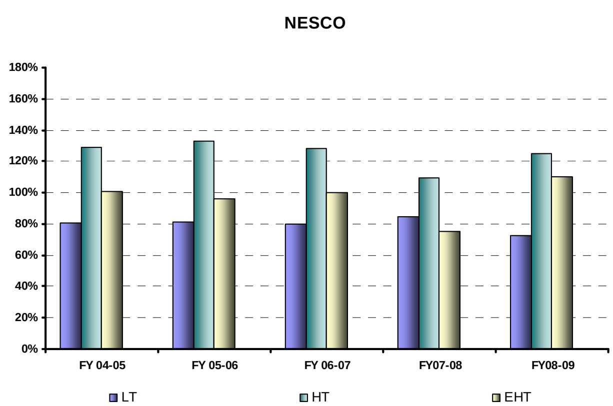


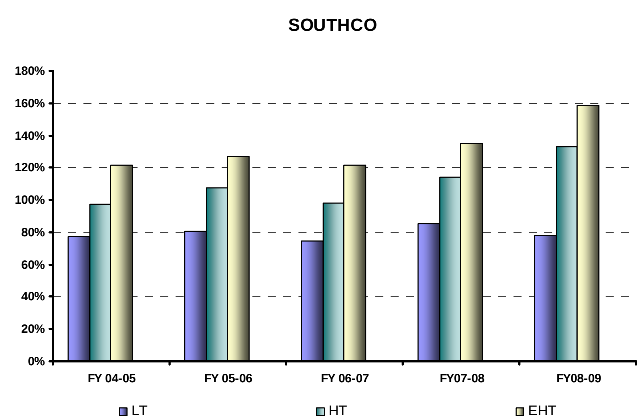












- It is clear from the above that LT category which comprises of domestic and general purpose and public lighting etc. is subsidized by HT and EHT consumers. The Commission has tried to introduce cost-based tariff, and has linked the Energy Charge at different voltage levels to reflect the cost of supply. While determining Energy Charge, the principle of higher rate for supply at low voltage and gradually reduced rate as the voltage level goes up has been adopted.

- The Commission raised the tariffs in the FY 06 and the WESCO had surplus which was used to bridge the gap of other Commission. The Commission has not been clear in its approach for bridging the gap in the studied tariff orders. The Commission nets out the overall revenue gap by revenue surplus..

- **Transmission charges**

- The transmission charges were determined for transmission of power at 220 KV/ 132KV over OPTCL's EHT transmission lines and sub-stations. It was also to be applicable for the purpose of transmission of energy from a CPP to its industries located at a separate place(s) within the State. The Commission calculated Long term open access charges on the basis of MW flow. In FY 07, the Commission did not calculate short term open access charges but in the next two tariff order short term open access charges were determined as 25% of the long term open access charges.

- The table below provides details about the transmission charges approved by the SERC.

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs. Crs)	333	374	377
Approved Total Transmission (MUs)	15153	16963	17930
Transmission Loss %	4.00%	5.00%	4.50%
Approved Transmission Tariff (Paisa/KWh)	**22**	**22**	**21**
Transmission charges to Long Term open access customers (Rs./MW/Day)	5278	5200	5040
Transmission charges to Short Term open access customers (Rs./MW/Day)		1300	1260

- **Subsidy**

- The government does not provide subsidy to the DISCOMs. The Commission has categorically mentioned the government's stand on the issue of subsidy wherein the government when approached for subsidy has said it does not propose to give grant/subsidy to any of the utilities or to any consumer or any class of consumer. Government further said that it is the responsibility of the Commission to bring down the distribution loss, AT&C loss and improve their collection efficiency to bridge up their revenue gap for the year.

- **MYT**

- Orissa is currently in its second Control period. The Commission approved a set of principles called LTTS principles which regard Tariffs as essentially a risk-sharing mechanism. As per LTTS principles, the risk elements have been divided as Controllable (the ones which are directly within the control of the Licensees or can be managed by the Licensees) and Uncontrollable which could be recoverable through tariffs in the ensuing year(s) of the Control Period as special appropriation. Controllable parameters included network and financing costs and Aggregate Technical & Commercial (AT&C) losses and uncontrollable parameters included fuel cost changes that affect the cost of power purchase, inflation, exchange rate variations, etc

17. Punjab – Executive Summary

- **Introduction**

The Punjab State Electricity Board (PSEB) operates as a bundled utility in the State of Punjab. The sales mix in Punjab is dominated by agriculture consumers followed by industrial which together form about 75% of the total sales. The generation mix is dominated by coal (48%) followed by BBMB share (30%) and hydro (22%). In terms of regulatory ratemaking, Punjab has till date followed the Annual Revenue Requirement (ARR) approach.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, PSERC followed the past performance of power plants, CERC norms, and benchmarking the performance with generating stations of other utilities. The PLF was approved taking into account the actual PLF for the past three years and past performance of generating station while also considering the renovation and modernization (R&M) programme, as proposed by PSEB. With respect to the Station Heat Rates, PSERC took into account the SHR of the Central Generating Stations and other thermal generating stations of similar vintage. From the FY 06 onwards, PSERC has adopted CERC norms but in case of GNDTP having 110 MW units, the Commission has allowed SHR for GNDTP at 3000 kcal/kWh i.e. at par with Tanda Thermal Station of NTPC and the same basis has been followed in case of auxiliary consumption.

➢ PSERC while doing the true-up for the FY 05 to FY 07 had allowed incentive to the Board on overachievement of the target PLF for thermal generating plants. The Commission had allowed incentive of Rs.15.71 Crs, Rs. 48.04 Crs and Rs. 185.35 Crs for FY 05, FY 06 and FY 07 respectively.

➢ As regards sales assessment, PSERC has consistently taken CAGR of past 3 years while approving the sales for each metered category.

➢ Agriculture sector has the largest share in the overall sales mix in Punjab followed by industrial consumers. The SERC had adopted 1700 kWh/HP/annum as the normative level of consumption in case of agriculture for FY 05. From FY 06 onwards, PSERC has allowed a year-on-year growth rate of about 5% on the agricultural sales.

➢ The basis adopted by the Commission for approving the T&D loss level for FY 08 has been the three year trajectory set out in the Tariff order for FY 05, which mandates 1.25% percent reduction every year from FY 05. Though the trajectory ended in FY 08 without the targets set having been achieved, the Commission had retained a T&D loss level of 19.5% for the FY 09. A comparison of proposed losses vis-à-vis the approved losses is tabulated below:

T&D Losses	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	23.25%	22.00%	20.75%	19.50%	19.50%
Proposed by the Utility	24.00%	24.00%	23.00%	22.00%	21.00%
Trued up by SERC at the end of year	23.25%	22.00%	20.75%		

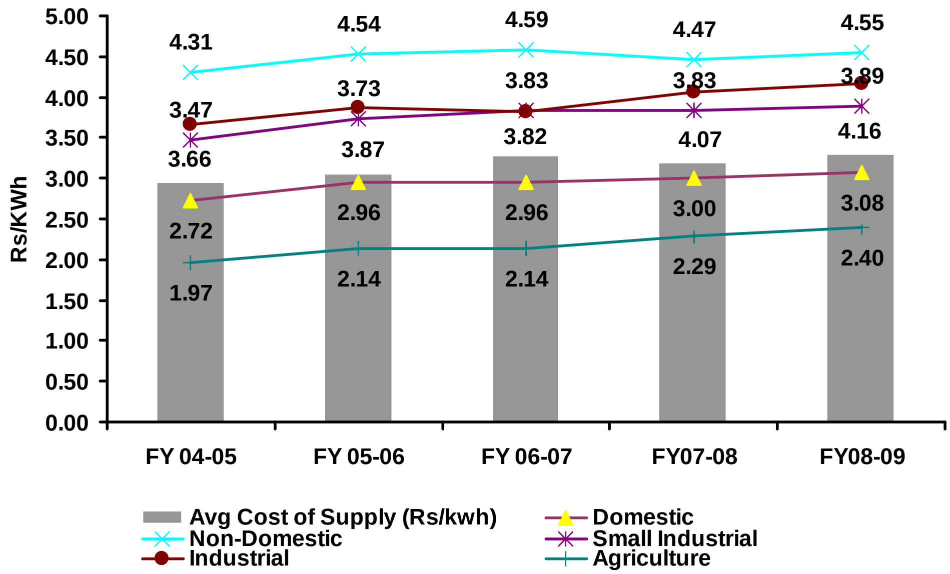
- In addition to CGS and IPPs, the Commission recognizes banking and short-term power purchase to account for power drawn through unscheduled interchange (UI) as sources of power purchase, and had considered the same while estimating the power purchase cost in the ARR. The Commission had approved the average rate for short term market purchases based on the actual average rate of power purchased from traders in the previous year/ past months.
- PSERC, while truing up the power purchase cost had disallowed the additional energy purchased by the Board on account of higher T&D losses. A comparison of approved vis-à-vis actual power purchase cost shows that the Commission had underestimated the actual power purchase cost – e.g. the approved power purchase cost in FY 07 was Rs.2.37/kWh whereas the trued up amount (without factoring T&D loss disallowance) was Rs.3.15/kWh.
- PSERC did not take into account external factors such as the implementation of Pay Commissions, Actual DA paid, etc while approving the employee costs. The Commission had time and again asked the PSEB to bring down its employee cost. The Commission, consistently during each year, had disallowed more than 10% of the projected employee cost. From FY 07 onwards, the Commission has consistently applied WPI increase on the employee costs determined in the base year and the same has been incorporated in the Commission's Regulations framed in 2005.
- Other O&M expenses such as R&M and A&G were escalated based on increase in WPI over the O&M expenses approved by the Commission for the previous year. In truing up of R&M and A&G, PSERC had allowed variation on account of actual increase in WPI and assets added during the year.
- For FY 05, the Commission had approved the depreciation as projected by Board. The depreciation for the rest of the years (FY 06 to FY 09) has been worked out on the basis of function-wise depreciation rates (Generation - thermal stations – 4.5% to 4.89%, Generation - hydel stations - 2.31 to 2.46%, Transmission – 4.99% to 5.28%, Distribution – 5.86% to 5.94%) as per the books of accounts of the utility. The depreciation amount has been determined by applying depreciation rate on opening gross block.
- PSERC has consistently disallowed the interest of Rs.100 Crs on account of diversion of capital funds by the Board for revenue expenditure. Interest claims of the Board proposed in the ARRs were allowed and analyzed by the Commission in accordance with the PSERC Tariff Regulations. While calculating the interest cost on the fresh borrowings, Commission has made adjustments for consumer contribution. The interest on government loans has been offset against the subsidy to be given to Board on account of agriculture and SC category free power. In the FY 09, the Commission allowed an additional amount of Rs.102.15 Crs as carrying cost on the approved gap of the years FY 07 and FY 08. The SERC has approved the normative working capital as per PSERC Tariff regulations.
- The Commission had allowed return at the rate of 3% on Net fixed assets for the FY 05 and FY 06. For FY 07 to FY 09, PSERC has uniformly for all the years adopted Return on Equity (RoE) at 14% as the parameter for allowing return. Equity capital of Rs.2946.11 Crs was determined as on April 1, 2006 which was about 26%, well within maximum limit

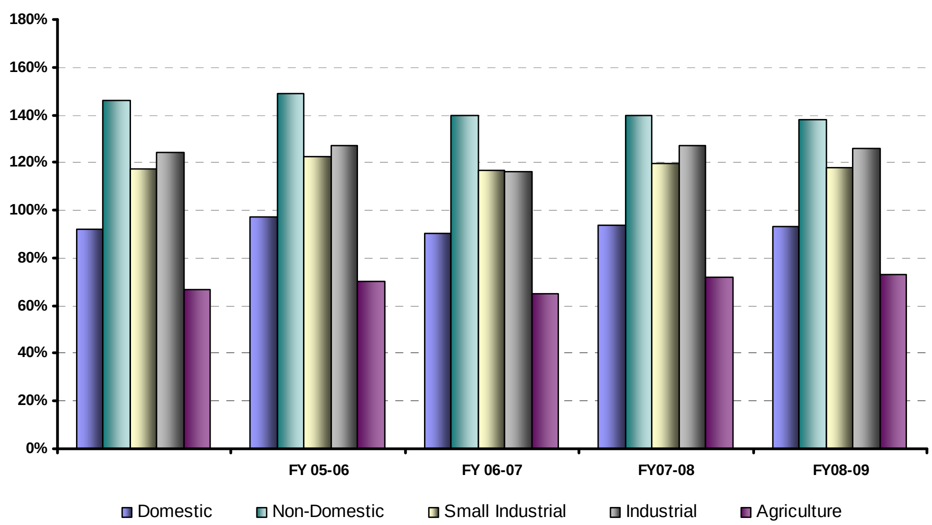
of 30% as per CERC regulations. The Commission had approved Return on Equity of Rs.412.46 Crs for each year between FY 07 and FY 09.

- PSERC had allowed the bad and doubtful debts at the time of truing up of FY 07. The Commission in the Tariff Order for FY 09 specified that bad and doubtful debts expenditure would be considered on actual basis in the true up exercise after audited accounts become available.

- **Tariff**

- The trend of tariff rationalization, as carried out by the SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as % of average cost of supply is shown below:





- It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of ±20%, while tariff for domestic and agriculture category has remained about 80 to 90% and 60% to 70% (with Govt. Subsidy) of the average while non-domestic and industrial pay about 140 and 120 % of cost of supply respectively.
- PSERC has defined a road map for reduction of cross subsidy prevalent in the consumer categories and further divided the roadmap into two phases. In the first phase, the Commission shall determine tariff so that it progressively reflects combined average unit cost of supply and the cross subsidy is eliminated over a period of 10 years from the date of issue of PSERC Tariff Regulations. In the second phase, the Commission shall consider moving towards the category-wise cost of supply as a basis for determination of tariff.
- Commission has increased the consumer tariffs in the state to meet the approved revenue gap (including trued-gap for the past years) of Rs. 769 Crs, Rs.423.78 crs and Rs. 249.64 Crs for FY 06, FY 08 and FY 09 respectively. PSERC has uniformly for all the years followed the approach laid down in the first phase (reduction of cross subsidy) while determining the consumer tariffs in the state.

- **Transmission & Wheeling charges**

- Transmission charges are calculated for long term and short term open access consumers. The total transmission capacity and distribution capacity was adopted for calculating transmission and wheeling charges. The short term open access (Transmission and wheeling charges) have been arrived at by multiplying the sum of transmission and wheeling charges by 25% and for long term open access charges, the sum had been multiplied by 33% for the FY 07. From FY 08 onwards the short term open access charges were computed @ 20% of the sum of transmission and wheeling charges as there was an amendment to the open access regulations.
- PSERC has been calculating the cross subsidy surcharge as the difference between realization and the combined average cost of supply and allowed only 50% of recovery of surcharge from Open Access customers as against full recovery prescribed in the National Tariff Policy. From FY 08 onwards, Commission has removed the cross subsidy surcharge for the open access customers. The table below provides details about the transmission charges, wheeling charges, losses and cross subsidy surcharge approved by the SERC.

Particulars	FY 07	FY 08	FY 09
Transmission ARR (Rs. Crs)	427	455	527
Transmission capacity (MW)	5870	5870	6095
Transmission Charges (Rs./MW/day)	**1991**	**2124**	**2370**
Distribution ARR (Rs. Crs)	1789	2067	2507
Distribution Capacity (MW)	5919	6088	6288
Wheeling charges (Rs./MW/day)	**8280**	**9299**	**10924**
Transmission + Wheeling Charges Chargeable from long term customers	3389	3807	4431
Transmission + Wheeling Charges Chargeable from Short term customers	2568	2285	2659

Particulars	FY 07	FY 08	FY 09
T&D Losses	10.38%	(>=66 KV) 5.85% (< 66 KV) 9.75%	(>=66 KV) 5.85% (< 66 KV) 9.75%
Cross Subsidy Surcharge for Small Supply (Rs./unit)	0.3194	Nil	Nil

- **Subsidy**

➢ PSERC in all the Tariff orders has computed the quantum of subsidy required for the agricultural consumers as well as subsidy applicable to other consumers. Apart from the adjustment in the electricity duty and interest due on Govt. loans, Govt. is also paying subsidy in cash. The Commission before ascertaining the tariffs in the Tariff Order seeks government stand on the amount of subsidy it will grant based on the agriculture consumption and the free units to SC category.

➢ The quantum of subsidy had been increased in the last three years because of free electricity to the agricultural consumers from Sep 1, 2005. The SERC had notified the tariff factoring in the aforesaid subsidy amount.

Particulars (Rs. Crs)	FY 05	FY 06	FY 07	FY 08	FY 09
Subsidy Approved for the Year	902.56	1115.18	1541.61	2119.10	2479.76
Past Year Subsidy Arrears		68.25		429.63	121.97
Total Subsidy Approved	**902.56**	**1183.43**	**1541.61**	**2548.73**	**2601.73**

18. Rajasthan – Executive Summary

- **Introduction**

  The State Electricity Board in Rajasthan was unbundled into five entities in the year 2000

  – Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN) – Generation

  – Rajasthan Rajya Vidyut Prasaran Nigam Ltd. (RVPN) – Transmission

  – Ajmer Vidyut Vitran Nigam Ltd. (AVVNL) – Distribution

  – Jaipur Vidyut Vitran Nigam Ltd.(JVVNL) – Distribution

  – Jodhpur Vidyut Vitran Nigam Ltd.(JdVVNL) – Distribution

The installed capacity of the state is 3847.35 MW with coal dominating the fuel mix – approximately 84% of the energy generation is from coal. The sale mix is dominated by agriculture category (33%) followed by large Industrial consumers (24%) and domestic (18%). The generation tariffs are approved station-wise. Retail tariffs are uniform in the state. The Rajasthan Electricity Regulatory Commission (RERC) followed the annual revenue requirement approach of fixing tariff till FY 06 and introduced MYT thereafter with control period of 3 years (FY 07 to FY 09).

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, RERC approved the PLF based on past performance and the renovation & modernization plan of RVUN. Station Heat Rate (SHR) was approved taking into account the past performance and benchmarking with other thermal stations such as Tanda and Talcher.

➢ In terms of incentives, RERC has allowed incentive of 25 paise/kWh on overachievement of the target PLF.

➢ Fuel costs have been approved based on weighted average price of coal from various sources. RERC switched over to monthly fuel cost adjustment since FY 08 prior to which this adjustment was done on an annual basis.

➢ To approve transmission loss, RERC has been carrying out load flow studies calculating thereof the peak load and the peak losses while also considering the actual performance in that regard in the preceding year. In MYT, while RERC had laid down the trajectory of loss reduction for the control period, it changed the approved loss level while issuing the tariff order for FY 09.

Transmission Loss	FY 05	FY 06	FY 07	FY 08	FY 09
Approved loss level	4.60%	4.60%	4.50%	4.40%	4.40%

➢ The intra-state transmission tariff is approved in terms of Rs./kW/month - the approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year. The transmission charges thus arrived was equally applicable to all intrastate open access customers. The transmission charges recovered from such customers are reduced from those recovered from DISCOMs.

- The sale mix is dominated by agriculture (33%) followed by large Industrial (24%) and domestic consumers (18%). RERC has been following the CAGR approach for estimating consumption for different consumer categories. As regards unmetered agriculture consumption, the norms kept changing from one year to the other – while it was 1739 units/kW/year in FY 06, it was 1945 units/kW/year in FY 07.

- The determination of distribution loss is a very contentious issue in Rajasthan with large agriculture consumption being unmetered. While the Commission laid down the trajectory for loss reduction - 4% per year for the period FY 05 to FY 08 – this was revised each year, as the DISCOMs failed to achieve the 4% loss reduction.

Distribution Loss (Ajmer)	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	34.25%	39.14%	34.08%	35.00%	32.00%
Actual	43.49%	40.07%	37.26%		
Distribution Loss (Jaipur)					
Approved in the Tariff Order	32.9%	33.88%	29.51%	28.50%	23.90%
Actual	37.65%	36.21%	33.70%		
Distribution Loss (Jodhpur)					
Approved in the Tariff Order	34.25%	34.77%	31.29%	33.00%	30.00%
Actual	42.39%	40.34%	32.47%		

- In addition to determining the power available from central sector and other inter-state generating stations, in its MYT order, RERC has also considered power available from renewables in line with the renewable energy purchase obligation of DISCOMs – RERC has assumed average of RPO and maximum limit of PPA for the purpose of estimating power available from renewables.

- As regards O&M expenses, in generation, RERC has approved consolidated O&M expenses for the period FY 05 to FY 09 while allowing escalation on the base rate of Rs.5.10 lakhs/MW for coal based and lignite generating stations and Rs.6.24 lakhs/MW for gas based generating stations, as approved for FY 05. The escalation is based on the ratio of wholesale price index (WPI) in the preceding and the current year reduced by 1%. In transmission and distribution too, the O&M expenses are approved on consolidated basis with yearly escalation allowed in line with WPI on the base rate. Besides escalation, 3% of the value of assets added during the year was also allowed as part of O&M expense. The transmission O&M expenses were further segregated into transmission and SLDC.

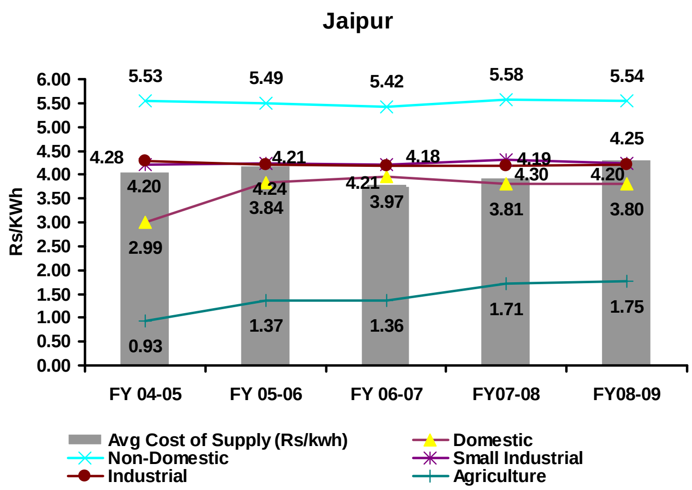
- Depreciation has been worked out in line with the tariff regulations notified by RERC. The Commission continues to provide Advance Against Depreciation and has asked the utilities to take transition loans for bridging the gap between loan repayment and allowed depreciation.

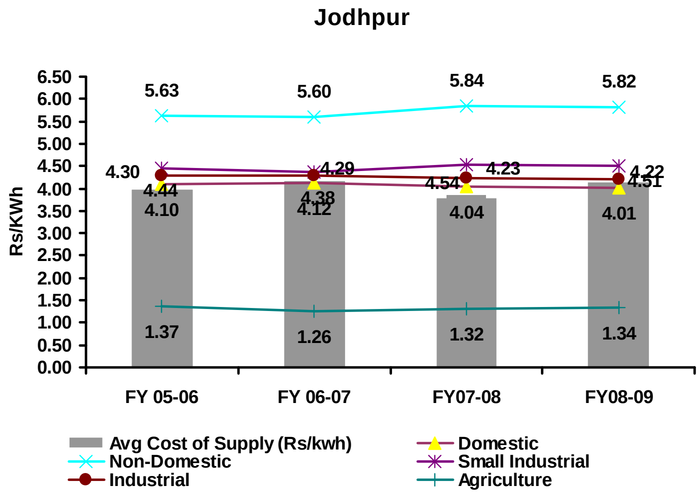
- Interest charges have been allowed on long term loans, transitional loans and working capital where the latter most has been arrived at based on norms approved by the Commission in its tariff regulations while benchmarking the interest rate with the short term prime lending rate of State Bank of India. In distribution, for the year FY 09, RERC allowed interest on short term borrowings, as proposed by the DISCOMs for covering the revenue deficit, to the extent of Return on Equity, which was not claimed by the DISCOMs for that year.

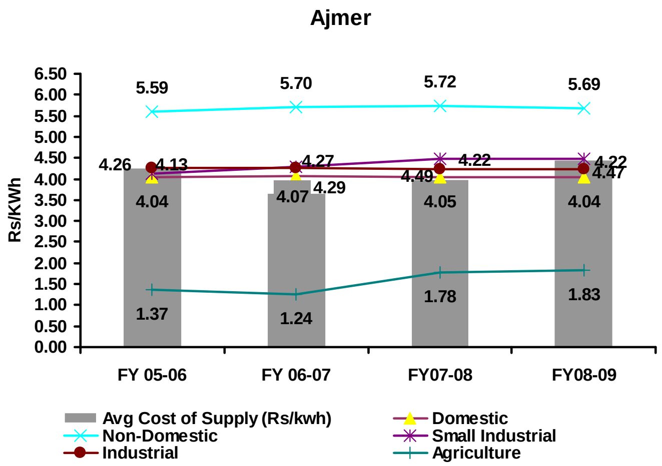
- ➢ As regards Return on Equity, a mixed approach has been followed by RERC by allowing RoE in some years while not considering the same in others. Also no RoE on old assets while RoE being approved for new assets. In generation, RERC allowed no RoE in FY 06, as the same was not proposed by RVUN. However, in FY 06, RoE @ 8% was allowed. For the remaining years, RoE @ 11% has been allowed for new projects with no RoE allowed for the existing stations. In transmission, RoE has not been approved by the Commission during FY 05 to FY 09 barring FY 06 when RoE@8% was considered in the transmission ARR. No RoE was proposed and allowed for years FY 05 to FY 07. For FY 08 and FY 09, though the DISCOMs did not claim any return, the Commission compensated them by allowing interest on short term borrowings @ 11%, which was equal to post tax RoE, as per the tariff regulations.

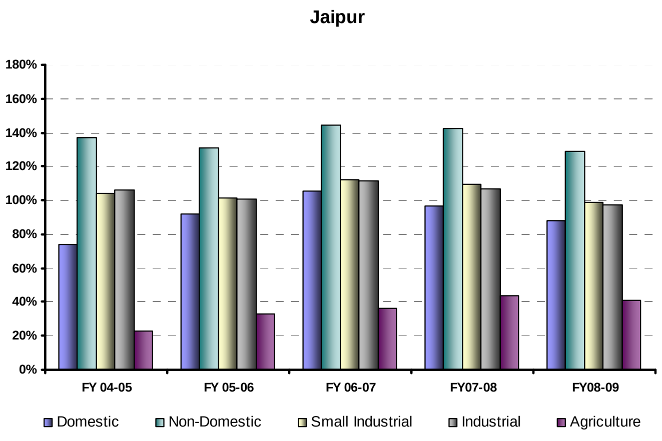
- **Tariff**

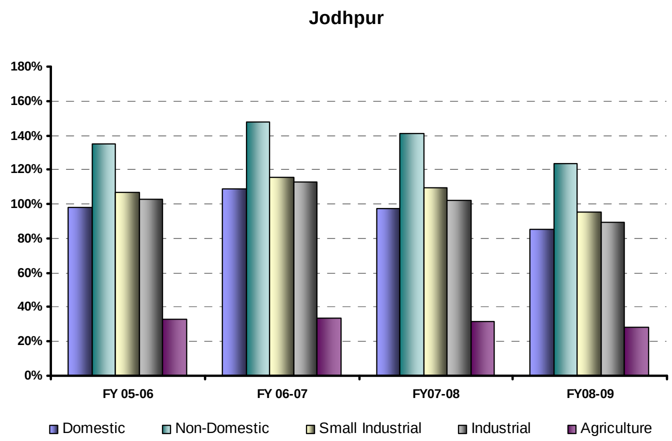
- ➢ The trend of tariff rationalization, as carried out by RERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:

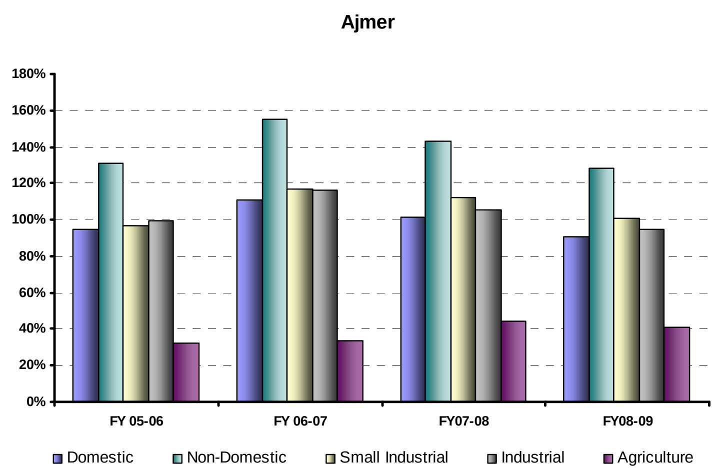



Jodhpur
Rs/KWh
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5.63
5.60
5.84
5.82
4.30
4.44
4.10
4.29
4.38
4.12
4.54
4.23
4.04
4.22
4.51
4.01
1.37
1.26
1.32
1.34
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


Ajmer
Rs/KWh
6.50
6.00
5.50
5.00
4.50
4.00
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
5.59
5.70
5.72
5.69
4.26
4.13
4.04
4.27
4.07
4.29
4.49
4.22
4.05
4.22
4.47
4.04
1.37
1.24
1.78
1.83
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


Jaipur
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture





- It is clear from the above that non-domestic consumers continue to cross subsidize agriculture consumers while other categories paying close to the average cost of supply. In comparison with the NTP stipulation of $\pm$ 20% of average cost of supply, the average realization from non-domestic category is a little over 120% while agriculture is about 40% of the average cost of supply.

- **Transmission and wheeling charges**

- RERC has been determining voltage-wise wheeling charges in proportion to the non-coincident demand of consumers. It specified that for recovery of wheeling charges in cash, the DISCOMs would recover only the customer service cost from EHT customers, and for recovery of wheeling charges in kind, only the losses occurring at different voltages (33 kV, 11 kV and LT), as approved by the Commission.

- The cross subsidy surcharge has been calculated for each DISCOM separately. While it was only consumers with 15 MVA & above of contract demand in FY 06, over a period of time, open access has been allowed to consumers with relatively lower levels of contract demand as well. The trend in cross subsidy charge, as approved by RERC is tabulated below:

Particulars	Cross Subsidy Surcharge (Rs./unit)		
	FY 07	FY 08	FY 09
LIP - EHV	0.91	0.728	0.55
LIP -33KV	0.63	0.504	0.38
LIP -11KV	0.27	0.216	0.16
ML -132KV	0.74	0.592	0.44
ML -33KV	0.46	0.368	0.28
ML -11KV	0.09	0.072	0.05
NDS-132KV	2.45	1.96	1.47
NDS-33KV	2.17	1.736	1.3
NDS-11KV	1.8	1.44	1.08

- **Subsidy**

➢ In Rajasthan, subsidy is mainly provided for agriculture consumers. RERC has considered the subsidy support while fixing tariffs for the state during FY 05 to FY 09 but it did not provide any direction to the DISCOMs to charge full tariff to the subsidized consumer categories in case of non-receipt of subsidy from the State Govt. The trend in subsidy announced by the State Government and the amount received by the DISCOMs is tabulated below:

Particulars (Rs. Crs)	FY 05	FY 06	FY 07	FY 08	FY 09
Subsidy announced by State Govt.	1039.00	927.00	1066.00	NA	NA
Subsidy Requirement estimated in the Tariff Order	NA	NA	1652.72	1675	NA
Actual Subsidy Received by DISCOMs	1050.20	NA	NA	NA	NA

19. Tamil Nadu- Executive Summary

- **Introduction**

➢ TNEB has not submitted their ARR petition to TNERC since FY 2003. On account of this, there has not been any substantial changes to the electricity tariff in the state for the last 6 years. Thus, the tariff rates and the structure in the state are quite unviable for the operation of the electricity sector under commercial principles and competitive environment mandated by the Electricity Act, 2003 and later policy initiatives.

➢ The growing base of subsidized consumers such as agriculture, hut service and a high percentage of domestic consumers have adverse impact on its financial performance. Free supply or below cost supply to these categories without a corresponding and equivalent subsidy from the State Government has led to resource constraints to undertake further capital expenditure and to meet the day to day normal revenue expenditure. Overall, there has been robust growth across all categories of consumers, with the overall CAGR growth rate clocked being 8.4% between 2003 and 2007. Urban and services sectors are the fastest growing sectors of the State's economy. This has resulted in significant growth in subsidizing categories such as Industrial HT and Commercial HT in recent years. However, the subsized categories of domestic and powerlooms have also clocked above average growth rates. Agriculture has grown at a steady 3.7 % between 2003 and 2007.

➢ TNERC has not passed any tariff order for TNEB consumers in the last 6 years in the absence of a formal petition by the TNEB. However, the Commission has been quite active in putting in place other regulatory policies in place such as open access provisions, tariff rates for renewable resources etc. It also passes an order every year specifying the amount of agriculture subsidy to be paid by the State Government to TNEB for providing free power to the agriculture sector in the state. Some of the key highlights of the orders issued by TNERC during FY 05 to FY 09 are as follows:

- **Reduction of AT&C losses**

➢ TNERC had issued an Order on 21st July, 2009 in the matter of reduction of AT&C Losses as per the recommendations of FOR working group. The Commission has directed TNEB to achieve AT&C loss reduction targets fixed by the Commission vide letter dated 06-11-2008 detailed as below:

Particulars	FY 09	FY 10	FY 11	FY 12
Approved AT&C loss	19.3%	18.9%	18.5%	18.1%

➢ The Commission also directed TNEB to undertake the following steps:

1. Discontinuation of clubbing Transmission and Distribution losses by installing meters with starting from EHV feeders and upto Secondary side of the distribution transformers to asses exact technical losses
2. Distribution Licensee should furnish the roadmap for installation of meters in hut and agricultural services and commence installing meters from 01.10.2009

3. Baseline data should be compiled for each electricity division by TNEB to segregate technical and non-technical losses
4. Suitable local area based incentive and disincentive schemes for the staff of the Distribution Licensee linked to reduction in losses
5. Segregation of agricultural feeders as far as possible. Assessment of unmetered agricultural consumption based on scientific sampling and with third party verification where segregation of agricultural feeders is not possible
6. Underachievement of loss reduction target to be borne by the licensee and in case of overachievement, the gain to be shared between the licensee and the consumers in the ratio of 50:50
7. Furnish report on various loss reduction strategies and status of action taken on quarterly basis

- **Determination of Transmission Charges, Wheeling Charges, Cross Subsidy surcharge and Additional Surcharge**

➢ For FY 06, TNERC after analyzing the petition of TNEB and process of public hearing determined the transmission and wheeling charges for the open-access consumers based on the following methodology:

➢ The Commission accepted the proposal of TNEB for adoption of pooled cost method for determination of transmission and wheeling charges considering the simplicity and ease of implementation in the absence of voltage wise asset value. Therefore, TNERC approved the open access charges as per TNERC's Tariff Regulations. The approved the transmission charges for FY 06 for long-term open access customers are detailed below:

Particulars	Proposed by TNEB	Approved by TNERC
Annual Transmission Charges (in Rs. Lakhs)	77394	73062
Available Transmission Capacity in MW	6654	7198
Transmission Charges Rs/MW/Day	3187	2781

➢ The Commission fixes the wheeling charges for FY 06 for long-term open access customers as detailed below:

Particulars	Proposed by TNEB	Approved by TNERC
Wheeling charges for long term OA customers (Paise per unit)	19.29	14.74

➢ Open access customers were also required to compensate the line loss in kind as per the open access regulations which were also determined based on point of drawl and injection point.

Injection Voltage	Drawal Voltage	Transmission Loss	Distribution Loss	Total Loss
22kV/11kV	22kV/11kV	5.00%	5.00%	10.00%
33kV	22kV/11kV	2.25%	5.00%	7.25%

Injection Voltage	Drawal Voltage	Transmission Loss	Distribution Loss	Total Loss
110kV	22kV/11kv	1.25%	5.00%	6.25%
110kV	33kV	1.25%	2.25%	3.50%
110kV	110kV	1.25%	1.25%	2.50%
230kV	22kV/11kV	0.50%	5.00%	5.50%
230kV	33kV	0.50%	2.25%	2.75%
230kV	110kV	0.50%	1.25%	1.75%
230kV	230kV	0.50%	0.50%	1.00%

- Further, the Commission approved the rate for short-term open access customers at 25% of the rate for long-term open access customers in line with the provisions in CERC's Regulations.

Cross-subsidy Surcharge

- The approved cross-subsidy surcharge payable by different category of open access customers for injection and drawal at different voltage level is as below:

Injection Voltage	Drawal Voltage	Industrial (paisa/kwh)	Educational Institutes (paisa/kwh)	Commercial (paisa/kwh)
22kV/11kV	22kV/11kV	97.17	91.71	274.87
33kV	22kV/11kV	105.47	100.01	283.17
110kV	22kV/11kv	108.49	103.03	286.19
110kV	33kV	116.8	111.34	294.5
110kV	110kV	119.82	114.36	297.52
230kV	22kV/11kV	110.76	105.3	288.46
230kV	33kV	119.06	113.6	296.76
230kV	110kV	122.08	116.62	299.78
230kV	230kV	124.35	118.89	302.05

Additional Surcharge

- Considering the deficit in generation capacity available at the disposal of TNEB, TNERC had approved no additional surcharge for FY 06.

- **Subsidy from State Government**

- The Board has been dependent on the State Government to provide tariff compensation for supply of free and subsidized electricity to certain categories of consumers. The cash subsidy available in FY 07 was Rs 1330 Crs per annum. The cash subsidy has not at all matched the actual quantum of subsidization by the Board to the subsidized categories. This led to gradual deterioration in the financial health of the Board

- TNERC has approved subsidy of Rs. 1561.30 Crs for FY 09 to compensate the short fall in revenue to TNEB. Moreover, Commission has directed the State Government to pay the subsidy amount in advance to TNEB.

20. Tripura – Executive Summary

- **Introduction**

  The Tripura Electricity Regulatory Commission (TERC) was constituted in line with the Electricity Act, 2003 and National Electricity Policy to improve the financial performance of power sector in the state of Tripura. Tripura State Electricity Corporation Limited (TSECL) was also recently constituted as a public limited company which started functioning from January 1, 2005 as the deemed licensee. Operational control of all assets relating to generation, transmission and distribution and its allied activities had been transferred to Tripura State Electricity Corporation Limited (TSECL).

  The Commission has thus far issued two Tariff Orders for FY 06 and FY 07 after the formation of TSECL.

- **Annual Revenue Requirement**

➢ In the tariff order for FY 06, the Commission had approved a revenue requirement of Rs. 104.35 Cr. However, the tariff order did not detail the approach adopted by the Commission to approve the components of the ARR perhaps due to its very recent constitution and lack of baseline data. The Commission had however, issued certain directions such as requirement for licensee to submit details on metering status, action plan for accurate metering, actual energy accounts for FY 05 and FY 04 and provisional energy balance for the year FY 06 (1st Quarter), Plan for purchase of power either for consumption or resale.

The Commission had further directed the licensee to establish and functionalize Grievance Management System and prepare action plan for energy audit by accredited agency.

The Commission, in the FY 05 order, had also specified levying of surcharge in case of delayed payment of bill and rebate in case of prompt payment.

➢ In the next and the latest tariff order i.e. for FY 07, the Commission had approved components on the basis of input data rather than assumptions. Energy sales with a growth rate of 6.7% were approved as submitted by TSECL. The Commission however made certain disallowances in the expenditure proposed, thereby approving ARR of Rs. 106.33 Crs as against proposed of Rs. 150.87 Crs.

➢ The employees cost was approved as that for FY 06 and the proposed escalation of about 17% amounting to total cost of Rs. 55.10 Crs was disapproved. Similarly, a depreciation amount of Rs. 10 Crs was approved as against provisional amount of Rs.20 Crs approved in FY 06 since evaluation of fixed assets was not complete and audited account was not submitted. Proposed bad debt provision of Rs. 82 Lakh was not approved as enough exercise of recovery was not exhibited. Similarly, R&M Expenses was approved as that approved for FY 06.

➢ Similarly, AT&C loss proposed at 40% for FY 07 much higher than 35% proposed for FY 06 was unaccepted and the Commission pegged it to bring it down 25% within a timeframe.

- However, the Commission provisionally approved Income from Trading on account of inter-state, bilateral and UI altogether at Rs.125 Crs against proposed amount of Rs. 119.85 Crs.
- The Commission also conducted exercise to calculate average cost of Supply as shown below:

Particulars		Cost of Supply (Rs/kWh)
Weighted average cost of generation (State	Rs. 1.50 per kwh	Rs. 1.50/kwh
Weighted average cost of generation (ISGS)	Rs. 1.40 per kwh	
Transmission cost of per unit (ISGS)	39 paise per kwh	Rs. 0.16/kwh
Transmission cost of per unit (State)	10 paise per kwh	
Distribution cost per unit of supply upto consumer premises.	Rs. 1.00 per kwh	Rs. 1.00 per kwh.
(+) 10% variation		Rs. 0.26 per kwh
Sub Total		**Rs. 2.92 per kwh**
Add 5% due to price index for 2006-07		Rs. 0.14 per kwh
Total		**Rs. 3.06 per kwh**

- **Tariff**

- The Commission, in the tariff order for FY 07, had introduced consumption based tariff and differential rates for higher consumption which brought in awareness among consumers to exercise conservation of energy. The Commission further proposes to adopt telescopic tariff structure accompanied with rationalization of tariff

- **Subsidy**

- In FY 07 The Commission had requested subsidy from the government in form of Rs. 8.05 Crs as employee cost, Rs. 5.83 Crs as Interest cost, Rs. 14.44 Crs as tariff support and Rs. 11.67 Crs as Special support for special maintenance and trading risk.
- The Commission in its orders had accepted that the system is in evolution stage and that certain amount of inadequacy in determination of revenue requirement might be possible which is expected to improve with time as more base level data is available.

21. Uttar Pradesh – Executive Summary

- **Introduction**

The State of Uttar Pradesh has two generating companies Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd (UPRVUNL) and Uttar Pradesh Jal Vidyut Nigam Ltd (UPJVNL) which were incorporated on 14th January 2000 through Uttar Pradesh Electricity Reforms Transfer Scheme. The present installed generation capacity of the UPRVUNL and UPJVNL put together is 4537 MW (Derated capacity).

Uttar Pradesh has four Distribution companies namely, Pashchimanchal Vidyut Vitaran Nigam Ltd (Meerut DISCOM), Poorvanchal Vidyut Vitaran Nigam Limited (Varanasi DISCOM), Madhyanchal Vidyut Vitaran Nigam Limited (Lucknow DISCOM) and Dakshinanchal Vidyut Vitaran Nigam Limited (Agra DISCOM) created vide Uttar Pradesh Transfer of Distribution Undertaking Scheme, 2003 through divestment of the distribution function from Uttar Pradesh Power Corporation Limited (UPPCL) earlier responsible for both Transmission and Distribution functions.

Presently Uttar Pradesh Power Corporation Limited (UPPCL) functions as Bulk Supply Licensee and Uttar Pradesh Power Transmission Corporation Limited (UPPTCL) as State Transmission Utility. MYT order was issued by the Commission for FY 06 to FY 08 for the generating companies.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, UPERC approved various parameters based on Generation Regulations, past performance of power plants and planned R&M. The PLF was approved based on MYT Regulations during and after the control period except in case of plants with planned R&M. With respect to the Station Heat Rates and Auxiliary consumption, UPERC considered MYT regulations for approving the same during the MYT period. However, for FY 09, SERC relaxed the norms for some plant as proposed by UPRVUNL as it was not able to carryout maintenance activity due to defaults in payment by the UPPCL leading to financial crunch.

➢ As regards high Auxiliary consumption, unavailability of funds due to non-payment by UPPCL was observed to be one of the major reasons by the Commission. SERC had decided that the impact of inefficiency in plants shall be shared by the UPRVUNL and UPPCL. UPERC accordingly ordered that half of the increased auxiliary consumption above the benchmarks shall be borne by the UPPCL for failure in timely payment and the rest half shall be borne by UPRVUNL for not being diligent in realizing its revenue.

➢ UPERC has approved equity linked incentive on overachievement of the target PLF (80%) for the generating stations. UPERC also has in place a fuel cost adjustment formula, which is used to pass through the increase in fuel costs on quarterly basis.

➢ The transmission losses, has been approved by UPERC for all the years at 5% since no study was undertaken and there was no reliable base line information regarding actual transmission losses.

➢ UPERC has considered expected growth for number of consumers, specific consumption level per consumer and connected load for the year to arrive at total sales. The total sale thus arrived at was adjusted by some econometric parameters (correction factors) like GDP composition, growth of the State, plan targets, income elasticity of demand, household size and population growth etc. For the unmetered category the Commission approved sales based on the consumption norms established by UPPCL dated 20-07-01,

- Domestic category has the largest share in the overall sales mix for DISCOMs in Uttar Pradesh followed by Others and Industrial consumers. The SERC had set loss reduction trajectory in FY02 with approved reduction of T&D losses by 3% every year. For FY 05 through FY 09 SERC kept the reduction target at 27.4% (for all the DISCOMs put together) because the DISCOMs were not able to meet the targets for FY 03 and FY 04. A comparison of proposed vis-à-vis the approved losses segregated between the DISCOMs is tabulated below:

Particulars	FY 05	FY 07	FY 08	FY 09
Agra				
Approved in the Tariff Order	37.20%	29.10%	29.10%	29.10%
Proposed by the Utility	41.20%	34.00%	28.00%	23.00%
Lucknow				
Approved in the Tariff Order	23.50%	22.40%	22.40%	22.40%
Proposed by the Utility	26.60%	26.20%	24.00%	24.00%
Meerut				
Approved in the Tariff Order	30.90%	29.10%	29.10%	29.10%
Proposed by the Utility	34.60%	34.00%	27.00%	23.00%
Varanasi				
Approved in the Tariff Order	23.10%	26.70%	26.70%	26.70%
Proposed by the Utility	26.20%	31.10%	30.00%	25.00%

- UPERC has ordered the DISCOMs to follow merit order dispatch (MOD) principle while purchasing power.
- UPERC considered various components of salary and external factors such as merger of dearness allowance in the basic pay for approving employee cost in FY 05, FY 07. For FY 08 and FY 09 the Commission changed its methodology and approved O&M cost (employee cost, R&M cost and A&G cost) for the base year (FY 08) based on the three year CAGR and then applied escalation index to the approved cost of base year to arrive at the employee cost for FY 09. UPERC also allocated a portion of additional O&M expenses @ 2.5% of the additions to the assets during the previous year to employee cost in FY 09.
- As regards R&M expense SERC approved it at 2.5% of the opening Gross fixed assets for FY 05 and FY 07. However SERC has approved A&G cost for FY 07 with escalation over previous year cost by removing spikes.
- UPERC for first three years (FY 05, FY 06 and FY 07) allowed depreciation on opening gross block but for FY 08 and FY 09 UPERC shifted its approach and allowed depreciation on opening gross block with 50% depreciation on addition during the year. SERC considered average rate of depreciation as per CERC norms in absence of

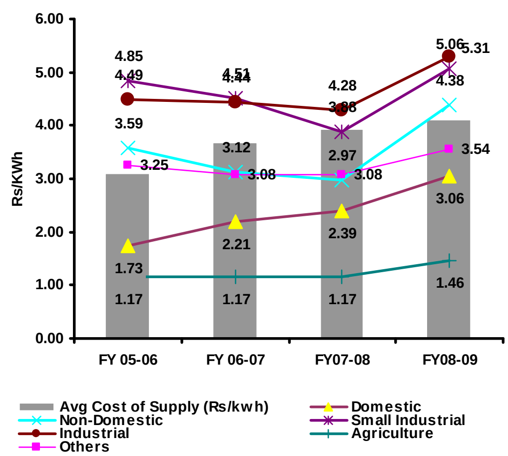
detailed assets register. UPERC in all the years i.e FY 05 through FY 09 has not allowed depreciation on assets funded by any capital subsidy / grant.

- UPERC used DISCOM-wise weighted average interest charges calculated on the basis of total interest charges on average of opening & closing of loans to approve interest cost for new as well as existing loans in FY 07. But for FY 08 and FY 09 SERC approved interest cost of existing loans on actual basis and undertook scheme-wise analysis of loans to approved interest rates as well as the funding pattern. The SERC has also provided for interest on security deposit.
- The Distribution licensees as well as generations companies have not asked for any return on investment since the overall power sector is not viable and requires subsidy support from the State Government. Accordingly, SERC has also not allowed any return on investment for either of the businesses
- UPERC has not approved any provision for bad debts as the utilities (UPPCL and the four DISCOMs) were actually not writing off any bad debts and there is no clear policy for writing off bad debts off.

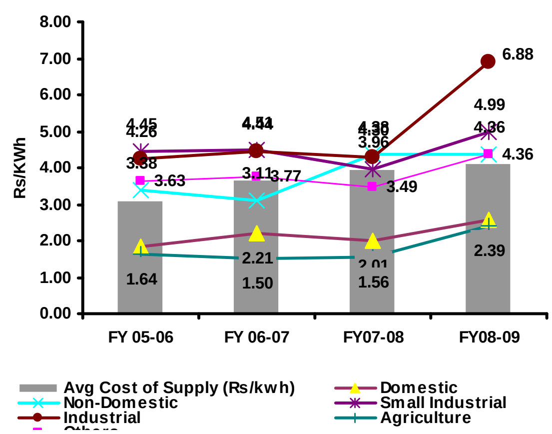
- **Tariff**

- The trend of tariff rationalization, as carried out by SERC, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of average cost of supply is shown below:

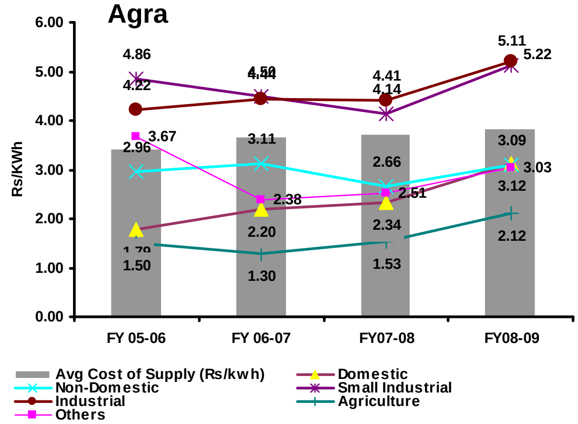
Meerut



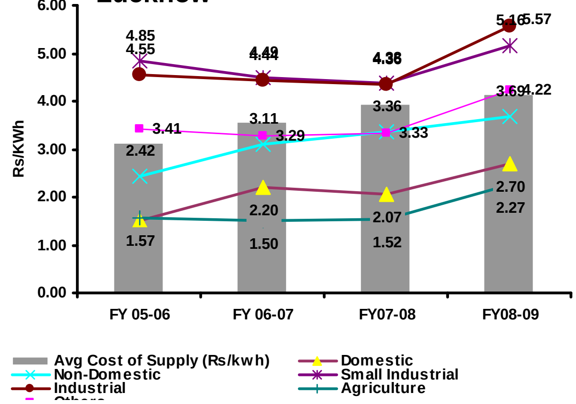
Varanasi

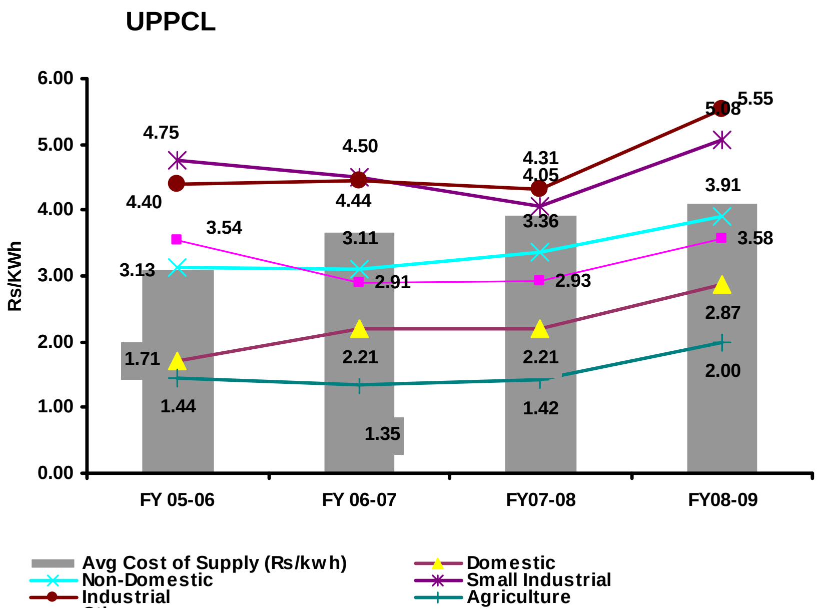


Agra



Lucknow





- ➢ It is clear from the above that industrial and small industrial consumers continue to cross subsidize other categories like agriculture and domestic categories
- ➢ For FY 05 and FY 08 the Commission increased tariff of consumer categories to meet the revenue gap, though the major source of funding the gap in FY 05 was Government subsidy and in FY 07 and FY 08 the Commission approved no increase in tariff as was proposed by the DISCOMs. Rather for FY 08 the Commission approves long term loans to fill the revenue gap, which wee to be treated as GoUP subsidy and the interest implications of which were not to be included in future ARR.
- ➢ One of the important tariff changes done by UPERC was linking the tariff of various categories to hours of supply in FY 07.

- **Multi Year Tariff**

- ➢ UPERC adopted the MYT framework way back in FY02. UPERC was the first in the country to introduce performance targets on key operating parameters (system losses and collection efficiency) over a multi-year period. The Commission introduced MYT tariffs for generation companies from FY 06 to FY 08. Details of the controllable and uncontrollable parameters have not been provided in the tariff order.

- **Transmission & Wheeling charges**

- ➢ Transmission charges are calculated for long term and short term open access consumers.
- ➢ Wheeling charges are determined in cash as well as in kind. The charges in kind are essentially the system losses depending on the voltage level at which the consumer is drawing electricity. Wheeling charges have been calculated at 11kV and above by considering average wheeling charges. Wheeling charges for wheeling energy at 11 kV voltage level are 80% of the average wheeling charges and that for wheeling energy above 11 kV are 50% of the average wheeling charges.

Details	FY 09	
	Long Term	Short Term
Connected at 11 kV Voltage Level	Rs 0.45./kWh	Rs.0.11./kWh
Connected above 11 kV Voltage Level	Rs.0.28./kWh	Rs.0.07./kWh

- Cross-subsidy surcharge for eligible open access consumers was approved to be zero as per the computation based on the methodology prescribed by the UPERC in the Open Access regulations.

- **Subsidy**

- The State Government of Uttar Pradesh provides subsidy to following categories of consumer:
    - Rural Domestic
    - Rural Private Tube wells
    - Departmental Employees
- In addition the UPERC also issued directive for advance subsidy for allowing surcharge waiver scheme and Rebate to Power Loom consumers.
- UPERC has approved subsidy as a means to negate the effect of tariff increase and to fill the revenue gap for the DISCOMs.
- The Commission notifies tariff exclusive of subsidy.

22. Uttarakhand – Executive Summary

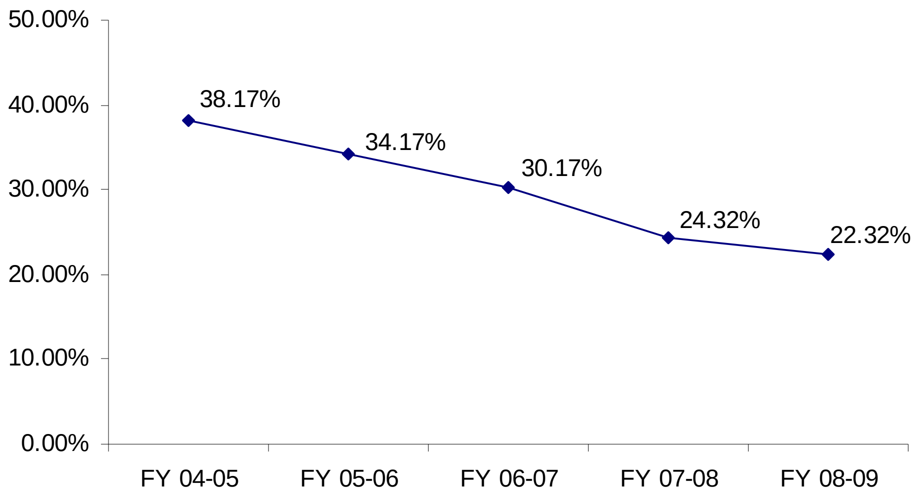
- **Annual Revenue Requirement**

➢ The State of Uttarakhand has nine large and medium hydel generating stations contributing 95% of the total installed capacity in the State. The Commission has followed a similar approach for estimation of energy generation from the nine hydel stations in each of the tariff order of UJVNL. Lower of 15 years' average annual generation and plant-wise design energy has been considered by UERC for estimation of the gross generation from each plant. Auxiliary consumption and transformation loss has been considered as per the Terms & Condition for determination of Hydro generation Tariff Regulation, 2004 of UERC

➢ On account of delay in interface metering between PTCUL and UPCL, the Commission has not been able to approve the transmission losses for PTCUL in the orders issued for PTCUL. Also, inspite of repetitive direction by the Commission in each of the Order, there has been no accounting and treatment of auxiliary consumption, losses and availability as per Regulations between PTCUL and UPCL. However, in the FY 08 & FY 09 combined order for UPCL, the Commission has allowed intra-state transmission loss of 2.5% for FY 08 & FY 09 while revising the AT&C target for UPCL.

➢ The Commission after approving the sales for FY 06 as claimed by UPCL had revised its approach and considered CAGR of past three years from FY 07 onwards. Sales to the unmetered domestic, commercial and public lamps categories had been approved based on the consumption of metered consumers. For approving the consumption by private Tube wells and State Tube wells, the Commission has considered 1100 hours per year and 3562 units per month (as per UPERC norms). Since no truing up of sales has been undertaken by the UERC in any of the orders, the reasonableness of the estimate cannot be determined.

➢ The Commission has approved AT&C loss reduction trajectory keeping in view the massive investments being made under APDRP programme and commitment made to Government of India for reduction target of 20% by 31.03.2004. To be more realistic in setting the AT&C target, the Commission has stipulated a target of 20% loss reduction for UPCL over the next 5 years i.e. 4% reduction each year. The 4% reduction target comprised of 1% technical loss reduction and 3% commercial loss reduction. The Commission has approved AT&C target for UPCL based on this methodology in each of the tariff order uptp FY 08. However, for FY 09, the Commission has considered a reduction of 2% in the AT&C loss level in line with the recommendation of the task force (Abraham Committee) constituted by Ministry of Power, Government of India on APDRP Programme regarding reduction in losses by 2% per annum for licensees having distribution losses in the range of 20 to 30%.



Since, the Commission had revised the AT&C loss by excluding the inter-state and intra-state losses in FY 08, the trajectory was revised in FY 08. Also, in absence of true-up of technical parameters, UPCL actual AT&C loss against the approved cannot be compared.

- UPCL is responsible for the power purchase in the State. The Commission apart from considering power from State generating stations, Central generating stations and micro hydel plants, recognizes banking arrangements with States like Punjab. The majority of the power requirement of Uttaranchal is met from power available from UJVNL stations and allocation of the State in CGS. Any gap in demand supply of power in the State has been considered to be met by the way of UI drawals. The cost of power purchased approved by the Commission has increased from FY 06 to FY 09. However, the cost of power purchase approved by the Commission for FY 07 has been very high as large quantum of high cost UI drawals was estimated to meet the increasing industrial demand in the State.

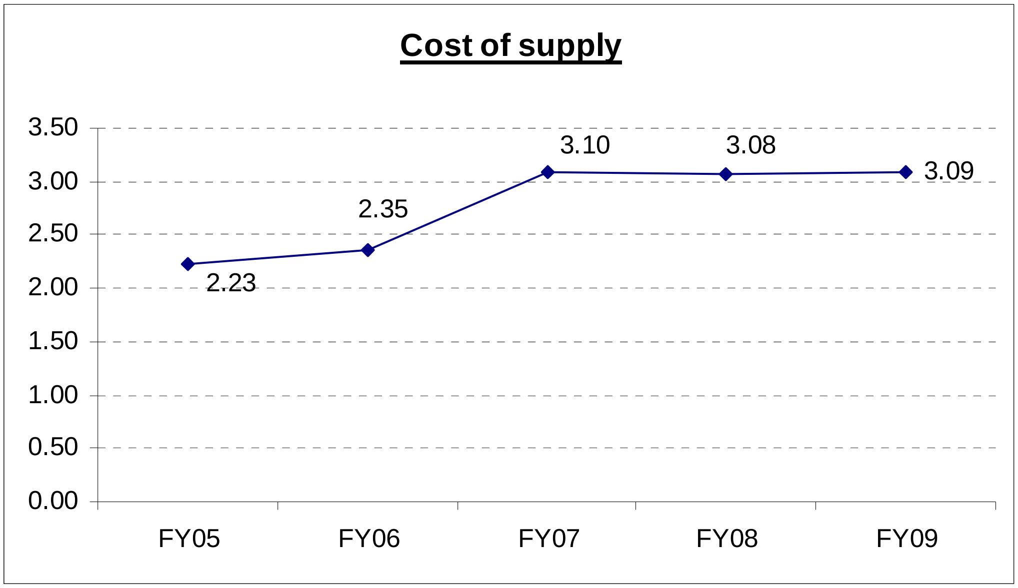
- The Commission has approved the O&M expenses for FY 06 by individual estimation of employee cost, R&M and A&G expense. Escalation over past year actual (provisional) amounts was applied for estimation of each parameter. However, the approach was revised to consolidated approval of O&M expense by considering the previous year approved O&M expense, proportionate increase to account for the increased consumers and escalation of 4% to factor the inflation. Additional expenditure like regulatory fee, pay revision, etc was provided for over and above the O&M expense approved by the Commission.

- For the computation of depreciation, return on equity and interest of loans, opening value of the fixed assets has been considered by the Commission. Therefore, any asset capitalized during a particular financial year is effectively treated as capitalized at the end of the financial year.

- While the depreciation rates has been considered as per the Distribution Tariff Regulations, a weighted average depreciation rate has been applied by the Commission for approval of the depreciation for the purpose of tariff determination due to lack of information regarding the breakup of assets in various asset categories and age of the assets. The Commission has followed this approach for each year during FY 06 to FY 09.

- Since the final apportionment of loan between UPCL and PTCUL was not completed, the Commission had considered interest on all loans for the determination of the ARR for UPCL for FY 06. Scheme-wise loan and interest rate analysis has been done by the Commission. Loans drawn for financing the capitalized assets have only been considered for the purpose of ascertaining the interest liability of UPCL. Further, the interest on loans from Government of Uttaranchal was not considered as the same attracted an interest only in case of a delay in commissioning of the projects. In future tariff orders as well the Commission has followed a similar approach. However, interest outflow for PTCUL and UPCL loans was determined separately in the tariff orders for FY 07, FY 08 & FY 09.
- The Commission has determined the working capital requirement as per the norms specified in the Distribution Tariff Regulations. In the determination of normative working capital requirement, the Regulations allow interest for capital required to finance the shortfall in collection. A collection efficiency of 92% has been considered for FY 06 & FY 07 while 95% collection efficiency has been considered for FY 08 & FY 09 tariff order. Interest on the working capital has been approved based on the prevailing short term PLR of SBI.
- The Commission has utilized its prudence check to approve / disallow the provisioning of bad debts in the tariff order of UPCL. While no provisioning had been approved in the FY 06 & FY 07 tariff order, Provisioning of 1.5% for has been provided by the Commission in the FY 08 & FY 09 tariff orders.
- The Commission has uniformly considered Return on Equity (RoE) as the parameter for allowing return for UPCL. The rate of return on equity for generation, transmission and distribution has been kept uniform at 14% for all the years from FY 06 to FY 09. However, the Commission had not allowed any return during FY 06 and FY 07 as the utilities had not utilized any equity for acquisition of the assets during the transfer of assets. In the FY 08 & FY 09 combined order, return on equity on the assets capitalized funded out of equity of UPCL was approved by the Commission. Also, in case of PTCUL, the Commission has disallowed any return on equity investment provided by the Government of Uttaranchal from Power Development Fund.
- Approval for works capitalized is done in the subsequent tariff order and accordingly considered for the purpose of determination of depreciation, interest and return. The Commission has considered capitalization of assets for the purpose of tariff determination only if the project-wise details of work completed was submitted by the utilities.
- The Annual Revenue Requirement of UPCL has substantially increased owing to the increase in power purchase cost. The power purchase cost in turn has risen mainly due to increase in the tariff of central generating stations and increase in approved power purchase cost from UJVNL generating stations. In absence of audited accounts for FY 06 & FY 07, the Commission has undertaken provisional true up of the expenses and revenues for years FY 06 and FY 07 on the basis of provisional Balance Sheets and available data in the FY 08 & FY 09 tariff order.

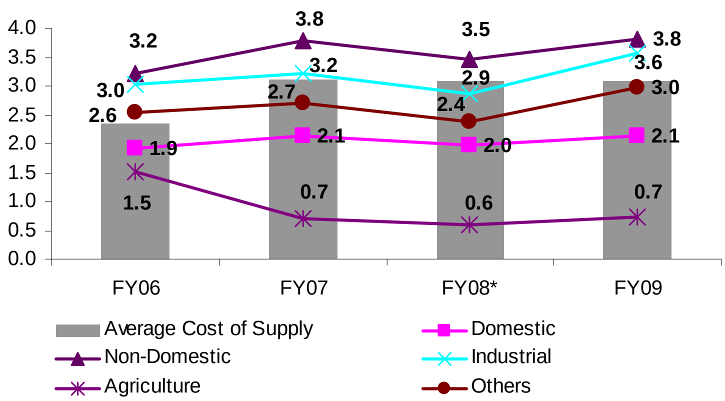
- **Approved Cost of Supply**



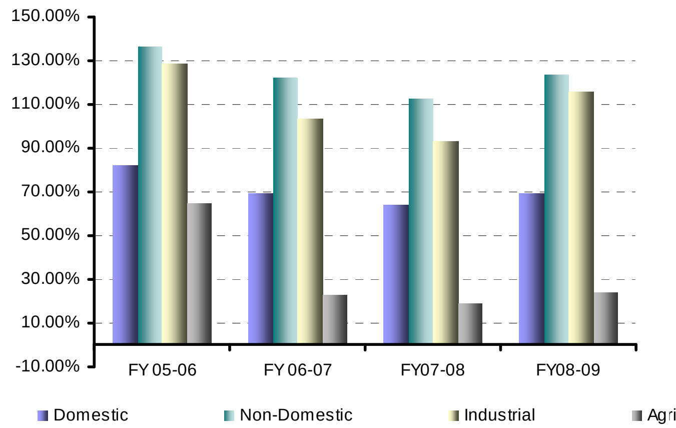
➢ The approved average cost of supply has increased from Rs, 2.23 per unit in FY 05 to Rs. 3.09 per unit in FY 09. However, the average cost of supply of Rs. 3.10 per unit for FY 07 had increased from Rs. 2.35 per unit in FY 06 was high as the Commission had approved higher power purchase through costlier UI drawal for meeting the estimated higher demand from industrial consumers.

- **Tariff Design**

➢ The trend of tariff rationalization, as carried out by the Commission, and the trend in reduction of cross subsidy, as captured in terms of average realization from each category as a % of cost of supply is shown below:



Note: Figures in Rs./kwh



- The non-domestic consumers have been paying more than the average cost of supply and cross subsidizing agriculture and domestic categories. The average tariff for industrial consumers has fluctuated with respect to the cost of supply. Tariff for Domestic and Agriculture categories are not in the +/-20% cost of supply level specified in the National Tariff Policy.
- Incase of UJVNL, the annual fixed charges for each hydel station is to be recovered through primary energy charges determined based on approved primary saleable energy. Any additional energy is being treated as secondary energy and is charged at the primary energy charges. However, in case of State Transmission Utility i.e. PTCUL, the ARR is recoverable by the way of 12 monthly equal installments to be paid by UPCL. Any charge recovered from any new beneficiary is to be refunded to UPCL. Inspite of several directives by the Commission, PTCUL has not submitted segregated accounts for transmission and SLDC business in its tariff proposals. Therefore, the Commission has been approving combined ARR for both the business.
- The categorization of consumers has remained the same with nine major categories in the State. As part of the tariff rationalization in the State, the Commission has undertaken a number of measures like abolishing the minimum charges for all the categories of consumers, introducing fixed charges for most of the categories, KVAh billing for LT and Non-domestic consumers with sanctioned / connected load above 25kW, etc. Special concessional tariff for domestic and small non-domestic consumers have been approved by the Commission for snow bound areas.
- Though the Commission in the last few tariff orders has intended to reduce cross-subsidisation but a clear road map for reduction in cross-subsidies has not been provided for any of the year from FY 06 to FY 09. Some initiatives have been undertaken to reduce tariff of cross-subsidizing categories i.e. reduction in cross-subsidy by steel units, increase in tariff of unmetered domestic consumers, etc.
- The Commission has specified a Time of Day (ToD) tariff for industrial consumers whereby a surcharge of 25% over normal hour rates is charges during peak hours. Also, a rebate of 5% is provided to industrial consumers for consumption during off-peak hours.

A surcharge of 20% over the normal hour tariff is applicable to industrial consumers requiring continuous supply.

- The ToD metering was extended to include all Non-domestic and LT industrial consumers with connected load above 25 kW in the FY 06 Tariff Order. However, the Commission had to abolish the ToD metering for non-domestic consumers based on their submission regarding inability to shift their load from peak to non-peak hours.

- **Subsidy**

- Apart from the cross-subsidy, no other form of subsidy for domestic as well as agricultural consumers from the State Government has been referred to in the tariff orders.

23. West Bengal – Executive Summary

- **Introduction**

State of West Bengal has four DISCOMs namely, West Bengal State Electricity Distribution Company Limited (WBSEDCL), CESC Limited (CESC), Durgapur Projects Limited (DPL), Dishergarh Power Supply Company Limited (DPSCL). These DISCOMs are Distribution cum Generating companies with own generating stations. West Bengal also has a state owned generating company West Bengal State Power Development Corporation Limited with present installed capacity of 2900 MW.

The West Bengal State Electricity Board (WBSEB), post restructuring on 1st April 2007, was replaced by West Bengal State Electricity Transmission Company Limited (WBSETCL) and West Bengal State Electricity Distribution Company Limited (WBSEDCL). The sales mix in West Bengal is dominated by industrial (small and large) followed by Domestic, which together form about 73% of the total sales. The generation capacity of WBPDCL is purely coal-based with hydel plants managed by WBPDCL. In terms of regulatory ratemaking, West Bengal followed the Annual Revenue Requirement (ARR) approach till FY 07 and the first MYT was launched with effect from FY 08 with control period of one year (mainly to establish proper base-line data) and second MYT period initiated on FY 09 with control period of three years.

- **Annual Revenue Requirement**

➢ As regards operational parameters of generation, WBSERC followed the past performance of power plants, plant-wise demand of WBSEB, Govt of West Bengal (GoWB) norms, vintage. The PLF was approved taking into account the plant-wise demand of WBSEB, actual PLF levels of previous years. However, while approving the PLF for the first MYT control period, the SERC compared R&M activity undertaken in past year and proposed to be undertaken in FY 08. With respect to the Station Heat Rates, SERC in absence of its own norms had considered Government of West Bengal norms for FY 05 and FY 06.. For approving the SHR for the MYT control period, the Commission analyzed approved SHR vs. projected SHR in past years and considered synchronization of Northern Grid and Southern Grid as the parameter to improve operational performance of WBPDCL.

➢ WBSERC has approved incentive of 25 paisa/kWh on overachievement of the target PLF (80%) for thermal generating plants.

➢ The transmission losses during the last two years, as approved by WBSERC, are tabulated below:

Particulars	FY 08	FY 09
Transmission Loss (%)	4%	3.90%

➢ WBSERC, for FY 05 through FY 08 has approved sales as proposed by the DISCOMs considering the growth rate in total sales over previous year.

➢ Industrial consumers have the largest share in the overall sales mix for WBSEDCL in West Bengal followed by Domestic consumers. The SERC in absence of reliable data and proper study the WBSERC accepted total sales as proposed but to arrive at the distribution losses, the Commission kept with the trajectory set by it in FY03. A comparison of proposed vis-à-vis the approved losses is tabulated below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Approved Distribution loss	25%*	24%*	23%*	19.53%	18.75%
Proposed Distribution loss	30.20%*	25%*	23%*	20.34%	
CESC					
Approved Distribution loss	17%	17.02%*	15.75%*	15.36%	15.11%
Proposed Distribution loss	18.5%*	16%*	16.00%*	15.5%	
DPL					
Approved Distribution loss	7.00%*	7.00%*	6.50 %*	6.50 %	6.10%
Proposed Distribution loss	6.50 %*	6.50 %*	6.50 %*	6.20 %	
DPSC					
Approved Distribution loss	5.74%*	5.74%*	5.74%*	5.60%	5.54%
Proposed Distribution loss	6.00%*	5.74%*	5.74%*	5.60%	

**Combined T&D loss for WBSEB.*

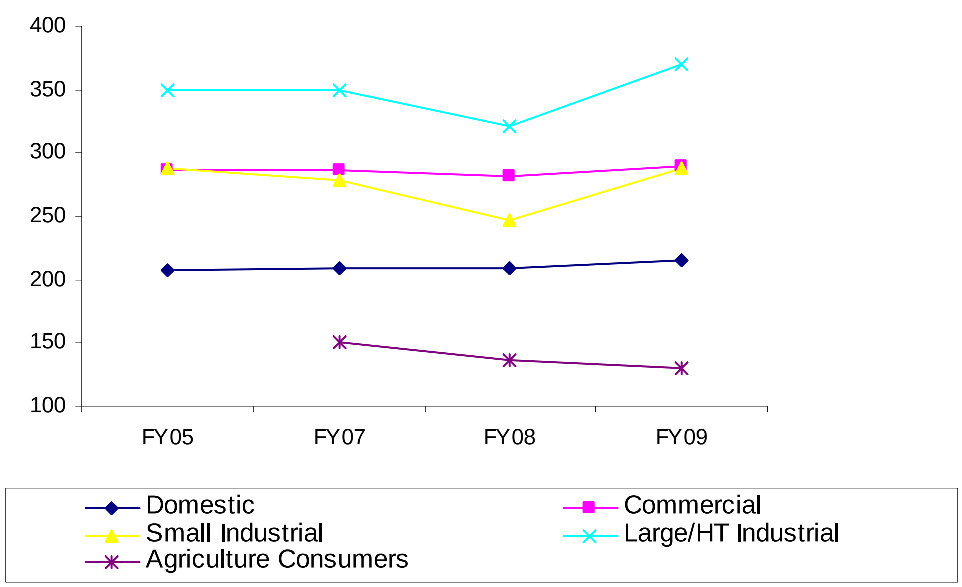
- For the first MYT control period, the SERC has specified trajectory of 1% loss reduction. For second MYT control period WBSERC specified normative Distribution loss as per the Tariff Regulations
- WBSERC ordered the WBSEDCL to follow merit order dispatch (MOD) principle while purchasing power.
- While approving Employee cost, WBSERC took into account retirement of employees, their terminal benefits, normal inflationary impact and increase in the element of D.A. (including arrears). For first MYT control period, WBERC has approved employee cost as proposed considering DA, terminal benefit and past year employee expense of WBSEB. In case of generation, SERC approved employee cost of FY 08 on case to case basis considering various factors like estimated employee cost for FY 07, actual employee cost of FY 06, trend of increase and inflationary impact for approving employee cost of various plants.
- Other O&M expenses such as R&M and A&G were approved by SERC as proposed by WBSEDCL considering various factors like increased activity and network of the licensee, inflationary impact, past year expenditure etc. For second MYT control period, WBSERC approved A&G cost approved at the level of the actual expenditure of FY 08 or the claim whichever was less and R&M cost as per Schedule 9A the Tariff Regulations.
- For depreciation, WBSERC primarily took into account the Notification issued by the Central Government under the Provisions of Electricity (Supply) Act, 1948, proposed depreciation and tariff regulations. For FY 05 in absence of detailed cost benefit analysis of the capital expenditure proposed, SERC approved depreciation in the same ratio as the revised estimate for FY04.
- For FY 05 through FY 09, the Commission approved interest on proposed capital works as proposed by WBSEDCL. Whereas, WBSERC allowed 50% of the interest expense on securitization scheme for power purchase dues considering the detailed report submitted by WBSEDCL. WBSERC, for all the years has disallowed other financing charges

relating to fees and expenses for restructuring of loans and interest on capital liabilities. SERC has also provided for interest on security deposit.

- The approach of WBSERC for approving return was not consistent throughout. For FY 05 SERC approved a return of on fixed assets at the rate of SBI PLR plus 3%. For FY 07 WBSERC allowed 14% on closing equity of FY 05 and for first and second MYT control period, SERC had allowed 14% return on average equity.
- WBSERC had approved provision for bad debts at 0.5% of revenue from sale for FY 07. This was modified to amount of bad debts actually written off in the latest available audited accounts subject to a ceiling of 0.5% of the annual gross sale value of power at the end of the year during the MYT control period.

- **Tariff**
- A two part tariff exists in West Bengal. WBSERC for all the years through FY 05 to FY 09 for all the DISCOMs has not assessed revenue at existing tariff and thus revenue gap. The Commission has also not determined revenue at revised tariff. Trend in energy charges of important categories are as shown in the graph below:

Trends in Energy charges of important categories



- As can be seen the tariff for all other categories has increased apart from agriculture consumers.

- **Multi Year Tariff**

- WBSERC introduced MYT tariffs from FY 08 onwards with control period for one year. Second MYT control period started in FY 09 with control period of three years. The controllable factors approved by the SERC in its regulations are:
    - Depreciation

- o Non-tariff income
- o Man/ MW ratio of generating station as adopted by the Commission in pursuance to Schedule 9A
- o O&M expenses as per Schedule 9A of these regulations.

Uncontrollable factors consist of:

- o Fuel Cost subject to efficiency norms as per Schedule 9A of these regulations
- o Power Purchase Costs subject to efficiency norms of distribution loss and/or Uncontrollable transmission loss as per Schedule 9A of these regulations
- o Employee Cost subject to Man/ MW ratio adopted by the Commission
- o Interest rate & Finance Charges rate
- o Taxes on Income, Duties, Levies, cess, etc
- o Sale of electricity to unregulated market and to those whose purchase of electricity is not regulated by WBERC
- o Incentive
- o Foreign Exchange Rate Variation
- o Energy Sales Volume
- o Unscheduled Interchange
- o Rate of interest on Working Capital as per regulation 4.6.5
- o Insurance premium payable
- o Equity Base subject to ceiling as specified in regulation 4.4.2
- o Effect of rebate / surcharge
- o Income from other business

- **Transmission & Wheeling charges**

- ➢ Transmission charges are calculated for long term and short term open access consumers. The short term open access transmission charge is 1/4th of the long term charges and it is available only for selected block of hours in a day.
- ➢ Wheeling charges are determined in cash.

Category	FY 08	FY 09
Long Term (paise/ kWh)	72.01	69.19
Short Term (paise/ kWh)	57.61	55.35

- ➢ WBSERC has been calculating the cross subsidy surcharge as difference between the tariff applicable for the category of the consumers being allowed open access and the cost avoided (per unit) by the licensee in this regard. The table below provides details about the cross subsidy surcharge approved by the SERC.

Particulars	FY 08	FY 09
Cross Subsidy Surcharge (Rs/kWh)	239.88 Paise/kwh + Wheeling charges per unit as applicable	143.42 paise/kWh + Wheeling charge per unit as applicable

- **Subsidy**

➢ None of the DISCOMs have received subsidy in any form from the Government.

ANNEXURE A – Detailed Analysis of Each State

The detailed analysis of each State is attached as following:

List	State Electricity Regulatory Commission
Annexure A-1	Andhra Pradesh Electricity Regulatory Commission
Annexure A-2	Assam Electricity Regulatory Commission
Annexure A-3	Bihar Electricity Regulatory Commission
Annexure A-4	Chhattisgarh State Electricity Regulatory Commission
Annexure A-5	Delhi Electricity Regulatory Commission
Annexure A-6	Gujarat Electricity Regulatory Commission
Annexure A-7	Haryana Electricity Regulatory Commission
Annexure A-8	Himachal Pradesh Electricity Regulatory Commission
Annexure A-9	Jharkhand State Electricity Regulatory Commission
Annexure A-10	Jammu & Kashmir State Electricity Regulatory Commission
Annexure A-11	Joint Electricity Regulatory Commission for Manipur & Mizoram
Annexure A-12	Karnataka Electricity Regulatory Commission
Annexure A-13	Kerala State Electricity Regulatory Commission
Annexure A-14	Madhya Pradesh Electricity Regulatory Commission
Annexure A-15	Maharashtra Electricity Regulatory Commission
Annexure A-16	Meghalaya State Electricity Regulatory Commission
Annexure A-17	Orissa Electricity Regulatory Commission
Annexure A-18	Punjab State Electricity Regulatory Commission
Annexure A-19	Rajasthan Electricity Regulatory Commission
Annexure A-20	Tamil Nadu Electricity Regulatory Commission
Annexure A-21	Tripura Electricity Regulatory Commission
Annexure A-22	Uttar Pradesh Electricity Regulatory Commission
Annexure A-23	Uttarakhand Electricity Regulatory Commission
Annexure A-24	West Bengal Electricity Regulatory

A-1. Andhra Pradesh

A-1.1. Transmission Corporation of Andhra Pradesh Ltd

Introduction

Transmission Corporation of Andhra Pradesh Limited (APTRANSCO) is the holder of Transmission and Bulk Supply License and the State Transmission Utility (STU) to carry out the transmission and bulk supply business in Andhra Pradesh for a period of 30 years from 1-2-2000. In the state, there are four Distribution Companies (DISCOMs) namely, Eastern Power Distribution Company of A.P Limited (APEPDPCL), Central Power Distribution Company of A.P Limited (APCPDCL), Northern Power Distribution Company of A.P Limited (APNPDCL) and Southern Power Distribution Company of A.P Limited (APSPDCL).

The tariff orders issued by APERC for FY 05 and FY 06 specified tariffs as applicable both for transmission business (APTRANSCO) and the distribution business (4 DISCOMs) in the state. From the FY 07onwards, the Commission decided to go in for a Multi-year Tariff (MYT) framework in accordance with the National Electricity Policy with a 3 year control period from FY 07 to FY 09. Separate tariff orders for the MYT control period were approved for the transmission and the distribution business. The first MYT order for the transmission business determined the transmission charges for the control period from FY 07 to FY 09 and SLDC charges fro FY 07 without Bulk Supply Tariff since under the Third Transfer Scheme notified by the Government of Andhra Pradesh, APTRANSCO was divested of its bulk supply business with effect from June 2005. APTRANSCO was however designated to continue with SLDC function for the control period as well. The Commission issued separate tariff order for FY 08 and FY 09 in respect of the SLDC function. In preparation of adoption of MYT framework, the Commission had earlier notified the APERC (Terms and Conditions for determination of Transmission Tariff) Regulation, 2005 on November 30 2005.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission in the tariff order for the transmission business of APTRANSCO during FY 05 to FY 2008-09.

Capital Outlay

The Commission had considered and evaluated scheme wise capital works in progress for FY 03-04 to project the capital works-in process as on March 31st, 2004 in order to have the basis for opening balance of FY 05. The Commission approved a capital work-in process (CWIP) quantum of Rs.310.43 Cr. as the opening balance for FY 05 and had then estimated the base capital expenditure for all the schemes for FY 05. In doing so for FY 05, the Commission had allowed for inclusion in the CWIP only those schemes which have prior approval or those schemes which do not require such approval (schemes individually costing less than Rs.5 Cr). Based on this norm, the Commission allowed for inclusion in the CWIP an estimated amount of Rs. 297.00 Cr as Base Capital expenditure in respect of all the schemes as against Rs. 467.10 Cr projected.

The Commission in the Tariff order for FY 05 had directed that FY 2005-06 onwards, the CWIP along with the corresponding loans and consumer contributions shall be excluded and not taken into account for calculating the Capital Base and the necessary corresponding adjustments shall also be carried out in the expenses to be capitalized. APTRANSCO was further directed to submit monthly progress reports on physical and financial progress on each of the schemes April 1st 2004.

The Commission has adopted similar approach for FY 06 in determination of opening balance of CWIP and scheme wise CWIP addition during the respective years. For MYT control period from FY 07 to FY 09, the Commission has approved Rate Base for the purpose of computing the Return on Capital Employed (RoCE) that consisted of the investments completed and capitalized during the year and the proposed asset creation expected during the ensuing year after adjusting for depreciation set aside for the projects to be capitalized and user contributions pertaining to the proposed new investments.

The capital outlay approved by the Commission during FY 05 to FY 09 is shown in table below.

Table A-1.1: Approved Base Capital Expenditure (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Base Capital Expenditure - Approved	297.00	304.13	492.82	500.00	500.00
Base Capital Expenditure - Proposed	467.10	500.75	807.66	1126.88	1122.34

The Commission has further considered the positive and negative elements of the capital base to finally arrive at the net capital base. The positive elements considered by the Commission are:

Original Cost of Fixed Asset (OCFA)

The Commission had approved transfers to OCFA from CWIP against that proposed by APTRANSCO during FY 05 to FY 09 as shown in table below.

Table A-1.2: Approved Original Cost of Fixed Assets (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed					
OCFA opening	3822.57	4171.25	4871.08	5756.21	6975.75
ADD: Works likely to be completed during the FY	563.8	965.76	885.13	1219.54	1360.08
OCFA Closing	4386.37	5137.01	5756.21	6975.75	8335.83
Approved					
OCFA opening	3761.97	3948.9	4759.74	5104.74	5616.59
ADD: Works likely to be completed during the FY	400	500	345	511.85	558.16
OCFA Closing	4161.97	4448.9	5104.74	5616.59	6174.75

In the MYT order, deductions had been made from the OCFA on account of accumulated depreciation and consumer contributions inclusive of capital grants and capital subsidies (as discussed below) received by the Licensee.

Working Capital Requirement

The Commission had undertaken a detailed analysis of working capital and the interest on borrowings in the tariff orders.

Average Cash and Bank Balance

For FY 05, analysis of existing billing and collection lags by the Commission had revealed that the working capital projected corresponds to roughly one month's average cash and bank balance. However, considering the working capital difficulties in the transition as represented by APTRANSCO, the Commission in Tariff Order FY 05, had approved to allow the average cash and bank balance in computation of the Capital Base at two months' level of eligible items of expenses instead of one month. The Commission, in the tariff order for FY 05 had stated that it intended to provide a trajectory to an efficient level over a period of 3 years by reducing the level to 1½ months level for FY 2005-06 and thereafter reverting to one month's level.

Accordingly, for FY 06, the Commission approved expenses equivalent to 1½ months of cash and bank balance.

Average Cost of Stores

For FY 05 and FY 06, the had been no change in the level of approved average cost of stores, which was already being provided at 2 months' level of the annual repair and maintenance expenses.

In the MYT Order, the Commission has approved working capital requirement equivalent to 45 days' O&M expenses for inclusion in the Rate Base

APTRANSCO in its MYT tariff petition had claimed additional working capital in rate base as being equivalent to three months' R&M expenses. This claim is in addition to 45 days' O&M expenses towards working capital. As per the Transmission Tariff Regulation, the Licensee is entitled to only 'the carrying cost of maintaining an appropriate inventory level of O&M stores'. The Commission after careful examination argued that such an inventory should normally be maintained from out of the normal O&M expenses admissible to the Licensee. The Commission ruled that the Licensee shall be entitled only to the carrying cost @ 9% p.a. of this inventory and not any return thereon.

The working capital approved during the last five years from FY 05 to FY 09 is given in the table below:

Table A-1.3: Approved Working Capital Requirement (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Average Cost of Stores	6.67	7.28	---	---	---

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Average Cash and Bank Balance	28.66	21.2	---	---	---
45 days of O&M expenses (under MYT)	---	---	22.32	24.87	26.61
Carrying Cost of O&M Stores (under MYT)	---	---	1.41	1.62	1.8
Total	35.33	28.48	23.73	26.49	28.41

The negative (or deductible) elements of capital base considered by the Commission are:

Accumulated Depreciation

The accumulated depreciation as projected by the Licensee in the tariff petition for FY 05 is Rs.1503.20 Cr which has been corrected based on reduced capitalisation of works adopted by the Commission FY 03-04. The Commission, for the MYT control period, has approved accumulated depreciation and consumer contribution as in the table below and the same have been deducted from the approved Original Cost of Fixed Asset (OCFA).

Table A-1.4: Approved Accumulated Depreciation and Consumer Contribution (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Accumulated Depreciation	1499.64	1733.13	1958.23	2246.38	2559.18
Accumulated Depreciation – Proposed	1503.2	1740.72	1871.32	2049.02	2264.54
Accumulated Consumer Contribution	---	---	317.8	411.79	451.79
Consumer Contribution - Proposed	---	---	76.4	251.4	170.39

Net Capital Base

The Commission, for FY 05 and FY 06 has arrived at the Net Capital Base as shown below in table 5 in consideration of the above positive and negative elements. In the MYT order, however, the Commission has arrived at the Rate Base for the control period in order to determine Return on Capital Employed (ROCE) as given in table 6 below:

Table A-1.5: Approved Net Capital base (Rs. Crs)

Particulars	FY 05	FY 06
Net Capital Base- Approved	156.83	346.46
Net Capital Base- Projected by APTRANSCO	1416.4	1604.79

Table A-1.6: Approved Regulated Rate Base for the Control Period (Rs.Crs)

Particulars	FY 07	FY 08	FY 09
Regulated Rate Base - Approved	2812.1	2909.9	3078.7
Regulated Rate Base - Projected by APTRANSCO	3495.2	4302.4	5441.6

<u>Expenditure</u>

Purchase of Energy

APTRANSCO (STU) was the single buyer of energy and the Bulk Supply licensee in the State of Andhra Pradesh till the State Transmission Utility was divested of its bulk supply license. The four DISCOMS in the state of Andhra Pradesh had entered into a Bulk Supply Agreement (BSA) with APTRANSCO for the supply of energy and under the single buyer system; APTRANSCO, the Transmission and Bulk supply licensee alone were authorized to supply the entire requirement of the DISCOMs. The Commission has accordingly approved purchase of energy under the transmission business for FY 05 and FY 06.

The Commission had analysed sales projections of the DISCOMs category-wise and month-wise for each DISCOM. The projected losses of the DISCOMs and APTRANSCO were then added on to it to arrive at the overall energy requirement for APTRANSCO.

The Commission had approved a total power purchase of 42,008 MUs for retail supply by the DISCOMs including nine Rural Electric Supply Co-operative Societies (RESCOs) to specific end-consumers during FY 2004-05. The Commission had approved total system losses of 10,574 MU (23.6%), consisting of transmission losses of 2,801 MU (6.25%) and distribution losses of 7,773 MU (17.35%). This finally translated into power purchase requirement of 44,808 MUs (excluding inter state sales) or 45,997.12 MUs (including inter state sales) by APTRANSCO for the DISCOMs for FY 05.

Analyzing on a similar basis for FY 06, the Commission had approved a total power purchase of 48,886.50 MUs for retail supply by the DISCOMs and RESCOs based on sales of 38,442.21 MU to end-consumers during FY 2005-06. APTRANSCO had projected transmission losses of 5 % (inclusive of PGCIL losses external to AP Grid) for the ensuing year and the same had been accepted by the Commission for estimation of power purchases. Total system losses of 10,444.29 MU (21.36%), consisting of transmission losses of 2,444.33 MU (5 %) and distribution losses of 7,999.97 MU (17.23 %) were considered by the Commission to finally arrive at the power purchase requirement of 48,886.50 MUs to be bought by APTRANSCO for the DISCOMS.

Availability of Power

For FY 05 & FY 06, the project and approved availability is shown in table below:

Table A-1.7: Approved Availability of Power to APTRANSCO for FY 05

Source of power	APTRANSCO (MU)	APERC (MU)	Remarks
APGENCO			
Hydel	6,422.63	6,423.49	
Thermal	20,113.81	19,789.27	
Total	26,536.44	26,212.76	
CGS (Southern Region)	6,214.57	6,670.00	NTPC (SR) availability taken into consideration; 170 MUs available from NTPC – Ramagundam Expansion.
NTPC (ER)	365.00	332.10	Availability adjusted to allocated capacity from ER stations.
Simhadri	6,169.54	6,046.15	Availability from NTPC Simhadri as per NTPC declaration.
NTPC Talcher 2	2,181.64	1,900.06	As per NTPC availability declaration adjusted for commercial operation date of Unit-2
APGPCL	417.95	417.95	Based on current year approved levels
IPPs	7,156.07	6,480.87	The availability from IPPs adjusted for expected gas shortage and 0.2mmscmd new gas availability submitted by APTRANSCO.
Others	2,585.33	2,233.26	Non-conventional energy projects considered at 1850 MU as per the trend.
			VSP & NBFA total availability of 385 MU not considered. Other CPPs not considered.
Total	**51,643.54**	**50,293.15**	

Table A-1.8: Approved Availability of Power to APTRANSCO for FY 06

Source of power	APTRANSCO (MU)	APERC (MU)	Remarks
APGENCO	26,430.06	26,430.06	
Thermal	20,450.46	20,450.46	
Hydel	5,979.60	5,979.60	
CGS	11,254.08	10,834.37	
CGS (SR)	10,834.37	10,834.37	
CGS (ER)	419.71	0.00	NTPC - ER not considered
Source of power	APTRANSCO (MU)	APERC (MU)	Remarks
NTPC - Simhadri	6,484.25	7,446.00	Based on current years' actual generation
SEBs	88.89	0.00	Purchase from other SEBs/PTC not considered
APGPCL	424.31	424.31	
IPPs	6,253.00	5,315.71	
Others & NEDCAP	2,738.12	2,286.12	Short term sources excluded
TOTAL	***53,672.72***	***52,736.57***	

Since APTRANSCO was later divested of the Bulk Supply License, the Commission has not determined power purchase requirement or power availability in subsequent orders. The MYT order clarifies that PGCIL transmission costs of Rs.194.99 Cr. for FY 2006-07, Rs.204.74 Cr. for FY 2007-08 and Rs.214.97 Cr. for FY 2008-09 for the control period have been transferred to distribution licensees in consonance with the allocation of power purchase agreements to the DISCOMs

Power Purchase cost

The Commission had determined the power purchase cost by following the economic merit order dispatch principles both for FY 05 and FY 06. Load dispatch had been also been carried out on the basis of station-wise costs for both the years.

The total cost of power purchase has been determined as the summation of station-wise fixed cost and variable cost after necessary adjustments. For FY 05, the licensee had also submitted additional transmission charges on account of a few new assets expected to be added to the transmission network by PGCIL

The Commission adopted current year PGCIL tariffs for determination of transmission charges for the existing assets and projected transmission charges for additional assets were added on to arrive at the total PGCIL transmission charges for the ensuing year.

For FY 05, the Variable cost as submitted in the petition had been adopted for by the Commission for individual stations. The weighted average variable cost for FY 05 had been estimated as Rs 0.907 per kWh against the projected cost Rs.0.910 per kWh.

For FY 06, the Commission accepted the Variable cost as projected by the licensee for individual stations except for gas based IPPs and NTPC-Simhadri. The Commission, considering the price of gas to go up, had revised the variable charges upwards for the IPPs which use gas as fuel. In view of the impending coal shortage, the variable charge for NTPC-Simhadri had also been revised as it required procuring coal from alternate sources. The weighted average variable cost for FY 06 had been estimated as Rs.1.77 per kWh as against Rs.1.75 per kWh projected by APTRANSCO.

Summary of station-wise power purchase cost approved by the Commission for FY 05 and FY 06 is summarized below:

Table A-1.9: Details of Approved Power Purchase Cost for FY 05

Stations	Power purchases (MU)	Fixed costs (Rs. Crs)	Variable costs (Rs. Crs)	Total cost (Rs. Crs)	Rs/Kwh
APGENCO Thermal	16,827.17	1,689.52	1,789.89	3,479.41	1.50
APGENCO Hydel	6,423.49				
CGS (SR) - Generation	6,670	344.92	621.32	966.24	1.45
NTPC Simhadri	6,046	457.82	526.98	984.80	1.63
NTPC (ER)	332	35.77	34.82	70.59	2.13
Talcher 2- Generation	1,900.06	192.03	89.30	281.33	1.48
IPPs	5,677.26	852.31	558.72	1,411.03	2.49
APGPCL	157.66	21.90	17.55	39.45	2.50
Non Conventionals	1,849.99		520.04	520.04	2.81
Others	113.05	49.48	13.37	62.85	5.56
Generation costs	45,997.12	3,643.75	4,171.99	7,815.74	1.70
Transmission associated with Generation other than APTRANSCO		279.70		279.70	0.0608
Total	45,997.12	3,923.45	4,171.99	8,095.44	1.76

Table A-1.10: Details of Approved Power Purchase Cost for FY 06

Stations	Power purchases (MU)	Fixed costs (Rs. Crs)	Variable costs (Rs. Crs)	Income Tax, Incentive and other charges (Rs. Crs)	Total cost (Rs. Crs)	Rs/Kwh
APGENCO	23,919.42	1,535.19	1,947.42	42.00	3,524.61	1.47
Thermal	17,939.82					
Hydel	5,979.60					
CGS	10,070.41	592.28	845.73	58.60	1,496.61	1.49
CGS (SR)	10,070.41	592.28	845.73	58.03	1,496.04	1.49
CGS (ER)	0.00	0.00	0.00	0.57	0.57	0.00
NTPC - Simhadri	7,446.00	445.31	696.05	9.52	1,150.87	1.55
SEBs	0.00	0.00	0.00	0.00	0.00	0.00
APGPCL	424.31	24.55	60.37	0.00	84.92	2.00
IPPs	4,758.87	808.11	554.77	30.94	1,393.82	2.93
Others & NEDCAP	2,267.48	45.38	586.35	87.61	719.34	3.17
Total Energy Cost	48,886.50	3,450.82	4,690.71	228.67	8,370.19	1.71
Transmission Cost excluding APTRANSCO		224.72			224.72	
ULDC* Charges		34.34			34.34	
Total	48,886.50	3709.88	4690.71	228.67	8629.25	1.77

** Unified Load Despatch Centre*

The Summary of power purchase cost as projected and that approved by the Commission for FY 05 and FY 06 is given in table 1 below:

Table A-1.11: Summary of Approved Power Purchase Cost for FY 05 and FY 05- 06

Particulars (in Rs./kWh)	FY 05	FY 06
Power Purchase Cost - Approved	1.76 (including 0.0608 for Transmission)	1.77
Power Purchase Cost - projected by APTRANSCO	1.72 (including 0.0549 for Transmission)	1.75

The Commission in its tariff order for FY 06 had observed that APTRANSCO had adopted the same maintenance schedule as proposed by generating companies without optimizing the power purchase cost based on monthly despatches corresponding to monthly power purchase requirement for DISCOMs. The Commission had accordingly directed APTRANSCO to optimize power purchase cost through redrawing of the maintenance schedule in consultation with the generating companies wherever cheaper source is proposed for maintenance during periods of higher power requirement.

O&M Expenses

The Commission had approved employee cost (salaries, wages etc), A&G expenses and R&M expenses separately for FY 05 and FY 06 while a Consolidated O&M cost had been approved for the MYT control period.

Employee Cost

The Licensee had projected an amount of Rs. 100.70 Cr towards wages, salaries and other allowances (net of capitalisation) and Rs.10.10 Crs (net of capitalisation) towards Employee funds for pension and gratuity for inclusion in the ARR of FY 2004-05. In order that the provision towards employee's pension and gratuity funds is reflected at gross (and not net of capitalisation), the capitalisation out of employees' pension and gratuity funds had been taken into account under Salaries and Wages for FY 05.

The Licensee has projected an amount of Rs. 101.60 Crs towards Wages, salaries and Other Allowances (net of capitalisation) for inclusion in the ARR of FY 2005-06. The Commission had approved the cost as submitted however with a slight disallowance.

Table A-1.12: Approved Employee Cost (Rs. Crs)

Particulars	FY 05	FY 06
Wages, Salaries and other Allowance - Approved	110.8	101.6
Wages, Salaries and other Allowance - Projected	95.18	99.23

Administrative and General Expenses

The Licensee had claimed Rs.23.50 Cr and Rs. 12.92 Cr towards Administration and General Expenses (net of capitalisation) for FY 05 and FY 06 respectively. This Commission had considered the projections to be reasonable and had approved the expenses in full.

Repair and Maintenance Expenses

APTRANSCO has projected Rs.40.00 Cr and Rs. 43.68 Cr towards Repairs and maintenance (net of capitalisation) for FY 05 and FY 06 respectively. The Commission has approved the R&M expenses as claimed by APTRANSCO.

In the MYT petition, the Licensee had projected the base year expenses, for further projections for the control period, on the basis of its estimates of the expenses for the base year 2005-06 alone not having specified O&M expenses for 2 years preceding the base year as was prescribed in the tariff regulations. Accordingly, the Commission had to undertake the whole exercise de novo. The base norms for O&M cost per bay and per km of line were calculated from the FY 05 audited accounts of APTRANSCO. During the exercise, the Commission had observed that the R&M expenses during FY 05 were abnormally high. After making necessary adjustments, the Commission arrived at the base year figure for O&M expenses as Rs.166.38 Cr. (excluding SLDC) for FY 06 as against Rs.231.88 Cr projected by the Licensee.

The Commission, on the basis of base year cost, determined the norms of Rs.0.075 Cr per substation bay and Rs.16240 per km line length for the base year. The Commission, in the MYT order, had applied an annual inflation rate of 5% to the number of bays and kilometers of line length for each year of the control period. Projections for the number of bays and Km of line length were based on the capital investment plan considered by the Commission for this Order.

The O&M expenses approved by the Commission from FY 05 to FY 06 are shown in table below:

Table A-1.13: Approved O&M Cost for APTRANSCO (Rs.Cr)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Wages, Salaries and other Allowance	110.8	101.6	---	---	---

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
A&G Expenses	23.5	12.92	---	---	---
R&M expenses	40	43.68	---	---	---
Total O&M Cost	174.3	158.2	181.02	201.75	215.87

Interest on Loans and other Finance Charges

The Commission provided interest on all loans taken into account in the computation of the Capital Base. For FY 05, an amount of Rs.2944.47 Cr had been reckoned as loans by the Commission in the computation of the Capital Base as against Rs.2036.90 Cr and the interest had been calculated accordingly. The licensee, in its petition for FY 05 had requested for a provision of Rs.74.30 Cr for debt redemption obligation which the Commission did not approve as part of ARR. The Commission has however, approved interest of Rs.4.27 Cr on fresh borrowings to meet the requirement. The total interest (gross) as shown below has been determined and approved after taking into consideration the interest benefit of swapping of loans (Rs.26.70 Cr) and interest on debt redemption obligation. The amount of Rs.16.40 Cr claimed in the ARR towards Other Finance Charges (including Lease rentals) had been considered reasonable and allowed in full.

Similar approach had been followed by the Commission in approving interest and finance charges for FY 06.

The Commission had not approved separate interest cost on loans in the MYT tariff order as they have been considered in Return on Capital Employed (ROCE) during the control period. The table 4 below shows the interest cost on loan and other finance charges, as approved by the Commission for FY 05 and FY 06.

Table A-1.14: Approved Interest on Loans and other Finance charges (in Rs.Crs)

Particulars	FY 05	FY 06
Approved		
Interest on loans	305.46	229.12
Other finance charges	16.4	11.64
Total	321.86	240.76
LESS: IDC capitalized	16	*0.00
Amount taken for ARR computation	305.86	240.76
Proposed		
Interest on loans	400.8	249.76
Other finance charges	16.4	11.64
Total	417.2	261.4
LESS: IDC capitalized	25.1	22.64
Amount taken for ARR computation	392.1	238.76

Return on Capital Employed

Return on Capital Employed (RoCE) for the MYT control period had been estimated taking into account the debt equity ratio of 75:25 as appropriate after examining the current debt-equity structure of the Licensee and the risks involved in the Transmission business. The Commission had reiterated that Return on Equity (RoE) will continue to be provided being a prerequisite for the health of the sector. Interest cost on debt at 9% and return of equity of 14% had been factored in computing the Weighted Average Cost of Capital (WACC). RoCE, for the transmission business, computed on the approved Rate Base has been allowed as Rs.288.24 Cr for FY 2006-07, Rs.298.26 Cr for FY 2007-08 and Rs.315.57 Cr for FY 2008-09.

Depreciation

The depreciation amount approved by the Commission both for FY 05 and FY 06 had been slightly lesser than that claimed by the Licensee. The difference is primarily on account of the difference in the level of capitalisation for respective preceding years i.e. FY 03-04 and FY 05.

In its MYT petition, APTRANSCO had computed depreciation as also the AAD, in accordance with the provisions of the Tariff Regulations. The AAD had been taken as the difference between the amounts required for loan repayments and the depreciation admissible as per the CERC formulation. However, the Commission had continued with the on-going practice of following MoP rates for depreciation. Accordingly, no AAD had been provided.

Table A-1.15: Approved Depreciation Cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Depreciation - Approved	235.8	248.3	252.23	271.01	294.81
Depreciation - Claimed	239.3	255.9	150.24	177.7	215.52

Total Expenditure

In addition to the above expenditure items, the Commission had also made certain previous year adjustments pertaining to Interest, Depreciation, Income Tax, Wage revision, Reasonable Return, APGENCO fixed cost as found essential to finally arrive at the total expenditure.

The table 6 given below summarizes the total expenditure as approved by the Commission from FY 05 to FY 09.

Table A-1.16: Approved Total Expenditure for APTRANSCO (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Expenditure - Approved	8701.1	9332.7	342.5	381.3	417.9
Total Expenditure - Projected	8641.2	9810.7	520.5	650.8	803.0
% Disallowed	0.0	0.0	0.3	0.4	0.5

Reasonable Return

APTRANSCO had not claimed Reasonable Return in the petition for FY 05 and FY 06 while it was eligible for such return as per the Sixth Schedule to the Electricity (Supply)

Act, 1948. The Commission had accordingly allowed a Reasonable Return, considering it in the interest of both consumers and the Licensee. The Commission considered it necessary to provide for such reasonable return in the calculation of the Revenue Requirement so as to also reinforce commercial orientation.

The Commission had allowed an amount of Rs.39.81 Cr as reasonable return to APTRANSCO as per Sixth Schedule and had included it in the calculation of the Revenue Requirement for FY 2004-05. Similarly, the Commission, for FY 06, had approved an amount of Rs.67.59 Cr (16% of the capital base of Rs.346.46 Cr and 0.50% of the loans of Rs.2431.28 Cr as Reasonable Return in the calculation of the Revenue Requirement.

Non-Tariff Income

The Commission has reckoned non-tariff income for FY 05 and FY 06 as shown in the table below. Apart from other sources such as incentive on securitization, rebate on power purchase etc., the Commission has considered the surplus power available in the State as 1114 MU (filed by the APTRANSCO) for FY 05 and this power is expected to be sold at Rs.2.10 per unit. The revenue from the Inter-State sale of power for FY 05 reckoned for tariff purpose had been approved at Rs.233.94 Cr as against Rs.267.36 Cr projected by the Licensee at the rate of Rs.2.40 per unit. The Commission, for FY 06, has however not approved any surplus power being available in the State as against 300 MU filed by the APTRANSCO and accordingly the net revenue from the Inter-State sales of power, had been approved nil.

Table A-1.17: Approved Non-Tariff income (Rs. Crs)

Particulars	FY 05	FY 06
Non-Tariff Income – Approved	397.34	164.64
Non-Tariff Income – Projected	258.3	209.44

Aggregate Revenue Requirement

In consideration of the above components discussed, the Aggregate Revenue Requirement (ARR) approved by the Commission for the transmission business in the state from FY 05 to FY 09 is given in table below:

Table A-1.18: Approved Net ARR (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total expenditure	8701.13	9332.69	342.52	381.3	417.89
Reasonable return (RoCE in case of MYT)	39.81	67.59	288.24	298.26	315.57
Less: Non-tariff income	397.34	164.64	15.47	15.47	15.47
Net Aggregate Revenue Requirement	8343.6	9235.64	615.29	664.09	717.99

Transmission Loss Trajectory

The Commission had examined the band proposed by APTRANSCO for the tolerable variance of losses with reference to the target of +/- 0.3%. The Commission had not accepted the band as the proposed reduction in transmission losses in the successive years was only 0.1% of the total energy handled. The Commission stated that a band of 0.3% as proposed eliminates grant of any incentives or levy of penalties as envisaged in the Transmission Tariff Regulation. The Commission analyzed the scope afforded by optimizing the operation of transformers in service during non-peak hours period in terms of possible additional loss reduction. The transmission loss targets accordingly set out for Control Period are given in the table below:

Table A-1.19: Approved Transmission Loss Trajectory for MYT Control Period

Particulars (in %)	FY 07	FY 08	FY 09
Approved			
Lower Value of the Band	4.35%	4.20%	4.10%
Average Transmission Loss	4.45%	4.30%	4.20%
Upper Value of the Band	4.55%	4.40%	4.30%
Projected			
Lower Value of the Band - Projected	4.20%	4.10%	4.00%
Average Transmission Loss	4.50%	4.40%	4.30%
Upper Value of the Band	4.80%	4.70%	4.60%

The Commission, in the MYT order, had specified the following incentives for improved performance of APTRANSCO towards reduction of transmission losses:

- For FY 07 - 25% of average variable cost of energy saved beyond the lower value of the target range
- For FY 08 - 35% of average variable cost of energy saved beyond the lower value of the target range
- For FY 09 - 45% of average variable cost of energy saved beyond the lower value of the target range

This being the first Control Period, the Commission had decided that no penalties shall be levied in case the actual losses are higher than the target range

Transmission Tariff

The Commission had identified the transmission cost from the ARR filed by APTRANSCO and accordingly fixed the charges for transmission. The transmission charges to be paid by all consumers who access the transmission network had been fixed at Rs.84.65/KW/month plus Energy losses in kind at 6.25% for FY 05, for the contracted capacity with APTRANSCO.

For FY 06, the Commission had not accepted the proposal of APTRANSCO reasonable as charges were projected on the basis of the energy allocated to the DISCOMs without considering other users. The Commission had then determined the transmission tariff payable taking into consideration all users of the system.

The Commission had opined that transmission and SLDC assets are used and useful not only for DISCOMs but also for other Open Access consumers/generators. The Commission had accordingly reckoned 700 MW Load of open access consumers /generators and 10816 MW load of DISCOMs in its calculations for fixation of tariffs. The Commission had approved expenditure for transmission as Rs.897.98 Cr and for SLDC as Rs.56.60 Cr for FY2005-06.

Accordingly, the transmission and SLDC charges approved by the Commission for FY 06 are given in the table below:

Table A-1.20: Approved and Proposed Transmission & SLDC Charges for FY 06

Particulars (in Rs.Cr)	FY 06
Approved	
Transmission Charges (Rs./kW/Month)	69.25
SLDC Charges (Rs./kW/Month)	4.1
Projected	
Transmission Charges (Rs./kW/Month)	66.61
SLDC Charges (Rs./kW/Month)	4.38

The Commission had stated that besides transmission charges, all users of the system would have to pay losses in kind. The projected loss of 5% as filed by APTRANSCO had been accepted by the Commission.

The Commission, in its MYT order, had prescribed that ARR for transmission business for each year of the Control Period as approved shall be recovered by APTRANSCO from the user of the transmission system of the State through the transmission tariff calculated in accordance with Clause 20 of the Tariff regulation.

The Tariff Regulations specify formula as:

TR = (Net ARR *TCC) / 12

Where,

TR is Transmission Rate in Rs. / kW / Month

Net ARR is Net ARR as determined by the Commission

TCC: Total Contracted Capacity in kW of the Transmission system by all Long Term Users

The table below summarizes the approved revenue requirement for the three years of the Control period and the consequent transmission tariff approved by the Commission for the MYT Control period.

Table A-1.21: Proposed and Approved Transmission Charges for the MYT Control Period

Particulars	FY 07	FY 08	FY 09
Approved			

Particulars	FY 07	FY 08	FY 09
Total Capacity for Transmission (MW)	12036	12402	15376
Revenue Requirement (Rs.Cr)	615.29	664.09	717.99
Tariff, Rs/kW/ Month ((2 / (1X12))*1000)	42.6	44.62	38.91
Projected			
Total Capacity for Transmission (MW)	12036	12402	15376
Revenue Requirement (Rs.Cr)	712.01	909.14	1113.03
Tariff, Rs/kW/ Month ((2 / (1X12))*1000)	49.3	61.09	60.32

The Commission, in its MYT order had further specified:

1. The users of the network in addition shall bear energy losses in transmission in kind.

2. The Transmission charges payable and the energy losses to be borne shall be related to the contracted capacity in KW, at the entry point.

The Commission in the first MYT order had approved the SLDC Charges only for FY 07. For approval of SLDC charges for FY 07, the Commission had excluded PGCIL charges of Rs. 27.14 Cr out of revenue requirement of Rs.53.99 Cr. projected for the SLDC business and had accepted just the O&M charges for SLDC as claimed by the Licensee. The Commission had accordingly approved SLDC charges for FY 07 by allowing the recovery of the approved revenue requirement for SLDC activity of Rs. 26.85 Cr from the wheeled units. The details are tabulated below:

Table A-1.22: Proposed and Approved SLDC Charges for FY 07

Particulars	FY 07
Approved	
Generation Capacity (MW)	12036
Revenue Requirement (Rs.Cr)	26.85
SLDC Charges (Rs./KW/Month)	**1.86**
Projected	
Generation Capacity (MW)	12036
Revenue Requirement (Rs.Cr)	53.99
SLDC Charges (Rs./KW/Month)	3.74

The Commission has approved the SLDC charges for the next two years i.e. FY 08 and FY 09 of the control period in a separate order.

The Commission has examined the ARR and the proposed SLDC tariff submitted by the Licensee for FY 08 and FY 09. The Commission had observed certain incorrectness in the computation and had therefore undertaken alternative computations to determine the ARR for the SLDC activities and accordingly fix the Annual Fee and Operating Charges for each year of the Control Period.

1. Annual Fee

The parameters considered by the Commission for fixing the Annual Fee were:

- Prevailing Bank Rate (RBI) of 6.00%
- Generation Capacity considered in the MYT Order on Transmission and SLDC Charges

While recalculating the Annual fee, the Commission had stated that the basis for determination of the annual fee is the Capital Cost to cover the repayment of principal and payment of interest on investments in a year, plus any residual capital cost of the past investments.

Considering the limited sources of revenue for SLDC and criticality of communication system for the day-to-day operation of SLDC, the Commission had accepted the investment proposal of Rs.4.18 Cr for FY 08 and Rs.9.77 Cr for FY 09 but had directed that for the next control period the SLDC shall file a detailed investment plan with modern communication system by 30th November 2008.

Table A-1.23: Approved and Projected Annual Fee for FY 08 & FY 09

Particulars	FY 08	FY 09
Approved		
Total Capacity	12401.59	15375.79
Annual Fee (per MW/per annum)	3313.27	3701.99
Projected		
Total Capacity	11910	12810
Annual Fee (per MW/per annum)	568	4137

2. Operating Charges

Operating Charges included Employee Cost, A&G charges, R&M Expenses and other expenses. All the expenses except R&M expenses, as proposed by the Applicant had been accepted by the Commission both for FY 2007-08 and FY 2008-09. The R&M costs of Rs. 6.30 Cr projected by the Applicant for FY 08 and Rs.6.28 Cr. for FY 2008-09 were not found to be commensurate with the size of assets held by SLDC and its business operations.

Commission had approved R&M expenses equivalent to 3% of original cost of fixed assets (OCFA) as submitted by the licensee that came to about Rs.2.92 Cr. and the same has been provided for FY 08 and FY 09 respectively.

Particulars	FY 08	FY 09
Approved		
Annual Operating Charges (Rs.Cr) - a	23.6	24.9
Total Generating Capacity MW - b	12401.6	15375.8
Operating charges (Rs/MW/month) - (a/b)/12	1587.2	1350.7
Projected		
Annual Operating Charges (Rs.Cr) - a	27.0	28.9
Total Generating Capacity MW - b	11910.0	12810.0
Operating charges (Rs/MW/month) - (a/b)/12	1889.2	1840.4

Accordingly, the SLDC charges approved by the Commission for FY 08 and FY 09 are tabulated below:

Particulars	FY 08	FY 09
Annual Fee (per MW/per annum.)	3313.3	3702.0
Operating charges (Rs/MW/month)	1587.2	1350.7

The Commission in its order for SLDC charges for FY 08 and FY 09 had specified that:

- SLDC charges (Annual Fee & Operating Charges) shall be paid by Generating Companies (including Captive Generating Plants), Distribution Licensees and Trading Licensees using the intra-State Transmission Network.
- The Annual Fee shall be paid by all the users in advance in two equal installments
- If the Fee and Charges are not paid by the due date, surcharge at the rate of 2% per month shall be levied on the unpaid amounts.
- An amount equivalent to two months' Operating Charges shall have to be deposited in advance by every User as security against default in payment of Operating Charges.

Bulk Supply Tariff

APTRANSCO in the FY 05 petition for Bulk Supply Tariff (BST) had proposed uniform Single-part BST of Rs.1.966/kWh to the DISCOMs. The Electricity Act, 2003, that coming into force from 10th June 2003 ruled that a Transmission Company can no longer carry on with the business of Bulk Supply. Accordingly, the Commission had decided that Bulk Supply business of APTRANSCO would soon be taken out and its Power Purchase Agreements (PPA) would be allocated to the DISCOMS, as recommended to GoAP by the Commission, or to some other entity/entities.

However, the Commission for FY 05 had determined the BST after taking into account Transmission Charges payable to the APTRANSCO and the Inter-State sales to be done by the DISCOMs during the FY 2004-05. The weighted average Bulk Supply Tariff for the DISCOMs as determined by the Commission is Rs.1.986 per kWh. The following table gives the details of subsidy to be provided and the power purchase costs for each of the DISCOMs based on the differential rates of Bulk Supply Tariff:

Table A-1.24: Approved Bulk Supply Tariff for the DISCOMs for FY 05

Particulars (in Rs.Cr)	APNPDCL	APEPDCL	APSPDCL	APCPDCL	Total
Revenue	1142.1	1516.6	1795.9	3596.6	8051.2
Subsidy	310.5	194.4	334.1	464.3	1303.3
Sale in MUs	6155.5	5651.3	7879.3	14548.8	34234.9
Power Purchase Cost	1249.1	1491.2	1843.8	3759.4	8343.5
Net Revenue Requirement	1512.7	1718.9	2204.9	4217.9	9654.5
MUs purchased by each	7646.6	6687.9	9667.8	18006.0	42008.3

Particulars (in Rs.Cr)	APNPDCL	APEPDCL	APSPDCL	APCPDCL	Total
DISCOM					
Bulk Supply Tariff (Ps/kWh)	163.4	223.0	190.7	208.8	198.6

For FY 06, APTRANSCO had filed a two-part Bulk Supply Tariff for DISCOMs. The Commission, however, approved a single bulk power purchase (cost) tariff (BST) which included generation cost, transmission charges and SLDC charges. The BST had again been estimated separately for each DISCOM for FY 2005-06 pending finalization of allocation of generation capacities to DISCOMs by GoAP.

Table A-1.25: Approved Bulk Supply Tariff for the 4 DISCOMs for FY 06

Particulars (in Rs.Cr)	APNPDCL	APEPDCL	APSPDCL	APCPDCL	Total
Revenue	1076.0	1862.4	1902.1	4042.0	8882.4
Subsidy	342.1	232.9	410.7	613.8	1599.5
Sale in MUs	6505.8	6749.1	8953.8	16233.5	38442.2
Power Purchase Cost	1199.2	1823.3	1936.1	4215.5	9174.0
Net Revenue Requirement	1446.1	2101.3	2343.8	4715.8	10606.9
MUs purchased by each DISCOM	7988.4	7888.2	10790.4	19775.3	46442.2
Bulk Supply Tariff (Ps / kWh)	150.1	231.1	179.4	213.2	197.5

Cross-subsidization Surcharge

The Commission in the FY 05 order stated that separate proceedings shall be initiated for the cross-subsidization surcharge, prior to fixing the surcharge.

ANDHRA PRADESH – DISTRIBUTION UTILITIES

Introduction

Andhra Pradesh has four Distribution Companies (DISCOMS) namely, Eastern Power Distribution Company of A.P Limited (APEPDPCL), Central Power Distribution Company of A.P Limited (APCPDCL), Northern Power Distribution Company of A.P Limited (APNPDCL) and Southern Power Distribution Company of A.P Limited (APSPDCL) which are the holders of Distribution and Retail Supply Licenses to carry out distribution and retail supply business in their respective areas of Andhra Pradesh (A.P.). These DISCOMS have been granted license for a period of 30 years since 01.04.2001.

During the period FY 05 to FY 09, APERC has essentially issued four tariff orders for the 4 DISCOMS; 2 orders combined for both transmission and distribution, 1 MYT Order and 1 separate order for Retail Supply Business. The Commission had approved wheeling charges and the Retail Supply Tariff (RST) for the distribution business along with Bulk Supply Tariff (BST), Transmission Charges and State Load Despatch Centre (SLDC) charges for Transmission business in the tariff orders for FY 05 and FY 06. The subsequent tariff Order for FY 07 was the first MYT order for the four Distribution Companies of Andhra Pradesh. The Commission had, accordingly determined the Aggregate Revenue Requirement (ARR) for the Distribution Business of each company and fixed the Wheeling Charges for the 3 year control period from FY 07 to FY 09. In this MYT order, RST for the Retail Supply Business for each DISCOM had been approved for FY 07 only. The Commission has approved RST for FY 08 in a separated tariff order for Retail Supply Business. In preparation of adoption of MYT framework, the Commission had earlier notified the APERC (Terms and Conditions for determination of tariff for Wheeling and Retail Sale of Electricity) Regulation, 2005 on November 14, 2005.

The Commission in the two orders for FY 05 and FY 06 had determined consolidated ARR for the Distribution and Retail Supply Business separately for the four DISCOMS. The broad parameters considered by the Commission in determination of ARR were:

1. **Determination of Capital Base** - comprising of positive elements such as Original Cost of Fixed Assets (OCFA), Capital Work in Progress (CWIP) etc and negative elements such as accumulated depreciation, loans from government, consumer deposits, amount outstanding in tariff etc)

2. **Expenditure Items –** consisting of power purchase cost, employee cost, A&G expenses, R&M expenses, interest on loans, interest on consumer security deposits, depreciation, reasonable return, non-tariff income etc.

However, in the MYT order for the first control period beginning FY 06- 07, the Commission had segregated the Distribution System and Retail Supply Business while computing ARR. The components considered for determination of ARR for the distribution business and retail supply business under the MYT framework are as given below:

A. Distribution Business

Regulated Rate Base – consists of 3 components: a) Original Cost of Fixed Assets (OCFA), b) Additions expected to be made to OCFA by capitalization of new investments, and c) Working Capital. Amounts written off or set aside towards depreciation and the consumer contributions had been deducted.

Loss Reduction Trajectory

ARR Components:

- **O&M Cost (Controllable)** – include employee cost, R&M expenses and A&G expenses
- **Return on Capital Employed (RoCE, Controllable) -** instead of RoE
- **Depreciation (Controllable)**
- **Non-Tariff Income (Controllable)**
- **Taxes (Uncontrollable)**

The ARR determined for distribution business had been the basis for determining wheeling tariffs/charges. The revenue requirement (or cost of providing distribution system) approved by the Commission had been allocated to all the consumers of the distribution network system including the licensee.

B. Retail Supply Business

The ARR for retail supply business comprises mainly of the Power Purchase Cost (Uncontrollable), computed in line with the approved Power Procurement Plan. The other items of expenditure for the Retail Supply business are:

i. PGCIL (Power Grid Corporation of India Limited & ULDC (Unified Load Despatch Centre) charges;

ii. transmission tariffs

iii. wheeling charges;

iv. SLDC charges;

v. Retail supply margin; and

vi. Other expenditure (mainly the interest on security deposits)

The tariffs determined by the Commission for the retail sale of electricity had been approved for the recovery of the ARR for the Retail Supply business inclusive of its share of PGCIL costs, Transmission charges, SLDC charges and Wheeling charges.

Sales / Demand

The Commission had examined the previous sales history and after comparison of the sales with sales database and additional information filed by the DISCOMS had approved the sales volume for FY 05. On aggregate, the Commission had approved less than the sales forecasted by DISCOMS with lower volumes mostly in LT categories. The Commission had observed that DISCOMS were still following aggregate approach in sales forecast at DISCOM level rather than drilling down the forecasting exercise to section level. The Commission had accordingly directed that from 05-06 onwards, the sales forecast for each category of consumers shall be made at each operation section/division level and then aggregated for the entire DISCOM.

The Commission, for FY 06 had approved the energy sales for each category of consumers based on first six months actual sales and the estimated sales for the remaining six months of the year FY 05. The consumption for unmetered agricultural consumers had been estimated in similar manner with the supporting information from meters fixed on LV side of sample distribution transformers fixed for measuring the consumption. With the broad conformation of the sales growth with the volumes for previous year and sales information in the form of sales database, the Commission had approved the sales forecast as projected by the DISCOMS except for Rural Electric Cooperatives and Agriculture (LT).

In FY 05 tariff order, the following procedure has been detailed for estimation of agricultural consumption on a monthly basis:

i. Monthly meter readings of all the metered agriculture DTRs are collected from five Circles of the company in the APERC's prescribed format and distribution transformers (DTRs) consumptions is determined

ii. Net agriculture consumption of each DTR is determined by deducting appropriate LT line losses as per APERC categorization of DTRs into 9 slots

iii. Net consumption of all metered DTRs is added for each mandal.

iv. On the basis of the above consumption relating to sample agricultural DTRs and the connected HP of the pumpsets incident on the above DTRs, agricultural consumption in KWH per HP, which is specific consumption per HP of that Mandal, is determined for the respective month.

v. The total no. of pumpsets and the total connected load (HP) of the particular Mandal are available. By multiplying the specific consumption by the total connected load (HP), the total consumption in units of that particular Mandal is arrived at.

vi. Similarly for all the Mandals in a Circle, the net agricultural consumption for the Circle is computed.

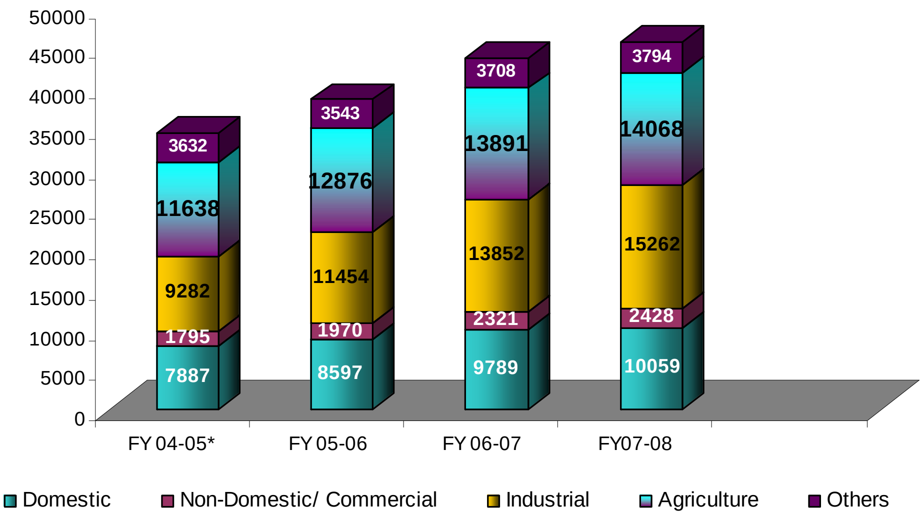
APERC has followed this approach for estimation of unmetered agricultural consumption in the subsequent tariff orders.

The Commission in the first MYT order while analyzing ARR for the retail supply business for FY 07 had approved the sales as projected by the DISCOMs. The Commission, considering decline in sales growth rate in industrial consumers, had viewed that potential for continuation of higher growth in sales needs to be first established before constraining the Licensee's financing by assuming such higher sales volumes. Similarly, sales to domestic category of consumers had also been approved as projected by the DISCOMs, duly reckoning the need for additional volumes on account of Rajeev Gandhi Grameen Vidyuteekaran Yojana (RGGGY) scheme for electrification of rural homes.

In the tariff order for retail supply business for FY 08, the Commission after having reckoned the forecasted sales volume by DISCOMs had made slight disallowance to the sales projected for LT agricultural consumers as it concluded that the sales for the category has been projected higher. Sales to all other categories of consumers had been approved as projected by the DISCOMs.

The figure below shows sales consumption mix of the different categories of consumers. As can be observed, Agriculture and Industrial sectors in the state are the largest consumers of energy followed by the domestic category.

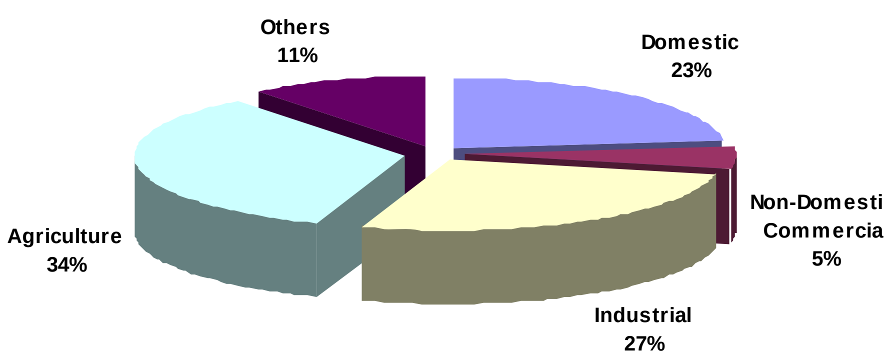
Graph A-1.1: Share of consumer categories in approved sales and the trend from FY 05 to FY 09



**Sales for agriculture category also includes sales to HT irrigation services*

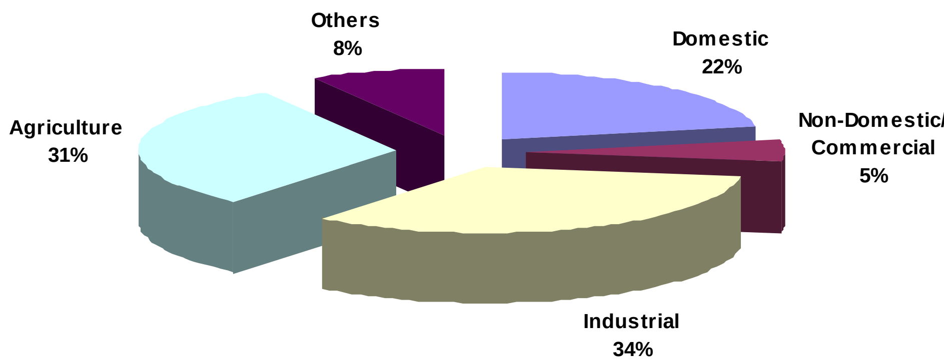
Figure 2 and 3 below illustrate the change in share of the major consumer categories during FY 05 and FY 08. Agriculture category was the biggest consumer category consuming about 34% of total approved sales followed by Industrial (27%) and Domestic (23%).

Graph A-1.2: Percent share of consumer categories in approved sales for FY 05



** Sales to agriculture category also includes sales to HT irrigation facilities*

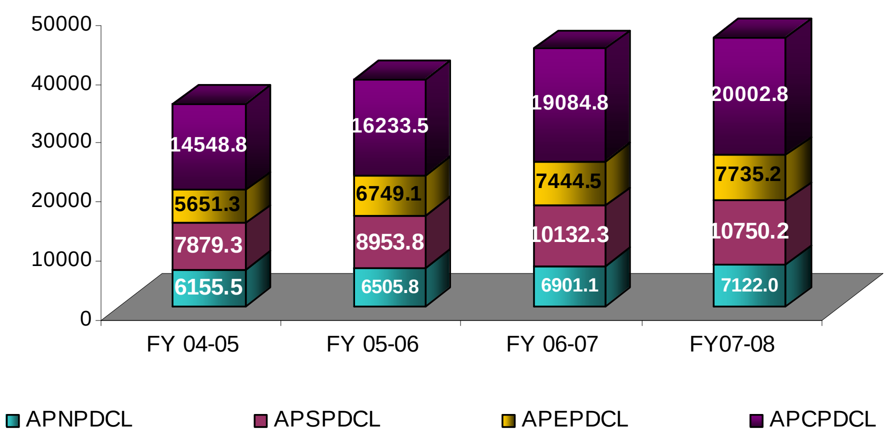
Graph A-1.3: Percent share of consumer categories in approved sales for FY 08



It is observed that the consumer mix has not changed significantly in FY 08. Still there are some emerging observations. The Industrial category, on the basis of available data appears to have superceded the agriculture category with a share of 34% in total energy consumed. Domestic consumption is almost at the same level as that during FY 05.

Figure 4 below shows the allocation of energy sales in Andhra Pradesh between the four DISCOMS. Though the energy sales have increased by around 33% from 34235 MUs in FY 05 to 45610.2 MUs in FY 08, the sales allocation between the DISCOMS has remained largely unchanged.

Graph A-1.4: Sales allocation between the DISCOMS from FY 05 to FY 09



The table below summarizes the sales approved by the Commission for the four DISCOMs during the period FY 05 to FY 08.

Table A-1.26: Approved Sales for FY 05 to FY 08 (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08
APNPDCL	6155.5	6505.8	6901.1	7122.0
APSPDCL	7879.3	8953.8	10132.3	10750.2
APEPDCL	5651.3	6749.1	7444.5	7735.2

Particulars	FY 05	FY 06	FY 07	FY 08
APCPDCL	14548.8	16233.5	19084.8	20002.8
Total Sales	**34234.9**	**38442.2**	**43562.8**	**45610.2**

T&D Losses

The Commission had approved the distribution losses projected by the DISCOMs for FY 05 pending the submission of the distribution loss study that the Commission had directed the DISCOMs to undertake in the previous order. The Commission had approved the loss levels for FY 06 with some reasonable disallowance. In the MYT order, the Commission had again approved lower distribution loss trajectory over the control period for each of the DISCOMS by excluding EHT sales made and assuming improvements in system efficiency as a result of schemes envisaged.

The table below shows the distribution loss levels approved by the Commission from FY 05 to FY 09.

Table A-1.27: Approved Distribution Losses for the DISCOMS

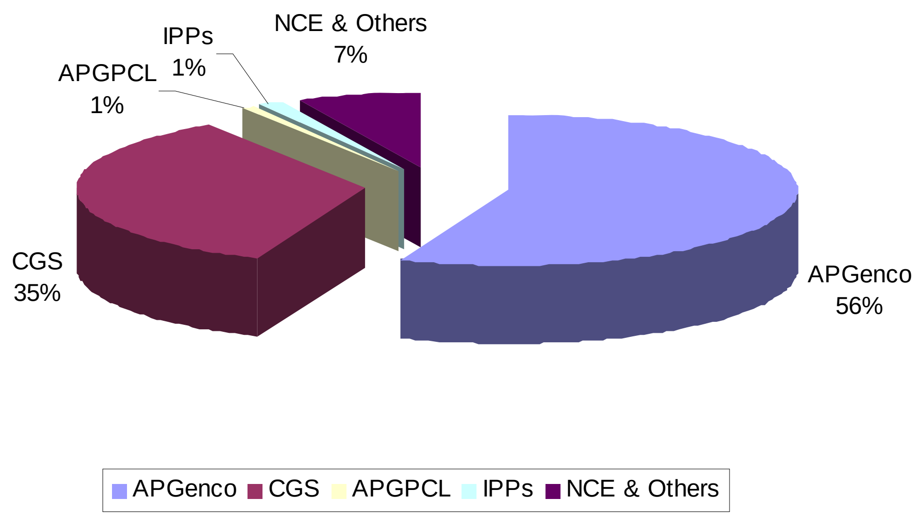
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Distribution Loss	19.20%	17.20%	---	---	---
Proposed Distribution Loss	19.20%	17.40%	---	---	---
Loss Trajectory under MYT Control Period					
APCPDCL					
Approved Distribution Loss	---	---	18.90%	16.90%	15.90%
Proposed Distribution Loss	---	---	18.90%	17.10%	16.30%
APEPDCL					
Approved Distribution Loss	---	---	17.10%	15.80%	15.10%
Proposed Distribution Loss	---	---	17.10%	16.30%	15.80%
APNPDCL					
Approved Distribution Loss	---	---	19.90%	18.00%	17.10%
Proposed Distribution Loss	---	---	19.90%	18.80%	17.90%
APSPDCL					
Approved Distribution Loss	---	---	17.30%	15.90%	14.90%
Proposed Distribution Loss	---	---	17.30%	16.50%	15.70%

Power Purchase Quantum

APTRANSCO was the Bulk Supply Licensee in the State and responsible for the power purchase from various sources upto FY 06. The DISCOMS had entered into a Bulk Supply Agreement (BSA) with APTRANSCO for the supply of energy. The power purchase requirement was determined based on the approved sales and distribution loss levels. The bulk supply tariff to be paid was determined based on the average cost of power from various sources.

In the MYT Order, the DISCOMs had filed the total availability of energy from different sources for FY 07 which was accepted by APERC. However, for FY 08, the Commission had broadly accepted the projection of the DISCOMs with minor modifications considering the data of the maintenance schedules and revised provisioning for bilateral purchase.

Graph A-1.5: Breakup of approved power availability from various sources in FY 08



Power Purchase Cost

During FY 05 and FY 06, was responsible for purchasing power on behalf of the DISCOMs. For approving power purchase cost in FY 05 and FY 06, APERC examined in detail the projected availability of power from different sources and the requirement of sales. In the FY 05 & FY 06 Order, power purchases from only those sources were reckoned which had long-term contracts with APTRANSCO with rates of power purchases from individual generators adopted on the basis of respective agreements. As regards energy costs for DISCOMs, the methodology adopted had been to consider the Bulk Supply Tariff (BST) computed by the Commission considering the energy costs, transmission costs and SLDC charges.

In the MYT Order for FY 07, APERC has accepted the fixed charges for APGENCO based on the estimates of A.P. Power Coordination Committee and as proposed by the DISCOMs while the variable charges has been approved based on the fuel cost adjustment bills of APGENCO for the month of September, 2005 as also proposed by the DISCOMs. For CGS and IPPs, AERC has accepted the fixed and variable charges as proposed by the DISCOMs based on actual bills for September. For power purchase from A.P. Gas Power Corporation Limited the rates has been considered as per MoU's. Considering the high cost and disproportionate allocation of Non-conventional energy (NCE) sources to the DISCOMs, APERC had distributed the cost of purchase from NCE sources among the four DISCOMs equally.

For FY 08, AERC followed a similar methodology with a few modifications to the power purchase cost as proposed by the DISCOMs. The fixed cost for APGENCO was revised based on the submissions of APGENCO including a provision of Rs.100 Crs as likely financial impact of revision in fixed charges. Variable cost was based on actual bills for Sep 06 while the cost of bilateral power was considered at Rs.6.35/unit as proposed by the DISCOMs.

Further, the Commission has also approved the cost for DISCOM-to-DISCOM (D-to-D) transfer of energy at an average fixed cost of purchases from all power stations plus a marginal variable cost of a generation plant (VTPS-III for FY 08 and RTPP-I for FY 09).

PGCIL & ULDC charges

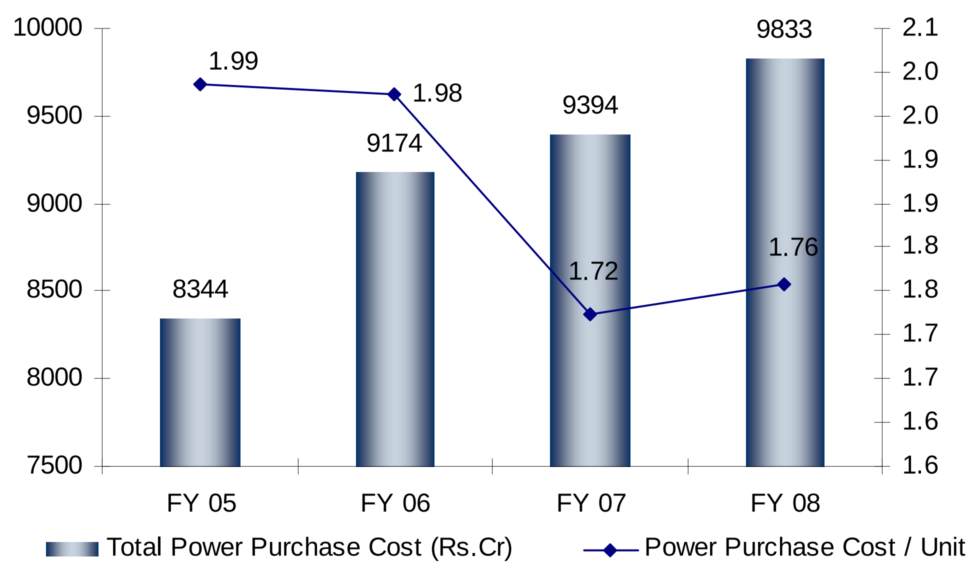
For FY 07, APERC had considered PGCIL & ULDC cost as proposed in the APTRANSCO petition and allocated to the four DISCOMs in the ratio of their respective allocation of energy from CGS.

For FY 08, the PGCIL & ULDC cost proposed by the DISCOMs were allocated in the ratio of the respective allocation of energy from CGS to the DISCOMs.

Table A-1.28: Approved Power Purchase Cost for the DISCOMS (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08
APCPDCL	3,576	3,906	4,143	4,353
APEPDCL	1,328	1,558	1,589	1,648
APNPDCL	1,519	1,578	1,489	1,497
APSPDCL	1,920	2,131	2,173	2,335
Total Power Purchase Cost	**8,344**	**9,174**	**9,394**	**9,833**
Approved Total Power Purchase (MUs)	**42008**	**46442**	**54481**	**55967**
Power Purchase Cost (Rs. per Unit)	***1.99***	***1.98***	***1.72***	***1.76***

Graph A-1.6: Power Purchase Cost per unit as against Total Power Purchase



O&M Cost

As mentioned above, the Commission had approved Employee Cost (shown as wages, salaries and other allowance), R&M expense and A&G expense separately for FY 05 and FY 06 while a consolidated O&M expense had been approved for the 3 year MYT control period beginning FY 07. The approach of the Commission for approval of O&M expenditure and its components is detailed below:

Employee Expenses

The Commission had estimated the employee cost (or Wages, salaries and other allowances) for FY 05 and FY 06 after due consideration of the actual expenditure incurred during the latest preceding year for which the full-year data was available. In addition impact of additions to/retirement etc. of employees and the increases in the basic pay and dearness allowance, etc. for the current and the ensuing years had also been taken. Further, capitalization of employee cost, as per the Licensees' accounting policies, had been deducted from the gross amount so arrived at and the resultant figure taken to the Aggregate Revenue Requirement (ARR).

Administrative and General Expenses

The expenditure figures projected by the Licensees for FY 05 and FY 06 were reviewed by the Commission with reference to the past trends and the size of the business to arrive at a reasonable amount to be allowed. The expenditure to be capitalized was deducted from the gross amount (wherever applicable) and the net amount so arrived considered in the ARR.

The table below summarizes the amount of A&G cost allowed to the four DISCOMS during the period FY 05 to FY 09.

Repairs and Maintenance Expenses

The Commission adopted a similar approach for approval of R&M expenses as that adopted for A&G Expenses.

Total O&M Expenses

As mentioned above, for FY 05 and FY 06, the components of O&M expenses viz. employee cost, A&G expenses, R&M expenses had been separately approved. The summation of theses individual elements for the two years is shown below in the table.

For the MYT Control Period, the licensees had used the data for FY 07 for developing O&M cost norms based on 3 parameters, namely, the number of substations, line length and the number of consumers.

The Commission had found the approach adopted by DISCOMs as unacceptable since what had been used as the basis for O&M cost was the projected performance (for FY 07) instead of actual or benchmarked (normative) performance. Hence, the Commission had carried out a comprehensive benchmarking exercise to arrive at the O&M cost for each of the licensees for each year of the control period.

However, the Commission realized that only four companies are under consideration having fairly wide variations in performance levels coupled with the fact that the current tariff order is for the first control period and that the Commission would prefer to keep an eye on individual elements of the O&M expenses.

Hence, for the first control period, the Commission had preferred to project the O&M expenses of the Licensees' expenditure by increasing the employee and A&G costs at inflation (5%), and providing for R&M costs corresponding to 2.5% of old assets (Gross Block as on 31st March 2002) plus 1.25% to 2% of new assets (Additions to the Gross Block during 2002-03 onwards up to the year under consideration).

Table A-1.29: Approved O&M Expenses for DISCOMS

Particulars (in Rs.Cr)	FY 05	FY 06	FY 07	FY 08	FY 09
APCPDCL	322.70	326.49	371.27	389.84	406.9
APEPDCL	155.13	169.87	190.46	189.26	197.89
APNPDCL	174.87	172.47	196.71	200.93	210.78
APSPDCL	242.20	244.16	274.64	282.75	296.23
Total O&M Expenses	**894.90**	**912.99**	**1033.08**	**1062.78**	**1111.8**
Sales (MUs)	**34234**	**38442**	**43562**	**45610**	-*
O&M Expenses per unit of sale	**0.261**	**0.237**	**0.237**	**0.233**	---

**Tariff order on Retail Supply Business for FY 09 of DISCOMs has not been issued*

Capital Expenditure (Capex)

The Commission has approved capital expenditure for FY 05 and FY 06 in consideration of the capex approved for the previous year and the scheme wise analysis of corresponding actual achievement of such expenditure during the lapsed part of the previous year.

In the MYT order for the control period from FY 07 to FY 08, the Commission had examined in detail the capital expenditure projections proposed by the Licensees. In addition, the Commission had also considered physical and financial progress of schemes / projects during FY 06 and taking into consideration the status of project planning, approvals, tendering state etc, only those investments that are likely to be completed and added as fixed assets during the control period had been accepted for inclusion in the Rate Base.

Asset Capitalization

The capitalisation expenditure for FY 05 and FY 06 had been taken as 10% of the base capital expenditure.

As for capitalization of works during the MYT control period, the Commission had approved capitalisation only on submission of the Physical Completion Certificates and the Financial Completion Certificates (at the time of true up).

Depreciation

For FY 05 and FY 06, the Commission had approved Depreciation on the opening Gross Fixed Assets (GFA) at the rates prescribed by the Ministry of Power from time to time.

The depreciation for FY 06 had been provided on the assets as on 01.04.2005 and taken to the ARR.

In the MYT order, the Commission had decided to continue with the existing practice of following MoP rates for depreciation. Accordingly, no AAD had been provided**.**

Table A-1.30: Approved Depreciation Expenses for DISCOMS during the period FY 05 to FY 09 (Rs.Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
APCPDCL	143.85	178.84	130.9	152.47	171.85
APEPDCL	70.58	90.18	93.51	105.68	118.95
APNPDCL	69.63	86.41	82.38	90.27	98.1
APSPDCL	110.32	136.53	106.52	115.41	124.59
Total Depreciation	**250.53**	**491.96**	**413.31**	**463.83**	**513.49**

Working Capital Requirement

Working capital requirement for FY 05 and FY 06 had been approved as summation of two costs for determination of the capital base:

Average Cost of Stores

- Equivalent of 2 months' requirement of Repairs and Maintenance expenses

Average Cash and Bank Balance

- At 2 months level of eligible expenses (wages, salaries + A&G Expenses + R&M Expenses + Contribution to employee funds) for FY 05
- At one and a half months' level of eligible expenses for FY 06

(Provision towards contribution to employee funds had been made at 13% of basic pay plus D.A. for all Licensees, pending the receipt of Actuarial Valuation Report)

Working Capital requirement for the MYT control period (FY 07 to FY 09) had been approved equivalent to 1 month's O&M expenses as allowed for the year for inclusion in the Rate Base for the Distribution business.

Interest Expense

The Commission had approved interest rates on the basis of rates on loans filed by the Licensees for the current year and the ensuing year. Lease rentals and other finance charges had also been included under this heading. Other finance charges include discounts to consumers, incentive etc. The interest so worked out had been considered in the ARR.

Under MYT, the Commission had approved Return on Capital Employed (RoCE). The cost of debt for the entire control period had been taken as 7.5%.

Rate of Return

In FY 05 and FY 06, the Licensees had not claimed Reasonable Return that they were eligible for as per the guidelines issued by the Commission.

The Commission, had however, opined that for enabling these entities to operate commercially, it would be in the interest of both the Licensee and the consumers to allow reasonable return they are eligible for. The Commission, therefore, had decided to allow reasonable return @ 16% on Net Capital Base and 0.50% on the approved loans taken in the Capital base of the Licensees.

For FY 07, FY 08 and FY 09 under the MYT control period, the Commission had approved Return on Capital Employed (RoCE). RoCE had been computed on the Regulated Rate base. The rate base had been estimated for each year of the control period and RoCE had been computed using a Weighted Average Cost of Capital. For the purpose of deriving the WACC, debt-equity ratio of 75:25 had been taken. The cost of debt had been determined after considering the Licensees' proposals, present cost of debt, prevailing market conditions and other relevant factors. A Return on equity (RoE) of fourteen percent (14%) had been provided for the Distribution business, at par with Generation and Transmission which together with an element of the distribution margin, apparently considering the higher level of risks involved in the retail supply business, had been taken as 16% return.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the three DISCOMS.

Table A-1.31: Approved Return by the Commission (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approach	Return on Net Fixed Assets	Return on Net Fixed Assets	RoCE	RoCE	RoCE
Rate of Return	16% on NFA + 0.5% on approved Loans	16% on NFA + 0.5% on approved Loans	WACC, with RoE@16%	WACC, with RoE@16%	WACC, with RoE@16%
APCPDCL	11.68	6.13	132.55	146.21	159.88
APEPDCL	2.31	1.58	58.44	61.36	63.79
APNPDCL	3.31	3.24	77.51	87.01	93.66
APSPDCL	2.91	2.29	68.62	68.35	67.01
Total Return	**8.53**	**13.24**	**337.12**	**362.93**	**384.34**

SLDC charges

For the MYT order, the Commission had removed SLDC charges relating to the Distribution Licensees from the Distribution business considering them to be related to the Retail supply business**.**

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission had computed the ARR for each DISCOM.

The table below summarizes the ARR approved in the various Tariff Orders from FY 05 to FY 09:

Table A-1.32: Approved ARR (Rs.Cr) for the four DISCOMS in FY 05 and FY 06

Particulars	FY 05	FY 06	FY 07*	FY 08*
APCPDCL				
ARR Approved (Rs.Cr)	4034.73	4406.61	4766.92	5181.78
ARR Proposed (Rs.Cr)	4570.49	5222.22	4798.9	5783.25
APEPDCL				
ARR Approved (Rs.Cr)	1556.03	1836.2	1971.65	2107.36
ARR Proposed (Rs.Cr)	1839.37	2058.72	2036.41	2199.9
APNPDCL				
ARR Approved (Rs.Cr)	1782.34	1824.88	1834.89	1961.31
ARR Proposed (Rs.Cr)	1533.54	1592.28	1927.25	2142.77
APSPDCL				
ARR Approved (Rs.Cr)	2281.34	2539.22	2619.72	2908.85
ARR Proposed (Rs.Cr)	2345.69	2594.03	2896.91	3068.77
Total				
ARR Approved (Rs.Cr)	**9654.44**	**10606.91**	**11193.18**	**12159.30**
ARR Proposed (Rs.Cr)	**10289.09**	**11467.25**	**11659.47**	**13194.69**

** Retail Supply Business of the DISCOMs (which includes the share of Distribution Business for supply of energy to the consumers of the distribution licensee)*

Table A-1.33: Approved ARR of Distribution Business for the four DISCOMS during MYT Control Period FY 07 to FY 09 (Rs. Crs)

Particulars	FY 07	FY 08	FY 09
APCPDCL	644.18	693.52	743.63
APEPDCL	349.35	363.11	386.3
APNPDCL	365.06	383.21	407.53
APSPDCL	454.78	471.51	492.83
Total Approved Distribution Business ARR	**1813.37**	**1911.35**	**2030.29**

Revenue Gap

The Revenue gap determined by the Commission for each of the DISCOMs from FY 05 to FY 09 has been tabulated in tables below:

Table A-1.34: Revenue Gap for FY 05 to FY 08 at Existing Tariff and Excluding Subsidy (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08
APCPDCL				
Aggregate Revenue Requirement	4034.73	4406.61	4766.92	5181.78
Aggregate Revenue from Current Tariff	3655.95	4152.88	4619.07	5469.74
Revenue Gap	**-378.78**	**-253.73**	**-147.85**	**287.96**

Particulars	FY 05	FY 06	FY 07	FY 08
APEPDCL				
Aggregate Revenue Requirement	1556.03	1836.2	1971.65	2107.36
Aggregate Revenue from Current Tariff	1539.95	1837.12	1965.04	2218.06
Revenue Gap	**-16.08**	**0.92**	**-6.61**	**110.70**
APNPDCL				
Aggregate Revenue Requirement	1782.34	1824.88	1834.89	1961.31
Aggregate Revenue from Current Tariff	1153.79	1173.34	1133.21	1335.24
Revenue Gap	**-628.55**	**-651.54**	**-701.68**	**-626.07**
APSPDCL				
Aggregate Revenue Requirement	2281.34	2539.22	2619.72	2908.85
Aggregate Revenue from Current Tariff	1825.73	2008.41	2124.19	2487.20
Revenue Gap	**-455.61**	**-530.81**	**-495.53**	**-421.65**
Total Revenue Gap (Rs.Cr)	**-1479.02**	**-1435.16**	**-1351.67**	**-649.06**

The Commission, after assessment of the resultant revenue gap, had considered its recovery through tariff, efficiency gains and subsidy from Government of Andhra Pradesh (GoAP). The Commission, for the MYT Control period, had allowed recovery of the ARR of the distribution business through the approved retail supply tariff for respective years.

Tariff Determination

APERC utilizes the category-wise CoS model to fix tariffs for various categories of consumers. The Commission, as per the provisions of the Electricity Act 2003, follows appropriate methodology to ensure that the tariff progressively reflects the cost of supply of electricity, and also reduces and eliminates cross-subsidies.

In order to recover the gap for FY 05, the Commission had considered Government subsidy for subsidized categories and efficiency gains. APERC had also continued its effort to align the tariff rates with CoS, especially with regard to subsidizing categories. Key changes in the tariff design were:

- Reduction in tariffs for all HT, LT and Non-domestic categories where the existing tariff was higher than the CoS
- Increase in tariffs of those HT categories where the tariffs were below the CoS

A similar approach was followed by APERC in the tariff order for FY 06. The gap determined was met by the way of efficiency gains and GoAP subsidy amount for agricultural and domestic consumers. Efforts to align the tariffs with the CoS of subsidizing categories were undertaken by reduction in tariffs of HT industrial and HT Government Irrigation.

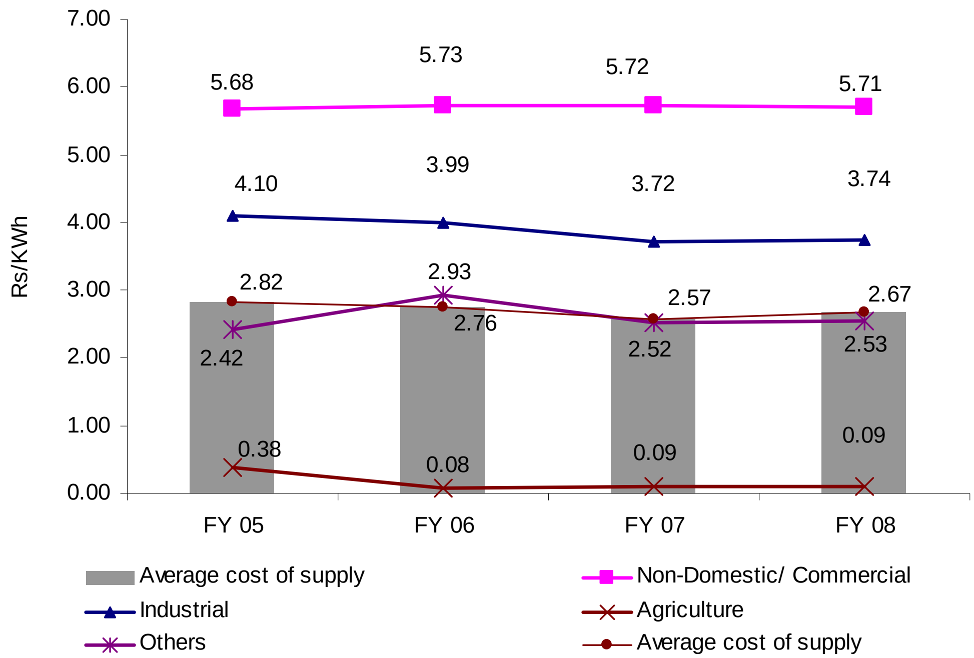
For the first year of MYT Control Period i.e. FY 07, the Commission had computed a revenue gap at the tariffs proposed by the DISCOMs which was similar for subsidized category of consumers as compared with previous year tariff. However, the DISCOMs had proposed a reduction in tariff for the subsidizing categories like HT industrial. In line with the previous year approach, APERC had notified the full cost tariffs as well as the subsidy requirement to the GoAP to maintain the existing tariffs in the State. The GoAP had approved the subsidy amount as computed by the Commission.

In FY 08, the Commission had also computed the CoS at different voltage levels for some of the industrial categories to determine the CoS for each category of consumer. Subsequently, the category wise surplus/ deficit were computed as the difference between the CoS and total revenue from tariffs and charges and the surplus was apportioned as per the methodology in previous year tariff orders. For two of the DISCOMs, a surplus was computed which was eliminated by reduction in energy tariff for subsidizing categories. However, for the remaining DISCOMs a revenue gap was determined which was eliminated by an increase in energy tariff from subsidized categories.

In line with the approach followed in earlier tariff orders, APERC had notified the tariffs computed for each DISCOM. However, the GoAP under Section 108 of the Electricity Act issued policy direction to maintain the retail tariffs as proposed by the Licensees in a uniform manner across the State.

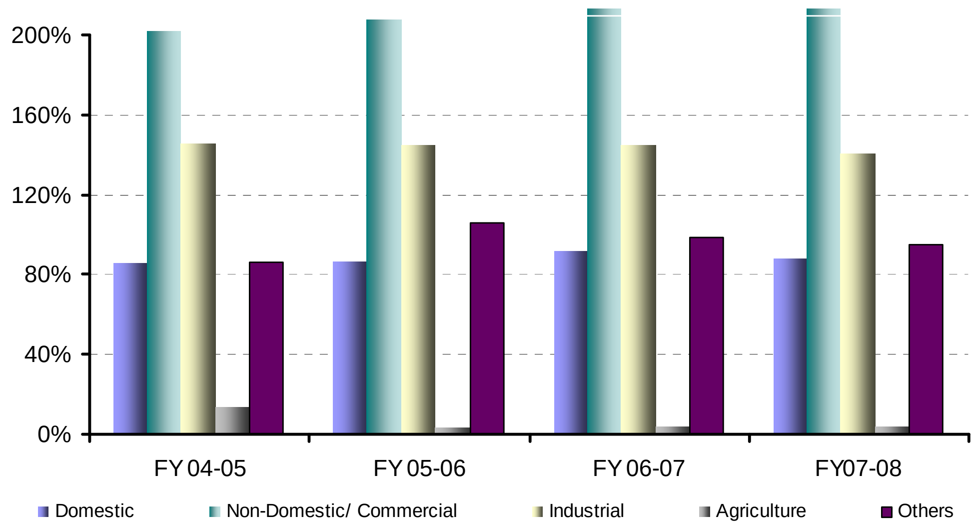
The trend of realization from tariff as approved by the Commission for various consumer categories against the average cost of supply from FY 05 to FY 08 is captured in the figure below.

Graph A-1.7: Average Cost of Supply vis-à-vis average tariff for each consumer category



The graph below illustrates the approved realization from the consumer tariff as percentage of the average cost of supply during the period FY 05 to FY 08. It is observed that the realizations from commercial and industrial categories are cross-subsidizing domestic and agriculture categories during the period FY 05 to FY 09. Though, the Commission has undertaken due consideration of the cost to supply while determining the tariff of each category of consumers, the improvement in average realization as percentage of cost of supply during the said period is marginal.

Graph A-1.8: Approved realization as percentage of Average Cost of Supply



Time of Day (ToD)

In the order for FY 05, the Commission had shown inclination towards implementation of ToD tariff not only for optimal utilization of available energy but also in anticipation of implementation of Availability Based Tariffs (ABT) at the DISCOM level. The Commission had accordingly directed the DISCOMS to explore and identify all such consumers who were using higher quantum of energy and select cases where TOD tariff could be effectively implemented to the advantage of the utilities and the consumers

The DISCOMS later submitted a report but no specific proposal was made. The Commission in the order for FY 06 sought proposals for introducing TOD metering for large consumers with details on: a) metering facility; b) consumption patterns; and c) proposed incentive. The Commission had directed that a specific plan be submitted within 3 months of this Order and that mock billing be done for the targeted consumers.

The Commission had in the subsequent MYT order further stressed on the need for quick implementation of Time of Day metering.

Cross Subsidy / Subsidy Support

The Commission had taken into consideration the required cross-subsidy before determining the fully allocated cost tariff of each category. The quantum of cross-subsidy was set by the Commission by decrease in tariffs or by fixing constraints on increase in tariffs of subsidizing categories. The available cross-subsidy was then distributed among the subsidized categories in proportion to the difference between the prevailing tariff and the cost-to-serve (CoS). In case of a gap between the CoS and the revenue from current tariffs and cross-subsidy for the subsidized categories, the tariffs were increased to cover the gap for the respective subsidized categories to have the fully allocated cost tariffs, category-wise

The Commission had then communicated to GoAP to intimate whether it shall (under Section 65 of the EA, 2003) grant any subsidy to any consumer or class of consumers in the tariff determined by the Commission. GoAP desired that the tariff in respect of the subsidized categories may be reduced to the levels proposed by the DISCOMS and had accordingly, agreed to make available the consequent total financial implication.

The amount of cross-subsidy and subsidy by the GoAP as approved by the Commission in each of the Tariff Order is summarized in table below:

Table A-1.35: Approved Cross Subsidy and Government Subsidy for FY 05 (Rs. Crs)

Subsidized categories	Revenue	Cross-subsidy	Government subsidy
Domestic	1901.83	655.06	486.33
Cottage Industry	7.35	2.4	1.8
Agriculture	409.17	821.15	609.97
Local Bodies	205.31	147.94	109.79
HT Agriculture	33.91	6.51	4.37
RESCOS	52.73	121.49	91.01
Total	**2610.30**	**1754.55**	**1303.27**

Table A-1.36: Approved Cross-Subsidy and Govt. Subsidy for FY 06 (Rs, Crs)

Subsidized categories	Revenue	Cross-subsidy	Govt Subsidy
Domestic	2039.2	779.82	544.42
Cottage Industry	9.13	2.96	2.1
Agriculture	67.07	1176.21	871.17
Local Bodies	220.99	166.22	117.49
HT Agriculture	38.85	8.86	6.41
RESCOS	26.71	80.47	57.89
Total	**2401.95**	**2214.54**	**1599.48**

Table A-1.37: Approved Cross Subsidy and Government Subsidy for FY 07 (Rs. Crs)

Subsidized categories	Revenue	Cross-subsidy	Government subsidy
Domestic (0- 200)	1891.24	949.37	292.8
Cottage Industry	8.3	2.48	1.2213
Agriculture	51.44	2212.83	901.21
Local Bodies	206.51	230.82	84.11
HT Agriculture	0	16.45	10.82
RESCO	28.83	63.99	61.43
Total	**2186.28**	**3475.93**	**1351.67**

Government Subsidy

The GoAP provides subsidy mainly for Domestic, Agriculture and RESCOs categories of consumers. APERC, after distributing the cross-subsidy amount available to the subsidized categories in proportion to the difference between the prevailing rate and the CoS, determines the gap and the tariff for respective categories to cover the gap. The fully allocated cost tariffs are communicated to the GoAP. The GoAP decides the levels to which the fully allocated cost tariffs in respect of the subsidized categories are to be reduced and makes good the resultant gap in the revenue requirement by way of subsidy.

The subsidy amount agreed by the GoAP each year is summarized in table below:

Particulars	FY 05	FY 06	FY 07	FY 08
GoAP Approved Subsidy	1303.27	1599.48	1351.67	1047.72

The Commission has proposed the principles for administration of subsidy amount as follows:

- The subsidy given by the GoAP as per Section 12(3) of Reform Act is for maintaining the tariffs at the level proposed by the DISCOMS in respect of the subsidized categories
- Each DISCOM gets the subsidy commensurate to the extent of energy sales projected in each subsidised category
- The subsidy allocation to each DISCOM as calculated in (b) above must be paid by the GoAP to the respective DISCOMS in monthly instalments, in advance

The Commission had clearly directed the DISCOMs to revert back to the full cost tariff fixed by the Commission in case the subsidy is not paid regularly on monthly basis in advance by the GoAP.

Further, APERC has indicated that request for any additional subsidy requirement in excess of the approved subsidy amount will not be entertained by the Commission unless prior permission is taken from the GoAP if the excess consumption relates to agriculture. However, in case of excess consumption by other categories, no additional subsidy will be recommended by the Commission to GoAP.

The DISCOMS are required to file before the Commission the actual sales to subsidized categories of consumers for whom the GOAP agreed to pay the subsidy every month. The Commission then monitored the units actually sold by the DISCOMS vis-à-vis the subsidy provided. At the end of the year, subsidy adjustments had been made based on the consumption of units in respect of various subsidized categories.

- The agricultural consumption had been estimate based on LV side meter readings on DTR.
- For measuring the sales to metered categories of consumers, the sales database shall be the basis

Wheeling Charges

The Commission had determined the wheeling charges payable for the use of the distribution system in the tariff order for FY 05. The weighted Wheeling charges of all the four DISCOMs in the State were determined at 51 paisa /unit for FY 05. The DISCOM wise wheeling charges and the losses in kind up to the respective voltage level at which the wheeled energy is delivered for each year is tabulated below:

Table A-1.38: Approved Wheeling Charges and Distribution Loss for FY 05

Particulars	APNPDCL	APEPDCL	APSPDCL	APCPDCL
Wheeling Charges (in paisa/unit)	58	49	60	45
Voltage Level Losses (%)				
33kV	6.4%	8.0%	6.0%	6.4%
11kV	13.6%	13.6%	12.6%	13.6%
LT	24.3%	22.1%	21.6%	22.7%

Table A-1.39: Approved Wheeling Charges and Distribution Loss for FY 06

Particulars	APNPDCL	APEPDCL	APSPDCL	APCPDCL
Wheeling Charges (in paisa/unit)	60	47	56	46
Voltage Level Losses (%)				
33kV	6.07%	7.11%	5.66%	5.78%
11kV	12.90%	13.11%	11.92%	12.28%
LT	23.05%	21.30%	20.44%	20.50%

Table A-1.40: Approved Wheeling Charges for FY 07, FY 08 & FY 09 (Rs./kVA/month)

	FY 07			FY 08			FY 09		
Licensee	33kV	11kV	LT	33kV	11kV	LT	33kV	11kV	LT
APCPDCL	35.25	100.27	142.22	36.63	103.58	146.10	38.82	109.91	155.41
APEPDCL	11.68	58.78	39.90	11.81	59.16	237.20	12.10	60.66	244.01
APNPDCL	25.66	94.04	205.09	25.98	95.18	207.45	27.35	100.17	218.24
APSPDCL	26.19	115.17	161.23	25.76	113.06	158.30	25.90	113.82	159.59

Table A-1.41: Approved Distribution Losses for FY 07, FY 08 & FY 09

	FY 07			FY 08			FY 09		
Licensee	33kV	11kV	LT	33kV	11kV	LT	33kV	11kV	LT
APCPDCL	4.21%	6.46%	8.16%	4.00%	6.13%	7.75%	3.81%	5.84%	7.38%
APEPDCL	6.10%	4.42%	6.71%	5.92%	4.29%	6.52%	5.28%	4.19%	6.36%
APNPDCL	5.45%	5.83%	8.67%	5.18%	5.55%	8.24%	4.92%	5.27%	7.83%
APSPDCL	4.85%	5.33%	7.27%	4.67%	5.13%	7.00%	4.49%	4.93%	6.72%

MYT Framework

Under the MYT framework, the Commission segregated costs into two categories - Controllable and Uncontrollable parameters for the distribution business and retail supply business. The key features of the MYT framework adopted in the State of Andhra Pradesh for distribution and retail supply business are summarized in table below:

Table A-1.42: Key Highlights of the MYT Regulations

Particulars	
First Year of MYT	FY 07
Time frame for the control period	3 years, FY 07 to FY 09
Issuance of the MYT Order	23rd March 2006
Base year considered for MYT projections	FY 06
Uncontrollable Parameters	– Cost of Power Purchase – Taxes on Income
Controllable Parameters	– O&M expenses – Return on Capital Employed – Depreciation – Non-Tariff Income

A-2. Assam

A-2.1. Assam Power Generation Company Limited

Introduction

Post the restructuring of Assam State Electricity Board (ASEB hereafter) in December 2004, the power generation in the state of Assam is being undertaken by Assam Power Generation Company Limited (referred as APGCL hereafter). APGCL has a total of two gas-based and one hydel power plant with a combined installed capacity of 354 MW.

Assam Electricity Regulatory Commission (AERC) issued the first tariff order for APGCL in 2005. After the issuance of a combined Tariff Order for ASEB for FY 05, the Commission has issued four tariff orders for the generation utility i.e. FY 06, FY 07, FY 08 and FY 09. As per the Assam Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff) Regulations, 2006, the state generating company is required to file its Petition to the Commission for the determination of generation tariff for ensuing year by 1st of December. However, the APGCL has not been able to meet the requirement since its incorporation. AERC on the other hand has been issuing the Tariff Orders for the generation utility within the specified time frame of 120 days from the date of filing. The Tariff Orders in the last two years have been delayed primarily due to inadequate information submitted by the company in its petition and delay in filing the additional information.

Although the Commission had decided to adopt Multi Year Tariff (referred as MYT hereafter) regime from FY 08 with a control period of three years, due to unavailability of reliable data, the Commission issued MYT Order for FY 08 – FY10 and subsequently recalculated the ARR for FY 09 & FY10 under MYT framework based on additional information submitted by APGCL.

Generation Capacity

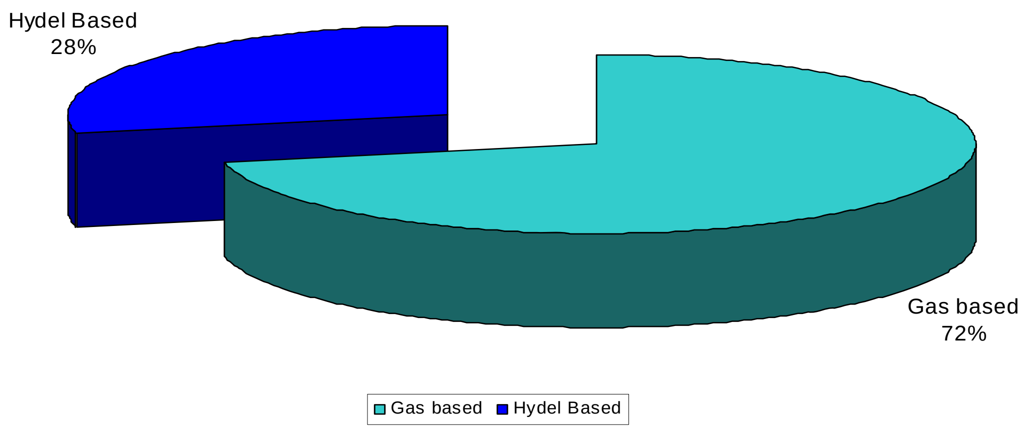
APGCL has got two gas based plants i.e. Lakwa Thermal Power Station (referred as LTPS hereafter) and Namrup Thermal Power Station (referred as NTPS hereafter) and one hydel power station Karbi Langi Hydel Plant. The installed capacity of the plants is 354 MW (as per their rated capacity). APGCL also has two thermal based plants (Bongaigoan Thermal Power Station and Chandrapur Thermal Power Station) which are currently non-operative due to high fuel cost. APGCL and the state government have decided to transfer the assets of BTPS to NTPC. Further, the revival of the CTPS on coal with FBC technology through a joint venture is also proposed. A Request for Proposal (RFP) for the selection of a JV partner has already been issued.

Table A-2.1: Plant wise Generating Capacity

Particulars	LTPS	NTPS	Karbi Langi Hydel
Station Capacity (MW)	120	134	100
Fuel	Gas	Gas	Hydro
Units Capacity	15*4 + 20*3	23*3 + 12.5 + 30 + 22.5	50*2
Year Of Commissioning	1966-1991	1984-2000	2008

Out of the total installed capacity of 354 MW, 254 MW is gas based and 100 MW is hydel Plant.

Graph A-2.1: Fuel-wise Generation Capacity



Plant Load Factor (PLF)

The Commission has approved the PLF for the state generating plants during FY 07 to FY 09 at 50% in accordance with Clause 39 of the AERC (Terms and Conditions for Determination of Tariff) Regulation, 2006 for recovery of fixed charges from beneficiaries. The Commission in its Tariff Order for FY 05 had approved gross energy generation as claimed by APGCL in its petition due to lack of gas availability for the gas-based plants. However, the approach for FY 06, is not mentioned. Therefore, the PLF in the respective Tariff Orders has not been approved by AERC.

Table A-2.2: Approved and Actual Plant Load Factor

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved PLF					
LTPS	38.1%	42.3%*	50%	50%	50%
NTPS	38.3%		50%	50%	50%
Actual PLF					
LTPS		38.2%*	44.76%	-	
NTPS	-		32.51%	-	-

** Calculated by reverse calculation*

The actual PLF in FY 07 is lower than the approved PLF for both LTPS and NRPS generating stations. The reason for lower PLF of the plants can be attributed to the unavailability of the gas in case of LTPS and poor conditions of its old age NTPS plant. The Commission has approved the actual of FY 07 during the true-up exercise. Due to unavailability of audited accounts for FY 08, the Commission has not undertaken the true-up for the FY 08 and has primarily done a review of the FY 08 figures as submitted by APGCL. The actual PLF for FY 05 is not available in the subsequent tariff order.

Auxiliary Consumption

The auxiliary consumption for the plants has been approved based on the fact that gas booster compressor and open cycle mode of operation consumes more energy. Therefore, the Commission has approved the auxiliary consumption for both the plants at 5.2% of the gross generation in FY 05. However for FY 06, the Commission has been approved auxiliary consumption based on the CEA norms issued in December 2004 for open cycle plants and adjustments made for gas booster compressor in the plant.

For FY 07, FY 08 and FY 09, auxiliary consumption for all the three plants i.e. LTPS, KTPS and Karbi Langi hydro plant has been approved as per the APGCL's claim. The approach followed by the Commission while approving auxiliary consumption figures for plants is not mentioned. A higher auxiliary consumption for LTPS has been approved by AERC to account for the requirement of running two set of gas booster compressor system of stage 1 (15X4) and stage 2 (20X3).

Table A-2.3: Approved and Actual Plant Auxiliary Consumption

<table>
<tr><th>Particulars</th><th>FY 05</th><th>FY 06</th><th>FY 07</th><th>FY 08</th><th>FY 09</th></tr>
<tr><td><u>Approved Auxiliary Consumption</u></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>LTPS</td><td>5.20%</td><td>5.50%</td><td>5.50%</td><td>5.59%</td><td>5.59%</td></tr>
<tr><td>NTPS</td><td>5.20%</td><td>4.50%</td><td>4.50%</td><td>4.30%</td><td>4.00%</td></tr>
<tr><td>Karbi Largi</td><td>-</td><td>-</td><td>-</td><td>.50%</td><td>.50%</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td><u>Actual Auxiliary Consumption</u></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>LTPS</td><td></td><td rowspan="2">4.96%</td><td rowspan="2">7.30%</td><td>-</td><td>-</td></tr>
<tr><td>NTPS</td><td></td><td>-</td><td>-</td></tr>
<tr><td>Karbi Largi</td><td>-</td><td>-</td><td>-</td><td>-</td><td>-</td></tr>
</table>

The actual auxiliary consumption for FY 06 and FY 07 in case of LTPS and NTPS is higher than the approved figure and the same has been approved by the Commission while true up exercise. The actual auxiliary consumption of NTPS for FY 08 has been higher than the approved; however true-up of the same is yet to happen.

Station Heat Rate (SHR)

In FY 05, the SHR of the generating plants has been approved by the Commission based on the operating mode of the plant, its load pattern, design SHR and past trends keeping in mind the capacity of individual plants. For FY 06 Tariff Order, AERC had approved the recovery of the total cost FY 06 as the first year of operation for APGCL as an unbundled utility and adequate information was not available. Although APGCL had came up with a study on the same but the Commission decided to use normative norms until a review of all the parameters is undertaken by a technical expert.

FY 07 onwards, it had been approved based on the AERC (Terms and conditions for determination of Tariff) regulations of 2006. The final approved figure of the following years is mentioned below in the table.

Table A-2.4: Approved and Actual Station Heat Rate (SHR)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved SHR					
LTPS	3658	3658	3658	3600	3600
NTPS	3658	3266	3266	3266	3266
Actual SHR					
LTPS	-	-	3806	3750	-
NTPS	-	-	3349	3280	-

It can be seen from the above table that the actual level of the SHR has been higher than the approved level of the SHR. The actual level of the SHR for FY 05 and FY 06 has not been mentioned in the true-up tariff order.

Gross and Net Units Generated

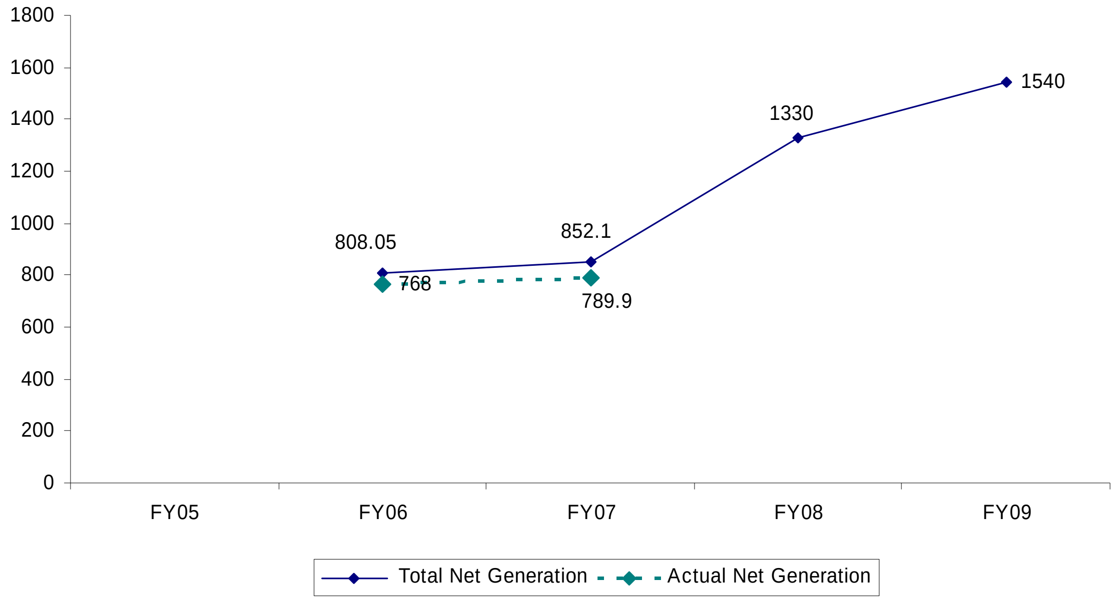
Based on the technical parameters discussed above, AERC has approved gross and net generation of each generating station. The table given below summarises the plant-wise approved level of gross and net generation during FY 05 to FY 09.

Table A-2.5: Approved and Actual Gross and Net Generation (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Gross Generation					
LTPS	400	940.16	525.6	477.41	620.21
NTPS	450		586.92	507.28	586.22
Karbi Largi	-	-	-	395.28	394.2
Total		940.16	1113	1380	1601
Total Net Generation	**850**	**808.**	**852**	**1330**	**1540**
Actual Net Generation		**768**	**790**	**-**	**-**

The comparison of the approved and the actual net generation figure from the state generating plants highlights in FY 06 and FY 07, the Commission had been taking very optimistic view while projecting the net power generation from these plants. This has happened because APGCL had not been able to achieve the approved PLF level and actual auxiliary consumption was higher then the approved level.

Graph A-2.2: Approved and Actual Net Generation



FIXED COST

Operation & Maintenance Cost (O&M)

For estimation of O&M cost of each of plant, the Commission has approved expenses for each of the O&M components separately.

With regard to Employee cost, Commission has escalated the cost by 8% in FY 06 to factor in the inflation of 5% and an additional 3% to cover any contingency. For FY 07, the Commission had approved the employee expense as claimed by APGCL in the petition as the amount claimed was less than the amount claimed in the previous financial year. For FY 08, Commission has approved the figure as asked by APGCL considering the merger of DA into basic pay and recruitment of employees. In the Tariff Order for FY 09, AERC has approved various components of the employee cost separately. Salaries have been escalated by 15%, DA has been increased by 30% over last year unaudited figure and other allowances have been escalated by 6% over actual expenditure in FY 08.

For the estimation of Repairs and Maintenance (R&M) Cost for FY 06, the Commission has allowed 24% increase over FY 05 figures as filed by APGCL. However for FY 07, FY 08 and FY 09, the R&M expense has been increased by 6% over previous year approved figure. This has been allowed keeping in mind an inflation of 5% and an additional 1% increase on account of any other expenditure.

Regarding approval of Administration and General expenditure, the approach of the Commission has remained similar for all Tariff Orders i.e. for FY 06, FY 07, FY 08 and FY 09. AERC has escalated the cost by 6% over approved amount of last TO. The escalation of 6% has been done keeping in mind the inflation of 5% and 1% for additional expenditure.

Table A-2.6: Approved, Proposed and True-up of O&M (In Rs Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	45.3	44.9	57.7	59.3
Proposed by the petitioner	46.7	47.2	60.1	82.1
Total Trued-up O&M	39.4	37.3		

The Commission has undertaken true-up for FY 06 and FY 07. The true-up of FY 08 has not been done as audited financial statement was not available at the time of issue of the FY 09 Tariff Order. For FY 06 and FY 07, the Commission has trued-up the components of O&M i.e. employee cost and R&M cost based on the Audited figures for the respective financial years. As A&G had been considered as controllable item, the Commission had not true-up the expenses incurred under A&G expense head. Disallowances have been substantial with respect to the actual O&M expenses claimed by the petitioner during FY 06 and FY 07.

Capital Expenditure

In FY 07, on account of absence of information regarding the scheme-wise detail of capex plan, AERC had asked APGCL to submit the scheme-wise detail within two months of issue of the FY 07 Tariff Order. For FY 08, no detail on the approval for approval of capital expenditure is mentioned in the tariff order. For FY 09, the Commission has asked APGCL to submit feasibility reports on capex planned along with the cost benefit analysis for each of the plan.

Asset Capitalization

In the proposals submitted by APGCL, high level of capital work in progress has been claimed in each of the tariff orders. The Commission has directed APGCL to undertake thorough scrutiny of the CWIP and furnish details of the break-up of capital expenditure schemes on a quarterly basis. Furtehr, the APGCL was also directed to account for eligible amount of capital locked up in CWIP and its conversion into Gross Fixed Assets.

Depreciation

AERC has provided depreciation only for the operation plants i.e. NTPS, BTPS and Karbi Langi Hydel Plant. In FY 05 and FY 06, the approved amount of depreciation had been restricted to the amount of loan repayment as the information regarding the value of generation assets was not available with the Commission. Since the depreciation allowed was limited to the extent of loan repayment, depreciation on assets created out of grants, etc was not considered by the Commission at the time of approval of depreciation. The Commission had also planned to maintain a development fund to replace old assets.

For subsequent years, depreciation has been approved based on the depreciation rates specified under the AERC regulation. For FY 07, the value of the generation plants has been considered as per the transfer scheme. For FY 08 and FY 09, the value of the assets has been considered as per updated Opening Balance Sheet (OBS) based on Audited financials of FY 05 and additions in subsequent years. In FY 09, addition in GFA during the year is considered to be done by 90% grant and 10% loan, thus 10% of addition in GFA is taken for computation of depreciation. The Commission has considered addition of assets in the middle of the year and has accordingly approved 50% of the depreciation on the additional assets.

The Commission has applied the depreciation rate for each individual category of assets as prescribed in the AERC regulations. The depreciation amount approved as percentage of total fixed cost is in the range of 12-17% in the Tariff Orders for FY 06 to FY 09.

Advance Against Depreciation (AAD)

The AERC (Terms and conditions for determination of Tariff) Regulations 2006 provides for AAD for determination of ARR for generation utilities. Though AGCL has claimed for AAD in its petition for ARR and tariff proposal, the Commission has made no mention of its approach for determination of AAD and has also not approved any amount against AAD in the orders issued between FY 06 to FY 09.

Interest Cost

For the year FY 06, FY 07 and FY 08, the amount of interest has been approved based on the opening balance of debt for various generating stations. AERC had disallowed interest on the non-operational plants (i.e. BTPS and CTPS) and the plants i.e. NTPS and LTPS whose approved debt capital is found to be zero. In FY 06, heavy interest had been provided In FY 09, the Commission has allowed interest on the approved debt capital of Karbi Langpi Hydel Plant. The main source of debt in FY 09 was public bond, state government loans and PFC loan.

Table A-2.7: Approved and Proposed Interest Cost (In Rs Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Interest cost Approved	16.56	0.72	32.34	38.72
Interest Cost Claimed	17.94	12.87	39.92	40.50

Interest on Working Capital

In FY 06, for estimation of interest on working capital, the Commission has computed the requirement for working capital based on AERC (Terms and Conditions for Determination of Tariff) Regulation 2005.

Following are the components of the working capital as per the AERC Regulations 2005:

- Fuel cost for one month.
- O&M cost for one month on approved figures.
- Maintenance spares to a level of 1% of the approved Gross Fixed Assets (GFA) only for operation plants.
- Receivables for one month based on the projected sales.

No specific norms were set forth in the AERC Regulations, 2005 for the hydel plant as Karbi Langi Hydel Plant was Commissioned in FY 08.

In FY 07, the Commission had revised the components of working capital. Estimation of working capital requirement for the subsequent years is based on AERC (Terms and Conditions for Determination of Tariff) Regulations, 2006. In the revised norms, the receivables for two months were considered instead of one month for the gas-based plants. Additionally, norms for the working capital requirement for hydel-based plants have also been specified in the revised regulations which are as under:

- O&M cost for one month on approved figures.
- Maintenance spares to a level of 1% of the approved Gross Fixed Assets (GFA) only for operation plants.
- Receivables for two month based on the projected sales.

After calculating working capital requirement, the Commission had approved interest cost on the borrowing to fund working capital. The interest rates allowed on the borrowings to fund working capital are based short-term Prime Lending Rate of State Bank of India as on 1st April of the financial year for which the generating station has filed its petition for ARR and tariff proposal.

The table below gives the snapshot of the approved, proposed and trued-up value of interest on Working Capital.

Table A-2.8: Approved, Proposed and True-up of IWC (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	-	1.6	2.2	5.5	10.1
Proposed by the petitioner	-	3.4	2.0	9.4	8.6
Total Trued-up O&M	-	3.2	1.6	-	-
Approved Interest Rate (%)	-	9.0%	9.0%	9.5%	13.75%

Rate of Return

The Commission has approved Return on Equity for APGCL in each of the tariff Orders issued during FY 06 to FY 09. However, the rate of ROE provided to each generating station has varied based on the performance and judgment of the Commission in line with the AERC (Terms and conditions for determination of Tariff) Regulations 2006 that state *"Return on Equity shall be allowed by the Commission on achievement of a satisfactory level of performance by the generating company"*.

For FY 06, the Commission disallowed return on equity to APGCL based on the poor performance of the generating stations. For FY 07, a 7% rate of return was approved by the Commission on the approved level of opening equity for NTPS and LTPS generating stations. No RoE has been allowed to BTPS and CTPS, as the two units were not in operation. For FY 08 and FY 09, the rate of return considered for return on equity for the gas based plants is 7%. In view of the improvement shown in the gas-based plants and to avoid any slippages in maintenance of these generating stations, the Commission had approved a return of 7% on the equity for the plants. However, for hydel plants, the Commission had approved a 14% return on equity for FY 08 and FY 09 Tariff Orders. A higher ROE was allowed for Kargi Langpi Hydel Plant as the station was operating at full load since its date of Commissioning.

During all these years, the Commission has not provided for any equity invested in the non-operational plants. The amount of approved RoE has been in the range of 9-13% of the approved total annual fixed cost.

Total Fixed Cost

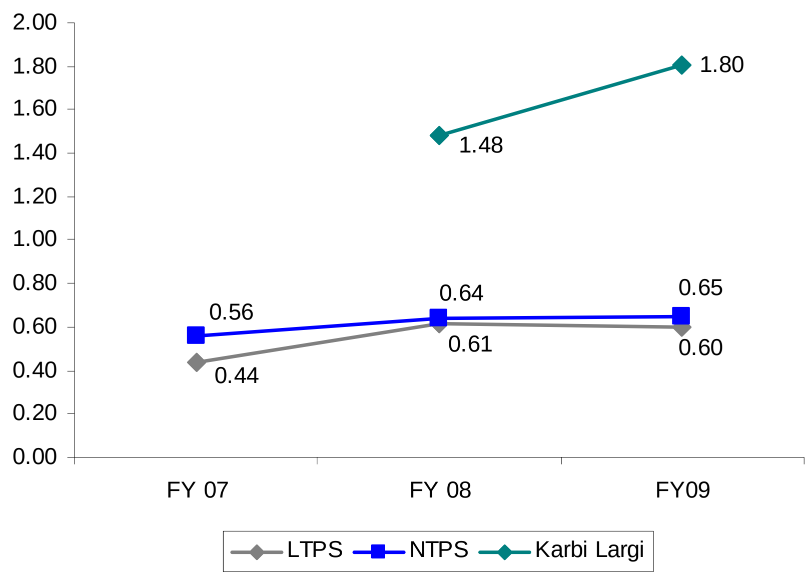
Based on the approach mentioned above, AERC has approved the total fixed cost for the three plants. Since the Order for FY 05 was issued for the bundled utility, the fixed cost for the generating plants was not determined separately. Further for FY 06, the Commission has approved consolidated fixed cost for APGCL as a whole and the annual fixed cost is to be recovered in 12 monthly equal installments from the ASEB. In the subsequent tariff orders, the Commission has approved annual fixed charges for each of the generating plants separately. However, for the determination of tariff to be charged from the ASEB, the Commission has approved a similar methodology as considered in the FY 06 order. The table below summarizes the annual fixed charges and monthly fixed charges for APGCL:

Table A-2.9: Approved Annual and Monthly Fixed for APGCL (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
APGCL Total Fixed Charges	70.74	64.52	129.00	192.05
Monthly Fixed Charges	5.89	5.37	10.75	16.00

The increase in annual fixed charges during FY 08 is primarily on account of Commissioning of Karbi Largi hydel plant. A comparison of per unit fixed cost approved from each generating station during FY 07 to FY 09 is summarized in the graph below:

Graph A-2.3: Approved Fixed cost of the Generating Stations of APGCL (Rs. per unit)



Fuel Cost

For FY 05, the Commission has approved fuel cost based on the gross generation, average gross calorific value, average SHR, gas consumption and the prices of the fuel.

The base price of the gas has been calculated as per billing done by GAIL. However in FY 06, the Commission had approved full recovery of fuel cost without considering the SHR and auxiliary consumption norms as FY 06 was the first year of operation of APGCL. In the Order, the Commission has specified that the norms will be applied by the Commission for FY 07 post the technical review of the SHR report submitted by APGCL.

For FY 07, FY 08 and FY 09, the fuel cost has been determined based on the approved gross generation, fuel prices, requirement of fuel and the transportation cost. The Commission has considered the price of gas for the computation of fuel cost similar to the APGCL claimed prices (equal to the prevailing fuel price).

The fuel cost estimated by the Commission for the FY 06 and FY 07 was trued-up in FY 09. The trued-up exercise in case of fuel cost is primarily undertaken with a view to account for any variation in fuel prices. In FY 06 and FY 07, the Commission has considered fuel cost at actual and has decreased the amount on pro-rata basis for higher auxiliary consumption as compared with the approved figure. The table below shows the amount of approved, actual and trued up figure for APGCL.

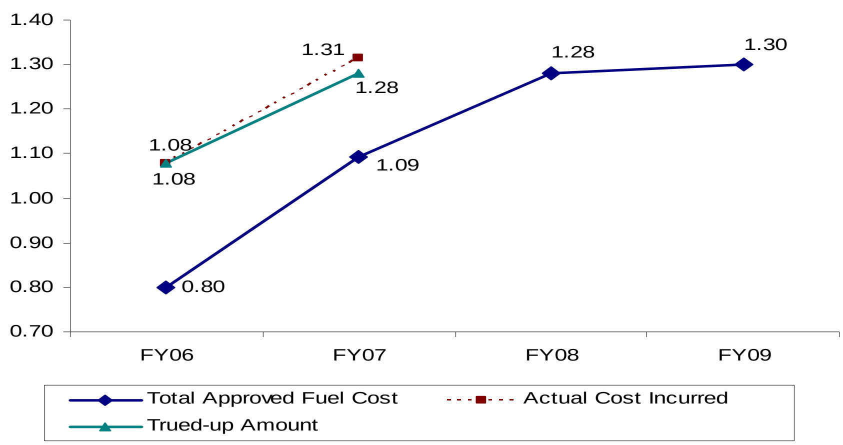
Table A-2.10: Approved, Actual and True-up of Fuel Cost (Rs per unit)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved Fuel Cost		0.80	1.09	1.28*	1.30*
Actual Cost Incurred		1.08	1.31		
Trued-up Amount		1.08	1.28		

** Excluding energy availability from Kargi Langpi hydel power plant*

Higher than approved level of fuel prices have resulted in an increase in trued-up per unit variable cost as compared with the approved per unit variable cost. However, the actual cost as claimed by APGCL is still higher owing to the higher than approved levels of SHR and auxiliary consumption which has not been approved by the Commission while truing-up the variable cost.

Graph A-2.4: Approved, Actual and True-up per unit Variable Cost*



**Variable cost for FY 08 & FY 09 exclude energy availability from Karbi Langpi Hydro Power Station*

Incentive Level

The Commission has approved incentive of 25 paisa/kWh on overachievement of the target PLF for all generating plants in line with the AERC (Terms and Conditions for determination of Tariff) Regulations, 2006.

A-2.2. Assam State Transmission Utility

Introduction

The bundled State utility, Assam State Electricity Board (ASEB) was restructured into five corporate entities through a notification issued by the Government of Assam on 10th December 2004. Among the five entities, Assam Electricity Grid Corporation Limited (AEGCL) was incorporated to carry out the functions of electricity transmission as the State Transmission Utility (STU). Accordingly, AEGCL started functioning independently as per the Assam Electricity Reform First Transfer Scheme.

The Government of Assam notified the transfer scheme vide notification dated 16th August, 2005 as per which AEGCL was assigned assets and liabilities, on a provisional basis as given below:

Table A-2.11: Opening Balance Sheet of AEGCL as on 1st April, 2005

Particulars	(In Rs. Crs)
NET ASSETS	
Gross Fixed Assets	501.73
Less: Accumulated Depreciation	478.63
Net Fixed Assets	23.10
Capital Work in Progress	96.68
Total Fixed Assets	119.78
Investment	11.91
Total Current Assets	26.4
Total Current Liabilities	5.12
Net Current Assets	21.28
Total Assets	**152.97**
FINANCED BY	
Payment due on Capital Liabilities	3.2
Capital Liabilities	28.44
Fund / Loan from State Govt.	2.57
Equity Share Capital	80.55
Contribution, Grants & subsidies towards cost of capital assets	0
Reserve & funds	38.21
Total Fund	**152.97**

The notification stated that the opening balance has been prepared based on the approved accounts of Assam State Electricity Board as on 31st March, 2004 and such opening balance sheet shall all be subject to all consequential adjustments on the update, finalization and audit of accounts of ASEB as on 31st March, 2005. Accordingly, the Opening Balance Sheet (OBS) was updated for all unbundled entities as per the GOA Notification dated 16th August, 2005 and sent to Government of Assam vide notification dated 19th September, 2006 for notification.

Subsequently, the Government of Assam notified the updated and finalized Opening Balance Sheets in August 2007. The updated value of opening assets and liabilities for AEGCL was finalized as Rs. 221.86 Cr as against the provisional amount of Rs. 152.97 Cr.

The Assam Electricity Regulatory Commission (AERC) has since taken a few key initiatives. The Commission notified Intra State Open access regulation in 2006, which allowed open access facility for consumers with connected load of 1MW and above with effect from 31st December, 2008. This created need for separate transmission tariff for the state which was duly considered and implemented by the Commission in the transmission tariff notified for FY 2008-09 and FY 2009-10.

In the Tariff Order for 2006-07, the Commission had drawn the attention of the State Government to the situation resulting from non-allocation of generating capacities of the State Generating Stations and the respective share of the Central Generating Stations among the distribution licensees of the State which is sought to be addressed through an agreement made between ASEB and the distribution licensees with differential bulk sale rates. The Commission was of the view that the Deemed Trading Licensee does not have the discretion of charging differential bulk sale rates to different distribution companies. The Commission suggested that the Power Department of the State Government should evolve a suitable allocation plan for the Distribution Licensees of the State and notify the same accordingly. Meanwhile, Government of Assam vide its letter dated 20th February, 2009 informed the Commission that the Government had decided to merge the three distribution companies into one which would eliminate the need for determination and charging of differential Bulk Supply Tariff. The Commission has since fixed the bulk sale rate for ASEB for the electricity supplied to it by APGCL and CSGS.

In terms of the adoption of MYT framework in the state of Assam, the Commission delayed commencement with MYT by one year. The Tariff Policy notified by the Government of India on 6th January, 2006 stipulates that the MYT framework is to be adopted for any tariffs to be determined from 1st April, 2006. However, the Commission decided to adopt the MYT from FY 2007-08 with a 3 year control period. The utilities were accordingly directed to file their Tariff Petitions for the entire control period.

As per latest Government notification dated 18th March, 2009, ASEB has been allowed to undertake limited functions of Bulk purchase and Bulk supply upto 15th June, 2009 in respect to the existing generating capacity and existing contracted capacity for the said period. For ASEB to continue to undertake the functions of Bulk purchase and Bulk supply beyond 15th June 2009, further authorization from the Government of Assam is required.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 2005-06 to FY 2008-09 (separate information on transmission business is not available for FY 2004-05) in approval of the Annual Revenue Requirement (ARR) of the state transmission utility AEGCL.

Transmission Losses

AERC has considered the following factors while approving the transmission losses for the FY 06-07 to FY 08-09:

- Data available from SLDC on actual transmission losses for the previous year
- Considered some percentage of errors in this loss calculation on account of non-availability of proper meters at some feeders
- Consideration of Direction issued on the Previous year Tariff Order

Table A-2.12: Approved Transmission Losses

Particulars	FY 06	FY 07	FY 08	FY 09
Approved	8.55%	6.50%	6.10%	5.82%
Actual/Trued-up	6.31%	7.26%	6.10%	

Transmission Charges payable to PGCIL

The Commission has approved Rs.8.0 Cr towards depooling of PGCIL transmission charges during FY 2005-06 as were submitted by the transmission utility supported by receipts. In FY 2006-07, the Commission has considered transmission charge of 35 paisa per unit (as per CERC) and has approved Rs.100.28 Crs payable to PGCIL against 2865.251MU of energy to be received from Central sector Generating Units. In FY 2007-08 and FY 2008-09, the Commission has approved Rs. 98.1 Cr and Rs.113.9 Cr. respectively as transmission charges payable to PGCIL again in conformance to CERC order on the annual charges recoverable for transmission lines and network of PGCIL.

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 05-06, FY 06-07, FY 07-08 and FY 08-0-9 in its Tariff Orders for AEGCL. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

Employee Cost

In FY 05-06, the Commission has allowed 8% increase over the last tariff order to factor in inflation (5%) plus an extra cushion of 3% to cover any contingency. In FY 06-07, the Commission has approved employee cost as submitted by the AEGCL. In FY 07-08, though the Commission has allowed all expenses under employee cost as submitted by AEGCL but terminal benefits have been limited to future liability of 22.79% of the basic and DA claimed. The Commission, in the tariff order for FY 08-09, has allowed the major expenses on employees including salary and DA as submitted in the petition but the terminal liability has been again been capped at future liability of 22.79% while other allowance has been increased by 6% over the actual level of FY 2007-08.

The net employee cost (after capitalization???) as approved by the Commission in each of the past four tariff orders is summarized in table 2 below:

Table A-2.13: Approved Employee Cost from FY 2005-06 to FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Net Employee Cost (Rs. Cr.)	37.04	42.31	49.84	48.89
Total Approved ARR (Rs. Cr.)	49	179	209	334
% Employee Cost of Approved ARR	75.6%	23.7%	23.8%	14.7%

Repair & Maintenance (R&M) Expenses

In FY 2005-06, the Commission has allowed an increase of 24% over the R&M cost approved in the preceding year as submitted by AEGCL in its petition. The Commission, has however, stated that in future the R&M cost shall be benchmarked against the length of lines, transformation capacity and number of substation bays. In the following three years from FY 2006-07 to FY 2008-09, the Commission has however approved a straight increase of 6% in the R&M cost to factor Inflation (5%) plus 1% cushion to take care of additional expenditure.

The R&M expenses approved by Commission in the last four tariff orders are summarized in Table A- 1.14 below:

Table A-2.14: Approved R&M Expenses from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Net R&M Expenses (Rs.Crs)	5.91	6.17	6.64	7.03
Total Approved ARR (Rs. Crs)	49	179	209	334
R&M Cost as % of Approved ARR	12.1%	3.5%	3.2%	2.1%

Administrative & General Expenses

In FY 2005-06, the Commission has approved an increase of 6% p.a. over the audited accounts of FY 2004 factoring 5% inflation plus 1% to take care of additional expenditure while disallowing the proposed one time expenditure in absence of detailed justification. Similarly for the next two years i.e. for FY 2006-07 and FY 2007-08, the Commission again going with the same philosophy approved a 6% increase in the A&G expenses approved in the preceding year. In FY 2008-09 however, the Commission has accepted a new methodology adopted by AEGCL while making projections of A&G expense based on the escalation index formulated using the Wholesale Price Index (WPI) and Consumer Price Index (CPI) as notified by the Central Government for different years. Accordingly, the Commission approved an escalation rate of 11.09% computed and applied by AEGCL for making projection of A&G expenses for FY 2008-09.
A&G expenses approved by the Commission in the past four year tariff orders are summarized below:

Table A-2.15: Approved A&G Expenses from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Net A&G Expenses (Rs.Crs)	1.79	1.85	2.01	2.33
Total Approved ARR (Rs.Crs)	49	179	209	334
A&G Cost as % of Approved ARR	3.7%	1.0%	1.0%	0.7%

Depreciation

In FY 06, the Commission has limited the amount of the depreciation allowed to the level of loan repayments due to absence of asset register, current net value of the asset, etc. Since the assets are created through loans, the Commission viewed that this method will also help in finding the value of asset net of grants. In FY 07 and FY 08, the Commission has largely approved the depreciation as filed in the petition as the calculation by AEGCL was based on depreciation rates approved by AERC. The Commission however has reserved the right to reanalyze the same on receipt of audited financial accounts. However, AERC had deducted the amount of grants while approving depreciation in FY 08.

In FY 2008-09, the Commission has allowed Depreciation as per the updated Opening Balance Sheet of AEGCL based on Audited Financial Statement of FY 2004-05, including the additions made during the FY 2008-09 as per the particulars submitted in the petitions. For depreciation calculation Grant has been apportioned in the ratio of GFA and CWIP and had been deducted from GFA to get the value of GFA as on 1st April, 2008. Addition in GFA during FY 2008-09 has been considered to be done by 90% grant and 10% loan, thus 10% of addition in GFA is taken for depreciation calculation purposes. The Commission has further considered 50% of the amount for depreciation as no date of Commissioning of assets is submitted for the additions of assets during the financial year.

In terms of claiming of Advance Against Depreciation (AAD), the tariff orders from FY 2005-06 to FY 2007-08 do not make any such mention, however AEGCL has claimed an amount of Rs. 67.71 Cr. towards Advance Against Depreciation (AAD) for 2008-09. But the Commission has disallowed the AAD finding AEGCL to be ineligible as per regulations for such advance in FY 2008- 09.

Interest cost

In FY 2005-06, the Commission has accepted Interest on loans without capitalisation of interest charges for loan funded capital projects. Since gestation varies from 6 months to 18 months, the Commission has allowed the interest cost to be pass through in computation of ARR. The net interest charges approved in FY 2005-06 have been about 12% of the ARR. In the next three years from FY 2006-07 to FY 2008-09, the Commission has approved interest cost based on the approved debt of AEGCL. Since the approved debt of AEGCL in FY 06-07, FY 07-08 and FY 08-09 is NIL, no interest has been provided

Rate of Return

The Commission has uniformly for all years during FY 05-06 to FY 08-09 has adopted Return on Equity (RoE) as the parameter for allowing return on investment.

In FY 2005-06, the Commission has in a way penalized AEGCL due to its poor performance in management of transmission losses by disallowing any return on equity. In the following year i.e. FY 2006-07, the Commission determined that the actual transmission loss for the FY2005-06 is 6.31%, which is 2.24% lower than the approved transmission loss of 8.55%. Therefore, in order to encourage and maintain this pace of improvement, the Commission viewed that AEGCL should not face any cash shortage. As such, the Commission approved a Return on Equity @7% to AEGCL in FY 2006-07 on their approved Equity of Rs.80.55 Cr. In FY 2007-08 and 2008-09, the Commission has considered the efforts made by AEGCL in arresting transmission losses and has approved a return on equity of 14% in both the years.

The details pertaining to approved rate of return between FY 2005-06 and FY 2008-09 are given in the table below:

Table A-2.16: Approved Rate of Return between FY 06 and FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Equity (Rs. Crs)	81	100	100	100
Approved Return on Equity (%)	0%	7%	14%	14%
Approved Return on Equity (Rs. Crs)	0.00	5.64	13.99	13.99

Other Expenses / Prior period / Provisions

The Commission has approved other expenses for AEGCL in FY 2006-07, 2007-08 and 2008-09 which have consistently grown as percent of ARR with increase in ARR. These expenses are essentially towards the plan for funding Terminal Benefit of ASEB Employees that was notified by Government of Assam in February 2005. The said expenses approved by the Commission in FY 2008-09 were as high as 39% of the approved ARR.

The table below shows the other expenses / provisions approved by the Commission during the last four financial years.

Table A-2.17: Approved Other Expenses between FY 06 and FY -09

Particulars	FY 06	FY 07	FY 08	FY 09
Other Expenses/Prior Period/Provisions (Rs.Crs)	0	27.29	38.76	129.2
Approved ARR (Rs. Crs)	49	179	209	334
Other Expenses as % of Approved ARR	0.0%	15.3%	18.5%	38.7%

Other Miscellaneous Charges

The Commission has approved the deduction of full amount of miscellaneous charges based on submitted information / receipts from FY 2005-06 to FY 2008-09. Expenses under the head miscellaneous have been the only deductible item all through the said four year period from FY 2005-06 to FY 2008-09. As is evident from the table 7 below, miscellaneous charges which were substantial at 18.3% of ARR in FY 2005-06 have been approved less than one percent of ARR in FY 2008-09.

Table A-2.18: Approved Miscellaneous charges between FY 06 and FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Miscellaneous Charges (Rs.Crs)	8.94	9.39	20.47	2.87
Approved ARR (Rs. Crs)	49	179	209	334
Miscellaneous charges as % of Approved ARR	18.3%	5.3%	9.8%	0.9%

Annual Revenue Requirement

The Commission has approved the ARR by deduction of the approved miscellaneous charges from other admissible expense components as discussed above. The table 8 below shows the ARR approved by the Commission vis-à-vis that proposed by AEGCL from FY 2005-06 to FY 2008-09.

Table A-2.19: Approved ARR for AEGCL from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	49	179	209	334
ARR proposed by AEGCL (Rs.Crs)	84	210	302	507
% Disallowance	42%	15%	31%	34%

Transmission Tariff

The Commission has computed the intra-state transmission tariff in paisa/KWh during all the years from FY 2005-06 to FY 2008-09 in quite a simple and straightforward manner. The approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year.

The Commission has adopted only energy charges in FY 2005-06 for recovery of transmission costs as metering for recording demand of distribution licensee did not exist to support the introduction of demand charges. In all the years from FY 2005-06 to FY 2008-09, the Commission has approved full recovery in case utility meets its availability target.

Table A-2.20: Approved Transmission Tariff from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	49	179	209	334
Approved Energy Available in ASEB Grid (MUs)	3385	3559	4127	4792
Transmission Loss %	8.6%	6.5%	6.1%	5.8%
Energy Available for DISCOMs (MUs)	3096	3328	3876	4513
Approved Transmission Tariff (Paisa/KWh)	**0.16**	**0.54**	**0.54**	**0.74**

Determination of Transmission Charges & Open Access Charges

As per the Section 62 (b) and 62 (c) of Electricity Act 2003, the Commission is required to fix the transmission and wheeling charges for using the transmission system. These charges fixed on the basis of postage stamp method as per CERC Guidelines, will be applicable for all users of the network including the DISCOMs. The Commission in its Tariff Order for FY 07 to FY 09 has decided to determine separately the transmission and SLDC charges to be paid by all consumers of the transmission network (66 KV and above) including loss. Similarly the consumers using the network below 66 KV are required to pay the wheeling charges as determined by the Commission in addition to transmission charge.

Transmission Charges for FY 05-06:

The Tariff Order for AEGCL was issued on 27th May 2005. The Commission in this year has also issued AERC (Terms and Condition of Tariff Regulation), 2005 and based on these regulations the Commission approved the transmission charges for AEGCL for FY 05-06.

Since the Regulations for open Access were not available during the FY 05-06, the Commission approved only transmission charges applicable to the utility.

Transmission Charges for FY 06-07:

The Tariff Order for FY 06-07 was based on the amended AERC (Terms and Conditions for determination of tariff) with amendment up to May 2006 and AERC (Terms and Conditions for Intrastate Open Access regulation), 2006, which allows open access facility for transaction of 10 MW and above with effect from FY 06-07.

Based on the open Access Regulation, the Commission approve in this order Long term and Short term Transmission Charges, where long term Transmission costumer includes DISCOMs.

State Transmission Utility in the state of Assam is not capable to transmit power independently to all the regions of the state due to geographical constraints and is hence assisted by Central Transmission Utility (CTU) network. Similarly STU networks are used to transmit Central generating station power to other states of the region. For the purpose of the same North East Region (NER) Tariff known as Unified Common Pool Transmission tariff is used. In case open access transaction is functionalized CTU will be a part of it and hence the transmission tariff of the state includes the net CTU transmission tariff.

Table A-2.21: Monthly charges payable by Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
Long Term customers/ DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12*total gross contracted capacity in kilowatt of the transmission	**= Rs 198.42**

	system by all long term open access costumer) Where; Net Transmission ARR= **Rs 178.58** Gross Contracted capacity= **750 MW**	
Short Term	**Transmission charges(Rs. / MW / day))=** Short Term rate per day= Transmission ARR / (Annual Maximum peak*365) Where; Annual Maximum Peak(Assumed) = 750 MW	=**Rs. 6404**

Note: Energy losses in kind will also be applicable over and above the Transmission Charges

However the Commission decided to approve transmission charges applicable to DISCOMs in Rupees per unit and hence the transmission charges **for FY 06-07 will be Rs 0.5366 per unit.**

Transmission Charges for FY 07-08

This Tariff order was based on the amended AERC (Terms and Conditions for determination of tariff) with amendment up to May 2006 and AERC (Terms and Conditions for Intrastate Open Access regulation), 2006, which allows open access facility for transaction of 10 MW and above with effect from FY 06-07. Based on the open Access Regulation the Commission approve in this order Long term and Short term Transmission Charges, where long term Transmission costumer includes DISCOMs.

The Commission for approving transmission tariff has used same approach as in FY 06-07.

