MINUTES OF THE 54TH MEETING

OF THE

FORUM OF REGULATORS (FOR) HELD AT VARANASI (U.P.)

VENUE	**:**	**"SARANGI" HALL RAMADA PLAZA JHV VARANASI (UTTAR PRADESH)**
DATES	**:**	**07TH – 09TH APRIL, 2016**
LIST OF PARTICIPANTS	**:**	**AT ANNEXURE-I (ENCLOSED)**

The meeting was chaired by Shri Gireesh B. Pradhan, Chairperson, Central Electricity Regulatory Commission (CERC) and Forum of Regulators (FOR). The Chairperson, CERC / FOR welcomed the Members of the Forum to the Meeting. He formally welcomed Shri Anand Kumar, who attended the FOR meeting for the first time after assuming the charge of Chairperson, Gujarat ERC.

Thereafter, the Forum took up agenda items for consideration.

BUSINESS SESSION – I

AGENDA ITEM NO. 1 : CONFIRMATION OF THE MINUTES OF THE 53RD MEETING OF "FOR" HELD ON 18TH MARCH, 2016 AT NEW DELHI.

The Forum noted and endorsed the minutes of the 53rd Meeting of "FOR", held on 18th March, 2016 at New Delhi.

AGENDA ITEM NO. 2 : PRESENTATION ON THE STUDY ON "REVIEW OF FUNCTIONING OF CGRF & OMBUDSMAN".

The Forum of Regulators had commissioned a study on "Review of Functioning of CGRF & Ombudsman". The FOR Secretariat, after following due process, had identified M/s. PricewaterHouseCoopers as the consulting agency to assist the Forum in carrying out the study.

The consulting agency made a detailed presentation (copy **enclosed** as **Annexure-II**) before the Forum on the study. The study examined various issues besides conducting a consumer survey to gain an understanding of major concerns faced by them.

The study made the following recommendations:

1. At the time of receipt, complaints are required to be categorized into "Critical" and "Non-Critical". In cases of exceptional urgency / imminent loss is involved, 'Critical' status may be assigned and such critical grievance may be redressed within a stipulated time period, say 20 days. However, in order to discourage pendency, other non-critical complaints, which are not resolved within a stipulated dead-line may also be automatically shifted to critical category.

2. SERCs / JERCs are required to monitor and review the functioning of CGRFs and Ombudsman, on a periodical basis and issue directions for disclosure of grievance-related information in the public domain, from time to time.

3. Better management and effective decision-making may be brought in by assigning accountability. SERCs / JERCs are required to specify in regulations regarding the responsibilities of each of the members with respect to attendance, hearing the cases, decision-making, judgment writing, etc.

4. All CGRF members are required to be empowered to conduct various forum activities. In this regard, sittings may be conducted with a quorum of any three members, critical issues may be dealt by any 3 of 4 (with final approval from Chairman), non-critical by any 2 of 4 (Technical expert mandatory in both).

5. Consumer Advisory Committees may be constituted to impart awareness to the consumers on the prevalent escalation structures and on representation of grievances to the relevant body. These Committees may also facilitate taking up grievances on behalf of many consumers, especially rural consumers, and help them maintain evidence for filing and escalation besides helping them obtain interim reliefs if required.

6. CGRFs may be facilitated to conduct scheduled tours across designated regions to ensure complete coverage in a one year period, thereby warranting greater admittance of grievances and feedback from each region.

7. In order to facilitate the consumers, look and layout of bills may be improved to simplify billing information besides providing the escalation structure clearly on electricity bills.

8. Since consumers frequently experience the need to understand the process of billing, meter reading and other related procedures, an independent helpline may be set up wherein trained helpline executives provide answers to all the consumer queries.

9. To ease the burden of resolution on CGRFs, grievances may also be resolved through a process of mediation between consumers and licensees.

10. Distribution utilities may be penalized in case of any deviations observed from the regulations.

The Forum observed that all tables, charts may be appropriately provided with references / notations. With this observation, the Forum approved the Study Report on "Review of Functioning of CGRF & Ombudsman".

AGENDA ITEM NO. 3 : PRESENTATION ON THE STUDY ON "BEST PRACTICES ON AND STRATEGIES OF DISTRIBUTION LOSS REDUCTION".

FOR commissioned a study on "Best Practices on and Strategies for Distribution Loss Reduction". The FOR Secretariat, after following due process, had identified M/s. PricewaterHouseCoopers as the consulting agency to assist the Forum in carrying out the study. The Consultant made a presentation (copy **enclosed** as **Annexure-III**) highlighting the salient features of the report.

Aggregate Technical and Commercial (AT&C) loss and Transmission and Distribution (T&D) loss are considered key indicators of performance of distribution utilities and these losses can be segregated into technical and non-technical losses. Technical losses relate to network configuration and lack of maintenance where as non-technical losses relate to connection management, meter reading, billing, collection / credit management and field vigilance.

The study included the States which represent different parameters related to loss reduction. Various loss reduction initiatives taken by the utilities have been analyzed to identify the best initiatives which can have maximum impact for each type of loss and for each type of consumer category.

Various parameters have been considered to develop the framework for strategizing loss reduction, which inter alia include, defining the current loss levels, specifying the loss targets to be achieved, measurement of losses and verification, energy audit and analysis, planning – execution – improvement, controlling – sustaining and benchmarking with similar utilities. As part of the initiatives, Network strengthening (including Installation of LT ABC, Improving HT:LT ratio, Substation/DT augmentation, Segregation/Bifurcation of feeders, Implementation of HVDS system) and other initiatives (including DF initiatives/ Privatization to promote competition, Loss based capex plans under regulatory structure) were suggested. As part of the improving commercial losses, initiatives for Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc. and Outsourcing strategy and implementation have been suggested.

The Forum observed that all tables, charts may be appropriately provided with references / notations. The Forum felt that weightages assigned to different initiatives for loss reduction be supported with necessary statistical evidence. It was also pointed that instead of isolating only "Theft" category, all such cases may be categorized under "Un-authorized use of electricity". With these observations, the Forum approved the Study Report on "Best Practices on and Strategies for Distribution Loss Reduction".

AGENDA ITEM NO. 4 : PRESENTATION BY APP ON THE "IMPACT OF ENVIRONMENTAL NORMS ON POWER SECTOR".

Ministry of Environment, Forests & Climate Change (MoEF & CC) recently issued a Gazette Notification amending the Environment (Protection) Rules, 1986, with specified emission norms pertaining to Particulate Matter, SOx, NOx & Mercury, and Water Consumption. Representatives of Association of Power Producers (APP) made a presentation (copy **enclosed** as **Annexure-IV**) before the Forum on the impact of these environmental norms on power sector.

It was argued that implementation of new norms in respect of Particulate Matter, SOx, NOx & Mercury, and Water Consumption would need additional expenditure of Rs.1.25 – 1.5 Cr./MW along with a time-line ranging from 12 to 48 months for complete implementation.

It was also presented that, Domestic availability of required technology/equipment is limited and considering assistance from global suppliers, time and cost overruns are likely to be enormous as the timelines specified in the norms for compliance cannot be adhered to. Considering the shutdown time for modification and retrofitting of various plants simultaneously, wide scale disruption in power supply is anticipated. The compliance of norms would need

an additional capex, thereby leading to a tariff increase of about Rs. 0.5/kwh to Rs. 1.25/kwh.

APP made a request for preparation of a guiding document encompassing - phased implementation program with realistic timeframe and enabling framework to manage the Technological, Financial, Regulatory and institutional issues, by CEA in consultation with Industry, State governments, Regulators, Bankers and Manufacturers of Air Pollution control equipment. A request was also made to FOR to take up the matter appropriately with the Government of India.

The Forum noted the points brought out in the presentation and decided that Forum will examine the matter in detail before finalizing the recommendations for consideration of the Government of India.

BUSINESS SESSION – II

AGENDA ITEM NO. 5 : PROPOSED BUDGET OF "FOR" FOR THE F.Y. 2016-17.

The budget for the year 2016-17 as circulated was discussed in detail. Salient features of the proposed budget as reflected in the income and expenditure statement (contained in Annexure-I of the Agenda Note) were explained. It was also informed that the expenditure on account of capacity building and

commissioning of studies is also estimated to be on the higher side in view of the reduced Plan Assistance from the Ministry of Power on these counts.

The Forum was also informed that in the light of the observations received from the tax consultant, provision for payment of services tax has also been made. Considering the requirement for payment of service tax, the issue as to whether the annual subscription should be inclusive of service tax came up for discussion. While separate reimbursement of Service Tax is a general practice, it was decided that the appropriate authority be approached for exemption of FOR for payment of service tax. With these observations, the Forum approved the Annual Budget for FY 2016-17.

AGENDA ITEM NO. 6 : PROPOSED STUDIES AND TRAINING PROGRAMMES FOR THE YEAR 2016-17.

The Forum was informed that the proposal for commissioning the studies and conducting the training programmes during the financial year 2016-17 was evolved keeping in view the need for detailed analysis of the emerging issues facing the sector and also with due regard to the need for capacity building for Regulators and regulatory staff. Considering the suggestions for studies made by the Members of the Forum, it was decided that the following studies and capacity building programmes would be undertaken during the financial year 2016-17:-

Studies –

1. Study on Energy Storage Systems
2. Study on Price Cap Regulation for Distribution & Supply
3. Study on Model Guidelines on Operating Norms for Distribution Networks
4. Review of Status of Open Access in Distribution
5. Study on the issues related to Power Sector raised in Economic Survey FY 2015-16, including "Progressivity of Domestic Tariff"
6. Any other Study as may be decided by FOR / FOR Chairperson subject to availability of budgetary provision.

The Forum also decided that inter se prioritisation of studies/programmes would be left to the Chairperson, FOR.

Training Programmes –

1. Orientation Programme for Chairpersons and Members of SERCs / JERCs
2. Training on Legal Aspects of Regulation
3. Training Programme on Consumer Protection and Consumer Interest
4. Capacity Building Training Programme for Members / Officers of SERCs at IIT Kanpur

AGENDA ITEM NO. 7 : PRESENTATION AND DISCUSSION ON "COURT CASE MANAGEMENT AUTOMATION SYSTEM (E-COURT) IN CERC".

The Central Electricity Regulatory Commission recently launched its "Court Case Management Automation System (e-Court)" as an initiative towards e-Governance and Digital India facilitating transparency, transformation and a step towards paperless office. This initiative is aimed at strengthening MIS thereby facilitating easy data storage and retrieval. The "e-Court" comprises of different modules, which inter alia include e-Registration, e-Filing, e-Pleading, Case Information System, e-Hearing, Digitization & e-Library etc. A copy of the presentation is **enclosed** as **Annexure-V**.

As part of the initiative, CERC has spread awareness via advertisements, letters etc., establish a dedicated helpdesk to address user concerns, conduct training and workshops on regular basis. CERC is adopting Open Source technology for the project.

In the second version of "e-Court", it is aimed to disseminate CERC Information through digitally signed documents, facilitate stakeholders to submit digitally signed documents through CERC e-Filing portal, operationalization of online payment gateway, automatic generation of cause-list, facilitate conduct of

hearings through video-conferencing and launch of a Mobile App which provides real time petition status. The Application is hosted on NIC cloud to have 24x7 access and as on 04-09-2015, 2,37,600 pages have been digitized.

The Forum appreciated the initiative, and urged CERC to extend support to SERCs in their efforts towards digitization of their offices.

BUSINESS SESSION – III

AGENDA ITEM NO. 8 : ISSUES RAISED BY THE STANDING COMMITTEE ON ENERGY ON "REDUCTION OF COMMERCIAL LOSSES".

The Forum considered the recommendations contained in the 12th Report of the Standing Committee on Energy on the subject "Measures to Check Commercial Losses" which was laid in Lok Sabha and Rajya Sabha during December, 2015. The Standing Committee on Energy, through this Report made several recommendations.

Secretary, CERC/FOR informed the Forum that the Ministry of Power has sought comments on the recommendations and only seven ERCs have responded so far. She urged the Forum to expedite their response by providing detailed

comments / observations on the recommendations, so that timely reply could be sent to MoP / Standing Committee on Energy.

AGENDA ITEM NO. 9 : PRESENTATION ON "MINI GRID REGULATIONS OF UPERC".

UPERC recently notified regulations on Mini-Grid Renewable Energy Generation and Supply and they are the first ERC to notify such regulations in the country A detailed presentation was made by the Director (Distribution), UPERC before the Forum on its recently notified UPERC (Mini-Grid Renewable Energy Generation and Supply) Regulations, 2016 (copy **enclosed** as **Annexure-VI**).

These regulations mandate the Mini Grid Operators (MGOs) to provide a minimum of 5 hours (during 1700 - 2300 hrs.) of supply per day through their RE based generating system upto 500kWp, and the feed-in-tariff (FiT) is regulated by UPERC (Captive and Renewable Energy Generating Plants) Regulations, 2014. The MGO through its Power Distribution Network to supply power to its consumers and adhere to the standards of performance as specified in the Regulations. The tariff is not to be regulated by SERCs. Upon arrival of grid connectivity, the MGO is allowed to exercise the option to continue with supply to its consumers or to sell the excess energy / entire energy to the distribution licensee at the point of interconnection as per Feed-in-Tariff. In case of pre-existence of grid, the MGO is required to supply to the consumers for a minimum

period of three years before exercising the option of selling the entire energy to the distribution licensee and distribution licensee qualify for accounting such power under RPO. MGOs are required to adhere to safety and metering standards as per norms specified by the Central Electricity Authority and the MGOs are required to submit their quarterly returns to UPERC as detailed in the Regulations.

The Forum appreciated the initiative taken by UPERC and requested the State Commission to share the Regulations with other Commissions.

AGENDA ITEM NO. 10 : PRESENTATION ON "ECONOMIC SURVEY OF INDIA ON POWER – CHALLENGES AND WAY FORWARD".

A detailed presentation on "Economic Survey of India on Power Sector – Challenges & Way Forward" was made by Shri R.N. Sen, Chairperson, WBERC, Kolkata (copy **enclosed** as **Annexure-VII**). He made a reference to the key challenges facing the sector, including on account of quality of coal, environmental norms, high T&D losses, etc., and made his suggestions for addressing the issues.

The Forum noted the presentation.

BUSINESS SESSION – IV

Shri Piyush Goyal, Hon'ble Minister of State (I/C) for Power, Coal, New & Renewable Energy joined the proceedings.

Hon'ble Minister launched the re-designed logo of the Forum of Regulators, which was approved earlier by the Forum in its 53rd meeting held on 18.3.2016 at New Delhi.

Thereafter, Hon'ble Minister addressed the Members of the Forum. While appreciating the work being done by the FOR, he was kind enough to state that in order to ease the financial constraints being faced by the Forum for running its affairs, efforts would be made to explore the possibility of identifying sponsors (while taking due care of issues of conflict of interest) for meeting the expenses under FOR Budget Sub-Heads "Meeting Expenditure" and "Training Expenditure".

He stated that growth rate of demand for electricity is not encouraging and therefore, immediate measures are required to be taken to boost demand for electricity. He urged the SERCs / JERCs to provide their suggestions in this regard. With regard to generation sector, he stated that in order to address the twin issues of in-efficiency in generation and pollution, the proposal for retirement of the plants which exceed 25 years of operating life is being examined. He stated

that once the proposal is approved, the retired plants will not be allocated funds towards R&M / extension of life etc.

He stated that to further ease the constraints owing to fuel supply, efforts have been made by the Government of India to augment coal production. The efforts have resulted in stability of coal prices and witnessed no increase in coal prices during the last three years. Now, continued efforts are being made on improving the quality of coal supplies to the generating stations.

While emphasizing on the issue of efficiency in power sector, he stated that measures for improving energy efficiency should not be seen in isolation, but required to be synchronized with the efforts towards addressing the issues related to climate change. He said that Government of India has worked extensively on the issue of bringing in the benefit of economies of scale in pricing LED bulbs. The efforts have resulted in substantial reduction of price of LED bulbs by 83% within a period of 18 months and the production of LED bulbs has increased from 6 lakhs in 2013-14 to 9 crores in 2015-16. He conveyed the Forum that in specific pockets, investments have been made for replacing the existing in-efficient agriculture pump-sets with new efficient star rated pump-sets on pilot basis and these efforts have shown encouraging results. He stated that these investments have also brought out that the savings in power consumption by the efficient pump-sets out-weigh the cost of replacement.

He appreciated the initiative of FOR towards facilitating implementation of UDAY Scheme. Further, he stated that the UDAY scheme has been drawn up after carrying out very wide consultation with all stakeholders. During the entire process, a high degree of transparency is maintained which inter alia includes the agreements entered into with States for implementation of UDAY Scheme. He urged the SERCs / JERCs to provide their comments on better implementation of the UDAY Scheme for further consideration by the Ministry of Power.

While referring to the issues related to renewable energy, he stated that lack of interest in the market for purchase of RECs has been a major concern. In this regard, he suggested that State Governments / Discoms have to take steps to comply with RPO targets specified by SERCs. He urged the SERCs to proactively ensure compliance of RPO targets by the State Discoms so that demand for RECs could be stimulated in the market. Additionally, efforts may be made to invite REC and PFC and the State Governments to purchase RECs.

He informed the Forum that the Ministry of Power has launched several IT-enabled applications on internet / mobile platforms for effective and real-time dissemination of information. The applications provide information pertaining to Power Market, Energy Efficiency etc. These measures have facilitated stakeholders with updated real time information.

He said that in the context of the issue raised by NTPC Chairman (who accompanied the Hon'ble Minister), that the retail tariff does not reflect the two components of tariff truly, viz., the fixed cost and variable cost. the FOR should look into the issue and study its implication. He urged the Forum of Regulators to constitute a Sub-Group / Working Group to examine all important issues related to Waste to Energy, which inter alia include, generation facilities, availability of technology, evacuation facility, regulatory mechanism etc. He wished the Forum to continue to deliberate upon important issues relevant to the sector and provide its recommendations from time to time to the Government for its consideration and necessary action.

On conclusion of the meeting, Chairperson, CERC/FOR thanked the Hon'ble Minister for his address, the Chairperson, Members and staff of the Uttar Pradesh Electricity Regulatory Commission (UPERC) for their painstaking efforts to host the 54th Meeting of FOR at Varanasi. He also thanked all the dignitaries present in the meeting.

Secretary, CERC/FOR thanked the staff of "FOR" Secretariat for their arduous efforts in organizing the meeting.

The meeting ended with a vote of thanks to the Chair.

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/ ANNEXURE – I /

LIST OF PARTICIPANTS ATTENDED THE 54TH MEETING

OF

FORUM OF REGULATORS (FOR)

HELD DURING 07TH – 09TH APRIL, 2016 AT VARANASI (UTTAR PRADESH).

S. No.	NAME	ERC
01.	Shri Gireesh B. Pradhan Chairperson	CERC – in Chair.
02.	Shri S.K. Negi Chairperson	BERC
03.	Shri Narayan Singh Chairperson	CSERC
04.	Shri Krishna Saini Chairperson	DERC
05.	Shri Anand Kumar Chairperson	GERC
06.	Shri Jagjeet Singh Chairperson	HERC
07.	Shri S.K.B.S. Negi Chairperson	HPERC
08.	Shri Basharat Ahmed Dhar Chairperson	J&KERC
09.	Justice (Retd.) Shri N.N. Tiwari Chairperson	JSERC
10.	Shri S.K. Chaturvedi Chairperson	JERC for Goa & All UTs except Delhi
11.	Shri R.K. Kishore Interim Chairperson	JERC for Mizoram and Manipur
12.	Shri T.M. Manoharan Chairperson	KSERC
13.	Dr. Dev Raj Birdi Chairperson	MPERC
14.	Shri Imlikumzuk Ao Chairperson-cum-Member	NERC
15.	Shri Satya Prakash Nanda Chairperson	OERC
16.	Shri D.S. Bains Chairperson	PSERC

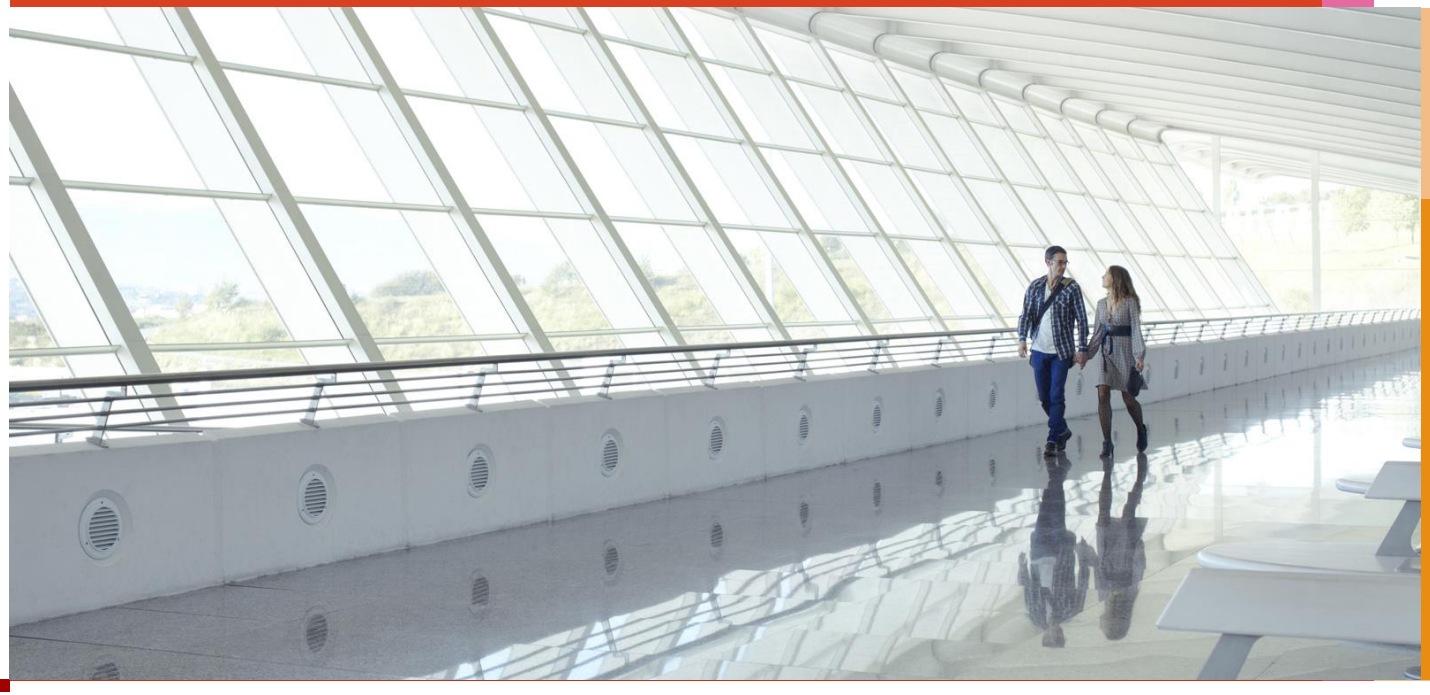
17.	Shri S. Akshayakumar Chairperson	TNERC
18.	Shri Niharendu Chakraborty Chairperson	TERC
19.	Shri Desh Deepak Verma Chairperson	UPERC
20.	Shri Subhash Kumar Chairperson	UERC
21.	Shri Rabindra Nath Sen Chairperson	WBERC
22.	Shri Dipak Chakravarty Member	AERC
23.	Shri D.B. Manival Raju Member	KERC
24.	Ms. Shubha Sarma Secretary	CERC
25.	Dr. Sushanta K. Chatterjee Joint Chief (RA)	CERC
SPECIAL INVITEES		
26.	Shri A.K. Singhal Member	CERC
27.	Shri A.S. Bakshi Member	CERC
28.	Dr. M.K. Iyer Member	CERC

PwC
Energy & Utilities

Review of functioning of CGRF and Ombudsman

Forum of Regulators

Strictly Private and Confidential
8 April 2016



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Overview

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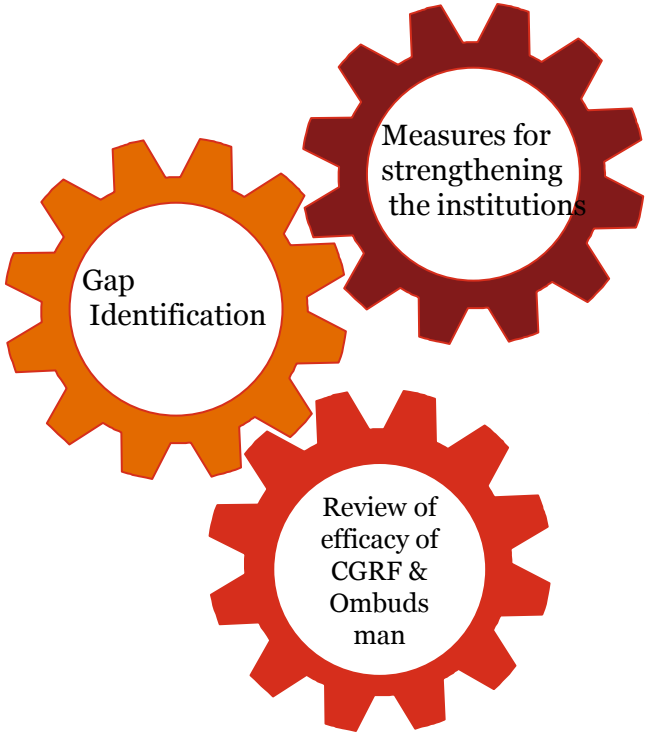
Objective of study



The Electricity Act, 2003 makes elaborate provisions which seek to protect the interests of consumers. The National Electricity Policy and the Tariff Policy framed under the Act reinforce its provisions.

The State Electricity Regulatory Commissions (SERC) have notified regulations for redressal of consumer grievances. Further, the States have institutionalized the mechanisms of grievance redressal, such as the Consumer Grievance Redressal Forum (CGRF) and the Ombudsman.

The Forum of Regulators recognizes the need to review the steps taken in various States in operationalizing the CGRF and Ombudsman.

The Forum of Regulators appointed PwC to undertake review of functioning of CGRF's & Ombudsman in States

Scope of work

Tabulation of status of establishment

- Tabulating status of establishment and composition of CGRF and Ombudsman in all States

Analysis of functioning

- Analysis of functioning of CGRF & Ombudsman in 10 States
- Tabulation of number and nature of complaints handled by the selected states

Gaps identification

- Gap identification in the functioning of CGRF and Ombudsman vis a vis their role envisaged under the Act and the Rules & Regulations

Suggesting measures for strengthening the institutions

- Suggesting measures for strengthening the institution of the CGRF & Ombudsman

Other related analysis

- Related analysis that help in identification of gaps

Our approach

Phase 1: Inception

a) Review of legal and regulatory framework with respect to CGRF and Ombudsman
b) Tabulating status of establishment of CGRF and Ombudsman in all States
c) Selection of 10 states for in-depth study
d) Comparison of SERC Regulations regarding CGRF and Ombudsman in select 10 states

Phase 2: Analysis

a) Collection of data from select 10 states through primary and secondary research
b) Representing the data collected in tabular form for comparison on parameters such as number of cases disposed, types of complaints, time of resolution etc.
c) Analysis of the data for the ten states
d) Conducting a consumer survey to gain an understanding of major concerns faced by them

Phase 3: International and sectorial review

a) Review of consumer grievance mechanism in other countries like Philippines and UK
b) Review of consumer grievance redressal mechanism in other sectors such as banking and telecom sector
c) Based on the review, derive key learnings from each country/ sector

Phase 4: Way forward

a) Identification of issues and scope for improvement in the current structure
b) Recommendations and Way forward

Legislative and Regulatory Provisions

2

Legislative and Regulatory Provisions

Electricity Act, 2003

- **Section 8** provides for *establishment of consumer grievance redressal forum by distribution licensee and empowers state commissions to formulate guidelines for the same. It envisages for the formation of a two tier consumer grievance redressal mechanism under every SERC.*

National Electricity Policy, 2005

- **Section 5.13** lays *emphasis on safeguarding the interest of the consumers and promoting the quality standards of supply of power. It reiterates the role of SERCs in setting up the mechanisms of CGRF and the Ombudsman.*

National Tariff Policy, 2006

- **Section 8.0** lays *emphasis on the supply of reliable and quality power of specified standards. The policy also emphasizes on the imposition of penalty on the licensees in case of failure to meet the standards.*

Electricity Rules, 2005

- **Rule 7** describe *the appointment of Ombudsman by the State Commission, reporting requirements of Ombudsman with respect to grievance redressal and compliance of SOP as specified by the commission along with procedure for grievance redressal.*

Review of Existing Scenario in India

3

Existing Scenario in India

The following measures have been undertaken by states to institute consumer protection in accordance with regulations:

1. Establishment of CGRF & Ombudsman bodies and regulations

a) Composition and Operationalisation of CGRF and Ombudsman

b) Reporting requirements of CGRF and Ombudsman

c) Process to be followed by consumer for submission of grievance

d) Details about the grievance handling process (Investigation process, issue of order)

2. Development of a four tier mechanism for redressal of consumer grievances:

a) Tier 1: Consumer to contact the internal grievance redressal cell/call centre of the discom

b) Tier 2: If the consumer is dissatisfied or complaint is not resolved within a stipulated timeframe, it can register a complaint with CGRF

c) Tier 3: If the consumer is not satisfied with the outcome at the CGRF level, he/she may appeal the CGRF's decision to the Ombudsman

d) Tier 4: If still dissatisfied, the consumer has the right to approach the High Court

3. Development of Model Regulations by FOR in 2011:

a) In order to bring clarity and uniformity in the method of grievance redressal being followed in various states, FOR had come up with model regulations for the constitution and operationalization of CGRF and Ombudsman in February 2011 called as "*Model Regulations for Protection of Consumer Interest*"

Initiatives taken by various states regarding establishment of CGRF and Ombudsman

- ✓ Karnataka and Kerala have established one CGRF for each revenue district.
- ✓ MP holds sittings for CGRF at various locations to increase the reach.
- ✓ Delhi and Haryana prints details for CGRF and Ombudsman on electricity bills for consumer awareness.
- ✓ Maharashtra has established two Ombudsman while Orissa has established four (*one for each discom*).

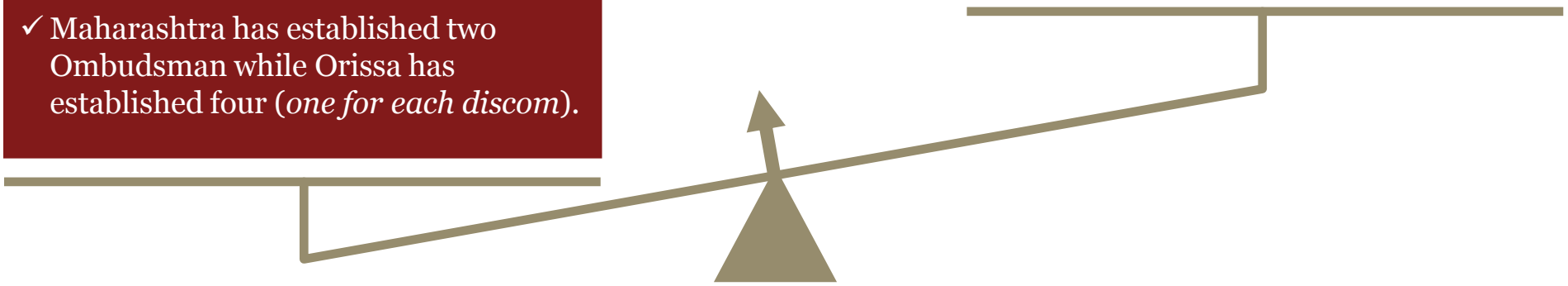
All the states have one CGRF established except:

- ✓ Arunachal Pradesh
- ✓ Nagaland
- ✓ Jammu and Kashmir

Similarly, all states have one Ombudsman established except:

- ✓ Nagaland
- ✓ Jammu and Kashmir

In Nagaland and J&K the notifications for CGRF and Ombudsman have been issued, yet the office has not been established. While in AP, the utilities are working to establish an office of CGRF.



Selection of states (1/2)

States	Region	Data Availability	Year of Notification	No of CGRF Offices
Delhi	North	√	2003	4
Uttarakhand	North	√	2004	2
Punjab	North	√	2005	NA*
Haryana	North	√	2004	2
Gujarat	West	√	2004	8
Madhya Pradesh	Central	√	2004	3
West Bengal	East	√	2003	NA**
Chhattisgarh	Central	√	2007	3
Karnataka	South	x	2004	Each district
Andhra Pradesh	South	√	2004	2

**Data on exact number of CGRF's is not available*
*** West Bengal has GRO's instead of CGRFs*

Selection of states (2/2)

State Selection				
North	Central	**West**	**South**	**East**
Delhi	**Madhya Pradesh**	**Gujarat**	**Karnataka**	**West Bengal**
Haryana	**Chhattisgarh**		**Andhra Pradesh**	
Punjab				
Uttarakhand				

State Selection Parameters:

1. Region : Representation of each of the regions
2. Data Availability: As per published and available data
3. Unique Features : Consisting of observed difference in composition and autonomy
4. Number of CGRF offices : Representation from states with better geographic reach
5. Year of notification of regulations : Representation from states with recent notifications or earlier notifications

Review of CGRF Regulations across ten states(1/2)

Structure

- ✓ WB has mandated to have at least one Grievance Redressal Officer at sub-district/district and one at corporate level.
- ✓ Karnataka has established a CGRF in each revenue district.
- ✓ Gujarat & Chattisgarh have established multiple CGRF offices for most utilities to enhance reach.
- ✓ Haryana, Uttarakhand and Madhya Pradesh have divided large regions into 2-3 CGRFs.

Details here

Cost and Expense of the Forum

Normally costs and expenses of the forum are determined by the distribution licensee

As per the Regulations:

- ✓ In Karnataka and Maharashtra, no mention of who would bear the cost and expenses of the forum
- ✓ For remaining reviewed states, cost and expenses of the forum shall be borne by the distribution licensee (Accounted in ARR for Haryana)

Details here

Appointment of Members

Members are appointed either by Commission or by licensee or by both.

As per Regulations:

- ✓ Delhi has ensured independence of all 3 members.
- ✓ No mention of independence in Haryana
- ✓ Other reviewed states have at least one independent member except WB
- ✓ The members cannot generally be appointed to the Forum within two years of their retirement from a licensee.
- ✓ Details here

Maximum Time Period for Grievance Handling

Ranges between 30-60 days on case to case basis from state to state.

As per Regulations:

- ✓ No mention of maximum time period for grievance handling in Haryana.
- ✓ MP guides CGRF to address the cases within 6-8 weeks.

Details here

Review of CGRF Regulations across ten states(2/2)

Tenure of Members

Normal tenure of service is 2-3 years for members of CGRF

As per Regulations:

- ✓ Gujarat, Uttarakhand, Chhattisgarh and AP allow extension of tenure by 2 years if deemed necessary
- ✓ MP allows extension of tenure by 3 years if deemed necessary
- ✓ Delhi and Haryana do not allow an extension of the tenure period.
- ✓ No mention of tenure in Karnataka and West Bengal.

Details here

Composition

Members are experts in either one or more of the areas like Financial, Technical, Legal and Consumer Affairs

As per Regulations:

- ✓ No consumer affairs expert in WB as members
- ✓ Only Delhi, AP, Gujarat and Haryana have a legal expert as members
- ✓ Madhya Pradesh, AP, Karnataka and Punjab have a financial expert as member
- ✓ In West Bengal, no clause pertaining to composition of CGRF is present **Details here**

Appeal against the order of CGRF

Consumers are allowed to appeal in Ombudsman if dissatisfied

As per Regulations:

- ✓ Distribution licensee can not appeal in Ombudsman.
- ✓ Time frame of appeal varies from state to state.
- ✓ WB allows a time period of 20 days from the date of the order of GRO before which the consumer has to appeal.
- ✓ While MP give 60 days, rest give 30 days for appeal.