Table A-2.22: Monthly charges payable by Open Access Customer

Type of Customer	Calculation of Transmission Charges	Transmission Charges
Long Term customers/ DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12*total gross contracted capacity in kilowatt of the transmission system by all long term open access costumer) Where; Net Transmission ARR= **Rs 209.40 Crs** Gross Contracted capacity= **830 MW**	**= Rs 210.24**
Short Term	**Transmission charges(Rs. / MW / day)=** Short Term rate per day= Transmission ARR / (Annual Maximum peak*365) Where; Annual Maximum Peak(Assumed) = 830 MW	=**Rs. 6912**

Note: Energy losses in kind will also be applicable over and above the Transmission Charges

However, the Commission decided to approve transmission charges applicable to DISCOMs in Rupees per unit and hence the transmission charges for **FY 07-08 will be Rs 0.54 per unit.**

Transmission Charges for FY 08-09

This Tariff order was based on the amended AERC (Terms and Conditions for determination of tariff) with amendment up to May 2006 and AERC (Terms and Conditions for Intrastate Open Access regulation), 2006, which allows open access facility for transaction of 10 MW and above with effect from FY 06-07. Based on the open Access Regulation the Commission approve in this order Long term and Short term Transmission Charges, where long term Transmission costumer includes DISCOMs.

The Commission for approving transmission tariff has used same approach as in FY 06-07.

Table A-2.23: Monthly charges payable by Open Access Customer

Type of Customer	Calculation of Transmission Charges	Transmission Charges
Long Term customers/ DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12*total gross contracted capacity in kilowatt of the transmission system by all long term open access costumer) Where; Net Transmission ARR= **Rs 333.61** Gross Contracted capacity= **868.90 MW**	**= Rs 319.95**
Short Term	**Transmission charges(Rs. / kW / month)=** Short Term rate per day= Transmission ARR / (Annual Maximum peak*365) Where; Annual Maximum Peak(Assumed) = 868.90 MW	=**Rs. 10519**

Note: Energy losses in kind will also be applicable over and above the Transmission Charges

However the Commission decided to approve transmission charges applicable to DISCOMs in Rupees per unit and hence the transmission charges for **FY 08-09 will be Rs 0.70 per unit.**

AEGCL should recover the full transmission charges (FY 05-06 to FY 08-09) approved by the Commission at the target availability of transmission system as per clause 89(2) and 86(b) of AERC Terms and Conditions for Determination of Tariff Regulations, 2006. Further any recovery on account of short term open access charges shall be adjusted to Net ARR (Approved for FY 05-06 to FY 08-09) of the transmission system after meeting all contingency expenditure in connection with open access transmission.

Cross-Subsidy Surcharge and Additional Surcharge:

Cross subsidy surcharge is charged to Open access customer to transmission and Distribution system under section 38, 39(2)(d), 40(c) and 42(2) of the Electricity Act 2003. As per the AERC (Open Access Regulation), 2006 apart from the transmission charges the following charges will also be applicable to open access consumers who are likely to avail open access facilities including captive generators.

- Cross –Subsidy Surcharge and Additional Surcharge.
- SLDC Charges

- Wheeling Charges

In the Tariff Order for FY 06-07, the cross subsidy data for different categories of consumers based on the estimated cost of supply to different categories of consumer is applied to arrive at the cross subsidy surcharge component of tariff of respective categories of consumers. This cost separation as per the model will give an indication of cost causation by different categories of consumers depending on the supply voltage, time of use, load factor etc. The cost separation will facilitate open access to those consumers who may opt for open access as per the provision of AERC Open Access Regulation notified on 13th September, 2005. Such consumers shall have to pay open access surcharge to the respective DISCOMs at whose area the consumer is located.

Further, in the tariff order for FY 06-07 the Commission applied cost of supply model and related data required updating regarding consumer load curve, consumer load factor, segment-wise loss and cost incurred in different activities. The calculation in FY 06-07 was based on information on some sample data of load curves, sample cost breakups for the purpose of separation of distribution cost. However in the tariff order for FY 07-08 the Commission updated the model further also to include the unauthorized intermediate tapping leading to losses, with distribution cost separation as a percentage of assets value at different voltage. Further the DISCOMs have not submitted sufficient data as required by the Commission. Therefore based on the available sample some modifications were made in the model.

The Commission in both the tariff orders for FY 06-07 and FY 07-08 has specified that Additional surcharges will be approved, wherever applicable, on case to case basis. For FY 08-09 the Commission has approved cross-subsidy surcharge based on the cost of supply model but also taking into consideration segregated wheeling charges at different supply voltages to the consumer along with the consumer charges based on the realistic data as per the principle of replacement cost. The table below summarizes the approved Cross subsidy surcharges for FY 06-07 and FY 08-09:

Table A-2.24: Approved Cross Subsidy Surcharges for Open Access

Particulars (Rs. /kWh)	FY 07	FY 08	FY 09
LT Commercial Supply	NA	NA	0.10
LT general Supply	1.53	0.06	0.99
Public Water Works	1.69	0.77	1.30
Bulk Govt, Educational Institution	0.63	0.46	1.02
Other Bulk Supply	0.47	0.38	0.11
HT Industries-1	0.42	0.47	1.09
HT Industries-II	0,40	0.35	0.18
Tea, Coffee and rubber	1.50	1.48	0.71
Oil and Coal	0.81	0.41	0.08
HT Irrigation	0.12	0	0.32

Note: No cross-subsidy surcharge is applicable to Captive generator for captive use.

In the Tariff order for FY 08-09, the Commission has further provided the applicability of Transmission, Wheeling and Customer Services charges under different scenario of Open Access.

Connection of Generator(Source)	Connection of consumer	Applicability of charges
EHT network	Distribution Network	Transmission , Wheeling at respective voltage and Customer charges
Connected to Distribution network(33 kV and below)	Transmission network(66 kV and above)	Transmission Charge and customer charge
Connected to transmission network	Connected to transmission network	Transmission Charge and customer charge
Connected to Distribution system	Connected to Distribution system	Wheeling charge upto the level of voltage where te consumer will be connected and customer charges

SLDC Charges

Based on the directive given by the Commission in the Tariff Order for FY 05-06, the AEGCL has submitted separate ARR for SLDC business. The Commission adopted the same principle of fixing transmission tariff in case of determining SLDC charges to be recovered from both long term and short term open access consumers of the state by adding the NERLDC charges with that of SLDC charges.

Table A-2.25: Approved SLDC Charges

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs. Crs)	2.60	6.75	1.82
Approved SLDC Charges (Rs. / MW/ day)	94.98	181.66	57.42
Approved per unit SLDC charge (Paise /unit)	0.78	1.74	0.40

The aforesaid SLDC charge has been allocated to DISCOMs in the ratio of average percentage share of loads in MW drawn by them during peak load hours of respective year.

Wheeling Charges

Commission has approved wheeling charges for the FY 06-07 and FY 07-08 for each distribution company. Moreover, Commission has also approved loss level at different voltages (33 kV, 11 kV and LT) and losses in kind up to the respective voltage level at which the wheeled energy will be applicable to the open access consumers.

For effective open access in the distribution network the segregation of wheeling cost is very much imperative. Therefore, the Commission in the Tariff Order for FY 08-09 has computed wheeling cost for different segments of network in voltage wise where different consumers are connected for receiving power supply. The distribution cost are further separated into wheeling cost and consumer cost so as to reflect a actual or near actual cost to be recovered from the open access consumers in a transparent manner.

A-2.3. Assam – Distribution Utilities

Introduction

On 10th December 2004 the Government of Assam issued a notification (vide memo no. PEL.151/2003/Pt./165) to restructure the Assam State Electricity Board (ASEB) by transferring and vesting of functions, properties, interests, rights, obligations and liabilities of Assam State Electricity Board on the State Government and re-vesting thereof by the State Government in the five corporate entities. The responsibility of the power distribution in the State of Assam is given to three distribution companies each catering to a different region.

The three distribution companies are Lower Assam Electricity Distribution Company Limited (LAEDCL) to carry out the functions of electricity distribution and retail supply in the areas of Guwahati, Mangaldoi, Rangia, Bongaigaon, and Kokrajhar circles of the erstwhile ASEB; Central Assam Electricity Distribution Company Limited (CAEDCL) to carry out the functions of electricity distribution and retail supply in the areas of Tezpur, Nagaon, KANCH and Cachar circles of the erstwhile ASEB; Upper Assam Electricity Distribution Company Limited (UAEDCL) to carry out the functions of electricity distribution and retail supply in the areas of Dibrugarh, Jorhat, Lakhimpur and Sibsagar circles of the erstwhile ASEB. However, the Government has notified that the purchase of electricity would be the responsibility of ASEB and ASEB would also supply electricity in bulk to the DISCOMs.

Post the transfer scheme in 2004, the Assam Electricity Regulatory Commission (AERC) had issued the Tariff Order for approval of ARR of LAEDCL, CAEDCL and UAEDCL and determination of RST to be charged to different consumer categories. After the issuance of an order for ASEB (bundled) in FY 05, the Commission has issued four orders for the Distribution Licensees for FY 06, FY 07, FY 08 and FY 09. The Commission also decided to adopt the MYT Framework from FY 08 with a control period of three years However, based on the scrutiny of the petitions submitted by the utilities and non availability of reliable data, the Commission issued the Tariff Order for FY 08. Subsequently, the Commission issued an order for FY 09 and FY10 after the receipt of authentic records like Audited Annual Financial Statements, Assets Registers etc. from the utilities.

Sales / Demand

The Commission has examined the estimates of growth rates particularly in view of the reduced sales during FY 2004. AERC had approved the energy sales for FY 05 based on the claim of the ASEB in the petition. ASEB had forecasted an overall growth of 14.8% for FY 05 over the FY04 actual sales. Limited availability from own generating stations and constrained transmission system were the major reasons for lower sales in earlier years. With the Commissioning of 405 MW Ranganadi HEP and marginal mitigation in transmission constraints; the sales within the State of Assam was expected to increase. The Commission after a thorough analysis of the sales in various categories had approved the estimates of ASEB.

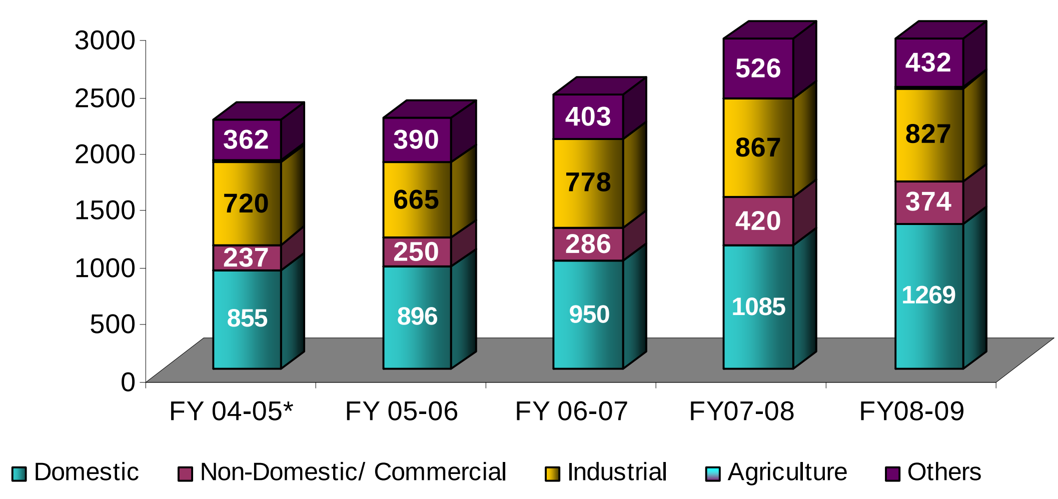
In FY 06, AERC has approved the sales after in-depth analysis of the power availability, system constraints and consumption pattern of the consumers. However, the Commission has not specified any methodology in the Tariff Order for approval of the sales estimate. However, the Commission has provided separate sales estimate for each of the three DISCOMs.

In FY 07 and FY 08, the sales was determined based on the actual six months sales for each category of consumer and estimated sales for remaining six months. The Commission has approved the sales for FY 07 & FY 08 considering the higher sales growth for previous year and sales information in the form of sales database. Further, the Commission directed the DISCOMs to separate the sales at each operation circle/district categorywise.

In FY 09, the Commission modified the methodology for estimating the sales which was more comprehensive and well defined in the Order. The Commission had considered the CAGR of all categories of consumers in terms of number of consumers, connected load and energy sales and computed leading indicators like sales per consumer and sales per KW for last three years. Averages of these indicators were applied to the closing level of consumers and connected load for previous year to estimate the energy sales for FY 09.

As clear from the Graph below, the sales to domestic category (approx. 40%) form the majority share of the total sales for the DISCOMs in the State. The sales to agriculture consumers has grown at a CAGR of 35.7% during theperiod FY 06 to FY 09. During the period FY 05 to FY 09, 12% CAGR in approved sales for Non-Domestic is the maximum followed by domestic (10%).and industrial (5%).

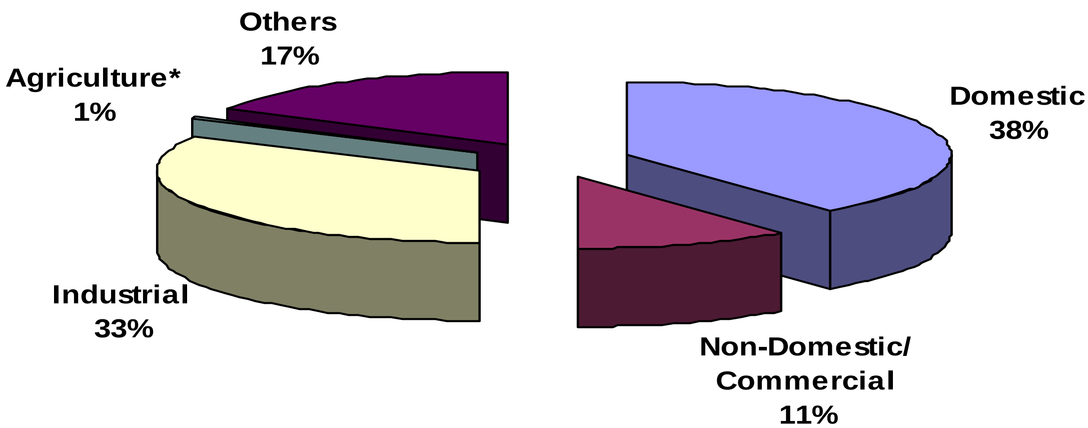
Graph A-2.5: Share of consumer categories in approved sales and the trend from FY 2004-05 to FY 2008-09



**Sales for agriculture category also includes sales to HT irrigation services.*

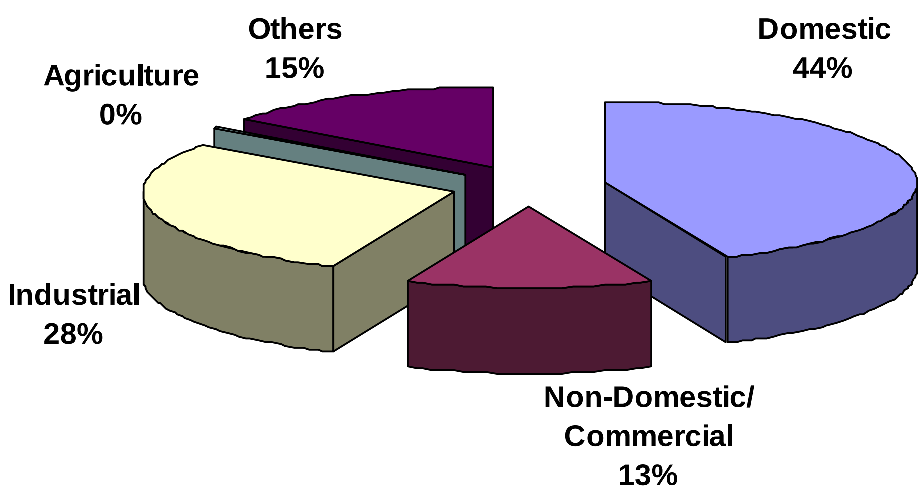
Graphs 2 and 3 below illustrate the change in share of the major consumer categories during FY 05 to FY 09. Domestic category contribute the highest share in the total approved sales followed by Industrial and Others (comprising of bulk supply consumers).

Graph A-2.6: Percent share of consumer categories in approved sales for FY 05



* *Sales to agriculture category also includes sales to HT irrigation facilities*

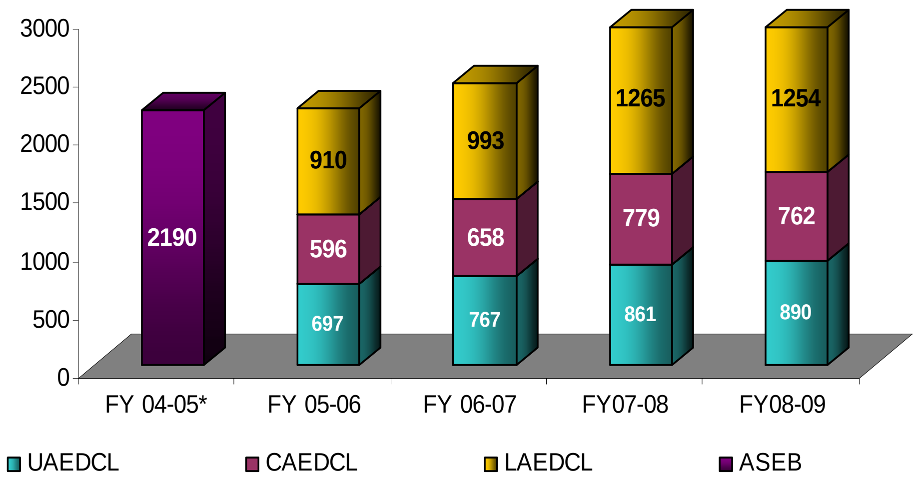
Graph A-2.7: Percent share of consumer categories in approved sales for FY 09



It is observed that the consumer mix has not changed significantly. Still there are some emerging observations. Domestic and non-domestic categories have witnessed the highest growth (>10%) while the industrial and bulk supply consumption has seen modest growth levels (approx 3.5%). Moreover the share of agriculture consumers of the total sales in approved is negligible.

Figure 4 below shows the allocation of energy sales in Assam between the three DISCOMs. LAEDCL has had the maximum share of approx. 42% followed by UAEDCL (average consumption of 31%) and CAEDCL (average consumption of 27%). Though the energy sales have increased by around 32% from 2203 MUs in FY 05 to 2903 MUs in FY 09, the sales allocation between the DISCOMs has remained largely unchanged.

Graph A-2.8: Sales allocation between the DISCOMs from FY 05 to FY 09



Moreover there are certain regions located under LAEDCL which are not connected through the ASEB/ DISCOMs Grid and hence power to these areas is being supplied by MeSEB through its own network. Time and again, AERC has directed LAEDCL to create its network in this region so that the cost of power purchase could be reduced but no compliance to the directive has been undertaken by LAEDCL.

The table below summarizes the sales approved by the Commission and actual sales during the period FY 05 to FY 09.

Table A-2.26: Approved and Actual Sales for FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Sales (MUs)	**2190***				
LAEDCL		697	767	861	890
CEADCL		596	658	779	762
UAEDCL		910	993	1265	1254
Actual Sales (MUs)	**1990#**				
LAEDCL		890	987		
CEADCL		690	589		
UAEDCL		632	668		
Variation (MUs)	**200**				
LAEDCL		-193	-220		
CEADCL		-94	69		
UAEDCL		278	325		

** Sales approved for ASEB*

#As per the provisional accounts

Though the variation in approved sales estimate and actual sales for Assam as a whole has been lower, the variation in sales across the distribution utilities has been high. Sales approved for LAEDCL has been approx 200 units lower than the actual sales for FY 06 & FY 07. Also, it is observed that the sales estimate of future years i.e. FY 08 & FY 09 does not reflect the past trends in the distribution area of each licensee i.e. Approved sales of LAEDCL for FY 09 is lower than the actual sales of LAEDCL for FY 07.

T&D Losses

In FY 05, in absence of complete details on energy loss submitted by the ASEB, the Commission had approved the T&D loss level at the level claimed by ASEB on a normative basis only for the purpose of computing the power purchase cost. The Commission had considered the claim of ASEB with a view that in case the actual loss level was greater than the approved loss level, the financial risk would be with ASEB. Considering the high level of unmetered consumers, the Commission directed ASEB to meter all consumers in order to improve revenue generation and reduce losses. Also, ASEB was directed to submit a quarterly progress reports on the achievement of metering such consumers. Further, the Commission directed the Board to submit monthly reports (showing category wise the amount of energy sales billed on a metered basis versus that billed on an assessed basis) in the formats specified by the Commission from the month of August to enable the Commission to determine the T&D loss level while processing the ARR petitions for subsequent years.

Prior to the issuance of FY 06 Order, AERC had published 14 Regulations including Distribution Licensee's Standards of Performance Regulations which stipulated certain performance standards for the distribution licensees that may be taken as key performance indicators for distribution. In line with the same and considering the unbundling of the ASEB into three distribution utilities, the Commission approved target T&D loss levels for each of the utility. The T&D loss level approved for purposes of computation of energy requirement for FY 06 are 25.38%, 32.02% and 30.28% for LAEDCL, CAEDCL and UAEDCL, respectively. However, the methodology for approval of the T&D loss by the Commission to approve loss level is not provided in the Order. It is observed that the Commission has considered the submission of the DISCOMs with a further reduction of 0.40% in the T&D loss levels.

In the Order, the Commission also specified mechanism for incentive for achievement of the target T&D levels. In case of a reduction of 1.5% in T&D loss by each DISCOMs, 50% of the surplus on account of distribution loss reduction will go to the Development Fund and the balance is to be refunded to the consumers through the ARR for subsequent year. Further, incase of a loss reduction higher than 1.5%, the DISCOMs can retain the entire amount of surplus revenue on account of this additional T&D loss reduction. As per the Standards of Performance Regulations, the Commission also directed the DISCOMs to maintain annual average billing and collection efficiency of 95%.

Similarly, the Commission had not provided any methodology for approval of the T&D loss level for each of the DISCOM in the FY 07 and FY 08 Tariff Orders. However, it is observed that the Commission had considered the submission of the DISCOMs for the approval of the FY 08 T&D loss levels.

In FY 09, the Commission had considered the past trend, the investments proposed by the DISCOMs and the loss study submitted by CAEDCL for determining the T&D loss target for the DISCOMs. In view of the steps proposed by the DISCOMs to improve the condition of network to reduce length of lines, increase conductor size and other measures, the Commission has approved 20%, 25.5% and 24% for LAEDCL, CAEDCL and UAEDCL, respectively.

The table below shows the approved, actual and trued-up T&D loss level by the Commission during FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Losses (%)	36.50%*				
LAEDCL		25.38%	23.88%	21.60%	21.50%
CEADCL		32.02%	30.52%	26.55%	27.00%
UAEDCL		30.28%	28.78%	28.35%	25.50%
Actual Losses (%)	39.90%#				
LAEDCL		31.12%	29.20%		
CEADCL		31.00%	35.60%		
UAEDCL		34.35%	35.00%		
Trued Up (%)					
LAEDCL		25.38%	23.88%		
CEADCL		31.00%	30.52%		
UAEDCL		30.28%	28.78%		

** The approved level of losses for ASEB*

#Provisional Figure as per the Tariff Order of FY 06

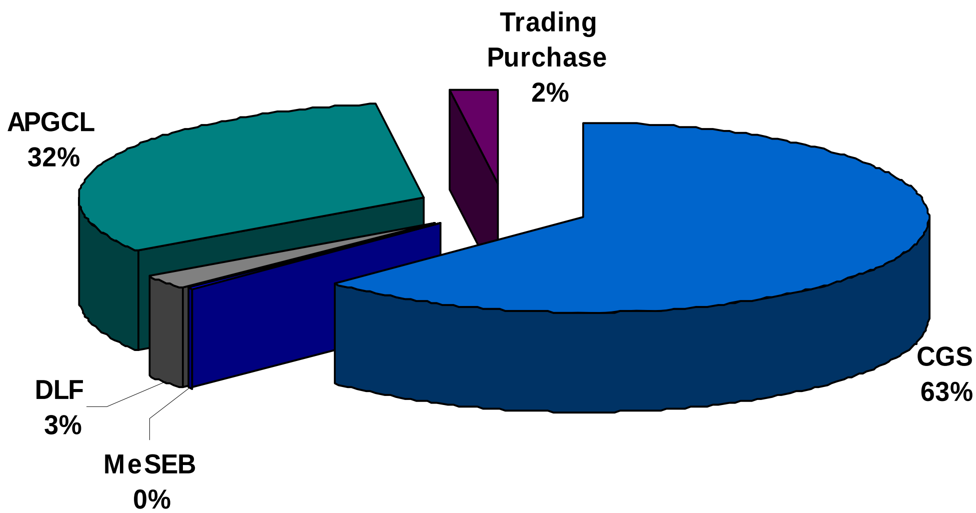
Though the actual T&D loss for LAEDCL and UAEDCL was higher as compared to the Commission approved T&D loss level, the Commission has considered the approved T&D loss level for computation of the power purchase cost at the time of true-up and proportionately reduced the actual cost of power purchase to factor the higher losses of the utility. Therefore, the utility has to bear any financial impact on account of higher than approved T&D loss targets.

Power Purchase Quantum

As a bundled utility, the purchase and distribution of electricity was the responsibility of ASEB in FY 05. Even after unbundling of ASEB into generation, transmission and distribution, ASEB was assigned the role of bulk purchase and supply of electricity in the State. This includes the purchase of electricity from APGCL, other generators in Assam, the CSGS, and power traders and the supply of electricity to the three DISCOMs. The bulk supply tariff at which the ASEB Trader will sell power is determined by the AERC. The available power is allocated based on the estimated sales and T&D losses of the DISCOMs for the respective year.

The major sources of power purchase for ASEB are CGS Hydel plants, CGS thermal plants, DLF (IPP), MeSEB and availability from trading. Assam being one of the major states in North East India, enjoys adequate allocation from various Central generating stations. The contribution of the State Generating stations is 32% of the total power availability to the State. The share of various sources in total power availability is shown below.

Graph A-2.9: Breakup of approved power availability from various sources in FY 09



During FY 05 to FY 09, the Commission has been assessing the requirement of power for each of the DISCOMs based on the approved sales and T&D losses for the each of the DISCOMs. The methodology adopted by the Commission for estimation of power from various sources has remained consistent during the period FY 05 to FY 09.

The Commission had been estimating power availability from State Generating Stations based on the approved technical parameters and net power generation for each of the generating station in the Order of APGCL.

The availability of power from Central generating NEEPCO Hydel Plants has been considered on the design energy as approved by the CERC in its tariff orders. For NEEPCO Thermal plants, the availability has been computed based on CERC regulation norms and past year actual PLF. Availability from DLF generating stations (IPP) is considered on the threshold PLF in the power purchase agreement between ASEB and DLF. Further, the allocation of power to the State from NTPC plants like Farraka, Kahalgaon and Talcher has also been considered based on previous year actual availability from these stations.

The Commission has been estimating the availability from MeSEB as per the claim of ASEB in their petition. A month wise demand and availability analysis is undertaken by the Commission for determination of the surplus/ deficit in power availability. Any surplus/ deficit power is considered to be traded through power trading companies. After treating for inter and intra state losses separately, the Commission considers the net energy available to the DISCOMs for sale. The table below shows the net energy required and net energy available with the ASEB

Table A-2.27 Total Power Available and Required by ASEB (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Power Available	3687	3689	3966	4678	4792
Power Required	3449	3385	3586	4127	4073
Net Surplus	**238**	**304**	**379**	**550**	**719**

As per the table, the Commission has projected a surplus power in each of the year between FY 05 to FY 09 on an overall basis. The surplus power is available primarily in the months of May to October when the hydel plants are running at full capacity while during the months of November to April, the State faces shortage of power which is primarily bridged through short term sources.

The availability of energy for each of the DISCOM was determined based on the estimated sales and T&D loss level approved.

Power Purchase Cost

The DISCOMs have been purchasing power at the Bulk Supply Tariff (BST) for ASEB post the unbundling of the ASEB. However, the determination of power purchase cost from various sources was considered by the Commission while approving the ARR for ASEB.

The Commission has been following a consistent approach for determination of the power purchase cost by ASEB from various sources during the period FY 05 to FY 09. Power purchase cost from the Central generating hydel plants has been approved based on the annual fixed charges as per CERC's tariff order and share of ASEB in the plant. Estimation of the fixed and variable charges from Central thermal plants has been computed based on the tariff approved by CERC for these generating stations.

The power purchase cost from State Generating stations has been approved based on the tariff determined for APGCL by the Commission. The cost of power purchase cost from MeSEB was approved as per the tariff determined by the MeSEB.

As per the PPA, ASEB has 100% allocation of power from the DLF (IPP). Therefore, the power purchase cost from the DLF(IPP) has been determined by the Commission based on the agreement. However in FY 09, tariff for power from DLF plant had been considered on the Order issued by the Commission for provisional tariff.

The Commission has also deducted any income earned by sale of surplus power from the total power purchase cost. The net power purchase cost along with other approved expenses of the ASEB like employee cost, A&G expense, interest on working capital, etc has been taken into account while computing the ARR of ASEB.

The DISCOMs were required to pay to ASEB for power purchase cost as per bulk supply tariff determined by the AERC. However keeping in view the consumer mix, losses and cost structure of each DISCOM to be dissimilar, the Commission has been determining a differential bulk supply tariff for each of the DISCOM. Therefore, the bulk supply tariff for the DISCOMs is computed in a manner so that each DISCOM is able to cover its cost and earn a fair return under a uniform retail tariff policy of Government of Assam.

The Commission has been determining the BST for each of the DISCOM in the Tariff Orders for FY 05 to FY 09 based on their consumer mix, expenditure and assured return. The graph below shows the BST rates approved by the Commission for each of the DISCOM during FY 06 to FY 09.

Graph A-2.10: Approved Power Purchase Cost per Unit (Rs. Per kWh)

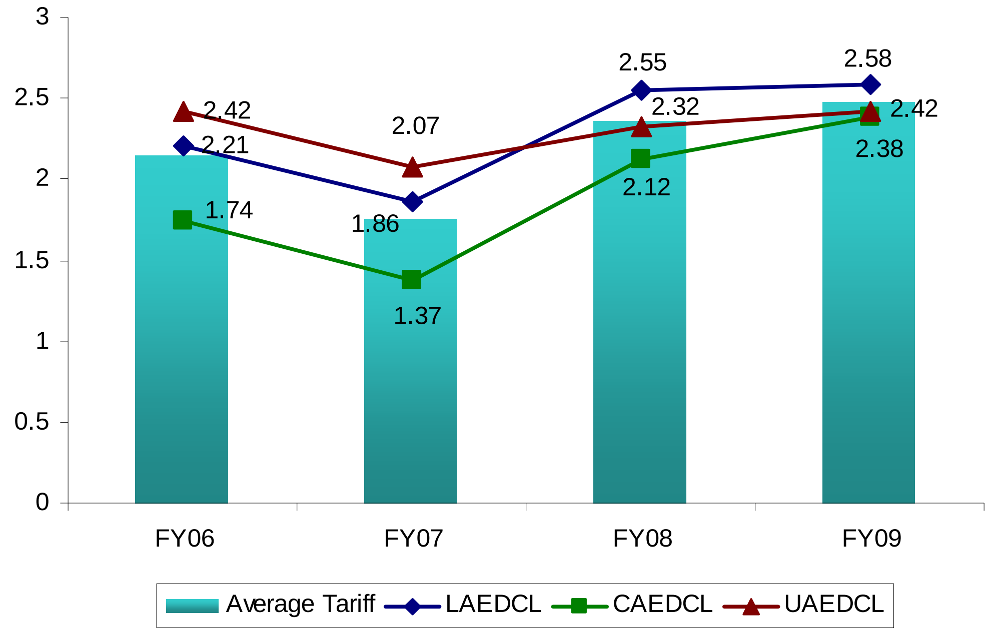


Table A-2.28: Approved and Trued-up Power Purchase Cost (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Approved				
LAEDCL	270.0	313.1	501.4	537.2
CEADCL	153.0	181.1	283.5	348.2
UAEDCL	241.4	281.9	345.3	399.4
Total Power Purchase Cost	**664.3**	**776.1**	**1130.3**	**1284.9**
Trued-up				
LAEDCL	263.5	307.3		
CEADCL	159.4	177.8		
UAEDCL	239.4	247.6		
Total Power Purchase Cost	**662.3**	**732.7**		

It is observed that the actual power purchase cost approved by the Commission has been commensurate with the approved power purchase cost. The Commission has not approved additional power purchase cost on account of higher than approved T&D losses. Therefore the financial impact of the additional power purchase has been to the DISCOMs account.

O&M Cost

AERC has approved each component i.e. Employee Cost, R&M expense and A&G expense of O&M expenses separately. The approach of the Commission fro approval of each of the component of the O&M expenditure is detailed below:

Employee Expenses

For FY 05, the Commission has determined the employee cost for ASEB based on the actual employee cost for the previous year i.e. FY04. All components incuding basic salary, DA and terminal liability, etc was considered for approval of the employee cost for FY 05. However, the cost determined by the Commission as compared with the submission of the Board was lesser on account of terminal benefits. The Commission has approved to true-up the employee expense in the subsequent ARR in case of any variation on account of actual payout of terminal benefits i.e. pension and gratuity being higher than the approved amount.

In FY 06, the employee cost had been approved by providing for an 7% escalation over the approved employee expense for last year. While approving a 8% increase, the Commission has accounted for any increase in employee cost on account of normal inflation (5%) and an additional escalation of 3% to account for any contingency.

In FY 07, the employee cost approved by the Commission was as per the claims made by the DISCOMs. As the claim of the DISCOMs for employee expenses for FY 07 was lower than the approved employee expense for FY 06 by 8.71%, the Commission has considered the submission of the DISCOMs.

A similar approach was followed in FY 08, where the Commission has considered the claim of the DISCOMs with regard to the employee cost. The same was approved after considering the proposed new manpower recruitment, merger of Dearness allowance into basic pay, improved productivity, rise in cost of living etc. which results in rise in overall employee cost.

For FY 09, the Commission has followed a more detailed approach for approval of the employee cost. The following set of assumptions were made for the approval of employee cost:

(i) Salaries: 15% rise over the actual (un-audited) figure for FY 08

(ii) DA: 30% rise over the actual (un-audited) for FY 08

(iii) Other allowances: 6% rise over the actual (un-audited) for FY 08

(iv) Terminal Benefits

(v) Sharp inflationary trend in FY 08-09

(vi) Salary impact of new entrants.

The table below shows the amount of employee cost approved for the three DISCOMs during the period FY 05 to FY 09. The employee cost for FY 05 relates to the employee cost approved for the bundled ASEB.

Table A-2.29: Approved Employee Cost to DISCOMs during the period FY 05 to FY 09

O&M Cost	FY 05	FY 06	FY 07	FY 08	FY 09
LAEDCL		87.11	82.85	113.54	152.85
CAEDCL		72.89	75.87	88.3	94.71
UAEDCL		65.02	64.34	77.39	102.64
TOTAL	**298.09***	**225.02**	**223.06**	**279.23**	**350.2**

**Bundled utility*

Repairs and Maintenance Expenses

In FY 05, the R&M expenses had been approved based on the claim of the ASEB. The Commission had considered the claim of the Board as the same was reasonable and was necessary for the upkeep of the plants.

For FY 06, the Commission followed a similar approach as considered in the previous tariff order. However, considering the claimed amount was much higher as compared to the level approved in the previous tariff order, the Commission had acknowledge to revise the approach in the subsequent orders based on the length of lines, transformation capacity, and number of substation bays.

AERC revised its approach for the approval of the R&M expenses from FY 07 onwards and determined the R&M expense by allowing escalation of 6% over the preceding years approved amount. While allowing a 6% escalation, the Commission has taken into account normal inflation of 5% and additional 1% escalation has been kept for the purpose of any additional expenditure. However, for FY 09, the Commission considered the actual un-audited R&M expense for previous year as the base and escalated the same by 6%.

The table below shows the amount of R&M cost allowed to the three DISCOMs during the period FY 05 to FY 09. The amount of R&M cost approved by the Commission for FY 05 to FY 09 is summarized in the table below.

Table A-2.30: Approved R&M Cost to DISCOMs during the period FY 05 to FY 09

R&M Cost	FY 05	FY 06	FY 07	FY 08	FY 09
LAEDCL		5.74	6.08	6.44	9.47
CAEDCL		6.38	6.76	7.18	6.51
UAEDCL		4.10	4.35	4.61	6.73
TOTAL	**22.99***	**16.22**	**17.19**	**18.23**	**22.71**

**Employee cost for the bundled ASEB*

Administrative and General Expenses

In FY 05, AERC had approved the A&G expenses for the ASEB by escalating the actual cost incurred in FY03 by 5% p.a. For FY 06, the Commission had approved the A&G expense by escalating the last audited figures by 6% p.a. While allowing 6% increase, the Commission has taken into account normal inflation of 5% and 1% cushion to consider any additional expenditure.

In the tariff orders of subsequent years, AERC had followed a similar approach for approval of the A&G expense. The Commission has approved the A&G expenses by allowing an annual escalation of 6% over previous years' approved A&G expense.

The table below summarizes the amount of A&G cost allowed to the three DISCOMs during the period FY 05 to FY 09.

Table A-2.31: Approved A&G Expense to DISCOMs during the period FY 05 to FY 09

A&G Expense	FY 05	FY 06	FY 07	FY 08	FY 09
LAEDCL		4.24	7.64	4.76	5.05
CAEDCL		3.09	3.27	3.47	4.02

UAEDCL		3.27	3.46	3.67	3.89
TOTAL	**13.68***	**10.60**	**14.37**	**11.9**	**12.96**

**A&G expense for bundled ASEB*

O&M Expenses

The total O&M Expense approved by the Commission is the submission of Employee expenses, R&M Expense and A&G Expense approved by the Commission during the period FY 05 to FY 09. The table below summarizes the amount of total O&M cost approved by the Commission during the period FY 05 to FY 09 and the per unit contribution of O&M expenses in the CoS of the energy sold.

Table A-2.32: Approved O&M Expenses to DISCOMs during the period FY 05 to FY 09

O&M Cost	FY 05*	FY 06	FY 07	FY 08	FY 09
LAEDCL **(Rs. Crs)**		97.09	96.57	124.74	167.37
CAEDCL **(Rs. Crs)**		82.36	85.90	98.95	105.24
UAEDCL **(Rs. Crs)**		72.39	72.15	85.67	113.26
TOTAL O&M Cost (Rs. Crs)	**334.76**	**251.84**	**254.62**	**309.36**	**385.87**
Sales (MUs)	2190	2203	2418	2905	2907
O&M Expenses per unit of sale	**1.53**	**1.14**	**1.05**	**1.06**	**1.33**

**Total O&M cost for bundled ASEB*

Capital expenditure (Capex)

The Commission has made no mention on the approach for approval of Capital expenditure for the DISCOMs in the orders for FY 05 to FY 08. For FY 06, the DISCOMs did not claim any capital expenditure. Capital cost considered by the Commission for FY 07 was based on the Gross Fixed Assets value as on 1st April 2005 after deducting any contributions, grant and subsidy. A similar approach has been undertaken by the Commission for considering the capital cost of the assets in the FY 08 tariff order. However, upto FY 08, the Commission had not approved any capital expenditure in the DISCOMs tariff orders.

However, for FY 09, the DISCOMs have submitted details of the capital expenditure planned for making critical and urgently needed investments in their distribution network to strengthen the system and enhance reliability to meet contingencies. However, on scrutiny the Commission observed that the submissions were incomplete and lacked details on project schemes i.e. Commission date, project cost, terms of loan, capitalization scheme, etc.

In absence of these details, the Commission did not approve the investment plan of the DISCOMs and directed to submit a 3-year Rolling Capital Investment Plan outlining the major schemes proposed for each Financial Year and detailed capital investment plan along with a feasibility reports. Further, the DISCOMs were required to submit Feasibility Reports with a broad Cost-Benefit Analysis for Capital Investment Schemes exceeding Rs. 10 Crs The Commission also decided to adopt a 2-Stage Approval Process for capital expenditure including “in-Principle Clearance” followed by “Final Approval during the Tariff Determination Process and / or ARR Review”.

The Commission in all its tariff order has been directing the DISCOMs to maintain asset register with details on the asset, including the costs incurred, date of Commissioning, location of asset, and all other technical details.

Asset Capitalization

The Commission has not approved any asset capitalization in the orders for FY 05 and FY 06 as the same was not submitted in the petitions. In FY 07 and FY 08, the Commission had considered the capitalization at every stage of completion of the schemes under progress. Since the DISCOMs had not provided the details of the schemes under progress, the Commission had directed to them to submit a detailed cost breakup of the schemes under Capital Work in Progress along with the expected date of completion and on quarterly basis thereafter. However, the DISCOMs did not submit the same in the subsequent petition for FY 08.

However in FY 09 order, the Commission revised its methodology and directed the DISCOMs to provide a physical completion certificate accompanied by financial completion certificate within 60 days of completion of work. In absence of the completion certificate the capitalization of the scheme would not be considered for tariff determination.

Depreciation

For FY 05, the Commission had approved the depreciation to the extent of loan repayment. In FY 06, the Commission while estimating the depreciation for each of the DISCOM observed that information relating to asset register, value of assets which had been fully depreciated and breakup of the different categories of assets. In absence of the same, the Commission followed the similar approach of approving depreciation to the extent of the loan repayment.

In FY 07, the Commission has considered the value of the assets based on the final transfer scheme and the computation submitted by the DISCOMs. Since the depreciation rates applied on gross block were in line with the Commission, AERC had approved the depreciation claim made by the DISCOMs.

For FY 08 and FY 09 Order, the Commission has followed a similar approach as mentioned in the FY 07 tariff order. Any additions to the GFA have also been considered after netting for any grants. In FY 09, additional GFA during the year was considered on 90% grant and 10% loan.

Working Capital Requirement

In absence of the detailed lead lag study and non-payment of interest on consumer deposits by ASEB, the Commission had not allowed any interest on working capital requirement for FY 05. Also, the Commission had directed ASEB to come up with a detailed lead lag study within three months of the issue of the tariff order for FY 05.

In FY 06, the working capital requirement for the DISCOMs was estimated based on the following components:

- O&M cost for one month on approved amount
- Maintenance spares to the level of 1% of the approved GFA
- Receivable for two months based on projected sales
- Less: Security deposit

However in subsequent years, the Commission followed the AERC regulations consistently for estimation of the working capital requirement on normative basis. Following were the components of the working capital requirement:

- O&M cost for one month on approved amount
- Maintenance spares to the level of 1% of the approved GFA
- Receivable for two months based on projected sales

Interest on Working Capital

The Commission has considered an interest rate equal to short-term Prime Lending Rate of State Bank of India as on 1st April of the financial year for approving the interest cost on working capital requirement approved on normative basis.

Table A-2.33: Interest rate approved for Computation of Interest amount on Working Capital

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Interest Rate	-	9.00%	9.00%	9.50%	13.75%

Interest Expense

For approval of the interest cost for FY 05, the Commission had undertaken scheme-wise analysis of the outstanding loans of the ASEB. The Commission had done an in-dept analysis regarding the loan repayment, corresponding interest rates, adjustments regarding restructuring of loans, etc while approving the interest cost on the loan amount. Since ASEB had not provided for capitalization of the interest cost during construction period, the Commission has considered a capitalization of 20% of the interest cost.

In FY 06, the Commission had approved the interest cost as claimed by the DISCOMs. However, the Commission has not elaborated on the methodology for approval of the interest cost. Moreover, the Commission had also approved an interest on the consumer deposits in line with the Electricity Act, 2003.

In FY 07, the Commission had approved interest on term loans based on weighted average interest rate on the outstanding loan amount as filed by the DISCOMs. As approved in the previous order, the Commission had allowed bank charges as claimed by the petitioner and interest on consumer deposits @ 5.01%.

In FY 08 and FY 09, the interest rate had been approved at par with the preceding year interest rate. The interest on loan amount had been approved based on approved interest rate and approved outstanding debt amount. Interest on security deposits has also been allowed @ 5%.

Rate of Return

In FY 05, the Commission had considered a 3% return on fixed assets in the determination of the ARR for ASEB. The return was approved in order to ensure that there was no cash shortfall that could adversely affect the effort to improve efficiency.

However, for FY 06, the Commission revised its approach from Return on Fixed Assets to Return on Equity (RoE). However, the Commission had not allowed any return to the petitioner on account of the poor performance of the ASEB in FY 05.

For FY 07, FY 08 and FY 09, the Commission has continued with approach of providing RoE as per the provisions of AERC (Terms and conditions for determination of Tariff) Regulations 2006. However, the Commission has approved differential rate of return of 3%, 7% and 7% for FY 07, FY 08 and FY 09, respectively, on the opening level of equity for the DISCOMs. The Commission has applied its judgment for approval of the rate of return based on the performance of the DISCOMs in the previous year.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the three DISCOMs.

Table A-2.34: Approved Return (including interest cost) by the Commission and Return as % of Total ARR

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Rate of Return	RoFA	RoE	RoE	RoE	RoE
Rate of Return Allowed	3%	0%	3%	7%	7%
Total Return Approved	20.93*	0.00	5.32	10.20	11.40

** Return allowed to bundled ASEB*

Bad Debts

In FY 05, AERC had disallowed provision for bad debts claimed by the ASEB in view of the fact that ASEB has not written off the bad debts in its books of account. The Commission had also guided ASEB to pursue recovery of past dues and conduct periodic ageing analysis of the receivables in order to identify the non-recoverable dues. Based on the same, the Commission will consider the amounts to the extent written off for the determination of the ARR.

In FY 06, the Commission has approved 2.5% of the ARR to be set aside as provision for doubtful debts. Although the Tariff Regulations allows creation of Provision for Bad and Doubtful Debts @1% of the total revenue, the Commission had allowed a higher percentage considering the collection drive undertaken by the distribution licensees involving waivers as incentives for payment. However, any amount in excess of the provision made would not be approved

In subsequent years, the Commission had followed approved 1% of the total revenue as provision for bad debts as per the Tariff Regulations. In each tariff order, the Commission has directed the DISCOMs for submission of the details pertaining to the actual bad and doubtful debts written off in the preceding year.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM.

The table below summarizes the proposed, approved and trued-up ARR in the various Tariff Orders from FY 05 to FY 09:

Table A-2.35: Proposed, Approved and Trued-up ARR at differential BST (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
LAEDCL					
Proposed by the Utility		468	401	628	797
Approved		380	422	560	553
Trued-up		388	432	-	-
CAEDCL					
Proposed by the Utility		314	318	380	462
Approved		255	279	344	336
Trued-up		264	273	-	-
UAEDCL					
Proposed by the Utility		409	316	496	602
Approved		326	363	381	393
Trued-up		333	337	-	-
Total					
Proposed by the Utility	1185	1191	1247	1504	1861
Approved	898	961	1064	1285	1282
Trued-up	-	985	1042	-	-

The Commission has been liberal during the initial years post unbundling and has approved the ARR in line with the claim of the DISCOMs. However, for FY 08 & FY 09, the Commission has been more cautious in its approval for approving various parameters of the ARR leading to higher disallowances.

Tariff Determination

A two part tariff structure comprising energy charge and demand charge exists in the state of Assam. There were 12 major consumer categories in the state of Assam in FY 05 which were increased to 14 in FY 06 & FY 07 and were reduced to 13 in FY 08 & FY 09.

In FY 05, the Commission analyzed there was a revenue gap computed based on the approved sales and existing tariff. Moreover, the subsidy provided by the Government was not adequate to cover the revenue gap. Also, it was determined that the average Cost of Supply has declined as compared with the average CoS for FY04. Therefore, the Commission has approved marginal tariff increase for high paying consumers in order to reduce cross subsidy in the State.

In the FY 05 tariff order, the Commission has rationalized the fixed charges for the various consumer categories by way of the following methods:

- Increase in the level of fixed charges for Industrial and Commercial consumers
- Linking of fixed charges to level of availability (For categories with high fixed charge e.g. Tea, Coffee plantations, Oil & coal etc.)

In absence of a category-wise Cost of Service, the cost allocated to the categories has been computed based on the average Cost of Supply for ASEB. Based on the same, the existing tariffs have been increased for various categories to a level that fully recovers the approved annual revenue requirement of ASEB. The tariff of rural unmetered category (domestic and commercial) has also been increased to reflect the tariff rationalization across all categories. However, the Commission has not increased the demand charges for rural industry in order to reflect the difference in supply conditions between rural and urban areas.

Since, the approved tariff for retail supply was applicable only for 8 months of the year i.e. August 2004 onwards, the Commission has worked out applicable tariffs for eight months of FY 05 required to compensate for the under-recovery in the first 4 months of the year. The same has resulted in applicable tariffs being marginally higher than the approved tariffs.

In FY 06, the Commission estimated a surplus of Rs 4 Cr (approx.) based on the revised tariff design. The surplus has been allowed by the Commission to the Licensees as the same would help in any under recovery due to lower realization of fixed charges in some categories (where the Commission had assumed the availability of some categories to be at the highest slab) revenue shortfall on account of higher discounts in the off peak energy charges, etc.

In case of collections being higher than the approved ARR for FY 06, 50% of the surplus amount is to be deposited in the Development Fund and the balance will be returned back to the consumers in the subsequent year ARR.

In the FY 06 tariff order, the Commission also recognized the importance of an incentive tariff design to promote efficient usage of power by the consumers and promote healthy commercial behavior. Following steps were undertaken b ythe Commission to implement its philosophy:

- Revision of tariff schedule and creation of new categories and new slab structures (which will also lead to reduction in cross subsidy)
- Re-categorization of consumers into two broad groups of LT & HT with the objective of providing common benefits to the two groups.
- Encouraging consumers to shift to higher voltage option by suitable tariff rationalization which would also reduce T&D loss
- Introduction of Lifeline tariff for consumers who are in need of minimum quantum of electricity at low price
- Elimination of un-metered category

The Commission in the tariff order also focused on the requirement for conducting a study of voltage based cost of supply that would indicate the actual cost of supply to various consumer categories. This study would also help in the determination of cross subsidy between categories.

In FY 07, the Commission estimated the revenue gap of approximately Rs 34 Cr. The Commission intimated the Fully Allocated Cost Tariff (FACT) for each category of consumers provisionally determined as per provision of the Act along with the amount of cross subsidy and the estimated revenue gap; to the Government of Assam (GoA) for direction, if any, in respect of provision of subsidy for any consumer or class of consumers under section 65 of the Act. However, the GoA did not approve of any subsidy amount for FY 07. Therefore, the Commission had determined the retail tariff after considering the existing tariff and level of cross subsidy and comparing the same with the estimated cost of supply for each category of consumer.

The Commission followed the following principle with respect to determination of tariff and cross subsidy for FY 07:

- The present level of cross subsidy contribution as per estimation is not altered to higher percentage
- For consumers receiving cross subsidy, tariff is adjusted closer to their estimated cost of supply (also ensured that the tariff did not exceeded the average cost)
- Categories of consumers availing the benefit of Time of Day (ToD) tariff continue with rationalization of TOD rates

In FY 08, the Commission had estimated a Revenue Gap of Rs 14 Cr (approx.) based on the estimated sale and the estimated tariff. The Commission approached the GoA in respect of provision of subsidy for any consumer or class of consumers under section 65 of the Act. However, in absence of any response from the GoA on the same, the Commission revised the existing tariff by an increase of Rs 0.05 paise per unit in each category of consumers except for Jeevan Dhara. The Commission followed a similar principal with regard to cross subsidy in FY 08 as considered in the FY 07 tariff order.

The Commission in the tariff order for FY 08 has introduced the following new initiatives with regard to tariff determination:

- Computation of open access charges including transmission, wheeling, SLDC, cross-subsidy and other applicable charges with an aim to facilitate open access in the State
- Computation of cross-subsidy for each of the consumer category based on the Cost of Supply (this will help in determining the compliance with respect to National Tariff Policy that envisages a gradual reduction of cross subsidy with a trajectory so as to bring the tariffs within +/- 20% of the average cost of supply by 2011-12)

In FY 09, the Commission estimated that there will be a marginal revenue surplus of Rs. 10.05 Cr. Therefore, the Commission kept the retail supply tariff of FY 09 unchanged. Additionally, no further detailed category wise analysis was required to be undertaken in view of the unchanged tariff. Introduction of a separate category for Temporary Connection for agricultural consumers has been undertaken in an effort to boost agricultural consumption for the benefit of the State. This would be beneficial for farmers for whom a permanent connection is not feasible.

The table given below shows variable charges for various categories from FY 05 to FY 09

Table A-2.36: Energy Charges for various categories during FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Domestic					
Lowest Slab	2.00	2.75	2.75	2.80	2.80
Highest Slab	4.30	4.30	4.50	4.55	4.55
Commercial					
Lowest Slab	3.55	4.00	4.20	4.25	4.25
Highest Slab	4.60	4.30	4.50	4.55	4.55
Small Industrial					
Lowest Slab	2.45	2.15	2.30	2.35	2.35
Highest Slab	2.95	2.60	2.75	2.80	2.80
Large/HT Industrial					
Lowest Slab	3.35	3.40	3.50	3.55	3.55
Highest Slab	3.85	3.95	4.00	4.05	4.05
Agriculture Consumers					
Metered	1.65	2.15	2.25	2.30	2.30

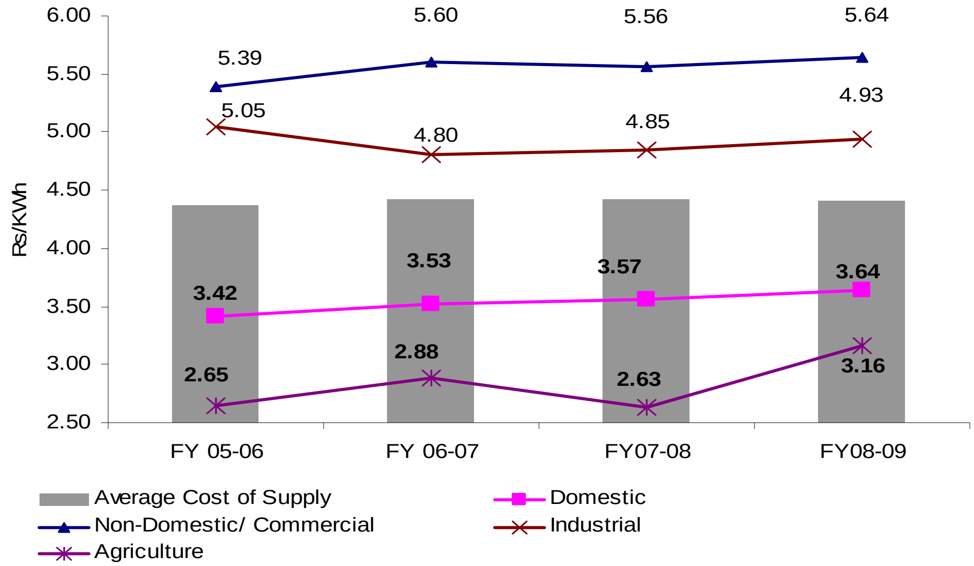
New Initiatives in the Tariff Order

Some of the appreciable key initiatives undertaken by the Commission in its tariff orders for FY 05 to FY 09 were:

- With an aim to introduce, segregation of cost was made so that the cost causation only is charged from the consumer who utilizes the portion of the facility and service. Further, the Commission decided to notify the element of estimated cross subsidy for each category of consumer in a transparent manner.
- Separate computation of Wheeling and Retail Supply Tariff (RST) along with the Retail Supply Margin. This bifurcation in the tariff would greatly facilitate adoption of open-access by the consumers

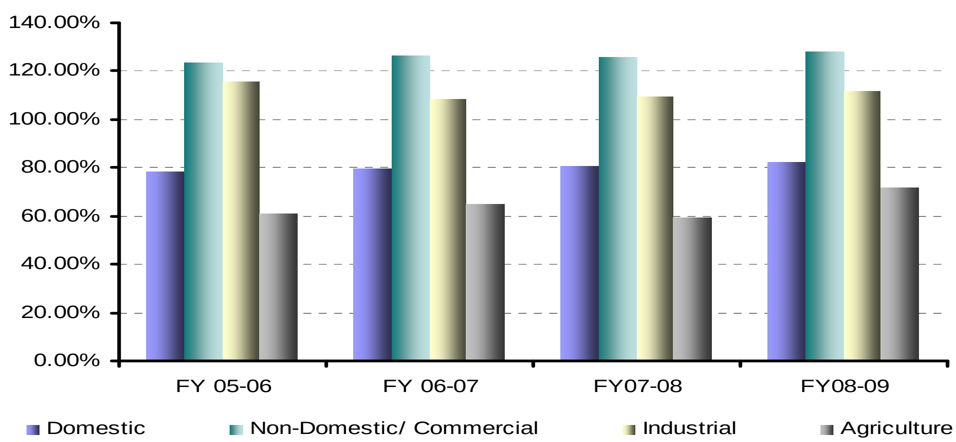
The trend of realization from tariff as approved by the Commission for various consumer categories against the average cost of supply from FY 05 to FY 09 is captured in the figure below.

Graph A-2.11: Average Cost of Supply vis-à-vis average tariff for each consumer category



The graph below illustrates the approved realization from the consumer tariff as percentage of the average cost of supply during the period FY 06 to FY 09. It is observed that the realizations commercial and industrial categories are cross-subsidizing domestic and agriculture categories during the period FY 06 to FY 09. Though, the AERC has undertaken due consideration of the cost to supply while determining the tariff of each category of consumers, the improvement in average realization as percentage of cost of supply during FY 06 to FY 09 is marginal. The average tariff of Commercial category of consumers has remained greater than +20% while the agricultural tariffs has remained lower than -20% of the average cost of supply.

Graph A-2.12: Approved realization as percentage of Average Cost of Supply



Time of Day (ToD)

The tariff structure in FY04 included a ToD charge for the categories of H.T industries, Tea, coffee & rubber and Oil & coal. In view of introducing the ToD metering to other categories, the Commission had directed ASEB to submit an action plan listing out the ground issues for implementation of such charges for other categories and estimation of the time and money required to upgrade the metering at consumer premises.

The Commission had also shown its inclination for extension of ToD metering to other categories of consumers in the various tariff orders issued by it. However, in absence of adequate sample of data submitted by the DISCOMs on the pattern of consumption during different periods of day by different categories under TOD tariff, the Commission did not extend the ToD metering to other categories of consumers.

A study was undertaken by the Commission to ascertain the effectiveness of ToD metering and the results were found to be very positive. The findings suggested a scope to reduce peak demand by way of TOD tariff still exists. Also, the findings suggested that the peak consumption may be reduced further by enhancing the ToD rates during evening period in the subsequent tariffs. The Commission has considered the findings of the survey while designing ToD tariff rate in the order for FY 09.

Renewable Energy

The Commission in its tariff orders time and again has stressed on the usage of renewable sources of energy to meet the high consumption during peak hours. In order to encourage consumers to switch over to solar water heating system, the Commission had introduced a monthly rebate of Rs. 30 to all consumers who have installed such solar water heating systems. Further, this rebate was increased to Rs 40/- per month to encourage more consumers to shift to renewable sources of energy.

Average Cost of Supply Vs Realization

The average cost of supply in the last four years FY 06 to FY 09 has increased by 0.5% whereas the average realization has increased by 0.9% during the same period. Throughout the period, the Commission had allowed to recover the full cost. In FY 06 and FY 09, the Commission had allowed a marginal revenue surplus.

Approved by AERC	FY 06	FY 07	FY 08	FY 09
Total Sales	2203	2418	2905	2907
Total ARR	961	1070	1285	1282
Total Revenue	965	1069	1285	1292
Avg Cost of Supply (Rs/KWh)	4.36	4.42	4.42	4.41
Avg Realization from Tariff (Rs/KWh)	4.38	4.42	4.42	4.44
(Gap)/Surplus	0.02	0.00	0.00	0.03

The table below shows the trued up per unit cost of supply and average realization during the period FY 06 and FY 07. The Commission computed a combined (for FY 06 and FY 07) revenue surplus of Rs 14 Crs for LAEDCL and deficit of Rs 8.5 Crs and Rs 5 Crs for CAEDCL and UAEDCL, which was adjusted in the ARR for FY 09.

Trued-Up based on Actuals	FY 06	FY 07
Total Sales	2212	2244
Total ARR	981	1034

Total Revenue	977	1058
Avg Cost of Supply (Rs/KWh)	4.43	4.61
Avg Realization from Tariff (Rs/KWh)	4.42	4.71
(Gap)/Surplus	-0.02	0.11

Subsidy Support

The principle followed by the government in case of availability of subsidy was as follows:

- The subsidy given by the GoA was utilized to maintain the tariffs at the levels as desired by GoA. with respect to the subsidized categories.
- Each DISCOM received the subsidy commensurate to the extent of energy sales projected in each subsidized category.
- The subsidy allocation to each DISCOM was to be paid by the GoA to the respective DISCOMs in installments, in advance.
- The DISCOMs shall file before the Commission the actual sales to subsidized categories of consumers for whom the GoA agreed to pay the subsidy and the Commission will monitor the units actually sold by the DISCOMs vis-à-vis the subsidy provided.
- At the end of the year, subsidy adjustments will be made based on the actual consumption of units in respect of various subsidized categories.

In FY 05, the Commission approved a revenue gap of Rs 95 Cr (approx.) based on the current sales estimation and existing tariff rate. Moreover, the Commission had also allowed inclusion of approved gap of Rs 177.96 Cr for FY04 to be recovered in FY 05. This had happened as the petitioner had filed for the petition approval very late and the Commission did not want to revise tariff with retrospective effect. As per the agreement between ADB, ASEB and GoA, GoA was required to provide financial support to ASEB within two months of ASEB raising the demand for it. The GoA confirmed the financial support for Rs 110 Cr and Rs 76 Cr for FY04 and FY 05, therefore considering a part of subsidy to be included in FY 05. Therefore, the total ARR was reduced to the extent of the Govt subsidy while the balance amount was approved in the ARR.

In FY 06, The Commission rationalized of tariff for major groups whose productive activities contribute spin-off benefits to the economy. The Commission had estimated marginal ARR surplus based on the approved tariff and approved sales. This cushion was allowed as in the calculations of revenue from fixed charges the Commission had assumed the availability of some categories to be at the highest slab and later realizes that it might not be the case. In this year no subsidy was given.

In FY 07, FY 08 and FY 09 tariff orders, the Commission approached the GoA for support to cross-subsidized categories in order to restrict the proposed increase in tariff (based on cost to supply). However, the GoA had not approved any subsidy. Considering the same, the Commission had allowed increase in tariff across categories at different rate so as to bring the tariff near to CoS as well as maintain / reduce the element of cross subsidy in various categories of consumers.

The table below shows the increase in energy charges energy charges across various categories.

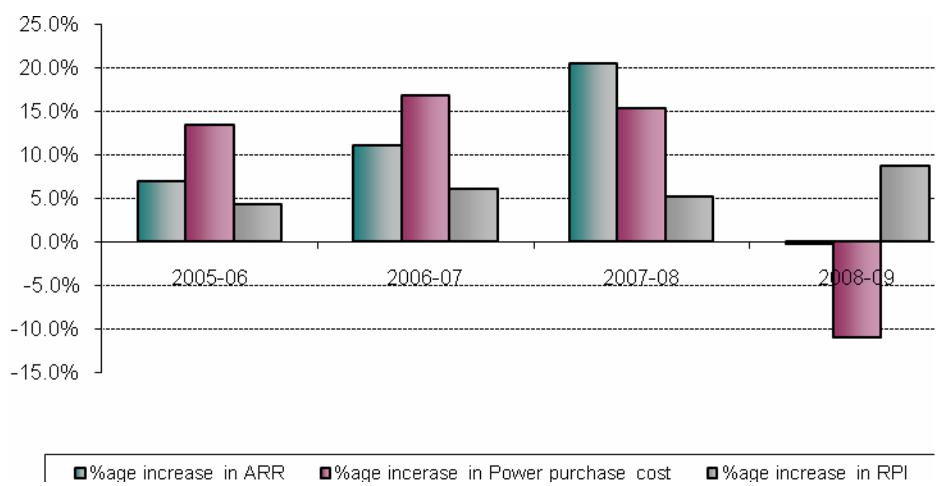
Table A-2.37: Increase in Energy Charges across Key Categories

Particulars	FY 06	FY 07	FY 08	FY 09
	Tariff Increase	Tariff Increase	Tariff Increase	Tariff Increase
Domestic				
Lowest Slab	38%	0%	2%	7%
Highest Slab	0%	5%	1%	4%
Commercial				
Lowest Slab	13%	5%	1%	5%
Highest Slab	-7%	5%	1%	4%
Small Industrial				
Lowest Slab	-12%	7%	2%	9%
Highest Slab	-12%	6%	2%	7%
Large/HT Industrial				
Lowest Slab	1%	3%	1%	6%
Highest Slab	3%	1%	1%	5%
Agriculture Consumers				
Metered LT	30%	5%	2%	9%

There had been substantial rise in the tariff of domestic and agriculture consumers in FY 06. This can be attributed to the change in slab structure under these categories. It is observed that the Commission had focused on tariff rationalization while approving an increase in tariff across various categories of consumers in each of the tariff order.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



*Revenue from sale of Surplus power has been deducted from the power purchase cost.

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	898.00	961.00	1067.00	1285.00	1282.00
Approved Sales (MU)	2190	2203	2418	2905	2906
Average Cost of Supply in Rs/kwh	4.10	4.36	4.41	4.42	4.41
% of Power Purchase Cost in ARR	65%	69%	73%	70%	62%
% of Other remaining Cost in ACS	35%	31%	27%	30%	38%
% Annual Increase in Power Purchase Cost		13.4%	16.8%	15.4%	-11.0%
% Annual Increase in Other Cost		-5%	-2%	34%	25%
% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%

The ARR has increased during the period FY 2004-05 to FY 2007-08, primarily on account of increase in power purchase cost. For FY 2008-09, there is a decline in power purchase cost due to higher revenue estimated by the Commission from sale of surplus power. The Commission has increased retail tariffs in each of the year from FY 2004-05 to FY 2007-08 to reflect the increase in ARR. Retail tariff in FY 2008-09 were not revised due to revenue surplus determined by the Commission for the respective year. Therefore, cost escalation on account of RPI was also passed on to the consumers in the retail tariff.

Timeliness of the Order

There has been considerable time lag between the date of submission of the tariff petition by the DISCOMs and the issuance of the Tariff Order by the Commission which is shown in the table below:

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Date of Submission of ARR	24-Feb-04	15-Feb-05	26-Dec-05	11-May-07	29-Nov-08
Date of Issuance of Tariff Order	21-Jul-04	27-May-05	28-Jul-06	12-Sep-07	24-Jul-09
No. of Days in Issuance of Order after submission	148	101	214	124	237
Public Notice for Public Hearing	7-May-04	9-Mar-05	26-Apr-06	22-May-07	7-Jan-09
Deadline for Receipt of Objections/ Comments (including extension)	31-May-04	21-Apr-05	25-May-06	10-Jul-07	31-Jan-09
Number of Objections Received	6	6	NA	15	13

One of the major reasons that can be attributed to the delay is the late submission of the tariff petition by the DISCOMs and inadequate data submitted by the DISCOMs. There was a considerable delay in FY 07, which can be attributed to the GoA's request to the AERC to delay the order in view of the reorganization of the sector.

A-3. Bihar

Introduction

The Bihar State Electricity Board (BSEB) is a bundled utility and was constituted under section 5 of Electricity (Supply) Act, 1948 on 1st April 1958. It is yet to transit from Annual Revenue Requirement (ARR) approach to the Multi Year Tariff (MYT) framework.

The Bihar Electricity Regulatory Commission (BERC) was established in April 2002 under the Electricity Regulatory Commissions Act, 1998 (repealed by the Electricity Act 2003) to regulate the electricity sector in the state of Bihar, though it became functional only in August, 2005. Since the Commission became functional only in August 2005, first Tariff Order for Bihar State Electricity Board was issued for FY 07.The Commission had subsequently issued Tariff order for FY 09 as BSEB did not file petition for FY 08.

Generation

Bihar has a total generating capacity of 540 MW. The two generating stations namely, Barauni TPS is 320 MW and Muzaffarpur TPS is 220 MW. But almost all the units of both the stations are shut down and the present generating capacity of BSEB is 220 MW i.e. Unit-6 and Unit-7 of Barauni TPS which are also running under deteriorated condition. The plant wise generating capacity of the State Generating Stations is as summarized below:

Table A-3.1: Details of State Generating Stations

Particulars	Barauni TPS	Muzaffarpur TPS
Station Capacity (in MW)	320	220
Fuel	Coal	Coal
Year of Commissioning	FY 1969 to FY 1985	FY 1976 to FY 1981
Capacity (MW)	2 X 50 2 X 110 (3 units shut down)	2 X 110
Present Status	Unit 1,2,3 retired, Unit 4 shut down since 1996, Unit 5 shut down since 1995 Unit 6 and Unit 7 running under deteriorated condition	Both the units shut down since 2003.

Though the installed capacity is 540 MW, most of the units are not operating due to shut down and therefore the actual generation is also meager, about 30-50 MU. As regards operational parameters of generation, BERC did not specify any norms for approval of PLF and SHR. The PLF was approved taking into account the actual PLF for the past year and past performance of a generating station while also considering the renovation and modernization (R&M) programme, as proposed by BSEB.

Auxiliary Consumption

Since functional units of Barauni plants were running in deteriorated condition, the Commission approved auxiliary consumption in FY 07 for both the units based on the actual generation details of these units from April 2006 to August 2006. The Commission also took into consideration scheduled R&M for approving auxiliary consumption. For FY

09, the Commission observed the actual energy generated in FY 07 to be very low and had accordingly approved auxiliary consumption based on the actual auxiliary consumption of FY 07.

Table A-3.2: Approved and Actual Auxiliary Consumption

Particulars	FY 07	
	Approved	Actual
Barauni TPS 6	12%	24.48 %
Barauni TPS 7	24.46%	24.48 %

Gross and Net Units Generated

The Commission approved gross and net generation for FY 07 based on the actual generation details from April 2006 to August 2006 but for FY 09, the Commission had approved gross and net generation same as projected by the Board. The Commission had approved the gross generation of 310 MU and net generation of 279 MU from BTPS, with an auxiliary consumption of 10% as projected by BSEB for FY 09.

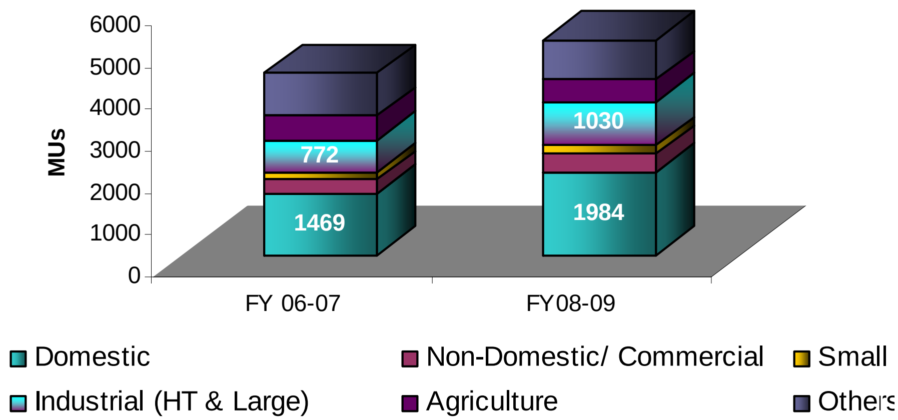
Demand / Sales Estimation

The Commission has adopted a uniform approach for approving sales for FY 07 and FY 09. The approach adopted by the Commission for approving sales to different categories is as follows:

- For agricultural consumers, being largely un-metered category, the Commission had considered agricultural norms for Bihar which were based on ground water level (2000 kWh/kW/annum). Moreover, Commission had also considered the impact of addition in connected load during the year as well as increase in number of users that would restore supply under One Time Settlement (OTS) scheme on the agricultural sales under OTS scheme. .
- For other metered categories, BERC had followed the CAGR of past 2 years and 3 years and increase in number of connections for sales estimation (projected by taking CAGR or past trends. Besides, BERC had also applied correction factors on account of one time settlement schemes, Rajeev Gandhi Grameen Vidyutikaran Yojna, specific consumption norms, growth in industries across India, etc.
- The sale of power to Nepal had approved by the Commission based on the past trends.

The major share in the energy sales in the two Tariff Orders for FY 07 and FY 09 has been that of Industrial (HT & large) and Domestic consumers. Since the sales estimation to various categories in the state is based on the past years data of restricted supply, the Commission has adjusted the sale of power to various categories based on the availability of power from various sources.

Graph A-3.1: Consumption Mix for BSEB



A review of actual energy sales (as submitted by BSEB) vis-à-vis the energy sales trued-up by the Commission shows a disallowance of 5% which is mainly on the account of sales to Irrigation consumers.

T&D losses

The Commission has assessed baseline T&D losses by deducting the metered energy sales and assessed energy sales of un-metered categories from the total energy available (i.e. own Generation + Power Purchase) because meters are not provided on the feeders from generating station to distribution transformer level and it is difficult to have realistic assessment of losses. The Commission has assessed consumption for un-metered categories like Irrigation consumer and un-metered domestic consumers based on the norms and correction factor.

The Commission in FY 07 had set loss reduction trajectory for three years. The table 4 below shows the loss reduction trajectory approved by the Commission in FY 07.

Table A-3.3: T&D Loss reduction Trajectory set in FY 07

Year	T&D Losses
FY 07	41.40%
FY 08	38.00%
FY 09	34.00%

Since, in FY 08 the Board was not able to achieve reduction targets set by the Commission in the Tariff Order for FY 07, the Commission revised the baseline data and reduction targets for next three years. In FY 09, the Commission set reduction target of 3% over the estimated T&D losses of FY 08 (41.40%). The loss trajectory fixed for the ensuing years was in line with the recommendations of Abraham Committee in its report on “Restructuring of APDRP”. The T&D loss reduction trajectory set in FY 09 is as follows:

Table A-3.4: T&D Loss reduction trajectory set in FY 09

Year	T&D Losses
FY 09	38%
FY 10	35%
FY 11	32%
FY 12	29%

The table below summarizes the approved, proposed and actual T&D losses for FY 07 and FY 09.

Table A-3.5: T&D Losses for the period FY 07 to FY 09

Particulars	FY 07	FY 09
Approved in the Tariff Order	41.40%	38%
Proposed by the Utility	36.00%	40.50%
Actual (Not trued up)	42.61%	----

Components of Annual Revenue Requirement

Power Purchase Quantum

The main sources of power purchase are CGS (NTPC and NHPC), Tala & Chukka projects in Bhutan, BSHPC and Nepal.

The Commission for both the years i.e. FY 07 and FY 09 had approved power purchase from CGS and other stations as per the allocation in the generation capacity of these generating stations. The energy availability from these thermal stations was worked out at 80% Plant Load Factor (PLF) which was a norm fixed by the CERC and the availability from the hydel stations was based on the allocation to the state and energy drawals during earlier years.

Table A-3.6: Approved Power Purchase Mix for FY 07 & FY 09 (MUs)

Source of Power Purchase	FY 07	FY 09
Central Generating Station	6690	6430
Tala & Chukka	650	1650
Bihar HPC	40	50
Nepal	80	60
Vaishali Power Gen.Co.		500
Unscheduled Inter change (UI)		100

For FY 09, the energy available from all the sources was 8769 MUs (CGS and own generation) against sales forecast of 7497 MU which left a surplus of 1272 MU. Therefore, the Commission, considering restricted consumption has allocated 479 MU (net of T&D losses of 38%) of the surplus power to be sold to meet state consumption and 500 MU for sale outside the state either by contract or under unscheduled interchange (UI). The Commission, accordingly, had increased the assessed energy sales for HT categories by 10%, urban domestic, non-domestic and LT industry was increased by 15% and balance (about 25%) to un-metered categories. The Commission had further approved transmission losses in the regional network at 3.7% as proposed by BSEB.

Power Purchase Cost

The Commission had approved power purchase cost as proposed by BSEB for FY 07 and FY 09. The approach for determination of power purchase cost for the two years from different sources has been as follows:

Central Generating Stations: The cost of power from CGS was approved based on the bills paid during April '06 to September '06 for FY 07 and April '07 to December '07 for FY 09.

Vaishali Thermal Power Station: Vaishali thermal power station is a JV company of NTPC & BSEB. Since the tariff for this station was yet to be determined by CERC, the tariff was approved as proposed by BSEB.

Bihar State Hydro Electric Power Corporation (BSHPC): Since the tariff determination for BSHPC stations was pending, the Commission had approved tariff as proposed by BSEB.

The Commission in all the years has considered banking etc. for estimation of short term power purchase from other sources. The Commission has however not brought out a separate merit order for surplus power and sale within state for any year.

Table A-3.7: Approved Power Purchase Cost for FY 07 & FY 09

Particulars	FY 07	FY 09
Power Purchase Cost (Rs.Crs)	1405	1719
Separate Cost Approved for Surplus Energy (Rs. Crs)	0	150
Net Power Purchase (MUs)	4338	5,127
Power Purchase Cost per unit (Rs./kWh)	**3.23**	**3.06**

As for the revenue form such surplus sale, the Commission has shown them under the head revenue available from the Interstate sale and as UI underdrawal and treated it as revenue from sale of power.

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 07 and FY 09 in its Tariff Orders for BSEB. Approach of the Commission in approval of each of the O&M cost parameters in the past two tariff orders is discussed below:

Employee Cost

For FY 07, the Commission had approved employee cost with an increase of 4.33% over the actual employee cost of FY 06. The Commission had approved provision of Rs. 206.31 Cr towards terminal benefits and provision of Rs. 1 Cr towards payment of overtime as a special case. The Commission had however directed BSEB to reduce manpower from the then current ratio of 9.52 employees per 1000 consumers.

For FY 09, the Commission had approved employee cost which includes an increase of 6.75% in salaries and allowances, 7.8% in other staff costs and 9.0% in pension and gratuity over the corresponding expenses during FY 08 as proposed by BSEB. Considering the prevailing inflation rates, the increase proposed by the Board was reasonable and therefore Commission had allowed the same. The Commission had however disallowed Rs. 6.00 Crs towards overtime payments proposed by BSEB.

The Commission observed that the employees cost was mainly increased because of increase in terminal benefits (Rs. 276.45 Crs) during FY 07 as against approved by the Commission (Rs. 206.31 Crs). The employee cost (after capitalization) as approved by the Commission in each of the past two tariff orders is summarized in table below.

Table A-3.8: Approved Employees Cost for FY 07 & FY 09

Particulars	FY 07	FY 09
Employee Cost (after capitalization) (Rs. Crs)	525.91	610.15
Total Approved ARR (Rs. Crs)	2170	2600
% Employee Cost of Approved ARR	24.2%	23.5%
Employees cost Per unit of Energy Sale (Rs/kWh)	1.21	1.08

Repairs and Maintenance (R&M)

The Commission had approved the R&M expenditure for FY 07 with an escalation of 12.3% over the actual cost R&M cost of FY 06. The Commission approved R&M expenses both for FY 07 and FY 09 as proposed by BSEB as they were found to be in accordance with the norms that prescribe R&M to be within 2% of GFA. Moreover, Commission while approving the R&M expenses for FY 09 had specified that the generation plant, transmission and distribution system in Bihar is quite old and Considerable expenditure is involved for proper maintenance of the system in order to achieve the standards of performance notified by the Commission. The R&M expenses approved by Commission in the last two Tariff Orders are summarized in table below:

Table A-3.9: R&M Cost approved for FY 07 & FY 09

Particulars	FY 07	FY 09
R& M Expenses (in Rs. Crs)	25.20	42.3
Total ARR (in Rs. Crs)	2170	2600
R&M Expenses as % of Total ARR	1.16%	1.63%
R&M expenses as % of Opening GFA	1.12%	1.47%

**Opening GFA for FY 07 is not available, therefore Closing GFA for FY 07 has been taken.*

Administrative and General Expenses (A&G)

For FY 07 and FY 09, the Commission had approved A&G expenses as proposed by BSEB. The A&G expenses for FY 07 approved with an escalation of 4.42% over previous year. For FY 09, the Commission approved A&G expenses with an escalation of 11% increase over the estimated expense of FY 08. The estimated A&G expense in FY 08 increased at 27.6 % (which comprise about 143% increase in legal charges) over that for FY 07.The table below summarizes the A&G expenses approved for BSEB for FY 07 and FY 09.

Table A-3.10: A&G Cost approved for FY 07 & FY 09

Particulars	FY 07	FY 09
A&G Expense (Rs. Crs)	21.26	33.1
Total ARR (Rs. Crs)	2170	2600
A&G expense as a % of Total ARR	0.98%	1.27%

**A&G expenses are gross figures as expense net of capitalization are not available.*

Depreciation

BERC has approved depreciation in accordance with the regulations issued by Ministry of Power, Government of India vide notification dated 29th March 1994 and subsequent amendments and at the rates of depreciation as laid down in the CERC (Terms and Conditions of Tariff) Regulations.

For FY 07, the Commission had approved depreciation in accordance with the CERC regulations however the Commission did not specify the applied depreciation rates. For FY 09, the Commission approved depreciation on existing assets as well as on assets capitalized during the year based on the approved investment of Rs. 950 Crs. While approving the depreciation, the depreciation charges on the assets existing as on 1.4.2007 was taken into consideration and the depreciation charges on the proposed addition of new assets was worked out at 3.6 % on 90% of the asset value on straight line method as per CERC Regulations.

No details of approach followed by the Commission on treatment of depreciation on assets created out of consumer contribution, grants, APDRP funds, has been provided in the Tariff Order.

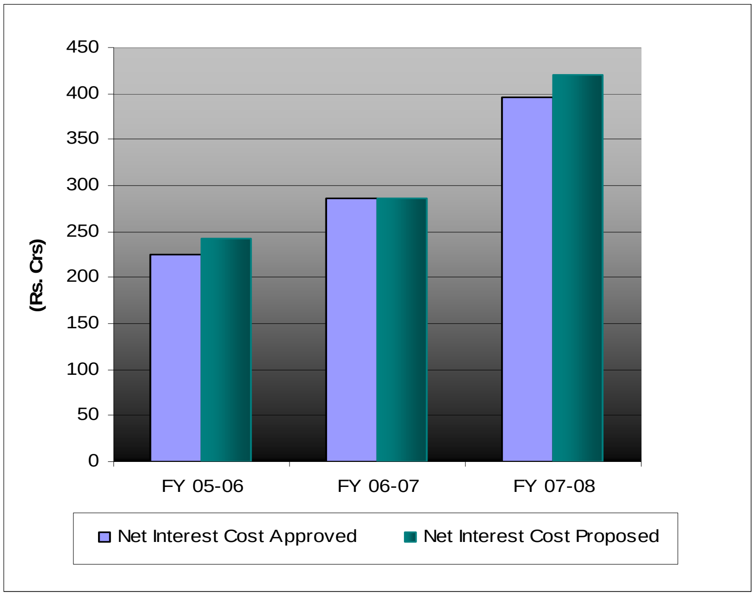
Interest on Loans

The Commission had carried out source-wise analysis of loan. In the Tariff order for FY 07, Commission allowed Rs. 1089.78 Crs of state government loan taken during FY03 to FY 07 (FY estimated) as against Rs. 4369.18 Crs, projected by the Board. The Commission disallowed Rs. 3279.40 Crs of State Govt. Loans taken by the Board to meet revenue short-fall and pay power purchase bills of CGS. Similarly the Commission had disallowed short term loans and interest cost on short term loans and overdraft.

Moreover, Commission had recommended that the state government should either waive-off the interest on State Government loans till the financial position of the Board improves or convert the loan utilized to meet revenue expenditure as grant.

For FY 09, the Commission had approved interest cost as proposed by BSEB. The approved interest cost includes interest on existing loans, Interest on working capital and interest on new loans, the details of analysis of source-wise loans have not been provided. A comparison of the amount proposed each year and that approved by the Commission is given in Graph below:

Graph A-3.2: Interest on Loan from FY 06 to FY o8



Rate of Return

The Commission has not approved any Rate of Return nor has the Board proposed any rate of return.

Bad Debts

The Commission has not provided any provision for bad debts for tariff computation. However, the Commission had directed the Board in FY 07 to issue notices to all defaulters for clearing the dues within a specified period and based on the status of recovery of dues, make out a proposal to write off of bad debts.

Capital Expenditure

The Commission had not approved any capital expenditure for FY 07 as BSEB had neither submitted any future investment programme nor the details of capital works in progress (CWIP) with the tariff petition. However, the Commission in the Tariff Order for FY 07 had directed the Board to submit the capital investment plan for the next 5 years along with the detail of CWIP. For FY 09, however, the Commission had approved capital expenditure as proposed by BSEB taking into consideration past year's capital expenditure of the Board.

In the investment plan of Rs.950 Crs for FY 09, the Board had proposed new loans of Rs 356.34 Crs and the rest is to be funded by internal resources. The Commission has consistently allowed funding of entire capital expenditure for new schemes through debt and equity in the ratio as proposed by BSEB.

Interest on Working Capital

The Commission had allowed Interest on working capital along with interest and finance charges for FY 09 as proposed by the Board. No details of approach followed to approve interest on working capital were given in the Tariff order for FY 09.

Annual Revenue Requirement

The Annual Revenue Requirement as approved by the Commission vis-à-vis that proposed by the BSEB in the tariff petition is given in table below:

Table A-3.11: ARR Approved for FY 07 and FY 09 (Rs. Crs)

Annual Revenue Requirement	FY 07	FY 09
Proposed by the Board	2826.60	2702.15
Approved by the Commission	2170.16	2600.35
Disallowance in the order	656.44	101.8

The revenue gap or surplus as determined by the Commission for FY 07 and FY 09 is summarized in the table below. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government has been discussed in detail in the subsequent sections.

Table A-3.12 Approved Revenue Gap / Surplus

Particulars	FY 07	FY 09
(Gap) / Surplus at existing Tariff (Rs.Crs)	(184.78)	(33.47)
Impact on Consumer Tariff during the year	Increase	Increase

Tariff Determination

A two-part tariff structure exists in the state of Bihar. For FY 07, Commission had computed the revenue gap of Rs. 184.78 Crs after adjusting the grant from State Govt of Rs. 720 Crs. The Commission converted Rs.60.00 Crs out of the gap of Rs.184.78 Crs into a Regulatory Asset. The balance revenue gap of Rs.124.78 Crs was proposed to be recovered from the consumers during the FY 07 through tariff revision approved by the Commission.

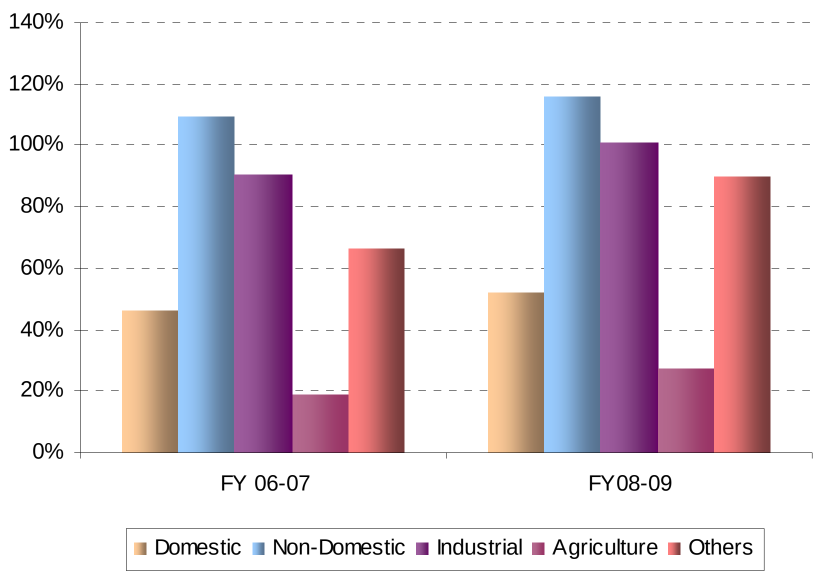
While approving the tariff, the Commission had followed the average cost of supply in the absence of relevant data for working out consumer category-wise cost of supply. The Commission had therefore, proceeded to rationalize the tariff with marginal increase for different categories. While attempting the rationalization, the Commission had kept in view the guidelines of the NTP to provide concessional tariff for BPL consumers. Moreover, the Commission had specified that the road map for reduction of cross subsidy could not be possible mainly due to lack of data regarding cost of supply at various voltage levels.

For FY 09, Commission had computed the revenue gap of Rs. 33.47 Crs after adjusting the grant (subsidy) from State Govt of Rs. 720 Crs as a revenue resource for payment to

NTPC towards power purchase. The revenue gap of Rs.33.47 Crs was proposed to be recovered from the consumers during the FY 09 through tariff revision approved by the Commission. The Commission had finally approved a revenue surplus of Rs. 16.42 Crs and the surplus was kept to meet any contingency because of variation in sales estimated, sales mix etc.

In both the Tariff orders, Commission had computed the category-wise subsidy as against approved average cost of supply. It has been observed that the agricultural category is highly subsidized and is currently paying ~27% of tariff as against cost of supply followed by domestic consumers which is paying ~52%. The figure below shows the approved realization from consumer tariff as percent of the average cost of supply.

Graph A-3.3: Revenue Realization from consumer tariff as percent of average cost of supply



Average Cost of Supply vs. Realization

The average cost of supply approved by the Commission from FY 07 and FY 09 has decreased by 8%. This is mainly because of increase in energy sales on account of higher availability of power from CGS though generation from BSEB owned stations have reduced drastically.

Table A-3.13: Average Cost of Supply Approved for FY 07 & FY 09

Approved by BERC	FY 07	FY 09
Total Energy Sale (MUs)	3973	5127
Surplus Energy Sale (MUs)	365	500
Total ARR (Rs Crs)	2170	2600
Avg Cost of Supply (Rs/kWh)	**5.00**	**4.62**
Avg Realisation from Sale of Power(Rs/kWh)	**3.20**	**3.37**
Realisation from Govt. Grant (Rs/kWh)	**1.66**	**1.28**
Avg. Realisation from Regulatory Assets (Rs./kWh)	**0.14**	**0.00**
(Gap)/ Surplus	**0.00**	**0.03**

Subsidy Support from the Government

Under this section, the aim is to capture the approach and prudence applied by the respective SERC while approving subsidy support required from the Government for a given year. This analysis is essential as pre-SERC era provision of subsidy was invariably used without discretion under the justification of shielding consumers against tariff increase. Subsidy should ideally be considered as a mechanism to support cost recovery and the incidence of which should be in the form of direct subsidy from the government to weaker section of the society while cross-subsidy should be minimized.

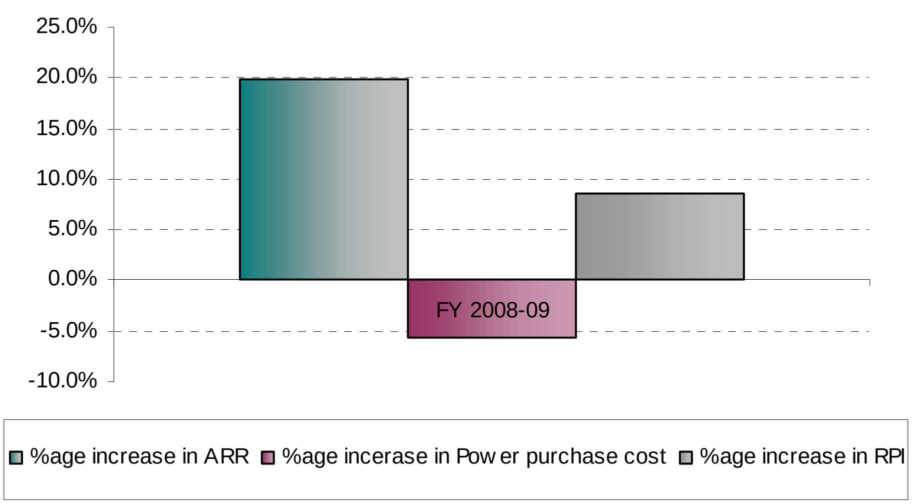
For FY 07 and FY 09, the Commission had approved subsidy support of Rs.60 Crs per month from Government of Bihar for payment of energy bills of NTPC i.e. an amount of Rs.720 Crs each for both the years. The Commission has however not specified the mode of payment for the subsidy.

Subsidy Booked & Received during each year

Though Commission had approved a subsidy/grant of Rs. 720 Crs in both the Tariff Orders but the status of actual amount of subsidy/grant received during the previous year was not available in the Tariff Orders.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Increase in power purchase cost and annual revenue requirement is mainly due to increase in sales approved. The average cost of supply has decreased mainly due to substantial increase in sales approved as against increase in power purchase and other costs.

Particulars	2006-07	2008-09
Approved ARR (Rs. Crs)	2170	2600
Approved Sales (MU)	4338	5627
Averge Cost of Supply in Rs/kwh (A)	5.00	4.62

Particulars	2006-07	2008-09
Fuel cost	51.17	62.35
% of Power Purchase Cost in ARR	62%	64%
% of Other remaining Cost in ACS	38%	36%
% Annual Increase in Power Purchase Cost		-5.7%
% Annual Increase in Other Cost		-10.83%
% Annual RPI Increase	6.06%	8.67%
RPI -X (X= 2%)	4.06%	6.67%

Time of Day Charge

The Commission in the FY 09 introduced the Time of Day (ToD) for all HT categories except Railway traction charge to offer rebate for power consumption during off-peak hours through the application of concessional night time tariff. During the peak time (5:00 PM to 11.00 PM) the charges have been approved at 120% of normal rate of energy charge while during Off-peak period ((11:00 PM to 5:00 PM) the charges are 90% of normal rate of energy charge. This has been done to flatten the load curve. The impact analysis for the same however not yet been carried out.

Pre-paid Metering

The Commission in the Tariff Order for FY 09 had directed the BSEB to undertake pilot study for installation of pre-paid meters and develop a scheme to introduce prepaid metering. No other directive has been passed in this regard.

Transmission Tariff

The Commission has determined transmission and wheeling charges for BSEB only in the recent tariff order for FY 09. In order to compute ARR for transmission function, the Commission has segregated the ARR of FY 09 based on the submitted budget estimate. The table below summarizes the percentage in which various components of the ARR are segregated in different functions.

Table A-3.14: Percentage allocation of ARR to various functions

Particulars	Generation	Transmission	Distribution
Power purchase	NA	NA	100%
Generation of power	100%	NA	NA
Repairs and Maintenance	12.30%	14.34%	73.36%
Employee cost	7.03%	11.08	81.88
Administration and General Expenses	7.00%	29.25%	63.75%
Depreciation	7.45%	37.31%	55.24%
Interest and Finance charges	9.53%	47.61%	42.86%

Transmission Tariff:

The intra-state transmission tariff has been computed in Paise/KWh for FY 09. In order to determine tariff, the approved transmission ARR has been simply distributed over the available energy units to distribution function after deduction of approved transmission losses in a given year. The table below summarizes the approach adopted by the Commission in determination and approval of transmission tariff.

Table A-3.15: Approved Transmission Tariff for FY 09

Particulars	Approved (Rs. Crs)
Total ARR for Transmission (Rs. Crs)	232.25
Energy available for Transmission (MU)	8269
Transmission losses assumed (%)	4%
Energy delivered to distribution (MU)	7938
Transmission tariff (Ps./kWh) (1/4)	**29.26**

Determination of Open Access Charges & Other charges

The Commission has issued the "Terms and Conditions for open access" Regulation 2006 on 20th May 2006. The Commission approved Open Access charges according to these regulations. Based on the transmission charges approved, the Commission calculated short-term and long-term open access charges. The table below shows the details of short term and long term Open Access charges:

Table A-3.16: Charges payable by Open Access customer for FY 09

Type	Computation of Transmission charges	Transmission charges
Long-term	Transmission ARR / (Average transmission capacity X 12)	Rs.1,48,878 /MW/Month
Short-term	Transmission ARR x 0.25) / (Average transmission capacity X365)	Rs. 1,224 /MW/Day

** Transmission losses at 4% payable in kind.*

Cross-Subsidy Surcharge

As per the open access regulation 2006, apart from the transmission charges the following charges will also be applicable to open access consumers who are likely to avail open access facilities including captive generators.

- Cross Subsidy Surcharge and Additional Surcharge
- Reactive Energy charges
- SLDC Charges
- Wheeling Charges

The Commission has approved cross subsidy surcharge for open access consumers for FY 09 as per the following formula recommended in the National Tariff Policy:

S = T – [C (1+L/100)+D]

Where,

S = Surcharge

T = Tariff payable by the relevant category of consumers

C = Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel based generation and renewable power.

D = Wheeling charges (Transmission and Distribution)

L = System losses for the applicable voltage level, expressed as a percentage.

Thus the cross-subsidy surcharge as per the above formula is as follows:

Cross-subsidy surcharge approved by the Commission for open access consumers for FY 09 is summarized below.

Table A-3.17: Cross Subsidy Surcharge payable by Open Access customer

Particulars	(Ps./kWh)
For 132 kV consumers	175.74
For 33 kV consumers (other than HTSS)	142.34
For 11 kV consumers (other than HTSS)	112.77
For HTSS consumers 33 kV	80.34
For HTSS consumers 11 kV	26.70

SLDC Charges

Since no separate SLDC is established in Bihar so far, the Commission has clarified that these charges will be applicable on a case-to-case basis.

Reactive Energy charges

The Commission has approved Reactive Energy Charges at 4 paise/kVAR. These charges have been fixed based on the concept paper on open access in inter-state transmission issued by the CERC. The Commission has directed BSEB to conduct a study to establish the basis and methodology of determining the reactive energy charge.

Wheeling Charges

The Commission has approved wheeling charges based on the approved ARR for Distribution function. Wheeling Charges have been calculated at 33 kV and 11 kV Voltage level.

Table A-3.18: Wheeling charges payable by Open Access customer at 33kV for FY 09

S.NO	Particulars	Approved
1	Energy input into transmission system (MU)	8269
2	Losses in transmission system (4%)	331
3	EHV sales (as approved by the Commission) MU	761 (at 132 kV)
4	Energy input into 33 kV system [1-(2+3)] MU	7177
5	Total distribution cost (Rs. Crs)	705.48
6	Distribution cost for 33 kV voltage levels (Rs. Crs)*****	246.92
7	Wheeling charges for 33 kV voltage level (6÷4) (Paise / Unit)	34.40

**The Distribution cost at 33 kV has been assumed to be 35% of total Distribution ARR.*

Table A-3.19: Wheeling charges payable by Open Access customer at 11kV for FY 09

S.No.	Particulars	Approved
1	Energy input into 33 kV system (MU)	7177
2	Losses in 33 kV (6%)	431
3	Energy sales in 33 kV system as approved by the Commission (MU)	455
4	Energy input into 11 kV system [1-(2+3)] MU	6291
5	Total distribution cost (Rs. Crs)	705.48
6	Distribution cost for 11 kV voltage levels (Rs. Crs)*	211.64
7	Wheeling charges for 11 kV voltage level (6÷4) (Paise/Unit)	33.64

** The Distribution cost at 11 kV has been assumed to be 30% of total Distribution ARR.*

Multi-Year Tariff Framework

BSEB has yet not adopted MYT regime. The Commission has noted that there is lack of requisite and reliable data as there has been no study to assess voltage wise losses in the absence of metering at all feeders, distribution transformers and consumers. In addition, the present MIS and regulatory reporting system of the Board has also been found to be inadequate to adopt MYT framework. The Commission taking into account all these factors, has decided to introduce MYT from the year 2010-11.

Timeliness of orders

There has been a considerable lag between the date of submission of the tariff petition by the BSEB and issuance of tariff order by the Commission which is shown in the table below.

Particulars	FY 07	FY 09
Date of Submission of ARR	11-Aug-06	29-April-08
Date of Issuance of Tariff Order	29-Nov-06	26-Aug-08
Delay (No. of days)		
Notice for Public Hearing	13-Aug-2006	03-May-08 and 09-May-08
Deadline for Receipt of Objections /Comments (including extension)	18-Sept-06	10-June-08
Number of Objections Received	17	23

A-4. Chhattisgarh

A-4.1. Chhattisgarh State Electricity Board

Introduction

The Chhattisgarh State Electricity Regulatory Commission (CSERC) was constituted by the Government of Chhattisgarh through a Notification dated August 23, 2002 issued under the provisions of the Electricity Regulatory Commissions Act, 1998. The Commission became operational on July 1st, 2004.

Chhattisgarh State Electricity Board (CSEB) is yet to transit from Annual Revenue Requirement (ARR) approach to the Multi Year Tariff (MYT) framework. Though the Commission issued MYT Regulations in 2008 but due to reasons like lack of baseline data on various efficiency parameters (for e.g. voltage-wise T&D losses), absence of efficient information system to facilitate acquisition of necessary operational data and no energy audit to determine transmission and distribution losses, the Commission has yet not issued an MYT order. The Commission, in the tariff order for FY 08 decided to introduce MYT from FY 10.

The Commission issued its first tariff order for FY 06 and then on in FY 07 and FY 08. Tariff for FY 09 was not filed by CSEB, which requested the Commission an exemption for that year as the State government had initiated the unbundling process. The Commission from FY 08 onwards has approved separate ARR for Distribution, Transmission and Generation function.

CSEB got unbundled on 1st January 2009 into Chhattisgarh State Power Generation Company Ltd. (Generation Utility), Chhattisgarh State Power Transmission Company Ltd. (Transmission Utility), Chhattisgarh State Power Distribution Company Ltd. (Distribution Utility) and a holding and trading company, though the final accounts and opening balance sheet of the companies are yet not finalized. True-up for none of the orders are available because the audited accounts of the Board have not been finalized.

Generation

The generating capacity of CSEB owned power plants increased from 1411 MW in FY 06 to 1424 MW in FY 07 and finally to 1924 MW in FY 08 due to the addition of 2 coal-based units (in FY 08) and 3 small hydel plants (in FY 07). CSEB has a total of 4 coal-based generating stations and 4 hydel generating stations and 1 Co-Generation plant. The plant wise generation capacity of the CSEB is summarized as below:

Table A-4.1: Plant wise Generation Capacity – Coal Based

Particulars	Korba (East) PH-II	Korba (East) PH-III	Korba (West)	Korba East Extension I&II
Station Capacity (in MW)	200	240	840	500
Fuel	Coal	Coal	Coal	Coal
Year of	FY 1966 to FY	FY 1976 to	FY 1983 to	FY 08

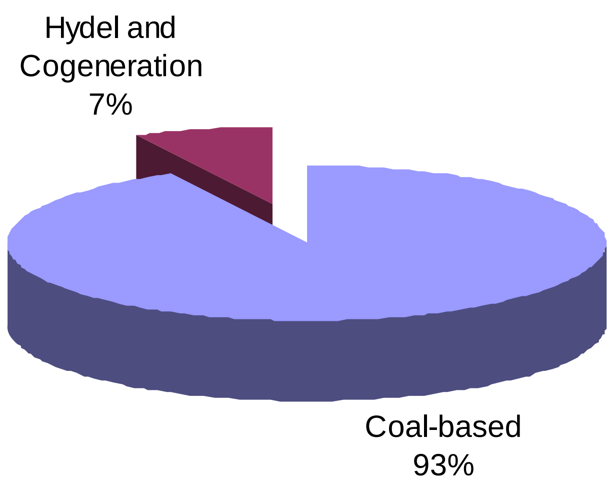
Particulars	Korba (East) PH-II	Korba (East) PH-III	Korba (West)	Korba East Extension I&II
Commissioning	1968	FY 1981	FY 1986	
Units Capacity (MW)	4 x 50	2 x 120	4 x 210	2 x 250

Table A-4.2: Plant wise Generation Capacity – Hydel and CoGen

Particulars	Hasdeo Bango HEP	Mini Hydel Power Station, Korba	Gangrel HEP	Sikasar HEP	Kawardha Cogeneration
Station Capacity (in MW)	120	.85	10	6	7
Type	Hydel	Hydel	Hydel	Hydel	Cogeneration
Year of Commissioning	FY 1994 to FY 1995	FY 2003	FY 2004	FY 2006	FY 2006
Units Capacity (MW)	3 x 40	1 x 0.85	4 x 2.5	1 x 6	2 x 3.5

Of the total generating capacity of 1924 MW, 1780 MW is coal based and 143.85 MW is hydel and cogeneration.

Graph A-4.1: Fuel-wise Generation Capacity



Plant Load Factor (PLF)

The Commission had approved the PLF for CSEB plants during FY06 to FY08 based on CERC norms of PLF for thermal generating station, PLF achieved by the respective plants in the previous years and taking into consideration the PLF guaranteed by refurbishment agency and maintenance plans for different plants. PLF for the 2 new units Korba East Extension I&II in FY 08 was based on the PLF expected of a new plant and considering the date of commencement.

The approved and actual PLF of the various stations are as under:

Table A-4.3: Approved and Actual Plant Load Factor

Particulars	FY06		FY07		FY08	
	Approved	Actual	Approved	Actual	Approved	Actual
Korba (East) PH-II	80.00%	91.92%	88.50%	92.66%	87%	NA
Korba (East) PH-III	80.00%	75.49%	80.00%	78.95%	80.32%	NA
Korba (West)	76.00%	78.13%	78.00%	80.78%	78%	NA
Korba East Extension I					80%	NA
Korba East Extension II					80%	NA

Auxiliary Consumption

The auxiliary consumption for all the three thermal plants in FY 06 and FY 08 was approved by the Commission as was proposed by CSEB. The Commission approved Auxiliary consumption in FY 06 at higher level but with a clear plant-wise directive to reduce the auxiliary consumption before tariff filing for FY 07. For FY 07 and 08 Commission approved Auxiliary consumption considering refurbishment done, vintage and capacity of the units and as proposed by CSEB.

For hydel and cogeneration plants Commission had approved the auxiliary consumption for FY06, FY07, and FY08 as proposed by CSEB except for Korba mini hydel plants in FY07.

Table A-4.4: Approved and Actual Plant Auxiliary Consumption

Particulars	FY06		FY07		FY08	
	Approved	Actual	Approved	Actual	Approved	Actual
Korba (East) PH-II	10.25%	10.18%	10.15%	10.16%	10.00%	NA
Korba (East) PH-III	9.50%	8.84%	9.00%	8.48%	8.98%	NA
Korba (West)	9.50%	9.80%	9.50%	9.37%	9.45%	NA
Korba East Extension I					9.00%	NA
Korba East Extension II					9.00%	NA

As can be seen from the table above actual auxiliary consumption for Korba (East) Phase-III in all the years has consistently been lower than that approved.

Station Heat Rate (SHR)

In FY 06 the Commission had approved SHR of the coal based plants either on the FY 05 levels or as per guaranteed performance parameters after refurbishment of the units with some correction in deviation on guaranteed performance as it was on higher side.

In case of Korba (East) PH-II and Korba (East) PH-III, where the units have gone refurbishments recently, the Commission approved the SHR based on guaranteed performance and some deviations in it. For Korba (west) the Commission approved SHR at the levels of FY 05. In FY 07 Commission approved SHR for all the three plants considering their vintage and CERC norms. But in FY 08, since the plants were not able to meet target SHR the Commission approved SHR at FY 07 level and for the newly

Commissioned plants namely, Korba East Extension I and Korba East Extension II Commission approved SHR as per CEA report on "Technical Standard on Operation Norms for Coal/Lignite Fired Thermal Power Stations" issued during December 2004

Table A-4.5: Approved and Actual Station Heat Rate (in kCal/kWh)

Particulars	FY06		FY07		FY08	
	Approved	Actual	Approved	Actual	Approved	Actual
Korba (East) PH-II	2780	3,041	2780	2,942	2780	NA
Korba (East) PH-III	2600	2,835	2600	2,639	2600	NA
Korba (West)	2600	2,645	2575	2,783	2575	NA
Korba East Extension I	NA	NA	NA	NA	2500	NA
Korba East Extension II	NA	NA	NA	NA	2500	NA

Gross and Net Units Generated

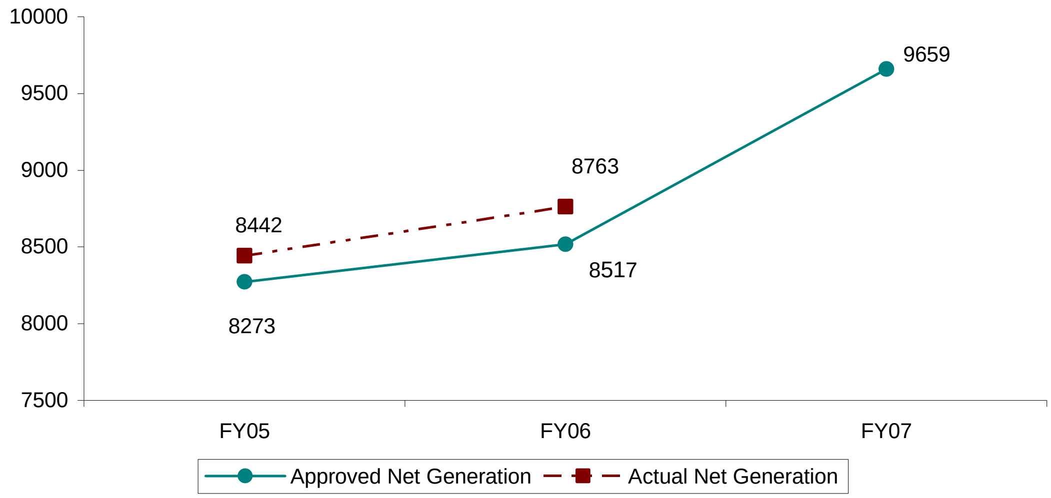
Considering the above technical parameters, the Commission had approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY06 to FY08:

Table A-4.6: Approved Gross and Net Generation (MUs)

Particulars	FY06	FY07	FY08
Korba (East) Phase-II	1,402	1551	1,520.51
Korba (East) Phase-III	1,682	1682	1,693.27
Korba (West)	5,592	5740	5,767.82
Korba East Extension I	NA	NA	823.26
Korba East Extension II	NA	NA	381.66
Hasdeo Bango		360	358.71
Gangrel	428.0*	20	27.25
Korba Mini Hydel	5.01	4.8	6.91
Sikasar Hydel		7.18	18
Kawardha Co-gen. Plant		8.64	24.27
Total Gross Generation	9109	9374	10622
Auxiliary Consumption	836	857	963
Net Generation	8273	8517	9659

A comparison of the approved and actual net generation highlights that the Commission has been generally under projecting the net power available from these stations by assuming lower PLF.

Graph A-4.2: Comparison of Approved and Actual Net Generation (MUs)

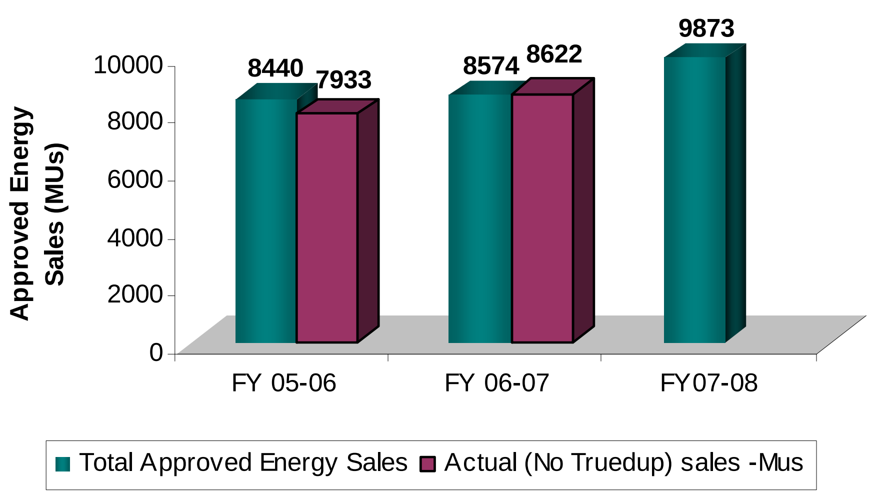


Demand / Sales Estimation

The Commission considered growth rates (YoY) for previous years on long term CAGR (5 years) along with some correction factors across various categories for approving energy sales. The energy sales in respect of un-metered BPL connections were approved as 30 units per month per consumer and for flat rate (un-metered) agriculture consumption it was based on 15-18% load factor.

In case of Agriculture (unmetered and metered) consumers the Commission had taken the load factor of about 8-10% in FY 06 but revised its estimates based on the sample metering to load factor of about 15% to arrive at the agricultural consumption for FY 07. The load factor was again revised to 18% which was finally approved by the Commission for approving the agricultural sales for FY 08. The graph below shows the trend in the energy sales approved by the Commission vis-à-vis the actual (not trued-up) sales for the period FY 06 to FY 08.

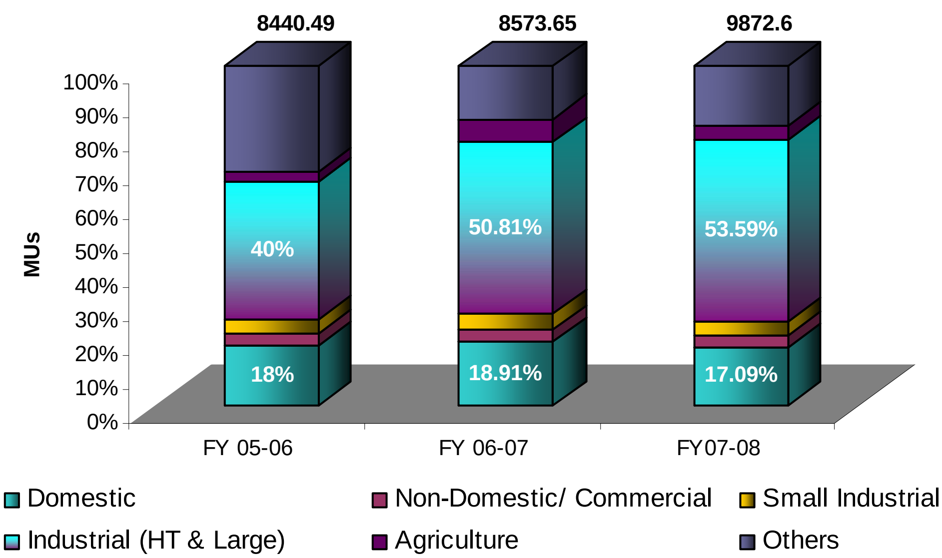
Graph A-4.3: Approved vs. Actual Energy Sales (MUS)



While approving the energy sales in FY 06, the Commission took into consideration the pending applications for new connections in LT categories and State government directive to add about 1 lakh new BPL consumers and to provide 25,000 new pump connections to the agricultural consumers in the year. In the following years, i.e. FY 07 and FY 08, Commission took into consideration pending applications and the CSEB target (under RGGVY) of providing about 1.5 lakh new BPL and agricultural connections every year.

The major share in the energy sales in the past four years since FY 06 has been that of Industrial (HT & large) and Domestic consumers. The two categories together account for more than 71% of the total approved energy sales in FY 08. Though in the first year (FY 06) the share of HT and large industries decreased (mainly due to re-categorization and transfer of some consumers to other categories) in the subsequent years it has shown an increase.

Graph A-4.4: Approved Sales Mix



A review of actual energy sales(as submitted by CSEB, but not from the audited accounts) for FY 06 and FY 07 vis-à-vis the energy sales as approved by the Commission for the respective years shows a moderate over estimation of 6% in FY 06 and 1% in FY 07. The comparison signifies the close estimation of the energy sales done by the Commission and also the fact that the variance of 6% in FY 06 further declined to 1% in the following FY 07. Major reason for sharp decline in deviation is the prudent application of the correction factors, wherein the past year performance of CSEB (in providing new connections and actual load factors) were considered by the Commission.

T&D losses

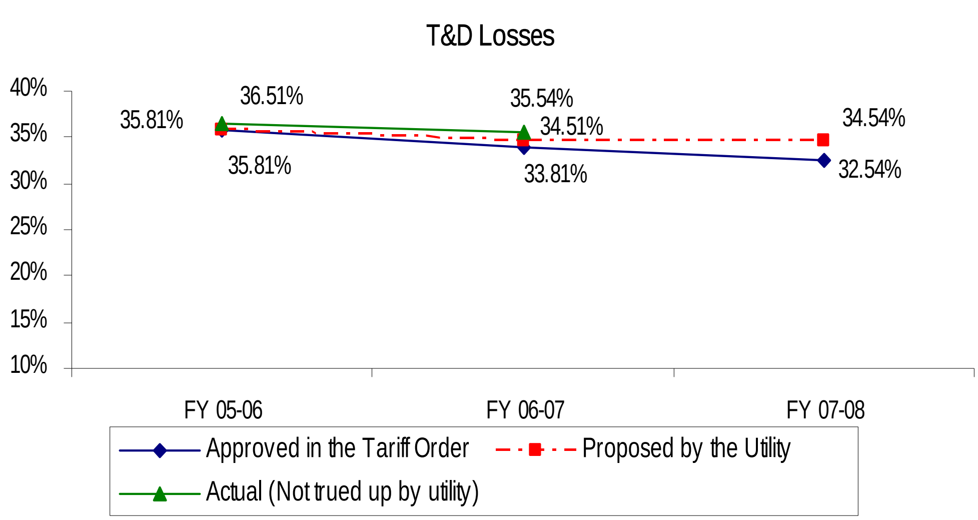
The Commission approved baseline T&D losses in the first year tariff order i.e. FY 06 as proposed by CSEB. To arrive at the baseline T&D loss CSEB deducted consumption of metered consumers and un-metered consumers (assessed consumption of BPL and agricultural consumers) from the input of energy into the transmission system. The board assessed sales to un-metered SLP consumers by assuming consumption of 15 units per month per consumer and sales to flat rate (un-metered) agriculture consumption based on 8-10% load factor.

The Commission has approved T&D loss reduction as proposed by CSEB but directed the board to meter to at-least 1% agriculture consumers, proportionately to total number of various types of un-metered agriculture consumers i.e. low, medium and high level consumption categories on open wells/tube wells and perennial sources like rivers/nallahs and test check load factor of one full year consumption covering all crops so that a realistic load factor was projected.

While approving the T&D losses for FY 07, the Commission pointed out the favorable mix of LT: HT consumers for CSEB, where HT category comprises of about 64% of the total sales. Considering the favorable mix Commission has pointed that the T&D losses of the state are high and reduction target of 2.7% (which is 2%, as proposed by the Board, plus the shortfall of 0.7% of the target for 2005-06) for FY 07. In FY 07 the Commission also set loss reduction targets for FY 08 of 3%(to 30.81%) and in case the Board is unable to achieve these targets, the deficit in reduction of loss were to be borne by the Board as deficiency in performance and the efficiency gains were to be retained by the Board. But for FY 08 as CSEB was not able to achieve the targets the Commission relaxed T&D targets to 32.54% (reduction target of 3% on the actuals of previous year).

The graph below shows the approved T&D loss as compared to proposed and actual (not trued-up) as proposed by CSEB.

Graph A-4.5: Approved, Proposed & Actual (not trued-up) T&D Losses for CSEB



In FY 06 as part of tariff determination process the Commission did set collection efficiency targets for CSEB of recovery of at least 92% (collection efficiency) against current demand and a minimum of 15% recovery out of the arrears as on 01.04.2005. But for FY 07 and FY08 the Commission did not set collection efficiency targets but issued directive and directed the Board to recover 92% of current demand and 25% of arrears as on 31.3.2006.

Components of Annual Revenue Requirement

Power Purchase Quantum

The main sources of power purchase are CGS (NTPC, NHPC and NPC), Independent power producers (IPP), Captive power plant and power traders. The Power Purchase Agreements (PPAs) are assigned to the CSEB itself as unbundling is still in progress and PPAs are yet to be assigned to the Distribution Utility.

The total power availability from Central Generating Stations (CGS) was assessed by the Commission on the basis of firm allocation and share in unallocated power for the state. For FY 08 the Commission considered the generation quantum of CGS as per the CEA in its program for FY 08. For estimating the net energy available (i.e., energy sent out), the Commission considered auxiliary consumption of NTPC stations based on actual auxiliary consumption in FY 06, as reported by CEA in its performance review of thermal power stations for FY 06.

For New Generating stations in FY 08 the Commission considered energy available based on expected date of commercial operation and estimated generation during the year.

The Commission after approving power from CGS and own generation of CSEB Commission approved remaining power to be availed from Captive generation plants, IPP, Power traders and UI drawal. In FY 06 the Commission approved power from other sources as proposed by CSEB but with clear instructions to reduce UI overdrawal and not to make any purchase of power with overall purchase rate of higher than Rs. 3.30 per unit.

In FY 08 Commission approved power available from IPP's based on the power purchase agreement and actual power purchased till August '07. Similarly UI under-drawal and over- drawal was approved based on the actual data from April 2007 to August 2007. Power from captive plants was approved based on the actual power purchase from total capacity and average actual load factor from April to August 2007. Commission has taken similar approach in approving power from traders.

It can be seen that the Commission in orders of FY 06 and FY 07, has been approving power purchase from IPP, captive plants, traders and UI based on the assessed gap in power available from CGS and own generation and power required. But in FY 08 the Commission assessed the power from various sources like IPP, captive plants, UI and traders based on the requirement, past monthly data, and the PPA agreements(if available).

FY 07 onwards the Commission approved total power purchase quantum after taking into consideration the Transmission loss external to CSEB system.

In addition, the Commission maintained for all the years from FY 06 to FY 08 that the procurement of power from all sources should be strictly on the basis of merit order dispatch. There was no special provision for bilateral/ banking to meet the power shortages during peak time in any year.

Table A-4.7: Approved Power Purchase Mix for the period FY 06 to FY 09

Source of Power Purchase	FY 06	FY 07	FY 08
NTPC	33%	41%	54%
NPC	0%	4%	0%
Captive plants	2%	8%	13%
IPP	19%	24%	10%
Power Traders	71%	17%	14%
UI Drawals	0%	0.39%	0%

Surplus energy to the tune of 166.54 MU, and 127 MU (net) has been projected for respective years of FY 06 and FY 08 by the Commission separately for outside state sale and UI underdrawal.

Power Purchase Cost

As mentioned above, the CSEB purchases power from Central Generating Stations of NTPC, NHPC and NPC, Independent Power producers (IPP), Power Trading Corporation and Captive power plants and power swap.

Central Generating Stations: The Commission in FY 06 approved the rates of power purchase from CGS on the basis of average increase in the rates for last few years since the tariff revision by CERC for Central generating stations (CGS) was pending. In FY 07, cost of power from CGS was calculated as average delivered cost of power calculated as average of actual payment made during 2005-06. In FY 08 cost of power was approved station-wise. For existing NTPC stations the annual fixed charges was taken as per the latest CERC orders for each station, the variable cost was approved based on the variable charges including FPA as projected by CSEB for the year. For NPC station the tariff was approved as per the tariff notified by Department of Atomic Energy as on October 6, 2006. For the plants due for Commissioning in the same year, Commission approved provisional tariff as notified by CERC. For CGS the Commission also considered incentives for generation above 80% PLF, in accordance with the provisions of CERC (Terms and conditions of Tariff) Regulations. The Commission also considered the Income Tax, Electricity Duty, cess, prior period charges payable/refundable by CSEB to Central Generating stations based on estimates made by CSEB for the year-08.

Captive and Other Plants: In FY 06 rate of power purchase from captive plants, power traders etc. was approved as per tariff existing at the end of FY05. For FY 07 cost of power purchase from captive plants was approved based on the concept of average delivered cost and for power traders average of purchase made in the month of April, May and June was escalated by 10% because of volatility in cost and absence of long-term purchase agreements.

For FY 07, the Commission has used the concept of average delivered cost of power to approve rates of power purchase. The average delivered cost has been calculated based on average cost of power purchase on the basis of actual payment made during 2005-06.

The Commission has also stated that any increase in the tariff of CGS of other sources after 1.4.05 shall be adjusted through the VCA.

Table A-4.8: Power Purchase Cost for FY 06 to FY 09

Particulars	FY 05-06	FY06- 07	FY07-08
Power Purchase Cost (Rs. Crs)	2077.24	1584.16	1754.00
Revenue Approved from Surplus Energy (Rs. Crs)	166.54	0.00	127.00
Net Power Purchase Cost (Rs. Crs)	1910.70	1584.16	1627.00
Net Power Purchase (Mus)*	13510	12955	14160
Power Purchase Cost per unit (Rs./kwh)	**1.41**	**1.22**	**1.15**

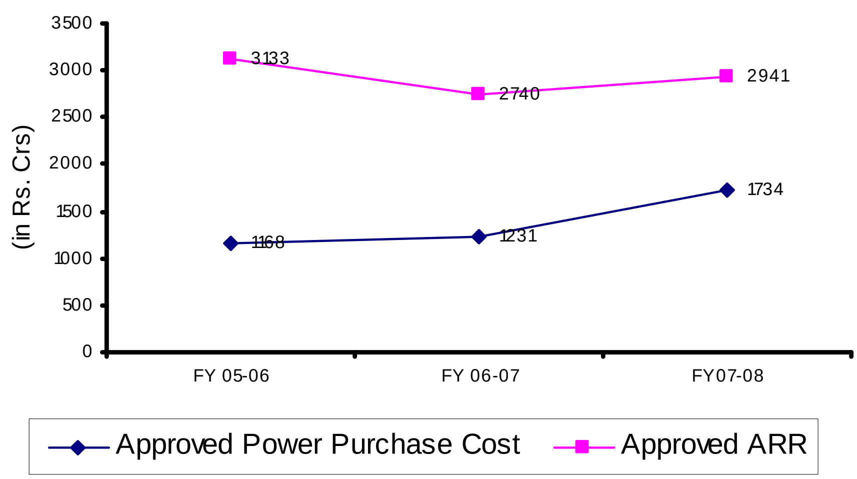
**Power Purchase after reducing the surplus sale*

To factor the variation in fuel cost, the Commission has considered VCA for all the years from FY 06 to FY 08.

As for the revenue form such surplus sale, the Commission has shown them under the head revenue available from the Interstate sale in FY 06 and as UI underdrawal in FY 08 and treated it as revenue from sale of power. The revenue from surplus sale in FY 08 (UI underdrawal) has been deducted from the Power purchase cost to arrive at the net power purchase cost.

The figure below shows the movement of approved power purchase cost versus the approved annual revenue requirement.

Graph A-4.6: Approved Power Purchase Cost for the period FY 06 to FY 09



Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 06, FY06-07 and FY 08 in its Tariff Orders for CSEB. Approach of the Commission in approval of each of the O&M cost parameters in the past three tariff orders is discussed below:

Employee Cost

For estimation of employee cost in FY 06 and FY 07, the Commission considered each component of the salary i.e. basic salary, dearness allowance, etc but for approving employee cost for FY 08 the Commission approved a growth over previous year actual employee cost. In FY 06 basic salary and dearness allowance of the previous year has been escalated at a 15% growth rate to account for promotions and increment in salaries of the employees. Gratuity fund at 12.5% per annum on salary and dearness allowance has been allowed. CSERC has also allowed inclusion of 50% of pension fund liability i.e (based on the actuarial study and gap therein).

For FY 07 the Commission allowed an escalation of 5% on components of salary like Basic salary, Dearness allowance, other expenses, Other Allowances & Benefits and other terminal benefits. CSERC also approved 15% increase over Basic pay from 01-12-2005, which was equivalent to Rs. 67.63 crore as part of wage revision (done every five years in CSEB) but subject to true-up.

In FY 08 the Commission has approved 6.4% increase in employee cost over the actual employee cost of FY 07.

It can be seen that CSEB has not utilized the one time expenses approved by the Commission in FY 07 and hence Commission had allowed the provision for wage revision in FY 08 on the basis of previous year's expenditure. Further, Commission has considered decreasing rate of escalation i.e 10% in first year, 5 % in second year and 2.8% in third year and the Commission has not established any method of arriving at the escalation rates for each year.

The employee cost (before capitalization) as approved by the Commission in each of the past three tariff orders is summarized in table below.

Table A-4.9: Employees Cost for CSEB

Particulars (Mus)	FY 06	FY 07	FY 08
Employee Cost (before capitalization) (Rs. Crs)	470	638	625
Total Approved ARR (Rs. Crs)	3133	2740	2941
% Employee Cost of Approved ARR	15%	23%	21%
Employees cost Per unit of Energy Sale (Rs/kwh)	0.56	0.74	0.63

Repairs and Maintenance (R&M)

The Commission approved the R&M expenditure for FY 06 with an increase over previous year expenses, where the Commission had allowed 10% escalation over the actual R&M cost of FY 05. For FY 07 and FY 08 the Commission shifted the approach to approval of R&M as percentage the GFA, but with the cost of civil works restricted to 10% of approved R&M cost for generation. In FY 07, Commission approved the R&M cost of Distribution function at the same level as that of FY 06 and also made a provision of Rs.

30 crore towards renovation of 6000 distribution transformers. For 08 the Commission had approved R&M cost as 5% of the GFA.

The R&M expenses approved by Commission for the period FY 06 to FY 08 are summarized in table below:

Table A-4.10: Repairs and Maintenance (R&M) cost for CSEB

Particulars	FY 06*	FY 07	FY 08
R& M Expenses (in Rs. Crs)	145.0	147.3	142.0
Total ARR (in Rs. Crs)	3133	2740	2941
R&M Expenses as % of Total ARR	4.63%	5.38%	4.83%
R&M expenses as % of Opening GFA	16.54%	5.07%	4.90%

*Opening GFA for FY 06 not available, therefore Closing GFA for FY 04 has been taken.

Administrative and General Expenses (A&G)

While approving the A&G expense for a year, the Commission had analyzed the A&G expense of previous year in order to exclude any one time expenses and applied an escalation factor. An escalation factor of 6% and 10% was used for the FY05-06 and FY 07 respectively. In FY 08 Commission had not considered the 10% escalation proposed by CSEB (according to the Commission, 10% escalation is not reasonable) and, therefore, approved an escalation factor of 4.5% considering the average inflation rates.

Table A-4.11: Administrative and General Expenses (A&G) cost for CSEB

Particulars	FY 06	FY 07	FY 08
A&G Expense	55.92	47.12	61
Total ARR	3133	2740	2941
A&G expense as a % of Total ARR	1.78%	1.72%	2.07%

*A&G expenses are gross figures as expense net of capitalization are not available.

Depreciation

CSERC allowed depreciation on the Gross Fixed assets in FY 06 by segregating the assets into existing assets and new addition. The Commission allowed depreciation on existing assets as proposed by CSEB on CERC defined rates at 3.6% for generation and 2.5% for transmission but the depreciation on new assets had been charged at the rate of 4% because new additions in generation mainly involved refurbishment of old plants which may not have same life.

For FY 07, the Commission worked out the average rate of depreciation for generation function at 3.35%, for transmission function at 3.5% and for distribution function at 3.63% on the basis of average of depreciation calculated as per the rates for each type of assets prescribed by the regulations of the Commission which are in turn based on the CSERC Regulations 2004. The Depreciation was allowed on opening GFA for the year and on 50% of the addition to the GFA during the year. Consumer contribution and grants for past years and 50% of the grants and consumer contribution to be received during the year were deducted from GFA to calculate depreciation. For FY 08 the Commission has taken depreciation rates lower(Generation at 2.49%, Transmission at 2.22% and

Distribution at 1.02%) than that allowed in FY 07, on account of the depreciation for part of the year, on large lumpy additions to the gross fixed assets, which were considered for computation of the average depreciation rate.

In terms of the approach followed by the Commission on treatment of depreciation on assets created out of consumer contribution, grants, APDRP funds, the Commission has taken a considerate view in FY 06 by allowing depreciation of the consumer contribution and grants, but for FY 07 and FY 08 the Commission has deducted consumer contribution (except for those received on fully depreciated assets) and grants from the gross block to calculate depreciation for the year.

Interest on Loans

The Commission analyzed interest cost as a whole and then divided the interest expense for different functions viz. generation, transmission and distribution for each year from FY 06 to FY 08. The extent to which the interest cost proposed was disallowed each year and the approach adopted by the Commission for approving the interest cost in respective tariff orders is as summarized below:

In FY 06, the Commission approved interest cost based on the actual interest cost for the FY 06 since CSEB has not raised any market borrowing in FY 05 the Commission reworked the interest liability in FY04-05 and projected the same borrowing in FY05-06. The Commission has only disallowed interest on working capital to some extent.

In FY 07, CSERC analyzed all the loan interest payments as proposed by CSEB. CSEB calculated the effective rate of interest on all the loans for the year by taking into account the loan repayment proposed by CSERC and the total loan amount. Since the effective interest rates calculated by CSEB for various loans was in the range of 6% to 8.5% the Commission approved the same. The loans for various functions like Generation, Transmission and Distribution included State government loans and bonds, Loans from Financial Institutions, existing and proposed long term loans and interest on consumers' security deposit(for distribution function only).

In FY 08, the Commission disallowed the interest expenditure proposed on the Marwa project (amounting to Rs. 11.01 crore). For existing loans the Commission approved interest expenditure on loans like:

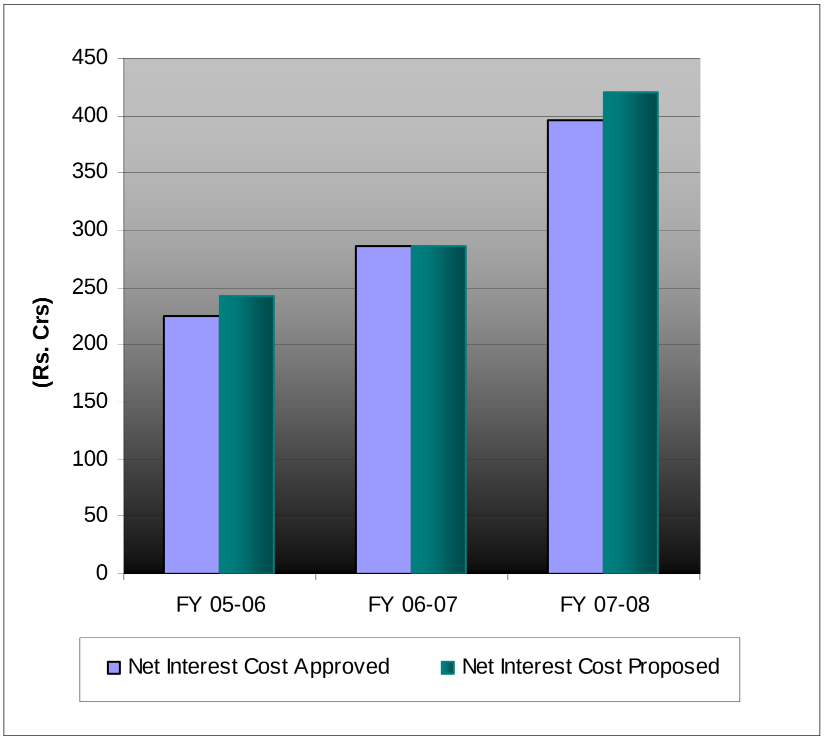
- Interest of Rs. 15 crore on perpetual World Bank loan
- Interest of Rs. 21.52 crore on public bonds
- Interest of Rs. 16.38 crore on SLR bonds

The interest payments on these loans were suspended in past due to lack of funds. The Commission allowed this interest cost. But the Commission directed CSEB to ensure that an amount equal to the past and current interest dues is kept apart and is invested in Government securities till it is paid, and the interest earned on the same be accounted for in the subsequent ARR petitions.

Further, Commission approved the weighted average rate of interest of 8.8% for the long term loans. For the new projects the Commission approved interest rate of 11%, since most of the recent loans have been released at same rate. The Commission also approved interest on the consumers' security deposit at the rate of 6%.

A comparison of the amount proposed each year and that approved by the Commission is given in Figure below:

Graph A-4.7: Sources of Funds for CSEB over the years



Rate of Return

The Commission for FY 06 allowed Return on net worth for CSEB because equity base of CSEB was very low (Rs. 23 Crs). Though, CSEB proposed a return of 3% over net fixed assets for FY 06, the Commission considered 14% return on the net-worth of CSEB at the beginning of the year because the retained earnings of CSEB are supposed to have gone into creation of new fixed assets.

For FY 07 and FY 08, Commission had adopted Return on Equity (RoE) as the parameter for allowing return. The rate of return on equity for generation, transmission and distribution has also been kept uniform at 14% for all the years from FY 06 to FY 08. The reasonable return on equity @ 14% has been allowed on the full equity as on April 1, 2005, and on the normative equity (30%) employed in the capital expenditure made on or after April 1, 2005. On the amount of equity employed on or after 01-04-2005 over and above 30%, the reasonable return of 8.5% paid by CSEB on its debt.

Capital Expenditure

The Capital Expenditure plan for FY 06 and FY 07 was submitted by the CSEB with ARR

The Commission for FY 07 has approved scheme-wise capital expenditure separately for Generation, Transmission & Distribution. Commission has broadly analysed the debt/investment plan submitted by CSEB and has allowed the funding as submitted with minor disapprovals. The Commission has approved Rs. 2039.56 Cr against the proposed capex of 2097.87 Cr implying a minor disallowance of about 2.7%.

In FY 08, CSEB has submitted the detailed function-wise capital expenditure plan (during ARR filing and subsequently on Commissions demand) i.e for Transmission, Distribution and Generation separately. For generation the Commission after having discussion with CSEB regarding the various aspect of the capital expenditure funding has disapproved projected expenditure on Marwa generation project and the projected expenditure on the associated transmission infrastructure for the same. The Commission has also mentioned that it feels that the high expenditure projected on the distribution system by CSEB is not achievable, but has allowed the same because it is funded through grants.

As for FY 08, Grant (GoI and GoC), Loans from FI/Bank, APDRP loan, equity and long term loans have been considered as the mechanism for funding capital expenditure.

The capitalization (asset addition) plan during FY 06 to FY 09 has therefore been broadly approved by the Commission as submitted by CSEB. However, the Commission in FY 08 has approved the capitalization as submitted by CSEB but has disallowed capitalization to the extent of Marwa generation plant.

Debt-Equity Ratio

The Commission has consistently allowed funding of entire capital expenditure for new schemes through debt and equity in a ratio as proposed by CSEB, though 14% on equity has been allowed only on the normative (30%) equity for all the capital expenditure taken up during the year.

Provision for Bad and Doubtful Debts

In FY 06 the Commission approved provision for bad and doubtful debts as proposed by CSEB i.e at 2.5% of the revenues from sale of power in the financial year. But for FY 07and FY 08 the Commission made provision for bad debts at 1% of the total revenue for the respective year.

Interest on Working Capital

For FY 06 the Commission approved interest on working capital requirement for Generation, Transmission and Distribution separately. The Commission approved interest on working capital based on the working capital loans taken in previous years and proposed to be taken. For FY 07 and FY 08 the Commission has not approved interest on working capital as CSEB did not raise any working capital requirement.

Annual Revenue Requirement

The Annual Revenue Requirement as approved by the Commission vis-à-vis that proposed by the CSEB in the tariff petition is given in table below:

Table A-4.12: ARR for the period FY 06 to FY 08

Annual Revenue Requirement (Rs.Cr)	FY 06	FY 07	FY07-08
Proposed by the Board	3200.75	3216	3363
Approved by the Commission	3133.02	2740	2941
Disallowance in the order	2%	15%	13%
Provisional (not Trued-up ARR) as submitted by the Board	2698	2838	
Actual (Provisional) as percentage of Approved ARR	-14%	4%	---
Provisional (Gap) /Surplus	68.60	15.78	

The revenue gap or surplus as determined by the Commission for each of the year from FY 06 to FY 09 is given in the table below. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government has been discussed in detail in the subsequent sections.

Table A-4.13: Revenue Gap / Surplus

Particulars	FY 06	FY 07	FY07-08
(Gap) / Surplus at existing Tariff (Rs.Crs)	(46)	24	214*
Impact on Consumer Tariff during the year	Increase	Decrease	Decrease
Consumer Cross Subsidy Level	Decrease	Decrease	Decrease

** Surplus of Rs. 214Crs includes adjustment for excess return (Rs. 109 Crs) allowed in FY 07*

Tariff Determination

A two-part tariff structure exists in the state of Chhattisgarh. Since the Voltage-wise cost of supply was not being made available to Commission, CSERC had used average cost of supply to determine tariff for all three years i.e. FY 06, FY 07 and FY 08. Although the Commission has not been able to lay any road map for reduction in cross-subsidy, because of lack of base-line data, there has been consistent effort by the Commission to reduce cross-subsidy in the following manner:

- Reduction in the average cost of supply
- Reduction in the tariffs for subsidizing categories of consumers

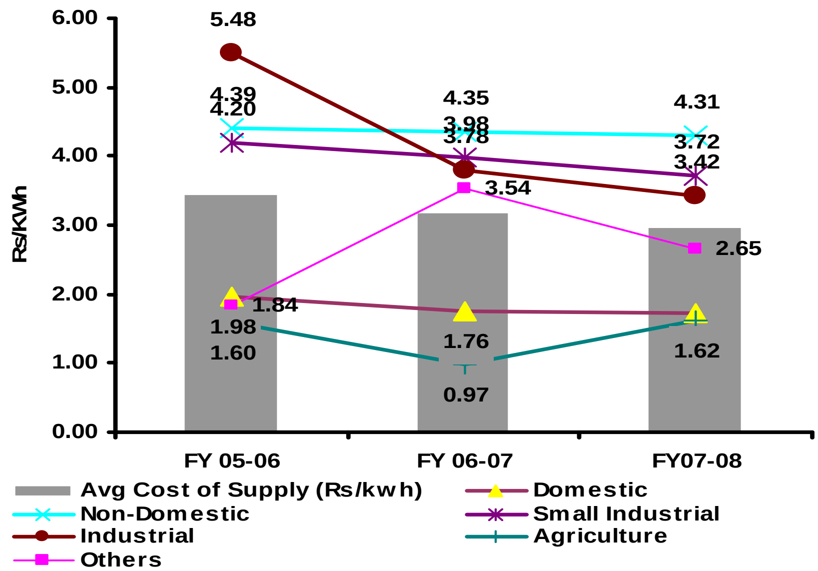
For FY 06, Commission had increased the tariffs of the consumers paying below cost of supply to a larger extent as compared to the consumers whose tariffs were above the cost of supply, thereby reducing the cross subsidy. Agricultural tariff increased to 48% of the average cost of supply whereas that for domestic consumers to 57%. The domestic tariffs were increased in line with the objective of achieving reduction in cross-subsidy.

There was a revenue surplus of Rs. 23.91 Crore in FY 07 and the Commission accordingly reduced and rationalized the tariffs with the objective of achieving reduction in cross-subsidy. The Commission reduced the tariff for various categories of HT industries consumer (like Steel industries, Cement Industries, Coal Mines, Heavy Industries at 132/220 KV etc.) by 1% to 5%.

In FY 08, the Commission arrived at revenue surplus of Rs. 214 crore (Rs. 105 crore revenue surplus on the existing consumer tariff & Rs. 109 crore by truing up ROE for the year 2006-07). The Commission had utilized the revenue surplus to reduce the cross subsidy. The Commission reduced the tariff for domestic consumer to an extent of 8.42%. The overall tariff of non- domestic categories was reduced by 5.68%. For different categories of HT industries the tariff was reduced by percentages like 0.21%, 3.16%, 1.72%, and 3.11% by the Commission.

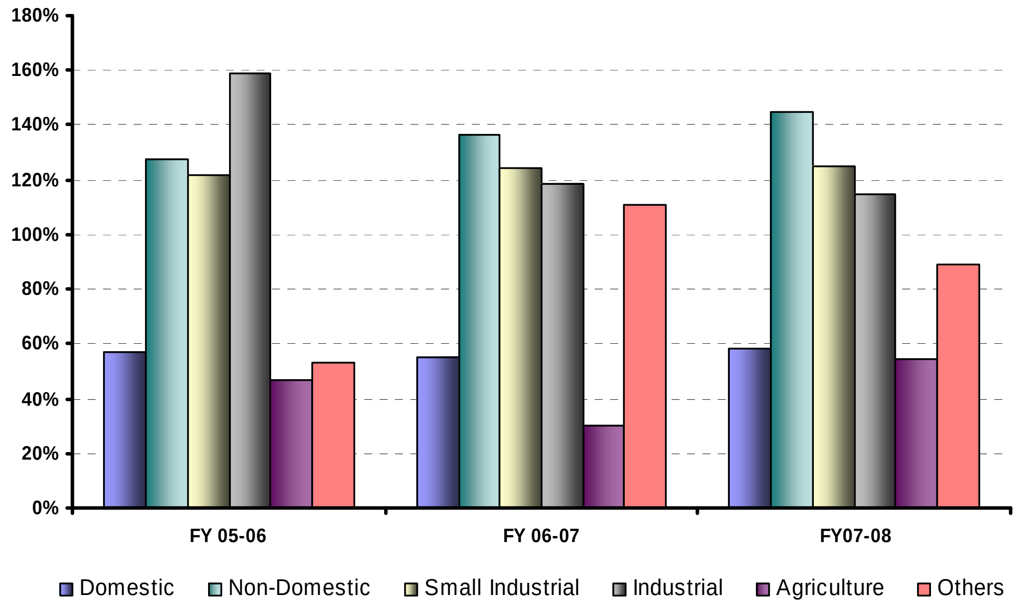
The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 06 to FY 09 is captured in the figure below:

Graph A-4.8: Revenue realization from consumer tariff as against average cost of supply



The figure below shows the approved realization from consumer tariff as percent of the average cost of supply from FY 06 to FY 08.

Graph A-4.9: Revenue realization from consumer tariff as percent of average cost of supply



It is clear from the above that non-domestic, industrial and small industrial consumers continue to cross subsidize agriculture and domestic categories. As regards NTP stipulation of +20%, while tariff for domestic and agriculture category has remained about 55-60% and 30-55% of the average cost of supply respectively, the non-domestic and industrial paid about 127% and 159% in FY 06 and 145% and 115% in FY 08.

Time of Day Charge

The Commission has since FY 06 introduced the Time of Day (ToD) charge to offer rebate for power consumption during off-peak hours through the application of concessional night time tariff for HT industrial consumer as part of their tariff structure. TOD tariff was optional and the rates were approved as follows:

- 130% of normal rate of Energy Charge during peak hours
- 85% of normal rate of Energy Charge during non –peak hours

This has been a thoughtful and positive step by the Commission which also facilitates better demand side management.

Average Cost of Supply vs. Realization

The average cost of supply approved by the Commission from FY 06 to FY 08 had decreased by 18% year on year basis. This was mainly because of overestimation of power purchase cost (approved Rs.1622.98 Crs versus actual of Rs. 900.22 Crs) for FY 06, based on the proposal of CSEB. As shown in table below, the average cost of supply of Rs.3.45/Kwh in FY 06 was reduced to 3.20 in FY 07. Though the true-up for the ARR has not been done, the provisional actuals submitted by CSEB has shown revenue surplus for FY 06 and FY 07.

Table A-4.14: Average Cost of Supply Approved by the CSERC

Approved by CSERC	FY 06	FY 07	FY 08
Total ARR (Rs Crs)	3133	2740	2941
Average Cost of Supply (Rs/kwh)	**3.45**	**3.20**	**2.98**
Average Realization from Tariff (Rs/kwh)	**3.45**	**3.20**	**2.96**
(Gap)/ Surplus	0.00	0.00	(0.02)

Subsidy Support from the Government

Under this section, the aim is to capture the approach and prudence applied by CSERC while approving subsidy support required from the Government for a given year.

In Chhattisgarh, subsidy support is prevalent for two consumer categories viz. domestic and agriculture. In the Tariff Orders issued between FY 06 and FY 08, subsidy support has been approved for BPL consumers and agriculture consumers belonging to Scheduled Caste and Scheduled Tribe up to 5 HP.

In FY 06, the Commission had not approved any subsidy since State Government of Chhattisgarh would take a decision about the subsidy only after the issue of tariff order. However, Commission had directed the Govt. that if the Govt. wishes to provide subsidy to the Board to meet the gap, the subsidy should be paid to the Board in advance according to Section 65 of the Act. Moreover, Commission had also directed the Board to bill the consumers as per the tariff schedule pending the decision on the quantum of subsidy to be paid by the Govt.

In FY 07, Commission was continued with the consumer a category on which subsidy was applicable. The details of subsidy applicable to the consumer categories are given below:

- 15 units of electricity per month for BPL consumers
- Rs.65 per HP per month for agriculture consumers (Scheduled Caste and Scheduled Tribe up to 5 HP)

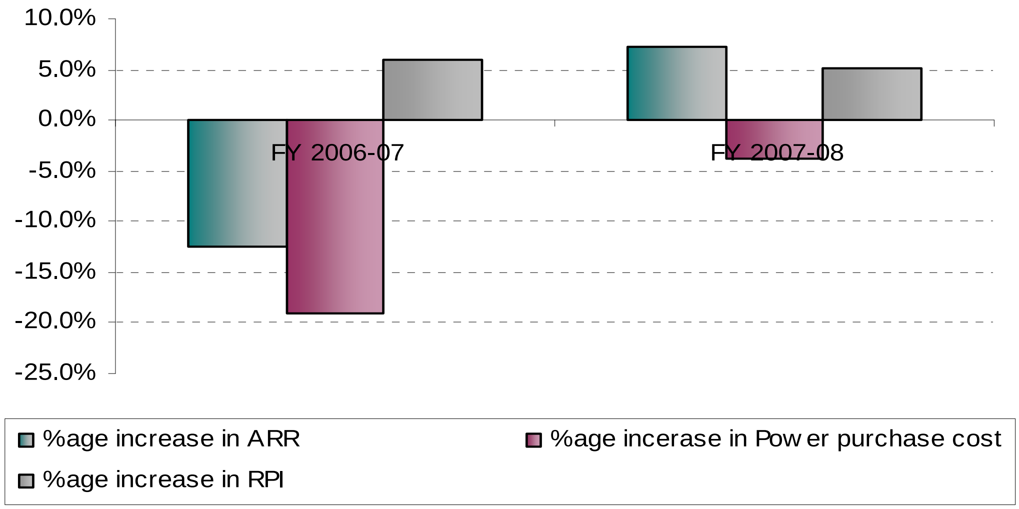
Commission in the Tariff Order for FY 07 had directed the Board to book subsidy amount separately in its Books of Accounts and show it as revenue resource in future tariff filings. In the Tariff Order for FY 08, the Board had furnished the details of Subsidy of Rs. 26.72 Crs received from the Govt. for FY 06 under the separate revenue head.

Subsidy Booked & Received during each year

In all the Tariff Orders for the period FY 06 to FY08 the details of actual subsidy booked and received by the CSEB was not available. The Commission has time and again in its Tariff Order requested the State Govt. to settle subsidy account (subsidy receivable on account of bifurcation of erstwhile Board of M.P) so as to facilitate the scheme of transfer of assets and liabilities and restructuring of the CSEB.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Annual Revenue requirement as well as power purchase cost decreased in FY 2006-07 as against FY 2005-06, because of over-estimation of Annual Revenue requirement by the Commission in FY 2005-06 (FY 2005-06 being the first year of tariff order). As for FY 2007-08, the power purchase cost has decreased because of increase in generation capacity of CSEB and reduced per unit power purchase cost from outside source. The *average cost of supply has reduced during FY 06-07 and FY 07-08 due to decline in power purchase cost resulting in reduction in the consumer retail tariff in the respective years. Therefore, the RPI did not have any impact on the overall consumer tariff during FY 06-07 and FY 07-08 as the power purchase cost comprises approximately 60%.*

Particulars	2005-06	2006-07	2007-08
Approved ARR (Rs. Crs)	3133.42	2740.09	2941.00
Approved Sales (MU)	9088.49	8573.65	9872.60
Averge Cost of Supply in Rs/kwh (A)	3.45	3.20	2.98
% of Power Purchase Cost in ARR	**66%**	**58%**	**60%**
% of Other remaining Cost in ACS	**34%**	**42%**	**40%**
% Annual Increase in Power Purchase Cost		-19.2%	-3.8%
% Annual Increase in Other Cost		16.0%	-10.8%
% Annual RPI Increase	4.4%	6.1%	5.2%

Transmission & Wheeling Tariff

Transmission Tariff

The Commission has approved intra state transmission charges for FY 07 and FY 08. The Commission has adopted similar approach for approving ARR for Distribution function as well as for Transmission function and is as discussed above. The table below shows proposed and approved ARR for FY 07 and FY 09.

The approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year. The table shows the calculation of transmission charges for FY 07 and FY 09.

Table A-4.15: Approved Transmission Tariff from FY 07 to FY 08

Particulars	FY 07	FY 08
Approved ARR (Rs.Cr)	165.41	185.61
Approved Energy Available in Grid (MUs)	12955	14637
Transmission Loss %	3.93	4.03%
Energy Available for DISCOMs (MUs)	12446	14047
Approved Transmission Tariff (paise/KWh)	13	13

Determination of Open Access Charges & Other charges

As per the Section 62 (b) and 62 (c) of Electricity Act 2003, the Commission is required to fix the transmission and wheeling charges for using the transmission system. CSERC has issued the Chhattisgarh Electricity Regulatory Commission (Intra-State Open Access in Chhattisgarh) Regulations, 2005 on 30th July, since then the Commission is approving transmission and wheeling charge in the Tariff orders. The table below shows the details of short term and long term Open Access charges:

Table 0.1: Monthly Charges payable by Open Access customer

Type	FY 07	FY 08
Long-term	Rs. 65,639/MW/Month	Rs.63,030/MW/Month
Short-term	Rs.540/MW/Day	Rs.518/MW/Day

The transmission losses would be borne by the open access customer in kind. The Commission had approved 3.93% and 4.03% for the FY 07 and FY 08 respectively.

Wheeling Charges, Cross-Subsidy Surcharge and Other Surcharge:

Cross subsidy surcharge is charged to Open access customer for transmission and Distribution system under section 38, 39(2)(d), 40(c) and 42(2) of the Electricity Act 2003. Apart from the transmission charges following charges are also be applicable to open access consumers who are likely to avail open access facilities:

- Wheeling Charges
- Cross –Subsidy Surcharge and Additional Surcharge.

Wheeling Charges

Wheeling charges were approved for FY 07 and FY 08 for the open access consumers in distribution network based on the distribution costs approved by the Commission. The total distribution cost was calculated by deducting power purchase cost (including transmission charges and own generation) from the total revenue requirement. The wheeling charges were the calculated as shown in the table below.

Table 0.2: Wheeling Charges for Open Access at 33 kV voltage level

Category of consumers	FY 07	FY 08
Energy input to transmissions system	12955	14637
Losses in transmission (3.93% as approved)		4.03%
EHV sales (as approved by the Commission)	2927	3043
Energy input to 33 KV system [I -(II + III)]	9519	11004
Total distribution cost as per approved ARR	493.46	493.05
Distribution cost for wire business (excluding interest on security deposit)	472.53	472.20
Distribution cost for 33 KV voltage level (assuming 35% of VI)	165.39	165.27
Wheeling charges for 33 KV voltage level (Paise/kWh)	**17**	**15**

** The distribution system loss at 33 kV are considered as 6% and to be borne in kind*

Cross Subsidy Surcharge

In the Tariff Order for FY 07 and FY 08, the cross subsidy data for consumer categories eligible for availing open access based on the average cost of supply is applied to arrive at the cross subsidy surcharge component of tariff of respective categories of consumers. The table shows the calculation of Cross subsidy surcharge for EHT and HT consumers (eligible categories):

Table 0.3: Cross subsidy surcharge payable by Open Access customer in FY 07

Category of consumers	EHT Consumers (at 132/220 KV)	HT Consumers (at 33 KV)
Average rate of subsidizing category consumers (Rs. per Unit)	3.88	3.75
Average cost of supply (Rs. per Unit)	3.20	3.20
Cross subsidy (Rs. Per Unit)	**0.68**	**0.55**

Table 0.4: Cross subsidy surcharge payable by Open Access customer in FY 08

Category of consumers	EHT Consumers (at 132/220 KV)	HT Consumers (at 33 KV)
Average rate of subsidizing category consumers (Rs. per Unit)	3.63	3.36
Average cost of supply (Rs. Per Unit)	2.98	2.98
Cross subsidy (Rs. Per Unit)	**0.65**	**0.38**

The tariffs for HT subsidizing consumers were brought down in this tariff order for FY 08 resulting in reduction in cross-subsidy. The cross-subsidy surcharge as given in the table above has been reduced in case of HT consumers substantially from Rs.0.55/kWh to Rs.0.38/kWh. For EHV consumers the reduction is from Rs.0.68/KWh to Rs.0.65/KWh.

Other Charge

Apart from transmission charges, Wheeling Charges (Distribution Network) and Cross Subsidy Surcharge, other charges approved by the Commission are as follows:

- Operating Charges at Rs. 1000/day or part thereof.
- Reactive Energy Charges at 27 paise/ KVARh

Multi-Year Tariff in the state

CSEB has yet not adopted the MYT framework due to various reasons as pointed out CSERC and CSEB. These reasons are:

- Lack of baseline or proper historical data on various efficiency parameters, especially voltage-wise T&D losses.
- Absence of efficient information system to facilitate acquisition of necessary operational data.
- No energy audit conducted so far to arrive at the extent of transmission and distribution losses.

Timeliness of orders

There has been a considerable lag between the date of submission of the tariff petition by the CSEB and issuance of tariff order by the Commission which is shown below.

Particulars	FY 06	FY 07	FY07-08
Date of Submission of ARR	31-Jan-05	13-Apr-05	31-Jul-07
Date of Issuance of Tariff Order	15-Jun-05	13-Sep-06	22-Oct-07
Delay (No. of days)	135	518	83
Notice for Public Hearing	13-Mar-05	30-Jun-06	25-Aug-07
Deadline for Receipt of Objections /Comments (including extension)	28-Mar-05	20-Jul-06	17-Sep-07
Number of Objections Received	69		

Major reasons for delay in issuance of tariff order have been the late submission of the tariff petition by the CSEB and then further delay in admission of the petition by CSERC due to inadequate data submitted by CSEB in the first instance or delay in validation sessions etc. The date

A-5. DELHI

A-5.1. Delhi – Generation Utility

Introduction

The State of Delhi has two generating companies i.e. Indraprastha Power Generation Company Limited (IPGCL) and Pragati Power Corporation Limited (PPCL). IPGCL was incorporated on 1st July, 2002 and it took over the generation activities from erstwhile Delhi Vidyut Board after its unbundling into six successor companies. Its associate Company, PPCL was incorporated on 9th January, 2001.

The installed generating capacity of the IPGCL and PPCL put together is 995 MW. Some of the plants of IPGCL i.e. Indraprastha power stations are very old and are expected to be decommissioned by 2010. There has been no addition in the State generating capacity in the past six years.

Post the transfer scheme in 2002, the Delhi Electricity Regulatory Commission (DERC) had issued the Tariff Order for approval of ARR of Delhi Transco Limited (DTL) and determination of BST to be charged to the DISCOMs for FY03 (9 months) and FY 04 which contained details of the about the generation plants. However, no separate ARR filing was envisaged for the generation companies. The Commission issued the first Tariff Order for generation companies on June 9, 2004 for FY 05. Following the issue of FY 05 Order, the Commission issued FY 06 and FY 07 ARR Orders. Thereafter, the Commission shifted from an ARR approach to Multi Year Tariff approach and issued a MYT Order for the Control Period FY 08 – FY11.

Generation Capacity

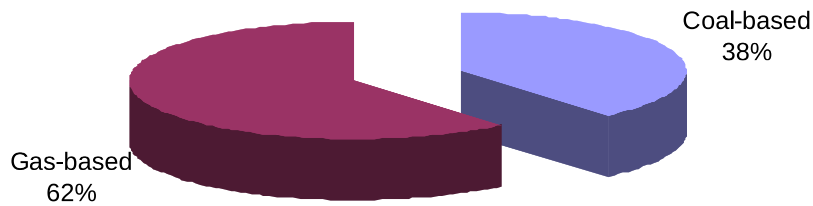
Delhi has a total of four generating stations with Indraprastha Power Station, Rajgath Power Station and Gas Turbine Power Station under IPGCL and Pragati Power Station under PPCL. The plant wise generating capacity of the State Generating Stations is as summarized below:

Table A-5.1: Plant wise Generating Capacity

	IPGCL			PPCL
Particulars	**Indraprastha**	**Rajghat**	**Gas Turbine**	**Pragati**
Station Capacity (MW)	247	135	282	330
Fuel	Coal	Coal	Gas	Gas
Year of Commissioning	1967-71	1989-90	1985-86 & 1995-96	2002-03
Units Capacity (MW)	3x62.5 + 60	2x67.5	6x30 + 3x34	2x104 + 1x122

Of the total generating capacity of 995 MW, 383 MW is coal based and 612 MW is gas based.

Graph A-5.1: Break-up of Generation Plants



Plant Load Factor (PLF)

The Commission has approved the PLF for IPGCL and PPCL plants during FY 05 to FY 07 based on the generation targets specified by CEA. For approving the PLF during the MYT Control Period, the Commission considered the PLF as per the operation norms prescribed in MYT Regulations. The PLF of the Delhi generating stations are low due to a number of reasons including old age of some stations like Indraprastha (more than 40 years old), inadequate R&M and unavailability of APM gas allocation.

The approved and actual PLF of the various stations are as under:

Table A-5.2: Approved and Actual Plant Load Factor

				MYT	
Particulars	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
Approved PLF					
Indraprastha	36.90%	46.10%	43.80%	45.00%	45.00%
Rajghat	71.88%	73.58%	67.60%	70.00%	70.00%
Gas Turbine	48.58%	66.79%	60.70%	70.00%	70.00%
Pragati	76.10%	83.02%	84.75%	80.00%	80.00%
Actual PLF					
Indraprastha	42.40%	45.40%	42.00%	-	-
Rajghat	58.93%	48.60%	53.19%	-	-
Gas Turbine	62.32%	70.60%	56.94%	-	-
Pragati	88.27%	79.53%	77.99%	-	-

The actual PLF of Rajghat for FY 05 of FY 07 has been lower than the approved PLF due to constant problems faced in unit 1 and unit 2 of the plant. The actual PLF of Pragati power plant was also lower than the approved levels for FY 06 and FY 07 due to issues relating to availability of gas.

Auxiliary Consumption

The auxiliary consumption for Indraprastha and Rajghat stations have been approved as per auxiliary consumption approved in previous year tariff orders. For the MYT period, the auxiliary consumption has been approved as per the norms prescribed in the MYT Regulations.

The Commission had approved the auxiliary consumption of Gas Turbine for FY 05 similar to approved auxiliary consumption of previous year. However, the Commission adopted a normative basis for approval of auxiliary consumption for FY 06 and FY 07 which was in line with the CERC defined normative auxiliary consumption for gas based generating stations. The approach for approval for auxiliary consumption during the MYT period was as per the norms set out in the MYT Regulations that were in line with the CERC specified normative auxiliary consumption for gas based generating stations.

The approval of auxiliary consumption for Pragati power station for FY 05 to FY 09 was based on normative auxiliary consumption of 3% specified by the CERC.

Table A-5.3: Approved and Actual Plant Auxiliary Consumption

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
Indraprastha	11.64%	11.64%	11.64%	11.64%	11.64%
Rajghat	11.28%	11.28%	11.28%	11.28%	11.28%
Gas Turbine	2.19%	3.00%	3.00%	3.00%	3.00%
Pragati	3.00%	3.00%	3.00%	3.00%	3.00%
Actual					
Indraprastha	12.42%	15.16%	15.51%	-	-
Rajghat	13.00%	13.88%	12.10%	-	-
Gas Turbine	2.39%	2.89%	2.80%	-	-
Pragati	3.95%	3.14%	2.85%	-	-

The actual auxiliary consumption in case of Indraprastha and Rajghat stations is higher as compared to the approved due to age of the plants. Since auxiliary consumption is not subject to true-up at the end of the year, the same results in erosion of the profits of IPGCL.

Station Heat Rate (SHR)

The SHR of the coal based plants have been approved by the Commission based on the draft PPA between the TRANSCO and IPGCL in absence of design heat rate data with IPGCL. In case of GT and Pragati stations, DERC had approved SHR based on normative SHR. For the MYT Order of FY 08 and FY 09 as well the SHR has been approved based on the same methodology as followed in the Tariff Order of FY 05 to FY 07.

Table A-5.4: Approved and Actual Station Heat Rate (in kCal/kWh)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
Indraprastha	3235	3235	3235	3235	3235
Rajghat	3200	3200	3200	3200	3200
Gas Turbine	2346	2450	2450	2450	2450
Pragati	2000	2000	2000	2000	2000

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Actual					
Indraprastha	3550	3907	3802	-	-
Rajghat	3379	3586	3210	-	-
Gas Turbine	2303	2426	2734	-	-
Pragati	2000	2018	2035	-	-

The actual SHR for Indraprastha and Rajghat have being much higher than the approved on account of low operating levels. IPGCL plants being old have not been able to meet up with the SHR levels approved by the Commission leading to adverse impact on the profitability.

Gross and Net Units Generated

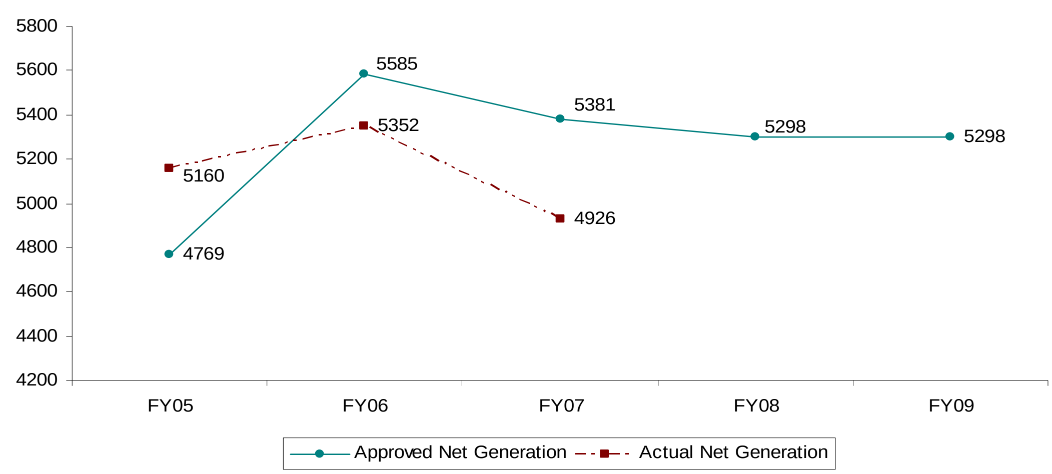
Considering the above technical parameters, the Commission had approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY 05 to FY 09:

Table A-5.5: Approved Gross and Net Generation (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Indraprastha	800	1000	950	729	729
Rajghat	850	870	800	828	828
Gas Turbine	1200	1650	1500	1729	1729
Pragati	2200	2400	2450	2313	2312
Total Gross Generation	**5050**	**5920**	**5700**	**5599**	**5598**
Auxiliary Consumption	281	335	319	301	300
Net Generation	**4769**	**5585**	**5381**	**5298**	**5298**

A comparison of the approved and actual net generation from the State generating plants highlights that the actual net generation has been generally been lower than the approved net generation approved for the stations. The actual net power availability from State generating Stations was higher during FY 05 primarily on account of a better PLF in the Gas Turbine Station.

Graph A-5.2: Comparison of Approved and Actual Net Generation (MUs)



FIXED COST

Operation & Maintenance Cost (O&M)

For estimation of O&M cost for IPGCL during FY 05 to FY 07 Tariff Orders, the Commission has escalated the previous year O&M cost by 4 percent as per the CERC specified escalation factor. However, for the MYT period, the Commission has revised the base by considering an average of past two years and escalated the O&M expense by 4 percent for estimating the O&M expense for each year of the Control period.

The Commission has followed a similar approach for PPCL except for FY 05 where it had considered a 7% escalation over FY 04 O&M expense. The Commission had also allowed a 10% carrying cost on the difference in O&M expenses estimated by the Petitioner and as approved by the Commission for FY 05. A provision for any expense over and above the expense incurred in previous year has also been provided i.e. Approval for premium on insurance policy for GT and Rajghat station during FY 07 and provision for 6th Pay Commission in the MYT Order.

Table A-5.6: Approved, Actual and Trued-up O&M Expense (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	112.21	140.08	143.06	155.67	175.76
Actual Petitioner Claimed O&M	202.26	177.82	151.66	-	-
Total Trued-up O&M	119.48	151.81	145.92	-	-
Disallowance w.r.t. True-up	*82.78*	*26.01*	*5.74*	-	-

With regard to true-up, the Commission has approved the O&M expense based on the recommendation of CEA considering all relevant parameters of operation taking into account the vintage and size of the generating units of these stations. However, the disallowances have been substantial with respect to the actual O&M expense claimed by the Petitioner during FY 05 to FY 07.

Depreciation

In the FY 05 Tariff Order, the Commission has considered a 4% average depreciation in absence of station-wise asset breakup and approved the depreciation for IPGCL. In the subsequent orders of IPGCL for FY 06 and FY 07, the Commission decided to consider depreciation based on straight line method over the useful life of the asset at the rates prescribed in Appendix II to CERC (Terms and Conditions of Tariff) Regulations, 2004. Considering this principle, the Commission had calculated the weighted average depreciation rate, based on the asset break-up. However, the same philosophy could not be adopted for IPGCL due to unavailability of station-wise asset break-up. Therefore, the Commission approved an average depreciation rate of 4 % for coal based thermal stations and 5% for GT station for FY 06 and FY 07. For approving the depreciation in the MYT Order, the Commission has considered the break-up of the opening level of asset for FY 08 in the same proportion as submitted by the Petitioner and depreciation rates as specified in the MYT Regulations.

For approval of depreciation in case of PPCL Tariff Order for FY 05, the Commission had considered depreciation over the fair life of the asset and applied an average depreciation of 5%. In the subsequent orders of PPCL for FY 06 and FY 07, the Commission has changed its approach and considered an average depreciation of 5.66% computed based on straight line method over the useful life of the asset at the rates prescribed in Appendix II to CERC (Terms and Conditions of Tariff) Regulations, 2004. For the MYT Order, the Commission has approved the depreciation based on the depreciation rates specified in the MYT Regulations.

Advance Against Depreciation (AAD)

The Commission has not considered AAD for the Tariff Order for FY 05. However, with the changed approach on approval of depreciation (CERC defined depreciation rates) the Commission had started considering AAD for IPGCL and PPCL from FY 06 onwards. For the issuance of FY 06 and FY 09 Tariff Order for IPGCL, AAD has not been approved as the cumulative depreciation was higher or equal to the cumulative debt repayment in each of the financial years. For PPCL, an amount of approx Rs. 7 Crs has been approved as AAD each year in the FY 06 to FY 09 Tariff Orders.

Table A-5.7: Approved Advance Against Depreciation (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
IPGCL	0.00	0.00	0.00	0.00	0.00
PPCL	0.00	6.82	7.82	7.19	7.19

Interest Cost

The Commission has approved the interest cost in the Tariff Orders for FY 05 to FY 07 incase of IPGCL and PPCL by considering the opening balance of loans, the repayment schedule and application of the actual rate of interest applicable to various components of the loan. A similar scheme wise analysis has been undertaken during the MYT Order (i.e. FY 08 and FY 09) for approval of the interest cost.

Interest on Working Capital

For approval of the interest on working capital, the Commission has considered normative working capital norms as per the CERC guidelines. For IPGCL stations the Commission had approved the following components for estimation of working capital requirement for FY 05 and FY 06:

- Fuel expenses for 1 month of operation at the projected PLF
- Coal inventory for 1 month
- Oil inventory for 2 months
- O&M expenses for 1 month
- Spares based on the company estimates
- Receivables for 2 months based on the projected sales

For PPCL, the Commission has computed the working capital requirement for FY 05 and FY 06 based on the draft PPA between TRANSCO and PPCL as the same were in line with the GoI specified norms. Following are the components for computation of the working capital:

- Fuel expenses for 1 month of operation at the projected PLF
- O&M expenses for 1 month
- Receivables for 1 month based on the projected sales

However, in FY 07, the Commission revised the components for estimation of working capital requirement in line with norms approved by the CERC in the "Terms and Conditions of Tariff" Regulations of March 2004. CERC has issued separate norms for coal based and gas based generating stations. Similar norms were followed by the Commission while approving the Tariff Orders for FY 08 and FY 09 for IPGCL and PPCL. Revised norms are as follows:

Working capital norms for coal-based generating stations:

- Coal stock for two months
- Oil stock for two months
- O&M Expenses for one month
- Maintenance spares – 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation
- Receivables for two month

Working capital norms for gas-based generating stations:

- Fuel cost for one month
- Liquid fuel stock for 1/2 month
- O&M expenses for one month
- Maintenance spares – 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation
- Receivables for 2 month based on the projected sales

Subsequent to the computation of the working capital requirements, the Commission had approved the interest rate for funding of the working capital requirement for FY 05 based on interest rate proposed by IPGCL/PPCL. For the remaining Tariff Orders, the Commission has approved the interest rate as per the CERC specified SBI PLR for short-term loans. A summary of the interest rate considered by the Commission in its various Tariff Orders during FY 05 and FY 09 has been summarized below:

Table A-5.8: Approved Interest Rate for Working Capital Borrowings (%)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Interest rate for WC borrowings	12.50%	10.25%	10.25%	12.75%	12.75%

The true-up of the interest on working capital cost is approved by the Commission based on the normative parameters only. The actual interest cost of the working capital funding is generally higher as compared to the approved / true-up cost leading to losses for the utilities i.e. IPGCL and PPCL. A comparison of the approved, actual and trued up interest cost on working capital requirement is provided in the table below:

Table A-5.9: Approved, Actual and Trued up Interest on Working Capital (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
IPGCL					
Approved	20.63	21.28	21.16	27.33	29.61
Actual	23.47	28.70	26.08	-	-
Trued up	18.33	19.73	21.16	-	-
PPCL					
Approved	7.70	6.67	11.80	13.52	14.20
Actual	13.65	12.61	13.18	-	-
Trued up	6.10	10.98	10.99	-	-

The difference in the actual and trued-up interest cost on working capital is primarily on account of higher requirement of working capital and higher interest rate considered by the Petitioner. Considering the age of the plants and the poor performance with respect to the approved technical requirements, the working capital requirement is higher than leading to higher interest cost primarily for IPGCL impacting the financial performance of the company.

Reasonable Return

DERC had followed a uniform approach for providing reasonable return to IPGCL & PPCL. For FY 05 to FY 09, the Commission has been providing Return on Equity on the average equity amount computed for each station. The rate of ROE considered in FY 05 was 16% as per the applicable GoI norms. However, as per the CERC norms, the ROE was revised 16% to 14% in the subsequent tariff orders.

Total Fixed Cost

The Commission has approved the total fixed cost for IPGCL and PPCL based on the approach for various components as discussed above. For the period FY 05 to FY 07, the Commission had approved consolidated fixed cost for all the plants of PPCL. This approach was in turn replaced with plant wise approval of fixed cost during the MYT period FY 08 and FY 09. A comparison of the approved total fixed cost for each year, as claimed by the Petitioner at the end of the year and the trued up total fixed cost is provided in the table below:

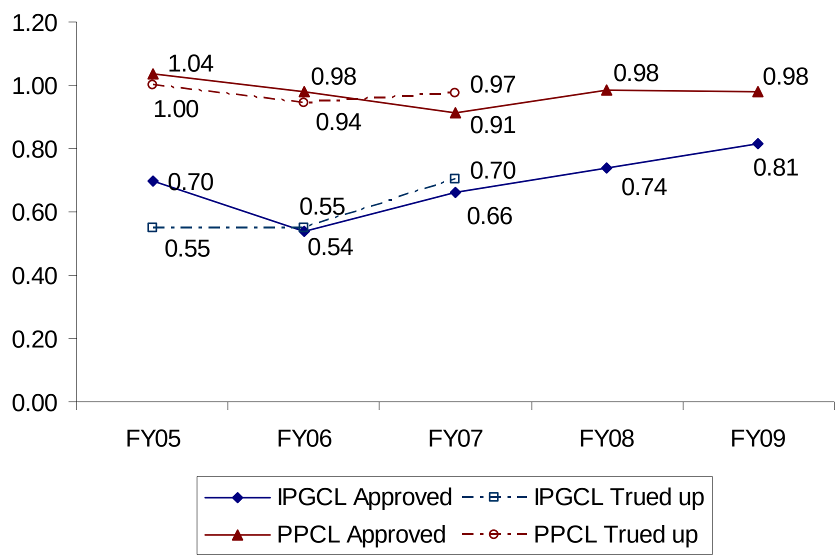
Table A-5.10: Approved, Actual and Trued up Fixed Cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
IPGCL					
Approved	183.93	175.06	198.97	225.90	248.98
Actual	232.33	221.10	234.09	-	-
Trued up	162.65	169.99	192.41	-	-

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Disallowance w.r.t. to Actuals	69.68	51.11	41.68	NA	NA
PPCL					
Approved	222.22	228.52	216.38	220.67	220.25
Actual	265.05	244.74	221.73	-	-
Trued up	224.14	219.30	213.09	-	-
Disallowance w.r.t. to Actuals	40.91	25.44	8.64	NA	NA

It is observed that in all the three years of true-up from FY 05 to FY 07, the Commission approved trued-up cost is lower than the approved cost inspite of a higher actual claim by the Petitioner. This highlights the fact that the Commission does not allows any inefficiency on account of the generating companies to be passed on to the consumers and follows a robust mechanism while truing up for previous year.

Graph A-5.3: Approved and Trued up Per Unit Fixed Cost (Rs. Per unit)



Fuel Cost

The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. The approach adopted by the Commission for computing the fuel price in each of the Tariff Order issued during FY 05 to FY 09 for IPGCL and PPCL is summarized in table below:

Table A-5.11: Approach for determination of Fuel Price

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Coal	Escalation of 3% over actual past year coal prices	Escalation of 3% over actual past year coal prices	Escalation of 3% over actual past year coal prices	Based on weighted avg price of coal from various sources	Based on weighted avg price of coal from various sources

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Oil	Escalation of 5% over actual past year oil prices	Escalation of 5% over actual past year oil prices	Escalation of 5% over actual past year oil prices	Based on weighted avg price of oil from various sources	Based on weighted avg price of oil from various sources
Gas	Escalation of 5% over actual past year oil price	Based on delivered price of APM gas	Based on weighted avg price of APM gas and PMT gas	Based on weighted avg price of Gas from various sources for FY 07	Based on weighted avg price of Gas from various sources for FY 07
Frequency of Fuel Price Adjustment	Annual basis (end of year)	Annual basis (end of year)	Annual basis (end of year)	Monthly basis	Monthly basis

The fuel cost estimated by the Commission in the tariff order for FY 05 to FY 07 was trued up annually for any variations in gross calorific value and the price of fuel. However, in the MYT Order, the Commission has specified a formula for fuel price adjustment and the same is done on a monthly basis. The formula set out considers weighted average price of fuel and weighted average gross calorific value of fuel. Other factors like PLF, SHR, auxiliary consumption is considered on normative for computing the fuel price adjustment.

The monthly adjustment of fuel price helps in smoothening out any major variations in the per unit variable cost of a generating station as the same is adjusted in the subsequent month bill.

Variable Charge

Variable charges comprising of fuel cost for each plant have been approved by the Commission in the Tariff Orders of generating companies based on the respective fuel consumptions (i.e. coal, gas, etc). The variable charges approved are based on the technical parameters approved by the Commission for each power station.

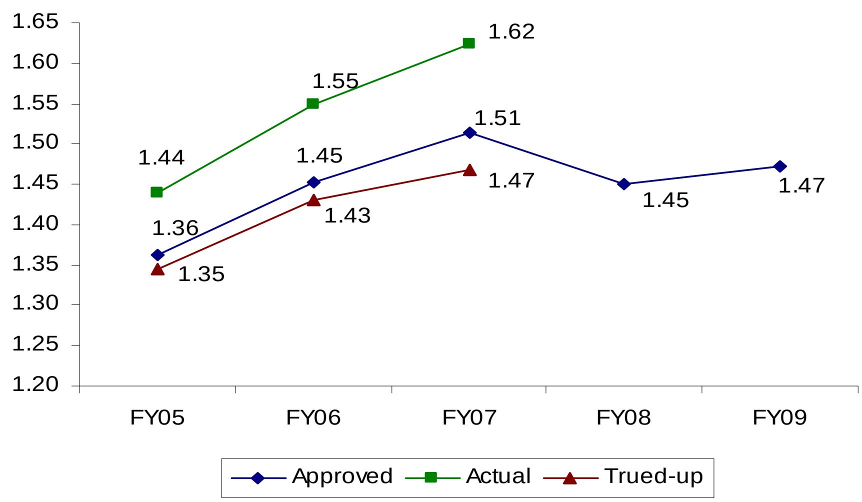
While truing up of variable cost for FY 05 to FY 07, the Commission has taken into consideration PLF of the plant, gross calorific value of fuel and fuel cost based on actual. Other parameters like Auxiliary consumption, station heat rate are considered based on normative or as approved by the Commission in the Tariff Order. A comparison of the approved, claimed and trued-up fuel cost is summarized in table below:

Table A-5.12: Approved, Claimed and Trued up Total Fuel Cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
IPGCL	408	559	555	553	564
PPCL	242	252	260	215	215
Trued up					
IPGCL	468	534	492		
PPCL	259	224	231		

Higher than approved auxiliary consumption, station heat rate, etc has led to disallowance of Rs. 169 Crs for IPGCL and Rs. 14 Crs for PPCL during the true-up for FY 05 to FY 07 against variable cost. In terms of per unit variable cost for all State generating plants (IPGCL and PPCL), the actual variable cost per unit claimed is higher than the approved variable cost per unit i.e. In FY 07, the actual variable cost per unit claimed by the generating utilities is 1.62 as compared with the trued-up variable cost per unit of Rs. 1.47 per unit.

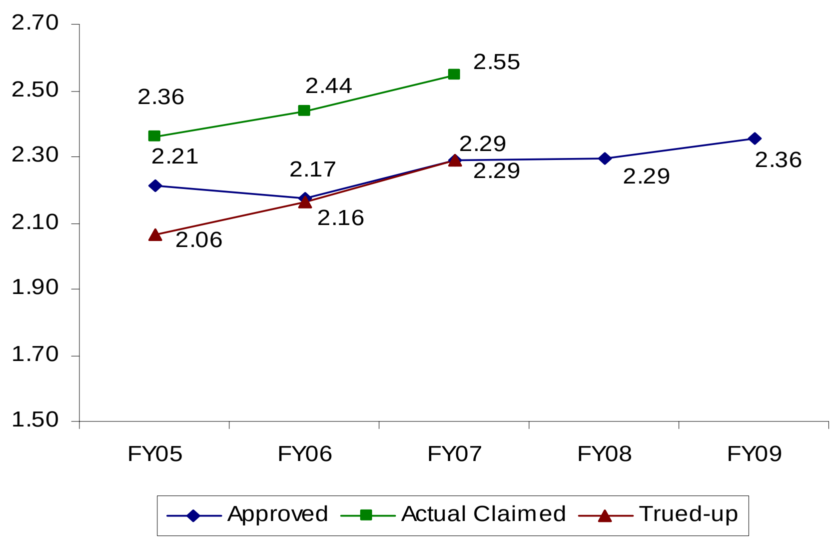
Graph A-5.4: Approved, Claimed and Trued-up Per Unit Variable Cost (Rs. Per unit)



Total Cost

The generation tariff applicable to the generating stations during each year is based on the fixed and variable costs approved by the Commission in each tariff order. A comparison of the approved, actual claimed and trued-up total cost per unit for Delhi generating stations as a whole is shown in the graph below:

Graph A-5.5: Approved, Claimed and Trued-up Per Unit Total Cost (Rs. Per unit)



The Commission trued-up total cost per unit has remained similar to the approved total cost per unit for FY 06 and FY 07. For FY 05, the Commission approved total cost per unit was high i.e. Rs. 2.21 per unit as compared to the trued-up cost per unit of Rs. 2.06 primarily on account of higher than approved PLF from the Gas Turbine station. The actual cost per unit claimed by IPGCL has been higher than the approved and trued-up cost per unit due to lower efficiency of IP and Rajghat Stations and are working at lower than approved technical specifications.

Incentive Level

The Commission has approved incentive of 25 paisa/kWh on overachievement of the target PLF for all generating plants from the FY 06 Tariff Order in line with the CERC (Terms and Conditions of Tariff) Regulations, 2004.

Under the MYT Framework, the Commission would utilize the revenue from sale of infirm power for reducing the capital expenditure and would not consider the same as revenue for the generation companies as per the MYT Regulations. The same would be applicable from FY 08.

MYT Framework

The Commission adopted the Multi Year Tariff (MYT) principles for determination of tariff in line with the provisions in Section 61 of the Electricity Act, 2003 after the end of policy direction period in the State of Delhi. The Commission issued MYT Regulations vide notification dated May 30, 2007 specifying Terms and Conditions for Determination of Tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff (MYT) framework for the period FY 08 – FY11.

Under the MYT framework, the Commission segregated costs into two categories - Controllable and Uncontrollable parameters for the generation business. The key features of the MYT framework adopted in the State of Delhi for Generating Stations are summarized in table below:

Table A-5.13: Key Highlights of the MYT Regulations

Particulars	
First Year of MYT	FY 08
Time frame for the control period	4 years, FY 08 to FY11
Issuance of the MYT Order	9 Month delay from the start of first year of Control Period
Base year considered for MYT projections	Trued up values of FY 07 & estimates of FY 08
Uncontrollable Parameters	Fuel Cost (recoverable as Fuel Price Adjustment)
Controllable Parameters	(a) Station Heat Rate (b) Availability (c) Auxiliary Consumption (d) Secondary Fuel Oil Consumption (e) O&M Expenses (f) PLF (g) Financing Cost which includes cost of debt (interest), cost of equity (return) (h) Depreciation

Particulars	
Time frame for truing up of Uncontrollable Parameters	On a Monthly basis
Base line data	Operational norms for existing plants: Based on vintage and current operations of the plants Operational norms for new plants: On normative basis

A-5.2. Delhi – State Transmission Utility

Introduction

On 20th November 2001, the Government of National Capital Territory of Delhi (GoNCTD) passed Delhi Electricity Reform Rules, 2001 that provided for unbundling of the functions of the erstwhile Delhi Vidyut Board (DVB) and transfer of assets to generation, transmission and distribution companies. Subsequently two generation companies (IPGCL and PPCL), one transmission company (DTL) and 4 distribution companies viz. i.e. BSES Rajdhani Power Limited (BRPL), BSES Yamuna Power Limited (BYPL), North Delhi Power Limited (NDPL) and New Delhi Municipal Council (NDMC) were formed.

Post the Transfer Scheme was made effective by the GoNCTD from July 1, 2002 onwards, DTL took over the transmission assets of DVB and became deemed transmission licensee to carry out the electricity transmission and bulk supply business in the National Capital Territory of Delhi. As per the provisions of the Transfer Scheme, DTL was given the responsibility of bulk power purchase and supply in Delhi during the Policy Direction Period i.e. upto FY 07. The bulk supply tariff during the Policy Direction Period was reduced to the extent of the support provided by the GoNCTD. Thereafter, the Power Purchase Agreements (PPAs) were allocated to the DISCOMs.

DERC issued the first tariff order for the unbundled utility on 26th June, 2003 for FY 2002-03 (9 months) and FY 2003-04. Also, with MYT Framework being implemented in the State after the end of Policy Direction Period, DERC issued a MYT Order with a control period of four years for DTL on 20th December, 2007. However, in terms of adoption of the MYT framework, the Commission delayed the same by one year as the MYT orders for the Distribution Companies were issued on 23rd February, 2008.

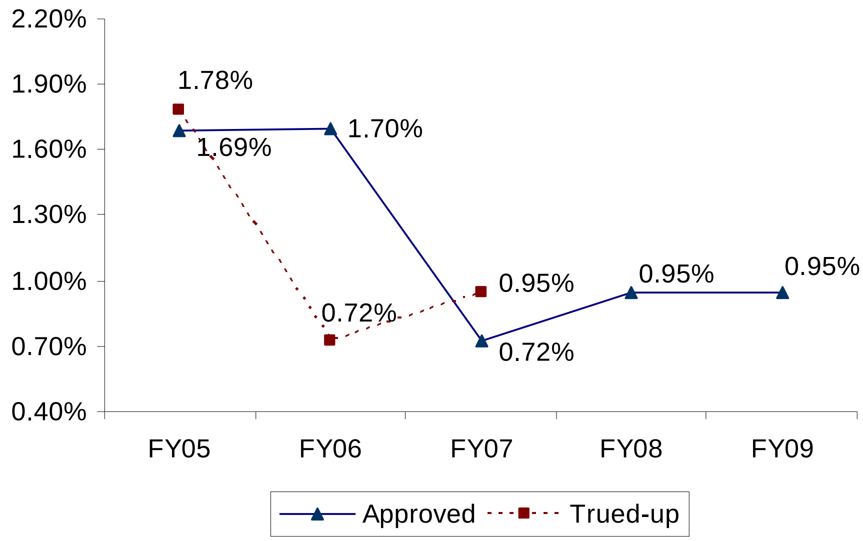
Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 05 to FY 09 in approval of the Annual Revenue Requirement (ARR) of the state transmission utility DTL.

Transmission Losses

For approving the intra-state transmission losses in the ARR of DTL, DERC has primarily considered the past year actual intra-state transmission losses except for FY 06 where the Commission had considered a small improvement on account of capital expenditure. The approved and actual transmission losses in each Tariff Order are provided in graph below.

Graph A-5.6: Approved & Trued up (Actual) Transmission Losses (%)



Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 05, FY 06 & FY 07 in the Tariff Orders for DTL. However, the approach was revised to a consolidated approval of O&M expenses in the MYT Order for FY 08 and FY 09. Approach of the Commission in approval of each of the O&M cost parameters in the tariff orders is discussed below:

Employee Cost

For approving the employee expenses for FY 05, the Commission has projected each component of the employee expenses rather than applying a growth rate on the overall employee expenses of FY 04. The Commission has made the following assumptions:

- Increase in Basic Salary by 3% over past year (DA equivalent to 50% of basic has been merged into Basic)
- 11% of Basic has been considered for Dearness Allowance
- Terminal Benefits of 26% of Basic plus Dearness Allowance
- Other Allowances have been considered in proportion of the basic salary
- Other components like staff welfare, other allowances, medical reimbursements, and bonus/ex-gratia, have been considered on proportionate basis based on the actual expenses during FY 05
- Capitalization of 15% has been deducted from employee cost

For FY 06 and FY 07, the Commission has approved the employee cost considering the following set of assumptions:

- Increase in Basic Salary by 3% over past year
- Increase in DA by 6% over past year

- Terminal Benefits of 26% of Basic plus DA
- Other Expenses have been considered as a proportion of the Basic Salary
- Capitalization has been assumed at 15% of gross employee cost for FY 06 and proportionate basis on approved capital expenditure vis-à-vis capital expense projected by the Petitioner for FY 07.

With the commencement of MYT regime from FY 08, the Commission has approved O&M expenses as a whole for FY 08 and FY 09. However, the approval of the employee cost (part of O&M) has been undertaken in line with the DERC MYT Generation Regulations Following factors have been considered by the Commission for approval of the employee cost:

- Trued-up employee cost for FY 07 has been considered as the base for projection of employee cost for FY 08 and FY 09
- Inflation factor has been computed as INDXn / INDXn-1 where

  INDXn = 0.55*CPIn +0.45*WPIn

  **CPI and WPI are for trailing 5 years*
- Impact of 6th pay Commission provided in FY 09 [to the extend of 10% of the total employee cost for FY 06 (3 months) and FY 07]
- Capitalization has been approved based on the DTL submission and proportionately allocating the same based on approved asset capitalization and asset capitalization proposed by DTL

The net employee cost after capitalization as approved by the Commission in each of the tariff orders is summarized in table below:

Table A-5.14: Approved Employee Cost from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net Employee Cost (Rs. Crs)	43	40	51	53	55
Total Approved ARR (Rs. Crs)	60	65	175	183	163
% Employee Cost of Approved ARR	*71%*	*61%*	*29%*	*29%*	*34%*

Repair & Maintenance (R&M) Expenses

In FY 05, the Commission has allowed an escalation of 7% over the R&M cost approved for FY 04 based on prevalent industry norms. The Commission has also directed DTL to maintain separate record of the items issued from the stores for R&M works, and submit the same to the Commission along with the details of the actual R&M Works carried out at the end of each quarter. Subsequently, for FY 06, the Commission has estimated the R&M expenses by considering a growth rate of 4% over the previous year R&M expenses. For FY 07, the Commission has adopted a different approach and has approved the R&M expenses as proposed by the Petitioner.

For FY 08 and FY 09, the Commission had issued a MYT Order and had approved the R&M expenses based on MYT Regulations. Under the MYT framework, the R&M expense is determined as a % of opening GFA as per the formula prescribed in the Regulations:

R&Mn = K * GFA n-1

where K factor for the Control Period is the average K factor of past 5 years (i.e. FY03 to FY 07)

The Commission determined the value of ‘K’ for the Control Period as 2.19%, which is the average ‘K’ for last 5 years.

The approach followed by the Commission for approval of the R&M expenses in the Tariff Orders for FY 05 to FY 09 is summarized in below:

Table A-5.15: Approved R&M Expenses from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approach of the Commission for R&M approval	7% increase over previous year	4% increase over previous year	As proposed by the DTL	Average R&M as a percentage of GFA for past 5 yrs	Average R&M as a percentage of GFA for past 5 yrs
Net R&M Expenses (Rs.Cr.)	17	14	17	20	24
Total Approved ARR (Rs. Crs)	60	65	175	183	163
R&M Cost as % of Approved ARR	*28%*	*22%*	*10%*	*11%*	*15%*

Administrative & General Expenses

For the approval of A&G expense of DTL for FY 05, the Commission has projected individual components of A&G expenses by applying an increase of 10% over the actual expenses incurred in FY 04. Similar approach has been followed by the Commission in the FY 06 and FY 07 tariff order with an escalation of 4% over actual A&G expenses for FY 05 and FY 06, respectively. During the MYT period, A&G expenses have been computed based on the methodology specified in the MYT Regulations:

- Trued-up A&G expense for FY 07 has been considered as the base (excluding the A&G expense related to SLDC business)
- The A&G expense of the base year has been escalated by the escalation factor calculated as follows:

  INDXn / INDXn-1

  where INDXn = 0.55 * CPIn + 0.45 * WPIn

where CPI and WPI are for immediately preceding five years

Table A-5.16: Approved A&G Expenses from FY 2005-06 to FY 2008-09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net A&G Expenses (Rs.Crs)	10	9	9	12	13
Total Approved ARR (Rs. Crs)	60	65	175	183	163
A&G Cost as % of Approved ARR	*16%*	*13%*	*5%*	*7%*	*8%*

O&M Expenses

The total O&M expense approved in the tariff order for FY 05 to FY 07 has been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission. However, the formula specified for approving the O&M expense under the MYT period i.e. FY 08 & FY 09 is as follows:

O&Mn = (R&Mn + EMPn + A&Gn)* (1 – Xn)

Xn is an efficiency factor for nth year. Value of Xn shall be determined by the Commission in the MYT Tariff order based on Licensee's filing, benchmarking, approved cost by the Commission in past and any other factor the Commission feels appropriate.

Apart from computing the employee cost, A&G cost and R&M expenses during the MYT period, the above formula also specifies an efficiency factor which is desired to be brought about by the distribution licensee during the control period. The Commission has assumed an efficiency of 0% and 2% for FY 08 and FY 09, respectively in the O&M expenses.

Depreciation

For FY 05, the Commission has continued with the methodology adopted in the previous tariff order and had applied an average depreciation rate of 3.75% considering the average fair life of the assets as 25 years. The Commission had adopted this methodology in absence of details of CWIP and the historical value of various categories of the assets of DTL. The Commission has also reiterated its view of FY 04 tariff order *"he Commission is of the view that in the future, the depreciation computed at the rate of 3.75% may be higher or lower than the rate based on the actual FAR, and is of the opinion that this can be adjusted against the actual depreciation chargeable, under the truing up mechanism."*

Further, the Commission has also stated the following in the Tariff Order:

"The Commission is of the view that as depreciation is a non-cash expenditure and there is no scheduled loan repayment, the reduction in the depreciation expenditure will not affect the Petitioner's operations as all legitimate and prudent expenditure is being considered for the purposes of determination of the ARR. Accordingly, the Commission has continued to use the depreciation rate of 3.75% for the purposes of the ARR."

Depreciation being non-cash expenditure, the same has been considered by the Commission for meeting the loan repayment requirement, working capital requirement and funding capital investments.

For FY 06 & FY 07, the Commission has applied the CERC prescribed depreciation rates as per the Annexure II of the CERC (Terms and conditions of Tariff) Regulations, 2004. The Commission had computed a weighted average depreciation rate of 3.32%, 3.58% and 3.24% for BRPL, BYPL and NDPL, respectively, based on the opening level of assets.

The Commission has also directed DTL in the FY 06 Tariff Order to submit the break-up of opening block of assets and assets capitalized during the year as per the classification specified in the Appendix II of CERC regulations while submitting the petition for FY 2006-07. In absence of breakup of assets, the Commission has considered the asset break-up as available from the Provisional Accounts for FY 04 for estimating weighted average depreciation rate (3.53%) for estimation of depreciation expense for FY 2005-06. Any difference in depreciation on account of computation of depreciation as per classification and rates in the Tariff Order and actual classification of assets as per the Appendix II and corresponding rates shall be trued-up in the subsequent Tariff Order. Similarly, weighted average depreciation rate of 3.40% was approved by the Commission for FY 07.

For the MYT control period, the Commission has considered the opening GFA based on the audited accounts of FY 07 and allocated the assets in various categories. Depreciation rates for various categories of assets have been applied as per the MYT Regulations for approving the depreciation.

The Commission has also computed the advance against depreciation (AAD) after the applicability of depreciation as per CERC norms. However, there was no requirement for AAD during FY 08 and FY 09.

The total approved depreciation for the DISCOMs and depreciation as a percentage of gross fixed assets is reflected in the Table below:

Table A-5.17: Approved Depreciation

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Depreciation (Rs.Crs)	27	28	28	37	44
Opening GFA (Rs. Crs)	714	759	792	923	1113
Depreciation as % of GFA	*3.75%*	*3.72%*	*3.53%*	*3.96%*	*3.94%*

Interest cost

For FY 05, the Commission has considered the means of finance for funding the capital expenditure from a mix of sources including unutilized depreciation, State Government support for funding the investments and commercial loan. The interest expenses approved for FY 05 is based on the interest rate submitted by the Petitioner for the Plan Fund Assistance and interest rate of 9% on commercial debt. A similar approach has been considered by the Commission for FY 06 Tariff order as well. For FY 07, the means of finance was primarily from Plan funds from State Government for funding the investments. The interest cost for has been worked out taking into account actual repayment period of 15 years and the interest rate @11.50% p.a. Additionally, an interest cost for DPCL loan @12% has also been provided by the Commission as the moratorium period of payment of interest on DPCL loan was to end on July 2006.

For FY 08 and FY 09 (MYT Period), the Commission has taken effect of interest cost in the RoCE by computing the average cost of debt for each DISCOM. For computing the average cost of debt for the Control Period, the Commission has made the following assumptions:

- Repayment schedule and interest rate @11% for loans provided by GoNCTD
- Repayment schedule and interest rate @ 12% as per loan agreement for DPCL loan

Since the asset capitalization is subjected to true-up under the MYT Regulations, the Commission will true-up for the means of finance at the end of the Control Period. The Commission has also directed DTL to take up the issue of interest rate with GoNCTD for appropriate reduction.

Table A-5.18: Interest Cost Approved for DTL

Particulars	FY 05	FY 06	FY 07	FY 08*	FY 09*
Net Interest Cost (in Crs)	9	17	52	-	-
Interest Cost as % of ARR	*15%*	*26%*	*30%*		

**Included under Return on Capital Employed during the MYT Control Period*

Rate of Return

The Commission has approved Return on Capital Base of 16% in accordance with the Schedule VI of the Electricity Supply Act, 1948. However, the loan provided by the GoNCTD for supporting the revenue gap has not been considered as part of the Capital Base. Inspite of the applicability of the Electricity Act, 2003, the Commission followed a similar approach for the approval of the return in FY 06 and FY 07 Tariff Orders to maintain consistency during the reform period.

For FY 08 and FY 09, the approach for rate of return has been changed by the Commission to Return on Capital Employed (RoCE) as per the MYT Regulations. As per the Regulations, RoCE shall be used to provide a return to the Transmission Licensee (which will provide for all financing costs including interest on loans and interest on working capital). The Regulations provide for a 14% return on equity to the transmission licensee in computation of WACC for the transmission business. In the MYT Order, the Commission has adopted a similar approach and computed the WACC based on the average rate of return on debt and 14% rate of return on equity. The WACC approved for FY 08 and FY 09 in the MYT Order is 12.15% and 12.17%, respectively.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for DTL.

Table A-5.19: Approved Return (including interest cost) by the Commission

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approach for Return	16% of Capital Base	16% of Capital Base	16% of Capital Base	Return on Capital Employed	Return on Capital Employed

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Return* (Rs. Crs)	27	50	86	93	111

** includes interest cost for FY 05, FY 06 and FY 07*

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for DTL. Since power purchase was the responsibility of DTL during FY 05, FY 06 & FY 07, the ARR for the respective years include the power purchase cost. For comparison of DTL's ARR during FY 05 to FY 09, the power purchase cost has been reduced from the total ARR.

The table below summarizes the approved and adjusted ARR for FY 05 to FY 09:

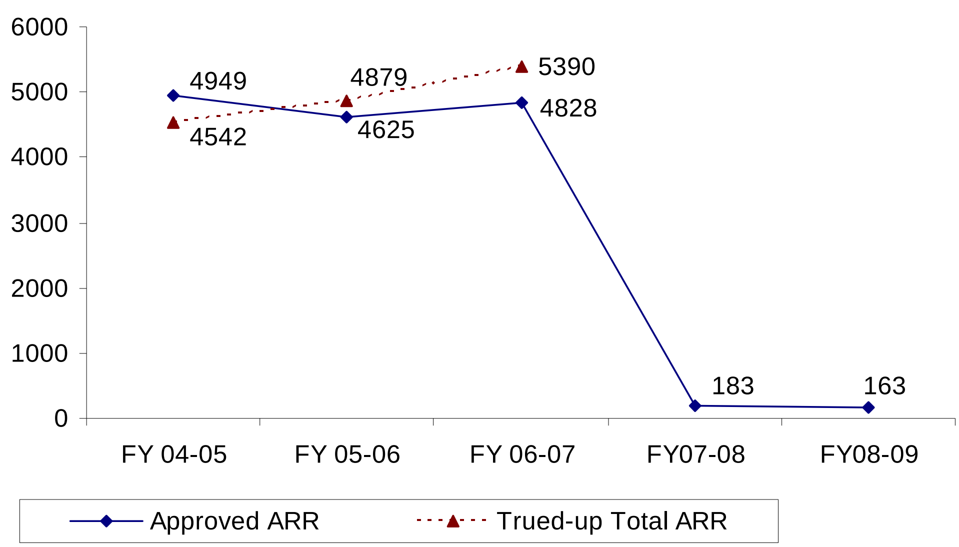
Table A-5.20: Approved ARR and Adjusted ARR for FY 06 to FY 09 fro DTL

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	4949	4625	4828	183*	163*
Approved Adjusted ARR (Rs.Crs)	61	65	175	183	163

**ARR for transmission business post the allocation on PPAs to the DISCOMs*

A comparison of the approved and trued-up ARR by the Commission is provided in the graph below:

Graph A-5.7: Approved and Trued-up ARR for DTL (Rs. Crs)



Determination of Transmission Charges & Open Access Charges

DTL was undertaking power purchase from various sources upto the end of policy direction period i.e.FY 07 for all the DISCOMs in the State. Therefore, Bulk Supply Tariff (BST) was determined for the DISCOMs (BRPL, BYPL & NDPL) based on their paying capacity during FY 05, FY 06 & FY 07. The paying capacity of each DISCOM in FY 05 has been determined based on the projected revenue realization at the approved tariffs for FY 05 (including regulatory asset apportioned to each DISCOM) and the revenue requirement excluding the power purchase cost. For NDMC & MES the existing BST of Rs. 2.57 per kVAh was considered. The recovery of DTL ARR has been considered from all sources including government support (as per the policy direction period), DVB Arrears, revenue from DISCOMs and revenue from NDMC and MES. The breakup of approved revenue is summarized in table below:

Table A-5.21: Approved Revenue for DTL during FY 05 to FY 07

Particulars	FY 05	FY 06	FY 07
Net Revenue Requirement (including gap of previous years)	**4,903**	**4,625.0**	**4,828.0**
Revenue			
Govt Support	690	138.0	-
DVB Arrears	103	119.0	-
Revenue from BRPL, BYPL & NDPL	3,714	4,001.0	4,529.0
Revenue from NDMC & MES	395	367.0	344.0
Total Revenue	**4,903**	**4,625.0**	**4,873.0**
Net Surplus/ Gap	**-**	**-**	**45**

Post the Policy Direction Period, the power purchase agreements were allocated to the DISCOMs and DTL was responsible for only the transmission business in the State. Therefore, during the MYT Period, the Commission has approved the transmission tariff based on the methodology specified in the Transmission Regulations that states *"The Annual Transmission Service Charge (ATSC) shall be divided between Beneficiaries of the Transmission System on monthly basis based on the Allotted Transmission Capacity or Contracted Capacity, as the case may be."*

The transmission charges were to be recovered in full only if it the transmission system availability is above 98%, as specified in the MYT regulations. The charges shall be recovered on a pro rata basis in case the availability is lower than the target level. The transmission tariff is to be determined as per the following formula:

TRi = (Net ARR / 12)* (TCi / TCC)

Where,

TRi: Transmission charges for ith long term user, in Rs. /month

Net ARR: Net Aggregate Revenue Requirement, as approved by the Commission

TCi: Total Capacity/ Entitlement in MW of the ith user of the Transmission system for the respective month

TCC: Total Capacity/ Entitlement in MW of the Transmission system by all Long-Term Users for the respective month

Additionally, as per the MYT Transmission Regulations, DTL should separate its business into transmission and SLDC functions, and segregate its accounts between these two businesses. However, in absence of segregated accounts submitted by DTL in the MYT Petition, the Commission has allocated the transmission & SLDC expenses for FY 08 and has directed DTL to file a separate petition for determination of SLDC charges for the subsequent years, including details of actual expenses for FY 08.

Short-term Open Access Transmission Charges:

In the MYT Order, DERC has specified that charges for short-term open access customers shall be recovered in line with the provisions of the MYT Transmission Regulations.

As per the MYT Transmission Regulations, the annual transmission charge approved by the Commission shall be divided amongst the beneficiaries based on the allocated transmission capacity. However, for the Short Term Open Access Customers, the transmission charges shall be computed as per the following methodology:

ST_RATE = 0.25 x [ATSC/ Av_CAP]/ 365;

Where:

ST_RATE is the rate for short-term open access customer in Rs per MW per day;

ATSC is Annual Transmission Service Charge;

Av_CAP means the average capacity in MW served by the transmission system of the Transmission Licensee in the last Financial Year and shall be the sum of the generating capacities connected to the transmission system and contracted capacities of other transactions handled by the system of the Transmission Licensee;

The Regulations allow the transmission licensee to retain 25% of the charges collected from the Short Term Open Access customers and adjust the balance 75% towards in the transmission service charges payable by the Long Term transmission customers.

A.5.2.1. Delhi – Distribution Utilities

Introduction

On 20th November 2001, the Government of National Capital Territory of Delhi (GoNCTD) passed Delhi Electricity Reform Rules, 2001 that provided for unbundling of the functions of the erstwhile Delhi Vidyut Board (DVB) and transfer of distribution assets to three distribution companies.

The State of Delhi has 4 distribution companies viz. i.e. BSES Rajdhani Power Limited (BRPL), BSES Yamuna Power Limited (BYPL), North Delhi Power Limited (NDPL) and New Delhi Municipal Council (NDMC) which operates in a small area.

Further, through policy directions issued in June 2006, the responsibility for bulk power purchase and supply in Delhi was also transferred to the Distribution Companies which was solely under Delhi Transco Limited (DTL) till March 2007.

Post the transfer scheme in 2002, the Delhi Electricity Regulatory Commission (DERC) had issued the Tariff Order for approval of ARR of BRPL, BYPL and NDPL and determination of RST to be charged to different consumer categories for 2002-03 (9 months) and 2003-04. This order adopted the new principles laid down in the policy directions issued by the GoNCTD for determination of RST for all the DISCOMs. The Commission has subsequently issued Tariff Orders for the DISCOMs for FY 05, FY 06 and FY 07. Thereafter, the Commission shifted from an ARR approach to Multi Year Tariff approach and issued a MYT Order for the Control Period FY 08 – FY 11.

Sales / Demand

The Commission has estimated the sales to be made to the various categories of consumers by considering short term (3 years), medium term (6 years) and long term (9 years) Compound Annual Growth Rate (CAGR) on previous year sales for Delhi state as a whole. The total sale assessed by the Commission has been then allocated to each of the DISCOM in proportion of their share in the total actual sales for each category in the previous year.

As is clear from the Figure 1, the domestic category forms the major chunk of consumers in the overall consumer mix for DISCOMs in Delhi. Though the absolute quantum of sales to domestic consumers has not seen much increase, having just grown from 6158 MUs in FY 05 to 6850 MUs in FY 09, it still remains the dominant category accounting for almost half of the total consumers.

Graph A-5.8: Share of consumer categories in approved sales and the trend from FY 05 to FY 09

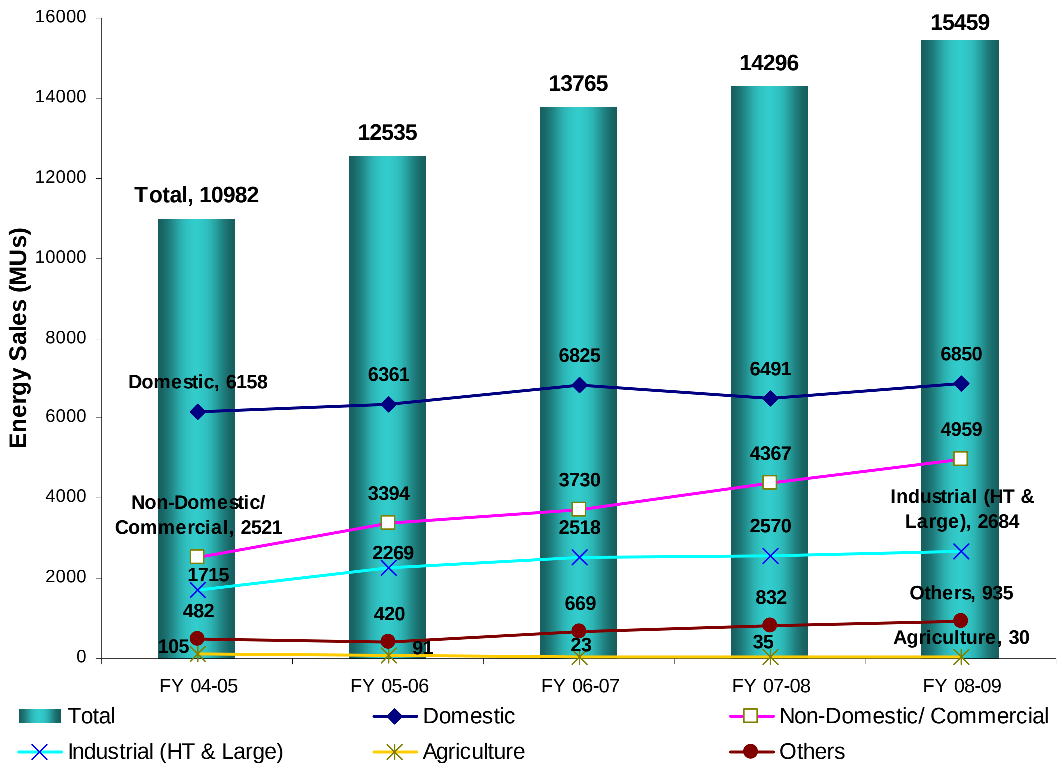
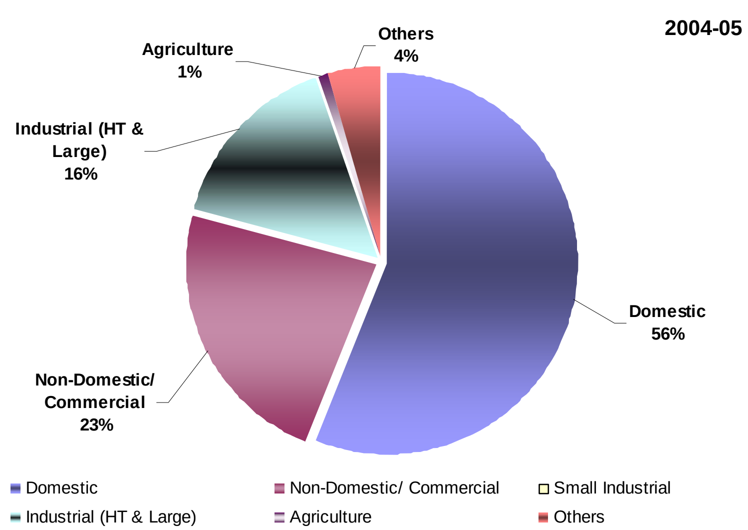
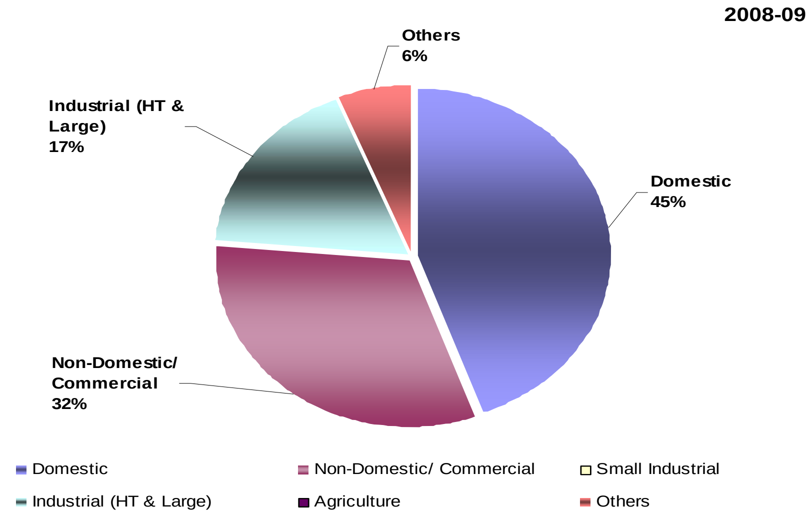


Figure 2 and 3 below illustrate the percent share of the major consumer categories in FY 05 and FY 09 respectively. After domestic category, the 2nd and 3rd largest consumer category has been non-domestic and Industrial (HT Large) with a current share of about 32% and 17% respectively. The demand from the non-domestic consumer base has shown the steepest increase from 23% in FY 05 to 32% in FY 09.

Graph A-5.9: Percent share of consumer categories in approved sales for FY 05



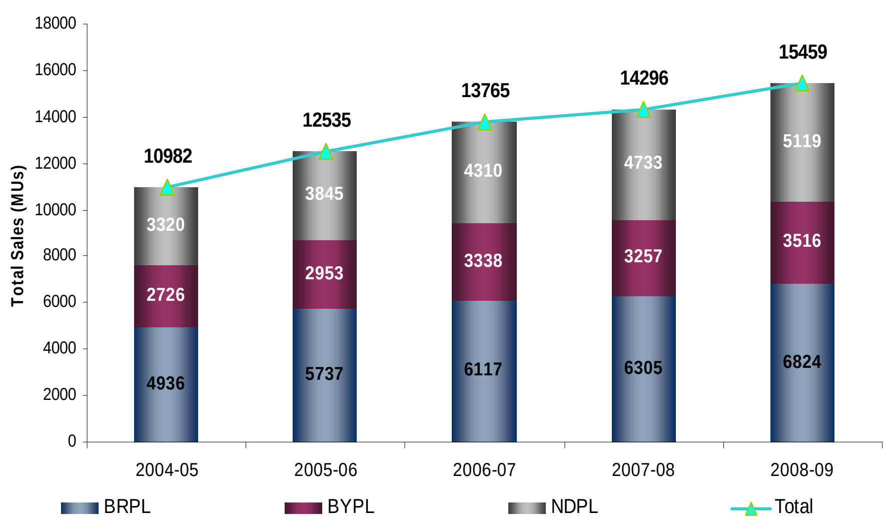
Graph A-5.10: Percent share of consumer categories in approved sales for FY 09



It can however be seen that the consumer mix has not changed significantly from FY 05 to FY 09 except a proportionate increase and decrease in the percent share of non-domestic and domestic categories respectively. The share of domestic sales has declined from 56% in FY 05 to 45 % in FY 09 whereas the non-domestic sales grew from 23% to 32% during the corresponding period. Another change that can be seen between the two pie charts in Figure 2 and 3 below is the disappearance of agriculture category in FY 09 as its percent share in sales has gone down from 1% in FY 05 to less than 1% in FY 09.

The graph below shows the allocation of energy sales in Delhi between the three DISCOMs. BRPL has had the maximum share with more than 40% followed by NDPL with around 33% and BYPL close to about 23%. Though the energy sales have increased by around 41% from 10,982 MUs in 2004-05 to 15,459 MUs in FY 09, the sales allocation between the DISCOMs has remained largely consistent.

Graph A-5.11: Sales allocation between the DISCOMs from FY 05 to FY 09



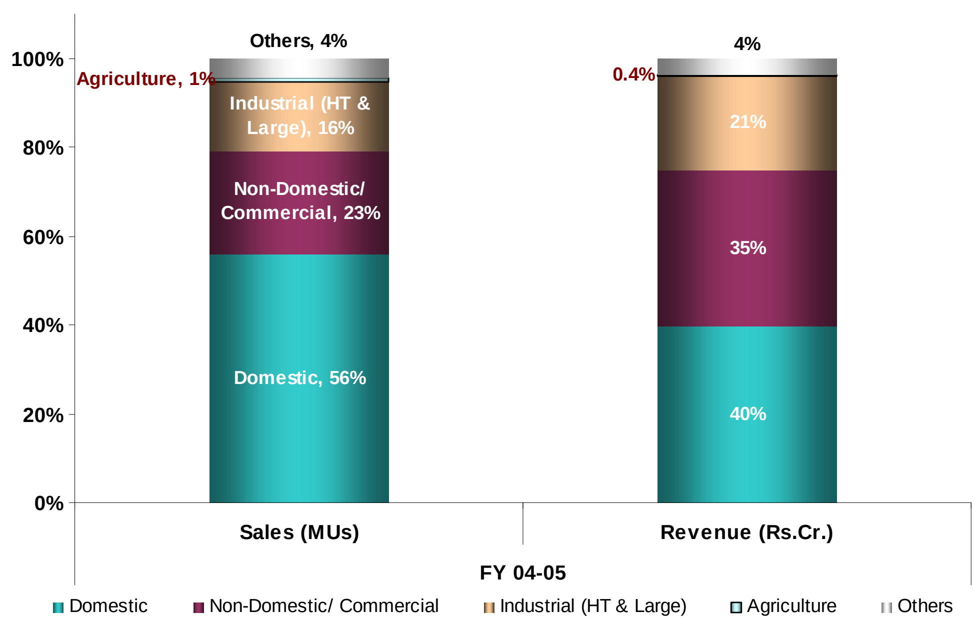
A comparison between the absolute energy sales share of different consumer categories in Delhi and their corresponding revenue contribution from FY 05 to FY 07 is shown in table below.

Table A-5.22: Category wise share in energy sales vis-à-vis revenue contribution

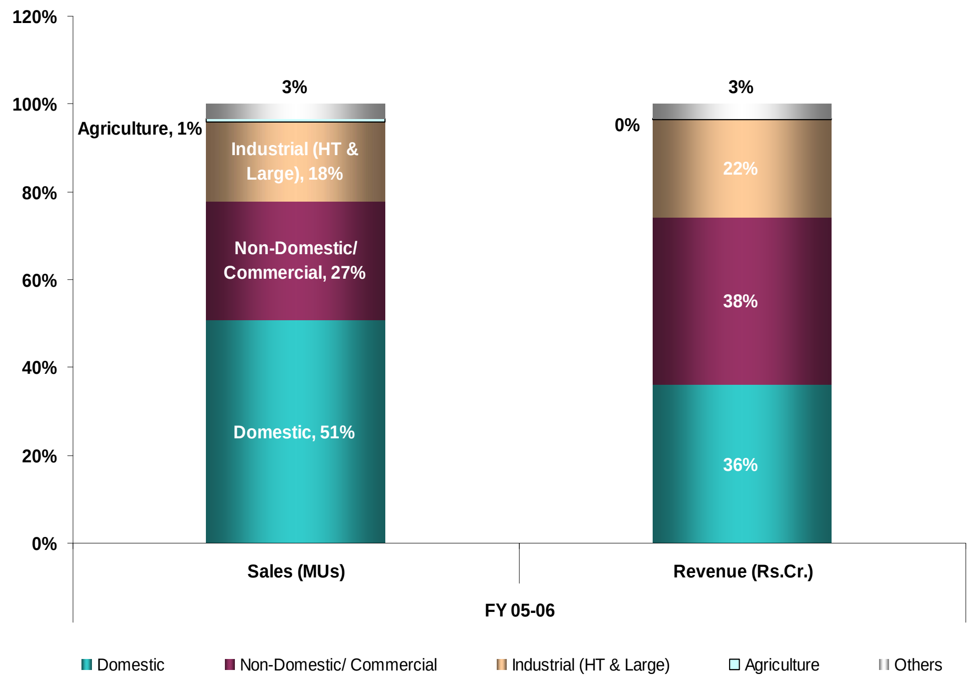
Categories	FY 05		FY 06		FY 07	
	Sales (MUs)	Revenue (Rs. Crs)	Sales (MUs)	Revenue (Rs.Crs)	Sales (MUs)	Revenue (Rs.Crs)
Domestic	6158	1727	6361	1986	6825	2168
Non-Domestic/ Commercial	2521	1536	3394	2078	3730	2263
Industrial (HT & Large)	1715	915	2269	1221	2518	1362
Agriculture	105	16	91	14	23	4
Others	482	159	420	177	669	258
Total	**10981**	**4352**	**12535**	**5476**	**13765**	**6055**

In percent terms, as illustrated in figures 5, 6 and 7 below, a significant fact that can be drawn is that the Industrial consumers which account for just about 16%-18% of total quantum of energy sales contributed more than 20% in the overall revenue realization. The non-domestic category has also contributed significantly by about 35% despite having a modest share of 23% - 27% in the total energy sales quantum. The fact is especially relevant since the domestic category which consumes about 50% of total energy sales makes contribution of less than 40%.

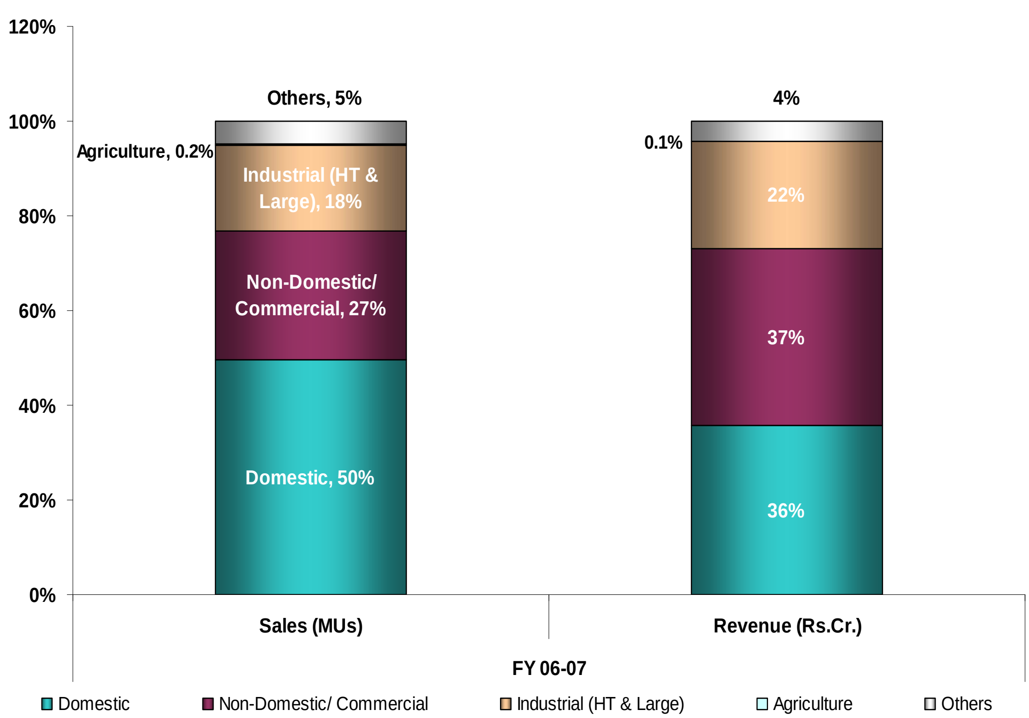
Graph A-5.12: Percent share in energy sales versus contribution to revenue in FY 05



Graph A-5.13: Percent share in energy sales versus contribution to revenue in FY 06



Graph A-5.14: Percent share in energy sales versus contribution to revenue in FY 07



Such disproportion between energy consumed and revenue contributed indicates clear prevalence of cross-subsidy in the state where domestic consumers are to a large extent being subsidized by non-domestic and industrial consumer categories.

AT&C Losses

AT&C loss has been considered and applicable in the state of Delhi since the government privatized the distribution function of the utility. The policy directions issued by the Government specified opening level of AT&C losses and a trajectory for loss level to be achieved by the DISCOMs.

The three DISCOMs were then required to bid for AT&C loss levels that they proposed to achieve in the next 5 years against the trajectory set by the government. The policy provides that:

- In the event of DISCOM achieving AT&C loss level lower than the level bid but higher than that specified by the Government, the entire benefit shall be passed on to the consumers.
- In the event of DISCOM achieving AT&C loss level over the AT&C loss level stipulated by the Government, the DISCOM shall be allowed to retain 50% of the additional revenue resulting from such performance and the balance 50% shall be counted for the purpose of tariff fixation.
- In the event of underachievement based on the AT&C loss reduction levels indicated in the Accepted Bid, the entire shortfall in revenue to the account of the distribution licensee.

The Commission has fixed the AT&C levels for the first 3 years i.e. from FY 05 to FY 07 based on the committed levels specified in the bid.

Since FY 08, the DISCOMs have come under the MYT regime with control period from FY 08 to FY 11. The commission, through the MYT regulations has set minimum AT&C level to be achieved by the DISCOMs by end of the control period with equal reduction each year subject to a minimum reduction of 20% per year. The MYT order has stipulated mechanism for sharing of incentive as follows:

- In the event of overachievement beyond the target incentive AT&C loss level stipulated in the MYT Order, the distribution licensee shall be allowed to retain 50% of the additional revenue resulting from such better performance and the balance 50% shall be utilized for the purpose of tariff fixation
- In the event of underachievement as compared to the minimum AT&C loss levels (20% reduction), the entire shortfall in revenue will be to the account of the distribution licensee.

The table below shows the AT&C loss level approved by the Commission as against proposed by the utility and the actual level determined later during truing up.

Table A-5.23: AT&C Levels proposed, approved and trued up for each DISCOM during FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Approved in the Tariff Order	42.70%	36.70%	31.10%	26.69%	23.46%
Proposed by the Utility	42.70%	36.70%	31.10%	27.92%	25.92%
Trued up by SERC	40.64%	35.53%	29.92%	27.51%	-
Actual claimed by Utility	40.64%	35.53%	29.92%	27.17%	-
BYPL					
Approved in the Tariff Order	50.70%	45.05%	39.95%	34.77%	30.52%
Proposed by the Utility	50.70%	45.05%	39.95%	36.03%	33.03%
Trued up by SERC	50.12%	43.89%	39.03%	30.23%	-
Actual claimed by Utility	50.12%	43.89%	39.03%	29.82%	-
NDPL					
Approved in the Tariff Order	40.85%	35.35%	31.10%	22.03%	20.35%
Proposed by the Utility	40.85%	35.37%	31.10%	22.38%	21.03%
Trued up by SERC	33.79%	26.52%	23.73%	18.29%	-
Actual claimed by Utility	33.79%	26.52%	23.73%	18.31%	-

The comparative analysis shows that all the DISCOMs have actually (trued-up) over achieved the proposed and approved AT&C target levels for all the three years from FY 05 to FY 07. Even for the MYT year FY 08[1], all DISCOMs have over achieved the level approved by Commission barring BRPL (trued-up 27.51% against 26.69% approved), though it managed to keep the loss level below the proposed level of 27.92%. Such performance by the DISCOMs has been encouraged by the Commission by allowing incentives each year as per directives of the policy.

The table below shows the quantum of incentive that has been approved by the Commission for the DISCOMs during each of the years from FY 05 to FY 08.

Table A-5.24: Incentive to DISCOMs for achievement of AT&C levels

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Achievement	2.06%	1.18%	1.18%	-0.17%	0.00%
Incentive share for Consumer	71	46	49	---	---
Incentive share for DISCOM	---	---	---	-7	---
Total Incentive	**71**	**46**	**49**	**-7**	**---**
BYPL					
Achievement	0.59%	1.16%	0.92%	4.54%	0.00%
Incentive share for Consumer	12	27	22	53	0
Incentive share for DISCOM	---	---	---	53	---
Total Incentive	**12**	**27**	**22**	**106**	**---**
NDPL					

[1] True-up order for FY 2008-09 has not been issued by the Commission as yet and therefore could not be considered for assessment.

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Achievement	7.06%	8.83%	7.37%	3.74%	0.00%
Incentive share for Consumer	122	146	134	55	0
Incentive share for DISCOM	37	82	72	55	---
Total Incentive	**159**	**228**	**206**	**110**	**---**

During FY 05 to FY 07, the actual achieved AT&C loss level for BRPL and BYPL is higher than the level based on the minimum level stipulated by the GoNCTD for that year but better (lower) than the level indicated in the Accepted Bid, therefore the entire additional revenue has been utilised for the purpose of tariff fixation. NDPL, however, during all the years from FY 05 to FY 07 has achieved a AT&C loss level lower than the minimum level stipulated by the Government which has resulted in proportionate sharing of the incentive between the Consumer and the DISCOM.

In the first MYT year i.e. FY 08, the actual AT&C loss level achieved by BRPL is worse (higher) than the incentive level because of which the shortfall in revenue has been to the account of the DISCOM. BYPL and NDPL have however over achieved the stipulated level and the resultant additional revenue has been approved to be shared equally between the consumer and DISCOM.

The parameters considered by the Commission for computation of collection efficiency from FY 05 to FY 09 have been

- Late Payment Surcharge
- Past arrears of the DVB collected by the DISCOM on behalf of the Holding Company and

Theft charges (FY 05 to FY 07) and Electricity Duty (FY 08 to FY 09)

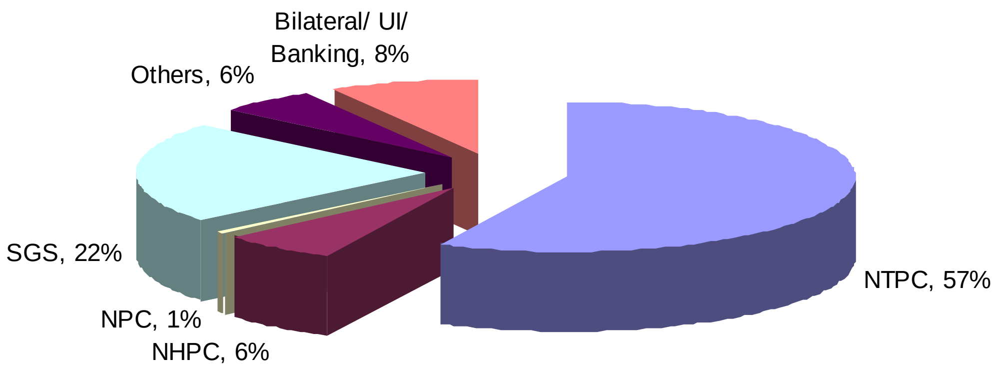
Power Purchase Quantum

DTL (Transmission Company) on behalf of the DISCOMs was responsible for the power purchase from various sources upto the end of the policy direction period i.e. FY 07. The available power was allocated among the DISCOMs based on their estimated sales and T&D losses for the respective year.

Post the policy direction period, the Commission had reallocated all existing Power Purchase Agreements (PPAs) among the three DISCOMs (BRPL, BYPL and NDPL) in proportion to the energy drawn by them from the date of unbundling to February 2007.

The major sources of power purchase for the Delhi DISCOMs are CGS (NTPC, NHPC and NPC), BBMB, State Generating Stations (IPGCL and PPCL), Independent power producers (IPP), bilateral and banking arrangements with other States. Delhi being the Capital State has been enjoying adequate allocation from the various CGS plants. The share of power from State generating stations is approximately 22% in the total availability of power in the State.

Graph A-5.15: Approved Breakup of Power from Various Sources for FY08



During FY 05 to FY 07, the Commission had assessed the availability of power for each of the DISCOM based on the approved sales and T&D losses for the each of the DISCOM. However, for assessing the total power available to each DISCOM for FY 08 and FY 09, the Commission has considered the average of monthly weighted average share of firm and unallocated power for Delhi in CGS over past 22 month and computed the power available from generating stations to each DISCOM based on the assignment of PPAs.

The trend of Plant Load Factor (PLF) & Auxiliary Consumption of the generating stations in the past years have been considered by the Commission for arriving on the availability of power from each generating station. The methodology adopted by the Commission for estimation of power available from SGS is based on the approved technical parameters for each generating station for FY 08 and FY 09 in the Tariff Orders of IPGCL and PPCL.

The Commission has also approved power purchase from other sources like bilateral arrangements, intra-state purchases and banking arrangements to meet the peak demand during the summer and winter months. The Commission had encouraged the purchase of power through banking arrangements by passing an Order dated June 12th, 2007 in view of reducing the cost of power purchased during peak demand. Since more than 10 months had already elapsed at the time of the issue of MYT Order for FY 08 and FY 09, the Commission had considered actual of 9 months and had approved an additional power purchase from other sources for FY 08. For FY 09, the Commission had approved 5% of annual power requirement for FY 09 against power purchase from other sources (25% intra-state, 15% banking and balance 60% through bilateral arrangement) to meet the peak demand.

Further, the 15% unallocated share of power from SGS is at the disposal of the GoNCTD which apportions the unallocated quota among the three DISCOMs based on their energy deficit and regulate the power purchase cost of a DISCOM. Any change in this allocation has a major impact on the power purchase quantum as well as the cost of each of the DISCOM.

Any surplus power after meeting the requirements of the area of distribution licensee has been estimated to be sales through other sources (intra-state and bilateral). The Commission has approved the surplus power after accounting for demand in the distribution area to be sold through inter-state (75%) and intra-state (25%) arrangements.

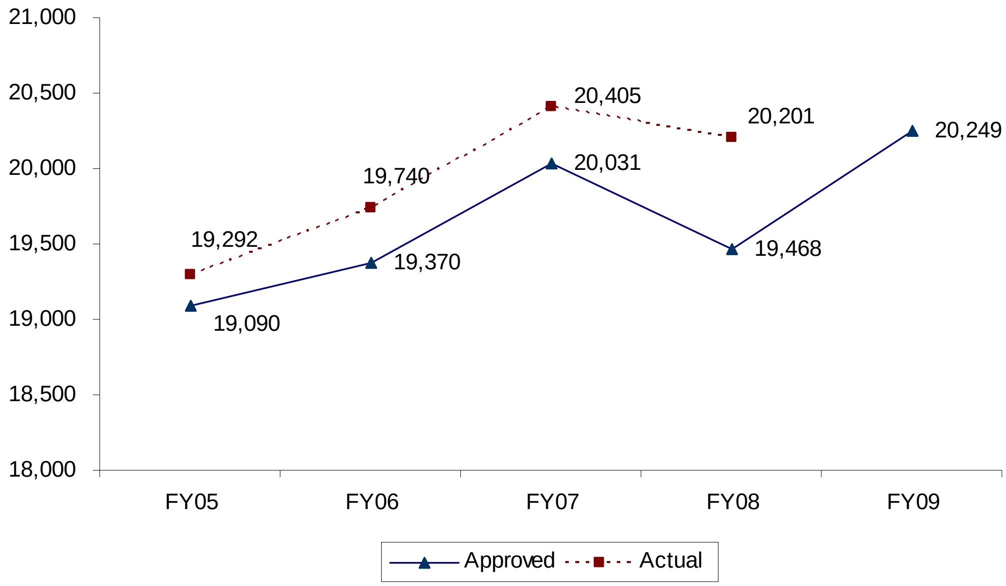
Table A-5.25: Approved and Trued-up Power Purchase Quantum for FY 08 (MUs)

	Approved				Trued-up			
Sources	BRPL	BYPL	NDPL	Sum	BRPL	BYPL	NDPL	Sum
NTPC	5,577	4,654	3,734	13,966	5,696	4,665	3,829	14,191
NHPC	681	426	456	1,562	703	439	472	1,613
NPC	73	45	49	167	34	22	23	79
SGS	1,963	2,022	1,314	5,299	1,833	1,811	1,230	4,874
Others	617	386	413	1,417	451	282	308	1,041
Bilateral/UI/Banking	1,034	100	870	2,004	1,570	303	1,112	2,986
Gross Power Available	**9,945**	**7,633**	**6,837**	**24,415**	**10,287**	**7,522**	**6,974**	**24,783**
Surplus Power Sold	1,076	2,484	584	4,144	630	1,968	433	3,031
Net Power Available (after PGCIL & DTL losses)	**8,515**	**4,944**	**6,010**	**19,468**	**9,272**	**5,285**	**6,275**	**20,831**

The trued-up net available power for the purpose of meeting the demand in the distribution area is 20.8 Billion Units as compared with the 19.5 Billion Units approved by the Commission. The increase during FY 08 was primarily on account of higher than estimated sales for all the three DISCOMs resulting in lower than estimated surplus power available for sale outside State.

A comparison of the approved and trued-up power purchased quantum for all the three DISCOMs during FY 05 to FY 09 is summarized in the graph below:

Graph A-5.16: Approved & Actual Net Power Purchase Quantum* (MUs)



**The power purchase quantum is after subtracting PGCIL & DTL losses and surplus*

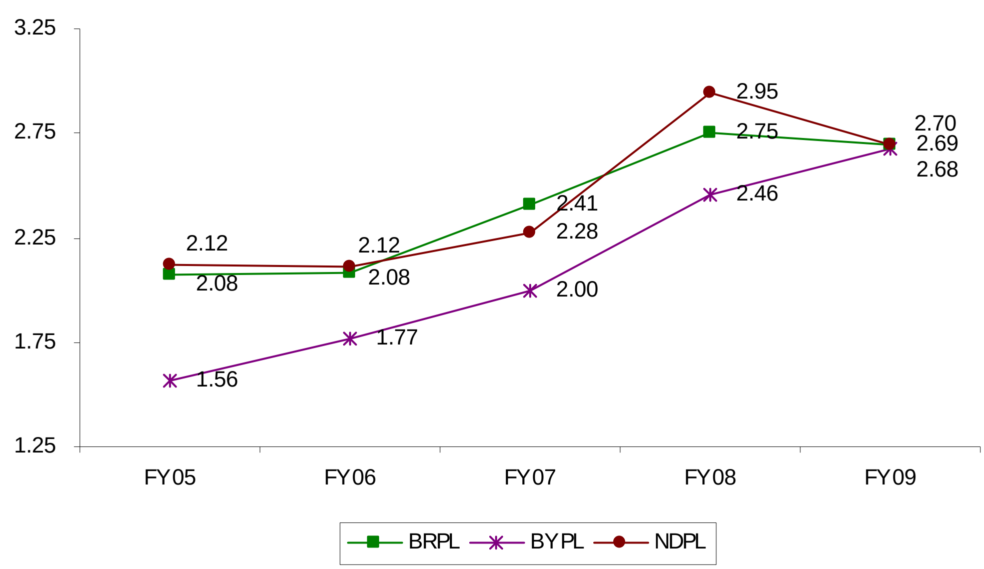
It is observed from the above graph that the Commission has been projecting lower requirement of power for the DISCOMs whereas at the end of the year, the trued-up power purchase quantum has been higher for all the four years. However, the variations have been in the range of 1-4% of the approved power purchase quantum.

Power Purchase Cost

During the Policy Direction Period i.e. FY03 to FY 07, DTL was responsible for the power purchase from the various sources. The DISCOMs were required to pay to DTL for the power purchase cost as per the Bulk Supply Tariff (BST) computed by the Commission. However, considering that the DISCOMs revenue realization was short of the ARR and would have lead to an increase in tariff in the State, the GoNCTD had extended a support of Rs. 3450 Crs to be passed on by the way of lower BST over a period of 5 years. Further, considering the variation in sales mix, annual expenses (other than power purchase) and AT&C losses among the DISCOMs, a similar tariff in the State was not possible. Therefore, the BST of the DISCOMs was to be computed based on their paying capacity. In other words, the DISCOMs were required to pay to DTL after meeting all expenses of the ARR (except power purchase cost). The gap of DTL on this account was to be met by the GoNCTD from the support planned as per the Policy Direction.

Therefore, the Commission determined the BST for each of the DISCOM in the Tariff Orders for FY 05 to FY 07 based on their ability to pay. The same is evident from the graph below where the cost of power purchase for BYPL has been lower than that of BRPL and NDPL due to its lower capacity to pay.

Graph A-5.17: Approved Power Purchase Cost per Unit (Rs. Per KWh)



Post the Policy Direction Period, the PPAs were assigned to the DISCOMs in proportion to the energy drawn by them from the date of unbundling upto February 2007 and the power availability and cost for each DISCOM was computed separately for FY 08 and FY 09.

The cost from State generating stations was considered based on the fixed and variable cost approved by the Commission in the generating company tariff order. For the Central generating stations, the annual fixed charges was considered based on relevant CERC order and the share of power from the generating station while the variable cost was approved by applying an escalation of 3% and 4% on actual variable cost of FY 07 for coal and gas based plants, respectively. The Commission has also considered other cost like incentive, tax, etc based on previous year cost. The power purchase cost from new plants was approved based on either the PPA signed by the DISCOM and generating station or an indicative rate.

Since the Commission has approved the power purchase from other sources like bilateral, intra-state and banking, the cost for the same has been considered as following for FY 08 and FY 09:

- Bilateral : Previous year trends
- Banking : Normative rate of Rs. 4.00 per unit
- Intra State : Normative rate of Rs. 2.75 per unit

Since the MYT Order was issued by the Commission after 11 months had elapsed in the first year of the MYT Control Period i.e. FY 08, the Commission had considered actual cost for bilateral power purchase for 9 months. Further, the surplus power as approved by the Commission has been considered to be sold by the DISCOMs under bilateral, intra-state and banking agreements at rates specified below:

- Bilateral : Previous year trends
- Banking : Normative rate of Rs. 4.00 per unit
- Intra State : Normative rate of Rs. 2.75 per unit

The Commission has reduced the revenue from the sale of surplus power from the total power purchase cost for FY 08 and FY 09. However, this leads to large variation in the per unit net power purchase cost for each DISCOM as the quantum of surplus power varies in case of each DISCOM. The Commission has not project any power purchase and sales under UI in the Tariff Orders for FY 08 and FY 09 but the same is considered at the time of true-up.

A comparison of the approved and trued-up net power purchase cost of the DISCOMs is summarized in table below:

Table A-5.26: Approved and Trued-up Net Power Purchase Cost* for (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Approved Cost	1,743	1,789	2,099	2,298	2,390
Trued-up Cost	1,654	1,876	2,096	2,566	
BYPL					
Approved Cost	830	904	1,090	1,094	1,268
Trued-up Cost	798	921	989	1,102	
NDPL					
Approved Cost	1,141	1,196	1,340	1,759	1,708
Trued-up Cost	1,105	1,203	1,309	1,703	
Total					
Approved Cost	3,714	3,889	4,529	5,151	5,366
Trued-up Cost	3,557	4,000	4,394	5,371	

**including revenue from sale of surplus power*

The net power purchase cost upto FY 07 has remained similar as the additional power purchase cost was being met by the GoNCTD by the way of support. For FY 08, the variation in the approved and trued-up net power purchase cost was Rs.221 Crs (after accounting for revenue from sale of surplus power) which was remaining with the DISCOMs for treatment in subsequent years from the surplus revenue (if any). The variation in power purchase cost for each DISCOM from FY 08 onwards would primarily depend on the allocation of unallocated quota (Govt share) in the Delhi Generating Stations and availability of surplus power. The same is evident from trued-up numbers for FY 08 where BRPL was short by Rs.268 Crs on account of power purchase cost while BYPL was short by Rs.8 Crs only as the allocation of BYPL in the Delhi Generating Stations was higher.

Table A-5.27: Power purchase cost per unit for the DISCOMs (In MUs)

Particulars	FY05	FY06	FY07	FY08	FY09
Power purchase cost (BRPL)	**1,743**	**1,789**	**2,099**	**2,639**	**2,620**
Power purchase cost (BYPL)	**5,307**	**5,106**	**5,448**	**7,428**	**7,106**
Power purchase cost (NDPL)	**5,392**	**5,655**	**5,882**	**6,593**	**7,391**
Power purchase quantum(MU) (BRPL)	8,391	8,609	8,701	9,591	9,723
Power purchase quantum(MU) (BYPL)	**830**	**904**	**1,090**	**1,827**	**1,901**
Power purchase quantum(MU) (NDPL)	**1,141**	**1,196**	**1,340**	**1,944**	**1,995**
Power Purchase cost per unit(BRPL)	**2.08**	**2.08**	**2.41**	**2.75**	**2.69**
Power Purchase cost per unit(BYPL)	**1.56**	**1.77**	**2.00**	**2.46**	**2.68**
Power Purchase cost per unit(NDPL)	**2.12**	**2.12**	**2.28**	**2.95**	**2.70**

O&M Cost

Employee Expenses

For approving the employee expenses for FY 05, the Commission has projected each component of the employee expenses rather than applying a growth rate on the overall employee expenses of FY 04. The Commission has made the following assumptions:

- Increase in Basic Salary by 3% over past year (DA equivalent to 50% of basic has been merged into Basic)
- 11% of Basic has been considered for Dearness Allowance
- Terminal Benefits of 26% of Basic plus Dearness Allowance
- Other Allowances have been considered in proportion of the basic salary
- Other components like staff welfare, other allowances, medical reimbursements, and bonus/ex-gratia, have been considered on proportionate basis based on the actual expenses during FY 05
- Capitalization of 10% has been deducted from employee cost

The DISCOMs in their FY 05 petition has submitted the expense of Rs. 318 Crs on account of Special Voluntary Retirement Scheme (SVRS). The Commission has assessed the following two options for amortization of cost of SVRS:

• Option 1: Amortization of entire SVRS expense within 1 year

• Option 2: Amortization of SVRS expense by spreading it over next 2-3 years through savings in Employee Costs

The Commission had taken a view that the Option 2 would be appropriated given that the same will be tariff neutral and will not result in a tariff shock for the consumers of Delhi. Further, it was envisaged that the expenditure on SVRS, the borrowing cost, and increase in other expenses due to implementation of this scheme, if any, would be met from the savings in Employee Costs over the future years and post the recovery of the SVRS cost, the savings in employee expenses will be made available for the purpose of ARR computation.

The DVB Employees Terminal Fund 2002 filed a response during the ARR and Tariff determination process stating that the DISCOMs have not consulted the Trust before the declaration of VRS/SVRS and therefore, the Trust is not liable to discharge the liabilities arising on these schemes. The Trust also submitted that the additional burden created on account of SVRS scheme can only be discharged by the Trust on the basis of a suitable compensation for the additional expenditure. Additional the Trust submitted that the same was not included by the DISCOMs while computing the total liability on account of SVRS and the same would amount to a total of Rs. 796 Crs.

In view of the fact that the matter of additional liabilities on account of implementation of SVRS is yet to be resolved between the Trust and the DISCOMs, the Commission has amortised the SVRS expenses during the next 3-4 years. Based on this mechanism, the Commission has projected the employee expenses without considering the costs of SVRS and savings in employee costs due to SVRS. Additionally, the increase in A&G expense on account of outsourcing of meter reading and billing expenses has also not been considered by the Commission in the ARR. This method of treatment of SVRS outgo and its savings will be beneficial to the consumers, as it maintains the employee costs at prudent levels and will be tariff neutral for around 2-4 years post which there would be substantial reduction in employee expenses that will be passed on to consumers in ARR and tariffs.

For FY 06 and FY 07, the Commission has approved the employee cost considering the following set of assumptions:

- Increase in Basic Salary by 3% over past year
- Increase in DA by 6% over past year for FY 06 and DA computed as 27% of the Basic salary for FY 07
- Terminal Benefits of 26% of Basic plus DA (excluding additional liability on account of SVRS)
- Other Expenses have been considered as a proportion of the Basic Salary
- Capitalization has been assumed in the same proportion as last year actual for FY 06 while the Capitalization in the FY 07 Tariff Order has been linked to approved addition in assets

With the commencement of MYT regime from FY 08, the Commission has approved O&M expenses as a whole for FY 08 and FY 09. However, the approval of the employee cost (part of O&M) has been undertaken in line with the Delhi Electricity Regulatory Commission (Terms and Conditions for Determination of Wheeling Tariff and Retail Supply Tariff) Regulations, 2007. Following factors have been considered by the Commission for approval of the employee cost:

- Trued-up employee cost for FY 07 has been considered as the base for projection of employee cost for FY 08 and FY 09
- Inflation factor has been computed as INDXn / INDXn-1 where

  INDXn = 0.55*CPIn +0.45*WPIn

  **CPI and WPI are for trailing 5 years*
- Impact of 6th pay Commission
- Provision for SVRS Employees
- Capitalization of based on ratio of approved asset capitalization and asset capitalization proposed by the Petitioner

Repairs and Maintenance Expenses

The approach adopted by the Commission for the approval of the R&M expenses has varied across each Tariff Order. For FY 05, the Commission had approved the R&M expenses based on previous year approved R&M without any escalation on account of reasons:

- Capital expenditure in the previous 2 years and the proposed capex for FY 05 will result in reduction of R&M expenses
- Under the current practice, the DISCOMs are booking part of the capex (eg. New transformers, meters, etc) under R&M expense which should ideally be capitalized

The Commission has also directed the DISCOMs to maintain a separate record of the items issued from the Stores for R&M works and submit the same to the Commission on quarterly basis

For FY 06 the Commission approved the R&M expense with an increase of 4% over actual R&M expenditure for previous year. In the Tariff Order of BRPL & BYPL for FY 07, the Commission accepted the Petitioner proposed R&M expense as the same lower than the approved R&M expense approved by the Commission for FY 06. However, for NDPL, the Commission has considered the costs for various components of R&M Expenses, as estimated by the Petitioner in its ARR and Tariff Petition for FY 07, except meter reading expenses and for security expenses which has been considered by providing an escalation of 10% to the level of security expenses approved for FY 06 by the Commission.

Under the MYT framework, the R&M expense is determined as a % of opening GFA as per the formula prescribed in the Regulations:

R&Mn = K * GFA n-1

where K factor for the Control Period is the average K factor of past 5 years (i.e. FY02 to FY 06)

The table below summarizes the net R&M expenses (after deducting the R&M expenses capitalized):

Table A-5.28: Approved R&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL	53	72	71	72	89
BYPL	31	48	48	32	43
NDPL	32	56	52	57	71
Total	**116**	**176**	**171**	**162**	**203**
Total R&M as % of Consolidated ARR	*2.45%*	*3.46%*	*2.97%*	*2.27%*	*2.79%*

Administrative and General Expenses

The Commission has approved A&G expenses for the DISCOMs by applying an escalation of 5% on some categories of the A&G expenditure for FY 04 which translates into a 4% overall increase in A&G expenditure for FY 05. However, considering the savings on account of reduction in employees (implementation of SVRS), the Commission had a view that the A&G expenses will reduce. Therefore, the Commission has approved the A&G expenses for FY 05 at the same level as approved in the true-up of FY 04.

For FY 06 and FY 07, the Commission has provided an escalation of 4% on the A&G cost of previous year. Service tax, property tax, legal charges, etc has been provided separately on a case to case basis for the various DISCOMs. During the MYT period, A&G expenses have been computed based on the methodology specified in the MYT Regulations:

- Trued-up A&G expense (excluding non-recurring expenditure) for FY 07 has been considered as the base
- The A&G expense of the base year has been escalated by the escalation factor calculated as follows:

  INDXn / INDXn-1

  where INDXn = 0.55 * CPIn + 0.45 * WPIn

  where CPI and WPI are for immediately preceding five years

O&M Expenses

The total O&M expense approved in the tariff order for FY 05 to FY 09 has been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission. However, the formula specified for approving the O&M expense under the MYT period is as follows:

O&Mn = (R&Mn + EMPn + A&Gn)* (1 – Xn)

Xn is an efficiency factor for nth year. Value of Xn shall be determined by the Commission in the MYT Tariff order based on Licensee's filing, benchmarking, approved cost by the Commission in past and any other factor the Commission feels appropriate.

Apart from computing the employee cost, A&G cost and R&M expenses during the MYT period, the above formula also specifies an efficiency factor which is desired to be brought about by the distribution licensee during the control period. The Commission has assumed an efficiency of 0% and 2% for FY 08 and FY 09, respectively in the O&M expenses on account of the repetitive nature of O&M works and introduction of new technologies.

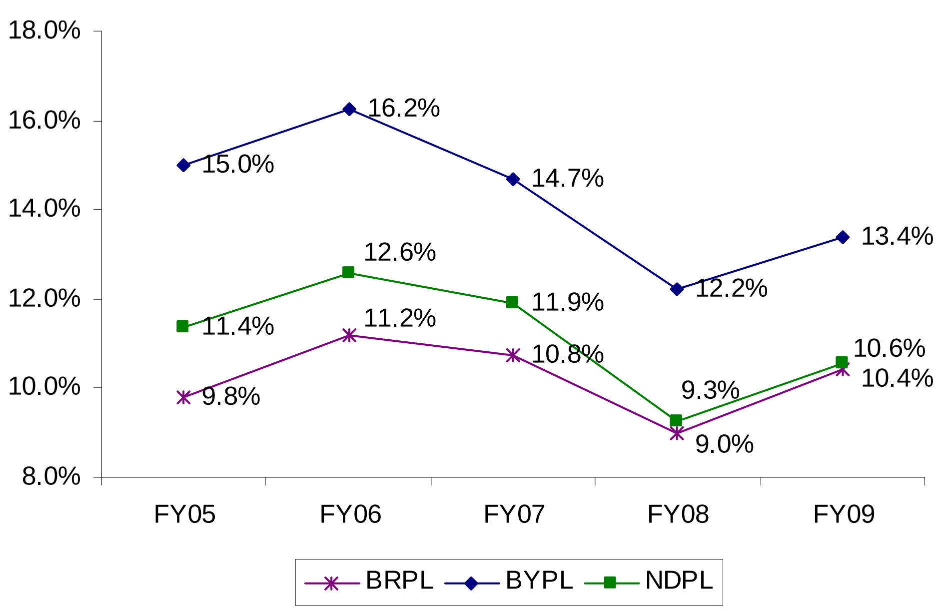
The total O&M expense approved by the Commission in each of the Tariff Order is summarized below:

Table A-5.29: Approved O&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL	209	252	279	289	334
BYPL	162	197	201	190	224
NDPL	170	203	213	220	253
Total O&M Expense	**541**	**652**	**693**	**698**	**811**

The proportion of O&M expenses as total ARR has declined for all the three DISCOMs but the same is primarily on account of increase in power purchase cost as a proportion of total ARR. The O&M expense as percentage of total ARR amongst the three DISCOMs is the highest for BYPL as reflected in the graph below.

Graph A-5.18: Approved O&M Cost as % of Total ARR for BRPL, BYPL & NDPL



Capital expenditure (Capex)

In the FY 05 Tariff Order, the Commission had shown concern over high capital investment proposed by the DISCOM and had directed them to submit the scheme-wise details, preparedness and the cost benefit analysis of the capital investment proposed in FY 05. The DISCOMs have complied partly with the information requirement. Though, the Commission acknowledges the investment required in the transmission and sub-transmission system (as per the Comprehensive Study Report of CEA), the Commission has shown its concern over implementation of proposed investments by the DISCOM based on the prior two year actual implementation undertaken.

Based on the details submitted by the DISCOMs regarding the status of preparedness of the proposed investment and need for integration of the implementation plan, the Commission had approved the investment plan at the normative level (based on approved investment for FY 04, actual investment during FY 04 and proposed investment for FY 05).

The Commission also directed the DISCOMs to take prior approval for all schemes which amount to more than Rs. 2 Crs by submitting DPR and cost benefit analysis. Further, the Commission reiterated its earlier direction for submission of quarterly progress report of investments.

In the subsequent tariff orders of FY 06 and FY 07, the Commission has followed a similar approach for approval of the capital expenditure taking into account the actual investment, extent of assets capitalized and the corresponding AT&C loss reduction achieved in the previous years. In the MYT Order for FY 08 and FY 09, the Commission has approved the investment plan for the Control Period at a normative level considering actual investment made during the past years and assessing system requirement for the ensuing period.

A comparison of the claimed, approved and trued-up capital expenditure for the DISCOMs is provided in the table below:

Table A-5.30: Petitioner Claimed, Approved and Trued-up Capital Expenditure of DISCOMs (Rs. Crs)

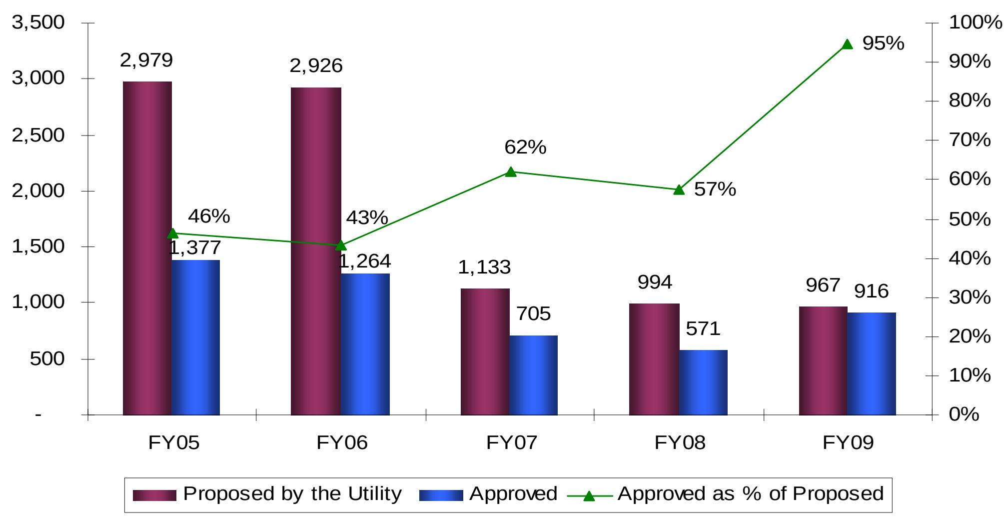
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Proposed by the Utility	1,149	1,400	488	380	484
Approved	526	477	271	128	391
Trued-up	539	619	306	-	-
Disallowance of Proposed Capex with respect to Approved	(623)	(923)	(217)	(252)	(93)
BYPL					
Proposed by the Utility	1,539	1,165	360	281	295
Approved	548	426	224	118	300
Trued-up	405	316	209	-	-
Disallowance of Proposed Capex with respect to Approved	(992)	(739)	(136)	(163)	5
NDPL					
Proposed by the Utility	290	361	285	333	188
Approved	303	361	210	325	225
Trued-up	328	319	271	-	-

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Disallowance of Proposed Capex with respect to Approved	13	-	(75)	(8)	37

As per the above analysis, the disapprovals for BRPL and BYPL have been high as compared to NDPL. The proposed capital expenditure by NDPL is realistic and has been approved by the Commission with minor disallowances in each of the Tariff Order. Also, the trued-up capex for NDPL is in line with the approved capex by the Commission. In case of BRPL and BYPL, the proposed capex amounts are very high and have been determined without taking into consideration the achievability of investment of such stature. Therefore, capex approved by the Commission is much lower and realistic. The reasonability of the approved capex is also established by the fact that the trued-up capex is closer to the approved capex as compared with proposed and trued-up capex in each of the years.

A comparison of the proposed and approved for all the three DISCOMs i.e. BRPL, BYPL and NDPL is summarized in the graph below:

Graph A-5.19: Claimed and Approved Capital Expenditure for Delhi (Rs. Crs)



For funding the capex approved in the Tariff Orders for FY 05 to FY 09, the Commission has considered a debt to equity ratio of 70:30 after excluding the capital expenditure funded through consumer contribution, APDRP Grant / Loan and depreciation.

<u>Asset Capitalization</u>

For FY 05, the Commission has considered the asset capitalization based on the assumption that the CWIP carried forward from FY 04 will be fully capitalized during FY 05 and 60% of the new investments approved in FY 05 will be capitalized during the year. In the subsequent Tariff orders, the Commission has approved capitalization considering 100% capitalization of previous year CWIP and 50% capitalization of new investments. The capitalization for FY 08 & FY 09 was done considering provisional closing balance of

CWIP of FY 07 as the same could not be trued-up due to insufficient information submitted by the DISCOMs.

Depreciation

For FY 05, the Commission has continued with the methodology adopted in the previous tariff order and had applied a average depreciation rate of 3.75% considering the average fair life of the lines and cables network at distribution voltages as 25 years. The Commission had adopted this methodology in absence of details of CWIP and the historical value of various categories of the assets submitted by the DISCOMs for the purposes of the ARR determination. The Commission has also reiterated its view of FY 04 tariff order *"The Commission has hence considered the depreciation rate as 3.75% for the purposes of this ARR. The Commission is of the view that in the future, the depreciation computed at the rate of 3.75% may be higher or lower than the rate based on the actual FAR, and is of the opinion that this can be adjusted against the actual depreciation chargeable, under the truing up mechanism."*

Further, the Commission has also stated the following in the Tariff Order:

"The Commission is of the view that as depreciation is a non-cash expenditure and there is no scheduled loan repayment, the reduction in the depreciation expenditure will not affect the Petitioner's operations as all legitimate and prudent expenditure is being considered for the purposes of determination of the ARR. Accordingly, the Commission has continued to use the depreciation rate of 3.75% for the purposes of the ARR."

For FY 06 & FY 07, the Commission has applied the CERC prescribed depreciation rates as per the Annexure II of the CERC (Terms and conditions of Tariff) Regulations, 2004. The Commission had computed a weighted average depreciation rate of 3.32%, 3.58% and 3.24% for BRPL, BYPL and NDPL, respectively, based on the opening level of assets.

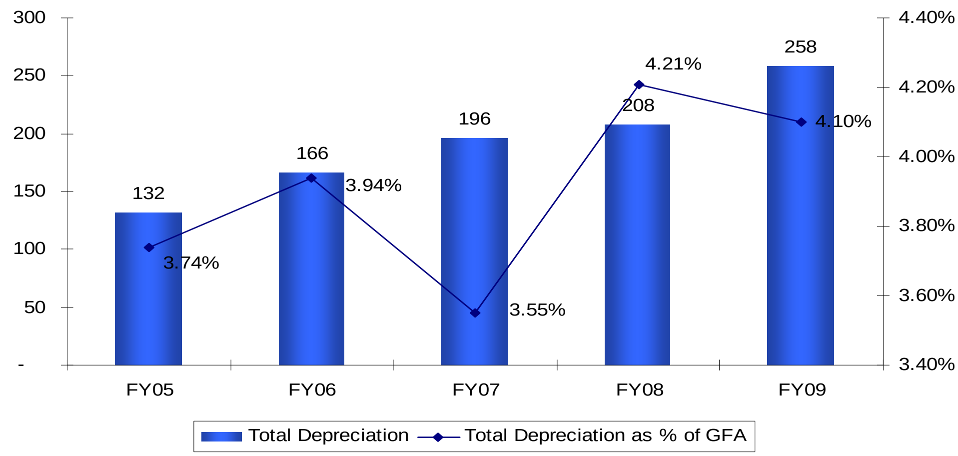
The Commission has also directed the DISCOMs in the FY 06 Tariff Order to submit the break-up of opening block of assets and assets capitalized during the year as per the classification specified in the Appendix II of CERC regulations while submitting the petition for FY 07. Difference in depreciation on account of computation of depreciation as per classification and rates in the Tariff Order and actual classification of assets as per the Appendix II and corresponding rates shall be trued-up in the subsequent Tariff Order.

For the MYT control period, the Commission has approved the depreciation based on the average of opening and closing value of assets approved during the control period and the rates of depreciation specified in the MYT Regulations, 2007. The Commission, while determining the depreciation has considered the closing value of gross fixed assets for FY 07 approved by the Commission after truing up due to difference in capitalization in the previous years. Additionally, depreciation on assets funded by any capital subsidy / grant has not been provided for by the Commission in any of the Tariff Orders.

The Commission has also computed the advance against depreciation (AAD) after the applicability of depreciation as per CERC norms. However, due to no debt liability in the initial years no AAD was applicable. During the MYT period i.e. FY 08 and FY 09, AAD was applicable only in case of BYPL.

The total approved depreciation for the DISCOMs and depreciation as a percentage of gross fixed assets is reflected in the graph below:

Graph A-5.20: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



Note: Depreciation as % of opening gross fixed assets has been computed, Advance against depreciation has not been included

Working Capital Requirement

The Commission has approved the normative working capital requirement in each of the Tariff Orders from FY 05 to FY 09. However, the variables for computation of during the MYT Period i.e. FY 08 to FY 09 have been revised compared with the Policy direction period i.e. FY 05 to FY 07. Since the power purchase was transferred to the DISCOMs with effect from 1st April, 2007, the normative working capital during the MYT Period included the amount equivalent to 2 months receivables and reduction of amount equivalent to one month of power purchase.

The parameter for determination of working capital requirement during the policy direction period and MYT regime is summarized in table below:

Table A-5.31: Parameter for Computation of Normative Working Capital

Policy Direction Period FY 05 to FY 07	MYT Framework FY 08 to FY 09
2 months R&M expenses	2 months Average Billing
1 month cash expenses i.e., Salary, A&G and R&M expenses	1 month O&M expenses
	Less: 1 month Power Purchase

Interest Expense

The Commission has considered interest rate of 11.5% for APDRP loans and 9% for commercial borrowings in the FY 05 Tariff Order. These rates have been considered based on the prevailing long-term lending rates. Interest expense on short-term loan and working capital facility has not been approved by the Commission as the funding of working capital has been considered to be through cash available from the allowed non-cash depreciation expense.

For FY 06, the Commission has assumed an interest rate of 8.5% for new loans based on the prevailing interest rates. The interest on existing loans had been considered based on the interest rate as available from the loan agreements. Interest for working capital has been assumed to be funded from approved depreciation expense in line with the methodology considered in FY 05 Tariff Order. The Commission has utilized a similar approach for approval of interest cost for FY 07. Additionally, an interest cost for DPCL loan @12% has also been provided by the Commission as the moratorium period of payment of interest on DPCL loan was to end on 30th June 2006. The Commission has indicated in the FY 07 Order that the DISCOMs should undertake efforts to swap the DPCL loan with lower interest rate loans in the benefit of the consumers.

For FY 08 and FY 09 (MYT Period), the Commission has taken effect of interest cost in the RoCE by computing the average cost of debt for each DISCOM. For computing the average cost of debt for the Control Period, the Commission has made the following assumptions:

- Repayment schedule and interest rate for outstanding loans as on 1 April 2007
- Repayment schedule and interest rate @ 9.15% as per loan agreement for DPCL loan which has been refinanced through IDBI
- Interest rate of 2.75% below SBI PLR (i.e. 9.50%) for new loans taken for capital expenditure and working capital during the Control Period. The interest rate is based on the information submitted by the DISCOMs regarding the terms & conditions of the loans taken during FY 07

Since the asset capitalization is subjected to true-up under the MYT Regulations, the Commission will true-up for the means of finance at the end of the Control Period. The interest rates considered for new loans taken for capital investment and working capital requirement will be trued-up by the Commission in case the deviation in the PLR of the scheduled commercial banks is more than 1% on either side.

Table A-5.32: Interest Cost Approved for BRPL, BYPL and NDPL (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08*	FY 09*
BRPL	11	25	85	-	-
BYPL	22	35	37	-	-
NDPL	22	35	80	-	-
Total Interest Cost	**55**	**94**	**201**	**-**	**-**

**Included under Return on Capital Employed during the MYT Control Period*

Rate of Return

The Commission has approved return on equity (RoE) in the Tariff Orders for FY 05 to FY 07 on the opening level of equity and average free reserves during the year. A rate of return of 16% has been considered by the Commission to compute the return on equity in line with the policy directions issued by the GoNCTD. For FY 08 and FY 09, the approach for rate of return has been changed by the Commission to Return on Capital Employed

(RoCE) as per the MYT Regulations. As per the Regulations, RoCE shall be used to provide a return to the Distribution Licensee (which will provide for all financing costs including interest on loans and interest on working capital).

The Regulations provide for a 14% return on equity to the distribution licensee in computation of WACC for the wheeling business. Further, the Regulations provides for providing retail supply margin but limits the same to a maximum of 16% of the total wheeling and retail supply business equity. Clause 5.39 of the Regulations states the following:

"The Commission shall specify the retail supply margin in such manner that the return from the Wheeling Business and Retail Supply Business shall not exceed 16% of equity."

Under the MYT Regulations for Distribution Licensee, RoCE will be computed as per following methodology:

"5.7 The RRB shall be determined for each year of the Control Period at the beginning of the Control Period based on the approved capital investment plan with corresponding capitalisation schedule and normative working capital.

5.8 The Regulated Rate Base for the ith year of the Control Period shall be computed in the following manner:

RRBi = RRB i-1 + ΔABi /2 + □WCi;

Where,

'i' is the ith year of the Control Period, i = 1,2,3,4 for the first Control Period;

RRBi: Regulated Rate Base for the ith year of the Control Period;

ΔABi: Change in the Regulated Rate Base in the ith year of the Control Period.

This component shall be the average of the value at the beginning and end of the year as the asset creation is spread across a year and is arrived at as follows:

RRB i-1: Regulated Rate Base for the Financial Year preceding the ith year of the Control period. For the first year of the Control Period, RRB i-1 shall be the Regulated Rate Base for the Base Year i.e. RRB_O;

$RRB_O = OCFA_O – AD_O – CC_O$;

Where;

$OCFA_O$: *Original Cost of Fixed Assets at the end of the Base Year available for use and necessary for the purpose of the Licenced business;*

AD_O: *Amounts written off or set aside on account of depreciation of fixed assets pertaining to the regulated business at the end of the Base Year;*

CC_O: *Total contributions pertaining to the OCFAo, made by the consumers towards the cost of construction of distribution/service lines by the Distribution Licensee and also includes the capital grants/subsidies received for this purpose;*

ΔWCi: Change in normative working capital requirement in the ith year of the Control Period, from the (i-1)th year. For the first year of the Control Period (i=1), ΔWC1 shall be taken as the normative working capital requirement of the first year.

5.9 Return on Capital Employed (RoCE) for the year 'i' shall be computed in the following manner:

RoCE =WACCi * RRBi

Where,

WACCi is the Weighted Average Cost of Capital for each year of the Control Period;

RRB - Regulated Rate Base is the asset base for each year of the Control Period based on the capital investment plan and working capital.

In the MYT Order, the Commission has adopted a similar approach and computed the WACC based on the average rate of return on debt and 14% rate of return on equity. Further, the Commission has approved a 2% additional return on total equity for wheeling and retail supply business to provide a total return of 16% on the equity to the DISCOMs.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the three DISCOMs.

Table A-5.33: Approved Return (including interest cost) by the Commission and Return as % of Total ARR

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Rate of Return	RoE	RoE	RoE	RoCE	RoCE
Total Return* (Rs. Crs)	251	354	484	421	548
Total Return as % of Consolidated ARR	*5.33%*	*6.96%*	*8.41%*	*5.90%*	*7.53%*

** includes interest cost for FY 05, FY 06 and FY 07*

Bad Debts

The Commission does not provide for bad debts for the tariff computation. However, the revenue considered by the Commission for meeting the ARR of each DISCOM upto FY 07 was based on the collection efficiency.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM.

The table below summarizes the proposed, approved and trued-up ARR in the various Tariff Orders from FY 05 to FY 09:

Table A-5.34: Proposed, Approved and Trued-up ARR (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
BRPL					
Proposed by the Utility	2,033	2,415	2,558	3,908	3,914
Approved	2,134	2,257	2,596	3,219	3,211
Trued-up	2,122	2,436	3,168	3,007	-
BYPL					
Proposed by the Utility	1,150	1,313	691	1,678	1,605

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	1,080	1,212	1,368	1,552	1,669
Trued-up	1,113	1,234	1,521	1,371	-
NDPL					
Proposed by the Utility	1,431	1,677	1,756	2,539	2,570
Approved	1,499	1,611	1,789	2,369	2,391
Trued-up	1,570	1,687	2,084	2,354	-
Total					
Proposed by the Utility	4,614	5,404	5,005	8,124	8,090
Approved	4,713	5,080	5,753	7,140	7,271
Trued-up	4,805	5,357	6,773	6,731	-

Tariff Determination

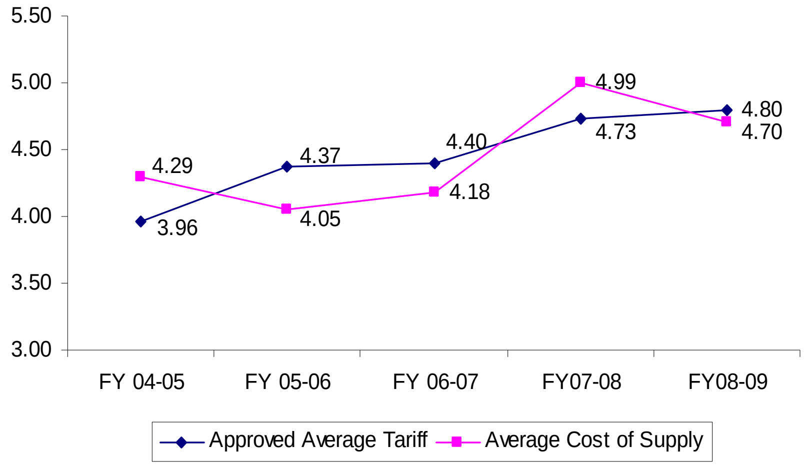
A two part tariff structure comprising demand (fixed) charge and energy charge exists in the state of Delhi. There are 9 major consumer categories including Domestic, Non-domestic, Industrial, Agricultural, Railway Traction, DMRC, etc. The overall average tariff for the State of Delhi has grown at a CAGR of approximately 5%, from Rs. 3.29 per unit to Rs. 4.80 per unit, primarily on account of increase in tariff and increase in consumption in the higher slab. The average tariff approved for major categories is summarized in table below:

Table A-5.35: Category-wise Average tariff approved by the Commission

Particulars (MUs)	FY 05	FY 06	FY 07	FY 08*	FY 09*
Domestic	2.80	3.12	3.18		
Non-Domestic	6.09	6.12	6.07		
Industrial	5.34	5.38	5.41		
Agriculture	1.53	1.56	1.72		
Others	3.29	4.22	3.86		
Approved Average Tariff	**3.96**	**4.37**	**4.40**	**4.73**	**4.80**
Trued-up Average Tariff	***3.80***	***4.52***	***4.39***	***4.39***	**-**

**Category wise revenue has not been provided in the MYT Order*

Graph A-5.21: Comparison of Avg. Tariff per unit and Avg. Cost of Supply per unit



For the purpose of determination of tariff in each of the Tariff Order, the Commission has considered various options, including creation of regulatory asset, increase in tariff, adjustment of gap of previous year in the subsequent years, etc. In FY 05, the Commission had used a mix of options to bridge the revenue gap through increase in tariff of certain categories and creation of regulatory assets. In addition, as mentioned above the BST has been subsidized through government support as per the policy directives. There has been no specific reduction in subsiding consumer categories but the tariff has been increased for all the categories (except a few categories like railways) to meet the average cost to serve. On reduction of cross-subsidy, the Commission has emphasized that domestic cross subsidy shall be reduced once efficient operating levels have been reached, quality of supply has improved and metering and billing problems have been minimized. The Commission has considered Cost of Supply (CoS) for the purpose of determination of DMRC tariff and has claimed that the CoS model would also be considered for other categories like domestic, etc once the efficient operational levels are reached.

In FY 06, the Commission has again hiked tariff to meet revenue gap. The increase in tariff has been across all the categories with higher increase in tariff for domestic and agricultural consumer categories. The tariff for domestic and agricultural category was increased by an average of 10% and 20% respectively as compared with non-domestic and industrial categories (4-5%). This action on part of the Commission to reduce the differential between the tariff for subsidized and subsidizing categories shows a clear intention to reduce the prevalence of cross-subsidization within the State. However, the same hike in domestic and agricultural categories was met by the GoNCTD by the way of direct subsidy.

The table given below shows percent increase in tariff for various categories from FY 06 to FY 09

Table A-5.36: Increase in energy charges from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Domestic				
Lowest Slab	9%	0%	2%	0%
Highest Slab	12%	0%	1%	0%

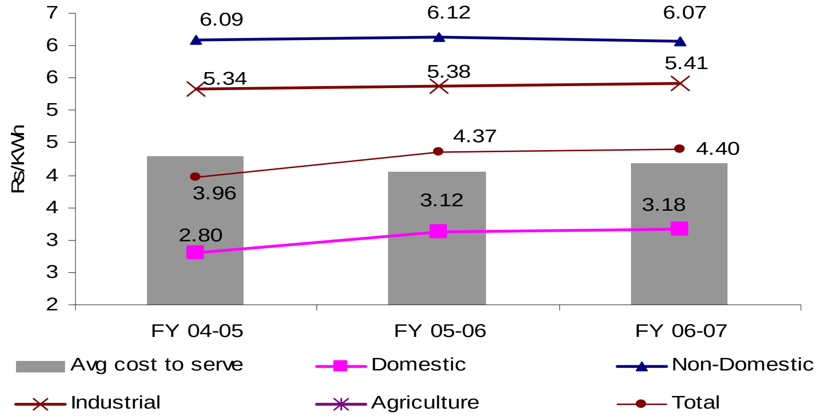
Particulars	FY 06	FY 07	FY 08	FY 09
Commercial				
Lowest Slab	4%	0%	0%	0%
Highest Slab	4%	0%	1%	0%
Small Industrial				
Lowest Slab	6%	0%	1%	0%
Highest Slab	3%	0%	1%	0%
Large/HT Industrial				
Lowest Slab	5%	0%	1%	0%
Highest Slab	3%	0%	1%	0%
Agriculture Consumers				
Metered	20%	0%	3%	0%

In FY 07, there has been a revenue surplus which has been utilized for the purpose of amortization of regulatory asset. The remaining part of the surplus has been apportioned for Tariff Control Reserve for meeting any unforeseen contingent liability that may arise in the future tariff orders. The justification given by the Commission for not continuing with the approach to reduce cross-subsidy was the guided by the over-riding principle of avoidance of tariff shock to any consumer category.

The first MYT order year for FY 08, was issued with a lag of 11 months and the Commission increased the tariff across the categories by 5 paisa on account of revenue gap. But since it was difficult to cover the gap in a single month left in the financial year, the revenue gap was carried forward along with a carrying cost to be adjusted against revenue surplus in future years.

Through slightly higher increase in tariff for domestic and agricultural categories (2% - 3%) as compared to non-domestic and industrial categories (1%), the Commission in FY 08 has again tried, to reduce the differential between the subsidized and subsiding categories to effect reduction in cross-subsidy. The Commission has suggested that the GoNCTD should consider supporting consumers by providing concessional tariff through subsidies so that the cross subsidies could be further reduced. In FY 09, there has been no variation in the consumer tariff and revenue gap carried forward from FY 08 has been partially treated in FY 09 and the balance has been carried forward for treatment against the surplus in the subsequent year.

Graph A-5.22: Category-wise Average Realization vis-à-vis Cost of Service for FY05 to FY07

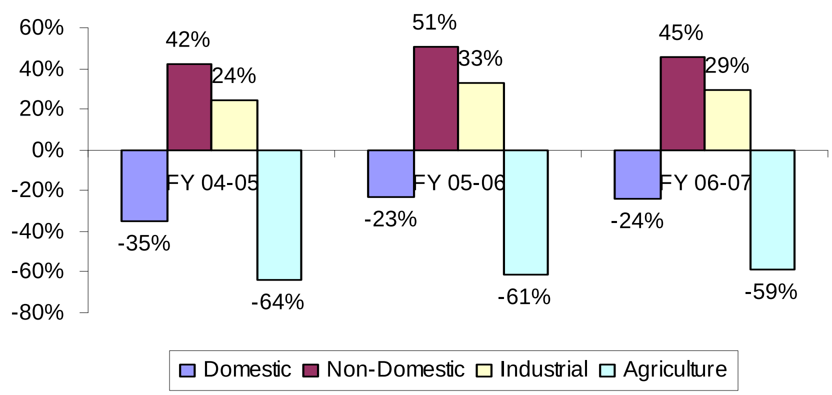


In both the years under MYT i.e. FY 08 and FY 09, the Commission has not computed category wise average cost of supply. However, DERC has undertaken a number of initiatives in the MYT Order which are summarized below:

- Average cost of supply at each voltage level has been determined which would help in facilitating open access in the State.
- Determination of Wheeling and Retail Supply Tariff (RST) along with the Retail Supply Margin to determine wheeling charges for open access consumers.

The Commission has made attempts to reduce cross-subsidy by the way of higher increase in cross-subsidized categories as compared with cross-subsidizing categories. However, DERC has not laid down any road map for the reduction of cross subsidy. A benchmarking of the average tariff of major categories with the cost of supply is provided in the graph below:

Graph A-5.23: Benchmarking of Tariff of Key Categories with National Tariff Policy prescription of +/-20%



The non domestic consumers and industrial consumers have been subsidizing the domestic and agricultural consumers to a large extent. Though, the cross subsidization has declined from FY 05 to FY 07, it is still not within the norms of +/- 20% stipulated in the National Tariff Policy. For FY 08 & FY 09, the cross-subsidization cannot be computed due to lack of category wise revenue approved by the Commission.

The Commission so far has also not been able to establish differential tariff for the DISCOMs based on their individual efficiency and operating parameters.

Segregation of Wheeling and Retail ARR

As per the provisions in the MYT Regulations, the Commission has provided for allocation of each element of the ARR into Wheeling and Retail Supply Business in the MYT Order. The Commission has included a retail supply margin as part of the retail supply tariff which comprise of all other expenses involved in retail supply of tariff apart from power purchase and transmission charges. In case the energy sales to the consumers is higher than the sales approved by the Commission in any year of the control period, the revenue earned through supply margin charges on the additional sales would be adjusted against the ARR during true-up. However, if the energy sale is lower than the approved sales, the losses on account of lower revenue from supply margin would be borne by the DISCOMs as this would act as a disincentive for the Petitioner to resort to load shedding.

Table A-5.37: Approved Wheeling and Retail Supply Tariff (Paisa per unit)

Particulars	FY 08			FY 09		
	BRPL	**BYPL**	**NDPL**	**BRPL**	**BYPL**	**NDPL**
Wheeling Tariff	54.65	64.64	64.58	62.10	79.75	71.75
Retail Supply Tariff	364.39	335.94	371.60	350.25	360.58	333.75
Supply Margin	23.10	24.71	32.53	25.35	27.76	34.84
Total Tariff	**442.14**	**425.29**	**468.71**	**437.70**	**468.09**	**440.34**

Subsidy Support

Subsidy support from the Government has been made available to the DISCOMs in one form or the other throughout the period from FY 05 to FY 09. A support of Rs. 3450 Crs has been provided as transitional support to be provided to the DISCOMs by way of subsidized the Bulk Supply Tariff (BST) charged by the Transco. Therefore, the power purchase cost applicable to the DISCOMs were on subsidized rates and therefore applicable to all categories of the consumers during FY 05 and FY 06. A subsidy support of Rs.690 Cr and Rs.138 Cr has been received in FY 05 and FY 06 respectively on account of Bulk Supply Tariff support.

However, inspite of a support by the Government, a tariff hike was proposed in FY 06 to meet up the revenue gap arising in the ARRs of the DISCOMs. Due to widespread protest, the GoNCTD had to provide for a direct subsidy to the DISCOM to neutralize 50% hike in domestic tariff and 100% hike in agricultural tariff. The balance 50% hike in Domestic tariff was to be borne by the DISCOMs with an assurance that the same shall be adjusted in future years against the overachievement of AT&C loss targets beyond the bid level during the FY 06.

The GoNCTD has continued to provide this subsidy to the domestic and agricultural consumers during the period FY 07 to FY 09 has continued with the same approach of neutralizing hike in domestic tariff and agricultural tariff hike through direct subsidy and part absorption by the DISCOMs as followed in FY 06. The Commission had also approved a hike in domestic tariff for FY 08 in the MYT Order, which was partly neutralized by the GoNCTD by providing an additional Re. 1 per unit subsidy to the lowest slab of domestic consumers from March 2008.

The tariff notification by DERC has been inclusive of subsidy all through from FY 05 to FY 09. In case of non-receipt of subsidy, the Commission has not given any clear directions in the Tariff Orders to the DISCOMs for charging full tariff in any of the years from FY 05 to FY 09.

Wheeling Charges

In a view to encourage open access in the State, DERC had segregated the wheeling and retail supply ARR for each DISCOM and has determined wheeling charges to be charged from the open access consumers using the distribution network of the DISCOMs at various voltage levels. The wheeling charges have been determined on a per unit basis based on the Wheeling business ARR of the DISCOMs and the sales in the respective distribution area. Distribution Loss at each voltage level to be paid in kind by the open access consumer has also been approved in the FY 08 Order.

The Commission has determined the wheeling charges and distribution losses to be paid in kind as illustrated in the table below:

Table A-5.38: Wheeling Charges at each Voltage Level (Paisa/ Unit)

Particulars	FY 08			FY 09		
	BRPL	BYPL	NDPL	BRPL	BYPL	NDPL
Above 66kV level	0.00	0.00	0.00	0.00	0.00	0.00
At 33/66kV level	7.66	7.96	9.32	9.03	10.40	10.55
At 11kV level	32.80	34.13	40.90	38.07	43.89	45.33
At LT level	62.19	70.71	72.71	70.82	87.52	80.66
Average	**54.65**	**64.64**	**64.58**	**62.10**	**79.75**	**71.75**

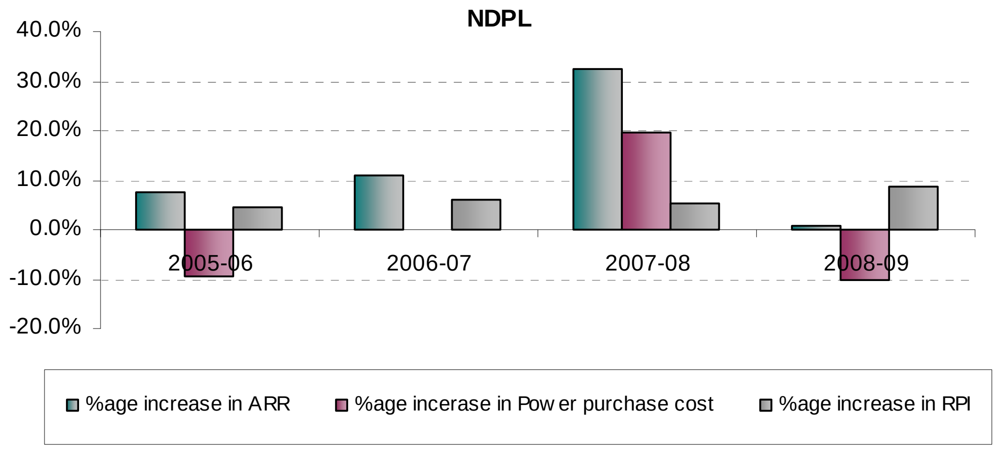
Table A-5.39: Distribution Losses at each Voltage Level (%)

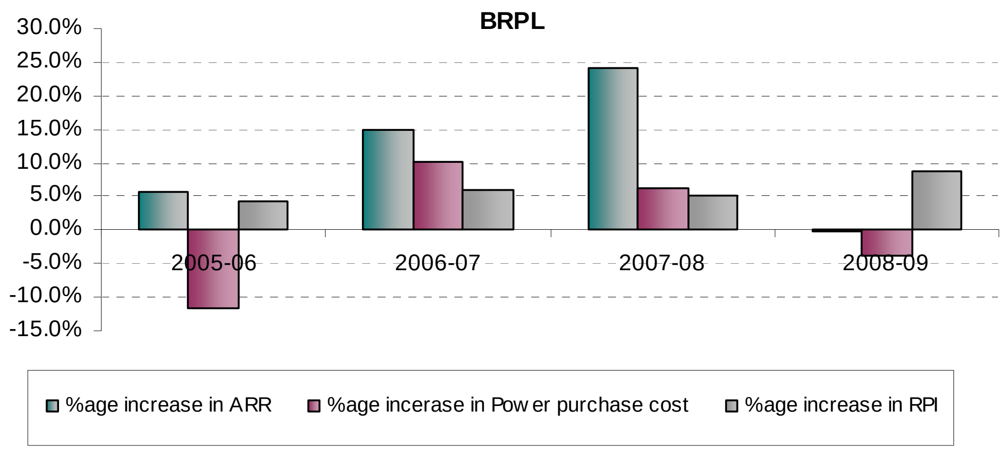
Particulars	FY 08			FY 09		
	BRPL	BYPL	NDPL	BRPL	BYPL	NDPL
Loss at 66kV level	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Loss at 33/66kV level	4.50%	4.50%	3.00%	4.00%	4.00%	3.00%
Loss at 11kV level	15.37%	15.37%	15.37%	13.51%	13.51%	13.51%
Lossat LT level	28.85%	36.70%	23.13%	25.63%	32.54%	21.66%
Overall	**25.95%**	**34.11%**	**21.24%**	**22.88%**	**29.99%**	**19.75%**

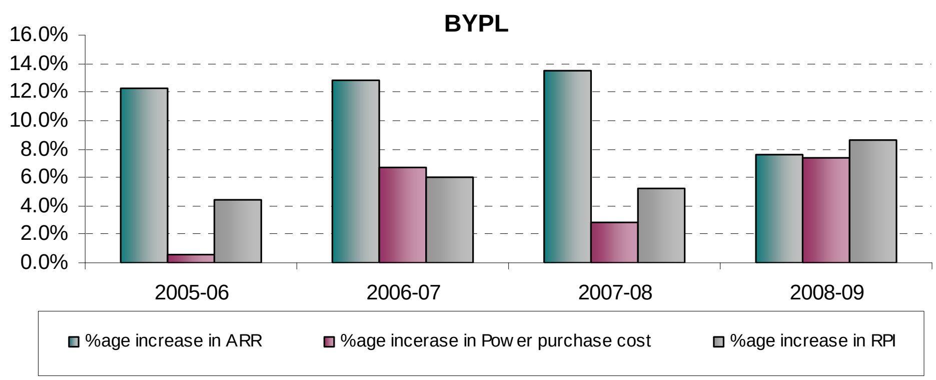
With regard to the cross-subsidy and additional surcharge, the Commission would approve the same from time to time in line with the provisions of the DERC (Terms and Conditions of Open Access) Regulations 2005 and the same has not been determined in the MYT Order.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.







Discom	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
BRPL	Approved ARR	2134.00	2257.11	2595.80	3219.03	3210.90
	Approved Sales (MU)	4936.00	5736.60	6116.65	6305.23	6823.89
	Average Cost of Supply in Rs/kwh (A)	4.32	3.93	4.24	5.11	4.71

	% of Power Purchase Cost in ARR	**82%**	**79%**	**81%**	**71%**	**74%**
	% of Other remaining Cost in ACS	18%	21%	19%	29%	26%
	% Annual Increase in Power Purchase Cost		-12%	10%	6%	-4%
	% Annual Increase in Other Cost		3%	0%	80%	-18%
	% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%
	RPI –X (X= 2%)		2.37%	4.06%	3.21%	6.67%

Discom	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
BYPL	Approved ARR	1079.70	1212.00	1367.63	1551.56	1669.49
	Approved Sales (MU)	2725.60	2953.40	3338.45	3257.24	3516.09
	Average Cost of Supply in Rs/kwh (A)	3.96	4.10	4.10	4.76	4.75
	% of Power Purchase Cost in ARR	**77%**	**75%**	**80%**	**71%**	**76%**
	% of Other remaining Cost in ACS	23%	25%	20%	29%	24%
	% Annual Increase in Power Purchase Cost		1%	7%	3%	7%
	% Annual Increase in Other Cost		14%	-20%	69%	-19%
	% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%
	RPI –X (X= 2%)		2.37%	4.06%	3.21%	6.67%

Discom	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
NDPL	Approved ARR	1499.00	1611.13	1789.38	2369.02	2390.64
	Approved Sales (MU)	3,320.00	3845.00	4309.65	4733.29	5118.87
	Average Cost of Supply in Rs/kwh (A)	4.52	4.19	4.15	5.01	4.67
	% of Power Purchase Cost in ARR	**76%**	**74%**	**75%**	**74%**	**71%**
	% of Other remaining Cost in ACS	24%	26%	25%	26%	29%
	% Annual Increase in Power Purchase Cost		-9%	0%	20%	-10%
	% Annual Increase in Other Cost		0%	-3%	24%	3%
	% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%
	RPI –X (X= 2%)		2.37%	4.06%	3.21%	6.67%

The power purchase cost decreased in FY 06 as the DISCOMs were required pay to DTL for the power purchase cost as per the Bulk Supply Tariff determined by DERC based on the paying capacity of each DISCOM. Whereas for FY 09, for NDPL and BRPL the power purchase cost decreased due to lower purchase cost from bilateral and UI. Increase in annual revenue requirement for FY 08 has been primarily due to inclusion of previous years gap in the annual revenue requirement.

MYT Framework

As discussed above, Delhi state has recently since FY 08 come under the MYT regime. The table given below lists the key features of the MYT framework being adopted in the state of Delhi:

Table A-5.40: Key Features of the MYT Framework

Particulars	
First Year of MYT	FY 08
Time frame for the control period	4 years, FY 08 to FY 10-11
Issuance of the MYT Order	11 Month delay from the start of first year of Control Period
Base year considered for MYT projections	FY 07
Uncontrollable Parameters	- Power purchase quantum and cost - Sales - Revenue
Controllable Parameters	- AT&C - O&M - ROCE (to be trued up at the end of Control period) - Depreciation (to be trued up at the end of Control period)
Time frame for truing up under MYT Regime	At the end of each Financial Year
Base line data	AT&C target: FY 07 data O&M Expense: FY 07 data Capex and depreciation: provisional FY 07 data
Incentive / disincentive sharing mechanism in case of over /under achievement of controllable target	Each year (AT&C targets)

Timelines of the Orders

The Commission has not complied with the 120 days timeline for issue of tariff order as provided in the Electricity Act, 2003. Of four orders issued by the Commission during FY 05 to FY 09 (including MYT Order), three of the orders were delayed. The table below summarizes the date of filing of petition by the DISCOMs, date of admission of the petition and date of issuance of tariff order.

Table A-5.41: Timelines for Filing & Admission of Petition and Issuance of Order

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
	ARR	ARR	ARR	MYT	
Date of Submission of Petition					
BRPL	26-Dec-03	29-Dec-04	20-Dec-05	1-Oct-07	
BYPL	26-Dec-03	29-Dec-04	20-Dec-05	1-Oct-07	
NDPL	17-Dec-03	31-Dec-04	14-Dec-05	29-Sep-07	
Admission of Petition	16-Jan-04	10-Mar-05	30-Mar-06	22-Oct-07	
Issue of Order	9-Jun-04	7-Jul-05	22-Sep-06	23-Feb-08	
No. of Days from Admission	145	119	176	124	

One of the major reasons for delay in admission with respect to filing of the petition by the DISCOMs was on account of deficiencies in the filed petitions. Similarly the delay in issuance of orders was on account of late submission of additional information required by the Commission.

The participation of stakeholders during the process of public hearing has been below 100 during FY 05 to FY 07. However, for the issuance of MYT Order, the participation of the stakeholders improved to 276. The number of objections received by the Commission during the tariff determination process each year is summarized in table below:

Table A-5.42: Objections received by the Commission

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Number of Objections Received	78	98	79	276	

A-6. GUJARAT

Introduction

The Generation, Transmission & Distribution businesses of the erstwhile Gujarat Electricity Board (GEB) have been unbundled by the Government of Gujarat w.e.f 1st April 2005. Accordingly, the 3 businesses of the state utility were transferred to 7 successor companies:

- Gujarat State Electricity Corporation Limited (GSECL) – Generation
- Gujarat Energy Transmission Corporation Limited (GETCO) – Transmission
- Dakshin Gujarat Vij Company Limited (DGVCL) - Distribution
- Madhya Gujarat Vij Company Limited (MGVCL) - Distribution
- Uttar Gujarat Vij Company Limited (UGVCL) - Distribution
- Paschim Gujarat Vij Company Limited (PGVCL) - Distribution
- Gujarat Urja Vikas Nigam Limited (GUVNL) – A Holding Company

Gujarat State Electricity Corporation Limited

Gujarat State Electricity Corporation Limited (GSECL) the generation company of Gujarat owns and operates four coal based thermal generating stations, one lignite fired thermal station, two major hydel stations and two mini hydel stations. GSECL was formed during the unbundling of Gujarat Electricity Board and it became operative from 1st April, 2005.

The installed generating capacity of GSECL (all stations) during FY09 was 4841 MW and there are planned capacity additions of 1385 MW out of which 375 MW will be commissioned during the control period (FY 09 to 2010-11)

Post unbundling GSECL filed its first tariff petition on 5th January, 06 and Gujarat state electricity Regulatory Commission (GERC) issued the first tariff order post unbundling for generation on 6th May, 2006 for FY 07. The MYT framework in the state of Gujarat has become applicable from FY 09. Accordingly, the first Control Period for MYT framework has been set for three financial years from April 1, 2008 to March 31, 2011. The Commission issued Multi Year Tariff (MYT) Framework Regulations on 20th December 2007 specifying the Terms and Conditions for Determination of Tariff.

Generation capacity

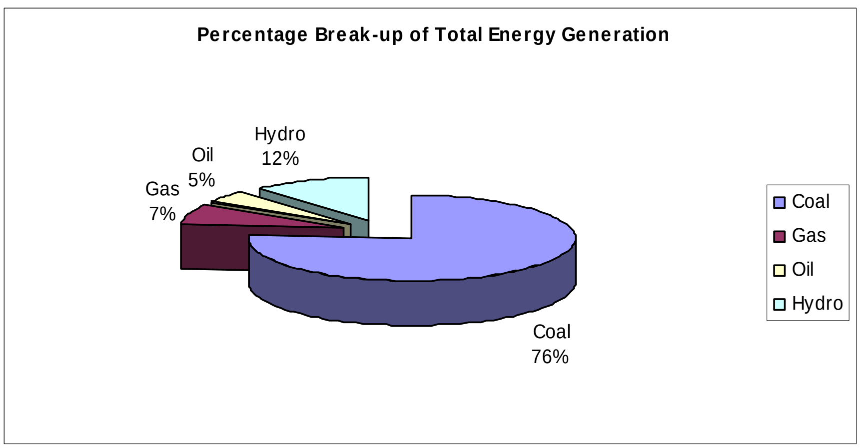
GSECL has a total of 11 generating stations and the details are given below. The Dhuvaran oil units 1-4 retired from service wef. 20th April, 2007. Units of the Ukai TPS have completed their stipulated service life and performance of these units is low due to ageing effect.

Table A-6.1: Plant Wise fuel used and generating Capacity for FY 09

Name of the Station	Fuel	Station Capacity (MW)	Units Capacity (MW)
Ukai	Coal	850	120*2+200*2+210
Gandhinagar	Coal	870	120*2+210*3
Wanakbori	Coal	1470	210*7
Sikka	Coal	240	120*2
KLTPS	Lignite	290	70*2+75*2
Dhuvaran	Oil and Gas	439.067	110*2+106.617+112.45
Utran	Gas	135	30*3+45
Ukai Hydro	Water	300	75*4
Ukai LBC	Water	5	2.5*2
Kadana Hydro	Water	240	60*4
Panam	Water	2	1*2

Of the total generating capacity of 4841MW, 3720 MW is coal based , 354.07 MW is gas based , 220 MW is Oil based and 547 is hydro.

Graph A-6.1: Approved Percentage break-up of Total energy generation for FY 09



Plant Load Factor (PLF)

The PLF was approved taking into consideration the capacity of plant, age of plant, technology of plant, past performance, operational and maintenance programme furnished by GSECL for the FY 06, FY 07 and FY 08. For approving the PLF during the MYT control period, the Commission had considered the actual PLF for the FY 06, FY 07, FY 08 and average of 3 years (2003-05). The Commission except for Gandhinagar, KLTPS and Dhuvaran gas (where the PLF has increased) had approved the projections made by GSECL for UkaiTPS, Wanakbori, Sikka, Utran, Ukai hydro and Kadana Hydro.

Table A-6.2: Approved and actual Plant Load Factor of each station

Stations/Units	FY 06	FY 07	FY 08	FY 09
Approved Plant Load Factor				
Ukai	73.00%	66.00%	70%	72%
Gandhinagar 1to4	71.00%	66.00%	65.00%	65.00%

Stations/Units	FY 06	FY 07	FY 08	FY 09
Gandhinagar 5	88.00%	88.00%	88.00%	92.00%
Wanakbori 1to 6	80.00%	83.00%	81.00%	85.00%
Wanakbori 7	90.00%	90.00%	88.00%	92.00%
Sikka	66.00%	79.00%	75.00%	75.00%
KLTPS 1to 3	34.00%	79.00%	70.00%	72.00%
KLTPS 4			25.00%	80.00%
Dhuvaran Oil	36.00%	45.00%	60.00%	77.00%
Dhuvaran Gas 1	80.00%	80.00%	78.00%	90.00%
Dhuvaran Gas 2		70.00%	80.00%	90.00%
Utran-Gas	87.00%	88.00%	78.00%	92.00%
Ukai Hydro				24%
Kadana Hydro				9%
Actual Plant Load Factor				
Ukai	72.03%	64.64%	67.81%	
Gandhinagar 1to4	64.06%	58.80%	66.78%	
Gandhinagar 5	94.77%	77.98%	94.95%	
Wanakbori 1to 6	76.76%	85.80%	83.10%	
Wanakbori 7	92.92%	82.56%	96.87%	
Sikka	66.81%	74.62%	70.95%	
KLTPS 1to 3	35.55%	68.95%	72.96%	
KLTPS 4				
Dhuvaran Oil	31.20%	28.44%	64.95%	
Dhuvaran Gas 1	78.45%	28.08%	75.37%	
Dhuvaran Gas 2			76.32%	
Utran-Gas	91.11%	89.28%	83.93%	
Ukai Hydro	21.73%	45.55%	34.96%	
Kadana Hydro	10.10%	16.80%	14.29%	

Station Heat Rate

The Commission has specified normative Station Heat Rate of 2500 Kcal / kWh for 210/250 MW thermal units. For lower capacity units the Commission may allow higher Heat Rate based on the past operational performance. For lignite fired stations, station heat rate of 1.1 times the heat rate for coal based stations is allowed.

The Commission dapproved the Station heat rates for FY07 and FY08 based on the past performance of the stations, the norms of heat rates specified by the Commission, heat rates recommended by the CEA, the performance of the units in other state utilities particularly 210/210 MW series, the R&M programme of the units and the directions of the Appellate Tribunal for electricity where in it directed that "the station heat rate has to be allowed considering the vintage and present condition of the station in view of the CEA recommendations and treatment given by CERC for similarly placed stations". For approving the SHR for MYT control period 2008-2011, the Commission had accepted the projections of the GSECL for the time being but had directed to carry out a study to establish exact correlation of SHR with age, size, technology, PLF, type and quality of fuel. The currently approved SHR values will be reviewed during truing up of FY 09 based on the recommendations of the Consultant (CEA) and the trajectory of these parameters for the control period will be fixed accordingly.

Gross and Net Units Generated

Considering the above technical parameters, the Commission had approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY07 to FY09.

Table A-6.3:: Gross and Net generation (MUs)

Stations/Units	FY 06	FY 07	FY 08	FY 09
Total Gross Generation	27965	29730	28792	30475
Auxiliary Consumption	2443	2584	2604	2721
Total Net Generation	25522	27146	26188	27754

Fixed Cost/ Capacity Charges

Operation and Maintenance Cost (O&M)

Operation and Maintenance expenses have been approved under the following heads:

- Employees Expenses
- Repair and Maintenance Expenses
- Administrative and General Expenses

The O&M charges was approved for each station for the period FY 06 to FY08-09. For FY 08, O&M expenses was approved component wise for all the generating stations but for the year FY 09 Commission had again adopted the methodology followed during the period FY 06 to FY 07.

GSECL had not submitted the O&M charges for FY 06 and FY 07 based on norms specified in Commission's regulations but followed a separate methodology.

GSECL proposed an increase of 20% over FY 05 for FY 06 and 10% increase (over FY 06) for FY 07 in the employees cost. For FY 2007, the GSECL projected employee expenses to increase by 10% over FY 06 taking into account the implementation of Fifth Pay Commission report. GSECL also stated that the increase in salaries and allowances is mainly due to merger of dearness allowance of 50% in the basic pay. However, Commission had acknowledged that there would be additional burden due to implementation of merger of 50% DA in basic pay, which will be in the range of 7% to 8%. Commission had approved 15% and 8% increase in the employees cost for the FY 06 and FY 07 respectively. For R&M expenses and A&G expenses, Commission had considered10% and 8% increase for the FY 06 and FY 07 respectively

For FY 08, GSECL projected 5% increase under employee cost and A&G expenses and 8% increase under R&M expenses. Commission while approving the O&M expenses found that A&G expenses were increased at 8% p.a. whereas employee cost and R&M expenses was escalated at 5% during FY 08. The Commission had, therefore, approved the O&M expenses (5% for R&M expenses and Employees cost and 8% for A&G expenses) as projected by the GSECL.

During the MYT control period from FY 09 to FY10-11, GSECL had projected O&M expenses of the PPA based stations viz Gandhinagar-5, Wanakbori-7, Utran and Dhuvran CCPP-1 as per the conditions of PPA. For the other generating stations, GSECL had claimed O&M as per norms and an escalation of 10% per annum on an average for the control period. The Commission had approved the escalation of O&M expenses at 4.2% in respect of PPA based stations and 4% in respect of other stations as per CERC norms.

Table A-6.4: Approved and Actual O&M Expense (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	422.18	461.41	394.96	523.64
Actual Petitioner Claimed O&M	431.78	480.23	391.78	523.64

The true-up for the O&M expenses has not been done in any of the Tariff Orders issued by the Commission.

Depreciation

The Commission had approved the following rates of depreciation for the period FY 06 to FY 08 in accordance with CERC norms.

Thermal Stations - 3.51% to 3.66%

Hydro Stations - 2.68% to 2.77%

Depreciation is worked out based on the opening gross fixed assets and average of additions during the year for the respective financial year.

For the FY 09, depreciation for GEB transferred stations was considered as per the actual weighted average depreciation rates from the books of GSECL and the depreciation shall be considered as per PPA between GUVNL and GSECL on finalization of PPA. For four PPA governed stations depreciation was considered at the rates specified in PPAs. During the MYT Control Period, the Commission had accepted the depreciation charges projected by the GSECL.

Advance against Depreciation (AAD)

Advance against depreciation has been allowed by the Commission where ever the cumulative repayment up to a particular year exceeds the cumulative depreciation up to that year. Commission has approved AAD in case of Dhuvaran 8 and KLTPS 4 for the FY 07 and FY 09 respectively.

Table A-6.5: Depreciation (Proposed and Approved), and AAD (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Gross Fixed Assets at the end of the year	6408.42	6892.28	8346.01	
Depreciation Approved	225.97	243.59	280.49	321.93
Depreciation Proposed	355	355	321.6	321.93

Average Rate of Depreciation		3.53%	3.36%	-
Advance Against Depreciation		12.33		10.46

Interest Cost

Commission had considered the opening balance of the loans and GSECL's new borrowed loans taken for R&M works for computing the interest cost for FY 06 and FY 07. The loans taken prior to the unbundling could not be divided to the seven corporate entities as the details were not available . The Commission considered GSECL's submission on allocation of the opening balance of loans to each of the Generating stations transferred from GEB on the basis of depreciated capital assets more appropriate than criteria of the capacity of the stations. Commission approved the weighted average interest rate of 9.11% for GEB stations transferred to GSECL and at 8.8% for earlier GSECL stations.

GSECL claimed interest charges at 8.6% for the FY 08 based on the weighted average rate arrived at for the FY 06. For the four generating stations of Gandhinagar-5, Wanakbori-7, Dhuvaran Gas and Utran, the interest rate adopted according to PPA. The Commission had approved the Interest and Guarantee charges as claimed by GSECL for the FY 08.

For the MYT control period, GSECL projected the interest charges with 10.75% interest rate per annum and repayment in 10 years. Commission while approving the interest charges had checked the accounts for FY 07 (audited) and for FY 08 (provisional) and found that the actual average rate of interest for FY 07 worked out to 8.36% and for FY 08 worked out to 8.68%. Commission assumed a margin for the market fluctuation and has the interest rate at 10% per annum with 10 years repayment period for estimating the interest charges for the control period.

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Interest on Working Capital

For the approval of interest on working capital, Commission has considered norms specified by GERC. The amount of working capital for the four GSECL owned and operated stations are considered on the basis of norms specified in the PPAs.

Norms followed while calculating Working capital

Norms for coal-based generating stations:

- Coal stock for two months
- Oil stock for two months
- O&M Expenses for one month
- Maintenance spares – 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation
- Receivables for two month
- Working capital norms for gas-based generating stations:

- Fuel cost for one month
- Liquid fuel stock for 1/2 month
- O&M expenses for one month
- Maintenance spares – 1% of the actual capital cost escalated @ 6% per annum from the date of commercial operation
- Receivables for 2 month based on the projected sales

Norm for Rate of Interest

Rate of interest on working capital shall be on normative basis and shall be equal to the short-term Prime Lending Rate of State Bank of India as on 1st April of the year in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

Table A-6.6: Approved Interest and Guarantee charges and interest on working capital (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Interest and Guarantee Charges	236.54	246.31	296.83	323.53
Interest on Working Capital	165.72	185.2	152.64	213.72
Rate of interest for Working Capital	10.25%	10.25%	8.58%	10.25%

Insurance Charges

The Commission had approved insurance charges as projected by GSECL for year FY 08 and for FY 09. Insurance charges paid in FY 07 for the PPA based stations were considered by the Commission during the Control Period.

Return on Equity

Post unbundling, the allocation of equity to the GEB individual plants was not available, therefore,, the allocation of equity was worked out based on the depreciated capital assets at the end of the year. This approach was approved by the Commission in the Tariff Order dated May 06, 2006.

Return on equity for the FY 06 and FY 07 for GEB erstwhile stations was allowed at 12%. The Commission had considered the equity according to the Provisional Balance Sheet and allocation of equity to the generating stations of erstwhile GEB based on depreciated capital was approved. The return on equity for the PPA based plants was considered according to norms specified in the PPA, which is 11.75% Commission had also allowed internal surpluses / free reserves to the extent invested in capital work as equity. For the FY 08, Commission had approved 13% rate of return as proposed by the GSECL.

During the MYT control period, GSECL had projected the return on equity at 13% in respect of PPA based stations and at 14% in respect of other stations in accordance with the GERC (Terms and Conditions of Tariff) Regulations 2005. The Commission had approved the return on equity as claimed by the GSECL for the Control Period 2008-11.

Table A-6.7: Return on equity

Particulars	FY 06	FY 07	FY 08	FY 09
Equity at the end of the year	2057.34	2242.91	2399.69	2013.07
Approved Return on Equity	245.48	267.76	311.96	337.55
Proposed Return on Equity	275.58	301.57	311.96	337.55
Approved Rate of Return	11.75-12%	11.75-12%	13%	13-14%

Total Fixed Cost

The Commission had approved the total fixed cost for GSECL based on the approach for various components as discussed above. The Commission had provided a break up of approved plant wise as well as component wise fixed cost right from the first tariff order post unbundling. The same approach was applied for approving fixed cost for the MYT control period. For MYT control period, the actual fixed cost for year FY 07 taken as base. A comparison of the approved total fixed cost for each year, as claimed by the Petitioner at the end of the year and approved fixed cost is provided in the table below.

Table A-6.8: Proposed, Approved, and Actual Fixed Cost (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Proposed	1471.6	1578.97	1458.99	1756.93
Approved	1295.89	1416.6	1444.87	1730.83
Actual	1347.22	1502.42	1592.36	-

The true-up for the fixed charges has not been done in any of the Tariff Orders issued by the Commission.

Fuel Costs

The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. While approving the fuel costs various parameters like heat rate, specific oil consumption, auxiliary consumption, transit loss etc are considered.

Coal Transit Loss

The Commission have specified in the tariff regulations transit loss of coal in transport for Pithead stations is 0.3% and Non-pithead stations is 0.8%. This is in line with the guidelines issued by CERC. However, GSECL had projected actual transit loss of coal is ranging from 1.5% to 3.21% at different stations and requested for approval of the Commission for the actual transit loss of coal for each of the stations for the period FY 06 to FY 08. GSECL had also submitted the detailed explanation of higher transit losses. Considering the various aspects of transport of coal over a long distance, the Commission had approved transit loss of coal to each of the stations ranging from 1.2% to 2%. For the MYT control period, GSECL in their petition had projected actual transit loss of coal is ranging from 1.20% to 2% at different stations, which is also in line with the level approved in the last Tariff Order. The Commission had approved transit loss of coal for the control period FY 09 to 2010-11 at the same level as projected by the GSECL. Commission in its Tariff Order also recommended that GSECL should try to reduce the transit loss of Indigenous coal to the norm of 0.8% in a span of 5 years, i.e. by 2013-14.

The approach adopted by the Commission for computing the fuel price in each of the Tariff Order issued during FY06 to FY09 for GSECL is summarized below.

Table A-6.9: Approach for determination of Fuel Price

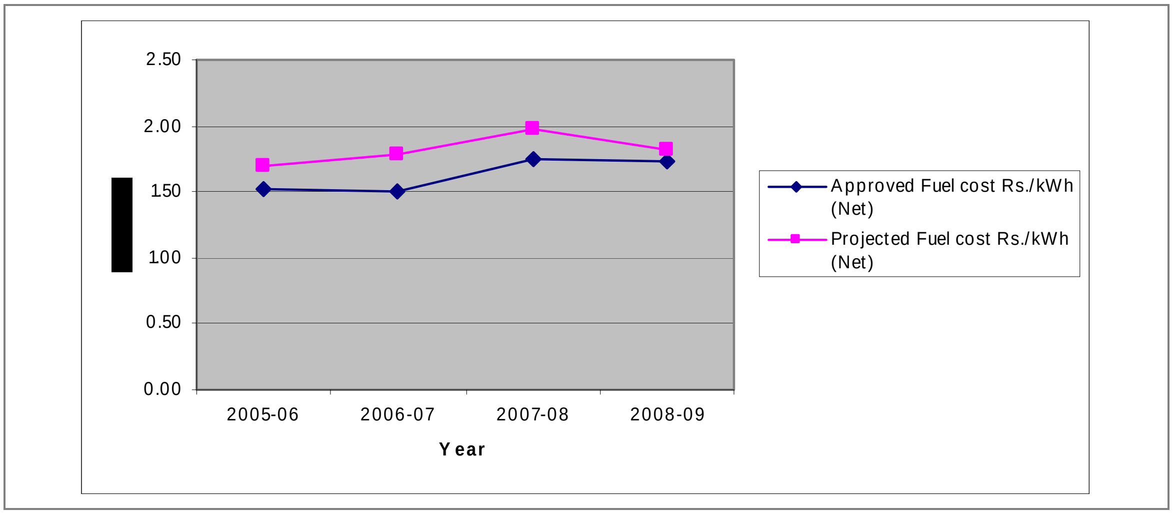
Particulars	FY06	FY07	FY08	FY09
Coal	Weighted Average Price of Coal and Weighted Average calorific value of coal received based on actuals up to December, 05.	Weighted Average Price of Coal and Weighted Average calorific value of coal received based on actuals up to December,05	Weighted Average Price of Coal received during the quarter Oct-Dec,06 and Weighted Average calorific value of coal received for the period April-Dec,06.	Weighted Average GCV and Weighted average unit cost of coal as approved for year FY 08 in the TO for FY 08
Lignite	Cost worked out based on gross Generation, SHR, GMDC price and C.F of Lignite.	Cost worked out based on gross Generation, SHR, GMDC price and C.V of Lignite. No price escalation is considered for FY 07.	Weighted average price of lignite for the quarter Oct-Dec,06 and GCV of lignite for April-Dece,06 considered. No price escalation considered..	Weighted Average GCV and Weighted average unit cost of Lignite as approved for year FY 08 in the TO for FY 08
Oil	Weighted average cost of oil considered up to December 2005.	Weighted average cost of oil considered up to December 2005.	Weighted average cost of oil considered Oct-December 2006.	Weighted Average GCV and Weighted average unit cost of oil as approved for year FY 08 in the TO for FY 08
Gas	Weighted average price of gas considered up to Dec,06.	Weighted average price of gas considered up to Dec,06.	Weighted Average price of gas during April-Oct 2006	Weighted Average GCV and Weighted average unit cost of Gas as approved for year FY 08 in the TO for FY 08
Frequency of Fuel Price Adjustment	Quarterly	Quarterly	Quarterly	Quarterly

Any variation in the approved fuel cost by can be passed on to the consumers by way of Fuel Price Adjustment charge, the frequency for which is quarterly. The implementation of MYT has not brought out any change in the method of calculating fuel price. The cost parameters such as weight average GCV & weighted average unit cost of coal, Oil etc are taken as approved for FY 08. A comparison of the approved and claimed fuel cost is summarized in table below.

Table A-6.10: Approved, and Claimed Total Fuel Cost (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Approved	3762.25	3972.76	4447.55	4810.45
Claimed by Petitioner		4589	4864.7	4980.97
Approved Fuel cost Rs./kWh (Net)	1.52	1.51	1.74	1.73
Projected Fuel cost Rs./kWh (Net)	1.70	1.79	1.98	1.82

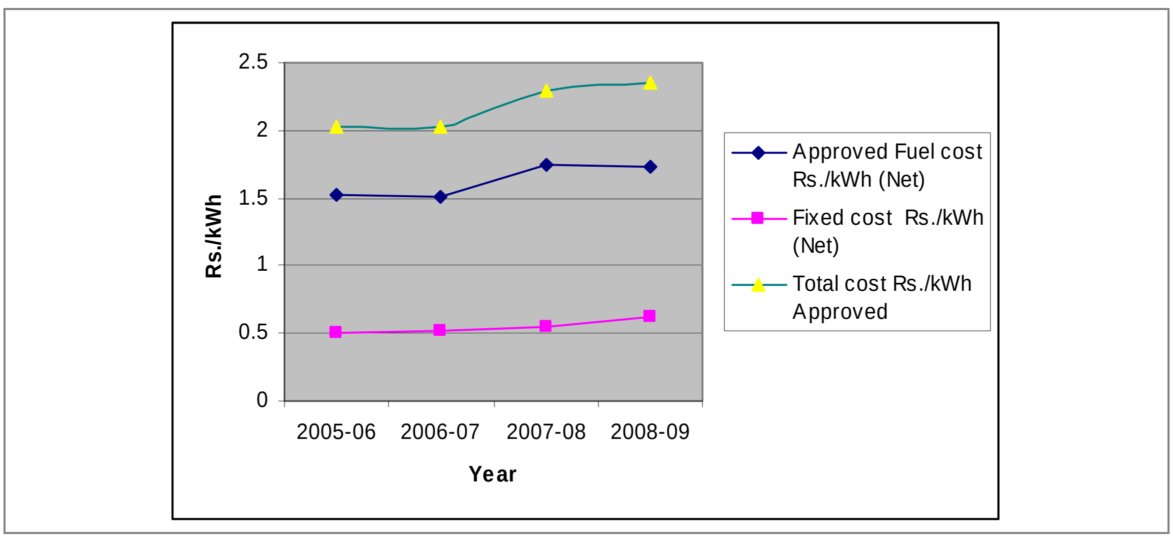
Graph A-6.2: Approved, and Claimed Per Unit Variable Cost (Rs. Per unit)



Total Cost

The generation tariff applicable to the generating stations during each year is based on the fixed and variable costs approved by the Commission in each tariff order. A comparison of the approved, and claimed total cost per unit for GSECL generating stations as a whole is shown in the graph below.

Graph A-6.3: Approved, Per Unit Total Cost (Rs. Per unit)



Incentive Level

The Commission contended that GSECL will earn incentive for PLF above 80%. The Commission has approved incentive of 25 paisa/kWh on overachievement of the target PLF for generating plants. In case of generating plants where PPAs exist, the terms and conditions for parameter like PLF will govern the terms of contract till its term of expiry. In case of hydro plants incentive will be payable for all the generating stations, including new generating stations in the first year of operation, when the capacity index (CI) exceeds 90% for purely run-of-river power generating stations and 85% for run-of-river power station with pondage or storage type power generating stations and incentive shall accrue up to a maximum capacity index of 100%.

MYT Framework

The Commission adopted the Multi Year Tariff (MYT) principles for determination of tariff in line with the provisions in Section 61 of the Electricity Act, 2003. The Commission has issued MYT Regulations vide notification dated November 30, 2007 specifying Terms and Conditions for Determination of Tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff (MYT) framework for the period FY09 – FY11. Under the MYT framework, the Commission will approve the variation caused by uncontrollable factors (factors which were beyond the control of, and could not be mitigated by, the applicant).

Uncontrollable factors refer to:

- Force Majeure Events;
- Changes in law, judicial pronouncements and Orders of the Central Government, State Government or Commission;
- Economy-wide influences, such as unforeseen changes in inflation rate,
- Market-interest rates, taxes and statutory levies.
- Some illustrative variations or expected variations in the performance of the applicant which may be attributed by the Commission to uncontrollable factors are:
- Variation in the price of fuel and/ or price of power purchase according to the FCA/FPPPA formula approved by the Commission from time to time;
- Variation in the number or mix of consumers or quantities of electricity supplied to consumers;
- Expenses on account of Inflation;
- Taxes on Income.
- Some illustrative variations or expected variations in the performance of the applicant which may be attributed by the Commission to controllable factors are:
- Variations in capital expenditure on account of time and/ or cost overruns / efficiencies in the implementation of a capital expenditure project not attributable to an approved change in scope of such project, change in statutory levies or force majeure events;
- Variations in technical and commercial losses, including bad debts;
- Variations in the number or mix of consumers or quantities of electricity supplied to consumers.
- Variations in working capital requirements;

- Variation in expenses like:
- Operation & Maintenance expenses ,
- Employee Cost,
- Admn. & General expenses,
- Interest & Finance Charges,
- Return on Equity, Depreciation,
- Non-tariff income;
- Failure to meet the standards specified in the Standards of Performance
- Regulations, except where exempted in accordance with those Regulations;
- Variations in labour productivity.

A-6.1. Gujarat Energy Transmission Corporation (GETCO) – State Transmission Utility

GETCO, the transmission company, has become operative with an opening balance sheet as on 1st April 2005 notified by the Government of Gujarat.

The Gujarat Energy Transmission Corporation Limited (GETCO), at present, manages transmission system comprising 66, 132, 220 & 400 kV voltage levels. The power injected into the GETCO system from various generating stations / sources is supplied to GUVNL (for supply to the four distribution companies, TPL and Kandla Port Trust) and captive power users.

The MYT framework in the state of Gujarat has become applicable from FY 09. Accordingly, the first Control Period for MYT framework has been set for three financial years from April 1, 2008 to March 31, 2011. The Commission issued Multi Year Tariff (MYT) Framework Regulations on 20th December 2007 specifying the Terms and Conditions for Determination of Tariff.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 06 to FY 09 in approval of the Annual Revenue Requirement (ARR) of the state transmission utility.

Transmission Losses and Energy Balance (MUs)

GETCO has projected the transmission loss in the system at 4.39% for the FY 06 and at 4.27% for FY 07 against the actuals of 4.39% for the year FY 05. The Commission has approved the transmission losses as projected by GETCO for FY 06 and FY 07.

In the tariff petition for FY 08, GETCO submitted that it has not been able to achieve the transmission loss target approved by the Commission (4.27%) for FY 07 and that the transmission loss level even for FY 08 shall be higher at 4.35%. The Commission observed that since GETCO system has a large 66 kV network, the loss levels would generally be high and has accordingly approved transmission loss for FY 08 at 4.35% with a suggestion for GETCO to make efforts reduce the loss level.

In its MYT order for the control period beginning FY 09, the Commission observed that the actual transmission loss during FY 07 and FY 08 has been 4.06% and 3.85% respectively, which is lower than the level approved by the Commission. The Commission has still approved a higher level of Transmission loss level for FY 09 as projected by GETCO in view of the submission made by the transmission utility that the loss level in the system has gone up from June 2008 onwards due to supply of power to the Union Territory (Diu, Daman and Dadra Nagar Haveli) primarily by PGCIL system resulting in lower off-take from GETCO. South Gujarat being a low loss area with concentrated generation, less power supply in this area resulted in the power flow to other areas, thus resulting in higher loss.

The follwing table shows the transmission loss level approved by Commission from FY 06 and FY 09

Table A-6.11: Approved Transmission losses for GETCO from FY 06 to FY 09

Particulars	FY 06	FY 07	FY07-08	FY08-09
Transmission Loss (%)	4.39%	4.27%	4.35%	4.09%

The subsequent paragraph discusses the approach adopted by the Commission in approving various components covering Annual fixed costs for Transmission Company to determine the Annual Transmission charges

Operation and Maintenance (O&M) Cost

The Commission has been approving employee cost, R&M and A&G cost separately as part of the total O&M cost for all the years from FY 06 to FY 09. The Commission has also approved Unified Load Despatch Charges (ULDC) payable to PGCIL from FY 06 as claimed by GETCO.

Approach of the Commission in approval of each of the O&M cost parameters in the tariff orders for FY 06 to FY 09 is discussed below:

In the tariff order for FY 06 and FY 07, the Commission has observed that there would be some additional increase in costs under employee costs, R&M and Administration and General Expenses due to unbundling as compared to normal increase in previous years, particularly in the employees cost due to implementation of 50% DA merged scales.

For FY 08, the Commission has found the increase proposed by GETCO for employee cost, O&M, A&G as reasonable and allowed them as it is with a slight disallowance due to mismatch with annual accounts in case of A&G expenses.

In the MYT order, the Commission has examined and analyzed the actual employee expenses of GETCO for FY05 to FY 07. The employee expenses during FY 07 have been found to be on much higher side at 62.72% due to payment of arrears of salary revised, leave encashment liability etc. In order to factor the likely impact of implementation of 6th Pay Commission and pay revision, the Commission has considered providing 60% of the amount during FY 09 and balance 40% during 2009-10 and the expenditure has been accordingly regulated. The Commission has approved an increase of 6% in employee cost on a year to year basis during the control period as against 10% increase proposed by GETCO. The Commission has also assessed the correct employee cost in FY 08 to provide base for projections of employee expenses during the control period by deducting interim relief amount from the employee cost as it has not been paid. As for approval of the R&M expenses during the control period, the Commission found from the annual accounts that the expenses incurred during FY 08 on R&M are abnormally high, an increase of 90% over FY 07 expenses. The Commission while approving R&M for the control period, however, has considered a uniform year on year increase of 6% the R&M cost for FY 08 shown by GETCO as actual cost taken as the base.

The Commission has approved a 5% year on year increase towards A&G expenses for the control period as against 10% proposed by the GETCO. The Commission has however approved Rs.114 Cr in full as claimed by GETCO for the 'E-Urja' project being undertaken for electronic database management.

The O&M expenses under various heads as approved by the Commission from FY 06 to FY 09 are shown in table below:

Table A-6.12: Approved O&M Cost from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Net Employee Cost (Rs. Crs)	203	219	219	291
Net R&M Expenses (Rs.Crs.)	29	31	59	92
Net A&G Expenses (Rs.Crs.)	35	37	37	46
Net O&M Cost (Rs.Crs)	267	288	314	429
Approved ARR (Rs.Crs)	811	843	917	1036
O&M Cost (% of ARR)	33%	34%	34%	41%
Employee cost (% of ARR)	25%	26%	24%	28%

ULDC charges are the charges to be paid for 15 years at the rate of Rs.1.28 Cr per month to Power Grid Corporation India Limited (PGCIL) for participation in the Unified Load Dispatch Scheme executed by PGCIL. The charges are effective from FY 06 and are determined by CERC. Accordingly, the ULDC charges (including SLDC for the state) as proposed by GETCO for FY 06 to FY 09 have been approved by the Commission in full. The table below summarizes the approved ULDC charges during last four years.

Table A-6.13: Approved ULDC cost from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
ULDC Charges (Rs.Cr)	2.56	15.36	15.36	15.36

Depreciation

The Commission, for FY 06 and FY 07, has approved the GFA as provided in the opening balance sheet and additions during the year. However, the rates at which the depreciation is claimed by GETCO based on Electricity Supply (Annual Accounts) Rules 1985 have not been accepted by the Commission. Commission has approved the depreciation based on the rates prescribed for transmission by the Central Electricity Regulatory Commission (CERC). The Commission has accordingly approved the weighted average depreciation rate of 3.78% for FY 06 and FY 07.

The Commission has considered the average GFA for FY 08 and FY 09 based on the Gross Fixed Assets as provided in the Annual Accounts for the respective preceding year for allowing the depreciation. The rates of depreciation claimed by GETCO are based on CERC / GERC norms for transmission assets and have therefore been approved by the Commission.

GETCO has not claimed any Advance Against Depreciation (AAD) for FY 06 and FY 07, as the loan repayment during the year worked out less than the depreciation claimed in each of the year. However, loan repayment is more than the depreciation allowed by the Commission for FY 06 and FY 07 and accordingly the Commission has shown the computation of AAD for GETCO as 29.8 Cr for FY 06 and 10.2 Cr for FY 07 as applicable under the regulations. As per Regulation 37 (ii) of GERC Regulations 2005 the AAD shall be computed as equal to Loan repayment amount subject to a ceiling of 1/10th of loan amount as per regulation 35 less depreciation as per schedule. However, only cumulative loan depreciation is available in the opening balance sheet while cumulative repayments are not and hence the Commission has not allowed any AAD for the years 05-06 and 06-07.

For FY 08 and FY 09, the Commission has approved the AAD as permissible under the guidelines with reasonable corrections applied to the amount of AAD claimed by GETCO for respective years.

The details of depreciation and AAD approved by the Commission from FY 06 to FY 09 are given below in table 4.

Table A-6.14: Approved Depreciation Expenses from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
GFA approved (Rs.Cr)	4307.1	4574.2	4971.2	5629.6
Depreciation (Rs.Cr)	162.8	172.9	167.7	179.0
AAD (Rs.Cr)	0.0	0.0	63.0	33.8
Total Approved ARR (Rs.Cr)	811.3	843.0	916.5	1002.2
Average Depreciation rate (% of GFA)	3.78%	3.78%	3.37%	3.18%

Interest cost

While computing the interest cost for FY 06 and FY 07, Commission has accepted the opening level of loans projected for FY 06 according to opening balance sheet and the weighted average interest at 9.11%. The Commission has however disallowed Rs.42 Cr of equity funding for FY 06 as the opening balance sheet did not show any surplus. Based on subsequent submissions made by GETCO, the amount of Rs.42 Cr has also been included as loan and not as equity. For FY 07, the Commission observed that since the company is likely to earn RoE during FY 06, the return on equity earned is likely to be investesd on the capital works during FY 07 and hence proposed equity investment has been allowed.

In the order for FY 08, the Commission has observed capital expenditure in FY 07 to be in line with that approved by the Commission in the previous order and has approved the approach adopted by GETCO in projecting the Interest cost. The basis for approval of interest cost has been the actual interest and finance expenses during FY 06. The capex for FY 07 and FY 08 has been assumed to be funded with normative gearing ratio of 70:30 in accordance with GERC regulations to arrive at the outstanding loan for FY 08.

For the purpose of determination of interest cost for FY 09 under MYT control period, the opening loan and the loan additions during each year have been revised in line with the Capex programme approved by Commission. In the approved capex plan, the capital expenditure during the control period has been reduced by Rs.502.32 Cr by the

Commission. The Commission has finally approved interest cost at an average interest rate of 9.36% for FY 09.

The table 6 below shows the interest cost approved by Commission from FY 06 to FY 09.

Table A-6.15: Interest cost approved during FY 06 to FY 09

Particulars	FY 06	FY 07	FY07-08	FY08-09
Opening Loan (Rs.Cr)	1925.97	1873.37	2279.6	2128.64
Closing loan	1873.37	1843.17	2334.3	2406.96
Net Interest Cost (Rs.Cr)	173.06	169.29	198	212.27
Approved Rate of Interest	*9.11%*	*9.11%*	*8.58%*	*9.36%*

Interest on Working capital

The Commission observed that the projections made by GETCO for working capital and interest on working capital for FY 06 and FY 07 at the interest rate of 10.25% are in line with the norms of the Commission and have therefore been approved in full.

For FY 08, the Commission has examined the projection for working capital based on the O&M expenses approved by the Commission. The Commission approved a working capital requirement of Rs.249.85 Cr as against Rs.253.62 Cr proposed by GETCO and accordingly a slight disallowance in interest on working capital has been approved. The interest on working capital has been approved on the basis of prevailing weighted average rate of interest from commercial banks as adopted by GETCO for making projection for FY 08.

In the MYT order for FY 09, the Commission observed that as per Regulation (V) of GERC Regulations 2005 the working capital should be determined on normative basis and the interest shall be equal to the short term prime lending rate of SBI as on 01/04/2004 or 1st April of the year in which the project has been declared under commercial operation whichever is later. Commission has computed the working capital requirement and made certain disallowance primarily on receivables projected by GETCO. The Commission has further considered the short term PLR as 10.25% in line with prescribed regulations as against 10.5% proposed by GETCO.

The details of interest on working capital approved by the Commission from FY 06 to FY 09 are tabulated below in table 7.

Table A-6.16: Interest on Working Capital approved from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Interest on Working Capital	23.66	24.66	19.69	27.78
Approved rate of Interest for WC (%)	10.25%	10.25%	7.88%	10.25%

Rate of Return

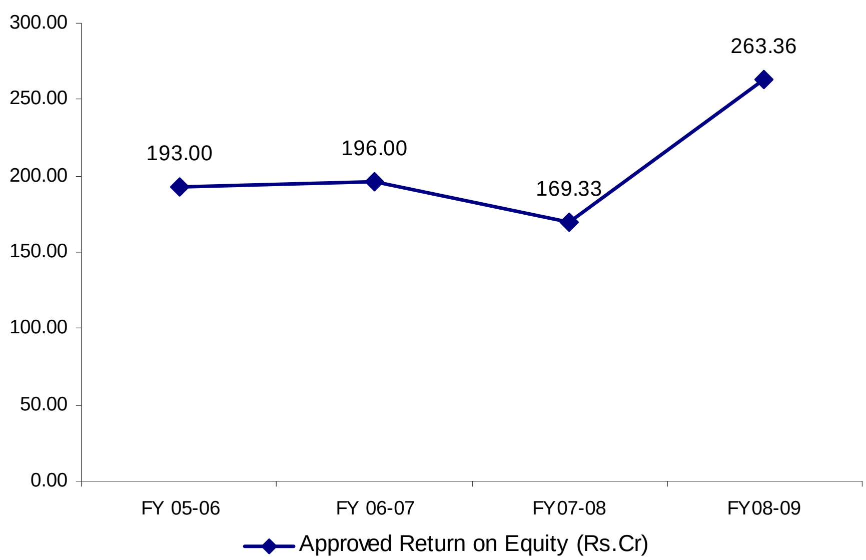
The RoE of Rs.269.71 Cr claimed by the company for FY 05 is not allowed as it was not a separate entity during FY 05 as a result of which the transmission company could not have generated any free reserves for investment during the year FY 06 as equity capital. Accordingly, the addition of Rs.42 Cr to the equity capital proposed by GETCO for FY 06 has been disallowed. Correspondingly, the RoE during the year FY 06 has been revised and consequently also for FY 07

For the FY 08, the Commission has considered the reserves to the extent of 30% investment of the capital expenditure for the years FY 07 & FY 08 to allow additional equity for purpose of claiming return on equity as projected by GETCO. The Commission has however observed that the capital structure of the company has a Debt: Equity ratio of almost 60:40, and has therefore limited the return on equity to 10% instead of 14%.

For determination of RoE for FY 09 under MYT control period, the equity addition during the control period has been approved with normative equity (30% of Capex) proposed during the control period. However, the Commission has again approved the normative RoE of 14% as per the regulations and not 10% as approved during FY 08.

The approved rate of return between FY 06 and FY 09 are given in the figure 1 below:

Graph A-6.4: Approved Rate of Return between FY 06 and FY 09



Income Tax

GETCO has not claimed any amount towards income tax or other tax for any year from FY 06 to FY 09. The Commission has stated in its orders that as per the terms and conditions of tariff, tax on the income streams of the transmission licensee from its core business should be computed as an expense and that GETCO may recover income tax through transmission charges based on tax paid.

Capital Expenditure

For FY 06 and FY 07, the Commission has approved the expenditure proposed by GETCO for capital works and R&M during FY 07 while the Commission has been informed that expenditure proposed for FY 06 has already been incurred for the said works. For FY 08, the Commission has again approved the capital expenditure as proposed by GETCO.

As for FY 09 under the MYT Control period, the Commission has disallowed the capital expenditure of Rs.89.79 Cr proposed by GETCO to be expended on 220 kV sub-station at Nanikhakher and an additional 400 kV line. The Commission opined that the proposed 220 KV sub-station at Nanikhakher is not appropriate delivery point for evacuation of 2000 MW from Adani Power Private Limited and is also a deviation from that approved by the Commission in bid document and is therefore disapproved. Similarly, in absence of proper justification for 400 kV line, the same has also been disapproved.

Non-Tariff Income

The Commission for the all the years from FY 06 to FY 09 has considered that a transmission company has limited sources for other income particularly when it does not undertake trading activity. The Commission has accordingly approved the other income or the non-tariff income as proposed by GETCO for each year from FY 06 to FY 09.

Table A-6.17: Non-Tariff Income Approved from FY 06 to FY 09

Particulars	FY 06	FY 07	FY07-08	FY08-09
Non-Tariff Income (Rs.Cr)	4.55	4.77	16.70	45.01

Annual Transmission Cost

The Commission has approved the Annual Transmission Cost by deduction of the non-tariff income and expenses capitalized from other admissible expense components as discussed above. The table 8 below shows the ATC approved by the Commission vis-à-vis that proposed by GETCO from FY 06 to FY 09.

Table A-6.18: Approved ARR for GETCO from FY 06 to FY 09

Particulars	FY 06	FY 07	FY07-08	FY08-09
Approved ARR (Rs.Cr)	811.26	842.99	916.51	1036.03
ARR proposed by GETCO (Rs.Cr)	966.50	1013.20	988.26	1091.11
Disallowance (%)	16.06%	16.80%	7.26%	5.05%

Transmission Tariff

The Commission, for all years from FY 06 to FY 09 has computed the transmission tariff only for long term consumers and has been not categorically specified tariff for short-term open access consumers. In it tariff order for FY 08, the Commission suggested that Long-term contracts should be signed by GETCO with the concerned consumers / users (other than Licensees / DISCOMs) in respect of their MW demand for the purpose of levy of Transmission charges at specified rates.

The transmission tariff approved by the Commission from FY 06 to FY 09 is given in the table below.

Table A-6.19: Approved Transmission Tariff from FY 06 to FY 09

Particulars	FY 06	FY 07	FY07-08	FY08-09
Approved Net Annual Transmission Cost (Rs.Cr)	811	843	917	1036
Transmission Charges (Rs/MW/Day)	2762	2832	2510	2410
Transmission Charges (Rs/MW/Month)	84023	86142	76521	12.55*

Other Charges

The Commission has considered determination of the following charges for FY 06 and FY 07 based on the petition filed by GETCO:

Reactive energy charges

In the tariff petition for FY 06 and FY 07, GETCO has submitted that some of the wind power generators are drawing reactive energy as high as 40% to 200% from the system. The transmission company has requested that reactive compensation should be provided locally to limit the reactive power drawal from the system as the industrial consumers are expected to maintain certain power factor and are penalized if the power factor is low. GETCO has further submitted that the wind energy generators are presently being charged at 10 paisa / kVARH which is comparatively much lower than being charged in other states.

The Commission viewed that Reactive power flow on the system does increase the transmission loss, affects system stability and may result in grid disturbance. The Commission considers that there is justification for recovery of reactive energy charges by GETCO and has approved the following charges for drawal of reactive energy:

Particulars	Reactive Charges
For the drawal of reactive energy at 10% or less of the net energy exported.	10 paise / KVARH
For the drawal of reactive energy at more than 10% of the net active energy exported.	25 paise / kVARH

Wheeling charges

GETCO has submitted that since most of the wind power generators have opted for wheeling option, wheeling charges need to be reviewed to relieve the additional burden on the utility especially since the actual losses are considerably higher than 4%, the level at which wheeling charges are recovered presently.

The Commission has however maintained in the tariff order for FY 06 and FY 07 that it is a policy decision of the Govt. of Gujarat to recover 4% of wheeling charges for wheeling wind energy and as the Commission has accepted this position in its various orders, the wheeling charges should not be enhanced. The Commission clarified that the wheeling charges will be at 4% only and will be recovered in kind, as at present.

O&M charges from dedicated transmission lines

GETCO has proposed to recover O&M charges from the users of dedicated transmission lines in Gujarat as provided under open access regulations of CERC at the rates specified in the regulations.

The Commission has however not given due consideration to the matter and has allowed existing practice to continue. The Commission however stated that it shall examine the submissions and take appropriate decision separately.

In the tariff order for FY 08, the Commission has not considered any of the additional charges approved/deliberated upon in the tariff order for FY 06 and FY 07 except the long term transmission tariff.

For FY 09 under the MYT order also the Commission has simply stated that the recovery of transmission / wheeling charges from purchasers/ users of renewable energy shall be in accordance with the Order of the Commission from time to time.

A-6.2. Gujarat – Distribution Utilities

Introduction

Post unbundling, the Commission has issued Tariff Orders for FY 07 and FY 08 in which it considered the assets and liabilities (gross block, loans and equity) in line with the Financial Restructuring Plan (FRP), as approved by the Government of Gujarat. Thereafter, the Commission shifted from an ARR approach to Multi Year Tariff (MYT) approach and issued an MYT Order for the Control Period FY 09 to FY 2010-11.

Sales / Demand

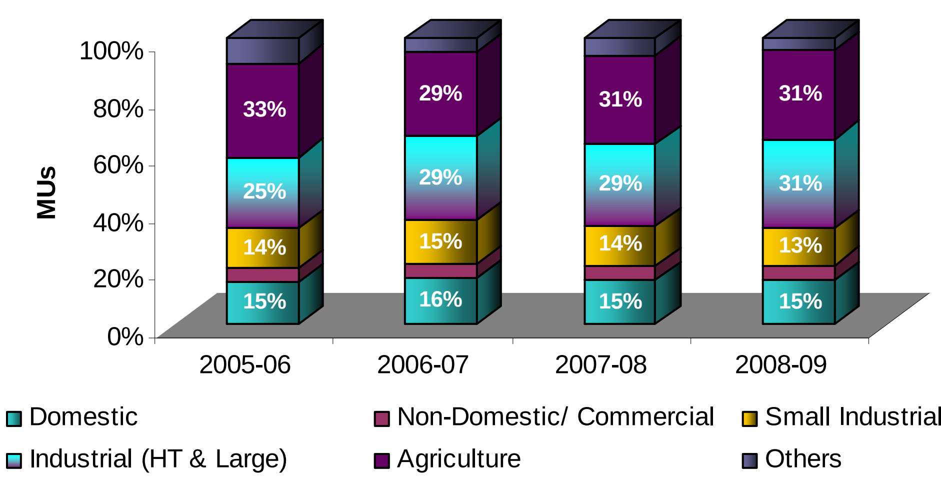
The Commission has followed CAGR of past 3 years and 5 years to arrive at the sales figure for the year. In addition to the CAGR approach, the Commission has considered the year on year sales growth. The same approach was followed for the MYT control period as well. For example, the Commission while approving sales for FY 08 not only considered the 3 years CAGR (2003-04 to FY 06) but also growth in sales during FY 06 over FY 05.

In the FY 07, the Commission had also applied correction factor in case of domestic sales because of implementation of Jyoti gram scheme. Similarly for industrial consumers, the growth rate was higher because of economic growth post recession.

In the State of Gujarat, agriculture category has the highest share in the overall sales mix for DISCOMs in Gujarat. The second highest sales category is Industrial, with domestic being third.

The graph below shows the percentage wise sales to each category year on year of all the DISCOMs combined together.

Graph A-6.5: Consumption Mix



The table below shows the absolute sales under each category for the four DISCOMs. PGVCL and UGVCL have a higher percentage of agricultural sales and MGVCL and DGVCL have higher percentage of industrial sales.

Table A-6.20: Total Category wise Approved sales (MU's) of the four DISCOMs

Categories	FY 06	FY 07	FY 08	FY 09
Domestic	4222	4643	5069	5779
Non-Domestic/ Commercial	1406	1562	1727	1997
Small Industrial	4041	4481	4613	4904
Industrial (HT & Large)	7224	8635	9647	11665
Agriculture	9514	8555	10442	11689
Others	2502	1462	1972	1641
Total	**28909**	**29338**	**33470**	**37675**

In percent terms, a significant fact that can be drawn is that the Industrial consumers (HT and large) which account for about 25-30% of total quantum of energy sales contributed 41-45% in the overall revenue realization. The domestic category is not a subsidized category; its realization has been relatively similar to its energy consumption pattern. The category which in terms of sales is next only to industrial i:e agriculture (25-31%) accounts for only 10% in the revenue realization area.

Such disparity between energy consumed and revenue contributed indicates clear incidence of cross-subsidy in the state where agriculture consumers are to a large extent being subsidized by industrial consumer categories.

T&D Losses

In agrarian states like Gujarat, wherein supply to most of the Agriculture pump-set connections is un-metered, T&D losses are determined by deducting the assessed/ estimated agricultural consumption from energy available within the state after meeting the energy sales to the metered categories. Since the energy availability within the state and the energy sales to the metered categories are based on meter readings, these figures cannot be disputed. Thus the difference between the energy availability and metered energy sale with in the state needs to be segregated between agricultural consumption and the T&D losses.

As compared to DGVCL and MGVCL, loss levels are higher in case of PGVCL and UGVCL owing to higher agricultural consumption in the latter two. Commission has adopted 1700 kWh/HP/annum as the normative level of consumption in case of agriculture to arrive at distribution losses. This level has been adopted on the recommendation of the Mishra Committee .Table below gives summarized the T&D loss proposed and approved during the period FY 06 to FY 09.

Table A-6.21: Distribution Losses proposed & approved for each DISCOM during FY 06 to FY 09

Dist Loss (DGVCL)	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	21.40%	19.90%	15.59%	14.45%
Proposed by the Utility	17.78%	16.33%	15.59%	14.45%
Dist Loss (MGVCL)				
Approved in the Tariff Order	23.60%	21.60%	21.09%	15.00%
Proposed by the Utility	20.09%	18.11%	21.09%	15.39%
Dist Loss (PGVCL)				
Approved in the Tariff Order	41.00%	36.50%	30.22%	30.00%
Proposed by the Utility	37.85%	33.66%	30.22%	30.30%
Dist Loss (UGVCL)				
Approved in the Tariff Order	28.60%	25.10%	16.95%	16.00%
Proposed by the Utility	24.94%	21.76%	16.95%	16.31%

As summarized in the above Table, the distribution loss proposed by the DISCOMs was lower than the approved figure. The Commission had approved higher distribution loss on account of unbundling while directing the DISCOMs to take more effective steps to reduce the losses and make a more realistic assessment of consumption by pumpsets. Commission had also directed the DISCOMs to undertake energy audit study on priority to identify and improve on the high loss areas.

PGVCL has the highest T&D loss with 39% share in the total agricultural sales in the state of Gujarat. For the MYT Control period, Commission had specified loss reduction trajectory for each of the DISCOM. For PGVCL it is 2% reduction for every year, for the other three DISCOMs reduction of 1% every year during the control period.

Power Purchase Quantum

Post unbundling, GUVNL was made responsible for power purchase from GSECL for supply to the DISCOMs. In the tariff order for FY 07, GUVNL purchased the entire power from GSECL, CGS and IPPs and performed the activity of bulk supplier of power to all the four DISCOMs at Bulk supply tariff (BST). However, since FY 08 onwards, GUVNL instead of ascertaining the BST, allocated PPAs to individual DISCOMs based on allocation of high costing PPAs to DGVCL and MGVCL and low cost PPAs to PGVCL and UGVCL so as to ensure level playing field among the four DISCOMs.

The Commission directed the DISCOMs to follow merit order dispatch (MOD) principle while purchasing power subject to Nuclear Power Corporation (NPC) power plant at Tarapore and hydro power plant at Kadana being considered as must run power plants.

The Commission allocated the capacities to the DISCOMs and arrives at the units dispatched to each DISCOM.

Table A-6.22: Approved Power Purchase Quantum (MUs)

Sources	TOTAL FY 07	TOTAL FY 08	TOTAL FY 09
Central Sector	13,582	14,607	**19,658**
IPPs	11659	8,670	**9,122**

Sources	TOTAL FY 07	TOTAL FY 08	TOTAL FY 09
GSECL	19266	20,391	**20,405**
Others	781	1,111	**1,301**
Gross Power Available	**45,288**	**44,779**	**50,486**
Net Power Available (after PGCIL & GETCO losses)		**33,470**	**37675**

Power Purchase Cost

For FY 07 the DISCOMs purchased power at the BST estimated by GUVNL. The BST includes the cost of power purchase from various generating stations, the transmission costs of PGCIL, GETCO and the cost of bulk supplier GUVNL. The revenue from sale of power to the bulk supply licensees i.e. Torrent Power AEC Ltd. (TPAL), Torrent Power SEC Ltd. (TPSL) and Kandla Port Trust was subtracted from the total power purchase cost to arrive at net power purchase cost to be charged to the four DISCOMs.

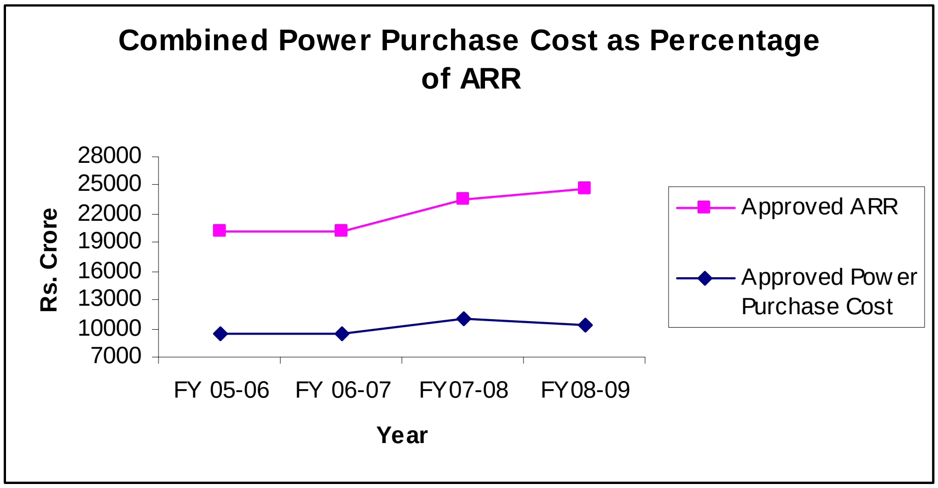
The amount available for power purchase with the four DISCOMs was arrived at by subtracting the sum of total expenses of all the four DISCOMs from the total revenue of the four DISCOMs. The difference between the net power purchase cost and the amount available with the four DISCOMs, indicated the revenue gap. This revenue gap varies from DISCOM to DISCOM. The bulk supply tariffs for the four DISCOMs were fixed keeping in view the magnitude of the revenue gap.

Since FY 08, GUVNL assigned the PPAs to the DISCOMs, the PPA allocation keeps on changing year on year depending upon the rate per unit of the PPA. The low cost PPA are assigned to PGVCL and UGVCL .

The table below gives details about the power purchase cost approved by the Commission and proposed by board. The table also mentions about per unit cost to each DISCOM.

Particulars	FY 07-08	FY 08-09
DGVCL		
Approved Cost	317,696	343,201
Proposed Cost	337,877	355,863
Approved Cost per unit	3	2.96
MGVCL		
Approved Cost	176,123	179,385
Proposed Cost	175,913	183,563
Approved Cost per unit	2.69	2.49
UGVCL		
Approved Cost	279,831	298,069
Proposed Cost	288,495	299,365
Approved Cost per unit	2.07	2.01
PGVCL		
Approved Cost	332,035	397,656
Proposed Cost	307,910	414,647
Approved Cost per unit	1.80	1.87

The graph above shows the combined power purchase cost and ARR. Power purchase cost is approx 80% of the ARR.



Role of GUVNL

GUVNL is a holding company of the restructured successor companies, and is also entrusted with trading of electricity. It purchases power from various sources and supplies to the four distribution companies and also to the bulk distribution licensees in Gujarat. GUVNL is a wholly owned company of the Government of Gujarat and has entered into bulk supply agreements with the four distribution companies. The contracted generation capacities of GUVNL have been allocated to the four DISCOMs. Certain generating capacity is retained with GUVNL from which it supplies power to the three licensees. The tariff for GUVNL's sale of power to DISCOMs is same as that of purchase of power by GUVNL from the respective generating stations. Apart from the tariff payment GUVNL shall also charge transmission charges and a margin to cover its own operating expenses.

O&M Cost

The Commission has segregated the O&M expenses into employee expenses, repairs and maintenance and Administrative expenses.

Employee Expenses

In the year FY 07, there was an additional burden due to implementation of the merger of 50% Dearness Allowance with Basic pay. For this Commission had approved 15% increase for FY 06 over FY 05 and 8% increase for FY 07 over FY 06.

For FY 08, the Commission had approved employee expenses based on the actuals of FY 06.The Commission applied growth rate of 5% over the actuals for FY 06 to arrive at the employee cost of FY 08. Commission found the actual employees cost for FY 06 was less than the cost approved by the Commission for the year and an increase of 5% for the years FY 07 & FY 08 considered reasonable.

For the MYT control period, the Commission approved 6% increase over the actual employees cost of FY 08. Commission had also considered the payment of arrears due to 6th Pay Commission as proposed by the DISCOMs. The Commission specified that the payment of entire arrears may not materialize during FY 09 and therefore, 60% of the amount has been provided during FY 09 and balance 40% during 2009-10.

Table A-6.23: Approved Employee Cost of DISCOMs

Particulars	FY 06	FY 07	FY 08	FY 09
Employee Cost (Rs. Crs)	531.49	574.02	608.06	847.37
Employee Cost Per Unit of Sale (Rs/kwh)	0.18	0.20	0.18	0.22

Repairs and Maintenance Expenses

The Commission has taken the actual R&M expenses of the previous year and escalated the same for increase on year on year basis. The escalation factor varied for each year.The table below gives details about the R&M expenses of each of the DISCOM.

Table A-6.24: Approved R&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
DGVCL	14.49	15.65	16.90	29.46
MGVCL	23	25	40	40
PGVCL	45	49	66	58
UGVCL	26	28	48	51
Total	**108.50**	**117.17**	**170.07**	**179.04**
R&M as a Percentage of GFA	2%	2%	2%	2%
Total R&M as % of Consolidated ARR	*1.01%*	*1.08%*	*1.36%*	*1.25%*

Administrative and General Expenses

In the Tariff order for FY 07, Commission had approved 10% increase for FY 06 to meet the transitional cost during first year of operation, and 8% thereon for FY 07.The Commission approved other debits with 10% increase for FY 06 and 8% increase for FY 07. DISCOMs gave a segregated projection for Administrative and general expenses and other debits.

For FY 08, DISCOMs submitted a combined proposal to Commission for A&G expenses. The Commission while approving segregated A&G into Administrative & General expenses, other debits, and extraordinary items. The Commission approved 5% increase over the actuals of FY 06 to cover inflation and increasing business requirements for Administrative & General expenses. For other debits Commission approved an increase of 5% on the items under other debits based on actuals.

For FY 09, the Commission approved 6% increase during the control period.

The total O&M expense approved in the tariff order for FY06-07 to FY08-09 has been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission.

Table A-6.25: Approved O&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
DGVCL	124.07	134.00	129.58	176.58
MGVCL	170	184	192	291
PGVCL	286	309	366	419
UGVCL	202	219	221	318
Total O&M Expense	**782.41**	**845.00**	**908.02**	**1204.51**
O&M as percentage of ARR	7%	8%	7%	8%

Provision for bad and doubtful debts

In the Tariff order for FY 06 and FY 07, the Commission had approved the 0.4% of revenue from sale of power for the FY 06 and FY 07. The Commission has limited the bad and doubtful debts to 0.4% of revenue form sale of power in the GERC Regulations. However, in the Tariff Order for FY 08, Commission made the provision for bad and doubtful debts based on the actuals for FY 06. Commission found that the realization of revenue was good and there was no need to provide for the bad and doubtful debts at 0.4%.

For the MYT control period, Commission had approved the provision at 0.1% of the projected revenue from sale of power for UGVCL, MGVCL and DGVCL. The Commission made the provision for bad and doubtful debts for the control period as proposed by the UGVCL, MGVCL and DGVCL. However, Commission approved 0.2% of bad and doubtful debts as against 0.4% proposed by the PGVCL.

Capital expenditure (Capex)

In the year FY 07, the Commission approved the capex proposed by the DISCOMs. The capex proposed was under various schemes viz.

- Electrification of hutments
- Kutir Jyoti Scheme
- Jyotigram Scheme
- Special Component Plan

The Commission analysed in brief the schemes where expenditure was to be undertaken.

For the other years as well the Commission approved the capex as proposed by the DISCOMs. The table below gives details about the capex approved and the source of funding. In the year FY 09, the DISCOMs took up scheme “Golden Goal” under which the pending agricultural connections were released.

The table below gives details about the various schemes and their funding sources.

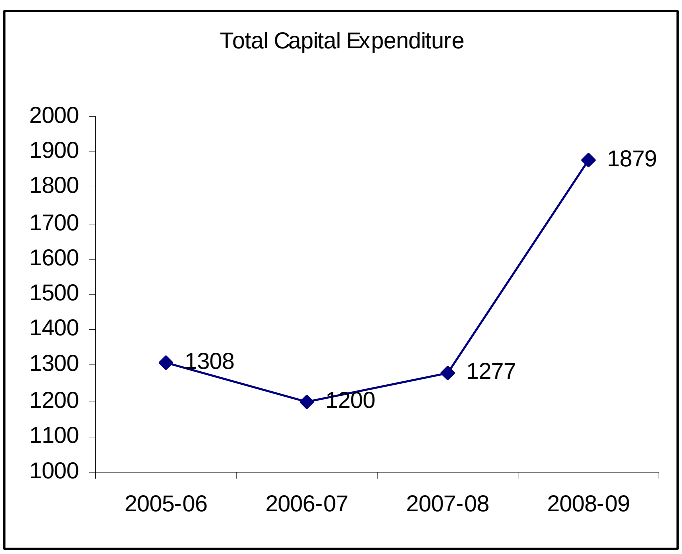
Schemes	Source Funding
Electrification of Hutments etc.	Government Grant
Kutir Jyoti Scheme	Government Grant

Schemes	Source Funding
Jyoti Gram Yojana	Government Grant
Normal Development Scheme	Deposit Work + Internal Resources
System Improvement Schemes and Scheme for Providing Meters	(Grant + Loan under APDRP)
Rural Electrification Schemes- TASP wells (AG & TASP) and Peta paras	Govt. Grant + Loan
Special Component Plan	Government Grants
Normal RE Works	Loan + Internal Resources
RGGVY	90% GOI Grant
Other new Schemes	Internal Resources + Loans

Table A-6.26: Approved Capital Expenditure for DISCOMs (Rs. Crs)

DISCOM's	DGVCL	MGVCL	PGVCL	UGVCL	DGVCL	MGVCL	PGVCL	UGVCL
Sources	FY08				FY09			
Consumer Contribution	156.14	26.23	132.43	43.20	55.05	52.01	166.13	53.91
Grants	24.88	30.18	5.90	41.48	45.34	137.30	82.23	91.75
Equity	137.95	42.44	152.60	126.42	128.70	77.50	167.09	57.97
Additional Equity								
Loans	11.04	83.90	173.11	88.75	58.04	180.82	389.87	135.26
GoG Loans								
Total Capital Expenditure	330.00	182.76	464.04	299.85	287.13	447.63	805.32	338.89

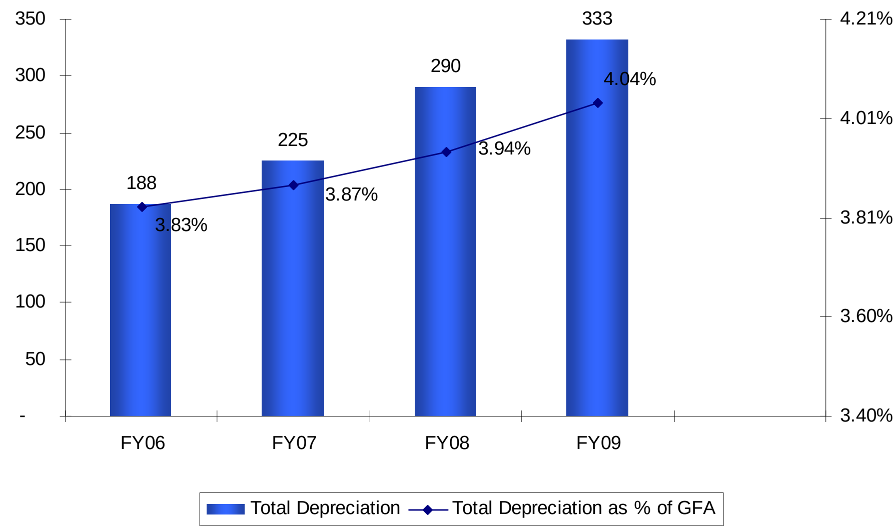
The graph below gives details about the capital expenditure approved for the DISCOM's over FY 06 and FY 09



Depreciation

For all the years (FY 06 to FY 09), the Commission approved depreciation taking into account the opening balance of assets at the beginning of the year and proposed capitalization i.e additional assets proposed to be brought into use during the year. The actual average rate of depreciation worked out and approved for the period FY 06 to FY 09 is ranging from 3.58% to 3.64%. The Commission has calculated the depreciation rate applicable to distribution licensee's assets as indicated in the CERC / GERC Regulations.

Graph A-6.6: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



Working Capital Requirement

The working capital requirement of the DISCOMs has been calculated based on the norms prescribed by Commission .The norms considered by the Commission are:

- Operating expenses for one month
- Maintenance spares at 6% p.a
- Revenue for two months

The Commission in the Tariff Order for FY 08 had mentioned that because the GUVNL purchases power from various sources and sells to DISCOMs, two months receivables in working capital of DISCOM was not appropriate. The Commission had considered receivables for only a month as a norm to arrive at interest on working capital. Moreover, Commission observed that the actual interest on working capital incurred by DISCOMs for FY 06 was very less as against the approved interest for the FY 06. The Commission approved 9% rate of interest for FY 07 and 7.88% for FY 08.

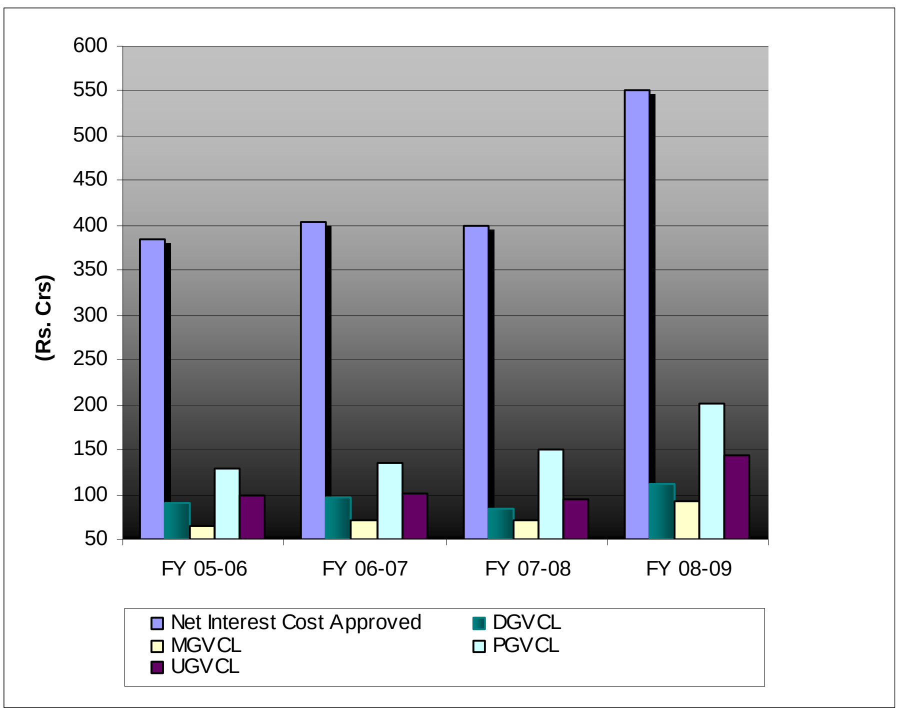
During the MYT control period, DISCOMs had projected the interest on working capital based on normative working capital formula as per Terms and Conditions of Tariff Regulations except in respect of receivables. Commission had approved the rate of interest on working capital on a normative basis and was equal to the short-term prime lending rate of SBI as on 01/04/2004. The short-term PLR as on 01/04/2004 was 10.25%.

Interest Expense

The Commission has approved the interest cost by taking into account the opening balance of the loans, loans taken during the year and repayment. The Commission has also provided for interest on security deposit. The Commission had accepted the interest cost projected by the DISCOMs for the period FY 06 to FY 09. The Commission had also considered the disallowed equity for FY 06 as loan taken during the year.

For the MYT control period, Commission approved 10% rate of interest as against 10.75% projected by the DISCOMs. Commission while computing the interest rate for the control period had considered the actual interest charges of security deposits and loans other than State Government of 9.5% for FY 08.

Graph A-6.7: Total Interest Cost Approved and interest cost for each DISCOM (Rs. Crs)



Rate of Return

The Commission has approved the equity as provided in the opening Balance Sheet notified by the State Government, the audited accounts for the year and reserves invested in capital expenditure. For equity computation of DISCOMs, the Commission did not account equity investment in the capital works for FY 06 but thereafter reserves invested in capital expenditure was considered.

The Commission allowed return on equity of 7% for the period FY 06 to FY 08 as against 14% specified in the GERC (Terms and Conditions of Tariff) Regulations, 2004. Commission had restricted the return on equity to 7% in order not to increase the revenue gap.

The Commission for FY 09 had approved the return on equity of 14%, which is as per GERC Regulations.

Table A-6.27: Approved Return by the Commission

Particulars	FY 07	FY 08	FY 09
Parameter for Rate of Return	ROE	ROE	ROE
Distribution	7%	7%	14%
Return	147.86	153.75	155.45
DGVCL	23.79	26.09	23.55
MGVCL	20.81	22.33	27.04
PGVCL	68.91	70.15	69.23
UGVCL	34.35	35.18	35.63

Annual Revenue Requirement

The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY06 to FY09.

Table A-6.28: Proposed, Approved ARR (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
DGVCL				
Proposed by the Utility	3,473	3,742	3,687	3,961
Approved	3,201	3,366	3,412	3,758
Approved as a percentage of proposed	92%	90%	93%	95%
MGVCL				
Proposed by the Utility	1,901	1982.05	2,087	2,323
Approved	1,747	1,753	2,035	2,232
Approved as a percentage of proposed	92%	88%	98%	96%
PGVCL				
Proposed by the Utility	3296.85	3,487	3,796	4,613
Approved	3,030	3,034	3,920	4,790
Approved as a percentage of proposed	92%	87%	103%	104%
UGVCL				
Proposed by the Utility	3,052	3,026	3,314	3,616
Approved	2,809	2,736	3,158	3,519
Approved as a percentage of proposed	92%	90%	95%	97%

Subsidy Support

The government of Gujarat used to give subsidy to erstwhile GEB for the loss due to supply of electricity at a lower tariff to agricultural pumpsets. That subsidy is now paid to the DISCOMs on the basis of the agricultural consumption in each DISCOM. The Commission approved the agriculture subsidy of Rs. 110000 lakhs among the DISCOMs in proportion to the consumption by pumpsets in each DISCOM. The table below summarizes the subsidy support provided to the DISCOMs The Commission notifies tariff along with the subsidy.

Table A-6.29: Subsidy provided by the GoG from FY 06 to FY 09 (Rs. Lakhs)

Particulars	FY 06	FY 07	FY 08	FY 09
DGVCL				
Agriculture Subsidy	5636	6595	*	6195
Other Subsidies				3297
MGVCL				
Agriculture Subsidy	8342	8785	7680	7323
Other Subsidies				2779
PGVCL				
Agriculture Subsidy	40487	42636	41463	43017
Other Subsidies				6469
UGVCL				
Agriculture Subsidy	55535	51984	60858	53464
Other Subsidies				2802
Total				
Agriculture Subsidy	110,000	110,000	110,001	109,999
Other Subsidies				15347

**As per Tariff order no subsidy was given to DGVCL in the FY 08.*

Tariff Determination

A two part tariff structure comprising energy charge and demand charge exists in the state of Gujarat.

As mentioned in the earlier paragraphs the retail tariffs across DISCOMs are same. But the bulk supply tariffs are different. In the year FY 06 and FY 07, the Commission followed the following approach to ascertain BST. GUVNL purchases power from various sources. The BST of GUVNL is arrived in the following manner.

BST of GUVNL (Rs./kWh) = Net power purchase cost/ Energy delivered to four DISCOMs (Ex-bus)

The net power purchase cost = total power purchase cost from all sources + Transmission charges and GETCO + GUVNL expenses - Power purchase cost recovered from bulk sales to licensees like Torrent.

BST to individual DISCOM (Rs./kWh) = (Revenue Gap of individual DISCOM + Amount available for power purchase)/ Energy purchased by the DISCOM

The Gap of individual DISCOMSs was arrived at by allocating total gap to each DISCOM in proportion to the revenue earned. The total gap is arrived at by subtracting the amount available for all the four DISCOM's from the net power purchase cost. The gap arrived was apportioned to individual DISCOM in proportion to revenue of each DISCOM. The amount available for power purchase by DISCOM is the revenue less the expenses other than power purchase. The revenue was based on existing tariff includes income from sale of power, other income, Agricultural compensation and subsidy from Government of Gujarat. The table below gives detail about the BST of all the four DISCOMs for FY 06 and FY 07.

Year	Details	DGVCL	MGVCL	UGVCL	PGVCL	Total
FY 06	Bulk supply tariff (Rs./kWh)	3.18	2.70	1.97	1.72	2.25
FY 07	Bulk supply tariff (Rs./kWh)	3.09	2.62	2.11	1.81	2.32

For FY 08 and FY 09 the Commission assigned the individual PPAs to the DISCOMs. The GUVNL cost was assigned to the DISCOMs in the ratio of the power purchased by them.

In the year FY 07 the Commission calculated the fixed charges based on consumer load. The fixed charges were marginally increased; the energy charges have not been increased in the year.

In the Tariff Order for FY 08, Commission had suggested certain measures to DISCOMs to bridge the revenue gap approved for the year:

- Scope for reduction of consumption by agricultural pumpsets
- Scope for reduction in losses by effective metering and billing. Replacement of old electro-magnetic meters, would improve the metered energy, resulting in reduction in commercial losses.
- Through effective metering, billing and revenue realization of all consumer installations particularly in urban and industrial areas it is possible to improve the sales and revenue thereon

Though Commission had approved a revenue gap for FY 08 but the retail tariff was not increased in the year.

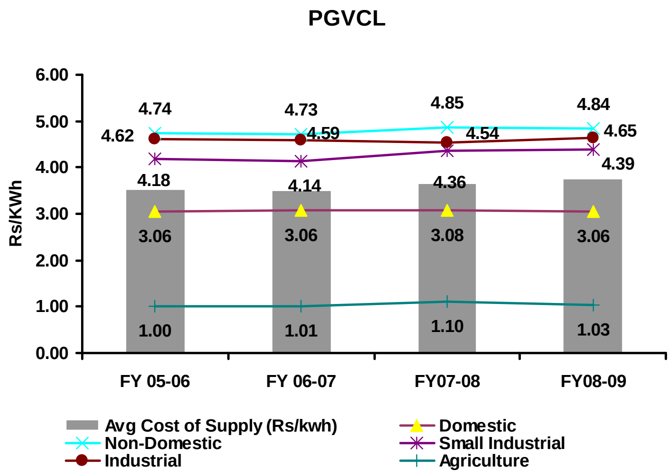
During the MYT control period, DISCOMs had proposed a tariff hike in the MYT Filing because of sharp rise in the cost of fuels across the world, especially in the last few years, on account of which it may not be possible for the DISCOMs to absorb all the multi fold cost increases unless there is some increase in tariffs.

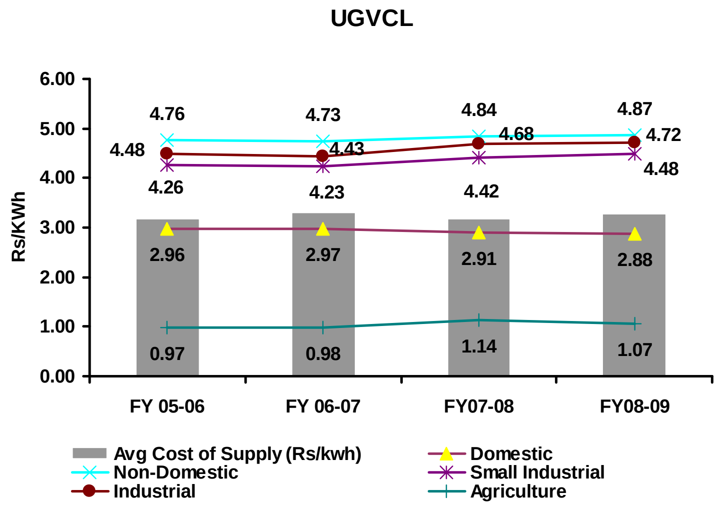
In the MYT Order, GERC had increased the tariff in some of the categories but that was not sufficient to meet the revenue gap approved by the Commission. GERC in its MYT order estimated a revenue gap for all the DISCOMs for the FY 09, FY 09-10 and FY 10-11. The tariff approved by the GERC was not even covering the full revenue gap for FY 09. GERC has also recognized the need for increase in tariffs or some restructuring to meet the revenue gap in the ensuing years.

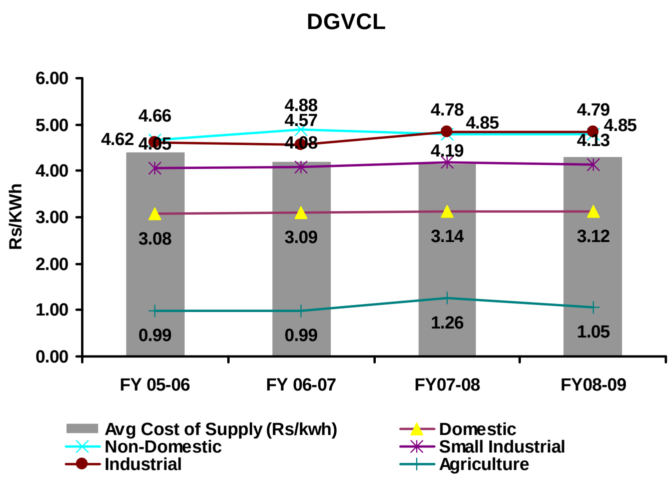
Time of Use Tariff

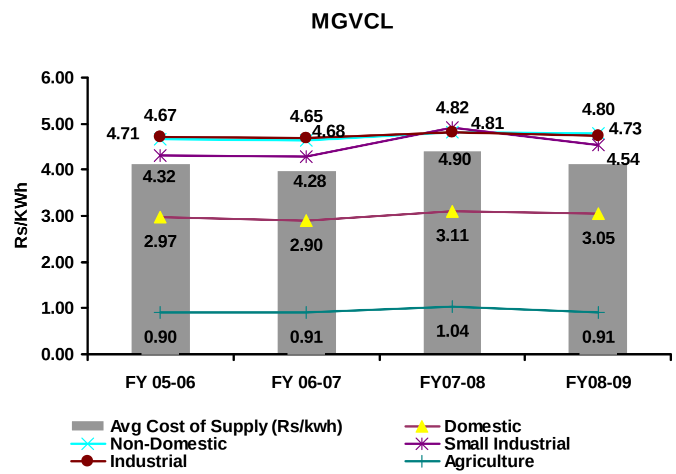
The Commission in the Tariff order for the FY 07 had approved the time of use tariff applicable to HT consumers having contract demand of 500 kVA above and for the and the water works consumers having connected load of 50 HP. The Commission approved additional energy charges (75 paise per unit) for the HT consumers during peak hours and has provided discount to the waterworks consumers during the off peak load hours (30 paise per unit) and night hours (75 paise per unit). The time of use charges was also approved without any revision for the FY 08 and FY 09 as well.

The graphs below show the cost of supply and average realization for each category from FY 06 to FY 09.


PGVCL
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4.74
4.73
4.85
4.84
4.62
4.59
4.54
4.65
4.39
4.18
4.14
4.36
3.06
3.06
3.08
3.06
1.00
1.01
1.10
1.03
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Non-Domestic
Industrial
Domestic
Small Industrial
Agriculture


UGVCL
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4.76
4.73
4.84
4.87
4.48
4.43
4.68
4.72
4.48
4.26
4.23
4.42
2.96
2.97
2.91
2.88
0.97
0.98
1.14
1.07
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Non-Domestic
Industrial
Domestic
Small Industrial
Agriculture

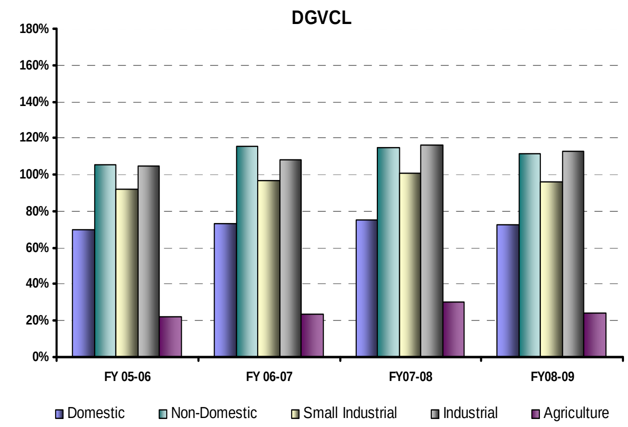

DGVCL
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4.66
4.88
4.57
4.78
4.85
4.79
4.85
4.62
4.05
4.08
4.19
4.13
3.08
3.09
3.14
3.12
0.99
0.99
1.26
1.05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Non-Domestic
Industrial
Domestic
Small Industrial
Agriculture

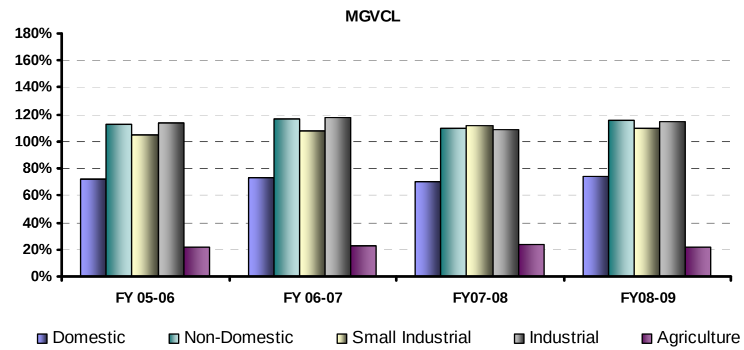

MGVCL
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
4.67
4.65
4.82
4.80
4.71
4.68
4.81
4.73
4.54
4.32
4.28
4.90
2.97
2.90
3.11
3.05
0.90
0.91
1.04
0.91
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Non-Domestic
Industrial
Domestic
Small Industrial
Agriculture

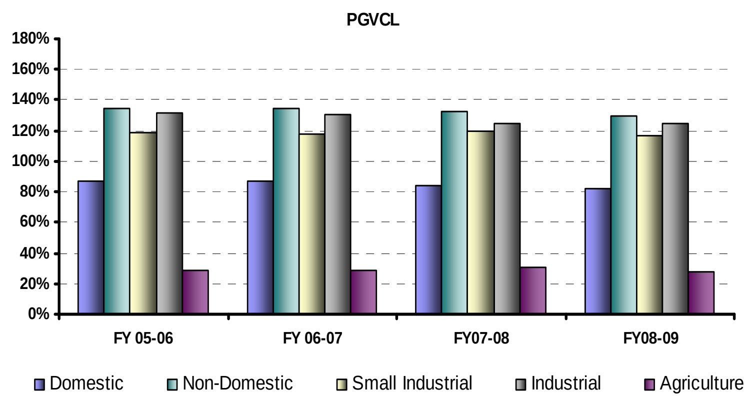
Average Cost of Supply vs. Realisation

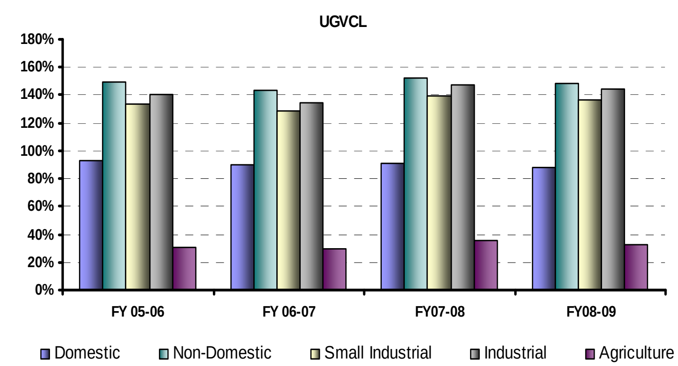
The graphs below give the realization percentage for each consumer category as against cost of supply for all the DISCOMs . Though the Commission directed the DISCOMs to furnish data to arrive at tariffs based on cost of service but nothing much has happened on that front. The realization for agriculture tariff shown in the graph below is after deducting the subsidy given by the Government of Gujarat.

In the year FY 09, the Commission increased the tariffs to meet the approved revenue gap. The utility was to recover 17% of the gap on an annual basis, and the other part of the gap, if any, was to be recovered during the remaining years of the control period. The graphs indicate that the realization from industrial consumers in case of PGVCL and UGVCL has been more than 120%, these DISCOMs are also the ones with higher share of agriculture consumers in their portfolio.


DGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


MGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


PGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


UGVCL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY 05-06
FY 06-07
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture

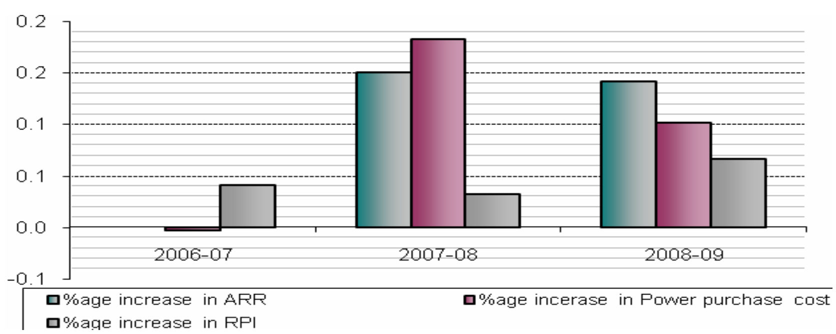
The table below gives details about the ARR and gap for the DISCOM's from FY 06 to FY 09.

Table A-6.30: ARR and Gap (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
DGVCL				
ARR (Rs. Crs)	3201	3366	3412	3758
Gap (Rs. Crs)	-209	-56	64	-46
MGVCL				
ARR (Rs. Crs)	1747	1753	2035	2232
Gap (Rs. Crs)	-110	-29	-162	-74
PGVCL				
ARR (Rs. Crs)	3030	3034	3920	4790
Gap (Rs. Crs)	-192	-50	-177	-219
UGVCL				
ARR (Rs. Crs)	2809	2736	3158	3519
Gap (Rs. Crs)	-179	-45	-151	-219

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



The Increase in ARR and Power Purchase cost for FY 2006-07 is insignificant as the Tariff order for FY 2005-06 was combined with Tariff order for FY 2006-07 as GEB had just unbundled.The Increase in the ARR for Fy 2007-08 over FY 2006-07 and for FY 2007-08 over FY 2008-09 has been consistent. The average Cost of Supply of Gujarat (four Discoms) has shown a mixed trend i:e increased in one year and decreased in another. Also the tariff has not increased in Gujarat significantly over the 2005-06 to 2008-09 period.

Particulars	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	10889.24	12525.76	14299.53

Particulars	2006-07	2007-08	2008-09
Approved Sales (MU)	29337.60	33470.00	37675.00
Averge Cost of Supply in Rs/kwh (A)	3.71	3.74	3.80
% of Power Purchase Cost in ARR	86%	88%	85%
% of Other remaining Cost in ACS	14.15%	11.73%	14.80%
% Annual Increase in Power Purchase Cost	-0.3%	18.3%	10.2%
% Annual Increase in Other Cost	7.48%	-16.44%	28.00%
% Annual RPI Increase	6.06%	5.21%	8.67%

Open Access – Transmission Charges, Wheeling Charges and Cross Subsidy Surcharge

The Commission calculated the transmission charges in the Tariff Orders issued for the FY 07, FY 08 and FY 09. The transmission charges are applicable for the use of transmission lines (system) of GETCO, the transmission licensee, by Generating Companies, Distribution licensees, other licensees and also consumers who are permitted open access under section 42 (2) of the Electricity Act 2003. The transmission charges are paid in cash and kind. The charges in cash are calculated individually for long term and short term open access consumers. The short term open access transmission charge is (1/4)th of the long term open access rate. The short term open access is further available for selected block of hours in a day as well and rates have been arrived at. The transmission charges in kind are percentage of energy loss. The transmission charges are uniform across DISCOMs. The table below given details about the transmission charges for long term and short term open access consumers.

Table A-6.31: Transmission Charges for the period FY 07 to FY 09

Transmission Charges	FY 07	FY 08	FY 09
Transmission Charges in Cash			
Long Term Access (Rs./MW/Day)	2832	2510	2410
Short Term Access (Rs./MW/Day)	708	628	603
Up to 6 hours in a day in one block (Rs/MW)	177	157	151
More than 6 hours and upto 12 hours in one block (Rs./MW)	354	314	302
More than 12 hours upto 24 hours in one block (Rs/MW)	708	628	603
Transmission Charges in Kind	4.27%	4.35%	4.09%

Wheeling Charges

The Commission calculated the wheeling charges in the Tariff Orders issued for the FY 07, FY 08 and FY 09The wheeling charges are applicable for use of distribution system of a licensee by other licensees or generating companies or captive power plants or consumers permitted open access under section 42(2) of the Electricity Act, 2003. Wheeling charges paid in cash as well as in kind. The wheeling charges in kind depend on the voltage level at which the consumer is drawing electricity. The wheeling charges are uniform across DISCOMs. In the FY 08--09 the Commission had also calculated the voltage wise wheeling charge.

Table A-6.32: Wheeling charges

Year	Wheeling Charges	LT level loss	HT level loss	Combined Loss
FY 07 (Rs/MW/Day)	2459	9.51%	10.01%	18.57%
FY 08 (Rs/MW/Day)	2205			
FY 09 (Ps / kWh)				
11 kV	13.48			
400 V	44.93			

Cross Subsidy Surcharge

The Commission in order to encourage the transition to competition and to make open access economically attractive for HT consumers the Commission had reduced the cross subsidy surcharge for FY 07 from the FY 06 level. The Commission was calculating cross subsidy surcharge based on the average cost of supply.

Commission while approving the cross subsidy surcharge for the MYT control period had also examined the provisions of the National Electricity Policy and Tariff Policy which are notified by the Govt. of India under the provisions of the Electricity Act, 2003. In the FY 09 the Commission arrived at cost of supply as the aggregate of (a) the weighted average of power purchase costs (inclusive of fixed and variable charges) of top 5% power at the margin, excluding liquid fuel based generation, in the merit order approved by the SERC adjusted for average loss compensation of the relevant voltage level and (b) the distribution charges determined on the principles as laid down for intra-state transmission charges. The Commission has used the following formula

$S = T – [C (1+ L / 100) + D]$

Where

S is the surcharge

T is the Tariff payable by the relevant category of consumers;

C is the Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel based generation and renewable power

D is the Wheeling charge

L is the system Losses for the applicable voltage level, expressed as a percentage

The Commission worked out the cross subsidy surcharge for HT/ EHT and railway traction category separately but then adopted the same rate for both. The table below provides details about the cross subsidy surcharge levied by the commission.

Table A-6.33: Cross Subsidy Surcharge

Particulars	FY 06	FY 07	FY 08	FY 09
Cross Subsidy Surcharge (Rs/kWh)	1.80	1.35	1.00	0.51

MYT Control Period

The Commission adopted the Multi Year Tariff (MYT) principles for determination of tariff in line with the provisions in Section 61 of the Electricity Act, 2003. The Commission issued MYT Regulations vide notification dated November 30, 2007 specifying Terms and Conditions for Determination of Tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff (MYT) framework for the period FY09 – FY11. Though Gujarat has shifted to MYT method but it has not adopted MYT in true sense. The MYT order does not specify controllable and uncontrollable parameters.

Concluding Remarks

- The Commission has not shown urgency to control distribution losses, which are very high in case of PGVCL and UGVCL. It's only in the MYT period that the Commission laid a roadmap to control them. But no study has been conducted so far to arrive at a realistic level of T&D losses.
- PPAs allocation seems to have placed an undue burden on DGVCL and MGVCL.

Torrent Power Limited

Introduction

Torrent Power Limited (TPL), is a company incorporated under Companies Act, 1956 and is carrying on the business of generation and distribution of electricity in the cities of Ahmedabad, Gandhinagar and Surat. TPL assumed the business consequent to the amalgamation of Torrent Power AEC Limited (TPAL), Torrent Power Surat Limited (TPSL) and Torrent Power Generation Limited (TPGL) with Torrent Power Limited. For FY 08 the petition submitted by TPL was combined for Ahmedabad and Surat but from the next year onwards the TPL started segregating the entire ARR for the Ahmedabad and Surat. TPL has adopted Multi year Tariff order principles in filling the tariff order for FY 09 onwards. TPL has also proposed introduction of uniform tariffs in Ahmedabad / Gandhinagar and Surat. The existing customer categories and tariff in Surat are different from those of Ahmedabad and Gandhinagar.

Generation

TPL has existing generation capacity of 500 MW at Ahmedabad, which consists of 400 MW coal based thermal power plant at Sabarmati and 100 MW Combined Cycle Gas based plant at Vatva. This capacity caters to the needs of Ahmedabad & Gandhinagar areas of TPL to a large extent.

TPL is also in the process of establishing 1147.50 MW combined cycle gas based power plant at village, Akhakhol, District Surat, Gujarat-TPL-G (Sugen).Out of the total capacity of Sugen 2/3rd is expected to be installed by 2nd quarter of 2009. Sugen project has been granted "Mega Power Project" status by the Ministry of Power, which mandates that the project should supply power to more than one state. The generation of Sugen will serve the needs of Surat area initially and that of Ahmedabad and Inter-State later.

Table A-6.34: Plant Wise fuel used and generating Capacity for FY 09

Name of the Station	COD	Station Capacity (MW)	Units Capacity (MW)
Sabarmati Thermal Power station (Coal)			
C Station	1997*	60	2*30
D Station	1978/2004**	120	1*120
E Station	1984	110	1*110
F Station	1988	110	1*110
Vatva dual fuel Combined Cycle Power Plant			
Gas turbine	1990 & 1991	65	2*32.5
Steam turbine	1991	35	1*35
Sugen		824.74	

** year of turbine retrofitting ** updating of the capacity*

Plant Load Factor

The Commission has approved PLF plant wise. For FY 08 Commission had approved PLF, based on the actual PLF of the past 2 years. For the MYT control period PLF actuals of the past 3 years were considered. The Commission took due cognizance of the repair and maintenance schedule to ascertain PLF. The table below gives details about the approved PLF for the two years and actual PLF for FY 08.

Table A-6.35: Approved and Actual Plant Load Factor

Years	FY 08	FY 09	FY 08
Stations/Units	**Approved Plant Load Factor (%)**		**Actual PLF**
Sabarmati			
C Station	90.00	92.51	92.07
D Station	92.00	86.79	95.46
E Station	90.00	92.53	99.08
F Station	93.00	91.42	101.04
Vatva CCPP	65.00	83.54	63.03
Sugen			

The Commission has contended that the PLF achieved by the TPL plants is high and better than generation plants of the rest of the country.

Auxiliary Consumption

The Commission, in its regulations, has specified auxiliary consumption of 9% for coal based thermal stations of 200 MW series with cooling towers and 8.5% for those without cooling towers. For units smaller than 210 MW, the Commission may specify auxiliary consumption separately based on past performance etc. For gas based station, it is 1% for open cycle and 3% for combined cycle.

The Commission has considered the past performance of the plant, capacity of units and vintage while approving the auxiliary consumption of the plants. For units below 200 / 210 MW where there are no operational norms specified by the CERC or GERC, for them similar units in other states have been studied. The table below gives details about the approved Auxiliary Consumption for the two years and actual PLF for FY 08.

Table A-6.36: Approved and Actual Auxiliary Consumption

Years	FY 08	FY 09	FY 08
Stations/Units	**Approved Auxiliary Consumption (%)**		**Actual Aux.**
Sabarmati			
C Station	9.35	9.41	9.41
D Station	9	8.73	8.73
E Station	9	8.73	8.73
F Station	9	8.73	8.73
Vatva CCPP	2.6	2.92	2.92

Station Heat Rate

The Commission has followed the CEA guidelines while approving the SHR of each station. Commission approved the SHR's for the respective years by looking at past data and the capacity of plant and it's PLF. The table below gives details about the approved SHR for the two years and actual SHR for FY 08.

Table A-6.37: Approved and Actual SHR

Years	FY 08	FY 09	FY 08
Stations/Units	**Approved SHR (Kcal/kWh)**		**Actual SHR**
Sabarmati			
C Station	3735	3735	3686
D Station	2565	2565	2546
E Station	2675	2675	2671
F Station	2715	2715	2677
Vatva CCPP	2050	1950	2062

Fuel Cost

The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. While approving the fuel costs various parameters like heat rate, specific oil consumption, Auxiliary consumption, transit loss etc are considered. The approach adopted by the Commission for computing the fuel price in each of the Tariff Order issued during FY07-08 to FY09 for Torrent is summarized below.

Table A-6.38: Approach for determination of Fuel Price

Particulars	FY08	FY09
Coal	The weighted average cost of indigenous and imported coal purchased and the weighted average calorific value of the mix of the coal for FY 07.The mix of indigenous and imported coal is considered at 72:28, as in FY 07.	A study is being conducted till then fuel cost parameters, including (1) the mix of indigenous and imported coal (2) Wt Av CV of coal and oil (3) Cost of coal and oil per MT as approved in the Tariff Order for FY 08, will apply.
Gas	the weighted average cost of gas / SCM and the corresponding calorific value are obtained for FY 07	For Vatva the gas cost for the control period is worked out based on the cost of gas / MMBTU in 2007 is taken.

Any variation in the approved fuel cost by can be passed on to the consumers by way of Fuel Price Adjustment charge, the frequency for which is quarterly. The implementation of MYT has not brought out any change in the method of calculating fuel price. A study is being conducted. Till then the cost parameters such as weight average GCV & weighted average unit cost of coal, Oil etc are taken as approved for FY 08 .A comparison of the approved and claimed fuel cost is summarized in table below.

Table A-6.39: Approved, and Claimed Total Fuel Cost (Rs. Crs)

Particulars	FY 08	FY 08 Excluding Sugen	FY 09
Approved	861.57	621.79	641.51
Claimed by Petitioner	902.99		656.88
Approved Fuel cost Rs./kWh (Net)	1.85	1.73	1.78
Projected Fuel cost Rs./kWh (Net)	1.94		1.83

Incentive

As per GERC norms "Incentive shall be payable at a flat rate of 25.00 paise/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to target plant load factor". TPL got an incentive of Rs.15.55 Crs for the generation above generation with 80% PLF. The incentive is not considered as cost component and is not taken in ARR as per MYT.

Gross and Net Units generated

Considering the above technical parameters, the Commission has approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY07 to FY09.

Table A-6.40: Approved Gross and Net generation (MUs)

Stations/Units	Sabarmati & Vatva		Sugen	
Year	FY 08	FY 09	FY 08	FY 09
Total Gross Generation (MU's)	3783	3902.92	1226	
Auxiliary Consumption (MU's)	342	301.51	37	
Total Net Generation (MU's)	3479	3601.41	1189	203

During True-up it was found out that Sugen plant had not generated any units during FY 08, so the generation was nil and TPL's trued up gross own generation came to 3978.86 MUs

Fixed Cost/ Capacity Charges

The fixed cost for FY 08 have not been segregated either function wise (Generation and Distribution) or area wise (Ahmedabad / Surat). But for the MYT control period TPL segregated the expense both function wise and area wise. For the sake of comparison between the two years we have not separated expenses into distribution and generation as was done by TPL in the tariff order of FY 09.

Operation and Maintenance Costs (Generation and Distribution)

The Commission has approved employee cost, R&M and A&G cost separately for FY 08 and for MYT control period FY 09 to 2010-11. For MYT control period O&M expenses are controllable expenses. Approach of the Commission in approval of each of the O&M cost parameters is discussed below.

Employee Cost

The Employee cost comprises salaries, dearness allowance, bonus, terminal benefits in the form of Pension and Gratuity, leave encashment and staff welfare expenses.

For FY 08 Commission directed board to submit the actuals of employee cost for the past 3 years. It took the employee cost for the employee cost of year FY 07 as base with the escalation of 5 % on it to arrive at the employee cost for FY 08.

For the MYT control period, 6% increase per annum over the annual actual accounts for year FY 08 was considered. The Commission did not take cognizance of the Voluntary Retirement Scheme for FY 09 and instead had asked for the review based on the actuals during the performance review of FY 09.

Table A-6.41: Employees Cost for Torrent

Particulars	FY07-08	FY 08 Excluding Sugen	FY08-09
Net Employee Cost (after capitalisation) (Rs. Crs) (Total)	131.79	130.28	146
Total Apporved ARR (Rs. Crs)	2820.08	2459.52	3201.66
% Employee Cost of Approved ARR	5%	5%	5%

Table A-6.42: Sales and employee cost per unit of sales

Years	FY 08	FY 09	
Particulars	Combined	Ahmedabad/ Gandhinagar	Surat
Sales (Mus)	7140	4922	3186
Employees cost Per unit of Energy Sale (Rs/kwh)	0.18	0.13	0.11

Repairs and Maintenance

The Commission had approved the Repairs and Maintenance expenses for FY 08 by taking actual expenses of year FY 07 as base and allowed 8% increase for FY 08. For the control period, Commission had considered actuals of year FY 08 as base with an escalation of 6% and made a special provision for spares. The table below shows R&M expenses of TPL as a percentage of GFA (excluding Sugen).

Table A-6.43: Approved R&M Expenses

Particulars	FY 08	FY 09
R&M Expenses	147.58	142.98
GFA	3549.05	3681.43
R&M as a Percentage of GFA	4%	4%

Administrative expenses

For FY 08, the Commission approved A&G expenses after analyzing the expenses of the previous two years. For approving the Administrative expenses for the control period the Commission took the actuals of year FY 08 as base and applied an escalation factor of 6%.

The Commission disapproved the donation charges for both the years as it did not regard it as a legitimate expense.

Table A-6.44: Approved O&M Expense (Rs. Crs)

Particulars	FY 08	FY 08 Excluding Sugen	FY 09
Employee Expenses	131.79	130.28	146
Repairs & Maintenance	164.59	147.58	142.98
Administrative & General Expenses	93.2	88.07	78.56
Total Approved O&M	**389.58**	**365.93**	**367.54**

Depreciation (Generation and Distribution)

The Commission has calculated the depreciation of Sugen separately from the common assets. The depreciation for Sugen was considered for four months time for first unit and second unit for 2 months for second unit. The depreciation for Sugen has been calculated based on the CERC approved rates. For other plants , for FY 08 and for MYT control period the depreciation has been calculated based on the rates specified by the CERC. The average rate of depreciation worked out to 3.68% to 3.93% on the average assets during the control period.

The table below gives details about the depreciation of TPL.

Table A-6.45: Depreciation Approved and Dep. as a percentage of GFA

Particulars	FY 08	FY 08 Excluding Sugen	FY 09
Depreciation Approved	128.19	102.72	139.39

GFA		3549.05	3681.43
Depreciation as %age of GFA		3%	4%

Interest on Loans (Generation and Distribution)

Interest on loans consists of interest on the existing term loans availed by the company as well as the new term loans planned during the year to meet capital expenditure requirements. The Commission considered the capital expenditure for FY 08 while approving the interest cost and applied 9.5% as the rate of interest on new loans. For the MYT period actual loans drawn during the year FY 08 and proposed to be drawn are taken and interest @ 12% is applied. The table below shows interest on loans and interest on working capital

Table A-6.46: Interest on Loans and interest on working capital

Particulars	FY 08	FY 08 Excluding Sugen	FY 09
Interest on Loans and Security deposit	83.09	51.42	128.86
Interest on Working Capital	64.46	62.21	69.83

Rate of Return (Generation and Distribution)

The Commission has uniformly adopted Return on Equity (RoE) as the parameter for allowing return on investment in generation.

The Commission had approved equity and free reserves of Rs. 1249.45 Crs as on 1st April 2005 for the entire business of TPL including distribution and generation. This approved equity base has been allocated to Distribution business and Ahmedabad generation business on the basis of GFA as on 1st April 2005. The Commission had approved the opening equity (capital employed) for the TPL as an integrated utility at Rs. 1506.37 Crs as on 01/04/2008. This excludes equity relating to TPL (Sugen). The gross fixed assets of TPL – Generation (APP) are of the value of Rs. 761.15 Crs

and that of TPL – Distribution Rs. 2920.28 Crs as on 01/04/2008. The proportional equity for the TPL – G (APP) has, accordingly been worked out to Rs. 311.45 Crs as on 01/04/2008. 30% of the capital expenditure has been taken into account for calculating return on equity. The return of 14% on the average of opening and closing equity is approved. The table below gives details about the return on equity and equity of TPL.

Table A-6.47: Return on Equity

Particulars	FY 08	FY 08 Excluding Sugen	FY 09
Equity at the end of the year	1712.17		1611.74
Approved Return on Equity	239.7	206.21	225.64
Approved Rate of Return	14%	14%	14%

Capital Expenditure (Generation and Distribution)

For FY 08 the Commission directed the TPL to furnish the details of capital expenditure incurred by it function wise for FY 05, FY 06 and FY 07 for AEC and SEC and SUGEN projects separately. For FY 08 the Commission approved Rs. 43.84 Crs for renovation and modernization. The Capital expenditure plan for the MYT control period was submitted by the TPL along with the ARR. The capex projected and approved was mainly on account of Sabarmati E station's uprating and the balance was towards routine capex, pollution control, over hauling etc. Total capex amounted to Rs.64.93 Crs out of which capex capitalized amounted to Rs.42.34 Crs for generation and Rs. 715.14 Crs for Distribution. The envisaged sources of funding for the capitalized capex were through debt and equity in the ratio of 70:30.

Working Capital

Working capital has been determined and approved on normative basis by the Commission for the years from FY 08 to FY 09. The working capital has been arrived at by taking into consideration the Cost of coal for 2 months, Cost of gas for 1 month, 1% Maintenance spares, O&M expenses for 1 month and Receivables for 2 months. O&M expenses for Sugen plant was taken into consideration post its commissioning in year FY 08. For FY 08 the rate adopted for calculation of interest was short term prime lending rate of SBI which was10.25% for FY 08 and for control period it was taken as 12.5%.

Demand/Sales Estimation

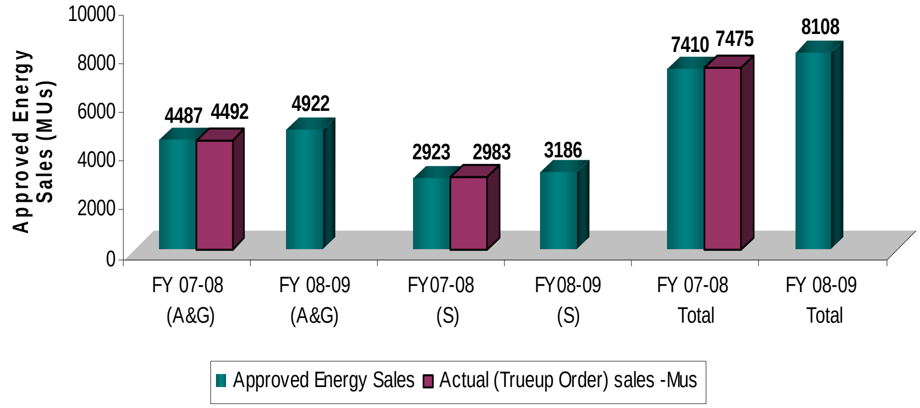
In the cities of Ahmedabad, Gandhinagar and Surat, TPL distributes power to around 18 lakh consumers, of which 13 lakh consumers are in the cities of Ahmedabad and Gandhinagar.

The Commission accepted the projected sales figures for each category of consumers for FY 08. The projections were based on the CAGR of the past 5 years and year on year growth for FY 08. While approving the energy sales in FY 08 for TPL, the Commission accepted the projections made by the TPL, that took into consideration the expected development plans in the city, industrial and commercial growth of Ahmedabad and Gandhinagar etc. and implementation of slum electrification programme.

For the MYT control period i:e FY 09 to 2010-11, the Commission has accepted the sales projection for each consumer category with minor alterations. The sales were projected for the control period considering the long term CAGR sales for the 5 year, medium term CAGR sales for 3 year and year on year growth of the immediate preceding year as the short term rate. In few categories like domestic and LTMD TPL took a growth rate which was higher on the ground that the specific consumption and category of consumers would grow further. The reason was accepted by the commission.

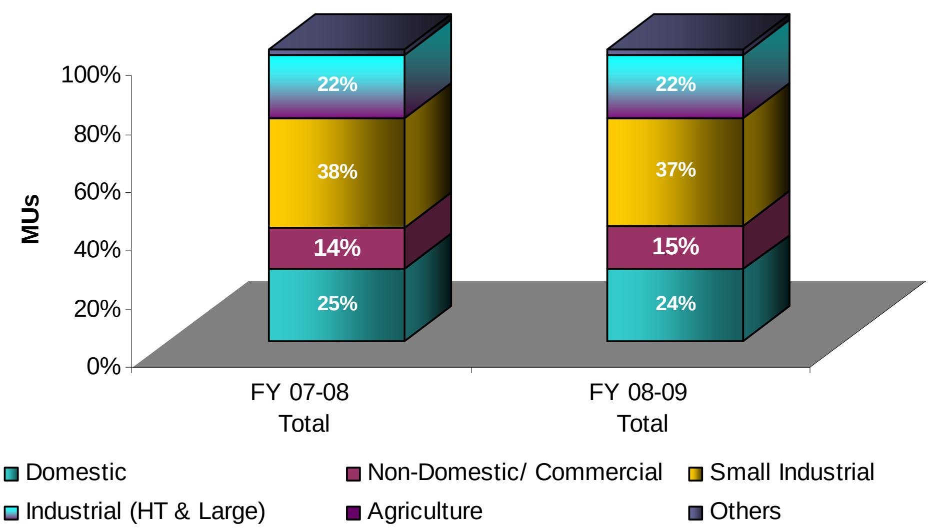
The graph below shows the trend in energy sales approved by the Commission for Ahmedabad and Gandhinagar (A&G) and Surat (S) vis-à-vis the actual and trued up sales for FY 08.

Graph A-6.8: Approved Energy Sales for Ahmedabad / Gandinagar and Surat



Domestic and HT categories together account for approx. 60% of the total energy sales in the licensee areas of Ahmedabad and Gandhinagar. However, in case of Surat, small and medium industrial category accounts for 60 % of the total energy sales. The figure below shows the percentage share of energy sales for different consumer categories for Ahmedabad & Gandhinagar and Surat approved by the Commission for FY 08 and FY 09.

Graph A-6.9: Consumption Mix

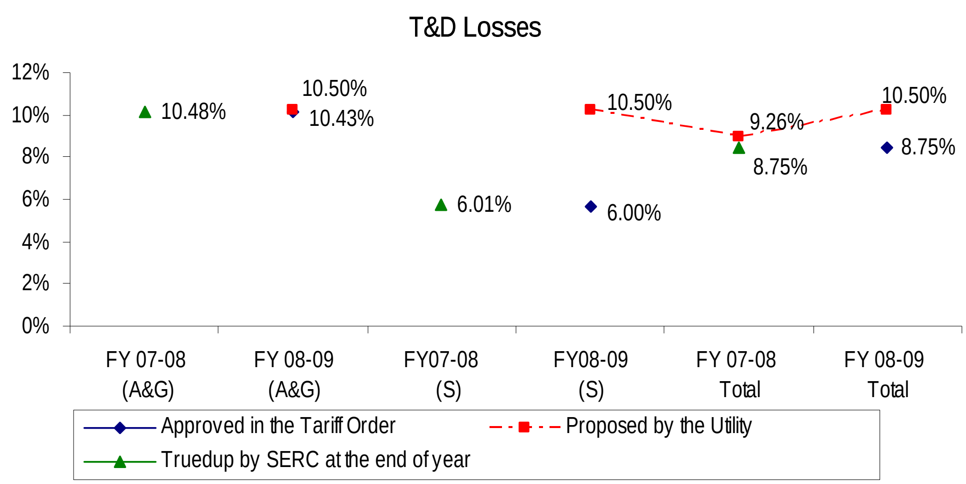


In the true-up order for FY 08, the variation in the energy sales approved and actual sales considered for True-up is very less. The sales approved by the Commission shows a minuscule underestimation of 0.1% in case of Ahmedabad & Gandhinagar and 2.1% in case of Surat.

T&D

The Commission has commended the work done by TPL to reduce its distribution loss. For FY 08 the Commission accepted the projected distribution loss of 9.26% (combined for Ahmedabad &Gandhinagar and Surat), which was a reduction of 0.26% over previous year. The transmission loss (8 MU) is only for the power that is imported from Sugen plant to Ahmedabad .

For the control period FY 09 to 2010-11, the Commission had approved the loss trajectory for Ahmedabad &Gandhinagar and Surat individually and TPL combined (8.75%), considering the actual loss for year FY 08. There is a variation is the distribution loss trajectory proposed and approved. TPL proposed the combined distribution loss trajectory starting with year 2008 at 10.50% with losses individually both in Ahmedabad and Surat at 10.50%. The Commission reasoned that the loss for Surat cannot be this high as it is a highly urbanized location and approved loss at 6% for the same. The Commission approved the loss trajectory for MYT period starting for FY 09 at 8.75%, 2009-10 at 8.70% and 2010-11 at 8.65%.



In the true-up order for the FY 08 the actual combined loss stood at 8.75% as against the approved 9.26%.

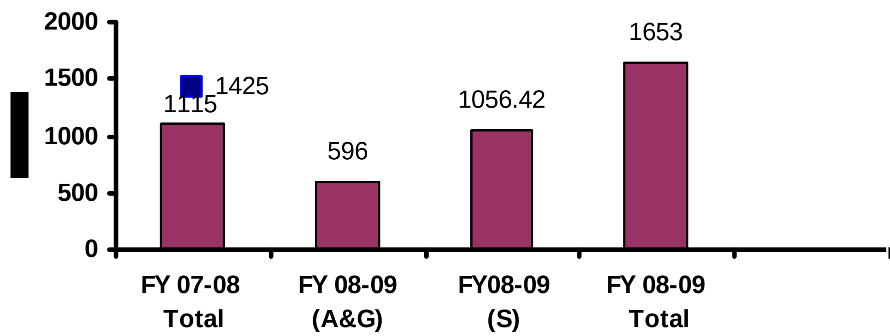
Power Purchase Quantum and Power Purchase Cost

TPL has got its own generation plants and it purchases only the balance amount from the GUVNL. SUGEN is the own generation plant of TPL but the tariff is fixed by CERC as inter state project. The company has an arrangement with GUVNL for supply of the required power to meet the demand of its consumers. The agreement has been approved by the Commission. For FY 08, the Commission approved the power purchase of 3507 MU at Rs.3.18/kWh.

For the MYT control period the Commission implemented the directive of mandatory purchase of power from renewable energy sources. Therefore, it asked TPL to purchase 4%, 6% and 8% of total sales during FY 09, 2009-10 and 2010-11 including the backlog from renewable energy sources. For the MYT control period the TPL has individually worked out the power purchase cost for both Ahmedabad & Gandhinagar and Surat. The cost of the power from GUVNL stations was proposed and approved at Rs.3.10/kWh and that from wind energy at Rs. 3.51/kWh. The power from SUGEN station has been approved at Rs. 3.10/kWh, Rs. 2.98/kWh and Rs. 2.93/kWh for FY 09, 2009-10 and 2010-11 respectively.

The Commission approved the transmission charges of Rs.4.25 Crs for FY 08.

Graph A-6.10: Approved Power Purchase Cost and Trued up cost.



In the true up order for FY 08 the power purchase cost trued up came to Rs. 1424.59

Table A-6.48: Approved energy and cost for control year FY 09

License area	Own Generation	GUVNL	Sugen	Wind Energy	Total	
Ahmedabad&Gandhinagar	3601	1668	32	197	**5498**	MU
	885.65	517.08	9.92	69.15	**1481.8**	Cost
Surat		3093	171	127	**3391**	MU
		958.83	53.01	44.58	**1056.42**	Cost

The Commission has allowed TPL to claim any variation in the price by means of FPPPA

.

Annual Revenue Requirement

For FY 08 the Commission gave the combined ARR for the generation and distribution but for the control period the Commission approved separately the ARR for the generation and distribution. The true-up ARR for FY 08 has also been given along with the Tariff order of control period FY 09 to 2010-11.

Table A-6.49: Annual Revenue Requirement for 07-08 and 08-09.

Annual Revenue Requirement (Rs.Cr)	FY07-08	FY08-09 A&G	FY08-09 Surat	FY08-09 Total
Proposed by the Board	3108.1	2112.01	1397.98	3509.99
Approved by the Commission	2820.08	1894.98	1306.68	3201.66
Disallowance in the order	9%	10%	7%	9%
Trued-up ARR by the commission	2909.02			

True up as a % of approved	103%			

As is evident from the table above the Commission has been reasonable in its approach while approving the ARR.

In the true up ARR for FY 08, ARR came to Rs.2909.02 Crs.

The revenue gap or surplus as determined by the Commission for each of the year from FY 08 to FY 09 is given below in table. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government is also mentioned in table.

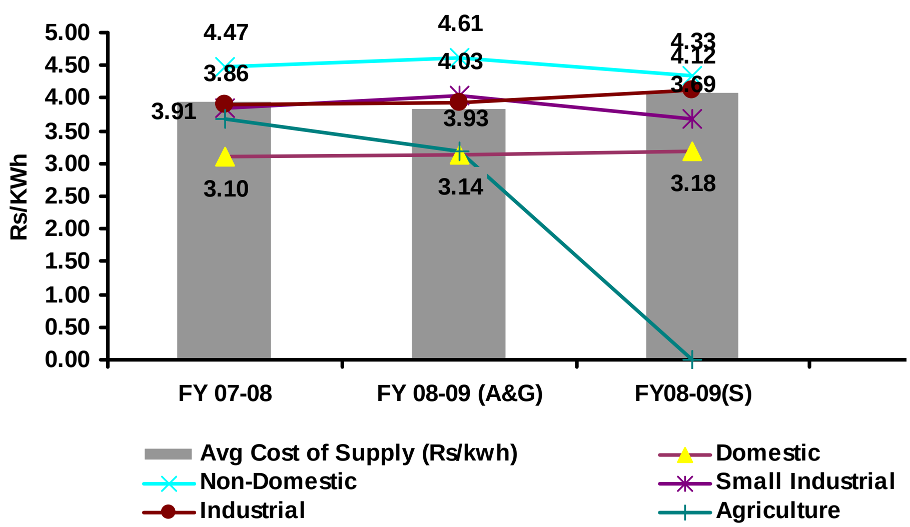
Particulars	FY07-08	FY08-09 A&G	FY08-09 Surat	FY08-09 Total
Gap/Surplus at existing Tariff (Rs. Cr)	24.29	13.91	91.03	104.94
Consumer Tariff		Increase	Increase	
Cross Subsidy		Increase	Increase	

For FY 08 TPL arrived at the combined gap (not individual gap) for Ahmedabad/ Gandhinagar and Surat. But for FY 09 TPL calculated the gap individually for both the areas. TPL had asked the Commission for the retrospective implementation of increased tariff to cover up the gap. But the Commission did not agree to it and allowed only the prospective implementation of increased tariff.

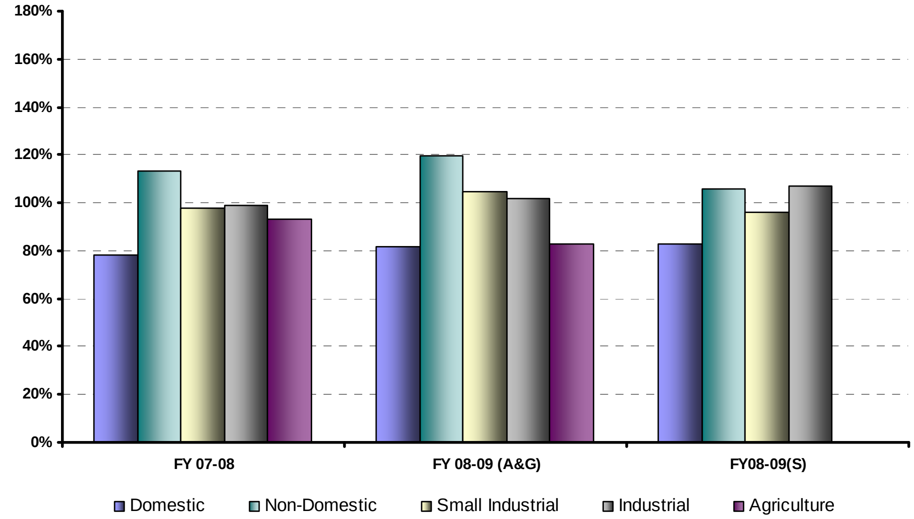
Tariff Determination

TPL proposed introduction of uniform tariffs in Ahmedabad / Gandhingar and Surat areas in place of separate tariffs at present in the two areas. The Commission has not taken a decision on that so the status quo remains on that front.

The graph below gives details about the Average Cost of Supply and and average realization for each category from FY 08 to 2008-2009 in Surat and Ahmedabad.



The level of cross subsidization has is in the range of +- 20%, which is good sign.



Multi Year Tariff Framework

The MYT method of tariff approval has been implemented for TPL. The Commission directed that in the performance review the true up will be permitted only in the case of uncontrollable items on availability of data as per actuals. Regarding controllable items the Commission said that it would review the gains and losses on each item and make appropriate adjustments, whenever required. A statement of gains and losses for each controllable item was to be presented in the filing for the next control period.

Table A-6.50: Classification of ARR items in Distribution business

Particulars	
First Year of MYT	FY 09
Time frame for the control period	3 years, FY 09 to FY 10-11
Uncontrollable Parameters	Tax on income
Controllable Parameters	(a) O&M Expenses (b) Return on equity (c) Depreciation (d) Interest and finance charges (e) Interest on working capital (f) Non-tariff income

Wheeling Charges

For FY 08, as the TPL had not submitted adequate information the Commission adopted the wheeling charges already determined for the other distribution Licensees in the State. Hence, the wheeling charges of Rs. 2205 per MW per Day were approved. For FY 09, the transmission ARR's were approved for both the areas Ahmedabad and Surat. The Commission allocated of the expenses between wire business and retail supply business of the TPL. ARR for distribution wheeling business for Ahmedabad/Gandhinagar was Rs.

340.59 Crs and was Rs. 180.20 Crs for Surat. The Commission approved wheeling charges separately for Ahmedabad/ Gandhinagar and Surat.

Table A-6.51: Wheeling Charges

Wheeling Charges for FY 09	Ahmedabad and Gandhinagar	Surat
Wheeling charges for 11 kV level (Ps/kWh)	18.6	15.96
Wheeling charges for LT levels (Psl/kWh)	63.32	41.82

Wheeling Losses

For FY 08, the Commission had approved the TPL's proposal of recovery of wheeling losses in kind respective voltage level at which energy was wheeled. For FY 09 the Commission allowed 4% loss of energy in kind for 11 KV which could be deducted from the energy input towards assumed loss in EHT/HT network of Distribution Licensees. For LT level 4.75% of energy in kind was allowed to be deducted from the energy input to system.

Cross Subsidy Surcharge

For FY 08, for TPL the Commission approved Cross-Subsidy surcharge of Rs.1.00 per Unit for the 'Open Access' consumers. For FY 09 the cross subsidy surcharge was calculated as per the following formula recommended in the National Tariff Policy.

S= T-[C(1+L/100) + D]

Where,

S= Surcharge

T= Tariff payable by the relevant category of consumers

C= Weighted average cost of power purchase of top 5% at the margin excluding liquid fuel

based generation and renewable power.

D= Wheeling charges (Transmission and Distribution)

L= System losses for the applicable voltage level, expressed as a percentage

For FY 09, the transmission losses including 11 kV were assumed at 6% and total losses at LT level were 10.43% (including transmission and 11kV). The Cross Subsidy surcharge for open access consumers at 11 kV for Ahmedabad/ Gandhinagar was therefore worked out at 52 Ps/ kWh and for that of Surat was worked out at 73.65 Ps/ kWh.

A-7. Haryana

A-7.1. Haryana – Generation Utility

Introduction

In the state of Haryana, the power generation activity is being undertaken by Haryana Power Generation company limited (HPGCL hereafter). HPGCL was incorporated as a company on 17th March, 1997 and was given the responsibility of operating and maintaining the generation projects owned by the state. Post the unbundling of Haryana State Electricity Board (HSEB), the business of generation of power in the State was transferred to HPGCL on 14th August, 1998. In addition, HPGCL was also entrusted with the responsibility of setting up of new generating stations. The total installed capacity of HPGCL was 2195 MW in FY09 comprising of thermal as well as hydel plants.

During the period FY05 to FY09, the Commission had to repeatedly direct HPGCL to file petition for the ensuing year. During each of these years, the Commission had issued Tariff Orders before 120 days from the receipt of the tariff petition except for FY07 and FY08. In FY07 and FY08, the issue of Tariff Order got delayed because of the delay in submission of additional information by HPGCL.

Haryana Electricity Regulatory Commission (HERC) had issued its first Tariff Order for HPGCL in 2004 and since then it has been issuing ARR for HPGCL every year. Till FY09, the Commission has been following the ARR approach.

Generation Capacity

HPGCL has a total of three thermal and two hydel power plants. The total installed capacity of HPGCL is 2195.5 MW. Since FY04, HPGCL has added one thermal plant i.e. DCR Thermal Power plant (Yamuna Nagar) with an installed capacity of 600 MW.

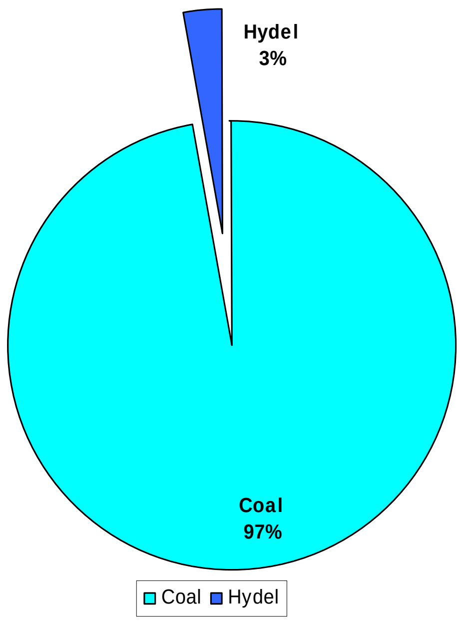
The government of Haryana has decided to scrap FTPS plant by 2011-12 as the plant is very old and completed its useful life. The cost of generation from FTPS is very high. The plant wise generating capacity of the State Generating Stations is summarized below:

Table A-7.1: Plant wise Generating Capacity

Particulars	FTPS	TDL TPP	DCR TPP	WYC Hydel
Station Capacity (MW)	165	1360	600	62.4
Fuel	Coal	Coal	Coal	Hydel
Year of Commissioning	1974-1981	1979-2005	2008-2009	1986-2004
Units Capacity (MW)	55X3	117.8 + 110X3 + 210X2 + 250X2	300X2	8X6 + 7.2X2

Out of the combine capacity of 2195 MW, around 2133 MW is coal based and 63 MW is hydel plants. The figure below shows the break-up of the generating plants.