Details here

Review of Ombudsman Regulations across ten states(1/2)

Number of Ombudsman

Number of Ombudsman in a state varies from state to state.

As per Regulations:

- ✓ MP, Delhi, AP, Gujarat, Punjab and Uttarakhand have highlighted appointment of more than one Ombudsman if needed.
- ✓ Haryana and Karnataka allows appointment for one Ombudsman only
- ✓ WB does not mention the no. of Ombudsman that can be appointed

Appointment of Ombudsman

The Ombudsman are appointed by the respective state commissions.

As per the Regulations:

- ✓ Delhi, Haryana, Karnataka and Punjab do not highlight the manner of appointment.
- ✓ While Gujarat, MP have highlighted the process of appointment.
- ✓ In Gujarat, a selection committee is formed consisting of members and Chairperson for appointment

Details

Independence of Ombudsman

Some states have clearly highlighted the eligibility criteria of the applicant to ensure independence of the members.

As per Regulations:

- ✓ Delhi, Gujarat, MP and Uttarakhand disallow the appointment of existing or recently retired employee of the licensee.
- ✓ Regulations of remaining states have not ensured independence which may serve as a bottleneck towards impartial redressal.

Details

Review of Ombudsman Regulations across ten states(2/2)

Tenure of Appointment

Tenure of appointment varies from 2-3 years in different states.

As per Regulations:

- ✓ Most of the reviewed states allow extension by 1-2 years except Delhi and Punjab
- ✓ WB does not have any clause regarding the tenure of appointment in regulations.

Details here

Cost and Expense

Cost of the Ombudsman and the Secretariat can either be borne by Commission or by distribution licensee or out of the funds created under section 103 of EA 2003.

As per the Regulations:

- ✓ Amongst the reviewed states, Delhi and Punjab the only states where costs are borne by the licensee in proportion of the power withdrawal which may hamper independence
- ✓ While WB does not have any clause regarding costs and expense in their guidelines.

Details here

Time Period for Issuance of Order

Time Period to issue an order ranges between 60-90 days .

As per Regulations:

- ✓ WB does not mention any clause regarding timelines for resolving the case but highlights a unique feature wherein the consumer can appeal to commission before going to judiciary if the case had been referred from commission.

Details here

Analysis of functioning of CGRF and Ombudsman

4

Performance Analysis: CGRFs and Ombudsman

Parameters for performance review

Efficiency of Grievance Resolution

Success in resolving grievances

- Efficiency of resolution
- Timeliness of resolution
- Category-wise resolution

Drivers of Resolution Efficiency

Efforts to address and expedite resolution

- Number of sittings
- Grievance handling capacity
- Geographical reach of CGRFs

Impact of Decisions

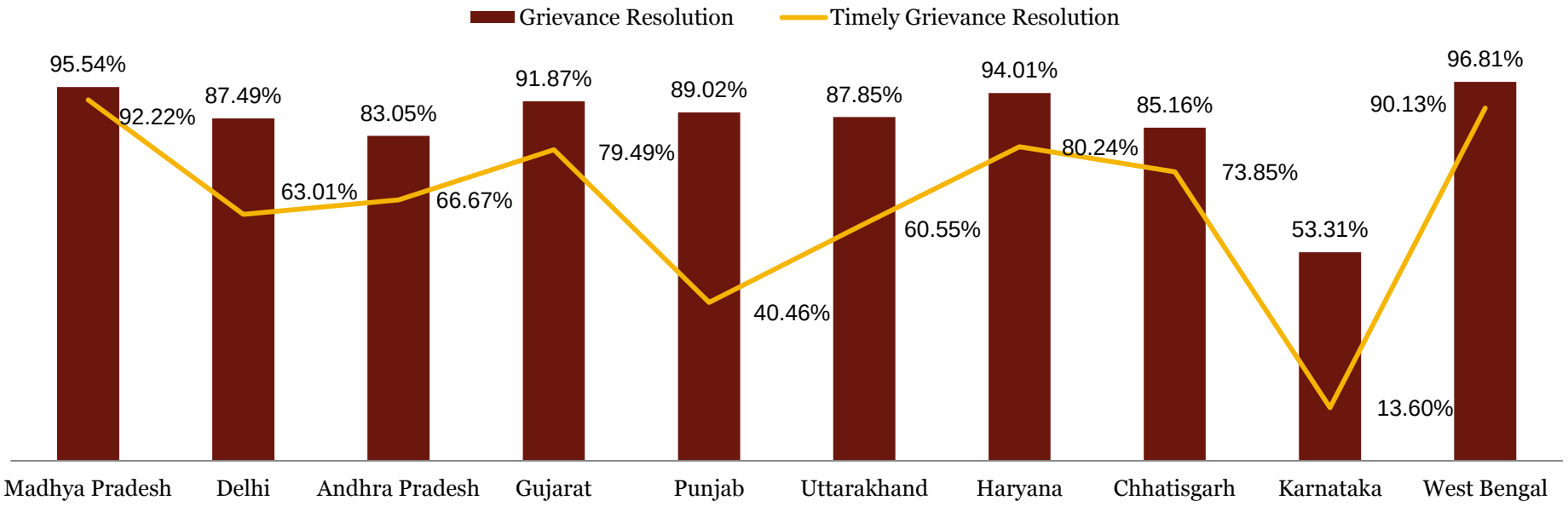
Outcome of grievance resolutions

- Analysis of decisions
- Escalations to the next level

Analysis: CGRF & Ombudsman of select ten states (1/8)

Snapshot of CGRF Performance – 2014-15

Related Graphs



Total Grievances Handled	Madhya Pradesh	Delhi	Andhra Pradesh	Gujarat	Punjab	Uttarakhand	Haryana	Chhatisgarh	Karnataka	West Bengal
	2379	2022	708	1697	173	469	334	283	272	4266

Key Observations

1. WB (CGROs), MP and Haryana are top performers in resolving grievances in an efficient and timely manner, followed by Gujarat & Chhatisgarh.
2. Delhi, Andhra Pradesh, Punjab & Uttarakhand have been striving for timely resolution of grievances, while Karnataka has struggled to manage a relatively smaller base of complaints.

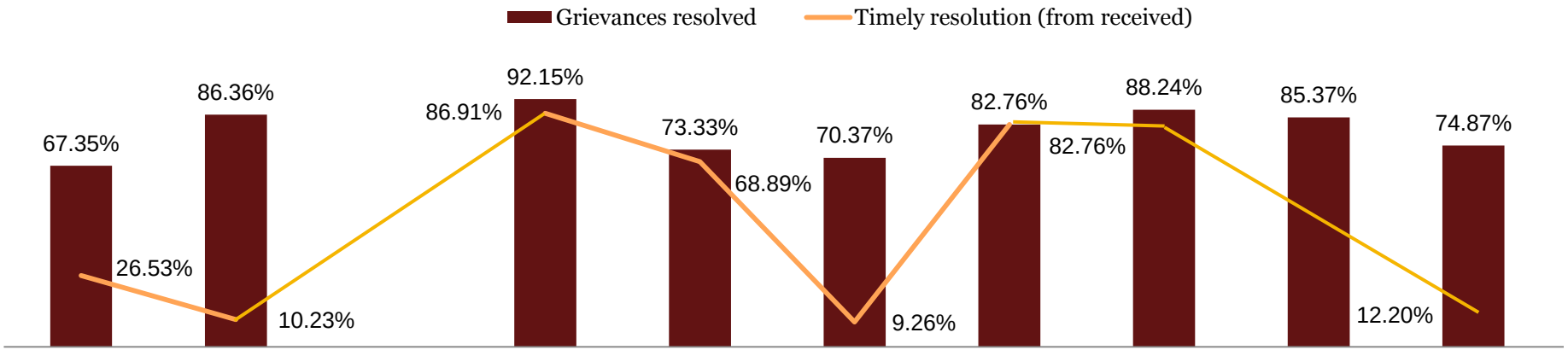
Key Considerations

1. Delhi faces a larger number of complaints than other states under study
2. WB has different structure of Grievance Redressal Officers as opposed to CGRF
3. MP faced an exceptional billing issue in 2014-15, hence a large number of grievances
4. Karnataka has a CGRF in every revenue district.

Analysis: CGRF & Ombudsman of select ten states (2/8)

Snapshot of Ombudsman Performance – 2014-15

Related Graphs



Total Grievances Handled	MP	Delhi	Andhra Pradesh	Gujarat	Punjab	Uttarakhand	Haryana	Chhatisgarh	Karnataka	WB (CGROs)
	49	88	NG	191	45	54	58	17	41	2352

Key Observations

1. Gujarat, Chhattisgarh, Haryana, Delhi and Karnataka have been most efficient in grievance resolution, while Punjab, Uttarakhand, Madhya Pradesh and West Bengal have achieved moderate success in the overall efficiency of resolution.
2. Gujarat, Punjab and Haryana have been most successful in resolving grievances in a timely manner, while Delhi, Madhya Pradesh, Karnataka and Uttarakhand have not been able to deliver decisions consistently within the stipulated period of resolution.

Reasons for delay:

- Delay in reports from test labs in case of meter related issues
- Incomplete documentation
- Undue adjournment of court

Analysis: CGRF & Ombudsman of select ten states (3/8)

Category-wise resolution by CGRFS in 2014-15

Related Graphs

Key Observations

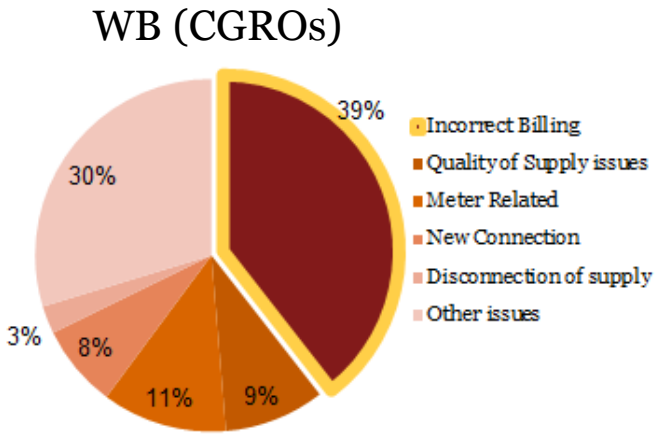
Incorrect Billing and Meter-related issues are the most frequently handled types of grievances and affect overall efficiency of resolution.

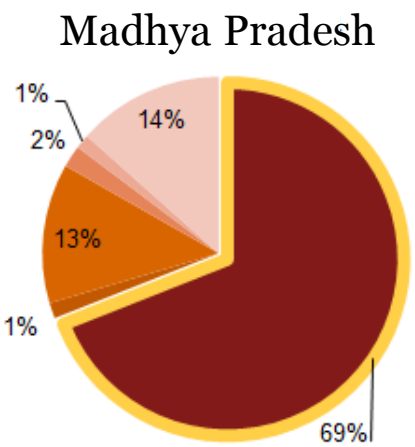
1. CGRFs of 8 out of 10 states receive more than 40% of grievances related to billing
2. MP & WB (CGROs) are able to resolve >90% billing and meter-related grievances in a timely manner, and hence are more efficient overall.
3. Punjab has been able to resolve 44.3% of billing issues on time, which has hampered the overall efficiency of resolution.

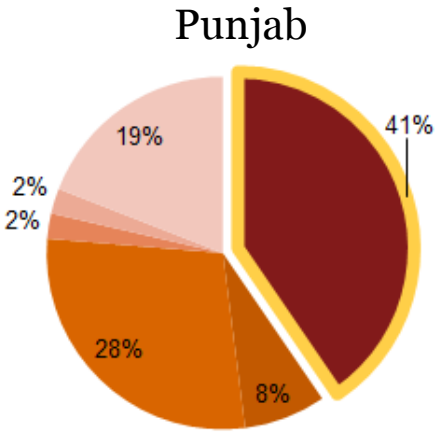
Key Reasons problems*

1. Technical malfunctioning of meters and display of incorrect usage.
2. Tampering of meters and thefts.
3. Unwillingness of certain consumers to pay bills within the stipulated billing cycle.
4. Lack of communication between utilities and consumers in any changes made in billing procedures.
5. Lack of awareness of consumers of the right escalation structure for reporting suspected issues with metering.

* As per sample CGRF and Ombudsman orders of select 10 states







Other states

Analysis: CGRF & Ombudsman of select ten states (4/8)

Category-wise resolution by CGRFS in 2014-15

Related Graphs

Key Observations

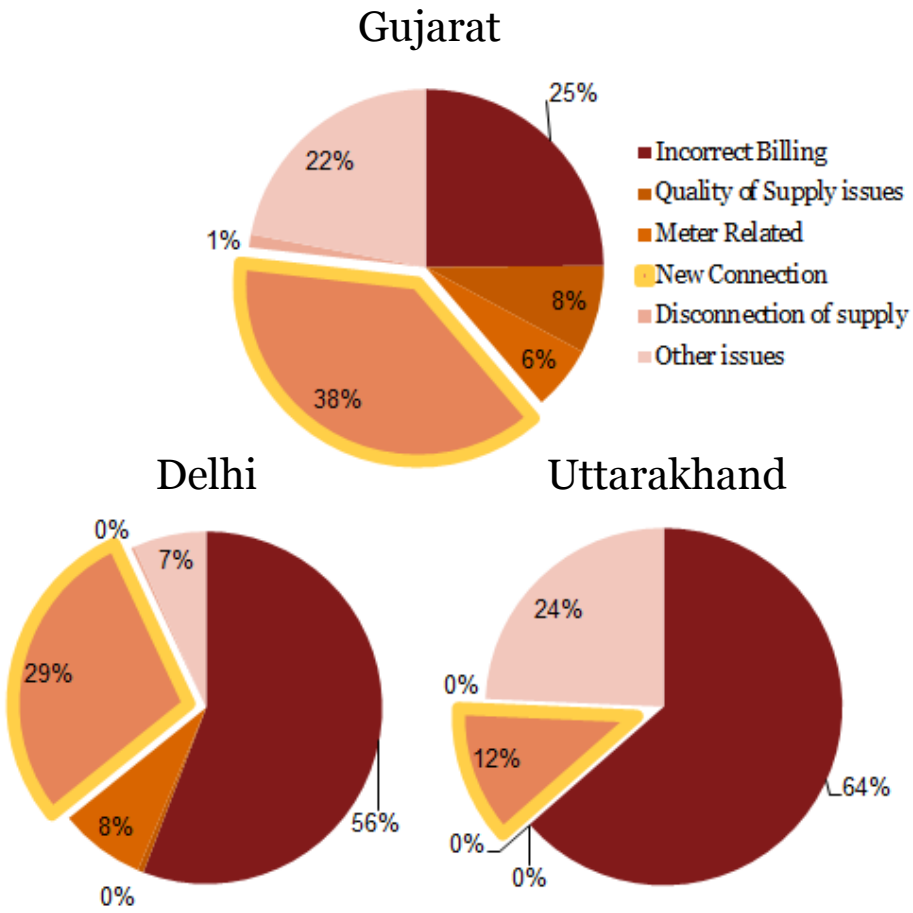
With increase in consumers & load growth, grievances related to new connections have been on a rise.

1. Delhi, Gujarat and Uttarakhand are registering substantial number of grievances related to new connections.
2. Expediting resolution process through measures such as reducing the number of visits by gathering more information beforehand from the concerned consumers.

Key Reasons

1. Delays caused in procurement and installation of requisite equipment.
2. Delays caused by utilities in understanding the needs of the consumer.

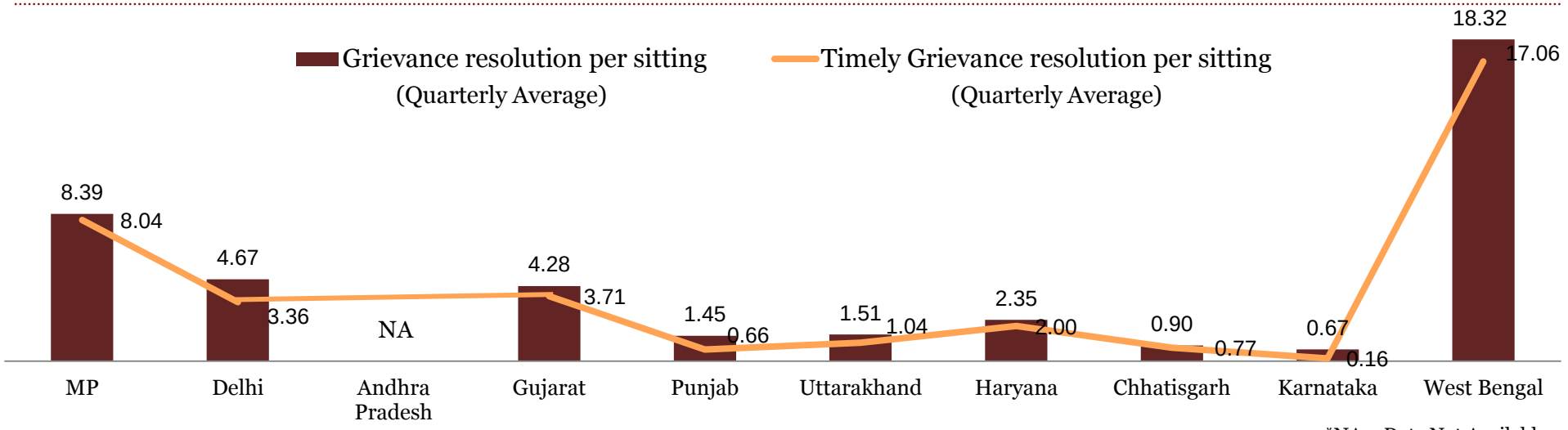
Electricity Act, 2003 mandates utilities to provide supply of electricity within one month after receipt of the application, unless it entails setup of new local or regional infrastructure.



Analysis: CGRF & Ombudsman of select ten states (6/8)

Effect of CGRF sittings – 2014-15

Related Graphs



*NA – Data Not Available

Key Observations

Number of sittings seems to positively influence timely redressal of grievances, and appears to be necessary in states such as Delhi and Madhya Pradesh, which have a large base of complaints

1. Madhya Pradesh, Delhi, Gujarat and Haryana have a higher efficiency of resolution per sitting in comparison to other states, followed by Punjab, Uttarakhand, Chhattisgarh and Karnataka.

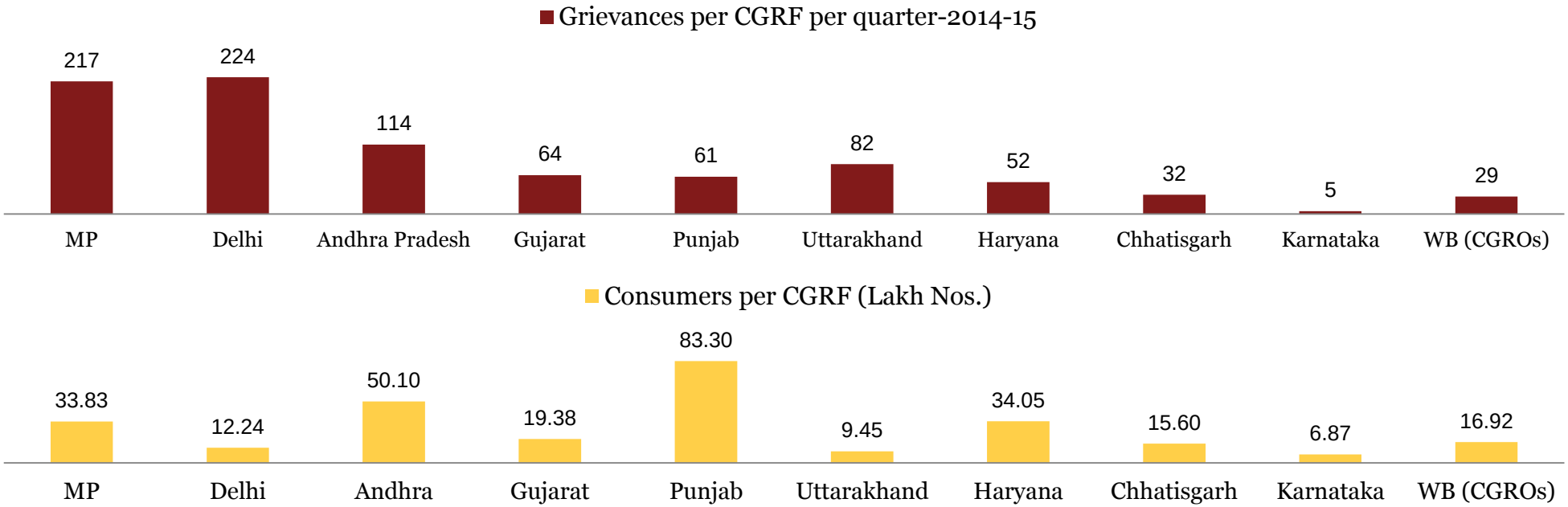
WB has highest grievances resolved per sitting, due to:

1. Empowerment of sub-district and district level grievance redressal officers to resolve grievances with limits of reward or penalty.
2. With a grievance redressal officer accessible in each region, the conduct of resolution sessions with consumers becomes more efficient, relevant and productive.

Constitution of CGRFs may be revised to ensure regular meetings amongst members who are not critically involved in other operations, and the final approval of critical issues may rest with the chairman of CGRF.

Analysis: CGRF & Ombudsman of select ten states (7/8)

Grievance Handling Capacity – 2014-15



Key Observations

1. While most CGRFs have been able to consistently handle the load of registered grievances over the two years, states where awareness and enterprising levels of consumers are high may struggle to resolve complaints in an expeditious manner (such as Delhi) and may require the creation of more forums in the coming years.
2. In states such as Madhya Pradesh and Delhi, one CGRF has been setup for each of the distribution utilities to serve the electricity consumers of those utilities, while in Haryana and Uttarakhand, the CGRFs have been established for each major region, keeping in mind regional and logistical considerations.

To improve the timeliness of resolution, states like Delhi and Punjab may need to increase the number of members by 2, to ensure that more sittings can be conducted with the required quorum, and increase frequency of state tours to resolve grievances.

Analysis: CGRF & Ombudsman of select ten states (8/8)

Analysis of decisions – 2014-15

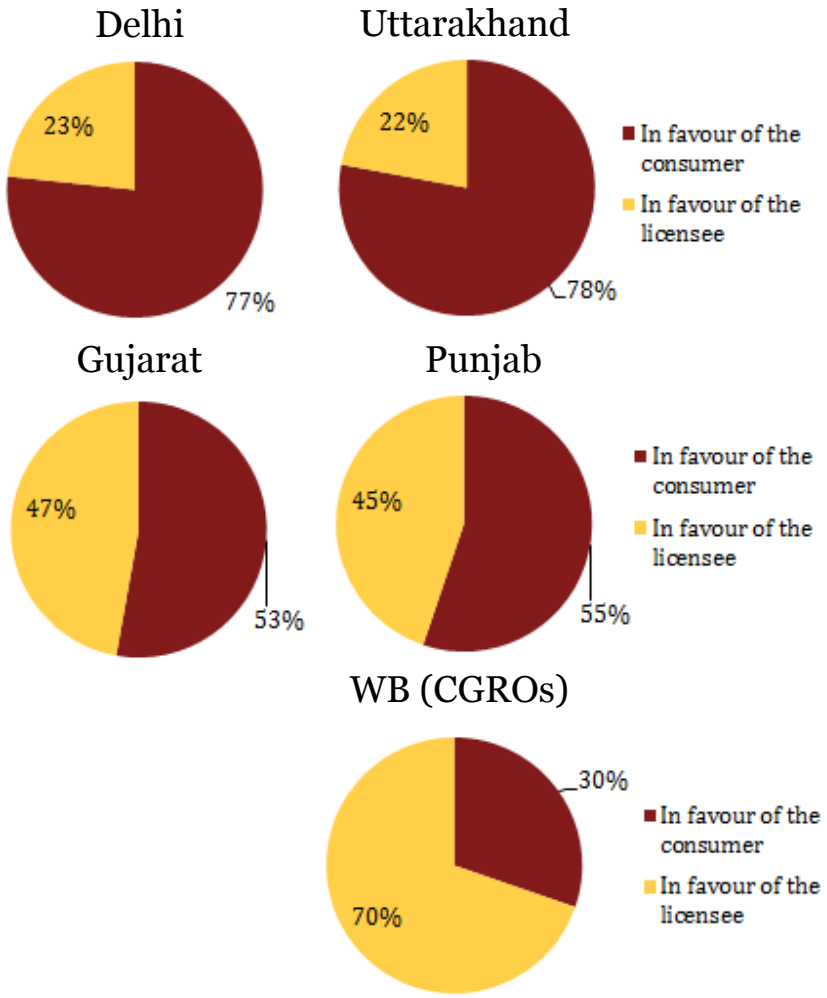
Key Observations

Most state CGRFs have been consistent in giving more decisions in favor of consumers than the licensees

1. Delhi & Uttarakhand have given a significant proportion of decisions in favour of consumers, followed by Chhatisgarh & Haryana.
2. CGRF's in Gujarat & Punjab have given marginally more decisions in favour of consumers.
3. WB is the only state where decisions have been more in favour of licensees than the consumers.
4. For Ombudsman, decisions were evenly matched in every state except WB, where more decisions in favour of consumers.

Key Reasons

1. More decisions regarding billing and connection/ disconnection issues seem to be going in favour of consumers.



Ombudsman escalations

Types of grievances escalated

Key Observations

Disconnection of supply are the more grievous types of complaints that are escalated in more numbers to Ombudsman

1. Significant number of grievances regarding disconnection in Delhi, Haryana and WB have been escalated to Ombudsman for resolution.

Key Reasons

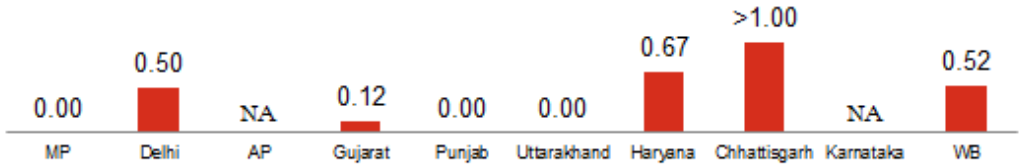
1. Many consumers believe that high billing charges and usage occurs on the account of theft or meter-tampering and therefore they pursue the matter for resolution.
2. In grievances where the consumers consider billing amounts to be inordinate or unfair, they feel compelled to further escalate the matter to Ombudsman. These cases account for significant monetary loss to consumers and hence the consumers seek immediate relief.

2. Ombudsman has also received several escalations of incorrect billing in Gujarat, Punjab, Uttarakhand, Haryana & WB

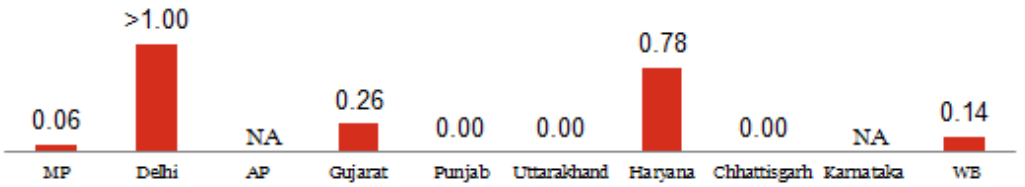
Ratio of type of grievance escalated to Ombudsman and to CGRF

Related Graphs

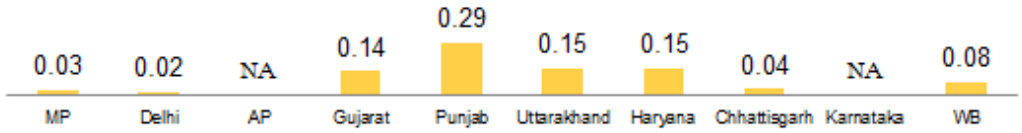
Disconnection of supply – 2013-14



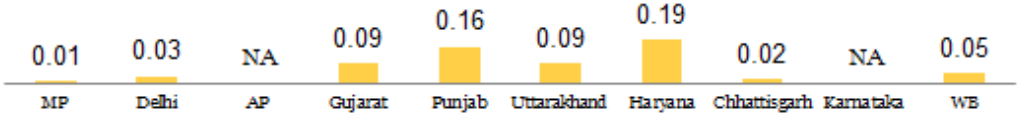
Disconnection of supply – 2014-15



Incorrect Billing – 2013-14



Incorrect Billing – 2014-15



Key Analysis: Consumer Survey Responses

Questionnaire

Background and major concerns faced	
1. Which state you belong to ?	4. Have you ever filed a complaint to the distribution company?
2.. Which category of consumer do you belong to ?	5. What was the time taken by distribution company to resolve the issue?
3. What is the most common problem that you face in electricity supply?	6. Why have you never filed a complaint with the Distribution Company?

Awareness of grievance escalation structure	
7. Are you aware of CGRF?	10. Why have you never appealed to CGRF? (If answer to Q9 was no)
8. Where did you get the information on CGRF and Ombudsman?	
9. Have you ever appealed to CGRF?	

Past escalations to CGRF or Ombudsman	
11. Why did you apply to CGRF?	14. Were you satisfied with the decision of CGRF?
12. For which issue did you appeal to CGRF?	15. Did you appeal to Ombudsman? (If answer to Q14 was no)
13. What was the time taken by CGRF to arrive at the decision?	16.What was the time taken by Ombudsman for the decision?

Feedback	
17.Would you appeal to CGRF/Ombudsman again if you face any problem with electricity supply?	20. Do you feel that legal assistance is required in filing an appeal to CGRF/Ombudsman?
18.What could be the possible reason for you to not appeal to CGRF and Ombudsman again?(if answer to Q17 was no)	21. According to you, which industry has the best customer grievance redressal mechanism ?
19. According to you, how can functioning of CGRF/Ombudsman be improved? (can select more than one option)	

Key Analysis: Consumer Survey Responses

Takeaways

Majority of consumers surveyed had billing or meter related issues.

Awareness level of consumers regarding internal Grievance Redressal Procedure followed by discoms was relatively high. It can mainly be attributed to the fact that the consumers who responded were mostly from metropolitan cities

Despite most respondents being from metropolitan cities, around 40 % of the consumer surveyed were unaware of CGRF and/or Ombudsman. The consumers who were aware of CGRF and Ombudsman mainly received information regarding the existence of such institutions either through information printed on bills or State Electricity Commission's websites.

More than 40% of the respondents feel that legal assistance is required for filing complaint and thus acts as a big deterrent for registering complaints.

Around 25 % of respondents cited that they would not like to register complaints with CGRF or Ombudsman as it is a time consuming exercise and entails considerable travel for hearing purposes. The consumers suggested that the maximum time period for grievance redressal for critical issues shall be reduced.

Review of Grievance Redressal Mechanism in other countries

5

United Kingdom

Grievance Escalation Structure

Energy Provider
Contact the energy company's customer care service, resolution team or head of relations.

→

Citizens Advice Service
Approach the Citizens Advice consumer service for company's details or any other support. The service lends their expertise as required

→

Ombudsman Services
Approach if the complaint hasn't been resolved to satisfaction after 8 weeks

→

Judiciary
Approach the courts to resolve disputes, though most consumers prefer resolving the escalations at the level of Ombudsman Services.

Key parameters used to measure grievance redressal performance of energy companies

Energy Companies are evaluated on a combination of the following parameters

Communication with the consumer

- Ease in obtaining supplier's contact details
- Ease in contacting the supplier to register complaint
- Clear agreement on nature of grievance and next steps

Response time of resolution

- Being given a timetable for the resolution process, and being updated on a periodic basis

First-contact resolution

- Utility's ability to solve issues at the first point of contact itself, i.e. at the customer care specialist level

Escalation of grievances

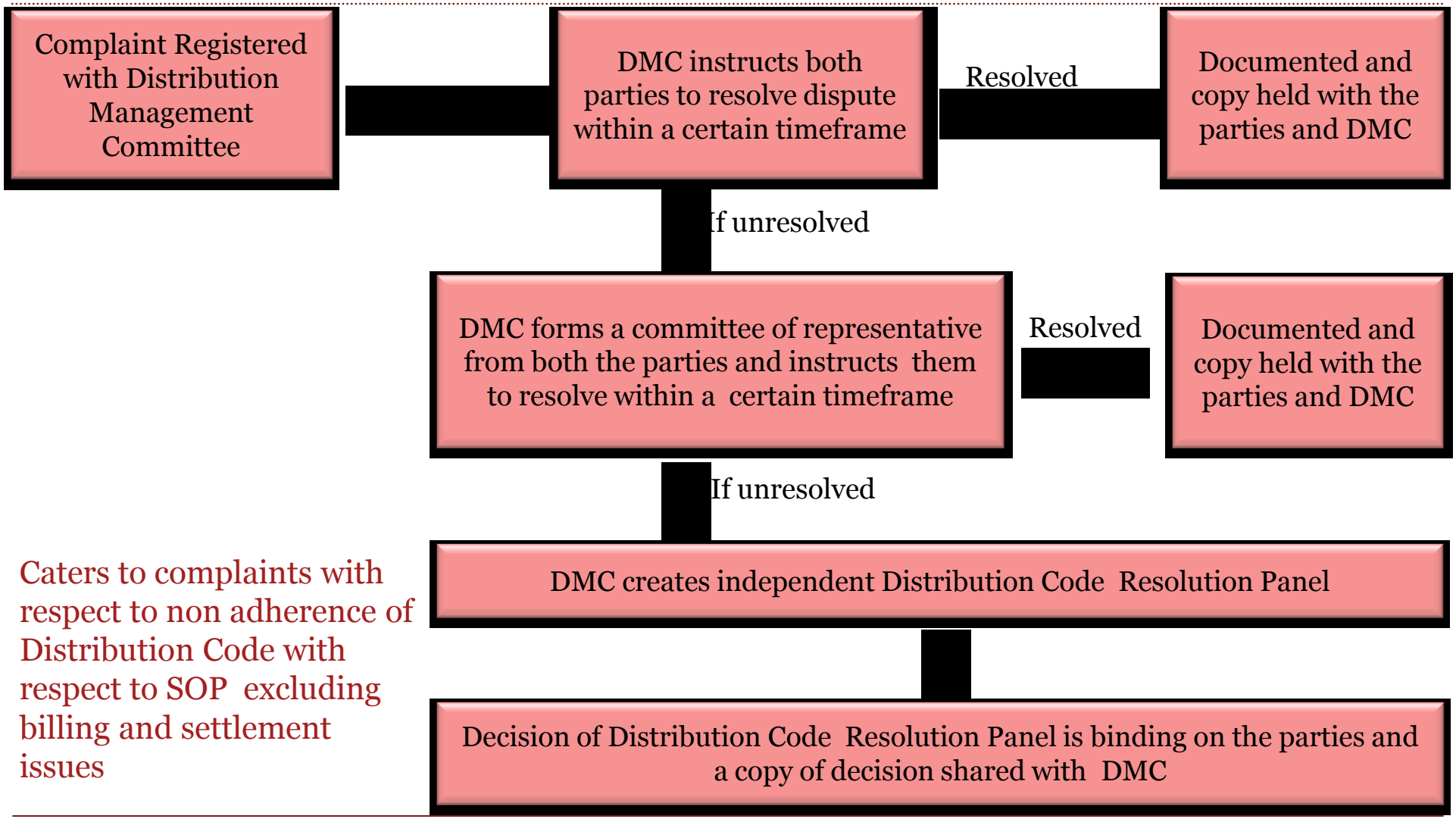
- Frequency of escalations of grievances to Ombudsman on failure or delay by energy supplier

Retention of consumers

- Utility's ability to prevent users from switching to other energy suppliers

Philippines

Grievance Escalation Structure



Caters to complaints with respect to non adherence of Distribution Code with respect to SOP excluding billing and settlement issues

Philippines

Grievance Escalation Structure

For ***metering and billing settlement related issues***, the following is the process for the dispute resolution

Stage 1

- Distributor's contract manager and user try to resolve the dispute
- In case it is unresolved it has to be resolved by the direct supervisors of both the parties

Stage 2

- If no resolution has been achieved at supervisor's level, distributor's position will prevail
- If user disagrees, it can submit request to a settlements arbitrator selected by Market operator

Stage 3

- Arbitrator's decision shall be binding on both the parties
- However in rare cases if a party feels that there is major error in arbitrator's decision, it can appeal to the ERC

Key takeaways from international experience

Takeaways from United Kingdom

Empowerment to Grievance handlers

- Empowering first contact complaint handlers to resolve problems

Performance Incentives

- More efficiency and assurance metrics linked to supplier's performance and incentives

Providing Convenience

- Establishing an app-based service
- A personal timeline to track usage, view billing related information and provide feedback

Takeaways from Philippines

Procedural Efficiency

- Assigning priority to complaints for fast-track resolution – based on certain parameters
- Different mechanism of grievance redressal for billing / metering issues and other types of issues

Improving Transparency

- Improving the look of the bills – Simpler, Cleaner and Easy to understand

Enhance Communication

- Customer confirmation on understanding the problem & knowing the next step
- Receiving updates, Ease of finding the right person to talk to, final response and close of dispute etc

Review of Grievance Redressal Mechanism in other sectors in India

6

Grievance redressal in Banking Sector

Regulatory Framework

Banking Ombudsman Scheme , 2006

Introduction

Under the Banking Ombudsman Scheme of 2006, The Reserve Bank appoints one or more of his officers as the Banking Ombudsman to redress customer complaints against certain deficiency in banking services.