Graph A-7.1: Breakup of the Generating station



Plant Load Factor (PLF)

HERC had been approving the PLF for various HPGCL plants from FY05 to FY09 based on the national norms and the PLF already achieved by the plants in the last five years keeping in mind the R&M plans of HPGCL for all the plants except for PTPS and FTPS. For FTPS and PTPS generating station PLF for FY05, FY06 and FY07 were based on the actual PLF of the past years. However in FY08 and FY09, the PLF for PTPS and FTPS was based on actual of past year, scheduled R&M activity, vintage and technology of the plant.

The approved and actual PLF for various generating plants during the period FY05 to FY09 are given in the table below.

Table A-7.2: Approved and Proposed Plant Load Factor

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved PLF					
FTPS	60.00%	62.00%	62.00%	45.00%	50.00%
TDL TPS Unit 1-4	65.00%	65.00%	55.00%	70.00%	77.00%
TDL TPS Unit 5&6	80.00%	80.00%	80.00%	80.00%	80.00%
TDL TPS Unit 7&8	80.00%	80.00%	80.00%	80.00%	80.00%
DCR TPP				80.00%	80.00%
Proposed PLF					
FTPS	62.27%	58.81%	58.81%	45.00%	45.00%
TDL TPS Unit 1-4	63.82%	65.00%	55.00%	63.00%	63.00%
TDL TPS Unit 5&6	64.56%	80.00%	80.00%	80.00%	80.00%
TDL TPS Unit 7&8	79.67%	80.00%	80.00%	80.00%	80.00%
DCR TPP	-	-	-	80.00%	80.00%

Auxiliary Consumption

The Commission has approved the auxiliary consumption for the units of the plants considering the age of the plants. For older plants, the Commission has considered actual consumption for the past years while for the newer plants/ units CERC norms for thermal/ hydel plants have been applied.

Table A-7.3: Approved and Proposed Plant Auxiliary Consumption

Particulars	FY 05	FY 06	FY 07	FY08	FY 09
Approved Auxiliary Consumption					
FTPS	12.50%	12.50%	12.50%	12.50%	12.50%
TDL TPS Unit 1-4	10.50%	11.00%	11.00%	11.0%	11.00%
TDL TPS Unit 5&6	9.50%	9.00%	9.00%	9.00%	9.00%
TDL TPS Unit 7&8	9.50%	9.19%	9.00%	9.00%	9.00%
DCR TPP	-	-	-	9.50%	9.00%
WYC Hydel Plants	0.50%	0.50%	0.50%	0.50%	0.50%
Proposed Auxiliary Consumption					
FTPS	13.00%	13.00%	12.50%	12.50%	14.50%
TDL TPS Unit 1-4	11.40%	11.40%	11.00%	11.00%	12.50%
TDL TPS Unit 5&6	9.50%	9.50%	9.00%	9.00%	9.40%
TDL TPS Unit 7&8	9.50%	9.50%	9.00%	9.00%	9.00%
DCR TPP	-	-	-	9.50%	9.50%
WYC Hydel Plants	0.60%	0.60%	0.50%	0.50%	0.50%

Station Heat Rate (SHR)

SHR of the older plants had been approved based on the actual of last year. However, SHR for the newer plants had been approved based on standard norm for SHR specified by CERC. The Commission has also considered any R&M activity undertaken by HPGCL while approving the SHR levels for the older plants.

Table A-7.4: Approved and Proposed Station Heat Rate (SHR)

Particulars	FY05	FY06	FY07	FY08	FY09
Approved SHR					
FTPS	3970	3970	3970	4000	4200
TDL TPS Unit 1-4	3500	3450	3450	3200	3100
TDL TPS Unit 5&6	2643	2625	2600	2600	2600
TDL TPS Unit 7&8	2600	2538	2500	2500	2500
DCR TPP	-	-	-	2600	2500
Proposed SHR					
FTPS	3970	4250	3970	3970	4577
TDL TPS Unit 1-4	3498	3500	3450	3450	3410
TDL TPS Unit 5&6	2830	2693	2600	2700	2703.5
TDL TPS Unit 7&8	-	2526	2500	2500	2500
DCR TPP	-	-	-	2600	2530

Gross and Net Units Generated

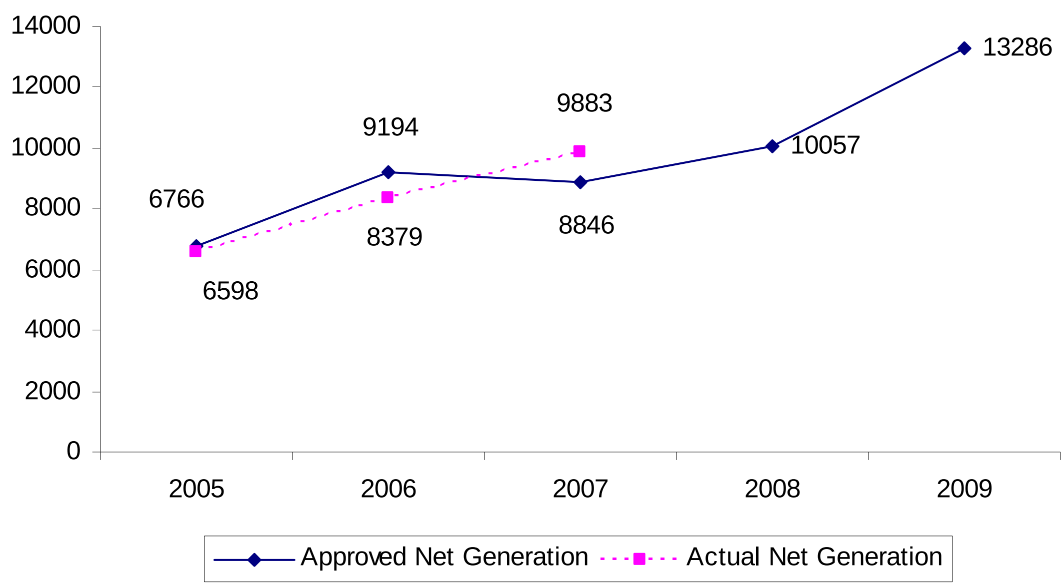
Considering the technical parameters approved for each generating station, the Commission has approved the gross and net power generation from all the plants. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY05 to FY09.

Table A-7.5: Approved Gross and Net Generation (MUs)

Particulars	FY05	FY06	FY07	FY08	FY09
Approved Gross Generation					
FTPS	867	896	896	651	723
TDL TPS	6325	8953	8568	9148	9468
DCR TPP	-	-	-	1014	4204
WYC Hydel Plants	312	-	310	302	275
Gross Generation	**7504**	**10171**	**9774**	**11115**	**14670**
Auxiliary Consumption	738	977	928	1058	1384
Net Generation	**6766**	**9194**	**8846**	**10057**	**13286**

A comparison of the approved and actual net generation from the State generating plants highlights that actual generation has been lower than the approved net generation in the Tariff Orders. However, in FY07 the actual generation was higher on account of higher PLF in the new generation units . The figures given below are based on the adjustment made for the date of Commissioning of the new plants and the actual PLF and auxiliary consumption as claimed by the HPGCL.

Graph A-7.2: Comparison of Approved and Actual Net Generation (MUs)



FIXED COST

Operation & Maintenance Cost (O&M)

The O&M cost comprise of the Employee cost, R&M expense and AG& expense. For FY05, the Commission has approved the O&M expense for older plants (PTPS Unit 1-4, FTPS Unit 1-3, WYC Hydel plant and micro Hydel plant) based on the audited accounts of HPGCL for past three years escalated at a rate of 4% p.a. For the new plants, the Commission has approved the O&M expense based on the CERC norms.

However in subsequent years, O&M for old plants have been approved by escalating the approved amount of the preceding year by 4% to factor in for inflation. Although the Commission had time and again emphasized and directed HPGCL to get the accounts audited for previous years, no action has been taken by HPGCL. For the newer plants the Commission has continued with its approach for approving O&M expense based on CERC norms.

The table below shows the approved and proposed amount of O&M expenditure

Table A-7.6: Approved, Proposed and True-up of O&M (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	169.1	215.8	224.4	250.3	315.8
Proposed by HPGCL	167.8	188.8	224.4	250.3	315.8

Depreciation

In FY05, in absence of audited Fixed Asset Register (FAR), HERC allowed depreciation amount as claimed by HPGCL. Further, the Commission directed HPGCL to apply rates prescribed by the Ministry of Power (MoP) on various classes of assets till the time Commission notifies a separate rate of charging depreciation. In FY06, the Commission continued with its earlier approach of approving depreciation. The Commission computed the depreciation for FY07 based on the CERC norms. However, the depreciation computed as per CERC norms would not suffice the loan repayment amount of HPGCL for FY07. Hence the Commission approved the depreciation rates as per MoP rates in line with the previous order.

However the Commission changed its approach for approving depreciation in FY08 and FY09. Depreciation amount had been approved based on rates specified by CERC. The table below summarizes the proposed and approved amount of depreciation.

Table A-7.7: Approved and Proposed Depreciation (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Depreciation	133.5	251.3	260.5	127.7	228.6
Proposed by HPGCL	133.5	251.3	260.5	267.9	395.6

Advance Against Depreciation (AAD)

Since the Commission had approved depreciation at MoP specified depreciation rates in the Tariff Orders of FY05, FY06 and FY07, AAD was not applicable during these years. However, the Commission revised its approach for approval of depreciation based n CERC determined rates and has therefore, approved AAD based on CERC notified methodology. Further, the Commission had specified that HPGCL should ensure that the proposed repayments are made on time and in case the repayments are not made during the financial year, any excess amount allowed will be recovered in the subsequent ARR with interest.

Interest Cost

In FY 05, the approach followed by HERC for calculating the interest on loans was not mentioned. In subsequent years i.e. FY06, FY07, FY08 and FY09, it had been calculated based on the outstanding loans and the corresponding interest rate adjusted for repayment and drawls during the year. The table below shows the amount proposed and approved of interest on loans.

Table A-7.8: Approved and Proposed Interest on loans (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved	167.3	238.3	210.2	239.9	395.6
Proposed by the petitioner	167.3	232.7	209.6	231.6	379.3

Interest on Working Capital (IWC)

For estimating the IWC, the Commission had calculated working capital requirement on normative basis. Following were the components of the working capital for thermal power plants:

- Cost of coal for two months
- Cost of oil stock for two months
- O&M for one Month
- Maintenance spares @ 1% of historical cost escalated @ 6% p.a.
- Two months receivables equivalent at projected fixed & variable charges

And following components were considered for computation of working capital for Hydel plants:

- O&M for one Month
- Maintenance spares @ 1% of historical cost escalated @ 6% p.a.
- Two months receivables equivalent at projected fixed & variable charges

Subsequent to the computation of the working capital requirements for FY05, FY06 and FY07, the Commission had approved interest rate on working capital requirement as claimed by HPGCL.

In FY08 and FY09, interest on normative working capital was approved based on the short term loans raised by HPGCL in recent past. The Commission had not considered the PLR for nationalized bank for determination of interest on working capital as the same was higher. The table below summarizes the amount of interest on working capital proposed and approved with the interest rate.

Table A-7.9: Approved and Proposed IWC (In Rs Crs)

Particulars	FY 05	FY06	FY07	FY08	FY09
Approved	11.5	72.8	77.3	88.7	150.0
Proposed by HPGCL	49.4	63.0	65.3	84.2	118.5
Approved Interest Rate for WC	9%	9%	9%	10%	10.5%

Rate of Return

Since the rate claimed by the petitioner had been lesser than the national norms from the period FY05 to FY09, the Commission had been approving the ROE based on the rate claimed by HPGCL. The proposed and approved ROE is summarized in table below:

Table A-7.10: Approved and Proposed RoE

Particulars	FY05	FY06	FY07	FY08	FY09
Approved RoE	5%	8%	10%	12%	14%

Total Fixed Cost

HERC had approved the total fixed cost for HPGCL based on the approach followed above on various components. The Commission had approved plant-wise total fixed cost in each of the Tariff Order. A comparison of the proposed and the approved Annual Fixed Charge is provided in the table below:

Table A-7.11: Approved and Proposed Total Fixed Cost (In Rs Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
Approved Total Fixed Cost	532.8	808.4	830.1	963.9	1362.3
Proposed by HPGCL	495.3	796.8	582.3	985.7	1423.9

Fuel Cost

The Commission had considered cost of coal for FY05 including a transit loss of 3% and Local Area Development Tax (LADT) of 2%. However, the methodology for approval for coal rate has not been elaborated in the FY05 order.

For FY06, the coal price had been approved based on weighted average invoice rate for the period from June 2004 to December 2004 available with the Commission. While computing the cost of coal, LADT of 2% and transit loss of 3% had been approved by the Commission.

In FY07, it had been worked out after considering the weighted average of the last invoice rate i.e. December 2005 made available to the Commission. The Commission had approved LADT of 2% and transit loss of 2.5%.

A similar approach has been considered for the FY08 order, where the Commission considered the last invoice rate i.e. December 2006 for determination of fuel cost. LADT of 2% had been considered for all the plants. Transit loss of 2% had been considered for all plants except FTPS where transit loss of 2.5% had been considered.

In FY09, the basic price of coal has been worked based on the weighted average rates from April 2007 to September 2007. Transit loss of 2% had been considered for all plants except FTPS (2.5%) along with LADT and railway freight as per actual.

Though, the Commission has been approving higher transit losses as against the national norm of 0.8% for non-pithead generating stations considering the ground realities and higher actual transit losses, the Commission has repeatedly directed HPGCL in each of its Tariff Orders to take all possible steps to reduce the transit losses to the national norm of 0.8%.

Moreover, the Commission has allowed HPGCL to recover the fuel price adjustment from the beneficiaries based on FPA formula prescribed by CERC on a quarterly basis without filing for a petition for approval of the same from HERC. Prior to FY07, the Commission had allowed FPA in FY06 after processing the petition filed by HPGCL.

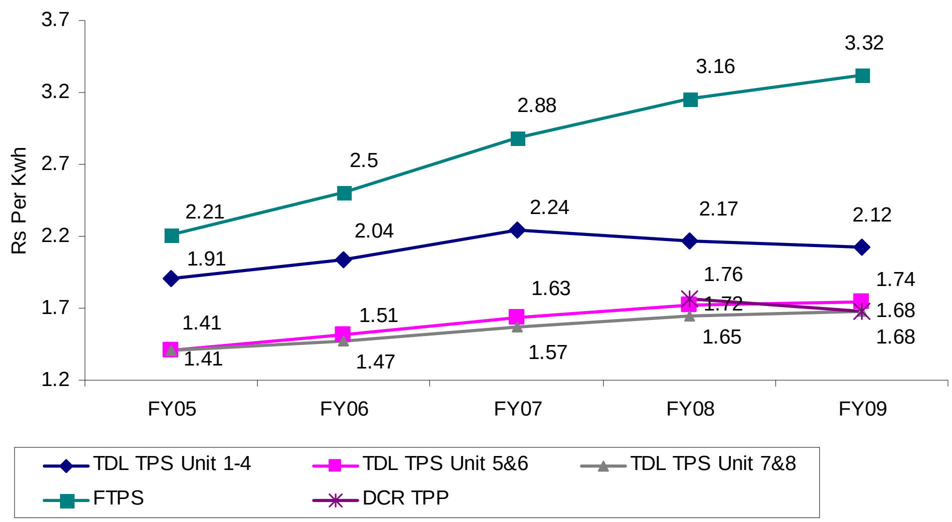
Variable charges comprising of fuel cost for each of the plant had been approved by the Commission based on respective fuel consumption, which is computed for each of plant based on the technical parameters approved by the Commission. The table below shows the proposed and approved variable cost for various plants of HPGCL

Table A-7.12: Approved and Proposed Total Variable Cost (in Rs Crs)

<table>
<tr><th>Particulars</th><th>FY 05</th><th>FY 06</th><th>FY 07</th><th>FY 08</th><th>FY 09</th></tr>
<tr><td><u>Proposed Variable Charge</u></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>TDL TPS Unit 1-4</td><td>2.00</td><td>2.05</td><td>2.25</td><td>2.38</td><td rowspan="3">1.92</td></tr>
<tr><td>TDL TPS Unit 5&6</td><td>1.59</td><td>1.54</td><td>1.70</td><td>1.74</td></tr>
<tr><td>TDL TPS Unit 7&8</td><td>1.62</td><td>1.45</td><td>1.58</td><td>1.67</td></tr>
<tr><td>FTPS</td><td>2.46</td><td>2.71</td><td>2.90</td><td>3.18</td><td>3.71</td></tr>
<tr><td>DCR TPP</td><td>-</td><td>-</td><td>-</td><td>1.79</td><td>1.71</td></tr>
<tr><td><u>Approved Variable Charge</u></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>TDL TPS Unit 1-4</td><td>1.91</td><td>2.04</td><td>2.24</td><td>2.17</td><td>2.12</td></tr>
<tr><td>TDL TPS Unit 5&6</td><td>1.41</td><td>1.51</td><td>1.63</td><td>1.72</td><td>1.74</td></tr>
<tr><td>TDL TPS Unit 7&8</td><td>1.41</td><td>1.47</td><td>1.57</td><td>1.65</td><td>1.68</td></tr>
<tr><td>FTPS</td><td>2.21</td><td>2.5</td><td>2.88</td><td>3.16</td><td>3.32</td></tr>
<tr><td>DCR TPP</td><td>-</td><td>-</td><td>-</td><td>1.76</td><td>1.68</td></tr>
</table>

The graph below shows the approved per unit variable cost of the HPGCL plants. The variable cost per unit of FTPS is much higher than the other plants due to age of the plant leading to higher auxiliary consumption and SHR. The main reason for diversion in the variable cost of FTPS and other plants post FY07 is primarily on account of relaxed SHR norms for FTPS as compared with other plants.

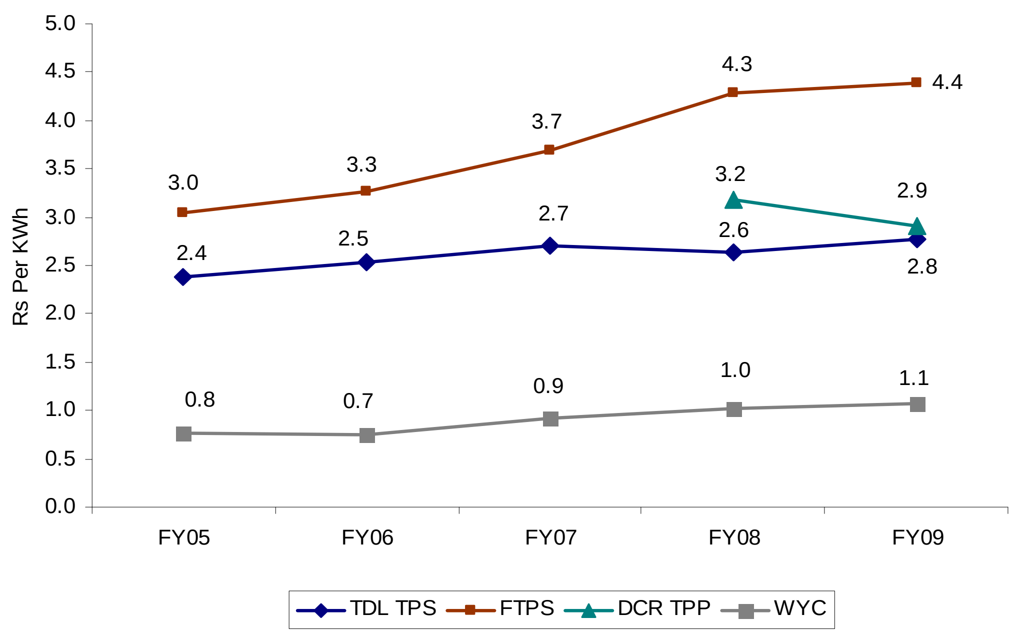
Graph A-7.3: Approved Per unit variable cost of various plants



Total Cost

The generation tariff applicable to the generating plants during the year was based on the fixed and variable cost approved by the Commission in each Tariff Order. The graph below shows the approved per unit cost for various HPGCL Plants.

Graph A-7.4: Approved Per unit cost (Fixed and Variable) for HPGCL Plants



Incentive Level

HERC has approved an incentive as per the CERC norms i.e. 25 paisa/kWh for ex-bus scheduled energy on overachievement of targeted PLF.

A-7.2. Haryana – State Transmission Utility

Introduction

Haryana Electricity Regulatory Commission was established on 17th August 1998 as an independent statutory body corporate as per the provision of the Haryana Electricity Reform Act, 1997. Haryana was the second State in India to initiate the process of Reform & Restructuring of the Power sector in India.

The Haryana Electricity Reforms Act 1997 was passed by the Haryana State Legislative Assembly on 22nd of July 1997. After receiving the Presidential assent on 20th Feb.1998, this Act came into force on 14th August1998. The erstwhile Haryana State Electricity Board was unbundled into two corporate bodies namely Haryana Power Generation Company Limited (HPGCL) for the Generation of Power and Haryana Vidyut Prasaran Nigam Limited (HVPNL) for the Transmission & Distribution of power within the state of Haryana. Subsequently, the activity of distribution and retail supply of power was entrusted w.e.f. 1st July 1999, to Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) for north circles and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL) for south circles of Haryana.

Till June 2005, HVPNL had been responsible for power purchase and bulk supply business. But in accordance with the Electricity Act 2003, the Government of Haryana transferred the rights relating to procurement and bulk supply of electricity from HVPNL to HPGCL. The assets and liabilities relating to 'Trading in Electricity' which stood in the books of HVPNL were transferred and vested with HPGCL. The Power Purchase Agreements and contracted generation capacities hitherto available with HVPNL was also transferred to HPGCL, while the ownership of shared generation was retained by the HVPNL.

The Haryana Electricity Regulatory Commission (HERC) has since taken a few key initiatives. The Commission notified Intra State Open Access Regulation in FY06, which allowed open access facility for consumers with contracted demand of 1MVA and above with effect from 1st April, 2008.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY05 to FY09 for the approval of the Annual Revenue Requirement (ARR) of the State transmission utility i.e. HVPNL.

Power Purchase Quantum

HVPNL had been responsible for power purchase and bulk supply business in the State of Haryana until June 2005. But in accordance with the Electricity Act 2003, the Government of Haryana transferred the rights for procurement and bulk supply of electricity from HVPNL to HPGCL.

The State of Haryana is deficit in energy, thus the power procurement program of Haryana is not demand driven, but based on the forecast of total energy available from various sources. The main sources of power availability has been from Central

Generating Stations (NHPC, NPC and NTPC), State generating Utility (HPGCL), Shared Projects, IPPs (Magnum) and other sources. The Commission has been following a consistent approach for approval of the availability from CGS during FY05 to FY09.

For assessing the total power availability, the energy contribution from Central Generating Stations (CGS) and Shared projects for each of the year since FY05 to FY 08-09 has been approved by the Commission based on the CEA gross generation target adjusted for auxiliary consumption as per the norms. The share of State allocation from the respective plants has been applied for approving the availability from CGS and shared plants. In case of NHPC, the Commission had further reduced the availability to the extent of 12% to account for free power commitment to the respective home States.

The availability from the State generating stations had been made on the basis net generation approved by the Commission in the HPGCL Tariff Order for respective years. The availability from the other sources like PTC, WBPDCL, NVVN and other short term purchases has been approved as per the availability proposed by HVPNL/ HPGCL in absence of any other suitable alternative. The availability from the IPP had been based on the long-term PPA with the respective IPPs.

For new generating stations, the Commission has approved the availability based on CEA generation schedule for respective years adjusted for auxiliary consumption and share of the State of Haryana. New generating stations for which CEA generation target was not provided, the Commission had approved the availability as proposed by HVPNL/ HPGCL. Further, the availability from cogeneration and non-conventional fuel based generation has also been approved as per the claim of the petitioner.

Availability from short-term bilateral was disallowed by the Commission for FY05 to FY07 considering the high cost for short-term. However, the Commission in view of the demand-supply gap had approved energy available from short-term bilateral based on the past trends and short-term agreements submitted by HPGCL.

The table below shows the source-wise energy available with the State of Haryana during the period FY05 to FY09.

Table A-7.13: Approved Source-wise availability of energy (MUs)

Sources	FY05	FY06	FY07	FY08	FY09
CGS	8700	8032	9017	10784	10541
HPGCL	6750	9193	8891	10058	13287
Shared Projects	3301	3542	3527	3428	3733
PTC and Others	2457	483	2429	2102	2002
TOTAL	**21208**	**21249**	**23863**	**26372**	**29563**

Power Purchase Cost

As mentioned above, the main sources of power purchase for the state of Haryana has been Central Generating Stations (NHPC, NPC and NTPC), State generating Utility HPGCL, Shared Projects, IPPs (Magnum) and other sources.

Throughout the period FY05 to FY09, the Commission has been using the consistent approach for approving the power purchase cost ffrom various sources. For approving the cost of power from CGS, the fixed charges have been approved based orders issued by CERC for the respective plants. The variable charges had been approved based on the latest available invoices.

Since HVPNL has to bear its share of O&M charges and capital expenditure incurred by the Shared plants, the Commission has taken into consideration the expected expenditure after adjusting for the revenue from sale from common pool for computing the cost of power purchase from these plants. The power purchase cost from HPGCL has been approved based on the fixed and variable tariff approved by the Commission in the Tariff Order.

For FY05 and FY06, the power purchase cost from **Other Sources** had been approved based on the latest available invoices from these sources. In FY07, the purchase cost from traders had been approved based on the weighted average rate. However, the Commission had directed the petitioner to file a quarterly report incorporating the source-wise actual rate and volume and cost of power purchased from these sources. In FY08, the power purchase cost was approved based on the rates in the recent past period. In FY09, the Commission had relied upon the average power purchase rate as per the FY08 average rates (Upto December 2007)

The cost of power from new generating plants has been considered as per CERC determined tariff or as proposed by HVPNL/ HPGCL, in absence of availability of any source. However to keep the price aligned with the cost, the Commission has been directing the bulk supply licensee to file FSA every quarter i.e. within one month of the completion of the quarter for which FSA is being claimed.

The table below shows the total amount of power available with the state of Haryana, the total power purchase cost and the average power purchase cost for the bulk supply licensee during the period FY05 to FY09.

Table A-7.14: Approved Power Purchase Quantum and Cost

Sources	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Purchase Quantum (MUs)	21208	21249	23863	26372	29563
Approved Purchase Cost (Rs Crs)	3943	4011	5216	5998	7084
Average Cost (Rs/KWh)	1.86	1.89	2.19	2.27	2.40

Transmission Losses

In FY05, HERC based on the submissions of HVPNL observed that overall transmission losses (inter-state and intra-state) upto Dec 05 had increased over previous year transmission losses despite substantial investment in the transmission infrastructure. Therefore, HERC approved the transmission losses similar to the actual losses for FY04. Also, HVPNL was directed to carry out a comprehensive study on the transmission losses.

HERC approved the overall losses considering the Commissioning of two new units near the load center and expected increase in availability from hydro plants leading to lower dependence on regional grid. Therefore, a reduction of 0.12% over the FY05 approved loss level was allowed by the Commission for FY06. For FY07, the Commission has further lowered the overall transmission loss levels to 4.4% considering HVPNL's negligence in taking appropriate measures to reduce intra-state transmission losses.

With the transfer of bulk supply business to HPGCL, inter-state transmission would constitute power purchase quantum of HPGCL's bulk supply business. Therefore, in FY08 & FY09 Tariff Order, HERC approved the intra-state transmission losses for HVPNL. The transmission losses were approved based on actual losses for the previous year and a reduction in loss levels.

Table A-7.15: Approved Transmission Losses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	4.62%*	4.50%*	4.40%*	2.60%	2.10%

**overall losses considering inter-state and intra-state losses*

Transmission Charges payable by Bulk Supply Licensee

The transmission charges payable by licensee includes the charges paid to PGCIL, the respective State Transmission Utility and other charges paid for open access. For FY05 and FY06, the Commission had approved transmission charges to PGCIL based on the amount as per invoices of previous year with an escalation of 5% on account of inflation. In absence of detailed information on open access charges, the charges payable to state utility had been approved as per the amount proposed by the HVPNL/ HPGCL.

In FY07, the Commission had approved an escalation of 4% on actual amount of transmission charges paid in FY06. In FY08 and FY09, the Commission had approved the transmission charges as per the amount proposed by HVPNL/ HPGCL.

Table A-7.16: Approved Transmission and Other Related Charges

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	136.7	129.39	138.3	176.2	171.7

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY05, FY06, FY07, FY08 and FY09 in its Tariff Orders for HVPNL. Approach of the Commission for approval of each of the O&M cost parameters in the past five Tariff Orders is discussed below:

Employee Cost

The Commission had further fragmented the employee cost in various components. During the period FY05 to FY09, the Commission has escalated the basic salary by 2% over the previous year basic salary as per the audited accounts. Dearness Pay had been considered at 50% of the basic salary. Dearness allowances had been considered at different rates over the period ranging from 14% in FY05 to 53% in FY09 of the basic pay. Other Allowances had been considered as a percentage of basic salary for the respective years. However, the percentage has been varying from 19.85% to 23.68% over the period. For FY05 and FY06, the Terminal Benefits had been approved on actual basis after considering pension payment adjusted for annual escalation, dearness pay and dearness allowances. For FY07, Terminal benefits had been approved as projected by HVPNL considering that the methodology used was in line with the methodology proposed by HERC in 2001. For FY08 and FY09, the Commission had approved the terminal benefits on accrual basis.

Capitalization of employee cost has been approved based on the same ratio as that of capitalization to the total capital expenditure as per the audited accounts of the licensee. The net employee cost as approved by the Commission in each of the past five Tariff Orders is summarized in table below:

Table A-7.17: Approved Employee Cost from FY05 to FY09

Particulars	FY05	FY06	FY07	FY08	FY09
Approved Net Employee Cost (Rs. Crs)	184.0	178.8	162.2	186.1	235.4
Employee Cost as percentage of Approved ARR (%)	4%	4%	52%	34%	43%

The increase in employee cost as percentage of the ARR in FY07 is primarily on account of transfer of trading business to HPGCL.

Repair & Maintenance (R&M) Expenses

During the period FY05 to FY08, the R&M expenses have been approved as per the proposed R&M expense by HVPNL. The Commission has considered HVPNL claim as the proposed amount was lesser than the HERC's computed R&M expense. However, for FY09, HVPNL proposed an increase of 253% in R&M expense over the previous year. As the increase in R&M expense was not substantiated, the Commission approved 0.5% of the average GFA (average rate of R&M expense as per last three audited accounts).

The R&M expenses approved by Commission in the last five Tariff Orders are summarized in table below:

Table: Approved R&M Expenses from FY05 to FY09

Particulars	FY 05	FY06	FY07	FY08	FY09
Net R&M Expenses (Rs.Crs)	5.8	6.1	9.8	8.3	11.8
R&M Cost as % of Approved ARR	0.1%	0.1%	3.2%	1.5%	2.2%

Administrative & General Expenses

Throughout the period, FY05 to FY09, the Commission had approved the A&G expenses as per the claim of HVPNL. However, the Commission had disallowed the amount of diminution in the value of investments and A&G expense proposed on the rent earning assets. Since the assets on which diminution in the value of investments was claimed did not form part of licensee's business, the same was not considered in the determination of HVPNL's ARR.

The Commission had approved capitalization of the expenses based on the latest audited accounts. A&G expenses approved by the Commission in the past five year Tariff Orders are summarized in table below:

Table A-7.18: Approved A&G Expenses from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net A&G Expenses (Rs.Crs)	6.8	7.2	7.9	8.3	7.7

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved ARR (Rs.Crs)	4151.0	4231.5	311.3	543.4	545.4
A&G Cost as % of Approved ARR	0.2%	0.2%	2.5%	1.5%	1.4%

Depreciation

In FY05 and FY06, the Commission had approved depreciation on the opening GFA based on the depreciation rate as per the latest audited accounts after adjusting the same for generation assets. Any depreciation on the income earning assets or assets created out of consumer contribution or capital reserve was not considered for the purpose of computing depreciation.

For FY07, HVPNL filed for depreciation based on the rates notified by the GoI. Further, HVPNL submitted depreciation as per the CERC notified rates as per the Commission's direction and the same had been approved by the Commission. In the subsequent years, the Commission has approved the depreciation rates as per CERC notified rates.

Utilization of depreciation is to be done as per principles laid down by the Commission in the following priority:

- For meeting loan repayment liabilities.
- For meeting permitted revenue gap to the extent possible
- For meeting capital expenditure to the extent possible

Since the depreciation computed for FY05 and FY06 were as per GoI notified depreciation rates, the Commission had not approved any AAD in the respective Tariff Orders. However in subsequent years, the Commission had computed the AAD as per CERC terms of tariff regulations.

Interest on Working Capital Requirement

For FY05, FY06 & FY07, the Commission had estimated the working capital requirement based on the approach followed by the Commission in FY03. In FY03, the Commission had limited the allowable working capital to one month of ARR. According to the norms, the Commission had approved an amount slightly higher than one month's ARR. For FY08 and FY09, the Commission had estimated 2 months ARR as the working capital requirement for HVPNL as per the order of Hon'ble ATE.

The Commission has been approving the interest on working capital requirement based on the average rate of borrowing for HVPNL.

Table A-7.19: Approved Interest on Working Capital from FY05 to FY09

Particulars	FY05	FY06	FY07	FY08	FY09
Net IWC (Rs.Crs)	31.6	32.0	22.3	76.8	98.5
Approved interest rate for Working Capital (%)	9.0%	8.9%	8.6%	8.5%	9.6%

Interest cost

During the period FY05 to FY09, the Commission had approved interest on loans for which the petitioner had been able to provide the source-wise details. During the period, the Commission had disallowed interest on the loans for which the petitioner had not been able to provide the source of loan, working capital loans which had been reclassified as capital expenditure loan by petitioner, borrowing related to generating assets, schemes which are yet not approved and the loans for which interest had been capitalized.

The Commission had approved the capitalization of interest based on the status of work. For FY05, the Commission had not mentioned the approach for approval of capitalization of interest amount. In FY06, the Commission had approved the capitalization of interest on loans which either had completed in FY06 or is planned to complete in subsequent years.

However in FY07, the Commission had capitalized the interest on loans based on the capitalization plan of the new capital expenditure. In FY08 and FY09, the Commission had capitalized interest for 6 months only for new capital expenditure loans as the amount is expected to be received evenly during the year.

The table below shows the amount of total interest on loans (including Interest on Working Capital loans) and interest cost as percentage of ARR during the period FY05 to FY09.

Table A-7.20: Approved Interest on loans (incl. IWC) from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net IWC (Rs.Crs)	72	77.3	56.7	163.3	163.9
Interest Cost as percentage of ARR (%)	2%	2%	18%	30%	30%

Rate of Return

The Commission had adopted Return on Capital Base for FY05 to FY07 for approval of reasonable return for the determination of ARR of HVPNL. However, the Commission revised its approach to Return on Equity (ROE) for FY08 and FY09.

In FY05 and FY06, since the petitioner had not proposed any return on capital base, the Commission had not approved the same. In FY07, the Commission had disallowed return on capital base as the capital base computed for HVPNl was negative. With regard to the change in approach during FY08 and FY09, the Commission approved a RoE of 8% for the transmission and SLDC business of HVPNL.

The details pertaining to approved rate of return between FY05 and FY09 are summarized in table below:

Table A-7.21: Approved Rate of Return between FY 06 and FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approach Followed	Return on Capital Base	Return on Capital Base	Return on Capital Base	ROE	ROE
Approved Return (%)	0.0%	0.0%	0.0%	8.0%	8.0%

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Return (Rs.Crs)	0.00	0.00	0.00	38.8	51.5

Tax

The Commission had not approved any expense towards Income Tax in FY05 and FY06 as no return on capital base was approved. However in FY07, HVPNL proposed to recover FBT as past year dues. Given the statutory nature of expenditure, the Commission had allowed it to be recovered after disallowing FBT on account of contribution to the superannuation fund.

In FY08, the Commission approved an income tax based on MAT on the return on equity approved for HVPNL. Further, the Commission had recovered the additional amount approved against FBT along with an interest of 8.47% (average rate of interest on working capital). A similar approach was followed for FY09 for the approval of income tax and FBT.

Contribution to Contingency Reserve

During the period FY05 to FY08, the Commission had been allowing contribution to contingency reserve as per the amount proposed by HVPNL. However, in FY09, the Commission had not approved any contribution towards contingency reserve as the outstanding reserves had not been utilized.

Annual Revenue Requirement (ARR)

The Commission has approved the Annual Revenue Requirement based on the approach followed by the Commission as discussed above. Table below summarizes the ARR approved by the Commission vis-à-vis the proposed ARR by HVPNL during FY05 to FY09.

Table A-7.22: Proposed and Approved ARR for HVPNL during FY05 to FY09

Particulars	FY05	FY06	FY07	FY08	FY09
Approved ARR (Rs. Crs)	4151.0	4231.5	311.3	543.4	545.4
ARR proposed by HVPNL (Rs. Crs)	4623.9	5223.9	567.7	661.4	723.7
% Disallowance	10%	19%	45%	18%	25%

Transmission Tariff

Considering that the ARR for HVPNL for FY05 and FY06 comprised of transmission business and bulk supply business, the Commission allocated the various cost parameters of the ARR of HVPNL between the two businesses. Further, the cost allocated to bulk supply business was desegregated into fixed and variable cost while that of the transmission business was considered as purely fixed costs. The Commission approved a fixed and energy charge for the bulk supply business. However, in view of the entire cost allocated to transmission business to be fixed in nature, the Commission approved a demand charge per kW per month basis to be recovered from the DISCOMs.

In case of wheeling of energy for any other party/ licensee, the Commission has approved a per unit transmission rate based on the total approved cost divided by approved sales. Additional, the Commission has specified a 4% deduction in energy as against transmission losses for wheeling customers.

Since the trading/ bulk supply business was transferred to HPGCL in FY07, the Commission has not approved any bulk supply tariffs in the FY07 and subsequent Tariff Orders. The Commission has determined the ARR of the transmission business and approved the tariff based on the similar methodology as adopted in FY05 & FY06 Tariff Orders. The transmission tariff has been computed as demand charges per kW per month. Also, the wheeling charges for other consumers/ licensee have been computed on per unit basis. From the FY08 Tariff Order, the Commission also approved 25% of the transmission charges collected by HVPNL from short-term open access consumers to be retained and the balance to be adjusted towards reducing the transmission charges of the existing long-term transmission customers.

Table A-7.23: Approved Transmission Tariff from FY06 to FY09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Transmission Tariff for long-term transmission customers (Rs./ kW/ month)	77.43	76.44	74.73	120.85	114.13
Approved Transmission Tariff for short-term open access customers (Paisa/KWh**)**	0.14	0.14	0.14	Rs 1007/ MW/ Day	0.19
Losses in kind to be applicable of short-term open access consumers	4%	4%	4%	2.6%*	2.1%*

**since HERC has not mentioned on the transmission losses applicable to open access consumers, the same have been retained in line with the approved transmission losses for long-term consumers*

Determination of Transmission Charges & Open Access Charges

As per the Section 62 (b) and 62 (c) of Electricity Act 2003, the Commission is required to fix the transmission and wheeling charges for using the transmission system. These charges fixed on the basis of postage stamp method as per CERC Guidelines, will be applicable for all users of the network including the DISCOMs. The Commission in its Tariff Order for FY 07 to FY 09 has decided to determine separately the transmission and SLDC charges to be paid by all consumers of the transmission network (66 KV and above) including loss. Similarly the consumers using the network below 66 KV are required to pay the wheeling charges as determined by the Commission in addition to transmission charge.

The Commission has been determining a single part transmission tariff considering that the entire cost of transmission business (including SLDC) was of fixed nature. In absence of data regarding assets and voltage-wise desegregation of transmission loss, the Commission had to approve the existing tariff design.

Transmission Charges for FY05:

In FY05, since HVPNL was also bulk supplier, the Commission had accepted the segregation of bulk supply and transmission business done by the petitioner based on which the ARR for transmission business came out to be Rs 283.6 Crs.

The Commission has projected the average annual system peak based on the actual average system peak of 3056 MW as per the data submitted by the HVPNL for FY05 (Up to Dec) and projected the average system peak for 4th quarter based on the correlation w.r.t. the 1st quarter. Accordingly, the average system peak for FY05 worked out to be 3052 MW which was utilized for the purpose of computing the transmission charges for lon-term transmission customers.

Table A-7.24: Monthly charges payable by DISCOMs and Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12*average annual system coincidental peak) Where; Net Transmission ARR= **Rs 283.6 Crs** Average Annual System coincidental Peak = 3052 **MW**	**= Rs 77.429**
Any Other Party*	**Transmission charges(Rs. / Unit)=** Short Term rate per day= Transmission ARR / Approved Sales Where; Approved sales = 20233 MUs	= **Rs. 0.14**

**Energy losses @4% will be deducted against transmission losses for wheeling customers*

Transmission Charges for FY06:

For FY06, since HVPNL continued to be the bulk supplier, the Commission had considered a similar methodology for approval of transmission charges as followed in the FY05 Tariff Order.

The Commission estimated the actual average annual system peak for the last three years. As the estimation was quite close to the annual system peak projected by the HVPNL, the Commission had accepted the HVPNL's estimation of 3233.35 MW for FY06.

Table A-7.25: Monthly charges payable by DISCOMs and Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12* average annual system coincidental peak)) Where; Net Transmission ARR= **Rs 296.6 Crs** Gross Contracted capacity= **3233.35 MW**	**= Rs** 76.443
Any Other Party*	**Transmission charges(Rs. / Unit)=** Short Term rate per day= Transmission ARR / Total Approved Sales Where; Total Approved Sales = 20293 MUs	=**Rs. 0.14**

**Energy losses @4% will be deducted against transmission losses for wheeling customers*

Transmission Charges for FY07

In FY07, HVPNL proposed to recover the cost of transmission based on the transmission capacity in the inter-connection points (MVA). However the Commission was of the view that the methodology followed so far incentivises the DISCOMs with respect to management of their peak load and thus an effective tool of demand side management.

The Commission had projected the annual system peak based on the CAGR of actual average system peak for last four years from FY03 to FY06. Since the projections were very close to the petitioner's projection, the Commission had approved the tariff based on the average system peak projected by HVPNL.

Table A-7.26: Monthly charges payable by DISCOMs and Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12* average annual system coincidental peak)) Where; Net Transmission ARR= **Rs 311.2 Crs** Gross Contracted capacity= **3471 MW**	**= Rs** 74.733
Any Other Party*	**Transmission charges(Rs. / Unit)=** Short Term rate per day= Transmission ARR / Total Approved Sales Where; Total Approved Sales = 22813 MUs	=**Rs. 0.14**

**Energy losses @4% will be deducted against transmission losses for wheeling customers*

Moreover, the Commission has mentioned that the billing will be done on monthly basis in accordance with the respective contribution of the DISCOMs to the coincidental system peak recorded during the month. The single rate wheeling will be recovered from the short term and long term 'open access' customers availing HVPNL's transmission system. The wheeling charges recovered form such customers shall be reduced from the transmission charges to be recovered from the DISCOMs.

The short term customers will be charged a composite fees & charge for each transaction @ Rs 1000 / Day or part there off as proposed by HVPNL.

Transmission Charges for FY08

For FY08, a similar approach for approval of transmission charges was followed by the Commission. Projections for the annual system peak was based on the CAGR of actual average system peak for last four years for FY03 to FY07. Since neither HVPNL nor the DISCOMs submitted their projections, the Commission had approved the tariff based on the average system peak projected by the Commission.

Table A-7.27: Monthly charges payable by DISCOMs and Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12* average annual system coincidental peak)) Where; Net Transmission ARR= **Rs 543.4 Crs** Gross Contracted capacity= **3747 MW**	**= Rs** 120.852

The wheeling charges for other parties or sales to other licensee's would be based on the respective contribution to the system peak. However, due to non-availability of time series data, the wheeling rate for third party in the State had been approved as a single rate on per MW/Day considering 25% of the approved transmission cost. This rate was applicable for system loss level.

Particulars	
Approved Transmission Cost (Rs Crs)	543.437
25% of the Approved Transmission Cost (Rs Crs)	135.9
Average system Peak (MW)	3747
Approved Rate (Rs/MW/Day)	**1007**
For open Access customers upto 6 hrs a Day	252
For open Access customers upto 12 hrs a Day	504
For open Access customers more than 12 hrs a Day	1007

**Energy losses in kind will be deducted against transmission losses for wheeling customers*

In line with the CERC regulations, the Commission had allowed 25% of the transmission charges collected from the short-term customers to be retained by HVPNL and the balance to be adjusted towards reducing the transmission charges payable by the DISCOMs in proportion of their co-incidental peak.

The Commission approved a charge at Rs 1000 / Day or part there off as composite fees & charge for each transaction for short term customers as proposed by HVPNL.

Transmission Charges for FY09

In absence of the detailed voltage-wise data including Assets and voltage-wise desegregation of the transmission losses, the Commission has continued with the existing tariff design.

The Commission had projected the annual system peak based on the CAGR of actual average system peak for last five years for FY03 to FY08.

Table A-7.28: Monthly charges payable by DISCOMs and Open Access Customer

Type of Customer	Computation of Transmission Charges	Transmission Charges
DISCOMs	**Transmission charges(Rs. / kW / month)=** Approved net Transmission ARR/ (12* average	**= Rs** 114.14

Type of Customer	Computation of Transmission Charges	Transmission Charges
	annual system coincidental peak)) Where; Net Transmission ARR= **Rs 545.4 Crs** Gross Contracted capacity= **3982 MW**	
Short term Open Access Charges	**Transmission charges(Rs. / Unit)=** Short Term rate per day= Transmission ARR / Total Approved Sales Where; Total Approved Sales = 28431 MUs	=**Rs. 0.19**

**Energy losses in kind will be deducted against transmission losses for wheeling customers*

Wheeling Charges

In the FY09 Order, the Commission has also determined the wheeling charges applicable to the open access consumers in the distribution area of the DISCOMs. Therefore the Commission had approved wheeling charges for each distribution company based on the demand related cost and the distribution system loss. In absence of data on segregated cost for distribution business, the Commission had approved 8% of the total ARR of the DISCOMs allocable to the distribution business. Also, due to lack of data regarding voltage-wise loss level, the Commission had approved 6% distribution losses based on the CEA norms for determination of distribution system losses. The wheeling charge applicable to open access consumers is summarized below:

Table A-7.29: Computation of Wheeling Charge

Components	Derivation
Distribution Cost	
Distribution ARR (8% of net ARR)	696.2
Allowed gross volume of power purchase by distribution licensee (MUs)	28400
Expenses per KWh (paisa/unit)	25
Cost of Losses	
% of distribution losses	6%
Losses (MUs)	1706
HERC approved average cost of power purchase (Rs./unit)	2.49
Total cost of losses	3900
Cost per unit of losses (Paisa/unit)	15
Total Wheeling Charge (Paisa/unit)	**40**

The Commission has also approved the cross subsidy surcharge applicable to intra-state open access consumers based on the difference between the existing category-wise consumer tariff and respective cost to serve. This surcharge would be utilized for meeting the requirement of the cross subsidy in the area of supply.

Table A-7.30: Approved Cross Subsidy Surcharges for Open Access for FY09

Particulars (Rs. /kWh)	Average CoS (paise/unit)	Average Realisation (Paise/Unit)	Cross Subsidy (Paise/Unit)
HT Industry	318	409	91
Street Lighting	394	415	21
Railway Traction	287	396	110
Bulk Supply (Except Bulk Domestic)	317	409	92

In FY09 order, no additional surcharge to be paid by the open access customers was approved by the Commission.

SLDC Charges

The recovery of the SLDC charges was approved on a monthly basis from the two DISCOMs i.e. DHBVNL and UHBVNL in ratio of their contribution to the system coincidental peak during the month.

Table A-7.31: Approved SLDC Charges

Particulars	FY 06-07	FY 07-08	FY 08-09
Approved ARR (Rs. Crs)	82.85	94.91	78.18

A-7.3. Haryana – Distribution Utilities

Introduction

Haryana Electricity Regulatory Commission was established on 17th August 1998 as an independent statutory body corporate as per the provision of the Haryana Electricity Reform Act, 1997. Haryana was the second State in India to initiate the process of Reform & Restructuring of the Power sector in India.

The erstwhile Haryana State Electricity Board (HSEB) was unbundled into two corporate bodies namely Haryana Power Generation Company Limited (HPGCL) for the Generation of Power and Haryana Vidyut Prasaran Nigam Limited (HVPNL) for the Transmission & Distribution of power within the state of Haryana. Subsequently, the activity of distribution and retail supply of power was entrusted w.e.f. 1st July 1999, to Uttar Haryana Bijli Vitran Nigam Limited (UHBVNL) for north circles and Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL) for south circles of Haryana.

UHBVNL was entrusted with the responsibility of catering to Panchkula, Ambala, Yamunanagar, Kurukshetra, Kaithal, Karnal, Panipat, Sonepat, Rohtak, Jhajjar and Jind districts; whereas DHBVNL was entrusted with the responsibility to cater Hisar, Fatehabad, Bhiwani, Sirsa, Faridabad, Gurgaon, Mewat, Rewari and Narnaul districts.

HERC issued first Tariff Order for the distribution licensees in 2000 and since then it has been issuing Tariff Orders for both the distribution companies. After the unbundling of the HSEB, HVPNL was made responsible for Bulk Supply business. However, in June 2005, the Government of Haryana transferred the right of power purchase from HVPNL to HPGCL. Currently, DISCOMs purchase power from HPGCL on the Bulk Supply Tariff determined by the Commission.

Sales / Demand

Energy sales in the State of Haryana had been largely dominated by agriculture category, followed by industrial and domestic category. Since the agricultural sales in the State are largely unmetered, the estimation of agricultural sales is done with caution.

The sales estimate for all categories except agricultural sales has been based on the average Annual Load Factor (ALF). The Commission has been computing the consumption for each category by applying the average ALF on the average projected connected load of each category. The connected load as well as ALF is revised each year for the actual of the preceding year. However, considering Haryana has remained an energy deficit State, the Commission has adjusted the consumer wise sales estimate based on the ALF (excluding agriculture) to the extent of volume of power available (net losses) from various sources. The Commission has been following the ALF approach in each of the Tariff Order as the estimated sales as the variation in the actual as compared with the estimated is low.

Agricultural Sales

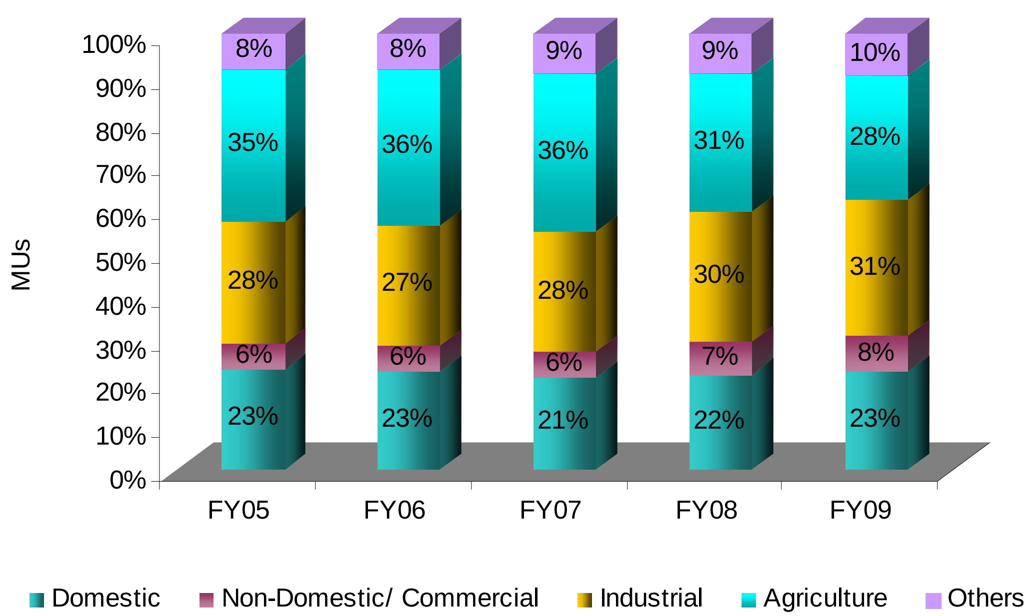
Haryana being predominantly an agricultural State, has a large portion of unmetered agricultural consumption which is billed on flat rates. Therefore, the estimate for consumption by agriculture category is crucial while determining the total sales for the DISCOMs. Further, the realistic estimation of the agricultural consumption is an imperative for accurate computation of losses and better projection of subsidy amount that is provided by the Government of Haryana.

For estimation of the metered agricultural sales, the Commission has approved the same based on the Average Annual Load Factor which in turn was based on the trends in the volume of sales in the metered agricultural category and the connected load. With regard to the estimation of sales for unmetered agricultural consumers, ALF of the metered agricultural consumers has been considered by the Commission.

Through out the period FY05 to FY09, the Commission has been emphasizing on metering the agricultural consumers. Though the DISCOMs have been taking steps for metering the unmetered agricultural consumption, the progress in the matter has been very slow. It is also observed that the authenticity of the metered sales is also questionable as a large number of meters were defective, slow or dead. However, in absence of availability of accurate information, the Commission has used the ALF approach for metered agricultural consumers and extended the same to unmetered agricultural consumers.

As is clear from the graph below, the industrial and agriculture category forms the major chunk of consumers in the overall consumer mix for DISCOMs in Haryana. The power sector in the State of Haryana had seen a tremendous growth in commercial consumers with a growth rate of 22% during FY05 to FY09, followed by Industrial with a growth rate of 17%. The agriculture category has seen the slowest growth of 8% only during the same period.

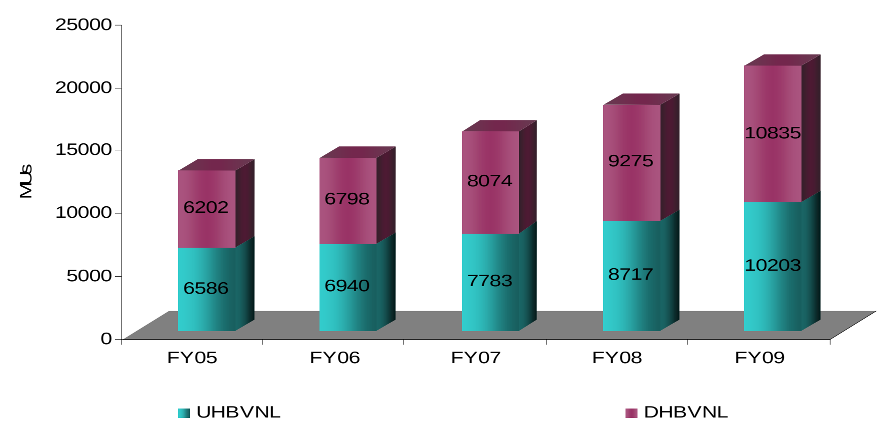
Graph A-7.5: Share of consumer categories in approved sales and the trend from FY05 to FY09



It is observed that the consumer mix in the State has not changed significantly from FY05 to FY09 except an increase in industrial and non-domestic proportion and a decline in agricultural sale proportion. The graph shows that the contribution of agriculture sector in total energy sales had decreased over the years from 35% in FY05 to 28% in FY09, whereas the contribution of commercial and industrial has increased during the same period.

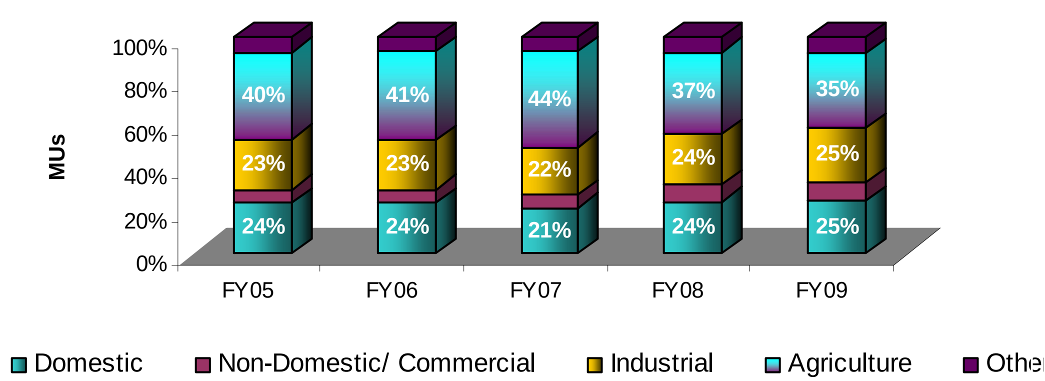
The graph below shows the allocation of energy sales in Haryana between the two DISCOMs. The share of DHBVNL and UHBVNL has reversed during FY05 to FY09. While the Commission had approved higher sales for UHBVNL (52%) in the FY05 Order, the sales approved for DHBVNL has been higher (51%) in the FY09 Order. This is primarily on account of growth in cities adjoining the Delhi Capital.

Graph A-7.6: Sales allocation between the DISCOMs from FY05 to FY09 (MUs)

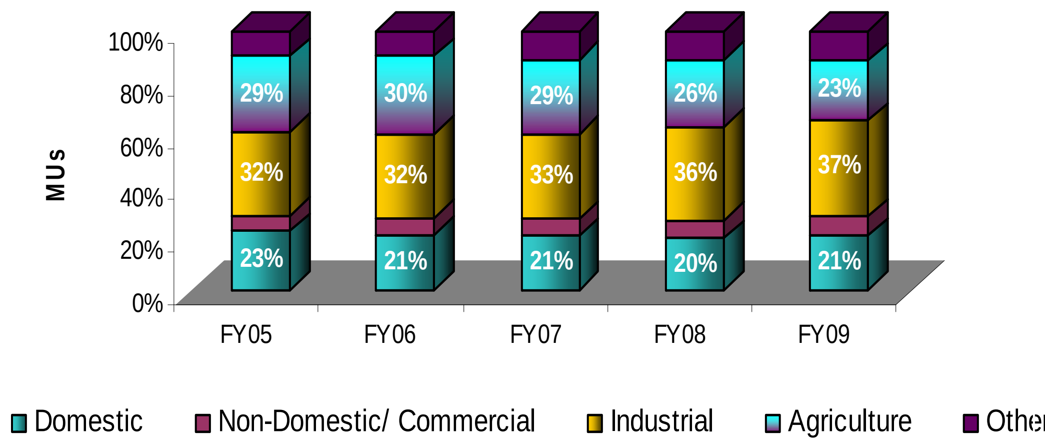


The graphs below summarize the category wise approved sales for UHBVNL and DHBVNL. While the sales mix of UHBVNL is predominantly dominated by agricultural sales, industrial consumption dominates the DHBVNL sales mix. Although the contribution of agricultural category in total approved sales of UHBVNL has declined over the period, it remains the largest contributer in terms of approved sales.

Graph A-7.7: Consumer contribution in total sales of UHBVNL during the period FY05 to FY09.



Graph A-7.8: Consumer contribution in total sales of DHBVNL during the period FY05 to FY09.



Distribution Losses

The Commission had been assessing the performance of the DISCOMs based on the few parameters i.e. Distribution loss, power supply-volume and quality including power regulatory measure, damage rate of distribution transformers and fatal and non fatal accidents. The Commission had done a detailed analysis for all these parameters. A performance report on these parameters is submitted by the DISCOMs each year along with their ARR petition.

The approach followed by the Commission for approval of distribution loss levels has been inconsistent without a predictable methodology.

In FY05, the Commission had approved the distribution loss levels for the DISCOMs based on the loss reduction achieved by the DISCOMs in the past years as the reduction in loss level in the previous years had been low.

In FY06, the Commission felt that the corresponding power would not be available in the grid at the filed distribution loss level by UHBVNL/DHBVNL. Therefore, HERC had approved a target of 32.3% distribution loss for each of the DISCOM considering the power available in the grid.

The DISCOMs had submitted a lower distribution loss level target to be achieved during FY07. However, the Commission had proposed a higher loss target considering that the targets claimed by the DISCOMs were not achievable in view of the past reduction in loss levels. The Commission, therefore, computed an energy loss of 32.4% taking into account the energy available and the approved sales. However, considering suitable reduction in loss level, the Commission approved a target loss level of 30.5% for both the DISCOMs.

For FY08, the Commission had based its approval of target distribution loss level on the past targets and massive capital expenditure planned by the DISCOMs to achieve large-scale improvements in distribution system for better power supply and substantial reduction in losses. Therefore, HERC had set a target of 28.5% of distribution loss level for both the DISCOMs. Moreover, the Commission directed the DISCOMs to prepare 11 KV feeder-wise consumer ledgers and submit the same to the Commission.

In FY09, the Commission based the loss reduction target on quantum jump in capital expenditure done by the DISCOMs. The Commission allowed a loss level of 26% for FY09.

The table below shows the distribution loss level approved by the Commission as against proposed by the utility and the actual level as per the performance report submitted by the DISCOMs.

Table A-7.32: Distribution loss Levels proposed, approved and Performance report submitted by the DISCOM during FY05 to FY09

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL					
Proposed by the Utility	31.50%	29.00%	29.00%	28.50%	26.00%
Approved in the Tariff Order	29.36%	32.30%	30.50%	28.50%	26.00%
Performance report submitted by the UHBVNL	31.12%	30.66%	28.67%	28.79%*	
DHBVNL					
Proposed by the Utility	30.25%	31.00%	30.50%	28.00%	26.00%
Approved in the Tariff Order	30.34%	32.30%	30.50%	28.50%	26.00%
Performance report submitted by the DHBVNL	30.17%	28.01%	29.65%	24.52%#	

**These are the average loss upto Oct'07*

#These are the average loss level upto Nov'07

The comparative analysis shows that both the DISCOMs have actually over achieved the approved distribution loss target levels for all the three years from FY05 to FY08 except for UHBVNL which could not achieve the target approved in FY05. However, the Commission has noticed discrepancies in the actual loss figures submitted by the DISCOMs in the performance report and the loss figures reported in the audited annual accounts.

Power Purchase Quantum

The State of Haryana had been a energy deficit state and thus the power procurement has not been demand driven but based on the estimates of power availability from various sources including owned generation, share from CGS, joint ventures, IPPs and other sources like bilateral, banking, UI, etc.

Availability from NTPC and NHPC generating stations was based on the CEA generation targets. The availability from short-term sources (including UI) has been approved based on the projections and agreements entered by the utility undertaking energy trading in absence of the suitable alternatives.

HVPNL (Transmission Company) on behalf of the DISCOMs was responsible for the power purchase from various sources up to the period June, 2005. The available power was then allocated among the two DISCOMs based on their estimated sales and T&D losses for the respective years.

Post June 2005, the Government of Haryana, vide its notification transferred the rights and obligation under the agreement and contracts, relating to procurement and bulk supply trading of power from HVPNL to HPGCL in line with the Electricity Act, 2003 which prohibits the transmission utility indulge in the business of the power trading.

The table below shows source-wise the amount of total energy available with the state of Haryana during the period FY05 to FY09.

Table A-7.33: Procurement and Sale of power by the two DISCOMs (In MUs)

Sources	FY05	FY06	FY07	FY08	FY09
CGS	8700	8032	9017	10784	10541
HPGCL	6750	9193	8891	10058	13287
Shared Projects	3301	3542	3527	3428	3733
PTC and Others	2457	483	2429	2102	2002
TOTAL	**21208**	**21249**	**23863**	**26372**	**29563**

It is observed that after the Commissioning of HPGCL's DCR TPP plant, the power from State generating stations form majority share of the total availability of the State followed by the Central generating stations. Both the sources contribute more than 80% of the State energy requirement.

During the period FY05 to FY09, the power purchase quantum had been approved based on the sales estimated for the DISCOMs and their respective approved distribution losses. A comparison of the approved power purchased quantum and approved sale for two DISCOMs during FY05 to FY09 is summarized in the table below:

Table A-7.34: Procurement and Sale of power by the two DISCOMs (In MUs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL Purchase	10438	10251	11198	12192	13788
UHBVNL Supply	6586	6940	7783	8717	10203
DHBVNL Purchase	9790	10042	11615	12972	14642
DHBVNL Supply	6202	6798	8074	9275	10835

Power Purchase Cost

The main sources of power purchase for the State of Haryana had been Central Generating Stations, State Generating Stations, Shared projects, PTC and other sources. During the period FY05 to FY09, the availability of power from various generating stations had been based on the following approaches:

During the period FY05 to FY09, the power purchase quantum had been approved based on the consumption estimates of the DISCOMs and their respective approved distribution losses.

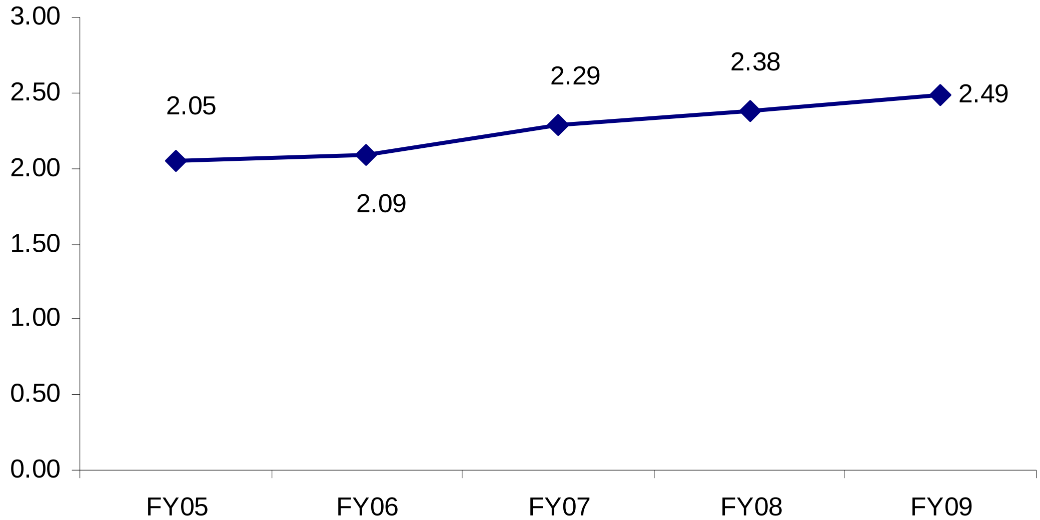
Table A-7.35: Power purchase cost per unit by the two DISCOMs (In MUs)

Particulars	FY05	FY06	FY07	FY08	FY09
Power purchase cost (UHBVNL)	2,157	2,151	2,561	2,902	3,433
Power purchase cost (DHBVNL)	1,994	2,081	2,656	3,087	3,646
Power purchase	10438	10251	11198	12192	13788

quantum(MU) (UHBVNL)					
Power purchase quantum(MU) (DHBVNL)	9,790	10,042	11,615	12,972	14,642
Power Purchase cost per unit(UHBVNL)	2.07	2.10	2.29	2.38	2.49
Power Purchase cost per unit(DHBVNL)	2.04	2.07	2.29	2.38	2.49

Since HPGCL was undertaking the function of power procurement in the State on behalf of the DISCOMs, the DISCOMs were required to pay for the power purchase cost as per the Bulk Supply Tariff (BST) approved by the Commission during the period FY05 to FY09. The Commission had approved uniform bulk supply tariff for both the DISCOMs during the period FY 05 to FY 09.

Graph A-7.9: Approved Bulk Supply Tariff (Rs. Per kWh)



During the period FY05 to FY09, the Commission had also mentioned that in case power purchase cost for the distribution and retail supply business changes due to any change in cost of power, the licensee should file their Fuel Surcharge Adjustment (FSA) application quarterly as per the FSA formula and guidelines approved by the Commission.

O&M Cost

HERC had approved each of the components of O&M separately. It has three components i.e. Employee Cost, R&M Cost and A&G cost. The approach followed by the Commission for approving each of the components of O&M expense has been discussed below.

Employee Expenses

For approving the employee cost, the Commission had further broken down the expenses and has projected each component of the employee expenses. During the period FY05 to FY09, the Commission had approved the employee expenses based on following assumptions:

- An escalation of 2% p.a. had been allowed on **basic salary** over the latest audited account.
- **Dearness Pay** had been assumed to be equal to 50% of the basic pay.
- **Dearness allowances** rate was considered at 14% for FY05; for FY06, 20% DA rate was approved based on the weighted average rate applicable on DA as announced by the State Government; for FY07, it was approved at 26% as claimed by the petitioner; for FY08, 40% had been approved keeping in mind the increased base of inflation; and for FY09, it had been approved at the rate proposed by the petitioner.
- The Commission had allowed **Other Allowances** as percentage of basic salary. The percentage was determined based on the actual percentage in previous years for each DISCOM.
- During the period FY05 to FY07, the **Terminal Benefits** had been approved based on actual payment basis. However in FY08, the Commission had allowed the terminal benefits on accrual basis based on the latest audited accounts as per the order of Hon'ble ATE. In FY09, the terminal benefits were allowed based on actual payment basis and as proposed by UHBVNL and DHBVNL.

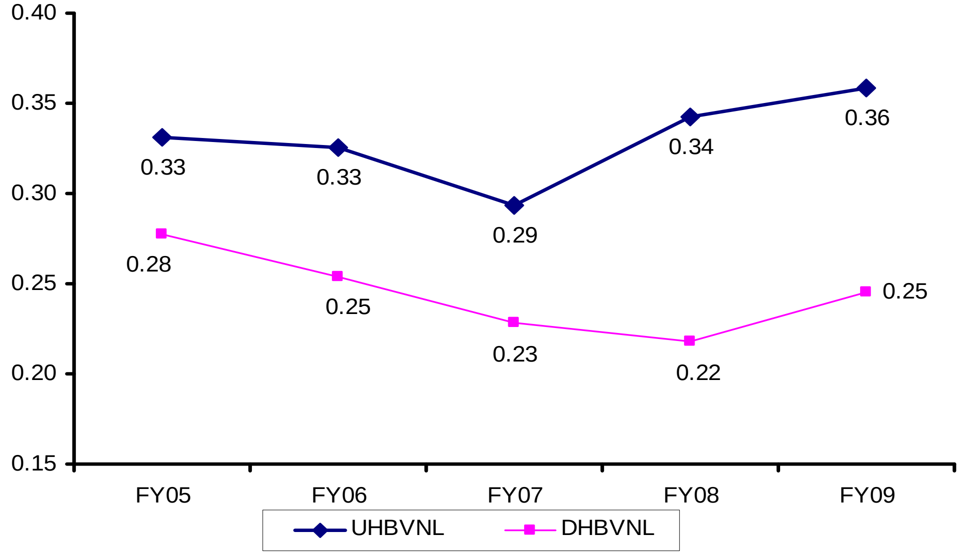
Capitalizations of expenses was done in the same proportion as that of capitalization to actual capital expenditure as per the previous year audited accounts.

Table A-7.36: Utility-wise Employee Cost and total Employee cost as percentage of ARR (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
DHBVNL					
Employee cost	172.25	172.37	184.49	202.18	265.48
Employee Cost as %age of ARR	9%	9%	6%	5%	6%
UHBVNL					
Employee cost	218.19	226.06	228.61	298.38	365.73
Employee Cost as %age of ARR	13%	14%	8%	8%	8%

The Graph below shows the employee cost per unit sale of energy during the period FY05 to FY09. The per unit employee cost of UHBVNL had always been more than that of DHBVNL.

Graph A-7.10: Employee cost per unit of sales for the two DISCOMs



Repairs and Maintenance Expenses

The approach followed by the Commission had remained consistent during the period FY05 to FY08. In absence of R&M norms for equipment used in Distribution and Retail Supply (D&RS) business, the R&M expenses during the period has been approved at 2% of the average Gross Fixed Asset. In FY09, it had been approved at 3% of the average GFA based on the most recent available audited accounts. However, the Commission had directed the DISCOMs to examine the reason for excessive R&M expenditure and to take preventive measures.

Table A-7.37: Approved R&M expenses (In Rs Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL	23.34	26.37	28.62	36.20	65.14
DHBVNL	20.92	24.38	27.24	40.63	59.38

Administrative and General Expenses

During the period FY05 to FY08, the Commission had approved A&G expenses as claimed by the DISCOMs. The Commission had further allowed capitalization A&G expenses based on the latest audited account. Moreover, the Commission had directed the petitioner to approach HERC in case of any unforeseen expenditure in the future years.

However in FY09, the Commission had changed its approach for estimation of A&G expense. The Commission had approved the A&G expense for DHBVNL by providing an escalation of 6% over past year A&G expense as per the audited accounts. A&G expense for UHBVNL was approved based on the CAGR in A&G expense in past 5 years.

Table A-7.38:Approved A&G Expense (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL	15.56	16.50	16.77	18.77	27.74
DHBVNL	14.03	14.98	15.83	24.51	34.00

O&M Expenses

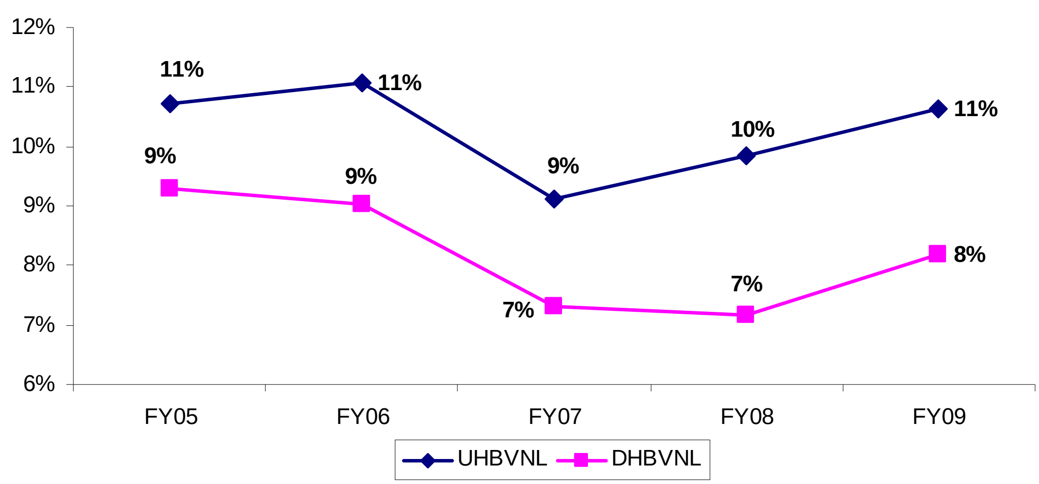
The total O&M expense approved in the Tariff Order for FY05 to FY09 has been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission.

Table A-7.39: Approved O&M Expenses for UHBVNL and DHBVNL during the period FY05 to FY09 (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL	257	269	274	353	459
DHBVNL	207	212	228	267	359
Total O&M Expense	**464**	**481**	**502**	**621**	**817**
O&M Cost Per unit of Sales					
UHBVNL	0.70	0.69	0.64	0.71	0.80
DHBVNL	0.33	0.31	0.28	0.29	0.33

The proportion of O&M expenses as total ARR has declined for both the DISCOMs but the same is primarily on account of increase in power purchase cost as a proportion of total ARR. The decline in O&M cost as a percentage of ARR in FY07 is primarily on account of increase in bulk supply tariff for FY07. The O&M expense as percentage of total ARR amongst the two DISCOMs is the highest for UHBVNL as reflected in the graph below.

Graph A-7.11: Approved O&M Cost as % of Total ARR* for UHBVNL and DHBVNL



**Excluding Subsidy Amount*

Capital expenditure (Capex)

In FY05, FY06 and FY07, the Commission had approved the amount of new investment to the extent of borrowing for which the licensee had provided source-wise detail, unutilized loans drawn in the previous year and funding through consumer contribution and grants. However in FY08, the Commission had allowed capital expenditure which had been initiated and the amount of work which was expected to complete in the ensuing year.

A detailed review of the actual works compared with the works approved by the Commission in the previous Tariff Order was undertaken while approving the capital expenditure for FY09. The Commission approved scheme wise capital expenditure based on the performance of the DISCOMs in the execution of capex plans during the previous years. Further, the works allotted and in progress have been considered while approving the capital expenditure for FY09.

Table A-7.40: Capital Expenditure Proposed and Approved by HERC for FY 05 to FY 09

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL					
Proposed by the Utility	158	216	274	686	639
Approved	158	216	274	585	542
DHBVNL					
Proposed by the Utility	183	171	213	988	948
Approved	165	160	213	943	549
Total					
Proposed by the Utility	341	388	487	1674	1587
Approved	322	376	487	1528	1091

The table above shows the amount of Capital expenditure proposed and approved during the period FY 05 to FY 09.

Asset Capitalization

For FY05, the Commission had considered the asset capitalization in line with the capitalization scheduled i.e. 30:60:10 followed in the earlier orders. However, the Commission has revised the capitalization schedule to 70:30 as proposed by the DISCOMs in their petition for subsequent years i.e. FY06 to FY09.

Depreciation

For FY05, FY06 and FY07, the Commission had approved the rate of depreciation based on the latest audited accounts available with the Commission. The average depreciation rate considered by the Commission is in line with the depreciation rates for various asset categories approved by the Ministry of Power. The value of assets taken for the purpose of the calculation of depreciation by the Commission was the value of assets as per the latest audited accounts after excluding the assets funded out of the consumer contribution and rent earning assets.

However in FY08 and FY09, the depreciation rate had been allowed as proposed by the DISCOMs in their petitions. The difference in the amount approved by the Commission and amount claimed by the DISCOMs was primarily on account of the difference in value of opening GFA considered by the Commission.

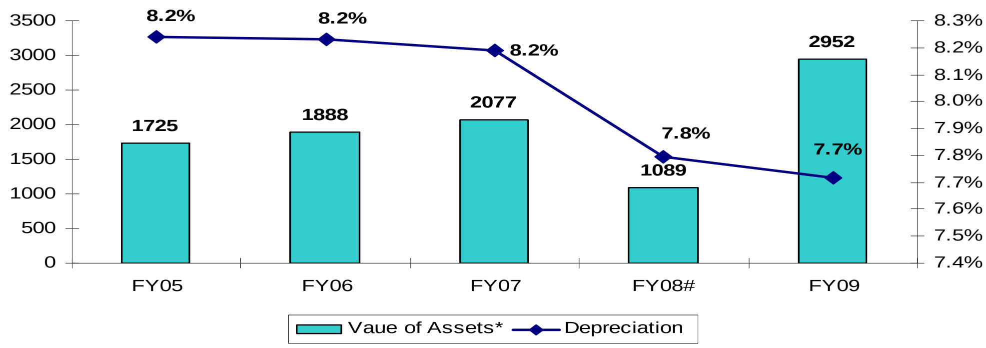
The Commission had also laid down the guidelines for utilization of depreciation amount in the given priority:

- For meeting loan repayment.

- For meeting the permitted revenue gap to the extent possible.
- For meeting the capital expenditure to the extent possible.

Since the depreciation rates were as per Ministry of Power approved depreciation rates, no advance against depreciation was applicable. The total approved depreciation for the DISCOMs and depreciation as a percentage of gross fixed assets is reflected in the graph below:

Graph A-7.12: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



* Value of Assets shown is excluding the value of assets through consumer contribution and rent earning assets.

In FY08, since the value of assets of UHBVNL is not provided. Hence for this year, value of asset and depreciation has been considered only for DHBVNL

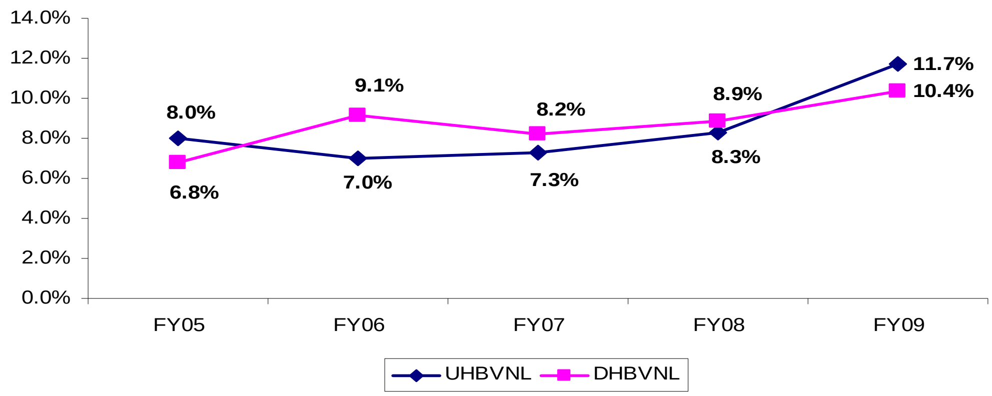
Working Capital Requirement

The Commission had approved working capital requirement in line with the methodology followed in earlier Tariff Order. Therefore, the Commission has been approving one month's ARR as working capital requirement to the DISCOM's after adjusting for excess cash. The interest on the estimated working capital requirement had been approved at an average rate of borrowing as estimated by the DISCOMs. The interest rates on the working capital requirement approved by the Commission are different for DHBVNL and UHBVNL.

The Commission has shown concerns over the higher cash balances of DHBVNL and UHBVNL and had directed the DISCOMs to undertake efficient cash management and reduce their cash and bank balance to 7 days of collection.

The graph below shows the rate of interest on working capital allowed to the DISCOMs during the year FY05 to FY09.

Graph A-7.13: Approved Rate of Interest on Working Capital Requirement



Interest Expense

For FY05, the Commission had allowed interest only on those loans for which the DISCOMs had been able to provide loan-wise, project-wise and utilization-wise details. In absence of information regarding utilization of the loan amounts, the Commission had disallowed the interest on unutilized funds to be considered for determination of ARR. A similar approach for approval of interest on loans was adopted by the Commission in the FY06 and FY07 Tariff Order.

In FY08, the Commission had approved interest on loan amount based on the status of the implementation of investment plans. However in FY09, the Commission had allowed interest on loans after disapproving interest on opening balance and the amount proposed to be borrowed during the year.

During the period FY05 to FY09, the Commission had been allowing interest on consumer's deposit as proposed by the DISCOMs subjected to compliance with HERC regulation and subject to fulfillment of the following two conditions i.e. the interest amount is adjusted in the bills of consumers; and actual payment will be adjusted against the amount allowed in the ARR and any deficit will be taken care in subsequent ARR based on audited accounts.

The Commission also allowed financial charges based on the information provided respectively during the period FY05 to FY08. The capitalization of interest rate had been done based on the approved capitalization schedule for the ongoing projects.

Table A-7.41: Interest Cost Approved for UHBVNL and DHBVNL during the period FY05 to FY09 (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL	33.62	39.82	44.70	63.13	79.40
DHBVNL	29.08	42.24	43.42	59.82	77.95
Total Interest Cost	**62.70**	**82.06**	**88.12**	**122.95**	**157.35**

Rate of Return

The Commission had consistently followed return on capital base in line with the existing tariff regulations for providing adequate return to the utilities. During the period FY05 to

FY07, DISCOMs had not claimed for any return on capital base, therefore no return was allowed. However, in FY08, only in case of UHBVNL, the return on interest loans had been allowed at the rate of 0.5% as per the order of Hon'ble ATE.

In FY09, the capital base of both the DISCOMs were found to be negative, hence the Commission had not allowed any return on capital base.

Table A-7.42: Interest Cost Approved for UHBVNL and DHBVNL (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL	0	0	0	4.26	0
DHBVNL	0	0	0	0	0

Bad Debts

The Commission does not provide for bad debts for the tariff computation as the same would put burden on the honest consumers who pay their dues regularly.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM.

The table below summarizes the proposed, approved and trued-up ARR in the various Tariff Orders from FY05 to FY09:

Table A-7.43: Proposed, Approved and Trued-up ARR* (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
UHBVNL					
Proposed by the Utility	2695	2808	2764	3558	4771
Approved	2396	2430	3002	3587	4319
DHBVNL					
Proposed by the Utility	2585	2511	2889	3473	4595
Approved	2228	2348	3112	3730	4384
Total					
Proposed by the Utility	5280	5319	5653	7030	9366
Approved	4624	4778	6114	7317	8703

***The amount of ARR shown here is excluding subsidy amount.

Tariff Determination

A single part tariff structure comprising of energy charge exists in the State of Haryana for all the categories of consumers except unmetered agricultural consumers. The consumers have been divided in 10 major categories. The retail tariff has been uniform for the consumer categories across the State.

The treatment of revenue surplus or gap by the Commission for determination of tariff year on year has been consistent. Throughout the period of FY05 to FY09, there has been no increase in the consumer tariffs.

In FY05, there was a combined revenue gap of Rs 1137.4 Crs of which Rs. 1102.5 Crs was provided as subsidy by the Government of Haryana (GoH). For the balance revenue gap of Rs 34.9 Crs, the Commission approved the creation of regulatory assets since the whole of FY05 had passed by the time the order was issued. For FY06, a revenue surplus of Rs 24.5 Crs was determined after taking into account the subsidy support from the GoH. The Commission had approved this surplus to be adjusted against the deferred subsidy outstanding in the books of DISCOMs.

However in FY07, the Commission changed its approach for calculating subsidy amount and its allocation. This was done considering the fact that both the distribution companies were State owned and it was appropriate to maintain uniform retail tariffs for various consumer categories across the State. Therefore, the Commission had two options i.e. either introduce differential BST based on the consumer mix or adjust the subsidy provided to each DISCOMs to counter balance the cross subsidy available to each of the DISCOMs. Since the end result of both the approach would have led to same result, the Commission adopted the second option and therefore in subsequent years, the subsidy allocation for each of the DISCOMs was determined on consolidated basis.

With regard to the FY08 revenue gap, the same was met by the GoH through additional subsidy. However, the revenue gap for FY09 was left untreated due to lack of information submitted by the DISCOMs on Cost of Supply.

The table given below shows the tariff for various categories from FY06 to FY09

Table A-7.44: Tariff rate for various categories of consumers during the period FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Domestic				
Lowest Slab	2.63	2.63	2.63	2.63
Highest Slab	4.28	4.28	4.28	4.28
Commercial				
Lowest Slab	4.19	4.19	4.19	4.19
Highest Slab	4.19	4.19	4.19	4.19
Small Industrial				
Lowest Slab	4.28	4.28	4.28	4.28
Highest Slab	4.28	4.28	4.28	4.28
Large/HT Industrial				
Lowest Slab	4.09	4.09	4.09	4.09
Highest Slab	4.09	4.09	4.09	4.09
Agriculture Consumers				
Metered	0.25	0.25	0.25	0.25

In nutshell, there was no tariff increase during the period FY05 to FY09 for any consumer category.

One important introduction made by the Commission in the FY09 Order has been with regard to the segregation of the Wheeling and Retail Supply Tariff (RST) for the

DISCOMs. The Commission has considered the demand related costs and distribution system loss (technical losses) for the determination of the wheeling charges for FY09. The demand related charges at 8% of the net ARR of the DISCOMs have been allocated towards distribution business based on the Commission's analysis and due to lack of segregation of cost between distribution and retail supply. In absence of data regarding voltage-wise loss levels, the Commission has considered the distribution system loss at 6% based on the CEA norms and investments made by the DISCOMs,.

The determination of the wheeling charges by the Commission would facilitate the adoption of open-access by the consumers in the State. Although the charges had been determined in absence of segregation of distribution assets and voltage-wise losses, the Commission has directed the DISCOMs to submit the same in subsequent tariff petition.

The cross subsidy surcharge has been approved at the same level as the difference between the existing consumer category wise tariff and the respective cost to serve. This surcharge would be utilized by the DISCOMs to meet the requirement of current level of cross subsidy within their area of supply. No additional surcharge has been approved for FY09. The Government had waived the cross subsidy surcharge and additional surcharge for FY08 to encourage customers to avail open access. Therefore, the Commission has specified that incase the GoH continues to waive the cross subsidy surcharge and additional surcharge for FY09 and compensate the DISCOMs to the extent of the loss of cross-subsidy, the same shall not be levied on the open access consumers.

Average Cost Of Supply Vs Average revenue Realisation

The average cost of supply approved by the Commission from FY05 to FY09 has increased by 14% from Rs 3.62 per unit to Rs 4.14 per unit, whereas the average revenue realization during the same period has increase by only 6% due to change in consumer mix. The Commission has not increased the tariff in the State as the revenue gap has been met by the GoH by way of subsidy. The table below shows the Average CoS and the average revenue realization in the State of Haryana. The gap between the average cost of supply and average realization has increased from Rs. 0.92 per unit to Rs. 1.29 per unit.

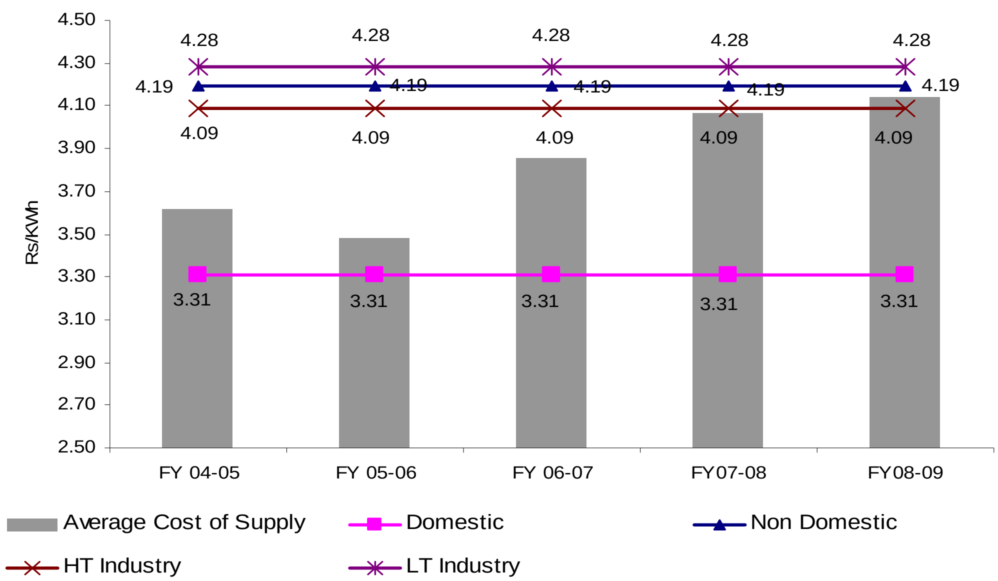
Time and again the Commission had emphasized the importance of determination of category-wise CoS to reduce the cross subsidy level. Despite the repetitive directions, the DISCOMs have not submitted the category wise cost of supply.

Table A-7.45: Average Cost of Supply approved by the Commission

Particulars	FY05	FY06	FY07	FY08	FY09
Total Approved Sales (Mus)	12788	13738	15856	17992	21038
Total Approved ARR (Rs. Crs)	4624	4778	6114	7317	8703
TOTAL Revenue (Rs. Crs)	3428	3547	4100	4946	5979
Average CoS (Rs./KWh)	3.62	3.48	3.86	4.07	4.14
Average Realisation (Rs./Kwh)	2.68	2.58	2.59	2.75	2.84
Gap/ Surplus (Rs./Kwh)	**0.94**	**0.90**	**1.27**	**1.32**	**1.29**

The trend of realization from tariff as approved by the Commission for various consumer categories against the average cost of supply from FY05 to FY09 is captured in the graph below.

Graph A-7.14: Average Cost of Supply vis-à-vis average tariff for key consumer category

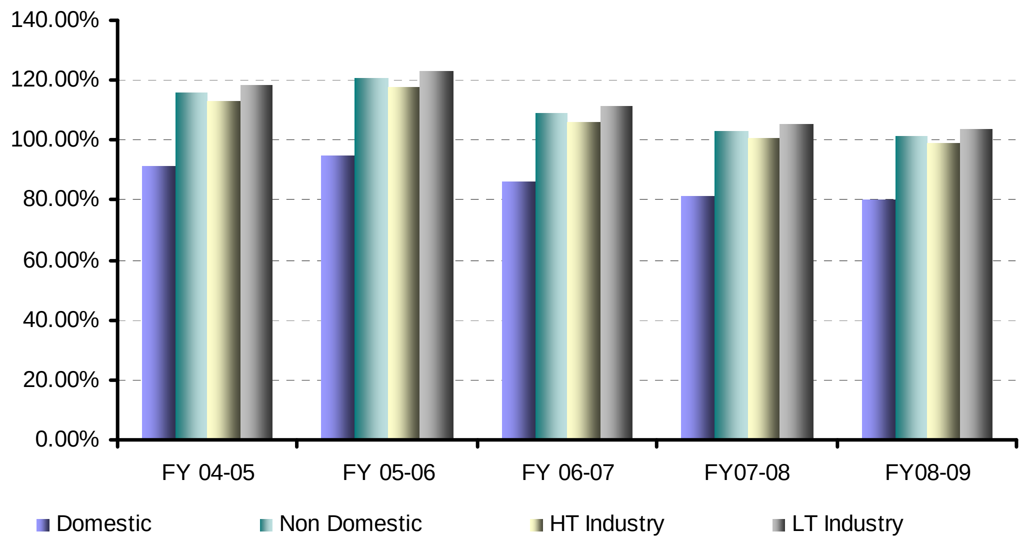


Since the Commission has not provided the breakup of the revenue from each consumer-category, the average realization from the domestic and agricultural metered as well as unmetered consumption cannot be determined. However, the average realization from domestic category has been considered based on consumption of 45:35:20 ratio across lower to highest slab.

It is observed that though the Commission has not increased the tariff for any consumer category during FY05 to FY09 in line with the increase in cost of supply, the average realization across all categories (except agricultural) has remained within the +/- 20% of the average cost of supply in line with the National Tariff Policy. However, the metered and unmetered agricultural category is highly subsidized by the GoH. The Government provides large amount of direct subsidy for meeting the deficit on account of sales to agricultural consumers.

Further, it is observed that the industrial (HT & LT) and non-domestic categories were cross subsidizing the domestic and agricultural categories during FY05 to FY07. However, with the increase in average cost to serve in FY08 and FY09 order, the cross subsidy available from the industrial and non-domestic consumers is marginal.

Graph A-7.15: Approved realization as percentage of Average Cost of Supply for key categories



Subsidy Support from Government

Subsidy support from the GoH has been made available to the DISCOMs throughout the period FY05 to FY09. The Government has been providing subsidy support to the DISCOMs for the consumption of energy by the agricultural consumers in the State. Considering that the low tariffs charged to the metered agricultural consumers and unmetered agricultural consumers, the GoH is approximately paying in full for the consumption by agricultural consumers.

Each year, the State Government announces the amount of budgetary subsidy it intents to provide to the State consumers. This subsidy is then utilized by the Commission to fill up the approved revenue gap. The Commission estimates this revenue gap based on the estimated cost of service and approved tariff rates. Since agriculture and domestic categories are non compensatory and are cross subsidized category, the amount of deficit is estimated based on the approved ARR and revenue from approved tariffs. Further, the Commission estimates the amount of subsidy generated by the other subsidizing categories. The balance amount of cross subsidy after meeting the cross-subsidy for domestic category is adjusted towards the deficit created by agricultural category. The balance deficit of agricultural consumers is met through the subsidy support from the State Government.

In FY07, the Commission expressed that since both the distribution licensee in Haryana i.e. DHBVNL and UHBVNL are State owned and therefore it would appropriate to maintain uniform retail tariff for various consumer categories across the State. So in the subsequent years, the Commission adjusted the total amount of subsidy available with each of the licensee to counterbalance the cross subsidy.

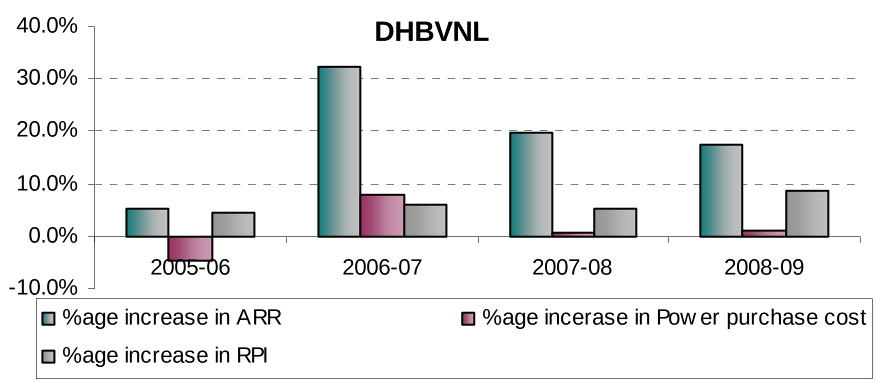
In FY05, the subsidy support from the State Government fell short of the approved revenue gap. Since whole of FY05 had passed by the time the order was issued, the Commission had allowed the DISCOMs to cover the gap through creation of regulatory asset. During the period FY06 to FY07, the subsidy support had been adequately high to cover the revenue gap for both the DISCOMs.

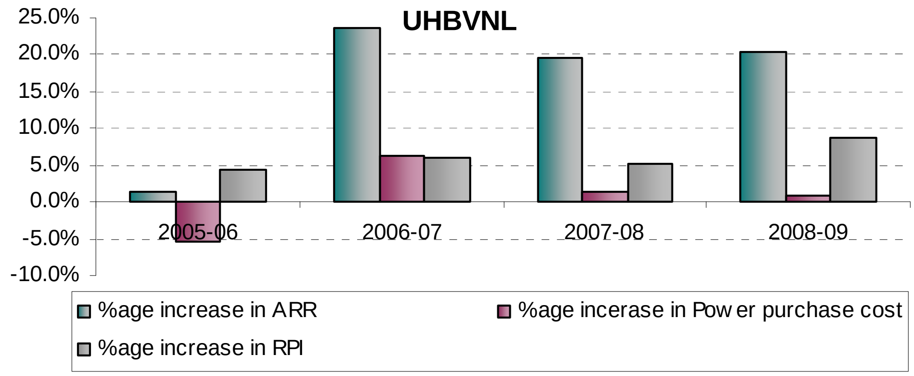
In FY08 and FY09, there was a revenue deficit in excess of subsidy support from the State Government. In FY08, the Commission had considered the balance gap after considering the GoH subsidy to be met through additional improvement in distribution loss by 2.5% and additional government subsidy. Whereas, for FY09, the information sought by the Commission on CoS was not provided by the DISCOMs. In absence of any tariff review proposal submitted by the DISCOMs , the Commission had asked the DISCOMs to bridge the revenue gap partially through improvement in distribution loss and the balance gap was left untreated. The Commission had directed the DISCOMs to fund the gap through institutional borrowing for which the interest cost would be approved in the subsequent year.

Particulars	FY05	FY06	FY07	FY08	FY09
Budgeted Subsidy (Rs. Crs)	1102.50	1256.00	1464.88	1873.82	1681.98

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.





The annual revenue requirement in FY 07 to FY 09 increased due to increase sales approved and hence power purchase cost. The tariff increase did not reflect increase in retail price index as the resulting revenue gap (due to increase in power purchase cost) was filled with subsidy provided by the government.

Discom	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
DHBVNL	Approved ARR	2228.00	**2348.00**	3112.00	3730.00	4384
	Approved Sales (MU)	6,202.00	**6797.00**	8074.00	9275.00	10835
	Averge Cost of Supply in Rs/kwh (A)	3.59	3.45	3.85	4.02	4.05
	% of Power Purchase Cost in ARR	89%	89%	86%	83%	83%
	% of Other remaining Cost in ACS	11%	11%	14%	17%	17%
	% Annual Increase in Power Purchase Cost		-4.8%	7.9%	0.7%	1.1%
	% Annual Increase in Other Cost		4.1%	40.0%	26.1%	-1.8%
	% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%
	RPI -X (X= 2%)		2.37%	4.06%	3.21%	6.67%

Discom	Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
UHBVNL	Approved ARR	2396.00	**2430.00**	3002.00	3587.00	4319
	Approved Sales (MU)	6,586.00	**6940.00**	7783.00	8717.00	10203
	Averge Cost of Supply in Rs/kwh (A)	3.64	3.50	3.86	4.11	4.23
	% of Power Purchase Cost in ARR	90%	89%	85%	81%	79%
	% of Other remaining Cost in ACS	10%	11%	15%	19%	21%
	% Annual Increase in Power Purchase Cost		-5.4%	6.2%	1.5%	0.8%
	% Annual Increase in Other Cost		10.8%	40.9%	36.9%	12.0%
	% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%
	RPI -X (X= 2%)		2.37%	4.06%	3.21%	6.67%

Timelines of the Order

There has been considerable time lag between the ARR and Tariff filing and the issuance of the Tariff Order by the Commission which is shown in the table given below.

Table A-7.46: Timelines of Orders

Particulars	FY05	FY06	FY07	FY08	FY09
Date of Submission of ARR	DHBVNL - 22-Dec-04 UHBVNL - 20-Dec-04	DHBVNL - 26-Jan-05 UHBVNL - 20-May-05	DHBVNL - 28-Nov-05 UHBVNL - 14-Dec-05	DHBVNL - 28-Nov-05 UHBVNL - 14-Dec-05	DHBVNL - 30-Dec-07 UHBVNL - 30-Dec-07
Date of Issuance of Tariff Order	DHBVNL - April 20, 2005 UHBVNL - April 18, 2005	DHBVNL - Nov 14, 2005 UHBVNL - Nov 9, 2005	DHBVNL - Aug 23, 2006 UHBVNL - Aug 23, 2006	DHBVNL - May 08, 2007 UHBVNL - May 08, 2007	DHBVNL - Nov 20, 2008 UHBVNL - Nov 20, 2008
Reason for Delay		Delay in providing complete information.	Delay in providing complete information.	Not Mentioned	
Public Notice for Public Hearing	DHBVNL - March 2, 2005 UHBVNL - Dec 25, 2004	DHBVNL - Sept 30, 2005 (Revised ARR) UHBVNL - Apr 20, 2005 (Revised ARR)	DHBVNL - March 2, 2006 UHBVNL - Jan 16, 2006	DHBVNL - Dec 12, 2006 UHBVNL - Dec 15, 2006	DHBVNL - Dec 12, 2007 UHBVNL - Dec 7, 2007
Deadline for Receipt of Objections/Comments (including extension)	DHBVNL - March 15, 2005 UHBVNL - Feb 05, 2005	DHBVNL - OCT 3, 2005 UHBVNL - May 19, 2005	DHBVNL - March 20, 2006 UHBVNL - Feb 14, 2006	DHBVNL - Jan 12, 2007 UHBVNL - Feb 15, 2007	DHBVNL - Jan 12, 2008 UHBVNL - Jan 31, 2008
Number of Objections Received	DHBVNL - 1 UHBVNL - 0	DHBVNL - 3 UHBVNL - 2	DHBVNL - 2 UHBVNL - 0	DHBVNL - 2 UHBVNL -	DHBVNL - UHBVNL -

One of the major reasons that can be attributed to the delay in issuance of the Tariff Orders during FY05 to FY09 is due to inadequate data submitted by the DISCOMs leading to late admission of the tariff petition by the Commission.

Concluding Remarks

- The Annual Revenue Requirement has been substantially increased in the state of Haryana which can be attributed to two factors i.e. Power Purchase cost and O&M expenses. Since power purchase cost constitutes about 90% of the total ARR any increase in power purchase cost has substantial impact on the total ARR. Increase in power purchase cost can be attributed to the increase in energy sales which has increase by 64% during th same period. The employee cost constitutes around 6-8% of the total ARR. So any impact on this front also increases the cost substantially.
- The performance of the DISCOMs in reduction of the T&D losses had been poor. The Commission has not set any loss reduction trajectory for the state due to which the loss level of the DISCOMs have remained high.

- During the period, the Commission had not provided any return to the DISCOMs except in FY08 where the Commission had allowed return only to UHBVNL in accordance with the order of Hon'ble ATE
- The interest on the estimated working capital requirement had been approved at an average rate of borrowing as estimated by the petitioner. The Commission thus had been approving different rates of interest for both the petitioners. This does not encourage the petitioner to go for best rates available in the market.
- The Government of Haryana had been providing heavy subsidy to the agricultural category consumers. Since only domestic and agriculture is the only cross subsidized category in the state of Haryana, the quantum of the subsidy provided each year has increased each year and had been substantial enough to off-set the tariff hike in all the categories of consumers.

Best Practices

- The Commission had time and again asked the DISCOMs to carry out a comprehensive study on Cost of Supply to implement guidelines of the NTP and to reduce the cross subsidization in the state.
- The Commission had adopted an diligent and sincere approach in factoring and making the subsidy available where it issued a clear instruction in absolute conformation with the National Tariff Policy which states that subsidy should be made available in advance.
- The Commission had been following a consistent approach while approving the sales estimation, availability of the quantum, power purchase cost and O&M cost. This helps in bringing in consistency and lay down a set approach for the DISCOMs to comply with.
- The Commission has allowed change in the fuel cost to be passed on to the consumer which does not put any additional burden on HPGCL in case of increase of fuel prices.
- The Commission had kept debt repayment in mind while approving the depreciation for individual plants.

A-8. Himachal Pradesh

Introduction

The Himachal Pradesh Electricity Regulatory Commission was established by the Government of Himachal Pradesh (GoHP) through a notification dated December 30, 2000, under Section 17 of the repealed Electricity Regulatory Commissions Act, 1998 and now covered under the first proviso to Section 82 of the Electricity Act, 2003, with its office located at Shimla.

As part of the tariff related provisions of the Act, the State Electricity Regulatory Commission (SERC) is guided by the Electricity Act, the National Electricity Policy (NEP) and the National Tariff Policy (NTP).

Himachal Pradesh State Electricity Board (HPSEB) has recently, from FY 09, made transition from Annual Revenue Requirement (ARR) approach to the Multi Year Tariff (MYT) framework. The first MYT control period is for 3 years from FY 09 to FY 11.

HPSEB as of now is operating as a bundled utility. The Ministry of Power has been for long pushing for unbundling of the HPSEB along with suggested time frames. These timelines were revised by the Government time and again to accommodate more time sought by the utility for the proposed unbundling. In view of this, the Commission in its tariff orders has been asking the government to clear its stand on unbundling in the state.

The Commission has recently again asked the government and HPSEB to clear its stand on unbundling. The state government is however yet to decide whether it would go for unbundling the HPSEB into separate transmission, generation and distribution entities or it would only set up a state transmission utility (STU). HPSEB has however recently formed a Transmission company, license for which has not been granted yet.

Generation

Himachal Pradesh has steadily added to its generating capacity. The installed capacity of in the state has grown from 341 MW in FY 06 to 466.95 MW in FY 08 and so has the approved gross generation from 1316 MUs in FY 06 to 1923 MUs in FY 08.

In order to estimate sales, the Commission in its tariff orders has,been guided by different methodologies. In FY 06, the sales targets were set based on estimates of the Central Electricity Authority (CEA) while for FY 07 the Commission considered the average generation in the past years after achievement of stability in generation. The Commission had adopted the concept of moving averages for FY08 whereas in the Tariff Order for FY 09, energy estimation for the control period was taken as average generation of last four years.

In terms of the correction factor, the Commission during FY 06 had considered the present status of plants under construction and their expected date of Commissioning. Next year in FY 07, the revised estimates submitted by HPSEB for new plants were accepted by the Commission after a prudence check based on expected date of Commissioning and seasonal variation in hydro generation. For FY 09, due to the planned R&M work at Bassi plant, the Commission had considered the annual generation as projected by the HPSEB while for Larji and Khauli plants the Commission has considered their respective design energy.

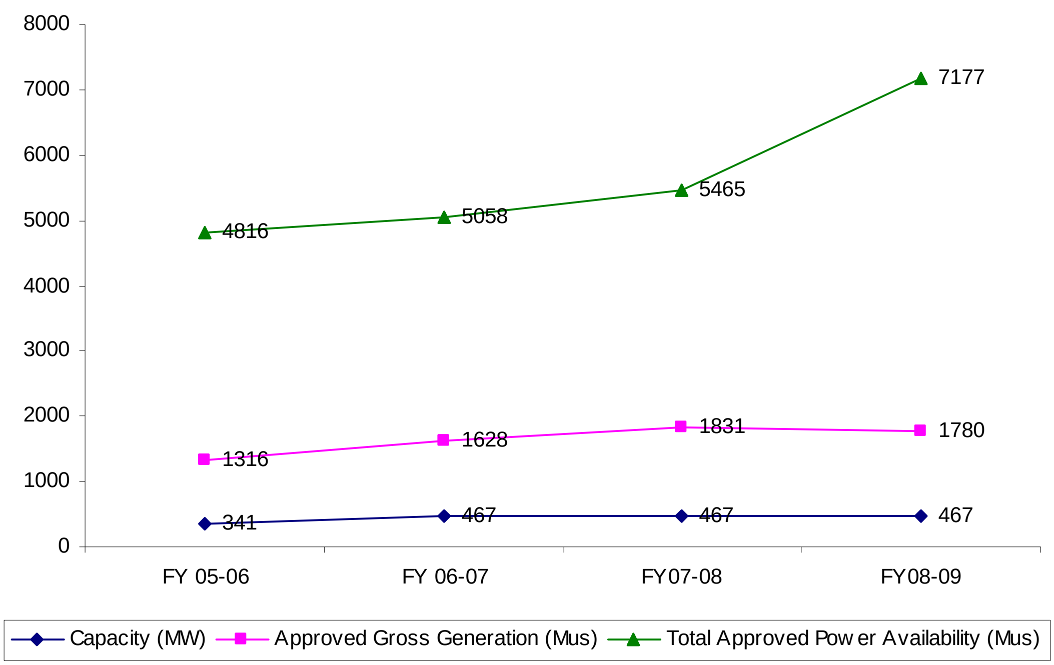
Table A-8.1: Approved Gross Generation in the State

Particulars	FY 06	FY 07	FY 08	FY 09
Capacity (MW)	341	467	467	467
Approved Gross Generation (MUs)	1339	1628	1923	1780
Aux Consumption & Transfer losses (MUs)	7	8	7	8
Share of GoHP (MUs)	24	0	92	100
Net Generation (MUs)	1309	1620	1824	1672

The approved net generation in the state as percentage of the approved total availability of power which stood at 27% in FY 06 rose to 33% in FY 08 while it dropped back to 23% in FY 09. The major reason for drop in net generation available to HPSEB as clearly seen in the table above is due to an increase in allocation of 12% share of power to GoHP in generating station of HPSEB Commissioned after 1990. The sudden decrease in FY 09 in gross generation, however, is largely on account of R&M at Bassi plant.

It is worth mentioning that there has been a substantial delay in the Commissioning of both Larji and Khauli HEP from the original COD and there were no specific directions in the Tariff Orders on time overrun to the HPSEB for the Commissioning of Larji and Khauli as well as for the future plants.

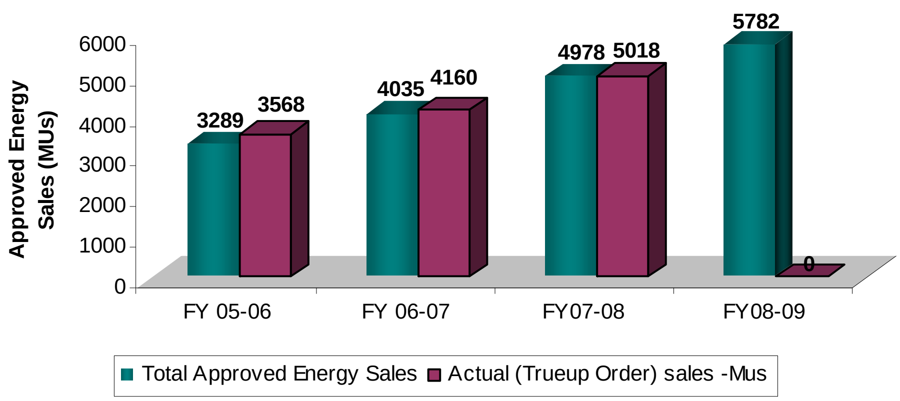
Graph A-8.1: Trend in Percent Share of Generation in Approved Total Power Availability



Demand / Sales Estimation

The Commission has considered CAGR with Long term (10 years) & Short term (3 years) across various consumer categories including agriculture for approving energy sales during FY 06 to FY 09. The Commission approved a total sale of 3289 MUs in FY 06 while that approved for FY 09 was 5782 MUS. The graph below shows the trend in the energy sales approved by the Commission vis-à-vis that trued up for the period FY 06 to FY 09.

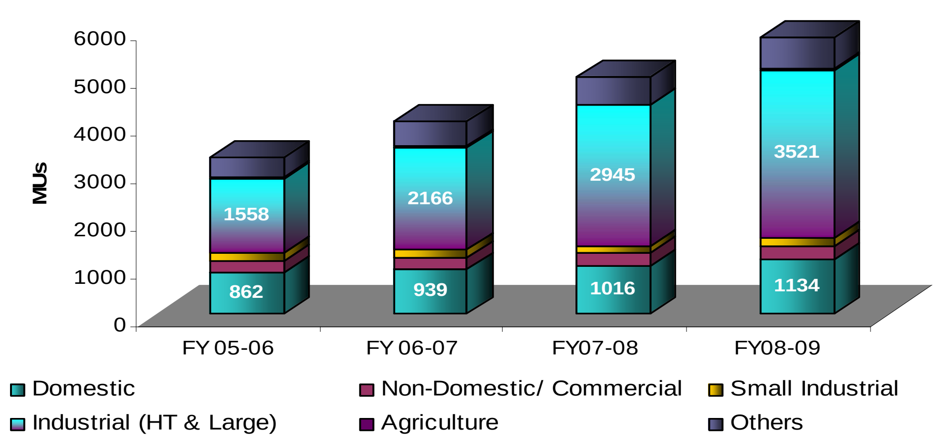
Graph A-8.2: Approved Energy Sales (MUs)



While approving the energy sales in FY 06, the Commission took into consideration the pending applications for new connections from major industries and also the implication of open access in the LT Industry that led to reduction of load by 30 MW in applying correction factor. In the next year i.e. FY 07, a new category (PIU) was added to the correction factor that was earlier part of Large Supply

The major share in the energy sales in the past four years since FY 06 has been that of Industrial (HT & large) and Domestic consumers. The two categories together account for more than 75% of the total approved energy sales. However, Industrial sales as percent of the total approved energy sales in respective years has increased over the last four years from 47% in FY06 to 61% in FY 09, the percent share of domestic consumers has declined from 26% in FY 06 to 20% in FY 09. The figure below shows the absolute share of energy sales for different consumer categories in the total sales as approved by the Commission for respective last four years.

Graph A-8.3: Major Categories of Energy Consumers



A review of actual energy sales as established during true-up for FY 06 and FY 07 and FY 08 vis-à-vis the energy sales as approved by the Commission for the respective years shows a moderate under estimation of 8%, 3% and 0.8%. The comparison signifies the close estimation of the energy sales done by the Commission and also the fact that the variance of 8% in FY 06 further declined to 3% in the following year FY 07.

It is worth mentioning that the reduction in the variance between the approved energy sales and that trued-up later is not really due to improvisations in approach by the Commission as it has stuck to the CAGR approach throughout the period mentioned.

T&D losses

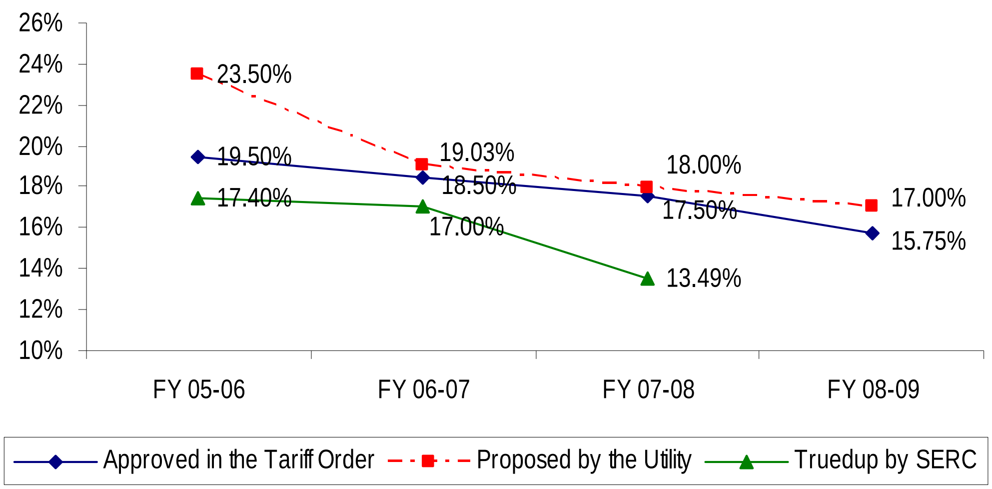
The basis adopted by the Commission for approving the T&D Loss level for three years from FY 06 to FY 08 has been the five year trajectory set in FY 03 under the MoU signed between the GoHP and GoI. As per the proposed trajectory, the T&D loss level shall be reduced by 1% percent every year from FY 03 onwards subject to a reduction of 5% in five years. For FY 06, the Commission in addition to the trajectory has taken cognizance of several other factors to arrive at a justified T&D loss level. The other factors that were applied to correct the T&D loss proposed by HPSEB were:

- Additional revenue billed through sundry debits that reduced T&D losses by 1%
- Energy supplied to its employees as an allowance as a part of their compensation package
- Impact of the kVAh tariff further reduced T&D losses by 1%

The Commission finally approved T&D loss level at 19.5% as against 23.5% proposed by the HPSEB for FY 06.

In the following two years i.e. FY 07 and FY 08, the Commission has simply reduced the T&D loss level of the preceding year by 1% as per the trajectory set earlier under the MoU without undertaking much due diligence while approving the T&D loss level for the respective year. Accordingly, the Commission has approved T&D loss level of 18.5% for FY 07 and 17.5% for FY 08.

Graph A-8.4: Approved, Proposed & Trued-up T&D Losses for HPSEB



The state of HP has since adopted the Multi-Year-Tariff structure with a three year control period from FY 09 to FY 10-11. The Commission while approving the T&D loss for the FY 09 has considered a similar approach as followed for the previous two years. The Commission assumed that the HPSEB will be able to reach T&D loss level of 16.5% by considering a straight reduction of 1% as in preceding two years. The Commission has further set a T&D loss reduction trajectory of 0.75%, 0.75% and 0.5% in FY09, FY10 and FY11 respectively to reach a level of 14.5% by the end of the Control Period. Accordingly, the Commission approved a T&D loss level of 15.75% for FY 09.

Table A-8.2: T&D Losses for the period FY 06 to FY 09

T&D Losses	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	19.50%	18.50%	17.50%	15.75%
Proposed by the Utility	23.50%	19.03%	18.00%	17.00%
Trued up by SERC at the end of year	17.40%	17.00%	13.49%	

Based on the true-up of FY 08 with T&D loss level determined at 13.49%, the Commission had revised the trajectory for T&D loss level prescribed for the MYT control period (FY 09 to FY 11). As per the revised trajectory, the Commission had directed HPSEB to now achieve a target of 12.49% by the end of control period as against the level of 14.50% approved earlier. The Commission in its first MYT Order had kept a provision for revision of the trajectory based on the audited accounts for FY 08. This approach of the Commission has failed to incentivise HPSEB on its good performance despite operating in a hilly terrain and at the same time not really kept up with the true spirit of MYT framework which proposes sharing of savings between consumer and utility that occur due to over achievement of targets. In other states, Commissions in a MYT regime set a trajectory at the beginning of the control period which is then reviewed at the end of the control period.

Components of Annual Revenue Requirement

Power Purchase Quantum

The power purchase quantum comprise of total power handled by HPSEB during the year. The main sources of power purchase are CGS (NTPC, NHPC, NJPC and NPC), BBMB, Independent power producers (IPP), Bilateral purchase from other states and free power entitlement of GoHP. The Power Purchase Agreements (PPA) are assigned to HPSEB itself as it is currently operating as a bundled utility.

For assessing the total power availability in a year, the energy contribution from Central Generating Stations (CGS) for each of the year since FY 06 to FY 09 has been considered by the Commission on the basis of allocated share of the state in each of the sources of power. As for the Plant Load Factor (PLF) & Auxiliary Consumption, the norms as approved in the CERC guidelines have been considered by the Commission for FY 06. For each of next three years from FY 07 to FY 09, the Commission has adopted PLF based on average monthly PLF for each plant in preceding years. The methodology adopted for auxiliary consumption in FY 07 was on the basis of historical performance of each plant and the Commission kept it at the same level for the next year i.e. FY 08 as well. The Commission however adopted the CERC guidelines once again for auxiliary consumption in FY 09.

Energy generation from the NHPC stations has been considered by the Commission since FY 07 and has been uniformly based on their design energy and the month-wise availability for all the three years till FY 09. Energy availability from the other IPPs (hydel) has also been considered from FY 06 onwards by the Commission and the estimate has been based on the respective design energies of the plants and HPSEB's share in their available generation for all the three years while the Commission additionally considered CEA targets for such estimation in FY 09.

The Commission had approved power purchase through banking as proposed by HPSEB from FY 07 onwards. HPSEB has since leveraged the banking arrangement to meet the winter deficit and the Commission has also approved such banking arrangement. The Commission has infact favorably considered the provision of banking of power and in FY 09 it has approved a high banking of 550 MUs. It is appreciable that the Commission, drawing experience from the true-up order from FY 06 to FY 08, has itself kept a provision for short-term power purchase to account for power drawn through unscheduled interchange (UI).

Table A-8.3: Power Purchase through Banking

Particulars (MUs)	FY 06	FY 07	FY 08	FY 09
	Actual	Actual	Actual	Approved
Actual Banking done	280	284	272	550
Power availability from UI	26	81	171	138

In addition, the Commission has maintained for all the years from FY 06 to FY 09 that the procurement of power from all sources should be strictly on the basis of merit order despatch.

In order to allocate the unallocated quota (decided by GoI from time to time)from CGS and SGS, for FY 06 the Commission had considered the month-wise actual share of HPSEB for the respective period during the previous year. In the next two years i.e. FY 07 and FY 08, the Commission had approved the quantum of unallocated quota as proposed by the HPSEB. In FY 09, however, the Commission had approved the monthly share of firm and unallocated power for HP in the preceding two years.

There was no special provision for bilateral/ banking to meet the power shortages during peak and winter months in FY 06 though banking was allowed at the time of true-up. The Commission, however, approved banking to meet the power shortages during winter months (as proposed by HPSEB) for next three years from FY 07 to FY 09. In addition, the Commission has approved market purchase of 169 MUs and 137 MUs to meet the deficit during FY 08 and FY 09 respectively.

Considering the huge potential of micro hydel generation in HP, the Commission in all the Tariff Orders except for FY 07, has approved a significant quantum of power purchase from the private micros. The Commission in its MYT Order has approved 150 MW of capacity addition through private micros i.e. generation of 147 MUs to 647 MUs from FY 08 to FY 11.

Table A-8.4: Approved Power Purchase Mix for the period FY 06 to FY 09

Source of Power Purchase	FY 06	FY 07	FY 08	FY 09
BBMB	7%	5%	5%	5%
NHPC	6%	10%	5%	5%
NTPC	28%	23%	30%	30%
NJPC	5%	18%	10%	9%
Narora	1%	2%	2%	2%
PSEB	1%	1%	1%	1%
Uttaranchal	10%	10%	9%	8%
IPP	29%	24%	22%	21%
Tehri	0%	1%	1%	2%
Private Micros	1%	0%	2%	5%
Grid Power/ Market Purchase	2%	0%	4%	3%
Share of GoHP Free Power	9%	6%	9%	10%
Total	**100%**	**100%**	**100%**	**100%**

Surplus energy to the tune of 706, 801, 569 and 569 MUs (net) has been projected for respective years from FY 06 to FY 09 by the Commission separately for outside state sale. The source of sale of surplus power approved has been UI/Bilateral.

The Commission has treated the Intra & Inter State losses as combined for computing the net energy available to HPSEB during FY 06 to FY 08. However, for FY 09, the Commission had treated the losses as separate with interstate losses considered as 3.50% (PGCIL Losses) and Intra State losses as 3.71% (HPSEB own Transmission Losses).

Power Purchase Cost

As mentioned above, HPSEB purchases power from Bhakra Beas Management Board (BBMB), Central Generating Stations of NTPC, NHPC, NJPC and NPC, Independent Power producers (IPP), Power Trading Corporation and Bilateral Purchases from other States.

The Commission while approving cost of power from NTPC CGS in FY 06 has considered the fixed charges based on the annual fixed charges estimated by NTPC in the tariff petition submitted to CERC. The variable cost has been escalated by 3% for coal based stations & 3.5% for gas based stations over the variable cost approved for respective stations in FY 04-05. Quite similarly, the cost of power from NHPC plants in FY 06 has been approved by Commission based on the annual fixed charges estimated by NHPC in the tariff petition submitted to CERC.

The cost of power from other sources such as Independent Power Producers (IPP) had been approved in line with the signed PPA/Bilateral Agreements at the levels proposed by the HPSEB for FY 06. Free Power from GoHP share had been considered at Rs. 1.93 /unit for FY 06 as against 70 paise approved for past years which is in line with the GoHP notification which states that HPSEB will get free power only during winter months at the price equal to the average cost of power purchase from various sources

For FY 07, the Commission had approved cost of power from NTPC based on the past trend of monthly increase in variable cost and the projected fixed costs. For NHPC Plants, the variable cost has been derived as aggregation of variable cost as per CERC notifications and fixed cost (in cases where entire AFC is not recovered through variable charge). The cost of power from other sources such as IPP has been approved based on the AFC from which net share of HPSEB has been computed/ Agreements with certain escalation/ Composite rates in case of Tehri & Baspa.

The Commission, in FY 07 had approved free power at Rs. 2.35 per unit being the marginal cost of the power from Central Sector stations. In addition, the Commission had computed a separate merit order for surplus power and sale with in state for power purchase cost in FY 07. The Commission had identified 891.1 MUs available for sale outside the state through the year, which includes equity power and free power from NJPC.

In principle, the power from NJPC is available to HPSEB during winter season when HPSEB faces severe shortage. Thus, the merit order prepared by the Commission in FY 07 is not practical.

In FY 08, the Commission had approved annual fixed charges based on the relevant CERC Orders & the variable cost on the increase in variable cost for NTPC plants in last 44 months. As for NHPC, the Commission in FY 08 had kept the variable cost at same level as that for FY 07 while the annual fixed charge from each station was considered and compared with the recovery from primary energy charge.

The cost of power from other sources such as IPP has been approved based on IPPS: based on the AFC net share of HPSEB has been computed/ Agreements with certain escalation / Composite rates in case of Tehri & Baspa. The Commission, in FY 08. had approved free power at Rs. 3.04/ unit (without any subsidy from GoHP). The Commission as in the previous year had computed a separate merit order in FY 08 for surplus power and sale with in state for power purchase cost. The Commission, through the merit order has suggested that cheapest available power should be made available for use within the State. As for the remaining power, the cheapest should be banked as the same will be made use for state consumption in the months of energy deficit. The remaining power may be traded if it is profitable to do so.

In FY 09, for cost of power from NTPC plants, the Commission had approved annual fixed charges based on the relevant CERC orders as in the previous year while the variable cost had been approved by applying a 3% escalation on the actual variable cost of FY 07. For NHPC Plants, the Commission had approved the annual fixed charges as specified in the respective CERC tariff orders for hydro stations. The cost of power from other sources such as IPP has been approved based on IPPS: Based on the AFC net share of HPSEB has been computed/ Agreements with certain escalation/ Composite rates in case of Tehri & Baspa

The Commission in FY 09 had again approved free power at Rs. 3.04/ unit (without any subsidy from GoHP). The Commission had however not brought out a separate merit order for surplus power and sale with in state for FY 09.

Table A-8.5: Power Purchase Cost for FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Power Purchase Cost (Rs. Crs)	692	679	1026	1319
Separate Cost Approved for Surplus Energy (Rs. Crs)	0	241	106	0
Net Power Purchase (MUs)	3507	4239	4779	5505
Power Purchase Cost per unit (Rs./ kWh)	**1.97**	**2.17**	**2.37**	**2.40**

To factor the variation in fuel cost, the Commission had considered truing-up at the end of the year uniformly for all years from FY 06 to FY 08. However, the trued-up power purchase cost clearly indicates that the power purchase cost originally approved was underestimated to the tune of ~ Rs. 350 Crs during each year.

Table A-8.6: Approved vs Trued-up Power Purchase Cost

Particulars (Rs. Crs)	FY 06	FY 07	FY 08	FY 09
Approved Power Purchase Cost	692	921	1132	1319
Trued up Power Purchase Cost	1058	1255	1529	NA
Difference	366	334	397	NA
Power Purchase Cost per unit (Rs/kWh)	2.09	2.55	2.92	

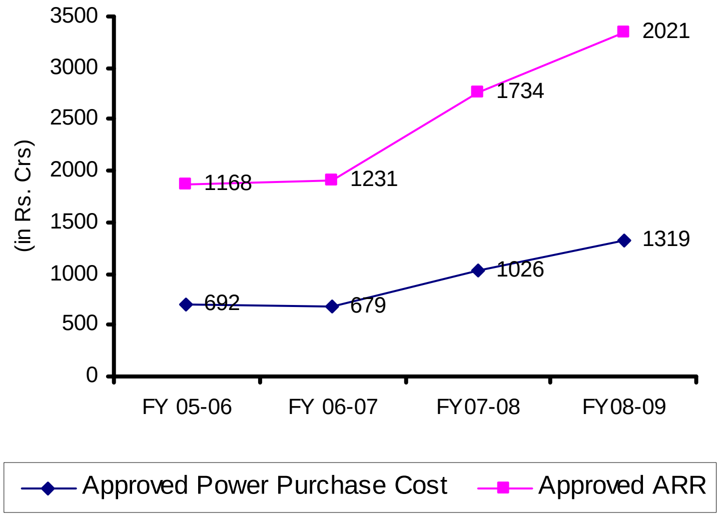
The Commission in FY 06 had not considered banking etc. for estimation of short term power purchase from other sources. From FY 07 to FY 09, the provision for banking had been assumed as cash less transaction with market purchase considered at Rs. 6 and Rs. 5 per unit for FY 08 and FY 09 respectively.

For estimation of surplus power sold through other sources, the Commission has approved Rs. 2.91/unit as proposed by HPSEB for the surplus energy available during FY 06. In the next year i.e. FY 07, the Commission had approved the rate of selling the power as Rs. 4.66/unit which is the same as the rate at which HP Government is selling its share of power to PTC. In FY 08, the Commission had approved Rs. 6/unit for selling surplus power which is lower than the rate at which HP Government is selling its share of power to PTC. In FY 09, Commission has approved Rs. 7.01/unit for sales of surplus power based on the actual power sold till Jan 2008.

As for the revenue form such surplus sale, the Commission had shown them under the head revenue available from the surplus energy sale in FY 06. In the next two years from i.e. FY 07 and FY 08, the Commission has reduced such revenue from the gross power purchase cost. Surplus revenue available after deducting from the purchase cost has been then shown under the head revenue. The Commission in FY 09 has again adopted the same approach as during FY 06 and has shown the revenues from surplus sales under the head revenue available from the surplus energy sale.

The figure below shows the movement of approved power purchase cost versus the approved annual revenue requirement.

Graph A-8.5: Approved Power Purchase Cost for the period FY 06 to FY 09



Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 06, FY 07 and FY 08 in its Tariff Orders for HPSEB. In FY 09, the Commission shifted to a consolidated approval of O&M cost after the implementation of MYT regime in the State. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

Employee Cost

For estimation of employee cost in each year, the Commission has considered each component of the salary i.e. basic salary, dearness allowance, etc. Basic salary of the previous year has been escalated at a growth rate of 4-5% to account for promotions and increment in salaries of the employees. HPERC had revised the basic salary in FY 06 due to inclusion of 50% of dearness allowance in the basic salary. Other expenses like DA, etc has been considered as a percentage of the basic salary. The Commission has also accounted for retirement of employees in each of the years while computing the total employee cost.

The Commission had moved towards approval of total O&M cost from the first year of the MYT control period i.e. FY 09, wherein the previous year total employee cost has been escalated by an inflation factor calculated as below:

Inflation factor (k) = (0.75 * CPIn + 0.25 * WPIn)

CPIn is average CPI growth in trailing 7 years

WPIn is the average WPI growth in trailing 7 years

The Commission has also provided for special provision like new recruitments, etc during FY 09.

The approved annual revision/increase in the MYT period does not factoring the increments of DA & interim relief which would be more than the consumer price index. The DA has been increased by 20% between FY 07 & FY 08 and the same trend has during the next year. This again shows that Commission has not considered the DA increments for the FY 09 whereas HPERC has allowed the actual DA paid by HPSEB in the True-up Order for FY 07 and FY 08 as per Appellate Judgment.

More over, the Commission has not approved the gratuity and pension fund (Rs.15 Crs per month for next five years) proposed by the Board in the subsequent filings made during the processing of MYT Petition. The Commission had stated that during the unbundling process of the Board, the balance sheet of the Board would have to be cleaned up wherein certain liabilities of the Board would be absorbed by the government. Hence, the quantum of future liabilities towards terminal benefits is uncertain.

Net employee cost approved by the Commission as a percentage of total ARR has decreased from 30% in FY 06 to 25% in FY 09 inspite of an increase to 35% in FY 07. This was primarily on account of increase in the power purchase cost as the approved net employee cost has increased at a CAGR of approx. 13% during FY 06 to FY 09. The net employee cost (after capitalization) as approved by the Commission in each of the past four tariff orders is summarized in table below:

Table A-8.7: Employees Cost for HPSEB

Particulars	FY 06	FY 07	FY 08	FY 09
Net Employee Cost (after capitalisation) (Rs. Crs)	351	425	446	511
Total Approved ARR (Rs. Crs)	1168	1231	1734	2021
% Employee Cost of Approved ARR	30%	35%	26%	25%
Employees cost Per unit of Energy Sale (Rs/kWh)	0.88	0.88	0.80	0.80
Trued-up Employees Cost (Rs.Crs)	408	467	544	

Repairs and Maintenance (R&M)

The Commission had approved the R&M expenditure based on a percentage of total opening gross fixed assets (GFA) for the tariff order for FY 06. However, part of the R&M was transferred to Capital WIP. In the tariff orders for FY 07 and FY 08, the Commission has adopted a different approach where the R&M expenses for the previous year have been escalated by 5% to account for the inflation. With the commencement of the MYT regime in FY 09, the Commission has reverted back to the approach of approving R&M expense as a percentage of opening GFA. The escalation factor (K factor) has been determined based on the average of last four year actual R&M expense as a percentage of opening GFA.

The R&M expenses approved by Commission in the last four tariff orders are summarized in table below:

Table A-8.8: Approved R&M Expense

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Net R&M Expenses (in Rs. Crs)	40	24	20	36
Total ARR (in Rs. Crs)	1168	1231	1734	2021
R&M Expense as % of Total ARR	3.4%	2.0%	1.2%	1.8%
R&M Expense as % of Opening GFA	1.9%	1.0%	0.6%	1.0%

Administrative and General Expenses (A&G)

While approving the A&G expense for a particular year, the Commission had undertaken a prudence check of the A&G expense of previous year in order to exclude any one time expenses and had escalated the same by an appropriate factor to account for the inflation and increased expenses on account of growth in business/ consumers. An escalation factor of 4-5% has been used during the tariff orders of FY 06, FY 07 and FY 08.

For the FY 09, which is the first year of the MYT control period, the Commission has used an inflation factor determined based on the CPI and WPI index. The inflation factor is computed as follows:

$$\text{Inflation factor (k)} = (0.25 * CPIn + 0.75 * WPIn)$$

CPIn is average CPI growth in trailing 7 years

WPIn is the average WPI growth in trailing 7 years

Apart from the regular A&G expenses, the Commission has also approved expenses on account of certain initiatives undertaken by HPSEB like consultancy fees, expenses relating to IT initiatives, regulatory fees, etc. A&G expenses approved by the Commission in the past four year tariff orders form approximately 1.5-2.0% of the total ARR of HPSEB.

Table A-8.9: Approved A&G Expenses

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Net A&G Expenses	26.27	23.69	26.35	28.44
Total ARR	1168	1231	1734	2021
Net A&G Expense as % of Total ARR	2.2%	1.9%	1.5%	1.4%

Depreciation

The Commission had adopted asset wise depreciation rates in FY 06 as prescribed by CERC. The depreciation rates for the next three years i.e. FY 07 to FY 09 had been taken by the Commission based on the audited account of the respective preceding year and accordingly average depreciation rate for generation, transmission and distribution had been computed and approved for each year. Unlike FY 06, asset wise depreciation had not been considered by the Commission during FY 07 to FY 09.

In terms of the approach followed by the Commission on treatment of depreciation on assets created out of consumer contribution, grants, APDRP funds, the Commission has largely taken a considerate view. In FY 06, the Commission had allowed depreciation on consumer contribution. In FY 07 and FY 08, the Commission had allowed depreciation on all the existing assets as well as those proposed to be capitalized though the tariff orders of the two respective years have not explicitly spelt out such consideration. In FY 09, the Commission had again allowed depreciation on the consumer contribution though HPSEB had not claimed the same in ARR petition.

Interest on Loans

The Commission has analysed interest cost separately for capital expenditure towards generation, transmission and distribution consistently for each year from FY 06 to FY 09.

To the extent the interest cost has been disallowed by the Commission in each year against that proposed by the board, the following approach has been adopted by the Commission in the respective tariff orders:

In FY 06, the Commission had disallowed new market borrowings that HPSEB proposed to draw to repay old debts. The Commission had pointed out that allowing such debt repayments from new loans would only push the HPSEB deeper into a worse debt trap. The Commission had further analysed that the ratio of outstanding debt to gross fixed assets is very high at about 67% which highlights the fact that the HPSEB has been borrowing in the past to fund revenue expenditure as well as to repay the loans. The Commission expressed shock on such gross financial indiscipline on the part of Board.

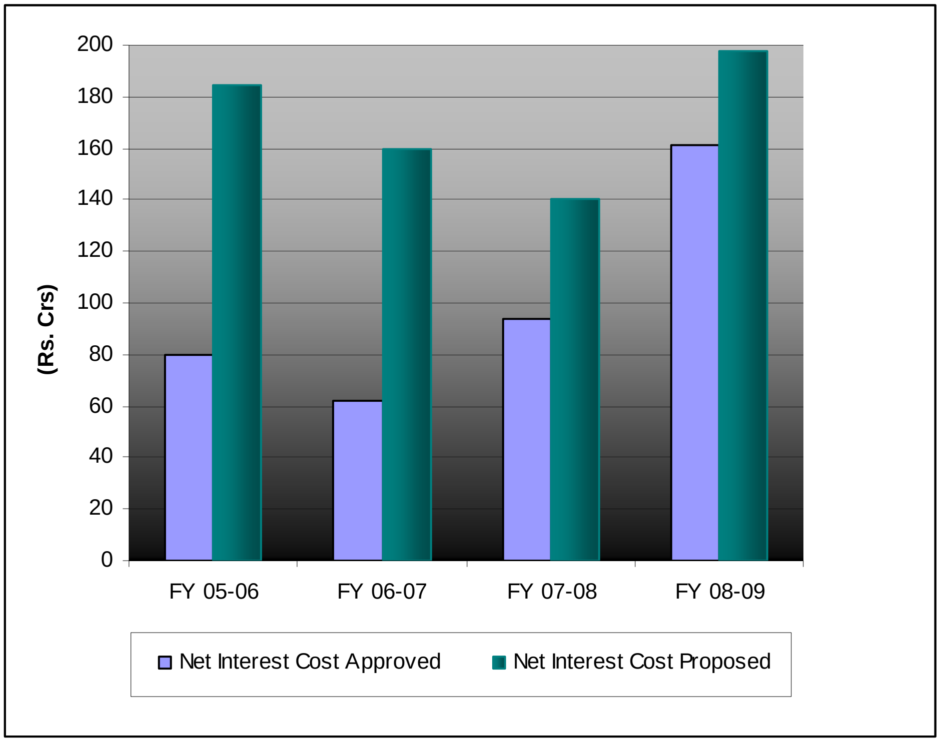
The Commission in FY 06 had also disallowed the investment proposed for generation projects as HPSEB had not submitted the detailed plan for approval. In addition, the Commission noted that the higher interest rate loans are not being restructured by the HPSEB despite direction given by HPERC which is adding to the costs to be ultimately borne by the consumers. The Commission had therefore approved old loans with a cap at the interest rate at 10% in FY 06. The major sources of funding as approved by the Commission has been LIC (10%), REC (3%), PFC (33%) & Bonds (40%) which together comprise 86% of the total funding.

In FY 07, HPSEB had not provided all the loan details. The Commission had accordingly disallowed interest claimed for LIC loans, market bonds, bank loans, HPSEB non SLR Bonds going with the assumption that these loans were raised to meet revenue items/gap. The Commission again noted in FY 07 that the higher interest rate loans are still not being restructured by HPSEB despite direction given by HPERC which is ultimately costing the consumers. In consideration of such observations, the Commission had approved provisional interest charges indicating that the approval shall be effective only after the approval of investment and debt plan for FY 07. Out of the total funding approved by the Commission in FY 07, 63.11% is through PFC Loans.

In FY 08, the Commission had provisionally disallowed some of the PFC loans towards Larji generation project till the cost of the Larji project is finalized and approved. Commission had also disallowed interest claimed for LIC loans as the loans were raised to fund equity contribution of HPSEB in other SPV Generation Projects. The Commission has disapproved the interest claimed for negotiated loans assuming that these loans were raised for repayment of older loans. As in the preceding year, the Commission had approved provisional interest charges indicating that the approval shall be effective only after the approval of investment and debt plan for FY 08. The Commission has approved 38% of the total funding through PFC Loans followed by 22% from bonds.

In the following year i.e. FY 09, the first year of the MYT control period, the Commission prepared a source wise loan schedule for all three functions separately. While analyzing loans and interest cost, the Commission had taken into consideration the outstanding loans at the end of FY 07 as approved in the true-up order for FY 07. Consistent with the approach followed by the Commission in previous years, it disallowed interest claimed for certain loans which were raised to meet revenue items / gap for FY 09. Further, the Commission had determined the debt requirement for the capital expenditure plan approved by the Commission for the Control Period. Finally, as per the MYT Regulations, debt has been allowed only on the capitalized assets and not on the capital works in progress. The Commission has approved funding to the tune of 36.5% of the total through PFC Loans followed by 17.3% from bonds 17.3% and 5.5% from REC for FY 09. A comparison of the amount proposed each year and that approved by the Commission is given in Graph below:

Graph A-8.6: Sources of Funds for HPSEB over the years



Rate of Return

The Commission has uniformly for all years during FY 06 to FY 09 adopted Return on Equity (RoE) as the parameter for allowing return on investment. The rate of return on equity for generation, transmission and distribution has also been kept uniform at 14%, 14% and 16% respectively for all the years from FY 06 to FY 09. The same is indicated in the table below:

Table A-8.10: Reasonable Rate of Return Approved by the Commission

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Parameter for Rate of Return	ROE	ROE	ROE	ROE
Generation	14%	14%	14%	14%
Transmission	14%	14%	14%	14%
Distribution	16%	16%	16%	16%

Though, the HPSEB had proposed a return of 3% over net fixed assets in each of the year from FY 06 to FY 08, the Commission had apportioned Rs.282.11 Crs of equity capital of HPSEB into generation, transmission & distribution in the same ratio as the gross fixed assets (GFA) at the start of respective year.

In FY 07, HPERC had directed HPSEB to create Reserve of Rs.138.17 Cr (Rs 96.55 Cr from the sale of surplus power outside the state and Rs 41.62 Cr from RoE) for HPSEB Development Fund. The purpose of creation of a fund was to meet the short duration capital investment programmes including urgent renovation and modernization of generation plants, funding studies and works as approved, or True up issues. Where as, HPSEB has not created the HPSEB Development fund and submitted that it is not possible for the HPSEB due to disallowance of genuine expenses for FY 07 and considering future liabilities.

The Commission has not approved any fresh equity for the entire control period from FY 09 to FY 10-11.

Capital Expenditure

The capex plan for FY 06 and FY 07 was not submitted by HPSEB with ARR and the Commission had directed it to submit the same during the processing of ARR Petition. For the next two years i.e. FY 08 and FY 09, HPSEB had submitted the investment plan along with the ARR

The Commission, for FY 06 had approved scheme-wise capital expenditure separately for Generation, Transmission & Distribution. The Commission had broadly analysed the debt/investment plan submitted by HPSEB and had disallowed certain loans which can be funded through grant. The Commission had approved Rs. 331.39 Cr against the proposed capex of 746.78 Cr implying a total disallowance of about 55%.

The HPSEB did not submit complete details of the investment plan/ debt plan in FY 07. The Commission broadly analysed the debt/investment plan submitted by HPSEB in FY 08 for approval of fresh loans/interest rates and the same had been considered by the Commission.

In FY 09, the Commission had made a few provisional disallowances while approving capital expenditure. The Commission factored a disallowance of Rs.41Cr out of the proposed Rs. 768.6 Cr while approving a capex of Rs. 726 Cr. The disallowances are primarily due to the fact that the capex plan submitted by HPSEB was not comprehensive and did not provide scheme-wise breakup. The Commission further directed the HPSEB to submit details of the sanctioned schemes, which form part of the capex plan, with cost benefit analysis for future years.

The source of funding in FY 06 has been a grant of Rs. 158.9 Cr & new loans of Rs. 172.26 Cr. Funding details for FY 07 and FY 08 are absent in the tariff orders. As for FY 09, consumer contribution & debt has been considered as the mechanism for funding capital expenditure.

The capitalization (asset addition) plan during FY 06 to FY 09 had therefore been broadly approved by the Commission as submitted by HPSEB with few disallowances. However, the Commission in FY 09 has approved the plan on provisional basis to organize for scheme-wise completion and consequent capitalization of the assets in consonance with the Commissioning / commercial operation of the respective scheme which would be certified by the Electrical Inspector/ relevant authority.

Debt-Equity Ratio

The Commission has consistently allowed funding of entire capital expenditure for new schemes through debt for all the years from FY 06 to FY 09 because the HPSEB has not infused any equity in the previous years

Working Capital

Working capital has been determined and approved on normative basis by the Commission for all the years from FY 06 to FY 09.

The norms approved by the Commission for working capital determination have largely been uniform all through the period from FY 06 to FY 09. Two Broad parameters such as 1 month of O&M expenses and 2 months of receivables have been approved by the Commission for working capital assessment. In FY 08, the Commission made a deduction of Rs. 150 Cr from working capital requirement, as assessed above, on account of consumer security deposit.

In the first year of MYT control period i.e. FY 09, the Commission had segregated the working capital requirement between generation, transmission & distribution. The norms in respect of O&M expenses (1month) and receivable (2 months) has been kept same as in earlier years. As in the preceding year, the Commission has again deducted consumer security deposit from working capital requirement (from transmission & distribution). The Commission has further deducted 1 month power purchase cost from the WC requirement in the distribution component. The Commission, however, approved working capital provision towards maintenance spares @ 40%.

In all, the Commission has approved a market rate of interest of 8.5%, 10%, 10% and 12.25% per annum for respective years starting from FY 06 to FY 09.

Annual Revenue Requirement

The Annual Revenue Requirement as approved by the Commission and later trued-up vis-à-vis that proposed by the HPSEB in the tariff petition is given in table below:

A break-up of ARR components for each year has also been provided in the Graph below:

Table A-8.11: Approved Annual Revenue Requirement

Annual Revenue Requirement (Rs.Cr)	FY 05-06	FY 06-07	FY07-08	FY08-09
Proposed by the Board	1375	1948	1948	2743
Approved by the Commission	1168	1231	1231	2021
Disallowance in the order	15%	37%	37%	26%
Trued-up ARR by the Commission	1670	1820	---	---
True-up as percentage of Approved	143%	148%	---	---

*(Approved ARR for FY 08-09 includes Profit of Rs 105.51 Crs based on True-up for FY 06-07)

As is evident from the table above, the Commission has been rather conservative in its approach while approving the ARR in each of the years with a disallowance ranging from

15% to 37%. The ARR trued-up by the Commission for FY 06 and FY 07 has seen an increase over the earlier approved ARR by about 43% and 48% respectively which is substantial.

The revenue gap or surplus as determined by the Commission for each of the year from FY 06 to FY 09 is given below in table below. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government is also mentioned in table and the same has been discussed in detail in the subsequent sections.

Table A-8.12: Revenue Gap / Surplus

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Gap / Surplus at existing Tariff (Rs.Crore)	(111)	97	(85)	(123)
Consumer Tariff	Increase	Decrease	Increase	Increase
Cross Subsidy	Increase	Increase	Increase	Decrease

Tariff Determination

A two-part kVAh tariff structure exists in the state of HP which was introduced by the Commission in FY 02. The Commission has since been expressing its intentions to align tariff so as to ensure recovery of cost of service and reduction of cross-subsidy.

FY 06 was the first year where the Commission determined the voltage - wise cost of supply and the same had been used for fixing the tariff. The Commission also accelerated the process of reduction of cross-subsidy. The Commission had approved agricultural tariff increase to 50% of the cost of supply at LT voltage. The domestic tariff had also been significantly increased in line with the objective of achieving reduction in cross-subsidy. The average realization from the domestic category in FY 06 increased to Rs.2.60 per kWh from Rs.1.39 per kWh in FY 04-05 which was around 57% of the cost of supply of Rs. 4.57 per kWh.

The Commission through the approved tariff structure in FY 06 reduced the cross-subsidy significantly by 34% by increasing the tariff to a rational level for all the categories except Large/HT Industrial in which case the tariff was proportionately reduced.

In the following three years from FY 07 to FY 09, HPERC had again determined the voltage - wise cost of supply but the same had not been considered for fixing the tariff.

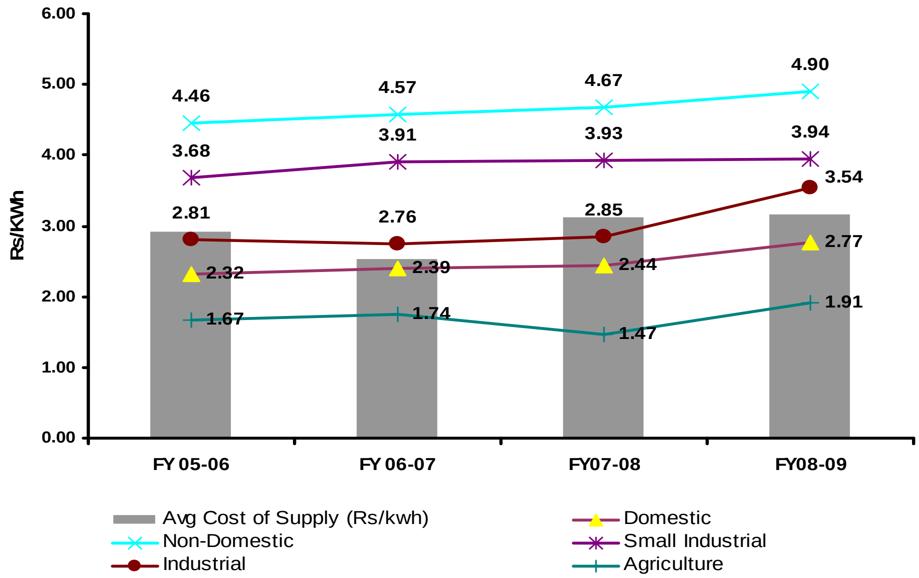
There was a revenue surplus of Rs.96.55 Crs in FY 07 and the Commission approved a decrease in tariff for both domestic as well as industrial consumers. The effective tariff decrease for FY 07 has been calculated at 2.49%.

In FY 08, the revenues dropped and there was a gap of Rs.85.32 Crs. The Commission approved an increase in tariff for all the consumer categories. The effective tariff increase for FY 08 has been calculated at 6.22%

The revenue had further dropped in FY 09 leaving a revenue gap of Rs.123.10 Crs. The gap was primarily due to decline in revenue from surplus energy. The Commission having left with no alternative had hiked the cross subsidy levels while at the same time increased the tariffs of subsided categories substantially.

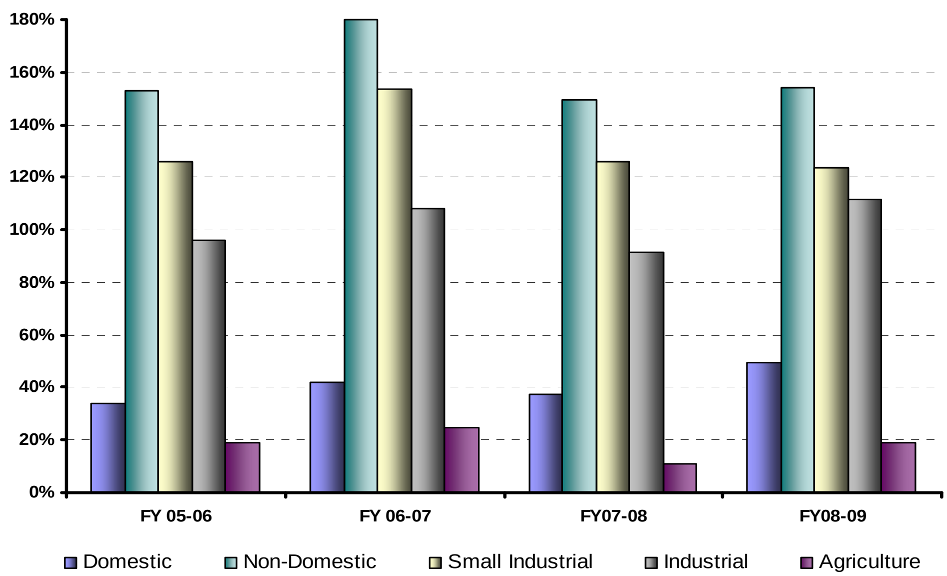
The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 06 to FY 09 is captured in the graph below:

Graph A-8.7: Average Cost of Supply vis-à-vis average revenue realization from different consumer categories



The graph below shows the approved realization from consumer tariff excluding GoHP[1] subsidy as percent of the average cost of supply from FY 06 to FY 09.

Graph A-8.8: Revenue realization from consumer tariff as percent of average cost of supply



[1] Based on the information given in the Tariff Orders, Subsidy of Rs. 115 Crs, Rs.125 Crs, Rs.130 Crs and Rs. 136 Crs for FY 06, FY 07, FY 08 and FY 09 Respectively

The graph above clearly indicates that the realization from non-domestic consumers and small industrial consumers in the state of HP during all years has always been more than 120% of the average cost of supply. At the same time, the tariff for agricultural consumers and domestic consumers in HP has been to a large extent cross subsidized by these categories. Even the large industrial consumers are below than the average cost of supply. This is actually in contrast to quite many states where industrial tariff approved by the Commission are substantially higher.

Though the Commission in the last few tariff orders had intended to reduce cross-subsidisation but a clear road map for reduction in cross-subsidies had not been provided for any of the year from FY 06 to FY 09.

Time of Day Charge

The Commission has since FY 06 introduced the Time of Day (ToD) charge to offer rebate for power consumption during off-peak hours through the application of concessional night time tariff for industrial and commercial consumers with connected load above 100 kW as part of their tariff structure. This has been a thoughtful and positive step by the Commission which also facilitates better demand side management.

Pre-paid Metering

The Commission during earlier orders had directed HPSEB to undertake pilot study for installation of pre-paid meters and find a sponsor for the same to improve billing efficiency. The Commission had suggested that it would replace the conventional meters in phases. The Commission further approved amount of Rs.1.00 Crs to be a pass through in FY 06 to encourage the pilot project as it was intended to establish the usefulness and the benefits of the pre paid meters as well as to financially support HPSEB to buy these meters. In FY 08, HPSEB submitted that 250 meters in Shimla town had been installed and that their performance and accuracy was satisfactory. The Commission, however, noted that the awareness about pre-paid meters among consumers was still low and that the HPSEB should take measures to sensitise the consumers.

This has also been a positive directive from the Commission in line with the natural attrition of meter reading and billing staff.

Average Cost of Supply vs. Realisation

The average cost of supply approved by the Commission from FY 07 to FY 09 has increased by 25% whereas, the actual cost of supply has increase by 13%. This shows that the Commission has been grossly underestimating the ARR which also has been the primary reason for decrease in tariff in FY 07. As shown in table 10 and 11 below, the average cost of supply of Rs.2.92/Kwh in FY 06 was reduced to 2.54 in FY 07 while the trued up cost of supply increased from Rs.3.18/Kwh to Rs.3.36/Kwh. The fact also shows that the Commission has not tried to learn from the previous years in approving the cost of supply which has lead to a significant differential between the approved and later trued-up average cost of supply.

Table A-8.13: Average Cost of Supply Approved by the HPERC

Approved by HPERC	FY 05-06	FY 06-07	FY 07-08	FY 08-09
Total Energy Sale (Mus)	3289	4035	4978	5782
Surplus Energy Sale (Mus)	706	801	569	569
Total ARR (Rs Crs)	1168	1231	1734	2021
Avg Cost of Supply (Rs/kwh)	**2.92**	**2.54**	**3.13**	**3.18**
Avg Realisation from Tariff (Rs/kwh)	**2.92**	**2.74**	**3.13**	**3.25**
(Gap)/ Surplus	0.00	0.20	0.00	0.06

Table A-8.14: Trued-up Cost of Supply

Trued-up based on Actuals	FY 05-06	FY 06-07	FY 07-08
Total Energy Sale (Mus)	3568	4160	5018
Surplus Energy Sale (Mus)	1681	1255	1199
Total ARR (Rs Crs)	1670	1820	2252
Avg Cost of Supply (Rs/kwh)	**3.18**	**3.36**	**3.62**
Total Avg Realisation (Rs/kwh)	**3.27**	**3.46**	**3.57**
(Gap)/ Surplus	0.08	0.10	-0.05

Subsidy Support from the Government

Under this section, the aim is to capture the approach and prudence applied by HPERC while approving subsidy support required from the Government for a given year. This analysis is essential as in the pre-HPERC era provision of subsidy was invariably used without discretion under the justification of shielding consumers against tariff increase. Subsidy should ideally be considered as a mechanism to support cost recovery and the incidence of which should be in the form of direct subsidy from the government to weaker section of the society while cross-subsidy should be minimized.

In HP, subsidy support is prevalent for two consumer categories viz. domestic and agriculture. In the tariff order issued between FY 06 and FY 09, subsidy support had been approved to bridge the deficit and neutralize tariff increase for the two categories. The subsidy had been considered on per unit basis in each of the consumer category while computing the revenue for each of the category during all these years.

In FY 06, the Commission observed a revenue gap of Rs. 111 Crs for HPSEB at existing tariff and accordingly recommended increase in the consumer tariff (except for large industrial consumer) going with the philosophy of aligning the tariff with cost of supply. HPERC has considered the FY 04-05 level of subsidy granted by Govt. for fixing the tariff for FY 06

The Commission had categorically asked the GoHP in FY 06 to clarify the quantum and manner in which it contemplated to provide the subsidy in advance i.e. monthly, quarterly etc and the mode of payment of such subsidy. The government however stated that only after the notification of tariff, it shall specify the details. The Commission therefore in its order for FY 06 worked out both scenarios, one indicating the tariff that shall be applicable to the domestic consumers at existing level of subsidy support and the other specifying the increased subsidy support (from 40 Crs to 126 Crs) that will be required from the government if the impact of tariff hike for domestic consumers was to be neutralized.

The actual subsidy provided by the government for domestic consumers in FY 06 was as follows:

- 50% subsidy in 1st slab
- 45% subsidy in 2nd slab
- 18% subsidy in 3rd slab

The tariff notified by the Commission for FY 06 was inclusive of the subsidy and had directions that in case of non-receipt of subsidy from the Govt., full tariff can be charged to the consumer.

In FY 07, the Commission reduced the tariff for domestic and industrial consumers as there was a revenue surplus while the subsidy for domestic consumers still increased. A better approach by the Commission could have been to allow benefit of revenue surplus to be shared equally between the consumer tariff and the subsidy support to effect reduction in both. As for subsidy, HPERC considered the same level of Govt. subsidy as was granted in FY 06 for fixing the tariff for FY 07 and the subsidy was assumed to be paid in advance.

The subsidy applicable to domestic consumers in FY 07 was as follows:

- 60% of subsidy in domestic 1st Slab
- 47% in 2nd Slab
- 19% in the last slab

The Commission had approved further increase in the subsidy for the domestic consumers along with increase in the tariff for all consumer categories in FY 08 considering a revenue gap of Rs. 85.32 Crs. HPERC again considered the same level of subsidy granted by Govt. in FY 07 for fixing the tariff for FY 08 and has assumed advance payment of subsidy.

Due to a proportionate increase in the subsidy, the net increase in the domestic tariff is nil. The subsidy applicable to domestic consumers in FY 08 was as follows:

- 63% of subsidy in domestic 1st Slab
- 52% in 2nd Slab
- 26% in the last slab

During the first year of the MYT control period i.e. FY 09, the Commission had considered Rs 140 Crs of subsidy for domestic & agriculture consumers as budgeted by GoHP for FY 09. In addition, Commission has again assumed advance payment of subsidy. The effective tariffs for FY 09 for different slabs of domestic category have been accordingly determined and approved.

The subsidy applicable to domestic and agriculture consumers in FY 09 was as follows:

Domestic	Agriculture
57% of subsidy in domestic 1st slab 46% in 2nd slab 22% in the last slab	72% in the 1st slab 58% in 2nd slab

The tariff notified by the Commission for FY 07 to FY 09 was inclusive of the subsidy but did not have directions for charging full tariff to the subsidized consumer category in case of non-receipt of subsidy from the Govt.

Subsidy Booked & Received during each year
In all the Tariff Orders for the period FY 06 to FY 09, the appropriate details of subsidy booked and received by the HPSEB from the GoHP is not available. However, HPSEB has specified in their responses given to the stakeholders that no subsidy on account of tariff is pending from GoHP.

Retail Price Index

Annual Revenue requirement of HPSEB has been increased in the period 2005-06 to 2008-09 because of increase in power purchase cost (except in 2006-07) and employees cost. The average cost of supply has increased during 2007-08 and 2008-09 due to decline in power purchase cost resulting in increase in the consumer retail tariff in the respective years. Therefore, the RPI did not have any impact on the overall consumer tariff during 2007-08 and 2008-09 as the power purchase cost comprises approximately 60%. However, in 2006-07, the retail tariff was reduced due to decrease in power purchase cost and other costs irrespective of increase in RPI.

Particulars	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	1167.87	1230.77	1733.52	2021.45
Approved Sales (MU)	3,995	4,836	5,547	6,351
Averge Cost of Supply in Rs/kwh (A)	2.92	2.54	3.13	3.18
% of Power Purchase Cost in ARR	59%	55%	59%	65%
% of Other remaining Cost in ACS	41%	45%	41%	35%
% Annual Increase in Power Purchase Cost		-18.9%	31.7%	12.3%
% Annual Increase in Other Cost		-4.2%	11.8%	-13.3%
% Annual RPI Increase	4.37%	6.06%	5.21%	8.67%

Transmission & Wheeling Tariff

HPERC has approved the transmission and wheeling charges separately in the Tariff Orders for FY 07 and FY 09.

Particulars (Rs/kWh)	FY 07	FY 08	FY 09
Transmission Charges	0.236	NA	106.94 Crs
Wheeling Charges	1.38	NA	0.75

The Annual Transmission Service Charge for FY 09 are divided between beneficiaries of the Transmission System on monthly basis based on the Allotted Transmission Capacity and the transmission losses are borne by the beneficiaries. Apart from the wheeling charges, distribution losses approved by the Commission would be borne by the beneficiary in kind.

HPERC had not specified/ indicated cross subsidy charges in any of the Tariff Orders issued between FY 06 to FY 09. However, Commission had mentioned in the MYT Order for FY 09 that a separate Order will be issued on the transmission charges applicable to any open access customer.

Multi-Year Tariff in the state

As already mentioned, HPSEB has very recently adopted the MYT framework. The table given below lists the key features of the MYT framework being adopted in the state of HP.

Table A-8.15: MYT Framework

Particulars	
First Year of MYT	FY 08-09
Time frame for the control period	3 years, FY 08-09 to FY 10-11
Issuance of the MYT Order	Two Month delay from the start of first year of Control Period
Base year considered for MYT projections	Trued up values of FY 06-07 & revised estimates of FY 07-08
Uncontrollable Parameters	Sales & Power Purchase Cost
Controllable Parameters	- O&M - Interest Cost - Return on Equity - Depreciation - Non Tariff Income & - Other Business Income
Time frame for truing up under MYT Regime	Projections for Control Period will be revised once the audited accounts for FY 08 will be avialable
Time frame for truing up under MYT Regime	At the end of each Financial Year
Base line data	T&D : Based on the Past Performance & estimated loss level of 16.5% for FY 08
Incentive / disincentive sharing mechanism in case of over /under achievement of controllable target	At the end of Control Period except O&M cost

Timeliness of orders

There has been a considerable lag between the date of submission of the tariff petition by the HPSEB and issuance of tariff order by the Commission which is shown in the table below.

Table A-8.16: Timeliness for Issuance of the Tariff Order

Particulars	FY 04-05	FY 05-06	FY 06-07	FY07-08	FY08-09
Date of Submission of ARR		8-Dec-04	30-Nov-05	30-Nov-06	30-Nov-07
Date of Issuance of Tariff Order	2-Jun-04	29-Jun-05	3-Jul-06	Apr-07	30-May-08
Delay (No. of days)		203	215	137	182
Notice for Public Hearing		4-Mar-05	30-Mar-06	10-Jan-07	15-Feb-08
Deadline for Receipt of Objections /Comments (including extension)		6-Apr-05	28-Apr-06	8-Feb-07	7-Mar-08
Number of Objections Received		37	14	16	9

One of the major reasons that can be attributed to the delay is the late admission of the tariff petition by the HPSEB that has at times been due to inadequate data submitted by HPSEB in the first instance or delay in validation sessions etc. The date of admission of the ARR petition by the Commission in each of the year during FY 06 to FY 09 is given in table below:

Table A-8.17: Admission of ARR Petition

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Date of admission of ARR Petition	2-Mar-05	18-Mar-05	30-Dec-06	7-Feb-08

A-9. Jharkhand

Introduction

The Jharkhand State Electricity Regulatory Commission (hereinafter referred to as the JSERC or the Commission) was established by the Government of Jharkhand under Section 17 of the Electricity Regulatory Commission Act 1998, vide the Department of Energy Notification No. 1763 dated August 22, 2002. The Commission became operational on April 24, 2003. The Commission derives its powers under Section 86 of the Electricity Act, 2003 which came into force with effect from 10 June 2003.

As part of the tariff related provisions of the Act, the State Electricity Regulatory Commission (SERC) is guided by the Electricity Act, the National Electricity Policy (NEP), the National Tariff Policy (NTP) and Principles laid down by JSERC

Jharkhand State Electricity Board (JSEB or Board) was constituted on March 10, 2001 under the Electricity (Supply) Act, 1948 as a result of the bifurcation of the erstwhile State of Bihar. Before that, the Bihar State Electricity Board (BSEB) was the predominant entity entrusted with the task of generating, transmitting and supplying power in the State. The Board is a vertically integrated entity, which incorporates Generation, Transmission and Distribution functions.

Till now, the Commission has issued two tariff order for JSEB for year FY 04 and FY 07. Moreover, it has issued three Tariff Orders for Tenughat Vidhyut Nigam Limited (a generating company in Jharkhand) for FY 05, FY 06 and FY 08.

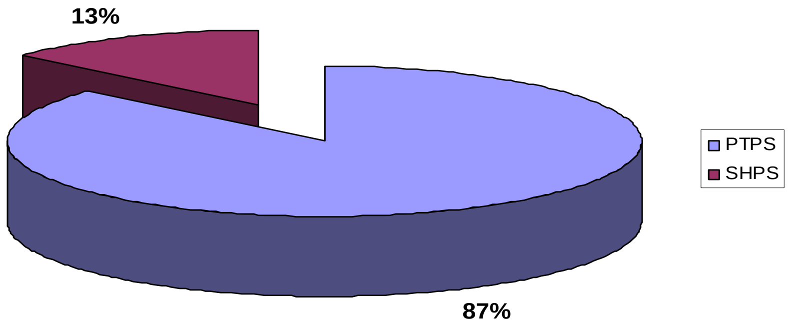
Generation Capacity

JSEB owns two power plants - Patratu Thermal Power Station (PTPS) of 840 MW (derated capacity of 770 MW) and Sikidri Hydel Power Station (SHPS) of 130 MW. The first Unit of PTPS was commissioned in 1966; with Units 1-6 being 33-40 years old (installed during 1966-71), these Units have run beyond their normal economic life. Units 7-10 which were installed during 1977-86 are old and operating at sub optimal levels.

The Board had estimated de-rated capacity of the PTPS at 770MW, with Units 1-4 being de-rated to 40 MW each totaling 160 MW, Units 5&6 being de-rated to 90 MW each totaling 180 MW, Unit 7&8 being de-rated to 105 MW each totaling 210MW and Units 9&10 being kept same to 110 MW each. The Board maintained that Unit 3,4,5,7 and 8, with a total de-rated capacity of 380 MW, have been shut down completely and require R&M before re-commissioning of these units. Unit 1, 7, 9 and 10 are under restoration currently.

Fuel-wise breakup of the generating capacity of JSEB in FY 07 is summarized is graph below:

Graph A-9.1:Fuel-wise break up of generating Capacity



Plant Load Factor (PLF)

In FY 07, the Commission had considered PLF for PTPS at 40% to estimate the gross generation of the plant as compared to the proposed PLF of 10.5% by JSEB.

Since the tariff petition was filed in January 2007 when the year had already passed. JSEB filed that the actual PLF of the plant was 9.1% which was abysmally low. The Commission recognized the fact that some of the units of the plants were very old and could not operate at high PLF. However, the Commission was of the view the decline in performance of PTPS was largely due to lack of initiative from the Board and consumers could not be burdened with the inefficiency on the part of the Board. Therefore, the Commission had kept the targeted PLF at 40% unchanged. The table below shows the claimed, approved and actual figures of PLF for the FY 07.

Table A-9.1: Filed, Approved and Actual PLF for PTPS

Particulars	FY 07
Filed by the Petitioner	10.5%
Approved by the Commission	40%
Actual For the Year	9.1%

Auxiliary Consumption

Since the entire FY 07 had elapsed, the Commission obtained the actual figure of auxiliary consumption for FY 07 from the board. For FY 07, the Commission had considered the auxiliary consumption level at 9% in accordance with the JSERC Regulations against the proposed auxiliary consumption of 16% by the Board. However, according to the actual figures of FY 07, the actual auxiliary consumption was 14%, which was higher than the auxiliary consumption considered by the commission. The Commission was of the view that the inefficiencies of the board cannot be passed on to the consumer and approved the auxiliary consumption at 9%.

For SHPS, the Commission had allowed the level of auxiliary consumption based on the actual figure. The table below shows the claimed, approved and actual figures of auxiliary consumption for the FY 07:

Table A-9.2: Filed, Approved and Actual Auxiliary Consumption

Particulars	FY 07
Filed by the Petitioner	
PTPS	16.0%
SHPS	0.5%
Approved by the Commission	
PTPS	9.0%
SHPS	0.5%
Actual For the Year	
PTPS	14.0%
SHPS	0.5%

Generation

The gross and net generation for PTPS had been approved based on the PLF and auxiliary consumption approved for FY 07. However for SHPS, the Commission had obtained the actual figure of gross and net generation and had approved the actual generation. Further, the Commission had marked the problem of silting in the plant due to which it has operated below the designed parameters. Thus, the Commission had directed the Board to look into the matter on priority to improve generation from this plant.

The table below shows the approved and actual gross and net generation in FY 07. The approved figures had been substantially higher than the actual figure due to lower actual PLF and higher auxiliary consumption.

Table A-9.3: Approved, Actual and Proposed Gross and Net Generation for FY 07

Particulars	Approved	Actual	Proposed
Capacity (MW)	970	970	970
Gross Generation (MUs)	3313	824	853
Aux Consumption & Transfer losses (MUs)	329	87	113
Net Generation (MUs)	2984	737	740

Station Heat Rate (SHR)

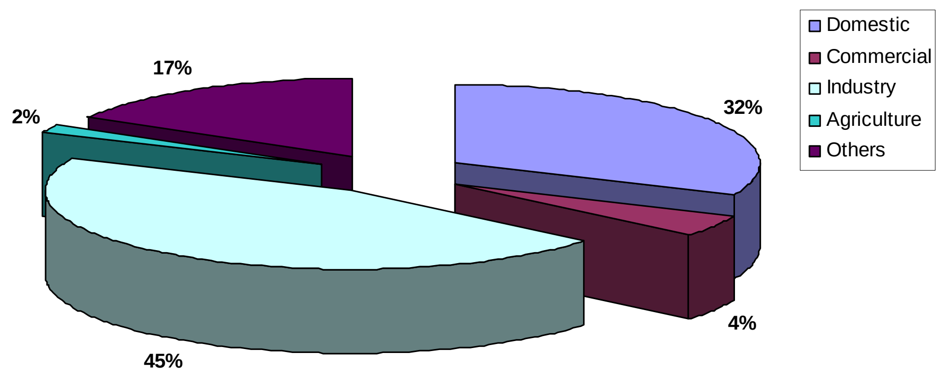
The estimated SHR by the Board for the year was 4230 Kcal/Kwh. However, the Commission was of the view that the SHR proposed by JSEB was very high and cannot be approved. Therefore, the Commission had allowed SHR at 2600 Kcal/Kwh based on the JSERC Regulation. According to the information provided by JSEB for the year, the actual SHR for the plant stood at 4230 Kcal/Kwh. The Commission reiterated that the above had occurred due to lack of initiative from the Board and consumers cannot be burdened for the same. Therefoe, the Commission has maintained the approved SHR.

Demand / Sales Estimation

In absence of adequate and reliable detailed data on load research, circle-wise consumption for different categories of consumers including un-metered category and the number of hours of supply to various categories of consumers, JSERC had estimated sales for FY 07, based on the approved level of sales for FY 04 and CAGR of sales between FY01 and FY 04. Since this number was close to the estimation done by JSEB which was on category wise sales CAGR for past three years, the Commission had approved the proposed sales by JSEB for FY 07.

Graph below shows the category-wise consumption in Jharkhand which is dominated by industrial consumers forming 45% of the total approved consumption.

Graph A-9.2: Approved Energy Sales in FY 07 (MUs)



Moreover, the Commission had directed JSEB to furnish the information on circle-wise consumption and load research in the subsequent tariff petition.

T&D losses

The board had proposed a reduction of 4.26% in T&D loss from 46.76% in FY 06 to 42.50% in FY 07.

In the recent past, the Commission had noticed high variation in the T&D losses reported each year by the Board. JSEB did not have authentic figures for actual losses till the FY 07 tariff order was issued. Major reasons for the high loss level were presence of substantial un-metered supply in the State and overloading of transformers. Therefore, the Commission directed the Board to formulate a task force for supervising the T&D loss in the State and report various efforts undertaken by the Board to reduce losses on a quarterly basis to the Commission.

According to CEA, the loss should be within the level of 15.5%, whereas the losses reported by the Board were substantially higher than the norms set by the CEA. The Commission viewed that these losses should not be passed on to the consumers and hence directed JSEB to make a long term plan to reduce the T&D Losses every year so that the normative T&D Loss can be attained over a fixed time period.

Despite the fact that the State had favorable consumer mix having more than 60% of the consumer as industrial and railways, the technical losses remained high. Considering all the parameters detailed above, the Commission had approved an overall T&D loss level of 36.67% for FY 07, which comprised of a transmission loss of 5.41% and distribution loss of 34.11%. The overall T&D loss represents a nominal 5% reduction from the loss level approved in FY 04 i.e. over the three-year period.

Components of Annual Revenue Requirement

Power Purchase Quantum

The power purchase quantum comprise of total power handled by the JSEB during the year. The main sources of power purchase other than JSEB own generating plants are CGS (NTPC and NTPC), TVNL, and WBSEB. The PPAs are assigned to the JSEB as it is operating as a bundled utility.

The Commission had estimated the total energy requirement based on approved sales, approved T&D losses and the actual net energy traded. The Commission had approved a total energy purchase of 6726 MU for FY 07 of which 736.9 MU will be met through its own generation (Thermal and Hydro combined), whereas the remaining 5989.2 MU will be purchased from the other sources.

Since most of the year had already elapsed by the time the petition was filed; the Commission directed JSEB to submit the actual bills of power purchased for FY 07. Based on the power purchase bills the Commission formulated a merit order dispatch based on the variable cost after considering the transmission constraints and contractual obligations from various sources. The Commission had approved the quantum of power purchase from each source and had been limited to the actual power purchased by the Board as per the actual bills.

The board purchased 293 MUs from Chukka and Tala. Chukka and Tala are international projects and the power purchase obligation from them was bound by contractual obligations, as per MOU between the India and Bhutan. The Government of India has designated PTC India Limited as the nodal agency for transfer of power from Tala, Bhutan. Hence, PTC was billing the Board for the power that is being provided to it.

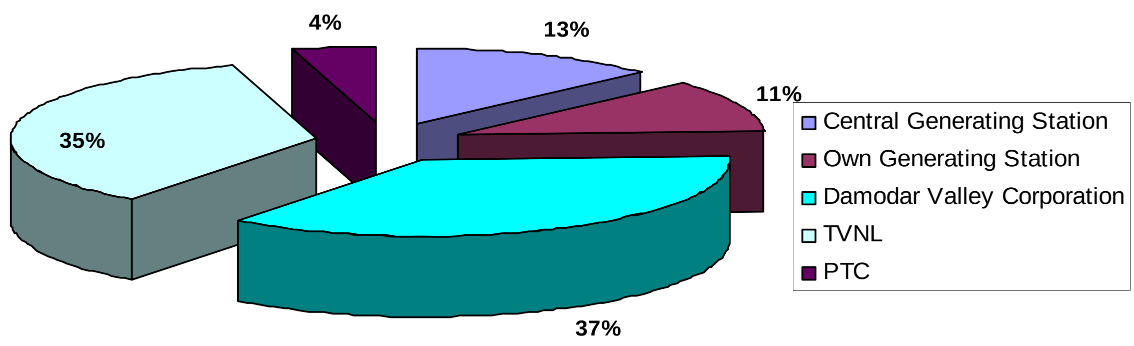
The power purchase quantum from PTC had been approved based on the actual power purchase cost as per the bills produced by the commission.

Availability of power from Central Generating Stations had been considered based on the merit order purchase by JSEB.

Since TVNL was entitled to sell its entire generation to the JSEB. The power purchase from TVNL had been based on the actual units purchased.

Damodar Valley Corporation (DVC) supplies power to the Board at 31 interconnection points as per PPA signed between them with a total contract demand of 395.7 MVA. Power was being supplied at 33 kV. During discussion with the officials of the Board, the Board submitted that no 132 kV transmission network exists through which power from DVC could be brought beyond these points and be supplied to other areas in JSEB area of supply. In view of the transmission constraints that existed, the Commission approved the actual power purchase of 2441 MU made by the Board for FY 07.

Graph A-9.3: Share of various sources in Approved Power Purchase Quantum



The figure above shows the contribution from each source in the approved power purchase quantum. The board purchases bulk of its requirement from DVC (2441 MUs), followed by TVNL (2375.5 MUs) and Central Generating Station (880 MUs).

Power Purchase Cost

As mentioned above, the JSEB purchases power from CGS (NTPC and NHPC), TVNL, DVC and PTC. For FY 07, the Commission obtained all the actual bills of power purchase and based on the merit order dispatch after considering the transmission constraints and contractual obligations from various sources approved the power purchase cost. Based on the formulated merit order, the Commission had approved a total power purchase cost of Rs 1142.98 Crs at an average per unit cost of Rs 1.91 per unit for FY 07.

The cost of power purchase from PTC had been considered at actual power purchase cost as per the bills submitted by the board. Since the power purchase from Farakka Thermal power plant and Kahalgaon Thermal Power Plant was based on PPA, the Board was liable to pay fixed charges on account of these agreements. So the Commission had allowed the fixed cost based on the actual bills produced by the board. As per the analysis of the commission, there was no requirement of power purchase from KTPS. Therefore, variable cost from this plant had been disallowed. The Fixed and variable cost of other central generating stations had been approved based on the actual cost data provided by the board.

Since TVNL is owned by the Government of Jharkhand and is entitled to sell its entire generation to JSEB. The tariff of TVNL had been approved based on the tariff approved by the commission. Power purchase cost from the DVC was based on the tariff determined by the CERC.

Further, the Board claimed that due to lack of infrastructure to wheel power to Pakur District, power was purchased from West Bengal State Electricity Board (WBSEB) in FY 07. Since WBSEB power was the costliest power amongst the other sources, the Commission was of the view that to supply power to the Pakur district, the Board should have considered opting for an open access to wheel its own cheap power from DVC to Pakur District and disallowed the cost of power purchased from WBSEB.

In order to estimate the Transmission Charges for FY 07, the Commission had considered the actual transmission charges vis-à-vis the units transferred through the network, as provided in the bills raised by PGCIL and ERLDC. The actual per unit transmission charge worked out to be Rs. 0.11 per unit. The same has been applied to the approved level of power purchase (interstate transfer of power) from various sources.

Table A-9.4: Source-wise Power Purchase Cost (Rs. Crs)

Source	Amount
Central Generating Station	148
Damodar Valley Corporation	471
TVNL	451
PTC	47
PGCIL Charges	13
Transmission Charges	13
TOTAL	**1143**

Operation and Maintenance (O&M) Cost

The Commission had approved employee cost, R&M and A&G cost separately for FY 07 in its Tariff Order for JSEB. Approach of the Commission for approval of each component of O&M cost expenses is discussed below:

Employee Cost

For FY 07, the Commission had benchmarked several parameters of employee productivity with those in other states. During benchmarking, the Commission noticed that the employee cost per unit of sale for Jharkhand was high when compared to West Bengal and Delhi and moreover it had deteriorated when compared with the approved employee cost per unit for FY 04. Also, the number of employees per thousand consumers for Jharkhand was higher as compared with neighboring states.

In absence of audited annual accounts and detailed information, the Commission had constrained estimation and verification of actual employee cost of the Board. The Board also failed to furnish details of actuarial studies being conducted for the determination of terminal benefit and pension corpus liabilities. In absence such information, the Commission had not approve the pension corpus fund of Rs 60 Crs. Moreover, the Hon'ble Supreme Court gave the judgment that pension liability of all retiree before the reorganization of erstwhile combined Bihar would rest with Bihar. In order to honor the terminal benefit liabilities, the Commission approves Rs. 22.86 Crs towards the terminal benefit liabilities for FY 07. Further, the Commission was of view that consumers cannot be burdened with the cost of free electricity and had disallowed the same.

The Commission had allowed a year on year inflationary increase over the approved FY 04 figure on various components except free electricity and terminal benefits. Moreover, the Commission had directed JSEB to submit the actuarial study with next tariff petition.

Since the Board was silent on CWIP and un-audited accounts did not state any major project under consideration, the Commission had not considered any capitalization of employee cost.

Repairs and Maintenance (R&M)

The Commission recognized that most of the Boards' infrastructure and plant are quite old and was prone to breakdown. Considering adequate R&M was essential for optimally utilizing the existing assets, the Commission had approved R&M cost of Rs. 51.64 Crs as proposed by JSEB, which is 3.11% of the approved GFA.

Administrative and General Expenses (A&G)

In absence of information, the Commission had approved a year-on-year inflationary increase on various components of A&G cost over approve A&G for FY 04.

Bad Debts

The Commission highlighted that no details have been submitted by the Board on the policy and rules for classifying a receivable as bad debt and procedure followed by the Board. Also, the Board's accounts were not finalized and hence bad debts that may have been written off could not be verified. Further, as per the JSERC (Terms and conditions for distribution tariff) Regulations, 2004 no provision for bad and doubtful debt should be considered as an admissible expense in the determination of ARR. In the light of the above, the Commission had disapproved provision for bad debts for FY 07.

Depreciation

As the Board does not maintain any Fixed Asset Register, the Board was not able to provide any detail on asset-wise break up. Considering the data constraints and absence of audited accounts, the Commission had considered the actual depreciation rate at FY 05 level i.e. 5.11%. In addition, the residual lives of the asset had been considered as 10% and depreciation had been allowed up to maximum of 90% of effective GFA. Land, assets lost in fire and assets not in use had been excluded while computing 90% of effective GFA.

Further, the Commission directed the Board to provide data related to fixed assets and maintain an asset register classifying assets on the basis of JSERC (Terms and Conditions for Determination of Thermal Generation Tariff) Regulations.

Interest on Loans

While reviewing the account of the board, the Commission highlighted that there were huge cash and bank balances lying with the board which the Board was not able to clarify. The Commission was of the view that with such huge amount under cash in hand and bank, there was no requirement for JSEB to resort to high cost borrowings. However, the Board clarified that the Cash in hand and Bank does not actually exist on the asset side and exists due to discrepancy in reconciliation between the field units and headquarter. Pending reconciliation and clarification, the Commission did not approve any interest cost for FY 07 considering that burdening the consumers with such huge liability would not be appropriate.

The Commission also directed the Board to submit the audited annual accounts for the previous years with detailed explanation and clarification on the above issue.

Rate of Return

The Commission had adopted Return on Equity (RoE) as the parameter for allowing reasonable return. The rate of return on equity for generation, transmission and distribution had been kept at 14%, 14% and 14% respectively in accordance with the JSERC regulation for FY 07.

Capital Expenditure

The petition filed by the Board was silent regarding the Capital work in progress or new capital expenditure. Hence, the Commission had not discussed the same in FY 07 Order.

Interest on Working Capital

The Commission had approved the interest on working capital for FY 07 to meet the shortfall in revenue collection by 5%. The interest had been computed by applying 10.5% rate of interest i.e. short-term prime lending rate of State Bank of India.

Annual Revenue Requirement

The ARR as approved by the Commission and as proposed by JSEB in the tariff petition is given in table below:

Table A-9.5: Approved and Proposed ARR for FY 07

Functions	Approved	Proposed
Generation	75	293
Transmission	45	84
Distribution	1230	2471
TOTAL	**1351**	**2847**

As is evident from the table above, the Commission had been rather conservative in its approach while approving the ARR in each of the years with huge disallowance. The table below shows the approved consolidated ARR for JSEB for FY 07.

Table A-9.6: Item-wise Approved Consolidated ARR for FY 07 (Rs. Crs)

Particulars	Amount
Power Purchase Cost	1143.0
Fuel Cost	40.6
O&M	281.0
Depreciation	70.7
Interest Charges	6.4
ROE	66.6
Total Expenditure	**1608.3**
Less:	
Inefficiency Cost of PTPS	104.6
Other Income	273.3

Particulars	Amount
Net Revenue Required	**1230.4**
Add: Contingency Reserve	30.0
Total Revenue Requirement	**1260.4**
Revenue at existing tariff @ 95% collection efficiency	**1183.2**
Revenue Gap	77.3
Net Energy Sales	3821.0
Average Cost Of Supply (Rs/ KWh)	**3.3**

Inefficiency cost of PTPS Rs 104.6 Crs shows the cost which the Commission has disallowed due to lower generation as compared with the approved. Hence the Commission had proportionately decreased the amount in the ratio of actual generation to approved generation.

The Commission has also trifurcated the total ARR in generation, transmission and distribution ARR based on the allocation as proposed by JSEB.

Tariff Determination

A two-part tariff structure exists in the state of Jharkhand which was introduced by the Commission in FY 04. The Commission has been expressing its intentions to align tariff so as to ensure recovery of cost of service and reduction of cross-subsidy.

The principles followed by the Commission for tariff determination is as below:

- Rationalization of tariff
- Reduction in cross subsidy
- Introduction of a new slab in domestic category for consumption above 400 kWh
- Rebate for use of solar water heaters by commercial consumers.

The table below shows the existing and approved average tariff for various consumer categories. The Commission had decreased the tariff for the board in FY 07.

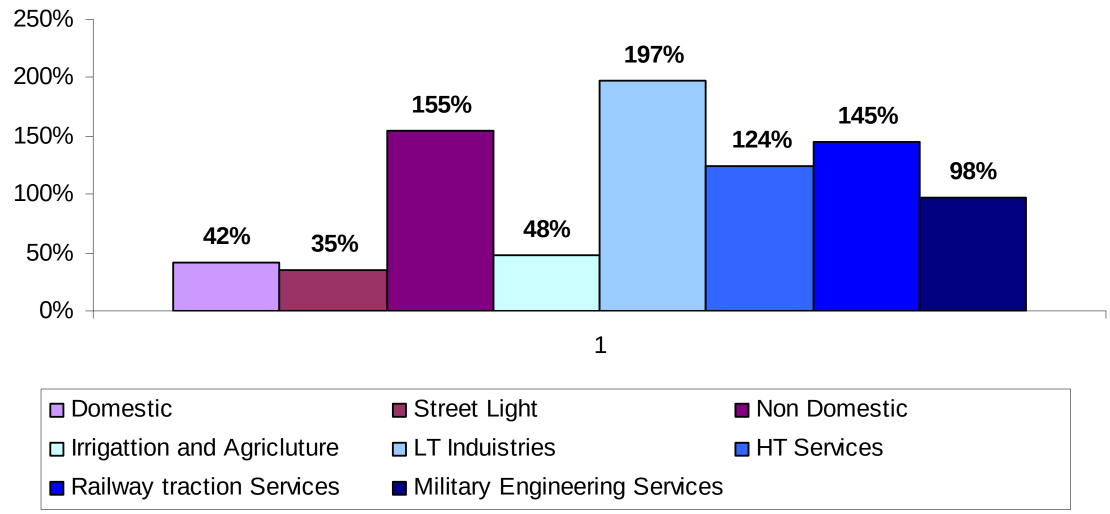
Table A-9.7: Consumer Category-wise Approved Tariff for FY 07 (In Rs/ KWh)

Consumer Category	Existing	Approved
Domestic	1.23	1.26
Street Light	0.89	1.07
Non Domestic	4.21	4.7
Irrigation and Agriculture	1.13	1.44
LT Industries	6.06	5.96
HT Services	3.88	3.75
Railway traction Services	4.48	4.39
Military Engineering Services	2.77	2.96
TOTAL	**3.1**	**3.03**

Moreover, the Board had not implemented the standards of performance regulations issued by the JSERC and therefore the Commission had directed JSEB to implement the Standards of Performance Regulations by 1st January 2008. The Commission had imposed a penalty of 2.5% reduction in energy charge for all categories in case of non compliance with the same.

The graph below shows that the level of cross subsidization for different consumer categories. Though the Commission in the tariff order has intended to reduce cross-subsidization but a clear road map for reduction in cross-subsidies was not provided. Moreover, the Commission has increased the tariff of some of the subsidizing categories like LT industries and Non-Domestic leading to a futher increase in cross subsidization. For other categories, the tariff has been increase to align the same with average CoS.

Graph A-9.4: Approved Category-wise Revenue per unit as percentage of ARR



In FY 07, due to absence of voltage-wise cost, the Commission had been unable to move forward with tariff rationalization. The Commission had therefore, directed the Board to carry out appropriate studies to determine voltage wise losses and costs and submit it to the Commission within a period of six months.

Time of Day Charge

The Commission had introduced the Time of Day (ToD) charge in FY 04 Order to offer rebate for power consumption during off-peak hours through the application of concessional night time tariff for HT industrial with connected load above 100 kVA as part of their tariff structure.

In the FY 04 Order, the Commission had suggested JSEB to conduct some sample studies to collect and compile information on the demand from various consumer categories at different times of the day as well as on consumption of energy during these intervals as part of the load research study in order to enable the Commission in determining a more effective ToD tariff in the subsequent tariff orders. However, the

Board did not take any steps to conduct the study nor collected any information in this regard.

A pre-requisite for implementation of ToD tariff is a robust metering infrastructure capable of recording time stamped consumption and with Jharkhand still to achieved 100% metering, the ToD tariff may not be effective. Hence, the Commission directed the JSEB to conduct a study on the feasibility (including requirement of metering infrastructure) and potential savings that will accrue from the introduction of ToD tariffs for categories of LT industrial consumers.

Transmission & Wheeling Tariff

The Commission, to encourage the open access within the State, determined the wheeling charges from approved distribution cost of FY 07. The Commission had considered following distribution charges attributable to wheeling charges:

Table A-9.8: Components of Distribution cost considered for determining the Wheeling Charges (Rs. Crs)

Particulars	Amount
Employee cost	107.9
R&M cost	18.2
A&G cost	20.2
Interest on working Capital	6.4
Depreciation	44.6
Add: Reasonable Return	29.4
Less: Other Income*	-48.2
Total	**178.3**

**Excluding Net UI income*

Wheeling charges represent the cost of network usage and ideally the Distribution Cost should be bifurcated between network usage costs and costs related to energy supply. In absence of the information regarding the same in the tariff petition for FY 07, the Commission had divided the total approved Distribution Costs equally between the two functions i.e. Wheeling Charges for network usage and Energy supply. Hence, for FY 07, the Commission had apportioned Total Wheeling ARR of Rs 89.14 Crs and computed a wheeling charge of 15.60 Paisa per kWh.

A-9.1. TVNL – Generation Utility

Introduction

The Tenughat Vidyut Nigam Limited (TVNL) is a thermal generation plant located in the state of Jharkhand. It was incorporated in 9th December 1995. The plant is situated near Tenughat Dam in the district of Bokaro. Prior to the bifurcation of erstwhile Bihar, the TVNL catered to the Bihar State Electricity Board. However, post bifurcation, TVNL has come under the ownership of the Government of Jharkhand and thereon it has been supplying power to the JSEB only. It has an installed capacity of 420 MW.

Jharkhand State Electricity Regulatory Commission (JSERC hereafter) issued first tariff order for TVNL in FY 05 and since then it has issued only three tariff orders for the utility i.e. for FY 05, FY 06 and FY 08.

Generating Capacity

TVNL is a coal based thermal generating plant. It has an installed capacity of 420 MW with two units of 210 MW each.

Plant Load Factor (PLF)

The Commission had approved PLF for TVNL keeping in mind the JSERC regulation, planned capital works during the year and actual PLF of past years. For FY 05, since the plant was under some major capital work, Commission approved PLF keeping in mind the actual of past year and the regulation of JSERC.

For FY 06, TVNL filed its petition in November 2005, when half of the year had elapsed. Therefore, the Commission had approved PLF for the unit-I based on the generation till December and for balance period it had assumed a PLF of 75%. Since Unit-II was not operational from April to July 2005, PLF for the rest of the period (August '05 to March '06) had been approved at 75%.

In FY 08, the Commission had approved PLF at 75% for unit-I except for the period during which it was under maintenance while for Unit-II, PLF was approved based on the actual generation from April '07 to July' 07 and 75% PLF for the balance period.

Table A-9.9: Approved and Actual Plant Load Factor (%)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved PLF	68.50%	59.31%	-	57.6%	-
Actual PLF	36.04%	41.56%	73.80%	-	-

The Commission had reviewed the performance of the TVNL in subsequent years. While reviewing Commission noticed that the actual PLF in FY 05 and FY 06 was much lower than the approved. Inadequate evacuation capacity, poor maintenance and lack of demand were the major reasons for lower PLF recorded by the station.

However in FY 07, Commission had seen a marked improvement. The primary reason for improvement was that both the units were dispatching simultaneously, plant had overcome the transmission constraint and lack of demand.

Since the Commission has not taken up the true up exercise for any of these years, this has affected the financials of TVNL adversely.

Auxiliary Consumption

JSERC had approved auxiliary consumption of 9% throughout the period i.e. for FY 05, FY 06 and FY 08 in line with the normative level set under JSERC Regulations.

Table A-9.10: Approved and Actual Auxiliary Consumption (%)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Auxiliary Consumption	9%	9%	-	9%	-
Actual Auxiliary Consumption	17.57%	14.23%	12.04%	-	-

The actual auxiliary consumption throughout the period was much higher than the approved level.

Station Heat Rate (SHR)

JSERC had uniformly approved SHR in line with the JSERC Regulations.

Table A-9.11: Approved and Actual SHR Kcal/Kg

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved SHR	2500	2500	-	2500	-
Actual SHR	3150	2958	2821	-	-

Though, the actual SHR has been much higher than the approved SHR, there has been an improvement during the period FY 05 to FY 07.

Gross and Net Generation

Based on the technical parameters approved above, JSERC had approved the gross and net generation for TVNL. The table below summarizes the gross and net energy generation during the period FY 05-FY 08.

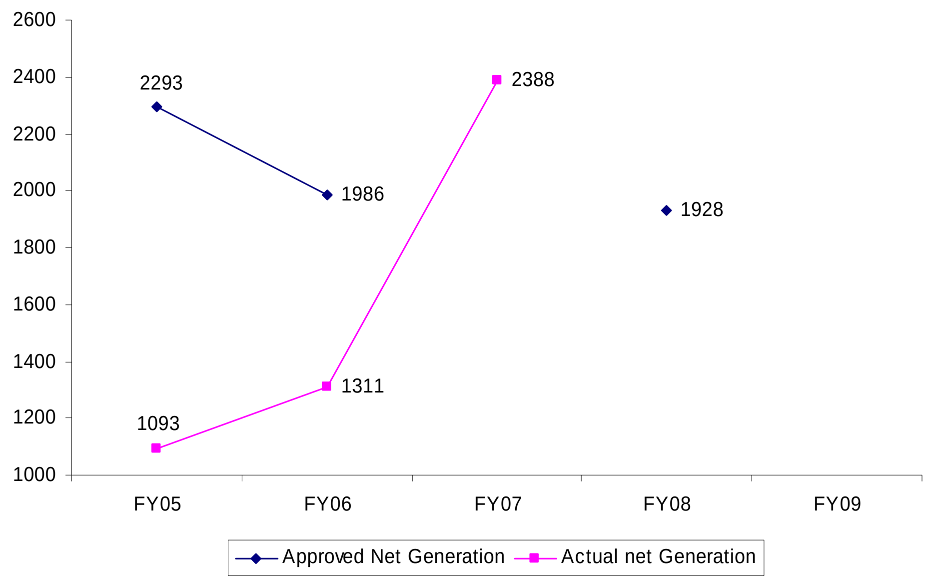
Table A-9.12: Approved and Actual Gross and Net Generation (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08
Approved Gross Generation	2520*	2182	-	2119
Approved Net Generation	2293*	1986	-	1928
Actual net Generation	1093	1311	2388	-

**Calculated value based on the level of approved PLF and approved Auxiliary consumption*

It is observed that the actual net generation has been lower than the approved net generation due to higher PLF and lower auxiliary consumption.

Graph A-9.5: Comparison of Approved and Actual Net Generation (MUs)



FIXED COST

Operation and Maintenance (O&M)

In FY 05, JSERC had observed that in the past years, the cost incurred on O&M activity had been high in respect to the norms set under JSERC regulation. Therefore, considering that the consumers should not be penalized for inefficiencies of TVNL, the Commission had consistently followed JSERC regulation for approval of O&M expenses. According to the regulation, O&M cost should not be more than 2.5% of the total capital cost with an annual escalation of 6% p.a. from the year of commissioning.

However in FY 08, a higher amount of O&M activity had been approved considering major R&M to be carried out by TVNL during the year.

Table A-9.13: Proposed, Approved and Actual O&M (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed O&M Cost	96.22	59.33	-	142.40	-
Approved O&M Cost	57.96	57.26	-	73.56	-
Actual Cost	59.01	67.17	95.47	-	-

The actual expenses incurred towards O&M of the plant during FY 05 and FY 06 is higher than the approved amount due to large amount of R&M expenses incurred.

Depreciation

JSERC had approved the amount of depreciation for TVNL assets, based on the rates set under JSERC regulation for various categories of assets. In FY 05, FY 06 and FY 08, since the depreciation claimed by TVNL was in line with the regulation; the Commission had allowed the same. The approved depreciation was higher than the proposed depreciation for FY 05 as the Commission had approved depreciation on additional investment proposed by TVNL.

Table A-9.14: Proposed and Approved Depreciation (Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed Depreciation	50.68	43.69	-	43.99	-
Approved Depreciation	60.02	43.7	43.96	-	-

Interest Cost

The main source of loan for TVNL was State Government of Bihar and State Government of Jharkhand.

JSERC follows source-wise detail approach to approve the cost of interest for the TVNL. In FY 05, the Commission had approved the existing interest liability as TVNL could not provide the details regarding source-wise interest rate payable and plans for refinancing of loans that carry a higher rate of interest.

In FY 06 and FY 08, as TVNL had not undertaken any refinancing of high interest cost schemes, the Commission allowed interest on the original loan amount at a rate based on terms of the loan. The Commission had disallowed the interest on accumulated interest liability and interest during construction (IDC) for new projects and directed TVNL to capitalize the same.

The Commission acknowledged that TVNL was not repaying the principle amount of the loan. Because of the non repayment of the loan, the principle amount and interest amount remained more or less constant.

Table A-9.15: Proposed, Approved and Actual Interest on Loans (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed Interest on loans	83.06	46.25	-	86.71	-
Approved Interest on loans	97.36*	83.13	-	83.06	-
Actual Interest on loans	0	0	-	-	-

** The amount of interest includes interest of Rs 14.3 Crs on additional investment*

It is observed that TVNL had not made any payment of interest amount on outstanding loans in FY 05 and FY 06. TVNL had attributed the inability to repay the loan amount to the large outstanding dues from Jharkhand State Electricity Board (JSEB).

Rate of Return

JSERC has followed Return on Equity (ROE) methodology for approving the reasonal return to TVNL. The Commission had consistently followed the JSERC regulations for allowing the rate on return on equity amount. In each of the tariff order for FY 05, FY 06 and FY 08, the Commission had approved a return of 14% to TVNL in line with the Regulations.

Table A-9.16: Proposed and Approved ROE (Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed ROE	14.00	56.94	-	14.00	-
Approved ROE	14.00	14.00	-	14.00	-

Interest on Working Capital (IWC)

For estimation of working capital requirement of TVNL, JSERC had calculated the amount of working capital based on the following components i.e. Fuel cost, Oil consumption cost, O&M cost, Maintenance cost, and Receivables.

In FY 05, the amount of working capital required was estimated based on the following:

- Coal consumption cost for half month.
- Oil consumption cost for one month.
- O&M expenses for one month.
- R&M expenses at 1% of plant equipment cost.
- Receivables of two months.

However in FY 06, the Commission modified the components for determination of working capital requirement. The estimation was done based on the following:

- Coal consumption cost for one and a half month.
- Secondary fuel consumption cost for two month.
- O&M expenses for one month.
- R&M expenses at 1% of the historical cost escalated at 6% p.a. from the date of commercial operation.
- Receivables of two months for sale of electricity calculated at target availability.

In FY 08, it was again modified slightly and the working capital requirement was estimated based on the following:

- Coal consumption cost for one and a half month.
- Secondary fuel consumption cost for one month.
- O&M expenses for one month.
- R&M expenses at 1% of the historical cost escalated at 6% p.a. from the date of commercial operation.
- Receivables of two months for sale of electricity calculated at target availability.

Subsequent to the computation of working capital requirements, the Commission had approved the interest rate of funding of the working capital requirement for FY 05 on Ad-hoc basis as no justification had been given for the same. For the subsequent years, the Commission had approved the interest rate considering the SBI PLR for short term loans as on 1st of the April as per JSERC Regulations. A summary of interest rate on working capital approved by the Commission is summarized below.

Table A-9.17: Approved interest rate and Approved and Actual IWC (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved interest for WC	12.50%	10.50%	-	13%	-
Approved Amount of IWC	11.15	10.24	-	13.00	-
Actual Amount of IWC	10.92	10.15	16.87	-	-

Total Fixed Cost

The Commission had approved the total fixed cost for TVNL based on the approach followed above for various components of Total Fixed Cost as discussed above.

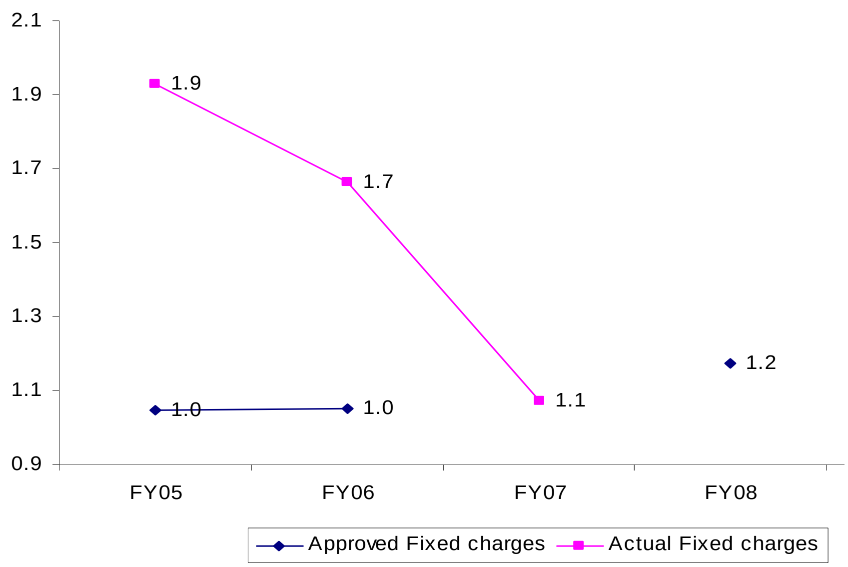
Table A-9.18: Proposed, Approved and Actual Total Annual Fixed Cost (Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed Total Fixed Cost	261.40	220.12	-	301.12	-
Approved Total Fixed Cost	240.48	208.32	-	226.41	-
Actual Total Fixed Cost	210.78	218.14	255.76	-	-

The actual annual fixed cost in FY 05 was lower than the approved amount on account of additional interest and depreciation amount approved for the new investment and non-payment of interest cost.

The actual and approved per unit fixed charges for the past years can be seen from the graph below. The drastic decline in actual per unit fixed charges during FY 07 was primarily on account of improvement in PLF of the generating station.

Graph A-9.6: Approved and Actual Per Unit Fixed Cost (Rs per Unit)



Fuel Cost

JSERC had approved fuel cost based on the total requirement of fuel and the estimated prices of the fuel. Further, the total requirement of fuel has been computed based on the SHR of the plant, calorific value of the coal and the estimated generation of power. In FY 05, JSERC cross verified the prices of the coal as claimed by the TVNL from the price list of the same grade coal available at CCL from the CIL data. In FY 06, the prices of the coal had been approved based on the actual average monthly cost incurred by TVNL till December 2005 (as the tariff petition for FY 06 was filed in November 2005). In FY 08, the prices of the coal had been approved based on the weekly bills produced by TVNL for the month of April and May 2007. Since TVNL procured coal from four different collieries, the average prices of the collieries was considered while approving the fuel cost for FY 08.

In FY 06, the cost of the oil consumed was approved based on the actual of last year prices and the escalation was made based on the WPI of FY 05. However, in FY 08, the same was approved based on the actual price paid by TVNL during August 2007.

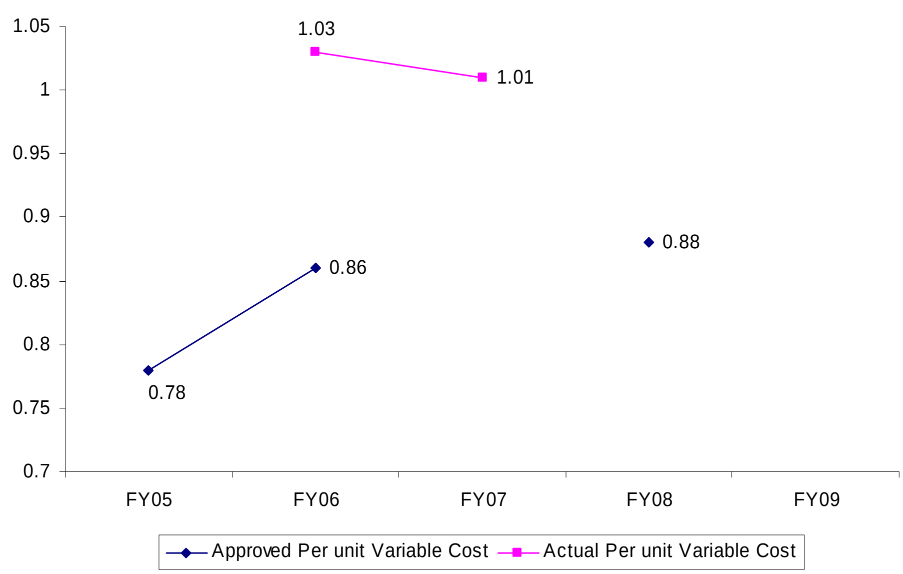
Based on the approved fuel cost and the net generation level of TVNL, Commission had approved per unit cost of electricity.

Table A-9.19: Approved and Actual Per Unit Fixed Cost (Rs per Unit)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Per Unit Cost	0.78	0.86	-	0.88	-
Actual Per Unit Cost	-	1.03	1.01	-	-

The actual per unit cost variable cost of the power had been higher than the approved variable cost per unit inspite of the fact that actual cost incurred on the fuel per standard unit (of fuel) was lesser than the approved fuel prices per Standard unit (of fuel). Therefore, the higher variable cost can be attributed to the higher SHR and higher per unit oil consumption.

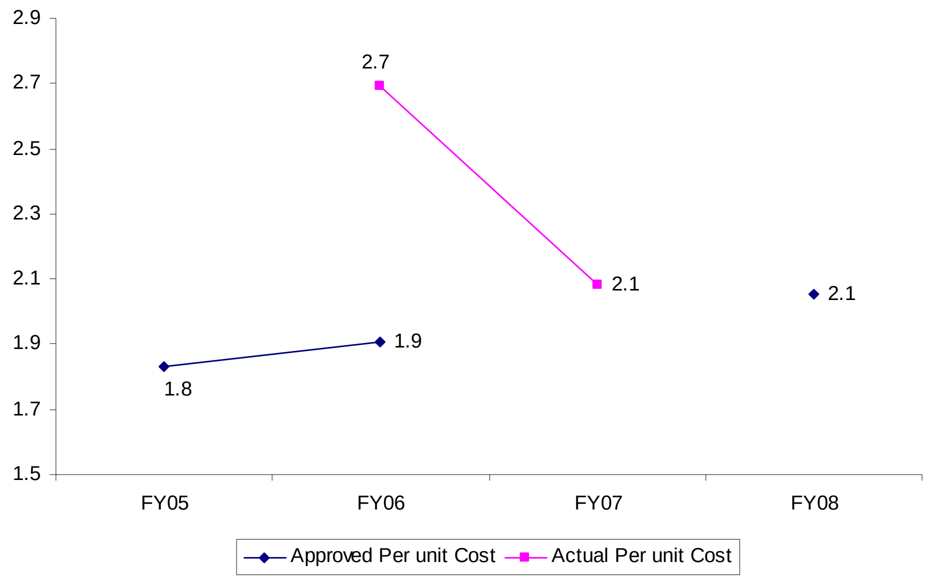
Graph A-9.7: Approved and Actual Per Unit variable Cost (Rs per Unit)



Total Cost

The generation tariff applicable to the TVNL during each year was based on the fixed and variable cost approved by the Commission in each tariff order. A comparison of actual and approved cost per Unit for TVNL is shown in the graph below.

Graph A-9.8: Approved and Actual Per Unit Cost (Rs per Unit)



A-10. Jammu & Kashmir

A-10.1. Jammu & Kashmir – Generation Utility

Introduction

Jammu and Kashmir State Power Development Corporation Limited (JKSPDC) is a State Government owned company which owns and operates various hydro-generation power projects in the State of Jammu & Kashmir.

JKSPDC owns and operates 19 hydel power stations with a total installed capacity of 308 MW. One of the plants with capacity 4 MW is not operational since 1992 and hence the total installed generating capacity of JKSPDC is 304.70 MW.

JKSPDC filed its first tariff petition for FY 09 post issuance of J&K State Electricity Regulatory Commission (Terms and Conditions for Determination of Hydro-Generation Tariff) Regulations in 2005. This tariff order for FY 09 has been for ARR in respect of 8 out of the 19 hydro electric plants as details for 11 HEP were not available.

JKSPDC in its tariff petition submitted that the Government of Jammu and Kashmir; Power Development Department had accorded approval to JKSPDC for entering into Power Purchase Agreement (PPA) with the J&K PDD for FY 99 at Rs.0.76 per unit for hydro power generation with a provision for escalation at the rate of 5% per annum and a rate in accordance with the same for FY 09 should be approved.

The Commission, however, opined that the rate of Rs. 0.76 per unit with an escalation of 5% per annum as agreed between the JKSPDC and the J&K PDD in the PPA dated 26/4/2000 is arbitrary in nature and is not substantiated by any factual information for such determination. The Commission further ruled that the rate would continue to be Rs.0.76 per unit for the purpose of billing energy sold to the J&K PDD till JKSPDC completes the exercise specified for furnishing the details on capital cost for the 11 HEPs which should be before filing its next petition for determination of tariff for the 11 HEPs covered under the PPA dated 26/4/2000.

The Commission has therefore approved ARR for 8 HEPs out of 19 HEPs

Generation Capacity

The plant wise generating capacity of the 8 State Generating Stations is as summarized below:

Table A-10.1: Plant wise Generating Capacity

Particulars	JKSPDC			
	USHP-II	Chenani-III	Sewa-III	Baderwah
Station Capacity (in MW)	105.00	7.50	9.00	1.00
Design Energy(MU)	460.00	42.93	33.41	4.85
Type of station	Underground	Surface	Surface	Surface
Year of Commissioning	Jun-02	Jun-03	Jun-03	May-05

Table A-10.2: Plant wise Generating Capacity

Particulars	JKSPDC			
	Pahalagam	Haftal	Marpachoo	Igo-Mercellong
Station Capacity (in MW)	3.00	1.00	0.75	3.00
Design Energy(MU)	15.57	7.62	4.00	19.80
Type of Station	Surface	Surface	Surface	Surface
Year of Commissioning	Jun-05	Jun-06	Jun-06	Aug-05

Thus, the total generation capacity for the 8 HEPs is 130.25 MW

Auxiliary Consumption

The Commission had approved auxiliary consumption for all the plants at 0.50% except for USHP-II at 0.70%. The Commission has however not elaborated on the methodology adopted for the approval of auxiliary consumption as against that proposed by JKPDC.

The table below shows the approved Auxiliary consumption for FY 09.

Table A-10.3: Approved Plant Auxiliary Consumption

Particulars	FY09
USHP-II	0.70%
Chenani-III	0.50%
Sewa-III	0.50%
Baderwah	0.50%
Pahalagam	0.50%
Haftal	0.50%
Marpachoo	0.50%
Igo- Mercellong	0.50%

Primary Saleable Energy

The Commission has calculated the primary saleable energy after adjusting for auxiliary consumption and transformation losses from the design energy for each of the projects. The details have been shown in the table below:

Table A-10.4: Approved Primary Saleable energy and Transformation losses (MUs)

Particulars	Design Energy	Transformation Losses	Primary Saleable Energy
USHP-II	460.00	0.50%	454.48
Chenani-III	42.93	0.50%	42.50
Sewa-III	33.41	0.50%	33.08
Baderwah	4.85	0.50%	4.80
Pahalagam	15.57	0.50%	15.41
Haftal	7.62	0.50%	7.54
Marpachoo	4.00	0.50%	3.96
Igo-Mercellong	19.80	0.50%	19.60

FIXED COST

Operation & Maintenance Cost (O&M)

The Commission for the FY 09 had approved the O&M expenses as per the Regulation 26(2)(b) of the Hydro Generation Tariff Regulations, 2005 @ 1.50% of the capital cost of the project from the COD and has subsequently escalated it at 4% per annum.

Table A-10.5: Approved and Proposed O&M Expense for FY 09 (Rs. Crs)

Name of the plants	Proposed	Approved
USHP –II Kangan	8.18	8.26
Chenani-III	1.01	0.75
Sewa-III	1.32	0.90
Baderwah	0.21	0.09
Pahalagam	0.89	0.28
Haftal	0.26	0.09
Marpachoo	0.21	0.07
Igo- Mercellong	0.75	0.27

The difference in the proposed and approved O&M expense is due to the difference in capital cost proposed by JKSPDC and that approved by the Commission.

Depreciation and Advance Against Depreciation (AAD)

For FY 09, due to non-availability of asset-wise break-up, the Commission had approved depreciation at an average depreciation rate of 2.57%. The Commission had also considered AAD in accordance with the Regulation 24 of the Hydro Generations Tariff Regulations, 2005.

Interest Cost

In the state of J&K, the Regulation 18(1) of the Hydro Generation Tariff Regulations, 2005 mandates that for the purpose of tariff determination the amount of equity shall be limited to 30% of the capital cost and the balance should be considered as the normative loan. Further, Regulation 18(2) mandates that the debt, equity amounts thus arrived should be used for calculating interest on loan, return on equity, advance against depreciation and foreign exchange rate variation.

For approving interest cost, the Commission has calculated normative loan amount (due to cost overrun) after applying the maximum ceiling of Rs.5.5 Cr per MW and proportionately adjusting for any subsidy received.

The interest rate, term of loan, moratorium period and repayment schedule etc. for the normative loans have been kept the same as for the actual loans for each projects. The approved interest ranges from 13% to 15% which is high.

The table below shows the comparison of proposed and approved interest cost.

Table A-10.6: Approved Interest Cost on Loans

Name of the plants	Interest Cost (Rs.Crs)	
	Proposed	Approved
USHP –II Kangan	2.41	14.90
Chenani-III	0.42	1.89
Sewa-III	0.48	2.27
Baderwah	0.18	0.21
Pahalagam	0.82	0.66
Haftal	0.21	0.29
Marpachoo	0.15	0.22
Igo- Mercellong	0.75	0.70

It has been observed that the Commission, after application of the approach as discussed above, approved a higher interest cost for most of the plants as against that claimed by the petitioner.

Interest on Working Capital

The Commission has not specified computation of working capital requirement whereas the approved interest on the working capital has been considered at the PLR of the Jammu & Kashmir Bank as on 1.04.2005 or the 1st April of the year of CoD of the plant

Return on Equity

The Commission, for FY 09 had approved ROE at 14% on Normative Equity. The RoE has been calculated on equity deployed which is a maximum of 30% of project cost as arrived by the Commission by applying the maximum ceiling of Rs.5.5 Cr. Per MW and proportionately adjusting for any subsidy received.

Total Fixed Cost

Based on the above parameters the total fixed cost for all the 8 HEP has been approved as follows:

Table A-10.7: Approved and Proposed Total Fixed Cost (Rs. Crs)

Name of the plants	Total Fixed Cost	
	Proposed	Approved
USHP –II Kangan	78.15	73.99
Chenani-III	10.04	7.47
Sewa-III	13.14	8.80
Baderwah	1.89	0.89
Pahalagam	9.05	2.78
Haftal	2.58	1.00
Marpachoo	2.05	0.75
Igo- Mercellong	7.59	2.79

A-10.2. Jammu & Kashmir – Distribution Utilities

Introduction

Power Development Department (PDD), Government of Jammu & Kashmir is the sole transmission and distribution utility in the State, and is a deemed licensee under Section 6A of the Jammu and Kashmir Electricity Act, Smvt 1997.

Initially, it was the sole entity handling generation, transmission and distribution of electricity in the State. Later the Jammu & Kashmir State Power Development Corporation (SPDC) was established in 1989 to handle the generation function in the State.

Jammu & Kashmir State Electricity Regulatory Commission was established by the Government of Jammu & Kashmir through a notification in the Government Gazette on July 1, 2002 as per the SERC Act but the Commission started functioning only from June 23, 2004 and issued the distribution tariff regulations in April 2005. Subsequently the Commission issued guidelines for revenue and tariff filing on September 14, 2005 detailing the procedure of filing the petition.

Before the issue of tariff order the tariff remained unchanged since April 1, 1999 and the gap between revenue expenditure and revenue receipts was being met by the State Government.

After the issuance of the Regulations for tariff filings, Jammu & Kashmir Power Development Department, the deemed distribution licensee took more than two years to file its first tariff petition on November 14, 2006 which was later admitted by the Commission on December 21, 2006.

Sales / Demand

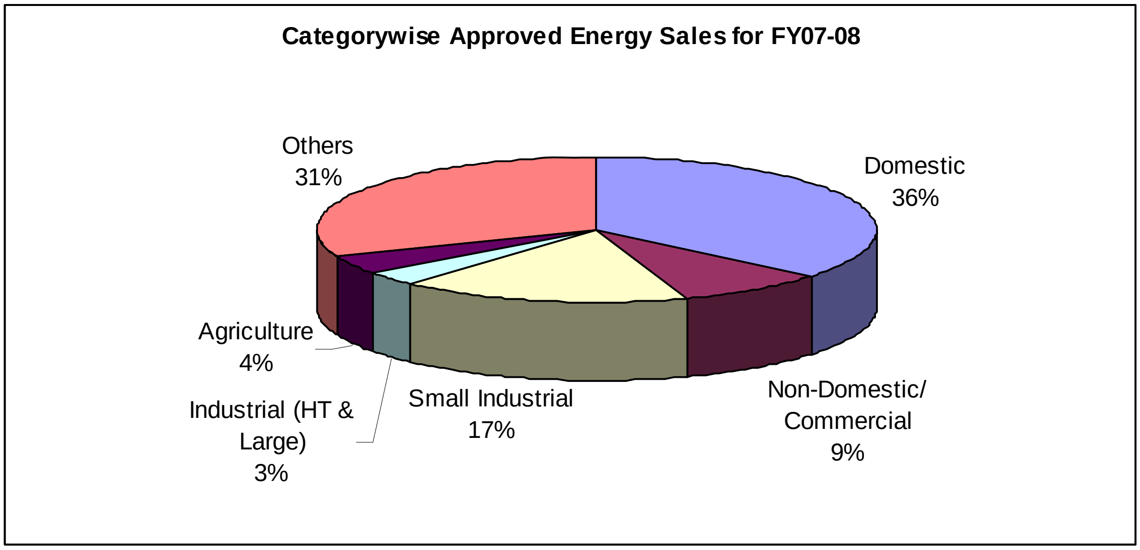
The Commission had computed CAGR on the basis of past year sales to project sales under various categories in FY 08. For the domestic category, the Commission had linked the energy sales with the level of metering in the State. The Commission has further used different scenarios (with variation in level of metering) to arrive at the optimal level of sales for domestic consumer. For SMVDT and Temporary Supply category, the Commission had projected sales based on overall annual growth rate of sales for all categories observed for the period FY 04 to FY 06 and has accordingly considered a 6.2% growth rate for approving sales.

The Commission had approved the sales for other consumer categories by considering a 2 year CAGR from FY 04 to FY 06. While approving the sales for FY 08, the Commission had also estimated the sales for FY 07 based on the same approach.

In the tariff petition for FY 09, the Commission observed that the sales data did not contain break-up of the slab-wise details for each consumer category for the purpose of application of the approved/ proposed tariff for further analysis. In the absence of such details regarding the sales data, the Commission was unable to carry out sales forecast for FY 09. The Commission directed the petitioner to submit relevant details on energy sales. The data later submitted by J&K PDD, however, had substantial variance and was not accepted by the Commission for determination of ARR for FY 09. The Commission specified that it shall approve the sales for the FY 08 and FY 09 post submission of appropriate detailed loss study report by the PDD.

Figure below illustrate the percent share of the major consumer categories in the sales during FY 08. After domestic category, the 2nd and 3rd largest consumer category has been small industrial (LT) and non domestic with a current share of about 17% and 9% respectively.

Graph A-10.1: Percent share of consumer categories in approved sales for FY 08



T&D Losses

For FY 08, the Commission had calculated the T&D losses based on the power purchase quantum projected by the utility for FY 07. Though J&K PDD had proposed the T&D loss levels for FY 05 and FY 06 as 48% and 47% respectively and proposed reduction of 2% year on year for FY 07 and FY 08, the Commission calculated the base level T&D losses based on the power purchase quantum and approved sales for FY 07. The Commission arrived at the T&D loss level of 50.7% and approved the loss reduction by further 4% based on the recommendations of the Abraham Committee. Further, the Commission had also determined the AT&C losses of the utility for FY 07, based on the approved T&D loss level and collection efficiency of 75%. For FY 08, the Commission had determined AT&C losses of 59% based on T&D loss level approved and collection efficiency of 77%. The rationale for adoption of collection efficiency of 75% and & 77% has however not been clarified by the Commission.

In the tariff order for FY 09, the Commission had not specified any T&D loss levels and energy input data in the absence of reliable and consistent sales data.

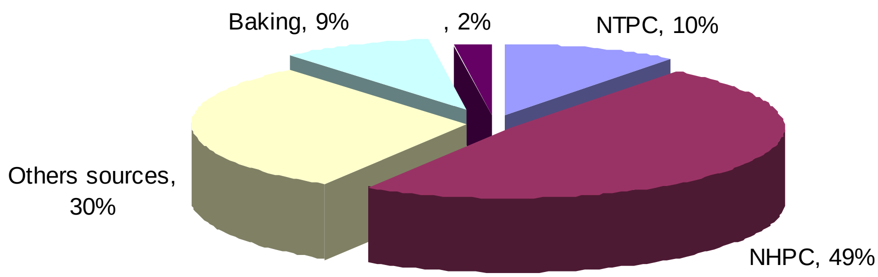
Power Purchase Quantum

For FY 08 the power purchase was approved from various sources like NTPC, NHPC, Other sources and banking.

For NTPC, the Commission had approved availability of energy based on the total generation from each station and the share allocation for the State. The Commission had considered installed capacity and PLF for plants based on the annual reports of NREB for the period FY 03 to FY 06 to estimate the generation. The PLF for the plants Commissioned after 2006 and auxiliary consumption was considered as projected by the JKPDD. The share allocation was taken as approved by the Northern Region Power Committee on February 16, 2007.

The energy availability from NHPC plants in FY 08 was estimated on the basis of actual availability in the previous years.. The energy availability from Tehri-I, Nathpa Jhakri and Tala hydro electric plants, was approved on the basis of its design energy and the share allocations decided by NRPC. Moreover, the Commission had also considered banking of 200 MUs as projected by the J&K PDD.

Graph A-10.2: Approved Breakup of Power from Various Sources for FY08



For FY 09, due to absence of inadequate data on sales and T&D losses, the Commission had approved power purchase at the same level as from the consolidated statement for the year FY 08 along with cost consideration for free power from NHPC stations

Power Purchase Cost

For FY 08, the Commission had approved cost of fuel for generation plants owned by JKPDD based on the details submitted for fuel cost in the Resource Plan for FY 08.

For the energy procured from JKPDC plants, the Commission had approved energy from the plants based on the PPA without any escalation in consideration of the fact that all the plant of JKPDC are hydroelectric and the power from HEP plants are bound to decrease with time.

The variable cost for NTPC was approved by the Commission as submitted for JKPDD for FY 07. The fixed charges corresponding to the NTPC stations was calculated on the basis of the annual fixed costs approved by CERC in the tariff orders for various plants.

Similarly, for NHPC the variable cost was approved based on the submission of JKPDD for FY 07.Due to non-submission of required information, the Commission had considered the variable cost for NTPC and NHPC as proposed by the JKPDD

The Commission considered the variable costs for other stations, based on the submissions of the Petitioner or as per CERC orders or bilateral agreements.

The Commission had also approved cost of free power from NHPC as the Commission is of the opinion that this power would also be available at a cost to JKPDD.

The Commission while approving the power purchase cost had approved short term purchases from the Unscheduled Intercharge (UI) Pool in order to bridge the demand-supply gap caused by seasonal variations in the generation pattern. The Commission had considered UI charges for FY 08, on the basis of average UI charges paid for the period FY 03 to FY 07, which was Rs. 156.37 Crs.

Commission had approved power purchase cost for FY 09 at the same level as from the consolidated statement for the year FY 08 along with cost consideration for free power from NHPC stations.

Table: Power Purchase Cost for FY 08 to FY 09

Particulars	FY 08	FY 09
Power Purchase Cost (Rs. Crs)	1,697.6	1909.18
Net Power Purchase (Mus)	7,947	8,674
Power Purchase Cost per unit (Rs./kwh)	**2.14**	**2.20**

O&M Cost

Establishment Cost

For FY 08, the Commission had approved Establishment Cost (Employee expense) as proposed by J&K PDD as it was comparable to the costs incurred by HPSEB, which caters to a similar geographical area as the State of Jammu & Kashmir.

In the Tariff order for FY 09, the Commission had accepted the increase in actual employee expenses for FY 08 considering the recruitment made by the J&K PDD and the additional D.A. For FY 09, J&KPDD had proposed the establishment cost to increase by 14.74% though the actual cost increased by 12.7 % from FY07 to FY08. The Commission had accordingly approved an increase of 10% over the actuals of FY 08. The table below summarizes the establishment cost for the J&K PDD.

Table A-10.8: Proposed, Approved and actual Establishment Cost for J&K PDD

Particulars	FY07	FY08	FY09
Proposed	201.00	215.00	273.54
Approved	NA	215.00	262.25
Actual	211.52	238.41	-
Employees Cost per unit of Energy sales (Rs./kwh)		*0.51*	*0.60*

O&M Expenses

The Commission had approved O&M separately for J&K PDD. This O&M cost does not consist of fuel cost for J&K PDD owned generating stations. The O&M cost approved by the Commission for JKPDD from FY 07 to FY 09 is tabulated in the table below:

Table A-10.9: Details of O&M Expenses for J&K PDD

Particulars	FY07	FY08	FY09

Proposed	53.50	56.50	44.22
Approved	---	36.61	44.22
Actual	28.78	43.51	

Note: The cost for Stakna hydro-electric station considered under O&M cost

The Commission, for FY 08, had approved O&M cost after considering annual inflationary increase of 6% for FY 07 and FY 08 though the two year CAGR from FY 04 to FY 06 has been 11.4%. Such an approach was adopted as the Commission assumed efficiency to improve over time.

For FY 09 the Commission had approved the O&M cost as proposed by J&K PDD. While projecting the O&M cost for FY 09, J&K PDD had considered 1.63% increase over actual O&M cost of FY 08.

Capital expenditure (Capex)

JKPDD had not submitted the capital expenditure to be incurred for FY 08 and FY 09. Therefore, the Commission had not approved capital expenditure plan in the Tariff Order for FY 08 or FY 09.

Depreciation

For FY 08 & FY 09, the Commission had applied average depreciation rate of 3.60% considering the average fair life of 25 years and a residual value of 10%. This depreciation rate was then applied on the average of opening and closing gross block to arrive at the total depreciation during the year. The Commission had adopted this methodology in absence of details on nature of assets of various categories. The table below summarizes the depreciation approved for FY 08 and FY 09.

Table A-10.10: Approved Depreciation for FY 08 and FY 09 (Rs. Crs)

Particulars	FY 08	FY 09
Opening GFA	1,905.03	1,950.80
Closing GFA	1,950.80	2,143.63
Average GFA	1,927.92	2,047.22
Depreciation Rate	**3.60%**	**3.60%**
Depreciation	69.40	73.70

Working Capital Requirement

J&K PDD had not proposed any requirement for working capital for FY 08 whereas the Commission had approved working capital requirement on normative basis. The parameter considered for determination of working capital is summarized below:

Working capital required = O&M expenses for 1 month+ Collection Inefficiency + Receivables for 1 month

The Commission had considered Interest rate of 10.25% while approving the working capital requirement.

For FY 09, neither J&K PDD had proposed Interest on working capital requirement nor had the Commission approved any such interest cost. The petitioner had stated that since it is a Government department, it does not raise working capital from banks and hence no payment of interest on working capital was projected in the ARR petition for FY 09.

Interest Expense

For FY 08, in absence of interest rate on loans from each source the Commission had calculated the applicable interest rates from FY 04 to FY 06 using the opening balance, closing balance and amount of payable interest

The Commission had calculated interest rates for FY 07 and FY 08 as the average of the interest rates prevalent in the previous three years, based on actual repayments.

The interest rates approved by the Commission for FY 07 and FY 08 for Market Borrowings, loans from LIC and loans from REC, were 11.98%, 14.61% and 11.45% respectively.

For FY 09, the Commission had approved Interest cost to be same as that approved for FY 08 since the utility had not filed the details of loan and interest payments.

Table A-10.11: Interest Cost Approved for FY 07 to FY 09

Particulars	FY 07	FY 08	FY09
Proposed Interest Cost	21.50	18.50	18.19
Approved Interest Cost	21.81	17.95	17.95
Actual Interest Cost	21.46	19.45	---
Trued-up Interest Cost	**21.81**	**17.95**	**---**

The Commission in the tariff order for FY 09 had stated that the interest expenses approved will be trued-up based on submissions by the J&KPDD in the subsequent years.

Rate of Return

The Commission has not approved any Rate of Return nor has the petitioner proposed any rate of return.

Bad Debts

The Commission has not provided any provision for bad debts for tariff computation.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for J&K PDD. The table below summarizes the proposed and approved ARR for FY 08 and FY 09.

Table A-10.12: ARR Approved & proposed for FY 08 & FY 09(Rs.Crs)

Particulars	FY 08	FY 09

Particulars	FY 08	FY 09
Proposed by the Utility	2,198	2,373.84
Approved	2,073.3	2,304.30

Average Cost of Supply vs. Realisation

The average cost of supply approved by the Commission from FY 08 to FY 09 increased by 8.39% whereas the average realistion increased by 7.30%

The Commission, for the FY 09, had computed the revenue based on the minimum realization per unit input as the J&K PDD was not able to submit the category-wise actual sales information. Considering the total energy sales approved for FY 09 and revenue computed from minimum realization per unit input, the average realization worked out to Rs.2.03/kWh for FY 09.

Table A-10.13: Average Cost of Supply Approved by JKERC

Particulars	FY 08	FY 09
Total Energy Sale (MUs)	4243	4351
Total ARR (Rs Crs)	2073	2304
Avg Cost of Supply (Rs/kwh)	**4.89**	**5.30**
Avg Realisation from Tariff (Rs/kwh)	**1.89**	**2.03**
(Gap)/ Surplus per unit	-2.99	-3.27

Subsidy Support

The Jammu & Kashmir Government has signed a tripartite memorandum of understanding (MoU) with the Ministry of Finance and the Planning Commission, Government of India in August 2006, to receive grant worth Rs 3,900 Cr. over 3 financial years (FY 07, FY 08 and FY 09). This reform grant has been linked to performance based benchmarks such as reduction in T&D losses, increase in revenue realizations, etc. It has also been linked to the filing of the Annual Revenue Requirement before the SERC and the subsequent issue of tariff orders.

In the Tariff order for FY 08, the Commission had computed the category-wise subsidy as against average cost of supply. It has been observed that the HT industrial category is also highly subsidized and is currently paying 56% of tariff as against cost of supply. The table below shows that all the consumer categories are subsidized and the state of J&K is heavily dependent on the subsidy to meet its ARR.

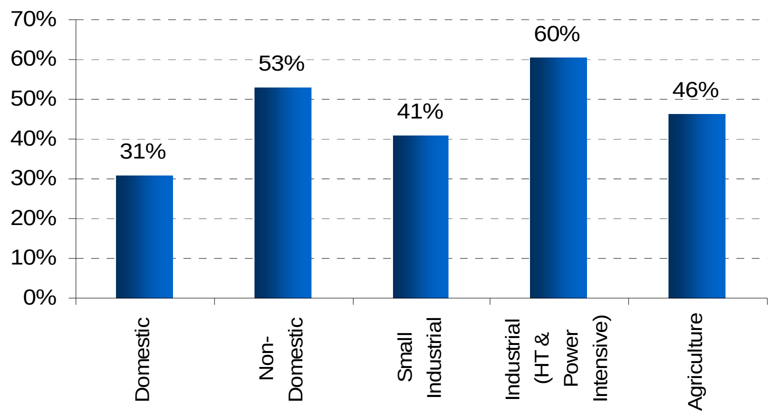
Table A-10.14: Category-wise details on Subsidy for FY 08

Particulars	Average cost of supply	Average Tariff	Subsidy	Subsidy(%)
Domestic	4.89	1.51	3.38	69.1%
Non-Domestic / Commercial	4.89	2.59	2.30	47.0%
Irrigation / Agriculture	4.89	2.26	2.63	53.7%
State/ Central Dept.	4.89	4.89	0.00	0.00%
Public Lighting	4.89	3.47	1.42	29.0%
LT Industrial	4.89	2.00	2.89	59.1%

Particulars	Average cost of supply	Average Tariff	Subsidy	Subsidy(%)
HT Industrial	4.89	2.72	2.17	44.3%
HT Industrial For Power Intensive Industries	4.89	3.49	1.40	28.6%
LT Public Water Works	4.89	3.30	1.59	32.5%
HT Public Water Works	4.89	3.64	1.25	25.5%
General Purpose Bulk Supply	4.89	3.66	1.23	25.1%
Temporary	4.89	2.46	2.43	49.7%

The Graph below shows the approved realization from consumer tariff excluding subsidy as percent of the average cost of supply for FY 08.

Graph A-10.3: Revenue realization from consumer tariff as percent of average cost of supply



Tariff Determination

Tariff order for FY 08 has been the first tariff order, and since the existing tariff structure was far from average cost of supply, the Commission had tried to align the tariff to the average cost of supply. The Commission had calculated the average cost of supply for FY 08 since details for voltage-wise cost of supply were not available. In FY 08, there was a tariff increase in all the categories, though the increase was not sufficient to meet the revenue gap for JKPDD. JKERC had approved revenue gap for both the years but has not suggested any recovery mechanism to meet the revenue gap.

Further, the Commission had introduced a two part tariff structure for HT category in FY 08 and for LT Industrial and LT Non-Domestic consumers in FY 09.

Since the Commission has not approved category-wise sale for FY 09, the Commission determined revenue from sale of power based on realization per unit input based on the previous year's realization. The realization was approved at 1.02 per unit. The revenue has accordingly been computed by multiplying realization per unit with the projected sales.

Retail Price Index

The table below shows detail annual increase in RPI verses annual increase in power purchase cost and other cost.

Particulars	2007-08	2008-09
Approved ARR	2073	2304
Approved Sales (MU)	4243	4351
Average Cost of Supply in Rs/kwh (A)	4.89	5.30
% of Power Purchase Cost in ARR	82%	83%
% of Other remaining Cost in ACS	18%	17%
% Annual Increase in Power Purchase Cost		9.67%
% Annual Increase in Other Cost		2.59%
% Annual RPI Increase	5.21%	8.67%
RPI -X (X= 2%)	3.21%	6.67%

MYT Framework

The Commission has not specified the details on implementation of MYT regime in the state in either of the Tariff Orders

A-11. Manipur and Mizoram

The Joint Electricity Regulatory Commission for the States of Manipur & Mizoram (JERC) was constituted by the Central Government under the provisions of Sub-section(5) of Section 83 of the Electricity Act, 2003 (36 of 2003) vide Govt. of India order dated 18th January, 2005 notified in the Gazette of India. The Joint Commission is a quasi-judicial body and has since been functioning as an independent Electricity Regulatory Commission. However, so far the Commission has not issued any order towards approval of ARR and tariff for state utilities.

A-12. Karnataka

A-12.1. Karnataka – State Transmission Utility

Introduction

The Government of Karnataka (GoK) initiated reform process in the power sector through a General Policy Statement issued during January 1997 followed by a detailed policy statement in 2001. The Karnataka Electricity Reforms Act (KERA) was enacted which came into effect from 01.06.1999. In terms of the said Act, the Karnataka Electricity Regulatory Commission (KERC) was established with effect from 15.11.1999.

The Karnataka Electricity Board (KEB) which was looking after generation, transmission and distribution functions of power in the state was unbundled and corporatised into a Transmission & Distribution Company called Karnataka Power Transmission Corporation Ltd (KPTCL) and a Generating company called Visvesvaraya Vidyuth Nigam Ltd (VVNL), on 01.04.2000. The Commission had issued a Bulk Supply and Retail Supply license to KPTCL under the provisions of the KER Act. Thereafter KPTCL was further unbundled into 5 independent companies effective from 01.06.2002, with one transmission company namely KPTCL and four distribution Companies.

Earlier KPTCL was responsible for the Transmission as well as the Bulk Supply business in the State. In view of the restriction imposed on transmission utility for engaging in the bulk supply business as per the provisions of the Electricity Act, 2003, the Government of Karnataka (hereinafter referred to as ‘GoK’) divested bulk supply business from KPTCL with effect from 10th June 2005.

KPTCL had filed its proposal for revision of BST and Transmission charges to cover the revenue gap for FY 05 during January 2004. However, in response to the Commission’s observations on the petition, KPTCL had filed its revised petition for FY 05 during December 2004 duly proposing revision of BST and Transmission charges. Considering a substantial period had already elapsed and the petition for FY 06 had become due, the Commission considered the petition for FY 05 along with the petition for FY 06.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 06 to FY 09 for the approval of ARR of the state transmission utility i.e. KPTCL.

Transmission Losses

The Commission on analysis computed the actual energy loss for FY 05 was less than the actual transmission losses in FY 04 due to commissioning of new transmission lines and stations, apart from better administrative measures. Thus, the Commission approved the transmission loss for FY 05 as per the actual transmission loss for FY 04. Further, considering that the reduction in transmission losses beyond a certain level was not possible, the Commission had kept the target for FY 06 at same level.

For FY 08 and FY 09, KPTCL had proposed higher transmission losses compared with the approved losses for FY 07. Since, the higher transmission loss could not be justified by KPTCL, the Commission retained the approved loss of FY 07 for approving the target loss for FY 08 and further reduced the losses marginally by 0.03% for FY 09.

Table A-12.1:Approved Transmission Losses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	4.18%	4.18%	4.06%	4.06%	4.03%
Actual/Trued-up	4.18%	4.33%	-	-	-

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 05, FY 06 and FY 07. However, the Commission revised its approach for approval of O&M expenses and approved the same on consolidated basis as per the MYT Regulations. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

For FY 05, the Commission had allowed the employee cost as per the audited figures after deducting the cost of bonus and the free or subsidized supply of electricity. The R&M and A&G expenses was also approved based on the audited accounts.

For FY 06, the Commission had approved employee cost as proposed by KPTCL after disallowing bonus and free or subsidized electricity cost and analyzing the cost components under each component of employee cost. Since investment in R&M activity would lead to improvement in the quality of the service, the R&M expenses had been approved based on the amount proposed by KPTCL. The Commission has approved a 20% increase in the actual A&G expenses for FY 05.

For FY 07, the Commission has approved the proposed employee cost, R&M and A&G expense by KPTCL. However, the Commission has disallowed bonus and free or subsidized electricity cost while approving the employee cost.

For FY 08 and FY 09, the Commission had approved the O&M cost based on the CERC norms. The Commission had sought the actual O&M cost and details of the physical asset base of KPTCL for the years FY 04 to FY 07 for designing norms for the control period. The total O&M cost from FY 04 to FY 07 was normalized for inflation and apportioned between the asset base of bays and line length in the ratio of 30:70 as adopted by the CERC. After computing the O&M cost per bay and per ckt Km for the past four years, the Commission had computed the O&M of FY 08 and FY 09 by escalating the average number of last four years by the average inflation rate (based on WPI and CPI) for FY 07. Since the average O&M cost corresponded to FY 06, the O&M cost for FY 07 was computed by escalating the FY 06 O&M cost by the average inflation rate.

Table A-12.2: Approved O&M Cost from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net O&M Cost (Rs. Crs)	198.05	255.63	257.31	250.96	264.44
Total Approved ARR (Rs. Crs)	428.40	671.80	681.46	723.73	666.96
% O&M Cost of Approved ARR	46%	38%	38%	35%	40%

Depreciation

In FY 05, the Commission had approved the depreciation as per the audited accounts (stated to be as per the rates prescribed by the Ministry of Power). For FY 06, the Commission had approved the proposed depreciation by KPTCL as the same was in line with the rates prescribed by the MoP.

However, for FY 07, KPTCL had claimed depreciation in line with the MoP specified depreciation rates which was subsequently revised to CERC specified depreciation rates as per the directive of the Commission. Therefore, the approach for approval of depreciation was revised in FY 07. But the Commission had to approve AAD to enable KPTCL to meet its debt repayment liabilities.

For FY 08 and FY 09, for computation of depreciation, the Commission had considered the assets based on the provisional accounts for FY 07 in accordance with the Electricity Act 2003 after including consumer contribution. The Commission had considered the average depreciation rate as per the MYT regulations i.e. 3.015%.

The Commission would provide depreciation, interest and return on equity on the capitalized assets during the annual performance review in accordance with the Hon'ble ATE Order. Therefore, no capitalisation has been considered for the control period. Retirement of assets as projected by KPTCL has been considered.

Table A-12.3: Approved Depreciation Cost from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net Depreciation Cost (Rs. Crs)	196.23	236.11	120.33	131.21	130.94
Total Approved ARR (Rs. Crs)	428.40	671.80	681.46	723.73	666.96
% Depreciation Cost of Approved ARR	46%	35%	18%	18%	20%

For computation of AAD, the Commission has considered the repayments for each year of the control period equal to repayment of long-term loans during FY 06 in absence of details for repayment of long-term loans during FY 07 submitted by KPTCL. For computing the repayment for FY 08 and FY 09, the Commission did not considered any repayment of loans of DISCOMs & GoK.

Interest cost

In FY 05, the Commission had approved the interest charges as proposed by KPTCL after disallowing any interest on additional capital expenditure incurred in FY 04 as KPTCL had not sought prior approval while incurring more than the approved expenditure. For FY 06, the Commission had allowed the proposed amount after disallowing the interest on power purchase cost. A similar approach has been followed for FY 07 after adjustment for disallowance of interest on account of lower capital expenditure approved for FY 07.

For FY 08 and FY 09, the Commission had determined the base year value on the basis of audited accounts available. The Commission has considered the closing balance of long term loans for FY 07 to compute the opening balance of the FY 08. For control period, the Commission has not considered any new loan. However the Commission has mentioned that the Commission would take the true up exercise during the annual performance review.

Table A-12.4: Approved Interest Cost for FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Net interest Cost (Rs. Crs)	141.08	166.43	228.89	122.59	112.04
Total Approved ARR (Rs. Crs)	428.40	671.80	681.46	723.73	666.96
Interest Cost as % of Approved ARR	33%	25%	34%	17%	17%

Interest of Working Capital

In the tariff order for FY 05 to FY 07, the Commission has not computed the working capital requirement and the interest on the working capital separately. However, it has approved the interest for unsecured loans as part of total interest cost approved for KPTCL.

For FY 08 and FY 09, the Commission had estimated the total working capital requirement in accordance with the provisions of its MYT Regulations. The Commission has considered receivables for FY 08 based on the approved ARR of FY 07 while the receivables for FY 09 are estimated on the basis of the approved ARR of FY 08.

The Commission had approved the rate of interest on working capital borrowing based on the short-term PLR of State Bank of India as on 1st April of the year.

Table A-12.5: Approved Interest on working Capital for FY 08 and FY 09

Particulars	FY 08	FY 09
Net interest Cost (Rs. Crs)	20.48	19.86
Total Approved ARR (Rs. Crs)	723.73	666.96
% Interest Cost of Approved ARR	3%	3%

Rate of Return

The Commission has uniformly for all years during FY 05 to FY 09 has adopted Return on Equity (RoE) as the parameter for allowing return on investment.

In FY 05 and FY 06, the Commission mentioned that the rate of return should not be more than 12% considering the prevailing interest rate and therefore approved a RoE of 12% on opening equity including reserves and surplus. For FY 07, the Commission had approved a R0E of 14% in line with the claim of KPTCL and CERC regulations for determination of tariff for transmission.

A similar approach was adopted during the MYT control period i.e. FY 08 and FY 09. A return of 14% on the opening equity plus reserves and surplus was approved for KPTCL. RoE for FY 08 has been carried forward to reserves for computing RoE for FY 09.

Table A-12.6: Approved Rate of Return between FY 05 and FY 09

Particulars	FY 06	FY 06	FY 07	FY 08	FY 09
Approved RoE (Rs.Crs)	99.74	107.63	95.56	138.33	157.70
Approved RoE (%)	12%	12%	14%	14%	14%

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for KPTCL. The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY 05 to FY 09.

Table A-12.7: Proposed and Approved ARR for KPTCL from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	428.40	671.80	681.46	723.73	666.96
ARR proposed by KPTCL (Rs.Crs)	640.99*	678.47	991.74	1351.63	1511.00
% Disallowance	33%	1%	31%	46%	56%

* As per audited accounts

Transmission Tariff

For FY 05 to FY 07, the Commission had approved the transmission charges on the net energy delivered at the interface points. The approved ARR was distributed equally over the energy available to the DISCOMs after deduction of approved transmission losses.

Table A-12.8: Approved Transmission Tariff from FY 05 to FY 07

Particulars	FY 05	FY 06	FY 07
Approved ARR (Rs.Crs)	428.40	671.80	681.46
Energy Available for DISCOMs (MUs)	33110	33847	36491
Approved Transmission Tariff (Paisa/KWh)	**12.94**	**19.85**	**18.68**

However, the Commission revised the methodology for approval of transmission charges in the MYT order for KPTCL. For determining the transmission charges the peak demand for the control period has been estimated based on the maximum of peak of DISCOMs for the months of February and March 2007 and an escalation of 6.58% p.a. has been applied for the control period. The growth rate of 6.58% has been determined based on CAGR of the actual system peak demand (MW) for the years FY00 to FY 07.

Accordingly, the Commission had determined the transmission charges for all long term customers (including DISCOMs and long term open access customers) for the control period, as follows:

Table A-12.9: Approved Transmission Tariff from FY 08 and FY 09

Particulars	FY 08	FY 09
Approved ARR (Rs.Crs)	723.73	666.96
Total Peak Capacity (MW) of DISCOMs*	7249	7726
Transmission Tariff (Rs./MW/Month)	83199	71939

Determination of Transmission Charges for Open Access Consumers

The Commission had planned to implement Open Access within the State in the following three stages:

- The first phase of Open Access was introduced for consumers with contracted demand of 15 MW & above and voltage level of 66 kV & above from 10th June 2005.
- The second phase of Open Access was applicable for consumers with contracted demand of 5 MW & above and voltage level of 33 kV & above from 1st April 2006.
- The third phase of Open Access was applicable for consumers with contracted demand of 3 MW & above and voltage level of 11 kV & above from 1st April 2007.

The transmission charges to be payable by long-term and short-term open access consumers were determined by the Commission in the tariff orders of KPTCL. The long-term and short-term open access consumers have to pay for the charges in cash and kind.

The transmission charges payable in cash and kind during the three phases are summarized in table below:

Table A-12.10: Monthly charges payable by Open Access Customer

	Particulars	Charges in Cash	Charges in Kind
FY 06	Long-term Open Access Consumers	Rs. 11 lakhs/MW	4.18%
	Short-term Open Access Consumers		
	Upto 6 hrs in a day in one block	0.25 * ST rate = Rs. 188/MW	4.18%
	More than 6 Hrs and upto 12 hrs in a day in one block	0.50 * ST rate = Rs. 376/MW	4.18%
	More than 12 Hrs and upto 24 hrs in a day in one block	equal to ST rate = Rs.753/MW	4.18%
FY 07	Long-term Open Access Consumers	Rs. 10.5 lakhs/MW	4.06%
	Short-term Open Access Consumers		
	Upto 6 hrs in a day in one block	0.25 * ST rate = Rs. 180/MW	4.06%
	More than 6 Hrs and upto 12 hrs in a day in one block	0.50 * ST rate = Rs. 360/MW	4.06%
	More than 12 Hrs and upto 24 hrs in a day in one block	equal to ST rate = Rs.720/MW	4.06%
FY 08	Long-term Open Access Consumers	Rs. 0.83 lakhs / MW / month	4.06%
	Short-term Open Access Consumers		
	Upto 6 hrs in a day in one block	0.25 * ST rate = Rs. 171/MW	4.06%
	More than 6 Hrs and upto 12 hrs in a day in one block	0.50 * ST rate = Rs. 342/MW	4.06%
	More than 12 Hrs and upto 24 hrs in a day in one block	equal to ST rate = Rs.684/MW	4.06%
FY 09	Long-term Open Access Consumers	Rs. 0.72 lakhs / MW / month	4.03%
	Short-term Open Access Consumers		
	Upto 6 hrs in a day in one block	0.25 * ST rate = Rs. 148/MW	4.03%
	More than 6 Hrs and upto 12 hrs in a day in one block	0.50 * ST rate = Rs. 296/MW	4.03%
	More than 12 Hrs and upto 24 hrs in a day in one block	equal to ST rate = Rs.591/MW	4.03%

A-12.2. Karnataka – Distribution Utilities

Introduction

The Government of Karnataka (GoK) initiated reform process in the power sector through a General Policy Statement issued during January 1997 followed by a detailed policy statement in 2001. The Karnataka Electricity Reforms Act (KERA) was enacted which came into effect from 1st June, 1999 under which the Karnataka Electricity Regulatory Commission (KERC) was established with effect from 15th November, 1999.

The Karnataka Electricity Board (KEB) which was looking after generation, transmission and distribution functions of power in the State was unbundled and corporatised into a Transmission & Generation Company called Karnataka Power Transmission Corporation Ltd (KPTCL) and a Generating company called Visvesvaraya Vidyuth Nigam Ltd (VVNL), on 1st April, 2000. The Commission had issued a Bulk Supply and Retail Supply license to KPTCL under the provisions of the KERA Act. Thereafter KPTCL was further unbundled into 5 independent companies effective from 1st June 2002, with one transmission company namely KPTCL and four distribution Companies namely Bangalore Electricity Supply Company Ltd (BESCOM), Mangalore Electricity Supply Company Ltd (MESCOM), Hubli Electricity Supply Company Ltd (HESCOM) and Gulbarga Electricity Supply Company Ltd (GESCOM). While KPTCL retained the functions of power purchase, transmission and bulk supply to the four Electricity Supply Companies (ESCOMs), ESCOMs were made responsible for distribution & retail supply to the consumers. In 2005, one more DISCOM namely Chamundeshwari Electricity Supply Corporation (CESC) has been established by bifurcating MESCOM.

Further in line with the provisions of the Electricity Act 2003, the responsibility for bulk power purchase and supply in Karnataka was transferred to the Distribution Companies with effect from June 2005.

Post unbundling in April 2000, KERC issued its first tariff order for KPTCL for FY01. The Commission has subsequently issued five other Tariff Orders for FY02 and FY03 (combined order for FY02 and FY03), FY 04, FY 06 and FY 07. Thereafter, the Commission had shifted from an ARR approach to Multi Year Tariff approach and issued a MYT Order for the Control Period FY 08 – FY10. In the MYT Order, the Commission has also segregated the expenses into distribution and retail supply business for facilitating open access within the State. The various cost parameters have been segregated into two major categories:

- Costs ‘that predominantly’ belong to a particular business
- Common costs which need to be allocated or apportioned based on the apportionment rule or a cost driver

The Commission has approved the segregation and allocation of various cost parameters as proposed by the DISCOMs and has directed the DISCOMs to allocate the expenses by the beginning of the second year of the first control period more accurately.

For FY 05, all the DISCOMs filed their petition in January 2004 showing a revenue gap for FY 05. However, treatment for the revenue gap and necessary tariff proposal was not file along with the petition in view of a court case filed by the DISCOMs against the

Commission for disallowance before the Hon'ble High Court of Karnataka. After several reminders by the Commission for filing the tariff proposal and necessary treatment for meeting the gap, the DISCOMs submitted the tariff filing to bridge the gap would be made based on the outcome of the order of the High Court. Considering the repeated directives, the DISCOMs proposed to fill the gap through Government subsidy. However, in absence of any commitment letter from the Government for providing subsidy for the revenue gap, the Commission rejected the ARRs of the DISCOMs for FY 05. The GoK later indicated to bridge the major portion of the revenue gap of the DISCOMs.

During the period, the Commission had taken up true-up for the period FY03 to FY 06 while issuing MYT order for FY 08 to FY10. For FY 05, the Commission had allowed all the cost as per the audited accounts excluding bonus/ex-grata, cost of free/ subsidized power to the employees and provision for bad debts. As per the accounts, the surplus or deficit had been carried forward.

The approach followed by the Commission while approving the tariff order for the ESCOMS has been discussed in the following section:

Sales / Demand

The Commission had categorized the consumer under two category i.e. metered consumers and un-metered consumers. These two categories have been further subdivided into number of categories based on the nature of their consumption. Metered Category consists of Domestic, LT and HT Commercial, LT and HT Industry, LT and HT Water Supply, HT Irrigation and HT Residential consumers. The unmetered category consists of consumers categorized under of Kutir Jyoti, LT Irrigation Pump sets and LT Street Lights.

The Commission has been estimating the sales to various metered categories of consumers based on the CAGR for short-term (2 years) to medium-term (5 years), claim of the DISCOMs and previous year growth rates. However, for estimation of the sales to non-metered category of consumers, the Commission has considered the number of installation and their average consumption level of past years.

The detailed approach for the estimation of sales for the unmetered consumer categories is as follows:

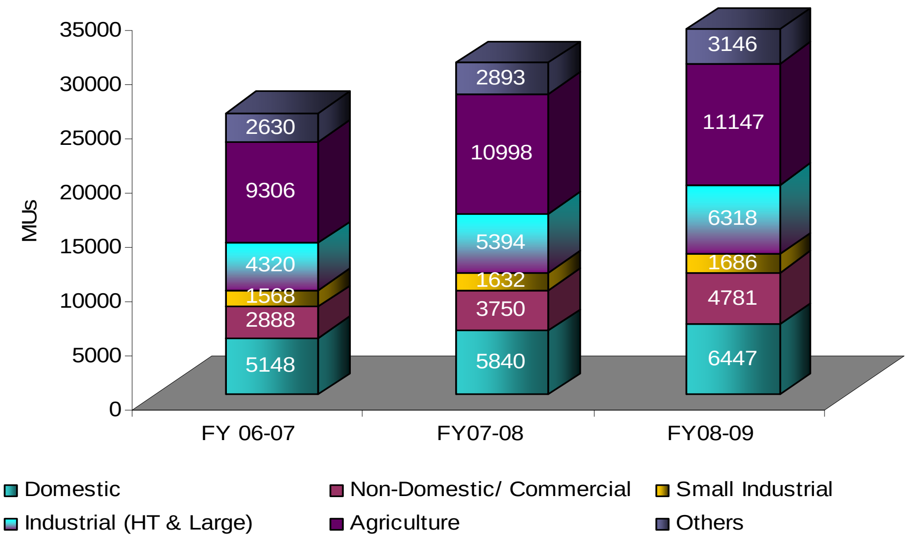
For FY 06, the Commission had approved the sales to unmetered consumers based on the current and projected mid year installations, which in turn were based on past trends and policy measures taken by the GoK, and appropriate consumption level under each consumer category. For Kutir Jyoti, irrigation Pump Sets and LT streets, the Commission had assumed the consumption of 18, 560 and 360 units per month respectively. However, the rationale for the assumed consumption level was not elaborated in the tariff order.

For FY 07, the Commission estimated the sales based on the projected installation during the year and estimated energy sold to each category. The number of installation had been estimated based on government policy and estimation made by the DISCOMs. Estimation for sales to each category of consumer was computed considering the sample study conducted by the DISCOMs. Since the Commission had directed to regularize all the irrigation sets in earlier order, sales to unauthorized irrigation sets was disallowed by the Commission.

Under the MYT regime i.e. during FY 08 to FY10, the Commission had approved the sale based on the CAGR for growth of installations & energy consumption. The sales was adjusted for number of factors like population, Government policies, number of hours of supply, target set, TERI report and sales proposed by the DISCOMs.

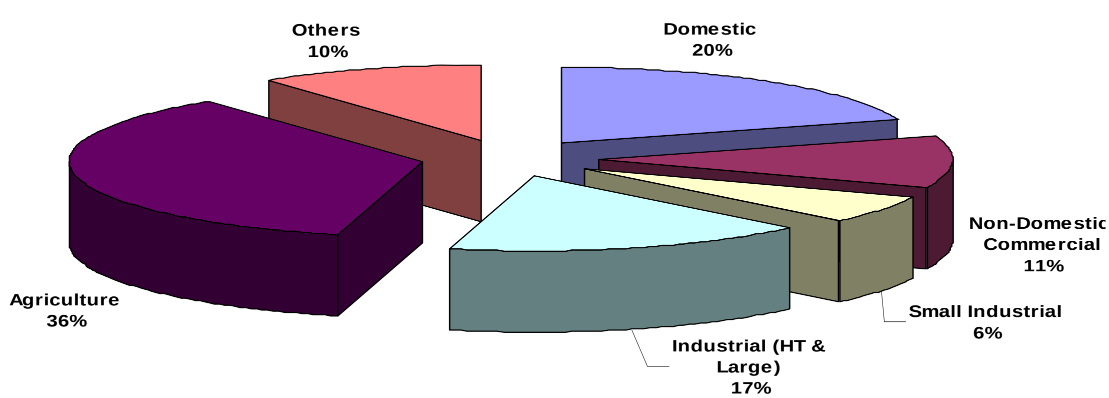
As is clear from the graph below, the Agriculture category forms the major chunk of consumers in the overall consumer mix in the State of Karnataka. The absolute quantum of sales to agriculture consumers has seen an increase at a CAGR of 9%, having grown from 9,306 MUs in FY 07 to 11,147 MUs in FY 09. During the period, the total approved energy sales by the Commission have increased at a CAGR of 14%.

Graph A-12.1: Share of consumer categories in approved sales and the trend from FY 2007 to FY 2009

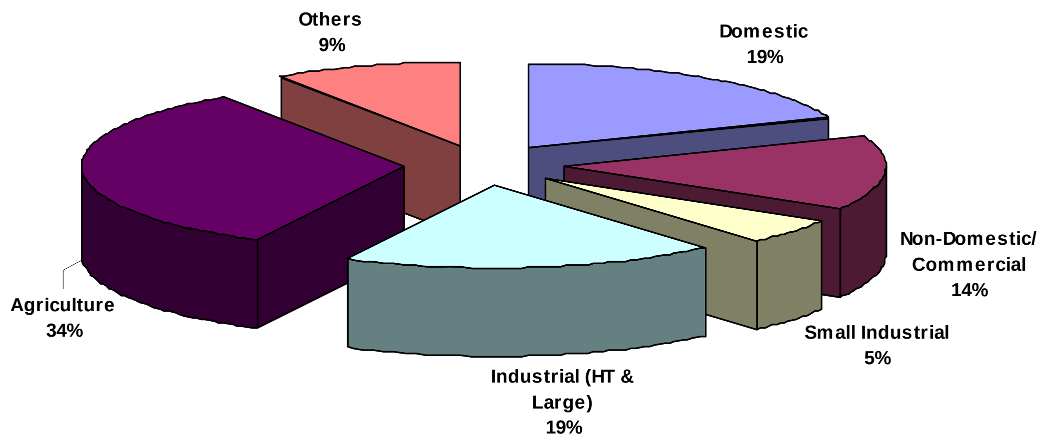


The graphs below illustrate the percent share of the major consumer categories in FY 07 and FY 09. Sales to agriculture category forms the highest share followed by domestic and industrial (HT & large) consumers. The demand from the non-domestic consumer has shown the steepest increase from 11% in FY 07 to 14% in FY 09.

Graph A-12.2: Percent share of consumer categories in approved sales for FY 07



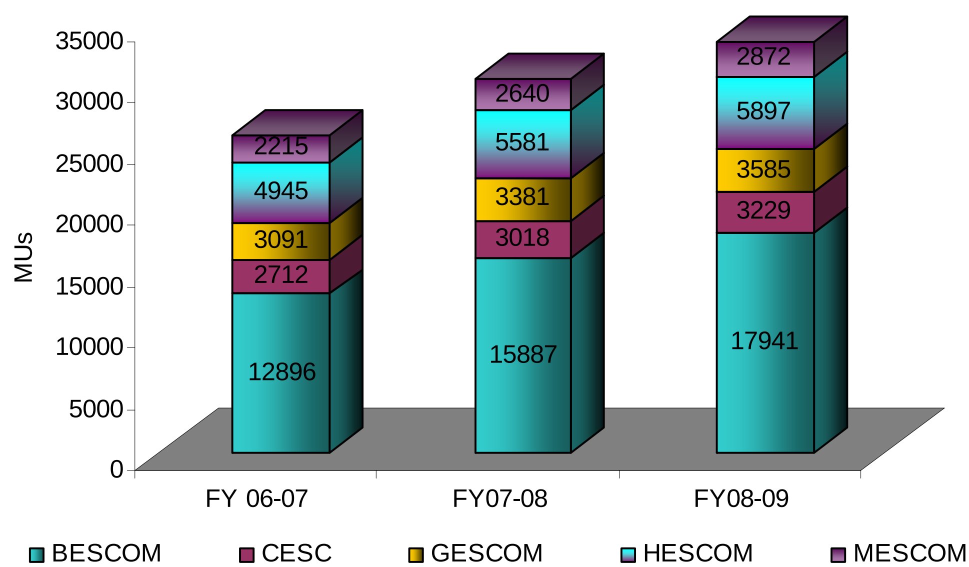
Graph A-12.3: Percent share of consumer categories in approved sales for FY 09



It can however be seen that the consumer mix has not changed significantly from FY 07 to FY 09 except for a proportionate increase and decrease in the percent share of consumer categories. The share of agriculture, small industries, domestic and other consumer categories has declined whereas the non-domestic and large industrial sales have increased during the corresponding period.

The graph below shows the allocation of energy sales in Karnataka among the DISCOMs. Approved sales for BESCOM has the maximum share (approx 50%) in the total approved sales for Karnataka followed by HESCOM and GESCOM, respectively. The approved energy sales have increased by around 14% during FY 07 to FY 09. Since the share of BESCOM in total energy sales has shown an increase from 50% in FY 07 to 53.5% in FY 09, the sales allocation to other DISCOMs has declined during the period.

Graph A-12.4: Sales allocation between the DISCOMs from FY 05 to FY 09



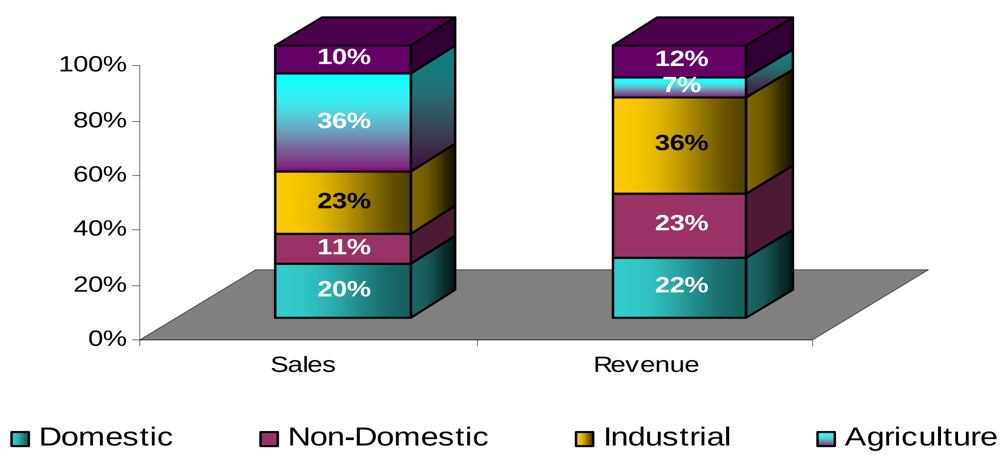
A comparison between the share in absolute energy sales of different consumer categories in Karnataka and their corresponding revenue contribution for FY 07 and FY 08 is shown in table 1 below.

Table A-12.11: Category wise share in energy sales vis-à-vis revenue contribution

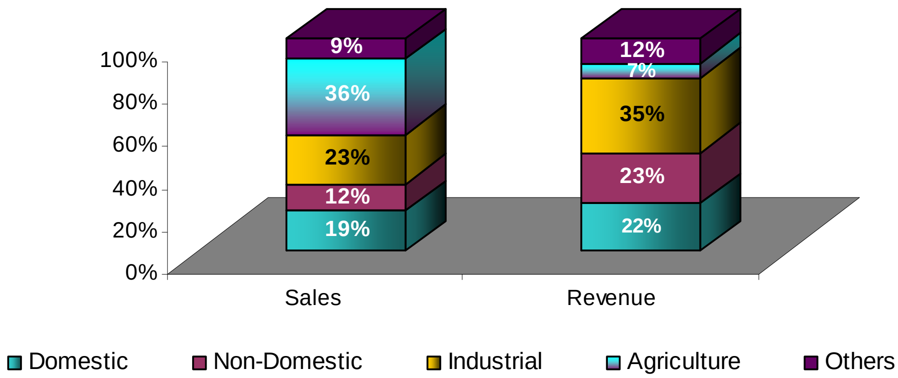
Categories	FY 07		FY 08	
	Sales (MUs)	Revenue (Rs. Crs)	Sales (MUs)	Revenue (Rs.Crs)
Domestic	5148	1715.37	5840	1921.93
Non-Domestic/ Commercial	2888	1761.22	3750	2007.83
Industrial	5887	2734.34	7026	3008.75
Agriculture	9306	552.65	10998	622.87
Others	2630	902.89	2893	991.12
Total	**25859**	**7666.48**	**30507**	**8552.5**

It is observed that the industrial consumers which account for just about 23% of total quantum of energy sales contributed more than 35% in the overall revenue realization for FY 07. The 23% contribution in overall revenue from the non-domestic category is also significant considering the sales contribution of 11%. On the contrary, agriculture category which consumes about 36% of total energy sales contribute about 7% to the total revenue realized in Karnataka considering the tariff for agricultural consumers are highly subsidized.

Graph A-12.5: Percent share of each consumer category in energy sales vs contribution to revenue in FY 07



Graph A-12.6: Percent share of each consumer category in energy sales versus contribution to revenue in FY 08



Such disproportion between energy consumed and revenue contributed indicates clear prevalence of cross-subsidy in the state whereby the agricultural consumers to a large extent are cross-subsidized by non-domestic and industrial consumer categories and subsidy available from GoK.

Distribution Losses

For FY 06 & FY 07, the Commission had approved the distribution loss for each of the DISCOM based on the distribution losses for previous year and loss reduction roadmap for the State furnished by the Commission to CEA. Moreover, the Commission had also denied consumption by unauthorized consumers in the FY 07 tariff order and accordingly consumption by unauthorized consumers was considered as distribution loss.

While reviewing the distribution loss levels for the previous year, the Commission has also analyzed the actual loss levels for towns/cities and the areas excluding town/cities. The Commission had directed the DISCOMs to reduce the loss levels in the 46 towns/cities (in the entire State) to less than 15%. However, after analyzing the higher loss levels in towns/cities, the Commission has repeatedly directed the DISCOMs to reduce loss levels in Towns and Cities to 15% and below.

For FY 08, the DISCOMs were required to file a trajectory of the loss levels in respect of technical and commercial losses for each year of the control period, backed up by proper studies to justify the loss levels indicated. However, the DISCOMs failed to comply with the Regulations. Further, the DISCOMs did not submit circle-wise energy loss at different voltage levels. In absence of the information required for setting the distribution loss trajectory, the Commission analyzed the actual distribution loss levels achieved by each DISCOMs in the past year both on a aggregate basis as well as losses in towns/cities and areas other than towns/cities. Subsequently, a baseline loss level was determined for each DISCOM and based on the roadmap furnished to CEA for the loss reduction in the State, LT loss level as recommended by TERI and proposed investment, the Commission has fixed a loss reduction trajectory for each of the DISCOM for the control period.

In the MYT order, the Commission has also stipulated mechanism for sharing of incentive as follows:

- In case the actual distribution loss is less than the approved loss level, such savings shall be shared between the distribution licensee and the consumers in the ratio of 70:30 during the first Control Period and in the ratio as may be decided by the Commission in the subsequent Control periods
- In case the actual distribution loss exceeds the normative loss level approved by the Commission, such excess loss shall be to the account of the Distribution Licensee.

However, FY 08 being the first year of operation under MYT framework, the Commission decided not to impose any penalty or allow incentive on account of under/over achievement of distribution loss.

The table below shows the AT&C loss level approved by the Commission as against AT&C loss level proposed by the utility.

Table A-12.12: Distribution Loss Levels proposed and approved for each DISCOMs during FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM				
Approved in the Tariff Order	21.00%	20.50%	21.35%	20.40%
Proposed by the Utility	-	22.17%	24.41%	23.50%
CESC				
Approved in the Tariff Order	25.03%	22.00%	24.10%	23.10%
Proposed by the Utility	-	23.06%	25.85%	23.79%
GESCOM				
Approved in the Tariff Order	27.05%	27.05%	31.00%	30.50%
Proposed by the Utility	-	28.21%	32.26%	31.00%
HESCOM				
Approved in the Tariff Order	26.37%	25.00%	25.00%	24.00%
Proposed by the Utility	-	25.51%	27.51%	26.51%
MESCOM				
Approved in the Tariff Order	15.36%	15.00%	16.15%	16.05%
Proposed by the Utility	-	15.00%	16.14%	16.04%

Power Purchase Quantum

The Major sources of power Purchase for the Karnataka DISCOMs are State Generating Stations (VVNL), KPCL, Central Generating Stations, Independent power producers (IPP), bilateral arrangements and others.

In FY 06, in terms of Section 39(1) of EA 2003, KPTCL was barred from trading in electricity with effect from 10.06.2005. Therefore, GoK vide order dated 10.05.2005 had notified the DISCOMs to undertake purchase of power from various generating companies from 10.06.2005 onwards and the existing PPAs of KPTCL were assigned to the DISCOMs in proportion of the energy consumption during FY 05. However, the renewable energy projects were assigned to the DISCOMs based on the geographical location of the projects.

For FY 06, the availability of the energy from KPCL (Hydro) plants had been estimated based on the actual generation from April 2005 to August 2005 and projected availability for the balance period duly considering the prevailing reservoir levels as at the end of August 2005. The energy availability from KPCL (Wind Farm) had been approved as proposed by the DISCOMs. Energy Availability from KPCL (Thermal) plants and VVNL were approved based on the revised estimate from KPTCL considering actual generation upto August 2005 and anticipated generation for the balance period.

Power availability from Central Generating Stations, IPPs and non conventional energy had been approved as proposed by the petitioner.

In FY 07, the power purchase requirement for each of the DISCOMs was estimated based on the approved energy sales and transmission and distribution losses. The Commission had approved the power purchase as estimated by the DISCOMs along with few disallowances. The methodology considered for approval of power purchase quantum for FY 07 is summarized below :

- The availability from the Central generating stations had been estimated based on the latest CERC orders.
- The availability from KPCL and State generating stations (VVNL) were estimated based on the latest power position including the availability of hydel and thermal power from KPCL owned generating stations as furnished by KPCL and VVNL after taking into account the delay in commissioning of BTPS.
- As per the approved intra-state transmission loss of 4.06%.
- 10% of the total energy requirement has been considered from renewable sources.
- Energy available from UI as proposed by DISCOMs has been disallowed considering that UI is not a scheduled source and arise due to variations from the day ahead schedules.
- Disallowance based on merit order dispatch

While approving the estimated power purchase quantum, the Commission had disallowed the power purchase through UI and said that it will be taken up while truing up.

For FY 08 and FY 09, the availability of the power from KPCL plants (Hydel and thermal) had been obtained from the KPCL. Based on the energy generation estimates and the power allocation as per the GoK's allocation, the availability to the DISCOMs from State Generating Stations had been determined.

In respect of CGS, the Commission had taken the projections filed by the DISCOMs. In respect of major IPPs, the energy availability had been worked out by considering the actual energy drawn from the respective sources during the months from April 07 to July 07 and allocation of power from these stations as per GoK notification.

In respect of drawal of power under UI and Bi-lateral trading, the actual energy drawn and costs from these sources during the months from April 07 to July 07 as furnished by PCKL was considered and are apportioned to each of the DISCOMs based on GoK allocation for FY 08.

The Commission, while applying the merit order dispatch to arrive at the source-wise availability of energy, had not considered the energy generated from the following stations for the following reasons

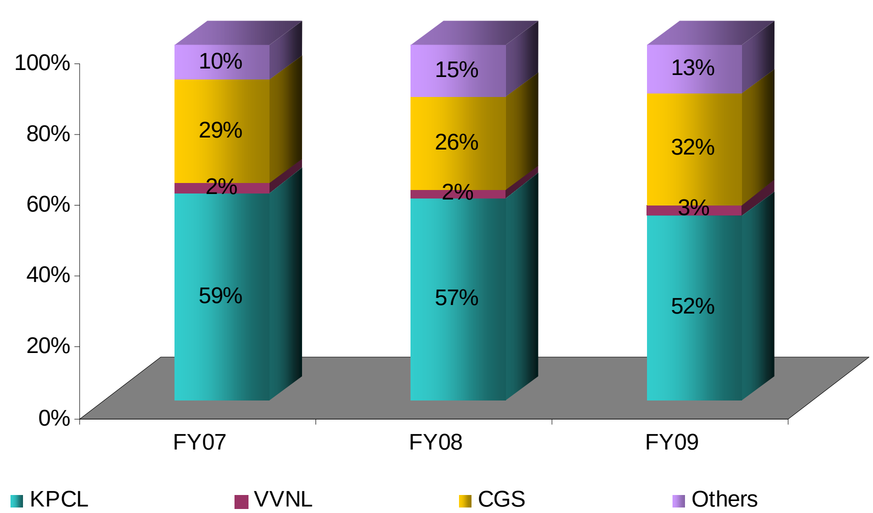
- Tail-Race Projects: Gerusoppa STRP, Kadra and Kodasalli, Bhadra RBC are tail-race projects of Sharavathi/ Nagjhari /Bhadra Generating Stations which are dependent on discharge from the main stations.
- Almatti: This project is a multi-purpose project and the generation depends on the irrigation requirements.
- Nuclear Stations of CGS: Nuclear stations are must run stations
- VVNL Yelahanka Diesel Plant as generation from this plant helps in improving voltage conditions in and around Bangalore.
- NCE Sources (Quantum of energy restricted to 10% of total energy requirement of the year as per prevailing Regulations)

Table A-12.13: Approved Power Purchase Quantum from Various Sources

Sources	FY 07	FY 08	FY 09
KPCL	20213.2	23132.8	22937.5
VVNL	862.5	902.4	1305.3
CGS	10152.2	10578.8	13903.2
Others	3310.2	5938.1	5872.0
TOTAL	**34538.1**	**40552.0**	**44018.0**

The graph below shows the power purchase mix from different sources for the State of Karnataka during the period FY 07 to FY 09. Majority of the power requirement for the State of Karnataka is met through the State generating plants of Karnataka Power Corporation Ltd (KPCL) which account for more than 50% of the total requirement.

Graph A-12.7: Power purchase Mix for the State of Karnataka during the period FY 07 to FY 09.



Power Purchase Cost

As mentioned earlier, the DISCOMs are purchasing power from State Generating Stations (VVNL), KPCL, Central Generating Stations, Independent power producers (IPP), bilateral arrangements and others sources. Considering that BESCOM and MESCOM had favorable consumer mix, the GoK had allocated costlier energy to BESCOM and MESCOM at the time of allocation of PPAs.

For FY 07, the Commission had approved the power purchase cost projected by SPPCC (a power purchase coordinating company) after disallowing the cost of power from the sources disallowed by the Commission while estimating the power availability from various sources. The power purchase cost was estimated considering the actual cost of energy drawl up to the end of August 2006 and estimates for the remaining period. The SPPCC projected the fixed cost of power available from CGS and PGCIL based on the CERC orders. In respect of variable cost and FPA, the average cost for the period from April 06 to August 06 had been considered. The approach followed by the petitioner for estimating the cost of power from other sources was not elaborated in the Tariff Order.

For FY 08 and FY 09 i.e. for MYT regime, while computing the power purchase cost for the DISCOMs, the Commission has separately computed the fixed charges and variable charges. The fixed cost was computed as proposed by the DISCOMs. The Commission had approved the variable charges after considering the inflation rates and source wise variable charges filed by DISCOMs. For VVNL hydel and diesel generating stations, a 5% escalation over the prevailing rates in October 2005 had been considered. The Commission has considered the existing tariffs for the NTPC plants and provided for an appropriate escalation on the same. For new plants like BTPS, the cost was considered as per the draft PPA. In respect of other generating stations, the existing tariff was considered. For Bi-lateral/Short-term requirement trading, a rate of Rs. 3 per unit was considered as proposed by the DISCOMs. In addition the Commission had allowed Rs 3 Crs each year towards SLDC charges and approved transmission charges as determined in the MYT order for KPTCL. The Commission has not project any power purchase and sales under UI in the Tariff Orders for FY 09.

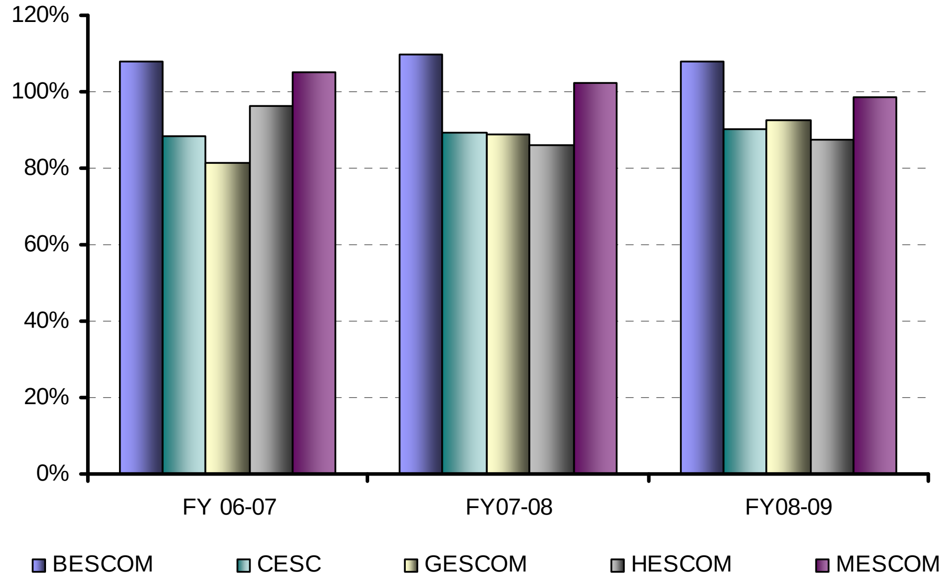
The table below shows the average cost of power purchase per unit for each of the DISCOMs and the average cost of power purchase per unit in the State of Karnataka during the period FY 06 to FY 09.

Table A-12.14: Approved Per Unit Cost of power Purchase (Rs/KWh)

DISCOMs	FY 07	FY 08	FY 09
BESCOM	2.13	2.27	2.50
CESC	1.74	1.86	2.08
GESCOM	1.60	1.84	2.13
HESCOM	1.90	1.78	2.03
MESCOM	2.08	2.12	2.28
Average for the State	**1.97**	**2.07**	**2.31**

The Graph below shows the approved average cost of power purchase for each of the DISCOMs as percentage of the average cost of power purchase for the State of Karnataka during the period FY 06 to FY 09.

Graph A-12.8: Approved Power Purchase as percentage of average rate for the State of Karnataka (Rs. Per Kwh)



It is observed that through out the period FY 07 to FY 09, BESCOM and MESCOM have been allocated costlier sources of power as compared with other DISCOMs. The per unit purchase cost for MESCOM was higher than the average per unit cost of power purchase for the state in FY 07 and FY 08. However, the approved cost of power purchase during FY 09 was slightly lower than the average cost for the State.

The differential allocation of PPA amongst the DISCOMs was primarily due to the favourable consumer mix in the distribution area of BESCOM and MESCOM . The table below shows the approved power purchase cost for each of the DISCOMs during the period FY 06 to FY 09.

Table A-12.15: Approved Net Power Purchase Cost* for DISCOMs (MUs)

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM	3418.17	3604.86	4708.22	5764.18
CESC	759.81	631.88	748.25	886.98
GESCOM	1008.87	708.36	889.16	1084.59
HESCOM	1439.75	1304.19	1381.03	1637.65
MESCOM	642.12	563.75	686.91	801.85
TOTAL	7268.72	**6813.04**	**8413.57**	**10175.25**

**including transmission cost*

O&M Cost

The Commission had approved each component of O&M expenses separately for FY 06 and FY 07. However in FY 08, the Commission had adopted MYT framework for control period FY 08 to FY10 and approved the O&M expenses on consolidated basis.

During FY 06, the approach followed by the Commission has been discussed below:

The Commission had approved the claim of the DISCOMs for R&M expenses based on the view that prudent R&M expenses would result in reduction in number of interruptions and failure rates of transformers.

For Employee expenses, the Commission had allowed all the expenses claimed by the petitioner excluding the bonus and cost of free/subsidized electricity.

Since the claims made by the DISCOMs were considered to be reasonable, the Commission had approved A&G expenses as proposed by the DISCOMs.

O&M expenses for FY 07 was approved considering the following:

While approving the R&M expenses for the DISCOMs, the Commission had segregated the cost under two components i.e. R&M of transformers and R&M of lines and cable networks. The R&M expenditure was approved by the Commission considering the large network and the vintage of the transformers and lines.

For FY 07, the DISCOMs proposed the employee cost including arrears for past years on account of pay revisions. The Commission was of the view that DA allowed to the employees takes care of the inflation in any year, so any pay revision should be compensated by employee productivity and therefore, disallowed the arrears for past period on account of pay revision. Therefore, the Commission had considered revision only FY 07 for approving the employee cost. Other components of the employee cost were approved as claimed by the utilities except for Bonus and free electricity.

For A&G Expenses, the Commission had sought detailed explanation for increase in expenses claimed for FY 07 and had allowed the same after prudence check.

For FY 08 & FY 09, the MYT framework was applicable and the O&M expenses were approved on a consolidated basis.

For FY 08 and FY 09, the Commission had considered the weighted average rate of CPI and WPI for computing the average inflation rate. Since CPI (Industrial Workers) represents the inflationary pressure for increase for employee expenses and WPI represents the inflationary increase for A&G and R&M expenses, the Commission had considered 70% weightage for CPI and 30% weightage for WPI. Based on the actual CPI and WPI for FY 07, the inflation factor was computed at 5.37%. The Commission had used this inflations factor for projecting O&M cost for the control period. Further, in addition to the increase in O&M expense on account of inflation, the Commission had also considered an increase in O&M expenses due to the growth in business (based on increase in consumer numbers) and a reduction on account of gains due to efficiency factor.

The Commission has prescribed the following formula for computation of O&M expenses for each year of the control period:

$$\textbf{O\&M Cost}_{t} = \textbf{O\&M Cost}_{t-1} * \textbf{(1 + WII + CGI – X)}$$

Where,

'O&M Cost $_t$' is the normative O&M cost aproved by the Commission for the fianncial year t

'WII' is the weighted inflation index of CPI and WPI based on the contribution of employee cost, R&M and A&G towards the total O&M cost

'CGI' is the Consumer growth index, which is linked to increase (CAGR) in no of consumers from FY03 to FY 07 which is 5.47%

'X' is the efficiency factor

The total O&M expense approved by the Commission in each of the Tariff Order is summarized below:

Table A-12.16: Approved O&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM	347.4	406.8	402.2	441.8
CESC	109.0	129.6	168.6	192.8
GESCOM	137.9	136.6	144.6	154.7
HESCOM	207.2	256.9	231.8	246.6
MESCOM	107.6	126.3	121.6	131.3
TOTAL O&M Approved	**909.1**	**1056.1**	**1068.8**	**1167.1**
O&M cost per unit of energy sold (Rs / KWh)	0.36	0.41	0.35	0.34

The tables above shows that the O&M cost per unit of energy sold has decreased over the period of time.

Capital expenditure (Capex)

In FY 06, the Commission found some discrepancies while analyzing the capital investment program and same was communicated to the DISCOMs. Subsequently, the DISCOMs provided the scheme-wise allocation of the capital investment program for the year. The Commission approved the capital investment program based on the scheme-wise detail provided by the DISCOMs. Moreover the Commission also directed the DISCOMs to furnish the scheme reports of all works including APDRP works costing more than Rs.1 Crs for the approval of the Commission.

In FY 07, the Commission had allowed the amount claimed by the DISCOMs as per the judgment of the Appellate Tribunal. The Commission also clarified that the approved amount will be subjected to the following as per Hon'ble ATE's judgment.

- Interest and finance charges on loans to be borrowed during the year FY 07 for the proposed investment would not be approved unless the actual amount invested is submitted.
- DISCOMs shall furnish complete details of investment proposed on completion of the works giving the actual expenditure, cost benefit analysis of each of the works, whether the asset is put to use etc. Also, complete details of the investments made during FY 07 would be submitted in the subsequent ARR filing i.e. FY 08.

- As observed by the Hon'ble ATE in its judgment, the Commission will undertake a prudent check and if deemed fit will allow the claim on the return on investment, interest on the capital expenditure and depreciation on the investments actually incurred by DISCOM in FY 07 in the subsequent ARR.

In subsequent years, the Tariff Order came under MYT framework under which the DISCOMs had filed a perspective plan for a period of five years commencing from FY 08. The Commission had approved capex as proposed by the DISCOMs for the MYT Control period.

<u>Asset Capitalization</u>

The capitalization has been considered in the subsequent ARR based on the analysis of the details of investment submitted by the DISCOMs.

Depreciation

For FY 06, the Commission had allowed depreciation amount as claimed by the DISCOMs as it was based on the rates prescribed by the GoI notification of 1994. However, the depreciation amount for FY 07 was approved based on the rates prescribed by the Commission on the opening balances of gross fixed assets at the beginning of the year.

However in FY 08 and FY 09, the depreciation had been allowed based on KERC MYT tariff regulation. The Commission had taken different approaches for different DISCOMs.

For BESCOM, the Commission had allowed weighted average depreciation rate of 3% for the computation of depreciation as the break up of asset as furnished by BESCOM was not comparable with depreciation schedule enclosed to the MTY Regulation.

For CESC and MESCOM, it had been allowed based on the weighted average rate of depreciation as per the audited accounts of FY 07.

For GESCOM, it had been approved based on the rate under KERC's MYT Regulation.

For HESCOM, the Commission had allowed the depreciation rate as per the depreciation rate claimed by the petitioner.

The Commission had considered the closing value of FY 07 as per the audited books of account as the opening GFA for FY 08. Therefore, the depreciation amount has been computed based on the approved weighted average depreciation rate and the opening GFA of FY 08. The opening value of GFA of FY 09 had been considered based on the additions proposed by the DISCOMs. Since additions during the year had been approved as proposed by the DISCOMs, the Commission will true up the same based on actual additions.

Moreover, the Commission had directed petitioners to furnish the computation of depreciation in accordance with the MYT regulations duly indicating the asset classification as per depreciation schedule of MYT regulations during the annual performance review.

Table A-12.17: Approved Depreciation Expenses of DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Total Depreciation				
BESCOM	122.72	48.92	92.33	109.92
CESC	41.29	19.49	30.41	38.68
GESCOM	40.32	20.20	43.91	65.16
HESCOM	98.10	53.46	133.74	172.30
MESCOM	41.69	18.13	28.05	35.88
Depreciation Rate				
BESCOM		-	3.00%	3.00%
CESC		-	3.55%	3.55%
GESCOM		-	3.60%	3.60%
HESCOM	-	-	6.51%	6.51%
MESCOM		-	3.25%	3.25%

Since the deprecation approved in the Tariff Orders of FY 06 and FY 07 were as per the depreciation rates approved by GoI notified rates, no AAD was applicable. However in FY 08 and FY 09, the Commission had allowed AAD in accordance with the KERC MYT Regulations. In accordance with the regulation, the Commission had allowed the AAD based on the difference between proposed repayments (excluding new loans) by the petitioner and depreciation allowed by the commission.

The table below summarizes the amount of depreciation allowed by the commission, the amount of loan repayment proposed by the Commission and approved Advance Against Depreciation during the MYT period.

Table A-12.18: Approved AAD to the various DISCOMs

Particulars	FY 08			FY 09		
	Depreciation Allowed	Loan Repayments claimed	AAD Allowed	Depreciation Allowed	Loan Repayments claimed	AAD Allowed
BESCOM	92.33	97.00	4.67	109.92	75.80	0.00
CESC	30.41	27.46	0.00	39.68	57.86	19.18
GESCOM	43.91	142.29	98.38	65.16	133.68	68.52
HESCOM	133.74	117.38	0.00	172.3	169.77	0.00
MESCOM	28.05	42.70	14.65	35.88	50.83	14.95

Working Capital Requirement

In the tariff order for FY 06 and FY 07, the Commission has not computed the working capital requirement and the interest on the working capital separately. However, it has approved the interest for unsecured loans as part of total interest cost approved for each DISCOMs. With the MYT framework in place for FY 08 and FY 09, the Commission had computed the requirement of working capital in accordance with the provisions of KERC's

MYT Regulation. The following parameters were considered for computing the working capital requirement for each DISCOM:

- One month's O&M Expenses
- Stores, Materials and supplies as 1% of the opening GFA and
- Two months of receivable (based on the approved ARR of previous year)

Interest on working capital requirement had been approved @11.5% based on the short term PLR of SBI on 1st of April of the year.

Table A-12.19: Approved Interest on Working Capital of DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM	-	-	87.03	101.95
CESC	-	-	22.88	22.44
GESCOM	-	-	25.37	27.79
HESCOM	-	-	37.04	42.25
MESCOM	-	-	18.93	20.11
Approved Interest Rate	**NA**	**NA**	**11.50%**	**11.50%**

Interest Expense

The Commission had approved interest cost on existing loans, however under the MYT period, the Commission had also allowed interest on new loans as well.

The Commission had approved the interest cost for FY 06 considering the amount proposed by the DISCOMs after undertaking a scheme-wise analysis. Interest cost on disallowed loans has been adjusted while approving the interest cost.

In FY 07, the Commission had done a source-wise analysis while approving the interest on loan for the utilities. The Commission had approved the proposed interest cost based on the source-wise details. Interest on new loans was disallowed by the Commission as the same would be considered in the ARR of subsequent year based on the capitalized assets and actual investments. Moreover, interest on payment of power purchase bills for past period was also disallowed. The Commission had approved the interest on security deposits @6% as per KERC (Interest on Security Deposit) Regulations.

For the control Period i.e. from FY 08 to FY10, the Commission has allowed interest on new loans on the proposed capital investment and the normative debt amount of 70% in accordance with the order of the Hon'ble ATE. The Commission had computed interest on existing loan based on the outstanding amount as per the audited balance sheet of the DISCOMs. Interest rate approved on the approved debt has been considered based on the average interest rate for the past year.

Apart from this, the Commission had also allowed interest on consumer deposits and other financial charges. The growth in the amount of consumer deposit for the ensuing years was estimated based on the CAGR of last three years.

The table below shows the amount of interest on loan approved by the Commission to each of the DISCOMs during the period FY 06 to FY 09.

Table A-12.20: Interest Cost Approved for DISCOMs (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM	66.30	125.09	174.91	229.73
CESC	16.70	31.98	43.67	64.79
GESCOM	33.93	20.41	65.62	116.69
HESCOM	42.88	57.44	129.73	176.00
MESCOM	16.70	41.06	35.46	46.76
Total	176.51	**275.98**	**449.39**	**633.97**

Rate of Return

The approach followed by the Commission for approving the reasonable rate of return to the DISCOMs has remained consistent during the period FY 06 to FY 09. Return on equity has been provided to the DISCOMs for determining the reasonable rate of return. In FY 06, the Commission had allowed a return of 12% on the opening equity including reserves.

In FY 07, the Commission had approved a return of 14% on the opening equity and the reserves and Surplus as per the KERC tariff regulations.

However FY 08 onwards under MYT regime, the Commission had allowed 14% return on Share capital, Share deposits and Reserves & Surplus for the purpose of RoE (subjected to a maximum of 30% of the capital investment). While computing the reserves, adjusted for the consumer contributions and grants was considered.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the DISCOMs.

Table A-12.21: Approved ROE by the Commission (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
BESCOM	50.25	48.69	56.22	98.46
CESC	1.98	4.35	5.68	6.07
GESCOM	19.13	21.58	18.21	19.49
HESCOM	33.81	40.29	35.57	42.68
MESCOM	18.89	21.32	19.39	26.09
TOTAL	**124.06**	**136.23**	**135.07**	**192.79**

Bad Debts

The Commission had disallowed the proposed provisioning for bad debts by the DISCOMs in the tariff order for FY 06 & FY 07, and had agreed to consider the same at the time of true-up based on actual.

Further, the Commission followed a similar methodology during the MYT period where no provisioning on account of bad-debts had been approved in the ARR of the DISCOMs but the same would be considered as per actual amount during the annual review.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM. The table below summarizes the proposed, approved ARR, Revenue Realization and approved gap in the various Tariff Orders from FY 06 to FY 09:

Table A-12.22: Proposed and Approved ARR (Rs. Crs)

Particulars	FY 06*	FY 07	FY 08	FY 09
BESCOM				
Proposed by the Utility		5342	7384	8133
Approved ARR	3986	4246	5233	6504
CESC				
Proposed by the Utility		1088	1513	1778
Approved ARR	930	824	982	1190
GESCOM				
Proposed by the Utility		1124	1578	1781
Approved ARR	1242	902	1176	1444
HESCOM				
Proposed by the Utility	2096	1723	2289	2694
Approved ARR	1832	1525	1844	2213
MESCOM				
Proposed by the Utility		898	1241	1293
Approved ARR	828	777	873	1005
TOTAL				
Proposed by the Utility		10175	14005	15677
Approved ARR	8818	8275	10109	12355

**Proposed ARR for the utilities were not available as the file was corrupt*

However, the Commission has revised the estimate for various components for ARR based on the annual performance review for FY 08 and revised estimates for FY 09 submitted by the DISCOMs.

The revised ARR projections for the five DISCOMs are summarized in the table below:

Table A-12.23: MYT Approved ARR and Revised ARR Approved by the Commission for FY 09

Particulars	BESCOM	CESC	GESCOM	HESCOM	MESCOM	Total
ARR approved in the MYT Order	6504	1190	1444	2213	1005	**12356**
Revised ARR	6805	1312	1706	2444	1142	**13408**
Increase/ (decrease) in ARR	*301*	*122*	*262*	*231*	*137*	***1052***

Tariff Determination

The Commission had followed a two-part tariff structure in the State of Karnataka. The consumers had been basically divided under two broad categories i.e. LT category and HT category. These had been further subdivided among various other categories depending upon the nature of their consumption. The Government of Karnataka had been granting subsidy to provide subsidized power supply to Bhagya Jyothi / Kutir Jyothi installations and to IP sets.

During the period FY 06 to FY 09, the Commission has been considering the average cost of supply in absence of voltage-wise cost of supply submitted by the DISCOMs. Inspite of repeated directives by the Commission to submit the voltage-wise CoS study in the orders issued during FY 06 to FY 09, the DISCOMs have not complied with the same.

The Commission had determined two sets of tariffs for the subsidized category as per the Sec 65 of the EA, 2003. The Commission, after factoring in cross-subsidy from the subsidizing consumers, had determined the tariffs for the subsidized consumers to ensure cost recovery of the DISCOMs and also a reduction in providing cross subsidies to the subsidized categories. These rates will be applicable in case the DISCOMs does not receive subsidy in advance. The second set of tariff would be applicable with timely payment of subsidy by the Government. The Commission had been providing clear directions to the DISCOMs to apply the first set of tariff in case of non-receipt of subsidy from the GoK on time.

The revenue gap for each year during FY 06 to FY 09 as determined by the Commission is summarized in table below:

Table A-12.24: Revenue Gap* for Karnataka DISCOMs (Rs. Crs)

ESCOMs	FY 06	FY 07	FY 08	FY 09
BESCOM	202	282	251	-675
CESCO	0	-104	212	-155
GESCOM	-485	-163	2	-384
MESCOM	-235	-123	-72	-136
HESCOM	-820	-511	-705	-1224
Total ESCOMs	**-1338**	**-618**	**-311**	**-2574**

**Excluding Government subsidy*

In FY 06, the Commission had approved a revenue gap of Rs 1338 Crs for all the DISCOMs excluding subsidy. DISCOMs had proposed to bridge the gap through revision in tariff considering that the arrears from subsidy from GoK had increased in the last three years. Considering the increase in average CoS during FY 06 and no response from the GoK regarding a long term policy in the matter of subsidy policy for the sector, the Commission issued a clear directive to the DISCOMs to recover the tariff from KJ in case the GoK does not release the subsidy in advance at the beginning of each quarter. The Commission had kept the tariff intact for all these categories except the domestic category. As per the communication from the GoK the provision for subsidy allocation for power sector in FY 06 was Rs.1750.00 Crs. which would be sufficient to meet the gap for all the DISCOMs. Further, the Commission had introduced differential tariffs for urban and rural areas for various categories of consumers, considering the quality of supply and service provided to consumers in Metropolitan, other Urban & Rural areas.

For FY 07, the State Government had provided a subsidy of Rs. 1780 Crs to all the DISCOMs to compensate for supply of free electricity to BJ / KJ installations and supply of electricity to agricultural pumpsets at lower than average cost of supply. Considering the subsidy amount, the Commission had estimated a revenue surplus for the DISCOMs.

Hence in FY 07, the Commission had made an effort towards tariff rationalization for LT and HT categories (particularly for consumers located in rural areas and small towns). In view of the revenue surplus, the Commission had reduced the energy charges (to the extent of 15 to 20 paise per unit) for the consumers coming under urban local bodies and village panchayaths considering the poor quality of power supply in these towns and villages.

During the issue of FY 07 order, the Commission had come out with a discussion paper for introduction of differential tariffs in the State. However, considering the adverse response from various stakeholders, the Commission continued with the uniform retail tariff.

In FY 08 onwards, the Commission adopted the MYT framework. The guiding principals for determination of consumer tariff during the MYT framework were:

- Factors encouraging competition, efficiency, economical use of resources, good performance, and optimum investment;
- Tariff progressively reflects the cost of supply of electricity, and also reduces and eliminates cross subsidies
- Principles in rewarding efficiency in performance

In the MYT Order, the Commission had introduced the differential tariff in the State of Karnataka by making readjustment of the subsidy allocation among the DISCOMs. Although, the Commission had not specified any roadmap for reduction of cross subsidy, it has been continuously trying to bring the level of cross subsidy in accordance with NTP policy.

The Commission has reduced the tariff for commercial and Industrial consumers in view of bringing the same closer to the cost to serve and reduce the level of cross-subsidy. Tariff for domestic category has either remained similar to FY 07 tariff.

As a first step towards differential tariff in the State and reflection of efficiency in the tariffs of the DISCOMs, the tariff for BESCOM consumers have been approved at a lower rate as compared with other DISCOMs. In the MYT Order, the Commission has introduced segregation of distribution and retail supply business considering that the same would facilitate open access in the State. Further, the Commission has computed Wheeling Charges along with the cross subsidy surcharge for open access consumers.

Table A-12.25: Approved Variable Charge for Key Categories of Consumers during FY 06 and FY 08 (Rs/kWh)

Particulars	FY 05#	FY 06	FY 07	FY 08				
				BESCOM	CESC	GESCOM	HESCOM	MESCOM
Domestic								
Lowest Slab	2.90*	2.90*	2.70*	2.50	2.75	2.75	2.75	2.75
Highest Slab	4.60	4.70	4.70	4.50	4.70	4.70	4.70	4.70
Commercial								
Lowest Slab	5.05	5.05	4.85	4.60	4.85	4.85	4.85	4.85
Highest Slab	6.00	6.00	6.00	5.60	5.90	5.90	5.90	5.90

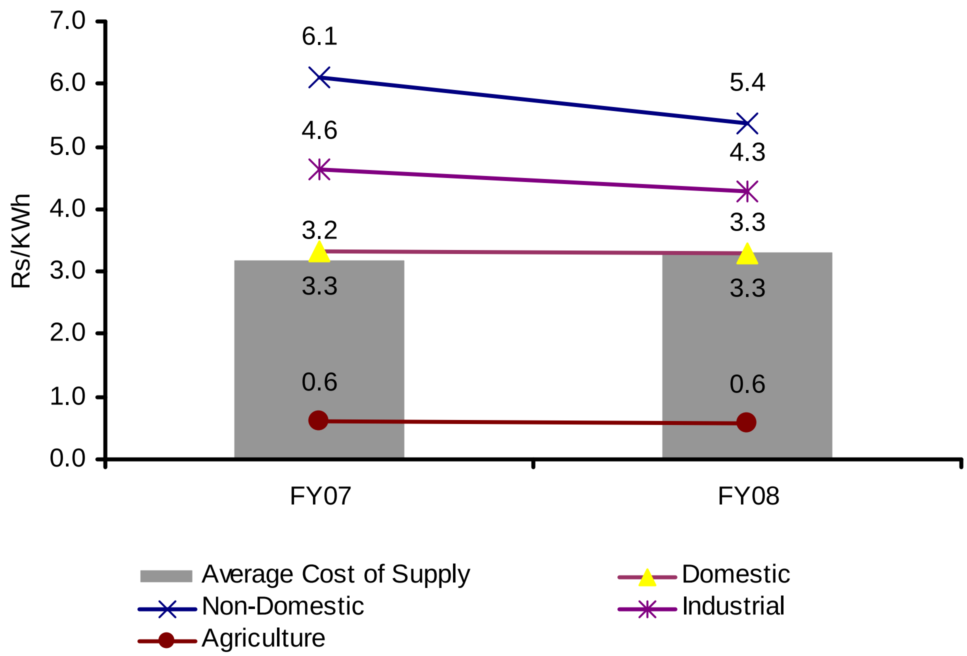
Particulars	FY 05#	FY 06	FY 07	FY 08				
				BESCOM	CESC	GESCOM	HESCOM	MESCOM
LT Industrial								
Lowest Slab	3.30	3.30	3.15	3.00	3.15	3.15	3.15	3.15
Highest Slab	4.05	4.05	4.05	3.75	3.90	3.90	3.90	3.90
HT Industrial								
Lowest Slab	3.80	3.80	3.65	3.45	3.55	3.55	3.55	3.55
Highest Slab	4.30	4.30	4.30	3.95	3.95	3.95	3.95	3.95
Agriculture Consumers								
Metered	0.40	0.40	0.30	0.20	0.30	0.30	0.30	0.30

*Since in FY 08, the slabs were changed, this tariff shows the tariff applicable to the domestic category for the slab consuming more than 30 Units

#Based on the existing Tariff as per Tariff Order of FY 06

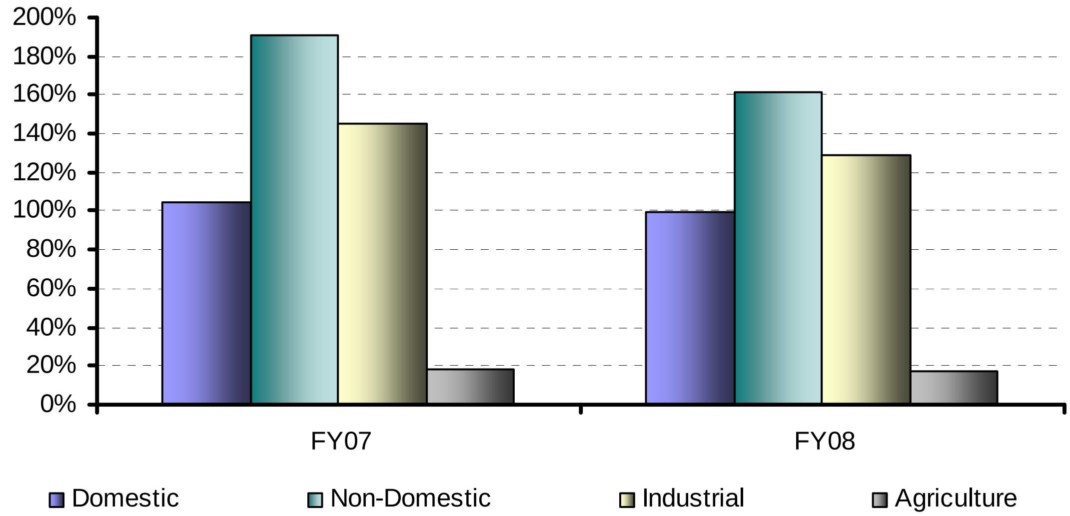
The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 06 to FY 08 is shown in the figure below:

Graph A-12.9: Approved Cost of Supply and Revenue Realization from each category of consumers from FY 07 to FY 08



The graph below shows the approved realization from consumer tariff as percentage of CoS in the State of Karnataka during the period FY 06 to FY 08.

Graph A-12.10: Approved Revenue Realization from each category of consumers as percentage of CoS from FY 06 to FY 08



The figure above clearly indicates that the realization from the non-domestic consumers and industrial consumers in the State of Karnataka during the period FY 07 to FY 08 had always been more than 120% of the average CoS. At the same time, the tariff from agricultural consumers in the State of Karnataka has been to a large extent subsidized by the GoK. Though, the Commission has in the various tariff orders tried to reduce the cross subsidy among categories, but the current amount of cross subsidization from industrial and non-domestic categories is still high.

TOD Charge

The Commission had introduced Time of Day (ToD) metering in FY 06 to offer rebate for power consumption during non peak hours through the application of concessional night time tariff for LT Industrial, HT water supply and HT industrial. This has been a thoughtful and positive step by the Commission which also facilitates better demand side management. The Commission had directed that the applicability of the ToD will be at option for HT industries and HT commercial. A differential ToD tariff has been approved for the categories. Further, the time slots for peak and non-peak hours have been set considering the nature of consumer.

The table below shows the approved ToD tariffs for the applicable categories in FY 08.

Table A-12.26: Approved Increase (+)/ Decrease (-) in energy charges over the normal tariff application ToD

Particulars	LT/ HT Industries	HT Water Supply
22.00 Hrs to 6.00 Hrs	(-) 80 Paise per unit	(-) 60 Paise per unit
6.00 Hrs to 18.00 Hrs	0	0
18.00 Hrs to 22.00 Hrs	(+) 80 Paise per unit	(+) 60 Paise per unit

Average CoS Vs Realization

Since, the DISCOMs had not been able to provide details of the Voltage-wise cost of supply, the Commission had considered the average cost of supply for computing the cross-subsidy levels. The Commission had time and again directed the DISCOMs to come up with the voltage-wise CoS study but the same has not been complied with. However, the Commission has decided to introduce CoS during the next control period and had directed the petitioner to come up with a study on the same.

The approved average cost of the power has increased for all utilities during the period FY 07 to FY 09. However, the approved CoS of MESCOM had remained same over the period while that of GESCOM had seen a increase of 38%.

Table A-12.27: Approved CoS and Revenue Realization for DISCOMs during the period FY 06 to FY 09

Particulars	FY 07	FY 08	FY 09*
BESCOM			
Average CoS	3.29	3.29	3.63
Average Realization	3.53	3.28	
Gap/ Surplus	**0.24**	**-0.01**	
CESC			
Average CoS	3.04	3.25	3.68
Average Realization	2.66	2.45	
Gap/ Surplus	**-0.38**	**-0.81**	
GESCOM			
Average CoS	2.92	3.48	4.03
Average Realization	2.39	3.24	
Gap/ Surplus	**-0.53**	**-0.24**	
HESCOM			
Average CoS	3.08	3.30	3.75
Average Realization	2.05	1.96	
Gap/ Surplus	**-1.03**	**-1.34**	
MESCOM			
Average CoS	3.51	3.31	3.50
Average Realization	2.95	2.91	
Gap/ Surplus	**-0.56**	**-0.40**	

**The tariff for FY 09 was not approved in the MYT Order, therefore, the Commission had not computed category wise revenue for FY 09*

Subsidy Support

Subsidy support from the GoK is of key importance in the State of Karnataka considering the dominance of highly subsidized agricultural consumers. The GoK subsidizes Kutir Jyoti and IP sets having sanctioned load of less than 10 HP (Agricultural Pump sets including sprinklers; Pump sets used in nurseries of forest and horticulture departments; Grass farms and gardens; Plantation other than coffee, tea and private horticulture nurseries) category. Throughout the period, GoK had been committed to pay 18 units per month at the cost of supply for the Kutir Jyoti Category.

As per the direction of KERC in 2005, "If the State Government requires the grant of any subsidy to any consumer or class of consumers in the tariff determined by the Commission, the State Government shall pay in advance in the first month of every quarter." The Commission had determined two sets of tariffs (i.e. with and without subsidy support) for the subsidized category as per the Sec 65 of the Electricity Act. The rates excluding subsidy shall be applicable in case the DISCOMs does not receive subsidy in advance.

Every year the GoK announces the subsidy it intends to give to the power sector. Accordingly, the Commission proceeds to allocate the subsidy to BJ/KJ installations and the balance amount of subsidy to IP sets.

The Commission determines the tariffs for IP sets category after considering (i) Cross subsidy available from subsidising categories of consumers and (ii) GoK subsidy allocation. Since the Commission determines the revenue requirement for each of the DISCOMs, relocation of the subsidy amount is also done by the Commission.

Table A-12.28: Subsidy Support from the GoK during FY 06 to FY 09 (Rs. Crs)

Particulars	FY 06	FY 07	FY 08
Subsidy support by GoK	1726.30	1780.61	1780.00

In case of non-receipt of subsidy, the Commission has given directions to the DISCOMs to charge full tariff in each of the tariff order from FY 06 to FY 09.

Distribution Network Charges under Open Access

In a view to encourage open access in the State, the Commission has determined distribution network charges to be charged from the open access consumers. The Commission has determined the distribution network charges in the FY 06 tariff order which would be payable as below:

i) Losses in kind

After considering the approved commercial losses and technical loss, the Commission had fixed the technical losses payable in kind as follows:

Table A-12.29: Losses in kind for Open Access Consumers

DISCOMS	33 kV/11kV	LT	Total
BESCOM	5.50%	8.26%	13.76%
MESCOM	5.86%	8.80%	14.66%
HESCOM	8.59%	12.88%	21.47%
GESCOM	5.12%	7.70%	12.82%

a) *If the point of injection & point of drawal are both at 33 kV/11 kV, only 33 kV/11 kV loss is payable in kind.*

b) *If the point of injection & point of drawal are both at LT level, only LT loss is payable in kind.*

c) *In case of transactions involving both HT & LT network, the open access customer shall bear the total technical losses indicated above.*

ii) Charges in Cash

The Commission has maintained the wheeling charges for the captive users as computed in its Order-dated 09.06.2005 in a view to encourage the captive generators in the State. These charges were applicable only to captive users only as open access to consumers at the distribution voltage level was still to be introduced under the regulations issued by the Commission.

Table A-12.30: Distribution Network Charges (paisa/unit)

DISCOMs	Wheeling charge-HT Paise per uni	Wheeling charge-LT Paise per unit
BESCOM	10.58	24.68
MESCOM	16.44	38.37
HESCOM	13.35	31.15
GESCOM	13.58	31.70

iii) Cross Subsidy Surcharge

The Commission has continued with the cross subsidy surcharge of 115 paise per unit based on the average cost of supply computed in its Order dated 09.06.2005.

For FY 07, the Commission has approved similar charges as computed in the tariff order for FY 06.

Determination of Wheeling Charges in the MYT Order

In line with the provisions of the KERC (Terms and Conditions for Determination of Tariff for Distribution and Retail Sale of Electricity) Regulations, 2006, the Commission has determined the wheeling charges for the five DISCOMs in the MYT Order. In absence of data on network assets voltage-wise and corresponding cost allocation, the Commission has determined the wheeling charges for each voltage level by considering the recovery of ARR for Distribution wires business on energy basis. Further, the Commission has directed the DISCOMs to furnish data of voltage-wise asset and loss details to enable determination of demand based wheeling charges in the future.

i) Losses in kind

After considering the approved commercial losses and technical loss, the Commission had fixed the technical losses payable in kind as follows:

Table A-12.31: Losses payable in kind

DISCOMs	HT- 11 kV	LT	Total
BESCOM	4.06%	9.74%	13.80%
CESCO	7.81%	11.71%	19.52%

DISCOMs	HT- 11 kV	LT	Total
GESCOM	6.01%	8.69%	14.70%
HESCOM	12.54%	7.62%	20.16%
MESCOM	6.22%	7.66%	13.88%

ii) Charges in Cash

Table A-12.32: Wheeling Charges for FY 08 (paisa/unit)

DISCOMs	HT- 11 kV	LT	Total
BESCOM	6	14	20
CESCO	16	36	52
GESCOM	20	47	67
HESCOM	17	38	55
MESCOM	17	40	57

iii) Cross Subsidy Surcharge

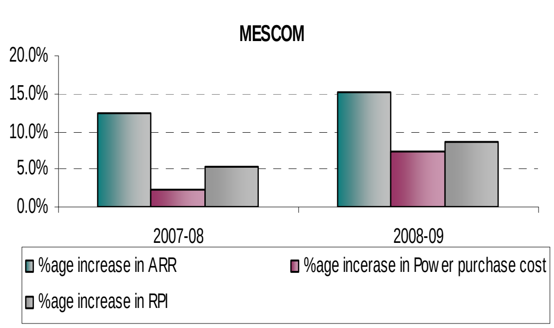
The cross-subsidy surcharge was determined for the entire State. However, the Commission revised the approach and has approved cross-subsidy surcharge separately for each DISCOM considering the different levels of realization and cost structure. In line with the NTP, the Commission has proposed to levy 80% of the above surcharge computed by the Commission to encourage open access in the State.

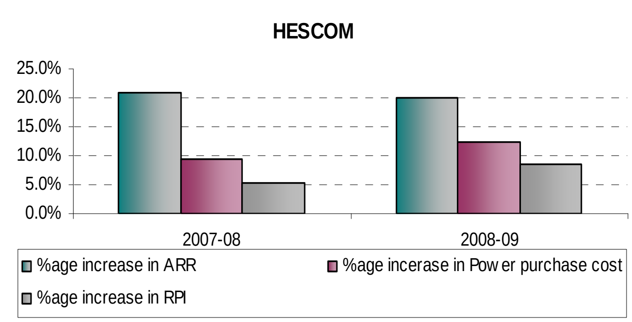
Table A-12.33: Cross Subsidy Surcharge for FY 08 (paisa/unit)

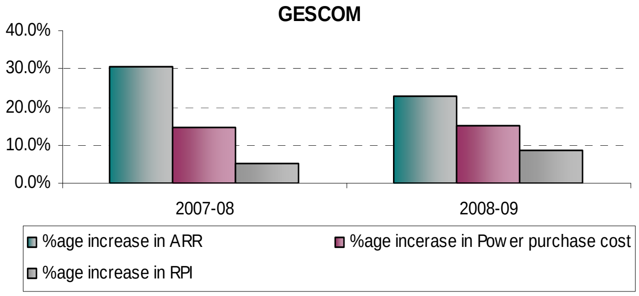
DISCOMs	66 kV and above level	33kV/11kV level
BESCOM	93	78
CESCO	52	20
GESCOM	86	67
HESCOM	66	22
MESCOM	62	34

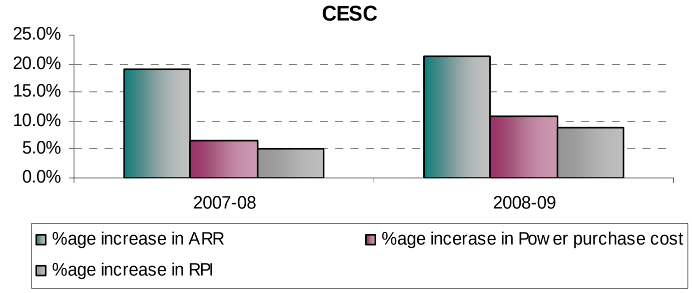
Retail Price Index

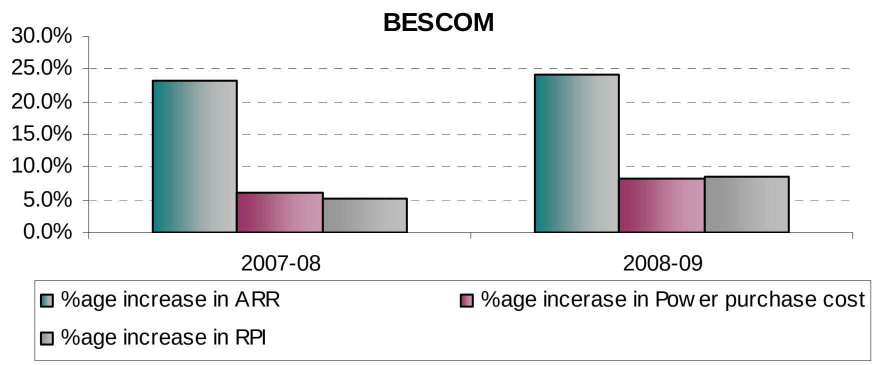
The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index for all the DISCOMs in Karnataka.











Annual revenue requirement and power purchase cost increased due to reasons like purchase of expensive power, increase in tariff of central power projects and increase in other cost like interest cost and advance against depreciation. The average cost of supply for all the DISCOMs has generally increased due to increase in other cost like interest cost, depreciation and power purchase cost except MESCOM.

Discom	Particulars	2006-07	2007-08	2008-09
	Approved ARR	777.00	873.00	1005
	Approved Sales (MU)	2215.00	2640.00	2872
	Averge Cost of Supply in Rs/kwh (A)	**3.51**	**3.31**	**3.50**
	% of Power Purchase Cost in ARR	**73%**	**79%**	**80%**
	% of Other remaining Cost in ACS	27%	21%	20%
MESCOM	% Annual Increase in Power Purchase Cost		2%	7%
	% Annual Increase in Other Cost		-27%	0%
	% Annual RPI Increase	6.06%	5.21%	8.67%
	RPI -X (X= 2%)	4.06%	3.21%	6.67%

Discom	Particulars	2006-07	2007-08	2008-09
HESCOM	Approved ARR	1525.00	1844.00	2213
	Approved Sales (MU)	4945.00	5581.00	5897
	Averge Cost of Supply in Rs/kwh (A)	**3.08**	**3.30**	**3.75**
	% of Power Purchase Cost in ARR	**73%**	**75%**	**74%**
	% of Other remaining Cost in ACS	27%	25%	26%

	% Annual Increase in Power Purchase Cost		10%	12%
	% Annual Increase in Other Cost		1%	18%
	% Annual RPI Increase	6.06%	5.21%	8.67%
	RPI -X (X= 2%)	4.06%	3.21%	6.67%

Discom	Particulars	2006-07	2007-08	2008-09
GESCOM	Approved ARR	902.00	1176.00	1444
	Approved Sales (MU)	3091.00	3381.00	3585
	Averge Cost of Supply in Rs/kwh (A)	**2.92**	**3.48**	**4.03**
	% of Power Purchase Cost in ARR	**78%**	**76%**	**75%**
	% of Other remaining Cost in ACS	22%	24%	25%
	% Annual Increase in Power Purchase Cost		15%	15%
	% Annual Increase in Other Cost		35%	18%
	% Annual RPI Increase	6.06%	5.21%	8.67%
	RPI -X (X= 2%)	4.06%	3.21%	6.67%

Discom	Particulars	2006-07	2007-08	2008-09
CESC	Approved ARR	824.00	982.00	1190
	Approved Sales (MU)	2712.00	3018.00	3229
	Averge Cost of Supply in Rs/kwh (A)	**3.04**	**3.25**	**3.69**
	% of Power Purchase Cost in ARR	**77%**	**76%**	**75%**
	% of Other remaining Cost in ACS	23%	24%	25%
	% Annual Increase in Power Purchase Cost		6%	11%
	% Annual Increase in Other Cost		9%	21%
	% Annual RPI Increase	6.06%	5.21%	8.67%
	RPI -X (X= 2%)	4.06%	3.21%	6.67%

Discom	Particulars	2006-07	2007-08	2008-09
BESCOM	Approved ARR	4246.00	5233.00	6504
	Approved Sales (MU)	12896.00	15887.00	17941
	Averge Cost of Supply in Rs/kwh (A)	**3.29**	**3.29**	**3.63**
	% of Power Purchase Cost in ARR	**85%**	**90%**	**89%**
	% of Other remaining Cost in ACS	15%	10%	11%
	% Annual Increase in Power Purchase Cost		6%	8%

% Annual Increase in Other Cost		-34%	25%
% Annual RPI Increase	6.06%	5.21%	8.67%
RPI -X (X= 2%)	4.06%	3.21%	6.67%

MYT Framework

As discussed above, the Commission has introduced MYT framework in the State of Karnataka since FY 08 with a control period of three years i.e. FY 08 to FY10. The table given below lists the key features of the MYT framework being adopted in the state of Karnataka:

Table A-12.34: Key Features of the MYT Framework

Particulars	
First Year of MYT	FY 08
Time frame for the control period	3 years, FY 08 to FY10
Issuance of the MYT Order	Delay of more than a year
Base year considered for MYT projections	FY 07
Uncontrollable Parameters	Power Purchase Cost Expenses on account of inflation Taxes on Income
Controllable Parameters	Distribution Losses O&M Interest and Financing Charges Return On Equity Depreciation Non-Tariff Income

Methodology for sharing of incentive/ disincentive on account of over/ under achievement of distribution losses:

- In case the actual distribution loss is less than the approved loss level, such savings shall be shared between the distribution licensee and the consumers in the ratio of 70:30 during the first Control Period and in the ratio as may be decided by the Commission in the subsequent Control periods
- In case the actual distribution loss exceeds the normative loss level approved by the Commission, such excess loss shall be to the account of the Distribution Licensee.

Time Lines of Order

The Commission has been a considerable time lag between the date of submission of the tariff petition and issuance of tariff order by the Commission which is shown in the table below:

Particulars	FY 07	FY 08	FY 09
Date of Submission of Petition	12-May-06	- **BESCOM -** 30th Nov, 2006 - **CESC -** 6th Dec, 2006 - **GESCOM** - 19th Dec, 2006 - **HESCOM -** 30th Nov, 2006 - **MESCOM -** 19th Dec, 2006	- **BESCOM -** 30th Nov, 2006 - **CESC -** 6th Dec, 2006 - **GESCOM** - 19th Dec, 2006 - **HESCOM -** 30th Nov, 2006 - **MESCOM -** 19th Dec, 2006
Date of Issuance of Tariff Order	**16-Oct-06**	- **BESCOM -** 11th Jan 2008 - **CESC -** 22nd Jan 2008 - **GESCOM** - 17th Jan 2008 - **HESCOM -** 18th Jan 2008 - **MESCOM -** 22nd Jan 2008	- **BESCOM -** 11th Jan 2008 - **CESC -** 22nd Jan 2008 - **GESCOM** - 17th Jan 2008 - **HESCOM -** 18th Jan 2008 - **MESCOM -** 22nd Jan 2008
Delay (No. of Days)	157	- **BESCOM -** 407 - **CESC -** 412 - **GESCOM** - 394 - **HESCOM -** 414 - **MESCOM -** 399	- **BESCOM –** 407 - **CESC -** 412 - **GESCOM** - 394 - **HESCOM -** 414 - **MESCOM -** 399
Number of Objections	**BESCOM - 31** **CESC - 175** **GESCOM - 10** **HESCOM - 233** **MESCOM - 11298**	- **BESCOM - 24** **- CESC - 22** **- GESCOM - 11** **- HESCOM - 441** **- MESCOM - 12101**	- **BESCOM – 24** **- CESC - 22** **- GESCOM - 11** **- HESCOM - 441** **- MESCOM - 12101**

One of the major reasons that can be attributed to the delay is due to inadequate data submitted by the DISCOMs. The MYT Order was delayed by more than a year due to the direction of Hon'ble ATE not to pass order till the judgment of the appeal filed by KPTCL is declared.

A.13- Kerala

Introduction

Kerala State Electricity Board (KSEB) was constituted in 1957 as per section-5 of the Electricity Supply Act 1948. Since its inception, the Board has been responsible for the generation, transmission and supply of electricity in the State of Kerala. After the enactment of the Electricity Act-2003, there has been large scale reform process in the country including Kerala. As per section 172 (a) of the Electricity Act 2003, KSEB has been continuing as State Transmission Utility (STU) and Distribution Licensee and with the second proviso to same section, the Central Government and Government of Kerala mutually decided to continue the KSEB as State Transmission Utility and Distribution Licensee for certain period.

Kerala State Electricity Regulatory Commission (KSERC) the apex body in the state approves the tariff petitions of the KSEB as per the Terms and Conditions for Determination of Tariff issued by it. Since its inception (KSERC) had issued 6 Tariff Orders till FY 09.

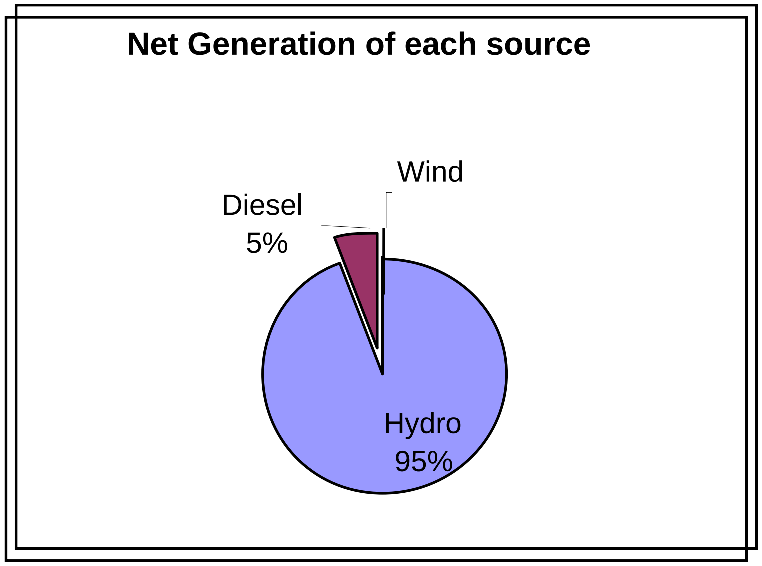
Generation

The state of Kerala has Hydroelectric Projects, diesel stations and a windmill plant to meet some of its energy requirement. Monsoons play an important role in estimating the energy generation and also the quantum of power purchase. Kerala has been adding capacities to its own generation by setting up hydel plants. New plants viz. Kuttiadi Additional Extension, Neriamangalam Extension, Kuttiadi Tail Race and Kuttiar diversion were added in the year 2007.

For estimating the energy generation from hydel plants for the period FY 05 to FY 09, Commission has considered the inflow data of the past ten years and taken the average of immediate past ten water years. The Commission has also worked out the monthly average of the past 10 years to arrive at the own hydel generation. Apart from the past years water inflow, Commission has also taken into account present level of storage, hydel generation schedule, and inflow during the year and the storage maintainable at the beginning of each water year to arrive at the FY 07 and FY 08 hydel generation.

The Board dispatches energy from diesel stations viz. BDPP and KDPP only during exigencies. Board is using KDPP and BDPP for meeting the peak load and for meeting the load requirements during the summer months. Though these plants are not falling under the merit order, considering their requirements in the system, the Commission has allowed the generation from these plants. Commission has approved the variable cost of the diesel plants as proposed by the Board for the period FY 05 to FY 09. The Board in the ARR petitions for FY 07 to FY 09 had proposed to operate the diesel plants viz. BDPP and KDPP at 40 MW and 60 MW respectively. KSEB also operates a wind mill at Kanjikode which generates 3 MUs. The graph below gives detail about the percentage net own generation from each source as in FY 09.

Graph: Generation Mix of KSEB



The Commission has always been of the opinion of running the hydro plants to the maximum and has time and again said that the use of power from diesel station should be minimized and that it should follow merit order principle. The cost of own generation is normally very less for Kerala as it has hydro plants and it runs diesel plants only during summer months. The table below gives details about the variable cost of the own generation in the state.

Table: Approved Variable Cost per unit from KSEB Generating Stations

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Plants	**Variable Cost per unit (Rs./kWh)**				
Hydel Generation	0.03	0.03	0.03	0.03	
Wind –Kanjikode	2.00	2.07	2.07	3.00	2.00
BDPP	2.76	3.23	4.09	5.80	5.17
KDPP	2.53	2.9	3.87	5.08	5.00

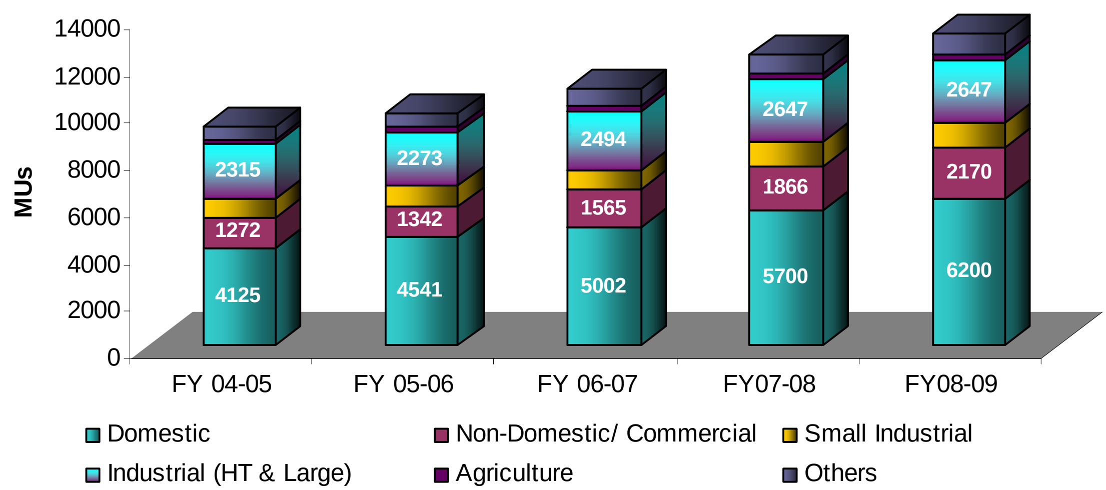
Demand / Sales Estimation

The Commission had approved the sales for FY 05 based on the actual/estimated sales in the past year. The Commission directed the board to carry out detailed analysis of the prevailing load demand and energy requirements before projecting the requirements for ensuing years. For FY 06, the Commission considered the actual data for FY 04 as the base and the actual growth rate achieved during FY 01-02 to FY 03-04 as the basis for the approval. For domestic category, the Commission had approved a growth rate of 6.5%, which was 1% higher than the growth rate in FY 03-04 keeping in view of the possible increase in number of connections and backlog applications to be serviced on a time bound manner in view of the provisions of the Electricity Supply Code. The Commission had also approved the growth rate for each individual category.

For examining the veracity of the sales estimated by the Board, the Commission had requested the Board in FY 06 and FY 07 to furnish details of Consumer category wise data collected from all the distribution sections regarding load growth, prospective electrification work including sectors such as railways, growth in other economic sectors. However, the Board had not provided the information.

Based on the information available with the Commission for FY 07, the Commission had approved the CAGR of 7.6% with respect to the actual consumption of FY 05. The Commission had followed the CAGR approach as well as applied annual growth rate in certain categories while approving the sales for the FY 08 and FY 09. The graph below illustrates approved sales in the state of Kerala for the period FY 05 to FY 09.

Graph: Category-wise Approved Sales mix for KSEB (in MUs)

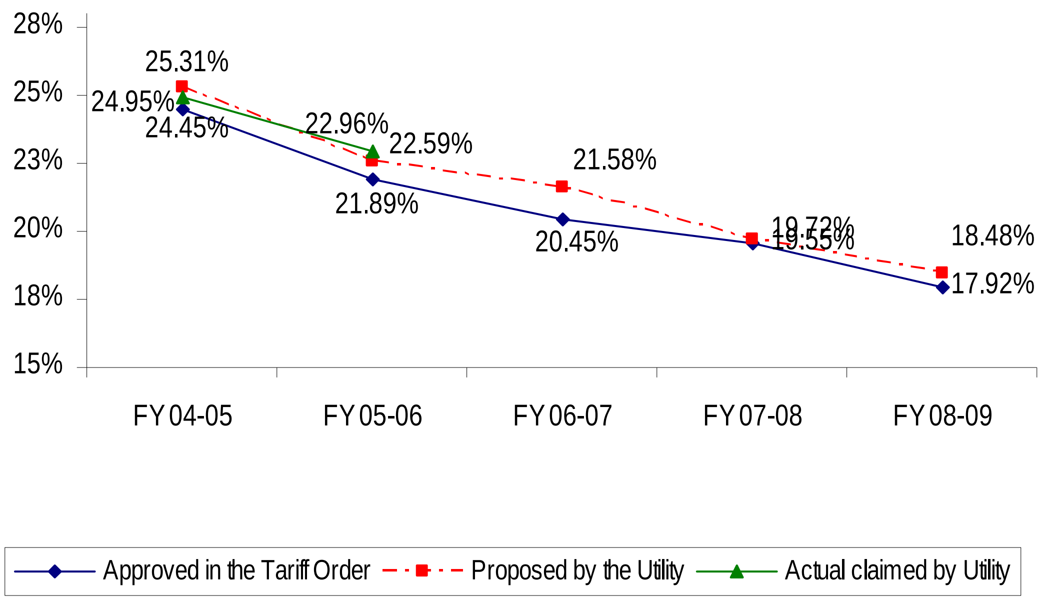


The share of domestic category in the total sales year on year has remained consistently above 45%. Industrial (HT & Large) has the next highest sales in the state nearly 23-20%. The Commission has also noted the decreasing trend in the year on year sales of this category and has expressed its reservations. In the state of Kerala, industrial consumption at the HT and EHT levels has shown negative trends and is a cause of worry. The shift of load to LT category is not a good sign and does not augur well, as on lower voltage the T&D is also high. The Commission has also directed the Board to come up with long term sales forecast and devise new methods to improve the forecasts. The true up exercise has been done only for FY 05, as the rest of the years true up has not taken place.

AT&C losses

In the state of Kerala AT&C is the measure of internal loss in the system. Till FY 08 Commission had been following T&D as a measure of loss but in the Tariff Order for FY 09 the Commission has also added the collecting efficiency to its loss measure. The Commission has also been directing the Board to furnish voltage wise losses so that transmission and distribution losses can be segregated. The Commission has also given direction for installation of energy meters on distribution transformers so that it can assess the losses in the LT system which in turn would provide the input for reducing losses in the distribution system. Various measures have been taken to bring down the losses in the state, these measures include strengthening of Anti-Power Theft Squad, 100% metering in the state, speedy replacement of faulty meters and computerization of billing, energy audit, encouraging the HT/EHT consumers to improve power factor, and encouraging the HT/EHT consumers to improve off-peak consumption and load factor.

Graph: Approved T&D Loss Levels for KSEB



For FY 05, the Commission agreed with the views of the stakeholders and the State Advisory Committee that a loss reduction of 3% from the level of FY 04 should be achieved during FY 05. While approving the loss level for FY 06, the Commission considered sales/ energy input for first 6 months of FY 05 and observed that actual loss level was close to the approved loss of 24.45% for that year. Therefore, the Commission approved the loss reduction target at 2.72%.

For FY 07**,** the Board proposed a loss reduction target of 1.76%. The Commission stressed on the need to reduce faulty meters, and accordingly the Board had set a target to replace 4 lakh meters during FY 07. Moreover, the Commission suggested that the Board should work out appropriate plans with cost benefit analysis suitable to the conditions in Kerala. Commission had mentioned that the huge investments proposed by the Board for technical loss reduction will give desired results, if such investments are supported by cost benefit analysis.

During the FY 08, Commission directed the board to reduce the loss level by 2.5% on the actual loss level achieved by the Board for FY 07. For FY 09, the Board had proposed the loss reduction target at 1.63%. Considering that the Board was not able to meet the targets fixed by the Commission in its previous orders, the Commission had approved the loss reduction target proposed by the Board so that, the onus will be on the Board to achieve the target fixed by themselves. The Commission has taken a commendable step in the year FY 09 as it adopted AT&C in true sense and has included collection efficiency under its ambit. Commission had considered collection efficiency of 98% while computing the AT&C loss for FY 09. The table below gives detail about the system loss in KSEB.

Table: T&D Losses for the period FY 06 to FY 09

T&D Losses	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	24.45%	21.89%	20.45%	19.55%	17.92%
Proposed by the Utility	25.31%	22.59%	21.58%	19.72%	18.48%
Actual claimed by Utility	24.95%	22.96%	21.55%		
True up order	24.50%				

Components of Annual Revenue Requirement

Power Purchase Quantum

The power purchase quantum comprise of power handled by the KSEB during the year. The main sources of power purchase are NTPC, Talcher, NLC stations and IPPs. The Power Purchase agreements are assigned to the KSEB as it operates as a bundled utility. KSEB has entered into Power Purchase agreements with Central Generating stations, Power Grid Corporation of India and Other Independent Power Producers (IPPs).KSEB has signed PPA's with BSES Kerala Power Limited (BKPL) and the Kasargode Power Corporation Limited (KPCL).

For assessing the total power availability in a year, the Board prepares the demand projections on the merit order dispatch principle. For CGS plants it considers the allocation to KSEB which is based on the energy availability and PLF of the stations.

The Nuclear stations MAPS and Kaiga are considered as must run due to technical constraints even though their position at merit order is at lower level. Therefore, full availability from these stations was considered.

The Commission has time and again stressed that the available hydro generation in the KSEB system should be utilized optimally and maximum commercial advantage derived thereof.

KSEB while scheduling availability of power from Generation and Power Purchase has followed the following strategy.

- KSEB tries to take the benefit of ABT by availing more import as UI when system favours- i.e. when system frequency is higher and UI rate is lower than the variable cost of internal thermal stations.
- Explore the possibility of UI export during peak hours and in summer when system frequency is lower and UI rate are higher by judiciously operating the hydel stations.

The Commission has approved the UI purchase for FY 05 at Rs. 28.61 Crs. For FY 06, the Commission directed that it predicts the year to energy surplus year and approved net UI exports @ of Rs. 2/unit. . In the FY 07, the Commission approved the total sale of 500 MUs at Rs 150 Crs. The Commission in the year FY 08 approved surplus sale to the tune of 442 MUs thus fetching revenue of Rs.144.04 Crs.

Table 1: Approved Power Purchase Mix for the period FY 05 to FY 09

Source of Power Purchase	FY 05	FY 06	FY 07	FY 08	FY 09
Thalcher-II	18%	35%	40%	34%	32%
NLC	17%	21%	21%	17%	17%
NTPC –RSTPS	32%	38%	34%	29%	23%
ER	8%	0%	0%	0%	0%
UI	5%	0%	0%	6%	4%
MAPS	1%	1%	1%	1%	2%
NLC (Exp)	6%	0%	0%	0%	0%
BSES	4%	0%	0%	1%	0%
Kayamkulam	4%	0%	0%	0%	12%
KPCL	0.2%	0%	0%	1%	1%
Kaiga	5%	5%	5%	8%	6%
Total	100%	**100%**	**100%**	**100%**	**100%**

The table below gives a snapshot of the energy availability in the State.

Table: Approved Power Purchase Mix for the period FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Own Generation	6314	6606	7366	7004	7790
Power Purchased	6210	5983	6902	8311	8995
Sales outside		228	150	442	295

Power Purchase Cost

As mentioned above KSEB purchases power from NTPC, Talcher, NLC stations and IPPs. The Commission approves the power purchase of Kerala based on the merit order principle. The Commission has asked the board to minimize the use of diesel plants as it is a source of costly power to the state. From 1-1-2003, the Availability Based Tariff System governed the tariff for power purchased form central agencies. Under ABT the fixed cost of the station is shared by the constituents of SREB in proportion to their allocation.

The external loss is added to the power received at the interface points in the KSEB system. The Board has classified the losses in the system into external loss and internal loss.

The table graph below shows the power purchase cost of Kerala. The power purchase cost does not include the cost of power from own generation.

Graph: Approved Power Purchase Cost and ARR for FY 05 to FY 09

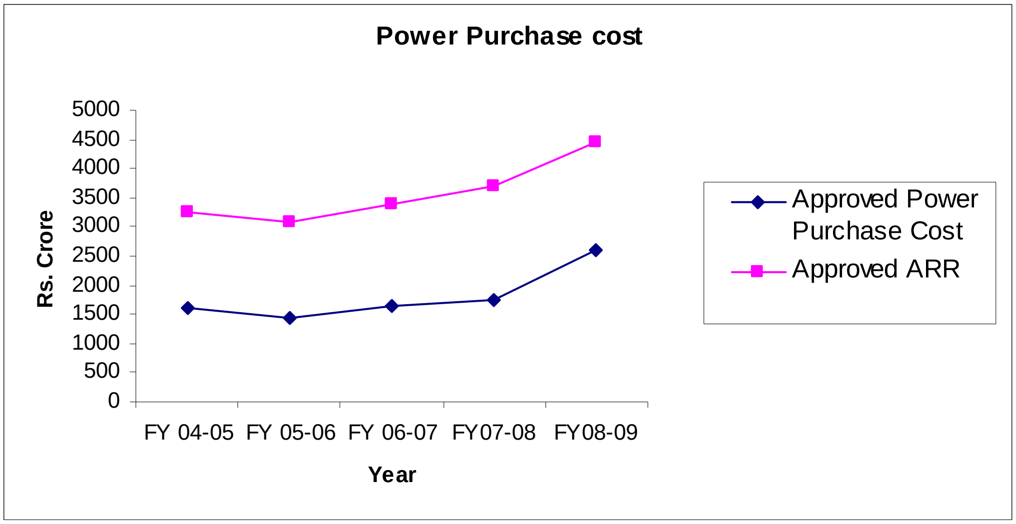


Table: Power Purchase cost for the period FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Power Purchase Cost (Rs. Crs)	1605	1427.31	1646.02	1734.65	2603.92
Net Power Purchase (Mus)	6210.28*	5983.13	6902	8311	8660.65
Power Purchase Cost per unit (Rs./kwh)	**2.58**	**2.39**	**2.38**	**2.09**	**3.01**

***** Gross Power Purchased

Fuel Cost Adjustment

There is no provision in the ARR for purchase of costly power the event of shortfall in hydro generation from the anticipated levels. The Board makes a realistic assessment of the annual shortfall in hydro generation by the end of October each year and come up with a proposal before the Commission for recovering the extra power purchase cost on account of the shortfall through a surcharge on the energy charges over a period of one year from November to October next year. The surcharge is levied only after obtaining the specific approval of the Commission, thereof. The Commission subsequently considers the finalized accounts/audited accounts to adjust the level of surcharge for periods ahead.

Transmission Charges paid to PGCIL

The PGCIL charges of KSEB are divided into Eastern Region, southern region and Kayamkulam. In FY 05, the Commission paid PGCIL charges worth Rs. 171.66 Crs. In FY 06 total transmission charges for PGCIL were approved by the Commission at Rs.188.36 Crs as against the proposal of Rs.193.06 Crs by the Board. The disallowance was mainly on account of power from Kayamkulam station which KSEB shares with Tamil Nadu. For FY 07, the PGCIL charges were for Rs. 192.87 Crs, it included fixed charges, variable charges and incentive.

Operation and Maintenance (O&M) Cost

The Commission has been approving employee cost, R&M and A&G cost separately for the period FY 05 to FY 09 in its Tariff Orders for KSEB. Approach adopted by the Commission in approving the O&M cost in the past five tariff orders is discussed below.

Employee Cost

For estimation of employee cost in each year, the Commission has considered each component of the salary i.e. basic salary, dearness allowance, etc. The Commission for FY 05 pointed out that the Board has been hiring employees without any increase in the workload and the employee cost per unit of sale has increased which is not a healthy sign. The Commission had also pointed out that the terminal benefits have increased without any consequent reduction in the employees which the Commission finds unfathomable. The Commission had finally approved the increase of 3% towards salaries and wages and 5% towards terminal benefits, and kept the provision for other allowances/bonus/benefits at the same level as in FY 04. In the FY 06, Commission approved the DA of 64% equivalent to the present level of DA to the Central Government Employee and 5% compounded increase in terminal benefits over the actuals of FY 04. The other heads of expenses under employee costs were allowed as proposed by the Board.

For FY 07, the Commission allowed 4.8% increase towards salaries over the actual for FY 05.The Commission had approved Rs. 165 Crs for DA at the current level and Rs. 35 crs towards pending DA arrears. In the FY 08, the Commission had approved the employee expenses at the level proposed by the Board. The additional expenditure on account of new recruitments to fill up the essential vacancies was also approved by the Commission. The Commission had also approved the impact of Rs. 125 crs due to wage revision implemented by the Board during the year.

In the FY 09, the Commission had approved the employees cost including terminal benefits as proposed by the Board. The proposed employee cost consists of about 60% for existing employees and balance 40% for pension claims. The Board had also considered the increase in DA as announced by the Government including future DA revisions as well as other allowances, overtime, holiday wages, pay revisions, etc in the employees cost proposed for FY 09. However, Commission had mentioned that at the time of truing up exercise only actual expenses would be allowed.

It has been observed that the Commission in the Tariff orders issued between FY 05 to FY 09 has mentioned the share of employee cost in the ARR is an area of concern. The Commission has also indicated that the terminal benefits have been met solely from the current revenues and the pension liability will only keep increasing over a period of time. Moreover, Commission in all the Tariff orders have suggested the Board to explore innovative and acceptable options for funding the pension liabilities.

The table below gives details about the employee expenses approved and employee expenses per unit of energy sale. As can be seen below the employee cost per unit is on a rise which is a cause of worry for the Commission.

Table: Approved Employee Expenses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total ARR (Rs. Crs)	3261	3098	3390	3712	4455
Employee expenses Approved (Rs. Crs)	718	846	823	1090	1137
Employee expenses as %age of Total ARR	22%	27%	24%	29%	26%
Employees cost Per unit of Energy Sale (Rs/kWh)	0.77	0.86	0.76	0.88	0.86

Repairs and Maintenance (R&M)

The Commission for FY 05 retained the R&M expenses at the same level as approved for FY 04. The Commission did not agree to the projections of Rs. 85 Crs made by the Board considering Rs. 51.65 Crs was incurred by the Board for R&M expenses during first ten months of FY 04.

The Board in its ARR petition for FY 06 had mentioned that due to liquidity crunch it could not take up need based R&M during FY 04. The Commission considered the submission made by the Board and asked for the detailed physical and financial plan for R&M, which Board had not provided. In the absence of a detailed work programme and required financial outlay, the Commission allowed a provision of Rs. 85.25 Crs equivalent to the level of expenditure projected by the Board for FY 05.

For FY 07, the Commission specifically sought clarifications on the maintenance practices being followed by the Board with cost details, but the Board was unable to provide the same. However, considering the importance of the R&M works, the Commission allowed a provision of Rs. 90 Crs, which was about 21% more than actual R&M expenses incurred in FY 05.

In FY 08, the Board had proposed Rs.101.47 Crs towards Repair and Maintenance expenses, which was about 1.24% of the GFA at the beginning of the year. Considering the importance of the R&M works and the need to implement the Standards of Performance regulation published by the Commission, the Commission allowed the R&M expenses as proposed by the Board.

The Commission in its Tariff Order for FY 09 had mentioned that the Board has not furnished the R&M plan inspite of several directions given in the previous Tariff orders. However, the Commission approved the expenses as proposed by the Board which was about 1.5% of GFA with a condition that in the next ARR filing Board has to provide the detailed R&M Plan. The table below gives detail about the R&M expenses.

Table: Approved R&M expenses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Repairs and Maintenance (Rs. Crs)	67	85	90	101	131
Total ARR (Rs. Crs)	3261	3098	3390	3712	4455
R&M expense as a %age of ARR	2%	3%	3%	3%	3%
R&M as a percentage of GFA		1.17%	1.17%	1.25%	1.46%

Administrative and General Expenses (A&G)

For FY 05, Commission approved the same level of expense as approved for FY 04, except in the case of insurance and electricity duty. The Commission considered A&G as a controllable cost and for FY 06 and had approved the expenses at the same level as it did in the FY 05 with the only exception of electricity duty.

For FY 07, Commission had analysed the main components of the expense viz. telephone expenses, printing expenses, etc and gave suggestions about the ways to reduce them. The Commission while approving the A&G expenses had disallowed certain amount of A&G expenses other than electricity duty. The same approach was followed for approving A&G expenses other than Electricity Duty for FY 08 and FY 09.

The Commission had allowed the high provision made for the electricity Duty for the FY 05 to FY 07 as per the Kerala Electricity Duty (KED) Act, 1963 and Audit remarks provided by the Board. However, the Commission had disallowed Electricity Duty under Section 3(1) as a pass through in the ARR for FY 08 and FY 09 and should be borne by the licensee. The table below gives details about the A&G expenses.

Table: Administrative and General Expenses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Administrative & General Expenses	69	91	105	54	64
Total ARR (Rs. Crs)	3261	3098	3390	3712	4455
A&G expense as a %age of ARR	2%	3%	3%	1%	1%

Depreciation

The Commission primarily took into account the CERC norms while approving depreciation for FY 06 to FY 09.

For FY 05, the Commission followed the depreciation rates on the basis of principles laid down under the Electricity (Supply) Act, 1948. From the FY 06 onwards, the depreciation amount approved by the Commission was based on the CERC specified rates. Considering the Electricity (Supply) Act, 1948 was no longer applicable for the approval of ARR for FY 06; the Commission had revised its approach for determination of depreciation. Though the CERC specified rates were only available for the generation and transmission, the Commission estimated the depreciation based on the information available to it. The Commission has continued with the similar approach for approving depreciation based on CERC rates for FY 07 to FY 09. The table below gives details about the opening assets of the KSEB and the depreciation there on.

Table: Approved Depreciation and GFA (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Opening GFA		7266.41	7711.62	8089.7	8977.79
Depreciation	382.27	235.65	247.43	260.18	290.69

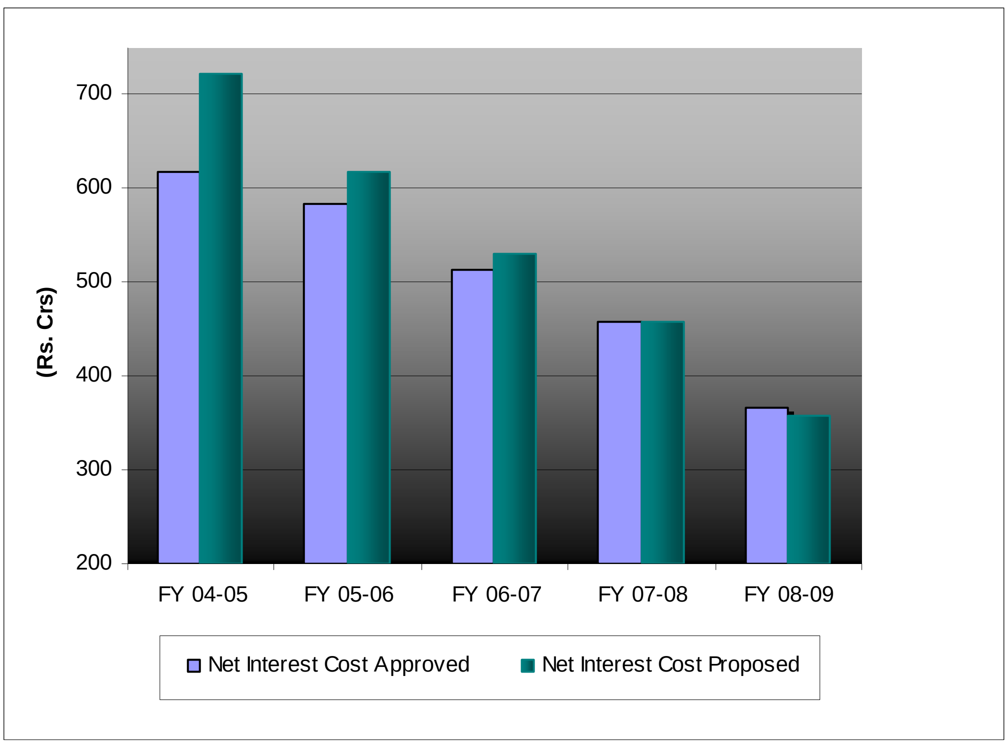
Interest on Loans

The interest on loans comprises of interest taken by Board for capital expenditure purpose and interest on cash required for working capital. In the FY 05, the opening balance of the loans was itself an area on which the Commission did not agree with the Board. The Board projected a borrowing for capex to the tune of Rs. 1423.37 Crs, which the Commission did not agree upon. The Commission disallowed interest on the excess borrowing of Rs. 545 Crs which came to Rs. 63 Crs. The Commission while approving the interest cost took cognizance of the completed works, and actual expenditure incurred during the previous year.

For FY 06, the Commission disallowed the interest cost (taking 10% as rate of interest) of Rs.62.97 Crs. From FY 06 onwards, the Commission had considered the interest on security deposits as specified in the Electricity Supply Code in the ARR. The rate of 6% was approved which was the bank rate as on November, 2004.

For the period FY 07 to FY 09, the Commission followed the same process of calculating the capex, the amount of borrowing, the repayments made for arriving at the interest cost of the year. The graph below shows the interest cost proposed and approved by the Commission. The interest cost here also includes the interest on loans, finance charges and interest on working capital.

Graph: Proposed and Approved Net Interest Cost



Working Capital

The Commission for FY 05 approved an amount of Rs. 10 Crs on account of interest on cash credit for working capital. The Commission in the same year directed the Board to improve its liquidity position and asked it to bring about collection efficiencies and better management of finances. The Commission also directed the Board to carry out lead lag study to determine the level of working capital.

For FY 06, the Commission allowed only 50% of the interest cost proposed by the Board for working capital. The Commission directed the Board to utilize the security deposits from the consumers for working capital requirements and reduce the interest on working capital to the extent possible.

The Commission had approved the provision for the proposed interest on the working capital of Rs. 7.5 Crs for FY 07, subjected to the condition that details regarding the source of funds used for working capital shall be furnished to the Commission with supporting data on actual lead-lag position. Moreover, Commission had considered the amount available in PF account for funding the working capital requirement during the year. Based on the past year trends, Commission had approved the interest on working capital as proposed by the Board for FY 08 and FY 09.

Rate of Return

In FY 05, KSEB proposed return on equity of Rs.155.3 Crs, which was 10% of the equity base for the year. The Commission, however, stated that the Board has neither started functioning on commercial lines nor it has improved its efficiency and has depended on the subsidy support of the government. Therefore, the Commission allowed a statutory return of 3% on the capital base in the beginning of the year.

From FY 06 onwards, Commission started following CERC norms for computation return on equity. The Commission while approving the return on equity for FY 06 had considered the Board’s submission, that unless it is granted higher returns it will not be able to raise funds for capex requirements for meeting load growth and improving loss reduction. Moreover, the Board had stated that the Government of Kerala has expressed inability to provide guarantee for any further loans availed by the Board.

The Commission has continued with the similar approach for approving return on equity based on CERC norm (14%) for FY 07 to FY 09.The table below summarizes the rate of return and the amount approved for the period FY 05 to FY 09

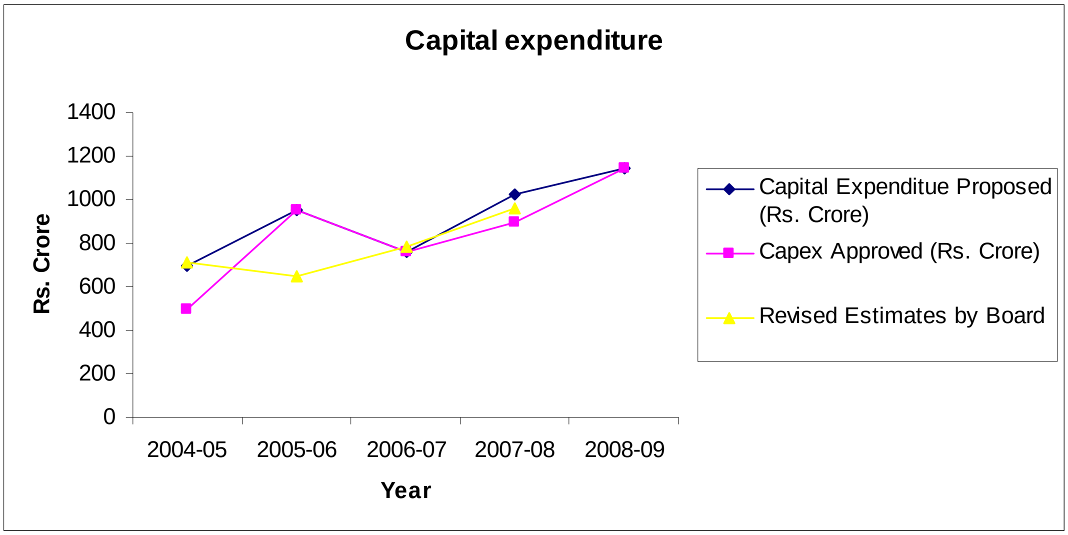
Table 2 Approved Rate of Return for KSEB

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Parameter for Rate of Return	NFA	ROE	ROE	ROE	ROE
Rate of Return (%age)	3%	14%	14%	14%	14%
Return (Rs. Crs)	105	217.42	217.42	217.42	217.42

Capital Expenditure

To arrive at the capital expenditure for the period FY 05 to FY 09, the Commission has analyzed the actual expenditure incurred during the previous year as well as analyzed the various schemes like APDRP, RGGVY, and their percentage completion in a given year. The Commission has approved the capital expenditure separately for generation, transmission and distribution. The Commission has not only issued directives regarding investment plan and implementation plan for various important projects but also repeatedly directed the Board to comply with the same in the Tariff Orders issued between FY 07 to FY 09.

Table: Proposed and Approved Capital Expenditure for FY 05 to FY 09



The Board in its ARR petition had submitted the proposed capital expenditure plan along with the project details for FY 06. The Board also submitted the revised estimate of Rs.715.85 Crs against the approved Rs. 500 Crs for FY 05. The Board also agreed that the capital expenditure plan may have to revise based on the availability of funds. Based on the information available, Commission had approved the capital expenditure as proposed by the Board. However, the Commission issued various directives to the Board regarding approval of the Commission for all new projects as well as effective monitoring and implementation of capital works programme of the Board.

In the FY 07, Commission did a scheme-wise analysis of the proposed capital expenditure. The Commission sought explanation regarding the low level of capitalization of ongoing projects and details related to the project progress with respect to targets, but the Board was unable to provide the proper explanation. The Commission considered the same approach as followed in the FY 07 but was not able to approve the scheme wise investment plan in the absence of details specified in the directives issued in the past two Tariff Orders.

In the FY 09 the Commission mentioned that the capex proposed by the Board was on higher side but the same had been approved on the grounds that the system requires huge investment. However, the Commission did not accept the revised capex for FY 08 and hence interest cost was not allowed in full for the current year. The table below gives function wise outlay approved by Commission.

Approved Capital Expenditure for the period FY 05 to FY 09 (Rs. Crs)

Approved Capital Outlay	FY 05	FY 06	FY 07	FY 08	FY 09
Generation		260.68	250	336.22	540.52
Transmission		297.53	218.5	221.8	181
Distribution		393	290	464.36	419.52
Other works		2.1	1.5		5.05
Total	**500**	**953.31**	**760**	**1022.38**	**1146.09**

Annual Revenue Requirement

The Annual Revenue Requirement as approved by the Commission and proposed by KSEB is summarised in the table below. The true up exercise has been carried only for FY 05 where in the trued up ARR was Rs. 3260.14 Crs.

Approved ARR Vs Proposed for the period FY 05 to FY 09

ARR (Rs. Crs)	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed by the Board	3922	3568	3696	4183	5206
Approved by the Commission	3261	3098	3390	3712	4455
Disallowance	17%	13%	8%	11%	14%

The revenue gap or surplus as determined by the Commission for each of the year from FY 05 to FY 09 is summarized below. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government has been discussed in detail in the subsequent sections.

Table 3 Approved Revenue Gap / Surplus

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
(Gap) / Surplus at existing Tariff (Rs.Crs)	(296)	(51.31)	184.63	329.72	(3.93)
Consumer Tariff	No change	No change	No change	Increase	No change

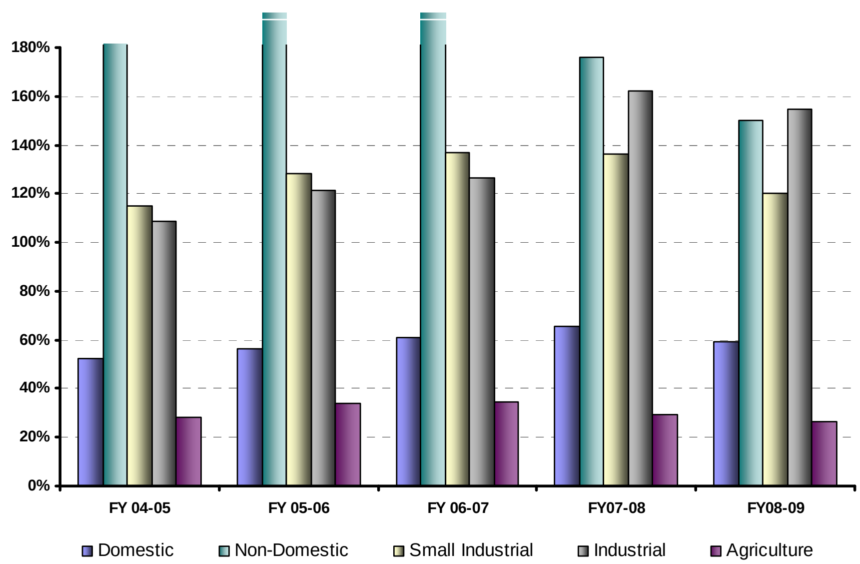
Tariff Determination

Two part tariff structure exists in the State of Kerala. The Commission in all the Tariff Orders has worked out the total revenue realized from each consumer category. During the period FY 05 to FY 09, Commission has not increased the consumer tariff in the state except for FY 08. Though there was a revenue gap during the FY 05 but the same were approved to bridge through State Govt. subsidy. In the FY 07, Commission had determined a revenue surplus but the same was not utilized for the tariff rationalization in the absence of consumer category-wise cost of service.

For FY 08, the Commission approved a revenue requirement (before adjusting non tariff income) of Rs.4074.22 Crs with total revenue (with non tariff income) of Rs.4403.95 Crs, resulting in a revenue surplus of Rs.329.72 Crs. The revenue gap determined after the true up exercise for the FY 04 and FY 05 together resulted in the gap of Rs.360.06 Crs. This gap was netted out with the surplus of FY 08 leaving a gap of Rs. 30.34 Crs. In FY 08, the tariff was increased to bridge the revenue gap. While fixing the tariff for FY 08, Commission had considered minimum tariff increase for majority of consumers, reduction in cross subsidy among highly skewed category of consumers (Commercial) etc.

Commission had given directions to the Board to submit separate accounts for Generation, Transmission and Distribution as well as results in respect of cost of service study. The Board did not submit the required information. Commission had expressed its view to eliminate existing cross subsidies in certain consumer categories as well as to prepare a roadmap for reduction of cross subsidy in a phased manner.

Figure 1: Revenue realization from consumer tariff as percent of average cost of supply



The graph above shows the trend in the revenue realization in the state. The domestic consumers in the state are currently provided with cross subsidy to the tune of Rs.1000 Crs per annum.

Time of Day Tariff

ToD incentive aims at reducing the system peak load and minimizing the purchase and/or generation of high cost peak power and reduce the loss incident as a result of overloading of lines & power system at peak period. In Kerala the Commission has made it mandatory for the HT/EHT consumers to install TOD meters. All EHT consumers (except Railway Traction) and all HT/Deemed HT consumers (except Cinema theatres, drinking water supply pumping stations of Kerala Water Authority, Corporations, Municipalities and Panchyats) are billed on differential pricing .Also in case of HT/Deemed HT consumers having only one shift during day time and if they shift the working time to off peak time, they will not be eligible for incentive. The differential pricing method in Kerala comprises of:

- **Demand charge** which is made up of Normal Demand Charge, Time of Use charge (peak hour charge) and incentive of using power during off peak time.
- **Excess Demand Charge** which is applicable only when recorded Maximum Demand during normal/peak time exceeds the contract demand.
- **Energy Charge** which is made up of Normal Energy Charge, Time of use charge if the consumption during peak period exceeds 10% of energy consumption during the month and Incentive if the consumption during Off-peak period exceeds 27.5% of energy consumption during the month.

In the state double charges for peak hours is there for Power Intensive industries for energy consumption during peak hours.

Average Cost of Supply vs. Realisation

The Commission has been directing the Board to follow cost of service approach to arrive at arrive at tariff. As the board did not come up with anything concrete on cost of supply, the Commission made an attempt to estimate the cost of service on embedded cost based allocation in the Tariff Order for FY 05. As shown in table below, the average cost of supply approved by the Commission.

Table: Approved Average Cost of Supply vis-à-vis Approved Revenue Realization per unit

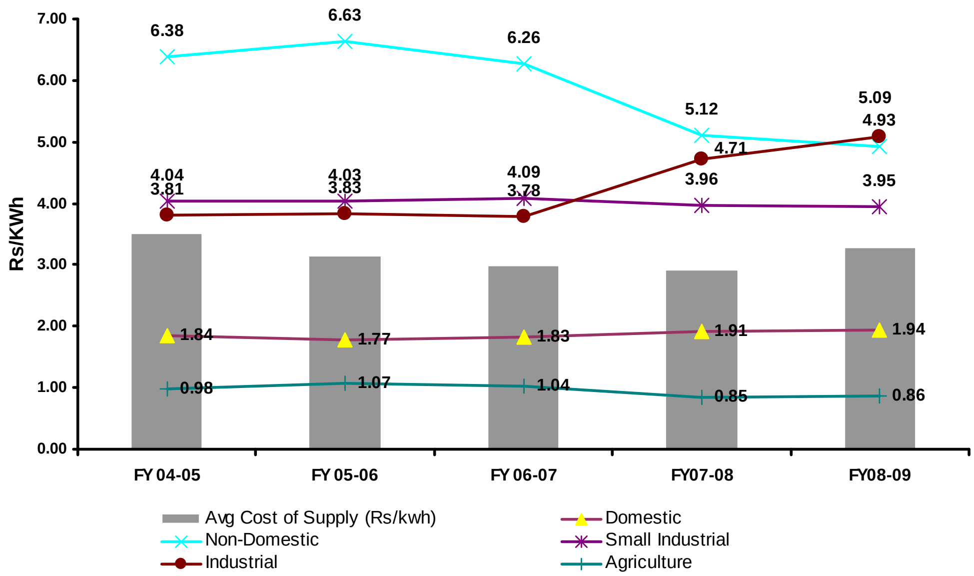
Approved by KSERC	FY 05	FY 06	FY 07	FY 08	FY 09
Total Energy Sale (MUs)	9300	9833	10860	12320	13261
Surplus Energy Sale (MUs)	0	0	500	442	295
Total ARR (Rs Crs)	3261	3098	3390	3712	4455
Avg Cost of Supply (Rs/kWh)	**3.51**	**3.15**	**2.98**	**2.91**	**3.29**
Avg Realisation from Tariff (Rs/kWh)	**3.19**	**3.10**	**3.15**	**3.17**	**3.28**
(Gap)/ Surplus	-0.32	-0.05	0.16	0.26	-0.003

The Commission has been conscious of the NTP reduction in cross subsidy. For that the Commission had specified that the cross subsidy should be reduced but the cross subsidy ratio should not be disturbed.

In the FY 08, the Commission in order to reduce the disparity between HT and LT commercial rates reduced the tariff for LT commercial category and increased the tariff for HT commercial category. As a first step towards rationalization and cost reflection, the Commission in the year removed the distinction of different category of licensees, and decided to align tariff on the basis of voltage of supply.

The graph below summarises that the non domestic category is the subsidizing category but over the years subsidization of the non domestic category has reduced while the share of industrial category in the cross subsidization has grown.

Graph: Category wise realization vis-à-vis Average CoS



Subsidy Support from the Government

The Government of Kerala provides subsidy to the Board by cash as well as by retention of electricity duty. It has been observed that the Board in all the ARR petitions (FY 05 to FY 09) had not made any proposal regarding subsidy from the Government or other concessions.

For FY 05, the Commission determined a revenue gap of Rs. 296.46 Crs. The Commission recommended the Government to exempt the Board from paying electricity duty to the tune of Rs.200 Crs and to provide the balance amount of Rs.96 Crs by way of revenue subsidy. The Commission was of the view that if the Govt. agrees to provide the required subsidy than the immediate tariff revision can be avoided.

The Commission continued with the existing tariff and other charges for FY 06, as the approved revenue gap was less than 2%. The Commission categorically asked the GoK in FY 06 to clarify the quantum and manner in which it contemplated to provide the subsidy. The Government expressed its reservation in increasing the tariff. The Commission did not increase the tariff but it expressed that if the Government wishes to provide subsidy to the Board to meet the gap, the subsidy should be paid to the Board in advance in twelve equal monthly installments.

For FY 07, the Commission approved an ARR (before adjusting non tariff income) of Rs.3680.43 Crs and total revenue (with non tariff income) of Rs.3865.06 Crs with a surplus of Rs.184.63 Crs. In this Order, Commission had verified the actual subsidy received by the Board and found that the Govt. had not paid the subsidy amount which was considered by the Commission in the past two Tariff Orders for bridging the revenue gap. Commission, therefore, asked the Govt. to communicate the position regarding the release of subsidy within a reasonable time.

KERC had not considered subsidy support form the Govt. for fixing the tariff for FY 08 and FY 09.

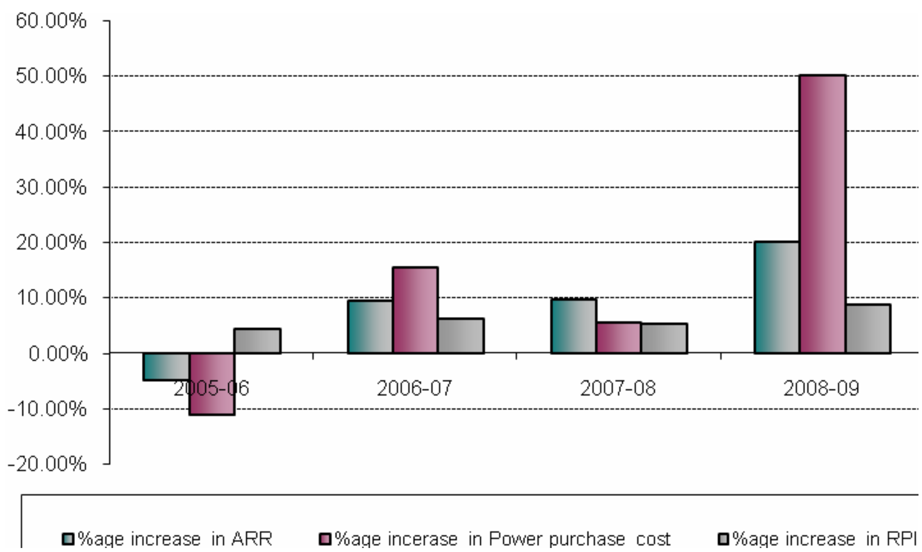
In the tariff Orders issued between FY 05 and FY 09, Commission had not computed the consumer category-wise subsidy required for the State of Kerala. Moreover the details of the consumer categories which required subsidy was also not provided in the Tariff Orders. Commission had considered a fixed amount of subsidy while computing the revenue gap. Due to this, the Board will never be in a position to charge full tariff in case of non-receipt of subsidy from the State Govt. as the details of subsidized consumers were not available.

Subsidy Booked & Received during each year

In all the Tariff Orders issued between FY 05 to FY 09, the appropriate details of subsidy booked and received by the Board from the State Govt. for the period FY 05 to FY 09 is not available.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Annual Revenue Requirement as well as Power purchase cost has shown an increasing trend from FY 2006-07. In FY 2008-09, Power Purchase cost increased considerably in FY 2008-09. The Power Purchase cost is highly dependent on rains and in turn hydro generation, so in the years when it does not rain adequately the power purchase cost goes up. The retail tariff in Kerala saw an increase only in the FY 2007-08.

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crore)	3261.46	3097.80	3389.92	3712.38	4455.06
Approved Sales (MU)	9,300	9,833	11,360	12,762	13,556
Average Cost of Supply in Rs/kWh (A)	3.51	3.15	2.98	2.91	3.29

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
% of Power Purchase Cost in ARR	49%	46%	49%	47%	58%
% of Other remaining Cost in ACS	51%	54%	51%	53%	42%
% Annual Increase in Power Purchase Cost		-15.9%	-0.2%	-6.2%	41.3%
% Annual Increase in Other Cost		-4.6%	-9.6%	0.9%	-11.9%
% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%

Multi Year Tariff

Commission in the Tariff order for FY 08, directed the Board to submit a detailed Multi Year Tariff petition for FY 09 with complete supporting data. The Board did not comply with the same.

Transmission & Wheeling Charges

Commission has not computed the transmission and wheeling charges for the open access consumers in the Tariff Orders issued between FY 05 to FY 09. However, the Commission had given directive to KSEB to submit a detailed proposal on principles of determination of wheeling charges.

A-14. Madhya Pradesh

Introduction

The Madhya Pradesh Electricity Board (MPSEB) was responsible for generation, transmission and distribution of electricity in the State of Madhya Pradesh till 1st June 2005 after which Madhya Pradesh Reforms First Transfer Scheme Rules, 2003 (Transfer Scheme) notified by the State Government on 30th September 2003 came into force. For the tariff petition of FY 06 the MP Power Generation Company Ltd., MP Power Transmission Company Ltd. and MP Poorv Kshetra Vidyut Vitran Company Ltd. incorporated in the year 2002 joined the process as co-petitioners.

Five companies, which were incorporated in July 2002 to look after the generation, transmission and distribution activities of the MPSEB had been in existence for more than two years as agents of MPSEB. Vide order dated 31st May 2005, GoMP notified the opening balance sheet of these five companies as on that date. The order also stipulated that the operation and management agreement existing between the MPSEB and the five companies on the effective date shall stand terminated and the companies would start independent operations. The order also stated that the MPSEB shall continue to undertake the electricity bulk purchase and bulk supply functions as provided in Schedule F to the Transfer Scheme Rules, 2003. GoMP also notified on 6th June 2005 that the MPSEB would continue to function as a trading licensee for a further period of six months i.e. till 9th December 2005.

Thus in addition to Genco, there came into being five licensees, viz. a transmission licensee (Transco), three distribution licensees and a trading licensee with effect from 1st June 2005.

The tariff order for FY 04-05 was a tariff order for a bundled utility. The tariff order for the year FY 06 did not follow the MPERC (Terms and Condition for determination of Distribution Tariff) Regulations, 2005 as it was issued on 5th December 2005. For the year FY 07, the Commission directed the DISCOMs to file MYT tariff order for control period FY 07 to FY 09. The DISCOMs were able to furnish the relevant information only for FY 07 and not for the rest of the years. The Commission directed the Distribution Licensees to file their subsequent petitions in October 2006 for multiyear tariff determination in accordance with the applicable regulations. The Commission issued afresh the terms and conditions for determination of distribution tariff by publishing the Regulations (Terms and Conditions of determination of tariff for distribution and retail supply of electricity and methods and principles for fixation of charges) on 10th November 2006. This was done so that so that the regulations could be consistent with the National Tariff Policy. The Tariff Period was revised to 1st April 2007 to 31st March 2010.

Madhya Pradesh Power Generating Company Ltd

MPPGCL is the owner of the generating plants previously owned by MPSEB. MPPGCL started functioning independently from 1st June 2005. The Generating Company filed this petition for determination of generation tariff for the period after coming into effect of GoMP notification dated 31st May 2005, which provided that MPSEB shall be sole buyer of all energy produced by MPPGCL. MPPGCL is a company incorporated under the Companies Act, 1956 in 2002 and was functioning under an O & M Agreement with MPSEB ever since. The Government of Madhya Pradesh notified the transfer scheme vide its notification No.

3679/FRS/18/13/2002 dated 31st May 2005 as per which the MPPGCL was assigned assets and liabilities, on a provisional basis.

The table below shows the Provisional opening Balance Sheet to of MPPGCL as per tariff order of year FY 06.

Table A-14.1: Provisional Opening Balance Sheet

Liabilities and Capital	Amt.(Rs. Crore)	Assets	Amt.(Rs. Crore)
Equity From GoMP	1278	Fixed Assets (Net)	2878
Project Specific Capital Liabilities	1945	Capital Works in Progress	1040
Loan from MPSEB	259	Current Assets	292
Current Liabilities	727		
Total	**4209**	**Total**	**4210**

The tariff order issued in FY 05 was for an unbundled utility .Post unbundling the first tariff order issued i:e for FY 06 was applicable for 10 months. In the year FY 07 Commission issued MYT tariff order it covered FY 07 to FY 09.

The tariff determination was only for generation units located in MP. The hydro power stations Rana Pratap Sagar and Jawahar Sagar are under operational control of power generating utility of Rajasthan and thus MPERC has no jurisdiction even though Madhya Pradesh has 50% share in the installed capacity. On the other hand, 50% share in installed capacity of Gandhi Sagar belongs to Rajasthan, 1/3rd share in the generation capacity of Pench belongs to Maharashtra and 50% share in the installed capacity in Rajghat belongs to UP. These plants are under operational control of MPPGCL and are located in MP. *Thus, Commission has jurisdiction to determine tariff for generation units located in MP irrespective of the fact that some part of the power generated is to be shared with others.* Rana Pratap Sagar and Jawahar Sagar have been excluded from our consideration for the purpose of determination of tariff.

Generation capacity

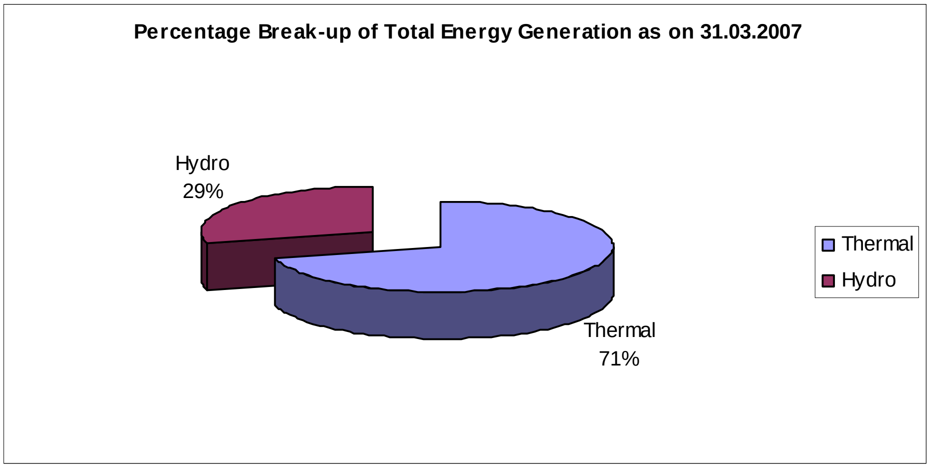
MPPGCL had a total of 10 generating plants as 31.3.07. The table below gives details about MPPGCL's total generation capacity.

Table A-14.2: Plant Wise fuel used and generating Capacity for FY 09

Name of the Station	Fuel	Station Capacity (MW)	Units Capacity (MW)
Amarkantak Thermal Power Station (Chachai)		290	(30+20)+(2x120)
Satpura Thermal Power Station (Sarni)		1017.5	0.6(5x62.5)+(200+210)+(2x210)
Sanjay Gandhi Thermal Power Station Birsinghpur	Thermal	840	(2x210)+(2x210)
Chambal HPS		193	0.5((5x23)+(4x43)+(3x33))
Pench Totladoh HPS		106.7	0.67(2x80)
Bansagar Tons HPS		425	(3x105)+(2x15)+(3x20)+ (2x10)
Birsinghpur HPS	Water	20	(1x20)
Bargi HPS		90	(2x45)
Rajghat HPS		22.5	0.5(3x15)
Madhikheda (NEW)		40	(2x20)
Total		**3044.7**	

Total installed capacity of the MPPGCL, as on 31.03.2007 was 3044.7 MW (with its share in bilateral interstate projects), consisting of 2147.5 MW thermal and 897.2 MW hydro power. The generation capacity has gone up from 3107.5 MW in FY 06 to 3044.7 MW in 2007. This was on account of increase in capacity of Bansagar Tons HPS and Madhikheda.

Graph A-14.1: Approved Percentage break-up of Total energy generation as on March, 2007



Plant Load Factor (PLF)

For FY05, the Commission had approved the PLF targets as proposed by MPPGCL (then MPSEB). While performance of PH I and II of ATPS Chachai, PH II of STPS Sarni and PH I of SGTPS Birsinghpur fell short of the target specified, yet due to better performance of other stations, MPPGCL could not only achieve the overall PLF target which was 71.5% but also exceeded it by 0.6%.

For fixing the target for FY06, the Commission had analyzed the historical performance from period FY02 to FY05. It also considered the maintenance schedule of the units and targets set by the Commission through its earlier orders and the recommendation of CEA in its report on Technical Standard on Operation Norms for Coal/Lignite Fired Thermal Power Stations issued in December 2004 of the thermal units of MPPGCL.

The tariff order for the year FY 07 to FY 09 was an MYT tariff order. The Commission determined the PLF as per the norms and principles elaborated in MPERC (Terms and Conditions of Generation Tariff) Regulations 2005. The table below gives details about the PLF approved for all the years and actual PLF for FY 05 and FY 06.

Table A-14.3: Approved and actual Plant Load Factor of Thermal Power Stations

Stations/Units	FY 05 (App.)	FY 05 (Actual)	FY 06 (App.)	FY 06 (Actual)	FY 07 (App.)	FY 08 (App.)	FY 09 (App.)
Amarkantak TPS (Chachai)	53.1%	**47.2%**	50.70%	**48.04%**	51.36%	5172%	52%
Satpura TPS (Sarni)	75.2%	**76.8%**	77.10%	**80.89%**	77.56%	77.98%	78.41%
Sanjay Gandhi TPS Birsinghpur	72.7%	**74.3%**	74.80%	**69.92%**	75.50%	76.00%	77.00%

*App. Approved

Auxiliary Consumption

For the year FY 05 the Commission considered the benchmarks set by it in the tariff order for year FY03. The Commission compared these norms with the auxiliary consumption of generating stations of similar age in India and found them to be reasonable.

For FY 06 the Commission had considered the historical trends, performance of similar units in other states and the recommendation of CEA for approving auxiliary consumption.

The auxiliary consumption for MYT control period was as per the (Terms and conditions of Generation Tariff) Regulations 2005.

The auxiliary consumption of MPPGCL has been on a rise; the Commission had approved higher auxiliary consumption but directed the MPPGCL to carry out necessary repairs and maintenance expenditure to achieve the benchmark norm as fixed by CERC for units of similar vintage. The table below gives details about the Auxiliary consumption approved and actual.

Table A-14.4: Approved and actual Auxiliary Consumption of Thermal Power Stations

Stations/Units	FY 05 (App.)	FY 05 (Actual)	FY 06 (App.)	FY 07 (App.)	FY 08 (App.)	FY 09 (App.)
Amarkantak Thermal Power Station (Chachai)	9.99%	**12.37%**	11.99%	11.85%	11.73%	11.57%
Satpura Thermal Power Station (Sarni)	8.92%	**9.15%**	8.91%	8.84%	8.77%	8.69%
Sanjay Gandhi Thermal Power Station Birsinghpur	9.24%	**10.32%**	9.79%	9.62%	9.39%	9.22%

Station Heat Rate (SHR)

For the year FY 05, the Commission had approved the heat rates based on historical trends and SHR's of the units of other well performing utilities. For the year FY 06, the Commission based on the past trend, the recommendation of CEA and CERC's existing norms, fixed the station heat rate for various phases of various thermal stations.

The SHR for the MYT control period FY 07 to FY 09 was as per the terms and conditions of Tariff regulations issued in 2005.

Table A-14.5: Approved and actual Station Heat Rate of Thermal Power Stations

Stations/Units	FY 05 (App.)	FY 05 (Actual)	FY 06 (App.)	FY 06 (Actual)	FY 07 (App.)	FY 08 (App.)	FY 09 (App.)
Amarkantak Thermal Power Station (Chachai)	3500	**4142**	3646	**4087**	3573	3573	3573
Satpura Thermal Power Station (Sarni)	2953	**2910**	2996	**3211**	2960	2926	2873
Sanjay Gandhi Thermal Power Station Birsinghpur	2837	**2825**	2850	**2977**	2825	2800	2757

Gross and Net Units Generated

Gross and net power Generation from each thermal station was approved after considering the above technical parameters for each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY07 to FY09.

For FY 06, for hydel generation the Commission approved generation based on the target set by MPPGCL based on historical trends as approved by CEA. The auxiliary consumption for the hydel plants was taken as 0.18% which was lower than the norm of 0.5% approved by CERC. For the MYT control period Commission approved the Net generation based on the projections of MPPGCL and accepted the fact that average energy generation in the past has been lower than the design energy. The auxiliary consumption considered was as per MPERC (Terms and Conditions for determination of generation tariff) Regulations 2005

Table A-14.6: Gross and Net generation (MUs)

Stations/Units	FY 06	FY 07	FY 08	FY 09
Total Net Generation (Thermal)	13127	13247	13384	13484
Net Generation Hydel	2361	2386	2386	2386
Total Net Generation	15488	15633	15770	15870

Fixed Cost/ Capacity Charges

Operation and Maintenance Cost (O&M)

Operation and Maintenance expenses have been approved under the following heads:

- Employees Expenses
- Repair and Maintenance Expenses
- Administrative and General Expenses

Repair and Maintenance

For the year FY 06 for its share generating plants, the Commission looked at the R&M expenditure made in the past year i.e. FY05 and escalated it with an inflation rate of 6%. For bilateral projects, Commission allowed a proportionate increase for share in bilateral stations located in Madhya Pradesh.

In the true up order Commission approved the actual expenses incurred by the MPPGCL for the year FY 06; this was done to encourage proper maintenance of the plants. The trued up repair and maintenance expenses were Rs. 114.04 Crore as against the approved Rs. 131.91 Crore.

Administrative and General Expenses

Commission allowed MPPGCL a 6% rise over the expenditure (excluding allocated portion of fee) approved by it for FY05 and in addition other proposed expenditures of year.

In the true up order Commission approved A&G based on the MPPGCL's argument about the Store Incidental Charges which was earlier loaded on to the cost of various materials issued from stores utilized in various Repair & Maintenance activities and construction activities and now began to be loaded on to the A&G. The Commission approved A&G to the tune of Rs. 19.62 Crs as against Rs. 13. 62 Crs approved by MPERC.

Employees Expenses

The Commission for FY06 determined the allowable net employee cost by allowing an inflationary increase of 6% over net actual payout of Rs. 97.28 Crores in FY05 as per the trial balance figure. However no provision for terminal benefits and WR/DA arrears was being included. Commission directed that in case MPPGCL incurs any terminal benefit liability it shall consider the actual expense incurred while truing up. The Commission directed the Generating Company to reduce its employee expenses as it would help in cutting costs. The amount approved was Rs. 110.63 Crore which was pro-rata reduced to Rs. 92.19 Crore for 10 months.

In the True up order Commission approved the increase in employee expenses on account of salary revision. The Commission approved employee expenses to the tune of Rs. 101.26 Crore as against the approved pro rata for 10 months which was Rs. 92.19 Crore.

For the MYT control period the Commission approved the consolidated O&M expenses. The Commission followed MPERC (Terms and Conditions of Generation Tariff) Regulations 2005 for approving O&M expenses. The table below gives details about the total O&M expenses and O&M expenses per unit of net generation.

Table A-14.7: Approved O&M Expense (Rs. Crs)

Expenses	FY 06	FY 07	FY 08	FY 09
O&M Expenses	256.16	299.83	317.98	336.93
O&M charges for 10 months	213.467			
O&M cost per unit of net generation (Rs./kWh)	0.165	0.192	0.202	0.212

Depreciation

For the year FY 06 the Commission approved depreciation based on the consideration that no asset additions were made during FY05 & FY06.The depreciation was approved for MPPGCL' s share and not for the 100% installed capacity. The Commission directed that it would permit the capital expenditure for inclusion in capital base only after prudence check and shall consider it only for units located within Madhya Pradesh. The Commission considered MPERC depreciation rates which were in line with those specified by CERC. These rates were lower than the rates notified earlier by MOP. For partnership projects, Commission did not approve depreciation for Rana Pratap Sagar and Jawahar Sagar Hydroelectric projects that are operated by Rajasthan as the Commission did not have jurisdiction over these two projects.

For the MYT control period Commission went into analyzing plant wise depreciation considering depreciation approved in the past years. The Commission calculated depreciation based on the opening gross block, which tallied with the figure notified by the GoMP, at the rates specified by the Commission in MPERC (Terms and Conditions of generation tariff) Regulations 2005. The Commission further stressed on the preparation of fixed asset register by MPPGCL.

In the true up order, Commission considered the depreciation on gross block indicated in the provisional opening balance sheet (Rs. 4452.59 Crore), corrected for 100% installed capacity of the shared projects. The depreciation approved was Rs. 93.97 Crore for 10 month period .In the true up order Commission approved Rs. 96.63 Crore for 10 month period.

Table A-14.8: Depreciation Approved and Depreciation as a percentage of GFA (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Gross Fixed Assets at the end of the year	4417.19	4417.1929	4417.1929	4417.1929
Depreciation Approved	112.76	107.98	107.95	135.57
Depreciation approved for 10 months	93.97			
Depreciation as percentage of GFA	2.13%	2.04%	2.04%	2.56%

Interest Cost

For the year FY 06, the Commission followed the approach of mapping loans to the purpose for which these loans had been contracted, the Commission asked the MPPGCL to furnish the details of the assets created out of the loans. The Commission for approving the interest cost did not consider loans drawn for ongoing projects such as SGTPS Birsinghpur V, ATPS Chachai V, Marhikhera, and for in progress Renovation and Modernisation works in ATPS Chachai and STPS Sarni as benefit from such works was yet to materialize.

For MYT control period Commission disallowed interest on regulatory asset and amortization of regulatory asset. Commission allowed interest on loans which the MPPGCL could map with the projects, the ones which it could not, the Commission disallowed interest on them as it considered them loans for revenue purposes. The table no.7 provides details about the interest cost approved.

Interest on Working Capital

For the year FY 06, for the approval of interest on working capital, Commission had considered norms specified by CERC, with only exception being days coal stock. MPPGCL reasoned that as its power stations are mix of the pithead and non-pithead stations, it should be allowed 45 days of coal stock. The Commission accepted that. The loans which could not be mapped for specific projects were considered for interest on working capital and interest thereon was allowed. Therefore, the interest on working capital loans approved was higher than the proposed figure of Rs. 668.89 crore. The norms followed by the Commission while computing the working capital is given below:

- 45 days coal stock
- 60 days fuel oil stock
- One months operation and maintenance expenditure
- Maintenance spares @1% of historical cost
- The interest rate of 12.75%

For the MYT control period as per the stand of the Commission all loans that could not be identifiable with assets created were treated as working capital loans. For the purpose of computation of interest on working capital, opening balance of loans for FY07 had been computed as per the repayment schedule provided by the Company and balance as per the notified balance sheet of 1st June 2005. The Commission allocated the allowed interest on REC, LIC, and MPSEB Loan to all power stations considered in this order in proportion of the working capital requirement of the individual station to the total working capital requirement of the power stations. The allocated working capital interest was higher for FY07 but for FY08 and FY09 it is lower than the interest on the working capital required on normative basis. The interest allowed on working capital loans was proportionately allocated to all power stations so that fixed cost of SGTPS and Bansagar does not get unduly inflated.

Norm for rate of Interest

Rate of interest on working capital was to be on normative basis and was specified to be equal to the short-term Prime Lending Rate of State Bank of India as on 1st April of the year in which the generating station or a unit thereof is declared under commercial operation, whichever is later.

Table A-14.9: Approved Interest & Guarantee charges and interest on working capital (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Interest Charges	32.03	19.46	8.44	5.96
Interest charges for 10	26.69			

Particulars	FY 06	FY 07	FY 08	FY 09
months				
Interest on Working Capital	136.64	54.72	52.83	52.35

Return on Equity

For FY 06 the Commission allowed return at the rate of 14% on this amount. As the MPPGCL did not have details of equity employed in each project, the Commission accepted the proposal of allocating total equity in proportion of the opening gross block of the assets. The Commission did not consider return on equity invested in Rana Pratap Sagar and Jawahar Sagar. For the MYT control period Commission allowed the proposed return by MPPGCL.

Table A-14.10: Return on equity

Particulars	FY 06	FY 07	FY 08	FY 09
Equity at the end of the year	969.86	929.57	929.57	929.57
Approved Return on Equity	135.78	129.106	129.106	129.106
Proposed Return on Equity	130.14			
Approved Rate of Return	14%	14%	14%	14%

Tax

For the year FY 06 the Commission calculated the tax by not grossing the post tax return on equity. The Commission corrected it and calculated tax expenses for the period of 10 months @ Rs. 65.30 Crore. The Commission allowed MPPGCL to bill the MPSEB for the actual tax liability incurred by it subject to the maximum of Rs 65.30 Crore. The amount billed by the Generating Company was allowed as a pass through item in tariff and was to be paid by MPSEB at actuals subject to the maximum of Rs. 65.30 Crore.

The tax liability of MYT control period was computed based on the 30% plus 10% surcharge and 2% education Cess. The Commission asked the MPPGCL to bill the beneficiary for the tax liability to be incurred by it subject to the maximum of Rs. 214 Lakh, Rs. 900 Lakh and Rs. 3136.9 Lakh respectively for ATPS, STPS and SGTPS for all the control years. For Hydel plants it was Rs.23.01 Crore for all the control years.

Total Fixed Cost

The Commission has approved the total fixed cost for MPPGCL based on the approach for various components as discussed above. The Commission has provided a break up of approved plant wise as well as component wise fixed cost right from the first tariff order post unbundling. The same approach was applied for approving fixed cost for the MYT control period. The table below gives details about the approved total fixed cost for each year.

Table A-14.11: Approved Fixed Cost (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Approved	741.13	688.91	697.77	704
Approved for 10 Months	617.16			
Thermal	606.35	551.86	560.22	565.95
Hydro	134.78	137.05	137.55	138.05
Fixed Cost per unit (Rs/kWh)	0.48	0.44	0.44	0.44

Fuel Costs

The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. While approving the fuel costs various parameters like heat rate, specific oil consumption, auxiliary consumption, transit loss etc are considered.

Coal Transit Loss

In the Tariff order of FY 05 Commission had expressed grave concern over high transit and stacking losses and directed that the transit losses should be progressively reduced to normative levels fixed by CERC. For the year FY 06, Commission considered the actual losses of in FY05 and CERC specified losses for pithead and non pithead station allowed 0.3% losses for ATPS, 0.6% loss for STPS and 1.5% for SGTPS. However, the Commission for FY 06 allowed 0.5% as stacking losses in addition to the above transit losses, but at the same time it directed that it would not allow the stacking losses from next year onwards. For MYT control period the Commission allowed transit loss @0.3% and 0.8% for ATPS and STPS respectively for all the three control years, and for SGTPS it was 1.80% for FY 07 and thereafter there was reduction of 0.30% reduction year on year.

Any variation in the approved fuel cost by can be passed on to the consumers by way of VCA (Variable Cost Adjustment). A comparison of the approved and claimed fuel cost is summarized in table below.

Table A-14.12: Approved Fuel Cost (Rs. Crs)

Particulars	FY 06	FY 07	FY 08	FY 09
Approved	1468.93	1609.7	1607.65	1591.49
Approved Fuel cost Rs./kWh (Net)	1.12	1.22	1.20	1.18
Total cost Rs./kWh Approved	1.43	1.47	1.46	1.45

The approach adopted by the Commission for computing the fuel price in each of the Tariff Order issued during FY06 to FY09 for MPPGCL is summarized below.

Table A-14.13: Approach for determination of Fuel Price

Particulars	FY 06	FY 07 to FY 09
Coal	For ATPS the weighted average cost of coal received in FY05 had been considered whereas for STPS and SGTPS the weighted average cost paid during the period April 04 to December 04. For Net Calorific Value Commission took weighted average mean of NCV for April 2004 to March 2005 for all its three power stations.	Commission has taken weighted average landed cost considering all sources from which the supply was received and all grades of coal that were Received during the period April 2005 to October 2005.The Commission took the actuals of weighted average of NCV of April to September 2005 for all the three years.
Oil	Weighted average price of secondary oil (Rs. /KL) paid in FY05	

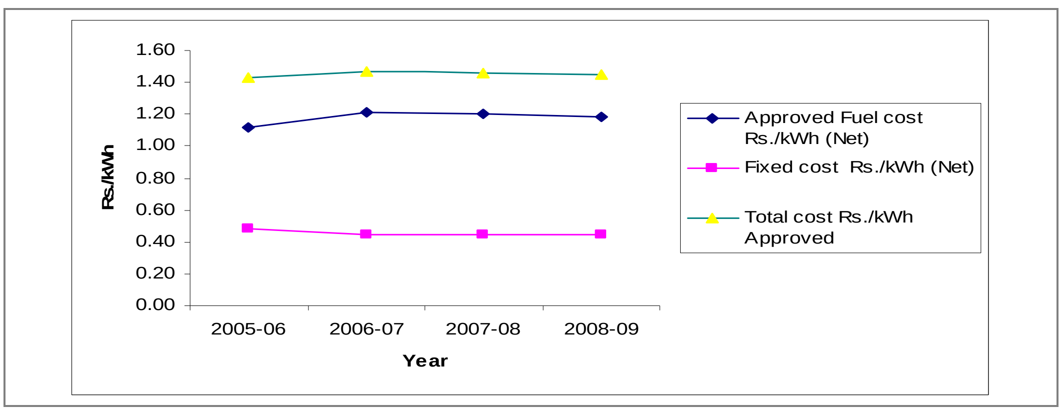
Total Cost

As per CERC principles the Commission introduced two part tariff structure for the **hydro generating stations** i:e tariff was determined and consisted of Capacity (Fixed) charges and Energy (Variable) charges separately for each generating station. MPPGCL was eligible to recover primary energy charges for each hydro station. The primary energy charge was to be paid monthly for the saleable primary energy (primary energy less auxiliary consumption) for the month at the rate of the thermal station having the least variable cost in the western region.

For **thermal generating stations** the Energy (Variable) Charge of the thermal generating stations comprise of fuel and related cost viz. landed cost of coal, oil, government levies etc. and the consumption is based on the operating norms fixed by the Commission from time to time. Any variation in the cost on account of price, net calorific value based on the actual grade of supply etc. was allowed as a recoverable through a Variable Cost Adjustment (VCA) formula approved by the Commission.

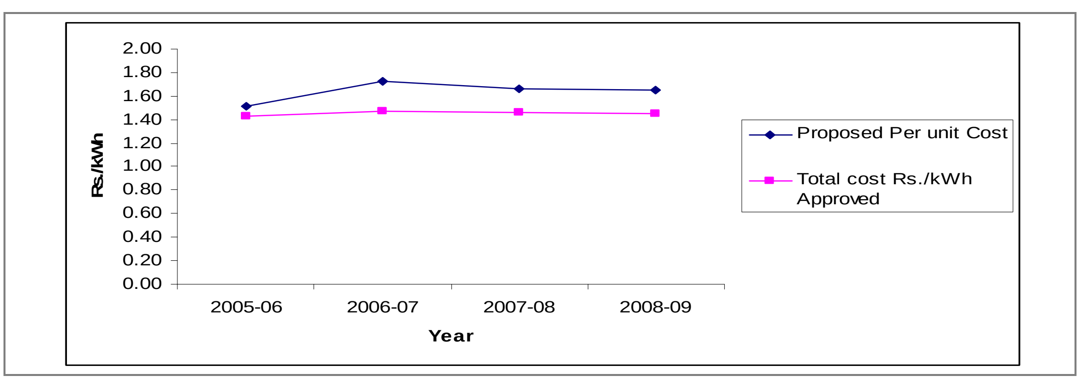
For FY06, the Commission had decided to fix separate tariffs for capacity made available and energy generated both for thermal and hydro generating units so that intra-state ABT could be made applicable as and when introduced. The Commission therefore fixed the availability targets for each station equal to PLF targets.

Graph A-14.2: Approved, Per Unit Total Cost (Rs. Per unit)



The generation tariff applicable to the generating stations during each year is based on the fixed and variable costs approved by the Commission in each tariff order. A comparison of the approved, and claimed total cost per unit for MPPGCL generating stations as a whole is shown in the graph below.

Graph A-14.3: Proposed and Approved Cost per unit



Incentive Level

The Commission determined that the incentive would be paid if the capacity index is more than the normative level i.e. above 90% for purely run of the river and above 85% for storage type and Run of the river plants with pondage. Incentive in case of hydro stations was to be determined as per the following formula.

Incentive= 0.65* Annual fixed charge*(CIA-CIN)/100

Where CIA=Capacity Index actually achieved

CIN= Normative Capacity Index

For thermal plants Commission directed that it would allow an incentive for actual generation in excess of generation based on target PLFs as approved for the year.

A-14.2. Madhya Pradesh – State Transmission Utility

Introduction

MPPTCL was a company incorporated under the Companies Act, 1956 in 2002 and was functioning under an O & M Agreement with MPSEB ever since. The Government of Madhya Pradesh notified the transfer scheme vide its notification No. 3679/FRS/18/13/2002 dated 31st May 2005 as per which the MPPTCL was assigned assets and liabilities, on a provisional basis, as per the table given below:

Table A-14.14: Opening Balance Sheet of MPPTCL as on 31st May, 2005

Liabilities and Capital	Amt.(Rs. Crs)	Assets	Amt.(Rs. Crs)
Equity From GoMP	845	Fixed Assets	1331
Project Specific Capital Liabilities	531	Capital Works in Progress	847
Loan from MPSEB	835	Current Assets	66
Current Liabilities	33	Regulatory Assets towards Pension Liabilities	3910
Pension Liabilities	3910		
Total	**6154**	**Total**	**6154**

MPPTCL is the owner of the transmission network previously owned by Madhya Pradesh State Electricity Board (MPSEB). MPPTCL started functioning independently from 1st June 2005. The Transmission Licensee filed the petition for determination of transmission tariff for the period after coming into effect of GoMP notification dated 31st May 2005, which provided that MPPTCL is to provide transmission services for conveyance of electricity from generation stations of MP Power Generating Company Limited (MPPGCL) and other generating stations and also interconnection points of Power Grid Corporation of India Limited (PGCIL) and other Transmission Licensees to the interconnection points of the long-term users in the State and also undertake the functions of the State Transmission Utility (STU), State Load Despatch Centre and System Operators as provided in the Electricity Act, 2003.

The tariff order for FY04-05 was for a bundled utility and has been analyzed along with the Analysis for the DISCOM's. Where ever possible we have quoted the relevant figures from tariff order of FY 05. The tariff order for FY 05-06 was applicable only for 10 months i:e from 1st june,05 to 31st March,06 as unbundling took place on 1st June, 05. From the year FY 07 to 09 the Commission adopted Multi Year tariff principles for ARR approval.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY FY 06 to FY FY 09 in approval of the Annual Revenue Requirement (ARR) of the state transmission utility MPPGCL.

Transmission Losses

The Commission in the tariff order for FY 05 allowed average transmission loss of 5.86%. The Commission for the year FY 06 accepted the proposal of MPPTCL and pegged the transmission losses for the FY06 at 5.22%.The Commission directed MPPTCL to make available voltage wise losses which would give it pointers to reduce the transmission loss. The Commission expressed that transmission loss at 220 KV should be given importance, as loss is higher at this voltage. For the year FY 08 the Commission accepted Transmission loss proposed by MPPTCL.

Table A-14.15: Transmission Losses

Transmission Loss	FY 06	FY 07	FY 08	FY 09
Approved	5.22%	5.00%	4.90%	4.90%
Proposed	5.22%	5.00%	4.90%	4.90%
Actual Loss	5.23%	5.00%		

Capital Expenditure

The Commission for the year FY 06 allowed Capital Expenditure as was proposed. MPPTCL submitted a Comprehensive Transmission Plan (Investment Plan) to the Commission for the period FY06 to FY10. The proposed plan was of Rs. 4469.45 Crore. MPPTCL revised the estimate for its Investment plan to Rs. 6804.46 Crore. The Commission provisionally accepted that but directed MPPTCL to furnish its stated set of requirements e.g. MPPTCL was required to inform the Commission after every six months about the physical and financial progress in respect of each work executed under various schemes.

Operation and Maintenance (O&M) Cost

The Commission approved employee cost, R&M and A&G cost separately for FY 05-06. From MYT control period onwards Commission approved consolidated O&M expenses for FY06-07, FY 07-08 and FY 08-0-9 in its Tariff Orders for MPPTCL. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

Employee Cost

For FY06 the Commission had determined the employee cost by allowing an inflation increase of 6% over the actual amount of Rs. 66.71 Crore incurred in FY05. The Commission allowed the capitalization rate of 10% for FY06. The employee expenses were then pro rated for a period of 10 months. The leave encashment is considered part of employee expenses.

Repair & Maintenance (R&M) Expenses

The Commission decided to allow an increase of 6% for FY06 over gross Repair and Maintenance expenditure incurred in FY05. The Commission considered the capitalisation rate of 10% for FY06.

Administrative & General Expenses

For the year FY 06, Commission, looked into the past annualized increases and the requirement of a newly formed company, and allowed 10% increase over FY05 actual expenditure (excluding fee paid to MPERC) and the projected MPERC fee for FY06. The Commission for FY06 considered a capitalisation rate of 10%.

For the MYT control period the Commission approved the O&M Expenses on the basis of the norms as specified by the Commission in its regulations “MPERC (Terms and Conditions for Determination of Transmission Tariff) Regulations, 2005. The Commission allowed O&M cost based on the possible increase in physical quantities of assets of the Transmission Licensee in FY06. This increase in the physical numbers was based on the capital expenditure plan approved by the Commission and the physical progress likely to be achieved as stated by the Licensee. The Commission believed that this would incentivize MPPTCL to expand the network economically and efficiently.

In the true up for the year FY 07, MPPTCL said that there was increase in the employee expenses due to the wage revision and revision in the Dearness Allowances as declared by the State Government. The Commission approved the same as it found it as an uncontrollable item and therefore revised employee expenses to Rs.98.58 Crore. Though there was no separate definition for A&G expenses and R&M expenses in the Transmission Tariff Order. The Commission considered it separately for the purpose of true up. For A&G Commission allowed the actual expenses incurred by it on the account and therefore A&G trued up came to Rs. 1201.07 Lakh. For repair and maintenance Commission approved the actual expenses incurred by it , so as to encourage MPPTCL. The Commission approved Rs. 2081.95 Lakh as claimed by MPPTCL. In all the Commission allowed an additional O&M expenses to the tune of Rs. 38.75 Crore.

Table A-14.16: Approved O&M Expenses from FY 06 to FY 09

<table>
<tr><th>Particulars</th><th>FY 06</th><th>FY 07</th><th>FY 08</th><th>FY 09</th></tr>
<tr><td>Employee Cost (Rs. Crs)</td><td>63.64</td><td rowspan="3">92.66</td><td rowspan="3">98.21</td><td rowspan="3">104.11</td></tr>
<tr><td>R&M Expenses (Rs.Crs)</td><td>13.95</td></tr>
<tr><td>A&G Expenses (Rs.Crs)</td><td>10.08</td></tr>
<tr><td>Net O&M expenses</td><td>87.67</td><td>92.66</td><td>98.21</td><td>104.11</td></tr>
<tr><td>Total Approved ARR (Rs. Crs)</td><td>462</td><td>599</td><td>647</td><td>672</td></tr>
<tr><td>%O&M Cost of Approved ARR</td><td>13.77%</td><td>15.48%</td><td>15.18%</td><td>15.48%</td></tr>
</table>

Terminal Benefits

For terminal benefits which were not approved as a part of employee cost the Commission considered the figure available in as per the Balance Sheet. For FY06 the Commission allowed a 6% rise over the amount of Rs. 120.40 Crore actually paid in FY05. Thus, for FY06 Rs. 127.62 Crore was allowed for payment of terminal liability. For 10 months the Transmission Licensee was entitled to receive Rs. 106.35 Crore.

For the MYT control period Commission determined the allowable terminal liability on the basis of existing practice. For FY07 and onwards a 6% rise was allowed each year over the average monthly payment done in FY06.The Commission considered the actual expense incurred for funding the trust after it is operationalised while truing up in subsequent orders. In the true up order for FY 07 the Commission allowed the actual expenditure of 194.72 Crore incurred on account of payment of terminal benefits.

Depreciation

For the year FY 06 the Commission adopted the rates specified by CERC for Transmission Licensee applicable for the tariff period FY04 to FY09. The depreciation was calculated on the gross block of fixed assets notified by GoMP as on 1st June 2005 in the transfer scheme at rates specified by CERC. MPPTCL had not claimed any addition of fixed assets to the notified gross block for calculation of depreciation since it had followed the provisions of ESSAR 1985.

For the MYT control period, the Commission computed the allowable depreciation considering the asset capitalisation year wise and with the applicable rates based on opening balance and allowing for six months of depreciation on the asset added during the year. The depreciation has been provisionally allowed at rates prescribed by the Commission.

Interest cost

The Commission has mapped the loans to purpose for which they were availed and allowed interest on those loans only. For the year FY 06, MPPTCL was not able to map part of MPSEB loan to any project and also was reluctant to provide the details for the same. The Commission took a right stand and considered that part of MPSEB loan as considered as working capital loan.

For the MYT control period Commission did a loan wise analysis and divided interest into one that was to be capitalized (WIP) and the other (revenue) which was to be charged. In case of MPSEB the Commission followed the same approach as it had followed for the previous year.

Interest on Working Capital

The Working capital is based on the following norms:

- O&M Expenses for one month
- Maintenance spares @1% of historical cost escalated @ 6% per annum
- from date of commercial operation
- Receivable on two months of transmission charges calculated on target availability basis
- The interest rate (SBI's PLR) plus one percent

For FY 06 the Commission approved interest on working capital @ 12.75%. The Commission had considered Rs. 123 Crore of MPSEB loan as working capital borrowings even though it is much in excess of the normative needs of Rs. 86.11 Crore . the interest cost calculated was then pro rated for 10 months and was approved at Rs. 13.07 Crore.

For the MYT control period the Commission allowed the interest on MPSEB excess loan as it had done in the previous year. The Commission took the interest rate for the purpose of working capital interest as 11.25%.

In the true up order Commission went in great details while approving interest cost. It allowed actual interest of MPPTCL i:e actual interest expenses of the amount of Rs. 79.83. In case of interest on MPSEB loan Commission considered interest on MPSEB loan of Rs. 173.61 Crore and therefore approved the additional interest of Rs. 20.83 Crore at the rate of 12% p.a. The interest on working capital loan was trued up @ 11.25% which worked out to Rs. 17.29 Crore.

Rate of Return

The Commission allowed return on equity at the rate of 14%. MPPTCL had proposed return of Rs. 92.82 Crore as return on equity and Rs. 21.84 Crore as interest on equity in excess of 70:30 norms. The Commission directed MPPTCL to keep accurate details of utilization of all sources of funds for the purpose of creation of fixed assets and meeting working capital requirement.

For the MYT control period 14% return on equity employed in assets that have been commissioned was approved.

In the true up order the Commission approved Return on Equity as proposed by the Transmission Licensee and allows the Return on Equity to the tune of Rs. 132.55 Crore.For the purpose of true up the Commission considered the average equity equal to Rs. 946.76 Crore.

The details pertaining to approved rate of return between FY FY 06 and FY FY 09 are given in the table below:

Table A-14.17: Approved Rate of Return between FY 06 and FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Equity (Rs.Crs)		877	909	909
Approved Return on Equity (%)	14%	14%	14%	14%
Approved Return on Equity (Rs.Crs)	101.08	122.78	127.26	127.26

Non Tariff Income

MPPTCL did not project the income under this head and therefore the same was not considered by the Commission. But as an when the income accrues under this head the licensee was asked to reduce the Annual Transmission Charges (TSC) allowed by the Commission by this amount. The charges to be paid by the long-term beneficiaries were to be reduced accordingly. In the true up order for FY 07, the Commission considered non tariff revenue equal to Rs. 3.93 Crore.

Incentives and Penalties

As per the tariff order of FY 06 the Commission allowed MPPTCL to receive incentive on achieving weighted annual availability beyond the target availability of 95 % indicated in Transmission Performance Standards. The availability shall be paid in accordance with the following formula:

Incentive= 722 (Equity employed in completed assets) * (Annual availability achieved-95%)/100

The incentive was to be paid by all beneficiaries who are liable to pay to annual transmission charges in the ratio of their average allotted capacity for the year.

For the MYT control period incentive was based on the achieving weighted annual availability beyond the target availability as per the regulations.

In the true up order for FY 07 the Commission approved an incentive of Rs.17.18 Crore as MPPTCL had achieved annual availability of 98.96% which was higher than the 97% as was specified in regulations.

Annual Revenue Requirement

The Commission approved the ARR by considering all the above components. The table below shows the ARR approved by the Commission vis-à-vis that proposed by MPPTCL from FY FY 06 to FY FY 09.

Table A-14.18: Approved ARR for MPPTCL from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	462	599	647	672
ARR proposed by MPPTCL(Rs.Crs)	693.31	680.08	762.49	870.09
% Disallowance	33%	12%	15%	23%

The ARR approved for FY 06 shown in the table is for the period of 12 months but as it has to be only for 10 months therefore the ARR approved for 10 months comes to Rs 385.18 Crore. In the true up order for FY 07 the revised ARR came to Rs. 673.15 Crore. The Commission directed that the True up amount for FY 07 of Rs. 74.47 Crore was to be recovered by the Transmission Licensee in 12 equal installments during FY 09 along with the Transmission Charges as determined by the Commission for FY 09.

During the true up for the year FY 07 MPPTCL submitted the revised ARR's for the FY 08 and FY 09, the Commission did a very good job by not accepting the revision and said "*the Commission is of the view that the revision in ARR for FY 08 is not at all warranted at this point of time, since FY 08 is almost over and the actual performance and audited figures would be available after the completion of FY 08".* It further said that *"The mid term revision in the norms defeats the purpose of MYT frame work".*

MPERC is a case in point of adopting MYT not only on paper but in spirit as well.

Determination of Transmission Charges & Open Access Charges

The Commission followed the MPERC (Terms and Conditions for Intra-State Open Access in Madhya Pradesh) Regulations, 2005 for calculating tariff payable by Long-term users. The tariff determined by the Commission for use of intra-State transmission system was recoverable from long-term users in the ratio of their allocated capacity and any short-term users were to pay as per terms notified for open access and were treated in accordance with the terms and conditions.

Table A-14.19: Approved Transmission Tariff from FY 06 to FY 09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Crs)	462	599	647	672
Approved Total Transmission capacity (MW)	5563	6011	7220	8170
Transmission Loss %	5.22%	5.00%	4.90%	4.90%

Particulars	FY 06	FY 07	FY 08	FY 09
Transmission charges to Long Term open access customers (Rs./MW/Day)	2276.34	2728.73	2454.93	2254.99
Transmission charges to Short Term open access customers (Rs./MW/Day)	569.09	682.18	613.73	563.75
Upto 6 hours in one block (0.25* Short term charges) (Rs./MW/Day)	142.2725	170.545	153.4325	140.9375
More than 6 hours and upto 12 hours in one block (0.5* Short term open access charges) (Rs./MW/Day)	284.545	341.09	306.865	281.875
Transmission Charges payable fo Non-conventional energy (Rs./unit)	0.42	0.51	0.45	0.42

The long-term users of transmission system were required to pay the allowable transmission charges to the Transmission Licensee every month. The short term users were required to pay 25% of the charges payable by the long term users. The short term users were further divided into different blocks and paid a percentage of short term term charge. As per the Government of MP notification the non-conventional energy generators were required to bear 2% of the energy transmitted as transmission losses while the Government would reimburse the Licensees the cost of 4% loss. The transmission charges determined are allocated between the generators and the Government in the same ratio as 1:2.

SLDC Charges

For the year FY 06 as the SLDC had not been maintaining a separate account for SLDC charges .Therefore for the year the annual transmission charges of the Transmission Licensee determined by the Commission in the order for FY06 were inclusive of charges for SLDC charges.

In the year FY 07 the Commission came out the separate SLDC order which was governed by MPERC (Levy and Collection of Fee and Charges by State Load Despatch Centre) Regulations, 2004. The Commission approved the SLDC ARR to the tune of Rs. 15.75 Crore and ascertained the Charges payable per months / MW by long term open access consumers as 26203.

A-14.3. Madhya Pradesh – DISTRIBUTION UTILITIES

Introduction

Post unbundling three DISCOMs came into being. The DISCOMs filed their individual petitions. The Commission came up the Tariff order thus approving individual ARR's for each DISCOM. The three DISCOMs are viz

- Madhya Pradesh Poorva Kshetra Vidyut Vitaran Company (East),
- Madhya Pradesh Paschim Kshetra Vidyut Vitaran Company (West) and
- Madhya Pradesh Madhya Kshetra Vidyut Vitaran Company (Central)

As previously mentioned the tariff order for year FY 05 was for bundled utility. The Consumer categories in the year FY 05 were different than the ones which are present today. So for the sake of not making any wrong analysis we have analysed the Tariff order for FY 05 separately.

For the year FY 06, as it was governed not governed by MPERC (Terms and Condition for determination of Distribution Tariff) Regulations, 2005, so we did a separate analysis of the Tariff order and its true up order.

Tariff Order for FY 05

MPSEB in the year FY 05 operated as a bundled utility and was thus handling Generation, Transmission and Distribution. The approach for tariff setting for the year by MPERC was governed by "Tariff Philosophy, December, 2003".

Sales/ Demand

The sales to different categories of consumers (except agricultural/SLP connections) during FY05 were estimated considering the past trends of 5 year sales and taking into account extraneous factors, if any. Based on the analysis of sales, the total sales to LT and HT categories had been determined as 16885 MUs.

For agriculture sales the Commission approved the projections made by board but directed board to conduct a study based on scientific methods to arrive at a reliable estimate of load factor for agriculture sales. The Board projected the number of consumers would rise and reach the level of FY 02. The Board had assumed that the load factor for this category shall be 17.5% in FY 05 and considered the sales in FY 05 at the same level of FY 04 i.e. 5,342 MU.

T&D Losses

For FY05, the Board, in its Tariff petition had submitted a target reduction of 1.5% for FY 05, the loss level estimated by the Board for FY 05 was 40.5%. The Commission did not accept it and decided to adhere at least to the loss levels stated by the Board in its December, 2003 petition and accordingly, had approved a loss level of 40.5% for FY 05.

Generation and Power Purchase Expense

Plant Utilisation Factor

The Commission accepted the projections for PUF made by MPSEB. The Board had projected higher PUFs for the stations for FY 05 than the actual PUFs for FY 04 in spite of a provision for higher planned maintenance days in FY 05. The Table 1 gives details about the PUF for the year FY 05.

Auxiliary Consumption

The Commission compared the auxiliary consumption of the generating stations of similar age in India with those of MPSEB stations. It found that the auxiliary consumption levels allowed for the previous Tariff Order were quite reasonable and there was no reason to deviate from these. Accordingly, the Commission had maintained the auxiliary consumption at the same levels as were allowed in the previous order. The Table 1 gives details about the Auxiliary Consumption for the year FY 05.

Station Heat Rate (SHR)

The Commission at the behest of board compared the SHRs allowed for MPSEB stations with the SHRs allowed for the stations of other utilities with similar vintage. The Commission made the slight relaxation in norms because of the age of stations. The Table 1 gives details about the PUF for the year FY 05.

Coal Transit Loss

The Commission for the year approved the projection made by MPSEB but directed the board to progressively reduce the coal transit loss in future years to the normative levels of transit losses fixed by CERC .MPSEB estimated transit losses to be 3% for each station and an additional stacking loss of 1%.

Table A-14.20: Approved Thermal generation efficiency parameters

Particulars	PUF (%)	Auxillary (%)	SHR (kcal/kWh)
ATPS	53.40%	10%	3500
STPS	75.20%	8.90%	2910
SGTPS	72.80%	9.20%	2825

Generation

The Commission approved the generation from thermal plants based on the approved technical parameters as shown in table 1. For hydel generation, the Commission took the average generation in the last 11 years of the hydel plants (including shared stations) to arrive at a fair estimate of generation from these stations for FY 05, except for newer stations, for which the average had been taken for the number of years for which they have been functional. The Commission approved the total Net Generation of 14,976.77 MUs @ Rs.1.05.

Power Purchase Quantum and Cost

Based on the Commission's sales estimates of 16885 MU and approved loss levels of 40.5%, the energy input required was 28,378 MU. At a self generation of 14,976 MU approved by the Commission the power purchase requirement came to 13,401 MU. The Commission had disallowed the variable charges of power purchase amounting to 860 MU from Kawas station. Only the fixed charges and other charges amounting to Rs 82.2 Crore had been allowed for Kawas station. Additionally, the Commission had considered the impact of retention of power from shared stations by MP and as a result, deemed power purchases were reduced by 625 MU. The remaining 277 MU had been reduced from non-committed sources such as PTC/TPC etc. The Commission approved the power purchase of 13401.45 MUs @ Rs.1.81.The total Power purchase cost was approved at Rs. 2423.39 Crore.