Obligations of banks under the scheme

- The purpose of the scheme and the contact details banking ombudsman are displayed prominently in branches and offices;
- The copy of the scheme is available with the designated officer of the bank for perusal in office premises and also uploaded on the websites;
- A Nodal Officer is appointed at regional/zonal offices who will be responsible for representing the bank and furnishing information to the Ombudsman about the complaints filed against the bank.

Code of Bank' s Commitment to Customers (BCSBI)

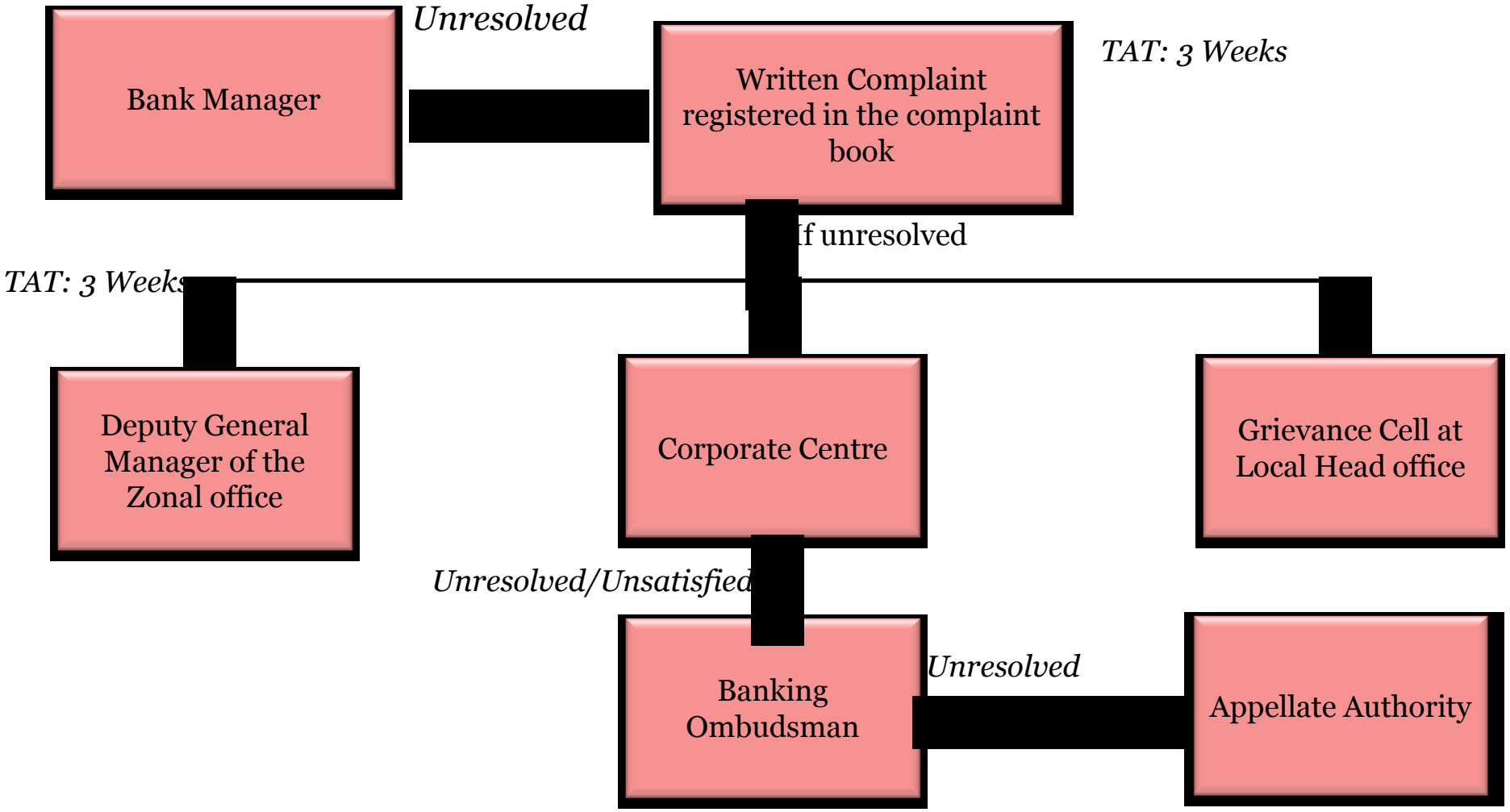
Introduction

- Code of Bank's Commitment to Customers was set up by the Banking Codes and Standard Board of India (BCSBI) in association with the Indian Bank's Association. Ensure energy input points of licensed area are metered
- Code of Bank's Commitment to Customers was set up to ensure minimum standards of banking practices for member banks to follow when they are dealing with individual customers.

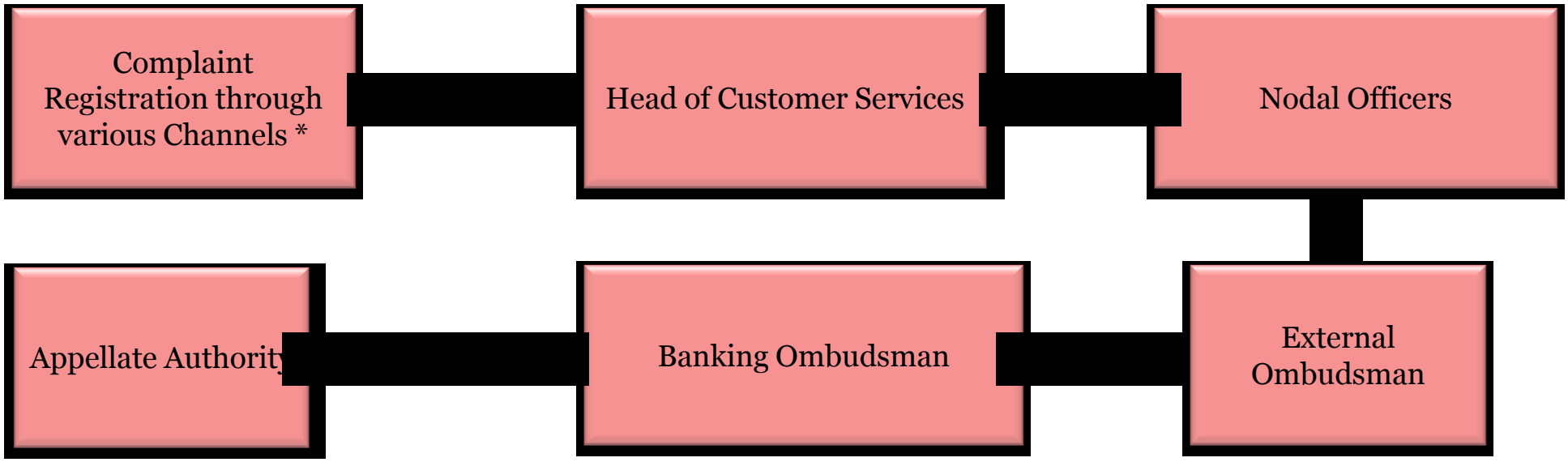
Objectives

The central objective of this code is to promote good banking practices, set minimum standards, increase transparency, achieve higher operating standards and promote a cordial banker-customer relationship which would foster confidence of the common man in the banking system.

Grievance redressal in Banking Sector
State Bank of India



Grievance redressal in Banking Sector
ICICI Bank



Various Channels of complaint registration

- **Customer Care**
- **Branch**
- **Website**

Additional initiative by ICICI Bank to improve consumer grievance redressal

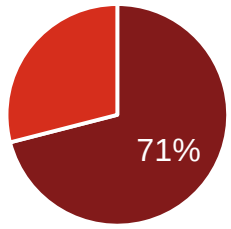
- **Branch Level customer service committee**
- **Standing Committee on customer service**
- **Customer service committee on board**

Grievance redressal in Banking Sector
Snapshot of performance of Banking Ombudsman

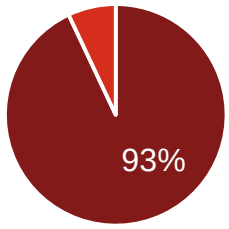
Number Of Complaints	FY 2011-12	FY 2012-13	FY 2013-14
Received during the year	72889	70541	76573
Brought Forward from previous year	4618	4642	5479
Handled during the year	77507	75183	82052
Disposed of during the year	72865	69704	78745
Rate of disposal	94%	93%	96%
Carried forward to the next year	4642	5479	3307

Total Ombudsman across country : 15

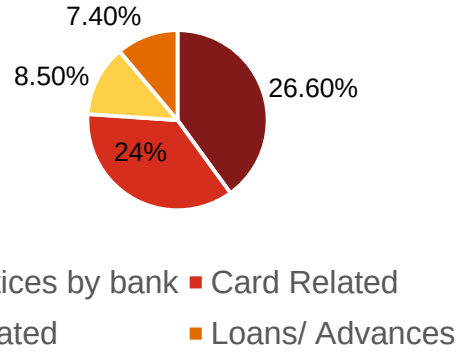
Population wise complaints



Category wise complaints



Nature of complaints



The rate of disposal of cases by the banking Ombudsman has been around 95 % and the complaints from individual customers have been relatively higher

Grievance redressal in Telecom Sector

Regulatory Framework

- The grievance redressal mechanism in the telecommunications sector is regulated by the Telecom Consumers Complaint Redressal Regulations, 2012 and as amended thereof issued by Telecom Regulatory Authority of India (TRAI) for speedy, effective and inexpensive redressal of consumer grievances.
- Regulations applicable to all service providers in the county providing basic telephone services, unified access services, cellular mobile telephone services and internet services

Exemption from Telecom Consumers Complaint Redressal Regulations, 2012

- ISP's having annual revenue < Rs 5 Crore
- Number of subscribers< 10,000

Two Tier Framework

The service provider has to establish an **Advisory Committee i**n each of the service areas to render advice on the appeals filed before the Appellate Authority.

Grievance Redressal in Other Sectors: Key takeaways

The banking sector divides the consumer complaints in to three main categories viz. attitudinal/behavioural, operational aspects, technology related and has different manner of treatment for each of such cases

The interface between the consumer and the service provider has many touch points. Thus customers can register complaints in various ways:
Telephonic, call centre, complaints in person , nodal customer care centres and complaints through email

The internal grievance redressal mechanism of the banking system has various levels of escalations thereby reducing the load on banking Ombudsman. Before representation to banking Ombudsman, the complaint goes through escalations before reaching to head of customer service and nodal officers

In the telecom sector, the service provider has to establish an Advisory Committee in each of the service areas to render advice on the appeals filed before the Appellate Authority. The Advisory Committee helps consumers at the most important stage of registration of complaints before the Appellate Authority

Insurance industry have recently started automation of complaint handling process. The automation is being done using BPM (Business Process Management) based platform. An efficient BPM engine enables organizations to automate their business processes within the time frame of readymade tools and with the flexibility of custom built systems

Recommendations

7

Recommendations ☐The way forward

Improving performance efficiency of redressal bodies

Process Efficiency

- **Prioritization of grievances**
- **Penalty for non-compliance with regulations**

Decentralization of duties

- **Empowering members in decision-making**

Handling rising consumer expectations and grievances

Consumer Awareness

- **Instituting an independent helpline**
- **Establish Consumer Advisory Committees**

Consumer Involvement

- **Improving Communication**
- **Active survey & admittance of grievances**

Key learning from the study

Improving reach of CGRFs will be necessary for all states in the foreseeable future

1. Increasing number of CGRFs in states with large geographical areas and base of consumers. Parameters such as area per CGRF and consumers per CGRF may be benchmarked against other states.

2. New forums may be set up keeping in mind the average distance that consumers would have to travel in order to register a grievance.

3. States can be set appropriate timelines for institution of new CGRFs such that an optimal number of grievances and consumers can be served in the near future.

3. Forum members can conduct more tours to designated areas for faster admittance and resolution of grievances.

4. Ensuring that CGRFs are composed of required members at all times and they conduct the necessary number of hearings.

Key learning from the study

Involving and educating consumers through new initiatives will be essential in improving services in the long run

1. Empowering first consumer contact to resolve simple grievances (especially billing and meter related issues).
2. Funds for increasing consumer awareness shall be earmarked by SERCs/utilities for CGRFs publicizing the process of resolution and relevant contact details.
3. Enabling online submission of grievances in a convenient manner for consumers across regions, and providing status of resolution.
4. Mandating all CGRFs for periodic disclosure of all grievance-related information, trends and decisions.

Key learning from the study

Ensuring independence of working of CGRFs from distribution licensees

1. The regulations shall ensure that the composition and membership of CGRF shall be independent of licensee.
2. Adherence with regulation shall be continuously monitored in form of quarterly reports by distribution licensee to SERC's
3. Office space of CGRF shall be separate from the premise of the distribution licensee to the extent possible
4. Regulations shall ensure financial independence of CGRFs

Recommendations ☐The way forward

Prioritization of grievances

Assigning 'Critical' status to certain complaints, to be granted where exceptional urgency or imminent loss is involved.

1. Grievances regarding disconnection of supply, billing issues with large imminent loss to consumer, and new connections (mandated to be achieved by distribution utilities in a maximum time period)
2. 'Critical' grievances would require redressal within an earlier stipulated time (say, 20 days), and non-critical complaints that are not resolved within stipulated deadlines may be granted the 'Critical' status.

Penalty for non-compliance with regulations

Distribution utilities may be penalized in case of any deviations observed from the regulations

1. Establishment, constitution, composition etc. of CGRFs and Ombudsman, to be monitored and reviewed by the respective SERCs.
2. Periodic disclosure of grievance-related information in the public domain.

Assigning accountability to forum members

Better management and effective decision-making by assigning accountability

1. Responsibilities of each of the members shall be prescribed with respect to attendance, hearing the cases, decision-making, judgment writing, etc.

Recommendations □The way forward

Decentralization of duties

Empowering all CGRF members to conduct various forum activities and make swift decisions would help resolve various types of grievances in the stipulated time period consistently

1. Sittings may be conducted with a quorum of any three members, with two members in case of only non-critical issues (Technical expert mandatory)
2. Critical Issues requires approval of any 3 of 4 (with final approval from Chairman), Non-critical requires any 2 of 4 (Technical expert mandatory in both)

Establishing Consumer Advisory Committees

Consumer Advisory Committees can provide expertise to consumers on the prevalent escalation structures and on representation of grievances to the relevant body

1. Consumer Advisory Committees can tackle grievances on behalf of many consumers, especially rural consumers, and help them maintain evidence for filing and escalation.
2. In cases with significant imminent loss, Consumer Advisory Committees can help consumers obtain interim reliefs if required

Recommendations ☐The way forward

Active survey and admittance of grievances

Conducting scheduled forum tours across designated regions to ensure complete coverage in a one year period, thereby warranting greater admittance of grievances and feedback being from each region

1. Forums may set up camps across the designated region to resolve non-critical issues in a fast-track manner. This process may also help resolve many simple cases without registration.
2. The presence of the technical expert may be necessary for all such tours and approvals.

Improving Communication

To increase awareness levels of consumers, enabling them to be able to locate and understand resolution details conveniently on all communication avenues set forth by utilities and redressal bodies

1. Improving the look and layout of bills to simplify billing information.
2. Providing a standardized layout for bills, websites and mobile applications in the long run.
3. Providing the escalation structure clearly on electricity bills.

Recommendations ☐The way forward

Establishing an independent helpline service for consumer queries

Since consumers frequently experience the need to understand the process of billing, meter reading and other related procedures, an independent helpline can be set up wherein trained helpline executives can answer all the consumer queries

1. Consumers may redirect all such queries to the independent helpline service without the need of finding necessary contact details for getting specific queries answered, or visiting the utilities.
2. Changes in tariff rates, payment procedures, etc. can also be informed by helpline executives.

Facilitating mediation before approaching CGRFs

To ease the burden of resolution on CGRFs, grievances can also be resolved through a process of mediation between consumers and licensees.

1. The process of grievance resolution through mediation has been instituted in countries such as Philippines, where it has proved to be an effective model for swift resolution of grievances.
2. The mediation proceedings can be overseen by CGRFs or SERC to help the concerned consumer and licensee arrive at an agreeable solution.

Thank you

Appendix

8

Cost and Expenses of CGRF

Back

Cost and Expenses	States
Borne by the distribution licensee	Delhi, Gujrat, Haryana, Madhya Pradesh, Punjab
Only determined by the distribution licensee	Karnataka, AP, Uttarakhand, Chhattisgarh

Back

Maximum time period of resolution	States
Within 45 days	Gujrat, AP, Chhattisgarh
Within 60 days	Delhi, Karnataka, Punjab, West Bengal, Uttarakhand, Madhya Pradesh

Independence of CGRF

Back

State	No. of Members appointed by Licensee	No. of Members appointed by the Commission	Independent Members
Delhi	0	3	3 independent member
Gujrat	2	1	1 independent member
Haryana	3	0	No independent member
Karnataka	3	0	1 independent member
Andhra Pradesh	3	0	1 independent member
Madhya Pradesh	3	0	1 independent member
Punjab	3	0	1 independent member
Uttarakhand	3	0	1 independent member
West Bengal	NA	NA	NA
Chhattisgarh	3	0	1 independent member

Tenure of CGRF members

Back

State	Normal term of service	Extended term
Delhi	3 years	No extension
Gujrat	3 years	Extendible by 2 years
Haryana	3 years	No extension
Karnataka	Not mentioned	Not mentioned
Andhra Pradesh	3 years	Extendible by 2 years
Madhya Pradesh	2 years	Extendible by 1 year
Punjab	2 years	No extension
Uttarakhand	3 years	Extendible by 2 years
West Bengal	Not mentioned	Not mentioned
Chhattisgarh	2 years	Extendible by 2 years

Composition of CGRFs

Back

State	Legal Expert	Finance Expert	Technical Expert	Expert in Consumer related matters
Delhi	√	x	√	√
Gujrat	√ (either of two)		√	√
Haryana	√	x	√	√
Karnataka	x	x	√ (two)	√
Andhra Pradesh	√	√	√	√ (co-opted member)
Madhya Pradesh	x	√ (or Commercial)	√	√
Punjab	x	√	√	√
Uttarakhand	√	x	√	√
West Bengal	Not defined	Not defined	Not defined	Not defined
Chhattisgarh	√ (either of two)		√	√

Appeal against the order of CGRF

Back

Appeal against the order	States*
Within 30 days	Delhi, Gujrat, Haryana, Karnataka, Punjab, AP, Uttarakhand, Chhattisgarh
Within 60 days	Madhya Pradesh

**West Bengal allows only a maximum time period of 20 days from the date of order from GRO/CGRO before which the aggrieved consumer has to appeal to Ombudsman*

Appointment of Ombudsman

Back

1. The regulations in the state of Chhattisgarh, Maharashtra, Jharkhand, Haryana, Uttarakhand, Bihar and Orissa Delhi, Haryana, Karnataka, and Punjab have mentioned that Ombudsman shall be appointed by the respective state commissions. However, it does not contain any clarity on the manner in which the Ombudsman will be appointed.

2. The Ombudsman state regulations of states such as Gujrat and Madhya Pradesh and Madhya Pradesh have elaborated the manner in which these appointments have to be done. For instance, Gujrat CGRF regulations outline the formation of a selection committee by the commission consisting of the Chairperson and members for selecting the Ombudsman.

3. The Ombudsman is to be selected by a simple majority and the chairperson of the committee (who is Chairperson of the Commission) shall have a casting vote.

Independence of Ombudsman

Back

State	Independence	Mechanism to ensure independence
Delhi	√	Ombudsman shall not have worked with a distribution licensee since last two years
Gujrat	√	Only retired CE cadre and above of utilities are allowed to apply
Haryana	x	No particular clause to ensure the independence
Karnataka	x	No particular clause to ensure the independence
Andhra Pradesh	x	No particular clause to ensure the independence
Madhya Pradesh	√	Applicants for post of Ombudsman shall not have worked with a distribution licensee since last 1 year
Punjab	x	Commission may designate a staff from the licensee as the Ombudsman
Uttarakhand	√	Applicants not eligible within 2 years of retirement from the services of an electricity utility.
West Bengal	Not mentioned	NA
Chhattisgarh	x	No particular clause to ensure the independence

Tenure of Ombudsman

Back

State	Normal term of service	Extended term
Delhi	3 years	No extension
Gujrat	3 years	Extendible by 2 years
Haryana	3 years	Extendible by 1 year
Karnataka	3 years	Not mentioned
Andhra Pradesh	3 years	Extendible by 2 years
Madhya Pradesh	2 years	Extendible by 2 years
Punjab	3 years	No extension
Uttarakhand	3 years	Extendible by 1 year
West Bengal	Not mentioned	Not mentioned
Chhattisgarh	2 years	Extendible by 2 years

Cost & Expenses of Ombudsman

Back

State	Borne by Commission	Out of funds created under section 103 of EA act 2003	Borne by the Distribution licensee
Delhi	x	x	√
Gujrat	√	x	x
Haryana	√	x	x
Karnataka	x	√	x
Andhra Pradesh	√	x	x
Madhya Pradesh	√	x	x
Punjab	x	x	√
Uttarakhand	x	x	√
West Bengal	Not mentioned	Not mentioned	Not mentioned
Chhattisgarh	√	x	x

Time period for issuance of Order of Ombudsman

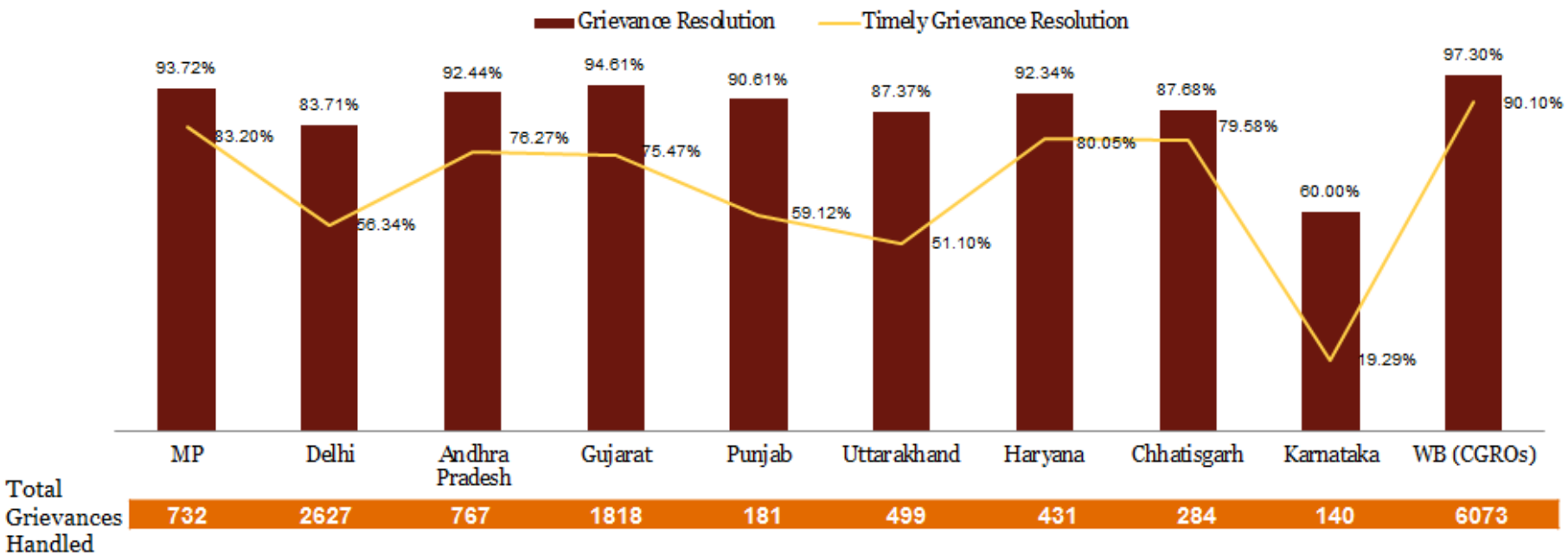
Back

Time period of resolution	States
Within 2 months	Gujrat, Karnataka, Andhra Pradesh
Within 3 months	Delhi, Haryana, Madhya Pradesh, Punjab, Uttarakhand, Chhattisgarh

Analysis: CGRF & Ombudsman of select ten states

CGRF Performance Snapshot – 2013-14

Back



Key Observations

1. WB (CGROs), MP and Haryana top performers in resolving grievances in an efficient and timely manner, followed by Gujarat, AP & Chhatisgarh.
2. Delhi, Punjab & Uttarakhand striving for timely resolution, while Karnataka is struggling to manage a relatively smaller base of complaints.

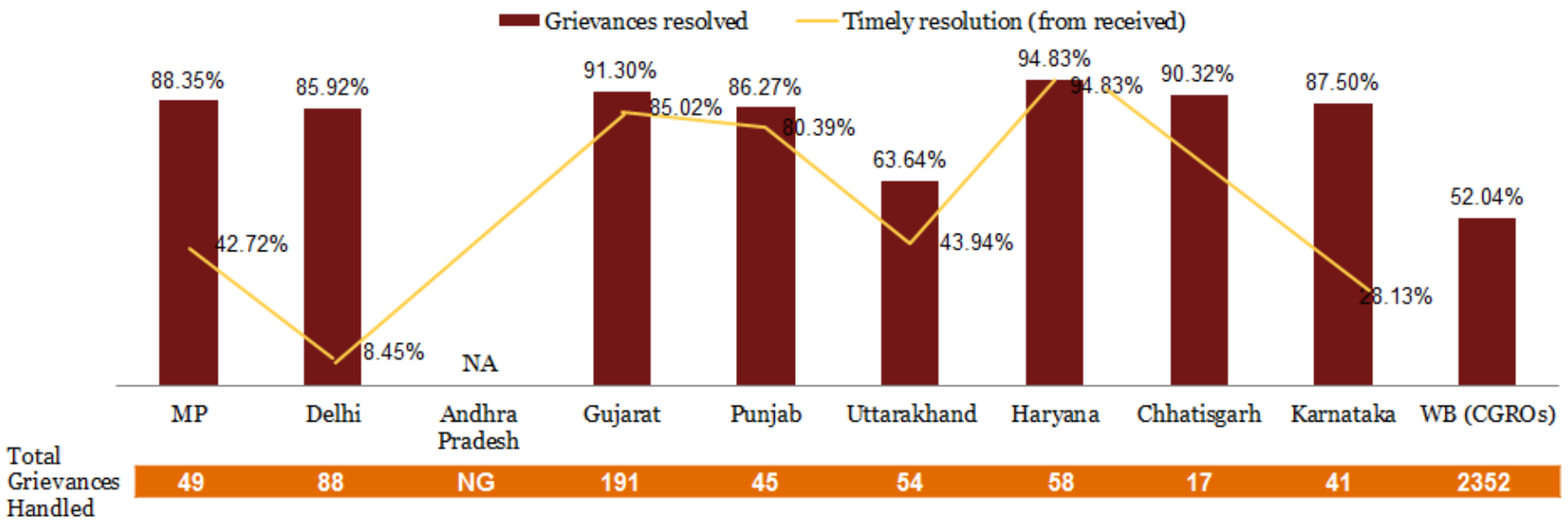
Key Considerations

1. Delhi faces a larger number of complaints than other states
2. WB has different structure of GRO's as opposed to CGRF
3. Karnataka has a CGRF in every revenue district from Q3, 2013-14 onwards.

Analysis: CGRF & Ombudsman of select ten states

Ombudsman Performance Snapshot – 2013-14

Back



Key Observations

1. Gujarat, Chhatisgarh, Haryana, Delhi and Karnataka have been most successful in grievance resolution, while Punjab, Uttarakhand, Madhya Pradesh and West Bengal have achieved moderate success in the overall efficiency of resolution.
2. Gujarat, Punjab and Haryana have been most successful in resolving grievance s in a timely manner, while Delhi, Madhya Pradesh, Karnataka and Uttarakhand have not been able to deliver decisions consistently within the stipulated period of resolution.
3. Timely resolution data not available for AP, Chhattisgarh and WB for Ombudsman

Analysis: CGRF & Ombudsman of select ten states

Effect of Ombudsman sittings – 2013-14

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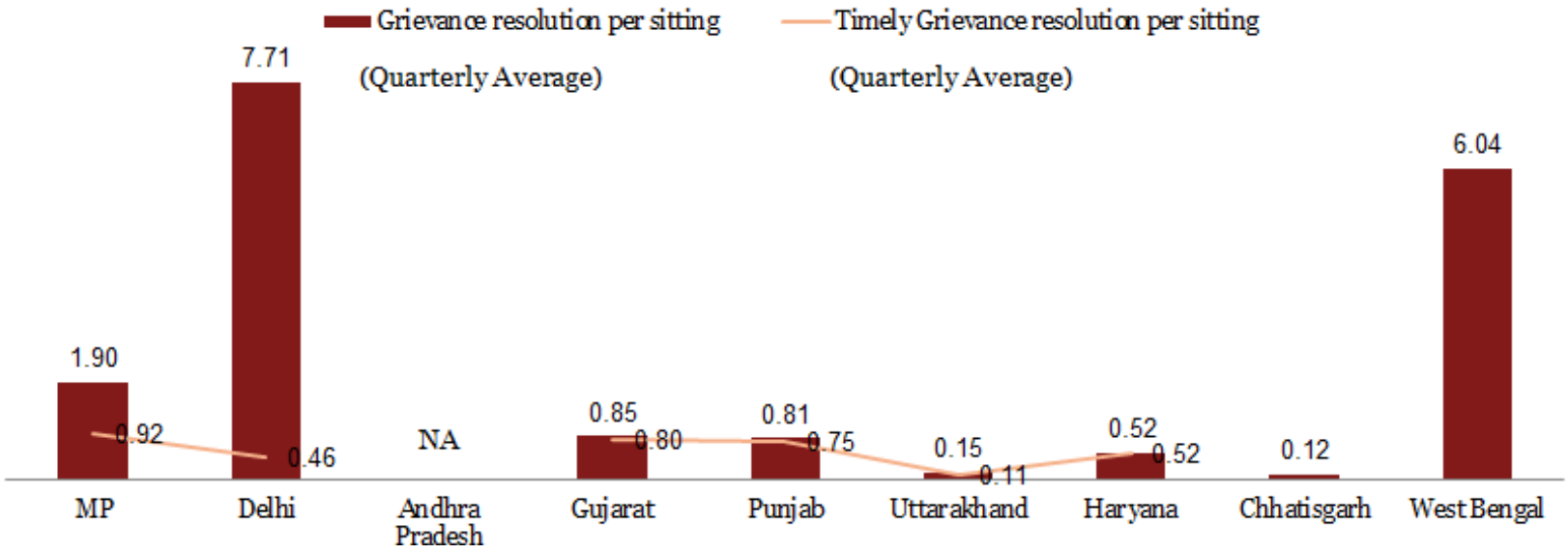

*NA – Data Not Available

Key Observations

1. Number of sittings seem to positively influence timely redressal of grievances, and seems necessary in states such as Delhi and MP with a large base of complaints.
2. Constitution of CGRFs may be revised to ensure regular meetings amongst members who are not critically involved in other operations. Final approval of critical issues may rest with the chairman of CGRF.

Analysis of CGRF and Ombudsman (1/4)

CGRFs Category-wise resolution – 2013-14

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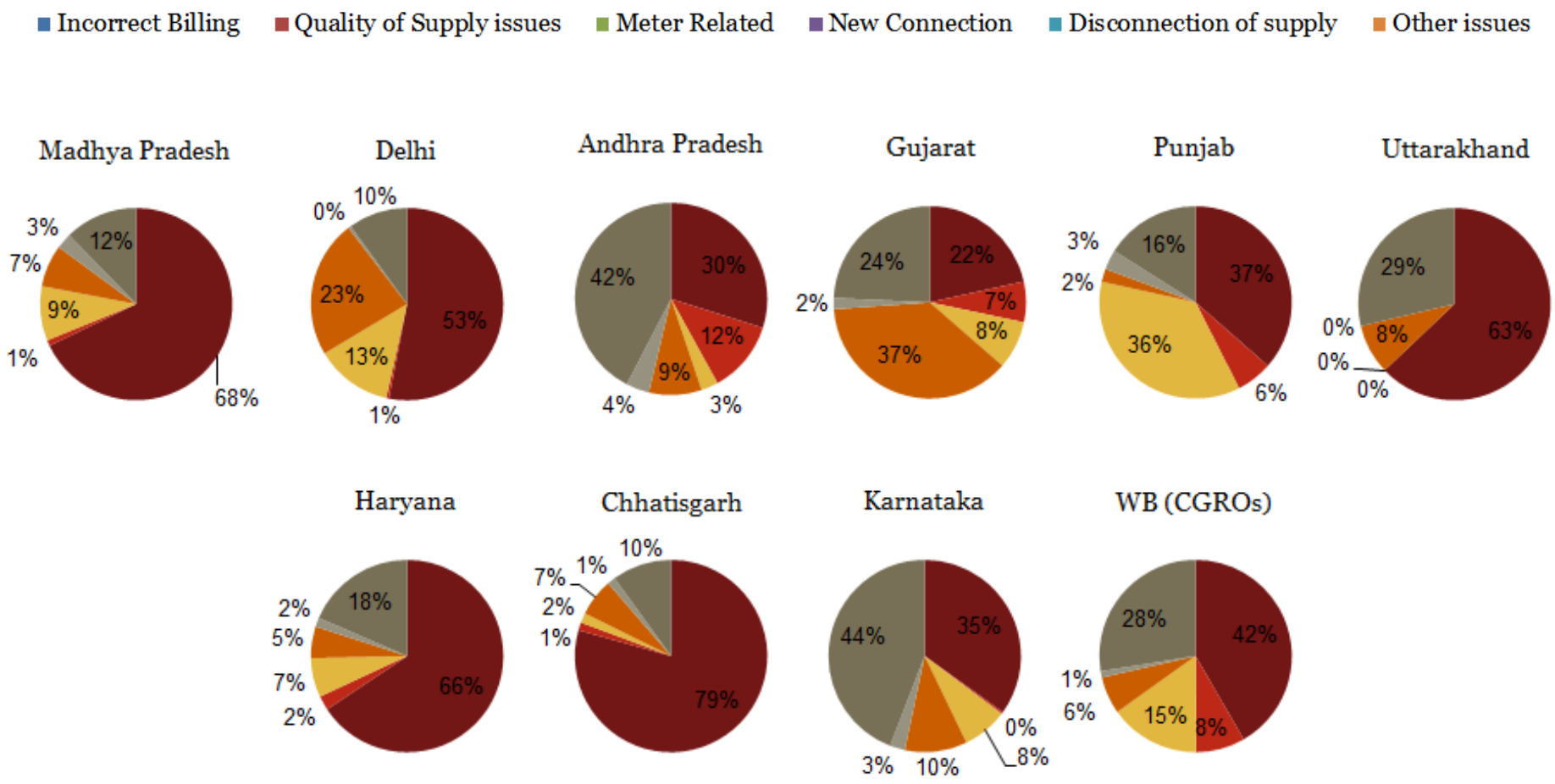

Analysis of CGRF and Ombudsman (2/4)

CGRFs Category-wise resolution – 2014-15

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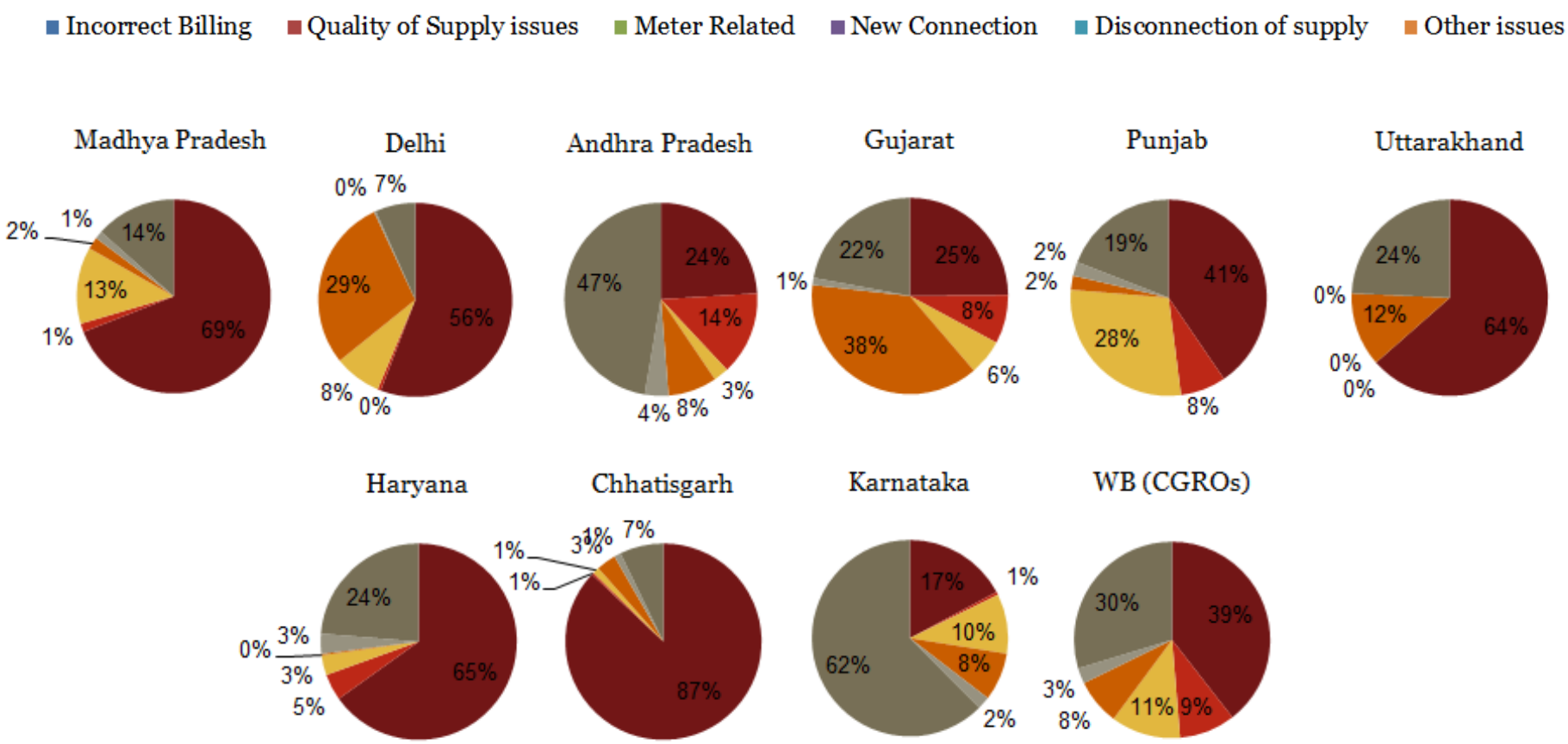

Analysis of CGRF and Ombudsman (3/4)

Ombudsman Category-wise resolution – 2013-14

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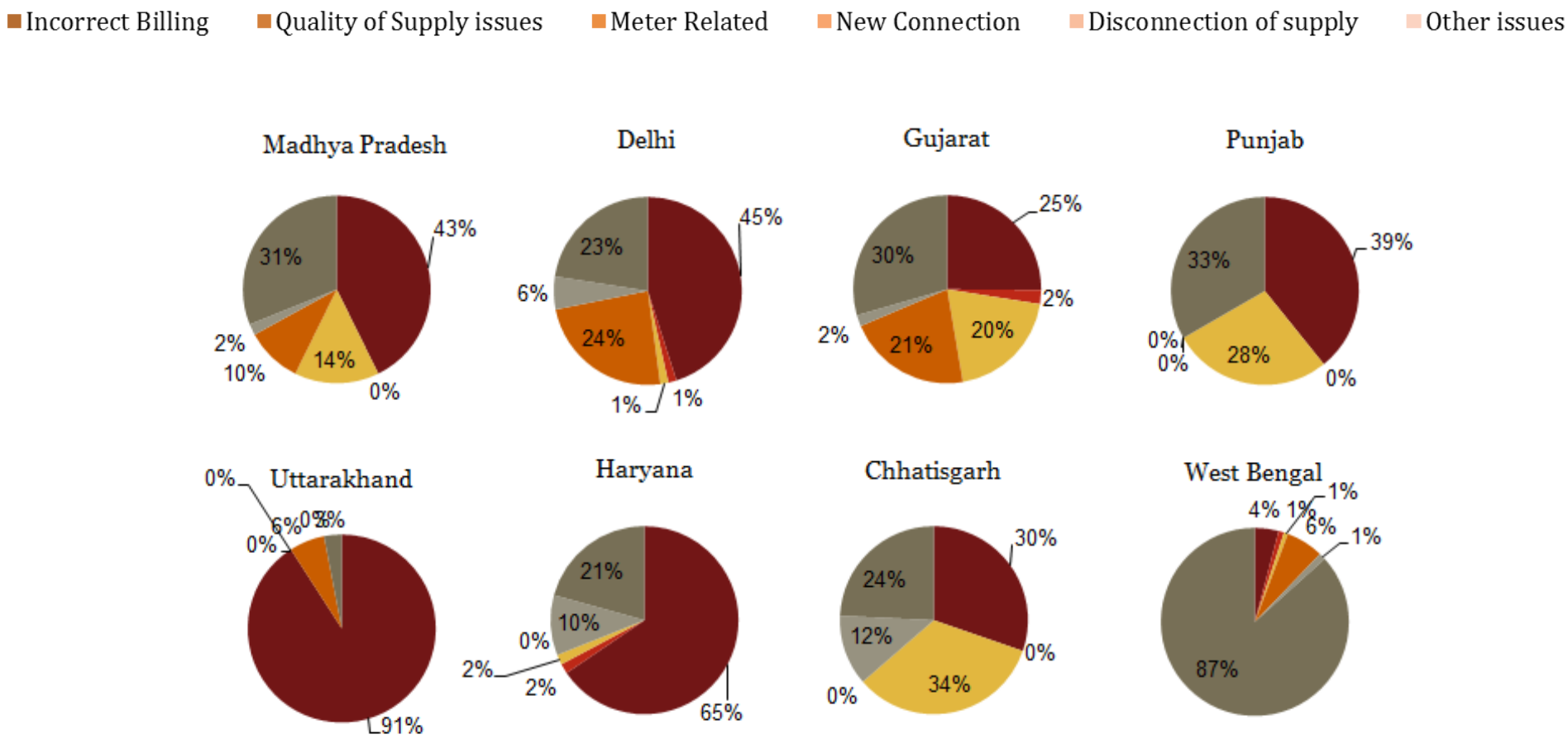

Analysis of CGRF and Ombudsman (4/4)

Ombudsman Category-wise resolution – 2014-15

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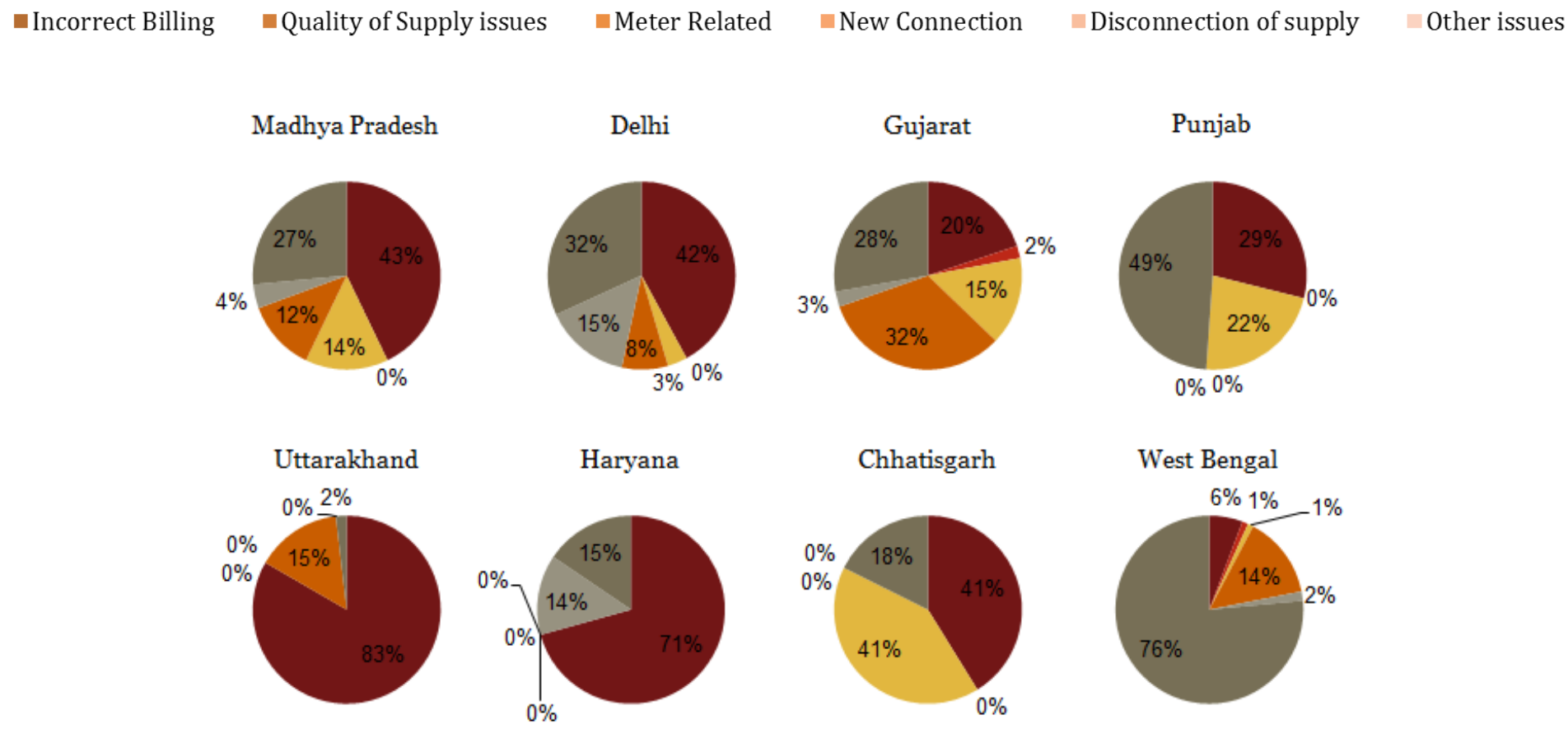

Analysis: CGRF & Ombudsman of select ten states (5/8)

Category-wise resolution by CGRFS in 2014-15

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Key Observations

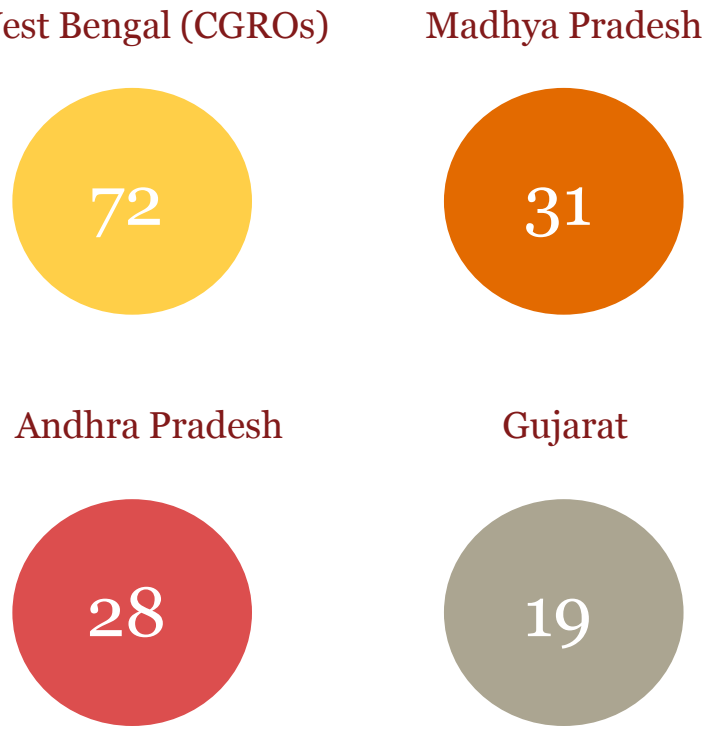
Disconnection grievances are often escalated by forums due to misuse of granted connections by certain users.

1. Punjab, Karnataka, West Bengal and Andhra Pradesh have faced many escalations of grievances regarding disconnections of supply.
2. West Bengal has addressed all disconnection grievances within the stipulated period.
3. Uttarakhand did not receive any grievances regarding disconnection of supply in 2013-14 and 2014-15.

Key Reasons

1. Suspected theft of electricity forces the utility to isolate the concerned consumers and disconnect their supply.
2. Many consumers also misuse subsidies to divert connections for other usages.

Grievances received by CGRFs regarding disconnection of supply (2014-15) (Nos.)



Ombudsman escalations

Ombudsman Category-wise escalations – 2013-14

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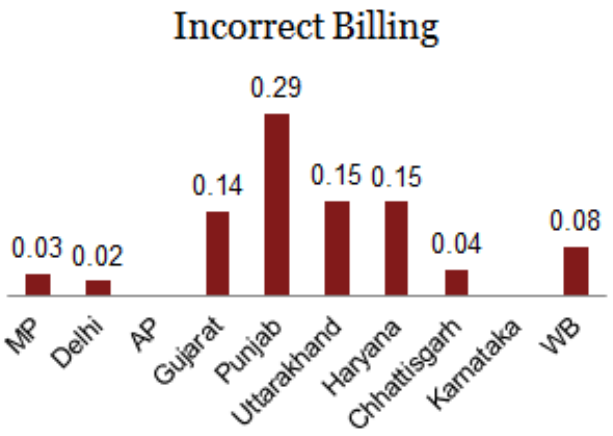

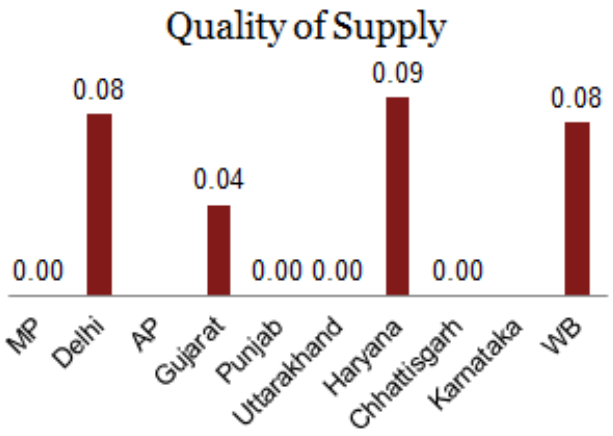

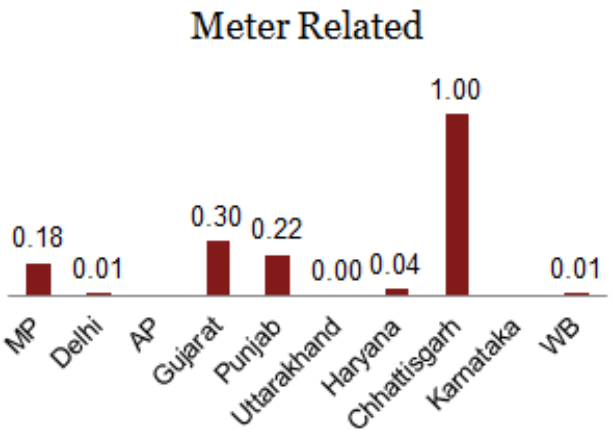

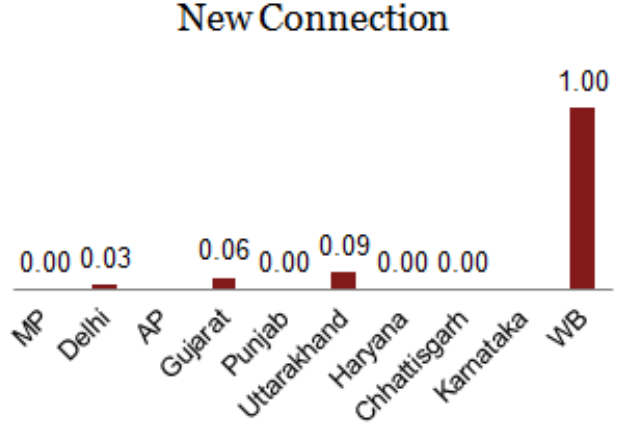

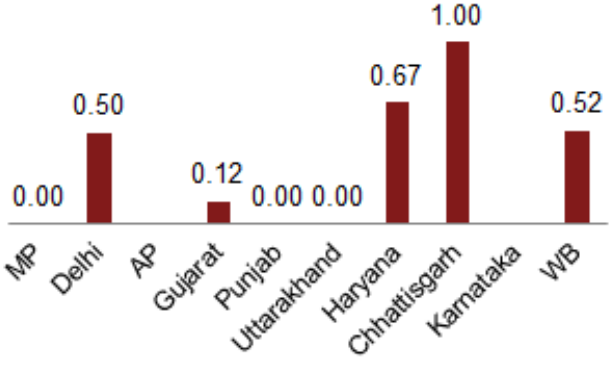

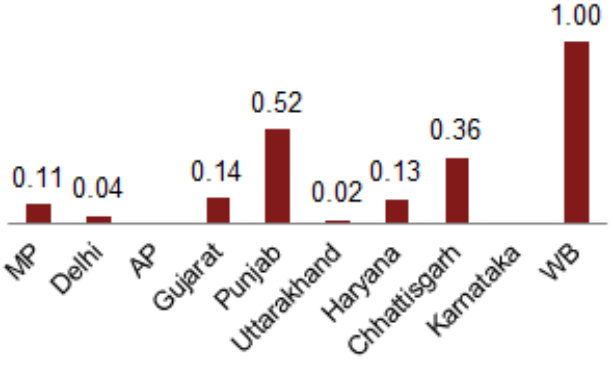

Ombudsman escalations

Ombudsman Category-wise escalations – 2014-15

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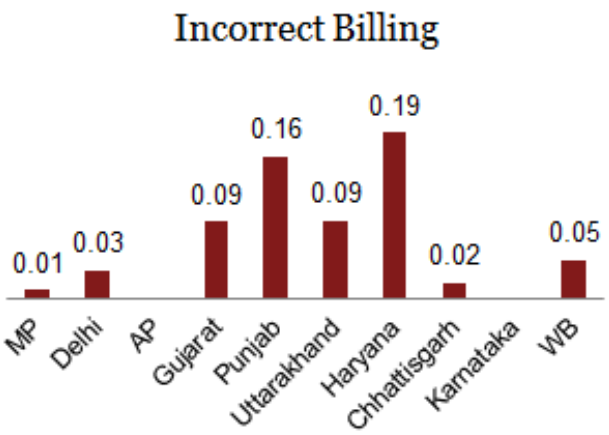
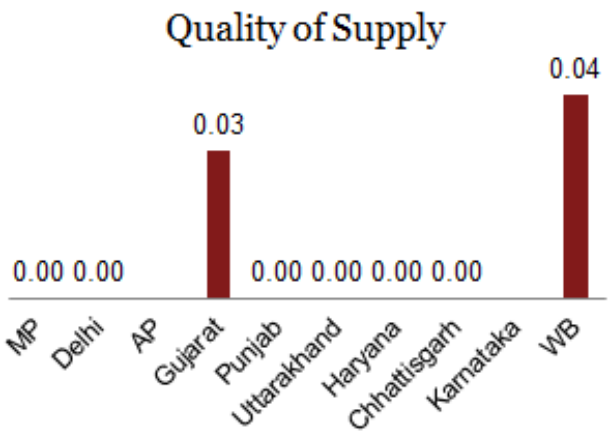
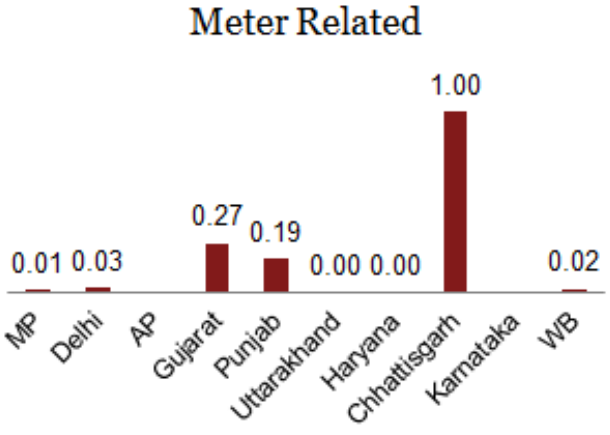
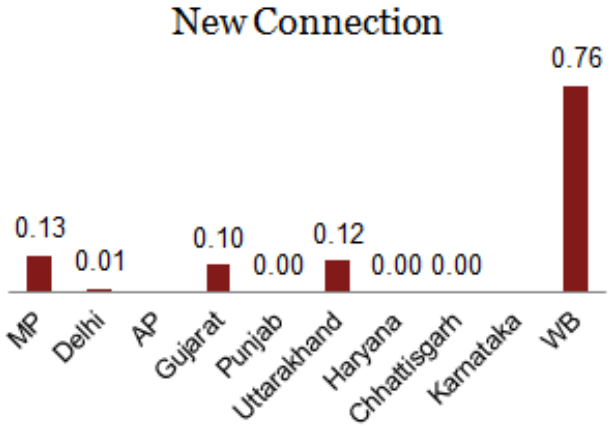
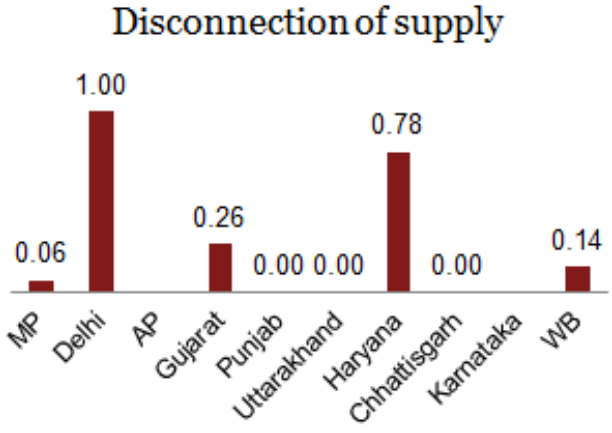
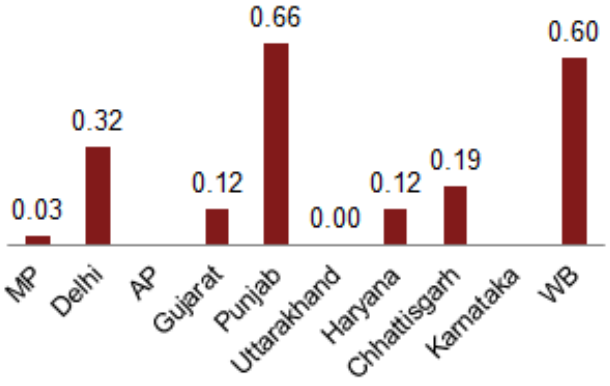








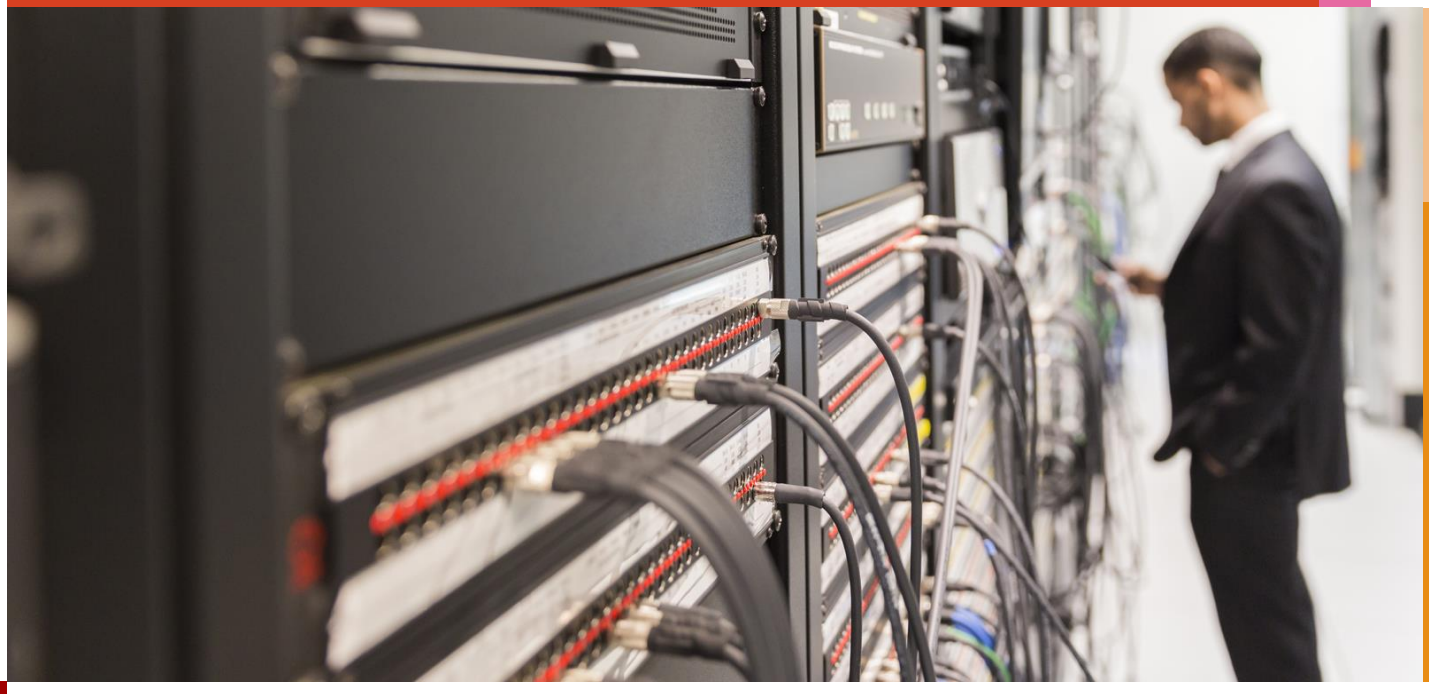




Business Unit

Best practices and strategies for distribution loss reduction

Forum of Regulators



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April 2016

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Structure of the presentation

Understanding distribution loss Components

- Various components of AT&C losses
- Understanding of AT&C losses

Review of Indian Experience

- Selection of 10 states
- Secondary research of key initiatives taken by select power distribution utilities
- Primary data collection
- Review of loss reduction initiatives across states

Review of International Experience

- Finalizing countries for study of loss reduction practices
- Secondary research on loss reduction initiatives
- Listing down of relevant loss reduction practices

Analysis of loss reduction initiatives

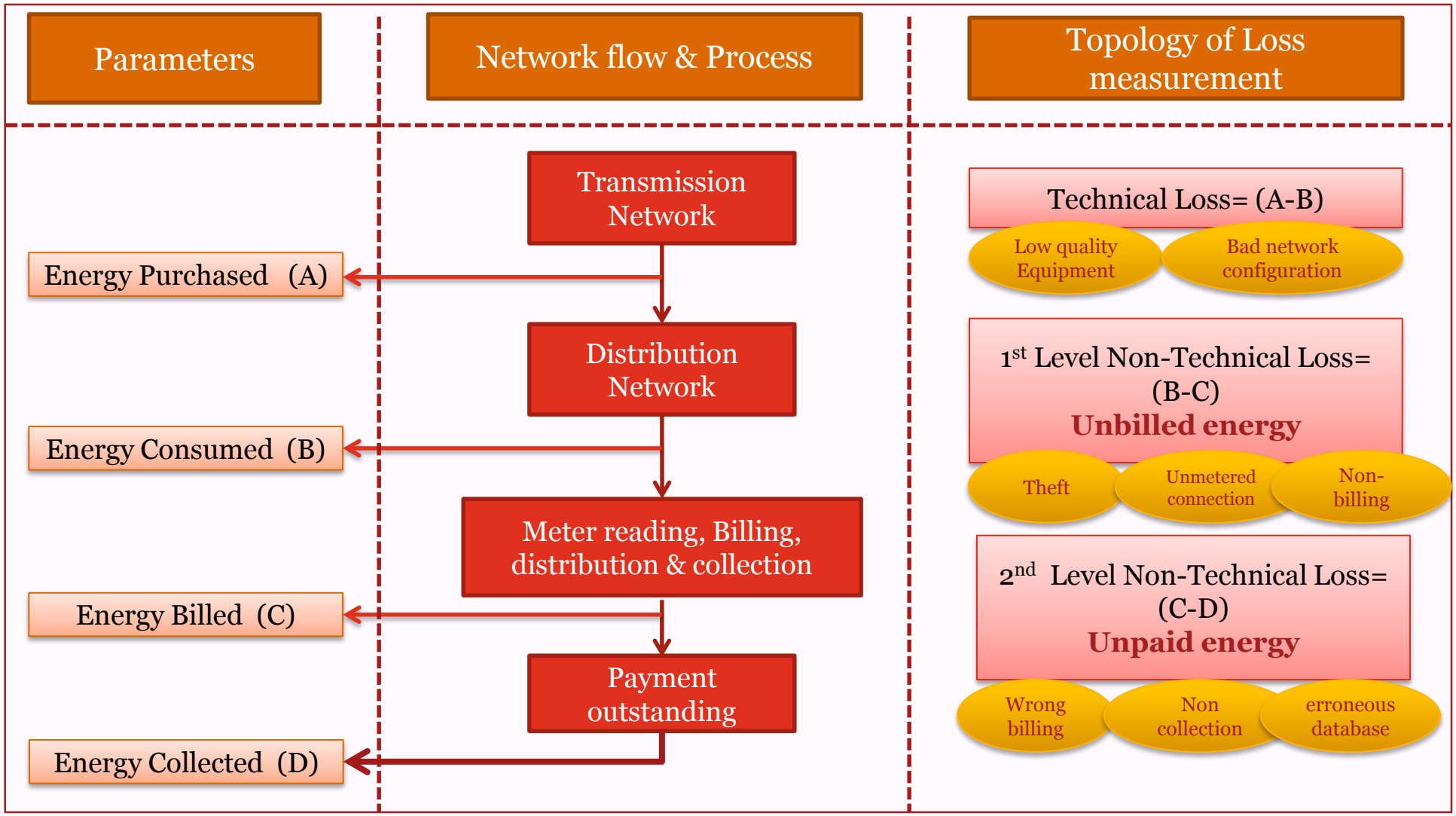
- Level 1 Analysis – Overall Analysis of Loss Reduction initiatives: classifying initiatives in 4 broad categories based on the no of states adopted for the same.
- Level 2 Analysis – State Specific analysis: analysis of which types of initiatives should be taken for which type of losses

Loss Reduction Strategy

- Loss Measurement ad Loss Verification
- Energy Audit and analysis
- Planning, execution and improvement of loss reduction strategies

Section 1
Understanding distribution loss components

Distribution System Losses : A Snapshot



Loss measurement: Components

Loss	Process	Design/ specification/ procurement/ process related error	People/training/capacity related concerns
Technical	Network configuration	• Non-standardized network planning leading to high feeder lengths, over-loading etc. • Equipment not as per prescribed quality • DT transformation loss • HT/LT line loss	• Poor workman ship eg. Jointing • Deviating from standard design norms to accommodate specific requests
	Lack of maintenance	• Absence or low level of maintenance process leading to leakage of electricity through faulty equipment	• Poor or no maintenance practice
Internal Non-Technical	Connection management	• Meter not installed • Ghost consumers	• Incorrect billing records • Collusion with consumer to update improper billing records
	Meter reading	• No/incorrect meter reading due to meter inaccessibility etc. • Absence of field quality check on reading records • Meter defective • Faulty meter reading equipment	• Wrong meter reading • Incorrect posting of meter reading • Intentional recording of wrong reading
	Billing	• Bill generated on average basis due to delayed/erroneous readings • Bill not delivered on time • Inadequate billing logic of the IT application	• Error in billing database
	Field vigilance	• Limited or no field vigilance for power pilferage • Hostile consumer resulting in threat to staff safety	• Wrong billing of theft cases • Staff collusion with conniving consumers
External Non - Technical	Collection & credit management	• Limited avenues for collections • Inadequate defaulter follow-ups	• Improper posting of collected revenue

Section 2
Distribution loss reduction initiatives followed in Indian states

Approach adopted for Indian review

Selection of states

10 states are identified and shortlisted based on their loss reduction in the past, current loss levels of utility and the initiatives taken up by the utility to reduce losses

10 best states selected for detailed study →

Data Collection

Secondary Research

An exhaustive secondary research was conducted to understand the key initiatives implemented for distribution loss reduction across states

Primary Research

Primary data was collected from various state utilities

Click here for questionnaire

Aspects of loss reduction initiatives identified →

Data Analysis

- List of all loss reduction initiatives across states was prepared
- Case studies for select states discussed for their loss reduction initiatives

State wise Loss reduction initiatives classified under types of initiatives

Selection of States | Framework for state selection

Step 1: Geographical Representation

- 4 regions – North, South, West, East & North East
- At least 2 states have been selected out of each region

Step 2: Initial shortlisting criteria

States in each region have been shortlisted on following criteria:

- **AT&C loss reduction (C1)** – States with AT&C loss reduction > 10% since 2003 till FY 13
- **Present AT&C loss level (C2)** – States having present AT&C loss (FY13) less than 25%
- **% Agriculture sales (C3)** – States with agriculture category sales (FY13) > 20% of total sales mix
- **% Industrial sales (C4)** – States with industrial category sales (FY13) > 30% of total sales mix

Step 2: Key initiatives by states

The key initiatives taken by each state for distribution loss reduction are compiled. In case a state is shortlisted in couple of criteria but has fewer loss reduction initiatives implemented, preference has been given to the state have multiple loss reduction initiatives implemented with equal or less number of shortlisting criteria

Step 2: Final selection

The states scoring maximum on shortlisting criteria along with multiple loss reduction initiatives has been selected for the study.