O&M Cost

The Commission segregated the O&M expenses into Employee expenses, Repair and maintenance and Administrative & general Expenses.

Employee Expenses

The Commission had considered the actual employee expenses for FY 03 and allowed for increase in salary on account of increments and promotions at the historic rate of increase observed which 2.2% was. Staff costs other than terminal benefits had been increased considering the inflation rates of 5% in FY 04 and 7% in FY 05. DA rates applicable to MPSEB employees had been considered at 61% of Basic and Additional Pay for FY 05. Terminal benefits had been considered as estimated by the Board at actuals.

Repairs and Maintenance

The Commission approved R&M expenses for the functions of Generation, Transmission and Distribution. The Commission examined the R&M of different Commissions and arrived at the conclusion that R&M allowed should be in the range of 1% and 3% of the opening gross blocks.

Administration and General Expenses

The Commission considered the approved expenses in FY 03 as reasonable and increased it for the inflation rate and to that extent of 5% for FY 04 and 7% for FY 05.

Depreciation

The Commission had utilized the services of an independent CA firm to verify the gross block and depreciation figures submitted by the Board and found weighted average rate of 4.85% proposed for FY 05 in line with the historic trend of depreciation accepted it.

Interest and Finance Charges

The Commission disapproved the interest and penalty on the books of the Board on account of overdue components. Additionally, the Commission took into consideration the impact of delayed debt disbursal in FY 05 as against the original plan of the Board and also reduced the interest on regulatory asset desired by the Board as the Commission did not take any stand on the revenue gaps of FY 03 and FY 04 in absence of final and audited accounts.

Return

The return had been approved at 3% of the value of Net Fixed Assets at the beginning of the financial year less the consumer contribution and capital subsidies. The Commission had agreed with the Board's projections and had approved Rs 134.3 Crore as reasonable return for FY 05.

Tariff Determination

The Commission increased the tariffs to bridge the gap of Rs. 783.4 Crores. The increased tariffs were applicable only for 3 months. The Commission directed the board to bring the Application for determination of Tariff for FY 06 to bridge the gap.

Average Cost of Supply and Realisation

The average cost of supply came to Rs. 3.67. The cost of supply was relatively much higher at lower voltages (covering residential, domestic, agricultural, LT industrial categories, etc) than in serving HT loads. The tariff structure contained a built in cross subsidy mechanism since the industrial and commercial categories were charged at a rate higher than the cost to supply and the agricultural and domestic categories were charged a rate lower than their cost to supply. The Cost of Supply was calculated at various voltage levels starting from the EHV level and going down to the LT level.

Table A-14.21: Snapshot of ARR for FY 05

Particulars	FY 05
Generation Expenses	1578.3
Power Purchase	2423.4
Repair & Maintenance	261.8
Employee Expenses	933.7
A&G Expenses	80.6
Depreciation	502.2
Interest & Finance Charges	254.8
Other Debits/Prior Period Charges	21.9
RoR @ 3%	134.4
Non Tariff Income	-366.9
Annual Revenue Requirement	**5824.2**
Revenue from Sale of Power	5040.8
Revenue Gap	**-783.4**

Tariff Order for FY 06

It was the first tariff order post unbundling where in the successor entities viz MPPTCL (Transco), MPPGCL (Genco), MP Madhya VVCL, MP Poorv VVCL, MP Paschim VVCL started functioning as independent entities.

The salient points of the tariff order for the year were:

- Till the determination of tariff and terms and conditions by the Commission, Genco was to be paid amounts on adhoc basis by MPSEB at the rate of Rs. 1.51 per unit (kWh) on average basis (thermal and hydel generation combined).
- As per the Transmission Service Agreement entered into between the Transco, Genco, MP Madhya VVCL, MP Poorv VVCL, MP Paschim VVCL and MPSEB an adhoc rate of paise 17.82 per unit (KWH) of energy transmitted was levied by the Transco on the three distribution companies.
- In the Bulk Supply Agreement entered into by the MPSEB and the three distribution companies, the former agreed to supply electricity in bulk to the latter from the effective date viz. 1st June 2005. The BST charged was differential for the three DISCOMs. The BST charged was:
  - ➢ East DISCOM -- Rs. 1.58 per kWh
  - ➢ Central DISCOM -- Rs. 1.41 per kWh
  - ➢ West DISCOM -- Rs. 1.5475 per kWh
- The Retail supply tariff was uniform across DISCOMs.
- Changes were made in the existing Tariff Structure. The changes made are mentioned below.

  - ➢ Domestic users' fixed cost charge was being significantly reduced by making four slabs on the basis of usage pattern.
  - ➢ Fixed cost charge was altered for domestic category and non-domestic category consumers in way that the users of domestic category could get considerable relief and the licensee also was assured of certain minimum revenue per consumer connected to the system.
  - ➢ The cut off date of prohibited supply of electricity without meter after 9th June 2005 under Electricity act 2003 was allowed some extra time and in the meanwhile the consumption made by such un-metered consumers was assessed on an ad-hoc basis as 65 units per month in rural areas and 100 units per month in urban areas.
  - ➢ In order to provide relief to the small and marginal agriculturists using electricity for irrigation purpose, per unit rate was lowered from the existing 220 paise to 175 paise for the first 300 units of consumption each month.
  - ➢ In order to compensate rural areas which had been subjected to prolonged interruptions owing to load shedding practices adopted by the licensee Commission, linked the fixed charges to the hours of supply and had allowed rebate to consumers affected by load shedding.

True up order for FY 06

The Commission came up with the true up order of the year FY 06 on 16th January' 2008. As per the true up petition of DISCOMs for the period June 05 to Mar 06 East DISCOM projected Revenue income from sale of power at Rs. 1687.87 Crore, West projected it at Rs. 1699.29 Crore and Central projected the same at Rs. 1428.84 Crore.

Sales/ Demand

The Commission considered the audited actual sales data for the year FY 06 for the true up purpose.

T&D

For the period of true-up under consideration, there were no notified targets for loss reduction. The Commission had tried to interpolate the GoMP loss reduction trajectory to determine the levels that would have been allowed for FY 06 if the trajectory contained targets for FY 06. This a priori process led the West DISCOM's actual distribution losses turning out to be more than the "normative" level so determined. The Commission, therefore, felt that if the losses to the other two DISCOMs, being poorer performers, were allowed at actuals, it would not be fair to the West DISCOM if its losses were curtailed. Therefore, for the period June 05 to Mar 06, the Commission allowed the actual distribution losses to all three DISCOMs.

Power Purchase Quantum and Cost

The Commission arrived at the power purchase quantum after considering the MP Transco losses and PGCIL losses. For truing up the power purchase cost the Commission analysed the short term power procurement from traders as no approval was sought from the Commission regarding it. The Commission took serious view of this as the license was not able to demonstrate to the satisfaction of the Commission that such short-term requirement has been met in the most economical manner. The Commission allowed power purchase at the differential BST notified under the Transfer Scheme.

Operation and Maintenance Costs

The Commission analysed the actual O&M expenses in two ways:

(a) Comparison of actual O&M expenses with the normative O&M worked out using norms as prescribed by MPERC for FY 06-07 in the erstwhile regulations for tariff determination for DISCOMs – worked backwards for FY 05-06;

(b) Benchmarking different elements of O&M expenses (R&M, Employee, A&G expenses) with those of distribution companies in other States

The Commission found out that the employee expense per unit of sales is highest for MP East DISCOM. In general, this ratio was higher for all three DISCOMs in MP as compared to the DISCOMs in other States.

Repairs and Maintenance expenses for MP DISCOMs was low which signified under-spend in the upkeep of the network, and required a regulatory review and resolution of the underlying causes.

The expenditure level of MP DISCOMs on A&G expenses was found to be comparable to that of the DISCOMs in other States.

It was seen from the benchmarking exercise above that the MP DISCOMs had spent considerably less on O&M in absolute terms as compared with the distribution companies in other States.

Depreciation

As the terms and conditions of distribution tariff were first published on the 5th of December 2005., considerable time had passed of the tariff period of year FY 06. Therefore, Commission accepted the depreciation terms, as adopted by the Licensees and did not apply rates prescribed by the Central Electricity Regulatory Commission (CERC) as per the rules.

Interest Costs

The Commission examined the interest claims of the DISCOMs from the audited accounts and the repayment schedules for each funding agency as provided by the Licensees. The Commission as per the regulations has to map the loans and equity with Fixed Assets and CWIP in order to identify the debt and equity eligible for earning Interest and Return respectively. As the year FY 06 did not fall under the purview of the above mentioned Regulations. The Commission therefore allowed for true-up, the actual interest claimed by the Licensees in their Audited Accounts, without attempting to map debt and equity to fixed assets and capital works in progress. In case of West DISCOM, however, Penal Interest amounting to Rs. 5 Lakhs has been disallowed.

For Interest on Working capital, Commission accepted the Licensee’s claim. For interest on security deposits the Commission accepted and approved for truing-up purposes, the actual interest on Consumer Security Deposit (CSD) as accounted for by the Licensees. The amounts computed in table above @ 6% are on the average of opening and closing balance of CSD.

Return

The return for the year was based at the rate of 3% of opening balance of Net Fixed Assets less consumer contributions and capital subsidies.

Bad and Doubtful Debts

The Commission considered the actual write-offs as submitted by the Licensees for the purpose of true up.

The table below shows the consolidated details about the three DISCOMs for FY 06

Table A-14.22: Snapshot of Trued up components for FY 06 (10 months)

Particulars	East	West	Central
Sales	4756	6204.95	4554.35
T&D	36.74%	36.24%	44.30%
Total Power Requirement for purchase allowed	8129.84	10523.2	8842.41
Power Purchase Cost (Rs. Crore)	1290.29	1630.39	1253.72
Capacity Allocated (MW)	1650	2091	1812
Allowed MP Transco charges (Rs. Crore)	114.18	144.7	133.41
O&M expenses	208.46	207.9	193.87
Depreciation	45.77	54.82	46.83
Interest and Finance Charges	30.68	37.36	20.37
Interest on Working capital	0.92	3.21	1.16

Particulars	East	West	Central
Opening NFA	493	631	493
Return (Rs. Crore)	12.33	15.78	12.33
Bad and Doubtful debts	104.01	0.03	0
Total Revenues	**1732.46**	**1821.61**	**1519.41**
Revenue from Sale of Power	1651.72	1699.29	1428.84
Tariff Subsidy	80.74	122.32	90.57
Expenditure	1811.38	2104.99	1668.2
Non Tariff Income	164.39	165.11	180.48
Expenditure for the Purpose of ARR (Expenditure- non tariff income)	**1646.99**	**1939.88**	**1487.72**
Allowed Profit / (Loss) for pass through	**85.47**	**-118.27**	**31.69**

For the years FY 07, FY 08 and FY 09

Sales / Demand

Metered Categories

For the year FY07,the Commission used the top-down approach to arrive at the sales forecast and power purchase requirement of the DISCOMs. The Commission had considered the trend in the power purchase quantum of three DISCOMs combined over the last four years.

For FY 08 the Commission looked at the sales forecast of all metered consumers and compared the same with the past trends. The Commission took note of DISCOM's supporting submissions with regard to sales projections of various categories and considered the assumptions as reasonable. The Commission said that it does not wish to bring down the sales forecast as MP has sufficient power available even after accounting for T&D loss.

The same approach was followed for the year FY09.

Unmetered Categories

The Commission approved the un-metered sales in domestic and agriculture category based on the following norms:

- Un-metered consumers in domestic category were billed on the basis of 77 units per consumer per month in urban areas, and 38 units per consumer per month in rural areas;
- Un-metered agriculture consumers in rural areas as notified by GoMP under the Electricity Act, 2003 were billed on the basis of 100 units per HP of sanctioned load per month for permanent connections and 130 units per HP of sanctioned load per month for temporary connections.
- Un-metered agriculture consumers in urban areas were billed on the basis of 130 units per HP of sanctioned load per month for permanent connections and 150 units per HP of sanctioned load per month for temporary connections.
- For the year FY 09, the Commission approved the proposed sales to un-metered consumers in domestic category in rural areas based on the Licensee assumption of 30 units per consumer per month instead of 38 units per consumer per month.

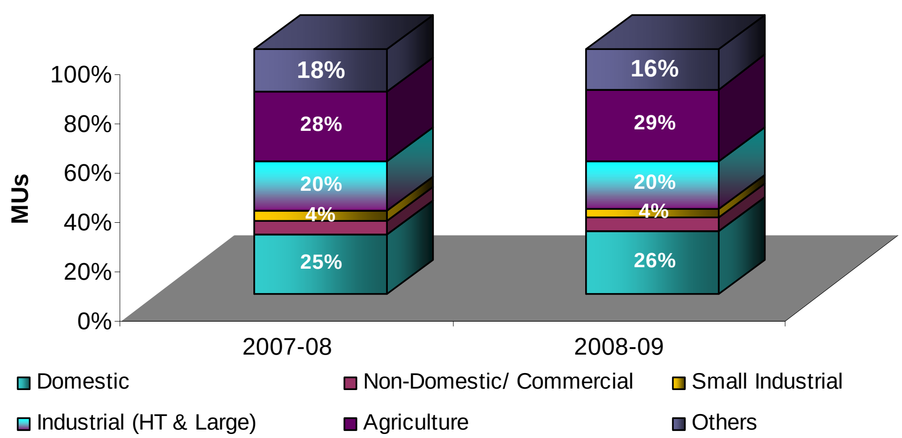
- For consumption in un-metered temporary consumers in agriculture category the Commission has made the computations considering 12 months of billing for permanent un-metered consumers and four months for temporary un-metered consumers. The approach was similar across DISCOMs.

For other categories the approach considered was same as the one followed in FY 09.

For our analysis we have booked sales from Coal Mines, Seasonal, HT Irrigation and Public Water Works and Township and Residential Colony sales as others.

The graph below shows the percentage wise sales to each category year on year of all the DISCOMs combined together.

Graph A-14.4: Consumption Mix



The table below shows the absolute sales under each category for the three DISCOMs.

Table A-14.23: Total Category wise Approved sales (MU's) of the three Discoms

Categories	FY 08	FY 09
Domestic	5264	6240
Non-Domestic/ Commercial	1170	1342
Small Industrial	844	929
Industrial (HT & Large)	4375	4756
Agriculture	5997	7110
Others	3799	4004
Total	**21449**	**24382**

T&D Losses

Distribution loss

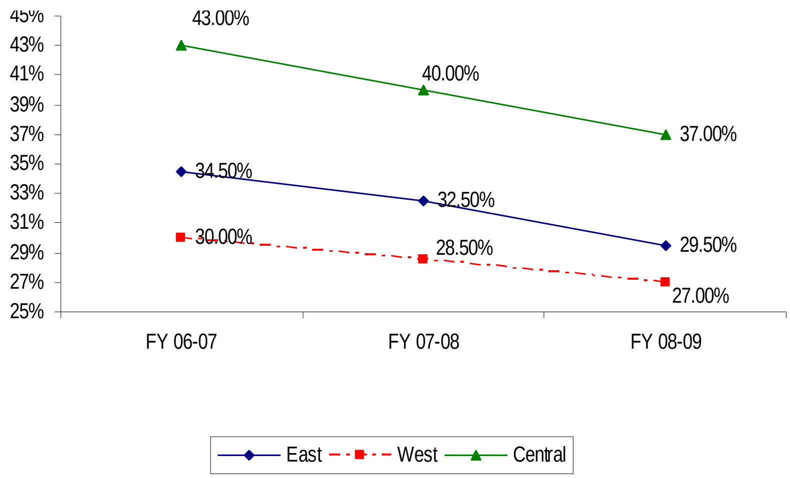
The State Government had come out with annual milestones for distribution losses for the period FY 07 to FY 11. The Commission computed the energy requirement of the Licensee on the basis of the GoMP's order dated 28th December 2006 on distribution losses.

Transmission loss

For computing the transmission loss, for the year FY 08 the Inter state transmission losses had been computed as per the moving averages of the scheduled losses of the last 52 weeks. For the transmission loss for FY 09 Commission calculated the Inter state transmission losses separately for eastern region (ER) and western region (WR) stations. For WR stations past data (44 weeks of FY FY 08, till week ending 3rd February, 08) was taken and an average loss level of 4.28% was used. Similarly for ER transmission line losses an average loss level (47 weeks of FY FY 08) of 3.31% had been considered.

The graph below gives distribution loss of the DISCOMs for FY 08 and FY 09.

Graph A-14.5: T&D Losses



Power Purchase Quantum

In the year FY07 the Commission approved total energy availability of 33359 MUs . The energy availability accounted for entire generation from power plants of MPPGCL located in MP. The share of Rajasthan in STPS and share of MP in the Chambal complex have to be considered according to the sharing agreement between the two states. For the year the Commission approved power procured from CPP/Wind Generators and UI at 5MUs @ Rs. 2.25/unit and from Other sources@ Rs. 1.539/unit. The Commission did not consider energy likely to be received from Unscheduled Interchange (UI) as projected as it regarded UI not as a regular source available for meeting predictable energy requirement.

For the year FY 08, the Commission, as per the Government of Madhya Pradesh Notification, considered energy allocation from existing stations for meeting DISCOMs requirements and also the capacities of new stations allocated to MP Tradeco. The Commission also considered the GoMP Notification which stated that, during energy deficit months, DISCOMs shall purchase power from MP Tradeco. While the GoMP had allocated capacities from Ranapratap & Jawahar Sagar HEPs, the Commission had not considered the power available from these stations as they are located in Rajasthan. For Satpura Phase-I, the Commission considered the availability based on the total installed capacity of 312.5MW since the project is located within the state of Madhya Pradesh.

For the year FY 09, the Commission allocated generating capacities as per the revised allocation notified by the GoMP, vide Notification No. No2088-F RS-4-XIII-2001 dated 19th March 2008. Omkareshwar hydel power station was earlier kept with Tradeco, since it was supposed to be operational from mid of last year. Since the plant was to be fully available for FY FY 09 it was considered for firm allocation on the basis of new notification issued by GoMP.

For bilateral stations the Commission had considered availability from all the bilateral stations (Rana Pratap sagar, Jawahar Sagar, Gandhi Sagar, Pench, Rajghat and Sarni Stage-I) for M.P. share only.

For Central Generating stations the Commission arrived at the annual energy availability of FY FY 09 after analysis of the availability during FY FY 07 and FY FY 08 (till December 2007 for WR, and till November 2007 for ER).

For MP Genco Stations energy Commission considered the total availability from the MP Genco station as per its tariff Order. However, the Commission undertook an exercise to analyze monthly availability and requirement for FY FY 09 from the data which was submitted by the MPGenco.

The table below shows the Station wise capacity allocation (%) to each DISCOM in the tariff order of FY 09.

Table A-14.24: Station wise capacity allocation (%) to DISCOMs FY09

Name of Power Station	East	West	Central
MPPGCL - IS: Ranapratap & Jawahar Sagar	29.56%	37.94%	32.49%
MPPGCL - SH: Bargi	21.00%	32.00%	47.00%
MPPGCL - IS: Gandhi Sagar	28.00%	38.00%	34.00%
MPPGCL - IS: Pench	22.00%	38.00%	40.00%
MPPGCL - SH: Birsinghpur	22.00%	31.00%	47.00%
MPPGCL - SH: Bansagar Complex	20.00%	32.00%	48.00%
MPPGCL - IS: Rajghat	30.00%	39.00%	31.00%
ER: Talcher STPS	46.00%	33.00%	21.00%
Sardar Sarovar Project	20.50%	31.00%	48.50%
WR: Korba STPS	24.00%	40.00%	36.00%
JV: Indira Sagar (8x125 MW)	38.00%	36.00%	26.00%
MPPGCL - ST: Amarkantak Complex	22.00%	47.00%	31.00%
WR: Vindhyanchal STPS – I	26.00%	38.00%	36.00%
MPPGCL - ST: Sanjay Gandhi Complex	22.00%	37.00%	41.00%
MPPGCL - ST: Satpura Complex (Ph - II & III)	21.00%	37.00%	31.00%
MPPGCL - ST: Satpura Ph-1 (Inter State)	21.00%	48.00%	31.00%
ER: Farakka STPS	48.00%	32.00%	20.00%
WR: Vindhyanchal STPS – II	38.00%	39.00%	23.00%
WR: Vindhyanchal STPS - III (Unit-I)	48.00%	32.00%	20.00%
WR: Kakrapar APS	48.00%	32.00%	20.00%
WR: Gandhar GPP	48.00%	32.00%	20.00%
WR: Tarapur APS	48.00%	32.00%	20.00%
ER: Kahalgaon STPS	48.00%	32.00%	20.00%
MPPGCL - SH: Marhikheda	48.00%	30.00%	22.00%
WR: Kawas GPP	48.00%	32.00%	20.00%
Omkareshwar HPS	48.00%	30.00%	22.00%

Name of Power Station	East	West	Central
WR: Vindhyachal STPS - III (Unit-II)	48.00%	32.00%	20.00%
Bansagar – IV (Zhinna)	48.00%	30.00%	22.00%
Marhi Khera (Unit-III)	48.00%	30.00%	22.00%
Lanco Amarkantak	49.00%	25.00%	26.00%
Weighted Average	**30.76%**	**36.49%**	**32.74%**

The Commission allowed DISCOMs to make short term power purchases at an approved MP Tradeco rate. The DISCOMs were allowed to sell surplus energy to other DISCOMs (intra state) with short fall. The rate for such sale was based on the Monthly Pooled Cost of Power. The Commission further directed that any surplus left after Intra state trading was to be used for external trading and the revenue earned would be adjusted against the power purchase cost. The table below gives details about the short term power purchase of each DISCOM.

Table A-14.25: Short Term Power Purchase

Short term Power purchase	FY 07	FY 08		FY 09	
		MUs	Cost/unit	MUs	Cost/unit
East	Wind 5 MU @ Rs 2.75/unit Other sources 484.34MU @ Rs.1.539/ unit	879.1	1.84	1164.44	2.44
West		551.6		1382.48	
Central		1312.41		1033.06	

Power Purchase Cost

The Commission has calculated power purchase cost source wise.

For the year 2007- 08 and FY 09 the Commission approved power purchase cost in the following manner

For power from Central generating stations of Western Region the Commission approved the fixed and the variable cost for these stations after verifying the fixed and variable costs from the CERC orders for these stations. The stations for which latest CERC order is not available, the Licensee petition on the basis of July 2006 bill was been considered. For KAPP and TAPPS 3&4, single part tariff was payable and the Provisional tariff rates had been considered as per the notification of Department of Atomic Energy GoI in October 2006. The Licensee had shown the allocation of share to MP for the Central stations as per the NTPC bills. The same approach was followed for FY 09 as well.

For Central Generating plants of eastern region same approach was followed as was followed for CGS of eastern region

For Indira Sagar (NHDC) and Sardar Sarovar Projects for FY 08 the Commission revised the annual charges for the year FY 08 on the basis of the bills paid in the year FY 07 by pro-rating the capacity charge and the variable charge actually paid by the Licensees till October’06. For FY 09 charges for Indira Sagar hydel power plant were allowed as per the CERC Tariff Order, dated 6th February, 2007. For Sardar Sarovar Hydro station the power purchase cost assumed by the Distribution Licensee was as per the cost assumed by the Commission in its Tariff Order for FYFY 07.The Commission accepted it and also allowed an increase of Rs. 0.08/kWh in the provisional rate as a possible escalation of O&M cost.

For Lanco-Amarkantak and Omkareshwar plants which became operational in 2008, the Commission approved the cost of bills raised by DISCOMs. Thus the Commission allowed the costs as filed.

For non conventional sources there is a minimum purchase requirement. The Commission has fixed a target for each licensee at 10% of its annual consumption (including third party sale and own use) in its area of supply, subject to availability. The minimum purchase requirement for non-conventional energy from different sources are Wind Generation 5%, Bio-Mass 2%, and Others 3%.This was approved in the TO of FY 09.

Inter-State and Intra state Transmission Charges

The PGCIL charges to be paid by MP consist of charges to be paid for transmission system of WR and ER.

For the year FY 08, the estimate of inter-state transmission cost for existing stations had been considered as per the methodology used by the Licensee, which was on the basis of the actual bills for September 2005 to August 2006 for eastern and western region. The Commission computed the charges for VSTPS-III (Unit-I) on the basis of the Per MW charges paid to PGCIL for the Western Region for the existing stations. The per MW cost was then applied to the allocated capacity of the new station to get the charges.

For the year FY 09, the Commission followed the same approach for estimating interstate transmission charges. The allocation of the transmission expenses was based on the station allocated to them. For ones which were allocated to MP Tradeco, the Commssion allocated the interstate transmission charges for these stations to MP Tradeco.

Table A-14.26: Transmission Charges

Particulars	FY 07	FY 08	FY 09
Total Transmission Charges (Rs. Crore)	**599***	**739**	**746**
East	178	219	221
West	225	280	283
Central	195	240	242

*SEZ is allocated 10 MW of Transmission capacity and bears 1 Crore of Transmission charge

For the year FY 09, the Commission directed that the transmission charges should be embedded as per unit charge in the power purchase costs and not added as a line item in the ARR This was to be done sincethe transco capacity is already allocated to the DISCOMs and thus any power which is purchased by the DISCOMs will necessarily flow through the transmission system. As per Commission the embedding of transmission charges would allow not only the full recovery but also recovery based on the use of the network by the DISCOMs. Further, the Commission expressed that no transmission cost was to be allocated to MP Tradeco since it is a short term customer and is only acting on behalf of the DISCOMs.

The Power purchase cost of FY 09 also included transmission true up for FY 07 and Indira Sagar Project (ISP) cost revision of FY 06

The table below gives details about the power purchase cost approved by the Commission and proposed by board. The table also mentions about per unit cost to each DISCOM.

Table A-14.27: Power Purchase cost per unit

Particulars	FY07	FY08	FY09
EAST			
Approved Cost		1,750	1,337
Availability at State Boundary MU		10,278	10,992
Cost per unit		1.70	2.13
WEST			
Approved Cost		2,065	2,770
Availability at State Boundary MU		12,276	14,234
Cost per unit		1.68	1.95
CENTRAL			
Approved Cost		1,715	2,214
Availability at State Boundary MU		11,398	11,885
Cost per unit		1.50	1.86
Total			
Approved Cost	4,944	5,530	6,321
Proposed Cost	31,581	33,952	37,111
Cost per unit	1.57	1.63	1.70

O&M Cost

The Commission has not segregated the O&M expenses into employee expenses, repairs and maintenance and Administrative expenses.

For the year FY 08, though the DISCOMs had calculated O&M expenses as per the MPERC (Terms and conditions for Determination of Tariff for distribution and retail supply of electricity and methods and principles for fixation of charges) Regulations, 2006. The Commission did not accept it on the ground that it is in the interest of consumers that DISCOMs are not allowed tariffs based on future additions to asset base, which may or may not materialise to the extent allowed, given the past performance of the Licensees. Hence, the Commission determined normative O&M expenses for FY 08 only on the ckt-km of HT lines and transformation capacity existing as at 31st March 2006.For other two determinants of normative O&M expenses i:e metered consumers and metered sales the Commission considered them at the end of FY 06 and no additions during FY 07 and FY 08 were considered for the purpose of O&M cost determination.

The Commission's regulations provide for Terminal Benefits to be provided over and above the normative amount of O&M expenses. But for the year FY 08 terminal benefits were being taken care of by the MPPTCL in the absence of creation of a pension trust as envisaged in the GoMP Order dated 31st May 2005, no separate provision for Terminal Benefits was considered.

For the year FY 09, the same approach was followed with the only difference that the ckt-km of HT lines and transformation capacity existing as at 31st March 2007 was considered. For two determinants of normative O&M expenses i:e metered consumers and metered sales the Commission considered them at the end of FY 07 and no additions during FY 08 were considered.

Table A-14.28: Approved O&M expenses of DISCOMs (Rs. Crs)

Particulars	FY07	FY08	FY09
East	389.10	363.96	403.45
West	420	456	466
Central	321	335	373
Total O&M Expense	**1130.42**	**1154.41**	**1242.64**
O&M as percentage of ARR	16%	15%	14%

Capital expenditure (Capex) and Capitalization

The Commission has specified the "Guidelines for Capital Expenditure by the Licensees in MP". The Guidelines require the Licensees to submit to the Commission a five-year Business Plan containing physical and financial details of all investment schemes planned over the five-year horizon.

Under the notified guidelines, the Licensee had filed a Business Plan to the Commission covering the five-year period FY 07 to FY 11, which was approved by the Commission. In the petition for the year FY 08 the licensee deviated from the approved Business plan. Commission expressed that it has no problem with the deviations as the DISCOMs know well about their investment needs. At the same time Commission directed the DISCOMs to make it mandatory to file details of all such schemes which were not aopproved under the business plan.

For capitalization, the Commission in the year FY 08 took Gross Fixed Assets as at the end of FY 05-06 from Licensee's Audited Accounts, to which capitalization during FY 07 and FY 08 was added. The Commission did a thorough analysis of the CWIP. The licensee's showed poor capitalization rate which led Commission to take the decision of not to consider any addition to GFA in FY 07 and FY 08 for FY 08 tariff determination. The Commission directed that the actual addition during FY 07, supported by Audited Accounts, would be considered for FY 09 tariff determination. In the Tariff order for FY 09 the Commission again owing to the poor progress of capital works against targets during FY 08 and failure of Licensee's in submitting any asset completion reports for FY 08, the Commission directed not to consider any addition to GFA in FY 08 and FY 09 for FY 09 tariff determination. The actual additions during FY 07, supported by audited Accounts, were to be considered for FY 09 tariff determinations.

Depreciation

The Commission did not consider the cost projections done by the Licensee as it felt they appear to be inflated and not in conformity with the past trends. For FY08 the Commission had computed depreciation on the closing balance of assets existing as on 31st March 2006 and no projected asset additions were considered. The Commission computed the depreciation as per the CERC rates. The Commission had computed depreciation on assets notified as a part of the transfer scheme of 31st May 2005 and on assets added during FY06 separately. For assets notified existing as on 1st June 2005 the Commission provided depreciation for an asset category to the extent that the accumulated depreciation as on 31st March of each year did not exceed 90% of the historical cost of acquisition.

For FY 09, the Commission directed the East DISCOM and central DISCOM, to submit asset class wise depreciable and fully depreciated assets as on 31st May 05 and directed them to do an extensive analysis to segregate depreciable and fully depreciated assets as on 31st May 05 ,. This exercise was already done by West DISCOM. The west DISCOM had worked out depreciation only on those assets which had not been depreciated up to 90% of their historical cost.

The East DISCOM expressed its inability to perform the required analysis. Therefore, the Commission in absence of any other suitable method, and acting in the interests of the consumers, allowed depreciation to the East DISCOM based on the weighted average depreciation rate of West and Central DISCOMs and on the opening balance of GFA as on 31st May 05, and further on additions during FY 06 and FY 07.

With regard to the value of the asset base the Commission did not accept the projections of the asset addition made by the DISCOMs for FY 08 and FY 09 as it felt that they were inflated based on the past trends. For FY 09 the Commission therefore had computed depreciation on the closing balance of assets existing as on 31st March 2007 and no projected asset additions during FY 08 and FY 09 were considered. The depreciation was allowed to West & Central DISCOMs as per CERC rate guidelines and same was applicable to East DISCOM also.

Working Capital Requirement

The Commission followed the following norms for calculating working capital requirement.

Wheeling Activity

- 1/6th of annual requirement of inventory for previous year
- 1/12th of O&M Expenses
- 2 months of average wheeling charges

Retail Sale Activity

- 1/6th of annual revenue requirement of inventory for previous year
- Receivables equivalent to 2 months of average billing

Less

- 1/12th of the power purchase expenses
- Consumer Security Deposit

For the year FY 08 the Commission allowed interest on working capital for wheeling and retail sale @ 12.75%. For the year FY 09 the same was 14.25%.

Interest Expense

As per Commission's Regulations on Terms and Conditions of Determination of Tariff for Distribution and Retail Supply of Electricity and Methods and Principles of fixation of charges interest charges only on the those loans can be passed through the ARR for which the associated capital works have been completed and put to use.

For the year FY 08, the Commission was not provided with information that could establish the works completed for the half year ended 30th September 06 have been capitalised or not .Therefore, the Commission was only certain of the capitalisation (GFA) as available from the final audited accounts of FY 05-06.The Commission also expressed that going by the past trend the asset addition anticipated during FY 07 and FY 08 would be marginal. The Commission followed the following approach to work out the interest cost chargeable to revenue account. This involved allocation of debt and equity into GFA and CWIP as available from the FY 06 Audited Balance Sheet. This was been done in the following manner.

- Net addition to GFA during FY 05-06 was worked out after subtracting from total addition to GFA, the consumer contribution amount as available from the Balance Sheet.
- 30% of the net addition to GFA during FY 05-06 had been considered as funded through equity and added to the Equity allocated to GFA as on 31st May 05 as per the FY 07 Tariff Order.
- Balance of net addition to GFA were considered as having been funded through debt and added to the total debt allocated to GFA as on 31st May 05 as per the FY 07 Tariff Order.
- Debt repayments were then subtracted from the total debt identified with completed assets as computed from above. Repayments had been worked out as pro-rata to total scheduled repayments during FY 05-06. Actual repayments had not been considered since there were principal defaults by the Licensee during FY 05-06.

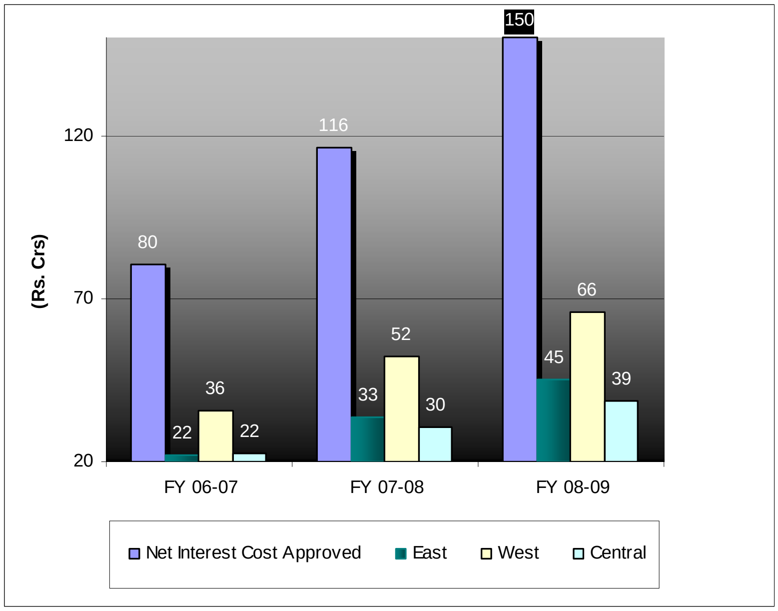
The interest had been allowed on such debt at the weighted average interest rate of all loans as on 31st March 06. The weighted average interest rate worked out for each DISCOM was then applied to the loans identified as associated with completed works. The interest rate was determined only on scheduled repayments, not considering actual interest and principal defaults during FY 05-06. Also, notional interest payment on REC loan had been considered for this purpose, even though there was a moratorium on interest payment on REC loan, since interest was to be paid after the moratorium period.

For the year FY 09, same approach was followed as was followed in FY 08.

Interest on Consumer Security Deposit

For FY08, the Commission determined the CSD as per the provisions of MPERC (Consumer Security Deposit) Regulations 2005 and the projected revenue from each category of consumers for the approved tariff. The Commission has determined the CSD amount both for FY FY 08 and FY FY 09 using the tariff revenue for these two years. The interest at the rate of 6% is then allowed at the average CSD for these two years.

Graph A-14.6: Total Interest Cost Approved and interest cost for each DISCOM (Rs. Crs)



*(*The interest cost includes Interest on loans, Interest on working capital and interest on consumer security deposit)*

Rate of Return

The equity is calculated as mentioned in the interest Expense section. The Commission had specified rate of 14% on the total equity identified as allocated to GFA at the end of FY 05-06. For the year FY 09 the audited account of FY 07 were considered.

Table A-14.29: Approved Return by the Commission

Particulars	FY 06-07	FY07-08	FY08-09
Parameter for Rate of Return	ROE	ROE	ROE
Distribution	16%	14%	14%
Return	173	156	167
East	51	46	52
West	72	65	69
Central	51	45	46

Bad Debts

The Commission allowed the provision for bad debts limited to 1% of total projected sales revenues as per the provisions of its regulations. The sales revenue was worked out using the approved sales forecast and the final tariff rates.

Annual Revenue Requirement

As per the Commission's Regulations the Distribution Licensees should file the Aggregate Revenue Requirement in three parts, viz. for power purchase activity, for wheeling (distribution) activity and for retail sale activity. The Regulations listed out the items of fixed costs (i.e. other than power purchase) that should be included into wheeling and retail sale activities.

But the DISCOMs complied only partially with the Commission's regulations and to the extent that they filed the ARR segregating the expenses for power purchase, wheeling and retail sale activities. For both FY 08 and FY 09 the Commission accepted the Licensee's method of allocating costs into wheeling and retail sale activities. Therefore, the Commission allocates the fixed costs (i.e. other than power purchase) in the following manner:

Wheeling activity was to include:

- O&M expenses
- Depreciation
- Interest on project loans
- Interest on working capital loans – for normative working capital for wheeling
- activity
- Return on Equity
- Other miscellaneous expenses
- **Less:** Other Income for Wheeling activity

Retail sale activity was to include:

- Interest on working capital loans – for normative working capital for retail sale
- activity
- Interest on Consumer Security Deposits
- Bad and Doubtful debts
- **Less** : Other Income for Retail Sale activity

Tariff Determination

A two part tariff structure comprising energy charge and demand charge exists in the state of Madhya Pradesh. In the state uniform retail supply tariffs exist for all the DISCOMs.

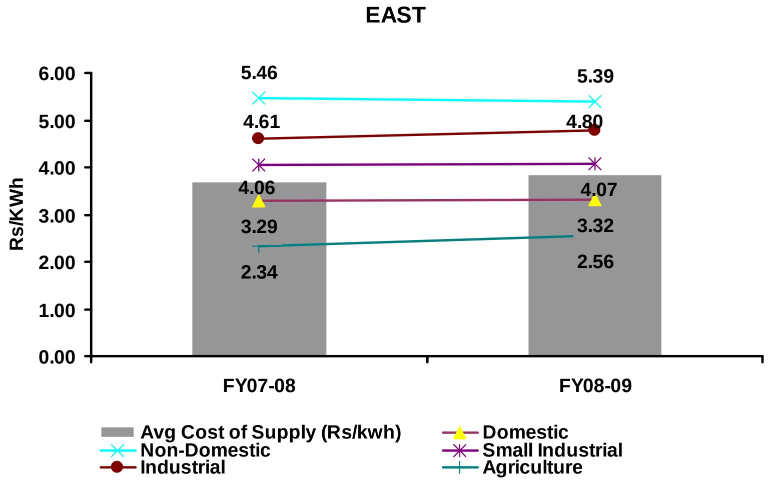
In FY07, Commission in order to fill up the combined gap of Rs. 328.61 Crores, increased tariffs and at the revised tariffs gap came to Rs. 9.50 Crores.

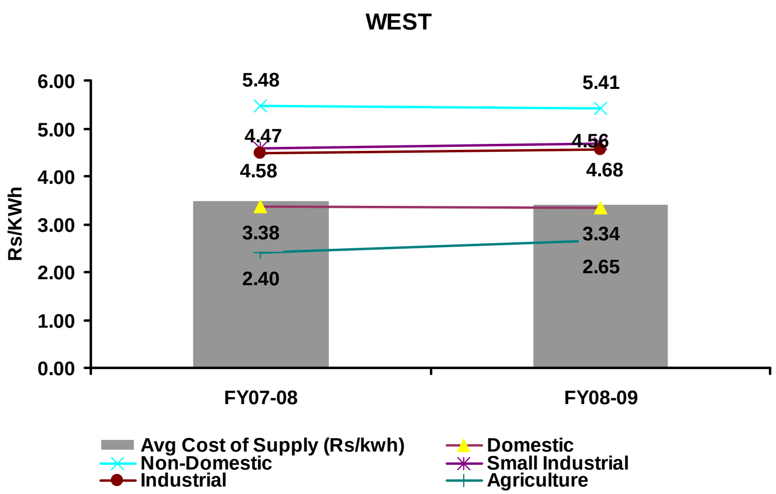
In the year FY 08, the Commission did not direct the DISCOMs about the means of covering gap and directed them that their position would be reviewed while truing up for FY 08. The Commission had changed the tariff structure for the year.

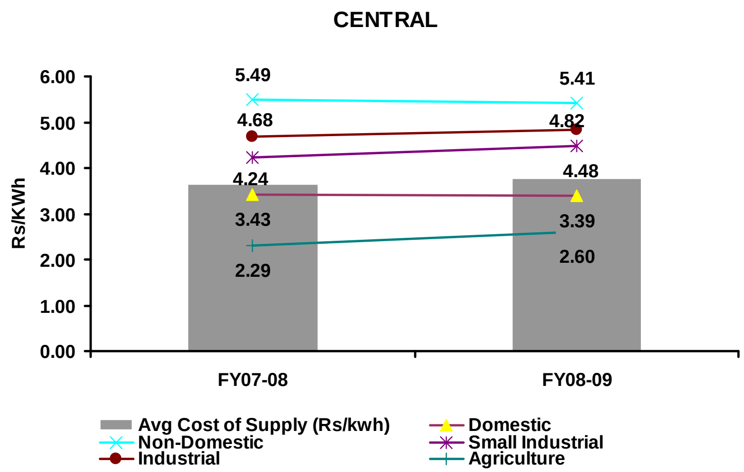
In the year FY 09 the Commission while calculating the gap included the effects of true up of MP Genco for the period June 05 to March 06 and true up of MP DISCOMs for the period June 05 to March 06. There was tariff increase in the year FY 09. All of these led to revenue surplus in case of all the DISCOMs.

Table A-14.30: ARR and Gap (Rs. Crs)

Particulars	FY07	FY08	FY09
East			
ARR	2141	2431	2832
Gap	38	-11	-53
Gap after accounting for true up			0.48
West			
ARR	2630	2917	3367
Gap	-15	23	161
Gap after accounting for true up			0.83
Central			
ARR	2231	2375	2690
Gap	-33	-17	4
Gap after accounting for true up			0.88


EAST
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5.46
5.39
4.61
4.80
4.06
4.07
3.29
3.32
2.34
2.56
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


WEST
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5.48
5.41
4.47
4.56
4.58
4.68
3.38
3.34
2.40
2.65
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


CENTRAL
Rs/KWh
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5.49
5.41
4.68
4.82
4.24
4.48
3.43
3.39
2.29
2.60
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture

Subsidy

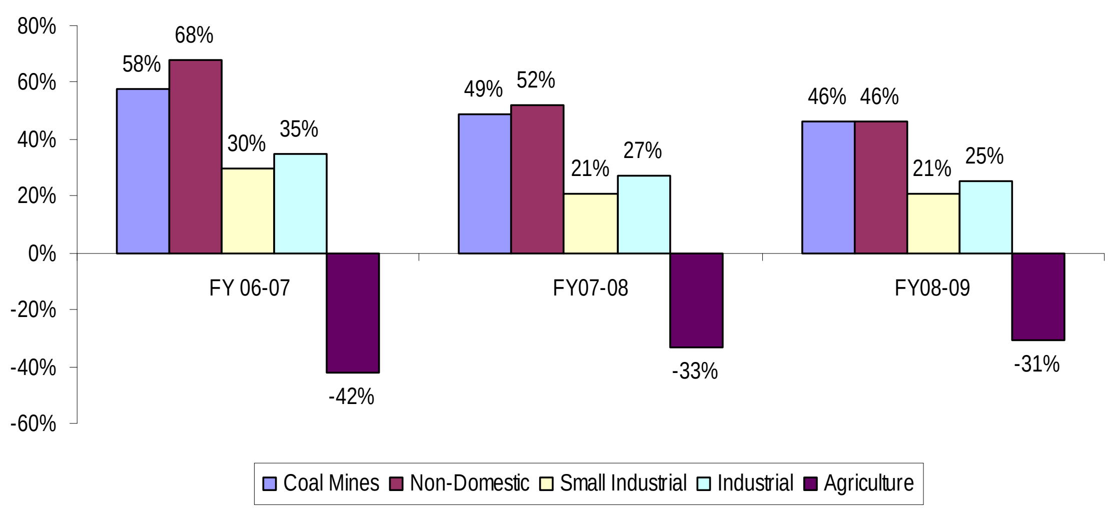
In the true up order for FY 06 the Commission noted that the DISCOMs had received revenue subsidy from the Government of MP to the tune of Rs. 80.74 Crore, Rs. 122.32 Crore and Rs. 90.57 Crore for East, West and Central DISCOMs respectively. The subsidy was provided to unmetered consumers for domestic and agricultural categories, both for urban and rural areas. In the true up order for FY 07, the revenue subsidy received from the Government of MP was to the tune of Rs. 88.51 Crore, Rs. 214.25 Crore and Rs. 115.84 Crore for East, West and Central DISCOMs respectively. The Commission had considered this amount in the income of the DISCOMs being a part of the revenue from sale of power to the subsidized consumers.

Average Cost of Supply vs. Realisation

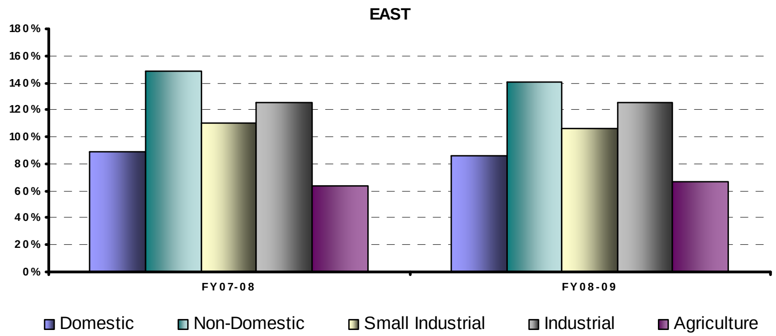
The Commission has been extremely proactive and has shown keen interest in analyzing the cross subsidy and has strived to bring it to the level of +/- 20% of the Average cost of supply. The Commission has carried out the State Average Cost of Supply vs. State Average realization Analysis wherein it has shown that the categories which were above120% percent mark. The Commission has followed the policy of increasing tariffs for the categories which have subsidized and decreasing tariffs for categories which have been generating cross subsidy.

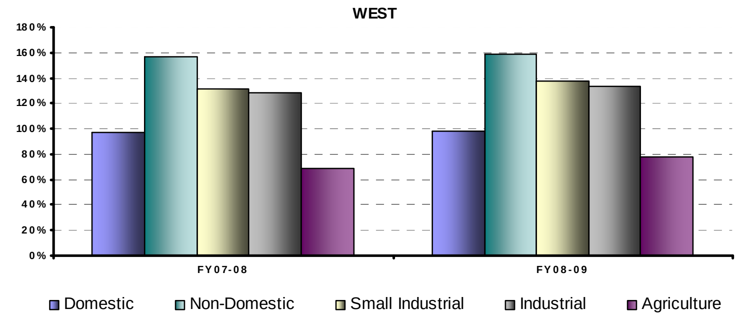
The Graph below gives a glimpse of the analysis done by Commission for cross subsidy reduction in the state. The categories shown have seen the most changes happening year on year.

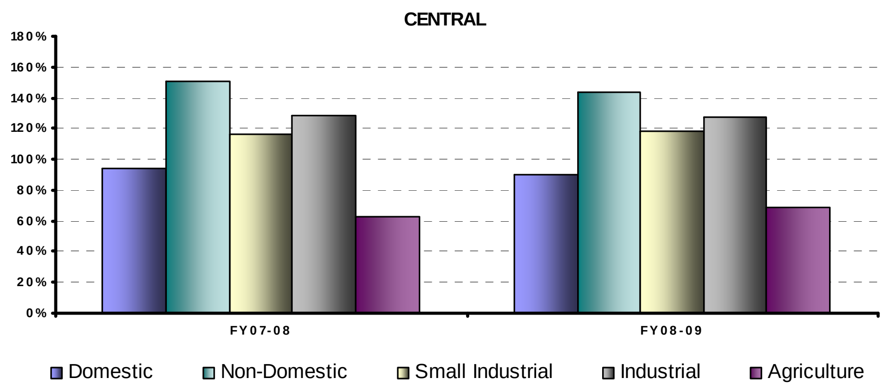
Graph A-14.7: Trend of Cross Subsidy across the State of MP



** Note: Analysis by Commission*


EAST
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


WEST
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


CENTRAL
180%
160%
140%
120%
100%
80%
60%
40%
20%
0%
FY07-08
FY08-09
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture

Time of Use Tariff

In the State of MP, Time of Day tariff exists and the Commission has fixed Time of Day surcharge for four hours (From 6PM to 10PM) and rebate for eight hours (10PM to 6AM next day).

Incentive scheme based on Load Factor

In the TO of FY 08, the Commission replaced the old schemes and introduced a new incentive scheme for providing Load Factor based tariff incentives for HT consumers for specified categories. Under the new scheme the Commission reduced the threshold load factor for eligibility of incentive claim, from 60% to 50%, thus linearizing the discounts on energy charges etc. Another important feature of the new scheme was that higher discount on energy charges were provided to consumers in the load factor range of 50% to 60%, with a gradual decline in the discount percentage in LF slabs of 61% to 70% and 71% to 80% respectively. This had been intentionally done to provide a greater push to the larger number of consumers in the sub 50% and upto 60% LF range to increase their energy consumption and better their load factors. In the year FY 09, in addition to FY 08 features Commission provided another slab of load factor concession for LF above 80%. The creation of this additional slab was to provide additional concession of about 4% on the entire energy consumption by all eligible consumers.

Power Factor incentives for LT consumers

In order to incentivise consumers to improve Power factor, the Commission provided an incentive of 1% of energy charge for each 1% increase by which the average monthly power factor exceeds 90%.

Incentive for improved performance

As per regulations Commission allows the licensee to retain fifty percent of the excess profit earned from performance above the benchmarks and the remaining shall be passed on to the consumers/ users.

Retail Price Index

Particulars	2007-08	2008-09
Approved ARR (Rs. Crs)	**7224.90**	**8889.04**
Approved Sales (MU)	**20868.00**	**23599.97**
Averge Cost of Supply in Rs/kwh (A)	3.46	3.77
% of Power Purchase Cost in ARR	70%	74%
% of Other remaining Cost in ACS	30%	26%
% Annual Increase in Power Purchase Cost		31%
% Annual Increase in Other Cost		69.27%
% Annual RPI Increase	5.21%	8.67%

Wheeling Charges

The Commission's Regulations under section 61 notified on 26th October 2006 state that the Distribution Licensees should file the Aggregate Revenue Requirement in three parts, viz. for power purchase activity, for wheeling (distribution) activity and for retail sale activity. The purpose of segregating the total distribution expenses into wheeling and retail sale activities was to establish the wheeling charges that are to be recovered from open access customers. The DISCOMs were directed to undertake a full accounting segregation for booking expenses separately under wheeling activity and retail sale activity. In the interim period the Commission the following costs of DISCOMs to wheeling activity.

Wheeling activity included:

- O&M expenses
- Depreciation
- Interest on project loans
- Interest on working capital loans – for normative working capital for wheeling
- activity
- Return on Equity
- Other miscellaneous expenses
- Less: Other Income as computed in previous section

The table below gives the wheeling ARR of the DISCOMs for FY 08 and FY 09

Table A-14.31: Wheeling ARR

Particulars	East	West	Central
Wheeling ARR for FY08 (Rs. Crore)	470.24	608.36	432.24
Wheeling ARR for FY 09 (Rs. Crore)	503.29	605.34	456.24

Cross Subsidy Surcharge

In the year 2008 the Commission came up with an order on cross subsidy surcharge. The formula used for calculating cross subsidy surcharge was as prescribed by The National Tariff Policy.

$S = T – [C(1+L/100) + D]$

Where

S is the surcharge

T is the Tariff payable by the relevant category of consumers;

C is the Weighted average cost of power purchase of top 5% at the margin excluding

liquid fuel based generation and renewable power."

D is the Wheeling charge

L is the system Losses for the applicable voltage level, expressed as a percentage

As per MPERC (Open Access) Regulations, 2005, the consumers with contract demand of 1 MW or above shall be allowed open access w.e.f. 1st October, 2007. In accordance with the above, the Cross-subsidy surcharge for all categories of HT consumers having contract demand of 1MW or above at 132kV/33 kV under all scenarios was approved.

The table below gives the Cross subsidy surcharge levied on various categories.

Table A-14.32: Cross Subsidy Surcharge (Rs. per unit) for FY09

Scenarios	Railway Traction	Coal Mines	Industrial	Non-Industrial
Generator is connected to Transmission network (EHT voltages), while the consumer is connected to the distribution network (33kV and below) of a Distribution Licensee	NA	1.56	0.62	1.09
Generator is connected to distribution network (33kV or below) of a Distribution Licensee, while the consumer is connected to the transmission network (132kV or above)	0.96	1.36	0.84	1.56
Both Generator and consumer are connected to the transmission network (132kV or above)	0.96	1.36	0.84	1.56
Both generator and consumer are connected to the distribution system of any Distribution Licensee	NA	2.08	1.14	1.61

A-15. Maharashtra

A-15.1. Maharashtra – Generation Utility

Introduction

The Maharashtra State Electricity Board (MSEB) was restructured into four entities – MSPGCL, MSETCL, MSEDCL and MSEB Holding Company through state government order in June 2005 under the Maharashtra Electricity Reforms Transfer Scheme 2004. As part of the scheme, the generating stations of MSEB were allocated to Maharashtra State Power Generation Co. Ltd (MSPGCL), a company incorporated under the Companies Act, 1956. MSPGCL also maintains & operates the hydro plants owned by the Irrigation Department, Government of Maharashtra as a lessee.

The State of Maharashtra has two more vertically integrated utilities having generation business viz. the Tata Power Company (TPC) established in 1919 and Reliance Energy limited (REL) established in 1929. The existing installed capacity of TPC's generation business is 2027 MW comprising 447 MW of hydel stations and 1580 MW of thermal station comprising of the 250 MW Unit 8 at the Trombay thermal power station in Chembur that commenced operations recently in March 2009. REL has a generating plant at Dahanu, Maharashtra (Dahanu Thermal Power Station – DTPS) of installed capacity of 2X250 MW for supply of power to the city of Mumbai in the REL license area.

MYT framework in the state has been implemented with effect from April 1, 2007 with a control period from FY08 to FY 09-10 instead of April 1, 2006 as stipulated in MERC (Terms and Conditions of Tariff) Regulations, 2005. The Commission granted an exemption of one year in implementation of MYT framework based on requests received from the utilities.

Generation Capacity

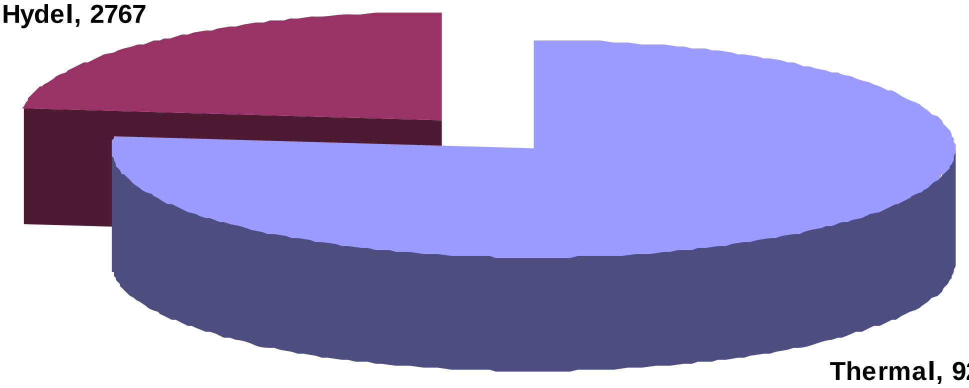
The table below shows the total power generation capacity installed within the state of Maharashtra.

Table A-15.1: Installed Power Generation Capacity

Particulars	Thermal	Hydel
MSPGCL (MW)	7190	2320
TPC-G (MW)	1580	447
REL-G (MW)	500	0
Sub-Total	9270	2767
Total (MW)	**12037**	

The graph below shows the break-up between the installed Hydel and Thermal Power Generation Capacity within the State of Maharashtra.

Graph A-15.1: Break-up of Installed Power Generation Capacity



Availability and Plant Load Factor (PLF)

The tariff order for FY06 does not specify separate consideration of PLF, Auxiliary consumption etc by the Commission and directly provides for approval of variable cost based on Fuel Adjusted Cost (FAC) approved coal costs. Detailed assessment and approval of PLF, Auxiliary consumption, Station Heat Rate etc. has been discussed in the orders from FY07 onwards.

For FY07, MSPGCL projected low PLF and availability for its stations, stating low loadability and overhauling of units as the reason. The Commission had however opined that forced outages should be restricted by efficiently monitoring the operational procedures and through better R&M practices. The Commission had estimated the availability based on the average of the actual availability of the last 3 years and had accordingly set target PLF for FY07 by considering 95% loadability for all the stations.

In the MYT petition submitted by MSPGCL for the control period FY08 to FY 09-10, the Commission observed that there is substantial variation in availability and PLF figures whereas in case of supply shortage scenario, the PLF of thermal stations should have been ideally equal to availability. MSPGCL submitted clarifications, but the Commission did not accept the problem of consistent loadability cited by MSPGCL as a valid reason for variation between PLF and availability. The Commission concluded that the availability numbers submitted by MSPGCL actually indicate machine availability rather than the ability of plant to actually generate power. However, the Commission for the MYT control period, had approved the station-wise availability considering the availability projections of MSPGCL and the stations for which the MSPGCL had projected the a-vailability of less than 80%, the Commission had considered the availability of 80%.

As regards the PLF for the control period, the Commission, considering that PLF and availability cannot be much different, had not reduced the recovery of Annual Fixed Charges and had approved the station-wise PLF based on projections of MSPGCL and PLF of 80% in case of stations where PLF had been projected less than 80%.

The Commission, in its MYT order, directed MSPGCL to submit station-wise actual availability and PLF figures on a monthly basis and in case achieved availability for a thermal station is less than 80%, it shall deduct the recovery of Annual Fixed Charges during truing-up.

The Commission had approved the PLF for various stations from FY07 to 08-09 as under:

Table A-15.2: Approved Plant Load Factor

Particulars	FY07	FY08	FY09
Khaparkheda	84.24%	82.34%	81.44%
Paras	81.09%	80.00%	80.00%
Bhusawal	82.94%	80.00%	80.00%
Nasik	81.66%	80.00%	80.00%
Parli	85.37%	80.00%	80.00%
Koradi	79.45%	80.00%	80.00%
Chandrapur	74.26%	80.00%	80.00%
Uran Gas	50.91%	52.77%	52.77%

In case of Uran Gas based station, considering the short supply of gas, the Commission had approved the availability as projected by MSPGCL for recovery of full fixed charges.

Auxiliary Consumption

For FY07, the Commission had gone with the norms of MERC Tariff Regulations for arriving at the target auxiliary consumption. For units of sizes 200 and 500 MW and above, Auxiliary Consumption had been approved as per MERC Tariff Regulations. For smaller capacity stations and stations where normative targets are significantly better than the actuals, the norms have been set on the lines of the previous Tariff Order.

For the MYT control period, the Commission had approved the station-wise auxiliary consumption based on auxiliary consumption approved by the Commission in its order for FY07.

Table A-15.3: Approved Plant Auxiliary Consumption

Particulars	FY07	FY08	FY09
Khaparkheda	8.50%	8.50%	8.50%
Paras	9.70%	9.70%	9.70%
Bhusawal	9.75%	9.75%	9.75%
Nasik	9.00%	9.00%	9.00%
Parli	9.00%	9.00%	9.00%
Koradi	9.80%	9.80%	9.80%
Chandrapur	8.50%	7.80%	7.80%
Uran Gas	2.30%	2.40%	2.40%
Hydel	0.78%	-	-

The Commission approved slightly lower auxiliary consumption for Chandrapur during the control period as the actual consumption in the previous year was less than the approved level of 8.5%.

Station Heat Rate (SHR)

In the order for FY07, the Commission had observed that the proposed heat rates are much higher than the design heat rates of the stations as MPGCL had also included factors such as plant ageing and frequent start-stop. The Commission, in its analysis, had considered the guidelines given in the Central Electricity Authority's (CEA's) technical standard for operating norms (Dec 2004) for units which are of less than 200 MW and more than 25 years old,. These prescribe a 10% deviation from the design heat rates for units smaller than 200 MW. For units of sizes 200 and 500 MW and above, Station Heat Rates have been approved as per MERC Tariff Regulations. However, in cases where normative targets were significantly better than the actuals, a trajectory had been specified on the lines of the previous Tariff Order.

The Commission had accordingly approved SHR for each station for FY07, as given below:

a) With 1% annual improvement trajectory for Khaparkheda, Nasik and Paras stations, considering that these are very old and a 3% improvement shall not be possible.

b) For Bhusawal and Parli the MERC Tariff Regulations and the CEA norms have been followed to determine the target SHR

c) In case of Chandrapur, a 2.5 kcal/kwh addition for every 1% reduction in target PLF was made to SHR as per CEA norms, considering that the plant would not be achieving PLF of 80% during FY07

d) For Uran TPS the target SHR was taken at the normative level of 1950 kcal/unit as per MERC Tariff Regulations.

In the MYT order, the Commission had analysed unit-wise heat rate achieved by MSPGCL thermal stations of last three years and compared the same with the heat rate of other thermal power stations of similar vintage. The Commission had then taken a heat rate degradation of 0.2% per annum for approving heat rate during the Control Period, based on heat rate degradation in SHR for some other Utilities, assessing the industry practices and in consideration the vintage of the Units.

Table A-15.4: Approved Station Heat Rate (in kCal/kWh)

Particulars	FY07	FY08	FY09
Khaparkheda	2644	2556	2561
Paras	3105	3105	3105
Bhusawal	2561	2649	2654
Nasik	2584	2648	2653
Parli	2573	2652	2657
Koradi	2907	2786	2792
Chandrapur	2480	2545	2551
Uran Gas	1950	1980	1980

Transit Loss

Despite much higher transit loss projected by MSPGCL, the Commission had approved a transit loss of 0.80% for FY07 and for the MYT control period for all the stations as per the MERC Tariff Regulations and in line with trajectory set in the earlier order.

Specific Oil Consumption

In the order for FY07, the Commission had observed that use of coal of quality inferior than design value has affected the plant's efficiency adversely and resulted in higher Specific Oil Consumption. The Commission had directed the utility to immediately undertake corrective steps to improve the coal quality and had approved specific Oil Consumption for FY07 as per MERC Tariff Regulations. In the MYT order, the Commission had approved specific secondary fuel oil consumption of 2 ml/kWh uniformly for all the existing coal based stations based on MERC (Terms and Conditions of Tariff) Regulations, 2005.

Net Units Generated

For FY06, the Commission for the purpose of FAC/ FOCA computation, had adopted Auxiliary Consumption, Transit Losses, Station Heat Rate norms on the basis of the previous tariff order. The same have then been applied to the actual gross generation of each station to arrive at Net Generation and thereby normative variable cost. The Net generation for FY06 had however been approved on an overall basis.

For FY07 and MYT control period, the Commission had approved net generation station-wise. The Commission, for FY08, had approved the generation from hydel stations considering the actual generation during last 10 years, excluding FY06 and FY07, when the rainfall was much higher than the average rainfall.

The table below summarizes the plant-wise net generation approved by the Commission during FY06 to FY08:

Table A-15.5: Approved Net Generation (MUs)

Particulars	FY06	FY07	FY08
Khaparkheda	-	5672	5544
Paras	-	372	367
Bhusawal	-	3134	3023
Nasik	-	5924	5803
Parli	-	4696	4400
Koradi	-	6780	6827
Chandrapur	-	13928	15120
Uran	-	3713	3844
New Station - Paras and Parli Ext	-	1423	2826
Hydel	-	3933	3934
Total Approved Net Generation	**4,6532**	**4,9575**	**5,1688**

VARIABLE COST

The Commission had approved the variable cost on the normative basis for FY06 as mentioned above.

The Commission for FY07 had essentially calculated the landed cost of coal and thus the total fuel cost without a detailed methodology for computation of variable cost.

As for FY08, the Commission had considered the price and calorific value of fuel equivalent to average actual fuel price considering the transit loss of 0.8%, and actual average calorific value for the period October 2006 to February 2007. The Commission had not considered any escalation in fuel prices as the adjustments for variation in fuel prices is allowed as part of FAC mechanism. Further, the Commission had considered the utilisation of washed coal and imported coal at various stations of MSPGCL as proposed by MSPGCL in its Petition. The Commission included the cost of other charges, viz., lubricants, chemicals and water charges, etc. as part of variable costs while estimating the energy charges. The Commission considered these costs for each station based on actual costs incurred during FY06.

Table A-15.6: Approved Variable Cost

Particulars	FY05	FY06	FY07	FY08	FY09
Net Thermal Generation (MU)	-	46532	45642	47754	-
Total Fuel Cost (Rs. Crs)	-	4880	5241	6002	-
Approved Variable Cost (Rs/kWh)	-	1.05	1.15	1.26	-

FIXED COST

The Annual Fixed Charges typically comprise of Operation & Maintenance Expenses, Depreciation, Interest on Long Term Loans, Interest on Working Capital, Return on Equity, Income Tax.

MSPGCL having come into independent functioning only in FY06, did not have separate accounts in place for its historical costs. Therefore, for the purpose of ARR determination for FY06, the Commission estimated the historical costs of MSPGCL from the details of generation function as per the audited accounts of MSEB.

Operation & Maintenance Cost (O&M)

For determination and approval of total O&M cost for MPGCL till FY06, the Commission had considered separate estimation of R&M Expenses, A&G Expenses and Employee expenses. However, in the tariff order for subsequent years i.e. from FY07 onwards, the Commission has approved a consolidated O&M cost.

In the tariff order for FY06, the Commission had approved R&M expenses as 3.8% of Gross Fixed Assets (GFA) on the basis of the principles of the previous tariff orders. As per the previous Tariff Order, R&M expenses are to be determined at an average of actuals as a percentage of GFA for the preceding five years.

The employee cost for FY06 had been approved on the basis of CAGR of actuals of last 5 years (6.67%).

The Commission had approved the A&G expenses for FY06 after considering a year on year increase of 4.2% on the approved values of FY 03-04 as per previous Tariff Order principles. The Commission opined that A&G expenses can be controlled by the utility and an increase over actual expenses as projected by MPGCL cannot be accepted. The Commission therefore had approved a total O&M cost of Rs.779 Crs for FY06.

For FY07, the Commission had observed that approval of O&M cost for the existing stations of MSPGCL on the basis of historical values shall not be the right approach as

- O&M expenses in the past have been less than the norms for new stations
- Station-wise trial balances are poorly maintained and
- Station wise R&M expenses incurred in the past have been erratic

Therefore, the Commission had approved O&M cost of existing thermal stations and gas based stations, based on the MERC Tariff Regulations for new generating stations. The O&M costs so determined are higher than the allowable amount as per MERC Tariff Regulations for existing stations but lower than that claimed by MSPGCL.

For approving the O&M expenses for the Control Period, the Commission had considered the O&M expenses approved in FY07 as the base expenses and had applied an escalation rate of 5.38% on account of inflation over the allowed level of gross O&M expenses in FY07, based on the increase in Wholesale Price Index (WPI) and Consumer Price Index (CPI). The Commission had considered the point to point inflation over WPI numbers and CPI numbers for Industrial Workers for a period of 3 years (from FY 03-04 to FY06) to smoothen the inflation curve, and also as the projection is being made over the Control Period of three years. The Commission had considered a weight of 60% to WPI and 40% to CPI, based on the expected relationship with the cost drivers.

Table A-15.7: Approved O&M Expense (Rs. Crs)

Particulars (Rs.Cr)	FY 06	FY 07	FY 08	FY 09
R&M Expenses	356	-	-	-
Employee Expenses	401	-	-	-
A&G Expenses	23	-	-	-
O&M Expenses	**779**	**817**	**862**	**908**
O&M Cost Claimed by MPGCL	884	1121	1058	1121
Disallowance (%)	12%	27%	19%	19%

Depreciation

In the FY06 Tariff Order, the Commission had approved the depreciation based on average of the last 3 years depreciation rates (5.17%) in terms of % of GFA, based on principles of previous tariff order.

MSPGCL had not submitted the depreciation rates for FY07 as per MERC Tariff Regulations and had based its calculations on depreciation rates notified by the Ministry of Power (MoP) vide its circular in 1994. The Commission had adopted the depreciation rate of 3.6%, which is the norm for new generating stations as per the MERC Tariff Regulations. The MERC Tariff Regulations specify that the depreciation shall be allowed up to maximum of 90% of original cost of the asset at a normative rate of 3.6%

For determining the life of the station, weighted average life (on the basis of capacity) of the units has been considered. Further, in accordance with the MERC Tariff Regulations, Advance against Depreciation (AAD) had been considered to match depreciation with loan repayments as submitted by MSPGCL for FY07.

For approving the depreciation in the MYT Order i.e. for FY08 and FY09, the Commission had again followed MERC (Terms and Conditions of Tariff) Regulations, 2005. As for approval of AAD under the control period, the Commission observes that AAD assessment for each station shall be appropriate only after MSPGCL undertakes apportionment of loan and equity across all the stations on rational basis. In view of this, the Commission had considered requirement of AAD at generating company level instead computing the same at generating station level, as a result of which no AAD was approved for the control period.

Table A-15.8: Approved Depreciation and Advance against Depreciation

Particulars (Rs.Cr)	FY 06	FY 07	FY 08	FY 09
Gross Fixed Asset	9437	-	10174	10349
Depreciation	448	187.06	336	314
% Depreciation	*5.31%*	*3.60%*	*3.30%*	*3.04%*
Advance Against Depreciation	-	116.09	0.00	0.00

Interest Cost

The Commission had approved the interest cost in the Tariff Orders for FY06 by considering the opening balances of transfer scheme (March 31, 2004) and there on only the approved borrowings and repayments. Similarly, for FY07, the Commission had approved interest expenses based on the approved closing balances of loans for FY06 and loan component of the approved capital expenditure plan for FY07. In the tariff orders for FY06 and FY07, rejecting MSPGCL's projections, the Commission clarified that the borrowings for new generating stations have to be considered separately and can be charged to ARR only after their capitalization and start of commercial operation

As for capitalisation for FY06 and FY07, the Commission opined that for interest expenses, capitalization based on historical trends shall not be proper and all the interest expenses on the amount invested on capital works during capitalization period will be capitalized.

Over the MYT Control period, MSPGCL had proposed significant increase in interest expenditure to around Rs 501.04 Crs mainly on account of significant increase in projected capitalisation over the control period. MSPGCL submitted that it envisages funding new Capex at Debt: Equity ratio of 80:20 in view of shortage of equity capital. In addition, MPGCL had considered loan tenure of 13 years including moratorium of 3 years at an interest cost ranging from 11.5% p.a. to 12.5% p.a. The Commission, however, noted that interest cost for loans recently disbursed by PFC/REC to State Generating Companies has been around 10.5% per annum. Accordingly, the Commission approved interest cost of 10.5% p.a. for the new loans to be drawn over Control Period. The loan repayment and interest for existing loans (i.e. loans corresponding to assets put to use during FY05 and FY06) has been approved by the Commission as per earlier terms.

The table below shows the fresh borrowings considered by the Commission and interest expenses approved during FY06 to FY09.

Table A-15.9: Approved Borrowings and Interest Expenses

Particulars (Rs.Crs)	FY 06	FY 07	FY 08	FY 09
Opening Balance	1134.0	919.8	1247.42	1150.94
Borrowings	28.0	518.4	143.12	161.76
Repayments	243.0	228.4	239.60	172.90
Closing Balance	919.0	1209.3	1150.9	1139.8
Interest Expense	**77.6**	**50.4**	**108.7**	**107.8**

Interest on Working Capital

The Commission had gone with the principles of previous Tariff Order and not the MERC Tariff Regulations as adopted by MPGCL for approval of interest on working capital for FY06. Accordingly, working capital has been considered as 0.75*(Current Assets – Current Liabilities), where

Current assets are:

- 2 months of receivables and
- 15 days of generation costs

Current liabilities are:

- 1 month of fuel expenses.

Interest rate of 10.25%, which is the SBI PLR, had been considered to determine the interest on working capital.

For FY07, the Commission had approved the interest on working capital as per MERC Norms

The Commission, for the 3 year MYT control period starting FY08 had estimated the Station-wise working capital requirement in accordance with the provisions of Tariff Regulations. Accordingly, the rate of interest on working capital has been considered on normative basis and equal to the short-term PLR of State Bank of India (11.5%) as on the date on which the application for determination of tariff is made.

A summary of the interest rate considered by the Commission in its various Tariff Orders during FY05 and FY09 has been summarized below:

Table A-15.10: Approved Interest Rate for Working Capital Borrowings (%)

Particulars (Rs.Cr)	FY 06	FY 07	FY 08	FY 09
Current Assets	1296.0	-	-	-
Current Liabilities	407.0	-	-	-
Working Capital	667	1667.0	-	-
Interest on Working Capital Approved	**68.0**	**168.1**	**212.8**	**214.4**
% Interest on WC Approved	*10.2%*	*10.1%*	*11.5%*	*11.5%*
Interest on Working Capital Projected	178	187.07	245.15	246.23

Return on Equity

MSPGCL, in its petition for FY06, had considered a return of 4.5% on NFA for the period 1 Apr 2005 to 5 Jun 2005 and a return on equity of 14% for the rest of the period. The Commission had however not approved MSPGCL's submission in full and as already ruled, had considered principles of the previous Tariff Order. Accordingly, the return had been approved as 4.5% on the opening NFA. The Commission had considered the balance sheet of MSPGCL given in the provisional Transfer Scheme to determine the opening NFA for FY06.

For FY07, the equity considered by MSPGCL is as per the provisional transfer scheme notified by Govt. of Maharashtra and therefore had been approved in full.

For the MYT control period, the Commission had considered the RoE @ 14% of the equity, in accordance with the MERC Tariff Regulations on the opening equity at the beginning of the year considering the Debt: Equity ratio of 80:20, as per capital expenditure and asset capitalisation.

Table A-15.11: Approved Rate of Return

Particulars (Rs.Cr)	FY 06	FY 07	FY 08	FY 09
% Return allowed	**4.5% of NFA**	**14%**	**14%**	**14%**
Return Approved	159.0	376.7	358.9	372.9
Return projected by MSPGCL	332.0	376.7	358.9	358.9
Disallowance (%)	52%	0%	0%	-4%

Total Fixed Cost

The summary of Annual Fixed Charges for existing Stations of MSPGCL as approved by the Commission from FY06 to FY09 is given in the following table

Table A-15.12: Approved Annual Fixed Cost for Existing, New and Hydro stations of MSPGCL (Rs.Cr)

Particulars	FY 06	FY 07	FY 08	FY 09
Khaparkheda	-	387.3	349.9	354.4
Paras	-	10.3	11.2	12.0
Bhusawal	-	91.3	98.1	104.4
Nasik	-	181.8	180.0	190.2
Parli	-	155.5	144.7	154.7
Koradi	-	186.9	210.4	217.7
Chandrapur	-	527.2	562.6	589.4
Paras Expansion	-	12.4	137.7	-
Parli Expansion	-	60.4	153.4	-
Uran Gas Station	-	175.4	193.5	172.8
Hydro Stations	-	132.9	146.8	148.6
Total Approved Fixed Cost	**1676**	**1921.3**	**2188.2**	**1944.19**

The fixed cost for Paras and Parli expansion for FY07 had been approved by the Commission as per MERC Tariff Regulations Interest Expenses & RoE have been determined on actual basis after disregarding loans that form part of transfer scheme balances.

For FY08, the Commission had approved the Annual Fixed Charges for New Paras Unit 1 and New Parli Unit 1 Project based on the Project Cost and other parameters approved by the Commission in its Order on ARR and Tariff for FY07 for in-principle approval of Tariff of these projects.

The Commission will separately determine the final tariff of these two new Projects considering the actual completed capital cost approved by the Commission, and the means of finance. The Commission had directed MSPGCL to file separate Petitions for approval of tariff for New Paras Unit 1 and New Parli Unit 1 upon completion of the Project.

Tariff Determination for Thermal Power Stations

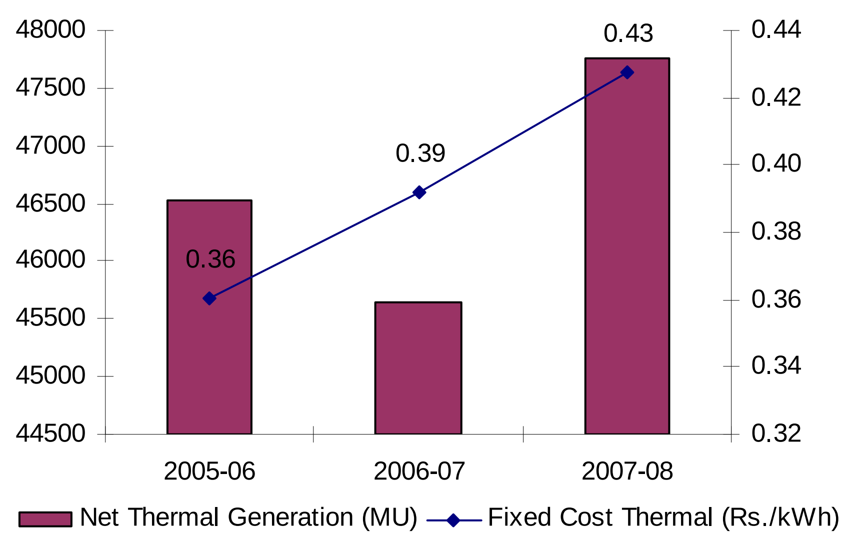
Determination of Tariff for thermal stations has been done in accordance with MERC Tariff Regulations which specify that “Tariff for sale of electricity from a thermal power generating station shall comprise of two parts, the recovery of:

- Fixed charges and
- Energy charges

Fixed Charges per Unit

The fixed cost per unit as approved by the Commission from FY06 to FY08 has been shown graphically in figure with respect to the approved Net thermal generation during respective years.

Graph A-15.2: Approved Per Unit Fixed Cost (Rs. Per unit)

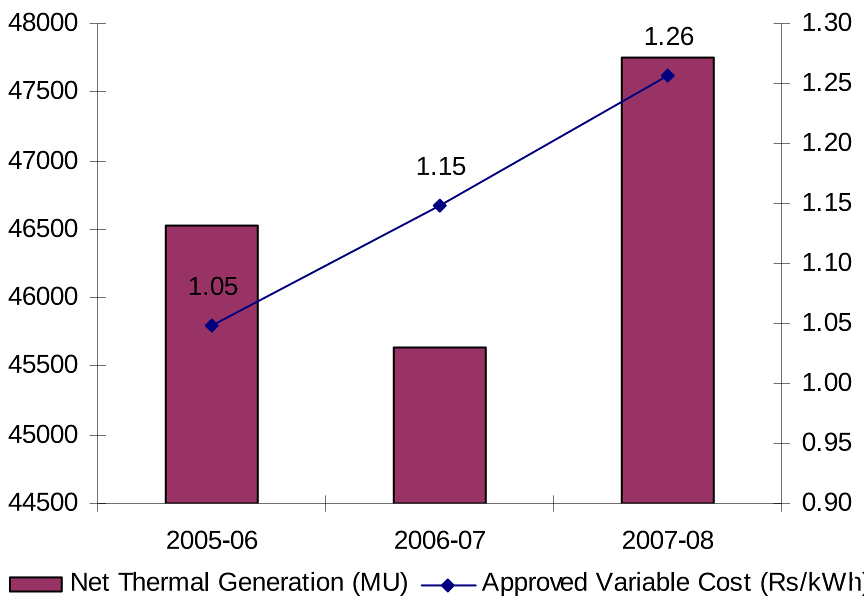


Variable (Energy) Charges per unit

Variable charges comprising of fuel cost for each plant have been approved by the Commission in the Tariff Orders of generating companies based on the respective fuel consumptions (i.e. coal, gas, etc). The variable charges approved are based on the technical parameters approved by the Commission for each power station.

A snapshot of the approved variable charges per unit with respect to the Net Thermal Generation during FY06 to FY08 captured in figure 2 below:

Graph A-15.3: Approved Per Unit Variable Cost (Rs. Per unit)



Incentive Level

The Commission, from FY07 through the MYT control period, had approved incentive of 25 paisa/kWh for ex-bus scheduled energy corresponding to scheduled generation in excess of ex-bus energy corresponding to a target Plant Load Factor of 80%. The incentive has been approved in accordance with Regulation 37 of MERC Tariff Regulations.

The Commission had further directed that in order to even out the cash flow on account of the incentives, MSPGCL shall determine the incentives at the end of September and March on the basis of actual performance and shall submit that amount to be billed to MSEDCL as an additional charge payable on this account.

Tariff for Hydel Power Generating Stations

The MERC Tariff Regulations specify that the Tariff for sale of electricity from a Hydro power generating station shall comprise of two parts,

- Recovery of Annual Capacity Charge and
- Energy charges

The Annual Capacity Charges for a Hydro power generating station had been specified to be computed in accordance with the following formula:

Annual Capacity Charges = (Annual Fixed Charge - Energy Charge),

The regulations further provide that the Energy Charge should not exceed the Annual Fixed Charge.

However, the Commission observed that as per the these regulations, the effective energy charge in the case of MSPGCL's hydro generating stations shall work out to be very minimal as the Annual Fixed Charge is far lesser than the other-wise applicable energy charges (variable cost of the least-cost, available alternative source of power).

Therefore, the Commission, guided by Section 61 of the Electricity Act, 2003, which calls for economic use of resources, had decided to adopt a one part (energy based) differential peaking tariff (for peak and non peak hours) for Hydel generation from FY07 to FY09.

Under this approach, differential pricing for peak and non-peak period have been structured to provide economic signal to generating companies to maximise Hydel generation during peak period and thereby reduce utilization of hydro resources during the non peak hours.

Peaking tariff has been considered by the Commission to be based on the least cost available alternative source of power, if such Hydel generation is not available in those hours. For the non-peak hours, the Commission had adopted the highest variable cost of thermal generating stations available for MSEDCL on long-term basis, i.e., from MSPGCL and Central Generating stations.

For the peak hours, the peaking tariff has been assumed on an indicative basis to be 20% higher than the tariff for non-peak hours.

The Commission had approved the following differential charges for peak and non-peak hours for FY 07 and FY 08:

Table A-15.13: Differential Pricing Approved for Peak and Non-Peak Hours

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Differential Energy Charges for Peak Hours (0900 to 1200 Hrs & 1800 to 2200 hrs)	-	-	2.00	2.00	-
Differential Energy Charges for Non-Peak Hours (other than peak hours)	-	-	1.65	1.65	-

Based on the above assumption of generation in the peak and non-peak hours and the corresponding energy tariffs during those hours, the total revenue recovery for FY07 had exceeded the annual fixed charge of Hydro generating stations by Rs.617 Crs. Hence, the Commission directed adjustment of excess recovery in the bills for sale of power between MSPGCL and MSEDCL as a fixed reduction of Rs. 51.38 Crs per month.

Similarly, for FY08, the total revenue recovery exceeded the annual fixed charge of hydro generating stations by Rs. 602.97 Crs. The Commission allowed 5% of excess recovery of revenue from Hydel stations on account of higher generation during peak hours to be shared between Generating Company and Distribution Licensees in proportion of 50:50.

The Commission, on the other hand, directed that loss of revenue due to lower than the target Hydel generation during peak hours specified in the Order, will not be trued up and will be shared between Generating Company and Distribution Licensees in proportion of 50:50.

Considering the target generation during peak and off peak hours specified in the Order, the Commission directs 95% of adjustment of excess recovery of Rs. 602.97 Crs from hydro generating stations in the bills for sale of power to be raised by MSPGCL to MSEDCL. The reduction towards excess recovery should be provided on monthly basis on pro-rata basis.

Incentive

The Commission, both for FY07 and FY08 had specified that MSPGCL shall be entitled for an incentive on the basis of the actual performance and shall present the amount to be billed to MSEDCL as an additional charge, payable at the end of the year.

ARR for Tata Power Company (TPC) and Reliance Energy Limited (REL)

The Commission has approved ARR for the Generation business of the two other companies in the State of Maharashtra viz. Tata Power Company and Reliance Energy Limited on a similar basis as discussed above.

The summary of the various cost component of the ARR as approved by the Commission for Reliance Energy Limited – Generation for FY 07 to FY 09 is tabulated below:

Particulars	FY 07	FY 08	FY 09
Fuel Cost	512.5	580.92	581.14
O&M Expenses	61.08	70.07	80.26
Depreciation	45.9	50.95	55.85
AAD		-	-
Interest on Long Term Loan Capital	1.04	8.61	16.05
Interest on Working Capital	10.98	6.16	6.19
Income Tax	4.55	7.81	8.56
Total Revenue Expenditure	**636.05**	**724.51**	**748.05**
Return on Equity	61.21	67.29	73.15
Incentive			
Less: Non Tariff Income	6.17	6.17	6.17
Aggregate Revenue Requirement	**691.1**	**785.64**	**815.03**

The summary of the various cost component of the ARR as approved by the Commission for Tata Power Company – Generation for FY 08 to FY 09 is tabulated below:

Particulars	FY 08	FY 09
O&M Expenses	297	313
Interest on Debt	33	44
Interest on Working Capital	88	81

Particulars	FY 08	FY 09
Depreciation	58	70
ROE	154	165
Income Tax	70	43
Less: Non Tariff Income	10	9
Annual Fixed Charges	**690**	**706**

MYT Framework

Under the MYT framework, the Commission segregated costs into two categories - Controllable and Uncontrollable parameters for the generation business. The key features of the MYT framework adopted in the State of Maharashtra for Generating Stations are summarized in table below:

Table A-15.14: Key Highlights of the MYT Regulations

Particulars	
First Year of MYT	FY08
Time frame for the control period	3 years, FY08 to FY10
Issuance of the MYT Order	April 25, 2007
Base year considered for MYT projections	FY07
Uncontrollable Parameters	a) Force Majeure Events b) Changes in law, judicial pronouncements and Orders of the Central Government, State Government or Commission c) Economy-wide influences, such as unforeseen changes in inflation rate, market interest, rates, taxes and statutory levies d) Cost of power generation and/or power purchase due to the circumstances specified in Regulation 25 (i.e. matters related to short term power purchase)
Controllable Parameters	a) Capital Expenditure on account of time and/or cost overruns/efficiencies in the implementation b) Technical & Commercial Losses including bad debts c) Consumer Mix in case of presence of more than one Distribution licensee within a area and availing open access by existing consumer d) Working Capital Requirements e) Standards specified under SOP Regulations f) Labour Productivity

A-15.2. Maharashtra – State Transmission Utility

Introduction

There has been unbundling of the utility in the state of Maharashtra in 2005. The state utility, erstwhile Maharashtra State Electricity Board (MSEB) was unbundled in the following 4 companies as a result of the provisional transfer scheme notified under the EA 2003 on 6th June 2005:

1. MSEB Holding Company Ltd.
2. Maharashtra State Power Generation Company Ltd.,
3. Maharashtra State Electricity Transmission Company Ltd. (MSETCL) and
4. Maharashtra State Electricity Distribution Company Ltd.

MSETCL is in the business of transmission of electricity and has also been notified as the State Transmission Utility (STU).

The MYT framework in the state of Maharashtra has become applicable from FY08. Maharashtra Electricity Regulatory Commission (MERC), granted exemption to all the Utilities in Maharashtra from implementation of MYT framework for FY07 in consideration of such requests from the utilities. Accordingly, the first Control Period for MYT framework has been set for three financial years from April 1, 2007 to March 31, 2010.

The Commission has decided that the MYT framework for MSETCL would incorporate the performance trajectory of transmission losses and system availability, as these are the two most important performance parameters of a transmission licensee's performance. The Commission further specified that it will undertake an Annual Review of the performance of MSETCL over the Control Period, including the Aggregate Revenue Requirement and revenue, over the Control Period.

The controllable and uncontrollable factors stipulated by the Commission for MSETCL under the MYT framework beginning FY08 are as follows:

Un-controllable factors

- Force Majeure Events
- Changes in law, judicial pronouncements and Orders of the Central Government, State Government or Commission
- Economy-wide influences, such as unforeseen changes in inflation rate, market-interest rates, taxes and statutory levies
- Cost of power generation and/or matters related to short term power purchase

Controllable factors

- Capital Expenditure on account of time and/or cost overruns/efficiencies in the implementation
- Technical & Commercial Losses including bad debts

- Consumer Mix in case of presence of more than one Distribution licensee within a area and availing open access by existing consumer
- Working Capital Requirements
- Standards specified under SOP Regulations
- Labour Productivity

MERC (Terms and Conditions of Tariff) Regulations, 2005, further stipulate that the Commission shall determine the tariff of a Generating Company or Licensee covered under MYT framework at beginning of each financial year during the control period, considering :

- The approved forecast of aggregate revenue requirement and expected revenue from tariff and charges for such financial year, including approved modifications to such forecast; and
- Approved gains and losses to be passed through in tariffs, following the annual performance review.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY05 to FY09 (separate information on transmission business is not available for FY05) in approval of the Annual Revenue Requirement (ARR) of the state transmission utility.

Transmission Losses and Energy Balance (MUs)

In its tariff petition for FY05, MSETCL had projected a transmission loss level of 6.01% and almost same loss level at 6% was again considered by MSETCL for FY06 and FY07. However, the Commission engaged Central Power Research Institute (CPRI) to scientifically undertake load flow analysis study on data available for FY05 for assessment of optimum transmission loss level in the MSETCL transmission network. CPRI arrived at a transmission loss level of 4.45% for MSETCL network for FY05.

Considering certain limitations in CPRI study and also the norms adopted in other state transmission systems, the Commission has considered that the transmission loss should be at 4.6% for both FY05 and FY06.

The Commission has further approved a slightly higher transmission loss level of 4.85% for the MSETCL network for FY07 considering that the demand for power is going to be high and hence the losses. The Commission stated that it shall fine-tune the transmission loss levels under the MYT framework.

In the first MYT tariff petition beginning FY08, the Commission has not considered it necessary to review transmission loss of 4.85% allowed by the Commission in FY07 since no new evidence has been submitted by MSETCL. The Commission has therefore accepted proposal of MSETCL to retain the trajectory of transmission loss over the Control Period at 4.85%.

The table 1 below shows the approved energy transmitted by MSETCL from FY06 and FY09

Table A-15.15: Approved Energy Transmitted by MSETCL from FY05 to FY09

Particulars	FY06	FY07	FY08	FY09
Energy Required by DISCOMs (MUs)	65,547	73,749		
Transmission Loss (%)	4.60%	4.85%	4.85%	4.85%
Net Energy Transmitted (MUs)	68,708	77,508		

In terms of the approving expense projections for FY06, the Commission has adopted ARR norms and principles for determination of tariff based on latest tariff orders. However, for the determination of ARR for FY07, the MERC (Terms and Conditions of Tariff) Regulations 2005, have been followed.

Operation and Maintenance (O&M) Cost

The Commission has been approving employee cost, R&M and A&G cost separately for FY06, FY07. In the first MYT petition, however, MSETCL requested that the Commission should approve O&M expenses based on certain norms calculated on per bay basis and per Circuit-km as MERC regulations did not provide norms for O&M expenses.

The Commission considered MSETCL's request and undertook a detailed analysis on the historical trend of O&M expenditure by MSETCL, and computed O&M expenditure based on cost per bay and per Ckt-km. The Commission also analyzed norms being prescribed / adopted by other SERCs of comparable States like Andhra Pradesh, Madhya Pradesh, Gujarat, etc. The Commission found that the O&M expenditure being allowed for MSETCL in the past years is on the higher side as compared to transmission utilities of other States, there does not appear to be any ground for upward revision in the norms for O&M expenditure. The Commission opined that any other suitable norm could only be adopted after a detailed study initiated through a separate process.

Pending determination of any such norm for O&M expenditure, the Commission has decided considering the individual elements of O&M expenditure based on the increase linked to inflation indices for the first Control Period of MYT.

Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

Employee Cost

For FY06, the Commission has considered an increase in employee expenditure of 6.2% (past 5 year CAGR from FY 2000-01 to FY05) over the previous year FY 2005. Similarly, for estimating employee expenditure for FY 2007, an increase of 7.1% (CAGR from FY 2002 to FY 2006) has been considered over FY 2006.

This increase in employee expenses has been allowed by the Commission for increase in DA, annual increments, etc., and not for additional employees. The employee expenses have been capitalized at the average capitalization rate observed in the past 3 years (for employee expenses and A&G expenses for MSEB as a whole).

The employee expenditure estimated for FY07 including the State Load Despatch Centre (SLDC) function. Since the SLDC budget has been approved by the Commission separately, the employee expenditure in FY07 has been adjusted net of the employee expenses of SLDC function.

In the first MYT order beginning FY08, the Commission has considered an increase of around 5.36% on account of inflation, over the allowed level of gross employee expenses in FY07, based on the increase in Consumer Price Index (CPI). The Commission has considered the point to point inflation over CPI numbers for Industrial Workers for a period of 3 years, i.e., FY 2003-04 to FY06, as per Labour Bureau, Government of India. The employee expense has been capitalized at the average capitalization rate of 20%, as proposed by MSETCL.

The employee expenses as approved by the Commission from FY06 to FY09 are shown in table below:

Table A-15.16: Approved Employee Cost from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Net Employee Cost (Rs.Crs.)	289.66	303.96	284.34	299.57
Total Approved ARR (Rs.Crs)	1,433	1,393	1,547	1,647
Employee Cost as % of Approved ARR	20.2%	21.8%	18.4%	18.2%

Repair & Maintenance (R&M) Expenses

In its ARR petition for FY07, MSETCL submitted that the R&M expenses approved by the Commission in FY05 are very low at 0.9% of GFA in comparison to about 3% being approved in the past for erstwhile MSEB. MSETCL opined that the R&M expenses should atleast be increased to 1.5% of GFA and has projected the R&M expenses on similar lines in its petition.

The Commission has, however, considered R&M expenses based on the average R&M expenses of the Transmission function / MSETCL as a percent of opening GFA for past 3 years for FY06 and FY07. While considering the opening GFA for FY06 and FY07, the Commission has excluded GFA of the SLDC function. Further, the R&M expenses have been capitalized at the average capitalization rate observed in the past three years (for MSEB as a whole).

The Commission, in its first MYT order for the control period beginning FY08, has considered an increase in R&M expenditure to factor the inflationary impact of around 5.39% based on the increase in WPI over the approved gross R&M amount in the preceding year. The Commission has not accepted the R&M expenses of about 2.5% of GFA that were proposed by MSETCL in its MYT tariff petition due to absence of substantive details. The Commission has however considered capitalisation of R&M expenditure at the rate of 0.75%, as proposed by MSETCL.

The R&M expenses approved by Commission from FY06 to FY09 are summarized in the table below:

Table A-15.17: Approved R&M Expenses from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Net R&M Expenses (Rs.Cr.)	60.81	59.6	85.54	90.15
R&M Cost as % of Approved ARR	4.2%	4.3%	5.5%	5.5%

Administrative & General (A&G) Expenses

For estimating the A&G expenses of MSETCL for FY06 and FY07, the Commission has considered a year-on-year (YoY) increase of 4.21% over the A&G expenses as approved by the Commission in the respective preceding order. The A&G expenses have been capitalized at the average capitalization rate observed in the past 3 years (for employee expenses and A&G expenses for MSEB as a whole).

Since SLDC budget for MSETCL has been separately approved by the Commission for FY07, the A&G expense has been adjusted net of the A&G expenses of SLDC function for FY07.

For each year during the first control period beginning FY08, the Commission has considered an increase of around 5.38% on account of inflation over the allowed level of gross A&G expenses in immediately preceding year, based on the increase in Wholesale Price Index (WPI) and Consumer Price Index (CPI). The Commission has considered a weight of 60% to WPI and 40% to CPI from FY08 to FY09, based on the expected relationship with the cost drivers. The A&G expense has been capitalized at the capitalisation rate of 15% proposed by MSETCL.

A&G expenses approved by the Commission in its tariff orders for FY06 to FY09 are given in the table below:

Table A-15.18: Approved A&G Expenses from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Net A&G Expenses (Rs.Crs)	25.08	24.53	25.45	26.82
Total Approved ARR (Rs.Crs)	1433	1393	1547	1647
A&G Cost as % of Approved ARR	1.8%	1.8%	1.6%	1.6%

Depreciation

The Commission has applied the average actual depreciation (5.99%) charged over the past 3 years as a percentage of the opening gross block of assets of the Transmission function to arrive at the allowable depreciation for FY06.

In its tariff order for FY07, the Commission has approved the depreciation as proposed by MSETCL as it was observed that depreciation claimed by MSETCL is in line with the MERC (Terms and Conditions of Tariff) Regulations, 2005. The Commission has also approved Advance Against Depreciation (AAD) for FY07 as MERC Regulations, 2005 provide for AAD in case the repayment obligations are higher than the depreciation expenditure computed as per Regulations. Since, cumulative depreciation and cumulative loan repayment could not be computed due to unavailability of details, the Commission has computed the AAD based on the loan repayment (based on loan outstanding as per the Provisional Transfer Scheme as on 31st March 2004, and making adjustments for borrowings, repayment of loans disallowed, etc. for subsequent years) and the depreciation expense for the year FY07.

In consideration of much lower actual capital expenditure incurred till December 2006 against that was projected by MSETCL, the Commission has revised the Opening GFA (subject to true-up) for FY08 for the purpose of determination of depreciation over MYT Control Period. Opening GFA for FY09 and FY 2009-10 have been approved based on the projected capitalisation of assets. The Commission has also approved AAD for each year under the control period as provided under the MERC Regulation 2005.

The details of depreciation and AAD approved by the Commission from FY06 to FY09 are given below in table 5.

Table A-15.19: Approved Depreciation Expenses from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Opening GFA approved (Rs.Crs)	8332.4	8452.8	8648.7	9288.4
Depreciation Including AAD (Rs.Crs)	498.09	302.59	388.49	362.65
AAD (Rs.Crs)	0.00	36.89	117.21	72.34
Depreciation (Rs.Crs)	498.1	265.7	271.3	290.3
Average Depreciation rate (% of GFA)	5.98%	3.14%	3.14%	3.13%

Capital Expenditure

The Commission has noted certain inadequacies in the 3 Year Rolling Plan submitted by MSETCL for FY07 to FY09 while it has approved the actual expenditure of Rs.227.07 Crs incurred by MSETCL in FY06. In addition to the inadequacies in the submitted 3 year Rolling plan, the Commission stated that the plan should first be approved by the MSETCL Board and then submitted to the Commission for scrutiny and approval. The Commission has directed MSETCL to remove the inadequacies in the system study report by including existing system loading condition, voltage and constraints on the network plan to justify addition (and associated capital expenditure proposed) or strengthening of existing system along with the associated impact. The Commission has also asked MSETCL to list the order of priority in which the fresh schemes are proposed to be undertaken in FY07.

Accordingly, the Commission has kept the 3-year Rolling Plan under examination and has considered an average of the fixed asset capitalization in the past 2 years as allowable capital expenditure for FY07 for the purpose of computation of the ARR. The actual capital expenditure in FY07 till December 2006, has been only around Rs.196 Cr, as against the projected capital expenditure of Rs.1054 Cr.

Under MYT regime, MSETCL has projected a capital expenditure of around Rs.13,248 Crs (12,701 DPR schemes + 547.09 Non-DPR schemes) over the 3 year Control Period from FY08 to FY 2009-10. However, MSETCL submitted only 64 schemes involving total capital outlay of Rs.3,632 Crs out of the proposed capital outlay of Rs 12,701 (DPR) Crs during the Control Period. The Commission has scrutinized the submitted schemes and accorded in-principle clearance for schemes involving capital outlay of Rs 1343.90 Crs. However, the Commission in its MYT tariff order expressed its dissatisfaction on that fact that MSETCL does not maintain accounts of scheme-wise capital expenditure on an ongoing basis. In the MYT tariff order for FY08 to FY09, the Commission has further directed MSETCL to submit a Report on mechanism to monitor scheme wise capital expenditure within 4 weeks from issuance of the order along with a list of critical milestones for completion of approved schemes.

Finally, since some of the schemes were already initiated during FY07 or earlier, out of approved capital expenditure of Rs.1343.90 Crs, the Commission has approved capital outlay of Rs 1198.89 Crs over the entire control Period. Further, the Commission has also considered 50% of capital outlay for Non-DPR schemes as against that proposed by MSETCL over the Control Period. Even with all diligence by the Commission, the capital expenditure and capitalisation approved by the Commission in FY08 and subsequent years is much higher than that made by MSETCL in the past.

Capitalisation

The Regulations envisage scheme-wise capitalisation of the capital expenditure for the purpose of determination of original cost of the project. Accordingly, the Commission has considered the capital expenditure and phasing plan for investment for the approved capex schemes as the basis for determining original cost of the projects in respect DPR schemes. The Commission has also computed interest during construction (IDC) based on the approved capex plan and phasing plan over MYT Control Period and has considered debt to equity ratio of 80:20 as proposed by MSETCL. The Commission has considered interest of 10.5% based on the present interest rate prevalent for the loans disbursed by PFC/REC instead of 11.5% as proposed by MSETCL.

In addition, the Commission has also considered expense capitalisation comprising capitalisation of employee expenses, A&G expenses and R&M expenses, in line with past trends.

The capital outlay and capitalisation as considered by the Commission from FY06 to FY09 is summarized in Table 6 below:

Table A-15.20: Capital Expenditure and Capitalisation approved for MSETCL from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Approved Capital Expenditure (Rs. Cr)	227.07	196.0	624.36	585.75
Capitalisation (Rs. Cr)			639.67	562.3

Interest cost

While computing the interest for FY06 and FY07, the interest on loans taken for investment in Dabhol Power Corporation have also been disallowed by the Commission in line with earlier tariff order. The Commission has also disallowed loans taken for investment in generation projects viz. DPC based on the view that Transmission Company should not be investing in power generation projects.

Further, the Commission has allowed additional loans (borrowings for the year) only to the extent of fixed asset capitalization in FY05 and FY06 with the assumption that the capitalization of fixed assets in FY05 and FY06 will be funded entirely by debt and not by equity, as no equity has actually flown into MSETCL.

In case of FY07, the Commission has allowed capital expenditure of Rs. 196 Crs and the loan amount is taken as 70% of the allowable capital expenditure for the year, in line with the MERC (Terms and Conditions of Tariff) Regulations, 2005.

Further, in case of additional borrowing made during a year, it is assumed that there would be a moratorium period of 3 years. The Opening loan balance in FY05 has been considered as per the Balance Sheet on 31st March 2004 under the provisional Transfer Scheme. However, the Commission has not considered MSEB loans that have not been allocated to MSETCL. The Commission has computed the interest amount by applying the average interest rate for the year on the average of opening and closing loan balances for the year. The Commission has considered the same rate of capitalization for interest expenses as projected by MSETCL.

For the purpose of determination of interest cost for FY08 to FY 2008-under MYT control period, the Commission has considered interest rate of 10.5% p.a. for the new loans as well as existing loans from REC and PFC based on interest rate applicable for loans recently disbursed by REC/PFC. The drawl of loan quantum has been linked to the phasing of capex plan with interest cost upto commissioning of the projects considered as part of Interest during construction (IDC). Subsequent to commissioning of the project, loan quantum corresponding to capitalized project cost has been considered for computing interest cost as part of revenue expense.

The table below shows the interest cost approved by Commission from FY06 to FY09.

Table A-15.21: Interest cost approved during FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Gross Interest on Long Term Loans (Rs.Cr)	308.58	293.92	262.46	273.13
Less: Expenses Capitalized (Rs.Cr)	19.44	18.52	37.66	34.16
Less: SLDC Apportionment (Rs.Cr)	0	0	0.95	0.95
Net Interest Expenses (Rs.Cr)	289.14	275.4	223.85	238.02

Interest on Working capital

For computing the working capital requirement for MSETCL for FY06, the details of current assets and current liabilities of MSETCL as provided in the Provisional Transfer Scheme have been used. The Commission has estimated the working capital requirement of MSETCL for FY06, as 0.75 x (Current Assets – Current Liabilities) in line with the approach adopted previously for MSEB. As the working capital for has been computed as negative, the Commission has considered 'Nil' interest on working capital in FY06.

For FY07, the Commission has computed interest on working capital as per the MERC (Terms and Conditions of Tariff) Regulations, 2005. Accordingly, the rate of interest on working capital loans for FY07 has been considered as 10.25%.

During the first Control Period beginning FY08, the Commission has computed interest on working capital as per the MERC (Terms and Conditions of Tariff) Regulations, 2005. The rate of interest on working capital loans has been considered as 11.5%, the prevalent SBI short-term PLR, as stipulated in the Tariff Regulations. The details of interest on working capital approved by the Commission from FY06 to FY09 are tabulated below in table 8.

Table A-15.22: Interest on Working Capital approved from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Total Working Capital (Rs.Crs)	Negative	225.8	275.22	303.22
Interest on Working Capital	0	23.14	31.65	34.87

Other Interest and finance charges

The other interest and finance charges from FY06 and FY09 have been allocated under included the following heads:

- Guarantee fee payable to Government of Maharashtra (GoM) for long-term loans taken from lenders
- Other Finance Charges

The Commission has allowed the other interest and finance charges as projected by MSETCL for FY06 and FY07. In the MYT order for FY08 and FY09, the Commission has accepted the guarantee fee projections of MSETCL, while other finance charges has been computed at 0.5% of Long-Term Loan drawl considered by the Commission over the Control Period.

Table A-15.23: Other Interest and Finance charges approved by Commission

Particulars	FY06	FY07	FY08	FY09
Guarantee Fee and Finance Charge (Rs.Crs)	30.42	30.42	23.07	23.22

Rate of Return

The Commission has allowed the return projected by MSETCL for FY06, as this is based on Return of 4.5% on NFA which was in line with the principles of the earlier Tariff Order for MSEB as a whole.

For FY07, the Commission has computed the RoE as per the MERC (Terms and Conditions of Tariff) Regulations, 2005. The capitalization of fixed assets in FY07 has been assumed to be funded by Debt: Equity of 70:30, as proposed by MSETCL in their ARR Petition. The Commission has further considered the fixed asset capitalisation for FY07 as the average fixed asset capitalisation of the past 2 years. The Opening equity of MSETCL for FY07 has been taken from the Balance Sheet as on 31st March 2004 under the Provisional Transfer Scheme. It has been assumed that the additional capitalisation upto FY06 would be funded entirely by debt, and there would be no additional equity.

The RoE for MYT control period beginning FY08 has been approved by the Commission at 14% (in accordance with the its tariff regulations) on the opening regulatory equity, and on 50% of projected levels of assets capitalized during each year of the Control Period. The debt: equity ratio has been considered as 80:20.

The details pertaining to approved rate of return between FY06 and FY09 are given in the table below:

Table A-15.24: Approved Rate of Return between FY06 and FY09

Particulars	FY06	FY07	FY08	FY09
Approved Capital Base- NFA (Rs.Crs.)	4583.16	NA	NA	NA
Regulatory Equity at Beginning (Rs.Crs)	NA	2,373	2375	2863
Equity portion of Capital expenditure (Rs.Crs)	NA	58.8	128	112
Approved Return on Equity (%)	4.5%	14%	14%	14%
Approved Return on Equity (Rs.Crs)	206.24	336.34	391.88	408.71

Income Tax

The Commission has approved the income tax amount for FY06 as submitted by MSETCL as it was based on actual advance tax paid by MSETCL to the Income Tax authorities for the year. The Commission, however, stated that the income tax refund received for FY06 would be trued up during the ARR determination for FY08.

For FY07, the Commission has considered the income tax as 'Nil' as no advance tax has been paid by MSETCL to the Income Tax authorities, for the year as per the submissions of MSETCL till the date of issue of the order. The Commission has further observed that since erstwhile MSEB has accumulated financial losses of Rs.1,872 Crs (as per the MSEB Accounts as on 31st March 2005), the tax losses on account of depreciation and operations would also be significant, and thus, no income tax shall be payable in FY07.

In its MYT petition, MSETCL has submitted that as per the modified Transfer Scheme, it has received a business loss and unabsorbed depreciation of Rs.1486 Crs in its books of accounts. Out of this loss, MSETCL has projected an amount of Rs.536 Crs to be set off in FY06, while the balance loss amount to be set off by FY08. MSETCL has accordingly considered that it shall have to pay income tax at the corporate tax rates only from FY09 onwards.

The Commission has accepted projections of Income Tax made by MSETCL for the control period beginning FY08. The Commission has however directed MSETCL to ensure that the entire past losses loss and unabsorbed depreciation are set off against future profits, so that the income tax liability can be minimized.

Income tax approved by the Commission in its tariff orders for FY06 to FY09 are tabulated in the table 11 below

Table A-15.25: Income tax approved from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Approved Income Tax Cost (Rs.Crs)	41.01	0.0	37.8	109.72
Applicable Tax Rate or Basis	Advance Tax at actuals	No Advance Tax	11.22%	33.66%

Other Expenses / Prior period / Provisions

MSETCL has projected a gain of Rs. 0.28 Crs in FY06 on exchange rate variation based on provisional accounts while a loss of Rs.1.41 Crs on exchange rate variation FY07. The Commission has allowed the amount of other expenses as projected by MSETCL both for FY06 and FY07.
In its MYT petition, MSETCL has sought approval of other expenses under various heads viz. R&D, Corporate social responsibility, exchange rate variation, material cost variation and fringe benefit tax (FBT) with a major chunk allocated to R&D during all the years under the control period. The Commission has however completely disallowed the other expenses for the Control period. The Commission disapproved R&D expenses in the absence of detailed rational and project schemes. The Commission has appreciated initiative of MSETCL toward social responsibility but has suggested the related expenses to be met out of RoE as it cannot be passed onto the consumers. In case of FBT, the Commission argued that it is an employee expense which has already been projected separately on the basis of inflationary trends.

The table below shows the other expenses / provisions approved by the Commission during the last four financial years.

Table A-15.26: Approved Other Expenses between FY06 and FY09

Particulars	FY06	FY07	FY08	FY09
Other Expenses (Rs.Crs)	-0.28	1.41	0.0	0.0

Contribution to Contingency and Reserves

The Commission has disallowed the contingency reserve amount projected for FY06, as there was no provision for the same in the earlier MSEB Tariff Order. The Commission has, however, allowed the contribution to contingency reserves as projected by MSETCL for FY07, as this was in line with MERC (Terms and Conditions of Tariff) Regulations, 2005.

For MYT Control Period, the Commission has allowed contribution to contingency reserves at 0.5% of Opening GFA as determined by the Commission over the Control Period, based on the capitalisation projected by the Commission.

Table A-15.27: Approved Contingency Reserves from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Contribution to Contingency & Reserves (Rs.Crs)	0.0	42.26	43.24	46.44

Non-Tariff Income

MSETCL earns non-tariff income, from activities such as sale of scrap, sale of tender forms, and miscellaneous receipts.

The Commission has accepted non-tariff income for all the years from FY06 to FY09 as projected by MSETCL. The non-tariff income approved by the Commission during the years under consideration is given in table 14 below:

Table A-15.28: Non-Tariff Income Approved from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Non-Tariff Income (Rs.Cr)	7.6	6.52	9.49	9.67
Approved ARR (Rs.Cr)	1433	1393	1547	1647
Non-Tariff Income as % of ARR	*0.53%*	*0.47%*	*0.61%*	*0.59%*

Annual Revenue Requirement (ARR)

The Commission has approved the ARR by deduction of the non-tariff income from other admissible expense components as discussed above. The table 15 below summarizes the ARR approved by the Commission vis-à-vis that proposed by MSETCL from FY06 to FY09.

In the first MYT tariff order, the Commission has trued-up the ARR approved for FY06, details of which are also captured in the table 15 below.

Table A-15.29: Approved ARR for MSETCL from FY06 to FY09

Particulars	FY06	FY07	FY08	FY09
Approved ARR (Rs.Crs)	1433	1393	1547	1647
ARR proposed by MSETCL (Rs.Crs)	1668	1854	2009	2609
Trued Up ARR - BY SERC	1310	-	-	-
Actual ARR Claimed- By Utility	1316	-	-	-
Disallowance (%)	0.43%			

The Commission, observed that truing up of expenses and revenue for FY07 shall be undertaken only after submission of audited accounts by MSETCL, subject to prudence check by the Commission.

Further, since MYT principles have been adopted for the first time and investment plans still not finalized, the Commission has specified a framework for determination of ARR in future years of the Control Period in the MYT order. The Commission hopes that such a framework shall bring about greater regulatory certainty to the licensees and consumers. The framework specified by Commission for determination of ARR in 2nd and 3rd year of the Control period is as follows:

$$\mathbf{ARRn = ARR^{1}n + ACCn + K + Z}$$

Where,

ARRn is ARR for the nth year of the Control Period;

$ARR^{1}n$ is the ARR requirement specified by the Commission at the beginning of the Control Period for the nth year

ACCn is the additional capital costs (depreciation, interest expenditure, and return on equity) that need to be considered for the nth year of the Control Period based on the additional DPRs or investments approved by the Commission during the Control Period.

K is the adjustment to the revenue requirement to be carried out as part of the Annual Performance Review to share the net gains and losses arising out of controllable and uncontrollable factors

Z is an adjustment that the Commission may apply during the control period to pass any appropriate financial implications (positive or negative) such as incentives or penalties for Voltage variations, Feeder availability, Sub-station availability, Neutral Voltage Displacements (NVD), System adequacy etc.

Transmission Tariff

The Commission has developed a Transmission Pricing Framework in June 2006 to determine transmission tariff to be applicable for use of Intra-State Transmission System (InSTS) for the State of Maharashtra. The main principles of the framework are:

- Intra-State transmission system shall comprise composite transmission network of MSETCL, Tata Power Co. Ltd. (TPC), Reliance Energy Ltd. (REL) and any other transmission licensee, in future.
- Aggregate of ARR of all licensees, as approved by the Commission, shall form the Pooled Cost or the Total Transmission System Cost (TTSC) of the Intra-State transmission system, to be recovered from the Transmission System Users (TSUs).
- For FY07, until adequate metering arrangement is put in place, transmission tariff shall be based on share of 'peak demand' of concerned TSU during each month of the previous year while it shall be based on contribution to Co-incident Peak Demand' (CPD) by each TSU subsequently. Accordingly, for FY07, average of the 12-monthly contributions to peak demand by each TSU shall form basis for arriving at Base Transmission Capacity Rights (Base TCR) and overall share/contribution of each TSU.
- Base Transmission Tariff for each financial year shall be derived as TTSC of intra-State transmission system divided by Base TCR and denominated in terms of Rs/kW/month or Rs/MW/day

The Commission has approved Total Transmission System Cost (TTSC) of Rs 1598.11 Crs (aggregate of ARRs of the 3 transmission utilities) for the intra-State transmission system (InSTS) for FY07. Further, based on the actual utilisation or Non-coincidental Peak Demand during FY06, the Commission has approved Base Transmission Capacity for FY07 for use of Intra-State transmission system by the distribution licensees.

In the MYT tariff order beginning FY08 , the Commission has arrived at the transmission capacity utilisation based on 12-monthly average of contribution to 'Co-incident peak demand' by each transmission system user as recommended by it in the earlier tariff order for FY07.

Commission has considered composite transmission loss of 4.85% for each year from FY07 to FY09 as approved based on CPRI load analysis study.

The transmission tariff approved by the Commission for MSETCL, TPC and REL from FY06 to FY09 is given in table 16 below.

Table A-15.30: Approved Transmission Tariff from FY06 to FY09

Particulars	FY07	FY08	FY09
Total Transmission System Cost – Aggregate of ARRs of MSETCL, TPC and REL (Rs.Cr)	1598.11	1800.4	2180.62
Base Transmission Capacity Utilisation (MW) - Aggregate Non-coincident Peak Demand	12085	NA	NA
Base Transmission Capacity Utilisation (MW) - Average Coincident Peak Demand	NA	11827	12085
Transmission Tariff - Long Term (Rs/kW/month)	**110.2**	**126.86**	**150.37**
Transmission Tariff - Long Term (Rs/MW/Day)	**3623**	**4171**	**4944**

The Commission in its respective tariff orders (from FY07 to FY09) has specified that the above transmission charges are payable by all long term transmission system users (TSU) irrespective of their actual utilisation (peak demand) recorded during the period of operation. In case, actual utilisation of transmission capacity by any long term TSU exceeds the allocated transmission capacity then, the same shall be governed as per MERC (Transmission Open Access) Regulations, 2005.

The Commission further observed that transmission system users shall be entitled to use surplus transmission capacity through short term open access subject to payment of short term open access charges and governed by MERC (Transmission Open Access) Regulations, 2005 and other regulations, as applicable.

Accordingly, the Commission has determined short term access charges (table 17 below) as per the Transmission Pricing Framework. The Commission has approved transmission Tariff in case of short term open access transactions uniformly at 25% of that applicable for long term open access transactions for all years from FY07 to FY09.

Table A-15.31: Transmission Tariff for Short Term Open Access

Particulars	FY07	FY08	FY09
Transmission Tariff -Short Term Open Access (Rs/MW/Day)	907.75	1042.75	1236

A-15.3. Maharashtra– Distribution Utilities

Introduction

The state of Maharashtra presently has four Distribution companies namely, Maharashtra State Electricity Distribution Company Limited (MSEDCL), Tata Power Company Limited Distribution Business (TPC-D), Reliance Energy Ltd. Distribution Business' (REL-D) and Brihan-Mumbai Electric Supply & Transport Undertaking (BEST).

The Maharashtra State Electricity Distribution Company Ltd. (MSEDCL) is a Company formed under the Government of Maharashtra on June 6, 2005. MSEDCL is in the business of distribution and supply of electricity in the State, except the Mumbai license area.

TPC is a Company established in 1919. TPC was granted a license by the Government of Maharashtra for the supply of energy to the public in its Mumbai License Area and to supply energy in bulk to licensees, vide Resolution No. IEA-2001/CR-10509/NRG-1, dated July 12, 2001.

REL (formerly known as Bombay Suburban Electricity Supply Company (BSES)) is a vertically integrated utility carrying out the functions of Generation, Transmission, Wheeling and Retail Supply of electricity. It was granted a license by the Government of Maharashtra for the supply of energy to the public in its Mumbai License Area, vide the "Bombay Suburban Electric License, 1926".

The Brihan-Mumbai Electric Supply and Transport Undertaking (BEST) is an Undertaking of the Brihanmumbai Mahanagarpalika and is in the business of distribution of electricity and providing public road transport. BEST submitted its application for approval of Annual Revenue Requirement and Tariff Proposal for the first time for FY05 and FY06.

The Tariff order for FY05 and FY06 were not issued by the Commission due to the unbundling activity in the state of Maharashtra; however, orders for TPC and REL were issued for FY05. The Commission followed an ARR approach till FY07 and shifted to MYT framework from FY08 with a control period of three year till FY 09-10. Since the controllable parameters for each year of the control period were determined based on approved numbers for FY07, the Commission after the issue MYT Order revised the controllable parameters for each year based on the trued-up figures (audited accounts) for FY07.

Sales / Demand

The Commission has determined sales for various Distribution licensees separately and as per the area of distribution, consumer mix, past trends of sales, prevailing demand-supply gap and restricted demand.

For FY05 the Commission approved sales for DISCOMs based on 3 year and 5 year CAGR. For TPC sales area where the sales mix has not changed substantially in the recent past the Commission used 5 year CAGR and for BSES sales area where the sales mix has changed substantially the Commission largely used 3 year CAGR to forecast sales. For the categories where the sales had declined the Commission had kept sales for FY05 at the level of FY 03-04 and where the sales were dependent on various factors the Commission had applied normative growth rates for e.g. temporary supplies, HT supply to hotels, film companies, cinemas, etc.

For FY07 the Commission approved sales as proposed by the DISCOMs' with minor disapprovals.

TPC projected the sales for FY07 based on CAGR of sales in various categories during the past few years and considering the addition of new consumers. Commission accepted TPC's projections for all the categories except Railways and LT-2 part commercial where the Commission projected sales by considering growth rate equivalent to 4 year CAGR on actual sales during FY06 (for Railways) and by considering a growth rate of 10% (for LT-2 part commercial)

For REL Distribution Business the Commission considered growth rate of 5.19%, equivalent to 5 years CAGR for the period FY 00-01 to FY06. The total sale of REL Distribution Business was then allocated to consumer categories in proportion to actual category-wise sales during FY06.

For MSEDCL, considering supply constraint situation and actual sale for FY06 based on (limited) review of accounts, the Commission accepted sales projections for non-agricultural sales made by MSEDCL.

However, for agricultural sales, though MSEDCL projected sales based on the agricultural consumption norms derived from the study of sample energy audit of the agricultural feeders, the Commission approved agricultural consumption based on the recorded consumption of metered consumers. The Commission filtered the abnormal records, viz., zero connected load, average billing, negative consumption, high connected load, etc., for all the zones.

After filtering out the abnormal cases, the billing details of consumers were used to arrive at the Zone wise consumption norm in hrs/hp/annum. Subsequently, the Commission used the respective zone wise consumption norm for projecting zone wise metered and unmetered agricultural consumption.

For FY08, the Commission adopted different approach for different DISCOMs to approve sales considering the variation in consumer mix of each of the DISCOMs

For TPC's first year of MYT control period the Commission approved sales based on five year CAGR.

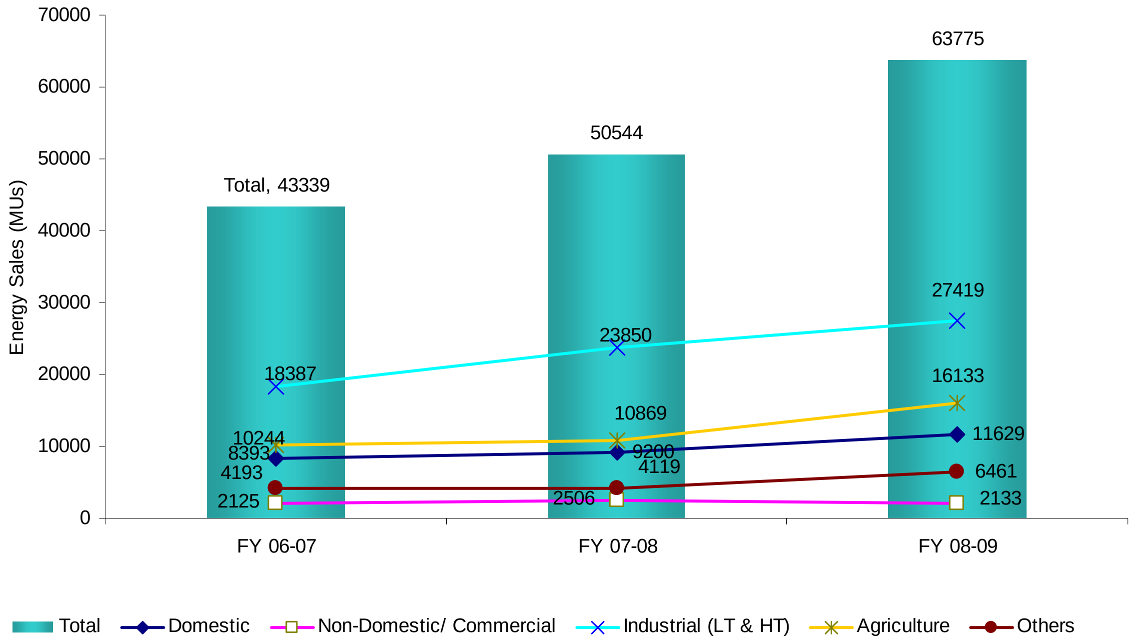
For MSEDCL since the supply situation was restricted and there was uncertainty regarding the estimates of unrestricted demand the Commission approved sales to various categories based on MSEDCL's proposal, past trend and projected additional availability of power. The Commission approved un-metered agricultural sales based on consumption norm of 1318 hours/HP/year as computed in the previous tariff order. For most of the HT consumer categories, except MPECS and HT Water-works (wherein the Commission approved sales based on past trends) the Commission accepted sales as proposed by MSEDCL. The Commission accepted sales projected by MSEDCL for some LT consumer categories, while it has done its own projection for the domestic, commercial, LT industrial, and LT metered agricultural categories, based on past trends.

For FY09, the Commission has considered the 5-year CAGR of sales for each category, by considering the period from FY 2001-02 to FY08. For categories like Railways and HT industrial, the Commission has considered the 5-year CAGR for projecting the sales, while for other categories, the three-year CAGR in sales was considered to project the sales, as it appears to be more representative of the immediate trend.

MSEDCL had computed the FY07 unmetered agriculture consumption based on the methodology prescribed by the Commission in the FY07 Order. Since MSEDCL has stopped extending un-metered connections, MSEDCL had submitted unchanged level of consumption for FY08 and FY09. The Commission had considered the submission of MSEDCL and approved the unmetered consumption for FY09 as per the claimed quantum.

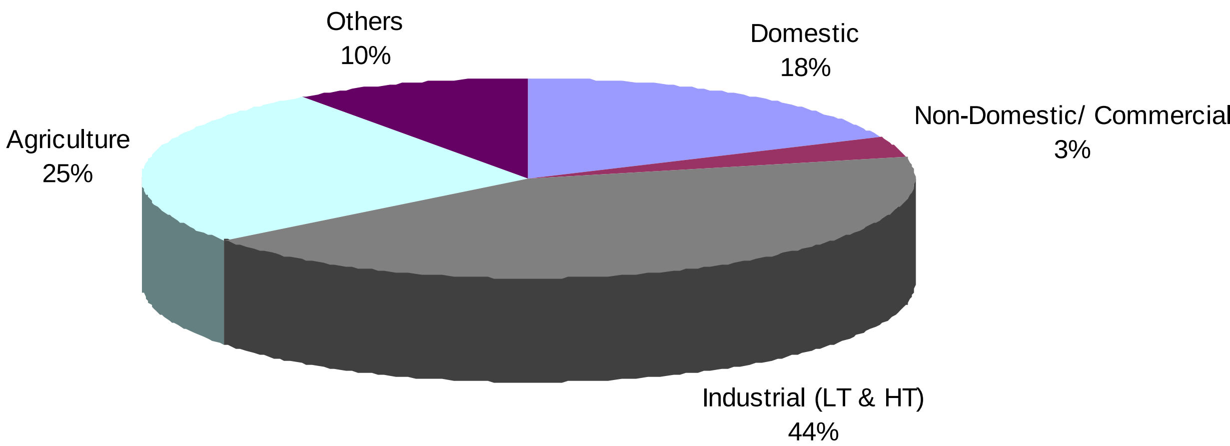
It is observed that the sales to industrial consumers form the largest share (approx 45%) of total approved sales for MSEDCL. The growth in approved industrial sales during FY07 to FY09 is approx 22%.

Graph A-15.4: Share of consumer categories in approved sales and the trend from FY07 to FY09



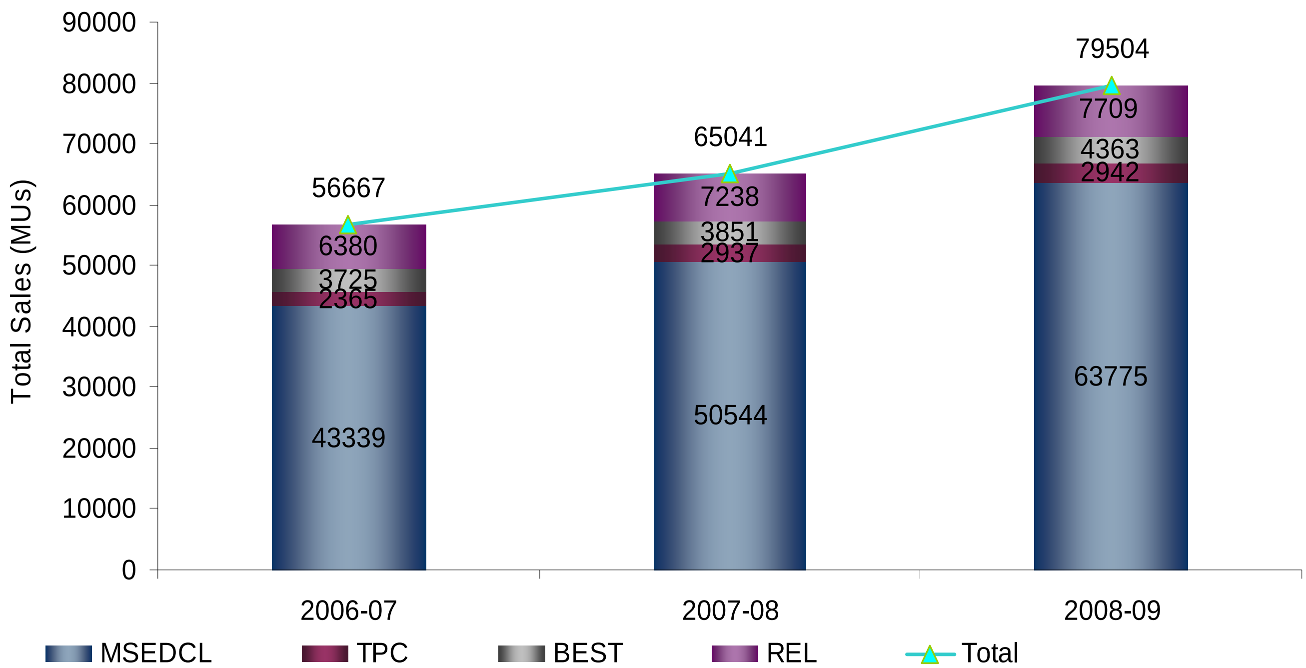
The percent share of the major consumer categories in FY09 is illustrated in the Graph below. After industrial category, sales to agricultural consumers is the next largest energy consuming category for MSEDCL with a share of approx 25% in FY09. The demand from agricultural sales has also increased at a CAGR of 25% during FY07-FY09. However, the consumer mix for MSDECL has not changed significantly from FY 07 to FY09.

Graph A-15.5: Share of Consumer categories in Approved Sales for FY09



The Figure 4 below shows the allocation of energy sales in Maharashtra between the four DISCOMs.

Graph A-15.6: Sales allocation between DISCOMs from FY05 to FY09



T&D Losses

The Commission from all the years has approved intra-State transmission system loss as per Regulation 14 of the MERC (Transmission Open Access) Regulations, 2005, where the intra-State transmission system losses determined by SLDC and approved by the Commission, are borne by the Transmission System Users pro-rata to their usage of intra- State transmission system.

For FY07 the Commission determined the baseline distribution loss for MSEDCL by considering sales to unmetered agricultural consumer on the revised agricultural consumption norm of 1318 hrs/hp/annum, sales to agriculture metered category and sales to nonagricultural consumers. The Commission then approved loss reduction target of 2% for FY07. For REL the Commission considered the actual loss reduction achieved during FY05 and FY06 and loss reduction indicated by REL along with Capital Expenditure Schemes, to approve reduction target of 0.5% during FY07

For MYT control period the Commission approved the base-line data for MSEDCL as the actual distribution loss for FY07, which was less than approved T&D loss for FY07. The Commission assessed the transmission and distribution loss for FY07 based on the energy audit data from Apr 06 to Jan 07.

Before setting the loss reduction target of 4% per year during the MYT control period the Commission did a through analysis of the technical and commercial loss and circle-wise distribution loss. The Commission also directed MSEDCL to target poorly performing divisions and attempt to reduce the losses on a priority in such divisions, using ‘ABC’ analysis.

The Commission did not reduce the power purchase on account of the approved trajectory of reduction of distribution losses but has considered additional revenue through the additional sales, while determining the revenue gap.

Since the T&D network of TPC mainly consists of Transmission lines (EHV/HT) and a smaller proportion of Distribution (LT) lines, the T&D loss of TPC is very loss and hence the Commission had approved loss level as proposed by TPCfor FY05 and FY07. For the MYT period the Commission has approved Distribution loss at 2.93% in accordance with the loss level approved for FY07, and the actual distribution losses reported by TPC.

The table below shows the comparison of proposed and approved T&D losses for FY05 through FY09.

Table A-15.32: T&D Loss approved and trued-up during FY05 to FY 09

Particulars	FY05	FY07	FY08	FY09
MSEDCL				
Approved Distribution loss		34.97%	31.7%	22.50%*
Trued-up		30.2%	26.20%	
TPC				
Approved Distribution loss	2.4%	2.93%	2.93%	2.93%
Trued-up	2.39%	2.30%	NA	
REL				
Approved Distribution loss	12.5%	11.52%.	11.50%	10.75%
Trued-up	12.1%	12%	11.00%	
BEST				
Approved Distribution loss		11.5%	11.00%	10.50%
Trued-up		11.90%	11.00%	

**Projected based on the revised loss for FY08.*

Power Purchase Quantum

The Commission has approved power purchase quantum separately for each of the DISCOM i.e. MSEDCL ,REL-D, TPC-D and BEST.

TPC-D, BEST and REL-D which distribute electricity in Mumbai and Mumbai Suburban areas, meet their power requirement from the generation of TPC-G, REL-G (Dahanu Thermal Power Station, i.e., DTPS), Renewable Purchase Specification (RPS) and bilateral contracts. The power purchase quantum from REL-G and TPC-G is approved as per the Commission's order for these generating stations.

MSEDCL has two primary sources of firm power, viz,

- Maharashtra State Power Generation Company Limited (MSPGCL)
- Purchase from Central Generating Stations (CGS)

In addition to the above sources, MSEDCL buys power from Power Trading Corporation (PTC), Ratnagiri Gas and Power Private Limited (RGGPL), Trading companies, TPC-D and other sources such as nonconventional sources including co-generation, wind power and surplus power from captive plants.

The Commission introduced the concept of costly power and non-costly power in FY07 and FY08, such that the average hours of load shedding was determined by allocating only non-costly power to all categories. The costly power (costing above Rs. 4 per kWh) was then allocated to consumer categories and regions, and an Additional Supply Charge (ASC) was collected from the consumers in proportion to the relief from load shedding made possible due to the costly power purchase. The Commission considered power costing Rs. 4 per kWh and above as costly power, for determination of the ASC payable by the consumers benefiting from reduction in load shedding. But the Commission abandoned its approach of costly and non-costly power in 2nd year of MYT period i.e. FY09.

The detail of approach followed by the Commission for approving power purchase quantum from various stations is as given below:

Power from MSPGCL: The Commission approved power purchase quantum from MSPGCL for FY07, FY08 and FY09 based of the Order issued for MSPGCL for the respective years.

Central Generating Stations:

For FY07, the Commission considered actual PLF of NTPC stations during FY06 for estimating the power purchase quantum. Similarly, the Commission has considered the actual power purchased during FY06 from Kakrapar and Tarapur 1&2. With regard to new NTPC plants and Tarapur 3 & 4, the estimate of MSEDCL was considered for projection of power availability from these generating stations.

For FY08, energy availability from existing CGS Stations had been considered based on actual PLF and auxiliary consumption of NTPC stations during last 3 years and actual PLF for FY07 (from April to February 2006) as compiled by Central Electricity Authority (CEA) in its performance report for power stations. For Eastern and Western Region Stations, the availability of power has been estimated based on the recent allocation for MSEDCL.

In FY09, for projecting the energy availability from existing CGS Stations, the Commission has considered the annual generation target for CGS as specified by the

CEA Report for FY09. For Western Region Stations, the share of MSEDCL from unallocated quota has been considered while for Eastern Region Stations, the allocation has been approved as per the MSEDCL's projections. For estimating the energy availability from new generating stations, the Commission has considered the expected commercial operation date for these generating stations based on the broad status report for CGS available at CEA website.

Power Purchase from Renewable Sources

For FY07 The Commission, vide its Order dated August 16, 2006 in the matter of Long term Development of Renewable Energy Sources and associated Regulatory (RPS) Framework had approved the Renewable Purchase Specification (RPS) as 3% of energy requirement of the Distribution Licensee.

The Commission has also approved power purchase quantum from Sardar Sarovar Project (SSP), Pench, Dodson, Wind, Co- Generation Project and Ratnagiri Gas & Power Private Limited (RGPPL)

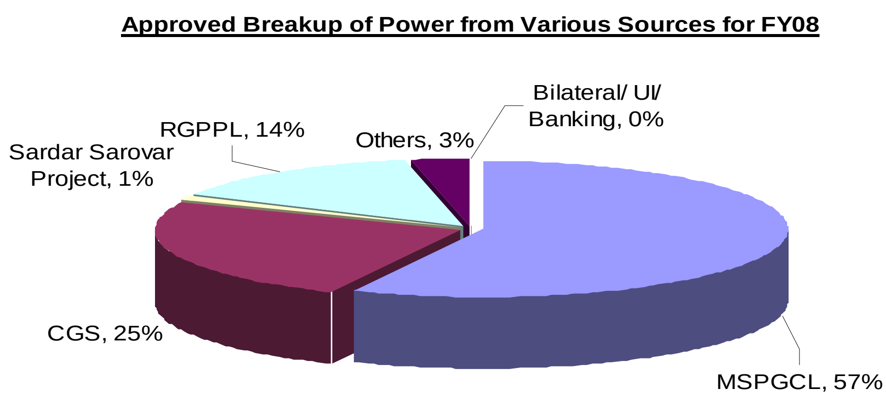
A similar approach for approval of power availability from renewable sources has been considered by the Commission in the subsequent tariff orders. For all the years the Commission has approved power purchase quantum as proposed by MSEDCL with minor disallowances.

Power Purchase from Bilateral & Other Sources

For FY07, the Commission has projected drawal of 900 MUs UI energy as a source of power available to meet the requirement in the State. A similar approach has been followed in FY08 Order, where the Commission has considerd 1000 MUs under UI drawal. However, the Commission itself has noted in the Order that UI drawl cannot be considered as a fixed source of power and should be tapped only to meet the demand-supply gap. No energy from UI drawal has been considered in the FY09 tariff order.

In case of REL-D and TPC-D, the Commission has considered the demand supply gap after considering power availability from firm sources to be met from the bilateral sources and imbalance pool settlement.

Graph A-15.7: Breakup of Power Availability for MSEDCL for FY08



Power Purchase Cost

The Commission for FY07 and FY08 while approving the power purchase expenses has not considered the power purchase from costly sources, i.e., sources costing Rs 4 per unit and above. The power purchase cost and recovery of the quantum of costly power purchased by the DISCOMs was not considered for tariff determination purpose. Such power sourced from costly sources has been considered in the determination of Additional Supply Charge discussed in the Tariff determination section.

Power Purchase from MSPGCL, Wind, Co-gen plants, TPC-G, REL-G

Cost of power purchase from these plants was approved as per the Commission's order for determination of tariff for sale of energy from these plants for the respective years.

Power Purchase from CGS Stations

For FY07, the Commission had considered the fixed cost of Vindhyachal STPS Stage -1 on the basis of CERC order dated June 29, 2006 in the matter of Approval of tariff in respect of Vindhyachal STPS Stage-I (1260 MW) for the period from 1.4.2004 to 31.3.2009. For other CGS stations, the Commission considered the fixed cost based on the actual power purchase bill for the month of March 2006. For FY08 and FY09 the Commission had considered the fixed cost of existing NTPC Stations based on the latest CERC Orders for each respective station in the proportion of allocation of energy to MSEDCL from the generating stations.

For FY07 the Commission determined the variable cost for all the stations based on the power purchase bill for the month of March 2006. The Commission approved variable cost for FY08 and FY09 based on the average of actual variable charges including FPA paid by MSEDCL for the months of April to December 2006 and April to February 2008, respectively.

The Commission also considered incentives for Korba SPTS, Vindyachal 1 STPS & Vindyachal 2 STPS as per CERC's guidelines. For power purchase from Eastern Region generating stations, the Commission had approved the fixed cost and variable cost based on the actual power purchase bill for the month of March 2006 in FY07.

Power Purchase from Sardar Sarovar Project (SSP)

In the absence of CERC's approval, the Commission had considered the energy tariff of Rs. 3.00 per unit for FY07 and Rs. 2.05 per unit in FY08 and FY09.

Power Purchase from New Plants of NTPC

For FY07, in absence of CERC's Order for these stations, the Commission has considered the rate of Rs. 2.73 per unit, as per marginal station of NTPC, viz., Gandhar.

The Commission, for estimating the power purchase cost for Vindhyachal III Unit 2, approved the fixed charges and variable charges, equivalent to that of Vindhyachal III Unit 1. For Kahalgaon II and Sipat, the Commission has considered the costs projected by MSEDCL.

For FY09, the Commission approved the power purchase cost from new generating stations by taking Fixed Charges and Variable Charges equivalent to the costs projected by MSEDCL

Power Purchase Cost from Other Sources

For MSEDCL, the Commission has considered an increase of 10% over the previous year actual UI rates for projecting the power purchase cost from UI sources for FY07. The increase of 10% was approved considering the increase in the UI charges post the synchronization of the Western Grid with the Northern Grid. For FY08, the Commission had considered a 4% increase over actual UI charges for the period April 06 to Sep 06. Avalability from UI has not been projected for FY09.

Average price of renewable energy during FY07 has been considered at Rs 3.30/kWh. For the subsequent years, the Commission has considered the submission of MSEDCL for the per unit power purchase cost of power from renewable sources.

Standby Charges

Over and above the power purchase and transmission charges, all the Distribution Licensee serving Mumbai and Mumbai sub-urban areas are required to pay a standby charges to MSEDCL, which is determined by the Commission on yearly basis and allocated to the DISCOMs in proportion of average non-coincident peak demand of the Distribution Licensee.

Table: Power Purchase Cost for FY 06 to FY 09

Particulars	FY 05	FY 06	FY07	FY08	FY09
Power Purchase Cost (Rs. Crs)	4,774	12,505	12643	16093	19403
Net Power Purchase (Mus)	22,595	72,456	69,789	80573	90206
Power Purchase Cost per unit (Rs./kwh)	**2.11**	**1.72**	**1.81**	**2.00**	**2.15**

The power purchase cost and quantum for FY 07 and FY 08 does not include power from costly sources i.e rs. 4/ Kwh and above.

O&M Cost

Employee Expenses

For FY05, the Commission had approved employee cost for TPC and REL based on the expected number of employees and the cost per employee (projected based on the 4-year CAGR). The employee cost also factored in the effect of increase in costs due to the wage revision and the impact of Voluntary Retirement Scheme (VRS) implemented in FY 03-04 for TPC and in FY05 for REL. The financial impact of the VRS has been amortized over three years.

In FY07, the Commission had considered an increase of 4.61% for MSEDCL over the trued-up employee expenses for previous year, in accordance with the increase in CPI.

For determination of employee cost for REL and TPC, the Commission has applied an escalation of 7.5% and 5%, respectively, based on the CAGR of past five years over the employee cost for previous year.

For the control period of FY08, FY09 and FY 09-10, the Commission approved an increase of around 5.36% on account of inflation, over the approved gross employee cost of FY07. This inflation linked percentage of increase is based on the increase in Consumer Price Index (CPI) over past three years. The employee expense has been capitalized at an average capitalization rate @ 5%, as proposed by MSEDCL.

In the order for FY09, the Commission revised the approved employee expense for FY08 and FY09 and approved an increase of 6.26% (based on the increase in CPI) over the trued-up employee expense for FY07.

Repairs and Maintenance Expenses

For FY05, the Commission has approved the R&M expense as proposed by REL and TPC which was 3% of the opening Gross Fixed Assets in case of TPC and 2.07% of opening Gross Fixed Assets in case of REL.

For FY07, the Commission has considered average R&M expenditure as a percentage of opening GFA i.e.3.48% for past five years for approving the R&M expense for MSEDCL.

For TPC the Commission approved R&M expenses at 3% of the Gross Fixed Assets (GFA) for TPC as a whole, and allocated the share of R&M expense for distribution business based on the proportion of TPC's distribution assets. However, the Commission has approved the amount of R&M expense claimed by REL in its petition.

The Commission has considered an increase in R&M expenditure during the MYT Control Period by considering the inflationary impact of 5.39% p.a. (based on the increase in WPI) over the approved gross R&M expense in FY07 for each DISCOM .

In FY09, the Commission revised the estimates of R&M expense for FY08 based on the trued-up FY07 R&M expenses. For MSEDCL and TPC, the Commission approved an increase of around 4.65% (based on the increase in WPI) on account of inflation over the trued-up R&M expenses for FY07. But for REL for the supply business, the Commission accepted REL's projections of R&M expenses, except for R&M projected for vehicles, furniture and fixtures. For the wires business, the Commission has considered a 4.5% increase over FY07 trued up levels, on account of change in WPI for the supply business.

Similarly for FY09, for REL, TPC and MSEDCL the Commission allowed the R&M expenses by considering a growth rate of 4.65% (4.5% for REL) over approved FY08 R&M expense.

The table below summarizes the gross R&M expenses (after deducting the R&M expenses capitalized):

Table A-15.33: Approved R&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY05	FY07	FY08	FY08*	FY09
MSEDCL	NA	340	358.85	436	456
TPC	107.77	2.90	3.06	5.12	5.35
REL	63.81	69.95	144.39	137.67	145.00

Particulars	FY05	FY07	FY08	FY08*	FY09
BEST	NA	20.00	5.73	25.93	28.03
Total	171.58	432.85	512.03	604.72	634.38

**Revised FY08 estimates approved by MERC based on audited annual accounts*

Administrative and General Expenses

The Commission approved A&G expense for FY05 as estimated by the DISCOMs with minor disapprovals. For TPC and REL, the Commission approved A&G cost as proposed with minor disapproval.

For FY07, the Commission approved A&G expense for TPC based on an escalation of around 5% (based on the increase in CPI) over the approved A&G expense for FY06 (after truing-up). For REL, the Commission has considered an increase of around 3.3% over the approved level of expenses in FY06 (after truing-up), based on the past trend of increase in A&G expenses, and computed the share of REL's distribution business proportionately. For MSEDCL, the Commission has considered a year-on-year (YoY) increase of 4.2% over the A&G expenses of FY06, on the basis of FY 2003-04 Tariff Order principles.

For the MYT control period, the Commission had approved A&G cost for all the DISCOMs with an increase of around 5.38% on account of inflation over the approved level of gross A&G expenses for FY07, based on the increase in Wholesale Price Index (WPI) and Consumer Price Index (CPI) for a period of 3 years. The Commission has considered a weightage of 60:40 for WPI and CPI, based on the expected relationship with the cost drivers.

The A&G expense was revised for FY08 and FY09 in the FY09 tariff order and was approved based on an inflationary increase of 5.29% over the trued-up A&G cost for FY07.

O&M Expenses

The total O&M expense approved in the tariff order for FY05 and FY09 has been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission.

The total O&M expense approved by the Commission in each of the Tariff Order is summarized below:

Table A-15.34: Approved O&M Expenses of DISCOMs (Rs. Crs)

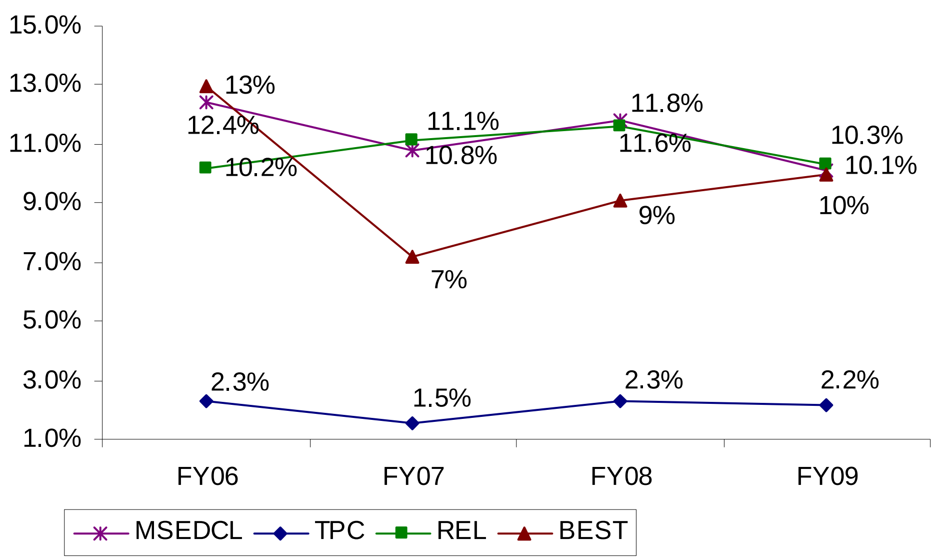
Particulars	FY05	FY07	FY08	FY 08*	FY09
MSEDCL					
Net Employee expenses		1445	1572	1727	1874
Net A&G expenses		108	116	156	181
Net R&M expenses		340	359	436	456
TPC					
Net Employee expenses	146	10	11	14	13
Net A&G expenses	83	9	10	13	13
Net R&M expenses	108	3	3	5	5

Particulars	FY05	FY07	FY08	FY 08*	FY09
REL					
Net Employee expenses	136	162	193	246	266
Net A&G expenses	70	63	91	99	107
Net R&M expenses	64	70	145	138	145
BEST					
Net Employee expenses		115	92	128	131
Net A&G expenses		82	86	82	85
Net R&M expenses		20	6	26	28
Total O&M Expense	607	2427	2683	3070	3303

**Revised FY08 estimates approved by MERC based on audited annual accounts*

The O&M expense as percentage of total ARR amongst the four DISCOMs is as reflected in the graph below.

Graph A-15.8: Approved O&M Cost as % of Total ARR for MSEDCL, TPC, REL



**The O&M expenses for TPC is very low as it supplies power only to industrial and Bulk supply consumers*

Capital expenditure (Capex)

For each of the years during FY05 to FY09, the Commission has approved capital expenditure based on the detailed scheme-wise analysis.

The details of capital expenditure exceeding Rs.10 Crs are required to be submitted to the Commission for approval as per Regulation 71 of the MERC (Terms & Condition of Tariff) Regulations 2005. DPR of such schemes is to be submitted separately with details regarding the scheme and cost benefit analysis of the same. The schemes with capital expenditure less than Rs. 10 Crs i.e. Non-DPR schemes do not require prior approval and such capital expenditure have been approved along the ARR for the respective year.

A comparison of the claimed, approved and trued-up capital expenditure for the DISCOMs is provided in the table below:

Table A-15.35: Petitioner Claimed and Approved Capital Expenditure of DISCOMs (Rs. Crs)

Particulars	FY05	FY07	FY08	FY09
MSEDCL				
Proposed by the Utility		2829	8,399	7,890
Approved		#	1,264	1,081
TPC				
Proposed by the Utility	408	90	78	20
Approved	192	11	33	12
REL				
Proposed by the Utility	824		572.06	469.09
Approved	102		390.21	356.11

#The Commission will approve the capital expenditure separately

For funding the capital expenditure approved in the Orders issued for FY05 to FY09, the Commission has considered a debt to equity ratio of 70:30. However, the Commission has considered debt to equity ratio of 90:10 for FY08 as proposed by MSEDCL.

Asset Capitalization

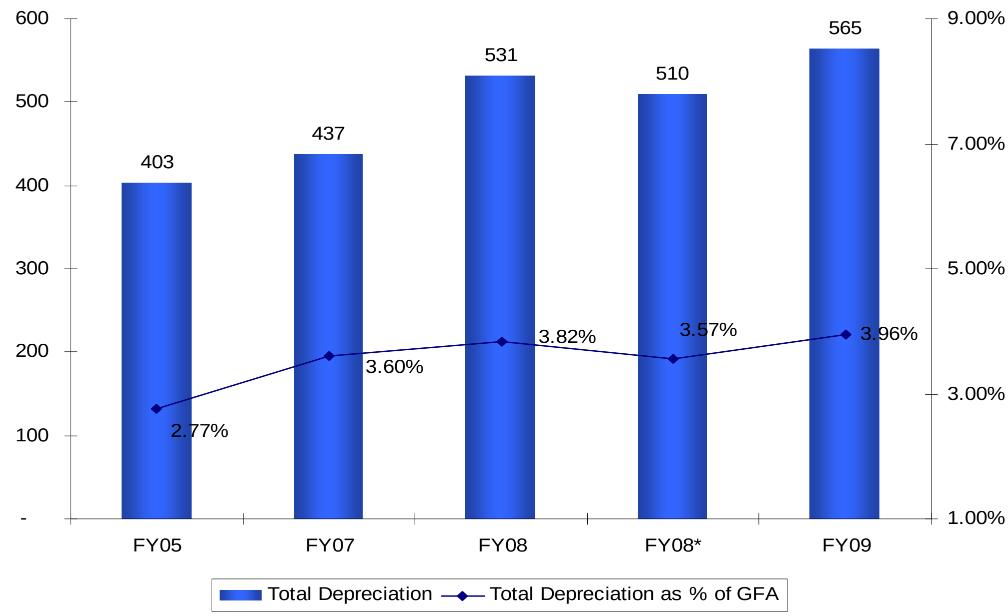
In each of the tariff order, the Commission has considered scheme-wise capitalisation of the capital expenditure for the purpose of determination of original cost of the project as envisaged in the Regulations.

Depreciation

The Commission for each of the year i.e. FY05 to FY09 and for all the DISCOMs has been approving depreciation at average depreciation rates on the Opening Gross Fixed Assets. The depreciation rates have been considered as specified under MERC (Terms and Conditions of Tariff) Regulations, 2005.

The total approved depreciation for the DISCOMs and depreciation as a percentage of gross fixed assets is reflected in the graph below:

Graph A-15.9: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



**Revised FY08 estimates approved by MERC based on audited annual accounts*
Note: Depreciation as % of opening gross fixed assets has been computed, Depreciation for FY05 includes actual depreciation for MSEDCL and BEST

Working Capital Requirement

The Commission has approved the normative working capital requirement for all the DISCOMs, in each of the Tariff Orders from FY05 to FY09. The working capital requirement was calculated in accordance with the Regulation 76.8 of MERC Tariff Regulations. The Commission has considered Prime Lending Rate (PLR) of State Bank of India at the time of filing tariff petition for approving the interest cost on working capital requirement as per the regulations .

The parameter for determination of normative working capital is summarized in table below:

Table A-15.36: Parameter for Computation of Normative Working Capital

Normative Working Capital
One month of O&M Expense
One month of the sum of the book value of stores, materials and supplies.
Two month of the expected revenue from sale of electricity at the prevailing tariffs
Less:
Amount of Security Deposit from Consumers and from Distribution System users
One month of Power Purchase Cost

Interest Expense

FY05, the Commission had approved interest on normative loan for new capital expenditure during the year for TPC and REL. The Commission approved normative Debt: Equity ratio of 70:30 on the new investments and allowed interest on the normative

Debt component @10% per annum with repayment over 10 years. Apart from new loans the Commission approved interest cost on existing loans after detailed analysis of information regarding interest rates for the individual loans, their repayment schedule and the corresponding interest expense.

For FY05 the Commission also approved interest on Foreign Loans and Guarantee Fees as proposed by TPC considering the amount of outstanding loans, repayments in the past years and the interest computations for the various years. However, the Commission disallowed interest on MSEB Arrears and Delayed Payment Charges, Loss on Exchange (as it is loss due to accounting treatment), Debenture Trustee Remuneration and Surveillance Fees.

Interest cost on capex loans for MSEDCL during FY07 has been considered based on the withdrawal schedule and outstanding loans. The Commission applied average interest rate as submitted in the Petition on the average of the reworked opening balance and closing balance in absence of information regarding interest rates for individual loans submitted by MSEDCL. The capitalization rate assumed for capitalization of interest cost was average of the actual capitalization rate for the past 3 years. The Commission had also approved other finance charges as a percentage of total interest on long-term loans.

In the tariff order of REL and TPC for FY07, the Commission followed a similar methodology for approval of interest on existing loans prior to FY05. However, the Commission revised its approach for new loans (approved in FY05 onwards) in FY07 and approved interest cost for capital expenditure post the asset capitalization. Therefore, for the assets capitalized in FY05 and FY06, the Commission considered interest cost at the interest rate of 10% p.a. while for assets capitalized during FY07, an interest rate of 8% p.a. was considered. The Commission also changed the approach towards approving the tenure of new loan and noted that as per the Regulation 74.2, normative loan repayment schedule for each year should be equal to amount of depreciation for fixed assets to which the loan relates. Accordingly, the Commission considered loan repayment schedule of 20 years for the loans to be drawn during FY07, but for loan repayment for loans drawn during FY05 the Commission continued the tenure of 10 years as approved in the order for FY05.

For FY08 the Commission has approved interest cost on existing loans as approved earlier but for the new loans the Commission followed different approach for different DISCOMs.

For MSEDCL the Commission had considered interest cost of 10.5% p.a. for the new loans to be drawn over the Control Period as the weighted average interest cost of existing loans during FY07 as projected by MSEDCL has been around 10.3%.

For TPC the Commission approved terms for borrowings during the Control Period as per loan terms under IDFC loan, i.e., interest rate of 8.9% p.a. with moratorium of 3 years and repayment of 9 years as proposed by TPC.

For REL the Commission approved interest rate of 8% for new loans with other terms and conditions similar to that approved for other DISCOMs.

Table A-15.37: Interest Cost Approved for all the DISCOMs (Rs. Crs)

Particulars	FY05	FY07	FY08	FY 08*	FY09
MSEDCL**		116	261.22	236.77	322.57

Particulars	FY05	FY07	FY08	FY 08*	FY09
TPC**	33.93#	2.13	9.83	8.39	11.35
REL**	27.60#	45.13	NA	72.17	91.18
BEST		6.01	19.31	4.79	4.38
Total Interest Cost	61.53	169.27	290.36	322.12	429.48

**Revised FY08 estimates approved by MERC based on audited annual accounts*
*** Interest on long term loans excluding interest on security deposits and other financing charges*
 # Combined interest cost for Distribution, Transmission and Generation business

Rate of Return

The Commission had approved Return on Equity (RoE) for each of the years between FY05 to FY09 for all the DISCOMs. However, an interest on internal funds @ 6% was approved for BEST in lieu of Return on Equity as per the Appellate Tribunal Judgement of 2006 for FY07. But the approach for computation of return for BEST was also revised to RoE as per the ATE Judgment dated August 27, 2007 for FY08 and FY09.

The Commission has considered the RoE @ 16% of the equity, in accordance with the Commission's Tariff Regulations, on the opening equity at the beginning of the year and 50% of the projected levels of assets capitalized (considering a normative debt to equity of 70:30) during each year of the Control Period or as approved by the Commission.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the three DISCOMs.

Table: Approved Return by the Commission and Return as % of Total ARR

Particulars	FY05	FY07	FY08	FY08#	FY09
Rate of Return	RoE	RoE	RoE	RoE	RoE
MSEDCL					
Total Return (Rs. Crs)		391	409.0	555	581
Total Return as % of Consolidated ARR		2.56%	2.16%	2.82%	2.34%
TPC					
Total Return (Rs. Crs)	226*	19.15	25.4	21.69	23.69
Total Return as % of Consolidated ARR	7.94%	1.98%	1.69%	1.56%	1.66%
REL					
Total Return (Rs. Crs)	257*	153.28	160.99	174.35	189.84
Total Return as % of Consolidated ARR	11.04%	5.28%	4.19%	4.20%	3.79%
BEST					
Total Return**(Rs. Crs)		51.96**	49.97**	101.15	105.54
Total Return as % of Consolidated ARR		3.12%	2.38%	3.89%	4.32%

#Revised FY08 estimates approved by MERC based on audited annual accounts

**Combined ROE for Distribution, Generation and Transmission function*

***Interest on Internal funds @ 6%*

Bad Debts

The Commission has been approving provision for bad debt for all the DISCOMs in each of its tariff order during FY05 to FY09.

In case of MSEDCL, the Commission has approved a normative provisioning for bad debt @1.5% of billing amount in each of the tariff orders. For TPC from FY05 to FY09 the Commission has approved provision for bad debts as proposed by TPC as the same was less than the normative level of provisioning for bad debts. For REL, a provision of 5% of receivables was approved as bad debts in FY05 and at 1.5% of receivables for FY07, FY08 and FY09.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM.

The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY05 to FY09:

Table A-15.38: Proposed and Approved ARR (Rs. Crs)

Particulars	FY05	FY07	FY08	FY 08*	FY09
MSEDCL					
Proposed by the Utility	14,474	22,489	18065	21695	25253
Approved	14,087	15,263	18933	19664	24785
TPC					
Proposed by the Utility	3178	1,021	1378	1,375	1,380
Approved	2846	968	1506	1,392	1,425
REL					
Proposed by the Utility	2899	3,057		4,206	4,370
Approved	2328	2,903	3,839	4,155	5,008
BEST					
Proposed by the Utility		2045	1966	2503	2575
Approved	1383.94	1667	2102	2601	2443
Total					
Proposed by the Utility	20,551	28,611	21,409	29,779	33,579
Approved	20,645	20,801	26,380	27,812	33,661

**Revised estimates as per Order on APR for FY08 & tariff determination for FY09*

Tariff Determination

A two part tariff structure comprising energy charge and demand charge exists in the state of Maharashtra. There are 16 major consumer categories. The State of Maharashtra does not have a uniform tariff across different licensees due to inherent differences in revenue requirement, consumer mix, consumption mix, LT:HT ratio, etc amongst the Distribution Licensees. Also, the tariff categorization and applicability of tariff is different across different licensee due to historical reasons and differences in management policies and approach across DISCOMs.

The Commission has been consistent in its approach for treatment of the revenue gap or surplus for all the years. In each of the years the Commission has increased the tariff across various categories.

In FY07, there was a tariff increase in most of the categories. The Commission has undertaken the following steps to mitigate the revenue gap:

- Revision in Tariff categories and slabs:

  The Commission has rationalized, re-categorized and revised the slabs for many categories and also introduced new category for advertisements & hoardings to give appropriate price signals to control the consumption.

- Revision of category-wise tariff:

  The Commission has revised category-wise tariff and linked it to average cost of supply. The Commission also calculated revenue per unit for each category by considering the two part tariff, estimated sales to that category in different time intervals, and Time of the Day (ToD) Tariff component.

- Revision of ToD tariff by increasing the diffrentials between peak and non-peak tariffs. Also introduction of new categories for which ToD tariffs will be applicable

- Other initiative like incentive and penalty linked to power factor.

For FY08 to mitigate the revenue gap of Rs. 1025 Crs determined at existing tariff, the Commission has increased the tariff. Some steps taken by the Commission to meet the revenue gap, rationalize the imbalance of tariff across different licensees and deal with the stressed demand-supply situation in the State are as follows:

- The Commission reduced the fixed charges/demand charges applicable for different consumer categories, and correspondingly increased the energy charges, so that the bills are more directly linked to the consumption.

- The Commission determined the tariffs applicable to MSEDCL’s consumers, keeping in mind the recently revised tariffs of BEST, REL-D and TPC-D to reduce the imbalances between the tariffs applicable for the same consumer category across Licensees in the State.

- In line with the steps taken by the Commission in FY07 to control non-critical consumption of energy the Commission introduced a new tariff category for all multiplexes and shopping malls having a sanctioned load more than 20 kW with demand charges of Rs 300 per kVA per month and energy charge of Rs 8.50 per kWh.

- Introduction of a new slab in domestic category for consumers consuming above 500 units pre month. The tariffs for this slab has been kept higher in order to disincentive the consumers

- Tariff for BPL category and agricultural category has not been increased

- Increase in sub categories to charge a higher fixed/ energy charges from consumers with higher consumption / connected load

In the FY09 Order, the Commission has determined a revenue gap of Rs. 1510 Crs (including refund of Rs. 500 Crs against the Regulatory Liability Charges to specified consumer categories), revenue gap of Rs. 2437 Crs for FY09 and surplus of past period. An average tariff increase of 6.76% was determined by the Commission for meeting the revenue gap.

The key highlights of the tariff philosophy to bridge the gap along with tariff rationalization in the State is as follows:

- There has been no specific reduction in cross subsidization subsiding consumer categories but the tariff has been increased for all the categories (except a few categories like railways, public water works, agriculture, etc) to meet the average cost to serve. On reduction of cross-subsidy, the Commission has emphasized that domestic cross subsidy shall be reduced once efficient operating levels have been reached, quality of supply has improved and metering and billing problems have been minimized
- Tariff for HT- I continuous industry has been increased at a higher rate in view of the elimination of additional supply charges
- Reduction in dissimilarity in the consumer categorization and applicability of tariffs should across distribution licensees in the State
- Any variation in the fuel prices to be passed on to the consumers through the existing Fuel Adjustment Cost (FAC) mechanism, subject to the stipulated ceiling of 10% of average energy charges.
- Reduction in fixed charges and corresponding increase in energy charges across different consumer categories so that the consumer bills are directly linked to consumption
- Creation of three new sub-categories under LT-2 commercial category at higher tariffs. Creation of HT-II commercial category with higher tariffs
- Extension of ToD tariff to other categories including LT V, LT III, LT II
- Additional demand charges of Rs. 20 per kVA per month fir rge stand by component for Captive Power Plant if the demand recorded exceeds the contract demand

The Commission for all the years has determined the tariffs and revenue from revised tariffs as if the revised tariffs were applicable for the entire year. In case of any shortfall in actual revenue due to the applicability of the revised tariffs for less than a year, the same will be considered in the truing up process.

Though, similar tariff philosophy has been applied in case of licensees in Mumbai and Mumbai Suburban areas, the increase /decrease in tariff has been based on the revenue surplus/ gap in the Orders of the respective DISCOMs. Further, due to dissimilarity in the consumer mix and consumer categorization in the area of licensees in Mumbai and Mumbai Suburban areas, the Commission has modified its approach for treatment of revenue surplus/ gap to that extent.

Subsidy Support

Subsidy provided to each category of consumer has not been provided in the tariff orders. However, the Commission in its Order on APR of MSEDCL for FY08 & tariff determination for FY09 has mentioned about the receipt of around Rs. 1706 Crs from the State Government of the total subsidy amount of Rs 1829 Crs for FY08.

New Initiatives/ Best practices in Tariff Design

- Categorization of HT industrial consumers in continuous and non-continuous industries based on the nature of industry in order to differentiate the industrial consumer in terms of their consumption pattern and accordingly charge the consumers drawing higher quantum of power for the additional purchase of costlier power by the utility.
- Applicability of Time of Day metering for various HT and LT category of consumers for effective Demand Side Management as it is one of the most effective methods for reducing peak demand
- Computation of wheeling charges and wheeling loss at various voltage levels (33kV, 22/11 kV and LT level) to facilitate open access within the State

Additional Supply charges

Since the demand – supply gap has increased in the State, the Commission issued a load shedding protocol based on the contribution of load by different geographical regions, i.e., major urban areas, other urban areas, and rural areas. In an Order issued by the Commission, uniform load shedding hours was to be applicable within the State considering purchase of power from non-costly sources. Since selected consumer categories were to benefit from reduced load shedding by the way of purchase of power from costlier sources, the Commission introduced an Additional Supply Charge (ASC) on consumers benefiting from the reduced load shedding.

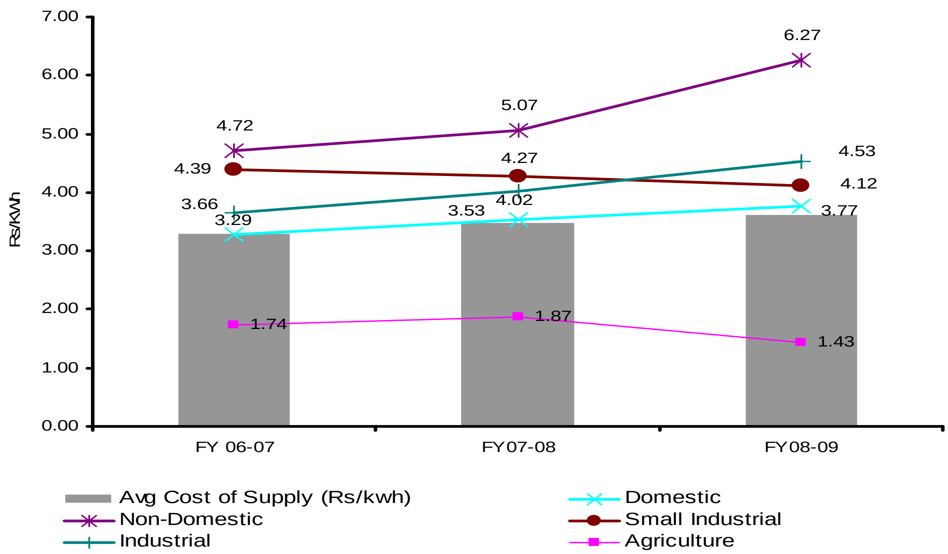
- The methodology for determination of ASC has been defined as follows:
  - Approval for quantum and cost of costly power purchase separately in the Tariff order
  - Determination of quantum of sale of power from costly power considering the T&D loss as proposed by MSEDCL for e.g 13.53% for FY07
  - Determination of average cost of supply based on the total quantum of sale and cost of costly power.
  - Exclusion of BPL consumer category from ASC and domestic consumers consuming less than 300 units per month to pay only 10% of the cost of costly power.
  - Balance cost to be recovered from other categories based on the regional location of the consumer and the category-wise percentage benefit from load shedding as per the protocol.

- In order to incentise reduction in consumption, the ASC percentage would be reduced by the amount equal to reduction in consumption over the average monthly consumption of previous year.
- For e.g MSEDCL would charge commercial consumers (LT-2) located in industrial and urban agglomerations 19% of their monthly consumption at the additional supply charge. If the consumer reduces his monthly consumption by 5% over the previous year average monthly consumption, ASC charges would reduce by 5% i.e 19%-5%.

Cost of Supply

The trend of realization from tariff as approved by the Commission for various consumer categories against the average cost of supply from FY06 to FY09 is captured in the graph below:

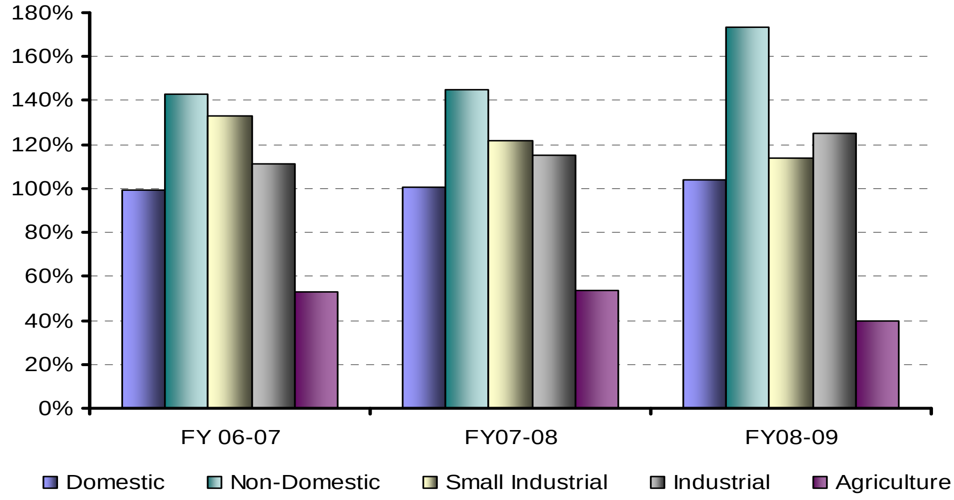
Graph A-15.10: Average Cost of Supply vis-à-vis Average Tariff for Key Consumer Category



**Since the tariff for all the Licensees are not uniform, the tariff and average cost of MSEDCL has been considered for the above analysis*

The graph below illustrates the approved realization from the consumer tariff as percentage of the average cost of supply during the period FY06 to FY09. It is observed that the realizations in commercial and industrial categories are cross-subsidizing agriculture categories during the period FY07 to FY09. It is observed that the domestic category in Maharashtra is being charged on a cost to serve basis and is not amongst the cross-subsidized category. Though the cross-subsidy available from the LT industrial consumers has reduced, cross-subsidy from the HT industrial category has increased during FY07 to FY09.

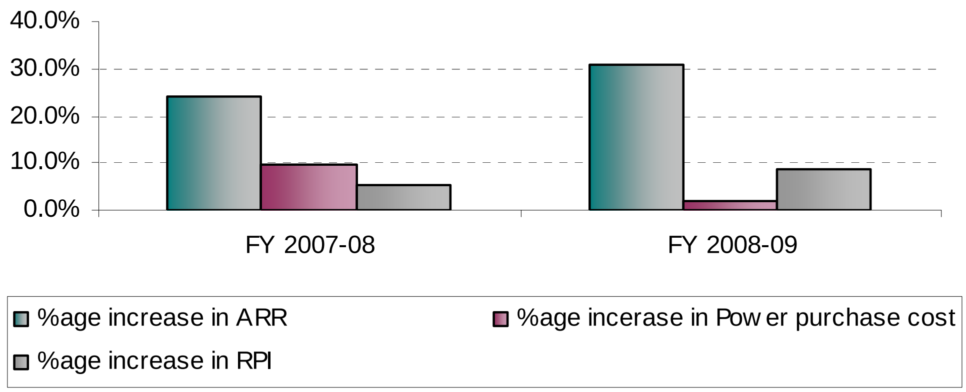
Graph A-15.11: Approved realization as percentage of Average Cost of Supply



**Since the tariff for all the Licensees are not uniform, the tariff and average cost of MSEDCL has been considered for the above analysis*

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



The Annual Revenue Requirement for FY 2007-08 and FY 2008-09 increased due to increase in sales, though the average cost of supply remained in the range of 3.50 Rs/kwh to 3.81 Rs/kwh. The average cost of supply increased due to increase in power purchase cost (which comprises of more than 80% of the Annual revenue requirement) and also resulted in increasing consumer tariff.

Particulars	2006-07	2007-08	2008-09
Approved ARR	15263	18933	24785
Approved Sales (MU)	43339	50544	64986
Average Cost of Supply in Rs/kwh (A)	3.52	3.75	3.81
% of Power Purchase Cost in ARR	83%	85%	85%
% of Other remaining Cost in ACS	17%	15%	15%

% Annual Increase in Power Purchase Cost		9.5%	2.1%
% Annual Increase in Other Cost		-8.7%	0.2%
% Annual RPI Increase	6.1%	5.2%	8.7%
RPI –X (X= 2%)	4.1%	3.2%	6.7%

MYT Framework

State of Maharashtra adopted MYT framework vide its order dated 20th December, 2005 defined first Control Period to be the 3 year period from 1st April 2007 to 31st March 2010. The Commission has notified the "MERC (Terms and Conditions of Tariff) Regulations, 2005" which applies to all the Distribution Licensees in the State.

The table below shows the key features of MYT framework in the state of Maharashtra.

Table A-15.39: Key Features of the MYT Framework

Particulars	
First Year of MYT	FY08
Time frame for the control period	3 years, FY08 to FY 09-10
Issuance of the MYT Order	18th May, 2007
Base year considered for MYT projections	FY07
Uncontrollable Parameters	- Cost of power generation and/or power purchase - Force Majeure Events - Changes in law etc. - Economy-wide influences
Controllable Parameters	- AT&C - Capital Expenditure - Working Capital - Depreciation (to be trued up at the end of Control period) - Consumer Mix - Labour Productivity Standards specified under SOP Regulations
Time frame for truing up under MYT Regime	At the end of each Financial Year
Base line data	Approved data for FY07 (However, the same was revised to actual trued-up data for FY07 in the subsequent year)
Incentive / disincentive sharing mechanism in case of over /under achievement of controllable target	Treatment of aggregate gain: - 1/3 may be passed on as a rebate in tariffs over the period as specified in the Order. - One-third of the amount of gain may be retained in a special reserve for the purpose of absorbing the impact of any future losses on account of controllable factor. - Balance amount may be utilized at the discretion of the Licensee Treatment of aggregate loss - One-third of the amount of loss may be passed on as an additional charge in tariffs over the period as specified in the Order. - The balance amount of loss shall be absorbed by the

Particulars	
	Licensee

A-16. Meghalaya

Introduction

The Meghalaya State Electricity Regulatory Commission was established by the Government of Meghalaya in May, 2004 in pursuance of section 82, of the Electricity Act, 2003. But the Commission became operational from 6th June, 2006.

Meghalaya State Electricity Board (MeSEB) is a bundled utility and yet to transit from Annual Revenue Requirement (ARR) approach to the Multi Year Tariff (MYT) regime. No details about the plan or timelines for unbundling of MESEB are available.

MeSEB filed its first tariff order for FY 08 after the formation of Meghalaya State Electricity Regulatory Commission (Determination of Tariff) Regulation, 2006. The Commission followed section 61 to 66 of Electricity Act 2003 and Tariff Policy announced by Government of India under section 3 of the act along with the regulations prescribed for determination of Tariff.

The Commission, despite being relatively new and with paucity of data had applied its best judgement in approval of ARR for the utility also drawing on necessary inferences from other states.

Generation

At present, Meghalaya has generation capacity of 185.2 MW which is purely hydel. MESEB has added very less capacity to its generating plants (65.20 MW in FY 76 and 18.2 MW in FY 09). MESEB has new projects underway, which will add to the existing capacity. The Plant-wise generation capacity for MeSEB is not available in the tariff order.

Meghalaya– Executive Summary

Annual Revenue Requirement

The Commission had approved expenses for certain parameters in FY 08 as proposed by MeSEB. The Commission, for FY 09, however approved all the expenses claimed by MeSEB except the interest cost. The ARR approved by the Commission for FY 08 and FY 09 was Rs.277.60 Crs and Rs.365.73 Crs as against Rs.443.07 Crs and Rs.512.01 Crs in the respective years. The details of approach followed by the Board for proposing expenses have not been provided in the tariff order.

- For FY 08, the Commission had observed the possibility of increased generation due to visible improvement in rainfall and has stressed on the need to revise the generation projection. MeSEB had initially projected a generation of 503.62 MUs based on the average of last five year discounted by 4.5% to factor monsoon uncertainty that had prevailed during last two years i.e. FY 06 and FY 07. However, upon direction from the Commission, MESB had revised the projection for generation to 638.11 MU on account of forecasted increase in rainfall.
- The Commission had approved energy sales in FY 07-08 and FY 08-09 as proposed by MeSEB. In FY 07-08 MeSEB forecasted energy requirement of 1393.24 MU and

in FY 08-09 a requirement of 2600 MU. The detail of approach followed by the Board to forecast sales had however not been provided in the tariff order.

- In FY 07-08 the Commission approved AT&C losses as proposed by MeSEB. The Board also accepted the trajectory for reduction in T&D and AT&C losses from FY 06-07 to FY 2011-12 as proposed by the Commission:

Table A-16.1: T&D and AT&C loss reduction trajectory approved by the Commission

Description	FY 07	FY 08	FY 09	FY 10	FY 11	FY 12
T&D loss	33.95	28.41	24.42	20.05	15.69	11.32
AT&C loss	36.80	35.62	31.29	26.68	22.05	15.11

For FY 09, the Board proposed AT&C losses at 40.60% (reduction of 0.39% over the actual AT&C loss of FY 07-08), but the Commission approved a AT&C loss level with a reduction of 2% over the actual loss of 40.99% for FY 07-08.

In FY 07-08 the Commission after taking into account energy requirement, generation from MeSEB owned plants and free power from NEEPCO approved power purchase of 682.06 MU as proposed by the Board.

The table shows the source-wise details of power purchase cost and quantum.

Table A-16.2: Source, Quantum and Cost of power purchase as approved by the Commission

S.No	Generating Station	Quantity (MU)	Rate (Paise/unit)	Cost (Rs. Crs)
1	Kopili	81.34	62.85	5.11
2	Khandong	26.12	95.33	2.49
3	NHPC, Loktak	61.57	118.42	7.29
4	TSTTPP,NTPC	41.90	126.97	5.32
5	Kopili Stage II	11.07	140.92	1.56
6	FSTPP,NTPC	67.76	168.54	11.42
7	Ranganadi	159.23	169.57	27.00
8	KHSTPP, NTPC	37.14	179.86	6.68
9	AGTPP	62.58	179.19	12.34
10	AGBPP	133.35	214.87	28.65
	Total	**682.06**		**107.86**

Accordingly for FY 08, due to the need to procure less energy at market price, the Commission approved a cost of Rs. 146.87 Crs against the earlier estimated procurement cost of Rs. 224.56 Crs

In FY 09, though the energy required had been approved at 2600 MU, the Commission approved power purchase quantum of only 1623.39 MU because of transmission capacity constraints. A power purchase cost of Rs 218.68 Crs had been approved by the Commission in FY 09.

In FY 08, the Commission observed inevitability of retaining the employee cost despite it being abnormally high. However, the Commission had urged the Government of Meghalaya to bear the financial burden on account of terminal benefits for retired employees in line with the experience in other states which revealed that whenever Electricity Boards have been restructured the financial burden on account of terminal benefits has been assumed by the State Government. The amount involved was Rs.20.07 Crs. The Commission had approved employee cost, A&G expense, R&M expense and depreciation as proposed by the Board in FY 09. However, again no details of the approach for calculating these expenses are provided in the tariff order.

The Commission approved Interest cost of Rs.55 Crs for FY 08 as proposed by the Board though it had initially requested the Government to absorb the interest burden for the current year pending imminent restructuring of the Board. However, as there was no response from the Government, the Commission had no alternative but to retain the cost in the ARR. For FY 09, the Commission disallowed Interest cost of Rs.29.02 Crs paid to the government. The Commission has stated that as and when Government reforms the Board, this Interest cost along with several other liabilities will be suitably adjusted.

The Commission has uniformly for all the years adopted Return on Equity (RoE) as the parameter for allowing return. The rate of return on equity for the Board has been kept uniform at 14% for all the years. The Commission in FY 07-08 has allowed RoE of Rs. 28.28, though the Board proposed RoE Rs 40.28 Crs, the reason for the same has not been provided in the tariff order.

The Commission has not approved Capital expense in the tariff order for FY 08 and FY 09.

The Annual Revenue Requirement approved by the Commission for FY 09 was substantially higher by about 70%, from Rs.277.60 Crs in FY 08 to 465.73 Crs in FY 09.

Tariff rationalization

- For FY 08, though the Board proposed tariff increase for all the categories ranging from 90% to 120%, but the Commission maintained the existing differential rates of tariff for each consumer category and rationalized the demand/fixed charge required to be levied for a two part tariff. For FY 09, in the context of continuing cross-subsidies and category wise differential revenues, the Commission had stated that though it cannot deviate from the two part tariff principle the shortfall in electricity should be proportionately be shared across all categories. In order to recover the approved ARR, the Commission had approved aggregate quantities of electricity proposed to be supplied to different categories of consumers representing different tariff groups.

- **Subsidy**
  - In FY 08 grant from the State government was available for rural electrification in the state and the same was deducted from the total ARR to arrive at net revenue requirement of the Board. In FY 09, no subsidy support was available to any consumer category in the state.
  - Due to lack of relevant base-line data, the Commission had delayed deliberation on certain important aspects like cross-subsidy etc.

Table A-16.3: Proposed and Approved ARR for FY 08 and FY 09

Particulars	FY 08 Proposed	FY 08 Approved	FY 09 Proposed	FY 09 Approved
Power Purchase	224.56	107	218.68	218.68
Inter State Transmission charges	---	39.87	46.21	46.21
Repair and Maintenance	14.63	---	29.17	29.17
Employee Cost	89.17	---	102.81	102.81
Administrative and General Expense	5.76	---	8.78	8.78
Depreciation	14.71	---	15.37	15.37
Interest and Finance Cost	55.57	55.57	93.88	64.86
Provision for Bad and Doubtful debts	12.13	---	10	10
Total	**416.53**	---	**524.90**	**495.88**
Less: Other Income	13.72	---	41.17	41.17
Revenue gain from 2% reduction of AT&C loss	---	---	---	17.26
Add: Return on Equity	40.28	28.28	28.28	28.28
Net Annual Revenue Requirement	**443.07**	**277.60**	**512.01**	**465.73**

A-17. ORISSA

A-17.1. Orissa – GENERATION UTILITY

Introduction

Orissa Hydro Power Corporation (OHPC) and Orissa Power Generation Corporation (OPGC) are the two generating companies in the State of Orissa established as per the the Electricity Act, 2003. Post unbundling of Orissa State Electricity Board (OSEB) in the year 1996, assets, liability and personnel of the Board were transferred to generating companies to carry out the business of generation of electricity. OHPC is responsible for hydro generation in the state while OPGC handles thermal generation. The entire power produced by OHPC and OPGC through its various generating stations is fully dedicated to the State of Orissa.

After the Electricity Act, 2003 came into force and with the promulgation of Government of Orissa Transfer Scheme, 2005; Grid Corporation of Orissa Limited (GRIDCO) was incorporated under the provisions of the Companies Act, 1956 with effect from the 20th day of April, 1995 and has the responsibility procurement, transmission and bulk supply of electric energy. As a deemed licensee, GRIDCO was assigned the existing Bulk Supply Agreements and Power Purchase Agreements (PPAs).

OPGC owns thermal generating station at Jharsuguda District with an installed capacity of 420 MW (2 units of 210 MW). OPGC had signed PPA with GRIDCO and supplies power exclusively to it. Similarly, OHPC supplies its entire power to GRIDCO, which in turn supplies the same to the Distribution Licensees of the State.

Under the existing legal set up, GRIDCO evacuates powers from the dedicated generating stations of OHPC and OGPC and delivers it at distribution licensee's end. The tariff determined by the Commission is applicable for sale of power by OHPC to GRIDCO. OPGC, does not file its ARR with the Commission and presently the case is pending with the Hon'ble Supreme Court

For FY 06 and FY 07, the Commission came up with a joint order on 23rd March, 2006 for OHPC. In reference to the above mentioned status of ARR filing of OGPS, the subsequent discussion with regard to the approach adopted by the Commission for ARR determination shall be limited to order for OHPC.

Generation Capacity

As stated above, Orissa has a total of six hydro power generating stations and one thermal station (installed capacity of 450 MW). The installed capacity of OHPC is 2062[*] MW excluding 6 MW of Potteru. The plant wise generating capacity of the State Generating Stations is as summarized below:

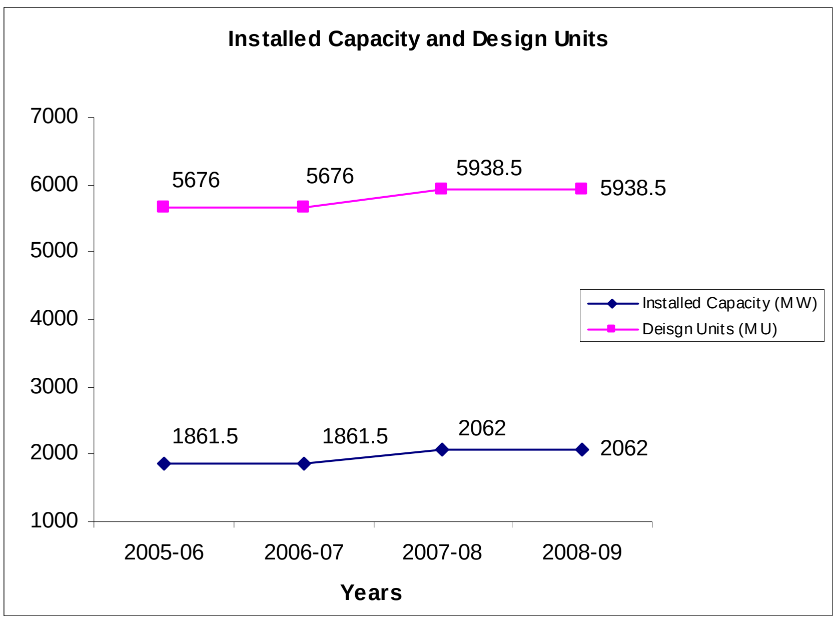
[*] As per 13th Annual report of OHPC

Table A-17.1: Plant wise Generating Capacity

Stations	Installed Capacity (MW)	
	FY 06	FY 09
Hirakud (Burla & Chiplima)	331.5	347.5
Balimela	360	510
Rengali	250	250
Upper Kolab	320	320
Upper Indravati	600	600
Machhkund(Orissa Share)	34.35	34.5
IB (OHPC) Thermal	420	420
Total	**2315.85**	**2482**

Out of the above plants Hirakud (Burla & Chiplima), Balimela, Rengali and Upper Kolab are referred to as old plants. UIHEP refers to Upper Indravati and Machkund is hydro power station which is a joint venture of Government of Orissa and Andhra Pradesh with an installed capacity of 114.5 MW where GRIDCO's share as 50%. The graph below shows the installed capacity and design units of OHPC.

Graph A-17.1: Installed capacity of OHPC



Gross generation and Net generation

For arriving at hydro generation for a year, Commission has analyzed the rainfall pattern in the catchment areas years for the past four years and compared it to the energy generated during the normal hydrology year. The Commission, for the years FY 06 and FY 07, had approved the design energy from old stations at 3714 MU and the net generation of 3676.86 MU after deducting 0.5% towards auxiliary consumption and 0.5% towards transmission loss. A similar approach was followed by the Commission in FY 08. Accordingly, a total net generation of 5584 MUs was approved for each of the years from FY 06 to FY 08. The Commission, in FY 08 had directed OHPC to conduct a study for the reassessment of design energy. However, as the results from the study were not available till the time of tariff filling for FY 09, the Commission approved the figure proposed by OHPC.

Table A-17.2: Net Generation

Particulars	FY 06	FY 07	FY 08	FY 09
Hirakud (Burla & Chiplima)	1162	1162	1162	1162
Balimela	1171	1171	1171	1171
Rengali	520	520	520	520
Upper Kolab	824	824	824	824
Upper Indravati	1942	1942	1942	1942
Machhkund (Orissa Share)	265	265	265	265
Approved Net Generation	5884	5884	5884	5884

Auxiliary Consumption

For the year FY 06 and FY 07, the Commission approved auxiliary consumption @ 0.5% for HPS and Balimela Power Stations instead of earlier approved 0.2% because of operational difficulties. In respect of other power stations namely Rengali, Upper Kolab and UIHEP auxiliary consumption was calculated @ 0.5% of gross generation as was being considered earlier. The special allowance was made for Balimela and HPS because these are old stations and the machines run at low load and sometimes at no load to meet the reactive power requirement of the grid.

Fixed Cost

The Commission follows CERC regulations to arrive at Annual Fixed Charges.

Operation & Maintenance Cost (O&M)

The Commission has calculated combined O&M expenses for OHPC. O&M expenses were arrived at by escalating O&M expenses by 4% on the previous year's O&M expenses. The Commission considered the Repair and maintenance schedules to ascertain a realistic level of O&M expenses. The actual level of O&M expenses for the base year FY 05 was Rs. 99.85 Crs.

Table A-17.3: Approved O&M Expenses

Particulars	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	112.56	116.87	127.24	143.43
O&M cost as a percentage of ARR	47%	47%	49%	48%

Depreciation

The Commission has calculated depreciation at pre-1992 norms. The Commission did not consider post'94 rates, considering that it would have substantially raised the revenue requirement due to upfront loading. Depreciation therefore was arrived at by applying rate of 2.57% as per CERC norms. The OERC regulation, had prescribed that for the purpose of tariff determination, the rate of depreciation can be linked to the useful life of the asset, calculated on straight-line method. This is in line with the CERC Regulation also. In view of this, the Commission had approved depreciation on the basis of historical cost.

For FY 08, depreciation rate was again computed as 2.57% on the project cost considered for FY 08 in case of Rengali and Upper-Kolab Hydro projects. However, in case of Hirakud Power systems and Balimela where loan repayment were more than the computed depreciation, the differential amount was taken in the calculation as Advance Against Depreciation (AAD). The same approach was followed for FY 09 as well.

Table A-17.4: Depreciation of each station in Rs. Crs and Depreciation as a %age of ARR.

Particulars	FY 06	FY 07	FY 08	FY 09
Hirakud (Burla & Chiplima)	12.49	19.21	14.50	10.72
Balimela	1.14	3.01	13.55	13.55
Rengali	0.90	2.41	2.41	1.05
Upper Kolab	1.06	2.80	2.81	1.25
Upper Indravati	32.07	32.07	32.07	32.07
Total Depreciation	47.66	59.50	32.07	58.64
Depreciation as percentage of ARR	20%	24%	12%	20%

Interest on Loans

The loan liabilities of OHPC are divided into two parts viz. 1) State Govt. loans and 2) PFC loans. For the year, FY 06, the Commission as per recommendations of Kanungo Committee did not take into consideration the valuation of the assets .Therefore, the interest impact of all other State Government loans except one loan of Rs.39.20 Crs was not considered for the purpose of tariff. The Commission also considers the loan under the APDP scheme to arrive at tariff. The Commission followed the same approach for the year FY 08 and FY 09 as well for calculation of interest.

The table below gives details about the opening balance of Loans and interest cost during the year.

Table A-17.5: Approved Interest on loans

Particulars	FY 06	FY 07	FY 08	FY 09
Loan Outstanding at the beginning of the year (Rs.Crs)	308.95	243.7	254.26	253.84
Interest (Rs.Crs)	33.24	24.40	31.09	24.65

Interest on Working Capital

The working capital is calculated based on the norms of specified by CERC.

The norms for calculation of working capital include:

- Operation and maintenance expenses for one month.

- Maintenance spares @ 1% of the historical cost escalated @ 6% per annum from the date of commercial operation and
- Receivables equivalent to two months of fixed charges for sale of electricity, calculated on normative capacity index.

The rate of interest on working capital was taken to be the short-term prime lending rate (PLR) of State Bank of India as on first day of the financial year. The Commission had computed the interest cost separately for OHPC old stations and UIHEP. This approach was followed for all the years from FY 06 to FY 09.

Table A-17.6: Interest on Working capital and rate of interest applicable

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Interest rate for WC borrowings	10.25%	10.25%	11.00%	12.00%
Interest on WC (Rs. Crs)	5.02	5.47	6.74	7.86

Return on Equity

For FY 06 and FY 07, the Commission allowed ROE on old stations @ 12% on OHPC's own investment of Rs.20.46 Crs. In case of UIHEP, the Commission allowed ROE @ of 14% in line with CERC norms. The return on equity acquires significance in the context that the government had asked to keep the effect of up-valuation in abeyance upto the FY 06 or the time by which the sector turns around. The Commission asked the government to further keep in abeyance the up-valuation of assets upto FY 11 as the sector has not yet turned around and any increase in the valuation of assets would lead to an increase in equity which in turn would have meant a higher return on equity. The same approach was followed for FY 08.

For FY 09, the Commission applied RoE at 14% on OHPC's own investment of Rs.48.40 Crs in case of HPS. In case of UIHEP also, RoE has been approved at 14% on Government equity of Rs.298.70 Crs.

Income tax

The Commission follows the CERC regulation according to which for hydro generating station the rate of primary energy and secondary energy are taken as equal. Primary energy charge is calculated as a ratio of annual fixed cost to the design energy. As secondary energy is in excess of the design energy inclusion of income tax rate in primary energy would mean double recovery. The Commission has considered it and decided that for the purpose of computation of secondary energy charges the per unit charge shall exclude income tax paid by OHPC.

Electricity Duty

Electricity Duty is a part of revenue requirement of the OHPC. The electricity Duty was allowed at @ 20 paise / KWh on Auxiliary Consumption, limited to 0.5% of the Design Energy.

Tariff Determination

Primary Energy Charges

The Commission has followed the CERC notification w.r.t Primary Energy Charges. As per CERC notification "Rate of Primary Energy for the generating station shall be equal to the lowest variable charges of the central sector thermal power generating station of the concerned region. The primary energy charges shall be computed based on primary energy rate and saleable primary energy of the project.

- Primary Energy Charges = Primary Saleable Energy (ex-bus) x Primary Energy Rate.
- Primary Energy rate = Annual Fixed Charge / Saleable Primary Energy"

The table below gives details about the primary energy rate of old stations and UIHEP. Also in case of UIHEP two-part tariff i.e. capacity charge and primary energy rate had been implemented since FY 05-06. The same principle was applicable for FY FY 07.

In the year FY 08, the Commission directed for the implementation of two-part tariff in case of all power stations of OHPC. The Commission calculated the primary energy charge and secondary energy charge. The capacity charge was arrived at after deducting primary energy charges from the annual fixed charges. In case of less generation when the generator is unable to recover the annual fixed charge, the gap between the AFC and the primary energy charge was to be treated as capacity charge. The same approach was followed for FY 09.

Table A-17.7: Primary energy rate of old stations and UIHEP (Single Part tariff)

Particulars	FY 06	FY 07
Annual fixed charges (Rs. Cr.)	112.02	123.86
	125.33	127.23
Total	**237.35**	**251.09**
Saleable primary energy(MU)	3676.86	3676.86
	1942.38	1942.38
Total	**5619.24**	**5619.24**
Primary energy rate(P/U)	30.47	33.69
	64.53	65.5

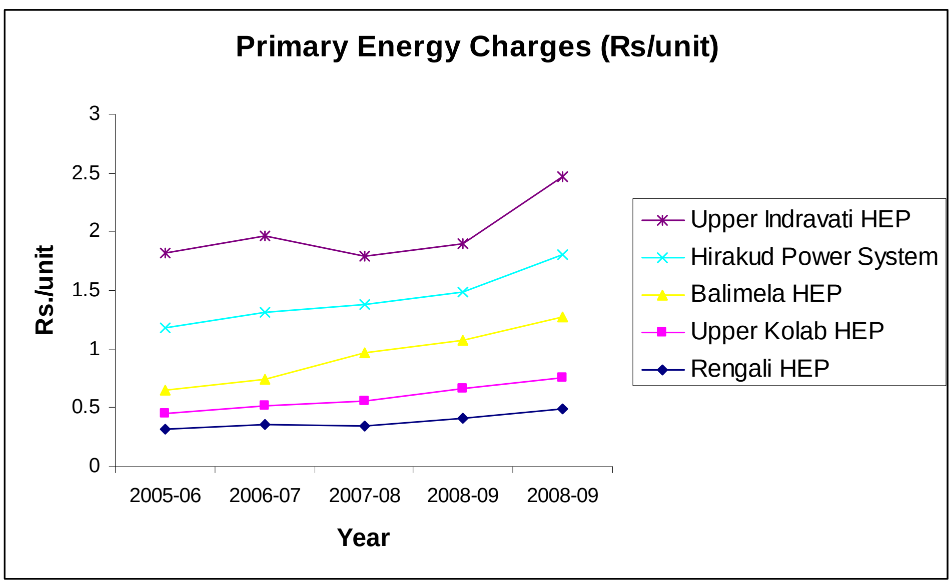
Secondary Energy Charges

The Commission follows the CERC notification in this regards which considers that the rate of secondary energy shall be equal to the primary energy rate. The Commission further says that revenue out of the sale of secondary energy may remain as part of normal fund of OHPC but shall be utilized to replenish the shortfall in revenue due to less generation by OHPC in years of hydrological failure to provide necessary comfort to the consumers of the state. The quantum of energy generated is fixed station wise after reassessment of design energy. In the year FY 08, the Commission accepted the average cost per unit less the income tax per unit payable would be the rate of secondary energy. The secondary energy rate is determined by taking annual fixed charges excluding income tax.

Table A-17.8: Tariff at which OHPC sold power to GRIDCO under two part tariff structure

Stations	FY 08	FY 09	Particulars
Rengali HEP	35.17	41.1	Primary Energy (P/U)
		4.32	Capacity Charge (Rs. Cr.)
	35.17	41.1	Secondary Energy (P/U)
Upper Kolab HEP	21.24	25.82	Primary Energy (P/U)
			Capacity Charge (Rs. Cr.)
	20.94	25.82	Secondary Energy (P/U)
Balimela HEP	41.10	41.1	Primary Energy (P/U)
	14.55	13.48	Capacity Charge (Rs. Cr.)
	41.10	41.1	Secondary Energy (P/U)
Hirakud Power System	41.10	41.1	Primary Energy (P/U)
	15.91	12.79	Capacity Charge (Rs. Cr.)
	41.10	41.1	Secondary Energy (P/U)
Upper Indravati HEP	41.10	41.1	Primary Energy (P/U)
	50.62	50.85	Capacity Charge (Rs. Cr.)
	41.10	41.1	Secondary Energy (P/U)

A two part tariff was introduced for OHPC plants in FY 08, the graph below shows the comparison of primary energy charges year on year.



UIHEP's Capital Cost

The capital cost of UIHEP in the Tariff order of year FY 08 has been determined at Rs1195.42 Crs. The break-up of capital cost into equity and loan with equity being 25% (Rs.298.70 Crs.) & loan 75% (Rs. 896.09 Crs).

Machhkund Hydro Electric Project

The Commission to arrive at the tariff for Machhkund power station considered the net share payable by Orissa towards O&M expenses for the year FY 05 (actual) to the tune of Rs.3.95 Crs. It allowed the escalation of 4% per annum for the year FY 06 and subsequently for FY 07 for O&M expenses. The same approach was followed for the year FY 08 wherein O&M expenses came to Rs. 3.94 Crs and the rate per unit came to 18.21 paise for the year. For the year FY 09, the Commission took into consideration the net share payable by Orissa towards O&M expenses for the year FY 07 (actual) proposed by OHPC and allowed an escalation of 4% per annum for the year FY 07 and subsequently for FY 08, O&M expenses came to Rs. 5.80 Crs for FY FY 09. The rate per unit came to 25.06 paise for the year FY 09.

A-17.2. ORISSA – DISTRIBUTION UTILITIES

Introduction

In the state of Orissa, the business of distribution and retail supply of electricity is handled by four distribution licensees namely CESU (CESCO), NESCO, WESCO and SOUTHCO. After commencement of the Electricity Act, 2003 and according to the first proviso of the Section 14 of the said Act, M/s WESCO, NESCO and SOUTHCO have been operating in the State of Orissa as deemed distribution licensees and supplying power to the consumers in their respective area of supply. The Commission revoked the license of the erstwhile CESCO w.e.f. 01.04.2005 and appointed Chief Executive Officer and Administrator (CEO&A) to manage the affairs of the Central Zone Electricity Distribution and Retail Supply Utility and was named CESU.

The sales mix of the DISCOMs is varied in the way that WESCO and NESCO have large base of EHT and HT consumers where as CESU and SOUTHCO have a large number of LT consumer base.

The DISCOMs are in their second Multi Year tariff Control period which started in FY 09. The first control period was from FY 04 to FY 08. The Commission has been regular in issuing tariff order and has been issuing them on time.

Sales / Demand

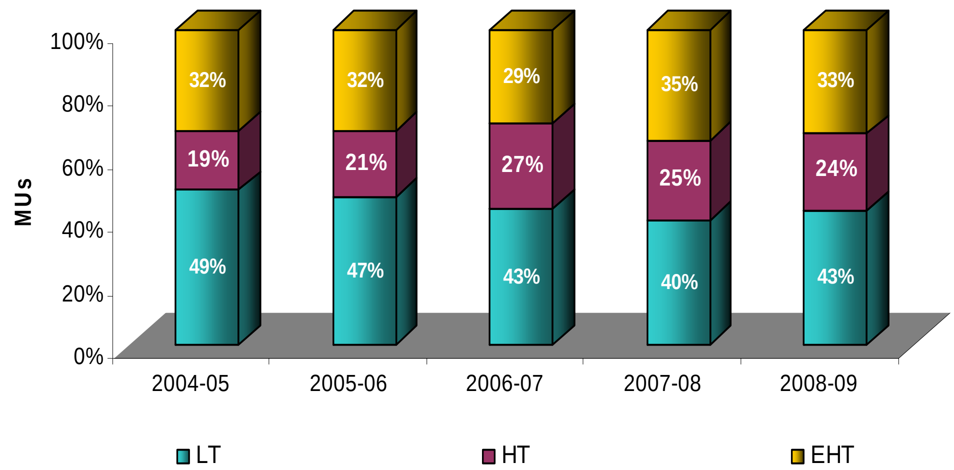
As per the terms and conditions of tariff the Commission approves the sales forecast of the DISCOMs by looking at the past trends of sales and checking it for the reasonability of the principles.

The quantum of energy to be sold is determined by deducting the units deemed to have been lost in distribution by applying the benchmark loss level, as adopted by the Commission. The Commission approves sales, voltage wise. The sales for HT and EHT category are based on the load growth.

In FY 05, the Load Growth was taken as proposed by the Distribution licensees. The quantum of sale at LT had been arrived after deducting the proposed sale at HT & EHT from the total sale. The same approach was followed for the entire control period i.e. till FY 08.

In FY 09, the Commission analyzed the actual sale figure at EHT and HT level month wise from April, 2007 to January, 2008. It assumed the January, 2008 level of sale for the balance two month of the financial year to arrive at the sale for FY 09. This approach was same across DISCOMs but at the same time Commission used some correction factors for individual DISCOMs such as net effect of reduction and addition to sales in case of NESCO because of reduction of contract demand of JINDAL Ltd and addition to sales because of increased HT sales. The Commission also took into account the electrification of villages under RGGVY and BGJY schemes while projecting higher sales. The graph below shows the percentage wise sales to each category year on year, for all the DISCOMs combined together.

Graph A-17.2: Consumption Mix



The table below shows the absolute sales under each category for all the DISCOMs.

Table A-17.9: Total sales (MUs) of all the DISCOMs category wise

Categories	FY 05	FY 06	FY 07	FY 08	FY 09
LT	3856	4064	4266	4811	5476
HT	1452	1846	2691	3064	3127
EHT	2529	2771	2909	4263	4254
Total	**7838**	**8681**	**9866**	**12138**	**12856**

T&D Losses/ AT&C loss

The Commission uses AT&C loss for determining the performance of the distribution companies. However, distribution loss is taken into consideration in assessing sale from year to year while determining the Annual Revenue Requirement.

To arrive at the T&D loss the Commission took into consideration initial projections made by the staff appraisal report of the World Bank in 1996, the recommendation of the Kanungo Committee and its own tariff order from year to year and at the same time the audit reports upto FY 03 of WESCO, NESCO, SOUTHCO in addition to the loss levels prevalent in various utilities inside the country.

The Commission had set a long term trajectory for the MYT control period from FY 04 to FY 08. For FY 05, the Commission directed the DISCOMs to reduce the T&D loss by at least 3% per annum till FY 08. The T&D network of all the DISCOMs is relatively similar in nature and the Commission observed that there cannot be large variation in the level of technical loss.

For the year FY 09 Commission had approved loss level by taking normative loss level target for the year. The Commission approved the overall loss level and LT loss level.

The table below gives details about the distribution loss projected, approved and achieved by each DISCOMs.

Table A-17.10: T&D Levels proposed, and approved for each DISCOM during FY 05 to FY 09

T&D Loss (CESCO)	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	39.00%	36.00%	33.00%	30.00%	29.30%
Proposed by the Utility	38.00%	34.00%			37.91%
Actual	41.49%	42.85%	43.52%		
T&D Loss (NESCO)					
Approved in the Tariff Order	38.00%	35.00%	32.00%	29.00%	25.50%
Proposed by the Utility	40.58%	36.63%			27.59%
Actual	39.40%	37.08%	33.22%		
T&D Loss (WESCO)					
Approved in the Tariff Order	34.00%	31.00%	28.00%	25.00%	25.00%
Proposed by the Utility	35.96%	32.65%			31.51%
Actual	36.38%	37.80%	36.36%		
T&D Loss (SOUTHCO)					
Approved in the Tariff Order	39.00%	36.00%	33.00%	30.00%	30.40%
Proposed by the Utility	39.77%	37.30%			39.31%
Actual	40.50%	41.07%	43.39%		

The variance in T&D loss amongst the DISCOMs is attributable to EHT load and commercial losses.

Power Purchase Quantum

The DISCOMs purchase power from GRIDCO, the Bulk Supply Licensee for the State of Orissa. GRIDCO levies differential Bulk supply price to each DISCOMs citing difference in consumer mix. The DISCOMs arrive at their power purchase requirement by considering the sales or demand in their respective areas and the distribution losses. In the shift to the MYT method of tariff filling the Commission had approved the Business Plan as per Long Term Tariff Strategy (LTTS) principles which governed the control years FY 04, FY 05, FY 06 and FY 07.

For the year FY 05, as the tariff petition was delayed the Commission took the actual purchase of power by CESCO and SOUTHCO from GRIDCO upto December, 04. After analysing the consumer mix and consumption pattern of the DISCOMs, the Commission extrapolated their consumption upto December, 04 and estimated the full quantum of energy purchase for FY 05. For WESCO and NESCO, the Commission had considered the level of consumption in the month of December and prorated it to determine the total consumption for the last quarter of financial year FY 05. Thus, the total consumption for FY 05 had been determined by consideration of the consumption of past nine months of FY 05 along with the projection for the last quarter of FY 05.

For FY 06 the Business Plan figures were considered for determining the power purchased by DISCOMs.

The Power purchase figures approved in the Business Plan for the year FY 07 were at variance with the approved figures for the DISCOMs especially in case of NESCO and

WESCO where there was substantial rise in sale of power to HT & EHT categories which was not foreseen by the licensees at the time of preparation of Business Plan. For FY 07 the quantum of power to be purchased had been assessed based on the actual purchase for FY 05 and quantum of power purchased from April, 2005 to January, 2006 and the expected addition of load projected by the licensees subject to prudence check. The same approach was followed for the year FY 08 and FY 09. In the year FY 09 the Commission took correction factor for implementation of different schemes such as RGGVY and BGJY. The table below shows the power purchase quantum and power purchase cost for the DISCOMs.

Power Purchase Cost

The Power Purchase cost of the DISCOMs is the Bulk Supply Price. The BST consists of Demand Charge and Energy Charge. The Demand Charge of the DISCOMs has been based on the Simultaneous Maximum Demand (SMD) in MVA for each DISCOM. The table below gives details about the power purchase cost of the DISCOMs of Orissa year on year.

Table A-17.11: Approved Power Purchase Quantum and Cost (MUs)

Sources	FY 05	FY 06	FY 07	FY 08	FY 09
Gross Power Available	12,470	9,038	14,714	16,653	17,620
Net Power Available (after distribution losses)	7837.59	8680.99	9865.6	12137.5	12856.44
Total Power Purchase Cost (Rs.Crs)	1630.60	1659.54	1774.43	2259.20	2152.23

GRIDCO Costs

Power purchase

The cost of power purchase for GRIDCO, which constitutes more than 95% of the total cost structure of GRIDCO has been considered on a merit-order basis, with hydro generation being computed based on the design energy of the stations, and the state thermal generation being considered as per norms of the PPA or CERC guidelines. Availability from the Eastern Region CGS has been considered as per the allocation of shares in these stations and the applicable CERC Regulations. The estimate for purchase of power is estimated on the basis of actual purchase made during the previous financial year. GRIDCO purchases power from the generators and at inter-state points from outside sources while OPTCL bills the customers at the delivery points. The gap between the units is treated as lost on account of delivery to the customers on the normative basis approved by the Commission. Table below gives detail about the power purchase break up of GRIDCO.

Table A-17.12: Power Purchase by GRIDCO (MUs)

Particulars	FY 06	FY 07	FY 08	FY 09
Total Orissa (Internal Gen.)	12277.41	12,396.30	12438.9	12719.93
Hydro(Central)	214.79	243.79	398.56	465.7
Thermal (Central)	4362.61	2,774.70	4702.02	5274.63

Particulars	FY 06	FY 07	FY 08	FY 09
Total Purchase by GRIDCO (MUs)	**16854.81**	**15,414.79**	**17,539**	**18,460**

GRIDCO incurs costs like O&M, interest and others. GRIDCO is also entitled to earn return on equity but it has been disallowed till the sector becomes viable in the state. The Commission gave indications of bridging the gap while arriving at the ARR of the GRIDCO by means of export earning, UI charges and recovery of receivable from DISCOMs. The table below gives detail about the bulk supply tariff charged by GRIDCO from DISCOMs. The Commission follows the differential bulk supply tariff. The Bulk Supply Price, which is approved by the Commission, is an input cost to the DISCOMs.

Table A-17.13: Bulk Supply Price per Unit

DISCOMs	FY 06	FY 07	FY 08	FY 09
Bulk Supply Price (Paisa per Unit)				
CESU	85	79	121.7	101.5
NESCO	86	81	125.8	125
WESCO	98.82	98.02	175.67	157.25
SOUTHCO	75	70	76.3	70

O&M Cost

The Commission has segregated the O&M expenses into employee expenses, repairs and maintenance and Administrative expenses.

Employee Expenses

The Commission determined the base year values for the control year based on the audited accounts for previous year. The base year values of basic pay and dearness allowance were escalated for annual salary increments and inflation.

For all the years, the Commission has allowed escalation of 3% over the basic pay towards normal annual increment on year to year basis in respect of all DISCOMs. The Commission for all the years approved terminal benefits of WESCO, NESCO and SOUTHCO based upon the rate of contribution given by actuary, the terminal benefits of CESCO were based on cash outflow basis. The approval was subject to final determination by the independent actuary which was to be appointed by the Commission.