Selection of States | Selected states (1/2)

Region	State	Major schemes for loss reduction	Reason/ remarks	Selected Discom
Western Region	Gujarat	• Implementation of Gram Jyoti Yojna (Feeder segregation) • Deployment of specially designed transformers	Qualifies in all four criteria and multiple loss reduction initiatives	MGVCL
	Madhya Pradesh	• Robust energy accounting at feeder level and DT level • Business process re-engineering (meter reading, vigilance enforcement and arrear management) • Implementation of AMR system	Qualifies in two criteria and multiple loss reduction initiatives	MPMKVVNL
	Maharashtra	• Feeder separation, 100% feeder metering, feeder level consumer mapping • IT application based meter reading , bill distribution, bill collection	Qualifies in all four criteria and multiple loss reduction initiatives	MSEDCL
Northern Region	Delhi	• Consumer indexing • DT level energy audit • Implementation of HVDS system • Installation of LT ABC • Process re-engineering of revenue management activity	Qualifies in two criteria, only state with private Discoms and multiple loss reduction initiatives	BSES YPL
	Uttarakhand	• Double metering of high value consumers • Replacement of defective meters • Deployment of Key Consumer Cell	Qualifies in three criteria and multiple loss reduction initiatives	UPCL
	Punjab	• Feeder segregation • Vigilance and theft control • Meter replacement • Installation of LT ABC	Qualifies in three criteria and multiple loss reduction initiatives	PSPCL

Selection of States | Selection states (2/2)

Region	State	Major schemes for loss reduction	Reason/ remarks	Selected Discom
Eastern Region	Assam	• Collection based DF at Feeder/DT level • DT level performance improvement scheme • HT consumer management application	Qualifies in one criterion and multiple loss reduction initiatives	APDCL
	Jharkhand	• Appointment of Distribution franchisee • Installation of LT ABC and introduction of spot billing	Qualifies in two criteria and multiple loss reduction initiatives	JSEB
Southern Region	Andhra Pradesh	• Feeder segregation • Implementation of HVDS system • 100% Consumer and Feeder metering • Deployment of IT tools (Consumer analysis tool, Monitoring and audit system etc)	Qualifies in two criteria and multiple loss reduction initiatives	APSPDCL
	Kerala	• Replacement of meters • 100% feeder and DT metering • Energy audit at DT level	Qualifies in three criteria and multiple loss reduction initiatives	KSEB

Data Collection

Internal Aspects *(implemented by utility)*

Governance - in order to ensure proper implementation of various loss reduction initiatives, several employee incentive schemes and vigilance initiatives are adopted under this aspect

Administrative – in order to speedily dispose off cases of thefts and to enforce laws and regulations, strict administrative measures like dedicated police or judicial courts are adopted

Process Strengthening – in order to realistically assess losses and identify main reasons for losses, process improvement initiatives are required such as regular energy audits

Soft initiatives – in order to encourage customers to reduce theft and collection losses, the state governments can take certain soft initiatives like interest or penalty waiver schemes

Network Strengthening – the aim of network strengthening initiatives is to identify weak links in the distribution network and improving upon them to draw maximum benefits out of least possible resources

External Aspects *(enforced by regulators/govt.)*

Competition promotion – competition in the market encourages efficiency improvement. Each market player would want to reduce its losses and pocket a larger share of profits gained due to loss reduction over and above the regulated figures.

Regulatory – in order to prevent consumers from paying for inefficiencies of utilities in reducing losses, the SERCs introduce certain restrictions on loss levels while designing tariffs or approving capex plans of utilities. This in turn puts pressure on utilities to improve loss levels.

Government support – for several initiatives, financial support is required from state governments in terms of funding for projects or timely settlement of utilities' dues.

Loss reduction initiatives across aspects

Microsoft Excel Worksheet

Based on review of loss reduction initiatives adopted in various states, the following initiatives under each aspect can be identified -

Aspect	Major State	Description of loss initiatives under respective aspect of loss reduction
Process Strengthening	All	Major initiatives undertaken by states fall under the Process Strengthening aspect of initiatives, wherein improvements were made in the IT applications, business processes, energy accounting, replacement of meters and MIS based reporting of business parameters
Network Strengthening	All	Over the years with the implementation of various capex plans to improve the network availability and reliability, improvements have also been seen in loss levels. Major initiatives taken up in this aspect has been improving HT:LT ratio and substation DT augmentation
Governance Framework	Maharashtra, Delhi, Assam & MP	While several initiatives exist under the aspect of Governance Framework, the adoption has majorly been in states of Maharashtra, Delhi and Madhya Pradesh. Setting up of a central level vigilance team has been the most popular initiative adopted in all states except Jharkhand
Administrative initiatives	Punjab, Maharashtra & Delhi	Dedicated police stations and courts were setup in Punjab, Maharashtra , Delhi and Assam
Regulatory initiatives	Maharashtra	Initiative of Loss level based capex plans has been adopted in all states while the states of Punjab and Maharashtra also determine tariff based on loss levels
Competition Promotion initiatives	Uttarakhand, Maharashtra, Delhi, Assam, MP	While Open Access has been implemented in all states, the consumer shift to open access ha been minimal due to high cross subsidy surcharges and limitations in physical network. Introduction of Distribution Franchise or private distribution companies has been implemented in major states except Punjab and Kerala.
Government Support	Maharashtra, Delhi, Assam & MP, Punjab	In order to improve the collection efficiencies of utilities, the most of the states offer direct subsidy on the energy sales of agricultural and below poverty line consumers.
Soft Initiatives	Maharashtra	Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc initiatives have also been implemented in various states from time to time.

Section 3
Review of International Experience

Selection of countries for international review

The first and foremost criterion of selection of a country is implementation of successful loss reduction strategies/initiatives along with availability of data. The other criteria for selection of a country are

- Population;
- GDP per capita;
- Energy consumption per capita; etc.

Name of the Country	Loss reduction initiatives	Population (Mn)	GDP per capita	Per capita electricity consumption
Iran	√	77.45	4763.07	2194.79
Uganda	√	37.58	571.85	65.90
Oman	√	3.63	21944.90	4964.16
Brazil	√	200.40	11207.58	2198.96

Pre requisites

- Similarity of countries to Indian context and data availability
- Availability of data regarding loss management

International Review

Technical loss reduction		**Oman**	**Iran**	**Brazil**	**Uganda**
Network Redesign and upgradation	Load Balancing	√	√	×	√
	Network Reconfiguration	√	√	√	√
	DT Management	√	×	×	×
	Power Factor Improvement	√	√	×	√
Non- technical loss reduction					
Energy Accounting	100% Metering	√	√	√	√
	Replacement of Defective Meters	×	×	×	√
Meter Reading	AMR/HHD	×	√	×	√
	Smart Metering	√	√	×	√
Billing	Spot Billing	×	×	×	×
	Appointment of MBC Franchisee	×	×	×	×
Collection Efficiency	Increase in avenues	×	×	√	√
	Increase in Modes	×	×	√	√
Soft Initiatives	Community Campaigns	√	×	√	×
	Other initiatives	×	×	×	×
Impact		Annual saving of ~ USD 5 mn	Losses from 23.17% to 3.85% in just one year	Improved collection efficiency & avg electricity consumption in pilot area	Losses from 35% to 30% in one year

Section 4
Analysis of loss reduction initiatives

Level 1 Analysis - Broad classification of loss reduction initiatives (1/2)

Initiative Name	No. of State Implemented
Loss based capex plans	10
Strengthening of Energy accounting infrastructure - 100% consumer metering	10
Replacement of defective meters and electromechanical meters	10
Improving HT:LT ratio	10
Substation/DT augmentation	10
Central level vigilance team	9
Implementation of IT application in MBC activities (AMR/HHD/e-mail, sms based intimation)	9
MIS based periodic reporting of unit wise business parameters	9
Installation of LT ABC	9
Strengthening of Energy accounting infrastructure - Feeder metering	8
Strengthening of Energy accounting infrastructure - DT metering	8
Introduction of private participation - DF initiatives/ Privatisation	7
Constitution of loss monitoring, energy audit etc committee/cells	6
Outsourcing strategy and implementation	5
Segregation of feeders/Bifurcation of feeders	5
Implementation of HVDS system	5
Performance monitoring and review	5
Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc	5

Must have Initiatives: initiatives adopted by 8 or more utilities out of 10 selected utilities

Strongly desirable initiatives: initiatives adopted by 5 to 7 out of 10 selected utilities

Level 1 Analysis - Broad classification of loss reduction initiatives (2/2)

Initiative Name	No. of State Implemented
Dedicated police stations and staff	4
Employee capacity building with focused programs	4
Implementation of IT application in network management activities (SCADA, DMS, OMS etc)	4
Timely payment of government dues	4
Consumer communication on loss reduction	4
Loss reduction based incentivisation mechanisms	3
Nomination of feeder managers	3
Dedicated field level loss management roles	3
Equity injection	3
Customer satisfaction program	3
Legal framework for employee penalisation or non-achievement of loss reduction target/ not following the prescribed procedure	2
Loss level based tariff design	2
Re-engineering of business processes with technological advancement	2
Dedicated courts	1
Theft reporting consumer incentive schemes	1
Employee incentive schemes	1
Engagement of local groups - Panchyat/Ex Service League for MBC management	1
Transformer Management System	1
Loss reduction focused clauses in Supply Code/ Grid code	0
Deployment of Third party monitoring body at circle level	0
Public communication/"Minister is role model" approach	0

Good to have initiatives: initiatives adopted by 3-4 out of 10 selected utilities

Other initiatives: initiatives adopted by 2 or less no. of utilities out of 10 selected utilities

Level 2 Analysis - State specific analysis of loss reduction initiatives

*F*or devising an overall loss reduction strategy, loss initiatives need to be identified from the existing list of initiatives which take care of the following three aspects:

Targeted type of losses

	FY10 Loss	Target loss	States
A	0-15%	Technical	Gujrat, Andhra Pradesh
B	16-25%	Commercial	Uttarakhand, Punjab, Mah, Delhi, Kerela,
C	> 26%	Theft	Jharkhand, Assam, Madhya Pradesh

Based on the initial loss levels of the state i.e. in FY10, it can be ascertained whether the loss reduction initiatives were targeted towards which type of losses

Targeted Consumer Category

	HT/LT sales	Target loss	States
I	0 - 80%	LT consumers	Punjab, Delhi, Kerela, Assam, Jharkhand, Andhra Pradesh
II	> 80%	HT consumers	Uttarakhand, Gujrat, Mah, Madhya Pradesh

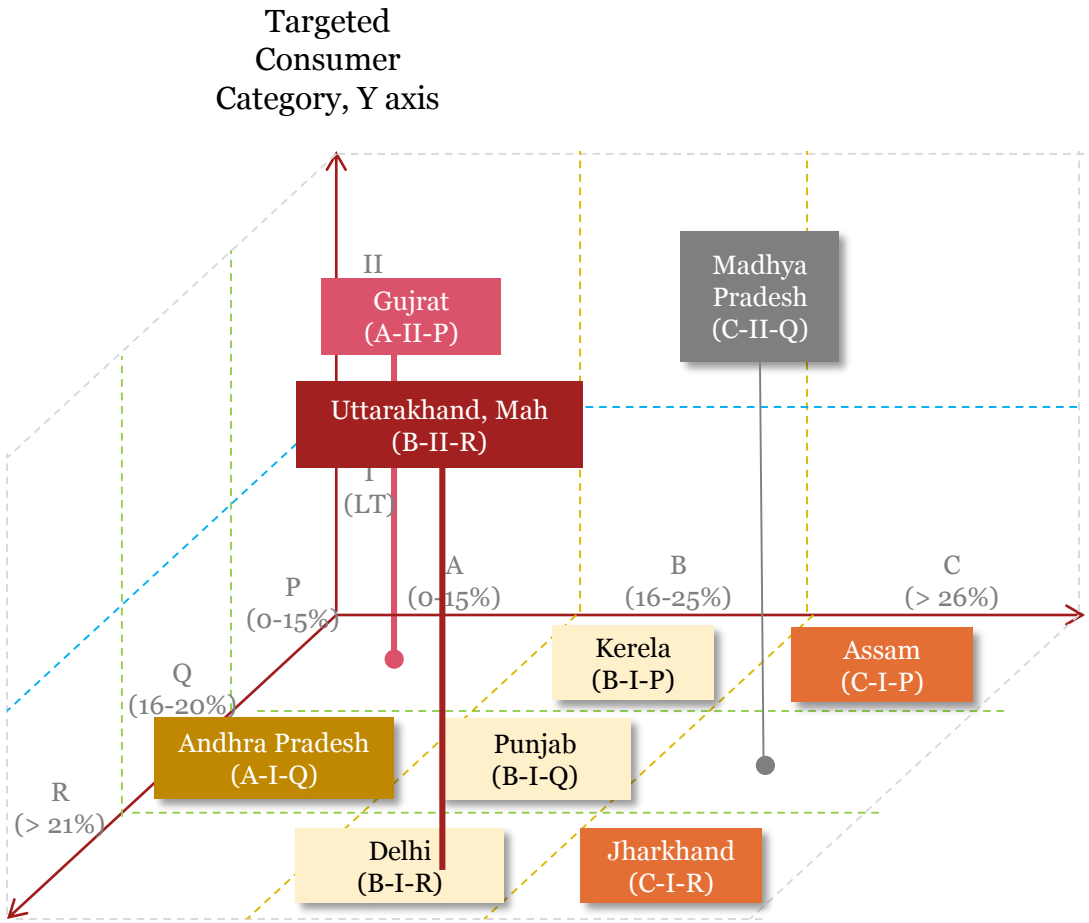
Based on the ratio of HT to LT consumers of the state in FY10, it can be ascertained whether the loss reduction initiatives were targeted towards which type of consumers

Effectiveness of Loss reduction

	Ratio of Loss reduction	Effectiveness	States
P	0-15%	Low	Gujrat, Kerela, Assam,
Q	16-20%	Moderate	Punjab, Andhra Pradesh, Madhya Praesh
R	> 21%	High	Uttarakhand, Mah, Delhi, Jharkhand

Based on the ratio of loss reduction of the state between FY10 and FY13 to loss level in FY10, it can be ascertained how effective the loss reduction initiatives were

Level 2 Analysis - Identifying best loss reduction initiatives



Depending on which sector the state falls in, the loss reduction initiatives taken in that particular state can be adopted as effective loss reduction strategy for the consumer type and loss type represent by that sector of the 3D graph

Annexure - >

Section 5
Loss Reduction Strategy

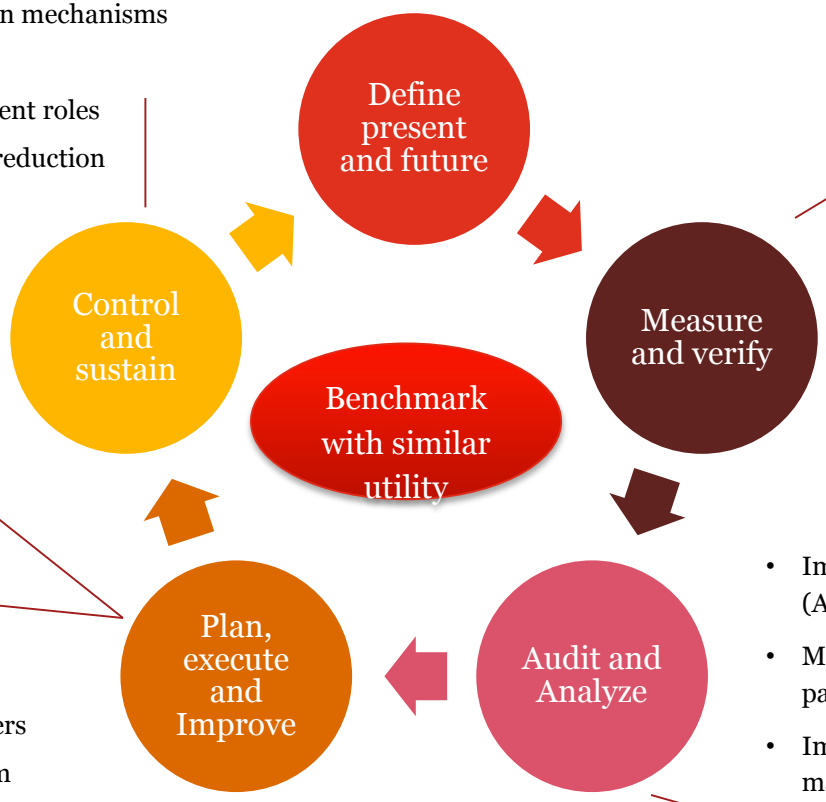
Loss reduction strategy

- Constitution of loss monitoring, energy audit etc committee/cells
- Performance monitoring and review
- Dedicated police stations and staff
- Loss reduction based incentivisation mechanisms
- Nomination of feeder managers
- Dedicated field level loss management roles
- Consumer communication on loss reduction

Various suggested initiatives each step

For Planning

- Loss reduction based Capex planning
- Equity injection
- Employee capacity building programs



- Strengthening of Energy accounting infrastructure by 100% consumer metering, DT metering and feeder metering.
- Replacement of defective and electromechanical meters.
- Customer satisfaction program

Execution

- Installation of LT ABC
- Improving HT:LT ratio
- Substation/DT augmentation
- Segregation/Bifurcation of feeders
- Implementation of HVDS system
- Connection regularization scheme
- Outsourcing strategy

- Implementation of IT application in MBC activities (AMR/HHD/e-mail, sms based intimation)
- MIS based periodic reporting of unit wise business parameters
- Implementation of IT application in network management activities (SCADA, DMS, OMS etc)
- Deploying a Central level vigilance team

Define present and future

Present

Define current level of AT&C losses -

- Define financial losses and related AT&C losses for the utility and communicate it every stakeholder.
- Stakeholders consist of consumer, owner and employees
- To define the present loss level one needs to measure the present loss level using appropriate loss measurement techniques based on the availability of data

Future

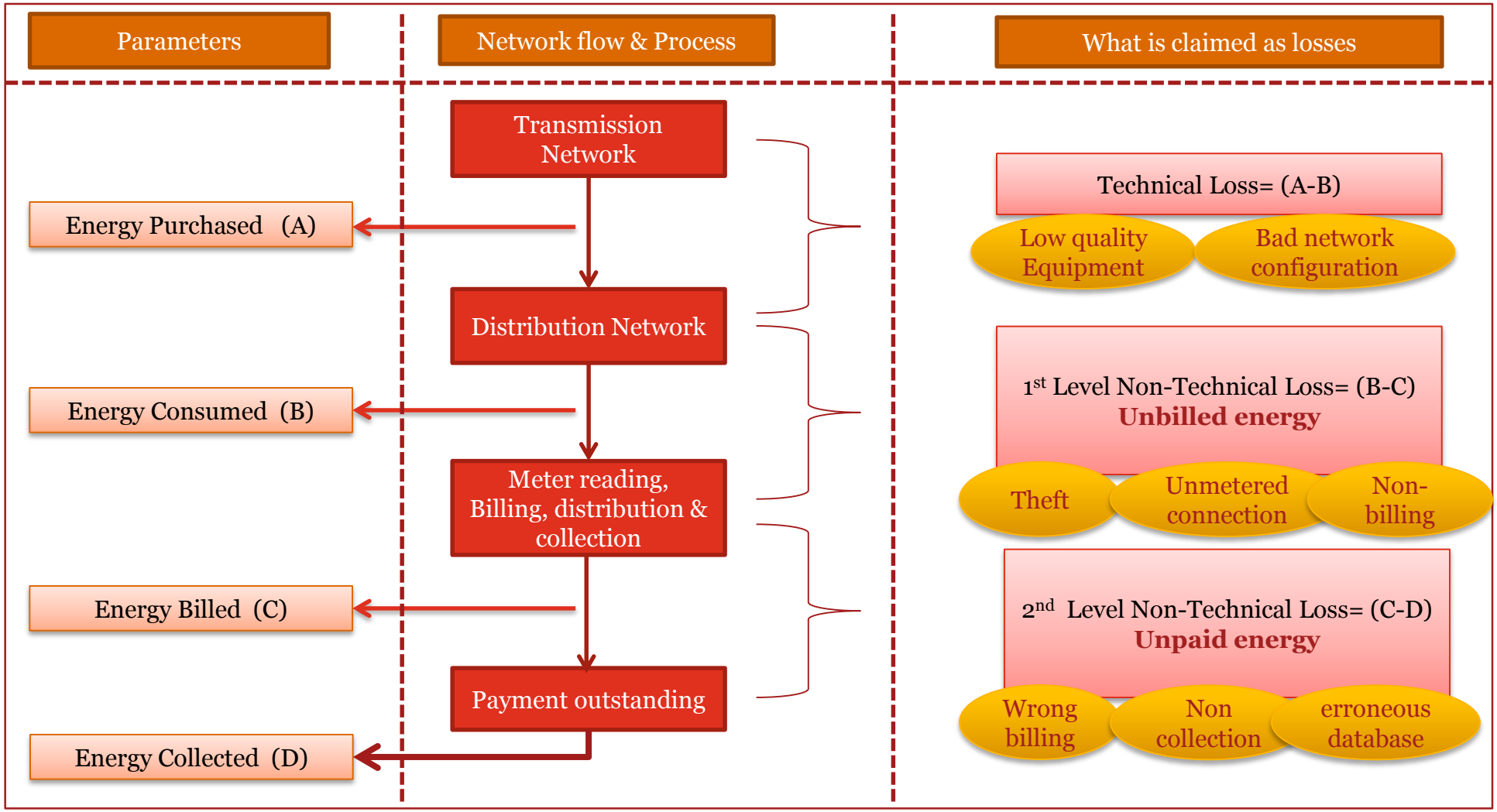
Define Loss Reduction Trajectory -

in order to ensure efficient utilization of the government grants and compliance to the overall loss reduction trajectory, the Discoms should

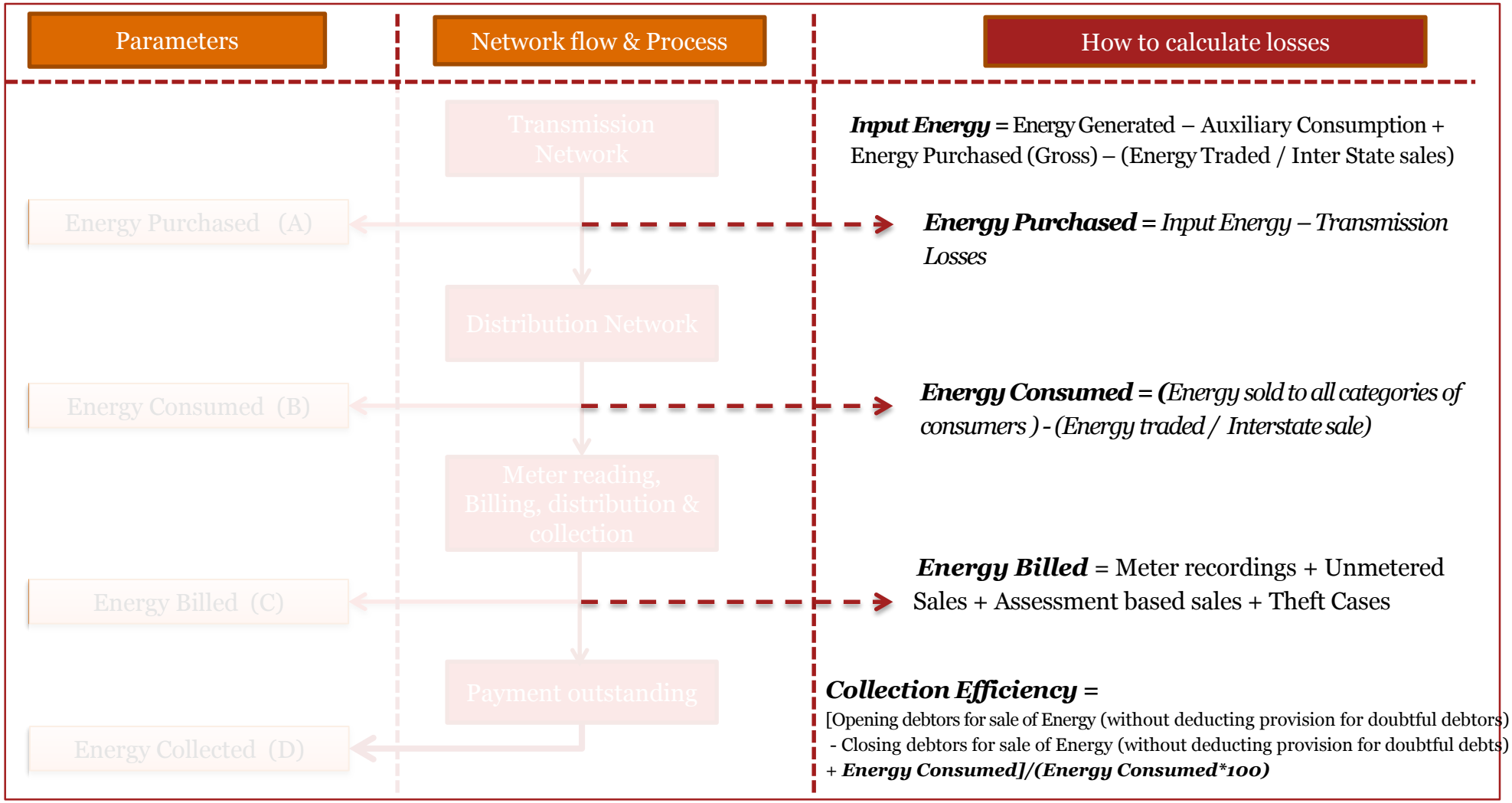
- define a detailed loss reduction trajectory
- for each type of loss i.e. Technical, Non-Technical and Collection loss.

These particular trajectories could be based on current level of losses, capital expenditure made in the past and future capital expenditure planned

Loss Measurement | Utility's claim of losses



Loss Measurement | Utility's calculation of losses

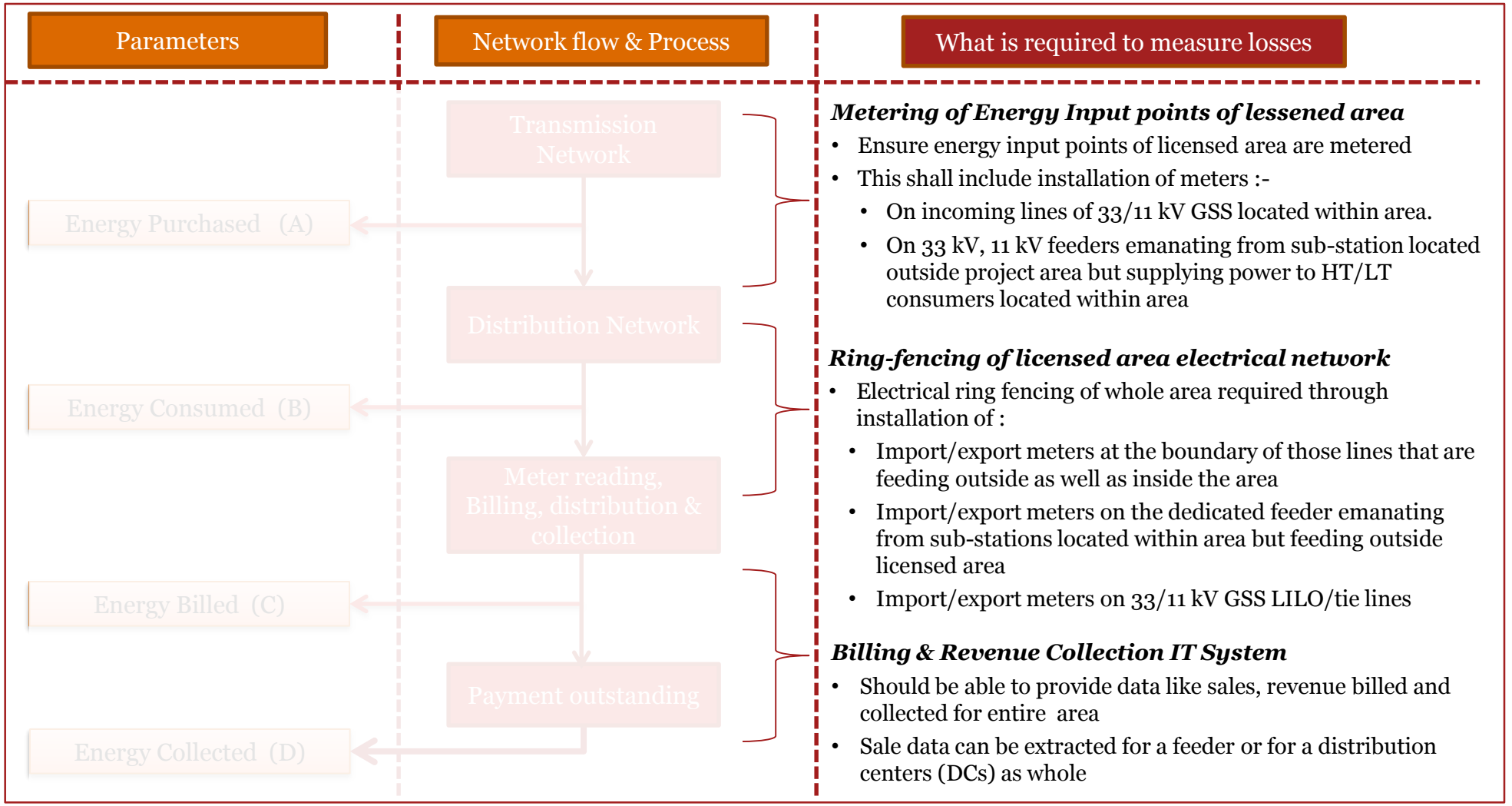


Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

***AT&C Loss* = (**Units Unrealized / Energy Purchased) *100

Loss Measurement | Pre-requisites for loss measurement

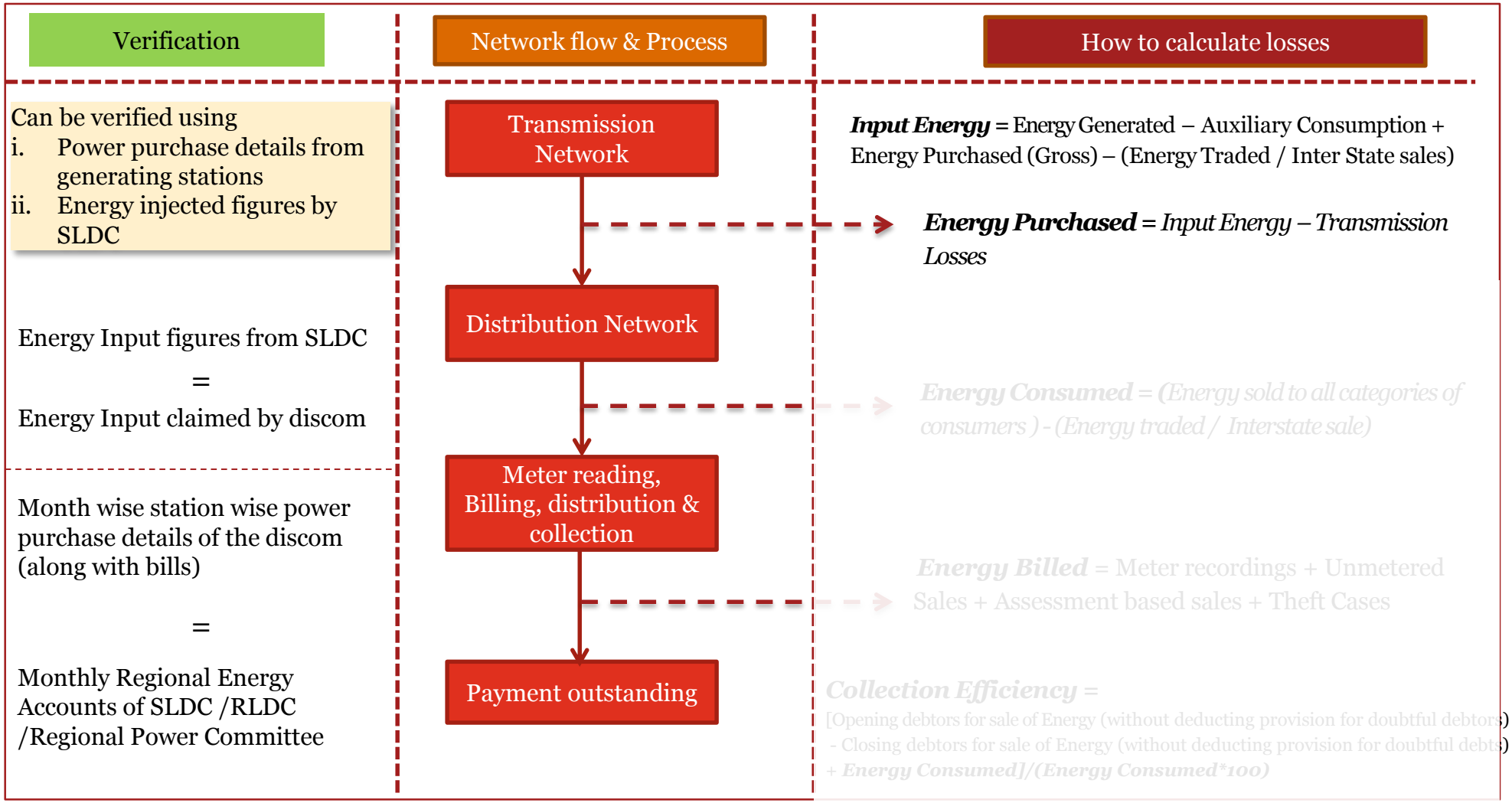


Loss Verification | Operational Verification

Operational verification is an initial, low cost step to ensure an efficient and correct measurement process.

Operational Verification Approach	Typical Application
Visual Inspection	Regular visual inspection of meters, meter reading instruments, data recording systems will help to detect any abnormality at an early stage.
Sample Spot Measurements	On spot measurement of meter data and recording system on sample basis will detect the abnormalities at a gross level, cannot be detected only with the help of visual inspection.
Short-Term Performance Testing	Short term performance testing on meters and MDMS is required to test the quality and correctness of measurement and data recording.
Data Trending and estimate Logic Review	Regular analysis on data trending and computational estimate is required to fine tune the loss estimation model. It is also helpful to detect any gross mismatch in data reading.

Loss Verification | Energy Input



Loss Verification | *Energy Billed (1/4)*

Verification	Network flow & Process	How to calculate losses
Can be verified using i. Category wise consumption pattern of metered consumers ii. Billing database of utility iii. Penalty charges for theft cases iv. Past arrears for consumers v. Consumer wise ABR	Transmission Network	***Input Energy*** = Energy Generated – Auxiliary Consumption + Energy Purchased (Gross) – (Energy Traded / Inter State sales)
		Energy Purchased = *Input Energy – Transmission Losses*
	Distribution Network	
Energy Billed = **Meter recordings** + Unmetered Sales + Assessment based sales + Theft Cases		***Energy Consumed*** = *(Energy sold to all categories of consumers) - (Energy traded / Interstate sale)*
For the verification of energy billed from Metered Consumers, the billing database of the utility can be analysed for – • Identifying Ghost Consumers – consumers with consistently high past arears or invalid geographical mapping • Consumers with very low ABR	Meter reading, Billing, distribution & collection	***Energy Billed*** = Meter recordings + Unmetered Sales + Assessment based sales + Theft Cases
	Payment outstanding	***Collection Efficiency*** = [Opening debtors for sale of Energy (without deducting provision for doubtful debtors) - Closing debtors for sale of Energy (without deducting provision for doubtful debts) + ***Energy Consumed]/(Energy Consumed*100)***

Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

AT&C Loss = (Units Unrealized / Energy Purchased) *100

Loss Verification | *Energy Billed (2/4)*

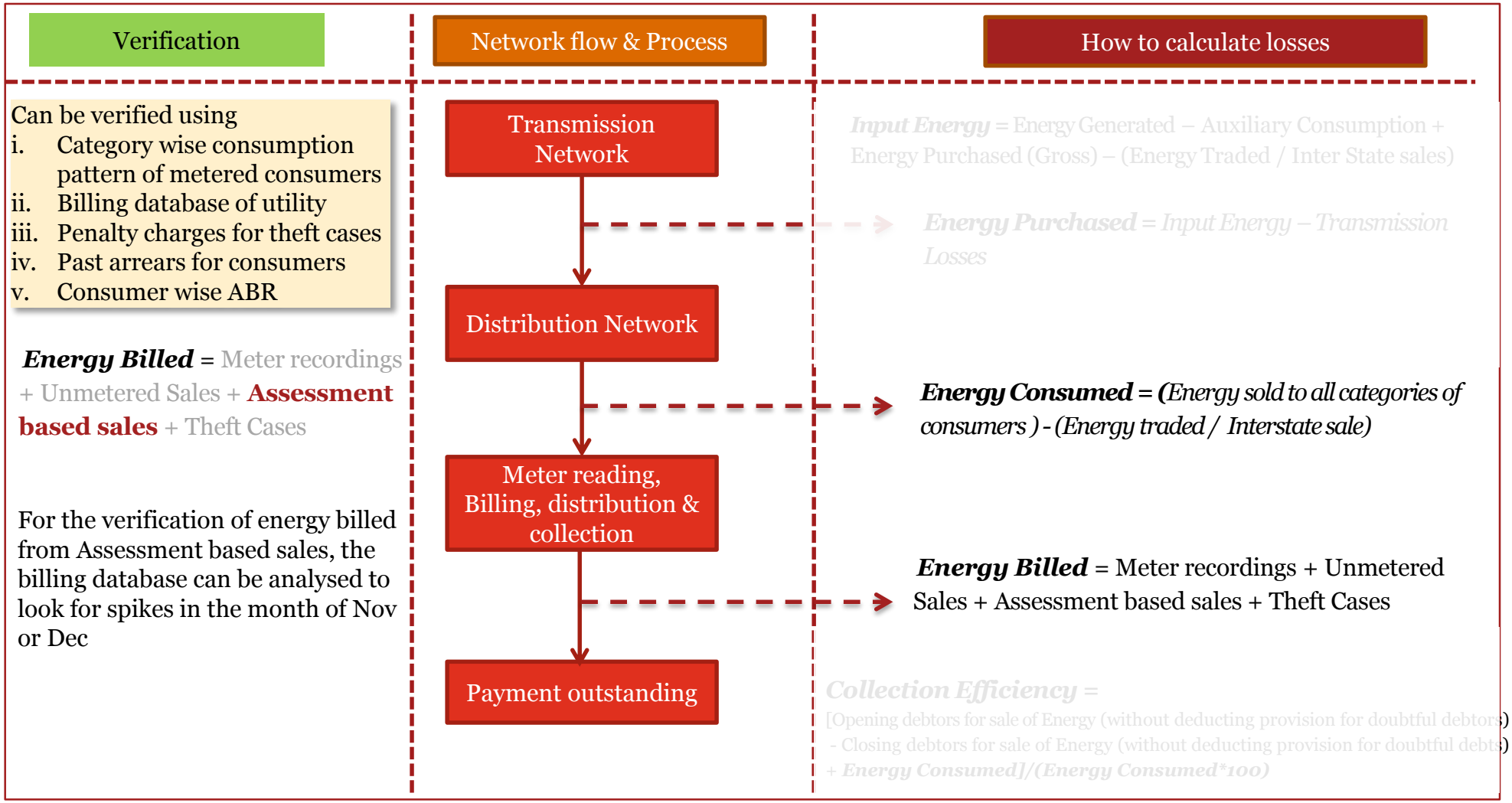
Verification	Network flow & Process	How to calculate losses
Can be verified using i. Category wise consumption pattern of metered consumers ii. Billing database of utility iii. Penalty charges for theft cases iv. Past arrears for consumers v. Consumer wise ABR	Transmission Network	***Input Energy*** = Energy Generated – Auxiliary Consumption + Energy Purchased (Gross) – (Energy Traded / Inter State sales)
		Energy Purchased = *Input Energy – Transmission Losses*
Energy Billed = Meter recordings + **Unmetered Sales** + Assessment based sales + Theft Cases	Distribution Network	***Energy Consumed*** = ***(****Energy sold to all categories of consumers) - (Energy traded / Interstate sale)*
For the verification of energy billed from Unmetered Consumers, the category wise consumption pattern or unmetered consumers can be compared to category wise consumption pattern of metered consumers of respective consumer categories, to check for anomalies	Meter reading, Billing, distribution & collection	***Energy Billed*** = Meter recordings + Unmetered Sales + Assessment based sales + Theft Cases
	Payment outstanding	***Collection Efficiency*** = [Opening debtors for sale of Energy (without deducting provision for doubtful debtors) - Closing debtors for sale of Energy (without deducting provision for doubtful debts) + ***Energy Consumed]/(Energy Consumed*100)***

Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

AT&C Loss = ***(***Units Unrealized / Energy Purchased) *100

Loss Verification | *Energy Billed (3/4)*



Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

AT&C Loss **=** (Units Unrealized / Energy Purchased) *100

Loss Verification | *Energy Billed (4/4)*

Verification	Network flow & Process	How to calculate losses
Can be verified using i. Category wise consumption pattern of metered consumers ii. Billing database of utility iii. Penalty charges for theft cases iv. Past arrears for consumers v. Consumer wise ABR	Transmission Network	***Input Energy*** = Energy Generated – Auxiliary Consumption + Energy Purchased (Gross) – (Energy Traded / Inter State sales)
		Energy Purchased = *Input Energy – Transmission Losses*
Energy Billed = Meter recordings + Unmetered Sales + Assessment based sales + **Theft Cases**	Distribution Network	***Energy Consumed*** = ***(****Energy sold to all categories of consumers) - (Energy traded / Interstate sale)*
In case of theft cases, the amount collected is double the amount due, as a penalty. For the purpose of calculating energy billed from this amount collected, the entire amount collected should not be divided by the ABR, to avoid double counting of energy units.	Meter reading, Billing, distribution & collection	***Energy Billed*** = Meter recordings + Unmetered Sales + Assessment based sales + Theft Cases
	Payment outstanding	***Collection Efficiency*** = [Opening debtors for sale of Energy (without deducting provision for doubtful debtors) - Closing debtors for sale of Energy (without deducting provision for doubtful debts) + ***Energy Consumed]/(Energy Consumed*100)***

Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

AT&C Loss = ***(***Units Unrealized / Energy Purchased) *100

Loss Verification | *Energy Collected*

Verification	Network flow & Process	How to calculate losses
Can be verified using i. Month wise collection details (category wise) ii. Daily collection details iii. Daily bank statements of Discom Daily collection details from – • Discom branches/collection centres • Online payments • 3rd party collection agents = Bank statements of Discom	Transmission Network ↓ Distribution Network ↓ Meter reading, Billing, distribution & collection ↓ Payment outstanding	***Input Energy*** = Energy Generated – Auxiliary Consumption + Energy Purchased (Gross) – (Energy Traded / Inter State sales) ***Energy Purchased*** = *Input Energy – Transmission Losses* ***Energy Consumed*** = *(Energy sold to all categories of consumers) - (Energy traded / Interstate sale)* ***Energy Billed*** = Meter recordings + Unmetered Sales + Assessment based sales + Theft Cases ***Collection Efficiency*** = [Opening debtors for sale of Energy (without deducting provision for doubtful debtors) - Closing debtors for sale of Energy (without deducting provision for doubtful debts) + ***Energy Consumed]/(Energy Consumed*100)***

Units Realized = Collection Efficiency * Energy Consumed

Units Unrealized = Energy Purchased – Units realized

AT&C Loss = **(**Units Unrealized / Energy Purchased) *100

Energy Audit | Levels of energy audit

- **Company level energy audit:**

  The main purpose of energy accounting at the company level is to cross check the company's energy input against energy input details provided by the Transmission unit. Presently UHBVN undertakes a company level energy audit.

- **Sub-transmission level energy audit and Division/sub-division level energy measurement:**

  The purpose of the sub-transmission level energy audit is to ascertain extent of technical losses taking place from procurement to dispatching in the 11KV feeders (i.e. substation level). Sub-division level audit shall help in segregating losses for each administrative unit of the company for performance analysis.

- **Feeder level energy audit:**

  Feeder level audit shall help in ascertaining losses in each 11 kV feeder taking place from point of dispatch up to the HT consumers and distribution transformer level. In addition to identifying 11KV feeders with high technical losses, this also helps is identifying leakages/ thefts taking place at the HT consumer level.

- **Distribution Transformer level energy audit:**

  Calculation of percentage unbilled energy / units lost at each DT in order to monitor and prioritize the loss reduction efforts for yielding the best results.

Energy Audit | pre-requisites

- Adequacy of metering at input point, at each voltage or transformation level.
- Electrical ring fencing of whole area required through installation:
  - Import/export meters at the boundary of those lines that are feeding outside as well as inside the area
  - Import/export meters on the dedicated feeder emanating from sub-stations located within area but feeding outside licensed area
  - Import/export meters on 33/11 kV GSS LILO/tie lines
- Every customer and element in the network should have a unique electrical address. This shall identify the customer's complete chain of electricity supply from the bulk supply point to the LT pole through which the service line is extended to the consumer's delivery point/ premise.
- Segregating feeders with un-metered consumers: Agricultural consumers are not completely metered in the state. Energy audit cannot be performed on any feeder/ distribution transformer where any such consumer exists due to uncertainty regarding units supplied to such consumers. Moreover, the billing for such connections is done on normative basis thus; all units supplied may not be equal to energy billed. In such case it becomes important for a distribution utility to segregate feeders with un-metered agricultural connections.
- Needs to have an energy audit cell (EAC) with defined roles and adequate resources. Key responsibility of the EAC is to ensure timely and accurate energy accounting and audit with the co-ordination from the operations staff.
- Preparation of a comprehensive energy accounting and audit plan

Loss reduction methodologies

Loss Type		Technical	Technical	Commercial	Commercial	Theft	Theft
Consumer Type		HT	LT	HT	LT	HT	LT
Selected State as per framework		Gujarat	Andhra Pradesh	Uttarakhand/Mah	Delhi	Madhya Pradesh	Jharkhand
Internal							
Process Strengthening	IT application in MBC activities	✓	✓	✓	✓	✓	✓
	Strengthening of Energy accounting infra	✓	✓	✓	✓	✓	✓
	MIS reporting of business parameters	✓	✓	✓	✓	✓	
	Re-engineering of business processes	✓			✓		
Network strengthening	Installation of LT ABC	✓	✓	✓	✓	✓	✓
	Improving HT:LT ratio	✓	✓	✓	✓	✓	✓
	Substation/DT augmentation	✓	✓		✓	✓	✓
	Segregation/Bifurcation of feeders	✓		✓	✓	✓	
	Implementation of HVDS system	✓		✓	✓	✓	
Governance	Central level vigilance team	✓	✓	✓	✓	✓	
	Constitution of loss monitoring cells	✓		✓		✓	
	Nomination of feeder managers			✓	✓	✓	
	Employee incentive schemes				✓	✓	
Administrative	Dedicated police staff			✓	✓		
	Legal framework for employee penalisation			✓			
Soft initiatives	Regularization or waiver schemes	✓			✓	✓	
	Consumer communication on loss reduction			✓	✓		
	Transformer management system					✓	
External							
Competition Promotion	DF initiatives/ Privatisation	✓		✓	✓	✓	✓
	Outsourcing strategy and implementation				✓	✓	
Regulatory	Loss based capex plans	✓	✓			✓	✓
	Loss reduction based incentivisation			✓	✓		
Govt. Support	Performance monitoring and review			✓	✓	✓	
	Equity Injection				✓		

Thank you!

Appendix 1
AT&C Loss(%) status

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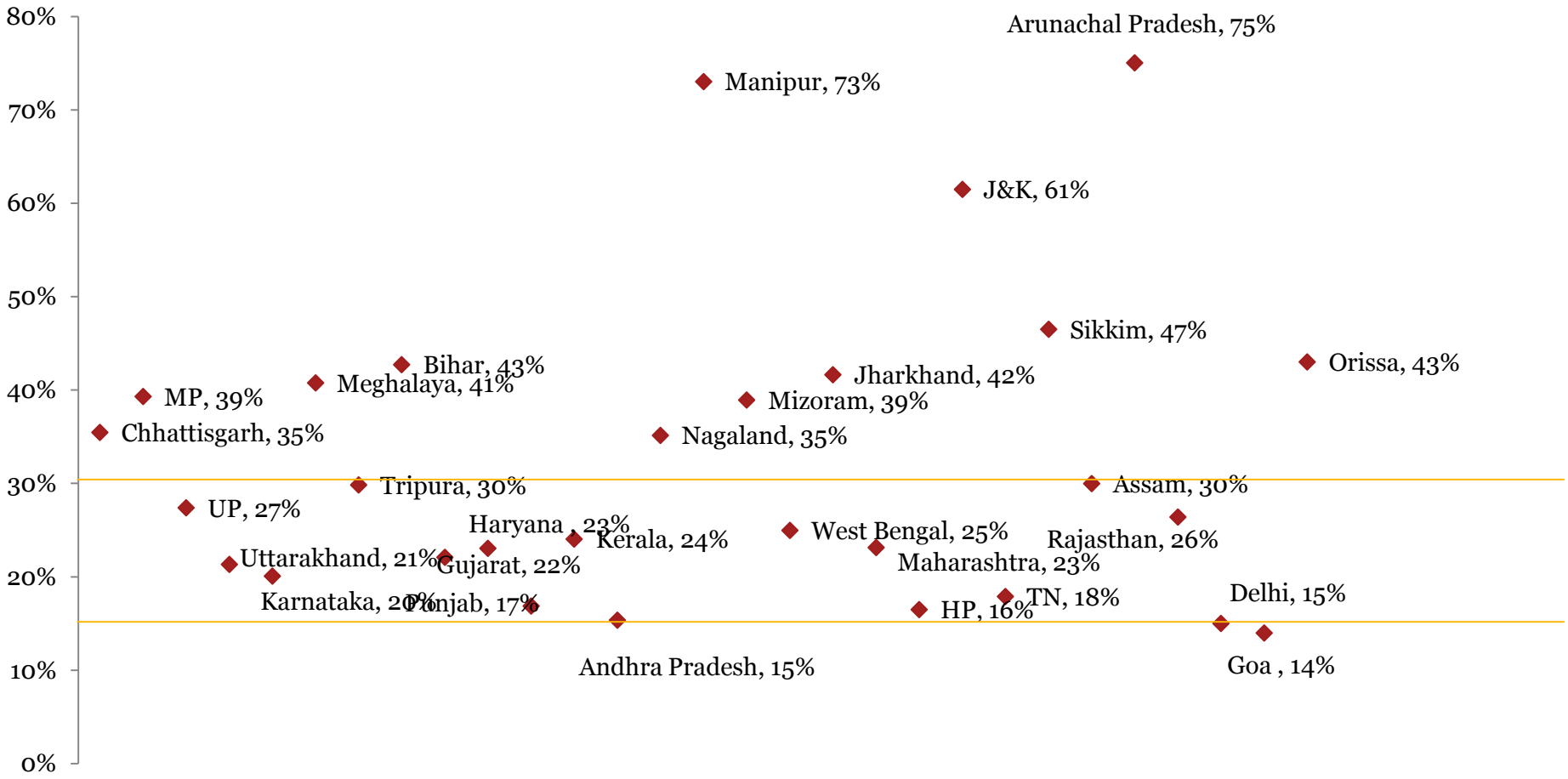
AT&C Loss(%) status during FY2013-14



Appendix 2
Status of government schemes

Appendix 3
Selection of states

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Selection of States | Geographical Representation

Parameters

- Geographical Representation
- Loss Reduction in Past
- Representative consumer categories
- Existing AT&C loss levels

States from East and North East region		States from western region	States from Northern region	States from southern region
Manipur	Nagaland	Gujarat	Delhi	Karnataka
Tripura	Mizoram	Madhya Pradesh (MP)	Uttarakhand	Andhra Pradesh (AP)
Arunachal Pradesh	Bihar	Chhattisgarh	Jammu & Kashmir (J&K)	Tamil Nadu
Sikkim	Jharkhand	Maharashtra	Punjab	Kerala
Meghalaya	Orissa	Goa	Haryana	
Assam	West Bengal (WB)	Rajasthan	Himachal Pradesh (HP)	
			Uttar Pradesh (UP)	

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Selection of States | Loss reduction in past

Parameters

Geographical Representation

Loss Reduction in Past

Representative consumer categories

Existing AT&C loss levels

Region	States	Decrease in AT&C loss (FY 04 to FY 13)
Northern	Delhi	33.92%
	Uttarakhand	20.30%
	J&K	7.92%
	Punjab	7.86%
	Haryana	7.75%
	Himachal Pradesh	-0.26%
	Uttar Pradesh	0.48%
Eastern and North Eastern	Manipur	-15.76%
	Tripura	-19.03%
	Arunachal Pradesh	-44.00%
	Sikkim	13.04%
	Meghalaya	12.71%
	Assam	11.50%
	Nagaland	-19.75%
	Mizoram	10.89%
	Bihar	11.63%
	Jharkhand	14.98%
	Orissa	0.66%
	West Bengal	-1.56%
Southern	Karnataka	6.87%
	Andhra Pradesh	2.89%
	Tamil Nadu	-0.08%
	Kerala	22.21%
Western	Gujarat	15.61%
	Madhya Pradesh	10.37%
	Chhattisgarh	5.87%
	Maharashtra	17.00%
	Goa	7.14%
	Rajasthan	24.43%

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Selection of States | Consumer Categories

Parameters

- Geographical Representation
- Loss Reduction in Past
- Representative consumer categories
- Existing AT&C loss levels

Region	States	% Agriculture sales (FY 13)	% Industrial sales (FY 13)
Northern	Delhi	0%	10%
	Uttarakhand	4%	56%
	J&K	6%	18%
	Punjab	29%	34%
	Haryana	29%	27%
	Himachal Pradesh	1%	53%
	Uttar Pradesh	18%	15%
Eastern and North Eastern	Manipur	0%	7%
	Tripura	4%	4%
	Arunachal Pradesh	0%	34%
	Sikkim	2%	13%
	Meghalaya	0%	40%
	Assam	0%	22%
	Nagaland	0%	4%
	Mizoram	0%	1%
	Bihar	5%	23%
	Jharkhand	1%	36%
	Orissa	2%	51%
	West Bengal	5%	30%
Southern	Karnataka	37%	22%
	Andhra Pradesh	31%	29%
	Tamil Nadu	21%	24%
	Kerala	2%	30%
Western	Gujarat	26%	42%
	Madhya Pradesh	34%	24%
	Chhattisgarh	13%	34%
	Maharashtra	25%	43%
	Goa	1%	52%
	Rajasthan	43%	23%

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Selection of States | Existing AT&C loss levels

Parameters

Geographical Representation

Loss Reduction in Past

Representative consumer categories

Existing AT&C loss levels

Region	States	AT&C Losses (FY 13)
Northern	Delhi	15%
	Uttarakhand	23%
	J&K	61%
	Punjab	18%
	Haryana	33%
	Himachal Pradesh	10%
	Uttar Pradesh	43%
Eastern and North Eastern	Manipur	85%
	Tripura	34%
	Arunachal Pradesh	60%
	Sikkim	54%
	Meghalaya	27%
	Assam	32%
	Nagaland	75%
	Mizoram	28%
	Bihar	55%
	Jharkhand	47%
	Orissa	43%
	West Bengal	34%
Southern	Karnataka	21%
	Andhra Pradesh	14%
	Tamil Nadu	21%
	Kerala	11%
Western	Gujarat	20%
	Madhya Pradesh	31%
	Chhattisgarh	25%
	Maharashtra	22%
	Goa	14%
	Rajasthan	20%

Appendix 4
Review of Indian Experience

Back

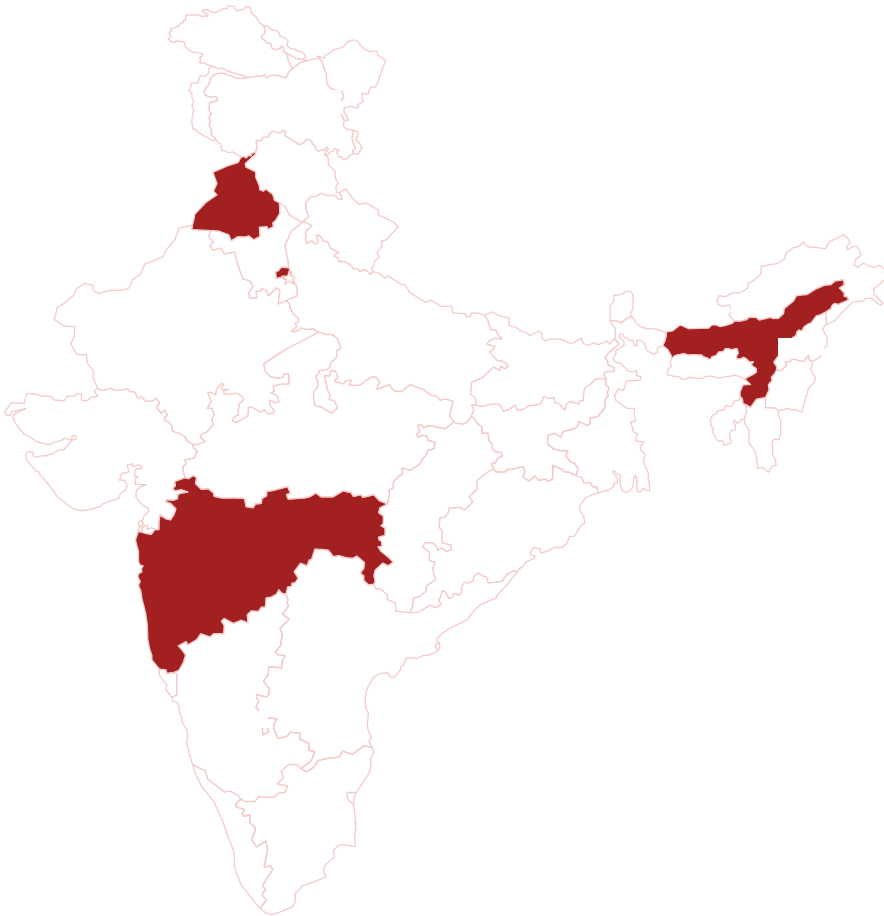
MIS data formats (used for collecting data from state)

Measurement	Metering status – Compliance, technology, defective etc
	Measuring techniques – IT application/manual, no read etc
	Verification framework – Field reading audits/energy audits etc
	Reporting – Sub division/ Feeder level/DT level (automated/manual), etc
Record	How – Manual/partially automated/automated etc
	Access – Centralised/decentralised/outsourced etc
	Management – Technology/staff capabilities/ application usage etc
Plan	Targets – loss levels, revenue, SoP, regulatory mandates etc
	Initiatives – loss component wise schemes , outlay, timelines, prioritisation, impact, variance etc
	Mode – Turn key/stand alone, Corporate/business unit, pilot/full fledge etc
Execute	Monitoring – Loss monitoring/works monitoring
	Over runs/target slippage – mitigation measures
	Level of monitoring – Corporate/circle/business units
	Quality checks -

Administrative initiatives

Types of initiatives

- Dedicated police stations and staff
- Dedicated courts
- Legal framework for employee penalisation or non-achievement of loss reduction target/ not following the prescribed procedure



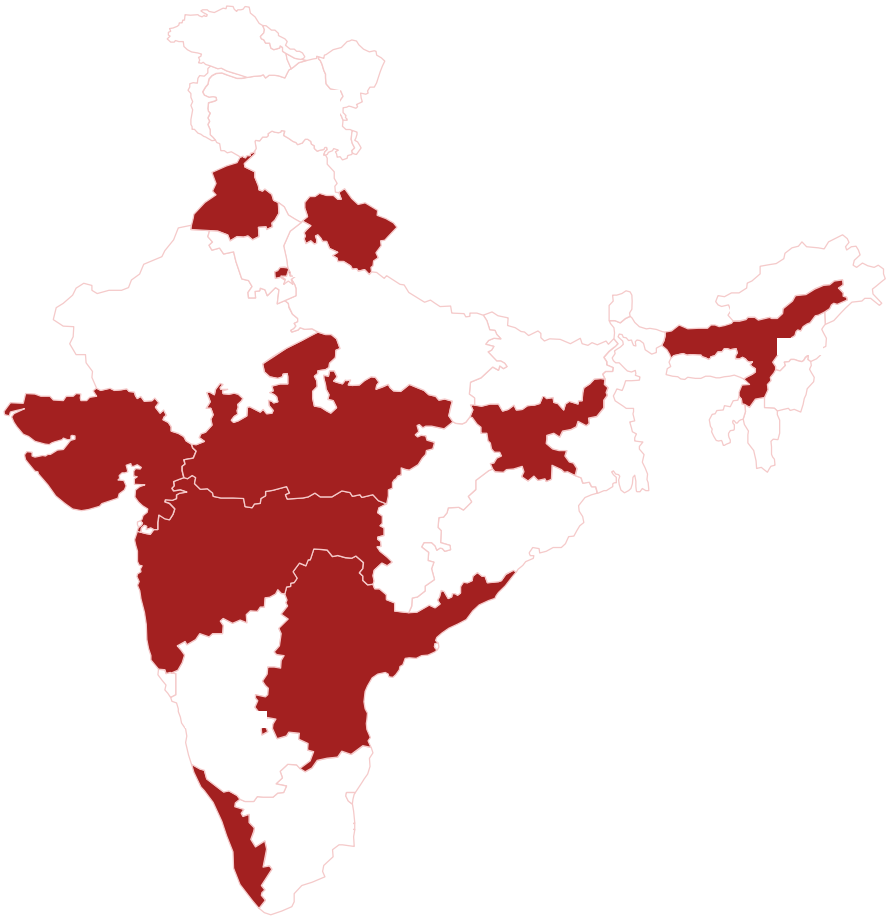
As per section 135 of the Electricity Act 2003, the theft of power, tampering with meter and use of power for purposes other than authorised are offences punishable upto 3 years

MSEDCL has a dedicated police station in Pune for electricity theft

Regulatory Initiatives

Types of initiatives

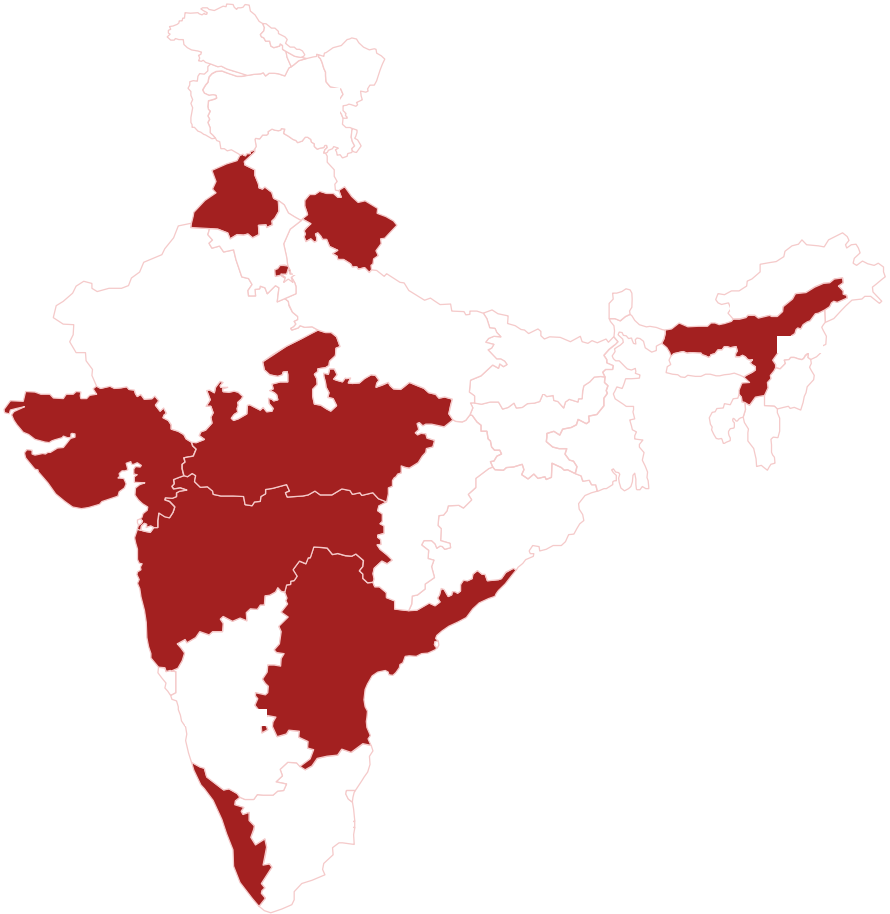
- Loss reduction focused clauses in Supply Code/ Grid code
- Loss reduction based incentivisation mechanisms
- Loss based capex plans
- Loss level based tariff design



Governance Framework

Types of initiatives

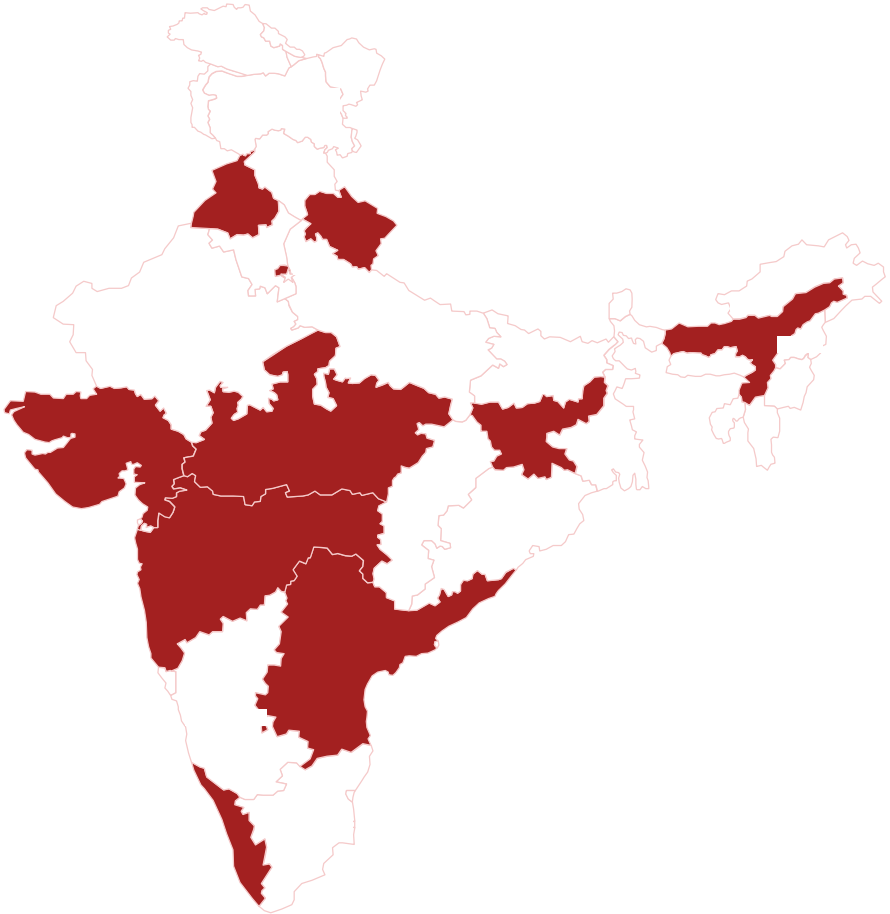
- Contribution of loss monitoring, energy audit etc committee/cells
- Dedicated field level loss management roles
- Theft reporting consumer incentive schemes
- Employee incentive schemes
- Central level vigilance team
- Employee capacity building focused programs



Competition Promotion/Cost Optimisation

Types of initiatives

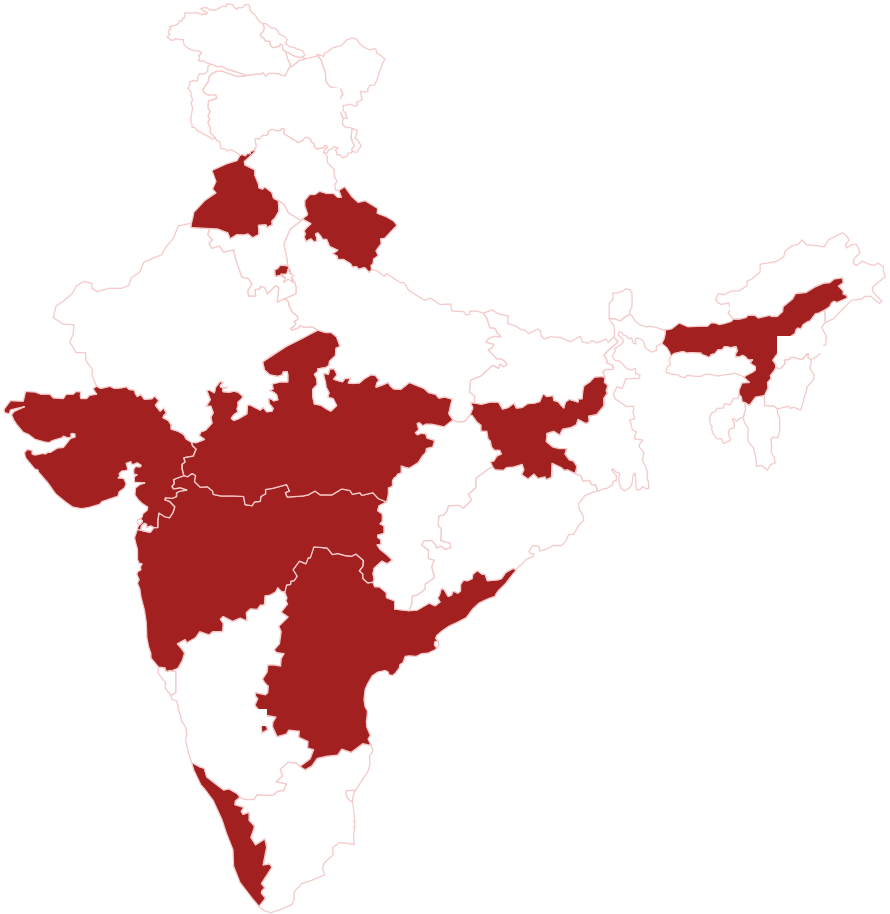
- Introduction of private participation - DF initiatives/ Privatisation
- Engagement of local groups - Panchyat/Ex Service League for MBC management
- Deployment of Third party monitoring body at circle level
- Outsourcing strategy and implementation