In the year FY 05, the Commission approved annual average DA rate of 64% over the Basic pay. This was based on anticipated half yearly rise in DA @ 3%.

For FY 06, the Commission approved the D.A. rate of 70% over the Basic pay. The DISCOMs for the year made provision towards additional expenditure in salary due to induction of new employees. The additional expenses were approved by the Commission. The same approach was followed in the year FY 07 with the approved D.A. rate of 77% over the Basic pay.

In the year FY 08 the Government of Orissa notified the merger of 50% of DA to the Basic Pay as Dearness Pay (DP) w.e.f. 01.04.2006.Therefore the Commission calculated D.A. @35% over the Basic pay + Dearness Pay. As the DISCOMs had not supplied the relevant data to the Commission to arrive at the employee cost for the year, the

Commission for CESU considered the approved figure of its own order of FY 07 as the base numbers. The staff strength of CESU was taken as 6794 as on 31.03.2006 due to retirement and otherwise. The data regarding the number of employees for FY 07 onwards was not available. Therefore, the Commission based on the past trend and after considering the reduction of the number of employees due to retirement calculated the employees at 6594. The approved figure for FY 07 was prorated for the FY FY 08 corresponding to the reduced number. Thereafter, appropriate escalation factor was applied to determine the basic pay for FY FY 08. For the other three companies viz. WESCO, NESCO and SOUTHCO the basic pay available in the audited account of FY 06 and the reduction in the number of employees shown in their filing had been considered to determine the basic pay for the year FY 08.

In the year FY 09, Commission had computed D.A.at 50% over the Basic pay plus Dearness Pay. In the Commission received the actuary report on terminal benefits. The Commission allowed the deficit funding of Rs.171.63, Rs.116.64, Rs.113.53 and Rs.222.98 Crs to WESCO, NESCO, SOUTHCO and CESU within a span of seven years under the head terminal benefits along with the carrying charges @8.5%.

The table below gives details about the employee expenses of each DISCOM and total employee expenses as a percentage of ARR.

Table A-17.14Approved Employee Expenses of DISCOMs (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU	107.49	113.30	113.10	133.94	163.19
NESCO	54.31	62.56	69.60	96.96	102.33
WESCO	65.18	70.76	80.16	97.76	109.97
SOUTHCO	56.85	63.73	68.18	82.82	93.06
Total	283.83	310.35	331.04	411.48	468.55
Total Employee cost as a % of Consolidated ARR	*12.94%*	*13.22%*	*11.40%*	*11.48%*	*13.06%*
Employee Cost Per unit (Rs/kWh)	0.36	0.36	0.34	0.34	0.36

Repairs and Maintenance Expenses

The Commission has taken values of latest audited accounts as base figures and applied 5.4% on the opening gross block of assets. The same approach has been followed by the Commission for all the DISCOMs for all the years. The Commission approved GFA for the year based on the opening asset and additions proposed by the DISCOM under various schemes like RGGVY, Biju Grama Jyoti etc. The table below gives details about the repairs and maintenance cost in the state of Orissa.

Table A-17.15: Approved R&M Expenses (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU	31.95	33.67	41.31	43.64	41.87
NESCO	18	23	24	24	26
WESCO	17	21	24	24	26
SOUTHCO	13	19	17	18	19
Total	**80.14**	**96.15**	**107.39**	**110.26**	**112.48**

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
R&M as a Percentage of GFA	5.4%	5.4%	5.4%	5.4%	5.4%
Total R&M as % of Consolidated ARR	*3.65%*	*4.09%*	*3.70%*	*3.08%*	*3.13%*

Administrative and General Expenses

The Commission approved administration costs for the DISCOMs by considering latest tax audited figure of A&G as base and escalated it for a specified rate. The escalation rate of 7% has been considered consistently throughout the DISCOMs for all the years. The table below gives details about the A&G expenses for each of the DISCOM.

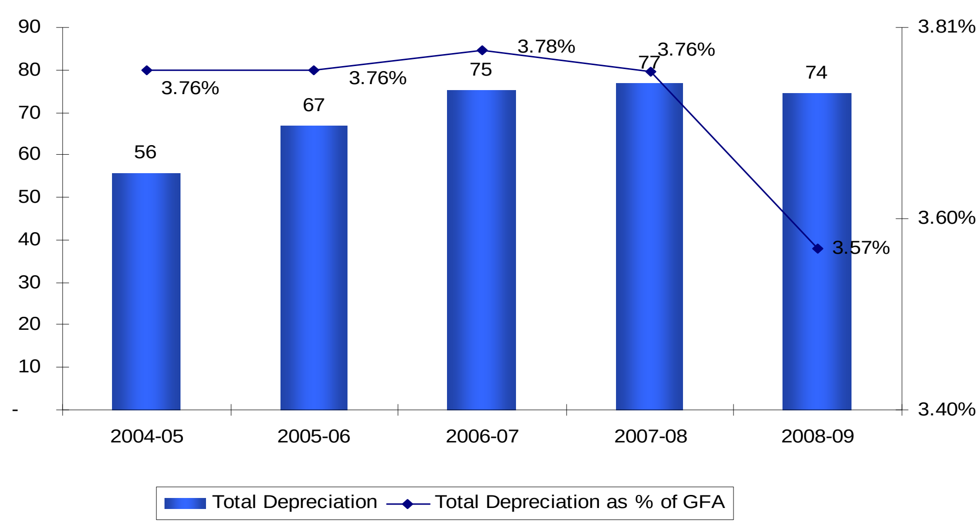
Table A-17.16: Approved A&G Expenses (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU	9.82	10.51	13.11	14.03	26.29
NESCO	7.86	8.42	10.48	12.83	14.52
WESCO	12.51	13.39	15.78	17.48	20.91
SOUTHCO	8.22	8.79	10.88	12.08	12.88
Total	38.41	41.11	50.25	56.42	74.60
Total A&G costs as a % of Consolidated ARR	1.75%	1.75%	1.73%	1.57%	2.08%

Depreciation

The Commission directed the DISCOMs to calculate depreciation at pre-92 rates which were substantially low in comparison to post-94 rates linked to the life of the assets. This was done to keep in abeyance the impact of revalued cost of assets on the tariff. The assets were revalued but Commission in the tariff order for FY 04 directed not to consider the revaluation and took the asset base as on 01.04.1996 and directed to consider subsequent additions year on year. The depreciation rate was applied on gross value of the assets as on 01.04.1996 and subsequent additions thereon.

Graph A-17.3: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



Interest Expense

At the time of reform and restructuring, distribution assets were transferred from GRIDCO to the DISCOMs. Project related loans taken by GRIDCO for the purpose of creation of distribution assets from PFC, REC were also transferred to the DISCOMs. However, GRIDCO continued to serve the lenders for the loans taken for both transmission and distribution assets. On the other hand, distribution companies were bound by Subsidiary Loan Agreement to service the transferred loans through back to back arrangement. After amendment in the Subsidiary Loan Agreement GRIDCO was to be reimbursed for the interest on DISTCO related loan through BST.

For interest on loan from World Bank Commission considered 70% of the amount as loan and 30% as grant.

WESCO, NESCO & SOUTHCO issued bonds worth Rs. 400 Crs in favour of GRIDCO to be assigned to NTPC w.e.f 1st October, 2000 @ 12.5% interest. The Commission in its tariff order for FY 06, FY 07 and FY 08 had allowed interest @ 8.5% (tax free) on those bonds as per the recommendation of Ahluwalia Committee. The Commission in its order advised the Govt. to pass on the benefits to the end users of electricity on account of the relief's that would be available if securitization shall be effected in line with the one time settlement scheme approved by the Govt. of India to be made effective on 01.10.2001. But, GOO has not yet communicated its decision. The Commission is waiting for the response of the Govt. of Orissa on the proposal to re-securitize the bonds of Rs.400 Crs issued to GRIDCO by the DISCOMs, which have been in turn endorsed to NTPC, under the one-time securitization scheme under the Ahluwalia Committee recommendations. The Commission therefore approved the interest at 8.5% on the loan amount of Rs.400 Crs as applicable for NTPC tax free bonds.

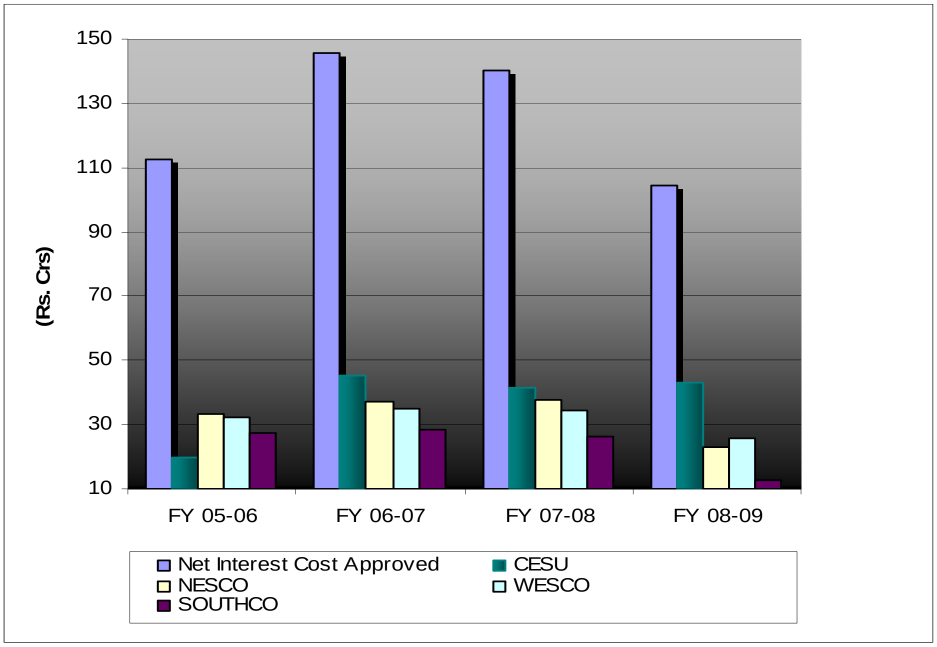
For interest on APDRP programme Commission analyzed the actual receipts of loan and the capital expenditure undertaken by the licensees. For FY 05, the Commission allowed interest only for CESCO on this account and directed that for other DISCOMs the impact of interest would be dealt with, on receipt of concrete proof.

For FY 06, the Commission considered the impact of interest on loan amount proposed by four DISCOMs upto 31.3.2005 as a part of revenue requirement for FY 06 to be passed on to the tariff. It did not approve the interest proposed on the ground that it was too optimistic plan.

For FY 07, the Commission allowed the interest on scheduled loan drawl for fixed asset additions during 2005 as a pass through in the revenue requirement of 06-07. For the Loans drawn during FY 07 the Commission capitalized the interest payable.

For the loan drawn during FY 08, the Commission had considered the interest impact on loans proposed to be availed from GOO as well as from PFC/REC up to FY 07, in case of WESCO, NESCO and SOUTHCO subject to the scheme approval by the Commission. The Commission has not considered interest on the unutilised portion of Govt. loan. The same approach was considered for FY 09. The Commission has also allowed interest outgo on the security deposit. The graph below shows the interest expense of the DISCOM and state of Orissa for each year.

Graph A-17.4: Total Interest Cost Approved and interest cost for each DISCOM (Rs. Crs)



Carrying Cost / interest on Working capital

The Commission allows carrying cost to the DISCOMs for financing the gap between the permitted collection efficiency and collectible revenue excluding bad debt on pragmatic consideration. The Commission has calculated the working capital as the difference between the approved collection efficiency and the revenue excluding bad debt requirement and has allowed interest rate on this working capital towards carrying charges. The Commission has allowed carrying cost consistently @ 10%.

Past loss or regulatory assets

The Commission has not allowed the recovery of Past losses or regulatory assets for any of the years. So, a major chunk of disallowance in the ARR proposed has come because of the disallowance of past loss or regulatory asset.

Rate of Return

The Commission has considered Return on Equity (RoE) as a part of revenue requirement. The Commission allowed return on equity capital at the rate of 16% to the DISCOMs. This was consistent for all the DISCOMs for all the years. The return allowed was in conformity with the OERC (Terms and Conditions for Determination of Tariff) Regulation, 2004 and LTTS order passed by the Commission. In all the tariff orders Commission has approved the return proposed by the DISCOMs.

Table A-17.17: Approved Return by the Commission

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Rate of Return	16%	16%	16%	16%	16%

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU	11.64	11.64	11.64	11.63	11.64
NESCO	10.55	10.55	10.55	10.54	10.55
WESCO	7.78	7.78	7.78	7.78	7.78
SOUTHCO	6.03	6.03	6.03	6.03	6.03
Total Return*	36	36	36	35.98	36
Total Return as % of Consolidated ARR	*1.64%*	*1.53%*	*1.24%*	*1.00%*	*1.00%*

Provision for Bad Debts

As per the LTTS order, 2.5% of the total annual revenue billings from sale of power is considered as prudential norm for provisioning of bad and doubtful debts to Licensees for the first Control Period. From the second control period onwards i:e from FY 2008-09 to FY2012-13 the Commission started allowing 2% of the revenue billing from sale of power as bad debt. The DISCOMs have been projecting higher provision for bad and doubtful debts and have been considering concept of AT&C loss measure.

Annual Revenue Requirement

The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY 05 to FY 09.

Table A-17.18: Proposed vis-à-vis the Approved ARR (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU					
Proposed by the Utility	1,482	1,605	1,659	2,021	1,247
Approved	706	729	836	1,027	1,092
Approved as a percentage of proposed	48%	45%	50%	51%	88%
NESCO					
Proposed by the Utility	577	694	1,055	1,321	1,095
Approved	493	549	773	903	938
Approved as a percentage of proposed	86%	79%	73%	68%	86%
WESCO					
Proposed by the Utility	758	829	1014	1466	1438
Approved	687	735	895	1,292	1,226
Approved as a percentage of proposed	91%	89%	88%	88%	85%
SOUTHCO					
Proposed by the Utility	388	446	646	808	697
Approved	306	336	401	364	332
Approved as a percentage of proposed	79%	75%	62%	45%	48%

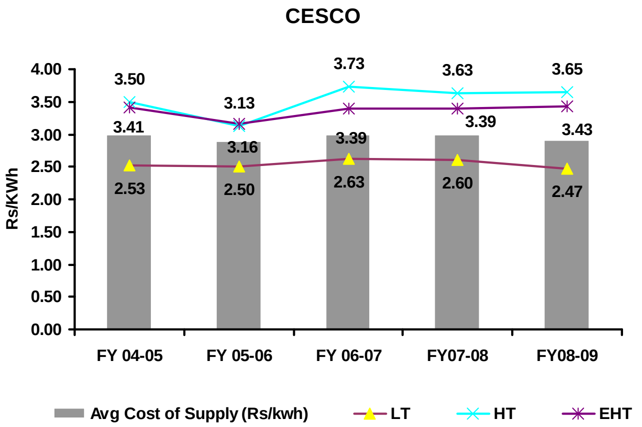
The disallowances in the proposed ARR have majorly been of the regulatory asset. Thus, reducing the ARR approved as percentage of proposed.

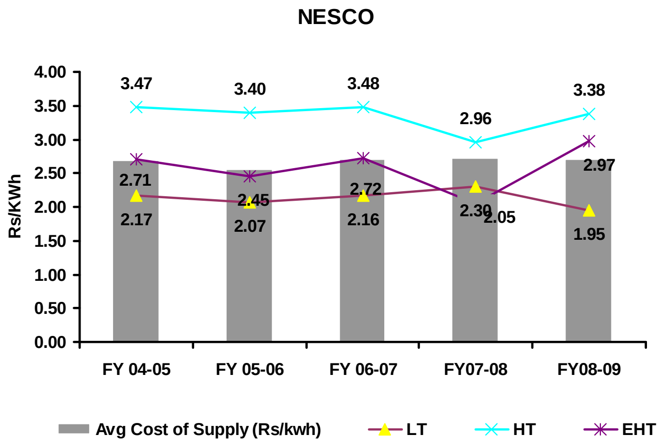
Subsidy Support

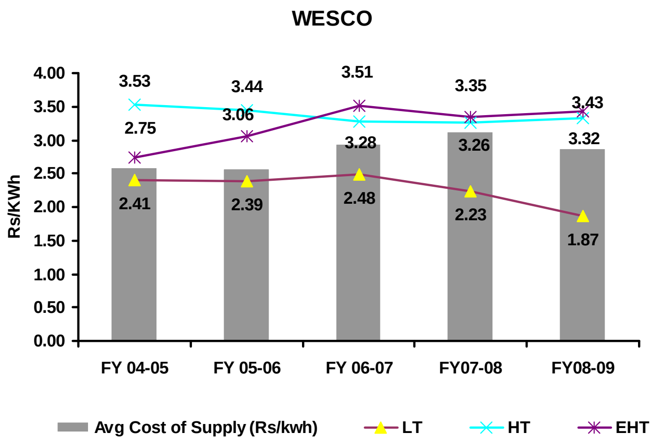
The government has not approved subsidy to the DISCOMs. In the tariff order of FY 09, the Commission had quoted the response of the Government on the issue of susbsidy as "The Government therefore clarifies that it does not propose to give grant / subsidy to any of the utilities or to any consumer or any class of consumer. It is the responsibility of the DISCOMs to bring down the distribution loss, AT&C loss and improve their collection efficiency to bridge up their revenue gap for the year FY 09".

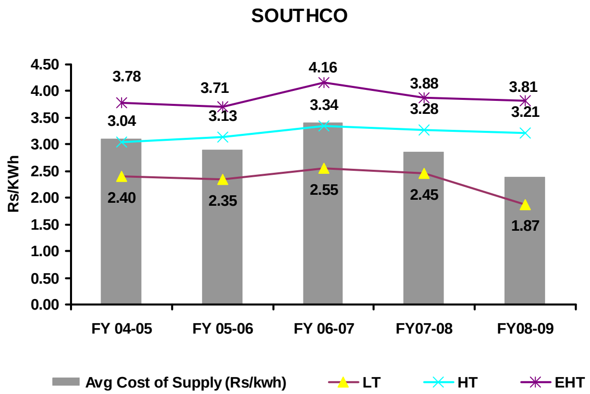
Tariff Determination

In the state of Orissa there is Uniform Retail supply tariff across the DISCOMs. The state also saw abolition of minimum charge for classes of consumers and introduction of a monthly minimum fixed charge for the low voltage group of consumers to recover expenses related to meter reading, billing and consumer service. The consumers have been divided among Single part Tariff and two part tariff. Consumers covered under two-part tariff are not required to pay the MMFC but are to pay Demand Charge and Customer Service Charge. Consumers covered under single-part tariff are liable to pay MMFC but will pay neither the Demand nor the Customer Service Charge. Only Consumers under LT supply upto 100 KW/110 KVA come under Single part tariff. The Commission has also shown its interest in the progressive reduction of Cross Subsidy. The graphs below show the cost of supply and average realization for each category from FY 05 to FY 09.


CESCO
Rs/KWh
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
LT
HT
EHT

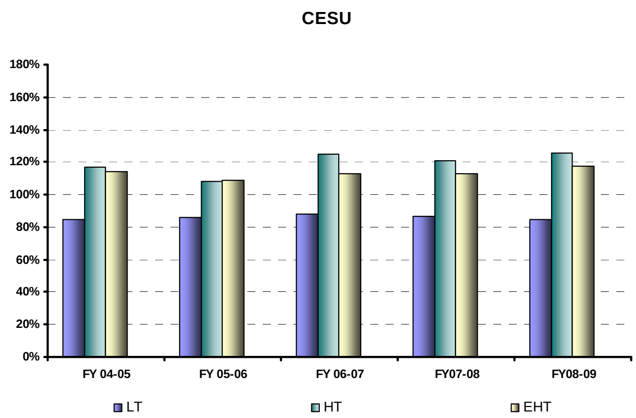

NESCO
Rs/KWh
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
LT
HT
EHT

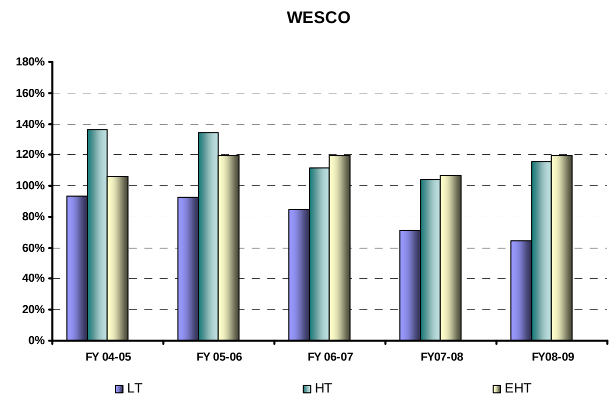

WESCO
Rs/KWh
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
LT
HT
EHT

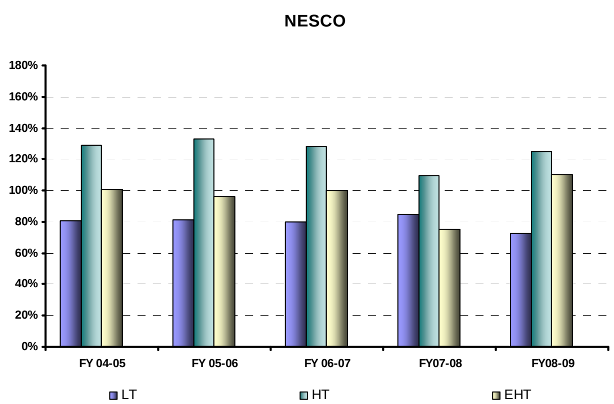

SOUTHCO
Rs/KWh
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
LT
HT
EHT

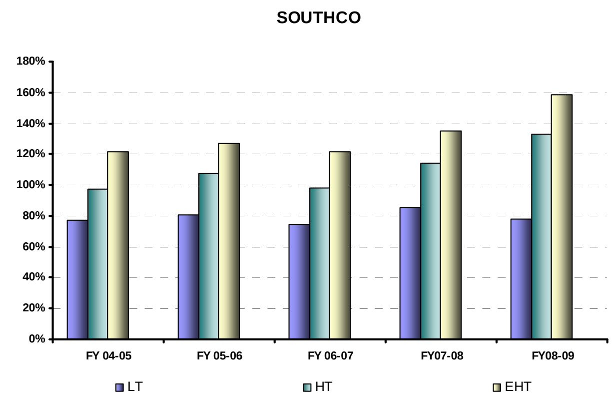
Average Cost of Supply vs. Revenue Realisation

During the OSEB regime tariff did not reflect the cost of supply, rather it was related to the paying capacity of the consumers and the Govt. would provide subsidy to the power sector. The new regulatory regime tried to address the issues and the Commission, while setting the tariffs adopted LT, HT and EHT level cost of supply as the benchmark for estimation of the prevalent cross-subsidies. The Commission, in keeping with its objective of rationalisation of tariff structure by progressive introduction of a cost-based tariff, and has linked the energy charge at different voltage levels to reflect the cost of supply. While determining energy charge, the principle of higher rate for supply at low voltage and gradually reduced rate as the voltage level goes up has been adopted. The graphs below show the average cost of supply and realization percentage for the DISCOMs. HT and EHT are the cross subsidizing categories.









The Commission has not been very explicit of its approach in bridging the gap. The table below gives details about the ARR and revenue gap for the DISCOMs

Table A-17.19: ARR and the Revenue Gap (Rs. Crs)

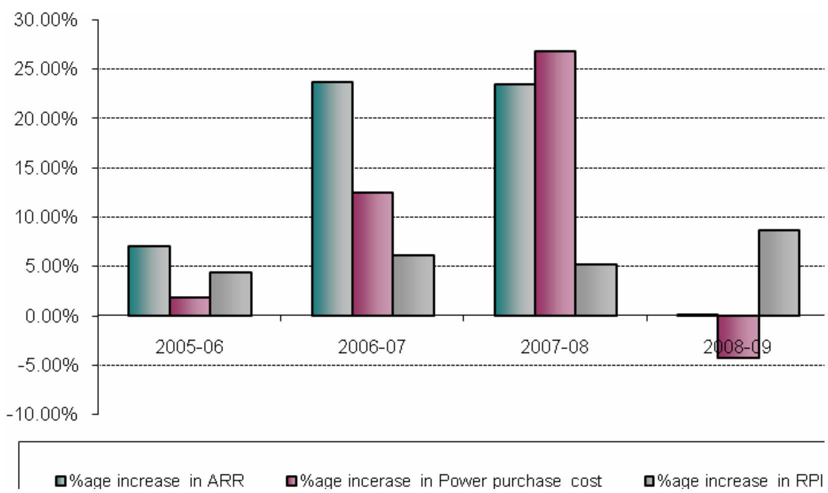
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESU					
ARR (Rs. Crs)	706	695	836	1027	1092

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Gap (Rs. Crs)	-34	-9	-8	3.10	3
NESCO					
ARR (Rs. Crs)	493	549	773	903	938
Gap (Rs. Crs)	-21	-22	-8	0.09	1
WESCO					
ARR (Rs. Crs)	687	735	895	1292	1226
Gap (Rs. Crs)	52	112	67	0.06	25
SOUTHCO					
ARR (Rs. Crs)	306	336	401	364	332
Gap (Rs. Crs)	-34	-16	-51	-3.78	0.06

The Commission nets out the overall revenue gap by revenue surplus. For examples, in FY 06 the Commission netted up the revenue gap for NESCO, SOUTHCO and CESU with the revenue surplus in WESCO. This approach effectively disincentivises the DISCOMs from achieving efficiency.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	2193.56	2348.40	2904.17	3585.49	3588.50
Approved Sales (MU)	7837.59	8680.99	9865.60	12137.50	12856.44
Averge Cost of Supply in Rs/kwh (A)	2.80	2.71	2.94	2.95	2.79
% of Power Purchase Cost in ARR	74%	71%	64%	66%	63%
% of Other remaining Cost in ACS	26%	29%	36%	34%	37%

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
% Annual Increase in Power Purchase Cost		1.8%	12.4%	26.8%	-4.3%
% Annual Increase in Other Cost		22%	51%	17%	9%
% Annual RPI Increase		4.37%	6.06%	5.21%	8.67%

The ARR has not increased considerably and so has the power purchase cost in the state of Orissa. The Average Cost of Supply in Orissa has not increased owing to favourable consumer mix, Orissa has a sizable HT and EHT consumers. The state of Orissa has not had a Tariff hike from FY 2001-02 to FY 2009-10.

MYT Regime

The Commission in its tariff order dt.19.04.02 approved to set in motion a MYT regime effective from April, 2003 for FY 03-04. As per the order, the base year was to be FY 03 and FY 04 was the transitional year in the MYT regime of FY 04 to FY 07. The control period was set to begin from first April, 2003 and to end on 31st March, 2007. The tariff for FY 04 and FY 05 could not be finalized in time due to legal complications. Therefore, the Commission decided to extended the control period by one more year i.e. to FY 08 for an objective assessment of LTTS at the end of three years from 04-05.

As per LTTS principles Tariffs are essentially a risk-sharing mechanism. Efficient risk allocation principles dictate that in order to minimize the overall costs, only those risks should be allocated to the Licensee where it is best placed to manage and mitigate them. Therefore, the risk elements were divided as Controllable (the ones which are directly within the control of the Licensees or can be managed by the Licensees) and Uncontrollable which could be recoverable through tariffs in the ensuing year(s) of the Control Period as special appropriation.

Controllable parameters included network and financing costs and Aggregate Technical & Commercial (AT&C) losses and uncontrollable parameters included fuel cost changes that affect the cost of power purchase, inflation, exchange rate variations, etc

Incentive for improved AT&C loss

The Commission has allowed incentive for improved AT&C losses. For this purpose, the Commission determined AT&C loss to measure performance of different distribution companies.

In case of profit earned as a result of improvement, the licensee was to be provided with an approved return at the beginning of the period under review. However, if the licensee made more profit than the approved return on account of improved performance, the Commission had to treat the profit beyond the approved return in the following manner;

- One-third amount was to be declared by the licensee as dividends to the shareholders. If not paid out as dividend, it could to be treated as part of equity to that extent and eligible to earn returns on the same. Any future declaration of dividend from this shall lead to commensurate decrease in the equity base for the purpose of returns.
- One-third amount was to be returned back to consumers by way of reduction in the consumer bills as rebate.

- One-third amount to be kept as tariff balancing reserve, which shall be used to reduce sharp rise in ARR in future years. The Commission could allow a part of the total reserve to be returned back to the consumers every 3 years by way of reduction in ARR. The amount in tariff balancing reserve could not be treated as part of equity and would not earn any return for the shareholders. Any return earned on this reserve shall be added back to this reserve."

Incentive for higher consumption to HT and EHT group of consumers

The Commission incentivises consumption at HT and EHT voltage levels. Eligible consumers availing power supply at HT or EHT are charged reduced energy charge. For determination of reduced charges, actual Load Factor in percentage achieved as defined in the OERC Distribution (Conditions of Supply) Code, 2004 has been considered. Also the incentive was given to consumers who assured to maintain their contract demand during the next three financial years starting from FY 06.

Special tariff for Power Intensive Industries

The Commission in order to give a boost to industrial growth in the state particularly to HT and EHT loads came up with special tariff for PIU. Doing so, not only brought additional revenue to the state exchequer and create avenues for employment in the state but also led to improvement of the financial health of the utilities. The Commission gave industries covered under special agreement a discount of 25% on the energy charges upto 50% load factor.

Time of Day

Time of Day tariff or (peak and off-peak tariff) exists in the state of Orissa. The Commission gave discount to few categories for consumption during off-peak. The discount was given at the rate of 10 paise per unit of the energy consumed during this period.

A-17.3. Orissa – State Transmission Utility

Introduction

Orissa Power Transmission Corporation Limited, Bhubaneswar (OPTCL), is a Govt. Company registered on 29th March, 2004 under the Companies Act, 1956. OPTCL is responsible for carrying on business of transmission of electricity within the State of Orissa. It had commenced operation on 31st March, 2004. The necessity for formation of this Govt. Company arose because, with the enactment of the Electricity Act, 2003 (hereinafter referred to as the Act) GRIDCO which was the Bulk Supply and Transmission Licensee under the Orissa Electricity Reforms Act, 1995 could no longer carry on both supply and transmission businesses. By virtue of a Transfer Scheme entitled ‘Orissa Electricity Reforms (Transfer of Transmission and Related Activities) Scheme, 2005 the erstwhile transmission business of GRIDCO with all the assets and liabilities was transferred to and vested with OPTCL with effect from 1.4.2005. Accordingly, OPTCL was notified as the State Transmission Utility (STU) u/s. 39 of the Act with effect from 01.04.2005. OPTCL is now governed by License Conditions set forth in OERC (Conditions of Business) Regulations, 2004.

OPTCL owns EHT network for transmission of power from various generating stations within the State and for interconnection with the neighboring States regions. OPTCL transmits bulk power to DISTCOS and wheels CGPs’ power to the industries located elsewhere. Conveyance of power incidental to inter-state transmission is also carried through OPTCL’s network. Apart from this, it is also expected to transmit power for both long term and short term open access customers as per OERC Open Access Regulations, 2005.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 07 to FY 09 in approval of the Annual Revenue Requirement (ARR) of the state transmission utility OPTCL.

Transmission Losses

The transmission system of OPTCL operates as an integral part of the Eastern Regional Grid to serve the internal demand of the State as well as to carry out import and export of power depending upon the system demand under the overall supervision of the Eastern Regional Load Dispatch Centre in accordance with the GRID CODE.

The Commission approves the current year’s transmission loss based on the actual loss of the subsystem during the past 10 months. The Commission also takes into account the transmission assets addition during the year. There has been variation in the loss because of the dependence of transmission loss on system configuration and power flow requirements at different load centers.

Table A-17.20: Approved and proposed Transmission Losses

Transmission Loss	FY 07	FY 08	FY 09
Approved	4.00%	5.00%	4.50%
Proposed	4.49%	5.00%	5.00%

Operation and Maintenance (O&M) Cost

The Commission has been approving employee cost, R&M and A&G cost separately for OPTCL for FY 07 to FY 09. Approach of the Commission in approval of each of the O&M cost parameters in the past three tariff orders is discussed below.

Employee Cost

The Commission approved component wise employee cost. The Commission has either considered the actual audited accounts or provisional accounts of the previous years to arrive at present year's employee cost.

- For basic pay, the Commission has consistently taken an escalation factor of the 3% on a year on year basis.
- For dearness allowance, the Commission in FY 07, had taken half yearly escalation factor of 3% and evaluated the annual average DA rate at around 77%.
- In FY 08, the Commission had followed the government of Orissa notification on the merger of 50% of DA into the Basic Pay. Accordingly, the Commission calculated DA at 35% over the Basic plus Dearness Pay for FY FY 08.
- For FY 09, the Commission calculated D.A.at 50% over the Basic plus Dearness Pay.

For FY 07 and FY 08, medical reimbursement was 3% of basic pay but in FY 09, medical reimbursement was allowed at 5% of the basic pay. For terminal benefits Commission adopted periodic actuarial valuation as per the accounting standard 15 issued by ICAI. The net employee cost (after capitalization) as approved by the Commission in each of the past three tariff orders is summarized in table below.

Repair & Maintenance (R&M) Expenses

The Commission analyzed the actual expenditure incurred in the previous year and in the past 6 years on the transmission system to arrive at the present year's R&M expense. The same approach was followed for all the years. The R&M costs have increased year on year on account of R&M on the transmission lines and sub-stations, as the Commission feels that they have been neglected for long. The R&M expenses approved by Commission in the last three tariff orders are summarized in table below.

Administrative & General (A&G) Expenses

The Commission approved A&G expenses by escalating the past years A&G with average of WPI & CPI. The approach has been consistently followed for all the years. A&G expenses approved by the Commission in the past three year tariff orders are given in table below:

Table A-17.21: Approved O&M Expenses from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Employee Cost (Rs. Crs)	115.16	142.52	132.86
R&M Expenses (Rs.Crs)	36.00	47.00	53.88
A&G Expenses (Rs.Crs)	14.89	15.71	16.57
Net O&M expenses	166.05	201.49	195.70
Total Approved ARR (Rs. Crs)	333	374	377
O&M Cost as % of Approved ARR	34.55%	38.13%	35.28%

Depreciation

The Commission calculated the depreciation on the assets of the OPTCL based on pre-92 norms notified by the GOI. The transmission utility had proposed the expenses based on the post-94 rate. The Commission as per notification of the Department of Energy kept in abeyance the up-valuation of assets till 2005-2006 or till the sector turns around, whichever is earlier to avoid re-determination of tariff for past years and also re-determination of asset of various DISCOMs. The Commission as per OERC regulations approved historical cost as the value base for the purpose of depreciation. The depreciation was calculated asset wise.

The Commission allowed Advance against Depreciation (AAD) to OPTCL after considering the loan repayments for the given year. AAD was allowed in all the three tariff orders.

Interest cost

The Commission analyzed source wise loan to arrive at the interest cost for the year. In the year FY 07, the Commission kept in abeyance the debt servicing of State Govt. loan and therefore disallowed the interest impact on the above loan to be passed on to tariff. Interest on GOO Bonds was also not allowed. Commission disallowed the finance charges for the year. In FY 08, the Commission disallowed the interest on deposit by EHT consumers, due to non-explanation by OPTCL about its utilization. The same disallowances were made in FY 08 and FY 09.

Rate of Return

In the tariff order for FY 07, the Commission disallowed the rate of return proposed by OPTCL. The disallowance was made on the grounds of the notification which stated no ROE was to be allowed to OHPC and GRIDCO till the sector becomes viable or FY 06 whichever is earlier. Modification was later made to the above notification and ROE was allowed in respect of the new projects commissioned after 01.04.2006. The Commission again did not allow return in the FY 08 and FY 09.

Other Expenses / Prior period / Provisions

The Commission allowed contribution to contingency reserve which was allowed in all the three years as proposed. In FY 08, the Commission approved grid coordination allowance for OPTCL. In the tariff orders for FY 08 and FY 09, the Commission made appropriations for loss of the previous year.

Table A-17.22: Approved Other Expenses between FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Other Expenses/Prior Period/Provisions (Rs.Crs)	12.59	24.57	15.13
Approved ARR (Rs.Crs)	333	374	377
Other Expenses as % of Approved ARR	3.78%	6.57%	4.02%

Miscellaneous Receipts

The Commission approved miscellaneous charges pertaining to inter-state wheeling for all the three years. They were to the tune of Rs.5 Crs in FY 07, Rs.3 Crs in FY 08 and Rs.1 Crs for FY 09.

Annual Revenue Requirement

The Commission has approved the ARR by deduction of the approved miscellaneous receipts from other admissible expense components as discussed above. The table below shows the ARR approved by the Commission vis-à-vis that proposed by OPTCL from FY 07 to FY 09.

Table A-17.23: Approved ARR for OPTCL from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs.Cr)	333	374	377
ARR proposed by OPTCL(Rs.Cr)	656.91	675.34	655.78
% Disallowance	49%	45%	43%

Transmission Tariff

The Commission has computed the intra-state transmission tariff in paisa/kWh during all the years from FY 07 to FY 09 in a straightforward manner. The approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year.

Determination of Transmission Charges & Open Access Charges

The Commission notified the Open Access Regulation under section 42 (2) of the Electricity Act, 2003. Consumers availing open access were required to pay the transmission charges for use of the transmission lines and substations of OPTCL. GRIDCO was given the responsibility of purchase of power from the generator end and at inter-state points from outside sources while OPTCL was to bill the customers at the delivery point. The gap between the units was treated as lost on account of delivery to the customers on the normative basis approved by the Commission and the actual figure was assigned for export of power outside the state taking place in the intra-state system due to power exchange. GRIDCO was asked to give credit to OPTCL for the units deemed to have been lost on account of export of power, if any.

The transmission charges were calculated for DISCOMs and open access customers. The transmission charges were applicable for transmission of power at 220 KV/ 132KV over OPTCL's EHT transmission lines and sub-stations, to be payable by the DISCOMs and CPPs. It was also be applicable for the purpose of transmission of energy from a CPP to its industries located at a separate place(s) within the State. The Commission calculated Long term open access charges on the basis of MW. In FY 07, the Commission did not calculate short term open access charges but in the next two tariff orders, short term open access charges were determined as 25% of the long term open access charges.

Table A-17.24: Approved Transmission Tariff (Paisa/kWh) from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs.Cr)	333	374	377
Approved Total Transmission (MUs)	15153	16963	17930
Transmission Loss %	4.00%	5.00%	4.50%
Approved Transmission Tariff (Paisa/KWh)	**21.99**	**22**	**21**
Transmission charges for Long Term open access customers (Rs./MW/Day)	5278.42	5200	5040
Transmission charges for Short Term open access customers (Rs./MW/Day)		1300	1260

A-18. Punjab

Introduction

The Punjab State Electricity Board (PSEB) operates as a bundled utility in the state of Punjab. Punjab State Electricity Regulatory Commission (PSERC) is the apex body in the State for approval of tariff petitions filed by PSEB as per the Terms and Conditions for Determination of Tariff. The Tariff Order of FY 09 is the 7th Tariff Order of the Commission. The previous Tariff Order for FY 08 was a suo-moto Tariff Order. The Commission has also come out with the true up orders for FY 05, FY 06 and FY 07. The state has not shifted to Multi Year Tariff (MYT) method of tariff filling as yet.

Generation

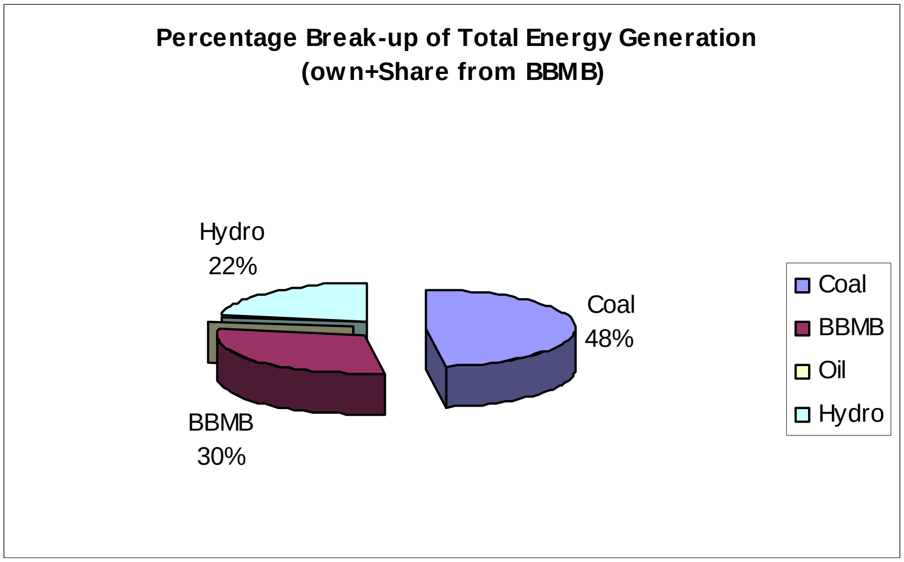
Punjab has four thermal stations and five major hydro stations. The thermal plants of Punjab are considerably old and therefore the plant load factor is low. Punjab has a total generating capacity of 3118.85 MW (excluding its share from BBMB) and has not added any capacities (since FY 05) to it. The table below gives detail about the plant wise fuel used and generating capacity for FY 09.

Table A-18.1: Plant Wise fuel used and generating Capacity for FY 09

Name of the Station	Fuel	Station Capacity (MW)
GNDTP, Bhatinda	Coal	440
GGSTP, Ropar	Coal	1260
GHTP, Lehra Mohabbat	Coal	420
Shanan	Hydro	110
UBDC	Hydro	91.35
RSD	Hydro	452.4
MHP	Hydro	207
ASHP	Hydro	134
Micro Hydel	Hydro	4.1
Total Own Generation Capacity		**3118.85**

Of the total generation capacity, 2120 MW is coal based while 998.95 MW is generated through Hydro-power plants. Punjab has a capacity share of 1330.35 MW in the BBMB project.

Graph A-18.1: Generation Mix of PSEB



Plant Load Factor

The Commission has arrived at the PLF of the individual station based on the repair and maintenance schedule and the PLF of the plants in the past 3 years. Wherever possible the Commission has tried to align with the operational parameters specified by the CERC in respected of thermal plants. From the year 2006 onwards, the Commission has considered the average of past 3 years for approving the current year PLF.

Table A-18.2: Approved and actual Plant Load Factor of each station

Years	FY 05	FY 06	FY 07	FY 08	FY 09
Stations/Units	Approved Plant Load Factor				
GNDTP, Bhatinda	52.95%	57.60%	59%	72%	66%
GGSTP, Ropar	78.02%	78.26%	78.85%	86.16%	90%
GHTP, Lehra Mohabbat	79.96%	83.96%	85.29%	87.85%	94%

Auxiliary Consumption

The Commission has consistently followed the CERC norms for assessing auxiliary consumption. For the FY 05, the Commission approved the auxiliary consumption at the levels actually achieved during FY 04. CERC has not specified any norm for 110 MW unit, therefore, Commission allowed auxiliary consumption for GNDTP at 11.00% in line with CERC norm for the Tanda station of NTPC, which like GNDTP has 4 units of 110 MW each. For the period FY 06 to FY 09, Commission followed the CERC norms. The table below gives detail about the auxiliary consumption proposed, approved and actual (trued-up).

Table A-18.3: Approved, Proposed and Trued-up Auxiliary Consumption

Years	FY 05	FY 06	FY 07	FY 08	FY 09
Stations/Units	**Approved Auxiliary Consumption**				
GNDTP, Bhatinda	9.54%	11.00%	11.00%	11.00%	9.1% (I&II) and 11%(III &IV)
GGSTP, Ropar	8.33%	8.50%	8.50%	8.50%	8.50%
GHTP, Lehra Mohabbat	8.91%	9.00%	9.00%	9.00%	9.00%
Stations/Units	**Proposed Auxiliary Consumption**				
GNDTP, Bhatinda	11.00%	12.40%	12.20%	11.50%	11.00%
GGSTP, Ropar	9.34%	9.34%	8.64%	8.50%	8.60%
GHTP, Lehra Mohabbat	9.61%	9.60%	9.35%	9.00%	9%(stage I) &9.50% (stage II)
Stations/Units	**Actual Auxiliary Consumption**				
GNDTP, Bhatinda	9.54%	11.00%	11.38%		
GGSTP, Ropar	8.33%	8.50%	8.38%		
GHTP, Lehra Mohabbat	8.91%	9.00%	8.80%		

Station Heat Rate

The Commission has analyzed the heat rates of the Central Generating Stations and other thermal generating stations of similar vintage. For the FY 05 the Commission approved the SHR based on actuals for GNDTP and GHTP during FY 04. From the FY 06 onwards, the Commission has adopted CERC norms but in case of GNDTP having 110 MW units, the Commission has approved the projections made by the Board as applicable CERC norms were not available. The table below gives detail about SHR approved by Commission for the thermal stations of Punjab.

Table A-18.4: Approved SHR of each station (Kcal/kWh)

Stations/Units	FY 05	FY 06	FY 07	FY 08	FY 09
GNDTP, Bhatinda	2837	2770	3000	3000	3000
GGSTP, Ropar	2500	2500	2500	2500	2500
GHTP, Lehra Mohabbat	2402	2500	2500	2500	2500

Gross and Net units Generated

After factoring the above mentioned parameters, the Commission has approved the gross and net generation of PSEB from its own generation plants (thermal and hydel). The table below summarizes the plant-wise gross and net generation approved by the Commission during FY05 to FY09.

Table A-18.5: Gross and Net generation (MUs)

Stations/Units	FY 05	FY 06	FY 07	FY 08	FY 09
GNDTP, Bhatinda	1982	2220	2281	2769	2546
GGSTP, Ropar	8895	8638	8703	9510	9886
GHTP, Lehra Mohabbat	3179	3089	3138	3542	6127
Shanan	434	502	516	529	507
UBDC	328	380	400	446	432

Stations/Units	FY 05	FY 06	FY 07	FY 08	FY 09
RSD	1190	1309	1281	1568	1612
MHP	791	997	879	1026	1074
ASHP	628	696	656	642	587
Micro Hydel	8	10	8	7	6
Gross Generation	**17435**	**17841**	**17862**	**20039**	**22777**
Auxiliary Consumption	1329	1396	1359	1591	1803
Net Generation (Own)	**16106**	**16445**	**16503**	**18448**	**20974**
BBMB	3469	4507	4248	4358	4327
Net Generation (Own +BBMB)	**19575**	**20952**	**20751**	**22806**	**25301**

Fuel Costs

Coal: The weighted average price of coal (excluding transit loss) and weighted calorific value of coal actually obtained during FY 04 was considered by the Commission for estimating the cost of fuel for the three stations in FY 05. The Commission allowed a 9% increase in the coal price including the freight charges actually obtained for FY 04 for 9.5 months. The 9% increase allowed was on account of revision of pit head price of coal by Coal India Limited. For the FY 06, the Commission incorporated the increase in the railway freight charges to the fuel cost of FY 05. For FY 07, the Commission has worked out the price of the Indian coal and imported coal separately. The price of Indian coal and the imported coal was considered at the value actually obtained during first half of FY 06. For FY 08, price of coal was considered at the same level as that of FY 07. In working out the cost of coal for the FY 09, the Commission had considered the price and calorific value of coal as validated for the FY 08. The Commission has approved that the Board can pass on the change in fuel cost as Fuel cost adjustment with prior approval of the commission. A comparison of the approved and claimed fuel cost is summarized in table below.

Table A-18.6: Approved, and Claimed Total Fuel Cost

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved (Rs. Crs)	2072.95	2176.19	2258.15	2404.28	2742.62
Claimed by Petitioner (Rs. Crs)	1910.83	2334.05	2316	2921.7	2977.72
Approved Fuel cost Rs./kWh (Net)	1.06	1.04	1.09	1.05	1.08
Projected Fuel cost Rs./kWh (Net)	1.18	1.49	1.42	1.54	1.46

Till FY 07, the Board did not provide the generation tariff separately and determined only the combined costs. However, from the FY 08 onwards, the Commission has calculated the total energy charge for different stations following the CERC regulations of determining generation tariff. The table below gives details about the annual capacity charges or fixed charges of thermal and hydel plants.

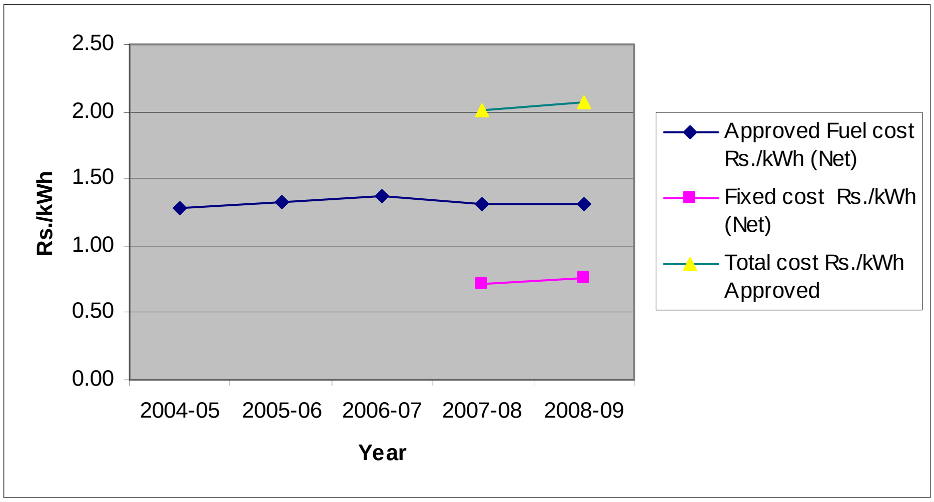
Table A-18.7: Approved Annual Fixed Charges – Generation (Rs. Crs)

Particulars	FY 08	FY 09
Thermal plants	745.67	933.66
Hydel Plants*	872.02	996.17

** The capacity charges of hydel plants include capacity charges of BBMB.*

The figure below shows the approved fuel cost for the period FY 05 to FY 09 and fixed cost and total cost for FY 08 and FY 09.

Graph A-18.2: Approved, Fixed and Total Fuel Cost



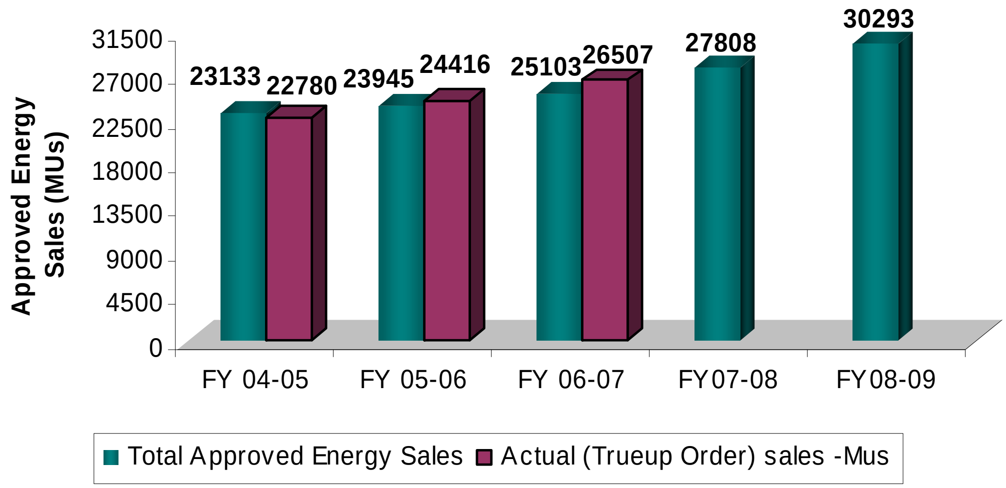
Demand / Sales Estimation

Punjab is an agrarian state and has mainly un-metered agricultural consumption. Domestic and large supply is the next major categories in terms of energy consumption after agriculture.

The Commission has consistently taken CAGR of energy sales for past 3 years while approving the sales of the current year for each metered category. A case in point, for approving the sales of FY 08, the Commission applied 3 years CAGR (FY 03 to FY 06), on approved sales for the FY 07.

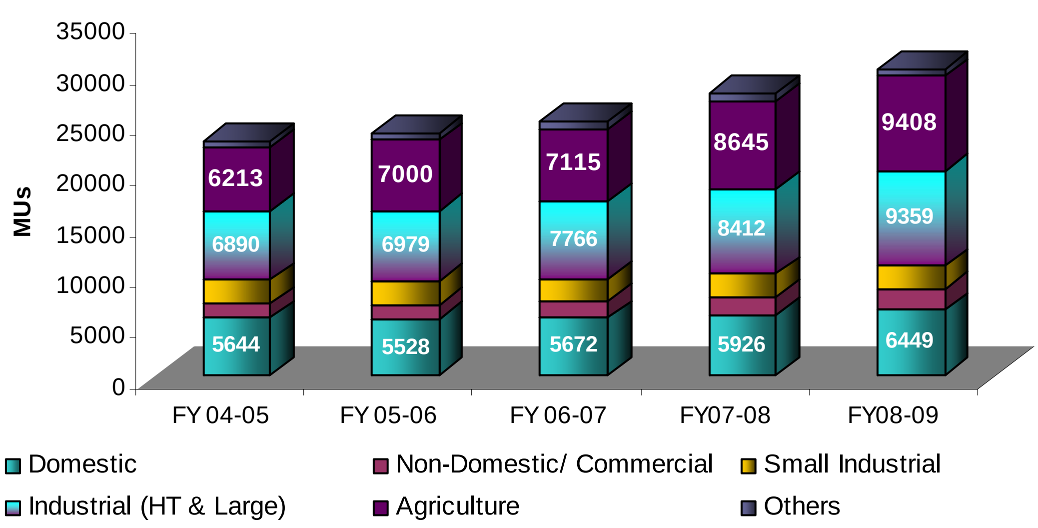
Unlike the energy supplied to other consumers, the supply to the agricultural pump sets is almost entirely un-metered in the state of Punjab. For Agricultural sales during the FY 05 the Commission had approved a consumption based on the norm of 1700 kwh/kw/year. The Commission had earlier fixed the norm of 1650 kWh/kw/year for determining agricultural consumption, but as the year 2004 was a monsoon failed year the Commission adopted 1700 kwh/kw/year as the norm. For the FY 06, the Commission allowed a reasonable increase over the approved sales of previous year. For the FY 07, the Commission accepted the projections of the board and for the years FY 08 and FY 09 Commission applied the growth rate of 5% on the agricultural sales approved for previous year. The Commission while approving the agricultural sales for FY 08 and FY 09 had considered the non-functioning of sample meters, average per day supply for agricultural consumers and new connections to be released. The graph below shows the trend in the energy sales approved by the Commission vis-à-vis that trued up for the period FY 05 to FY 09.

Graph A-18.3: Approved Energy sales MUs



The major share in the energy sales in the past five years from FY 05 to FY 09 has been that of the agriculture and industrial (large and HT) consumers. The two categories together accounted for about 62% of the total energy sales. Both agriculture and industrial large have shown an increasing trend in sales. The share of domestic categories is next only to agriculture and industrial and is witnessing an year-on-year downward trend in percent contribution to total sales. The figure below shows the absolute share of energy sales for different consumer categories in the total sales as approved by the Commission for respective last five years.

Graph A-18.4: Category-wise approved sales for PSEB

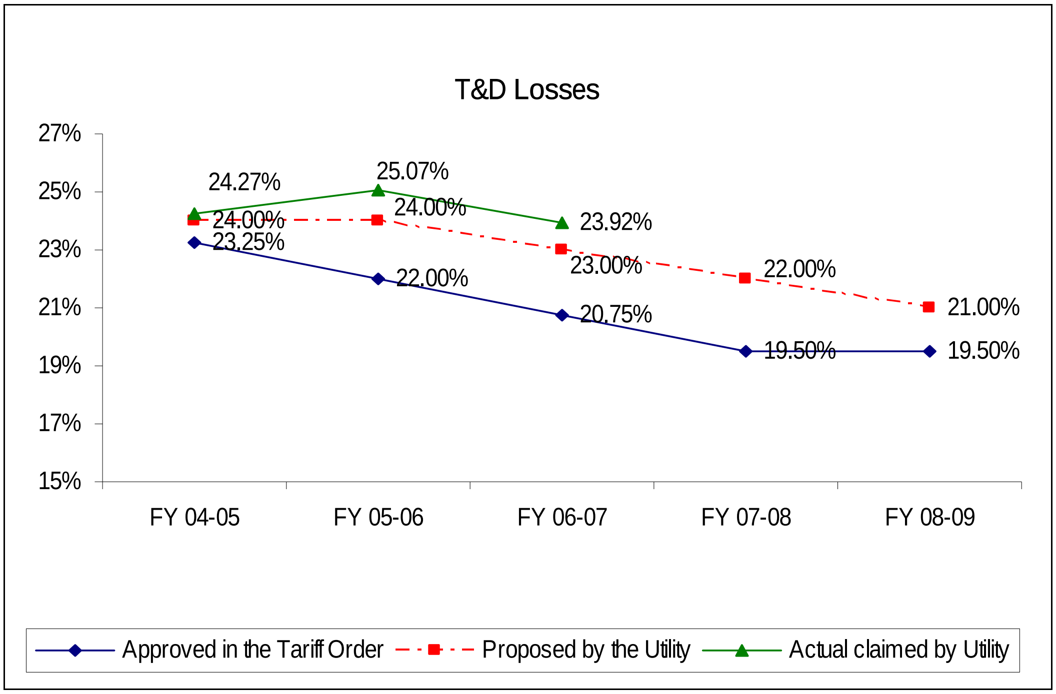


A review of actual energy sales as established during true-up for FY 05 to FY 07 vis-à-vis the energy sales as approved by the Commission for the respective years shows some level of underestimation of sales by the Commission.

T&D Loss

In the state of Punjab ascertaining T&D loss is a complex issue because the state has large un-metered agriculture consumption. There has never been convergence of the targets set by the board and Commission for T&D loss levels. One of the main reason of deviation for T&D setting is the changing approach and norm for ascertaining the agriculture consumption.

Graph A-18.5: Approved, Proposed & Trued-up T&D Losses for PSEB



For the FY 05, considering the Agriculture consumption norm of 1700 kwh/kw/year, the agriculture sales were estimated at 6213 MUs and target for T&D losses fixed at 23.25%. The Commission also fixed the loss reduction target at 1.25% every year for next 3 years. The Commission continued following the loss reduction trajectory as approved in the Tariff Order of FY 05 and has therefore approved T&D loss targets at 22% for FY 06, 20.75% for FY 07, and 19.50% for FY 08. Though the trajectory ended in FY 08 without the targets set having been achieved, but Commission had retained a T&D loss level of 19.5% for the FY 09. The Commission observed that the reduction of losses as determined by the Commission was achievable and the fact of the Board being unable to do so should be no occasion to penalize the consumers of the State.

The Commission in its Tariff Order for FY 09, reiterated that it will assess the overall strategy of the Board in reducing such losses and its implementation and then take a view on determining the trajectory for further reduction of T&D losses. In the true–up orders, the Commission has stuck to its stance of T&D targets and retained the originally approved targets.

Table A-18.8: T&D Losses for the period FY 05 to FY 09

T&D Losses	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	23.25%	22.00%	20.75%	19.50%	19.50%
Proposed by the Utility	24.00%	24.00%	23.00%	22.00%	21.00%
Trued up by SERC at the end of year	23.25%	22.00%	20.75%		

The Commission has disapproved expenses on account of high T&D losses in the true up order. The Commission observed that the financial burden as measured by the consequential additional power purchase on this account should not be passed on to the consumers and should be borne by the Board. The table 3 below gives detail about the expenses disapproved from FY 05 to FY 07.

Table A-18.9: Expenses disapproved on account of higher T&D loss

Particulars	FY 05	FY 06	FY 07
Expenses Disapproved (Rs.Crs)	110.49	326.2	487.33
Increased power purchase (MUs)	528	1417	1546

Components of Annual Revenue Requirement

Power Purchase Quantum

The main sources of power purchase are CGS (NTPC, NHPC, NJPC, and NPC), BBMB, Independent power producers (IPP), and Bilateral purchase from other states The Power Purchase Agreements (PPA) are assigned to the PSEB itself as PSEB is currently operating as a bundled utility.

For estimating the total power availability in a year, the generation from Central Generating Stations (CGS) for each of the year since FY 05 to FY 09 has been considered by the Commission on the average energy sent out during immediately preceding three years. A case in point, for approving the power purchase for FY 06, the Commission had considered the average energy sent out for three years (FY 02, FY 03 and FY 04) for computing the total energy availability from different central generating stations. Further, Commission considered average actual share allocation of the Board for three years (FY 02, FY 03 and FY 04) for determining total energy entitlement from NTPC and NPC stations. For Hydro (NHPC) stations the Commission had considered firm share allocation of Board.

The Commission has provisionally accepted the projection of the Board for purchase of power through banking from other states subject to finalization during true-up order. The Commission has also provided for power purchase from traders.

Surplus energy to the tune of 807 MUs, 741 MUs, 961 MUs, 1127 MUs and 2339 MUs was approved for respective years from FY 05 to FY 09 by the Commission for outside state sale. In the true up exercise the Commission finally approved the surplus sales of 669 MUs, 848 MUs, 1149 Mus for FY 05, FY 06 and FY 07 respectively.

The own generating stations of the Board, nuclear stations, co-generating plants and purchases from other sources through bilateral contract etc was not considered in the merit order by the Commission.

The Commission has separated Intra & Inter State losses for computing the net energy available to PSEB from FY 05 to FY 09. For the FY 05, Commission took the actual external loss of 3.18%, in the northern region for the 1st quarter of FY 05. Subsequently, the approach for determining loss kept changing in terms of time period considered. In the FY 09, the Commission considered external losses at a weighted average of 4.63% based on the actual losses in FY 07.

Table A-18.10: Approved Power Purchase Mix for the period FY 05 to FY 09

Source of Power Purchase	FY 05	FY 06	FY 07	FY 08	FY 09
BBMB	23%	29%	26%	25%	22%
NHPC	15%	15%	13%	13%	13%
NTPC	32%	32%	35%	38%	40%
NJPC	4%	5%	4%	4%	3%
NPC	4%	4%	6%	4%	5%
Banking	3%	3%	1%	4%	4%
Cogeneration	1%	1%	1%	2%	1%
Tehri	0%	2%	2%	2%	1%
Private Micros	0%	0%	0%	0%	0%
Grid Power/Market Purchase	18%	10%	11%	7%	10%
Other sources	0%	0%	0%	2%	0%
Total	100%	**100%**	**100%**	**100%**	**100%**

Power Purchase Cost

As mentioned above, the PSEB purchases power from Bhakra Beas Management Board (BBMB), Central Generating Stations of NTPC, NHPC, NJPC and NPC, Power Trading Corporation and through Bilateral Purchases from other States.

The Commission while approving cost of power from NTPC CGS in FY 05 had considered the fixed charges based on NTPC Bills for March, 2004 and the variable charges were approved equal to the variable cost per unit for FY 04 in respect of NTPC Stations. The cost of power purchase from NHPC was based on actual bills for FY 05 based on the orders issued by CERC for the NHPC stations. Commission approved the variable cost in respect of NHPC stations at 68 Paisa/kWh but limited it to annual capacity charge as per the CERC regulation which states that recovery through primary energy charge shall not be more than annual capacity charge. The tariff for NPC stations (NAPP and RAPP stations) had been considered by the Commission in accordance with the notified tariff.

The fixed charges for the NTPC stations for FY 06 and FY 08 was considered as per NTPC bills for September 2004 and March 2007 respectively. The annual fixed charges for FY 09 considered as per respective CERC orders in which AFC have been determined for the 5 year period from 01.04.2004 to 31.03.2009. For the period FY 06 to FY 09, the Commission approved the variable cost of NTPC stations as per NTPC bills for September/March of the previous year.

For approving the cost for NHPC stations for FY 07 to FY09, the Commission had considered the actual rate for primary energy in respect of purchases from NHPC stations as per the bills of March/September of the previous year. The Commission specified the power purchase rate for Tehri at Rs. 3.00 / kWh for FY 05 and Rs.3.49/kwh for FY 06, Rs.3.60/kwh for FY 07, Rs.3.28/kwh for FY 08 and Rs. 2.50/kwh for FY 09.

In addition, the Commission had approved market purchase from PTC/NVVNL for the period FY 05 to FY 09 to meet the deficit in the state. The Commission had approved the average rate for such purchases based on the actual average rate of power purchase from traders in the previous year/ past months. However, in the Tariff Order for FY 08, Commission had approved 1256 MUs from traders at an average rate of Rs. 5.34 /kwh. The Commission had considered the average rate proposed by the Board for FY 08 based on the large quantum of 2036 MUs of power purchased under UI during the FY 07. For the FY 09, Commission had approved 898 MUs at the rate of Rs. 5.45/kwh.

The Commission had approved the rates for banking which were applicable for the purchase of power during summer and sale of power during winter from HPSEB, J&K and UPCL.

The Commission all through from FY 05 to FY 09 has shown the income form such surplus sale under the head total revenue from the tariff, and has not deducted it from gross power purchase cost in determination of ARR.

Transmission Charges payable to PGCIL

The Commission has approved the PGCIL charges proposed by the Board every year. The PGCIL charges for the FY 07 for the power purchase of 12350 MU were approved at Rs. 165.00 Crs. For the FY 08 these charges were Rs.175.53 Crs for power purchase of 13401 MUs. For the FY 09 these charges were Rs.172.44 Crs for 15381MUs.

Table A-18.11: Power Purchase Cost for FY 06 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Power Purchase Cost (Rs. Crs)	2171	2260	2813	3410	4186
Net Power Purchase (Mus)	11372	10488	11886	12865	14669
Power Purchase Cost per unit (Rs./kwh)	**1.91**	**2.15**	**2.37**	**2.65**	**2.85**

(* The Power Purchase doesn't exclude sales outside state. Net Power Purchase refers to Purchase after excluding Transmission loss.)

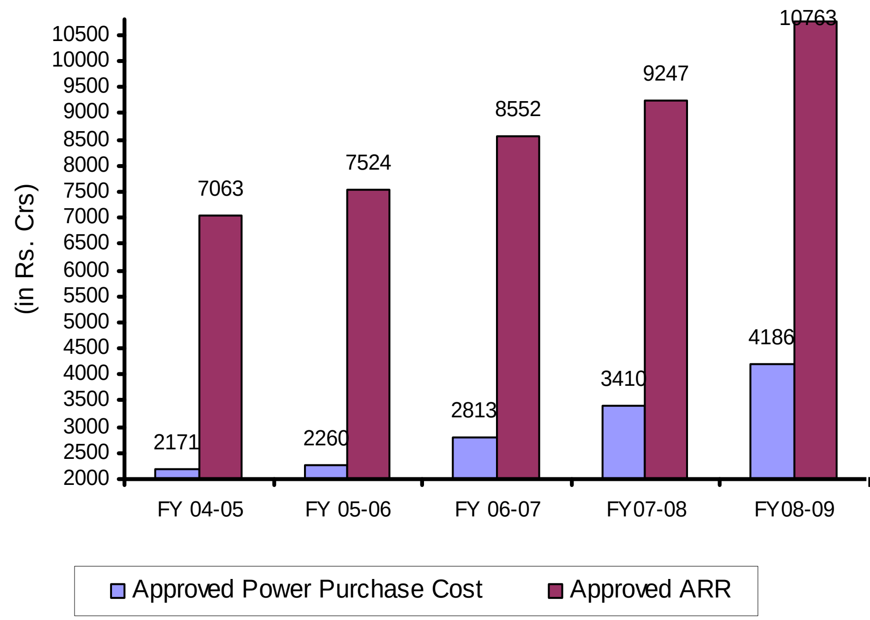
The Commission while truing up the power purchase cost had disallowed the additional energy purchased by the Board on account of higher T&D losses. The table below shows the approved and trued up power purchase cost .There is a high degree of variance between the approved cost and trued up cost. Also the per unit power purchase cost has risen sharply (33% in FY 07).

Table A-18.12: Approved vs. Trued-up Power Purchase Cost

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Power Purchase Cost (Rs. Crs)	2171	2260	2813	3410	4186
Actual Power Purchase Cost (Rs.Crs)	2281	2405	4327		
Disallowance of Power Purchase on account of T&D Loss (Rs. Crs)	110.49	326.20	487.33		
Trued-up Power Purchase Cost	2171	2079	3840		
Actual Power Purchase Cost per unit (Rs./kwh)	2.09	2.30	3.15		

The Commission while doing the true-up for the FY 05 to FY 07 has allowed the incentive to the Board on higher thermal generation. The Commission had allowed incentive of Rs. 15.71 Crs, Rs. 48.04 Crs and Rs. 185.35 Crs for FY 05, FY 06 and FY 07 respectively. The figure below shows the trend of approved power purchase cost versus the approved annual revenue requirement from FY 05 to FY 09.

Graph A-18.6: Power Purchase Cost



Operation and Maintenance

The Commission has been approving employee cost, R&M and A&G cost separately for all the years (FY 05 to FY 09) for PSEB. The approach followed by the Commission in approving each of the O&M cost parameters in the past five Tariff Orders is discussed below.

Employee Cost

The employee cost has always been a contentious issue between the Board and commission. The Commission has time and again asked the Board to bring down its employee cost. The Commission has consistently during each year has disallowed more than 10% of the projected employee cost. For the FY 05, the employee expenses including salaries, dearness allowance, other allowances, staff welfare expenses and terminal benefits etc. had been capped at Rs.1274.66 Crs and the Commission suggested that the Board should cover up the shortfall through internal efficiency measures and reduction of costs.

For the FY 06, the Commission allowed a cumulative increase of 15.61% over the capped employee cost that was approved in FY 03. For the FY 07 the Commission as per the PSERC (Terms and Conditions for Determination of Tariff) Regulations, 2005 took O&M expenses including employee cost approved by the Commission for the FY 06 as the base expenses for determination of O&M expenses for the FY 07. As per regulations, the base was to be adjusted according to the annual variation in the rate of WPI. As the WPI for FY 06 was not available, the Commission had adopted the WPI of FY 05 and then worked out the employee expenses for FY 07. For the FY 08, the Commission had considered the cost of FY 07 as the base cost and then applied the WPI of FY 07 on it to determine the employee cost. For the FY 09, similar approach had been followed by the Commission.

Table A-18.13: Employee expenses as a percentage of total ARR

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total ARR (Rs. Crs)	7062.6	7523.54	8551.87	9247.45	10762.97
Employee expenses (Rs. Crs)	1274.66	1473.63	1559.04	1661.41	1773.55
Employee expenses as %age of Total ARR	18%	20%	18%	18%	16%
Employees cost Per unit of Energy Sale (Rs/kWh)	0.55	0.62	0.62	0.60	0.59

During the True-up, variation was allowed only for the increase in WPI for the year. The table below gives details about the projected, approved and trued–up employee cost.

Table A-18.14: Projected, approved and trued up employee cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Projected employee expenses	1955.4	1700	1803	1,973.00	2225.01
Approved Employee expenses	1274.66	1473.63	1559.04	1661.41	1773.55
Trued up Employee expenses	1274.66	1461.78	1558.4		

Repairs and Maintenance (R&M)

For the FY 05, Commission had considered the past trends for determining the R&M expenditure, assuming an inflation factor of 6%. For the rest of the period, Commission has allowed the annual increase based on increase in WPI over the O&M expenses approved by the Commission for the previous year. The Commission has taken the R&M of the previous year as base and has approved the current year's expense with an escalation factor equal to WPI increase of the previous year.

Table A-18.15: Approved R&M expenses and R&M expenses as a percentage of ARR

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
R&M Expenses (Rs. Crs)	197.1	265	263.35	271.35	323.19
Total ARR (Rs. Crs)	7062.6	7523.54	8551.87	9247.45	10762.97
R&M Expense as a % age of ARR	3%	4%	3%	3%	3%
Trued up R&M Expenses (Rs. Crs)	224.19	238.75	259.99		
True-up as a % of Approved	114%	90%	99%		

The Commission has approved R&M expenses without major variations from those projected by the Board. They have largely been in the range of 1.8 to 2% of the gross GFA. The table above gives detail about the trued up R&M which is broadly in the range of + -20%.

Administrative and General Expenses (A&G)

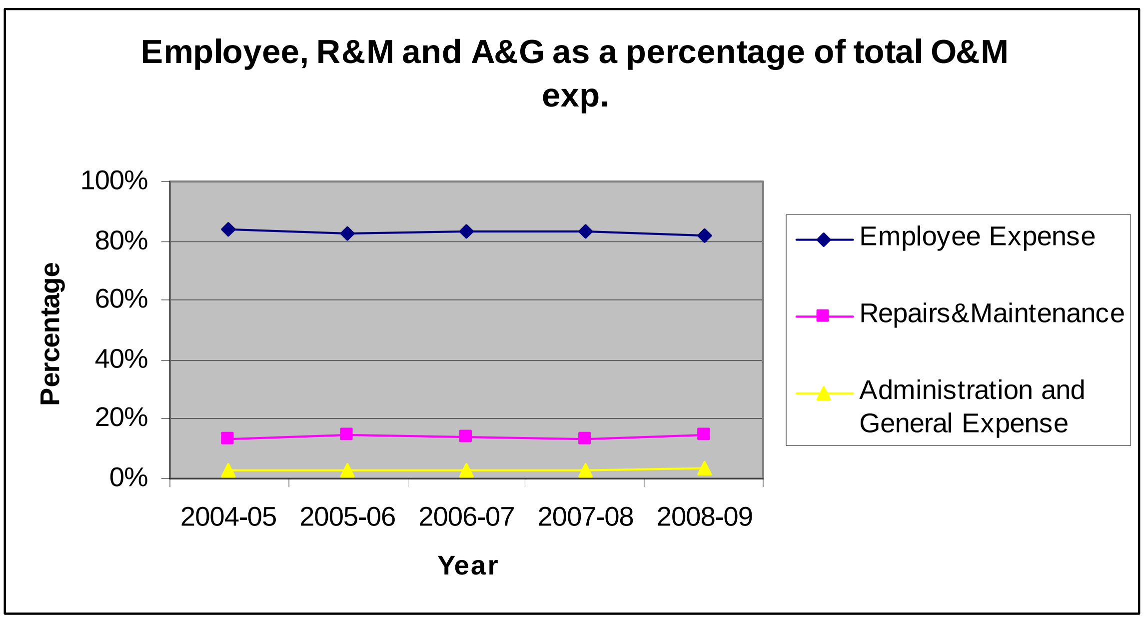
The Commission has consistently all through from FY 05 to FY 09 has followed the approach of considering the A&G expenses of the previous year as base and has then applied an escalation factor equal to the inflation for the current year to approve the current year's administrative expenses. The table below gives detail about the administrative expenses of PSEB and summary of the O&M expenses.

Table A-18.16: Summary of O&M expenses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	**1514.99**	**1788.94**	**1880.23**	**1995.17**	**2176.03**
Employee Expense	1274.66	1473.63	1559.04	1661.41	1773.55
R&M expenses	197.1	265	263.35	271.35	323.19
A&G Expenses	43.23	50.31	57.84	62.41	79.29
Actual Claimed O&M (PSEB)	2198.1	2020	2151	2356.07	2713.65
Total Trued-up O&M	**1551.15**	**1755.44**	**1878.2**	---	---

The figure below illustrates the percent share of components in the total O&M cost.

Graph A-18.7: Employee, R&M and A&G as a percentage of total O&M expenses



Depreciation

For FY 05, the Commission had approved the depreciation projected by the Board. The depreciation for the rest of the years has been worked out on the basis of function-wise depreciation rates determined for the previous year. The depreciation amount has been determined by applying depreciation rate on opening gross block.

In FY 08 and FY 09, the Commission arrived at the percentage rate of depreciation by taking the figures of depreciation charges from the audited accounts for the previous year. The table below gives details about the depreciation expense.

Table A-18.17: Depreciation and Opening GFA (Rs. Crs)

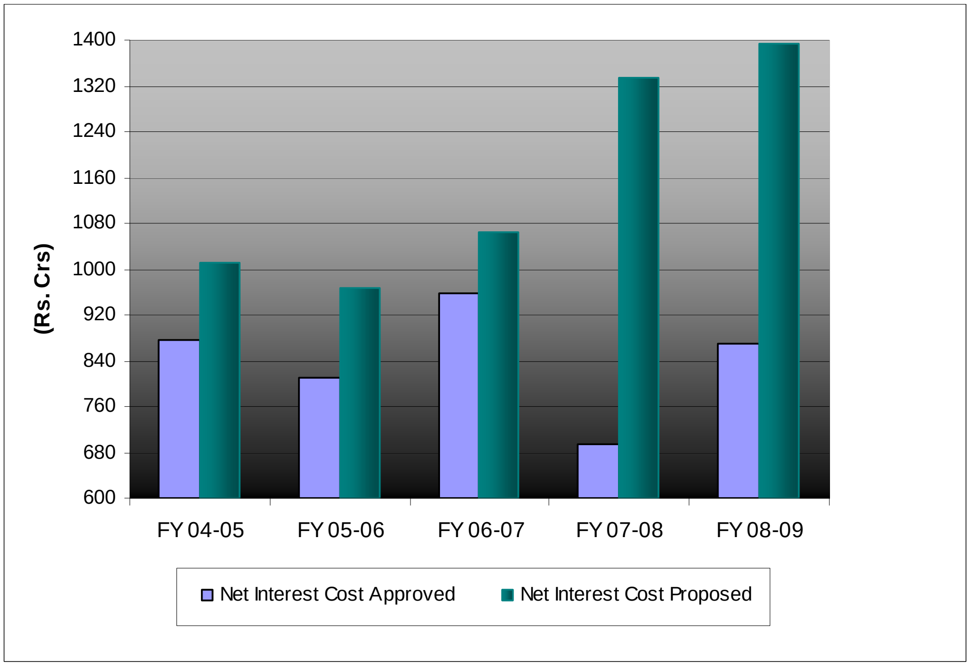
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
GEA at the beginning of the year	13402.08	13901.35	14695	16072.98	18256.81
Depreciation Approved	576.12	621.77	649	696.82	783.34

Interest on Loans

The interest cost is the sum of interest on short term, long term and government loans and finance charges. Interest on consumer deposits has also been considered as part of finance charges.

In the FY 05, the Commission had disallowed the interest of Rs.100 Crs on account of diversion of capital funds by the Board for revenue expenditure. While calculating the interest cost on the fresh borrowings, Commission had made adjustments for consumer contribution. The interest on government loans was offset against the subsidy to be given to Board on account of agriculture and SC category free power. The commission, following the principle of capitalization of interest cost in the ratio of net work-in-progress to total capital expenditure approved the capitalization as was proposed by the board. This approach of capitalization was followed year on year.

Graph A-18.8: Interest Cost Approved and Proposed



The Commission has time and again suggested the Board to restructure the government loans. In the FY 06, the Commission approved the same interest on government loans as in the previous year. However, the interest on government loans was offset against the balance subsidy payable by the government to the Board. Further, the Commission had disapproved the interest cost to the tune of Rs. 100 Crs on diversion of funds.

The same approach has been followed for approving the interest cost by Commission for the period FY 07 to FY 09. The amount of Rs 100 Crs has been consistently disallowed by the Commission in each of the years. In the FY 09, the Commission allowed an additional amount of Rs. 102.15 Crs on account of interest on the approved gap for the FY 07 and FY 08 which were Rs. 84.06 Crs and Rs.18.09 Crs respectively.

Rate of Return

For the years FY 05 and FY 06, the return was based on the net fixed assets at the beginning of the year. The net fixed assets have been calculated by adjusting gross opening fixed asset for accumulated depreciation and consumer contribution. The Commission has then allowed return at the rate of 3% on Net fixed assets.

From the FY 07 onwards, the Commission allowed ROE at the rate of 14% p.a. on opening equity capital. As per the PSERC (Terms and conditions) Regulations, 2005 Return on Equity was to be computed on the paid up equity capital determined in accordance with the CERC regulations. The Commission observed that PSEB is running in losses and the return on equity cannot be denied as it will only push PSEB into further losses.

The equity of Rs. 2946.11 Crs was determined as on April 1, 2006 and it worked out at 25.72% which was within maximum limit of 30% as per CERC regulations. The Commission had approved return on equity of Rs. 412.46 Crs for each year between FY 07 and FY 09. The table below gives a snapshot of the parameter of return, percentage and base used for calculation.

Table A-18.18: Snapshot of Return Allowed

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Parameter for Rate of Return	Net Fixed Assets	Net Fixed Assets	ROE	ROE	ROE
Percentage	3%	3%	14%	14%	14%
Base on which calculated (Rs. Crs)	7123.37	6852.45	2946.11	2946.11	2946.11

Capital Expenditure

The Commission has encouraged requirement of capital expenditure for providing uninterrupted and reliable power supply. Accordingly, the Board has been projecting a high capital expenditure year on year though the actual expenditure has largely been much less than the projected capital expenditure.

The commission, therefore uniformly across all the years, has considered the actual expenditure made in the previous years to arrive at the current year's capex. The Commission has then approved the capex after making adjustment for consumer contribution.

Working Capital

The Commission has approved the normative working capital based as per PSERC Tariff regulations. The Commission has arrived at working capital by considering one month Fuel Cost, one month Power Purchase Cost, one month Employee Cost, one month A&G Expenses, and one month R&M Expenses. Interest on working capital is based on the SBI PLR applied on working capital approved by the commission.

Bad and Doubtful Debts

The Commission had allowed the bad and doubtful debts at the time of truing up of FY 07. The Commission in the Tariff Order for FY 09 mentioned that bad and doubtful debts expenditure would be considered on actual basis in the true up exercise after audited accounts become available

Annual Revenue Requirement

The Annual Revenue Requirement as approved by the Commission and later trued-up vis-à-vis that proposed by the PSEB in the tariff petition is given in table below.

Table A-18.19: Proposed, Approved, Trued up ARR (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Proposed by the Board	7856.88	9364	9460	11499	13513.99
Approved by the Commission	7063	7524	8552	9247	10763
Disallowance in the order	10%	20%	10%	20%	20%
Trued-up ARR by the Commission	7117	7890	9310.87	-----	-----
True-up as percentage of	101%	105%	109%	-----	-----

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					

The ARR has been arrived at by adjusting gross ARR for non- tariff income. As can be seen above, the Commission has been prudent and accurate in its approval of ARR.

The revenue gap or surplus as determined by the Commission for each of the year from FY 05 to FY 09 is given below in Table. The broad approach followed by the Commission in treatment of consumer tariff and subsidy support from government has been discussed in detail in the subsequent sections.

Table A-18.20: Approved Gap /Surplus for FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Gap / Surplus at existing Tariff for the year (Rs.Crs)*	262	(500)	(281)	(87)	468
Cumulative gap considered* (Rs.Crs)	438	(769)	(8.81)	(423.78)	(249.64)
Consumer Tariff	Decrease	Increase	Same	Increase	Increase
Cross Subsidy	Decrease	Same	Same	Decrease	Decrease

** The numbers enclosed within parenthesis represent revenue deficit*

Tariff Determination

The Commission has followed single part tariff structure. The Board had time and again appealed for two part tariff but the Commission did not approve and directed the Board to submit a detailed and justified proposal.

The Commission has worked out total revenue realized from each category of consumers under three categories (a) Revenue from Sale of Electricity (b) Revenue from PLEC, MMC etc. and (c) Revenue from Other Income.

The Commission while approving the consumer tariff for the period FY 05 to FY 09 has considered the following parameters:

- Average Cost of Supply
- Recovery of the cost of electricity in a reasonable manner
- Reduction and elimination of cross subsidies

The Commission has defined a road map for reduction of cross subsidy prevalent in the consumer categories and further divided the roadmap into two phases. In the first phase, the Commission shall determine tariff so that it progressively reflects combined average unit cost of supply and the cross subsidy is eliminated over a period of 10 years from the date of issue of PSERC Tariff Regulations. In the second phase, the Commission shall consider moving towards the category-wise cost of supply as a basis for determination of tariff.

The Commission has consistently followed the approach laid down in the first phase while determining the consumer tariffs in the state.

In the FY 05, Commission had approved revenue surplus and proposed to reduce the tariff for the year. The tariff was reduced for later half of the year applicable October onwards. The tariffs were reduced substantially for each category of consumers. The reduction was quite substantial for subsidizing categories and over 8% for NRS, LS, Bulk Supply, Railway Traction and Public Lighting categories. There was marginal increase in case of AP, lowest slab of domestic consumers and SP. The Commission also decided to give concession of 10% in tariff on consumption of electricity to the domestic category of consumers located in rural areas. This concession was allowed to them in view of the substantially poor quality of supply. The cost for the same was adjudged at Rs.65 Crs.

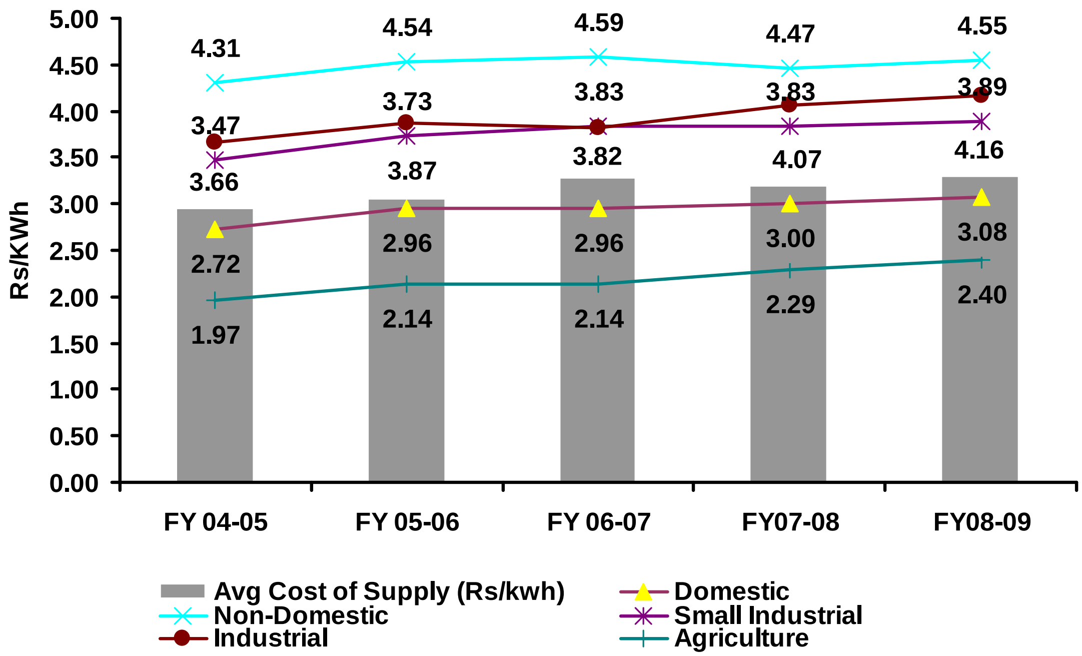
In the FY 06, the Commission approved the revenue gap and therefore increased the tariffs by an average of 10.27%, the MMC was also raised in the same proportion. The cross subsidy percentage was same as that of previous year. The 10% concession for domestic category of consumers located in rural areas approved in the previous year was withdrawn .The cross subsidy to the tune of Rs. 893.70 Crs was generated in the year, this cross subsidy was determined at the revised level of tariff.

In the FY 07, the Commission observed that the gap was only about 0.1% of the total revenue requirement of the Board and further the cross subsidy levels prevalent in the system had already been reduced substantially consequent to the last four Tariff Orders of the Commission. Therefore, Commission continued with the existing level of tariffs for all the consumer categories. The cross subsidy generated was to the tune of Rs. 1088.21 Crs.

In the FY 08, the Commission had segregated the tariffs on the basis of the three functions viz. Generation, Transmission and Distribution. Return on Equity was allocated based on the value of Fixed Assets of each function and the consolidated gap upto FY 07 was allocated to each of the functions to arrive at the consolidated ARR for FY 08.The generation tariff comprised of Annual Capacity (Fixed) Charges and Energy (Variable) Charges, and then total energy charges was calculated for each plant per unit. The transmission tariff was also determined based on the Charges for use of the Network, Operation Charges and Reactive Charges. The distribution/wheeling charges were calculated based on the Terms and Conditions for Determination of Tariff Regulations, 2005. The Commission, in order to reduce cross subsidy has increased tariff for the first slab of Domestic Supply consumers by 8.4% and for AP consumers by about 12%, for rest of the consumer categories increase was pegged at 7%. Cross subsidy to the tune of Rs. 1241.13 Crs was generated thus leaving a marginal surplus of Rs. 2.43 Crs.

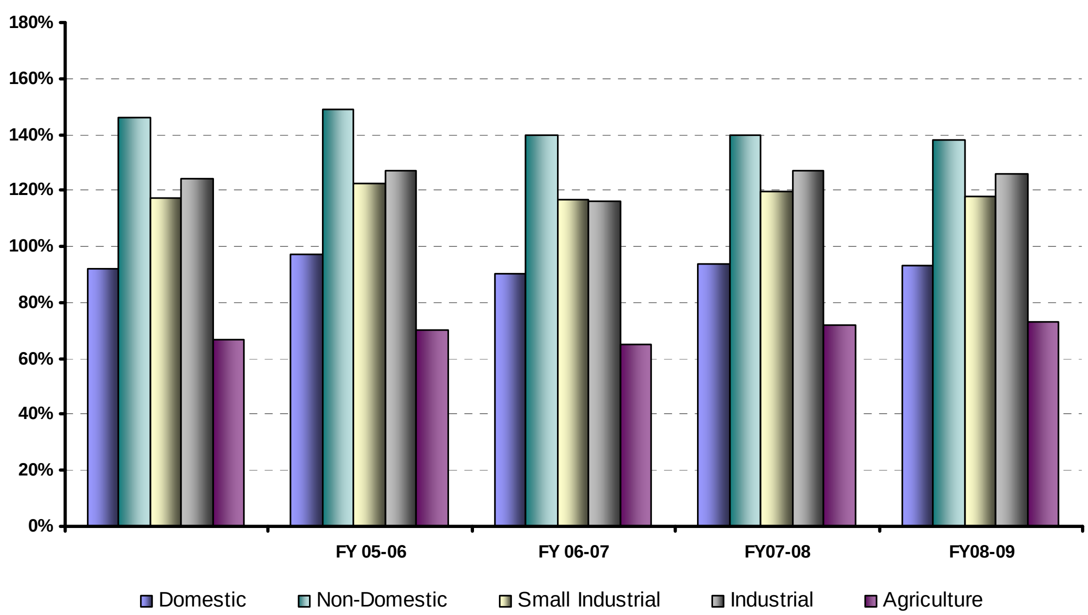
In the FY 09, the Commission followed the same approach as it followed in FY 08. The retail tariff was increased for Domestic supply consumers with consumption up to 100 units by 3.4% and for AP consumers by 4.8%. The tariff for Public Lighting and Bulk Supply consumers was retained at the same level and for others an increase of 2% is approved. The Commission has been consistently stressing on the NTP target of cross subsidy to be in the range of + -20%. At the revised tariffs, Rs.1509.23 Crs subsidy was approved to be generated thus leaving a marginal surplus of Rs.20.11 Crs.

The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 05 to FY 09 is summarised in the figure below. For the purpose of calculating the average cost of supply, total of energy sales within the state and outside state has been considered.



The figure below shows the approved realization from consumer tariff including GoP subsidy as percent of the average cost of supply from FY 05 to FY 09.

Graph A-18.9: Revenue realization from consumer tariff as percent of average cost of supply



The figure above clearly indicates that the realization from non-domestic consumers and industrial consumers in the state of Punjab during all years has always been on higher side of the average cost of supply. At the same time, the tariff for agricultural consumers in Punjab has been to a large extent subsidized and has thus effected realization. Commission has been conscious of the need for reduction in cross subsides, though a substantial implementation of the same has not been witnessed.

High Voltage Rebate

In the state of Punjab in order to shift industrial load to high voltage large supply consumers are given rebate at higher voltage levels, also at the same time surcharge is levied on the ones which operate on low voltage.

- Large Supply consumers and consumers of all other categories except Railway Traction supplied at 33KV/66KV are allowed rebate @ 3%. Large Supply consumers and consumers of other categories except Railway Traction, catered at 132KV/220KV are allowed rebate @ 5%. The rebate is admissible on consumption charges including demand charges, if any, or monthly minimum charges.

- For Large Supply consumers with contract demand exceeding 2500 KVA and upto 4000 KVA catered at 11 KV, surcharge @ 10% is leviable on consumption charges including demand charges, if any, or monthly minimum charges as compensation for transformation losses, incremental line losses etc. A surcharge of 17.5% is leviable on consumption charges including demand charges, if any, or monthly minimum charges on all Arc Furnace consumers and other Large Supply consumers having contract demand above 4000 KVA and catered at 11 KV.

- Medium Supply, Small Power, Domestic Supply and Non-Residential Supply consumers catered at 11 KV are allowed 7.5% rebate on their consumption charges including demand charges, if any, or monthly minimum charges. Also Large Supply consumers catered at LT i.e. 400 volts are levied 20% LT surcharge. Steel rolling mills supplied under LS category but connected at LT are levied steel rolling mill surcharge @ 5% in addition to LT surcharge @ 20%.

KVAH Tariff

Commission has time and again expressed it intention in establishing KVAH tariff in the state of Punjab. The Commission has accordingly directed the board to conduct a study for finding out the feasibility of KVAH tariff. The Commission observed that the data provided by the Board during the processing of ARR for FY 08 was incomplete and not addressing the issues. Therefore, the Commission continued with the existing practice of

Power factor surcharge/incentive for Large Supply, Medium Supply and Railway Traction.

TOD Tariff

The Commission had directed PSEB to come up with the Base paper on introduction of TOD in the state of Punjab. The directive was issued in the Tariff Order of FY 05. As per the Tariff Order of FY 05, the Commission did not implement the TOD in the state on the grounds that the state is short of power even during night hours. Also the Commission felt that the TOD would be beneficial only if shift of consumption takes place from day to night. The Commission was not in favour of extending TOD to three shift industries as it would lead to loss of revenue for the Board. However, there has been no mention about the Base paper in the Tariff Orders issued subsequently.

Average Cost of Supply vs. Realisation

The Commission has been overestimating the average realization from tariff and has been underestimating the average cost of supply. As shown in table below, the Commission has determined a surplus throughout the years from FY 05 to FY 09 based on approved average cost of supply and average realisation while the true-up exercise for three years revealed a gap in two years due to higher trued-up average cost of supply and lower average realisation.

Table A-18.21: Average Cost of Supply Approved by the PSERC

Approved by PSERC	FY 05	FY 06	FY 07	FY 08	FY 09
Total Energy Sale (MUs)	23133	23945	25103	27808	30293
Surplus Energy Sale (MUs)	807	741	961	1127	2339
Total ARR (Rs Crs)	7063	7524	8552	9247	10763
Avg Cost of Supply (Rs/kwh)	**2.95**	**3.05**	**3.28**	**3.20**	**3.30**
Avg Realisation from Tariff (Rs/kwh)	**3.14**	**3.32**	**3.38**	**3.62**	**4.20**
(Gap)/ Surplus	0.19	0.28	0.10	0.42	0.90

Table A-18.22: Trued-up Cost of Supply

Trued up by PSERC	FY 05	FY 06	FY 07
Total Energy Sale (MUs)	22780	24170	26507
Surplus Energy Sale (MUs)	669	848	1149
Total ARR (Rs Crs)	7117.08	7516.31	9310.87
Avg. Cost of Supply (Rs/kwh)	**3.04**	**3.00**	**3.37**
Avg. Realisation from Tariff (Rs/kwh)	**2.92**	**3.17**	**3.14**
(Gap)/ Surplus	-0.12	0.16	-0.22

Subsidy Support from the Government

Subsidy support from the government is of special importance in the state of Punjab because it is an agrarian state. The government of Punjab subsidizes AP consumers, Scheduled Castes DS consumers and Non-SC BPL DS consumers. As per the terms and conditions of determination of tariff issued by PSERC in 2005, “If the State Government requires the grant of any subsidy to any consumer or class of consumers in the tariff determined by the Commission, the State Government shall, notwithstanding any direction which may be given under Section 108 of the Act, pay, in advance and in such manner as may be specified, the amount to compensate the person affected by the grant of subsidy in the manner the Commission may direct, as a condition for the licensee or any other person concerned to implement the subsidy provided for by the State Government."

The Government of Punjab was allowing 50 units of free power per month to the Domestic consumers belonging to SC category with connected load upto 300 watts. However, the limit of free supply has been enhanced to 200 units per month from September 1, 2005.

The Commission before ascertaining the tariffs in the Tariff Order seeks government stand on the amount of subsidy it will grant based on the agriculture consumption and the free units to SC category. Commission then works out the total revenue from the consumer tariffs considering the subsidy of State Govt.

In the Tariff Orders for FY 05 and FY 06, Commission had approved a tariff of Rs. 60/BHP/month for the agricultural consumers in addition to the Govt. subsidy provided to agricultural consumers. In the FY 06, Govt. had taken a decision to provide free electricity to all farmers from September 1, 2005 and the impact of same had been compensated through additional subsidy support.

The tariff notified by the Commission for all the years was inclusive of the subsidy. But for the agricultural consumers, Commission approves tariff with Govt. subsidy and without Govt. subsidy. The tariff approved for the FY 09 without the Govt. subsidy was Rs. 250/BHP/month. The Commission has consistently increased the tariff for agricultural consumers and the tariff for this category has increased by Rs. 42/BHP/month in the last four years (FY 06 to FY 09).

Subsidy Booked during the year

The Government of Punjab provides subsidy to the Board in the following manner:

- Adjustment from interest due from the Board on Government loans
- Adjustment of Electricity Duty
- Cash Subsidy

Commission in all the Tariff Orders has computed the quantum of subsidy required for the agricultural consumers as well as subsidy applicable to other consumers. In the Tariff Order for FY 05, Commission had computed the subsidy for agriculture category alone at Rs. 852.56 Crs. The subsidy in case of free power supply upto 50 units per month to Scheduled Caste domestic consumers was ascertained at Rs. 50 Crs. In the FY 06, the Commission retained same level of consumer tariff as for previous year. The government agreed to provide Rs.1065.18 Crs as subsidy for FY 06. For the SC domestic consumers the Government was to provide Rs 50 Crs as subsidy.

In the FY 07, the Commission had approved AP consumption of 7115 MUs and determined subsidy of Rs. 1522.61 Crs for the same. An additional subsidy of Rs.7 Crs on account of service charges and meter rentals in respect of AP consumers was booked to be paid by the Government of Punjab. The Commission had approved Rs. 2119.10 Crs and Rs. 2479.76 Crs for FY 08 and FY 09 respectively. The quantum of subsidy has been increased in the last three years because of free electricity to the agricultural consumers.

Table A-18.23: Subsidy Details for the FY 05 to FY 09

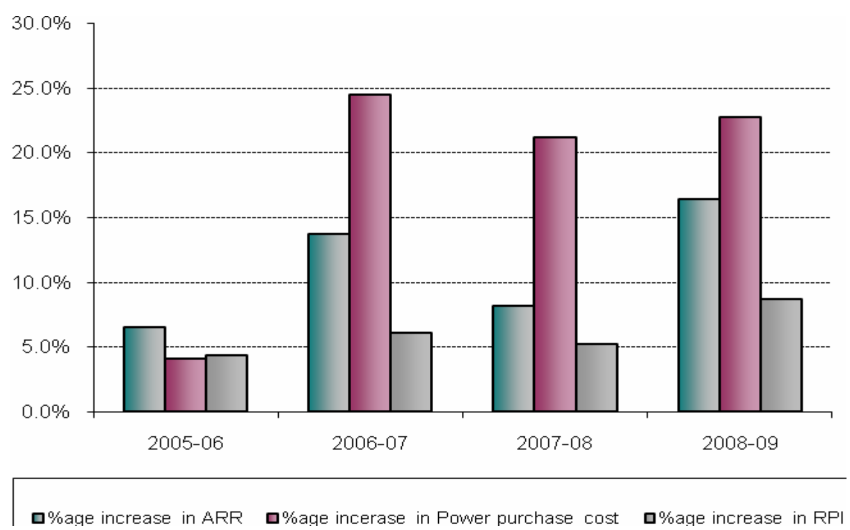
Particulars (Rs. Crs)	FY 05	FY 06	FY 07	FY 08	FY 09
Subsidy Approved for the Year	902.56	1115.18	1541.61	2119.10	2479.76
Past Year Subsidy Arrears		68.25		429.63	121.97
Total Subsidy Approved	**902.56**	**1183.43**	**1541.61**	**2548.73**	**2601.73**
Actual Subsidy Booked for the year	939.74	1394.01	1808.04	2578.13	
Subsidy Paid During the Year including Arrears	923.61	1435.92	1423.80	2848.04	

The Commission had also done the true-up of subsidy required for the year based on the actual sales and the actual subsidy received by the Govt. during the year.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.

ARR increased in FY 2006-07 and FY 2008-09 mainly on account of increase in Power purchase cost. The increase in RPI was also considerable in FY 2008-09, which in turn led to an overall increase in ARR. The average Cost of supply has seen an increasing trend in the state of Punjab, the main for that is demand supply mismatch which has lead to power purchase from traders and UI which are a costly source of Power. Also the generating stations in Punjab are considerably old and have a low plant load factor which leads to less own generation. The consumer retail tariffs have increased every year except for the year FY 2006-07.



Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	7062.60	7523.54	8551.87	9247.45	10762.97
Approved Sales (MU)	23,940	24,686	26,064	28,935	32,632
Averge Cost of Supply in	2.95	3.05	3.28	3.20	3.30

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Rs/kwh (A)					
% of Power Purchase Cost in ARR	30.7%	30.0%	32.9%	36.9%	38.9%
% of Other remaining Cost in ACS	69.3%	70.0%	67.1%	63.1%	61.1%
% Annual Increase in Power Purchase Cost	0.0%	4.1%	24.5%	21.2%	22.8%
% Annual Increase in Other Cost	0.0%	4.4%	3.3%	-8.4%	-0.1%
% Annual RPI Increase	0.0%	4.4%	6.1%	5.2%	8.7%

Transmission Charges

Punjab is a bundled state and therefore does not have a separate transmission utility. The Punjab State Electricity Regulatory Commission issued Open Access Regulations in year 2005. The regulation specified that the Transmission Tariff will have the following components:

- Charges for use of the Network;
- Operation Charges; and
- Reactive Charges

The Board had not supplied the State Load Dispatch Centre (SLDC) costs to arrive at operation charges. The reactive energy charges for Intra-State Open Access customers are to be realized as per the Regulations already notified by the Commission. Hence, only the charges for use of network have been approved by the Commission.

In the year FY 05 and FY 06, the Commission did not separate the transmission charges from the total ARR. In the FY 07, the Commission followed the following methodology in calculating open access charges.

- The costs of the utility were apportioned between generation, transmission and distribution. The Board did not furnish the segregated ARRs for these functions. The common expenses were apportioned in the proportion of direct costs under each head. The apportionment of total expenditure and of fixed assets was worked out taking the audited accounts of FY 05 as the base. While apportioning expenditure as above, expenditure on fuel cost and power purchase cost was excluded as this is directly related to generation and is very substantial and its inclusion for the purpose of apportionment may distort the results.
- The ARR for FY 07 approved by the Commission were apportioned among various functions in the ratio in which actual expenses for FY 05 had been apportioned. The total transmission capacity and distribution capacity was adopted for calculating transmission and wheeling charges. The short term open access (Transmission and wheeling charges) have been arrived at by multiplying the sum of transmission and wheeling charges by 25% and for long term open access charges the sum has been multiplied by 33%.
- For FY 08 and FY 09, the short term open access charges were computed @ 20% of the sum of transmission and wheeling charges as there was an amendment to the open access regulations.

Cross Subsidy Surcharge

The Commission in FY 07, calculated the surcharge as the difference between realization and the combined average cost of supply and allowed only 50% of recovery of surcharge from Open Access customers as against full recovery in the National Tariff Policy. Further, the Commission did not go into class-wise cost of supply on account of inadequate data available from the utility. Similarly, the Commission did not determine voltage-wise T&D losses went for the overall average T&D losses of which only 50% was payable by Open Access customers.

In the FY 08, the Commission calculated T&D loss voltage wise and for voltages at 66 KV and above loss was taken at @ 30% of normative T & D Loss and for Voltages below 66 KV loss was taken at 50% of normative T & D Loss. The same approach was followed for the FY 09 as well. The table below gives details about the transmission wheeling and cross subsidy surcharge.

Table A-18.24: Approved Transmission, Wheeling and cross subsidy surcharge

Particulars	FY 07	FY 08	FY 09
Transmission ARR (Rs. Crs)	426.56	454.97	527.15
Transmission capacity (MW)	5870	5870	6095
Transmission Charges (Rs./MW/day)	**1990.89**	**2123.5**	**2370**
Distribution ARR (Rs. Crs)	1788.82	2066.50	2507.14
Distribution Capacity (MW)	5919	6088	6288
Wheeling charges (Rs./MW/day)	**8279.91**	**9299.68**	**10924**
Transmission + Wheeling Charges Chargeable from long term customers	3389	3807.35	4431
Transmission + Wheeling Charges Chargeable from Short term customers	2568	2284.64	2659
T&D Losses	10.38%	(>=66 KV) 5.85% (< 66 KV) 9.75%	(>=66 KV) 5.85% (< 66 KV) 9.75%
Cross Subsidy Surcharge for Small Supply (Rs./unit)	0.3194	Nil	Nil

Apart from the aforesaid charges, other charges such as additional surcharge, operation charges, UI charges, reactive energy charges shall be levied as per the Open Access Regulations/Tariff Regulations notified by the Commission.

A-19. RAJASTHAN

A-19.1. RAJASTHAN – GENERATION UTILITY

Introduction

Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN) is the generation utility responsible for the generation of electricity in the state of Rajasthan. It is entrusted with the job of development of power projects under state sector, in the state along with operation & maintenance of state owned power stations. RVUN was constituted by Government of Rajasthan under Companies Act-1956 on 19th July, 2000.

Rajasthan Rajya Vidyut Utpadan Nigam Limited (RVUN) RVUN recovers its cost from three DISCOMs viz Jaipur, Ajmer & Jodhpur in the ratio of 36:36:28 respectively.

The total approved installed capacity of RVUN as on FY 09 was 3847.35 MW. The Commission for FY 09 considered the operation of new power plants. The installed capacity approved by Commission for FY 08 was 3024.35 MW. RVUN has been adding to its generation capacity.

The Commission issued a suo-moto Multi year tariff order for RVUN for FY 07-08 and FY 08-09. This suo-moto order was for the existing generation plants and for the new thermal power stations/extension projects which were likely to be Commissioned in FY 07-08 and FY 08-09(viz. Dholpur (gas), Giral (lignite) Unit-2, Chhabra, Suratgarh Stage IV and KTPS Stage-V) coal based stations the Commission came up with a separate order in March, 2007.

Generation Capacity

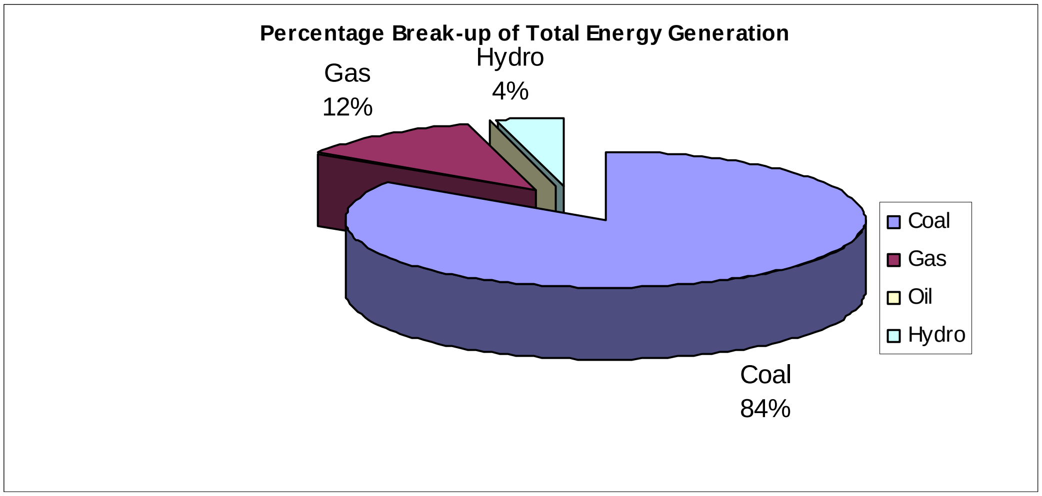
RVUN has total of 8 generating stations. The generating stations are further divided into units. The table below gives plant wise generating capacity of RVUN for FY 09.

Table A-19.1: Plant wise Generating Capacity

Particulars	Stations										
	KTPS	STPS	Giral-I	Dholpur (DCCP)	RGTPS	MAHI	MMH	KTPS-VII	STPS-VI	Chhabra Stage-I	Giral-II
Station Capacity (in MW)	1045	1250	125	330	113.5	140.00	23.85	195	250	250	125
Fuel	Coal	Coal	Lignite	Gas	Gas	Hydro	Hydro	Coal	Coal	Coal	Lignite
Units Capacity (MW)	2x110+ 3x210+195	5x250	1 x 125	330	113.5	2x25 +2x45s	23.85	1 x 195	1 x 250	250	1 x 125

Of the total generating capacity of 4094.35 MW, 3490 MW is coal based, 440.5 MW is gas based and 163.85 MW is hydro.

Graph A-19.1: Fuel-wise Generation Capacity



Plant Load Factor (PLF)

The Commission has worked out PLF for each plant. PLF has been worked out for each year considering the renovation, maintenance schedules and date of Commissioning of plant.

Table A-19.2: Approved PLF for the period FY 05 to FY 09

Years	FY 05	FY 06	FY 07	FY 08	FY 09
Stations/Units	Approved Plant Load Factor				
KTPS	80.00%	80.00%	87.39%	87.39%	88.62%
STPS	80.00%	80.00%	88.00%	88.00%	91.32%
Ramgarh Gas Thermal Power Station	70.00%	70.00%	70.00%	70.00%	70.00%

Auxiliary Consumption

The Commission has considered CERC norms for the auxiliary consumption. For FY 05, the Commission analyzed the past 5 years auxiliary consumption for STPS and KTPS and took their average to arrive at current year's average. Auxiliary consumption for 200-250 MW frame size units was higher than that specified under CERC's regulations. The Commission allowed a higher level of auxiliary consumption during the year but directed RVUN to bring it down in four years to the level specified by the Commission as per regulations.

The Commission followed the norms it specified in the term and conditions for Tariff, 2004 for approving the auxiliary consumption in the MYT suo-moto order as well. For new plant (Giral), Commission had considered the 10% during stabilization and 9.5% for the stabilization period in FY 08. For FY 09, Commission approved 9.5% of auxiliary consumption.

Table A-19.3: Approved Auxiliary consumption

Years	Approved Auxiliary Consumption				
Stations/Units	**FY 05**	**FY 06**	**FY 07**	**FY 08**	**FY 09**
KTPS	9.65%	9.55%	9.47%	9.32%	9.32%
STPS	9.40%	9.30%	9.20%	9.10%	9.00%
Ramgarh Gas Thermal Power Station	3% (C.C),1%(OC)		4.00%	4.00%	4.00%

Station Heat Rate (SHR)

The Commission had analyzed the SHR achieved by the units in the past years for determination of SHR for FY 04-05. The Commission directed the RVUN to conduct a study for the improvement in SHR. The Commission studied the SHR's for Tanda station and Talchar TPS and SHR of KTPS and STPS during past five years to arrive at FY 04-05 SHR. The Commission also directed RVUN to bring down the SHR for 110 MW unit in the four years. For the remaining years, Commission has followed the normative SHR prescribed in the RERC Regulations for the existing stations.

The Commission for FY 08 for new plants followed 2704 kcal/kwh as norm for SHR for plants during stabilization, 2600 kcal/kwh as stabilization period norms and for FY 09 it considered 2600 kcal/kwh of SHR.

Table A-19.4: Approved SHR

Years	FY 05	FY 06	FY 07	FY 08	FY 09
Stations/Units	**Approved Station Heat Rate**				
KTPS	2645	2621	2616	2611	2605
STPS	2500	2500	2500	2500	2500

Gross and Net Units Generated

Considering the above technical parameters, the Commission had approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY05 to FY09.

Table A-19.5: Approved Gross and Net Generation (MUs)

Stations/Units	FY 05	FY 06	FY 07	FY 08	FY 09
KTPS	6868	7323	8000	8000	8113
STPS	8760	8760	9636	9636	10000
Giral-I			767	876	529
Dholpur Combined Cycle Gas based Power Plant (DCCP)					2290
Ramgarh Gas Thermal Power Station	677.59	678	678	678	546
MAHI	339.90		225.00	225.00	225
MMH	13.33		10.00	10.00	10
Total Gross Generation	**16659**	**16761**	**19316**	**19425**	**21712**
Auxiliary Consumption	1497	284	1748	3955	1045
Total Net Generation	**15161**	**16477**	**17568**	**15470**	**20667**

Note: For RGTPS only combined cycle MUs are considered as per annexures along with Tariff order.

FIXED COST

Operation & Maintenance Cost (O&M)

The operation and maintenance cost comprises of employees cost, Repairs and Maintenance (R&M) expenses and Administrative and general expenses. The Commission has approved consolidated O&M expenses for the period FY 05 to FY 09.

As per regulation, escalation is allowed on the base rate of Rs.5.10 lakhs/Mw. for FY 05 for coal based and lignite fired generating stations and Rs.6.24 lakhs/MW for gas based generating stations. The escalation is based on the ratio of wholesale price index in the preceding and the current year reduced by 1%.

In the Tariff orders, the Commission has approved the O&M cost for each station separately. The Commission follows RERC (Terms & Conditions for determination of tariff) Regulations, 2004. For FY 05, the Commission considered the annual escalation of 8% for employees' cost, 8% for A&G and 4% for R&M. For FY 06, the Commission had considered an escalation of 5% on the normative O&M expenses computed for FY 05. The escalation of 5% was considered on the basis of annual increase in wholesale price index. For FY 07, the Commission had approved escalation of 2.91% considering the increase in WPI in FY 06 over FY 05 @ 3.91 % with reduction of 1% as per RERC Regulation.

In FY 08, Commission issued a suo-motu MYT Order for FY 08 and FY 09 and allowed O&M expenses on normative basis. For the new stations, the Commission considered O&M expenses with an escalation of 4%. In the revised Tariff order for FY 09 dated June, 28 2008, Commission contended that though O&M expenses, which include establishment cost and administrative & general expenses, are not controllable in nature, it will still follow normative escalation i:e 4 %, and specified the same can be reviewed during next tariff control period. The table below summarizes the O&M expenses for the period FY 05 to FY 09.

Table A-19.6: Approved, and proposed O&M Expense (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Total Approved O&M	112.32	137.67	143.98	147.35	183.97
Actual Petitioner Claimed O&M	118.76	135.55	143.57		187.43
O&M as a percentage of total cost			4%	4%	4%

Depreciation

Depreciation has been individually worked out for each generation plant. The Commission has arrived at depreciation by considering the addition of assets.

In FY 05, the Commission disallowed depreciation on assets of KTPS unit 1 and 2.The reason being that 90% of depreciation had already been allowed on assets of Kota Thermal Power Station. The depreciation was calculated at 3.57%.

For FY 06, the Commission accepted the RVUN's proposed depreciation. The depreciation was calculated as per the rates specified in RERC (Tariff) Regulations for individual assets and after taking into account the depreciation disallowed for KTPS by the Commission.

For the MYT control year (FY 08 to FY 09), depreciation was provided at the rate of 3.6% as per useful life of 25 years. Under the Suo-moto tariff order for MYT period the Commission accepted the RVUN's projections for depreciation except in case of KTPS &

GLTPS wherein, it reduced depreciation in case of GLTPS and increased in case of KTPS. For the new generating plants, the depreciation has been allowed on pro-rata basis for the period of operation of the plants. The Commission issued a Tariff order for FY 09 though it was a part of MYT control period. Commission retained the depreciation proposed by RVUN except in case of Giral-I (dep. for KTPS was not increased and RVUN prposed figure was accepted) where it was pro rata reduced considering its period of operation as eight months.

Advance against Depreciation (AAD)

For FY 05, RVUN proposed AAD requirement of Rs.311.31 Crs. The Commission for arriving at AAD analysed the loan repayments during the year and cumulative depreciation during the year. The Commission instead of charging the entire amount in one year approved the bridging of gap between the loan repayment and depreciation by means of transitional loans. The net AAD requirement of Rs.40 lakhs as above has been apportioned to various power stations in proportion to that for the AAD requirement of Rs.311.30 Crs proposed by RVUN.

For FY 06, the Commission approved transitional loans of Rs.235.70 Crs. For FY 07, the Commission approved the revised figure of Advance against depreciation and approved Rs. 513.78 Crs as transitional loans and for FY 08, the Commission accepted the AAD proposed by the RVUN. The table below summarizes the Depreciation and Advance against depreciation approved by the Commission.

Table A-19.7: Depreciation Approved, and Advance Against Depreciation (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Depreciation Approved	199.08	207.09	210.54	237.215	273.17
Advance Against Depreciation	0.40	51.67	85.42	179.3	358.20

Interest Cost

The interest cost is sum total of interest on long term loans and interest on transitional loans. For FY 05, the Commission arrived at approved interest cost by disallowing interest during construction for KTPS unit-6. Interest on transitional loan for the year was Rs.20.41 Crs. In FY 06, the Commission approved the interest on term loans as proposed. For interest on transitional loans Commission calculated the interest @ of 6.65%.The interest allowed on transitional loans was Rs.39.01 Crs.

For FY 07, the Commission has disallowed certain amount of interest cost on account of higher capitalization and less interest on the revised capital cost of Giral LTPS.

In the MYT Order for FY 08 and FY 09, the interest charges proposed by RVUN were lower and the same was allowed by the Commission. For the new plants, the interest and finance charges have been allowed based on the loan amount sanctioned by Power Finance Corporation at prevailing rate of interest of 10.5% - 11.5%.

Interest on Working Capital

The Commission arrives at working capital by considering the norms of fixed under RERC (Terms and conditions for determination of tariff) Regulations, 2004. The norms for working capital calculation are:

- Coal cost (Non Pit Head): Two Months
- Cost of gas: One Month
- Secondary Fuel Oil: Two Months
- Liquid Fuel Stock: Half Month
- O&M expenses: One Month
- Maintenance Spares: As per petition
- Receivables: Two Months

For FY 05, the Commission approved interest on working capital @ 8.96% based on the weighted average rate as proposed by RVUN.

For the year FY 06 and FY 07, the Commission approved interest on working capital at 10.25% and 11% respectively. The approved interest rate was based on the short term prime lending rate of State Bank of India admissible under the Regulations.

For the new power plants in FY 08, working capital for the year was approved on the normative basis as per RERC Regulations. The same approach was followed for old plants for FY 08 and FY 09. The table below gives details about the interest cost of the RVUN.

Table A-19.8: Approved Interest on terms loans, Transitional loans and Working Capital

Particulars	FY 06	FY 07	FY 08	FY 09
Interest and Guarantee Charges	329.63	236.07	175.93	322.49
Interest on Working Capital	104.72	116.91	89.35	123.86
Interest on Transitional loans	39.01	77.60	63.92	122.73
Rate of interest for Working Capital	10.25%	11.00%	11.00%	12.75%

Return on Equity

For FY 05, the Commission had not approved the return on equity as the same was not claimed by the RVUN. However, in FY 06, RVUN claimed a rate of return of 8% on equity as approved by Government of Rajasthan under the Financial Restructuring Plan and admissible under RERC (Terms and conditions for determination of tariff) Regulations, 2004. The same was approved by the Commission for FY 06 subject to State Government decision. For FY 07, RVUN had not projected any return on equity as per the state Government's Decision (Considering the company will be operating on no profit no loss basis). For the remaining years, Commission has allowed the return on equity at 11% (RERC Regulations) for new projects (Giral, Dholpur and Chhabra Power Projects) and no return has been approved for the existing old stations

Total Fixed Cost

The Commission has approved the total fixed cost for RVUN based on the approach for various components as discussed above. The table below shows the net fixed charges of RVUN and its individual power plants. The net fixed charges have been arrived at adjusting total fixed charges for Inter-Unit Account Balance Written off (+), Recovery of ARR & tariff petition fees(+), and Non Tariff income (-).

Table A-19.9: Net fixed cost for each station (Rs. Crs)

Station	FY 06	FY 07	FY 08	FY 09
KTPS	221.50	210.05	222.54	251.70
STPS	707.34	595.97	610.28	835.84
Giral-I		26.05	87.94	76.92
Dholpur Combined Cycle Gas based Power Plant (DCCP)				217.71
Ramgarh Gas Thermal Power Station	56.24	45.58	42.41	46.29
MAHI	24.44	13.29	0.00	12.16
MMH	2.89	2.98	3.13	3.77
KTPS-VII				
STPS-VI				
Chhabra Stage-I				
Giral-II				
Total Net Fixed Cost	**1012.41**	**893.92**	**966.30**	**1444.39**

Fuel Cost

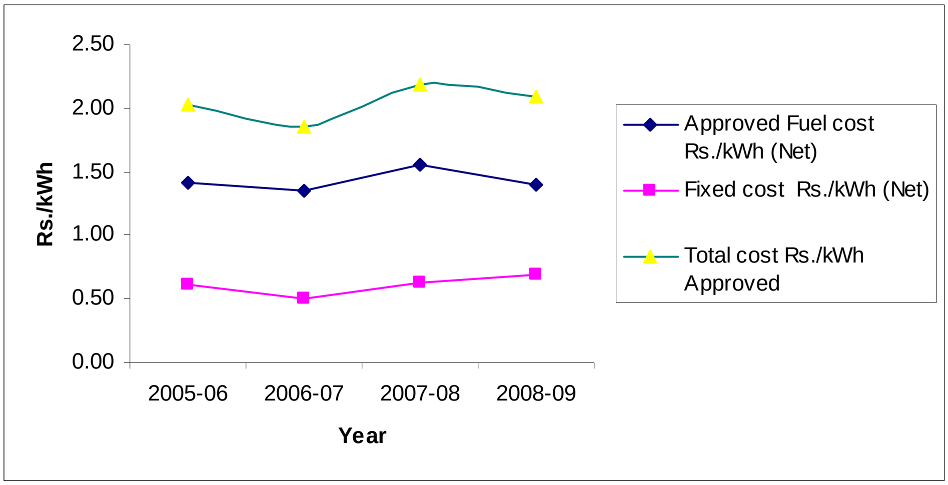
The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. The approach adopted by the Commission for computing the fuel price in each of the Tariff Order issued during FY05 to FY09 for RVUN.

Table A-19.10: Approach for determination of Fuel Price

Particulars	FY05	FY06	FY07	FY08	FY09
Coal	Gradewise quantities of coal used in 03-04, weighted average cost of coal per MT at KTPS & STPS before and after revision in the price of coal	Escalation of 3% over actual past year coal prices	Escalation of 3% over actual past year coal prices	Based on weighted avg price of coal from various sources	Based on weighted avg price of coal from various sources
Oil	Escalation of 5% over actual past year oil prices	Escalation of 5% over actual past year oil prices	Escalation of 5% over actual past year oil prices	Based on weighted avg price of oil from various sources	Based on weighted avg price of oil from various sources

Particulars	FY05	FY06	FY07	FY08	FY09
Gas	Escalation of 5% over actual past year oil price	Based on delivered price of APM gas	Based on weighted avg price of APM gas and PMT gas	Based on weighted avg price of Gas from various sources for FY07	Based on weighted avg price of Gas from various sources for FY07
Frequency of Fuel Price Adjustment	Annual basis (end of year)	Annual basis (end of year)	Annual basis (end of year)	Monthly basis	Monthly basis

Graph A-19.2: Fuel Cost Approved, Fixed Cost and Total Cost



Transit loss

The Commission in the tariff order for FY 05-06, considered the normative transit loss of 2.5% while working out the cost of coal for KTPS. The Commission was concerned about the higher level of transit loss in respect of coal received at KTPS. The transit loss at KTPS is more than that at STPS, although the distance from pithead in the case of kota is lesser than that of Suratgarh. For the remaining years, Commission has considered the normative transit loss for KTPS and actual level of transit loss for STPS.

Incentive

The Commission has also approved the incentive @ 25 paisa per KWh, same as that of Central Sector Generating Station (CSGS)'s tariff determined by CERC. For Mini Micro Hydel stations no incentive shall be payable as tariff is based on full recovery of actual cost of generation. In case of Mahi hydro power stations, primary and secondary energy charges are considered as 25 paisa/KWh, same as incentive rate for thermal stations instead of lowest variable charges of thermal station in northern region.

A-19.2. RAJASTHAN – STATE TRANSMISSION UTILITY

Introduction

Rajasthan Rajya Vidyut Prasaran Nigam Ltd. (RVPN) is the transmission utility of Rajasthan. It is responsible for the establishment, operation and maintenance of transmission net work and SLDC. Even after the Power Sector Reforms (Transfer Scheme) 2000, RVPN retained the ownership in the partnership projects (of BBMB, Chambal and Satpura) and continued to effect sale of electricity from these projects.

As per the provisions of Electricity Act 2003 a State Transmission Utility and the State Load Despatch Centre (SLDC) could not continue with the business of trading of electricity beyond June 9, 2004. The State Government and RVPN therefore decided that w.e.f. 1.4.04, trading functions were to be directly conducted by the three Vitran Nigams .

RVPN segregates its expenses in respect of generation projects, SLDC and transmission. RVPN recovers generation expenses net of revenue from outside the state sale from these projects from three Vitran Nigams.

As per the directions of RERC, RVPN has filed the first multi year tariff (MYT) petitions for the control period FY 07-08 & FY 08-09.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 05 to FY 09 in approval of the Annual Revenue Requirement (ARR) of the state transmission utility RVPN.

Transmission Losses

RVPN proposes transmission loss as interstate and outside state. The Commission gives a consolidated approval of the transmission loss. To ascertain transmission loss, the Commission analyzed the Load flow studies provided by the RVPN wherein the peak load and peak losses were calculated for each year. While approving the loss level for a year, Commission has also considered the actual loss level achieved by the RVPN in the past year. In the MYT Order, the Commission laid down the trajectory for both the years, though in the tariff order for FY 09 the transmission loss for the FY 09 was revised and approved at the same level of FY 08. The Commission specified that the loss percentage for transmission within the State except for non-conventional energy sources (NES) power plants for which the loss level was specified as per the policies issued by the state Government for NES.

Table A-19.11: Approved Transmission Losses

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved	4.60%	4.60%	4.50%	4.40%	4.40%
Proposed -Outside State	4.25%	3.25%	3.53%		
Proposed- Intra State	4.76%	4.60%	4.60%		

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately till FY 05. From FY 06 onwards, it has been approving combined O&M expenses. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

FY 05

Repair & Maintenance (R&M) Expenses

The Commission approved an increase of 7.0% and did not accept the RVPN projections of 10% annual increase over audited figure of FY 02-03.

Establishment Cost

The Commission approved annual growth rate of 7%. The Commission specified that though the rate was negative from 2001-02 & 2002-03 , it has approved a higher rate of increase in consideration to new recruitments being effected by RVPN in FY 05 and increase in allowance consequent to conversion of 50% DA as D.P.

A&G Expenses

The Commission approved A&G as proposed by the RVPN for the year.

FY 06 onwards

In FY 06, the Commission arrived at the O&M expense for the year by taking base O&M expense at Rs. 90.8 Crs and escalated it with increase in WPI (5%) of the previous year and added it for the O&M expense on addition to fixed assets @ 3%. The Commission segregated the O&M expenses into O&M expenses of Transmission and SLDC. For FY 07 as well as in the MYT order the Commission followed the same approach. The rate of escalation in the FY 07 was taken as 3.14% and for MYT period was 4.16%.

For FY 09, the Commission though had issued MYT order but revised the approved figure for O&M giving the reason that there is a change in actual addition to fixed assets in the year FY 07 as against considered by the Commission. The Commission for FY 09 applied an escalation factor of 2.75% on the revised normative O&M expenses approved for FY 08 for transmission only. The table below gives details about the O&M charges.

Table A-19.12: Approved O&M Cost for FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08*	FY 09*
O&M Cost (Rs. Cr.)	162	185.71	197.3	141.07	161.4
Total Approved ARR (Rs. Cr.)	673	759	744	662	762
% O&M Cost of Approved ARR	24.11%	24.48%	26.52%	21.32%	21.19%

*The ARR for the years does not consider fuel cost and expenses for generation.

Depreciation

In FY 05, the Commission after adjusting the GFA for assets which were depreciated upto 90% calculated the depreciation @ 5.16% on depreciable GFA.

For FY 06, the Commission determined addition to fixed assets of Rs. 356.63 Crs during the year and calculated depreciation @ 3.6% (rate as per RERC Tariff regulations) on the opening gross fixed assets and @ 1.80 % on the addition during the year. The Commission followed the same approach for the FY 07 as well.

The Commission while computing the depreciation for MYT control period had considered the average rate of depreciation of 3.4% on average gross block. In the Tariff order for FY 08-09, the Commission kept the projections for depreciation at the same level except that extra depreciation @ 3.4% was allowed on Rs.89.40 Crs allowed as extra capital expenditure equivalent to Rs.182 lacs considering 60% capitalization. Depreciation was reduced by 5% on account of assets, which had lived their useful life.

In terms of claiming of Advance against Depreciation (AAD), the Commission for FY 05 had directed RVPN to furnish data which it failed to do so. RVPN claimed AAD of Rs. 109.26 Crs for FY 06. The Commission suggested RVPN to meet the difference between principal repayment and depreciation by taking transitional loans. The Commission had also approved the interest on loans while approving the interest charges. Under MYT order the Commission did not consider AAD and stated that RVPN will meet the gap by securing transitional loans.

Interest cost

The interest and finance charges of RVPN comprises of interest on loans, interest on working capital and interest on transitional loans. For FY 05, the Commission directed the RVPN to capitalize interest on borrowed funds during the construction period of the projects. It also asked it to segregate fixed cost like interest and finance charges.

For FY 06,,the Commission expressed its concern about under capitalization of interest expenses and therefore capitalized interest both on the addition of fixed assets made during the year and the average of opening and closing balance of work in progress, because the existing method would have caused a gap in the funding of interest in the cost of projects, on the one hand, and on the other hand would have resulted in increase in loss or decrease in profits. The Commission considered the proportion of equity and loan in the ratio of 20.37: 79.63 on the assets created in FY 06. For the purpose of determining interest to be capitalized, the Commission considered the average rate of interest of 8.93% on the loans taken during FY 06. The loan component on the assets created and the average work in progress during the year 05-06 @ 79.63 % was worked out.

For the year 2006-07, the Commission followed the same approach as it had followed in the previous year. The Commission allowed interest on subsidy/ grants receivable from the Government of Rajasthan as deferred subvention as the Government had to provide interest @ 5% and such interest was to be accounted by RVPN on actual basis.

For the MYT control period FY08 to FY09 interest charges were based on capital addition and envisaged rate of interest.

In FY 09, the Commission despite being an MYT control year again came up with an order and observed that RVPN had taken short term loans to finance capex.Commission directed the discoms by saying for capital expenditure funding long term loans should be availed and not short term loan. The interest on short term loans therefore was approved on normative basis. RVPN had to take loans because of delay in payment of surcharge by DISCOM. The Commission directed that the RVPN can recover interest charges separately from Discom (and not consumers) on the short term loan taken in lieu of delayed payment surcharge .The Commission took other elements as it is i:e as per the approved figures in previously approved FY08 order except the requirement of additional long term loan for extra capital expenditure where the rate of interest was considered as the weighted average interest rate for 2008-09 which works out to 9.36%.

Interest on Working Capital

For calculation of working capital, norms considered by Commission were:

- O&M expenses for one month,
- Maintenance spares equivalent to 1% of the capital cost of plant,
- Machinery and receivable for two months

For FY 05, no working capital interest was proposed because RVPN proposed to pass on actual interest liability on short-term borrowings to Vitran Nigams. For FY 06, the Commission calculated interest on working capital @ 7%. In FY 07, RVPN did not claim interest on working capital and the same was compensated by allowing interest on transitional loans. For the MYT control period the Commission allowed interest on working capital separately for RVPN @ 9% per annum.

Rate of Return

RVPN was operating as no profit no loss organization till 2004-05.Therefore, no return was proposed and allowed. In the year 2005-06 the RVPN proposed return @ 8%. For the year 2005-06, the Commission allowed return of Rs.53.04 Crore. Later on in the tariff order of 2006-07 the RVPN based on FRP approved by the Government proposed not to have any return on equity for FY 05-06 & FY 06-07. The Commission is, therefore, did not make any provision for R.O.E and Income Tax in the year 2006-07. For the year 2007-08 and 2008-09 the Commission did not approve ROE and it was neither proposed.

Other Expenses / Prior period / Provisions

The Commission approved other expenses as were proposed by the RVPN. These expenses were incurred towards restructuring premium and project preparatory fund.

<u>Contribution to pension and gratuity fund</u>

The Commission approved the RVPN's liability to fund unfunded liability for pension and gratuity. For FY 07, the Commission fixed the contribution to above funds as Rs.18.60 KW per month for FY07. For the MYT control period, the Commission allowed contribution to above funds as Rs. 26.17 Kw/month for FY 08 and Rs. 28.75 Kw/month for FY 09. The table below shows the other expenses / provisions approved by the Commission during the last five financial years.

Table A-19.13: Approved Other Expenses between FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Other Expenses	4.63	11.48	19.95	7.16	6
Contri. to pension and gratuity fund. (Rs.Cr)	92.9	107.06	116.32	191.95	232.32
Approved ARR (Rs.Cr)	673.39	758.51	744.06	661.71	761.78
Other Expenses as % of approved ARR	14%	16%	18%	30%	31%

Annual Revenue Requirement

The Commission has approved the ARR considering the admissible expense components as discussed above. The table below summarizes the ARR approved by the Commission vis-à-vis that proposed by RVPN from FY 2004-05 to FY 2008-09.

Table A-19.14: Approved ARR for RVPN from FY 05 to FY 09 (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved ARR for Transmission	505.47	555.43	547.29	661.69	799.98
Approved ARR for SLDC	16.71	17.82	17.84	22.25	23.20
Approved ARR for Generation	182.41	194.03	196.88		
Approved ARR (Consolidated)	704.59	767.28	762.01	683.94	823.18
ARR proposed by RVPN	716	786	752	697	897

The ARR mentioned in the table above does not account for the other income and income from open access consumers.

Determination of Transmission Tariff

The Commission has approved the transmission tariff to be capacity based. The transmission charges are to be shared among the existing Jaipur, Jodhpur & Ajmer VVNs in proportion to RVPN's transmission capacity contracted/allocated to be utilized at point of injection to RVPN's system, based on generation capacity contracted/ allocated and inter Vitran Nigam deemed exchanges of capacity. The billing of transmission tariff is made monthly for transmission capacity contracted or allocated to be used after accounting for deemed exchanges. The excess or less recovery with respect to a specified amount per quarter shall be shared by three Vitran Nigams in the ratio of billing for that quarter.

The Commission in the Tariff Order for FY 07 specified that the following method should be applied to ascertain the transmission capacity handled by the firm. The capacity handled would be

1. Sum of the capacity of all the power stations, within the state, which are not central sector/interstate power stations having their own transmission system.
2. Sum of capacity contracted by distribution licensees (excluding that from power station at Sr.no (i))
3. Transmission capacity utilized for open access for one year or more.

4. Where such capacity (including temporary allocation) is utilized for part of the year, its annual average will be considered.

The table below provides details about the transmission capacity handled by RVPN during the period FY 05 to FY 09.

Table A-19.15: Approved Transmission Capacity

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Transmission Capacity (MW)	4712.2	5366.88	5211.45	6110.56	6733.98

The Commission has computed the intra-state transmission tariff in RS/KW/month during all the years from FY 05 to FY 09 in quite a simple manner. The approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year.

Table A-19.16: Approved Transmission Tariff from FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs. Crs)	471.93	546.66	530.07	639.43	761.83
Revenue from open access (Rs.Crs)			5.00		
Net transmission charges (Rs. Crs)	471.93	546.66	525.07	639.43	761.83
Capacity handled	4712.2	5366.88	5211.45	6110.56	6697.88
Approved Transmission Tariff (Rs/KW/month)	**83.5**	**84.88**	**83.96**	**87.20**	**94.78**

The transmission charges arrived was applicable to all intrastate open access customers. The transmission charges recovered from such consumers would be reduced from transmission charges to be recovered from DISCOMs.

A-19.3. RAJASTHAN- DISTRIBUTION UTILITIES

Introduction

Rajasthan is an unbundled state, i.e. the function of distribution, generation and transmission is carried out by different companies. In the state there are three distribution companies or (Vitran Nigams) formed under the Companies Act, 1956 by Govt. of Rajasthan. The three DISCOMs operating in the state are:

- Ajmer Vidyut Vitran Nigam Ltd. (AVVNL)
- Jaipur Vidyut Vitran Nigam Ltd.(JVVNL)
- Jodhpur Vidyut Vitran Nigam Ltd.(JdVVNL)

The Commission issues Tariff Orders separately for each DISCOM, but follows a similar approach while approving the ARR of each DISCOM. In line with the Tariff Policy, the Commission w.e.f. April, 06 introduced the Multi Year Tariff principles for determination of Annual Revenue Requirement (ARR)/Tariff for the DISCOMs keeping first control period of 3 years ending March, 09.

Sales / Demand

The Commission while approving the energy sales for the year for the DISCOMs has analyzed data in respect of number of consumers, sales, connected load and specific consumption, and their cumulative average growth rate (CAGR).

Table A-19.17: Total Category-wise sales of all the DISCOMs (MUs)

Categories	FY 06	FY 07	FY 08	FY 09
Domestic	3543	3795	4075	4411
Non-Domestic/ Commercial	1162	1220	1349	1467
Small Industrial	1613	1751	1823	1981
Industrial (HT & Large)	3916	4529	5112	5706
Agriculture	5188	6495	7325	7909
Others	1797	1921	2266	2494
Total	17219	19711	21950	23968

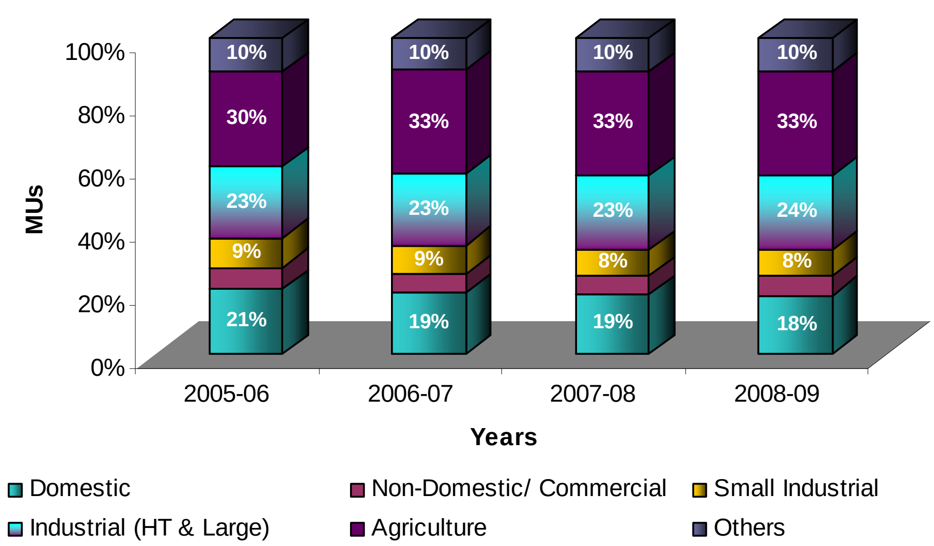
For FY 05, the Commission considered the data for 2000-01 to 2002-03 i.e. CAGR of 3 years to arrive at the sales figure for the year. The Commission had segregated agricultural sales into metered and un-metered (flat rate). Further, the Commission had considered the number of conversion of flat rate agricultural connections into metered ones. Moreover, Commission did not agree on the norms proposed by the DISCOMs for metered/new agricultural consumers and flat rate consumers but considered the increase in supply hours for estimation of agricultural sales. For industrial category consumers, the downward trend was taken into account in case of JVVNL and in case of JUVNL specific consumption/KW/consumer was considered for SIP and LIP and that for MIP it was considered as per CAGR.

For FY 06, the Commission considered the (CAGR) for last 5 years i.e. from FY 00-01 to FY 04-05 for estimating the energy sales for different categories. In case of agriculture consumers, the Commission assumed the flat rate norm of 1739 units/kW/year and load of 7.14 HP per consumer on average basis for all types of flat rate consumers in case of AVVNL , 10.16 HP in case of JUVNL and 4.81HP/consumer in case of JVVNL. The

Commission directed the DISCOMs in 2001 to carry out loss diagnostic study but the DISCOMs were not able to complete the study. In absence of data/study, Commission estimated the agricultural sales for flat rate consumers at 1739 units/kW/year.

The CAGR approach was followed for the rest of the years (FY 07 to FY 09) as well, but the norm of agriculture consumption was revised during FY 07 and was approved at 1945 units/kW/year for un-metered agriculture consumption. The Commission allowed the higher norm for agricultural flat rate consumption considering the average consumption of flat rate consumers had increased (Based on report submitted by DISCOMs). Moreover, Commission also considered the conversion of flat rate consumers into the metered category in each of the Tariff Order issued between FY 07 to FY 09. The graph below shows the percentage wise sales to each category year on year of all the DISCOMs combined together.

Graph A-19.3: Approved Consumption Mix



T&D Losses

Though the Commission has approved a long term trajectory for loss reduction, but in all the Tariff Orders (FY 05 to FY 09), T&D loss trajectory has been revised based on the actual loss level achieved in the previous year.

In FY 05, the Commission had revised the loss level trajectory fixed in the Tariff Order dated 10.6.03 due to poor actual performance in the FY 03-04. The Commission considered a reduction of 4% in a year for the period FY 05 to FY 08. Considering the DISCOMs were failed to achieve the distribution loss level target fixed for FY 05, Commission had again revised the loss level trajectory in FY 06 and directed distribution loss level for period FY 06- FY 09 shall be reviewed only for next tariff period.

In FY 07, the Commission had considered the revised normative consumption of 1945 units/kw/year for flat rate agriculture consumers and the T&D loss trajectory fixed in the Tariff Order for FY 06 was revised accordingly. The Commission from FY 07 onwards also started taking into account AT&C loss levels for the DISCOMs based on collection efficiency of 100%.

In the MYT Order, the Commission considered notification of Rural Electricity Policy by the GoI which came into effect after the fixation of target for loss reduction in the Tariff Order for FY 07. Moreover, the Commission agreed to revise the targets for FY 08 and FY 09 as proposed by the DISCOMs, which were in line with the recommendation of Abraham Committee.

The determination of loss is a very contentious issue in the state of Rajasthan. The main reason for this is the prevalence of agriculture consumption, which is un-metered and the norm of agriculture consumption keeps varying year on year. For any given year if the norm is increased the loss percentage decreases. Thus, the Commission finds it difficult to set the loss level which is feasible to achieve as well to protect the consumers interest in the state.

Table A-19.18: T&D Levels approved for each DISCOM during FY 06 to FY 09

T&D Loss (Ajmer)	FY 05	FY 06	FY 07	FY 08	FY 09
Approved in the Tariff Order	34.25%	39.14%	34.08%	35.00%	32.00%
Actual	43.49%	40.07%	37.26%		
T&D Loss (Jaipur)					
Approved in the Tariff Order	32.9%	33.88%	29.51%	28.50%	23.90%
Actual	37.65%	36.21%	33.70%		
T&D Loss (Jodhpur)					
Approved in the Tariff Order	34.25%	34.77%	31.29%	33.00%	30.00%
Actual	42.39%	40.34%	32.47%		

Power Purchase Quantum

The DISCOMs directly purchase power from various generating stations through the common Rajasthan Power Purchase Centre with effect from 1.4.04.The DISCOMs bear transmission losses and transmission charges of STU (RVPN) and CTU (Power Grid Corporation of India). As per Electricity Act 2003, RVPN and SLDC were prohibited from engaging in trading activity beyond 9.6.04. RVPN discontinued trading of electricity with effect from 1.4.04 and the State Government reassigned its share in partnership projects, allocation in central sector generating stations and generation capacity of RVUN in the ratio of 36:36:28 respectively among Jaipur, Ajmer and Jodhpur Vidyut Vitran Nigams.

Common pool supply from BBMB to Rajasthan Fertilizer Factories (RFF) was given to Jaipur Vidyut Vitran Nigam. The State Government also assigned non-conventional energy (wind and bio mass based power plants) power stations among DISCOMs.

The Commission has determined the availability of power from FY 05 to FY 09, from various power stations, based on energy generation and allocation of DSICOMs and RFF supply to DISCOMs and proportional share of DISCOMs in supply of energy to common pool consumers and MPEB out of BBMB, Chambal and Satpura Complex. The Commission also made the provision for inter DISCOM purchase to meet the energy deficit/gap.

In the MYT order, Commission also considered the renewable energy purchase obligation as per RERC Regulation, 2006 while determining power purchase requirement for each DISCOM. Commission had assumed average of minimum RE obligation and maximum limit of PPA for the purpose of RE availability for the DISCOM.

The table below gives a snapshot of the quantum of energy purchased by each of the DISCOM in FY 07.

Table A-19.19: Quantum of energy purchased by DISCOMs in FY 07.

Particulars	Ajmer		Jaipur		Jodhpur	
	MW	Mus	MW	Mus	MW	Mus
NTPC Stations	319	2198	319	2198	248	1709
NPC Station	156	786	156	786	121	611
NHPC Total	183	663	183	663	152	516
Purchase from other source	0	0	0	0	0	0
Net from Partnership Projects	340	1127	365	1310	264	876
Net Inter DISCOM Purchase/(Sale)	0	-237	0	141	0	96
Net Purchase/ (Sale) under UI	0	0	0	0	0	0
Total from central sector stations	997	4537	1022	5098	785	3809
Within State Purchase						
RVUN Total	971	6057	971	6057	755	4711
Total Non-Conventional Sources	121	203	121	203	94	158
CPP Total	0	0	0	0	0	0
Total Within State Purchase	1092	6260	1092	6260	849	4869
Total	**2089**	**10797**	**2114**	**11358**	**1634**	**8677**

From the year 2008-09 the generation from RVUN stations was allocated into 36.60: 34.20: 29.20 among JVVNL, AVVNL and JdVVNL respectively previously the same was in the ratio of 36:36:28.

Table A-19.20: Net Power Available with the DISCOMs

DISCOMs	FY 05	FY 06	FY 07	FY 08	FY 09
Ajmer (AVVNL)		9274	10163	10625	10935
Jaipur (JVVNL)	8878	10243	10502	11893	12390
Jodhpur (JdVVNL)	7213	8317	8171	9566	9768

(* Power purchase after Transmission loss)

Power Purchase Cost

For arriving at the cost of central sector thermal & hydro power stations of NTPC, NHPC and transmission charges of central transmission utility, Power Grid Corporation of India Ltd (PGCIL), the Commission considered the notification by the Govt. of India.

As the CERC notified tariff was not available in FY 05, the Commission considered CERC notified operating norms and rate of depreciations etc for computation of two part tariff for NTPC Plants. For NHPC stations, the Commission considered past determined tariff by CERC for the period 2001-02 to 2003-04. For new hydro power stations, the Commission considered rates as proposed by the DISCOMs. For the RVUN stations provisional tariff was considered, as RVUN petition for determination of generation tariff was awaited at that time.

For FY 05, the Commission had assumed purchase of power by the petitioners from the RVUN at the rate of Rs. 2.21per kwh for mini/micro hydel power stations and Rs. 2.18 per kwh for other stations. The Commission came with a new tariff order wherein it revised the per unit cost of power purchased. The cost of power purchase of the petitioners from RVUN was, therefore, revised thus bringing down the total power purchase cost.

For FY 06, the cost of generation of RVUN's power stations was considered as per RERC's order. The cost of power purchase for wind & biomass based power stations had been considered as per the Government of Rajasthan policies under which these were established.

The cost of generation at hydro power stations of National Hydro Power Corporation (NHPC) were worked out based on petitions for determination of tariff for the period FY 04-05 to FY 08-09, filed by NHPC with CERC.

The cost of generation at thermal power stations of National Thermal Power Corporation (NTPC) were worked out based on fixed charges and energy charges as per petition for tariff determination for the period FY 04-05 to FY 08-09 filed by NTPC with CERC. Energy charges for the same were enhanced by 9% to account for fuel price adjustment since energy charges in the petitions are claimed on the base prices of March 2004.

In respect of Nuclear Power Stations, the tariff for sale of power was taken as determined by the Department of Atomic Energy. Inter DISCOM purchases among JVVNL, AVVNL & JdVVNL were accounted at Rs.2.6450 per Kwh.

For the year 2006-07, the Commission followed the same approach as it followed in 2005-06. The cost of power from partnership projects was considered as per RERC's order.

The Commission provided for Rs.5,000 lakhs, Rs.1100 lakhs and Rs.1100 lakhs towards UI charges for JVVNL, AVVNL and Jd.VVNL respectively to cover up the mismatch between the scheduled drawl and actual drawl.

For the year 2007-08 and 2008-09, the Commission followed the same approach as it followed in the year 2006-07.

The Commission in order to promote renewable energy followed the RERC regulation which required the distribution licensee to purchase 4.0%[wind energy] + 0.88% [biomass] & 5% [wind energy] + 1.25% [biomass] of total energy from the RE during FY 08 and FY 09 respectively. It was also specified in the said regulation that the DISCOM can execute PPA upto 7.75% [FY 08] & 9.5% [FY 09] of the total energy purchase by the licensee and shortage in any source was to be made good from other source. The tariff in this case for wind power and biomass power was considered as per GoR policy.

The table below gives details about the power purchase cost as a percentage of ARR of the DISCOMs.

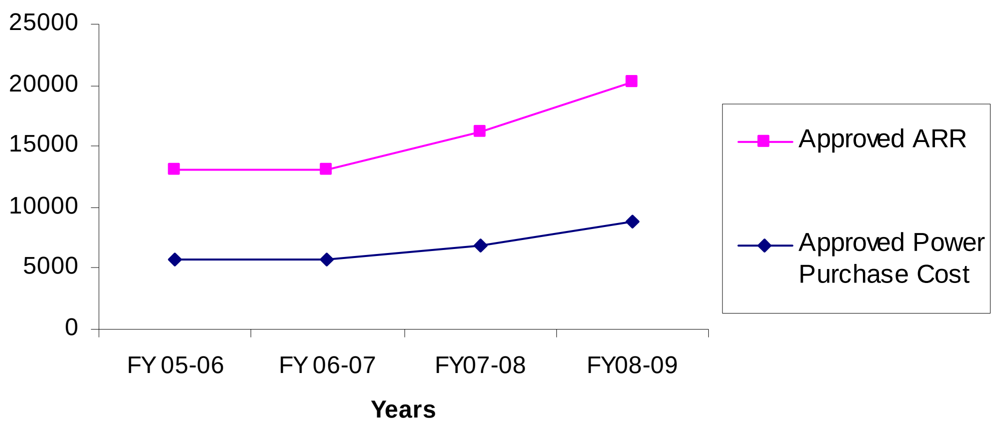
Table A-19.21: Approved Power Purchase cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Ajmer					
ARR	2263	2450	2545	3192	3959
Net Power Purchase (MU)		9274	10163	10625	10935
Power Purchase Cost	1848	2041	2203	2685	3381

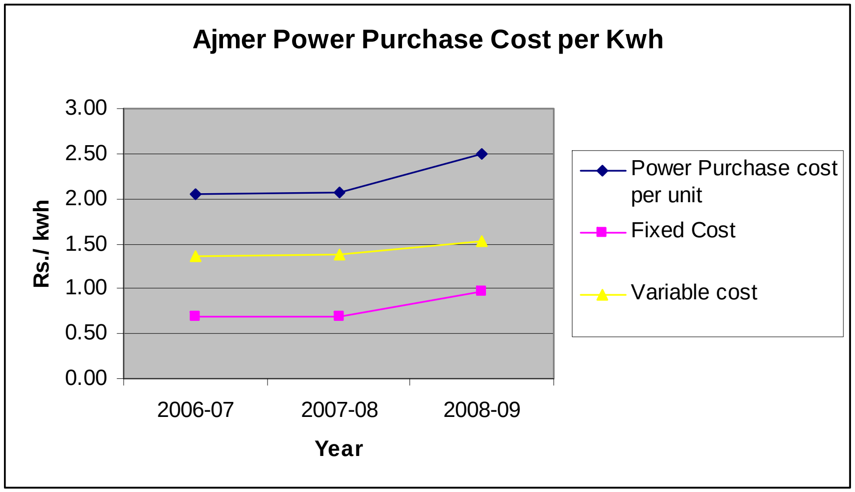
Power Purchase Cost per unit		2.20	2.17	2.33	2.82
Jaipur					
ARR	2376	2827	2826	3350	4169
Net Power Purchase (MU)	8878	10243	10502	11893	12390
Power Purchase Cost	2002	2359	2360	2756	3469
Power Purchase Cost per unit	2.26	2.30	2.25	2.36	2.85
Jodhpur					
ARR	1917	2153	2080	2716	3345
Net Power Purchase (MU)	7213	8317	8171	9566	9768
Power Purchase Cost	1543	1816	1775	2282	2837
Power Purchase Cost per unit	2.14	2.18	2.17	2.55	3.04

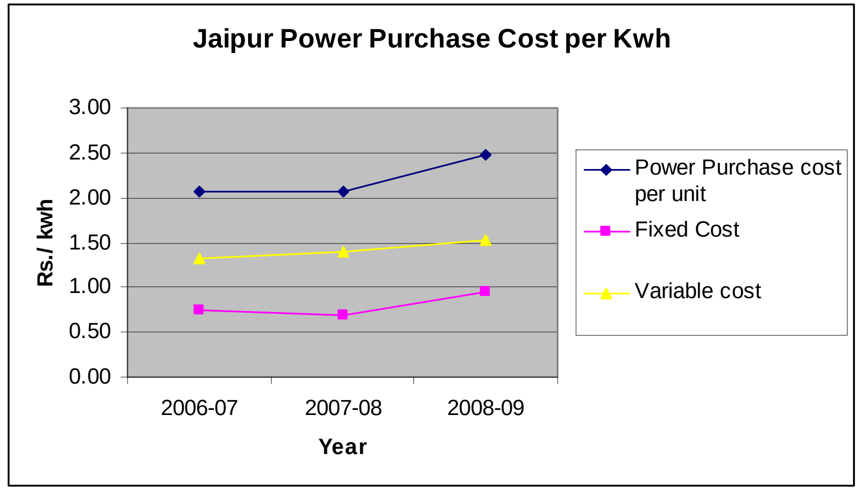
The power purchase of each DISCOM accounts for nearly 84% of the ARR. The power purchase cost includes PGCIL transmission charges, RVPN's transmission charges, SLDC charges and UI charges. The graph below shows the trends of approved power purchase cost as against approved ARR.

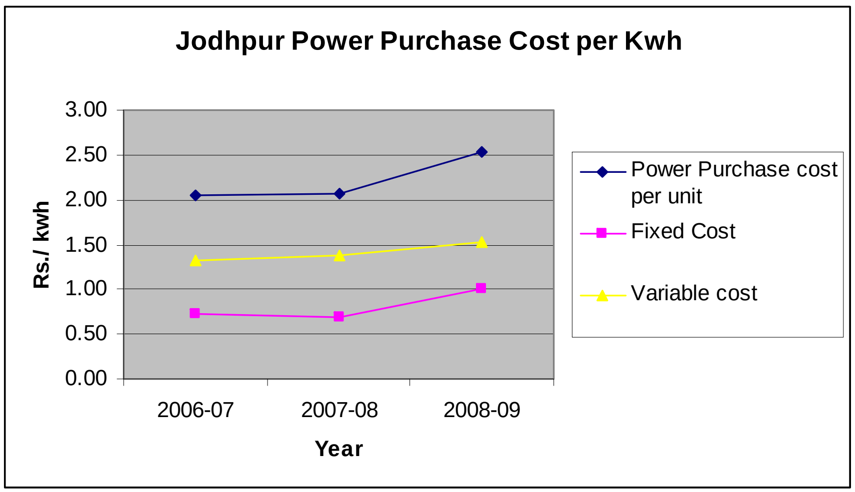
Graph A-19.4: Approved Power Purchase and ARR

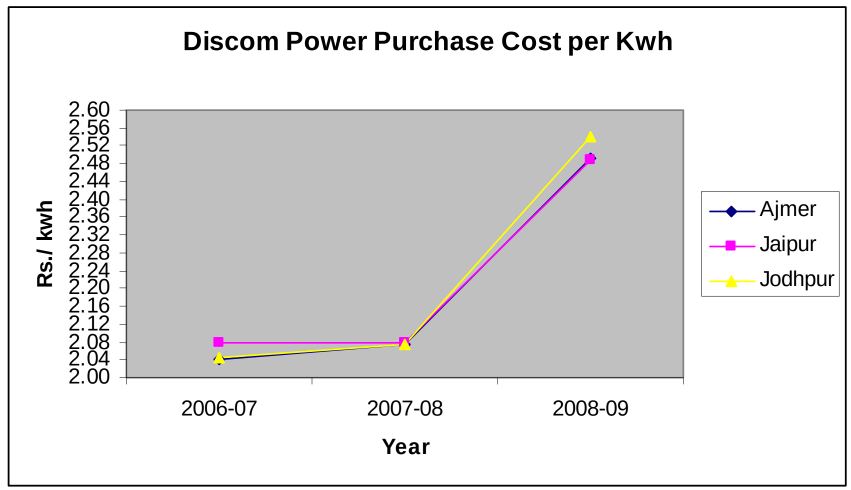


The graphs below show the fixed cost, variable cost and per unit cost of power in the DISCOMs and in Rajasthan.


Ajmer Power Purchase Cost per Kwh
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Rs./ kwh
2006-07
2007-08
2008-09
Year
Power Purchase cost per unit
Fixed Cost
Variable cost


Jaipur Power Purchase Cost per Kwh
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Rs./ kwh
2006-07
2007-08
2008-09
Year
Power Purchase cost per unit
Fixed Cost
Variable cost


Jodhpur Power Purchase Cost per Kwh
3.00
2.50
2.00
1.50
1.00
0.50
0.00
Rs./ kwh
2006-07
2007-08
2008-09
Year
Power Purchase cost per unit
Fixed Cost
Variable cost


Discom Power Purchase Cost per Kwh
2.60
2.56
2.52
2.48
2.44
2.40
2.36
2.32
2.28
2.24
2.20
2.16
2.12
2.08
2.04
2.00
Rs./ kwh
2006-07
2007-08
2008-09
Year
Ajmer
Jaipur
Jodhpur

Power Purchase Cost Adjustment (PPCA),

The Commission allowed PPCA as a pass through to the extent of 50% only, of the actual variation, without considering cross subsidization amongst different category of consumers, has been allowed to the DISCOMs to be levied on quarterly basis, as per formula prescribed, with the base rate of power purchase as of 2006-07 and considering the losses for different system voltage.

O&M Expense

The Commission for the years 2004-05 and 2005-06 approved the employee cost, repairs and maintenance cost and administrative cost separately for each DISCOM. From FY 07 onwards, the operation and maintenance costs were given a consolidated approval.

Employee Expenses

The Commission approved employee cost by taking a percentage increase over the previous year. E.g. in FY 05, the Commission increased the employee cost by levying an increase rate percentage of 4.4%.

Repairs and Maintenance Expenses

For FY 05, the Commission considered R&M as a percentage of gross fixed assets. The Commission analyzed the trend in the R&M as a percentage of GFA for the previous years to arrive at the current years R&M.

Administrative and General Expenses

For FY 05, the Commission considered the approved base cost for A&G for FY 03 and applied a rate percent on it to arrive at the cost for current year.

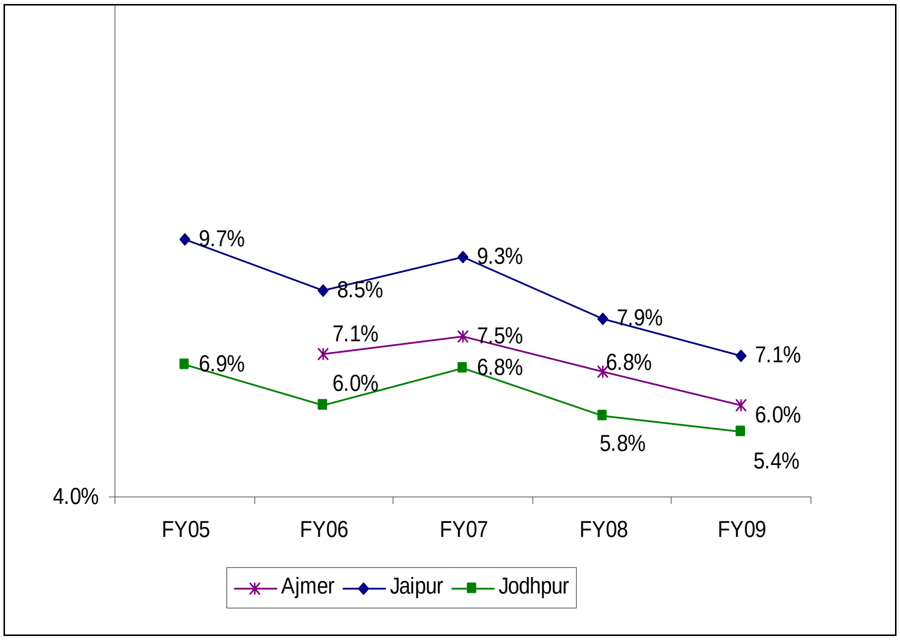
In FY 06, the Commission approved O&M expenses by considering an increase of 5% on the actual O&M expenses for the FY 04 based on annual increase in WPI. For FY 07, the Commission took the approved O&M expenses for FY 06 and escalated it with increase in WPI as per RERC Regulations. The Commission also factored increase of 3% in O&M expense on account of addition to fixed assets. For FY 09, the Commission followed the same approach for determining the O&M expenses.

Table A-19.22: Approved and trued up O&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
Ajmer					
Approved	158	175	192	216	239
Trued up	155	176	191		
Jaipur					
Approved	229	242	262	265	297
Trued up	230	206	216		
Jodhpur					
Approved	132	129	142	157	182

Particulars	FY05	FY06	FY07	FY08	FY09
Trued up	113	130	150		

Graph A-19.5: Approved O&M Cost as % of individual ARR's for Jaipur, Ajmer & Jodhpur



Capital expenditure (Capex)

It has been observed that none of the DISCOMs had furnished the investment plan during FY 05 to FY 09. The Commission directed the DISCOMs to submit investment plans for approval of capital expenditure. The Commission, however, approved a provisional capital outlay based on the data submitted by the DISCOMs for the purpose of calculating O&M expenses, depreciation and capitalization of interest charges.

Depreciation

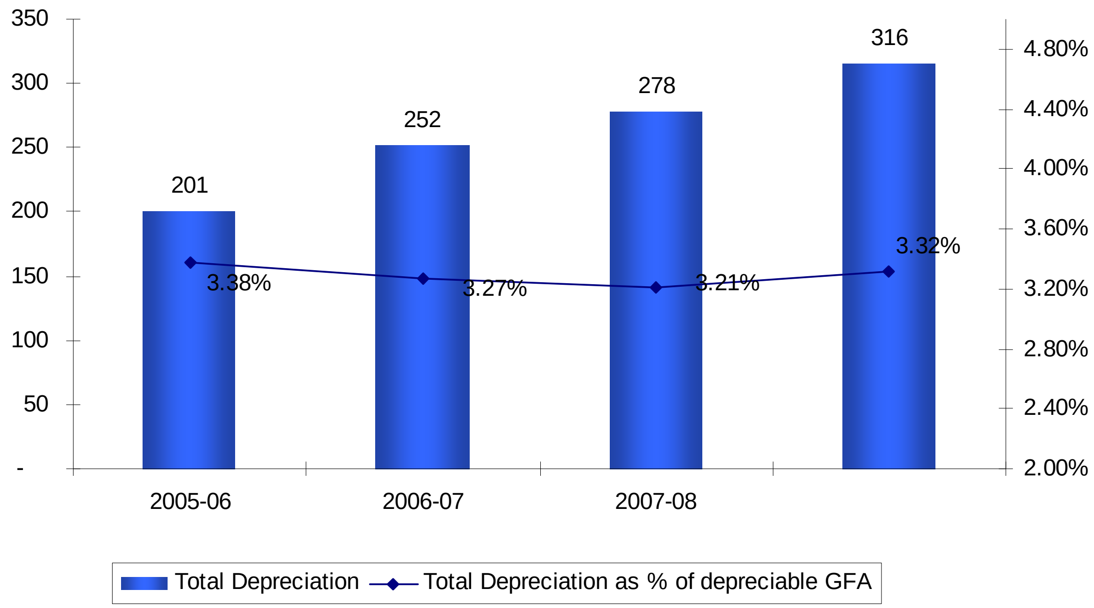
For the purpose of estimation of depreciation for the period (FY 05 to FY 09), the Commission adjusted the gross GFA for the assets created by 1987-88 and that had been depreciated by 90%. The Commission assumed that 3.5% of GFA would have depreciated by ninety per cent. The Commission made adjustment for another 4% of the value of total assets as lost & damaged and cease to be in operation. Depreciation was allowed @ 6.39% on depreciable GFA for the FY 05.

For FY 06 and FY 07, the Commission arrived at depreciation for the individual block of assets (after making adjustment for 90% depreciable assets and lost and damaged assets) and applied the individual rates on it.

For the MYT period, the Commission arrived at fixed assets for the purpose of depreciation in the same fashion as it did for previous years, the Commission applied a average rate of 3.6% (as permissible under Regulations) for both FY 08 and FY 09.

The Commission during the true up for FY 06 and FY 07, reduced the value of assets on account of creation out of consumer contribution .It also reduced the long term loans by the amount of consumer contribution taken to meet the capital expenditure.

Graph A-19.6: Approved Depreciation by the Commission and Deprecation as % of depreciable gross Fixed Assets.



Working Capital Requirement

The Commission computed the working capital requirement of the DISCOMs based on the following norms specified in Terms and Conditions for determination of tariff. The norms are:

- Normative O&M expenses for one month
- Maintenance spares for two months based on annual requirement of 1% of GFA of previous year
- Receivables for 60 days as determined by Commission
- Adjusted for Security Deposit

The Commission allowed interest on normative working capital at the SBI prime lending rate. The Commission also factored the security deposit from consumers while computing the working capital requirement for the year. In the FY 05 and FY 06, Commission had allowed the interest on short term borrowings as proposed by the DISCOMs instead of working capital requirement. The short term borrowings projected by the DISCOMs were higher as against the normative working capital requirement.

Interest Expense

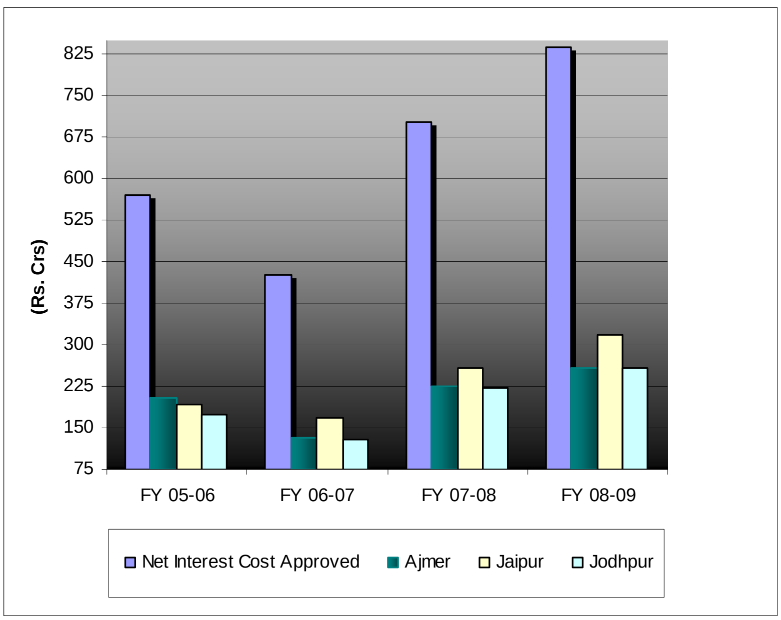
Interest charges of the DISCOMs mainly comprise of interest on long term loans, interest and finance charges on short-term borrowings made by the Nigam, and interest charges in lieu of late payment surcharge which is collected by RVPN.

In the year FY 05, the Commission considered the interest charges on short term borrowings as per the proposed ARR the Commission arrived at interest charges by taking interest on security deposits also.

For FY 06, the Commission followed the same approach. The Commission analyzed the revenue deficit and said that the revenue deficit worked out by the Commission would be based on the target loss level fixed by the Commission and not the actuals. Taking actual losses would have meant the approving higher revenue deficit and in turn higher borrowings and thus higher interest to meet the deficit. For FY 07, the Commission followed the same approach.

In FY 08, the Commission allowed late payment surcharge to the tune of Rs.1300 lakhs, Rs.1300 lakhs and Rs.1000 lakhs to JVVNL, AVVNL and JdVVNL respectively as it felt that that late payment of power purchase bills could not be ruled out. For FY 09, the Commission did not approve the proposed interest on short term borrowings to meet revenue deficit. The Commission in turn said that the DISCOMs have not asked for return on Equity. The Commission therefore decided to allow the interest on short term borrowing as expenses to the extent of RoE which the DISCOM is eligible to receive as per Terms and Conditions of Tariff Regulations.

Graph A-19.7: Interest Cost Approved for Ajmer, Jaipur and Jodhpur (Rs. Crs)



Rate of Return

No return was proposed and allowed for the period FY 05 to FY 09. In FY 08 and FY 09, though the DISCOMs did not claim any return, the Commission compensated them by allowing interest on short term borrowing. The Commission had approved the interest of 11% on short term loans, which was equal to post tax return allowed on the equity capital of the DISCOM (as per Terms and Conditions of Tariff Regulations).

Annual Revenue Requirement

Based on the approach considered by the Commission for various parameters detailed above, the Commission has computed the ARR for each DISCOM. The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY05 to FY09.

Table A-19.23: Proposed and Approved ARR (Rs. Crs)

Particulars	FY05	FY06	FY07	FY08	FY09
Ajmer					
Proposed by the Utility		2,580	2,773	3,031	3,249
Approved	2,263	2,450	2,545	3,192	3,959
Approved as a percentage of proposed		95%	92%	105%	122%
Jaipur					
Proposed by the Utility		2,725	3,020	3,345	3,591
Approved	2,400	2,743	2,706	3,280	4,093
Approved as a percentage of proposed		101%	90%	98%	114%
Jodhpur					
Proposed by the Utility		2199	2268	2782	3041
Approved	1,917	2,153	2,080	2,716	3,345
Approved as a percentage of proposed		98%	92%	98%	110%

Based on the approved ARR for each year, Commission has determined the revenue gap on the existing tariff. The Table below summarizes the revenue gap before adjusting the subsidy provided by the State Govt. during the year.

Table A-19.24: Approved Revenue Gap for the period FY 05 to FY 09 (Rs. Crs)

Revenue (Gap)/Surplus	FY 05	FY 06	FY 07	FY 08	FY 09
Ajmer	(322)	(450)	(306)	(543)	(1034)
Jaipur	(540)	(300)	(52)	(203)	(611)
Jodhpur	(640)	(451)	(280)	(583)	(1008)

Tariff Determination

In the Tariff Order for FY 05, Commission estimated a revenue gap for all the DISCOMs for but the Commission had not determined a mechanism to bridge the revenue gap. However, Commission mentioned that the revenue of DISCOMs had been much less than its expense and the subsidy provided by Govt. was not adequate. Moreover, Commission directed the DISCOMs that additional liability on account of late payment surcharge on delay in payment to generation/transmission companies and interest charges on borrowings to be provided by the State Government as subsidy.

After the issuance of Tariff Order for FY 05, all the DISCOMs filed the petitions in the month of August 2004 for revision of tariff for retail supply of electricity effective from December 1, 2004. The Commission issued the Order on December 17, 2004. In the order, the Commission approved the revised revenue gap for the FY 05 based on the revised revenue details submitted by the DISCOMs for FY 05. The Commission estimated the gap to the tune of Rs. 435.94 Crs for Jaipur, Rs. 476.93 Crs for Ajmer and Rs. 504.46 Crs for Jodhpur. The State Government informed the Commission that it would provide subsidy to the tune of Rs. 1039.00 Crs to bridge the gap for FY 05. After taking into account the Govt. subsidy there was an uncovered revenue deficit of Rs. 378.33 Crs in FY 05. The Commission was of the view that the additional revenue proposed by the DISCOMs on account of revision of tariff was not enough to cover the gap of Rs. 378.33 Crs. Commission finally approved a revision of tariff to partly cover the revenue deficit for the FY 05.

In FY 06, the Commission determined a revenue gap based on the tariff approved in the Order dated 17.12.04. Subsequent to the Order dated Dec, 2004, State Government under provisions of section 65 of the Electricity Act, 2003, had effected the reduction in tariff in the state of Rajasthan. The Commission therefore, had computed amount of subsidy to be provided by the government on account of non-implementation of tariff for FY 06. The Commission also specified that the revenue gap during the year would be bridged by tariff rise and/or fuel price adjustment or subsidy from the State Government.

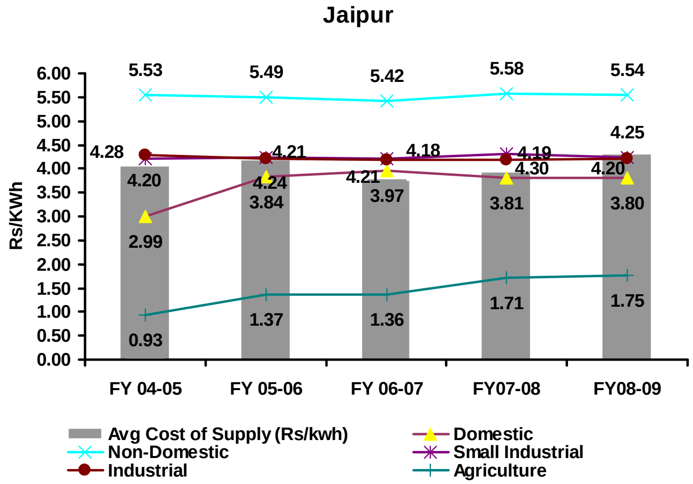
In FY 07, the Commission determined the Aggregate Revenue Requirements of the DISCOMs for FY 07 indicating a revenue deficit of Rs. 306.85 Crs for AVVNL, Rs. 51.68 Crs for JVVNL and Rs. 280.08 Crs for JdVVNL based on the distribution losses targets assigned by the Commission. The Commission stated that revenue gap worked out can be reasonably passed on to the consumer but the tariff was not increased during the FY 07. In FY 08 and FY 09, the Commission did not categorically mentioned about the way or bridging of gap.

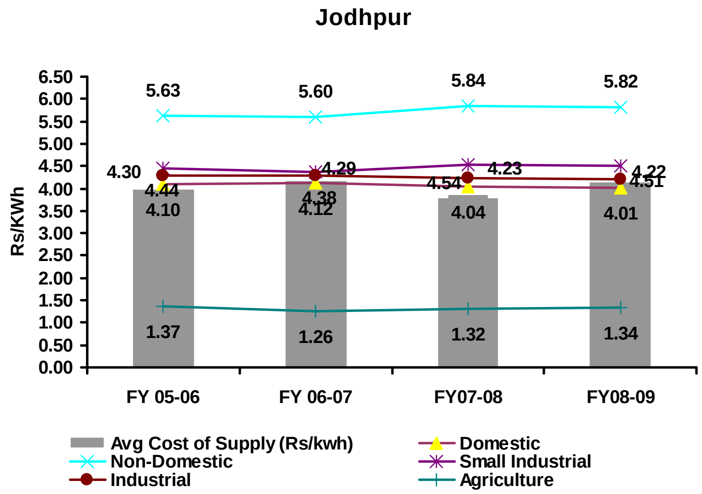
Though there has been a huge revenue gap but the tariff has not been increased by the Commission except for FY 05. However, Commission has suggested various alternatives to bridge the revenue gap. The Commission had also prepared a background note on Rationalization of Retail Tariff". The main features of the background paper were:

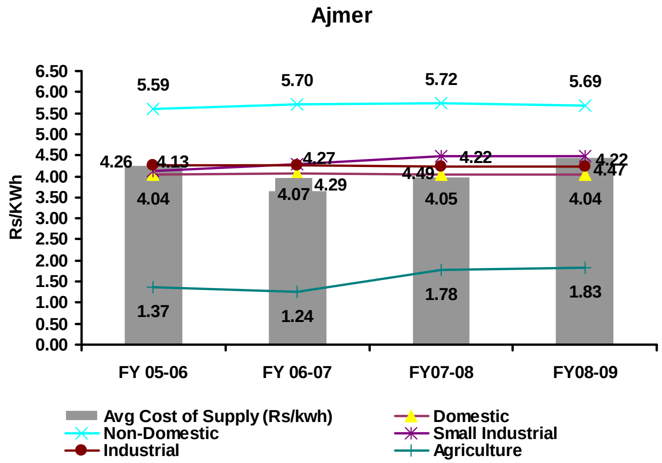
- Abolition of minimum charges for all categories of consumers except agriculture, without effecting any change in the fixed charges and energy charges in the existing tariff.
- BPL supply tariff to be atleast 50% of the cost of power supply.
- No discrimination in the category of consumers of the licensee whether having Captive Power Plant (CPP) or not.
- The provision of ToD tariff to be incorporated for the consumers having contract demand of 1500 kVA and above.
- Reduction in the number of tariff schedules for different category of consumers.

The tariff notified by the Commission for FY 05 to FY 09 was inclusive of the subsidy but did not have directions for charging full tariff to the subsidized consumer category in case of non-receipt of subsidy from the Govt.

The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 05 to FY 09 is summarized in the figure below:


Jaipur
Rs/KWh
FY 04-05
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


Jodhpur
Rs/KWh
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture


Ajmer
Rs/KWh
FY 05-06
FY 06-07
FY07-08
FY08-09
Avg Cost of Supply (Rs/kwh)
Domestic
Non-Domestic
Small Industrial
Industrial
Agriculture

Average Cost of Supply vs. Realization

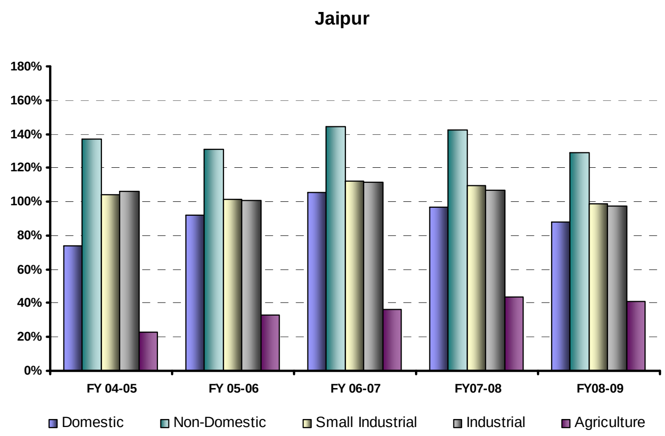
The table below gives the average realization from tariff per DISCOM as against average cost of supply. The average cost of supply has been computed after deducting the non tariff income and other tariff income.

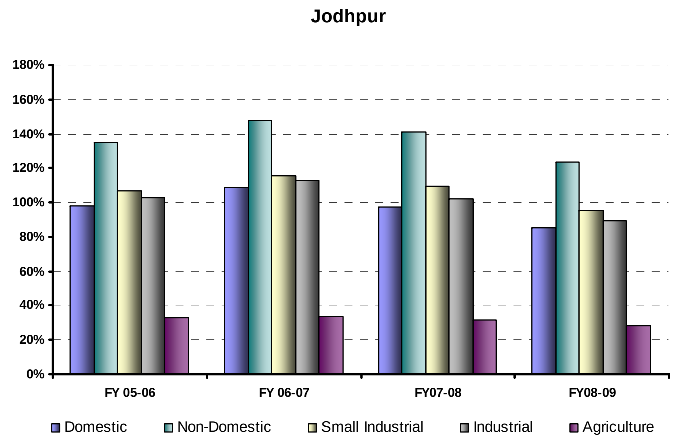
Table A-19.25: Avg. Cost of Supply vs. Realization

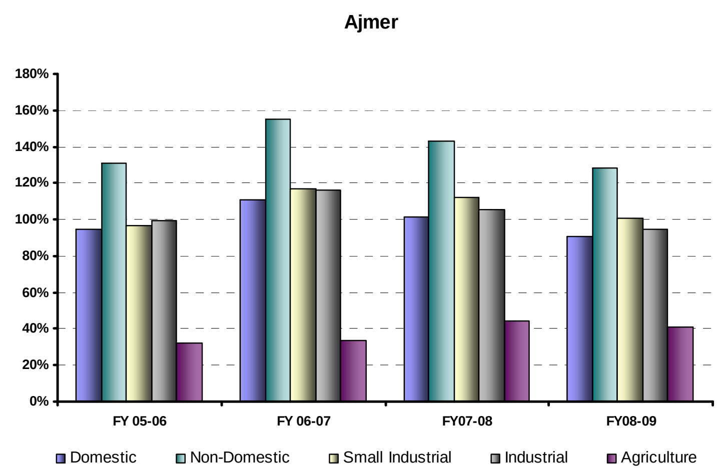
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Ajmer					
Avg Cost of Supply (Rs/kwh)	4.10	4.27	3.67	3.99	4.44
Total Avg Realization (Rs/kwh)	3.51	3.24	3.04	3.24	3.21
(Gap)/ Surplus	**-0.58**	**-1.03**	**-0.63**	**-0.75**	**-1.23**
Jaipur					
Avg Cost of Supply (Rs/kwh)	4.05	4.06	3.59	3.85	4.23
Total Avg Realization (Rs/kwh)	3.15	3.59	3.52	3.61	3.60
(Gap)/ Surplus	**-0.90**	**-0.47**	**-0.07**	**-0.24**	**-0.63**
Jodhpur					
Avg Cost of Supply (Rs/kwh)	3.99	4.17	3.80	4.15	4.71
Total Avg Realization (Rs/kwh)	2.66	3.19	3.13	3.12	3.14
(Gap)/ Surplus	**-1.33**	**-0.97**	**-0.66**	**-1.03**	**-1.57**

The figure below clearly indicates that the realization from non-domestic consumers and in the state of Rajasthan during all years has always been more than 120% of the average cost of supply. The state also has high non domestic consumers being a famous tourist destination. At the same time, the tariff for agricultural consumers in Rajasthan has been to a large extent subsidized and has thus effected realization. The large industrial consumers have marginally above than the average cost of supply. This is actually in contrast to quite many states where industrial tariff approved by the Commission are substantially higher**.**

Graph A-19.8: Approved realization from consumer tariff from FY 04-05 to FY 08-09







Subsidy Support

In Rajasthan, subsidy support is prevalent mainly for agricultural consumer category. In the Tariff Orders issued between FY 05 and FY 09, subsidy support has been considered to bridge the revenue deficit in the state.

The state committed cash subsidy of Rs.400 Crs per annum for the three Nigams. The subsidy included reimbursement of interest charges on borrowings made to fund the unfunded liability for the period FY 04 to FY 07.

As per the annual report of 2005-06, it was found out that the Commission approved Rs. 127.46 Crores as relief for non revision of tariff for Domestic and Agriculture Consumers for the period 1.1.05 to 31.3.05. The subsidy claim made by the DISCOM for the year 2004-05 was Rs. 142.22 Crore. The Commission allowed a subsidy of Rs. 42.48 Crore as Relief package to Domestic and Agriculture Consumers for April, 2005. The Commission also approved relief of Rs. 112.64 crore to Kutir Jyoti, poor domestic consumers consuming upto 50 units per month and Agriculture Consumers. In the same year the Commission also approved additional relief to the tune of Rs. 35.88 crore as package to flat rate(Reduction in slabs) and metered Agriculture (Reduction in minimum) consumers.

The total subsidy approved for the year 2005-06 therefore came to Rs. 191 crore. The Commission up till 2005-06 had granted a total subsidy of Rs. 287 crores only. The Commission estimated a subsidy of Rs.170.00 crores for FY 06-07 to be provided by the Government in advance in equated quarterly installments.

It has been observed the subsidy committed by the Govt. is in line with the approved financial restructuring plan.

Mode of payment of Subsidy:

The State Govt. has been paying subsidy to the DISCOMs in the following manner:

- Cash Subsidy
- Retention of Electricity Duty
- Interest Free Loan

The Commission has not directed the Govt. to clarify the manner in which it contemplated to provide the subsidy in advance i.e. monthly, quarterly, etc. Table below summarizes the subsidy details for the period FY 05 to FY 09

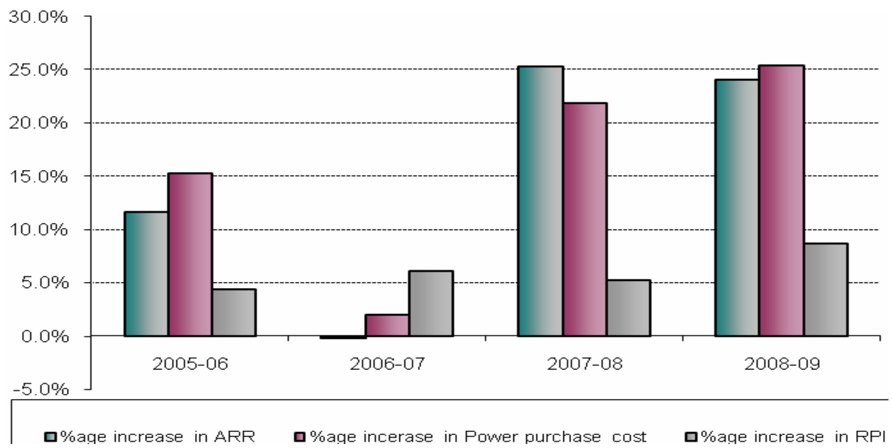
Table A-19.26: Subsidy Estimated/Paid Details

Particulars (Rs. Crs)	FY 05	FY 06	FY 07	FY 08	FY 09
Subsidy announced by State Govt.	1039.00	927.00	1066.00	NA	NA
Subsidy Requirement estimated in the Tariff Order	NA	NA	1652.72	1675	NA
Actual Subsidy Received by DISCOMs	1050.20	NA	NA	NA	NA

In all the Tariff Orders, the appropriate details of subsidy booked and received by the DISCOMs for the period FY 05 to FY 09 from the Govt. is not available.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



The Annual Revenue Requirement as well as Power purchase cost in Rajasthan have seen an increasing trend. The rise in Power purchase cost is mainly on account of increasing demand and less supply which in turn leads of buying of costly power from sources like UI where per unit rate of Power is very high. The Average Cost of supply in of Rajasthan Discoms is among the highest in the country. The state of Rajasthan has not witnessed increase in Tariff from FY 2004-05, so there is an ever increasing gap which in turn leads to increasing interest cost to meet the gap and coupled with higher power purchase cost has lead to increase in ARR.

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR (Rs. Crs)	6579.82	7347.11	7331.82	9188.68	11397.02
Approved Sales (MU)	16254.00	17659.00	19947.95	23065.00	25694.00
Averge Cost of Supply in Rs/kwh (A)	4.05	4.16	3.68	3.98	4.44
% of Power Purchase Cost in ARR	82.0%	84.6%	86.4%	84.1%	85.0%
% of Other remaining Cost in ACS	18.0%	15.4%	13.6%	15.9%	15.0%
% Annual Increase in Power Purchase Cost		15.3%	2.0%	21.9%	25.4%
% Annual Increase in Other Cost		-4.8%	-12.1%	47.4%	16.7%
% Annual RPI Increase		4.4%	6.1%	5.2%	8.7%

Open Access- Cross-Subsidy Surcharge and Additional Surcharge:

Cross subsidy surcharge is charged to Open access customer to transmission and Distribution system under section 38, 39(2)(d), 40(c) and 42(2) of the Electricity Act 2003. As per the RERC (Open Access Regulation), 2004 apart from the transmission charges the following charges will also be applicable to open access consumers who are likely to avail open access facilities including captive generators.

- Cross –Subsidy Surcharge and Additional Surcharge.
- SLDC Charges
- Wheeling Charges

The Commission specified the basis for calculation cross subsidy surcharge as the cost of supply to the category of consumers for the purpose of tariff to which the open access consumer belongs, the voltage at which he is connected and the realization from that category. To work out the cost of supply for individual consumer category, the approach adopted was:

- arriving at functional cost i.e. generation, transmission, distribution
- classification of cost into energy, demand, customers; and
- Allocation of voltage wise cost among different consumer categories; in proportion to their causation of the respective cost.

In the FY06, the open access covered consumers having contract demand of 15 MVA and above i.e. EHT consumers. The Cross Subsidy Surcharge calculated for each DISCOM was different. Cross Subsidy Surcharge for Ajmer worked out at Rs. 1.56/unit, Rs. 1.55/unit for Jaipur and Rs. 1.75/unit for Jodhpur.

In FY 07, the second phase of open access began which covered consumers with contract demand of 5 MVA & above. In the Tariff Order for FY 06-07, the cross subsidy data for different categories of consumers based on the estimated cost of supply to different categories of consumer was applied to arrive at the cross subsidy surcharge component of tariff of respective categories of consumers. This cost separation as per the model will give an indication of cost causation by different categories of consumers depending on the supply voltage, time of use, load factor etc. The cost separation will facilitate open access to those consumers who may opt for open access as per the provision of RERC Open Access Regulation. Such consumers shall have to pay open access surcharge to the respective DISCOMs at whose area the consumer is located.

Further, in the Tariff Order for FY 06-07, the Commission applied cost of supply model and related data required updating regarding consumer load curve, consumer load factor, segment-wise loss and cost incurred in different activities. The calculation in FY 06-07 was based on information on some sample data of load curves, sample cost breakups for the purpose of separation of distribution cost. However, in the Tariff order for FY 07-08, the Commission updated the model further to include the unauthorized intermediate tapping leading to losses, with distribution cost separation as a percentage of assets value at different voltage.

Table A-19.27: Approved Cross Subsidy Surcharges for Open Access

Particulars	Cross Subsidy Surcharge (Rs./unit)		
	FY 07	FY 08	FY 09
LIP – EHV	0.91	0.728	0.55
LIP -33KV	0.63	0.504	0.38
LIP -11KV	0.27	0.216	0.16
ML -132KV	0.74	0.592	0.44
ML -33KV	0.46	0.368	0.28
ML -11KV	0.09	0.072	0.05
NDS-132KV	2.45	1.96	1.47
NDS-33KV	2.17	1.736	1.3
NDS-11KV	1.8	1.44	1.08

In the Tariff order for FY 06-07, the Commission has further provided the applicability of Transmission, Wheeling and Customer Services charges under different scenario of Open Access.

SLDC Charges

The Commission segregated the consolidated ARR of RVPN into Transmission ARR, Generation ARR and SLDC ARR. The SLDC charges are recovered monthly from the vitran nigams in the ratio of 36:36:28. In case the consumers other than DISCOMs utilize the SLDC facilities the revenue collected from these consumers shall be deducted from gross SLDC charges to be recovered from DISCOMs.

The Commission in the Tariff Order for FY 05-06 had specified that short term consumers were to be charged Rs. 3000 per day per schedule as specified by CERC for SLDC. In the Tariff Order for FY 05-06, and onwards the Commission segregated the SLDC charges from the consolidated ARR and further divided among the DISCOMs. In the MYT period SLDC expenses were considered as per the tariff petition with 4% increase for FY 09.

Table A-19.28: Approved SLDC Charges

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR -				2320
est. revenue from open access (Rs.Cr)				5
Net SLDC charges	**1782**	**1784**	**2225**	**2315**
Monthly recoverable charges(Rs. lakhs)	148.5	148.7	185.41	192.92
Chargeable to JVVNL(Rs. lakhs/month)	53.46	53.53	66.75	69.91
Chargeable to AVVNL(Rs. lakhs/month)	41.58	53.53	66.75	69.2
Chargeable to Jd.VVNL (Rs. lakhs/month)	53.46	41.64	51.91	53.81
Trued Up SLDC charges	1760	1797	1797	

Wheeling Charges

Wheeling charges comprises of wheeling charges in cash and in kind i.e. charges in kind to compensate the losses in addition to the charges in cash per kW of contracted demand. The Commission determined voltage wise average wheeling charges in proportion to non-coincident demand of consumers. The Commission specified that for recovery of wheeling charges in cash the nigam would recover only the customer service cost from EHT customers. For recovery of wheeling charges in kind the Commission specified that wheeling charges would be recovered by nigam from customer using the network of the Nigam by compensating him for the losses accruing on the network, as allowed by the Commission.

Commission had approved wheeling charges for FY 06 and FY 07 for each distribution company. Moreover, Commission had also approved loss level at different voltages (33 kV, 11 kV and LT) and losses in kind up to the respective voltage level at which the wheeled energy will be applicable to the open access consumers.

For effective open access in the distribution network the segregation of wheeling cost is very much imperative. Therefore, the Commission in the Tariff Order for FY 07 had computed wheeling cost for different segments of network in voltage wise where different consumers were connected for receiving power supply. The distribution cost was further separated into wheeling cost and consumer cost so as to reflect actual or near actual cost to be recovered from the open access consumers in a transparent manner.

Table A-19.29: Wheeling charges

Voltage of network used	Rate of wheeling charge (Rs./unit)		
	FY 07	FY 08	FY 09
LIP – EHV	0.01	0.01	0.01
LIP -33KV	0.11	0.11	0.11
LIP -11KV	0.32	0.32	0.32
ML -132KV	0.01	0.01	0.01
ML -33KV	0.11	0.11	0.11
ML -11KV	0.32	0.32	0.32
NDS-132KV	0.01	0.01	0.01
NDS-33KV	0.11	0.11	0.11
NDS-11KV	0.32	0.32	0.32

A-20. Tamil Nadu

Introduction

TNEB has not submitted their ARR petition to TNERC since FY 2003. On account of this, there has not been any substantial change to the electricity tariff in the state for the last 6 years. Thus, the tariff rates and the structure in the state are quite unviable for the operation of the electricity sector under commercial principles and competitive environment mandated by the Electricity Act, 2003 and later policy initiatives.

The growing base of subsidized consumers such as agriculture, hut service and a high percentage of domestic consumers have adverse impact on its financial performance. Free supply or below cost supply to these categories without a corresponding and equivalent subsidy from the State Government has led to resource constraints to undertake further capital expenditure and to meet the day to day normal revenue expenditure. Overall, there has been robust growth across all categories of consumers, with the overall CAGR growth rate clocked being 8.4% between 2003 and 2007. Urban and services sectors are the fastest growing sectors of the State's economy. This has resulted in significant growth in subsidizing categories such as Industrial HT and Commercial HT in recent years. However, the subsized categories of domestic and powerlooms have also clocked above average growth rates. Agriculture has grown at a steady 3.7 % between 2003 and 2007.

TNERC has not passed any tariff order for TNEB consumers in the last 6 years in the absence of a formal petition by the TNEB. However, the Commission has been quite active in putting in place other regulatory policies in place such as open access provisions, tariff rates for renewable resources etc. It also passes an order every year specifying the amount of agriculture subsidy to be paid by the State Government to TNEB for providing free power to the agriculture sector in the state. Some of the key highlights of the orders issued by TNERC during FY 05 to FY 09 are as follows:

Reduction of AT&C losses

TNERC had issued an Order on 21st July, 2009 in the matter of reduction of AT&C Losses as per the recommendations of FOR working group. The Commission has directed TNEB to achieve AT&C loss reduction targets fixed by the Commission vide letter dated 06-11-2008 detailed as below:

Particulars	FY 09	FY 10	FY 11	FY 12
Approved AT&C loss	19.3%	18.9%	18.5%	18.1%

The Commission also directed TNEB to undertake the following steps:

1. Discontinuation of clubbing Transmission and Distribution losses by installing meters with starting from EHV feeders and upto Secondary side of the distribution transformers to asses exact technical losses
2. Distribution Licensee should furnish the roadmap for installation of meters in hut and agricultural services and commence installing meters from 01.10.2009
3. Baseline data should be compiled for each electricity division by TNEB to segregate technical and non-technical losses

4. Suitable local area based incentive and disincentive schemes for the staff of the Distribution Licensee linked to reduction in losses
5. Segregation of agricultural feeders as far as possible. Assessment of unmetered agricultural consumption based on scientific sampling and with third party verification where segregation of agricultural feeders is not possible
6. Underachievement of loss reduction target to be borne by the licensee and in case of overachievement, the gain to be shared between the licensee and the consumers in the ratio of 50:50
7. Furnish report on various loss reduction strategies and status of action taken on quarterly basis

Determination of Transmission Charges, Wheeling Charges, Cross Subsidy surcharge and Additional Surcharge

For FY 06, TNERC after analyzing the petition of TNEB and process of public hearing determined the transmission and wheeling charges for the open-access consumers based on the following methodology:

The Commission accepted the proposal of TNEB for adoption of pooled cost method for determination of transmission and wheeling charges considering the simplicity and ease of implementation in the absence of voltage wise asset value. Therefore, TNERC approved the open access charges as per TNERC's Tariff Regulations. The approved the transmission charges for FY 06 for long-term open access customers are detailed below:

Particulars	Proposed by TNEB	Approved by TNERC
Annual Transmission Charges Rs.in Lakhs	77394	73062
Available Transmission Capacity in MW	6654	7198
Transmission Charges Rs/MW/Day	3187	2781

The Commission fixes the wheeling charges for FY 06 for long-term open access customers as detailed below:

Particulars	Proposed by TNEB	Approved by TNERC
Wheeling charges for long term OA customers in paise per unit	19.29	14.74

Open access customers were also required to compensate the line loss in kind as per the open access regulations which were also determined based on point of drawl and injection point.

Injection Voltage	Drawal Voltage	Transmission Loss	Distribution Loss	Total Loss
22kV/11kV	22kV/11kV	5.00%	5.00%	10.00%
33kV	22kV/11kV	2.25%	5.00%	7.25%
110kV	22kV/11kv	1.25%	5.00%	6.25%
110kV	33kV	1.25%	2.25%	3.50%
110kV	110kV	1.25%	1.25%	2.50%
230kV	22kV/11kV	0.50%	5.00%	5.50%

Injection Voltage	Drawal Voltage	Transmission Loss	Distribution Loss	Total Loss
230kV	33kV	0.50%	2.25%	2.75%
230kV	110kV	0.50%	1.25%	1.75%
230kV	230kV	0.50%	0.50%	1.00%

Further, the Commission approved the rate for short-term open access customers at 25% of the rate for long-term open access customers in line with the provisions in CERC's Regulations.

Cross-subsidy Surcharge

The approved cross-subsidy surcharge payable by different category of open access customers for injection and drawal at different voltage level is as below:

Injection Voltage	Drawal Voltage	Industrial (paisa/kwh)	Educational Institutes (paisa/kwh)	Commercial (paisa/kwh)
22kV/11kV	22kV/11kV	97.17	91.71	274.87
33kV	22kV/11kV	105.47	100.01	283.17
110kV	22kV/11kv	108.49	103.03	286.19
110kV	33kV	116.8	111.34	294.5
110kV	110kV	119.82	114.36	297.52
230kV	22kV/11kV	110.76	105.3	288.46
230kV	33kV	119.06	113.6	296.76
230kV	110kV	122.08	116.62	299.78
230kV	230kV	124.35	118.89	302.05

Additional Surcharge

Considering the deficit in generation capacity available at the disposal of TNEB, TNERC had approved no additional surcharge for FY 06.

Subsidy from State Government

The Board has been dependent on the State Government to provide tariff compensation for supply of free and subsidized electricity to certain categories of consumers. The cash subsidy available in FY 2006-07 was Rs 1330 Crores per annum. The cash subsidy has not at all matched the actual quantum of subsidization by the Board to the subsidized categories. This led to gradual deterioration in the financial health of the Board

TNERC has approved subsidy of Rs. 1561.30 Crs for FY 09 to compensate the short fall in revenue to TNEB. Moreover, Commission has directed the State Government to pay the subsidy amount in advance to TNEB.

A-23. Tripura

Introduction

Tripura State Electricity Corporation Limited (TSECL) has been constituted and registered as a public limited company dated 28th December, 2004, and started functioning from January 1, 2005. TSECL serves over 3.25 lakh consumers which are mostly dominated by domestic category (including Kutir Jyoti) that constitute as high as 88% of the total consumers. Industrial load is about 1% of total connected load

The First tariff order was issued for FY 05-06 after the formation of TSECL. Next tariff order was issued in FY 06-07. Thus only two tariff orders have been issued after the formation of TSECL.

The tariff order for FY 05-06 has no details of proposed ARR and the approach adopted by the Commission for approving various components of ARR.

Tripura– Executive Summary

Sales

The Commission has approved sales as proposed by TSECL for FY 06-07 i.e at 395 MU, which is an increase of about 6.7% and hence reasonable according to the Commission. The table below shows the details of category-wise sales figure as proposed and approved by the Commission:

Table A-23.1: Approved Sales to various Categories for FY 07 (MUs)

Consumer Category	FY 07
Kutir Jyoti	9.40
Domestic	205.18
Commercial	27.40
Irrigation	31.00
Water Works	13.00
Industrial	20.70
Tea, Coffee and Rubber Garden	0.35
Public Lightining	18.00
Bulk Consumers	70.00
Total	**395.00**

Annual Revenue Requirement

- The Commission did not accept the expense projections as submitted by TSECL for FY 06-07 i.e. at Rs. 150.87 Crore and only provisionally approved expenses for TSECL at Rs. 106.3359 Crore. Various disapprovals of the Commission to the expense projections of TSECL and the reasons for the same are listed below:
  - Fuel cost of Rs. 45.59 Crore was approved as proposed but with directive to submit fuel purchase agreement
  - The employees cost proposed i.e Rs. 55.10 Crore was about 17% higher then as approved in 2005-06. Therefore employee cost was approved as approved for FY 05-06.

- Provisional depreciation amount of Rs. 20 Crore approved in FY 05-06 was rejected as fixed assets evaluation was not completed and audited account was not submitted. A token of Rs. 10 Crore was provisionally approved.
- Income from Trading on account of inter-state, bilateral and UI altogether was provisionally approved at Rs.125 Crore against proposed amount Rs. 119.85 Crore.
- Proposed bad debt provision of Rs. 82 Lakh was not approved as enough exercise of recovery was not exhibited.
- Repair and maintenance expense was approved same as for approved for FY 05-06.
- The AT&C loss was shown 35% by the TSECL in 2005-06 and the Commission pegged it to bring it down 25% within a timeframe. For FY 06-07 TSEC proposed increase in AT&C loss and the Commission note that "*This increasing trend of ATC loss indicates either there is departure from actual measurable quantity or it is yet to be finally assessed. The Commission feels that for Tripura due to old system configuration, spreaded network and old equipment, wire cables, joints etc. (which were supposed to be replaced by past depreciation reserve), the ATC loss of 25% should be attempted and no price variation on account of either fuel or other charge as per regulation will remain, inoperable for next one year or until notified otherwise".* .

o The Commission thus provisionally approved expenses as shown in section below. But the Commission approved tariff based on average cost of supply as calculated by allowing escalation of 5% over the cost of supply for FY 05-06.

o The Commission noted that, ***"As there is no account available, as submitted by Licensee, the Commission considered it in inappropriate to change fixed charge levied as per last Tariff Order for the financial year 2005-06. The Commission also analyzed and arrived at a calculated estimation of average cost of supply up to consumer premises as Rs. 3.05 (Rupees three & paise five) only per kwh, which was Rs. 2.90/- (Rupees two and ninety) only per kwh last year. In absence of appropriate cost analysis, based by audited accounts, the Commission seals it at Rs. 3.05 only considering as escalation of 5% (approximate). Keeping fixed charge unchanged, the variable charge altered at a level towards positive side and in consideration of quantum of energy volume, estimated to be 395 MU per annum for 2006-07 and total revenue as calculated as Rs. 105 Crore with Rs. 14.92 Crore as fixed charge. The schedules are prepared accordingly"***.

o The details of calculation of average cost of supply for FY 06-07 are as follows:

Particulars		Cost of Supply (Rs/kWh)
Weighted average cost of generation (State	Rs. 1.50 per kwh	Rs. 1.50/kwh
Weighted average cost of generation (ISGS)	Rs. 1.40 per kwh	
Transmission cost of per unit (ISGS)	39 paise per kwh	Rs. 0.16/kwh
Transmission cost of per unit (State)	10 paise per kwh	
Distribution cost per unit of supply upto consumer premises.	Rs. 1.00 per kwh	Rs. 1.00 per kwh.

Particulars		Cost of Supply (Rs/kWh)
(+) 10% variation		Rs. 0.26 per kwh
Sub Total		**Rs. 2.92 per kwh**
Add 5% due to price index for 2006-07		Rs. 0.14 per kwh
Total		Rs. 3.06 per kwh

Subsidy

In FY 06-07, the Commission has requested subsidy from the government in form of Rs. 805.46 lakhs as employee cost, Rs. 583.17 lakh as Interest cost, Rs. 1444.00 lakhs as tariff support, Rs. 1167.33 lakhs as Special support for special maintenance and trading risk.

Table A-23.2: Proposed and Approved ARR (Rs. Lakhs)

Particulars	FY 06 Proposed	FY 06 Approved	FY 07 Proposed	FY 07 Approved
Fuel	NA	4,493.48	4,558.60	4,558.60
Power Purchase	NA	11,844.00	12,396.20	12,396.20
Repair and Maintenance	NA	1,210.83	1241.48	1241.48
Stores & Spares	NA	95.68	210.79	210.79
Employee Cost	NA	4,704.54	5510.00	4704.54
Administrative and General Expense	NA	291.00	387.67	291.00
Legal Charges	NA	50.00	20.00	20.00
Auditors fees	NA	150.00	10.00	10.00
Consultancy fees, charges, Staff welfare expenses and training & development etc.			50	50
Depreciation	NA	2,000.00	2000.00	1000.00
Interest and Finance Cost	NA	672.00	583.17	
Provision for Bad and Doubtful debts	NA		82.19	
Return on Equity	NA	100.00		
Regulatory Expenditure	NA	100.00		
Total	NA	25,711.53	27050.10	24482.61
Less: Other Income(Inter-state Trading Power, Sale to Mizoram & Manipur, Income from UI)	NA	11,276.43	11,985.90	12500.00
Other Income	NA			619.00
Subsidy	NA	4000.00		
Provisional Total Expenditure	NA			
Net Annual Revenue Requirement		**10,435.10**		**10,633.59**

A-22. Uttar Pradesh

A-22.1. Uttar Pradesh – Generation Utility

Introduction

The State of Uttar Pradesh has two generating companies Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd (UPRVUNL) and Uttar Pradesh Jal Vidyut Nigam Ltd (UPJVNL). Both the companies were incorporated on 14th January 2000 through Uttar Pradesh Electricity Reforms Transfer Scheme, 2000. UPRVUNL which existed prior to the date of reorganization was vested with the responsibility of generation and sale of electricity from the thermal generating stations and Uttar Pradesh Jal Vidyut Nigam Limited (UPJVNL) was vested with the responsibility of generation and sale of electricity from the hydro generating station.

Presently, the installed generation capacity of the UPRVUNL and UPJVNL put together is 4537 MW (derated capacity). All the plants of UPRVUNL i.e. Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd are old and have their present capacity derated to 4022 MW (4544 MW was the original installed capacity of UPRVUNL). The only new capacity addition was in FY 06 through Parichha Extension Power Station with the capacity of 420 MW.

Post the transfer scheme in 2000 and the subsequent issuance of UPERC terms and condition for determination of tariff for the generating station in 2004, since no tariff petition was filed by the UPRVUNL and UPJVNL, UPERC had approved the tariff for these generating station through the Tariff Order for approval of ARR of Uttar Pradesh Power Corporation Limited (UPPCL) for FY 05. The Commission issued the first Tariff Order for generation companies as per MYT regulations with control period from FY 06 to FY 08. Following the issue of first MYT order for FY 06 to FY 08, the Commission has shifted back to ARR approach for FY 09.

Generation Capacity

Uttar Pradesh has a total of 8 coal-based generating stations belonging to UPRVUNL and 5 hydel plants (4 large hydel plants and 4 small Upper Ganga Canal power station clubbed under UGC). The plant wise generating capacity of the State Generating Stations is as summarized below

Table A-22.1: Plant wise Generating Capacity- UPRVUNL

Particulars	UPRVUNL			
	Harduaganj	Panki	Paricha	Obra A
Station Capacity (in MW)	440	284	220	550
Derated Capacity (in MW)	220	210	220	322
Year of Commissioning	1968-78	1967-77	1984-85	1967-76
Units Capacity (MW)	50X2 55X2 60X2 110X1	32X2 110X2	110X2	50X5 100X3

Table A-22.2: Plant wise Generating Capacity- UPRVUNL

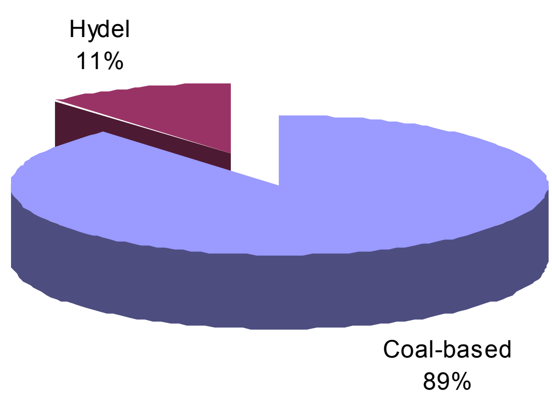
Particulars	UPRVUNL			
	Obra B	Anpara A	Anpara B	Paricha Extn
Station Capacity (MW)	1000	630	1000	420
Derated Capacity (MW)	1000	630	1000	420
Year of Commissioning	1980-82	1987-89	1994	2006
Units Capacity (MW)	200X5	3X210	2X500	210X1

Table A-22.3: Plant wise Generating Capacity- UPJVNL

Particulars	UPJVNL				
	Khara	Rihand	Matatila	Obra	UGC
Station Capacity (MW)	72	300	30	99	13.7
Year of Commissioning	N/A	N/A	N/A	N/A	N/A
Units Capacity (MW)	3 X 24	6 X 50	3 X 10	3 X 33	2 X 2.5 2 X 1.5 2 X 1.5 4 X 0.375 + 2 X 0.6

Of the total generating capacity of 4536.7 MW, 4022 MW is coal based and 514.7 MW is hydel based.

Graph A-22.1: Break-up of Generation Plants



Plant Load Factor (PLF)

During MYT control period from FY 06 to FY 08, the Commission had approved PLF based on the operating norms prescribed in MYT Regulations. According to these regulations PLF for any given period can be calculated as follows:

$$PLF (\%) = 10{,}000 \times \sum_{i=1}^{N} SGi / \{N \times IC \times (100-AUXn)\} \%$$

where,

IC = Installed Capacity of the generating station in MW,

SGi = Scheduled Generation in MW for the ith time block of the period,

N = Number of time blocks during the period, and

AUXn = Normative Auxiliary Energy Consumption as a percentage of gross generation.

By the time tariff order for MYT control years was filed, FY 06 and FY 07 had almost elapsed and therefore the Commission relaxed PLF norms. The Commission approved PLF for FY 08 as per the regulation except for Obra A as the plant was under R&M and only some of the units were functional during FY 08.

For FY 09, the Commission had approved PLF based on the PLF regulations. The Commission did not relax the norms in consideration of the fact that UPRVUNL has failed to show any improvement and had remarked that the relaxation of norms can only take place in case of planned R&M activity.