Process strengthening

Types of initiatives

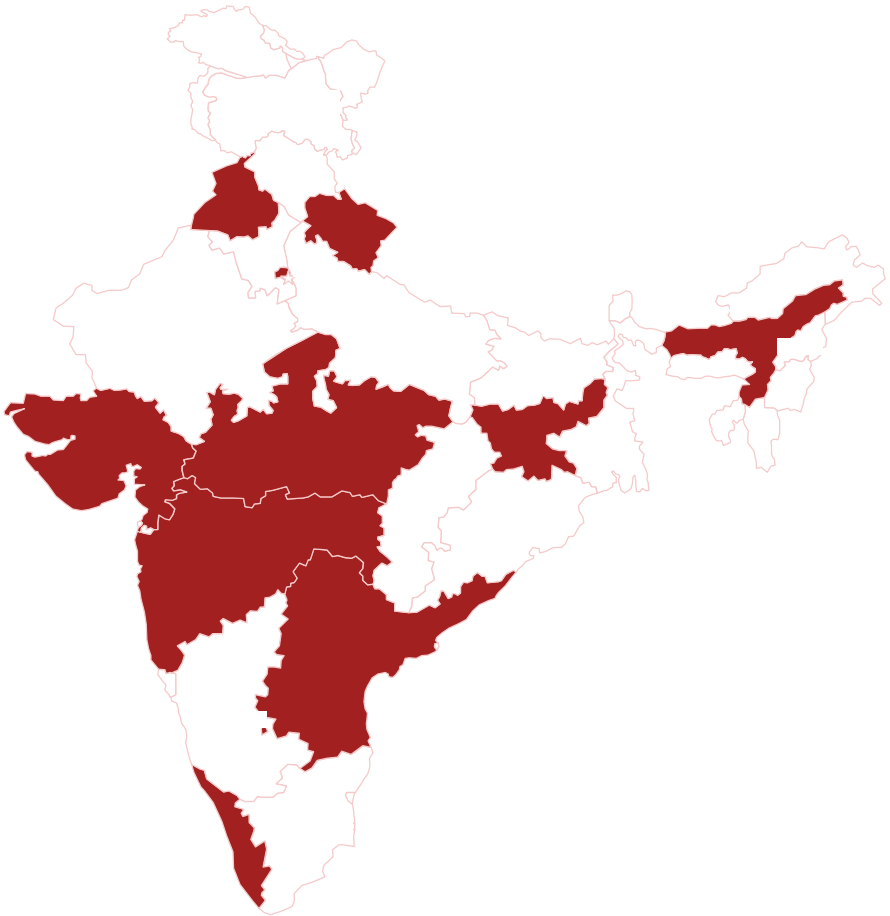
- Implementation of IT application in MBC activities (AMR/HHD/e-mail, sms based intimation
- Implementation of IT application in network management activities (SCADA, DMS, OMS etc)
- Re-engineering of business processes with technological advancement
- Strengthening of Energy accounting infratstructure - Feeder metering
- Strengthening of Energy accounting infratstructure - DT metering
- Strengthening of Energy accounting infratstructure - 100% consumer metering
- Replacement of defective meters and electromechanical meters
- MIS based periodic reporting of unit wise business parameters



Network strengthening

Types of initiatives

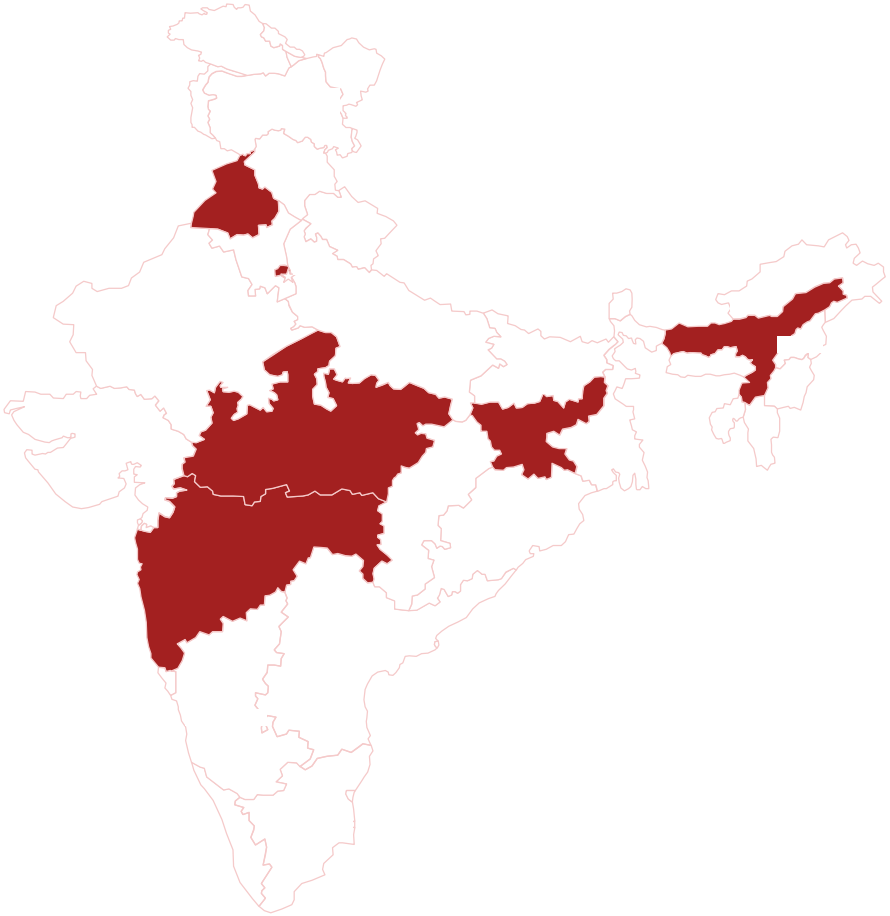
- Segregation of feeders/Bifurcation of feeders
- Implementation of HVDS system
- Installation of LT ABC
- Improving HT:LT ratio
- Substation/DT augmentation



Government support

Types of initiatives

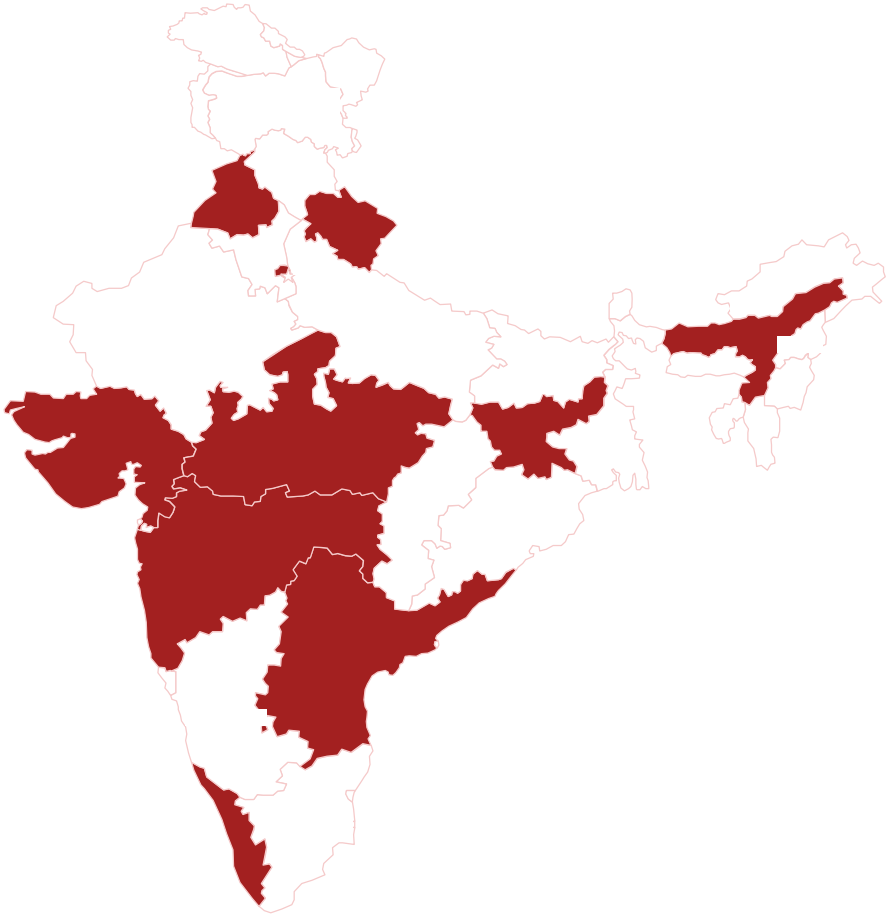
- Equity injection
- Public communication/"Minister is role model" approach
- Performance monitoring and review
- Timely payment of government dues



Soft initiatives

Types of initiatives

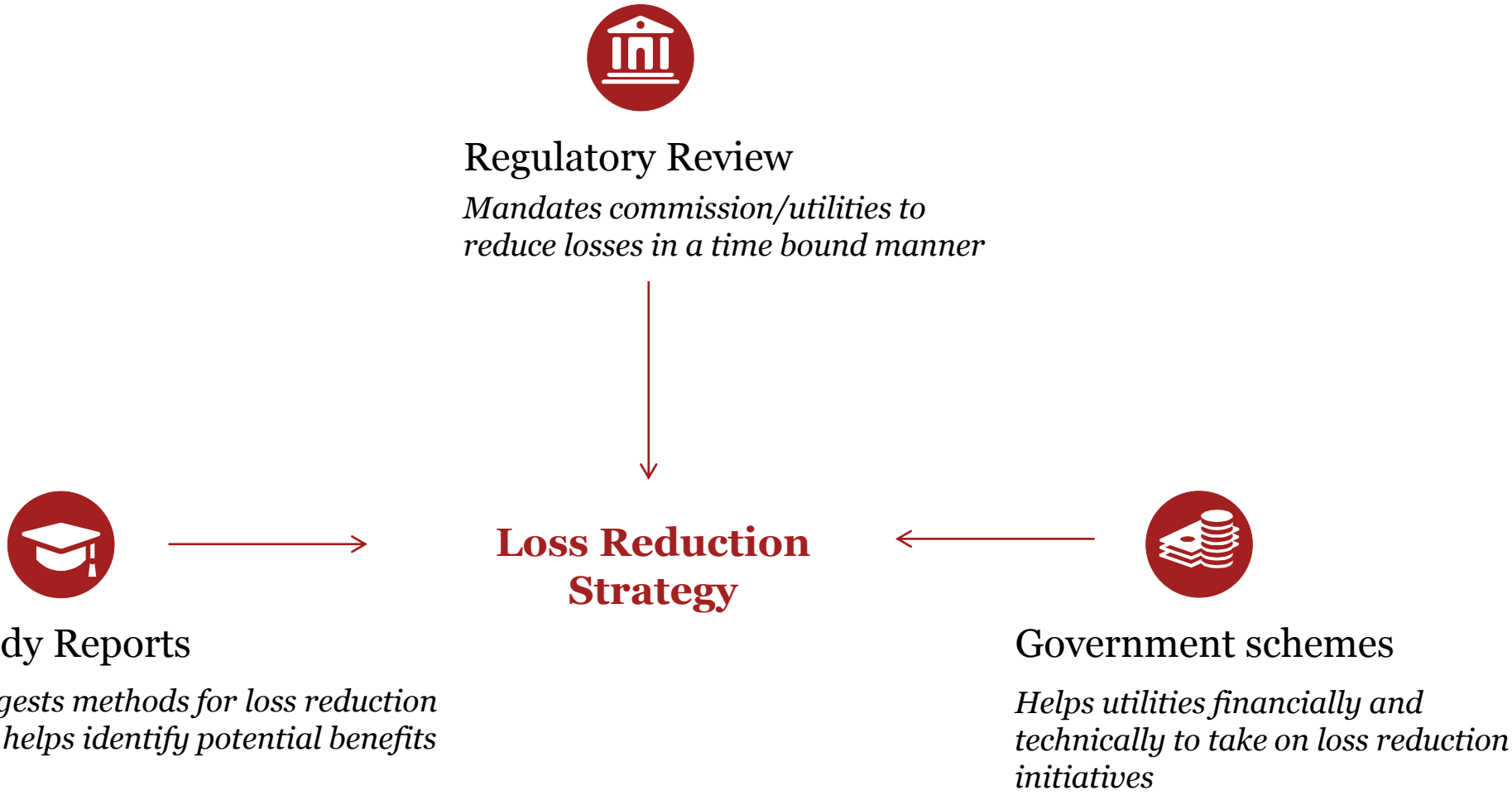
- Consumer communication on loss reduction
- Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc
- Customer satisfaction program
- Transformer Management System



Appendix 5
Loss measurement, verification and audit

Appendix 6
Review of policies and programs

Ecosystem for enabling loss reduction



Regulatory Review

Electricity Act, 2003 | Accurate Measurement of Losses

The EA 2003 provides for improvement in metering at various levels in order to facilitate accurate measurement of losses

***"Section 55** (1) No licensee shall supply electricity, after the expiry of two years from the appointed date, except through installation of a correct meter…..*

(2) For proper accounting and audit in the generation, transmission and distribution or trading of electricity, the Authority may direct the installation of meters by a generating company or licensee at such stages of generation, transmission or distribution…..

National Electricity Policy, 2005 | Loss reduction targets

The NEP 2005 suggested formulation of an action plan to reduce losses in a time bound manner

5.4.6 A time-bound programme should be drawn up by the State Electricity Regulatory Commissions (SERCs) for segregation of technical and commercial losses through energy audits…..An action plan for reduction of the losses with adequate investments and suitable improvements in governance should be drawn up

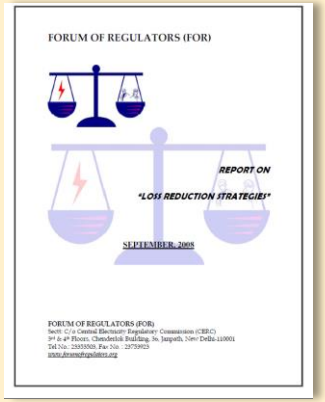
Tariff Policy, 2006 | Methodologies for factoring AT&C losses in tariff

The TP 2006 provides a roadmap and suggests methodologies for factoring the Aggregate Technical and Commercial (AT&C) losses in computation of tariff

8.2.1 (2) (2) AT&C loss reduction should be incentivised by linking returns in a MYT framework to an achievable trajectory….. The SERCs may also encourage suitable local area based incentive and disincentive scheme for the staff of the utilities linked to reduction in losses…. The SERC shall undertake independent assessment of baseline data for various parameters for every distribution circle of the licensee

Study reports

FOR report on loss reduction strategies, 2008



Issues identified for evolving a strategy for loss reduction in the FOR report of 2008 are -

- Definition of distribution loss and the method of computation of AT&C loss
- Segregation of technical and commercial loss
- Compilation of baseline data
- Third party verification of data and energy audit
- Methodology for achieving loss reduction in a time-bound manner
- Relative appropriateness of technical solutions etc.

FOR Framework to draw up a scheme at national level for feeder segregation of rural and agricultural consumers and suggest measures on effective metering, 2014

Following benefits are observed in feeder segregation projects:

- Reduction in line losses
- Improved financial condition of discoms
- Improved transparency in subsidy distribution
- Ground water resource management

Pre-requisites for feeder segregation project:

- **Metering at feeder level** – would help in effective energy audit thus identifying high loss feeders and LT lines
- **Economical remote metering infrastructure for DTRs or External meters for all customers** – to facilitate, identify and avoid any type of power pilferage in the system

Government schemes (1/2)

Restructured Accelerated Power Development Reform Program (R-APDRP) & Integrated Power Development Scheme (IPDS)

Particulars	R-APDRP	IPDS
Scope of the scheme	• Actual, demonstrable performance in terms of sustained loss reduction • Establishment of reliable and automated system for sustained collection of baseline data • Coverage in Urban areas, Cities & Towns with population more than 30,000 (10,000 for Special Category States)	• Strengthening of sub-transmission & distribution network • Inclusive metering and related capacity building • IT enablement of Distribution sector, establishment of National Power Data Hub and provisioning for Solar Panel
Funding mechanism	• Part A: 100% project cost as loan from GoI. Loan to be converted into grant on completion of project duly verified by relevant agency • Part B: non Special Category States (up to 25% loan from GoI & up to 75% loan from PFC/REC/Own/ Other sources) • Special Category States (up to 90% loan from GoI and up to 10% from PFC/REC/ Own/ Other sources)	Three tier funding: • Central grant: 85% (SCS), 60% (OS) • Discom contribution: 5% (SCS), 10% (OS) • Loan by FIs/ Banks: 10% (SCS), 30% (OS) • Additional grant on (50% of loan) on meeting milestones • 100% Central grant for completion missing links of NOFN

Click here for progress of R-APDRP

Government schemes (2/2)

Financial Restructuring Scheme (FRP) of state discoms

- Scope of the scheme is to –
  - To restructure and reschedule STL of Discoms
  - To achieve accelerated AT&C losses reduction
- All States with accumulated losses suffering with bad financial health are eligible for this scheme. The scheme got implemented in five States- Tamil Nadu, Rajasthan, Uttar Pradesh, Haryana and Himachal Pradesh
- Funding for this scheme is through Central TFM and self-funding through improved operations and financial health

Click here for progress of R-APDRP

National Electricity Fund (NEF)

- Scope of this fund is to Providing financial support to Distribution sector projects in areas which are not covered under R-APDRP & RGGVY
- All State Power Utilities, State Power Departments and Distribution Companies in both Public & Private Sector in the States & Union Territories engaged in the business of sale of electricity to the retail consumers within the area of supply
- Funding is a cumulative score based mechanism for States divided in Group I and Group II:
  - Group I: Score >= 75 (5%), 75>Score>=50 (4%), 50>Score>=35 (3%)
  - Group II (up to 31st March, 2014): Score>=60 (7%), 60>Score>=40 (6%), 40>Score>=30 (5%)
  - Group II (from 1st April, 2014): Score>=75 (7%), 75>Score>=50 (6%), 50>Score>=35 (5%)

Click here for progress of R-APDRP

Progress of R-APDRP (1/2)

Summary Sanctioned Projects Part-A (All Cost in Rs. Cr.)				
S.No.	**State Name**	**No. of Towns**	**Sanctioned Cost**	**Disbursement**
1	Andhra Pradesh	75	188.28	106.05
2	Arunachal Pradesh	10	37.67	11.3
3	Assam	67	173.76	86.72
4	Bihar	71	194.58	58.35
5	Chandigarh	1	33.34	0
6	Chhattisgarh	20	122.45	71.27
7	Goa	4	110.74	31.46
8	Gujarat	84	230.72	152.35
9	Haryana	36	165.6	95.72
10	Himachal Pradesh	14	96.4	53.49
11	Jammu & Kashmir	30	151.99	45.63
12	Jharkhand	30	160.61	75.99
13	Karnataka	98	398.7	221.25
14	Kerala	43	214.38	64.34
15	**Madhya Pradesh**	**83**	**275.63**	**188.22**

Progress of R-APDRP (2/2)

Summary Sanctioned Projects Part-A (All Cost in Rs. Cr.)				
S.No.	**State Name**	**No. of Towns**	**Sanctioned Cost**	**Disbursement**
16	Maharashtra	128	315.45	192.01
17	Manipur	13	31.55	9.47
18	Meghalaya	9	33.97	10.21
19	Mizoram	9	35.12	10.55
20	Nagaland	9	34.58	10.37
21	Odisha	12	105.65	31.69
22	Puducherry	4	27.53	4.51
23	Punjab	47	272.83	155.09
24	Rajasthan	87	315.95	130.25
25	Sikkim	2	11.63	10.46
26	Tamil Nadu	110	417.05	125.1
27	Telengana	40	201.94	118.14
28	Tripura	16	35.2	10.55
29	Uttar Pradesh	168	775.1	447.18
30	Uttarakhand	31	132.24	71.35
31	West Bengal	61	171.41	120.29
Total		1412	5472.05	2719.36

NEF – Scoring Pattern (1/5)

Utilities in	Group-I	Group-II
Reduction in AT&C Losses achieved	**Score**	**Score**
Reduction by 10% over previous year	50	75
Reduction by 8% over previous year	40	60
Reduction by 6% over previous year	30	45

Utilities in	Group-I	Group-II
Reduction in Gap achieved	**Score**	**Score**
If the Average Revenue Realized per unit on subsidy received basis is higher than the Average Cost Supply	40	25
Reduction in gap by 25% over previous year	30	20
Reduction in gap by 20% over previous year	20	15
Reduction in gap by 15% over previous year	10	10

Return on Equity (RoE) and Notification of Multi Year Tariff (MYT) Regulation are the other parameters for assessment of Group I states. Achievement of them would entail and additional score of 5 marks.

NEF – Subsidy Applicability (2/5)

Group – I States

Category	Score (out of total of 100 Marks)	Subsidy in Interest Rate (%)
Category A	Greater than or equal to 75	**5**
Category B	Less than 75 but more than or equal to 50	**4**
Category C	**Less than 50 but more than or equal to 35**	**3**

Group – II States : Up to 31st March, 2014

Category	Score (out of total of 100 Marks)	Subsidy in Interest Rate (%)
Category A	Greater than or equal to 60	**7**
Category B	Less than 60 but more than or equal to 40	**6**
Category C	**Less than 40 but more than or equal to 30**	**5**

Group – II States : After 31st March, 2014

Category	Score (out of total of 100 Marks)	Subsidy in Interest Rate (%)
Category A	Greater than or equal to 75	**7**
Category B	Less than 75 but more than or equal to 50	**6**
Category C	**Less than 50 but more than or equal to 35**	**5**

NEF – Progress of Scheme (Fifth Steering Committee) (3/5)

Sl. No.	Name of Utility	Loan amount considered for coverage under NEF (INR Crore)
1	BESCOM	2564.05
2	CESC	324.66
3	HESCOM	620.58
4	JVVNL	410.06
5	JdVVNL	534.33
6	AVVNL	303.15
7	TSSPDCL	377.01
8	TSNPDCL	563.41
9	APSPDCL	539.44
10	MSEDCL	1877.84
11	BEST	405.19
12	HPSEBL	95.87
13	TANGEDCO	801.19
14	UHBVNL	65.18
15	CSPDCL	167.27
Total		**9649.23**

NEF – Progress of Scheme (Fourth Steering Committee) (4/5)

Sl. No.	Name of Utility	Loan Amount Considered for Coverage Under NEF (INR Crore)
1	UHBVNL	587.30
2	DHBVNL	414.12
3	TANGEDCO	539.08
4	TSSPDCL	319.18
5	TSNPDCL	144.88
6	APSPDCL	411.93
7	WBSEDCL	757.38
8	AVVNL	275.20
9	JDVVNL	388.71
10	JVVNL	242.91
11	MESCOM	89.66
12	CESC	127.04
13	HESCOM	293.69
14	UPCL	245.62
15	TPDDCL	60.00
16	MGVCL	83.00
17	PSPCL	1035.84
Total		**6015.54**

NEF – Progress of Scheme (Third Steering Committee) (5/5)

Sl. No.	Name of Utility	Loan Amount Considered for Coverage Under NEF (INR Crore)
1	MSEDCL	5657.13
2	TSNPDCL	1646.61
3	APSPDCL	1147.54
4	APEPDCL	143.57
5	HPSEBL	314.75
6	MPMKVVCL	84.30
7	MPPuKVVCL	196.53
8	UPCL	125.99
9	UHBVNL	62.05
10	WBSEDCL	1124.43
11	CSPDCL	239.10
Total		**10742.00**

FRP – Progress of Scheme (1/4)

Particulars	Tamil Nadu	Uttar Pradesh	Rajasthan	Haryana	Himachal Pradesh
Nodal banks	SBI	SBI	JVVNL - Canara Bank JDVVNL - Punjab National Bank AVVNL -Bank of Baroda	Oriental Bank of Commerce	SBI
State govt. approval	Obtained	Obtained	Obtained	Obtained	Obtained
SERC approval	Obtained	Obtained	Obtained	Awaited	Awaited
Lenders approval	Obtained	Obtained	Obtained	Awaited	Awaited
Accumulated Losses of Discom as on March 31, 2012	INR 53600 Crore	INR 33600 Crore	INR 40900 Crore	INR 19700 Crore	INR 1400 Crore
Amount eligible under the scheme	INR 12700 Crore	INR 31600 Crore	INR 36000 Crore	INR 14700 Crore	INR 1400 Crore
Issuance of bonds by Discom	Issued for INR 6353 Crore	Issued for INR 15027 Crore	Issued for INR 17961 Crore	Issued for INR 7366 Crore	Under progress

FRP – Experience with Scheme (2/4)

One size fit policy did not take into account the individual need of each state:

- Every State has different issues and requires policy/ packages to address these issues specifically. For example:
  - Rajasthan Discoms have high power purchase costs due to non-availability own coal resources or any cheap hydro power
  - Moreover, Rajasthan Discoms also have highest number of subsidised consumers ~ 62% (FY 2013-14) as against national average of 40%, while revenue contribution by these categories is very less
- These kind of state-specific issues cannot be addressed through a single scheme

No fund for operational losses:

- The scheme envisaged availability of additional funding from Banks/FIs at diminishing scale during three year period from FY 2012-13, FY 2013-14 and FY 2014-15 approved as 100%, 75% and 50%, respectively
- However, with discoms unable to demonstrate turnaround as expected, the banks started to show unwillingness to fund the operational losses further

FRP – Experience with Scheme (3/4)

Interest liability for the transition period was not taken over by the state:

- FRP envisaged that the State Government shall take over the debt servicing liability on the loans issued as bonds from the cut-off date of issue of bonds as per the Central scheme i.e. 31 March 2012
- However, the State Government took over the liability from the currency of bonds only i.e. from 18 October 2013 which resulted in unaccounted burden of interest costs for discoms (this figure was ~INR 2700 Crore for Rajasthan Discoms)

***Inherent delay in operationalization of scheme*:**

- The scheme was notified in October 2012 which envisaged that the cut-off date for issue of bonds shall be considered as 31 March 2012
- However, the Guidelines for determination of interest rate of Bonds and special securities were notified in April 2013 only
- Thus, due to delay in issue of relevant guidelines for the operationalization of bonds, the implementation of scheme was also delayed

FRP – Experience with Scheme (4/4)

States lacked the required fiscal space:

- During FY13 and FY14, the Discoms reported shortfall in financial turnaround targets as envisaged in the FRP due to various uncontrollable factors and changes in business factors
- As per the Central scheme, the State Government shall is required to make good any shortfall in financial turnover
- Additional support from the State Government to meet this shortfall was not made available

Benefit of tariff hike not available for full year:

- For Rajasthan, even though tariffs were revised during FY 2011-12 (September 2011), FY 2012-13 (August 2012) and FY 2013-14 (June 2013), the benefit of tariff was not available for entire year
- Further, the tariff order for FY 2014-15 was notified in February 2015 only. The delay in tariff resulted in revenue loss to Discoms for approx. INR 7200 Crore. The resultant loss will also have impact in future FRP projections thereby leading to delay in turnaround

Appendix 7
Case Studies

Back

Case Study | TPDDL - Delhi

Competition promotion
Privatization of state discom

Process Strengthening
- Decentralized Energy Billing System (DEBS)
- SCADA system
- Centre for network management
- CRM application
- Replacement of meters (electro mechanical to electronic meters, AMR for high revenue customers)
- High Voltage Distribution system & low tension Aerial Bunch conductor

AT&C Loss levels - ~48%

Governance framework
- Safety audit
- Enforcement wing for theft cases

AT&C Loss levels - ~15%

2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013

Network Strengthening
- Energy audit upto DT level
- Grid Substation Automation System (GSAS) implemented
- Communication Network using optical cables was deployed
- Primary data center established

Soft initiatives
- Consumer education and vocational training targeted towards Economically weaker sections to create community pressure against theft
- Voluntary disclosure and amnesty schemes

Administrative initiatives
- Dedicated electricity courts

Regulatory (five year control periods)
- 16% RoE subject to achievement of loss reduction targets

Government Support
- Tax holiday in 2006-07

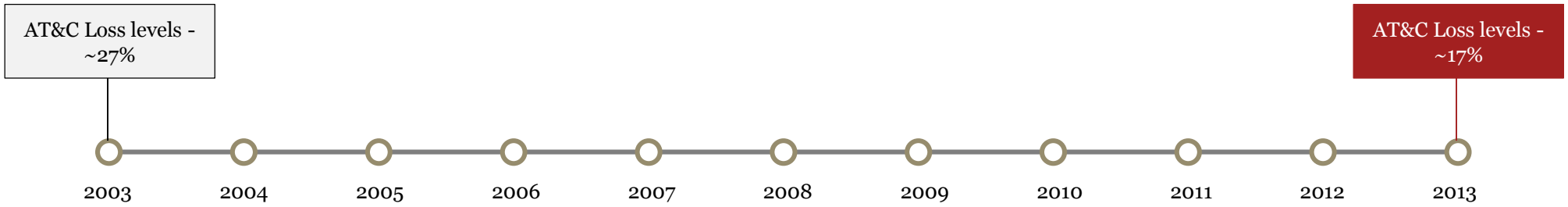
Back

Case Study | PSPCL - Punjab

Process Strengthening

- Installation of meters outside consumer premises

Feeder	Loss reduction	Cost	Savings	Payback period
11 KV hospital feeder	28.09%	5 Lacs	45 Lacs	< 1 month
11 kv Ablowal UPS feeder	~30%	50 Lacs	109 Lacs	6 months



Feeder Segregation

- Work of segregating about 2000 mixed feeders was started in 1996-97 & completed in 2003 – 04

Network Re-design

- 1,86,072 substations were installed
- Loss improvement of 11.28% to 19.29%
- Estimated cost of Rs. 1165.99 crores
- Average pay back period of 4.6 years

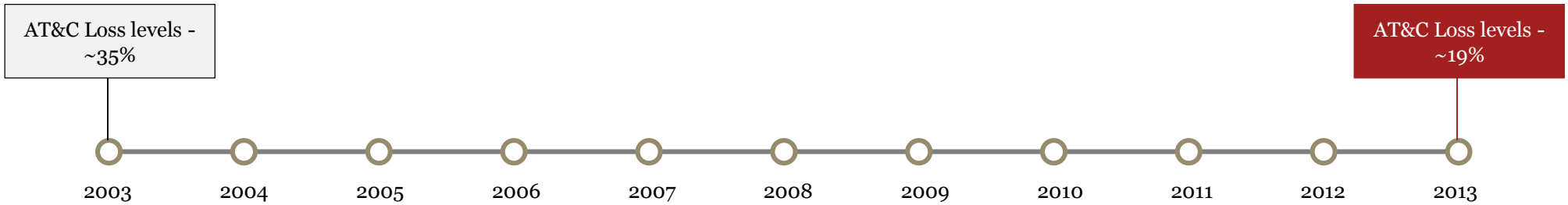
Back

Case Study | PGVCL/MGVCL/DGVCL/UGVCL - Gujarat

Process Strengthening

- 100% metering of customers, feeders and transformers

Utility	Cost (Rs. Cr)	Planned loss reduction	Actual loss reduction
MGVCL	110.44	In progress	In progress
DGVCL	166.33	15%	9.33%
UGVCL	80.57	In progress	In progress
PGVCL	44.68	N/A	N/A



Administrative Initiative

- Setting-up of Vigilance cells and police stations: GEB had set up one vigilance department headed by IPS officer in the rank of Addl. Director General of Police
- 74IC Squads
- 63 LT squads
- 11 HT squads

Network Re-design

- Network Redesign & capex for installing transformers, HVDS to improve HT:LT.