The approved and proposed PLF of the various stations are as under:

Table A-22.4: Approved and Proposed Plant Load Factor (PLF)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved PLF					
Harduaganj	24.40%	20.00%	28.00%	40.00%	40.00%
Panki	49.00%	50.00%	50.00%	65.00%	65.00%
Paricha	53.00%	45.00%	50.00%	60.00%	60.00%
Obra A	30.00%	18.00%	24.00%	40.00%	65.00%
Obra B	57.70%	55.00%	55.00%	75.00%	75.00%
Anpara A	77.70%	75.00%	75.00%	80.00%	80.00%
Anpara B	80.80%	85.00%	80.00%	80.00%	80.00%
Paricha Extn	0.00%	0.00%	0.00%	0.00%	80.00%
Proposed					
Harduaganj	NA	20.00%	28.00%	27.93%	40.00%
Panki	NA	50.00%	50.00%	49.86%	65.00%
Paricha	NA	45.00%	50.00%	59.84%	50%
Obra A	NA	18.00%	24.00%	23.93%	50%
Obra B	NA	55.00%	55.00%	54.85%	60%
Anpara A	NA	75.00%	75.00%	78.36%	80%
Anpara B	NA	85.00%	80.00%	79.78%	80%
Paricha Extn			80.00%	80.00%	80%

Auxiliary Consumption

The Commission had approved tariff for FY 05 on suo moto basis and accordingly the Auxiliary consumption has been approved as per the tariff regulations. The approach for approval of auxiliary consumption for the MYT control period from FY 06 to FY 08 has been as per the norms set out in the Tariff Regulations inspite of UPRVUNL requesting relaxation in norms. For FY 09, the Commission had approved auxiliary consumption based on the norms approved by the Commission in the Generation Regulations (First

Amendment), 2007. The Commission had however relaxed the norms for all the stations except for Anapara A, Anapara B and Parichha Extension on the proposal of UPRVUNL. UPRVUNL had submitted that it was not able to carryout maintenance activity because of non availability of adequate funds due to defaults in payment by the UPPCL.

The table below shows the proposed and approved Auxiliary consumption starting from FY 05 to FY 09.

Table A-22.5: Approved and Proposed Plant Auxiliary Consumption

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
Harduaganj	12.00%	12.00%	11.00%	10.00%	11.00%
Panki	12.00%	12.00%	11.00%	11.00%	11.50%
Paricha	12.00%	12.00%	11.00%	11.00%	11.50%
Obra A	12.00%	9.00%	9.00%	8.50%	11.00%
Obra B	9.00%	9.00%	9.00%	8.50%	10.50%
Anpara A	8.00%	8.00%	8.00%	8.00%	8.50%
Anpara B	7.60%	7.00%	7.00%	7.00%	7.00%
Paricha Extn	0.00%	0.00%	9.00%	9.00%	9.00%
Proposed					
Harduaganj	NA	17.70%	13.00%	12.75%	12.00%
Panki	NA	11.70%	12.00%	11.75%	12.00%
Paricha	NA	17.00%	13.00%	12.00%	12.00%
Obra A	NA	23.80%	15.00%	14.00%	12.00%
Obra B	NA	10.60%	10.60%	10.50%	12.00%
Anpara A	NA	9.80%	9.50%	9.00%	8.50%
Anpara B	NA	7.80%	8.50%	8.50%	7.00%
Paricha Extn			9.00%	9.00%	9.00%

The Commission in FY 08 had noted that since the unavailability of funds was one of the major reasons of high Auxiliary consumption and UPPCL was responsible for the same, impact of inefficiency in Obra-A, Obra B, Harduaganj, Panki and Parichha should be shared by the UPRVUNL and UPPCL. The Commission has accordingly ordered that half of the increased auxiliary consumption above the benchmarks shall be borne by the UPPCL for their failure in timely payment and the rest half shall be borne by the UPRVUNL for not being diligent in realizing its revenue

The table below shows the benchmark Auxiliary consumption for all the plants for FY 09.

Table A-22.6: Plant Auxiliary Consumption as per the regulation for FY 09

Thermal Power Station	Auxiliary consumption as per regulation
Anapara A	8.50%
Anapara B	7.00%
Obra A	10.00%
Obra B	9.00%
Panki	10.00%
Hardauganj	11.00%

Thermal Power Station	Auxiliary consumption as per regulation
Parichha	11.00%
Parichha Extension	9.00%

Station Heat Rate (SHR)

The Commission had approved Station Heat Rate (SHR) for FY 05 and for the MYT control period based on the Tariff Regulation. As for FY 09, however, the Commission had considered the difficulty faced by UPRVUNL due to non-payment of arrears by UPPCL that led to higher SHR and ultimately higher fuel cost and approved SHR as proposed by UPJUVNL to compensate for the losses.

Table A-22.7: Approved and Proposed Station Heat Rate (in kCal/kWh)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
Harduaganj	3450	3400	3350	3300	3450
Panki	3100	3000	3000	2950	3100
Paricha	3550	3400	3250	3100	3100
Obra A	3000	2950	2850	2850	3000
Obra B	2900	2750	2650	2550	2900
Anpara A	2500	2500	2500	2500	2500
Anpara B	2500	2450	2450	2450	2450
Paricha Extn	0	0	2600	2514	2500
Proposed					
Harduaganj	NA	3500	3500	3400	3450
Panki	NA	3100	3100	3100	3100
Paricha	NA	3550	3550	3500	3100
Obra A	NA	3500	3150	3000	3000
Obra B	NA	3000	3000	2900	2900
Anpara A	NA	2550	2500	2500	2500
Anpara B	NA	2550	2450	2450	2450
Paricha Extn	NA		2500	2500	2500

Gross and Net Units Generated

Considering the above technical parameters, the Commission has approved gross and net power generation from each plant. The table below summarizes the plant-wise gross and net generation approved by the Commission during FY 06 to FY 09.

Table A-22.8: Approved Gross and Net Generation for UPRVUNL (MUs)

Particulars	FY05	FY 06	FY 07	FY 08	FY 09
Harduaganj	NA	657	920	1318	816.82
Panki	NA	920	920	1199	1196

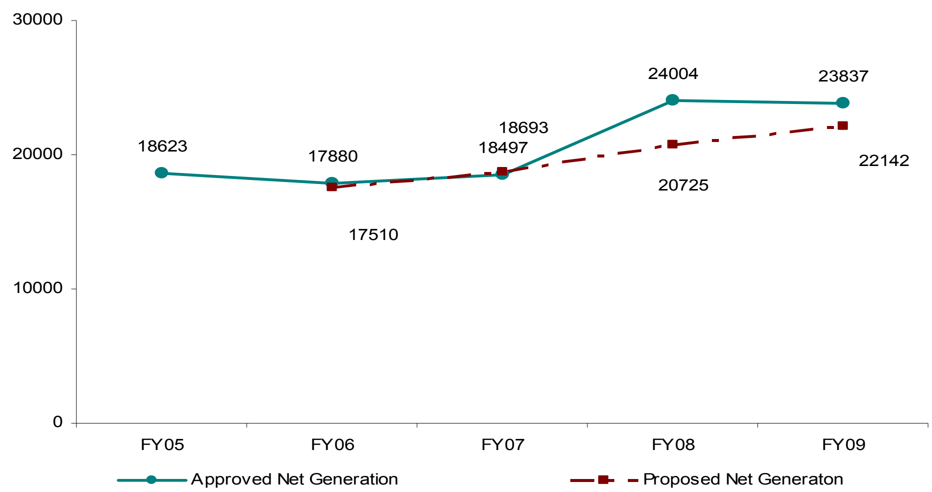
Particulars	FY05	FY 06	FY 07	FY 08	FY 09
Paricha	NA	867	964	1159	1156
Obra A	NA	697	929	1553	2148
Obra B	NA	4818	4818	6588	6570
Anpara A	NA	4139	4139	4427	4415
Anpara B	NA	7446	7008	7027	7008
Paricha Extn	NA	0	0	0	2943
Total Gross Generation	NA	19544	19698	23271	26253
Auxiliary Consumption	NA	1664	2485	3126	3139
Approved Net Generation	17916	17880	17213	20145	23114

Table A-22.9: Approved Gross and Net Generation for UPJVNL (MUs)

Particulars	FY05	FY 06	FY 07	FY 08	FY 09
Khara	NA	385	385	385	385
Rihand	NA	920	920	920	920
Matatila	NA	123	123	123	123
Obra	NA	279	279	279	279
UGC	NA	33	33	33	33
Total Gross Generation	NA	1740	1740	1740	1740
Auxiliary Consumption	NA	17	17	17	14
Approved Net Generation	1639	1722	1722	1722	1725

A comparison of the approved and proposed net generation from the UPRVUNL generating plants shows that the Commission has generally approved net generation more that proposed by UPRVUNL based on approved Auxiliary consumption and PLF as per the regulations whereas UPRVUNL has not been able to improve its performance over the years.

Graph A-22.2: Comparison of Approved and Proposed Net Generation (MUs)



The section below discusses the approach adopted by the Commission in approval of Fixed and Variable Cost

FIXED COST

Operation & Maintenance Cost (O&M)

The O&M cost of UPJVNL & UPRVUNL for FY 05 as well as during the MYT control period from FY 06 to FY 08 had been uniformly approved by the Commission by applying an escalation of 4% on the approved O&M cost of previous year. The Commission had, however, considered slightly different approach for UPJVNL during the control period. In case of UPJVNL, the escalation of 4% was applied on the average of actual and approved O&M cost for last five years.

For FY 09, the Commission had amended the UPERC Tariff Regulation specifying escalation rate of 5% by allowing 10% and 8% escalation proposed by UPRVUNL and UPJVNL respectively due to increase in Wholesale Price Index (WPI) and shortfall of funds experienced by the UPRVUNL and UPJVNL due to non-payment of dues by the UPPCL. Higher escalation for FY 09 was also allowed to enable the generating stations to improve efficiency and performance.

Depreciation

In FY 05 Tariff Order for UPRVUNL, the Commission had approved depreciation at the rate of 3.6% on the gross block of the assets except for Harduaganj and Obra A for which a depreciation of Rs.5 Cr and Rs.3 Cr respectively was approved as specified in the PPA’s. In the following years from FY 06 to FY 09, the Commission had approved depreciation for UPRVUNL on the Opening GFA of the year at the rate of 3.54% for all generating stations except for Anpara A, Anpara B, Paricha and Paricha Extn. In case of these stations, depreciation at 3.56% had been taken considering their old age. These rates of depreciation considered were the average depreciation rates for various assets, excluding land.

For UPJVNL, the Commission has approved the depreciation rate all through from FY 05 to FY 09 at 2.57% of the gross block in accordance with the CERC norms for similar generating stations. The Commission has however not calculated the average rate of depreciation rate since the plant-wise break-up of assets for the generation stations and details of capitalization were not provided by UPJVNL.

Advance Against Depreciation (AAD)

The Commission has not allowed AAD in any of the tariff order neither have the generating companies proposed AAD.

Interest Cost

The Commission had approved the interest cost (11%) as estimated by UPJVNL, in the Tariff Order for FY 05. The Commission had also directed UPJVNL to restructure its loan and bring down the rate of interest.

In the subsequent MYT petition, however, UPJVNL has projected a still higher rate of Interest which the Commission did not agree to and has maintained approval of interest cost at 11% as for the previous year since there was no evidence of drawal of fresh loans.

The Commission had approved rate of interest for loan repayment at 12.25% (as agreed by UPJVNL in the proposal by UPPCL) for FY 09, being the the prime lending rate of SBI bank as on April 1, 2008. Since the loan-wise details are not available, the repayment amount has been considered to be equal to the amount of depreciation during the year.

In case of UPRVUNL, the Commission for all the five year from FY 05 to FY 09 has approved the interest rates at 12.5% except for Paricha Extension generating station, where actual loan-wise details and replacement schedules are available. In case of absence of loan-wise interest rates and discrepancies in submission by UPRVUNL, the interest costs have been calculated by considering the opening balance of loans and the normative repayment schedule..

Interest on Working Capital

For approval of the interest on working capital, the Commission had considered normative working capital norms as per the CERC guidelines. For UPJVNL and UPRVUNL stations the Commission had approved the following components for estimation of working capital requirement for FY 06 to FY 08:

- O&M expenses for 1 month;
- Maintenance spares @ 1% of the historical cost escalated @ 4% per annum from the date of commercial operation; and
- Receivables equivalent to 2 months of fixed charges for sale of electricity, calculated on normative capacity index

For FY 09, the Commission had amended the working capital norms and increased the escalation rate for maintenance spares from 4% to 6%.

The Commission had approved interest rate for working capital rate on normative basis and which is equal to later of short term PLR of State Bank of India as on 1st April 2005 or 1st April of the year in which the generating station or a unit thereof is declared under commercial operation.

A summary of the interest rate on working capital considered by the Commission in its various Tariff Orders during FY05 and FY 09 has been summarized below:

Table A-22.10: Approved Interest Rate for Working Capital Borrowings (%)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved Interest rate for WC borrowings	NA	10.25%	10.25%	10.25%	12.75%

Table A-22.11: Approved and Proposed Interest on Working Capital (Rs.Crs)

Particulars	FY 05		FY 06		FY 07		FY 08		FY 09	
	App	Pro	App	Pro	App	Pro	App	Pro	App	Pro
UPRVUNL										
	0.00	NA	82.16	94.00	87.65	106.0	109.8	112.00	168.9	166.38

UPJVNL										
	3.40	NA	2.20	NA*	2.26	NA*	2.34	NA*	4.64	NA*

** The tariff order does not contain the details of proposed figures.*

Total Fixed Cost

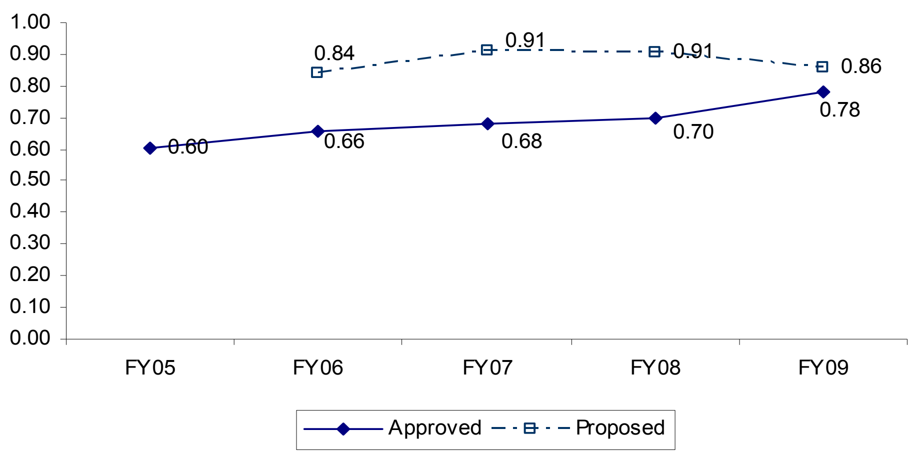
The Commission has approved the total fixed cost for UPRVUNL and UPJVNL based on the approach for various components as discussed above. The Commission has always approved plant-wise total fixed cost for both the generating companies. A comparison of the approved total fixed cost for each year, as compared to proposed total fixed cost is provided in the table below:

Table A-22.12: Approved and Proposed Fixed Cost for UPRVUNL (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
UPRVUNL					
Approved	1120.27	1180.57	1229.95	1487.89	1652.70
Proposed	----	1505.00	1638.00	1935.00	1834.87

The major reason contributing to the substantial gap between the proposed and approved fixed cost is the disallowance of Interest cost. The unavailability of loan-details and repayment schedule has caused the Commission to disallow huge amount of proposed interest cost. The gap, however, reduced in the order for FY 09 as the Commission took note of non-payment of arrears by UPPCL and has thus relaxed the regulations to allow extra budget to UPRVUNL for carrying out R&M of the plants.

Graph A-22.3: Approved and Proposed up Per Unit Fixed Cost (Rs. Per unit)



The Tariff order for UPJVNL does not contain the proposed figures for fixed cost for FY 06 through FY 08 and hence comparison of the two is not possible.

Fuel Cost

The Commission has approved fuel cost based on the total requirement of fuel for each station and the estimated prices of fuel. The Commission has adopted a uniform approach by considering simple average of actual cost of coal in the preceding 3 months for computing the fuel price in each of the Tariff Order issued for FY 06[1] to FY 09 for UPRVUNL. The fuel price adjustment for all the years has been done uniformly every month based on monthly audited results.

The cost of fuel for FY 07 and FY 08 had been kept at the same level as that for FY 06 and any impact of variation in GCV or cost of fuel during MYT period (FY 06 to FY 08) and later in FY 09 was subject to adjustment on monthly basis to be claimed as fuel price variation. The Commission had also directed UPRVUNL not to file any separate application for Fuel price adjustment. Simultaneously, the Commission also directed UPRVUNL to maintain following records:

1. Monthly coal and oil consumption as fired, based on daily shift wise consumption. Total Coal consumption includes the transit and handling losses as specified in the generation regulations.

2. Landed cost of coal and oil in accordance with the format specified by the Commission in generation regulation.

3. Summation of the above two, forming the total cost of fuel for the month duly verified by cost accountant and submitted to the Commission on quarterly basis.

The Commission had opined that monthly adjustment of fuel price helps in smoothening out any major variations in the per unit variable cost of a generating station as the same is adjusted in the subsequent month bill.

Variable Cost

Variable charges comprising of fuel cost for each plant have been approved by the Commission in the Tariff Orders of UPRVUNL based on the respective fuel consumptions (i.e. coal). The variable charges approved are based on the technical parameters approved by the Commission for each power station.

The Commission has considered Auxiliary Energy Consumption, Station Heat Rate, Specific Secondary Fuel Oil Consumption, fuel cost and GCV(as approved) while approving the Rate of Energy Charges i.e. the Variable cost for each station, which is in accordance with the Regulation 22 of UPERC (Terms and Conditions of Generation Tariff) regulations, 2004.

Table A-22.13: Approved and Proposed Total Fuel Cost (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Approved					
UPRVUNL	2007	2030	2104	2723	3173
Proposed					
UPRVUNL	NA*	2163	2315	2499	NA**

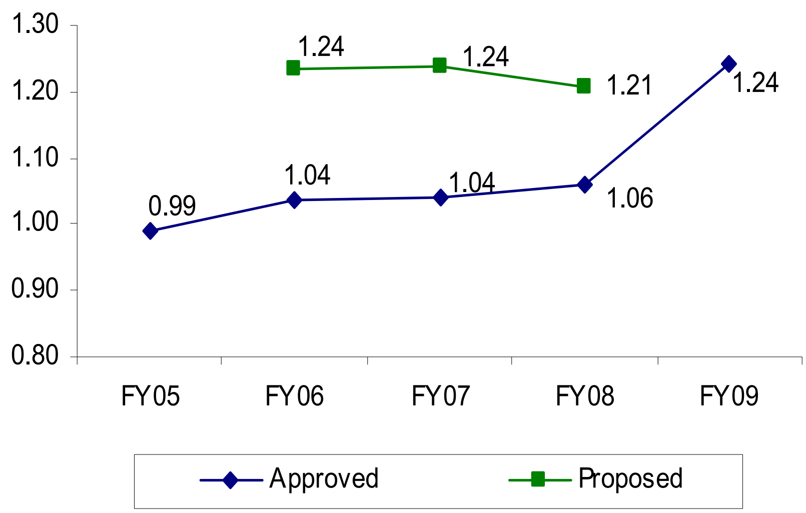
** FY 04-05 Tariff order was a suo moto and hence proposed figures not available*

[1] The Commission has not approved any variable cost (fuel cost) for UPRVUNL for FY 05

*** Not available in Tariff order*

Comparison of approved variable cost and proposed variable cost shows substantial gap between the two. The reason has primarily been the difference in proposed and approved auxiliary consumption, GSHR and other operational parameters.

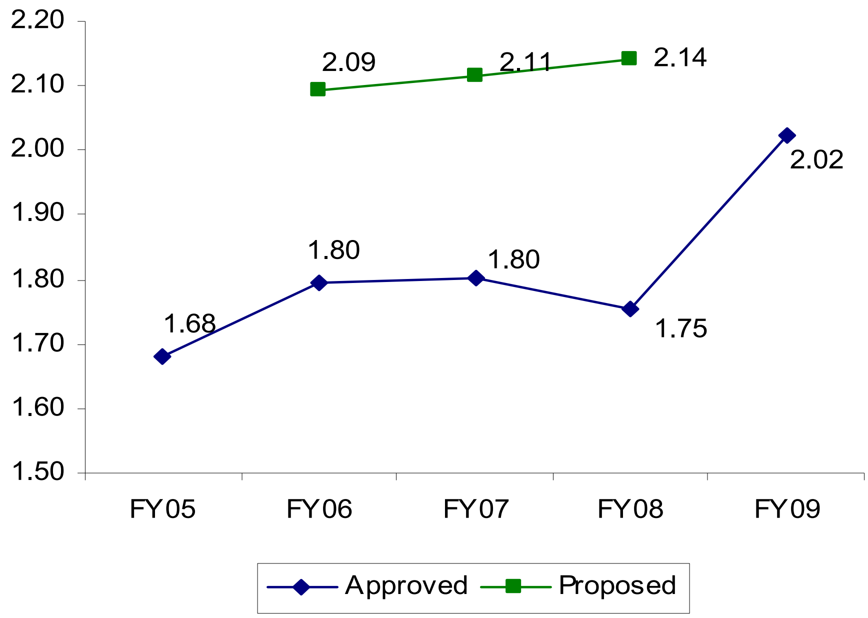
Graph A-22.4: Approved and Proposed Per Unit Variable Cost (Rs. Per unit)



Total Cost

The generation tariff applicable to the generating stations during each year is based on the fixed and variable costs approved by the Commission in each tariff order. A comparison of the approved and proposed total cost per unit for the UPRVUNL (corresponding data for UPJVNL is not available) as a whole is shown in the graph below:

Graph A-22.5: Approved and Proposed per Unit Total Cost (Rs. Per unit)



Incentive Level

Incentives to all power stations are determined as per according to Regulation 23 of UPERC (Terms and Conditions of Generation Tariff) Regulations, 2004 and Regulation 7 of Terms and Conditions of Generation Tariff (First Amendment) Regulation, 2007 and are not the component of tariff.

For FY 05, the incentive was linked to equity and was for achieving higher PLF than proposed. The norms for incentive had been specified as following norms:

- 0.4% of equity for every 1% above benchmark level and upto benchmark PLF + 5%
- 0.5% of equity for every 1% above benchmark PLF + 5% and upto benchmark PLF + 10%
- 0.6% of equity for every 1% above benchmark PLF + 10% and upto benchmark PLF + 15%;
- 0.7% of equity for every 1% above benchmark PLF+15%.

MYT Framework

The Commission adopted the Multi Year Tariff (MYT) principles for determination of tariff in line with the provisions in Section 61 of the Electricity Act, 2003. The Commission issued MYT Regulations vide notification dated May 30, 2007 specifying Terms and Conditions for Determination of Tariff for Generation, Transmission and Distribution of electricity under the Multi Year Tariff (MYT) framework for the period FY 08 – FY11.

The tariff order provides no further details of controllable and uncontrollable parameters.

A-22.2. Uttar Pradesh – Distribution Utilities

Introduction

The state of Uttar Pradesh presently has four Distribution companies namely, Pashchimanchal Vidyut Vitaran Nigam Ltd (Meerut DISCOM), Poorvanchal Vidyut Vitaran Nigam Limited (Varanasi DISCOM), Madhyanchal Vidyut Vitaran Nigam Limited (Lucknow DISCOM) and Dakshinanchal Vidyut Vitaran Nigam Limited (Agra DISCOM). These DISCOMs were created vide Uttar Pradesh Transfer of Distribution Undertaking Scheme, 2003 through divestment of distribution function from Uttar Pradesh Power Corporation Limited (UPPCL, earlier responsible for both Transmission and Distribution functions).

Presently Uttar Pradesh Power Corporation Limited (UUPCL) functions as Bulk Supply Licensee while Uttar Pradesh Power Transmission Corporation Limited (UPPTCL) as State Transmission Utility.

Post the transfer scheme in 2003, the Uttar Pradesh Electricity Regulatory Commission (UPERC) had issued the Tariff Order for approval of ARR of Agra, Meerut, Lucknow and Varanasi DISCOMs and determination of Retail Supply Tariff to be charged to different consumer categories for FY 05 through FY 09. The tariff order for FY 06 was not issued due to delay in tariff filing by the DISCOMs. Thereafter, the tariff filing for FY 08 was again delayed by almost a year (filed on 7th October 2007) and therefore the Commission issued a joint ARR for FY 08 and FY 09.

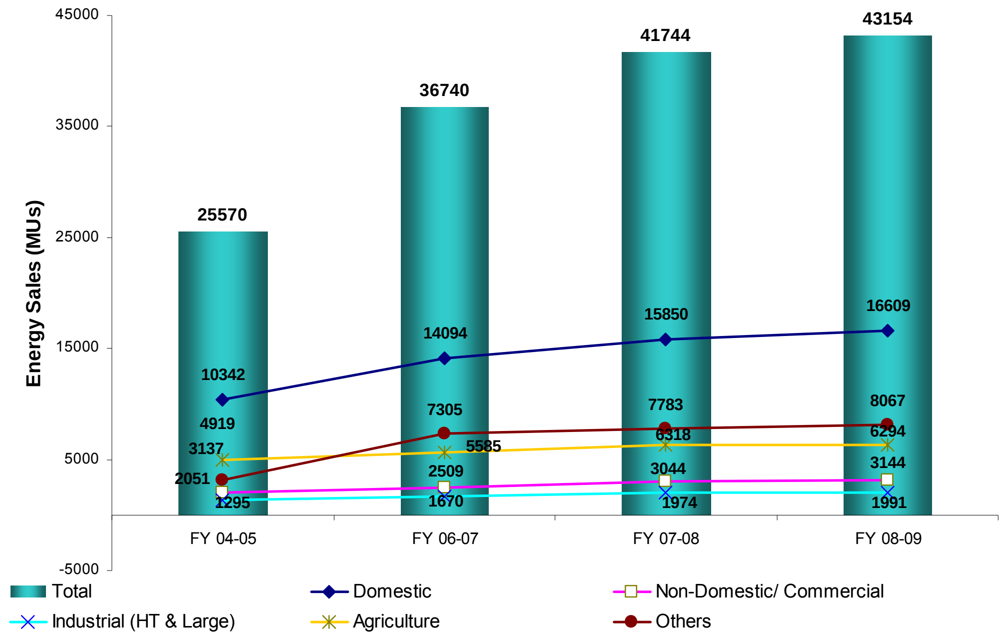
Sales / Demand

The Commission for all the years has followed the same approach and estimated the sales to be made to various categories of consumers by considering expected growth in the number of consumers, the specific consumption level per consumer and the connected load for the year. The total sale thus arrived at, has then been adjusted to some econometric parameters (correction factors) like GDP composition, growth of the state, plan targets, income elasticity of demand, household size and population growth etc. For the unmetered category, the Commission had approved sales based on the consumption norms established by UPPCL dated 20-07-2001 for un-metered consumption in each consumer category.

The Commission also analyzed division-wise data and then normalized the forecasted data to ensure consistency with the compilation of division-wise sales data. The total sale assessed by the Commission has been then allocated to each of the DISCOM based on the division-wise statements compiled by UPPCL.

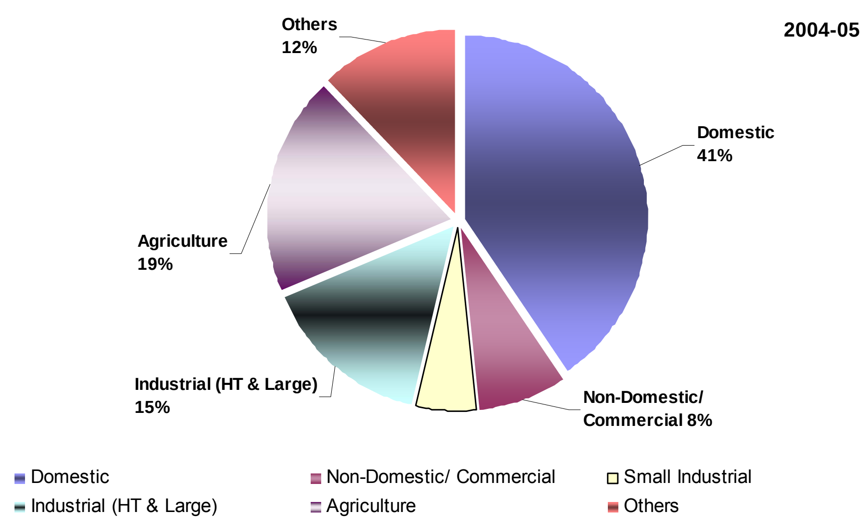
As is clear from the Figure 1, the domestic category forms the major chunk of consumers in the overall consumer mix for DISCOMs in Uttar Pradesh. The graph below shows the consumer mix in the total approved sales.

Graph A-22.6: Share of consumer categories in approved sales and the trend from FY 05 to FY 09

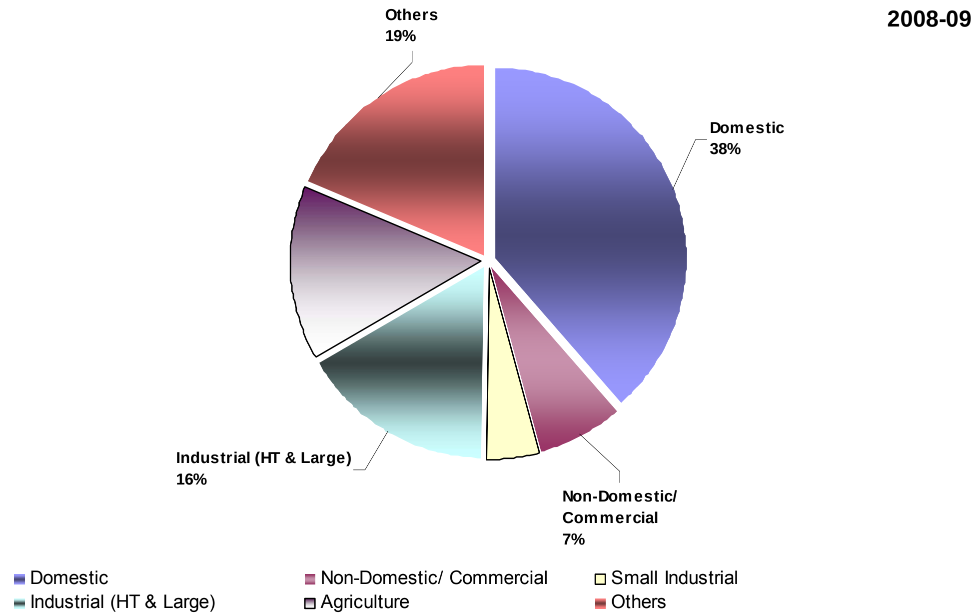


Graphs below illustrate the percent share of the major consumer categories in 05 and 09 respectively. The dominant category is domestic followed by Industrial (HT & Large) and others with a current shares of about 16% and 19% respectively.

Graph A-22.7: Percent share of consumer categories in approved sales for FY05



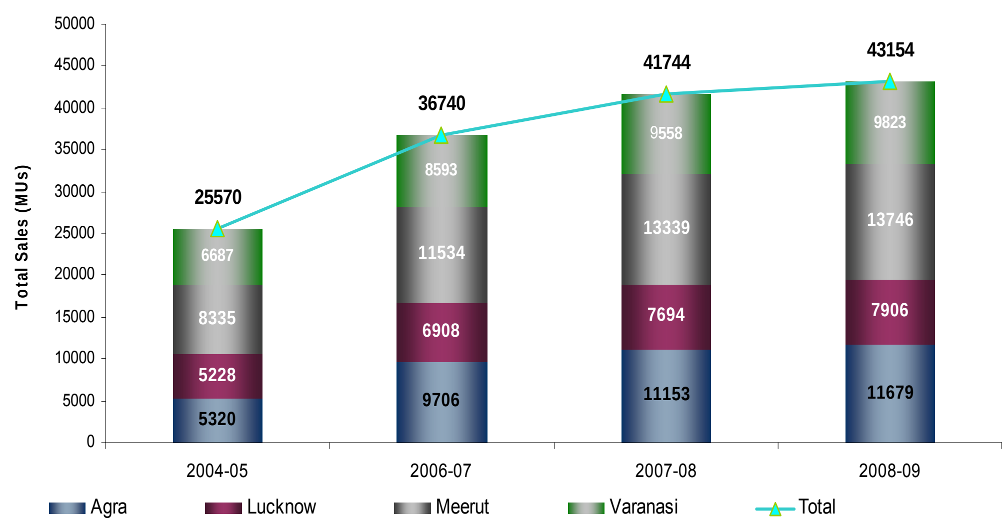
Graph A-22.8: Percent share of consumer categories in approved sales for FY 09



It can be seen that the consumer mix has not changed significantly from FY 05 to FY 09 except a proportionate increase and decrease in the percent share of all categories to some extent (except small industrial).

The Graph below shows the allocation of energy sales in Uttar Pradesh between the four DISCOMs.

Graph A-22.9: Sales allocation between the DISCOMs from FY 05 to FY 09



T&D Losses

The Commission had set a loss reduction trajectory starting FY 02 for five years. This trajectory was based on the baseline data for FY 01 and represented a 3% year on year reduction in T&D losses. The Commission had subsequently revised loss reduction trajectory in FY 06 and FY 08 as the DISCOMs were not able to achieve the targets.

The table shows the T&D loss reduction trajectory set by the Commission in FY 02

Table A-22.14: Loss reduction trajectory set in FY 02

Particulars	FY 02	FY 03	FY 04	FY 05	FY 06
T&D Losses %	36.4%	33.4%	30.4%	27.4%	23.9%
Reduction %	3%	3%	3%	3%	3%

For all years from FY 05 through FY 09, the Commission decided to keep the T&D loss level at 27.4%, the level that was approved for FY 05 as per the trajectory set earlier. Such a decision had to be taken by the Commission because the DISCOMs had not met the targets set for FY 03 and FY 04 and was unlikely to meet the targets in the following years. Accordingly, the Commission had approved T&D loss of 27.4% for FY 07. To clarify, DISCOMs had delayed the process of filing ARR for FY 06 and therefore no tariff order was issued in FY 06.

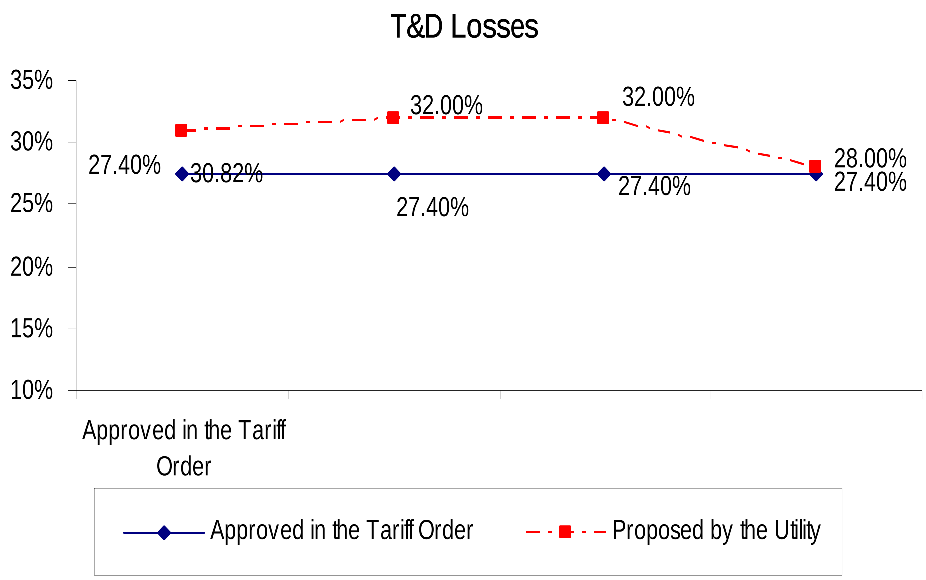
Again for FY 08 and FY 09, in the absence of any study being undertaken by the DISCOMs, non-availability of reliable base line information and DISCOMs proposing high T&D losses of 32% and 28% the Commission had no other option but to set the loss targets for the years on interim basis. Hence the Commission again approved T&D losses on an overall basis at the same level as approved in FY 07 i.e 27.4%.

The table below shows DISCOM-wise comparison of proposed and approved T&D losses for FY 05 through FY 09.

Table A-22.15: T&D Loss proposed and approved during FY05 to FY 09

Particulars	FY 05	FY 07	FY 08	FY 09
Agra				
Approved in the Tariff Order	37.20%	29.10%	29.10%	29.10%
Proposed by the Utility	41.20%	34.00%	28.00%	23.00%
Lucknow				
Approved in the Tariff Order	23.50%	22.40%	22.40%	22.40%
Proposed by the Utility	26.60%	26.20%	24.00%	24.00%
Meerut				
Approved in the Tariff Order	30.90%	29.10%	29.10%	29.10%
Proposed by the Utility	34.60%	34.00%	27.00%	23.00%
Varanasi				
Approved in the Tariff Order	23.10%	26.70%	26.70%	26.70%
Proposed by the Utility	26.20%	31.10%	30.00%	25.00%

The DISCOMs had neither achieved the proposed nor approved T&D target levels in any of the years. Even for the MYT period from FY 02 to FY 06, though the T&D loss levels were set in discussion with the DISCOMs, target levels were not achieved. Though the Commission devised policy for incentivising the DISCOMs of overachievement, the Commission failed to penalize the DISCOMs for not achieving the targets

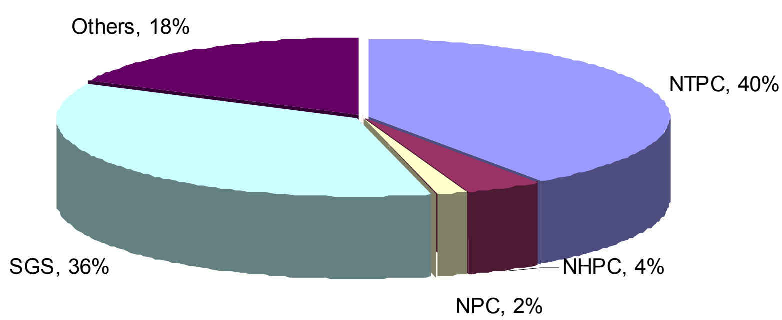


Power Purchase Quantum

UPPCL on behalf of the DISCOMs is responsible for the power purchase from various sources. The Commission has repeatedly directed UPPCL to allocate all existing Power Purchase Agreements (PPAs) to the DISCOMs.

The major sources of power purchase for the Uttar Pradesh DISCOMs are CGS (NTPC, NHPC), State Generating Stations (UPRVUNL and UPJVNL) and other plants including Cogeneration plants (obligatory purchase), Independent power producers (IPP), bilateral and banking arrangements with other States. Uttar Pradesh has adequate allocation from the various CGS plants.

Approved Breakup of Power from Various Sources for FY09



State Generating Stations (UPRVUNL & UPJVNL)

The Commission for FY 05 approved the revenue requirement, quantum and tariff for the generating companies along with the tariff order. For FY 07, FY 08 and FY 09 the

Commission separately approved quantum and cost of energy for these generating plants of these companies.

Central Generating Stations:

The power procurement from Central Generating Stations (CGS) includes power from NTPC, NHPC, NPC, Eastern Region and other Joint Ventures/IPP. Availability from sources like eastern region, cogeneration plants, NAPP, Tehri Stage 1 and Nathpa Jhakri are also included in this category

In FY 05, the Commission assessed the energy availability from central generating stations on the basis of actual availability from these stations in the period April – August 2004, program generation and the estimate of UPPCL Transco. The auxiliary consumption for these stations has been assessed at the levels approved for FY 04. Transmission losses have also been taken into account to estimate the availability.

For FY 07 to FY 09, the Commission approved power purchase quantum based on the allocated share (and also unallocated share) of the DISCOMs in Central Generating Stations. The allocated share to U.P. from various Central Sector Plants for FY 08 was as per NREB allocation w.e.f. 04.04.07 and for FY 09, the allocation was as per NRPC allocation w.e.f. 28.10.07 (inclusive of unallocated share also).

Other Sources / Emergency Purchases

For FY 05, the Commission had approved short term power purchase quantum of 70 MU mainly to bridge the gap requirement and available supply. In FY 07 - FY 09, the Commission approved the power procurement from other sources/ Emergency purchases as projected by the DISCOMs.

Table A-22.16: Approved and Trued-up Power Purchase Quantum for FY 08 (MUs)

Source	FY05	FY 07	FY 08	FY 09
NTPC	15931	20660	23079	23417
NHPC	1171	2095	2224	2544
NPC	679	1305	912	880
SGS				
UPRVUNL	18167	18538	20413	19968
UPJVNL	1639	1540	1443	1069
Others	1910	5965	8358	10450
Gross Power Available	**38816**	**50603**	**56428**	**58328**
Surplus Power Sold				
Net Power Available (after PGCIL & UPPTL losses)	**NA**	**48073**	**53,607**	**55,411**

**The power purchase quantum is after subtracting PGCIL & DTL losses and surplus*

Power Purchase Cost

In the state of Uttar Pradesh as per the Policy Direction of state government UPPCL is responsible for the power purchase from the various sources including state generating stations. The DISCOMs are required to pay to UPPCL for the power purchase cost as per the Bulk Supply Tariff (BST) computed by the Commission.

The approach for approving power purchase cost from various stations is as given below:

Central Generating Stations

NTPC: In FY 05, the Commission approved fixed costs for various NTPC stations at the levels approved in FY 04 order. The variable costs for NTPC stations were approved considering an increase of 4% over the approved costs approved of FY 04.

For FY 07, the Commission approved cost of power from NTPC stations as proposed by UPPCL. The fixed cost was as approved in various CERC orders, whereas variable costs was estimated by applying 4% escalation rate on the actual variable cost of FY 06.

For FY 08 and FY 09, the Commission had approved the variable cost for NTPC power stations as per the September 2007 bills and the fixed cost has been approved as per tariff orders issued by CERC for the period 1st April 04 to 31st March '09

NHPC: For FY 05, the power purchase costs for NHPC stations are approved at the levels as approved for FY 04. For FY 07 the fixed and variable costs for NHPC Plants were approved based on the actual energy bills of NHPC for the month of March 2006 and various tariff orders of CERC.

For FY 08 and FY 09, the Commission approved variable cost as proposed by UPPCL. The fixed and variable costs were estimated based on various tariff order of CERC and other fixed costs had been considered from the actual energy bills for the month of March 2007. UPPCL has also estimated rates for power purchase from new hydro power plants.

Other Stations:

In FY 05, the Commission approved power from sources like Nathpa Jhakri, Eastern Power stations, NAAP based on the cost of power procurement during the period April – August 2004.

For FY 07, the Commission approved power purchase cost from these stations, new power plants as proposed by UPPCL. The emergency purchase from Other stations was approved by the Commission as proposed by UPPCL. As regards,

FY 08 and FY 09, the Commission had approved power purchase cost as estimated by UPPCL, the approach for which was similar to that adopted for NTPC and NHPC plants. For emergency purchase the Commission analyzed the historical trend of such purchases in the past and for the FY 2007-08 up to February 2008 to approve the cost of power purchase.

Graph A-22.10: Approved Power Purchase Cost per Unit (Rs./KWh)

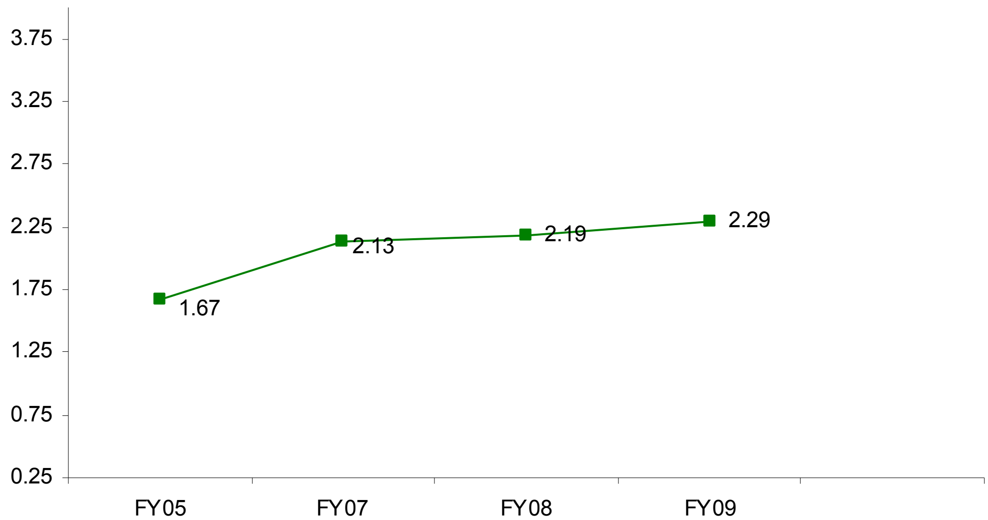


Table: Power Purchase Cost for FY 05 to FY 09

Particulars	FY 05	FY 07	FY 08	FY 09
Power Purchase Cost (Rs. Crs)	6501.10	11581.66	13701.83	14813.49
Net Power Purchase (Mus)	38816	50603	56428	58328
Power Purchase Cost per unit (Rs./kwh)	**1.67**	**2.29**	**2.43**	**2.54**

Operation & Maintenance Cost

Employee Expenses

For approving the employee expenses for FY05, the Commission had projected each component of the employee expense. The Commission had made the following assumptions:

- Basic salaries, bonus-exgratia and other allowances decreased in the year FY 04 by 4% and in FY 05 by 5% on account of staff attrition and selective retirement hiring practices)
- DA estimated to increase by 6% in FY 04 and FY 05.
- Medical expenses increased by 5% in FY 04 and 6% in FY 05.
- All other expenses estimated to increase by 3%.
- The employer's contribution to pension and gratuity fund estimated at 19.08% of basic salary and dearness allowance on the basis of an actuarial valuation
- Capitalization of about 16% has been deducted from the gross employee cost

- The Commission, while approving the employee cost for FY 05 had directed UPPCL to adopt appropriate policy on capitalization of salaries & wages.
- For FY 06 and FY 07, the Commission has approved the employee cost considering the following set of assumptions:
- Basic Salaries, Bonus/ Ex-gratia and Other Allowances decreased by 5% per year on account of staff attrition and selective retirement hiring practices).
- Dearness Allowance estimated at 68.5% of basic pay in FY 06 and due to merger of DA in FY 07 it is taken at 29.25% anticipating DA increase in FY 06 and FY 07 at 4.5% per year.
- Medical expenses increased by 6% in FY 07.
- All other expenses estimated to increase by 3%.
- Pension and Gratuity have been calculated at 16.7% and 2.38% (i.e., 19.08%) of Basic Salary and Dearness Allowance
- Capitalization has been assumed in the same proportion as approved in the tariff order for FY 05 i.e. at 15%.

For FY 08 and FY 09, the Commission had approved employees cost by escalating actual employee cost for FY 07 by rate equal to three year CAGR (since five year DISCOM wise O&M was not available) of O&M cost (actual or unaudited O&M expenses). Further, the employee cost for FY 09 was estimated by applying an escalation factor of 4.16% (inflation index) over the cost approved for FY 08. The Commission had also allowed an additional O&M expenses @ 2.5% on the additions to the assets during the previous year. The allocation of the same to employee expenses was Rs. 22.30 Crs for FY 09 and is included in Gross employee expenses calculated. The Commission had approved capitalization of employee cost in line with the approach followed by it in previous orders. The Commission had again reiterated the need to have a clear policy for capitalization of cost.

Repairs and Maintenance Expenses

For FY 05 and FY 07, the Commission had approved R&M at 2.5% of the opening Gross fixed assets (GFA) for that particular year. The Commission for the purpose of approving the R&M has also included the assets created out of grants. For FY 08 and FY 09, the Commission has changed its methodology and approved various components of O&M cost (employee cost, Repairs and Maintenance cost and Administrative and General Expenses) for the base year (FY 08) based on the three year CAGR and then had applied escalation index to the approved cost of base year to arrive at the O&M cost for FY 09. But in case of R&M expenses, the Commission noted that there was an abnormal growth over last three years and the CAGR for the same stood at 23%. Therefore, the Commission had applied an escalation index of 4.16% on the actual unaudited expenses for FY 07. The Commission applied the same escalation index (4.16%) to the approved cost of FY 08 for approving R&M expenses for FY 09. Over and above the approved R&M cost the Commission had also allowed an additional O&M expenses at 2.5% of the additions to the assets during the previous year (FY 07 and the allocation of the same to R&M expenses is Rs. 3.87 Crs for FY 09 and is included in gross R&M expenses.

The table below summarizes the gross R&M expenses (after deducting the R&M expenses capitalized):

Table A-22.17: Approved R&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY05	FY 07	FY 08	FY 09
Agra	40.88	46.07	51.34	55.05
Lucknow	44.40	51.01	56.85	60.79
Meerut	63.69	71.23	79.38	84.47
Varanasi	51.02	54.56	60.81	65.12
Total	199.99	222.87	248.38	265.43
Total R&M as % of Consolidated ARR	2.49%	1.87%	1.43%	1.42%

Administrative and General Expenses

The Commission had approved A&G expenses for the DISCOMs in FY 05 as assessed by UPPCL but with some disallowances like expenses on internal consumption and reassessing the components like License fees. For FY 06 and FY 07, the Commission had allowed an escalation of about 2% but disallowed the excess amount of Fringe Benefit Tax (over and above that paid in FY 05) which resulted in disallowance of Rs.39.35 Cr.

For FY 08, the Commission approved gross A&G expenses by applying an escalation rate, arrived at by considering the three year CAGR and averaging out the high cost elements like electricity expenses, billing and collection expenses, regulatory expenses and fees and subscription. Based on the same, the assessed CAGR for the period was 8.95% which was then applied over the actual unaudited expenses of FY 07. The A&G expenses for FY 09 were approved with an increase of 4.16% over approved expenses of FY 08 to offset the inflationary impact.

O&M Expenses

The total O&M expense approved in the tariff order for FY05 and FY 07 had been a sum of the employee cost, A&G cost and R&M expenses approved by the Commission. But for FY 08 and FY 09, the Commission had considered FY 08 as base-year and calculated the O&M expense of the base year based on the CAGR of last three years (since the actual O&M expense for last five years were not available). The inflation rate for the purpose had been the weighted average of Wholesale Price Index and Consumer Price Index in the ratio of 60:40. Accordingly the Commission had considered an Inflation Index of 4.16% for approving the ARR for FY 09.

Incremental O&M expenses for the ensuing financial year had been approved as 2.5% of capital addition during the current year. O&M charges for the ensuing financial year had been the sum of incremental O&M expenses so worked out and O&M charges of current year escalated on the basis of predetermined indices as indicated in regulation 4.3 (1).”

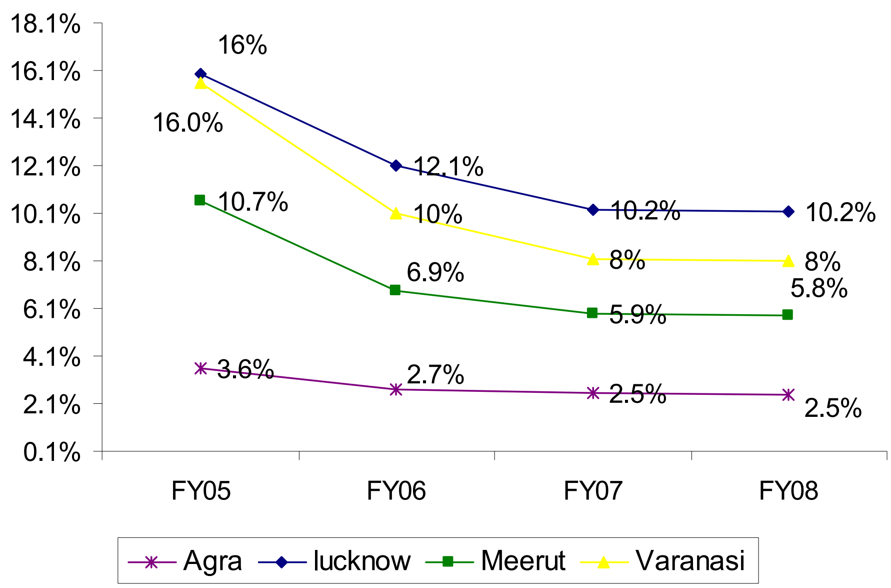
The total O&M expense approved by the Commission in each of the Tariff Order is summarized below:

Table A-22.18: Approved O&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY05	FY 07	FY 08	FY 09
Agra	205.87	226.63	237.96	255.16
Lucknow	262.18	298.55	311.22	332.81
Meerut	275.07	291.17	310.57	330.48
Varanasi	312.60	316.69	311.53	333.63
Total O&M Expense	**1055.72**	**1133.04**	**1171.28**	**1252.08**

The proportion of O&M expenses as total ARR has declined for all the four DISCOMs but the same is primarily on account of increase in power purchase cost as a proportion of total ARR. The O&M expense as percentage of total ARR amongst the four DISCOMs is the highest for Lucknow as reflected in the graph below.

Graph A-22.11: Approved O&M Cost as % of Total ARR for BRPL, BYPL & NDPL



Capital expenditure (Capex)

In the FY 05 Tariff Order, the Commission approved capital expenditure worth Rs.1280 Cr for Distribution as well as Transmission function as proposed by UPPCL. This expenditure included Rs. 545 Cr towards transmission & transformation works, Rs.346.55 Crs towards investments under APDRP scheme and the balance Rs. 388 Crs towards distribution investments with financing from other sources. The Commission had noted that the funds available as shown by UPPCL exceed the proposed capital expenditure to the tune of Rs. 263 Cr.

For FY 06, the Commission after detailed analysis of the investment plans proposed by UPPCL, had disallowed expenditure to the extent of Rs.499.95 Cr which included Rs.99.95 Cr as grants and Rs. 400 Crs towards rural electrification funded through equity for which UPPCL has not submitted any details.

Similar methodology was followed by the Commission for approving capex for FY 07 – FY 09. The details of proposed, approved and disallowed investments and the reason for the same is as detailed below:

- Investment to the extent funded by grants (Rs. 626.48 Crs for FY 08) had not been approved.
- Investment proposed under APDRP & System Improvements for both the years was approved.
- Investment approved under Rural Electrification & RGGVY allowed only to the extent of 10% through equity infusion since no details about the same was provided UPPCL.
- Proposed distribution works of Rs.1629.40 Cr for FY 09 proposed to be carried out through 100% equity funding was approved only to the extent of 50% on ad-hoc basis due to lack of details. This amount was approved in view of the fact that the UPPCL has to undertake capital expenditure to strengthen infrastructure network and bring down the losses.

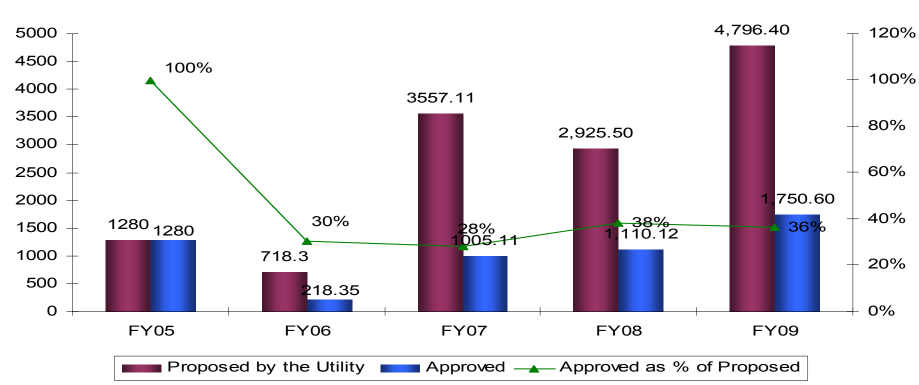
A comparison of the claimed vis-à-vis approved capital expenditure for the DISCOMs is provided in the table below:

Table A-22.19: Proposed and Approved Capital Expenditure of DISCOMs (Rs.Cr)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
UPPCL					
Proposed by the Utility	1280	718.3	3557.11	2,925.50	4,796.40
Approved	1280	218.35	1005.11	1,110.12	1,750.60

As per the above analysis, it can be seen that the Commission has disallowed a large portion of proposed capital expenditure. The disallowance mainly comprises of the capital expenditure towards rural electrification and RGGVY (Rajiv Gandhi Grameen Vidyutikaran Yogna) for which no detail were provided to the Commission and the government grant / subsidy. A comparison of the proposed and approved for all the four DISCOMs i.e. Agra, Varanasi, Meerut and Lucknow is summarized in the graph below:

Graph A-22.12: Claimed and Approved Capital Expenditure for Uttar Pradesh (Rs. Cr)



For funding the capex approved in the Tariff Orders for FY05 to FY 09, the Commission has considered a debt to equity ratio of 70:30 after excluding the capital expenditure funded through consumer contribution, APDRP Grant / Loan and depreciation.

Asset Capitalization

For all the years , the Commission has considered the asset capitalization equal to opening WIP (Work in Progress) plus 70% of the investments made during the year (which includes expenses capitalized and interest capitalized)..

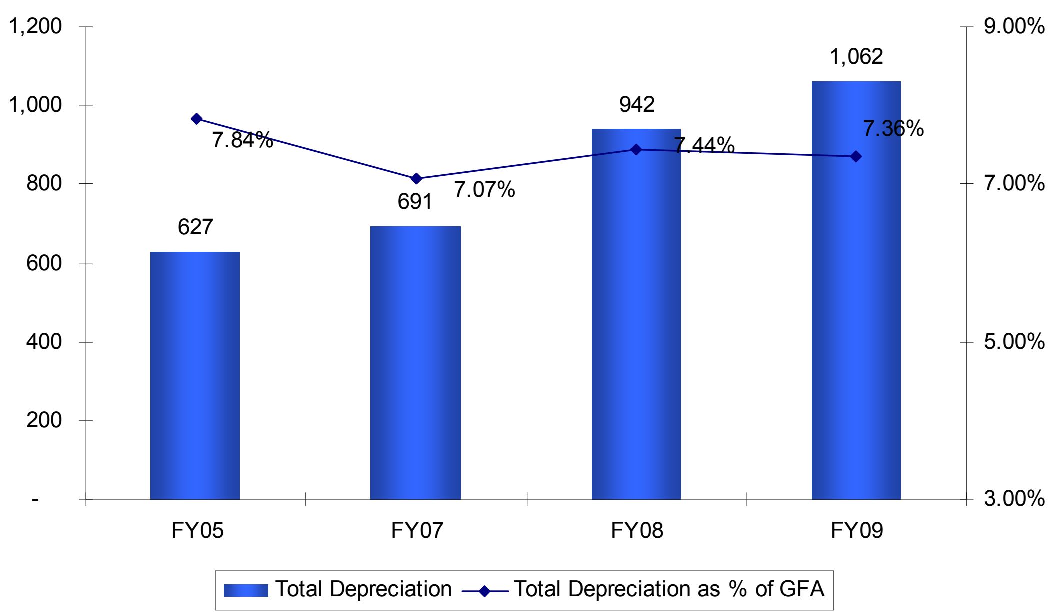
Depreciation

For FY05, in absence of a detailed asset register, the Commission continued with the methodology adopted in the previous tariff order and had applied a weighted average depreciation rate of 7.84% for the Distribution function. Depreciation was calculated by applying depreciation rate on Opening balance for FY 05.

For FY 06 & FY 07, the Commission has again allowed depreciation at the rate of 7.84% on the opening gross fixed assets. For FY 08 and FY 09, the Commission had approved depreciation at the rate of 7.84% on the opening gross fixed assets and at the rate of 3.92% on addition during the year. The Commission in all the years from FY 05 through FY 09 did not allow depreciation on assets funded by capital subsidy / grant. The Commission, in FY 09, had again directed UPPCL to maintain asset register across the field office.

The total approved depreciation for the DISCOMs and depreciation as a percentage of gross fixed assets is reflected in the graph below:

Graph A-22.13: Approved Depreciation by the Commission and Deprecation as % of Gross Fixed Assets



Note: Depreciation as % of opening gross fixed assets has been computed.

Working Capital Requirement

The Commission had approved working capital in FY 05 and FY 07 based on the actual working capital requirement. But for FY 08 and FY 09, the Commission had approved normative working capital.

The parameter for determination of normative working capital is summarized in table below:

Table A-22.20: Parameter for Computation of Normative Working Capital

Normative Working Capital
One month's O & M Expenses
One-twelfth of the sum of the book value of materials in stores at the end of each month of such financial year.
Receivables equivalent to 60 days average billing on consumers
Less:
Total Security Deposits by the Consumers reduced by Security Deposits under section 47(1)(b) of the Electricity Act 2003

Interest Expense

In FY 05, the details on computation of interest cost had not been provided in the tariff order. The Commission had disapproved interest cost of Rs. 54.34 Crs, but the source-wise details were not specified.

For FY 07, since UPPCL had not submitted loan-wise/ source-wise debt funding for various investment plans envisaged for the year, the Commission assumed the opening & closing loan balances for FY 07 and also total interest charges for various loans as submitted by DISCOMs in their petition. DISCOM-wise weighted average interest charges was computed on the basis of total interest charges on average of opening & closing of loans as submitted by the DISCOMs. This average rate of interest charges was applied on the new loans for FY 07 (corresponding to the normative debt component (70%) of approved investments) and also on opening loans to compute the interest charges for the total loans. Total interest charges of Rs. 296.41 Cr were thus approved by the Commission for FY 07.

For FY 08 and FY 09, the Commission had retained interest rates as submitted by the DISCOMs for existing loans. As for new investments, the Commission had considered a debt: equity ratio of 70:30 in case of schemes proposed under "Distribution" works and "other" schemes. The approved investment under the RGGVY scheme was considered under equity funding as proposed by the DISCOMs while investment under the APDRP scheme was partly funded through loan and partly through grant in the proportion of 50:50 as proposed by the DISCOMs. For the loan amount, the interest rates were taken as submitted by the DISCOMs. Since the terms of funding for new loans were not made available interest payments were calculated considering the tenure of 10 years.

For all the years the Commission approved cost of raising finance as 1% of the loan drawals for the year.

Table A-22.21: Interest Cost Approved for all the DISCOMs (Rs.Cr)

Particulars	FY 05	FY 06	FY 07	FY 08*	FY 09*

Particulars	FY 05	FY 06	FY 07	FY 08*	FY 09*
Meerut	36.48	NA	60.28	181.61	177.55
Agra	32.06	NA	48.64	173.27	166.80
Lucknow	85.13	NA	63.21	152.29	144.86
Varanasi	57.49	NA	55.79	147.93	142.07
Total Interest Cost	**347.16**	**NA**	**227.9**	**655.09**	**631.27**

* The approved interest cost is net of capitalization

Rate of Return

UPPCL and the four DISCOMs have not asked for any return on investment since the overall power sector is not viable and requires subsidy support from the State Government.

Bad Debts

The Commission did not allow provision for bad debts in any of the years from FY 05 to FY 09, as the utilities (UPPCL and the four DISCOMs) were actually not writing off any bad debts and there was no clear policy for writing off the bad debts The Commission had directed UPPCL to form a clear policy as defined in UPERC (Terms and Conditions of Distribution Tariff) Regulations, 2006**.**

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM.

The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY05 to FY 09:

Table A-22.22: Proposed and Approved ARR (Rs.Cr)

Particulars	FY 05	FY 07	FY 08	FY 09
Agra				
Proposed by the Utility	1870	3641	4318	4586
Approved	1817	3342	4146	4480
Lucknow				
Proposed by the Utility	1638	2318	3397	3604
Approved	1640	2127	3043	3276
Meerut				
Proposed by the Utility	2493	4164	5045	5433
Approved	2582	3853	5258	5665
Varanasi				
Proposed by the Utility	1940	2842	4139	4560
Approved	2007	2594	3814	4112
Total				
Proposed by the Utility	7941	12965	16899	18183
Approved	8046	11916	17373	18718

Subsidy Support

Subsidy support from the Government has been made available to the DISCOMs in one form or the other as a means to fill the revenue gap and to avoid tariff increase throughout the period from FY05 to FY 09.

In FY 05, the government of Uttar Pradesh provided subsidy to support rural private tube-well category, rural domestic consumers (for impact of increased hour of supply as directed by the state government) and departmental employees.

The table below shows category-wise details of subsidy provided by GoUP to all the DISCOMs for FY 05:

Category	Agra	Lucknow	Meerut	Varanasi	Total
Rural Domestic	220	354	254	191	1020
Rural Private Tube wells	146	99	157	82	484
Departmental Employees	7	6	3	2	18
Total	373	460	415	274	1521

In FY 07, the Government of Uttar Pradesh provided subsidy such that the first charge on the subsidy was that of Rural private tube well and rural domestic consumers and thereafter of the urban PTW consumers.

Further, the Commission had given following directives:

- The benefit of surcharge waiver scheme would be allowed at one service connection number once in a duration of five years. Further, the DISCOMs may launch a surcharge waiver scheme without any restrictions on quantum of surcharge waiver provided there is a State Government's commitment for advance subsidy to compensate the loss of the DISCOMs arising out of surcharge waiver.
- Rebate to Power Loom consumers would be applicable in accordance with the Government order dated 14th June, 2006 and the Commission's order dated 11th July, 2006 subject to adherence of provision of advance subsidy

For FY 08 and FY 09, the Commission approved subsidy support for Rural Domestic and PTW categories to an extent of Rs.1822 Cr and Rs.1532 Cr respectively as proposed by the DISCOMs. For FY 08, the Commission had considered the institutional loans (used to fill revenue gap) as subsidy from GoUP and the debt servicing of such loans to be directly funded by the GoUP through budgetary provisions. The same was directed to be not included in any of the future ARR / Tariff requirements of the licensees. The Commission had further given directives similar to those specified in FY 07. The Commission had specified that rebate to Power Loom consumers under this category shall continued in accordance with the Government order subject to adherence of provision of advance subsidy.

Though the Commission had clearly defined the mode of payment of subsidy as advance payment, the Commission did not given any directions to the DISCOMs to charge full tariff in any of the years from FY 05 to FY 09 in case of non-receipt of subsidy.

Tariff Determination

The Commission had introduced two-part tariff structures for all metered categories in FY 01 and had further rationalized the fixed charge component in FY 02. In that year, the

Commission also introduced kVAh billing for high voltage consumers to encourage them to improve power factor.

The year on year treatment of revenue surplus or gap, by the Commission, for determination of tariff has largely been through Government Subsidy or combination of Government subsidy and tariff increase.

In FY 05, there was a revenue gap of Rs. 405.35 Crs for Agra DISCOM, Rs. 473.74 Crs for Meerut DISCOM, Rs. 490.51 Crs for Lucknow DISCOM and Rs. 320.97 Crs for Varanasi DISCOM. The Commission approved an increase in tariff and a total Government subsidy of Rs.1,521 Cr to bridge revenue gap. The Commission had revised tariff for various categories and simplified the existing rate structure by converging the rates applicable to different categories/ sub-categories. The Commission reduced tariff for some categories in order to align tariff with the average cost of supply and to reduce cross subsidy. More specifically, tariff for subsidizing categories was reduced while it was marginally increased for subsidized categories like Urban Domestic etc.

The Commission as part of tariff order for FY 05, had for the first time introduced bulk supply uniform tariff for all the DISCOMs for the power purchased from UPPCL.

In FY 07, the State Government approved a subsidy of Rs.1512 Cr, another Rs. 772.66 Cr for efficiency improvement and short term loans of Rs.1,151.27 Cr as means to bridge the revenue gap of Rs. 3435.93 Cr, as had been proposed by the DISCOMs. As in Though the Commission did not hike tariff for any of the categories the, certain changes in the tariff design were made so as to link tariff for the categories to hours of supply. Some of the features of the approved tariff structure are as follows:

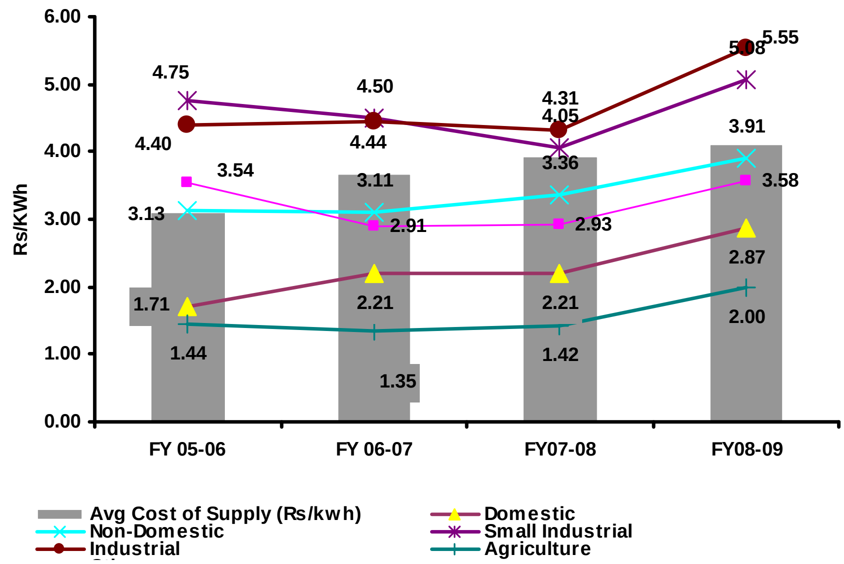
- Tariff for some metered categories was linked with hours of supply thereby giving a discounted rate for areas getting less than 14 hrs of supply.
- Large incentive provided for metering in LMV-1, LMV-2 and LMV-5 consumers under rural schedule by making their first 100 units free of cost.
- Minimum charges were abolished for some categories like LMV-4B, LMV-6.
- Base tariffs for Large & Heavy industrial consumers and railway traction were marginally reduced

For FY 08, the Commission approved to bridge the gap of Rs. 4,835.93 Crs through Government Subsidy of Rs.1,8220 Cr, deficit financing of Rs.2,306.93 Cr and savings on power purchase of Rs.707.00 Cr. Since the FY 08 has almost passed by the time tariff order was issued, the Commission approved no increase in tariff and approved long-term loans to fill the revenue gap as proposed by the DISCOMs. However, the Commission had allowed the institutional loans as subsidy from GoUP, the debt servicing of which was also to be directly funded by GoUP through budgetary provisions and not be included in any of the future ARR / Tariff requirements of the licensees.

In FY 09, the revenue gap of Rs. 4316.88 Cr was approved to be funded through tariff increase to provide estimated revenues of Rs.1,839.30 Cr. Government Subsidy of Rs.1,532 Cr. and tariff Rationalization & efficiency improvement initiatives of Rs. 945.58 Cr. For meeting the revenue gap through efficiency gains the Commission had pointed out increase in revenue through reduction in T&D loss, increase in collection efficiency etc.

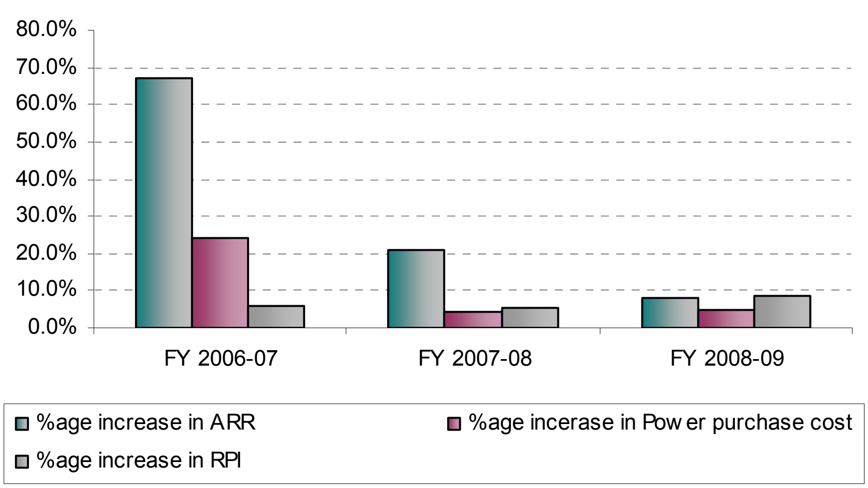
The trend of realization from tariff as approved by the Commission for various categories against the average cost of supply from FY 06 to FY 09 is captured in the figure below:

Graph A-22.14: Average Cost of Supply versus Average Revenue Realised



Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Tariff order for FY 05 was a suo - moto order and the tariff order for FY 06 was not issued due to delay in tariff filing by the DISCOMs. Thus the annual revenue requirement and power purchase cost increased in FY 07 by about 67% and 24%. The average cost of supply increased due to increase in power purchase cost as well as other cost (underestimated in suo-moto order of FY 05) , but the same was not reflected in tariff. The tariff was increased only in FY 05 and FY 09. Thus the RPI does not have an impact on consumer tariff.

Particulars	2004-05	2006-07	2007-08	2008-09

Approved ARR	8046.67	13428.39	16260.13	17534.91
Approved Sales (MU)	25570.00	36739.60	41744.00	43154.00
Averge Cost of Supply in Rs/kwh (A)	3.15	3.66	3.90	4.06
% of Power Purchase Cost in ARR	81%	86%	84%	84%
% of Other remaining Cost in ACS	19%	14%	16%	16%
% Annual Increase in Power Purchase Cost		24.0%	4.1%	4.6%
% Annual Increase in Other Cost		-16.8%	21.9%	2.9%
% Annual RPI Increase		6.1%	5.2%	8.7%

MYT Framework

As discussed above, Uttar Pradesh had adopted MYT framework way back in FY 02. This Commission was the first in the country to introduce performance targets on key operating parameters (system losses and collection efficiency) over a multi-year period. The Commission also had an independent study undertaken on the Reference Utility approach to MYT. The details of controllable and uncontrollable parameters have however not been provided in the tariff order.

A-22.3. Uttar Pradesh – State Transmission Utility.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 07 to FY 09 (separate information on transmission business is not available for FY05 and Commission had not issued tariff order fro FY 06) in approval of the Annual Revenue Requirement (ARR) of the state transmission utility UPPTCL.

Transmission Losses

In absence of any study being undertaken and availability of reliable base line information, the Commission had approved the transmission losses for the FY 07 to FY 09 on some interim basis, as submitted by the UPPTL. The approved and actual transmission loss as approved by UPERC is as follows:

Table A-22.23: Approved Transmission Losses

Particulars	FY 07	FY 08	FY 09
Approved	5%	5%	5%

Operation and Maintenance (O&M) Cost

The Commission had been approving employee cost, R&M and A&G cost separately for FY 07, FY 08 and FY 09 in its Tariff Orders for UPPTL. Approach of the Commission in approval of each of the O&M cost parameters in the past four tariff orders is discussed below:

i. Employee Cost

For FY 07, the Commission had approved employee cost as proposed by UPPTL with some changes. Employee cost is based on the unaudited accounts for FY 05. Following parameters have been considered while approving employee cost:

- Increase of 7.36% over the FY 06 employee cost of Rs. 163 Crore.
- The Basic Salaries, Bonus/ ex-gratia and Other Allowances decreased at the rate of 5% per year due to continued staff attrition and selective hiring practices.
- Dearness Allowance (DA) estimated to be 68.5% of basic pay in FY 2005-06, and with the merger of DA in FY 07 it is assumed to be 29.25% assuming DA increase in FY 07 and FY 06 as 4.5% (3 % half yearly).
- Arrears of DA merger which is applicable from FY 04 included in the interim relief in FY 07. (Amount included in FY 07 was half of the total arrear & remaining had to be included in FY 08 as per order of the UPPCL)
- Medical expenses forecast to increase by 6% per year from FY 05.
- Pension and Gratuity calculated at 16.7% and 2.38% (i.e., 19.08%) of Basic Salary and Dearness Allowance.
- All other expenses forecast to grow at 3% per year.

- Employee expenses capitalization at 29% of total employee Cost.

The Commission had also directed UPPTL to form a clear policy of capitalization of salaries & wages.

In FY 08 and FY 09, the Commission had modified its approach and approved employee cost for FY 08 by taking on base figures of FY 06 and actual data available of FY 07 expenses and for FY 09 by taking FY 07 as base data. The Commission had considered past trend of last three years of actual unaudited data provided in filing formats to arrive at a CAGR growth of 7.3%. The gross employee cost for the FY 08 was approved by applying CAGR over the actual unaudited cost for FY 07 and the employee cost for FY 09 was estimated by applying an escalation factor of 4.16% (inflation index calculated by taking notified WPI and CPI for the year in ratio 60:40) over the cost approved for FY 08.

Further, the Commission had also allowed an additional O&M expenses @ 2.5% of the additions to the assets during the previous year. The allocation of the same to employee expenses was Rs. 18.34 Crs for FY 09 and was included in gross employee expenses. For FY 09, the Commission had again allowed capitalization of employee cost at 29% in line with the approach followed by the Commission in the previous years.

In the absence of audited accounts for previous years the Commission has mentioned that the approved expense is subject to true-up on availability of audited accounts

The net employee cost as approved by the Commission in each of the past four tariff orders is summarized in table below:

Table A-22.24: Approved Employee Cost from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Net Employee Cost (Rs. Cr.)	181.64	203.58	225.06
Total Approved ARR (Rs. Cr.)	802.05	1,025.39	1,195.12

ii. Administrative & General Expenses

In FY 07, the Commission had approved A&G cost as proposed by UPPTCL i.e an increase of 2% p.a. over the unaudited accounts of FY 05. But the Commission had disapproved the base figure under the head rent, rate and taxes as proposed by UPPTCL.

For the next two years i.e. for FY 08 and FY 09, the Commission had modified its approach and approved A&G cost by allowing growth linked to inflation and allowed an escalation of 4.16% (as calculated for employee cost approval) over the expenses for FY 07 and FY 08 respectively to offset the inflationary increase. As mentioned above the Commission had allowed an additional O&M expense @ 2.5% of the additions to the assets during the previous year. The allocation of the same to A&G expenses was Rs. 1.87 Cr for FY 09 and included in gross A&G expenses. The Commission has approved capitalization in line with the approach followed by the Commission in the previous years.

In the absence of audited accounts for previous years, the Commission had mentioned that the approved expense is subject to true-up on availability of audited accounts.

A&G expenses approved by the Commission in the past three year tariff orders form approximately 1.5-2.0% of the total ARR of UPPTL and are given in table below:

Table A-22.25: Approved A&G Expenses from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Net A&G Expenses (Rs.Cr.)	22.80	23.68	26.18
Total Approved ARR (Rs.Cr)	802.05	1,025.39	1,195.12

iii. Repair & Maintenance (R&M) Expenses

In FY 07, the Commission had approved R&M expenses as 1.5% of opening gross fixed assets for transmission assets.

In the following two years, FY 08 and FY 09, the Commission had taken same approach as used for approving employee cost and A&G cost i.e. escalating actual unaudited expenses for FY 07 and FY 08 by inflationary index of 4.16% to approve R&M cost for FY 08 and FY 09 respectively.

The Commission also allowed additional O&M expenses @ 2.5% as discussed above. The Commission had again clarified that the approved expense shall be trued-up on availability of audited accounts. The R&M expenses approved by Commission in the last three tariff orders are summarized in table 3 below:

Table A-22.26: Approved R&M Expenses from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
R&M Expenses (Rs.Cr.)	59.31	60.45	66.83
Total Approved ARR (Rs.Cr)	802.05	1,025.39	1,195.12

Depreciation

In FY 07, the Commission had approved depreciation at an average rate of 5.27%, which was the weighted average depreciation rate (due to lack of details of fixed assets register). The Commission had calculated depreciation by applying these rates on opening GFA approved separately.

In FY 08 and FY 09, the Commission had approved depreciation for the entire year on the opening GFA as well as on the assets capitalized during the year on pro-rata basis. The same depreciation rate of 5.27% as in the previous year had been adopted.

Advance Against Depreciation (AAD) was neither claimed by the Licensee nor approved by the Commission

Interest cost

In FY 07, the Commission had approved interest cost on existing loans by calculating weighted average rate of interest. This weighted average rate of interest is based on opening and closing loan balances for FY 07 and total interest charges for various loans considered as submitted by UPPTL in their petition. For the new loans, in absence of loan-wise / source-wise debt funding for various investment plans approved by the Commission (debt to equity ratio of 70:30) the interest cost has been calculated by applying average rate of interest on the new loans for FY 07 (corresponding to the debt component of approved investments, expenses capitalized and interest capitalized). Interest charges are capitalized at the rate of 23%.

Additionally the Commission had allowed cost of raising finance as 1% of the amount drawn. The Commission had also allowed other charges as proposed by UPPTL.

For FY 08 and FY 09, the Commission did not calculate weighted average rate of interest. For existing loans, the Commission calculated interest cost by taking respective interest rates. For the new loans, the rates of interest were taken as provided by UPPTL. Since the source-wise details for the new loans were not provided the Commission had considered repayment tenure of 10 years.

Additionally the Commission has approved interest and finance charges as 1% of the loan drawals for the year

Interest on Working Capital

The Commission has not approved interest on working capital for FY 07. For FY 08 and FY 09, however, the Commission had approved working capital on normative working capital. The norms for working capital are as follows:

Normative Working Capital:
One month's O & M Expenses +
Plus (+) : One-twelfth of the sum of the book value of materials in stores at the end of each month of such financial year +
Plus (+) : Receivables equivalent to 60 days average billing on consumers
Less (-): Total Security Deposits by the Consumers reduced by Security Deposits

The Commission has approved rate of interest on working capital as bank rate specified by RBI for the year according to Transmission Tariff Regulation 4.5 (2) plus a margin decided by Commission. Accordingly, the rate on interest on working capital was considered at 12.50% per annum (RBI rate 6% + Margin 6.50%) which was also equal to SBI PLR.

Rate of Return

The Commission had approved return on capital base for FY 07 while for FY 07- FY 09, the Commission had approved Return on Equity.

In FY 07, the Commission has calculated capital base by adding opening gross fixed assets, opening CWIP and cash & stores and deducting consumer contribution, opening accumulated depreciation and opening loans borrowed from organization or Institution approved by the State Govt. Since the capital base arrived from the above was zero, the return on capital base was zero. The Commission additionally allowed Return on Long-term Debt at 0.5%.

In FY 08 and FY 09, the Commission had allowed return of 14% on opening equity and 7% on equity portion of expenditure on capitalized assets. In absence of notification of the transfer scheme, the Commission had considered opening levels of equity for FY 08 based on the closing levels of unaudited actual for the year FY 07 as provided by the UPPTCL.

The details pertaining to approved rate of return between FY 07 to FY 09 are given in the table below:

Table A-22.27: Approved Rate of Return between FY 07 and FY 09

Particulars	FY 07	FY 08	FY 09
Approved Equity/capital (Rs.Cr.)	(15.26)	1,842.97	2,131.91
Approved Equity portion of expenditure on Capitalized Assets	NA	288.94	335.56
Approved Return on Equity/Capital Base (%)	NA	14%	14%
Approved Return on Capitalized Assets		7%	7%
Approved Return on Equity/ Capital Base (Rs.Cr)	20.64*	278.24	321.96

** Includes Return on Long-term Debt at 0.5%*

Annual Revenue Requirement

The table below shows the ARR approved by the Commission vis-à-vis that proposed by UPPTL from FY 07 to FY 09.

Table A-22.28: Approved ARR for UPPTCL from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs.Cr)	802.05	1,025.39	1,195.12
ARR proposed by AEGCL (Rs.Cr)	952.54	1,015.31	1,272.09
% Disallowance	19%	-1%	6%

Transmission Tariff

The Commission has computed the intra-state transmission tariff in Rs/KWh during all the years from FY 07 to FY 09 in quite a simple and straightforward manner. The approved ARR has been simply distributed over the available energy units to DISCOMs after deduction of approved transmission losses in a given year.

The Commission has not calculated the target availability for UPPTCL neither has the Commission calculated the percentage recovery.

Table A-22.29: Approved Transmission Tariff from FY 07 to FY 09

Particulars	FY 07	FY 08	FY 09
Approved ARR (Rs.Cr)	802.05	1,025.39	1,195.12
Transmission Loss %	5%	5%	5%
Energy Available for DISCOMs (MUs)	48073		55,411
Approved Transmission Tariff (Rs/KWh)	**0.167**	**0.19**	**0.22**

Open Access Charges & Other charges

UPERC had issued the Open Access Regulations, 2004 in June, 2005 to facilitate the open access transactions in the State.

The Commission, for FY 07 had approved charges for open access consumers same as transmission tariff. The Commission also mentioned that although there is a need to notify the short term and long term transmission open access charges on per MW basis, but since there are numerous issues involved in the computation of the same, at the per MW open access transmission charges shall be notified later via a separate order

The Commission did not determine open access charges for FY 08 as the year had almost lapsed by the time of issue of the order..

This Tariff order for FY 09 was based on the Open Access Regulations, 2004. To determine various applicable charges for Open Access, the Commission had issued an Approach Paper on 'Determination of Various Charges for Open Access including Cross-Subsidy Surcharge and Additional Surcharge'. Based on the approach paper and comments received thereon, the Commission approved open access charges as follows:

- Since the voltage level wise break-up of expenses and asset details were not available, an interim allocation of costs (75% of the average transmission charges determined for Transco for transmission of energy at voltages above 132 kV) at various voltage levels was considered for approval of open access charges.
- The short term open access charges were determined as 25% of the long term open access charges.
- In addition to the payment of transmission Open Access charges, the customers seeking Open Access also had to bear the transmission losses in kind.

Table A-22.30: Monthly charges payable by Open Access Customer for FY 09

Details	Units	FY 09 (Approved)	
		Long Term	Short Term
Connected at 132 kV Voltage Level	Rs./kWh	0.22	0.05
Connected above 132 kV Voltage Level	Rs./kWh	0.16	0.04

Cross-Subsidy Surcharge and Additional Surcharge

Cross subsidy surcharge is charged to Open access customer to transmission and Distribution system under section 38, 39(2) (d), 40(c) and 42(2) of the Electricity Act 2003. As per the regulation 2006 apart from the transmission charges the following charges will also be applicable to open access consumers who are likely to avail open access facilities including captive generators.

- Cross –Subsidy Surcharge and Additional Surcharge.
- SLDC Charges
- Wheeling Charges

For FY 09 the Commission had stated that the cross-subsidy surcharge for eligible open access consumers will be zero as per the computation based on the methodology prescribed by the Commission in the Open Access regulations.

Similarly the Commission has stated that Additional Surcharge and other charges as per the regulations will also be zero.

A-23. Uttarakhand

A-23.1. Uttarakhand – Generation Utility

Introduction

Prior to formation of Uttarakhand state, the generation of power from hydro and thermal generating stations in the State of Uttar Pradesh was undertaken by Uttar Pradesh Jal Vidyut Nigam Ltd. (UPJVNL) and Uttar Pradesh Rajya Vidyut Utpadan Nigam Ltd. (UPRVUNL) respectively. Both were wholly owned by Government of Uttar Pradesh. The erstwhile UP State Electricity Board (UPSEB) had been unbundled under the UP Electricity Reforms Act, 1999. Under this Act, UP government notified a Provisional Transfer Scheme on 14.01.2000 and, thereafter, the Final Transfer Scheme on 25.01.2001, under which the assets and liabilities of UP State Electricity Board, which had been vested in the UP Government, were in turn transferred to UPJVNL along with UPRVUNL and Uttar Pradesh Power Corporation Limited (UPPCL) w.e.f. 14.01.2000.

Post creation of the state of Uttarakhand in November 2000, Government of Uttarakhand registered a company by the name of Uttarakhand Jal Vidyut Nigam Limited (UJVNL) in February 2001 and the certain assets, rights and liabilities was transferred from UPJVNL to UJVNL.

Out of the generating station transferred, nine are large/medium, nine small, and 23 micro-hydel generating stations. At present the total installed capacity of the UJVNL is 1004.28 MW. However the Commission has determined tariff only for nine large and medium plants. The combined capacity of these nine plants is 948.15 MW.

UERC issued the first Tariff Order for the UJVNL in 2004 and has issued four Tariff Orders till FY09. For three years i.e. FY04, FY05 and FY07, the Commission has issued Tariff Order suo-moto as UJVNL has failed to file tariff proposal with respect to tariff of these stations. Due to delay in filing of the proposal pertaining to FY06 by UJVNL, the Commission admitted the petitions to the extent the same related to FY07. For FY08 and FY09, the Commission had issued a combined Tariff Order as the entire FY08 had elapsed by the time the Commission processed the Order.

Generation Capacity

UJVNL has got nine large/medium plans, nine small and 23 micro-hydel generating stations. The total installed capacity of the nine large/medium plants is 948.15 MW representing 94.4% of the total installed capacity in the State. All the generating plants under UJVNL are hydel plants. Since unbundling, the utility has not added any large/ medium hydel capacity to its generating plants. The plant-wise details are given below.

Table A-23.1: Plant wise Generating Capacity

Plants	Station Capacity (MW)	Fuel Type	Units Capacity	Year Of Commissioning
Dhakrani	33.75	Hydel	3 X 11.25	1965-70
Dhalipur	51	Hydel	3 X 17	1965-70
Chibro	240	Hydel	4 X 60	1974-76
Khodri	120	Hydel	4 X 30	1983-84

Plants	Station Capacity (MW)	Fuel Type	Units Capacity	Year Of Commissioning
Kulhal	30	Hydel	3 X 10	1974-76
Ramganga	198	Hydel	3 X 66	1975-76
Chilla	144	Hydel	4 X 36	1980-81
Maneri Bhali I	90	Hydel	3 X 30	1984-85
Khatima	41.4	Hydel	3 X 13.8	1955-56
Total (MW)	**948.15**			

Auxiliary Consumption and Transformation Losses

For FY05, the auxiliary consumption of the plants had been approved based on the nature (surface or underground) of the plant and in line with the Terms & Condition for determination of Hydro generation Tariff Regulation, 2004 of UERC. Though, the Commission has not spelled out the approach for approval of the auxiliary consumption in the subsequent Tariff Orders, the auxiliary consumption approved by the Commission is similar to that approved in FY05.

For FY05, the transformation loss had been approved based on Section 14 of the Terms & Condition for determination of Hydro generation Tariff Regulation, 2004 of UERC. The transformation losses approved for FY05 was 15.86 MUs for the nine hydel plants. For subsequent years, similar level of transformation losses was approved by the Commission. The table below provides the details of the approved auxiliary consumption and transformation losses for individual plants during FY05 to FY09.

Table A-23.2: Approved Auxiliary Consumption and Transformation Losses

Particulars	Auxiliary Consumption	Transformation Losses
Dhakrani	0.20%	0.50%
Dhalipur	0.20%	0.50%
Chibro	0.40%	0.50%
Khodri	0.20%	0.50%
Kulhal	0.20%	0.50%
Ramganga	0.20%	0.50%
Chilla	0.20%	0.50%
Maneri Bhali	0.20%	0.50%
Khatima	0.20%	0.50%

Gross and Net Generation

The Commission has considered lower of 15 years' average annual generation and the plant-wise design energy mutually agreed between Uttar Pradesh Jal Vidyut Nigam Ltd and UPPCL for approval of the gross generation from each plant during FY05. The approach followed by the Commission for estimation of gross generation has been similar for subsequent Tariff Orders.

Particulars	FY05	FY06	FY07	FY08	FY09
Dhakrani	156.9	-	156.9	156.9	156.9
Dhalipur	192.0	-	192.0	192.0	192.0
Chibro	750.0	-	750.0	750.0	750.0

Particulars	FY05	FY06	FY07	FY08	FY09
Khodri	345.0	-	345.0	345.0	345.0
Kulhal	153.9	-	153.9	153.9	153.9
Ramganga	311.0	-	311.0	311.0	311.0
Chilla	671.3	-	671.3	671.3	671.3
M Bhali I	395.0	-	395.0	395.0	395.0
Khatima	194.1	-	194.1	194.1	194.1
Gross Generation	**3169.1**	**-**	**3169.1**	**3169.1**	**3169.1**
Auxiliary Consumption	7.83	-	7.83	7.83	7.83
Transformation Loss	15.86	-	15.86	15.86	15.86
Net Generation	**3145.4**	**-**	**3145.4**	**3145.4**	**3145.4**

Based on the approved gross generation level, auxiliary consumption and transformation losses, the Commission has approved net generation for individual plants. The table above summarizes the plants-wise gross and net generation of the individual plants as approved by UERC for each financial year.

FIXED COST

Operation and Maintenance (O&M)

UERC has estimated the O&M cost for each of the plants separately. For FY05, the Commission had approved the cost of each of the component of O&M. The Commission had divided the O&M cost in four sub-heads. These were Consumption of stores and spares; Repairs and Maintenance (R&M); Employee Cost; and Administration and General Expenditure (A&G). The Commission had approved the cost of the consumption for store and spares after relaxing the norms specified in the regulations of UERC. R&M had also been approved based on relaxed norms and the unapproved R&M expense amount had been considered as new capital works on which the Commission had allowed interest expense. The Commission has sub-divided the employee cost in various categories including basic salary, DA, other allowances, bonus, and medical allowances and had approved the same based on the claim of the petitioner. Other items like staff welfare exp, other exp, employee benefit, terminal benefit, etc has been approved under relaxed norms and independent valuations. For approval of the A&G expenditure, average of past three years has been considered by the Commission. Additional expense for insurance and regulatory fees had also been approved on previous year actual expense.

However in subsequent years i.e. FY07, FY08 and FY09, all the components of O&M expenses were approved as consolidated figures. For FY07, O&M expense has been approved based on average of actual past 3 years which represented mid year FY02-FY03. An escalation of 4% p.a. has been applied by the Commission for approving the O&M for FY07. Further, additional cost of free supply to colonies and regulatory fees has been allowed by the Commission.

The Commission revised the approach for approval of the O&M cost in the FY08 & FY09 combined Tariff Order. Previous year actual O&M expense was considered as the base for estimation of O&M costs for FY08 & FY09. The revision in base was done by the Commission as the approved O&M expense in previous Tariff Orders was higher than the actual expenditure. An escalation of 4% has been allowed on the previous year actual. In addition, expenditure on colony consumption, regulatory expenses, insurance charges, cost of concessional energy to past employees and impact of pay revision had been approved by the Commission. Terminal benefit, in accordance with the judgement of the Hon'ble ATE has also been approved by the Commission.

Table A-23.3: Approved and Proposed O&M (In Rs Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Amount Approved by the Commission	79.48	-	80.09	96.11	104.99
Amount Proposed by the Petitioner	146.69	-	113.34	116.7	124.21

There has been no true-up exercise undertaken by the Commission during FY05 to FY09.

Capital Expenditure and Capitalisation

In the FY05 Tariff Order, the Commission had considered excess R&M as part of capital expenditure. No additional capital expenditure was proposed by UJVNL. For FY07, UJVNL had claimed a capitalization of Rs. 1.61 Crs and Rs. 9.97 Crs for FY06 & FY07. However, due to absence of detailed information submitted by UJVNL, the Commission had disallowed the capitalization.

For FY08 and FY09, UJVNL had submitted the details of the additional capitalization undertaken during the past years and the proposed capitalization for FY08 & FY09. The same was considered by the Commission for the purpose of tariff determination in the order.

Depreciation

As per the Tariff Regulations, depreciation up to the 90% of the total asset cost has been considered by UERC. Of the nine plants considered for the Tariff Order, it was observed that the accumulated depreciation for four plants were higher than 90% of their book value. Therefore, the Commission has approved depreciation on the opening GFA of the balance five plants i.e. Khodri, Kulhal, Ramganga, Chilla and Maneri Bhali-I.

For FY05, UERC was of the view that the assets of the nine plants were vested in the petitioner through the act of the parliament, therefore no depreciation should be allowed on the same. However, the Commission approved depreciation amount to enable UJVNL to build a reserve (Renovation and Modernization Fund {RMF}) for replacement of the assets after the end of their useful life. Due to unavailability of breakup of the assets, the Commission approved the depreciation for FY05 based on the weighted average rate of 2.38% (computed based on assumed classification of assets and item-wise asset lives specified by regulation) after adjusting for 90% of the asset value.

Since the petitioner had not formed the RMF until FY07, the Commission did not approve any depreciation for FY07. However, the Commission had indicated in its FY07 order that the tariff for UJVNL plants would be revised to include the depreciation amount for FY07 post the transfer of the depreciation amount for FY05 and FY06 to the RMF fund.

For FY08 and FY09, the Commission has approved depreciation at a rate of 2.38% (in accordance with the regulation) on the opening Gross Fixed Asset (GFA) in absence of asset classification as directed by the Hon'ble ATE. While considering the depreciation on the additional capitalization of the plants, the Commission had allowed a rate of 2.66% on additional capital based on the projections of the petitioner.

Table A-23.4: Approved and Proposed Depreciation (In Rs Crss)

Particulars	FY05	FY06	FY07	FY08	FY09
Amount Approved	8.95	-	0.00	8.26	8.28
Amount Proposed	15.42	-	15.26	11.18	13.64

The Commission has not undertaken any true-up exercise for the Tariff Orders issued for FY05 to FY09.

Advance Against Depreciation (AAD)

No AAD has been approved by the Commission as the same was not necessary in the Tariff Orders issued during FY05 to FY09.

Interest Cost

Interest cost had been estimated by UERC based on the information available and prudence checks. Since the plants were Commissioned more than 20 years earlier, interest and loan repayment liability did not exist.

For FY05, the Commission had allowed excess expenditure under Repairs and Maintenance to be considered as capital expenditure. Though, UJVNL had not furnished the details of the works, the Commission had allowed interest on these loans. Additionally, the Commission has approved an interest amount towards financing of payments to be made to retiring employees during FY05. Since the amount relating to these employees is still to be transferred to UJVNL by the UP Trust, the Commission has approved an interest amount on the retiree payments. The Commission has considered the cost of funding @10.25% p.a. as per the PLR for SBI.

However, in absence of details of the work carried and their corresponding funding for the additional capitalization in FY05, The Commission did not approve any interest on the capital work during FY07. Also no interest has been allowed against the payment to retiring employees by the Commission.

For FY08 and FY09, the Commission has considered interest on loans for additional capitalization assuming normative loan. Since the Transfer scheme detailing the assets/liabilities to be transferred to UJVNL was finalized at the time of issuance of the Tariff Order, the Commission has not considered any interest expense arising from these loans during FY08 & FY09.

Table A-23.5: Approved and Proposed Interest Cost (In Rs Crss)

Particulars	FY05	FY06	FY07	FY08	FY09
Interest Cost Approved by the Commission	1.96	-	0.00	1.45	1.43
Interest cost Proposed by the Petitioner	4.58	-	3.29	11.19	14.7

Interest on Working Capital (IWC)

The Commission has been following the provisions of regulation for estimation of the normative working capital requirement in each Tariff Order. The estimation of the working capital requirement for each plant is done based on the following norms:

- O&M expense at one month of projected expenses.
- Maintenance spares @ 1% of historical cost escalated @ 6% per annum from the date of commercial operation/capitalization for the assets
- Receivables at two months of revenue from sale of electricity.

Interest rate on the working capital requirement has been approved based on the short term SBI PLR as on 1st April of the year in accordance of the regulation.

Table A-23.6: Approved and Proposed Interest on Working Capital (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
Interest on WC Approved by the Commission	2.96	-	2.88	3.92	4.20
Interest cost on WC Proposed by the Petitioner	7.89	-	7.39	5.01	5.45
Interest Rate Approved	10.25%	-	10.25%	10.25%	10.25%

Rate of Return

The tariff regulation in the State provide for 14% return on equity for the investment made by generating companies. However, the Commission has disallowed any Return on Equity for FY05 & FY07 considering the fact that the paid up capital of UJVNL was Rs. 5 Crs on the date of transfer of generating assets to UJVNL, and the company had not paid any amount for acquisition of the generating assets. In view of the same, the Commission has not approved any return on equity as UJVNL did not have to utilize any equity for acquisition of the generating assets.

The Commission revised it approach in the Tariff Order for FY08 and FY09, and provisionally approved a ROE @14% considering normative equity (30%) on the opening asset value and additional capitalization incurred during FY08 and FY09. The approach was revised by the Commission in compliance with the ATE order for considering ROE based on normative equity in determination of tariff.

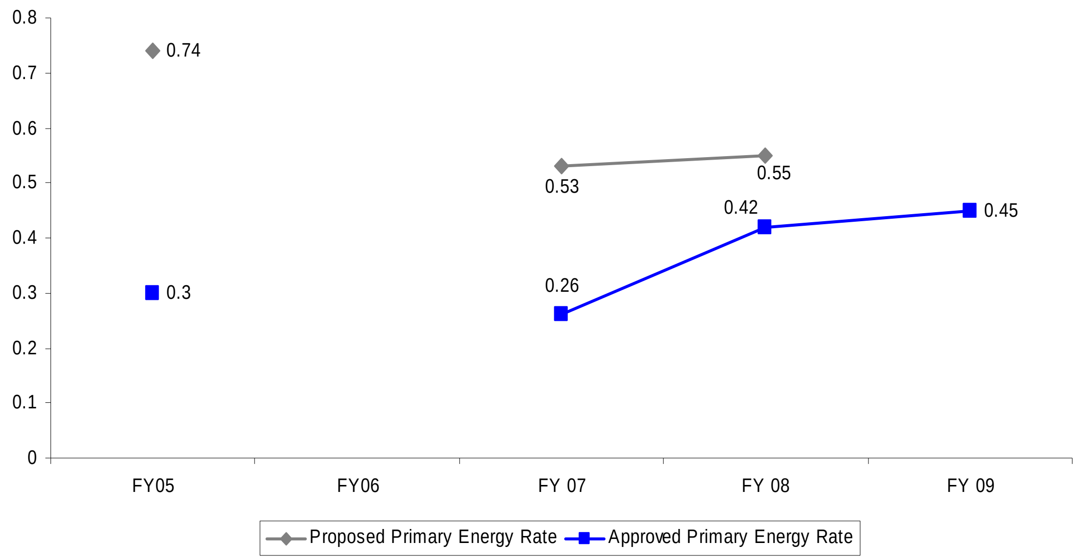
Taxes on Income

As per the provision of the generating tariff regulation, any tax liability on the generation utility is to be recovered from the beneficiaries. Since the recovery has to be done directly from the beneficiaries, UERC has not considered any taxes for determination of tariff in any of the Tariff Orders.

Total Fixed Cost and Primary Rates

Based on the approach mentioned above for various parameters, the Commission has approved the plant wise total fixed cost. Considering the approved Annual Fixed Cost (AFC) and the approved primary saleable energy, the Commission has worked out the primary energy charges for each of the hydel stations. A comparison of the year wise proposed and approved primary energy charge for UJVNL as a whole is summarized in graph below:

Graph A-23.1: Proposed and Approved Per Unit Fixed Cost (Rs. per unit)



Secondary Energy Charges

As per the Regulations, excess of saleable energy over the approved saleable primary energy would be treated as secondary energy and shall be charged at the primary energy rate. However, if the recovery from the primary energy charges is less than the AFC, the generating utility shall recover the difference as capacity charges.

A-23.2. Uttarakhand – State Transmission Utility

Introduction

Post de-merger of the Uttarakhand state, Uttarakhand Power Corporation Ltd was entrusted to cater to the need of the transmission and distribution sector. However, the Electricity Act 2003 mandated the separation of Transmission functions under Power Sector Reforms. On 1st June 2004, the Power Transmission Corporation Limited (PTCUL) was formed to maintain & operate 132 KV & above Transmission Lines & substations in the State. PTCUL is a company wholly owned by the State Government and engaged in the business of transmission of power in the State since 01.06.2004 through its intra-state transmission network operating mainly at voltages 66 kV and above. At present, the sole beneficiary of the transmission system of PTCUL is the distribution and supply licensee in the State i.e. Uttarakhand Power Corporation Ltd. (UPCL). Through a notification dated 31.05.2004, the Government of Uttarakhand vested all the transmission assets of UPCL into PTCUL.

Since the petitioner had not maintained Fixed Asset Register, the Commission has considered the value of assets of UPCL based on the value presented by UPPCL before the U.P. Regulatory Commission and the value shown in UPCL's provisional accounts in 2001 and based on the details of capitalization and deletions of the assets in subsequent years. This value was split between UPCL and PTCUL in the same proportion as shown in the Government's provisional transfer scheme. Based on the transfer scheme, the opening value of GFA for the FY06 was Rs. 163.63 Crs for PTCUL.

The Uttarakhand Electricity Regulatory Commission (UERC) has since taken a few key initiatives. The Commission notified Intra State Open Access Regulation in 2004, which allowed open access facility for consumers with connected load of 1MW and above with effect from 31st December, 2008.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission during FY 2005-06 to FY 2008-09 for approval of the Annual Revenue Requirement (ARR) of the State transmission utility i.e. PTCUL.

Transmission Losses

There is no accounting and treatment of auxiliary consumption, losses and availability as per Regulations between PTCUL and UPCL. In all the Tariff Order issued by the Commission, it has directed PTCUL to devise and develop, in consultation with the beneficiary, a suitable infrastructure and mechanism, for collection and collation of information required for calculation of actual auxiliary consumption in substations, voltage-wise losses in various parts and availability, in accordance with the Regulations. Also, due to lack of interface metering between PTCUL and UPCL the Commission has not been able to approve the transmission losses for PTCUL. Transmission losses submitted by PTCUL for earlier years in the FY08 & FY09 Petition is summarized in table below:

Table A-23.7: Transmission Losses submitted by PTCUL

Particulars	FY05	FY06	FY07	FY08	FY09
Actual as submitted by the Petitioner	2.33%	2.41%	1.74%	NA	NA

Operation and Maintenance (O&M) Cost

The Commission had approved the Employee cost, R&M and A&G cost separately in the Tariff Order for FY06. However from FY07 order onwards, the Commission changed its approach and approved consolidated O&M cost. Detailed approach of the Commission for approval of the O&M cost in the past three Tariff Orders is discussed below:

For FY06, the Commission had approved each component of the O&M separately. Employee cost has been estimated based on the salary bills for FY05. The Commission has escalated the basic salary by 3.5% as proposed by petitioner and the DA has been considered as 20% of the basic. Other expenses like Bonus/ex-gratia, Medical reimbursement, Leave travel assistance, Payment under Workmen Compensation Act and Staff welfare expenditure has been considered as claimed by PTCUL. The Commission had also allowed terminal benefits at a rate of 19.08% of basic salary and DA in line with the last actuarial study done for UPPCL.

The Commission has approved the R&M cost claimed by the petitioner. An increase of 16.7% over FY05 R&M cost has been considered. The Commission had estimated the A&G expenses by applying an escalation of 4% over the annualized Monthly Trial Balance A&G figures for FY05.

For FY07, the Commission has considered a 4% escalation over O&M expenses approved for FY05-06 excluding the components that are not subject to inflation. For newer projects Commissioned during FY06, O&M expenses have been approved on normative basis @1.5% of the capital cost in 2005-06 and an escalation @ 4% p.a. has been allowed by the Commission.

In FY08 and FY09, the Commission had approved a similar methodology for approval of O&M expenses. However, in view of the increase in employee cost during FY06-07 and the addition in employees, the Commission had considered the actual O&M expense for FY07 as the base and escalated the same by 4% p.a. for estimation of the O&M cost for FY08 and FY09. For new assets, O&M has been considered as 1.5% of the capital cost and has been escalated @4% p.a. from the year of Commissioning. Separate provision for regulatory fee has been provided for FY08 and FY09.

The table below provides the total O&M cost approved in the Tariff Orders and the O&M cost as percentage of total ARR.

Table A-23.8: Approved O&M Cost between FY 2005-06 and FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved O&M cost	21.45	28.27	38.05	43.36
Approved O&M as %age of Total ARR	*70%*	*66%*	*42%*	*50%*

Depreciation

During the period FY06 to FY09, the Commission had approved the depreciation based on the average rate of depreciation computed as per the depreciation rates defined in the UERC Regulations and opening balance of the transmission assets. Average depreciation rate was considered by the Commiesion due to non-maintenance of Fixed Asset Register (FAR). In absence of information regarding categorization of capital assets as per the categories specified in the Regulations and age profile of the assets, correct estimation of the depreciation was difficult. Therefore, the Commission had applied the weighted average rate of depreciation.

For FY07, the Commission had made adjustment for any subsidy or grant received in the value of capital assets for the purpose of computation of depreciation for the petitioner. During FY07, the Commission also recomputed the value of asset for previous year i.e. FY06 net of grants and subsidy. Considering the value of asset net of grants and subsidy, a higher depreciation was approved by the Commission during FY06 which was partially adjusted in the loan repayment obligation for FY07 and the balance was carried forward as AAD for future repayments. However, in absence of the information on the categorization of assets, the Commission has approved the weighted average depreciation rate of 3.40% proposed by the Petitioner.

The Commission had followed a similar approach in FY08 and FY09 Tariff Order and considered the value of assets net of grants and subsidy. However, the opening value of assets considered for computation of depreciation for FY08 & FY09 includes capitalization in the previous years which was not considered earlier by the Commission.

Table A-23.9: Approved Depreciation Cost between FY 2005-06 and FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Depreciation cost	8.66	1.61	17.66	19.83
Weighted Avg. Depreciation Rate		3.40%	3.77%	3.77%
Approved Depreciation as %age of Total ARR	28.14%	3.75%	19.37%	22.87%

The decline in depreciation during FY07 was primarily on account of change in approach for computation of depreciation by the Commission. For FY07, the Commission had considered depreciation on capital assets after adjusting for grants and subsidies. Approved depreciation increased for FY08 and FY09 as the Commission has considered asset capitalization during past years in the opening block of assets.

Interest cost

During the issue of FY06 Tariff Order, the final apportionment of the loans between UPCL and PTCUL was not done. Therefore, UERC has treated all loans as that of UPCL for the purpose of determining the interest costs to be recovered through consumer tariffs. However, in the subsequent Tariff Orders the Commission has conducted a scheme-wise analysis of loans for approval of the interest cost.

In FY07, the Petitioner had claimed interest of Rs. 23.42 Crs on outstanding loans, out of which Rs.13.76 Crs was transferred to CWIP, and balance Rs. 9.66 Crs had been claimed in tariff. The claimed interest amount included interest on loans under REC (new) scheme. Since the Petitioner had not obtained Commission's approval for proposed investment to be made under this scheme, the Commission had disallowed interest claims pertaining to REC loans. The Petitioner has claimed interest on loans for financing capital works in progress in its petition. However, considering that the Petitioner had not tied up any arrangement for financing of interest during construction, the Commission had allowed the interest on actual loans received and utilized for the capitalized assets as well as capital works in progress.

For FY08 and FY09, the Commission had approved interest and financial charges considering the loan amount corresponding to the asset capitalized in each year based on approved means of finance. The repayment of loans had been considered as per the details provided by the Petitioner. For normative loans considered for funding of other Schemes, the Commission has considered a normative repayment of 10 years. The interest rates considered for REC (9.75%) and NABARD (6.50%) loans were based on interest rate applicable on various loan trenches as estimated by the Petitioner. For normative loan, the Commission has considered the interest rate equivalent to the weighted average interest rate on other long-term loans for the particular year.

The table below provides the interest cost approved in the last four Tariff Orders and interest cost as percentage of total ARR

Table A-23.10: Approved interest cost between FY 2005-06 and FY 2008-09

Particulars	FY 05-06	FY 06-07	FY07-08	FY08-09
Approved Interest cost	-	11.74	20.69	21.67
Approved Interest as %age of Total ARR	-	27.32%	22.69%	24.99%

Rate of Return

The Commission has uniformly for all years during FY05-06 to FY08-09 has adopted Return on Equity (RoE) as the parameter for allowing return on investment. However, the Commission has disallowed any Return on Equity for FY05 & FY07 considering the fact that the paid up capital of UJVNL was Rs. 5 Crs on the date of transfer of generating assets to UJVNL, and the company had not paid any amount for acquisition of the generating assets. In view of the same, the Commission has not approved any return on equity as UJVNL did not have to utilize any equity for acquisition of the generating assets.

In FY06, the Commission had disallowed any return as PTCUL did not utilize any equity for acquisition of the transmission assets. For FY07, the Commission had approved 14% (after tax) ROE on capital expenditure undertaken by PTCUL during FY05, FY06 & FY07. The basic principle considered for eligibility of the investment for return has been defined as follows:

- The funds invested in the asset should be Company's own funds.
- The funds should have actually been invested in creating/ acquiring the asset.
- Investment of such funds should be part of approved financial package.

In FY08 and FY09, the Commission disallowed any ROE on REC and NABARD loans as the equity component for these investments was provided by the Government of Uttarakhand from a fund (Power Development Fund). Since the Power Development Fund is created out of cess collected by GoU on generation from hydel generating stations of UJVNL, the funds utilized as equity from this fund is consumer's money and therefore the Commission has not approved any ROE on equity contributed from these funds. ROE on loans from other schemes have been considered by the Commission for approval of return.

The details pertaining to approved rate of return between FY 2005-06 and FY 2008-09 is summarized in the table below:

Table A-23.11: Approved Rate of Return between FY 2005-06 and FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved Equity (Rs.Crs)	0	3.03	0.67	0.67
Approved Return on Equity (%)	0%	14%	14%	14%
Approved Return on Equity (Rs.Crs)	0.00	0.42	0.09	0.09

Interest on Working Capital

The Commission had approved the interest on working capital requirement in accordance with the UERC Regulations. While computing the working capital requirement, the Commission had considered the following components:

- One month of O&M expenses
- Receivables equivalent to two months of transmission charges calculated on target availability level
- Maintenance Spares (@ 1% of the historical cost on the date of unbundling of UPSEB to be escalated @ 6% pa)

The Commission has followed a similar approach across all the Tariff Orders issued for FY06 to FY09. The approved interest rate for estimation of the interest on working capital requirement is based on the short term PLR of SBI. The approved interest on working capital and interest rate is summarized in the table below:

Table A-23.12: Approved IWC between FY 2005-06 and FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved IWC (Rs.Crs)	0.95	1.22	2.20	2.43
Approved IWC (%)	10.25%	10.25%	10.25%	10.25%

Non Tariff Income

Non-Tariff Income comprises of delayed payment surcharge, meter rent, income from investments, miscellaneous receipts from consumers, trading income, etc. Throughout the period FY06 to FY09, the Commission has approved the non tariff income as proposed by the petitioner.

Table A-23.13: Approved Non-tariff Income between FY 2005-06 and FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Non-Tariff Income (Rs.Crs)	0.29	0.29	0.68	0.68

Annual Revenue Requirement

The Commission has approved the ARR by deduction of the approved non-tariff income from other admissible expense components as discussed above. The Table below summarizes the ARR approved by the Commission vis-à-vis that proposed by PTCUL from FY06 to FY09.

Table A-23.14: Approved ARR for PTCUL from FY 2005-06 to FY 2008-09

Particulars	FY 06	FY 07	FY 08	FY 09
Approved ARR (Rs.Cr)	31	43	78	87
ARR proposed by PTCUL (Rs.Cr)	60	78	156	-
% Disallowance	48%	45%	50%	-

Transmission Charges

The Commission has approved recovery of the annual fixed charges in 12 equal installments from UPCL as per the provisions of the Regulations. The monthly payments, however, shall be subject to adjustment in case of any addition in the beneficiary. The charges recoverable from the new beneficiary(ies) as per the Regulations shall be refunded to UPCL within one month of the close of current financial year.

Since the order for FY08 and FY09 was issued when almost the full year of FY08 had passed, the Commission directed PTCUL to recover the Annual Transmission charges in excess of existing charges in equal monthly installments to avoid sudden burden on UPCL financials.

SLDC Charges

The Commission has directed PTCUL for segregation of transmission and SLDC expenses for determination of SLDC charges in each of the Tariff Orders. However, in absence of the separate accounts maintained by PTCUL, the Commission has approved Annual Fixed charges for PTCUL inclusive of SLDC Charges.

A-23.3. Uttarakhand – Distribution Utilities

Introduction

Post de-merger of the Uttarakhand state, Uttarakhand Power Corporation Ltd (UPCL) was entrusted to cater to the need of the transmission and distribution sector. However, the Electricity Act, 2003 mandated the separation of Transmission functions under Power Sector Reforms. On 1st June 2004, the Power Transmission Corporation of Uttarakhand Limited (PTCUL) was formed to maintain & operate 132 KV & above Transmission Lines & substations in the State. Currently UPCL, the State Power Distribution Company caters to the power distribution function of the state.

Uttarakhand Power Corporation Ltd (UPCL), a government owned company, was incorporated under the Companies Act, 1956 on February 12, 2001 consequent upon the formation of the State of Uttarakhand.

The Commission issued its first Tariff Order in FY03 and since then it has issued three other Tariff Orders for distribution & retail supply. The Commission had not issued Tariff Order for FY05 because petitioner had not filed its petition. After several reminders, they submitted their petition in January 2005 but by that time, almost whole of year 2005 elapsed. Therefore, the Commission did not issue any Tariff Order for FY05 and reviewed the actual expenditure and revenue of the petitioner. For FY08 and FY09, the Commission had issued combined ARR order. The Commission had throughout followed ARR approach for approving tariff for the UPCL.

Sales / Demand

The Commission has revised its approach for estimation of the sale of power to various categories in the State after accepting the sales estimation of UPCL for FY06. The approach followed by the Commission to estimate power consumption has been discussed below.

In FY06, UERC had approved the growth claimed by the petitioner for domestic, non domestic, public lamp, public water work and industries which was based on escalation over previous year actual sales. But for other categories it was approved the sales based on the norm followed in undivided UP or as per contracted demand and load factor. For un-metered consumers, the sales had been estimated based on the following:

- Sales to the unmetered domestic, commercial and Public lamps categories has been approved based on the consumption of metered consumers.
- The consumption of private Tube wells and state Tube wells has been approved at 1100 hours per year and 3562 units per month (as per UPERC norms) respectively

However FY07 onwards sales to domestic, non-domestic, public lamps, agriculture, industry and public water work has been approved based on the CAGR of last three years as well as growth rate of past year. Whereas, for other categories i.e. government irrigation system and railway traction; power consumption had been approved based on standard consumption norm and contracted demand respectively. For estimation of sales for FY08, the Commission has considered the actual sales in individual categories submitted by UPCL.

As it is clear from the Figure 1 below, the domestic category used to form the major chunk of consumer in the overall consumer mix till FY06 in the overall consumer mix for the State of Uttarakhand. However, in subsequent years, sales approved for industrial consumers has grown substantially as compared to domestic consumers and form majority consumption of the total approved sales. The major reason for the increase in industrial sales has been the migration of the industry from adjoining states i.e. Uttar Pradesh owing to the availability of cheaper tariff for industrial consumers in Uttarakhand.

Graph A-23.2: Share of consumer categories in approved sales and the trend from FY05 to FY09

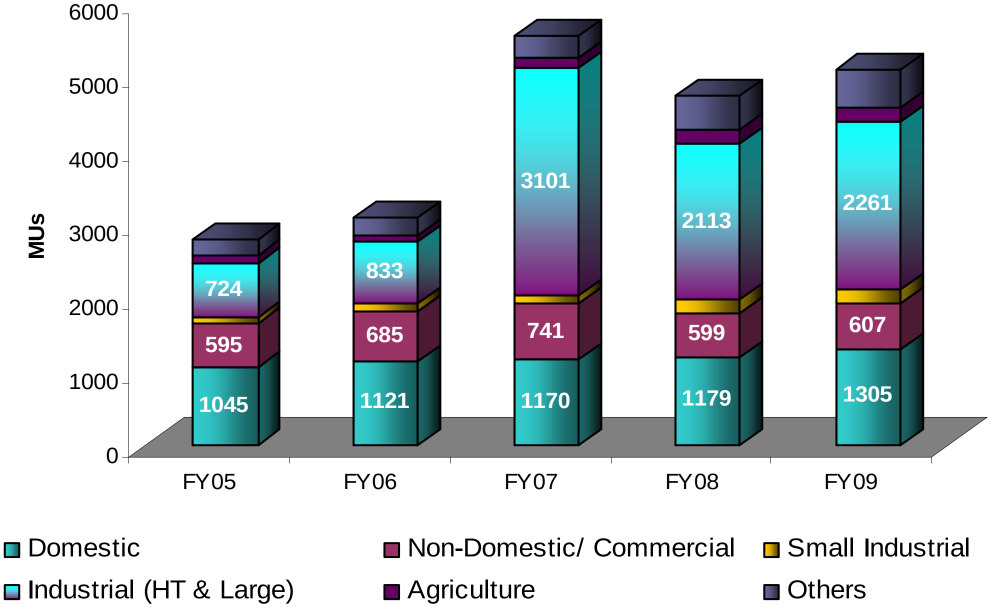
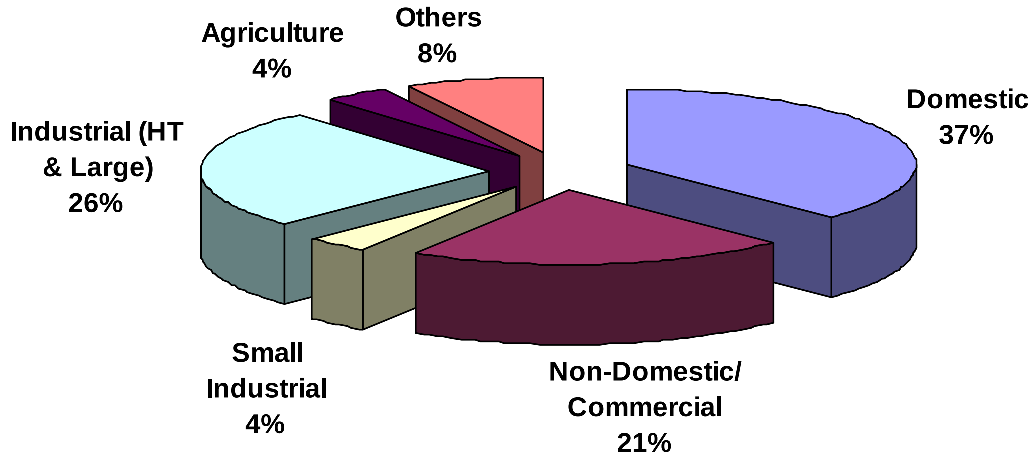
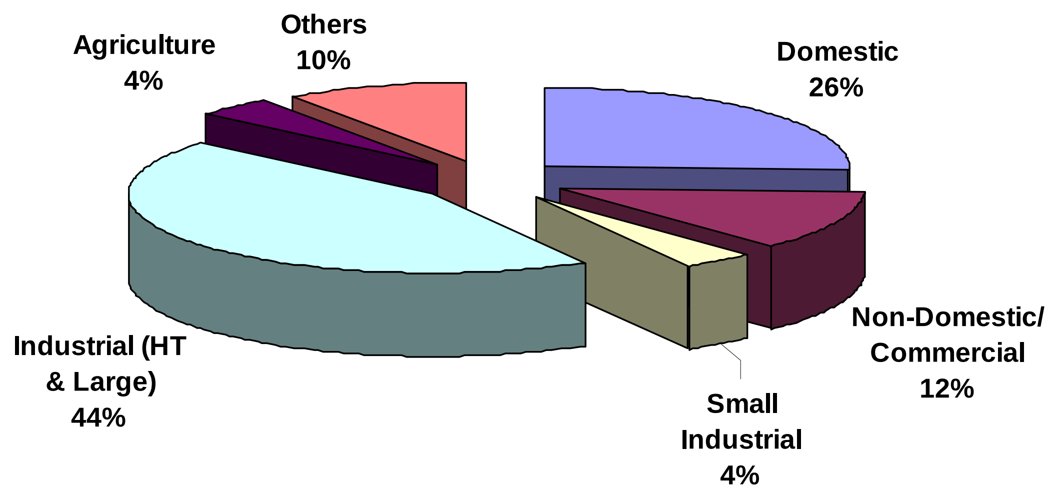


Figure 2 and 3 below illustrate the percent share of the major consumer categories in FY05 and FY09 respectively. Domestic category was the largest consumer in FY05 accounting for 37% of the total approved sales, followed by Industrial and Non-domestic categories. In FY09, the situation however has undergone a change with industrial consumers forming the majority contributor to the approved sales i.e. 44% followed by domestic and non-domestic categories. Over the years, the demand from non- domestic category had remained more or less constant, whereas the demand from domestic and industrial sector had seen an increment.

Graph A-23.3: Percent share of consumer categories in approved sales for FY05



Graph A-23.4: Percent share of consumer categories in approved sales for FY09



AT&C Losses

In FY06 and FY07, the Commission had approved loss level for UPCL taking into account the massive investments being made under APDRP programme and commitment made to Government of India for reduction target of 20% by end of FY04. However, the Commission had revised the target to 20% loss reduction over the next 5 years (till FY2007-08) in order to set realistic targets for UPCL. Therefore, the petitioner was required to reduce the loss level by 4% each year for the next five years. This target reduction of 4% constituted of 1% loss reduction towards technical loss and 3% loss reduction towards commercial losses.

In FY07, UPCL proposed a loss level of 38.57%, which was very high considering the trajectory set by the Government. In absence of proper justification for such high level of loss level, the Commission did not accept the claim made by the petitioner and set the target loss reduction as per the loss reduction trajectory set by it at 30.17%.

In the FY08 petition, UPCL submitted that it had no control over the inter-state losses and requested the Commission to set the target considering the same. The Commission considered the claim of UPCL and recomputed the loss reduction trajectory excluding the inter-state losses. The target for FY08 was then set based on the recalculated target trajectory.

For approving the AT&C loss level for FY09, the Commission has considered a reduction of 2% in the AT&C loss level in line with the recommendation of the task force (Abraham Committee) constituted by Ministry of Power, Government of India on APDRP Programme regarding reduction in losses by 2% per annum for licensees having distribution losses in the range of 20 to 30%. However, the Commission has considered no reduction in technical losses and a reduction of 2% in commercial losses.

The table below explains the reduction in AT&C loss approved by the Commission for FY08 and FY09:

Table A-23.15: Approved AT&C Loss in FY08 & FY09 Tariff Order

Particulars	FY08	FY09
Loss Level in Previous Year	28.32%	24.32%
Technical Loss Reduction	1.00%	0.00%
Loss Level for Energy Input	27.32%	24.32%
Sales	4733	5080
Commercial Loss (%)	6512	6712
Total Sales with effecting Improvements	4928	5214
Overall Distribution Loss (%)	**24.32%**	**22.32%**

The table below summarizes the loss reduction trajectory set by the Commission in each of the Tariff Orders.

Table A-23.16: AT&C Levels proposed and approved for UPCL during FY05 to FY09.

Particulars	FY 04-05	FY 05-06	FY 06-07	FY 07-08	FY 08-09
Approved in the Tariff Order	38.17%	34.17%	30.17%	24.32%*	22.32%*
Proposed by the Utility	-	-	38.57%	34.64%*	-

** Within UPCL's Network only.*

Power Purchase Quantum

Since its inception, the responsibility of power purchase is with UPCL. The major firm sources of power purchase for UPCL has been UJVNL's generating stations, Central Generating Stations like NTPC, NHPC and NPC, Small and micro hydel stations of UJVNL, UREDA and others. For FY08 & FY09, the Commission has also considered power availability from the share of 12% free power of the State Government of Uttarakhand.

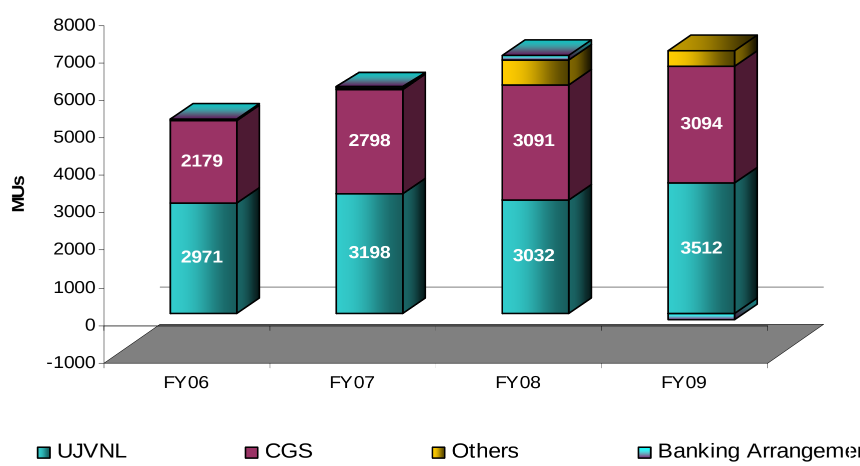
The Commission had considered power purchase from firm sources only. The estimation of total power availability has been based on the source-wise availability of energy. In FY06 and FY07, the estimation for availability of the energy from UJVNL was based on targets fixed by CEA. Since the order for FY08 and FY09 was issued late, the availability of energy from UJVNL stations for FY08 was projected based on actual energy generation from April 2007 to January 2008 and projected monthly generation for February to March 2008 as submitted by UJVNL. The energy availability for FY08 from UJVNL stations after excluding Himachal Pradesh's has been approved by the Commission. Energy availability from UJVNL generating stations for FY09 has been estimated based on the monthly availability of individual stations as projected by UJVNL.

In FY06 and FY07, the energy availability from small hydel plants was estimated based on the availability claimed by the UPCL. However for FY08, the availability was approved based on actuals for April 07 to Jan 08 and projected generation for the balance two months of FY08. For FY09, the availability has been considered based on past trend of the monthly generation pattern..

The Commission has approved the availability from Central Generating Stations (CGS) for Fy06 based on the claim of UPCL. The availability computed by UPCL was based on the past performance of the generating stations and share of UPCL. In FY07, the energy availability from CGS was approved based on the target specified by the CEA, auxiliary consumption based on CERC norms and State's share in each generating station. However for FY08, the availability has been estimated based on the actual generation for 10 months and projections for balance two months based on monthly average generation for past three years. For FY09, the estimation of availability was based on the CEA specified target and state's share.

In FY06 the energy availability under banking arrangement has been made based on the projections made by UPCL. However, in the subsequent orders, the availability has been approved based on the agreement signed between the UPCL and PSEB.

Graph A-23.5: Approved breakup of Power supply from various sources in FY06



In FY06, the contribution of UJVNL in the total energy supply was around 57% followed by Central generating stations with a contribution of around 42% in the total energy requirement. The share of banking arrangement was almost negligible during FY06. However by FY09, the share of power availability from CGS has increased to 45% due to fresh allocation from new plants and the availability from UJVNL has decreased to 51%. However, the contribution from banking arrangement was a negative 2% during FY09 on account of net return of energy banked.

Power Purchase Cost

Power purchase cost had been approved based on the estimated cost from each source. In FY06, the Commission approved the cost of power purchase based on monthly merit order dispatch excluding the power available from small hydro stations. For estimating the power purchase cost, the Commission broke down the entire power requirement and supply on a monthly basis.

For UJVNL plants, the Commission has considered the tariff approved by the Commission for the nine large and medium State generating plants during FY06 to FY09. Since the Commission did not approve the tariff for other plants of UJVNL, it had considered the power purchase cost from these stations based on the prevailing rate.

During period FY06 to FY09, the power purchase cost from CGS plants has been approved based on their annual fixed charges approved by CERC and variable charges based on the variable charges appearing in the latest bills. However, the Commission has considered actual cost for 10 months for FY08 and estimated cost for remaining two months.

During the period FY06 to FY09, UPCL proposed drawal of UI power to bridge the gap of power availability and demand, which was duly accepted by the Commission. The cost of additional power purchase through UI had been approved based on the rate claimed by the petitioner.

Under banking arrangement, no cost had been approved as the borrower is required to return the borrowed energy with 5% premium as per the banking agreement with UPCL.

Approach for determination of transmission charges has not been specified by the Commission in the order for FY06. In FY07, transmission charges payable to PGCIL and NRLDC has been approved as per the claim of UPCL while the PTCUL has been considered as per the approved annual fixed charges by the Commission for FY07. For FY08 and FY09, the PGCIL and NRLDC charges has been approved based on the applicable transmission charges for northern region and transmission capacity allocated to the UPCL while the intra-state transmission charges has been approved based on the transmission charges approved by the Commission for PTCUL.

A comparison of the approved and trued-up net power purchase cost for UPCL is summarized in table below:

Table A-23.17: Approved and Trued-up Net Power Purchase Cost* for (MUs)

Particulars	FY05	FY06	FY07	FY08	FY09
Approved Cost		567	1627	1042	1102.92
Trued-up Cost	660	751	927	-	-

** including transmission cost*

The actual figure of FY07 was much lesser than the approved amount. This can be attributed to the fact the Commission had over projected the sale of power in this year for steel industries.

O&M Cost

In FY06, for estimation of the O&M expenditure for UPCL, UERC had approved expenses for each of the parameters i.e. employee cost, R&M cost and A&G cost separately.

An absolute amount towards **R&M** expenses was approved as claimed by the petitioner so that no crucial function gets neglected and in view that entire state was covered under APDRP, it was expected that in future this expenditure will reduce for UPCL.

A&G expense was approved based on the annualized Monthly trial balance for FY04 and the same had been escalated by 4%.

However, in subsequent year i.e. FY07, the Commission had changed the approach and approved the O&M expenses in consolidation due to lack of compliance of directives given by the Commission in the earlier orders. For approval of the O&M expense for FY07 and account for the expenses relating to addition of new consumers during FY07, the Commission had proportionately increased the O&M expense of FY06 to account for the increased consumers and escalated the revised O&M by 4% to factor in the inflation. Expense related to regulatory fees has been approved by the Commission over and above the O&M expenses for FY07.

The Commission has followed a similar approach for approval of the O&M expenses for FY08 and FY09. An additional amount of Rs. 18 Crs has also been provided by the Commission during FY09 to account for the impact of expected pay revision on provisional basis.

The table below summarizes the total O&M expense approved during the period FY06 to FY09 and O&M expense as a percentage of the total ARR approved by the Commission:

Table A-23.18: Approved O&M and O&M as percentage of the approved ARR

Particulars	FY05	FY06	FY07	FY08	FY09
Approved O&M Expenses (Rs Crs)	129.8	138.7	159.9	178.7	224.3
Approved ARR (Rs Crs)	620	726	1714	1456	1568
O&M as %age of ARR	20%	16%	9%	12%	14%
Trued-Up O&M Expenses (Rs Crs)	124.5	148.1	164.2	-	-

Capital expenditure (Capex)

The Commission considers the capitalization of investments undertaken by UPCL and therefore, approves the capitalization each year instead of capital expenditure for the relevant year.

Asset Capitalization

For FY06, the Commission has considered capitalization of works at the end of the financial year and therefore has considered the amount of asset capitalized during FY06 for the purpose of depreciation interest and return. Therefore, the impact of the proposed capitalization by UPCL for FY06 has been considered to the extent adjustments in capitalized interest, employee and administrative costs have been being made. In subsequent years, the Commission has considered capitalization of assets for the purpose of tariff determination only if the project-wise details of work completed was submitted by UPCL.

Depreciation

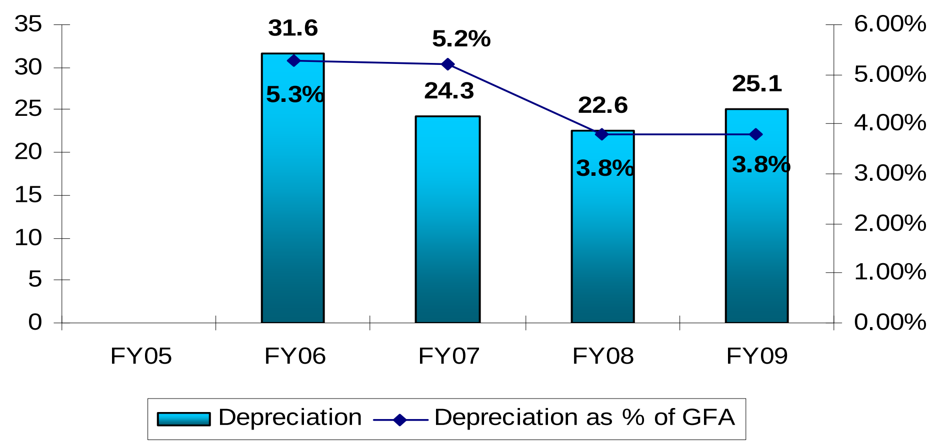
The depreciation for FY06 has been approved by the Commission in line with the Regulation 15 of Distribution Tariff Regulations which provides for the useful life of each category of assets and distribution of the depreciation over the useful life of the assets. However, due to absence of various categories of assets and age of the assets, the Commission had applied a weighted average rate of depreciation for approval of depreciation for FY06. The Commission approved depreciation was much lower than UPCL claimed depreciation due to disapproval over opening value of the GFA. A similar approach was adopted by the Commission for approval of depreciation for FY07 Tariff Order.

Due to non-submission of the report on asset classification and age in the FY08 petition as well by UPCL, the Commission had approved a weighted average rate of depreciation of 3.79% on opening GFA as per the regulation. Since the ARR of FY08 and ARR of FY09 are combined order, the depreciation for FY09 had also been approved in a similar manner.

The Commission had time and again directed the petitioner to submit a report on asset classification in line with the regulation along with their age, but the petitioner has continuously failed to comply with the direction of the Commission.

The total approved depreciation for UPCL and depreciation as a percentage of gross fixed assets is reflected in the graph below:

Graph A-23.6: Approved Depreciation by the Commission and Depreciation as % of Gross Fixed Assets



Note: While calculating depreciation as % of opening gross fixed assets, Subsidies and Grants have been excluded

Working Capital Requirement

In FY06, the Commission had approved the working capital requirement considering the following parameters:

- One month O&M expenses inclusive of maintenance spares forming part of R&M expenses
- Capital required to finance the shortfall in collection
- Receivables for sale of electricity equivalent to billing cycle.

For the subsequent Tariff Orders as well the Commission has followed a similar approach for estimation of the working capital requirement for UPCL.

The Commission had taken into consideration a collection efficiency of 92% and billing cycle of different categories of consumers after adjusting for security given by consumers and while approving working capital requirements for FY07. However for FY08 & FY09, a collection efficiency of 95% has been considered by the Commission.

After computing the working capital requirement for the petitioner, the interest rate on working capital has been approved based on the prevailing short term PLR of SBI. The Commission has considered an interest rate of 10.25% SBI PLR for each of the year.

Interest Expense

In FY06, since the final apportionment of loan between UPCL and PTCUL was not completed, the Commission had considered interest on all loans for the determination of the ARR for UPCL. The Commission has analyzed the scheme-wise loan and their interest and repayment schedule to approve the interest cost corresponding to each loan in the FY06 Order. Any interest on liabilities taken over by UP government at the time of restructuring or for the loans for which UPCL had not provided necessary details was disallowed by the Commission. Also, UPCL had claimed for interest on loans undertaken by Government of Uttarakhand which were provided at 0% interest rate but attracted an interest @2.75% p.a. in case the projects are not completed of time. The Commission has disallowed interest on these loans as the interest would be payable only if there is inefficiency and mismanagement on the part of UPCL.

For FY07, the Commission has followed a similar methodology for approval of interest cost and has analyzed scheme-wise loans and interest outflow. The loans taken for financing the capitalized assets have only been considered for the purpose of ascertaining the interest liability of UPCL. In FY08 & FY09 Order, the Commission has approved the interest cost in line with the previous orders. In absence of data submitted by UPCL regarding interest rates for various trenches of loans under different schemes, the Commission has considered one interest rate for each scheme which shall be trued up based on actual liability of interests..

Rate of Return

The Commission has approved return on equity to UPCL for approving the return on the investment undertaken for creation or acquisition of fixed assets. The Commission had uniformly followed this approach in each of the Tariff Order during FY06 to FY09.

In FY06 and FY07, the Commission has disallowed any Return on Equity considering the fact that UPCL did not had to utilize any equity for acquisition of the distribution assets at the time of unbundling.

For FY08 and FY09, the Commission had allowed ROE on the assets capitalized under the system improvement schemes, funded out of equity by UPCL. The Commission had allowed a return of 14% on equity in accordance with the UERC regulation.

Bad Debts

In FY06, the petitioner had total outstanding debtor worth Rs 1037 Crs, out of this Rs 569 Crs were private and rest were from Government Department. In FY06, the petitioner had an accumulated provisioning of Rs 278 Crs. The Commission disallowed any further provisioning for bad debts as the dues relating to government department cannot be considered as bad debt while the existing provision of Rs 278 Crs was sufficient for writing off private dues (approx 49% of the total private outstanding dues). The Commission directed UPCL to carry out a proper analysis of the outstanding dues and frame a transparent and clear cut policy for classification of bad and doubtful debts and according provide for writing off the same.

In FY07, the Commission disallowed the claim of the petitioner regarding provisioning of addition bad debts due to lack of compliance with the directive provided in the FY06 Tariff Order. However in FY08 and FY09 order, the Commission had concerns over the rising levels of receivables and allowed provisioning on bad debts to the extent of 1.5% of the revenue to be billed during the each of the year. The Commission also directed UPCL to take steps for recovery of the increasing bad debts and write off individually identified bad debts. .

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for UPCL. The table below summarizes the approved ARR in the various Tariff Orders from FY05 to FY09:

Table A-23.19: Proposed, Approved and Trued-up ARR for FY05 to FY09 (Rs. Crs)

Particulars	FY 05*	FY 06	FY 07	FY 08	FY 09
Proposed by the Utility	848	972	1138	1699	-
Approved	620	726	1714	1456	1568
Trued-up	620	934	1144		

**ARR for FY05 has been reviewed and approved by the Commission along with the FY06 ARR as the entire of FY05 had elapsed by the time UPCL had submitted its petition*

The reason for underestimation of ARR in FY06 was under estimation of the power purchase cost by the Commission. However in FY07, the Commission had estimated higher sale of power in the state to the Industrial category and had thus approved a higher power purchase cost.

Tariff Determination

The Commission had been following both two part tariff as well as single part tariff for different categories of consumers. The Commission approves tariff for nine major consumer categories. The Commission has not estimated any excess revenue through the levy of minimum charges and the revenue that will accrue to UPCL on account of minimum charges being excess of fixed/energy charges. In FY06, the Commission had estimated a revenue surplus based on approved sales and tariff at existing rates. Of the total surplus estimate for FY06, the Commission had permitted UPCL to set aside Rs. 5 Crs in a separate bank account for meeting the directives on improvement in quality of service to consumers in various areas and the balance for reducing the GPF trust liability which was taken by UPCL as transitional arrangement.

An important change pertaining to agricultural consumers that was proposed by UPCL and accepted by the Commission was regarding the payment of dues of agricultural consumers on half yearly basis in view of the seasonal nature of agricultural business. Another proposal of UPCL which was approved by the Commission was for clubbing of the un-metered agricultural consumers with load higher than 10 BHP with the consumers with load lower than 10 BHP. Moreover, the Commission had designed tariff for mixed category based on the mix of load for domestic and and non-domestic category. The Commission has designed slabs for different mix of domestic & non-domestic load and prescribed a weighted average rate for each such slab. Depending upon actual load mix of such connections, the applicable rate for that slab shall be charged for such mixed consumption.

In FY06, the ToD metering had been extended from HT industrial categories to other categories including all non domestic category with load above 4KW or in 3 phase supply, all other non domestic category above 25KW and LT industrial consumer above 25 KW. The Commission had also allowed time duration of four months to these categories to reorganize their consumption profile. For the residents of snow bound area, the Commission has exempt all domestic consumers and small non-domestic consumers with load upto 1 kW of these areas from payment of minimum charges and provided similar tariff as under the sub-category of below poverty line consumers with upto 1 kW load and 30 units/month consumption. Rebate to users of solar water heating systems and users availing supply at higher voltage was also approved by the Commission.

Some initiatives undertaken by the Commission on tariff design in FY06 order are as follows:

- Domestic consumer category had been reduced from three to two sub categories and tariff for high load category was reduced.
- Removal of minimum monthly charges for Public water works
- Minimum charges for LT industries had been reduced
- Introduction of 15 days billing cycle for power intensive units
- Reduction in interest rate from 1.5% to 1.25% for delay in payment of electricity bills

In FY07, the Commission directed UPCL to deposit the surplus amount collected from the consumers by the way of charging higher tariff from the consumers compared with the tariff approved by the Commission and claiming expenditure in excess of UPCL's prudent expenses up to March 2005 in a fund. This fund would be utilized for strengthening and upgrading of the current distribution system. Moreover in case of delay in transfer of the surplus amount to the fund, the same will attract an interest rate based on the interest charged by UPCL from consumer on delayed payment. The Commission approved for transfer of the surplus amount to the fund as it was difficult to identify the consumers from whom higher charges had been collected.

The Commission also removed the minimum charges applicable to all the categories of consumers based on its analysis and complaints of consumers received regarding wrong billing. The Commission had verified the same and and found that only 15.9% of the bills were based on metered consumption. Therefore, it directed UPCL to meter all the non functioning connection within two months and till the time the consumers can be charged on assumed basis for only two months in case of conversion of meters or non functional meters. The tariff of the steel units was made at par with the HT industry users as per the direction of the Hon'ble ATE.

Based on the tariff applicable to various categories, the Commission had computed a revenue gap of Rs. 156.82 crs. The gap has been proposed to be met through an increase in tariff by 10% for all categories excluding the domestic and commercial consumers in snow bound area, Private Tube wells and Below Poverty Line (BPL) category of consumers.

In prior years, substantial savings on account of separation of Uttarakhand from the state of Uttar Pradesh had accrued to UPCL was noticed by the Commission. The Commission had appointed a Chartered Accountant firm to identify the amount of savings which was identified as Rs. 755.53 Crs. Of Rs. 755.53 Crs, Rs. 654.94 Crs is available with the UPCL and the Commission has directed UPCL to transfer the amount to Network Development Fund (NDF) and will be utilized for leveraging funds available from Government and financial institutions for strengthening and up-gradation of the distribution system.

In FY08 and FY09, the Commission had estimated revenue gap based on approved sales and existing tariff for each category. Since the FY08 order was delayed by approximately a year, the Commission had allowed UPCL to charge the new tariff applicable from March 2008. The Commission estimated that additional revenue earned in March FY08 would reduce the revenue gap of FY08 to some extent and the balance amount could be met through the past period surplus amount.

The Commission has undertaken various tariff rationalization measures in the FY08 & FY09 Tariff Order. Some of the key changes are:

- Introduction of fixed charges for most of the consumer categories. For domestic category fixed charges is based on connection basis while for non-domestic category is based on contracted or sanctioned load.
- Re-introduction of Minimum Charges in slightly modified form of Minimum Consumption Guarantee (MCG) charges for the Industrial category. The MCG charges would be adjusted only towards energy charges.

- Increase in tariff of un-metered domestic consumers from existing tariff of Rs. 120/connection/month to Rs. 150/connection/month. However, this increase was not applicable for consumers in hilly areas of the State
- Extension of the kVAh Based Tariff for Non Domestic and LT Industry Categories having sanctioned load above 25 kW
- Re-categorization of the HT Industry category and uniform load factor based Energy Charge for all the consumers under HT Industry category.
- Penalties had been introduced for exceeding the contracted load applicable for all MDI meter users.

Considering that the tariff increase required to meet the gap of two years i.e. 2007-08 and 2008-09 in 13 months period i.e. March 2008 to March 2009 will lead to a severe tariff shock to the consumers, the Commission has utilized the surplus to the extent of Rs. 127.07 Crs to meet the uncovered gap of 2007-08. However, the recovery of entire approved ARR for FY09 has been allowed by the Commission by the way of increase in tariffs.

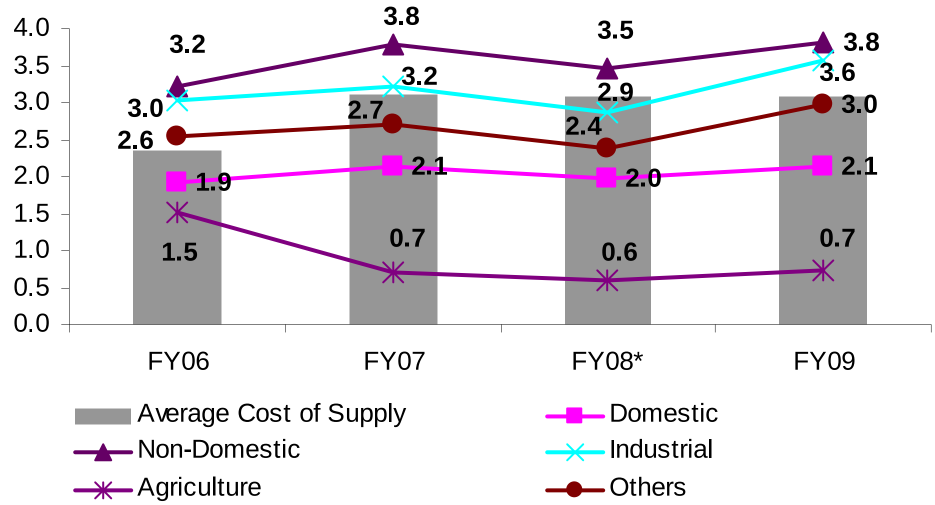
Tariff for the following categories have been revised in order to recover the projected gap for FY08 & FY09:

- Fixed charges for un-metered domestic categories had been increased
- Concessional tariff for non domestic category in snow bound area.
- Tariff for Public lamps, GIS, PWW had been linked to CoS with no element of cross subsidy
- Merger of the urban and rural un-metered category of agriculture.
- Fixed as well as energy charges of LT industry has been increased along with introduction of MCG charges
- Fixed as well as energy charges of HT industry has been increased along with introduction of MCG charges
- Uniform tariff for mixed load consumers
- Reduction in demand and energy charges for Railway Traction category

The approved tariff resulted in a surplus of Rs. 25.54 Crs which shall be utilized towards the refund to be made by UPCL to the Steel Units and Railway Traction for the period April 2007 to February 2008 based on the re-determined tariffs approved by the Commission in the FY08 & FY09 order.

The graph below shows the pooled average cost of supply and the average revenue from each category of consumer:

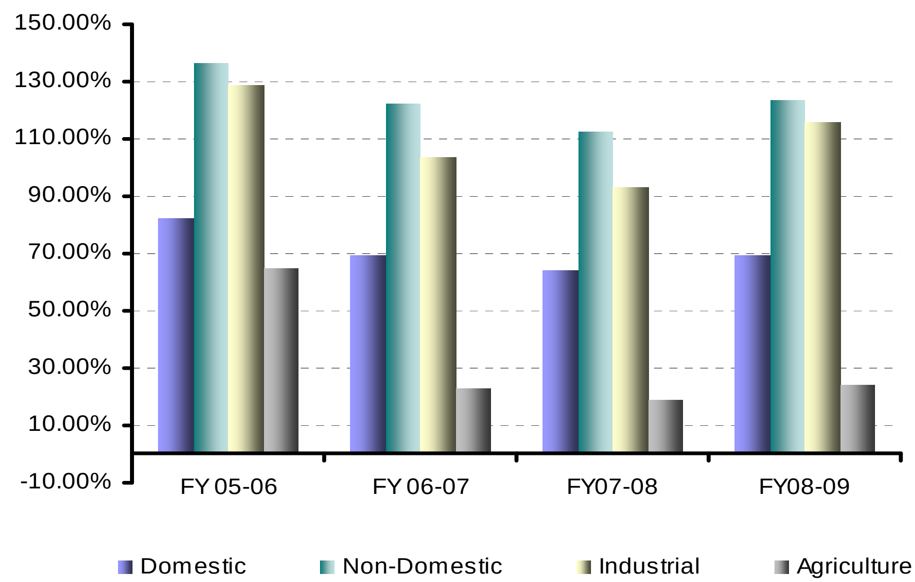
Graph A-23.7: Pooled average cost of supply and the average revenue from each category of consumer



** Revenue for FY08 had been considered at existing revenue estimated by the Commission as whole of the year was passed and the revenue breakup for FY08 at approved rate was not provided by the Commission*

 # The average CoS and Average Realisation figures considered are excluding efficiency gains of the petitioner

The graph above shows that Domestic and Agriculture had always been a cross-subsidized categories while the Non-domestic and Industrial consumers have remained cross-subsidizing categories. The extent of cross subsidization can be seen from the graph below.



It can be inferred from the graph that the cross subsidization levels have remained high during all the years i.e. FY06, FY07, FY08 & FY09 will marginal impact by the change in tariff design by the Commission. Though, the Commission has attempted to reduce cross-subsidy levels by increasing the tariff of domestic and agriculture category they are still far away from the +/-20% level specified in the National Tariff Policy. However, the tariff for industrial and non-domestic consumers has come within the +/-20% level from FY07 onwards.

Time of Day Metering

The Commission has introduced the Time of Day (TOD) Metering in the State of Uttarakhand to offer rebate for the power consumption during off-peak hours through concessional night time tariff for HT Industrial consumers prior to FY06 Order. The same was extended in FY06 Order to include all Non-domestic consumers under sub-category "Hospitals/Education/Charitable Institutions" with connected loads above 4 kW or with 3-phase supply, all other non-domestic consumers above 25 kW, and all LT industrial consumers above 25 kW. Moreover, the Commission has also provided an option for continuous supply (with a surcharge of 20%) to industrial consumers which have inflexible load and, therefore cannot avail of the benefit under the ToD metering.

The Commission had approved a surcharge of 25% over normal hour rates for consumption in peak hours (morning & evening) and a rebate of 5% over normal hour charges for consumption during off-peak hours. In the FY08 & FY09 Order, the Commission has abolished the ToD metering for non-domestic consumers considering their inability to shift their load from peak hours to off peak hours.

Approved Average Cost of Supply Vs Realization

The average cost of supply approved by the Commission from FY06 to FY09 has increased by 31% from Rs 2.29/ Kwh to Rs 3.01 /Kwh during the period FY06 to FY09. During the same period, the revenue realization has also increase by 18% from Rs 2.58 /kWh to Rs 3.06/Kwh. In FY09, the Commission had allowed a surplus of Rs .05 Kwh. This also shows that during the period FY06, FY07 and FY09 the Commission had allowed the full recovery of cost through revenue realization.

Table A-23.20: Approved Average Cost of Supply by the UERC during the period FY06 to FY09

Particulars	FY 05-06	FY 06-07	FY 07-08*	FY 08-09
Total Approved Sales	3173	5785	5089	5214
Total Approved ARR	726	1714	1456	1568
Total Approved Realisation	820	1722	1311	1593
Per unit CoS (Rs/Kwh)	2.29	2.96	2.86	3.01
Per unit Realisation (Rs/kwh)	2.58	2.98	2.58	3.06
(Gap)/Surplus	0.30	0.01	(0.29)	0.05

**Since the Commission issued the Tariff Order after approximately the full FY08 had passed, the revenue had been estimated based on the existing rates.*

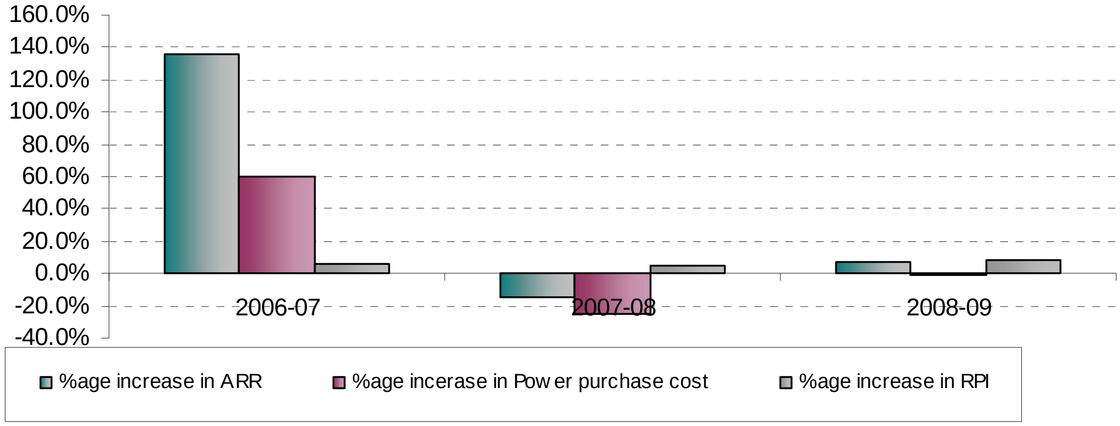
 # The figures given above for sale and revenue includes extra sales and revenue earned due to efficiency gains

Subsidy Support

The Commission has not specified anything on the subsidy in any of the Tariff Orders.

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Annual revenue requirement and power purchase cost in FY 2006-07 increased due to over-estimation of sales unit resulting in increase in power purchase cost (from costly sources). Subsequently in FY 2007-08 annual revenue requirement and power purchase cost reduced due to decrease in sales units approved.

Particulars	2005-06	2006-07	2007-08	2008-09
Approved ARR	726.00	1714.00	1456.00	1568
Approved Sales (MU)	3088.00	5536.00	4733.00	5080
Average Cost of Supply in Rs/kwh (A)	**2.35**	**3.10**	**3.08**	**3.09**
% of Power Purchase Cost in ARR	**78%**	**95%**	**72%**	**70%**
% of Other remaining Cost in ACS	22%	5%	28%	30%
% Annual Increase in Power Purchase Cost		60%	-25%	-1%
% Annual Increase in Other Cost		-69%	457%	5%
% Annual RPI Increase	4.37%	6.06%	5.21%	8.67%
RPI -X (X= 2%)	2.37%	4.06%	3.21%	6.67%

Timelines of Orders

The Commission had issued suo-moto orders in three out of last four Tariff Orders. This has happened as UPCL had continuously failed to file its tariff petition on time. Moreover, the delay in filing had been substantial enough forcing the Commission to proceed with the suo-moto order. In FY07, there had been a substantial time lag between the date of tariff filing and the date of issue of Tariff Order. The delay in issuance of Tariff Order is attributable to the delay in filing the complete information by the petitioner.

Table A-23.21: Timelines of Order during the period FY06 to FY09

Particulars	FY 06	FY 07	FY 08*	FY 09*
Date of Submission of ARR	Suo Moto	26-Dec-05	Suo moto	Suo Moto
Date of Issuance of Tariff Order	25-Apr-05	12-Jul-06	18-Mar-08	18-Mar-08
Delay in Issue of Tariff Order.		198		
Public Notice for Public Hearing	1-Jan-05	27-Dec-05	1-Jan-08	1-Jan-08
Number of Objections Received	175	91	56	56

**consolidated order for FY08 & Fy09 was issued*

Concluding Remarks

- The Annual revenue Requirement has substantially increased in the state of Uttarakhand. The increase in ARR can be attributed to the increase in increase in power purchase cost and the O&M cost. During the period FY06 to FY09, the ARR has increase from Rs 726 Crs in FY06 to Rs 1568 Crs in FY09, whereas the the power purchase cost has increased from Rs 536 Crs to Rs 1103 Crs during the same period.
- Till now, the Commission had not been able to apply the MYT framework for approving the cost in the state.
- The Commission had set a clear loss reduction trajectory and has followed the same while approving the AT&C loss for the petitioner. Although, the petitioner had not been able to meet the loss level set by the Commission, the Commission has continued with the practice.
- The Commission had already introduced ToD in the state of Uttarakhand to encourage power consumption during off-peak hours.
- In FY07, the Commission had over projected the sale to the industrial consumer category. This had happened because of the over estimation of the migration of industries from the neighboring states. However in subsequent years, the necessary corrections were made.

Best Practices

- In FY06, the petitioner had proposed an important change pertaining to agricultural consumers and accepted by the Commission was that the agricultural consumers should be allowed to make payment on half yearly basis keeping in mind the nature of their business.
- The Commission had introduced the Time of Day charges to encourage consumption during the off-pek hours and discourage the consumption during peak hours. This helps in better management o demand and is appreciable. The Commission had also done away with ToD for commercial and railway traction

while issuing Tariff Order for FY08 and FY09 considering the nature of their business.

- The Commission had been considering the availability of power only from firm sources. This helps in correct estimation of power availability and hence the amount of deficit and correct the power purchase cost.
- Although the Commission had tried to rationalize the tariff in the later period but due to lack of clear road map on cross subsidy reduction has not been able to do the same. However in FY09, the level of cross subsidy has reduced in comparison to the level of cross subsidy in FY06.
- The Commission had done a scheme-wsie analysis of the loan amount and had approved only those amounts for which the petitioner had been able to provide sources. Moreover, interest rate had been allowed based on the corresponding loan amount. This helps in correct estimation of the interest on loan amount.

A-24. West Bengal

A-24.1. West Bengal – STATE TRANSMISSION UTILITY

Introduction

West Bengal State Electricity Transmission Company Limited (WBSETCL) which is a state transmission utility was formed post restructuring of West Bengal State Electricity Board (WBSEB hereafter), in accordance with West Bengal Power Sector Reforms Transfer Scheme 2007. The functions and business in transmission activities and load dispatch activities were transferred to WBSETCL and the functions of distribution and activities related to hydro undertakings were transferred to WBSEDCL. The area of operation of WBSETCL covers the whole State of West Bengal excepting those areas of operation that are covered by other licensees.

The first tariff order for WBSETCL was issued in FY 08 and was an MYT order with control period of year. Thereafter he Commission issued second MYT order in FY 09 with control period of three years.

Approach adopted by the Commission in Approval of ARR

The subsequent section discusses the approach adopted by the Commission for FY 08 and FY 09 in approval of the Annual Revenue Requirement (ARR) of the WBSETCL.

Operation and Maintenance (O&M) Cost

The Commission has approved employee cost, R&M and A&G cost separately for FY 08 and FY 09 in its Tariff Orders for WBSETCL. Approach of the Commission in approval of each of the O&M cost parameters in the tariff orders is discussed below:

Employee Cost

For FY 08 and FY 09 the Commission had approved employee cost as proposed by WBSETCL.

For FY 08, the Commission for approving employee cost took into consideration un-audited actual expenditure incurred by erstwhile WBSEB for the functions relating to transmission services in the FY 07. Since the proposed expenditure was less as compared to WBSEB's employee expense for transmission function (which was mainly due to separate employees' terminal benefit through bonds to take care of the liabilities) the Commission had accepted the same.

For FY 09, for approving employee cost the Commission considered orders of the State Government issued in the year FY 07, merger of DA (50%) with basic salary and requirement of additional recruitment of 470 persons at different cadres.

The employee cost as approved by the Commission in each of the past two tariff orders is summarized in table below:

Table A-24.1: Approved Employee Cost from FY 08 to FY 09

Particulars	FY 08	FY 09
Net Employee Cost (Rs. Cr.)	48.39	77.40

Particulars	FY 08	FY 09
Total Approved ARR (Rs. Cr.)	423.43	646.75
% Employee Cost of Approved ARR	11.43%	11.97%

Administrative & General Expenses

In FY 08, the Commission approved A&G cost as proposed by WBSETCL considering estimated expenditure incurred by erstwhile WBSEB during FY 07. For the second control period (FY 09) the Commission approved A&G cost with 5% escalation over the approved A&G cost of FY 08.

A&G expenses approved by the Commission in the past two year tariff orders are given in table below.

Table A-24.2: Approved A&G Expenses from FY 08 to FY 09

Particulars	FY 08	FY 09
Net A&G Expenses (Rs.Cr.)	12.72	13.35
Total Approved ARR (Rs.Cr)	423.43	646.75
A&G Cost as % of Approved ARR	3.00%	2.06%

Repair & Maintenance (R&M) Expenses

For FY 08 and FY 09, the Commission approved R&M cost as proposed by WBSETCL. For FY 08, the Commission approved R&M cost which was 1.7% higher than the approved R&M cost for WBSEB for maintenance of the transmission lines in the FY 06 tariff order. For FY 09, the Commission approved R&M cost as proposed by WBSETCL though the claimed amount was about 21% higher that that approved in FY 08 because of considerable additions in the value of transmission system in operation.

The R&M expenses approved by Commission in the last two tariff orders are summarized in table below:

Table A-24.3: Approved R&M Expenses from FY 08 to FY 09

Particulars	FY 08	FY 09
R&M Expenses (Rs.Cr.)	13.70	16.55
Total Approved ARR (Rs. Crs)	423.43	646.75

Depreciation

For FY 08 and FY 09 the Commission approved depreciation as proposed by WBSETCL which is in accordance with rates prescribed in Commission's Tariff Regulations.

But for second MYT control period (FY 09) the Commission has stated that since it is difficult to precisely determine capitalization programme which involves considerable amounts, the depreciation amounts approved will be subject to revision during annual performance review.

The Commission has also approved advance against depreciation in FY 09, as per the Tariff Regulations of the Commission according to which advance against depreciation is to be provided when the amount of depreciation falls short of the amount of loan repayment in any financial year. The amount of loan repayment, however, is to be restricted to 1/10th of the principal amount of original loans.

Interest cost

The Commission approved interest cost in FY 08 and FY 09 after detailed analysis of source wise loans.

For FY 08 and FY 09 the Commission has admitted Interest and Finance charges on capital borrowings after considering capitalization of interest expense and capital works in progress. Similarly the Commission also approved interest on bonds for Pension Funds as proposed by WBSETCL for FY 08 and FY 09.

For FY 08 the Commission admitted other financing charges with minor disapproval of charges pertaining to fees and expenses for restructuring in absence details of the same. But for FY 09 the Commission approved other financing charges as proposed by WBSETCL.

Interest on Working Capital

For FY 08, the Commission had not approved interest on working capital since the same has not been proposed by WBSETCL.

For FY 09 though WBSETCL had proposed interest on working capital the Commission did not approve any interest on working capital as there was no existing working capital borrowing.

Rate of Return

For FY 08 and FY 09, the Commission allowed 14% return on average equity as computed by the Commission.

For FY 08 the Commission considered opening equity as per the Schedule “A” to the West Bengal Power Sector Reforms Transfer Scheme, 2007, notified by the Government of West Bengal which amounted to Rs.720 Crs on 31st March 2006. For FY 08 Commission considered notional addition of equity at 30% of capitalized assets (deducted by capital works in progress) but for FY 09 since WBSETCL submitted that additions in the value of fixed assets as well as in the capital works in progress (FY 08 to FY11) were to be financed by borrowings and audited accounts of WBSETCL for FY 08 were not available to ascertain internal resources to fund equity the Commission considered equity base as per the transfer scheme (Rs.720 Crs) to allow return at 14%.

The details pertaining to approved return for FY 08 and FY 09 are given in the table below:

Table A-24.4: Approved Rate of Return between FY 08 and FY 09

Particulars	FY 08	FY 09
Equity at the beginning of the period (i)	720.00	720.00
Addition to capitalized cost of assets	183.00	0
30% of the addition to the capitalized cost of Assets	54.90	0
Equity Base at the end of the period(ii)	774.90	720.00
Average Equity Base for the period ((i)+(ii)/2)	747.45	720.00
Return @ 14% on Average Equity Base	104.64	100.80

Other Income

For F08 the Commission approved income from other sources as proposed by WBSETCL and also approved amount received by WBSETCL for handling, scheduling and system operation charges from users of transmission system as other income.

For FY 09 the Commission approved income from other sources as proposed by WBSETCL.

Annual Revenue Requirement

The Commission has approved the ARR by deduction of the Other Income from admissible expenses approved by the Commission. The table below shows the ARR approved by the Commission vis-à-vis that proposed by WBSETCL for FY 08 and FY 09.

Table A-24.5: Approved ARR for WBSETCL for FY 08 and FY 09

Particulars	FY 08	FY 09
Approved ARR (Rs.Cr)	423.43	646.75
ARR proposed by WBSETCL (Rs.Cr)	409.61	611.62
% Disallowance	(3.26%)	(5.43%)

Transmission Tariff

The Commission has computed the transmission charges payable by the licensees or the open access customers based on the ARR approved and capacity allocated to each beneficiary based on average of daily peak demand on annual basis as proposed by WBSETCL.

The table below shows the calculation details of transmission tariff approved by the Commission.

Table A-24.6: Approved Transmission Tariff for FY 08 and FY 09

Particulars	FY 08	FY 09
Approved ARR (Rs.Cr)	42343	646.75
Average System Demand on the basis of average of the daily peak(MW)	3159.5	3475.83
Rate for long-term users (Rs/MW/month)	423.43 / 3159.58 x12 = Rs.1,11,678	646.75 / 3475.83x12 = Rs.1,55.058

Particulars	FY 08	FY 09
Rate for short-term users (Rs/MW/day)	Rs.1,11,678/- x0.25/30 = Rs.930.65.	Rs.1,55,058/- x0.25/30 = Rs.1292.15

Short-term user rate payable in case of uncongested transmission network, are as under:

- **Up to 6 Hours in a day in one block:** 1/4th of the rate for short term Customers
- **More than 6 Hours and up to 12 Hours in a day in one block:** ½ of the rate for short-term customers.
- **More than 12 Hours and up to 24 Hours in a day in one block:** At full rate for short-term customers

A-24.2. West Bengal– DISTRIBUTION UTILITIES

Introduction

West Bengal Regulatory Commission was constituted by the State Govt. of West Bengal in 1999 in pursuance of the provisions of Section 17 of the Electricity Regulatory Commissions Act 1998

West Bengal presently has four Distribution companies namely, West Bengal State Electricity Distribution Company Limited (WBSEDCL), CESC Limited (CESC), Durgapur Projects Limited (DPL) and Dishergarh Power Supply Company Limited (DPSCL).

The West Bengal State Electricity Board (WBSEB), post restructuring on 1st April 2007 was replaced by West Bengal State Electricity Transmission Company Limited (WBSETCL) and West Bengal State Electricity Distribution Company Limited (WBSEDCL) in accordance with West Bengal Power Sector Reforms Transfer Scheme 07. The functions and business in transmission activities and load dispatch activities were transferred to WBSETCL and the functions of distribution and activities related to hydro undertakings were transferred to WBSEDCL. The area of operation for both WBSETCL and WBSEDCL covers the State of West Bengal excepting those areas of operation that are covered by other licensees. The first tariff order for WBPDCL (WBSEB earlier) was issued in FY01.

CESC Limited, a Company under the Companies Act, 1956, is a distribution licensee in the State of West Bengal for supply of electricity in Kolkata and some areas of the districts of Howrah, Hooghly, North 24 Parganas and South 24 Parganas of the State.

DPSCL is a Distribution licensee with distribution area in Raniganj and Asansol belt with major part of the distribution area falling under DVC command area and sale predominantly at 11 KV.

The first Multi Year Tariff order was issued in FY 08 with the control period of one year. Then the Commission initiated second MYT control period from FY 09 to FY11.

Sales / Demand

Sale to own Consumers

The Commission for all the year has approved sales as proposed by WBSEDCL except for FY 06, where the Commission approved normative sales based on the approved T&D loss of 24%. This normative sale was used by the Commission to approve average cost of supply or FY 06.

The details of approach followed by WBSEDCL for projecting sales have not been provided in the tariff order. The Commission has stated that projected sales for FY 05, FY 07 and FY 08 which were an increase of 6%, 9.66% and 10.63% over previous years' approved sales was reasonable and hence approved by the Commission.

For FY 09 the Commission has not approved category-wise sales to own consumer in the tariff order.

Bulk supply to other Licensees

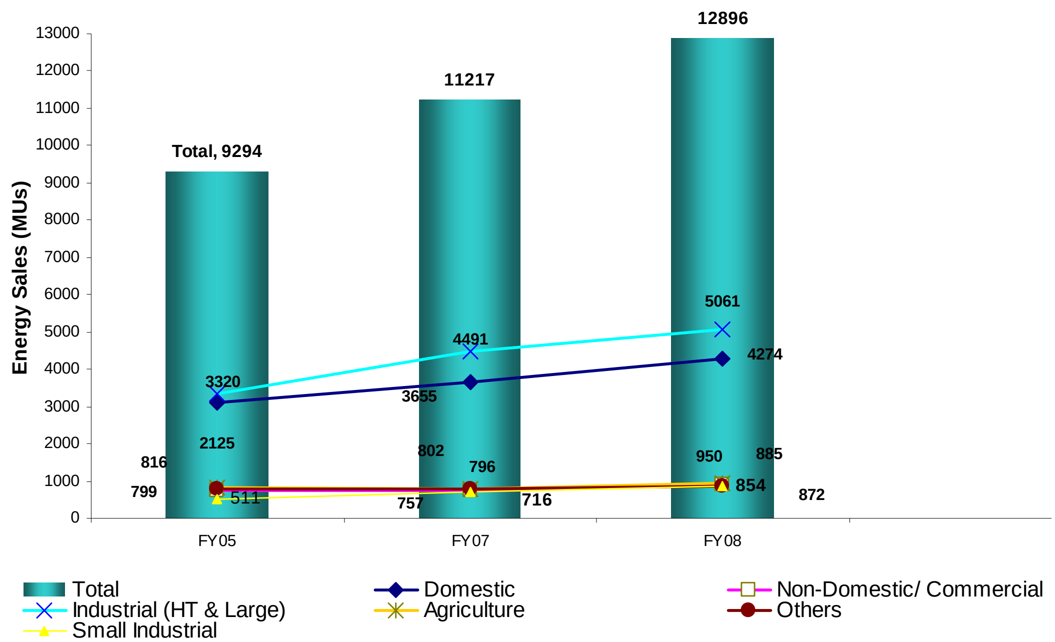
The Commission has also approved bulk sales to other licensee like CESC and DPSCL, DPL and Sikkim.

The Commission has approved bulk sale to these licensee considering the requirement of other licensee like CESC, DPL and DPSC and submissions made by WBSEDCL.

For all the years i.e FY 05 to FY 09 proceeds from sale of power outside the state (including cost of affecting such sale and incident grid loss) and sale to bulk supply licensee has been deducted from annual revenue requirement and such sale has not been accounted as sale to consumers.

As is clear from the graph, the Industrial HT and others category forms the major chunk of consumers in the overall consumer mix for WBSEDCL in West Bengal.

Graph A-24.1: Consumer Mix in Total Energy Sales (MUs)

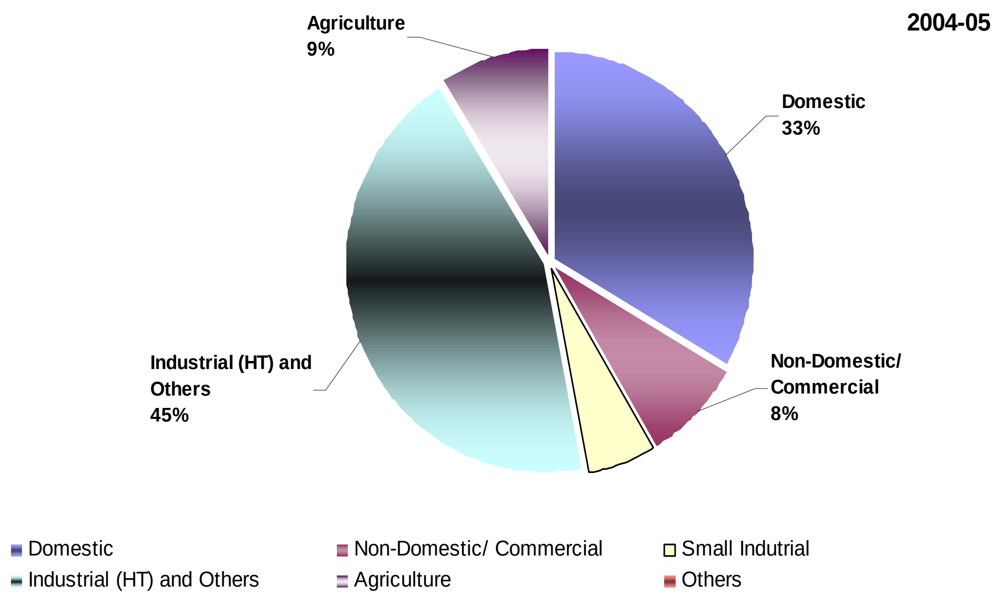


** Sales for FY 06 approved at normative level hence category-wise break-up not available and sales for FY 09 not approved category-wise in the tariff order.*

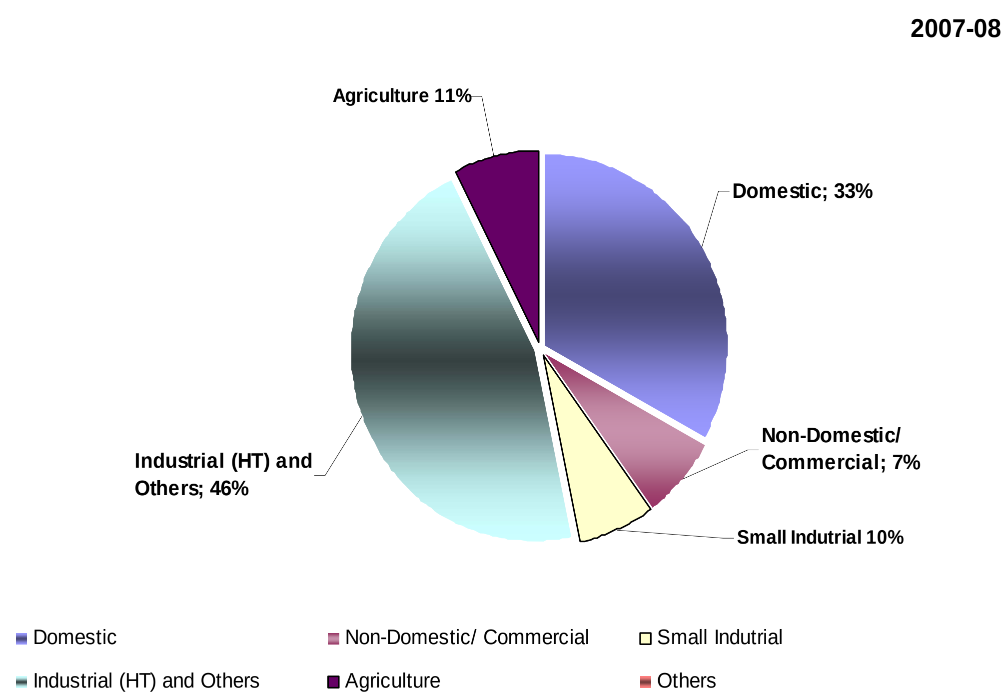
Graph: Share of consumer categories in approved sales and the trend from FY 05 to FY 08

The graphs below illustrate the percent share of the major consumer categories in FY 05 and FY 08 respectively.

Graph A-24.2: Percent share of consumer categories in approved sales for FY 05

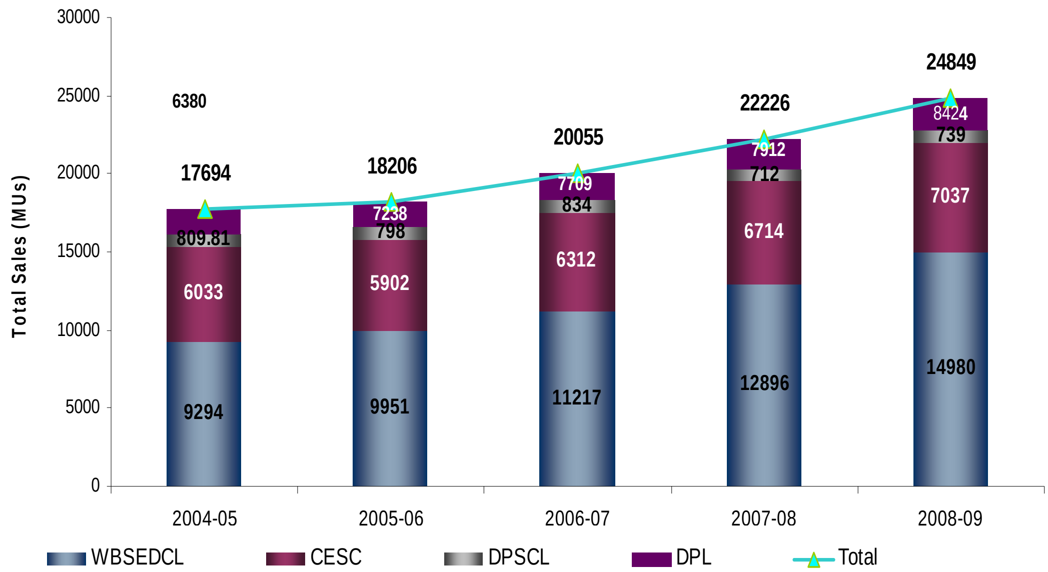


Graph A-24.3: Percent share of consumer categories in approved sales for FY 08



It can however be seen that the consumer mix has not changed significantly. The Graph below shows the allocation of energy sales in West Bengal between the four Discoms.

Graph A-24.4: Sales allocation between the DISCOMs from FY 05 to FY 09



T&D Losses

The Commission approved T&D loss for WBSEB for FY 05 as per the reduction trajectory set by the Commission in tariff order for FY03. The Commission for approving baseline T&D loss in FY03 took into consideration T&D loss as proposed by WBSEB for supply to own consumers (excluding bulk supply) and the observations of the Hon'ble Supreme Court in the judgment and order dated 10th March 2002 in the case of WBERC vs. CESC, according to which that the utility has to share a portion of T & D loss.

For FY 06 and FY 07 the Commission approved a reduction of 1% over the approved T&D loss of previous year irrespective of the actual T&D loss and stated that T&D loss excess to that approved will have to be borne by the licensee. For FY 08 after division of WBSEB into WBSETCL & WBSEDCL the DISCOMs proposed combined loss of 24.7% with transmission loss of 4%, hence the Commission approved Distribution loss of 19.50%.

For FY 09 the Commission approved Distribution loss as per the norms specified in the Tariff Regulations, 2007.

The table below shows the comparison of proposed and approved T&D losses for FY 05 through FY 09.

Table A-24.7: T&D Loss approved and trued-up during FY 05 to FY 09

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Approved Distribution loss	25%*	24%*	23%*	19.53%	18.75%
Proposed Distribution loss	30.20%*	25%*	23%*	20.34%	

**Combined T&D loss for WBSEB.*

Power Purchase Quantum

WBSEDCL purchases energy from different sources like Central Generating stations, West Bengal Power Development Corporation Ltd, West Bengal Renewable Energy Development Authority (WBREDA) and other DISCOMs in the state like DPL, DPSC and CESC.

Power purchase requirement of WBSEDCL is mostly met with energy production of WBPDCL, quantum and tariff of which has been approved separately by the Commission. WBSEDCL also has some hydel generating stations the quantum and cost for which are approved in the same tariff order.

Whereas for other licensees in the state like CESC Limited (has four generating stations in operation i.e., Budge Budge, Southern, Titagarh and New Cossipore), DPL and DPSC have there own generating stations which meet a substantial part demand. Availability of power from own generating stations has been approved by the Commission in the same tariff order. These Distribution licensees meet deficit and sell surplus to WBSEDCL through an agreement.

The Approach for approving power purchase quantum from various sources has not been provided in the tariff order. The power purchase quantum from WBPDCL has been approved separately.

Graph A-24.5: Approved Power Purchase from Various Sources

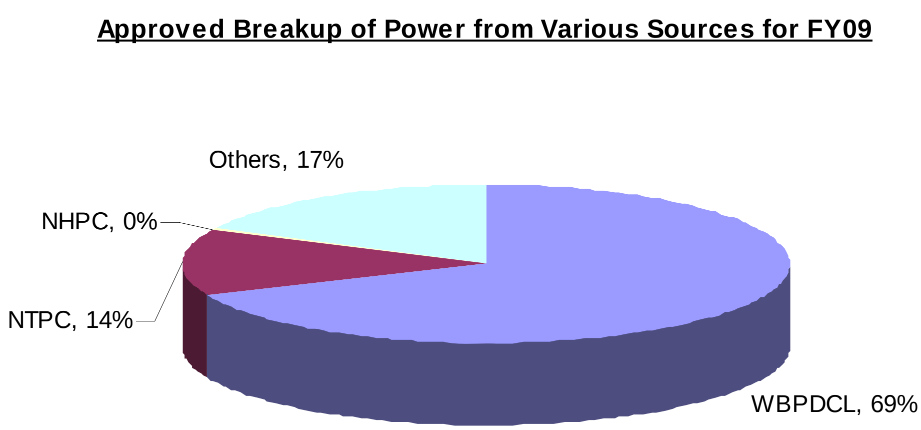


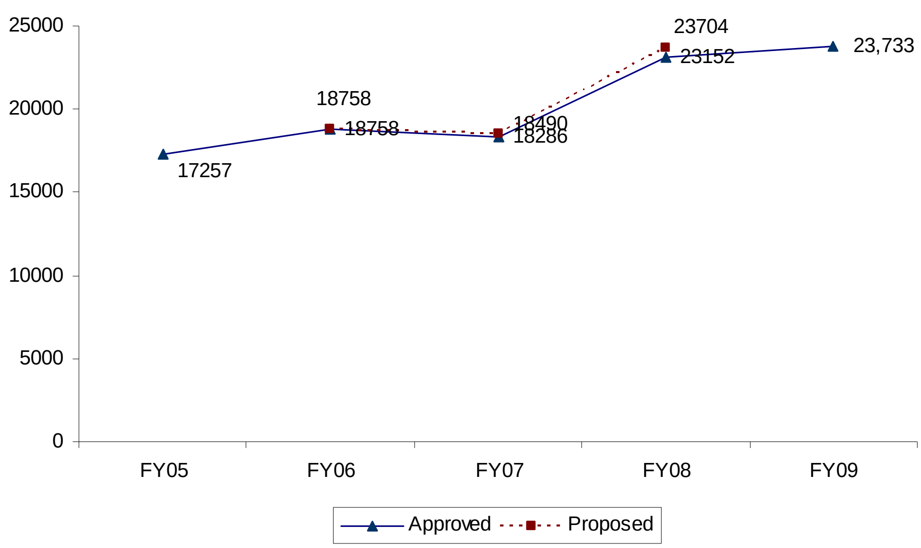
Table A-24.8: Approved and Trued-up Power Purchase Quantum (MUs)

Sources	FY 05		FY 06		FY 07		FY 08	
	App	Prop	App	Prop	App	Prop	App	Prop
NTPC	3190		3760	3760	3600	3600	3200	3200
NHPC	147		75	75	75	75	74	74

Sources	FY 05		FY 06		FY 07		FY 08	
	App	Prop	App	Prop	App	Prop	App	Prop
WBPDCL	12349		12349	13240.5	13240	13514	16020	16833
DPL	207		440	216.12	240	136	718	384
DVC	610		2160	1482.62	815	815	752	752
DPSC	154				90	124	160	160
PTC	600		600	600	600	600	680	680
Tala					397	397	1350	1350
WBREDA					1	1	0.32	1
Others			1.04	1.04	78.04	78.04	365.2	365.2
Traders							40	40
Gross Power Available			19475	19465.8	19136	19340	23360	23911
Net Power Available (after PGCIL & DTL losses)	17257		18758	18758	18286	18490	23152	23704

A comparison of the approved and trued-up power purchased quantum for WBSEDCL during FY 05 to FY 09 is summarized in the graph below:

Graph A-24.6: Comparison of Approved and Actual Net Power Purchase Quantum* (MUs)

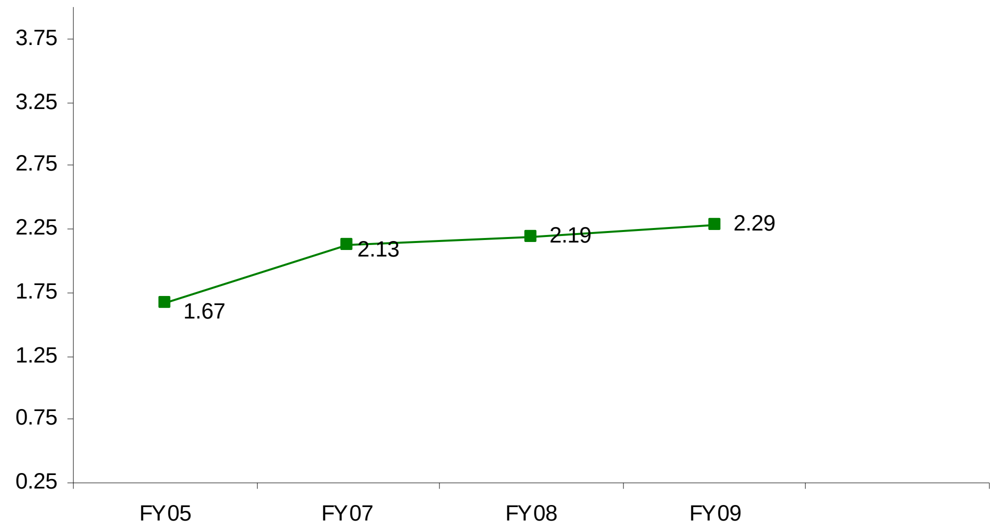


**The power purchase quantum is after subtracting grid losses*

Power Purchase Cost

Approach of the Commission for approving power purchase cost for WBSEDCL is not provided in the tariff order of FY 05 to FY 09.

Graph A-24.7: Approved Power Purchase Cost per Unit (Rs./kWh)



The table below shows the power purchase cost per unit for WBSEDCL:

Table A-24.9: Approved and Proposed Net Power Purchase Cost for (MUs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Approved Cost	2116.16	2678.40	2487.95	3018.74	4085.73
Approved Sales (Mus)	9294.57	11844.62	11217.00	12896.00	14980.00
Power Purchase Cost per unit (Rs./kwh)	2.28	2.26	2.22	2.34	2.73

Power purchase cost is net of revenue from sale to other Licensee. Sikkim, Others & Trading

O&M Cost

Employee Expenses

For FY 05 the Commission has approved employee cost by considering 5% increase in the approved employee cost of FY04. For FY 06 the Commission approved employee cost based on actual expenditure of FY 04 and estimated expenditure of FY 05. The Commission took into consideration retirement of 2000 employees, their terminal benefits and normal inflationary impact. For FY 07 and FY 08 the Commission approved employee cost as proposed considering proposed increase in the element of D.A. (including arrears) and terminal benefits to retiring employees in FY 07 and past year employee expense and projected employee expense for WBSEDCL and WBSETCL.

For FY 09 the Commission approved 17.5% increase in employee cost over approved cost for FY 08. In addition, the Commission has also allowed Rs. 1000 lakh and Rs. 1400 lakh for the new entrants in and impact of employees of Purulia Pumped Storage Projects (PPSP) in revenue account respectively.

Table: Approved Employee Expenses of DISCOMs (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL	491.27	425.71	498.83	369.54	458.21
CESC	282.65	253.61	281.22	297.51	329.34
DPSC	17.30	15.96	18.08	21.40	22.95
DPL	16.32	19.65	22.17	22.78	30.52
Total	807.54	714.93	820.3	711.23	841.02
Total employee cost as % of Consolidated ARR	14.56%	10.64%	12.37%	9.64%	8.71%

Repairs and Maintenance Expenses

The Commission for all the years' i.e FY 05 to FY 09(except generation function) has approved R&M cost as proposed by WBSEDCL considering past year expenditure, increased network of WBSEDCL and need to improve quality of supply.

For FY 05 the R&M cost was projected at 2% of the opening GFA approved for the year. For FY 06 and FT 08 the approach for projecting R&M cost has not been provided in the tariff order.

For FY 07 WBSEDCL projected R&M cost 6.5% higher than the estimated expenditure of 2005 – 2006. For FY 09 the Commission approved O&M expense for generation and Distribution function separately. For Generation function the Commission approved R&M cost as per Schedule 9A of the Tariff Regulations and for Distribution function the Commission approved R&M cost as proposed by WBSEDCL subject to revision under Annual performance review.

The Commission in the tariff order of FY 07 noted that "*The Commission would like to observe that the maintenance expenses cannot be always linked to the original cost of assets and allowed as a percentage of the cost of asset. The assessment should rather be need based. The original cost of an asset built years back may have been small, but its maintenance need may be high on account of vintage*".

The table below summarizes the gross R&M expenses (after deducting the R&M expenses capitalized):

Table A-24.10: Approved R&M Expenses of DISCOMs (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL	98.33	117.64	101.53	94.40	115.38*
CESC	131.71	152.81	162.63	172.39	107.33*
DPSC	6.37	4.68	4.73	5.21	2.41*
DPL	15.74	23.73	23.23	33.96	5.36*
Total	252.15	298.86	292.12	305.96	230.48
Total R&M as % of Consolidated ARR	4.55%	4.45%	4.40%	4.15%	2.39%

** R&M expense only for Distribution function only*

Administrative and General Expenses (Rs. Crs)

For FY 05 to FY 07, the Commission approved A&G cost as proposed by WBSEDCL considering increased activities of the licensee on the front of consumer services, revenue monitoring, drive against theft of power and decentralized activity of its Loss Prevention Wing up to circle level.

For FY 08, the Commission approved A&G cost with 4% increase on the amount approved in 2006-07. For FY 09 the Commission approved O&M expenses for generation in accordance with the norms specified in Schedule 9A of the Tariff Regulations. For Distribution function regarding rent, rates and taxes, legal charges, consulting fees and other administrative and general expenses amount for FY 09, the Commission approved the expenditure at the level of the actual expenditure of FY 08 or the claim whichever is less. Whereas audit fees was approved as proposed.

O&M Expenses

The total O&M expense approved in the tariff order for FY 05 and FY 09 has been a sum of the A&G cost and R&M expenses approved by the Commission. For FY 09 the Commission approved A&G and R&M together under O&M expense head. But O&M expense for Generation and Distribution function was approved separately.

The total O&M expense approved by the Commission in each of the Tariff Order is summarized below:

Table A-24.11: Approved O&M Expenses of DISCOMs (Rs. Crs)

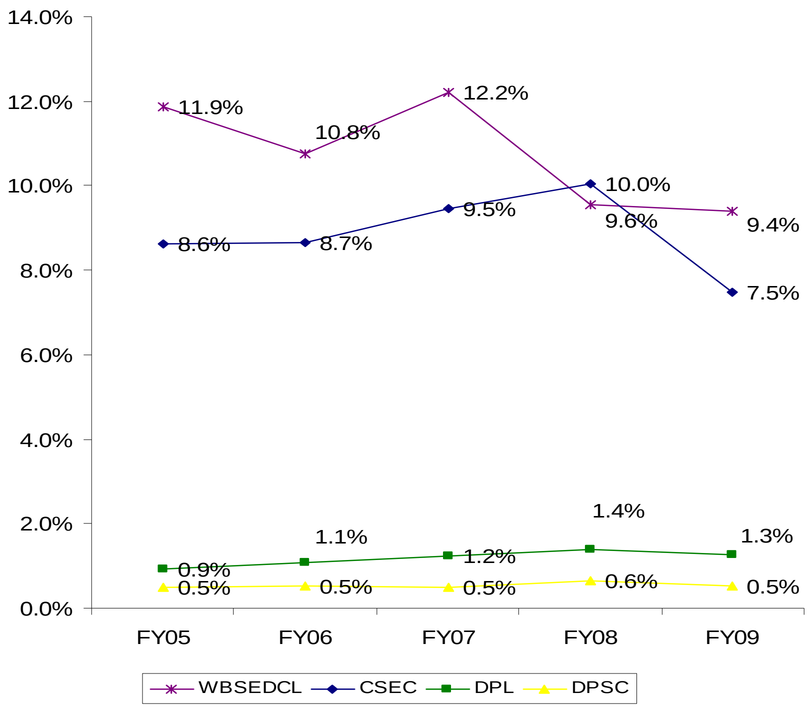
Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Net A&G expenses	68.47	53.89	77.39	66.30	62.32
Net R&M expenses	98.33	117.64	101.53	94.40	115.38*
CSEC					
Net A&G expenses	64.43	74.10	80.78	86.75	84.59
Net R&M expenses	131.71	152.81	162.63	172.39	107.33*
DPSC					
Net A&G expenses	3.71	8.79	5.15	8.73	5.54
Net R&M expenses	6.37	4.68	4.73	5.21	2.41*
DPL					
Net A&G expenses	19.17	17.41	22.56	19.98	39.60
Net R&M expenses	15.74	23.73	23.23	33.96	5.36*
Total O&M Expense	344	453	478	488	676

** R&M cost only for Distribution function*

The proportion of O&M expenses as total ARR has increased to some extent for DPL, DPSC and CESC except for in FY 09 as the O&M cost for FY 09 is only for Distribution function of these licensees. For WBSEDCL the O&M cost a percentage of total ARR has varied and mostly due to bifurcation of WBSEB into WBSEDCL and WBSETCL. The

O&M expense as percentage of total ARR amongst the four DISCOMs as reflected in the graph below.

Graph A-24.8: Approved O&M Cost as % of Total ARR for WBSEDCL, CESC, DPSC, DPL



Capital expenditure (Capex)

Capital expenditure plan for WBSEDCL for FY 05 to FY 09 has not been approved by the Commission. A detailed approach on approval of capital expenditure by the Commission has not been provided in the orders. The Commission, for FY 05, had disapproved capital cost towards an abnormal cost overrun in Teesta Canal project.

Asset Capitalization

For all the years, the Commission has approved the asset capitalization as proposed by WBSEDCL.

Depreciation

The approach of the Commission for approving depreciation in FY 05 through FY 09 has not been provided in the tariff order.

For FY 05, Commission approved depreciation which was in the same ratio as were the revised estimate for FY 04 in the absence of details of cost benefit analysis of the capital expenditure proposed to be incurred during the year. The detail of the approach for estimating depreciation has not been provided in the tariff order.

FY 06, the Commission approved depreciation as proposed by WBSEDCL as the Commission was yet to issue regulations in this regard. The depreciation was calculated by WBSEDCL as per the provisions of Notification issued by the Central Government under the Provisions of Electricity (Supply) Act, 1948. No pro rata depreciation was proposed. Similarly for first MYT control period (FY 07) the Commission approved depreciation as proposed by WBSEDCL which was estimated as per the Commission's Terms & Conditions of Tariff Regulations, 2005.

For the second MYT control period also the Commission approved depreciation as proposed by WBSEDCL since the same was calculated on the basis of tariff regulations. Due to non-availability of data on PPSP the Commission reduced the proposed depreciation by 5% as per the regulation 2.8.1.4.3 of the Tariff Regulations.

The Commission for none of the years has approved opening and closing gross fixed assets for WBSEDCL.

Working Capital Requirement

The Commission has not approved interest on working capital for FY 05 and FY 06.

For FY 07, though WBSEDCL had no existing working capital loan from any source the Commission approved normative working capital requirement and interest on Working capital. Working capital was assessed on normative basis at 12.5% of the estimated annual sales revenue reduced by the amount of depreciation, deferred revenue expenditure and returns. But for FY 08 and FY 09, though the Commission calculated working capital as per the regulations, it approved interest on working capital based on the actual working capital loan taken by WBSEDCL in previous year. For FY 08, the Commission considered borrowing from Government of West Bengal as borrowing for working capital in absence of details of utilization of loans. For second MYT control period (FY 09) the Commission did not approve any interest on working capital as no amount of existing borrowings towards working capital at the beginning of the year was present. But the Commission noted that if any such borrowing was done during the year then the same shall be considered for re-imbursement through APR for the concerned year.

The Commission approved Interest rate for FY 07 at short term lending rate of SBI. For FY 08, the Commission had approved the interest rate on working capital on actual interest cost for the loan from Government of West Bengal.

The parameter for determination of normative working capital is summarized in table below:

Table A-24.12: Parameter for Computation of Normative Working Capital in FY 07

S.No	Normative Working Capital
1	Sales Revenue allowed by the Commission
	Less:
2	Depreciation.
3	Returns

S.No	Normative Working Capital
4	12.5% of (1-2-3)
5	Interest @ 10.25% i.e. at short term lending rate of SBI

Interest Expense

The Commission for all the years has approved interest cost based on the source-wise analysis of the loan.

For FY 05, the Commission had approved interest on loans from state government and loans from other institutions as proposed by WBSEDCL but allowed only 50% of the claimed interest on securitization scheme for power purchase dues and directed WBSEB to submit a detailed report on the matter relating to issuance of Bonds for such securitization. The Commission adjusted the excess interest cost allowed in FY 02, FY 03 and FY 04 (reduce in interest rates on State Government loans) in the interest cost allowed in FY 05.

For FY 06, the Commission disallowed remaining interest cost on bonds issued for securitization scheme for power purchase while for State Government loans, the Commission considered interest rate of 8.5% on opening balance and fresh borrowings proposed. For FY 07 – FY 09, the Commission approved interest cost as proposed by WBSEDCL. The Commission, however, disallowed other financing charges relating to fees and expenses for restructuring of loans and interest on capital liabilities.

Rate of Return

The approach of the Commission for approving return has not been consistent.

For FY 05 the Commission approved return at 3% on fixed assets at the beginning of the year. For FY 06 the Commission approved return as per the Tariff Regulation, 2003. According to the regulation the return is to be allowed at SBI PLR plus 3% i.e. 13.25% on equity capital. For FY 07, the Commission has allowed Return on Equity at 14% on closing equity of FY 05 (equity fund was from the State Government) as the Commission noted that no addition to the equity capital will be considered for WBSEDCL till the time the amount of accumulated loss for the previous years were completely negated by the infusion of funds from WBSEDCL's own or outside sources.

For FY 08 and FY 09 the Commission approved return on equity at 14% on average equity for the respective year.

The table below illustrates the return approved by the Commission in each of the Tariff Order and the return as percentage of the total ARR for all the four DISCOMs.

Table A-24.13: Approved Return by the Commission and Return as % of Total ARR

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Total Return (Rs. Crs)	60.20	179.22	189.37	300.61	323.83
Total Return as % of Consolidated ARR	1.09%	3.23%	3.41%	5.42%	5.84%

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
CESC					
Total Return (Rs. Crs)	107.82	107.82	191.82	201.77	229.64
Total Return as % of Consolidated ARR	1.94%	1.94%	3.46%	3.64%	4.14%
DPSCL					
Total Return (Rs. Crs)	3.37	3.37	9.20	9.19	10.45
Total Return as % of Consolidated ARR	0.06%	0.06%	0.17%	0.17%	0.19%
DPL					
Total Return (Rs. Crs)	1.82	35.45	56.70	74.14	114.49
Total Return as % of Consolidated ARR	0.03%	0.64%	1.02%	1.34%	2.06%

Bad Debts

For FY 05 and FY 06, the Commission has approved provision for bad debt on ad-hoc basis considering factors like short provision approved by the Commission in previous years.

For FY 07, the Commission approved provisions for bad debts at 0.5% of the sales revenue. But for FY 08 and FY 09 the Commission approved Bad debts as per the regulation 4.10.1 of the Tariff Regulations, according to which the Commission may allow amount of bad debts as actually had been written off in the latest available audited accounts subject to a ceiling of 0.5% of the annual gross sale value of power at the end of the current year

Table A-24.14: Provision for Bad debts proposed and approved for all the DISCOMs

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Proposed	8.16		24.50	4.30	35.78
Approved	2.16	15	19.35	4.30	35.78
CESC					
Proposed	31.02	20.00	12.45	13.31	13.15
Approved	12.00	12.16	11.23	8.30	13.15
DPL					
Proposed	0.43	0.46	3.29	853.00	5.03
Approved	0.43	0.46	2.04	11.30	5.03
DPSCL					
Proposed	NA	NA	NA	NA	NA
Approved	NA	NA	NA	NA	NA

Charges of Singur-Haripal Rural Electric Co-Operative Society LTD (SHRELCOP)

Singur Haripal Rural Electric Co-operative Society (SHRELCOP) was a distribution licensee operating in the Singur and Haripal areas in Hooghly District. The license of the society was revoked with effect from 31st December 2005 and WBSEB was appointed as the Administrator. The Commission, for approval of ARR for WBSEB had clubbed the total projected consumption of different categories of consumers of the society with the projected consumption of WBSEB consumers of identical categories. Similarly, the expenses of the society had been projected and clubbed to be shown under separate head in the ARR.

Annual Revenue Requirement

Based on the approach for various parameters detailed above, the Commission has computed the ARR for each DISCOM. The table below summarizes the proposed and approved ARR in the various Tariff Orders from FY 05 to FY 09:

Table A-24.15: Proposed and Approved ARR (Rs. Crs)

Particulars	FY 05	FY 06	FY 07	FY 08	FY 09
WBSEDCL					
Proposed by the Utility	3782.88	3303.14	3701.84	4182.02	5455.49
Approved	2557.25	3870.18	3579.02	4133.14	5580.03
CESC					
Proposed by the Utility	2432.95	2401.23	2490.23	2661.23	2922.48
Approved	2360.72	2246.38	2363.10	2522.61	2804.74
DPL					
Proposed by the Utility	300.46	365.06	424.44	668.38	1073.86
Approved	379.06	395.60	415.38	472.41	910.44
DPSCL					
Proposed by the Utility	278.26	272.47	298.59	265.16	359.09
Approved	248.44	208.18	275.57	252.62	355.67
Total					
Proposed by the Utility	6794.55	6341.9	6915.1	7776.79	9810.92
Approved	5545.47	6720.34	6633.07	7380.78	9650.88

Subsidy Support

None of the DISCOMs have received any subsidy from the State Government during FY 05 through FY 09.

Tariff Determination

A two part tariff structure comprising energy charge and demand charge (fixed charges) exists in the state of West Bengal.

The Commission for all the years from FY 05 to FY 09 for all the DISCOMs has neither shown revenue gap assessed at existing tariff level nor revenues at revised tariff.

The table given below shows tariff approved for various categories from FY 05 to FY 09

Table A-24.16: Approved Tariff for Various Consumer Categories (FY 05 and FY 07)

Particulars	FY 05	FY 07

	Energy Charges	Fixed/ Demand Charges	Energy Charges	Fixed/ Demand Charges
Domestic				
Lowest Slab	207	Nil	209	Nil
Highest Slab	549	Nil	577	Nil
Commercial				
Lowest Slab	287	Nil	287	Nil
Highest Slab	545	Nil	547	Nil
Small Industrial				
Lowest Slab	288	10	278	11****
Highest Slab	455	10	430	11****
Large/HT Industrial				
Lowest Slab	350	180**	349	180**
Highest Slab	375	180**	366	180**
Agriculture Consumers				
Metered		193	150	Nil

Table A-24.17: Approved Tariff for Various Consumer Categories (FY 08 and FY 09)

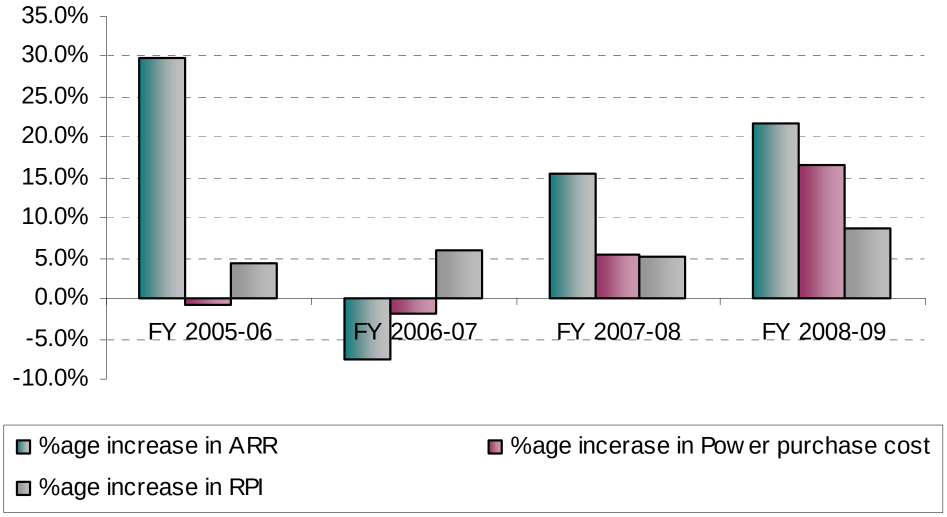
Particulars	FY 08		FY 09	
	Energy Charges	Fixed / Demand Charges	Energy Charges	Fixed/ Demand charges
Domestic				
Lowest Slab	209	Nil	215	5
Highest Slab	572	Nil	581	5
Commercial				
Lowest Slab	282	5***	289	10
Highest Slab	550	5***	570	10
Small Industrial				
Lowest Slab	247	5***	288	15
Highest Slab	465	5***	441	15
Large/HT Industrial				
Lowest Slab	321	200*	370	200*
Highest Slab	367	200*	420	200*
Agriculture Consumers				
Metered	137	Nil	130**	10

** Rs /KVA/month ** Rate for normal hours as TOD rates are compulsory*

**** Rs. 5 /consumer/month **** Rs./hp/month*

Retail Price Index

The graph below shows the percentage increase in ARR, power purchase cost and other cost as against increase in retail price index.



Annual revenue requirement in FY 06 increased by about 30% over the ARR of FY 05, as the ARR for FY 05 was grossly reduced due to adjustment of excess interest allowed in previous years. Since revenue from sale of surplus power (other licensees and export out of regions) forms a major chunk of sale revenue, the power purchase cost as well as ARR and average cost of supply for all the years have varied considerably depending on the amount of surplus sale. The Commission has increased or decreased the tariff depending on the revenue requirement.

Particulars	2004-05	2005-06	2006-07	2007-08	2008-09
Approved ARR	2980.25	3870.18	3579.02	4133.13	5025.63
Approved Sales (MU)	9294.57	11844.62	11217.00	12896.00	14980.00
Average Cost of Supply in Rs/kwh (A)	3.21	3.27	3.19	3.20	3.35
% of Power Purchase Cost in ARR	71%	69%	70%	73%	81%
% of Other remaining Cost in ACS	29%	31%	30%	27%	19%
% Annual Increase in Power Purchase Cost		-0.7%	-1.9%	5.5%	16.5%
% Annual Increase in Other Cost		8.2%	-3.3%	-11.2%	-27.4%
% Annual RPI Increase		4.4%	6.1%	5.2%	8.7%
RPI -X (X= 2%)		2.4%	4.1%	3.2%	6.7%

Wheeling and Cross-Subsidy Surcharge

The Commission determined wheeling and cross-subsidy surcharge payable to WBSEDCL by all open access customers including the captive generating plants during the FY 08 in accordance with the principles, terms and conditions laid down in Schedule-4 to the Commission's (Terms and Conditions of Tariff) Regulation 2007 referred as Tariff Regulations, 2007.

Since WBSEDCL also has hydro-power generating stations including Purulia pump storage project, the fixed charges approved by the Commission under different heads for the concerned year also include charges relating to hydel power generation. Therefore, the Commission segregated total fixed charges relating to distribution function and generation function to determine wheeling charges for WBSEDCL.

For segregating different heads of fixed cost into generation and Distribution function, certain amounts were directly attributable to generation and distribution functions and the remaining were allocated on a reasonable basis.

The table below shows the approved fixed cost and average fixed cost for FY 08 and FY 09:

Table A-24.18: Approved Average Fixed Cost

Particulars	FY 08	FY 09
Operation and maintenance expenses	509.88	630.27
Depreciation	161.22	201.01
Provision for bad debts	0.00	0.00
Interest and finance charges	249.84	272.19
Return, taxes and Appropriation	290.89	15.03
Reserve for unforeseen exigencies		14.18
Special allocation		49.55
ROE		203.63
Less adjustable income from other sources	168.05	168.49
Less: Adjustment on Annual Performance Review		5783.40
Net fixed charges	1043.78	1172.54
Projected sales (including bulk supply to licensees) in MU	144.94	169.46
Average Fixed cost pertaining to distribution System(paise/ kWh)	72.01	69.19

The table below shows the open access charges as approved by the Commission for FY 08 and FY 09.

Table A-24.19: Approved Open Access Charges for FY08 & FY09

Category (Rs/kVAh/Month)	FY 08	FY 09
Long Term Access	72.01	69.19
Short Term Access	57.61	55.35

For the captive generators with co-generation and generations from the non-conventional/renewable energy sources, the open access charges payable are 1/3rd (one-third) of the rate chargeable to customers generating electricity from other sources.

Cross-Subsidy Surcharge

Cross subsidy surcharge has been approved by the Commission as difference between the tariff applicable for the category of the consumers being allowed open access and the cost avoided (per unit) by the licensee in this regard. The avoidable cost has been calculated as follows:

Table A-24.20: Approved Avoidable Cost for Determination of Cross-Subsidy Charge

Category	FY 08	FY 09
Total fuel and power purchase variable cost (Rs. Crs)	4652.71	2913.83
Sent-out energy from own generation and Power purchase (MU)	25052.88	25006.03
Weighted average unit variable cost of pooled energy (paise/kWh)	193.10	116.53
Distribution loss allowed to WBSEDCL	19.5%	18.75%
Avoidable cost of WBSEDCL	239.88 Paise / kWh + Wheeling charges per unit as applicable	143.42 paise / kWh + Wheeling charge per unit as applicable

The formula prescribed for Avoidable cost is as follows:

Computation of Avoidable cost
Weighted average unit variable cost of Pooled Energy / (100-Distribution loss) × 0.01
PLUS (+)
Wheeling charge per unit as applicable

MYT Framework

State of West Bengal adopted MYT framework in FY 08 and defined first Control Period to be the 1 year from 1st April 2007 to 31st March 2008. Second MYT control period has been set as 3 years from 1st April 2008 to 31st March 2011. The Commission has notified the "West Bengal Electricity Regulatory Commission (Terms and Condition of Tariff) Regulations, 2007" which applies to all the Distribution Licensees and generating companies in the State.

The table below shows the key features of MYT framework in the state of West Bengal.

Table A-24.21: Key Features of the MYT Framework

Particulars	
First Year of MYT	FY 08
Time frame for the control period	1 year
Base year considered for MYT projections	FY 07
Uncontrollable Parameters	- Fuel Cost - Power purchase Cost - Employee cost - Interest and Finance charges - Taxes - Power sale to unregulated market - Incentive - Foreign Exchange Rate variation

Particulars	
	- Energy sales - UI sales - Rebate - Income from other business
Controllable Parameters	- R&M cost - A&G cost - ROE - Depreciation - Non-tariff income