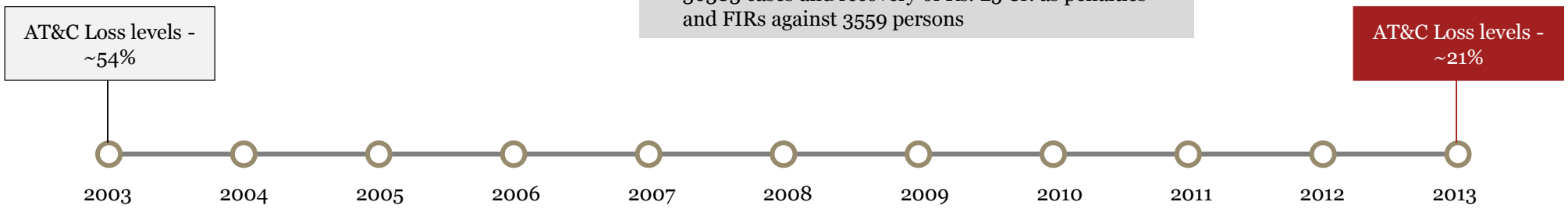
Utility	Network Re-design Cost (Rs. Cr)	Installation of LT ABC Cost (Rs. Cr)
MGVCL	627.65	103.64
DGVCL	N/A	166.33
UGVCL	1564.39	23.26
PGVCL	428.19	200.6

- Jyoti Gram Yojana (JGY): involved laying a parallel rural transmission network across the state involving the erection of 15,500 transformers and 75,000 km of lines at an investment of Rs 1,200 crore

Case Study | MSEDCL - Maharashtra

Administrative Initiative

- Six dedicated police stations have been established in Maharashtra to handle power theft cases only. During FY 2007-08 about 90,000 cases of power thefts amounting to Rs. 55.41 Cr. Were detected
- During April to September 2008, the drive resulted in 36383 cases and recovery of Rs. 25 Cr. as penalties and FIRs against 3559 persons



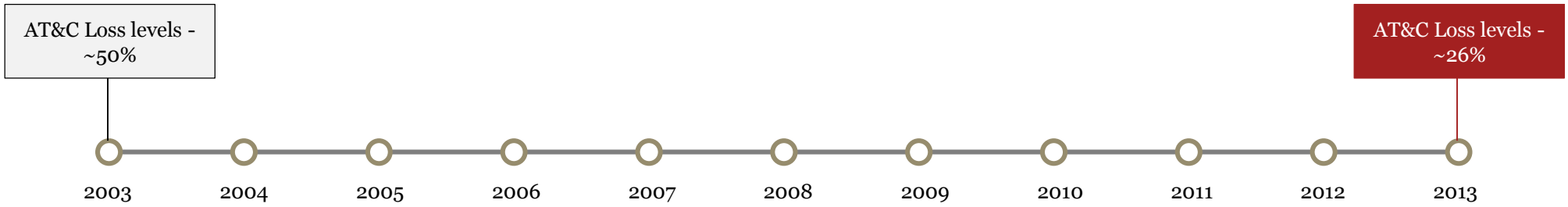
Network Re-design

- Gaothan Feeder Segregation is separating the rural feeders from agricultural pump sets for more than 15000 villages with an estimated total cost of Rs 2389 Crores
- Energy accounting at various levels to undertake Monthly Energy Accounting at Division, Feeder and DTC level
- Transformers loading was restricted to 80% level while capex was taken for installation of new transformers. Total project cost for infrastructure investment in 119 divisions is expected to be Rs 8918 Cr

Case Study | Madhya Pradesh

Process Strengthening

- Billing of Agricultural Consumption on the basis of Group Metering. provide meter on the Distribution Transformer for the group of agriculture consumers served by the DTR. The consumption recorded by the DTR meter could be divided amongst the connections on per HP pro-rata basis



Network Re-design

- Feeder Separation - The internal rate of return (IRR) of project is 26.03 % and payback period 4 years

Appendix 8
International Review

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Iran

T&D Loss Level : 13% (FY 13)

GDP per Capita (PPP) (FY 14): USD 16,500*

Per capita electricity consumption 2471 kwh/year (As on FY 14)*

Technical Loss Reduction

Initiative
Installation of Shunt Capacitors
Replacing high capacity DT with low capacity – Replacing 630 kVA DTs with smaller pad mounted 200 kVA, 100 kVA DTs
Complete Removal of low voltage network- Extension of 22KV line nearer to consumer
Utilization of Pad Mounted Transformer- Increasing reliability

Non-Technical Loss Reduction

Initiative
Automatic readings of meters
Replacement of traditional meters with Smart Meters
Load management- Peak load charges, auto load management device
Alarm Management- Alarm enabled meters to curb tampering ,theft etc.
Distribution loss analysis- Daily distribution loss monitoring

* Source - CIA World Fact Book

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Oman

T&D Loss Level: 12.99% (FY 11)

GDP per Capita (PPP): USD 44,100 (FY 14)

Per capita electricity consumption 4758 kwh/year (As on FY 14)

Technical Loss Reduction

Initiative
Addition of new Transmission Lines- Power flow over multiple paths
Minimizing losses due to weak links - (Jumpers, loose contacts, brittle conductors)
Installation of smaller capacity distribution transformer
Re- routing of higher loss feeders
Power factor correction and load balancing
Use of Aluminium Conductor Composite Core (ACCC) – Use of larger size & efficient conductors
Planned DT management and proactive maintenance
Technical specification strengthening – Incorporation of best standards

Non-Technical Loss Reduction

Initiative
Installation of smart meters
100% network metering up to consumer level
Community engagement and awareness for theft control
Installation of under ground cables for power distribution

* Source - CIA World Fact Book

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Uganda

T&D Loss Level : 27% (FY 12)

GDP per Capita: USD 1800 (FY 14)

Per capita electricity consumption 61 kwh/year (As on FY 14)

Technical Loss Reduction

Initiative
Substation metering for energy flow measurement
Installation of Low loss transformers
Re conductoring of overhead lines with large area conductors
Augmentation of supply system– Establishing 132 KV S/s
Installation of shunt capacitor banks
Load Balancing
Prepaid Metering
Reconfiguration of 11KV Feeders
Third party energy audits

Non-Technical Loss Reduction

Initiative
Implementation of new customer care and billing system (NCBS)- Capturing Real Time Data, access to centralized data base at the head office, MIS Reporting, efficient customer billing
100% metering and deployment of smart meters
Tamper-proof metering technologies
Outsourcing and decentralisation of O&M practices
Automatic Meter Reading
Institution of Special Courts
Community engagement
Daily monitoring of energy meter reading for select consumers

* Source - CIA World Fact Book

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Brazil

T&D Loss Level: 15.5% (FY 13)

GDP per Capita: USD 15200 (FY 14)

Per capita electricity consumption 2249 kwh/year (As on FY 14)

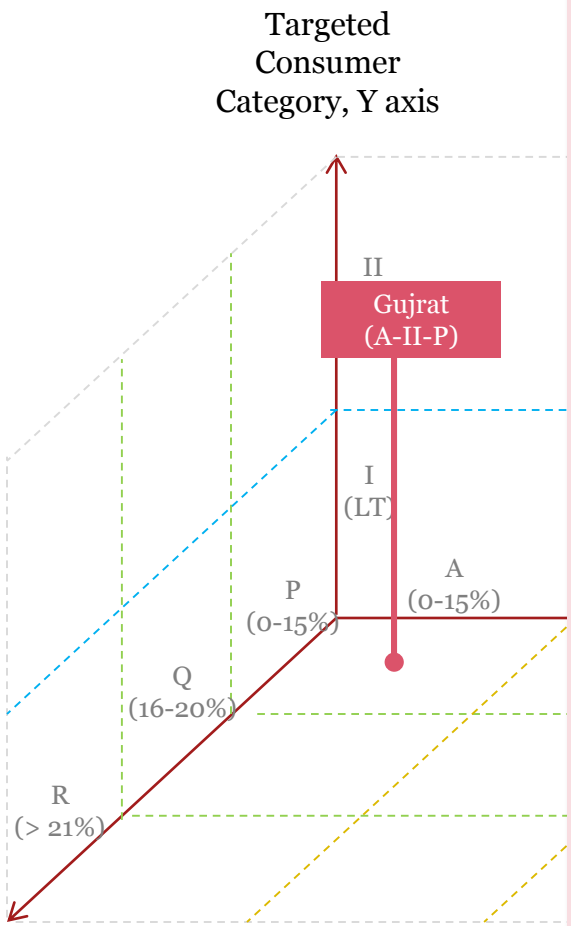
Non-Technical Loss Reduction
Third party energy audits
Waiving of connection fee so as to lure consumers to opt for metered connection
Customer connection & Efficiency measures- Replacement of inefficient household appliances, re-wiring of homes at the initiative of the Govt.
Conducting community events & door-to -door visits for apprising the consumers about the initiatives
Incentivising consumers for getting their connections metered
Educating the consumers in reducing the consumption
Capping of electricity bills for a certain period initially

Technical Loss Reduction
Upgradation of distribution system& service infrastructure
Installation of twisted & bi-coaxial cable to reduce theft
Electronic metering
Replacing twelve conventional overloaded transformers with efficient transformers

* Source - CIA World Fact Book

Appendix 9
Identifying best loss reduction initiatives

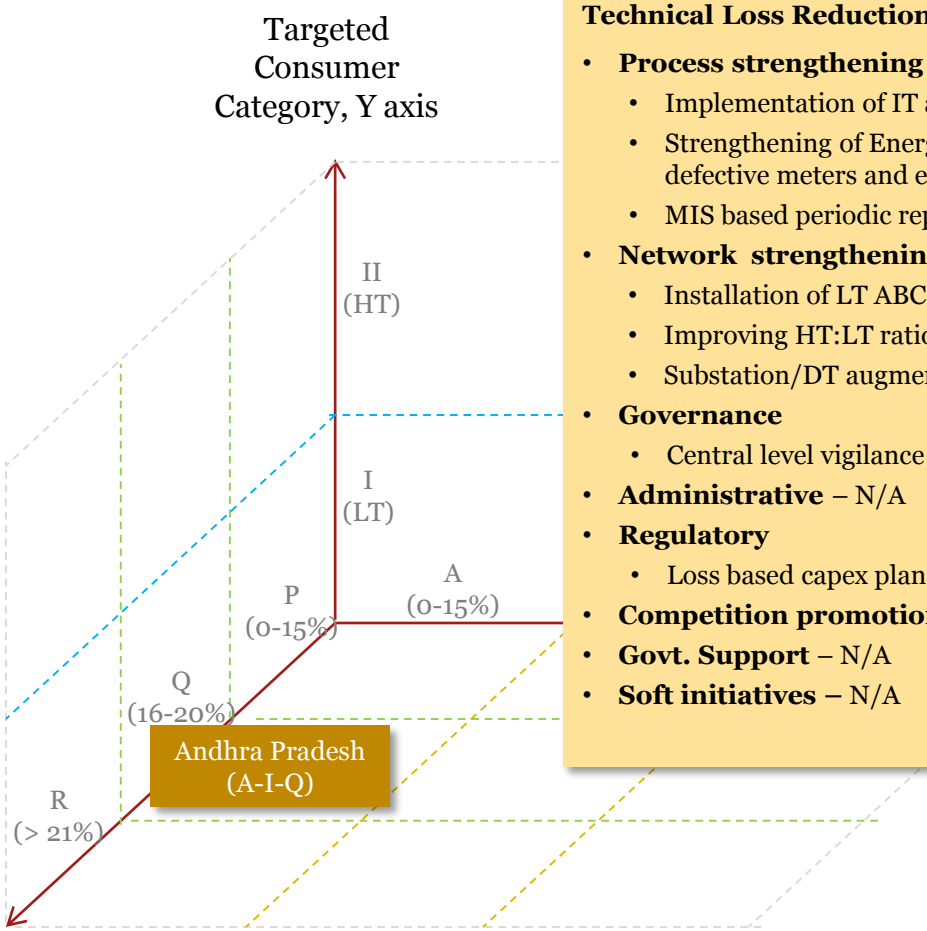
Identifying best loss reduction initiatives



Technical Loss Reduction for HT consumers:

- **Process strengthening**
  - Implementation of IT application in MBC activities (AMR/HHD/e-mail, sms based intimation
  - Re-engineering of business processes with technological advancement
  - Strengthening of Energy accounting infrastructure - Feeder metering, DT metering, 100% consumer metering, replacement of defective meters and electromechanical meters
  - MIS based periodic reporting of unit wise business parameters
- **Network strengthening**
  - Segregation of feeders/Bifurcation of feeders
  - Implementation of HVDS system
  - Installation of LT ABC
  - Improving HT:LT ratio
  - Substation/DT augmentation
- **Governance**
  - Constitution of loss monitoring, energy audit etc committee/cells
  - Central level vigilance team
- **Administrative** – N/A
- **Regulatory**
  - Loss based capex plans
- **Competition promotion**
  - Introduction of private participation - DF initiatives/ Privatisation
- **Govt. Support** – N/A
- **Soft initiatives**
  - Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS

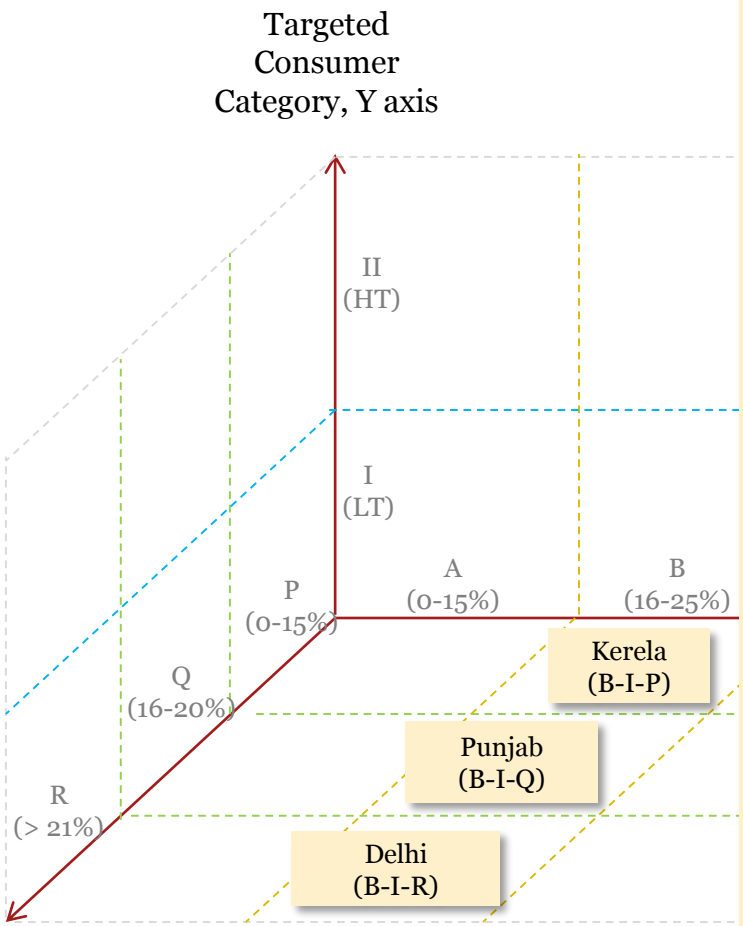
Identifying best loss reduction initiatives



Technical Loss Reduction for LT consumers:

- **Process strengthening**
  - Implementation of IT application in MBC activities (AMR/HHD/e-mail, sms based intimation
  - Strengthening of Energy accounting infrastructure - 100% consumer metering, replacement of defective meters and electromechanical meters
  - MIS based periodic reporting of unit wise business parameters
- **Network strengthening**
  - Installation of LT ABC
  - Improving HT:LT ratio
  - Substation/DT augmentation
- **Governance**
  - Central level vigilance team
- **Administrative** – N/A
- **Regulatory**
  - Loss based capex plans
- **Competition promotion** – N/A
- **Govt. Support** – N/A
- **Soft initiatives** – N/A

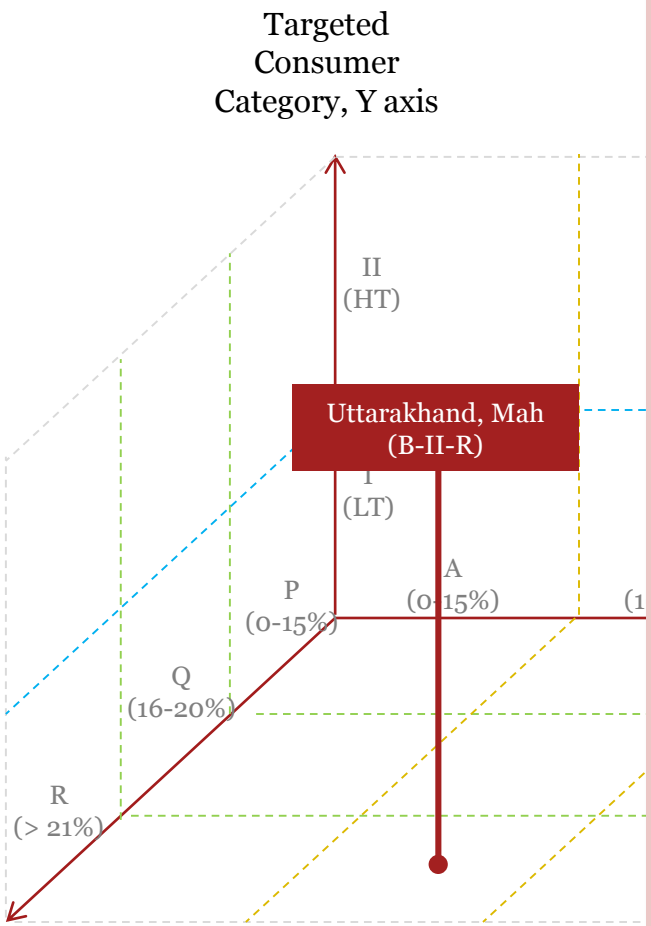
Identifying best loss reduction initiatives



Commercial Loss Reduction for LT consumers: (of Delhi)

- **Process strengthening**
  - Implementation of IT application in MBC and network management activities
  - Re-engineering of business processes with technological advancement
  - Strengthening of Energy accounting infrastructure – feeder metering, DT metering, 100% consumer metering, replacement of defective meters and electromechanical meters
  - MIS based periodic reporting of unit wise business parameters
- **Network strengthening**
  - Segregation of feeders/Bifurcation of feeders
  - Implementation of HVDS system
  - Installation of LT ABC
  - Improving HT:LT ratio; Substation/DT augmentation
- **Governance**
  - Nomination of feeder managers; Dedicated field level loss management roles
  - Employee incentive schemes; Central level vigilance team; Employee capacity building with focused programs
- **Administrative**
  - Dedicated police stations and staff; Dedicated courts
- **Regulatory**
  - Loss reduction based incentivisation mechanisms and capex plans
- **Competition promotion**
  - Introduction of private participation - DF initiatives/ Privatization
  - Outsourcing strategy and implementation
- **Govt. Support**
  - Equity injection; Timely payment of government dues
  - Performance monitoring and review
- **Soft initiatives**
  - Consumer communication on loss reduction; Customer satisfaction program
  - Connection regularization scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc

Identifying best loss reduction initiatives



Commercial Loss Reduction for HT consumers:

- **Process strengthening**
  - Implementation of IT application in MBC and network management activities
  - Strengthening of Energy accounting infrastructure
  - MIS based periodic reporting of unit wise business parameters
- **Network strengthening**
  - Segregation of feeders/Bifurcation of feeders
  - Implementation of HVDS system
  - Installation of LT ABC
  - Improving HT:LT ratio; Substation/DT augmentation
- **Governance**
  - Consititution of loss monitoring, energy audit etc committee/cells
  - Nomination of feeder managers; Dedicated field level loss management roles
  - Central level vigilance team; Employee capacity building with focused programs
- **Administrative**
  - Dedicated police stations and staff
  - Legal framework for employee penalisation
- **Regulatory**
  - Loss reduction based incentivisation mechanisms, capex plans and tariff design
- **Competition promotion**
  - Introduction of private participation - DF initiatives/ Privatisation
  - Outsourcing strategy and implementation
- **Govt. Support**
  - Performance monitoring and review
- **Soft initiatives**
  - Consumer communication on loss reduction
  - Connection regularisation scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc

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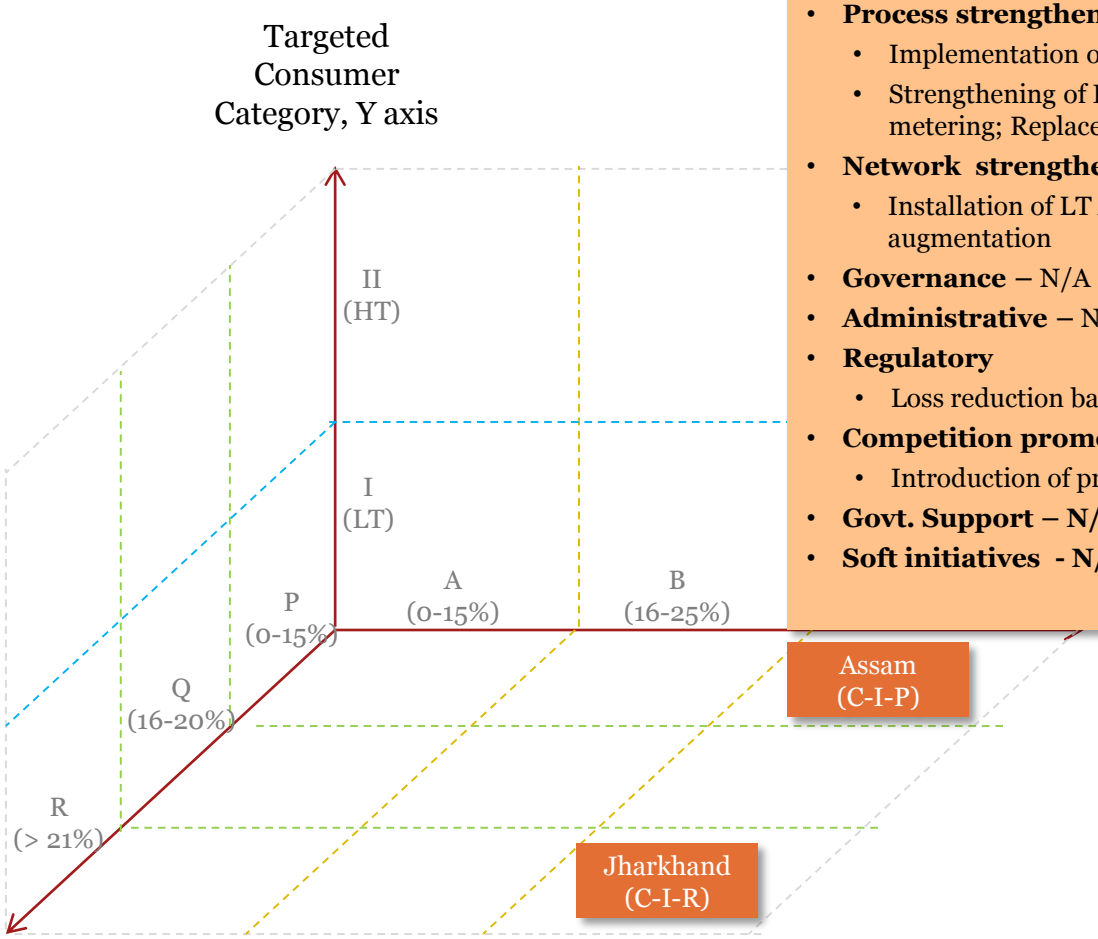
Identifying best loss reduction initiatives



Theft Loss Reduction for LT consumers: (of Jharkhand)

- **Process strengthening**
  - Implementation of IT application in MBC activities
  - Strengthening of Energy accounting infrastructure – 100% consumer metering; Replacement of defective meters and electromechanical meters
- **Network strengthening**
  - Installation of LT ABC; Improving HT:LT ratio; Substation/DT augmentation
- **Governance** – N/A
- **Administrative** – N/A
- **Regulatory**
  - Loss reduction based capex plans
- **Competition promotion**
  - Introduction of private participation - DF initiatives/ Privatisation
- **Govt. Support – N/A**
- **Soft initiatives - N/A**

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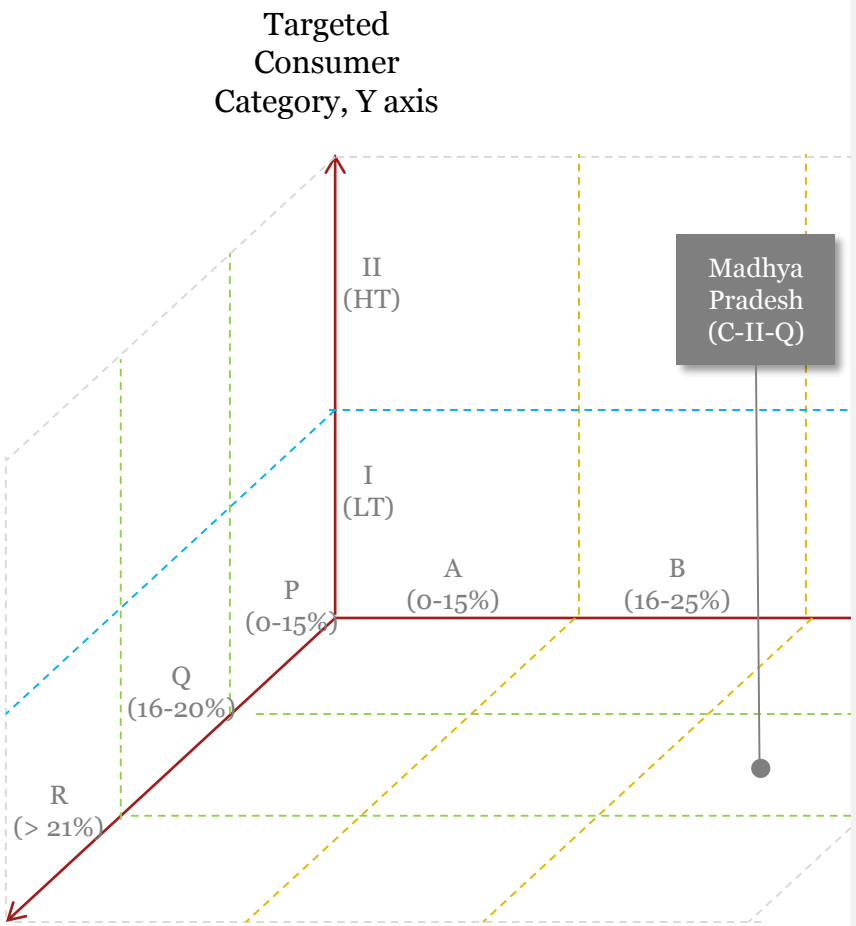
Identifying best loss reduction initiatives



Theft Loss Reduction for HT consumers:

- **Process strengthening**
  - Implementation of IT application in MBC and network management activities
  - Strengthening of Energy accounting infrastructure – feeder metering, DT metering, 100% consumer metering; Replacement of defective meters and electromechanical meters
  - MIS based periodic reporting of unit wise business parameters
- **Network strengthening**
  - Segregation of feeders/Bifurcation of feeders; Implementation of HVDS system
  - Installation of LT ABC; Improving HT:LT ratio; Substation/DT augmentation
- **Governance**
  - Consititution of loss monitoring, energy audit etc committee/cells
  - Nomination of feeder managers
  - Theft reporting consumer incentive schemes
  - Central level vigilance team
  - Employee capacity building with focused programs
- **Administrative** – N/A
- **Regulatory**
  - Loss reduction based capex plans
- **Competition promotion**
  - Introduction of private participation - DF initiatives/ Privatisation
  - Outsourcing strategy and implementation
- **Govt. Support**
  - Performance monitoring and review
- **Soft initiatives**
  - Connection regularisation scheme/surcharge waiver of scheme/interest waiver scheme/VDS etc
  - Transfornmer Management System, Flat rate for Agricultural consumer

Appendix 10
Supporting documents

List of documents referred for this study (1/3)

- Southern power distribution company of A.P. Limited, ARR & Tariff Proposals for Retail Supply Business for FY 2012-13
- Southern power distribution company of A.P. Limited, Aggregate Revenue Requirement and Retail supply business for the FY 2015-16
- Draft Report on Diagnostic Study in Transmission and Distribution utilities of Assam, February 2013
- Order dated 09 April 2015 of Assam Electricity Regulatory Commission against petition number 6/2015
- Executive Summary based on TPDDL's Petition for True up for FY 2013-14, APR for FY 2014-15 and ARR for FY 2015-16
- Order on TRUE UP for FY 2008-09 & FY 2009-10 and ARR for FY 2011-12 NDPL
- Tariff Order Truing up for FY 2013-14 and Determination of Tariff for FY 2015-16 For Madhya Gujarat Vij Company Limited (MGVCL)
- Tariff Order Truing up for FY 2012-13 and Determination of Tariff for FY 2014-15 For Madhya Gujarat Vij Company Limited (MGVCL)
- Tariff Order Truing up for FY 2011-12 and Determination of Tariff for FY 2013-14 For Madhya Gujarat Vij Company Limited (MGVCL)
- Tariff Order Truing up for FY 2010-11 and Determination of Tariff for FY 2012-13 For Madhya Gujarat Vij Company Limited (MGVCL)
- Business Plan for MYT second control period FY 2011-12 to 2015-16, Madhya Gujarat Vij Company Limited (MGVCL)
- Petition for true--up for FY 2011--12,, annual revenue requirement for FY 2012--13, MYT for control period FY 2013--14 to FY 2015—16 & tariff determination for FY 2013—14, JSEB
- Tariff Order on Annual Revenue Requirement for FY 2007-08, FY 2008-09, FY 2009-10, FY 2010-11 and FY 2011-12 and Determination of Provisional Tariff for FY 2011-12 for Jharkhand State Electricity Board
- Application for approval of the Aggregate Revenue Requirement and Expected Revenue from Charges for the year 2011-12, Kerala State Electricity Board
- Kerala State Electricity Board Limited, Aggregate Revenue Requirement & Expected Revenue From Charges For FY 2014-15
- Application for approval of the Aggregate Revenue Requirement and Expected Revenue from Charges for the year 2010-11, Kerala State Electricity Board
- Application for approval of the Aggregate Revenue Requirement and Expected Revenue from Charges for the year 2013-14, Kerala State Electricity Board

List of documents referred for this study (2/3)

- Application for approval of the Aggregate Revenue Requirement and Expected Revenue from Charges for the year 2012-13, Kerala State Electricity Board
- Final True up for FY 2010-11, Aggregate Revenue Requirement of FY 2011-12 and FY 2012-13, Tariff Determination for FY 2012-13 and Revision in Schedule of Charges, Maharashtra Electricity Regulatory Commission
- Petition of Maharashtra State Electricity Distribution Co. Ltd. for approval of Multi Year Tariff for Second Control Period FY 2013-14 to FY 2015-16
- Presentation on Problems before Mahavitaran Action Plan, Achievements & Future Plans Towards Reforms
- Presentation on MSEDCL's Mission statement and Ten Point Action Plan
- Presentation of Chief Engineer's Review Meet of MahaVitran on 5th August 2006
- Maharashtra State Electricity Distribution Company Ltd.'s (MSEDCL) Petition for Truing Up for FY 2008-09, Annual Performance Review for FY 2009-10 and Aggregate Revenue Requirement and Tariff Determination for FY 2010-11
- Maharashtra State Electricity Distribution Company Ltd.'s (MSEDCL) Petition for Truing Up for FY 2007-08, Annual Performance Review for FY 2008-09 and Tariff Determination for FY 2009-10
- Petition filed by Maharashtra State Electricity Distribution Company Limited seeking Final True Up for FY 2009-10 and Annual Performance Review for FY 2010-11
- Annual Revenue Requirement And Tariff Proposal Petition For Fy 2015-16, Madhya Pradesh Power Management Company Limited
- Aggregate Revenue Requirement And Retail Supply Tariff Order For Fy 2013-14, Madhya Pradesh Electricity Regulatory Commission
- Annual Revenue Requirement And Tariff Proposal Petition For Fy 2015-16, Madhya Pradesh Power Management Company Limited
- Filing Of Revised Arr For Retail Supply And Distribution Business For 2011-12 Before The Madhya Pradesh Electricity Regulatory Commission, Bhopal
- Annual Revenue Requirement Filed By The Punjab State Power Corporation Limited For The Financial Year 2013-14
- Assam Electricity Regulatory Commission (Aerc) Tariff Order Fy 2013-14 To Fy 2015-16
- Order on Annual Performance Review for FY 2013-14 and Determination of ARR and Tariff for FY 2014-15 for Power Development Department (Distribution), Govt. of J&K

List of documents referred for this study (3/3)

- Aggregate Revenue Requirement And Tariff Order for FY 2014-15 For Department of Power Government of Arunachal Pradesh
- Order On Performance Review For Fy 2013-14 And Determination Of Aggregate Revenue Requirement And Tariff For Retail Sale Of Electricity For Fy 2014-15 Of North Bihar Power Distribution Company Limited (NBPDCL)
- Order On Performance Review For Fy 2013-14 And Determination Of Aggregate Revenue Requirement And Tariff For Retail Sale Of Electricity For Fy 2014-15 Of South Bihar Power Distribution Company Limited (SBPDCL)
- Nagaland Electricity Regulatory Commission Tariff Order FY 2014-15
- True-up of FY 2011-12, Review of ARR of FY 2012-13 & Determination of Aggregate Revenue Requirement & Retail Tariff for FY 2013-14, Tripura State Electricity Corporation Limited
- Order Of The West Bengal Electricity Regulatory Commission For The Year 2013 – 2014
- Final True up of JSEB for FY 2003-04 to FY 2010-11 and MYT Order for Generation Business for First Control Period (FY 2012-13 to FY2015-16
- Tariff Order Truing up for FY 2012-13 and Determination of Tariff for FY 2014-15 For Uttar Gujarat Vij Company Limited (UGVCL)
- Tariff Order Truing up for FY 2012-13 and Determination of Tariff for FY 2014-15 For Madhya Gujarat Vij Company Limited (MGVCL)
- Tariff Order Truing up for FY 2012-13 and Determination of Tariff for FY 2014-15 For Paschim Gujarat Vij Company Limited (PGVCL)
- Tariff Order Truing up for FY 2012-13 and Determination of Tariff for FY 2014-15 For Dakshin Gujarat Vij Company Limited (DGVCL)
- Tariff Order 2014-15 For Electricity Department Government Of Manipur
- Kerala State Electricity Regulatory Commission ARR, Expected Revenue From Charges (Erc) And Tariff Order For Ksebl - FY15
- Tariff Order 2014-15 For Electricity Department Government Of Mizoram
- Sikkim State Electricity Regulatory Commission TARIFF ORDER FY 2014-15
- Determination Of Aggregate Revenue Requirement (Arr) And Tariff For Fy 2014-15 And Petition For True-Up Of Arr And Revenue For The Financial Years 2008-09 To 2011-12 For Dakshinanchal Vidyut Vitran Nigam Limited
- Joint Electricity Regulatory Commission (JERC), Annual Report 2013-14
- Joint Electricity Regulatory Commission (JERC), Annual Report 2012-13
- Assam Electricity Regulatory Commission (Aerc) Tariff Order Truing Up Of Fy 2013-14 Apr Of Fy 2014-15, Arr And Tariff For Fy 2015-16
- Determination of true-up of Aggregate Revenue Requirement for FY 2009-10 based on the true-up applications filed by Madhya Pradesh Poorv, Madhya and Paschim Kshetra Vidyut Vitaran Company Ltd. (West Discom) under Multi Year Tariff Principles.

New Emission/Water Consumption norms for Coal Based Power Plants

Presentation to Forum of Regulators, 8th April 2016

Association of Power Producers

Background

- On 7 Dec 2015, Ministry of Environment, Forests & Climate Change (MoEF & CC) issued a Gazette Notification amending the Environment (Protection) Rules, 1986, with stringent emission norms - Particulate Matter, SOx, NOx & Mercury, and Water Consumption.
- Despite concerns expressed by industry and even the CEA, the stringent new norms have been made applicable to plants in operation as well as plants under construction, thereby qualifying as an event of change in law.
- All existing coal based plants (173 GW) as well as plants under construction (75 GW) will be affected by these norms.
- While the entire industry believes that environmental safeguards are a must, one must keep ground realities and practical implementation in mind.
- Through this presentation, we attempt to discuss:
  - Global perspective and experiences
  - Measures required for compliance with the norms and implications on the sector
  - Proposed implementation roadmap
  - Enabling framework and process clarity

Global experiences

- An overview of the norms applicable in other developed as well as developing countries and also well established guidelines of international institutions such as the World Bank, reveal that the new emission norms provided in India are far more stringent than most other countries.
- A review of the path adopted by other nations for implementation of emission control norms shows a more practical and realistic approach taken in many cases:
  - **USA** – There was a consultative period of 2 years before the notification of new norms. The norms were implemented in two phases – first phase was spread over 7 years and was applicable to 110 large stations. Second phase was implemented after 10 years for rest of the stations. The NOx and SOx requirements were modeled as 'cap and trade' programs which allowed companies to decide how they wanted to meet the caps – through installation of equipment or switching to lower sulphur fuels or running the plants for lesser hours or purchasing credits from plants which had over-complied.
  - **South Africa** – new plants were given a period of 5 years to comply with the norms. Existing plants were asked to first comply with less stringent norms within 10 years and then comply with norms at par with new plants within further period of 5 years.
  - **European Union** - existing plants were given the option to 'opt out' from the directive, following which they would be allowed to operate for lesser number of hours before being gradually phased out.

Impact of new norms – Particulate Matter

Interventions required for compliance	Retrofitting Bag Filter between 2 ESPs, Replacing ESP with new Bag Filter, cyclone separator, multi field ESP, dust separation system, efficient water sprinkler
Timelines for design, procurement and installation of new equipment	ESP Area addition/installation of fabric filters – **36 months**
Broad estimate of expenditure involved	Rs **15 lakhs/MW** for installation of additional ESP fields/bag filters
Issues involved in compliance	• Space for additional ESP fields and Bag Filters – constraint in some Plants • High Ash Indian coal imposes limitation in use of additional ESP Fields or Bag Filters – requires OEMs' confirmations • Bag Filter technology for Indian Ash characteristics yet to be proved and indigenous availability is also an issue • Multi field ESP may be required with other particulate matter suppression and collection systems – will require extensive changes and a large amount of space. • **Required modifications will increase auxiliary consumption by 3-4% and can result in major modification of electrical systems.**

Impact of new norms – Sulphur Dioxide (SO_2)

Interventions required for compliance	Installation of Flue Gas Desulphurisation (FGD) unit
Timelines for design, procurement and installation of new equipment	48 months
Broad estimate of expenditure involved	Rs 50 lakhs/MW for installation of FGD system
Issues involved in compliance	• Capacity of FGD suppliers is limited (domestic and even global) and simultaneous retrofit across all plants in the specified timeframe will not be possible • Though technology for FGD (Wet, Dry & Semi Dry) is available, it is not tested for abrasive high ash Indian coal (the existing plants with FGD are using substantial imported coal) • Existing plants are likely to face challenges with space or incremental water availability for retrofit FGDs. Further, sub-critical units based on FBC technology will require substantial design change and re-engineering. • Disposal of hazardous solid waste - FGD system for a 500 MW unit is likely to generate additional hazardous solid waste to the tune of 85,000 tons per annum which would require creation of additional facilities for storage, treatment and disposal • Requirement of large quantity of limestone – About 1.05 MTPA lime would be required for a FGD system for a 500 MW unit. Availability and transportation of such large quantity would be an issue. • Sustained availability of required consumables in desired quantity at competitive prices • FGD with limestone may generate 0.7 tonnes of CO2 with absorption of one tonne of SO2, which may adversely affect the country's aim to reduce CO2

Impact of new norms – Oxides of Nitrogen (NO_x)

Interventions required for compliance	Installation of low NOx burners, Selective Catalytic Reduction (SCR) and Selective Non-Catalytic Reduction (NSCR) systems, Flue Gas Recirculation (FGR) system
Timelines for design, procurement and installation of new equipment	30 months
Broad estimate of expenditure involved	Rs 40 lakhs/MW for installation of SCR system
Issues involved in compliance	• Integration of the required technologies require major changes in design of boiler and burner system. Unit sizes lesser than 500 MW will face major technical constraints. • Proven SCR technology for Indian coal not available and not installed anywhere in India at present. Interactions with global suppliers of SCR systems has shown that none of them have experience with handling coal with such high ash content as Indian coal. Some vendors have even expressed the need to first set up a small pilot plant to study the behavior of flue gas resulting from Indian coals. • Further, capacity of SCR/SNCR suppliers is limited and simultaneous retrofit across all plants in the specified timeframe will not be possible with domestic and even global suppliers. • Installation of SCR systems requires extensive changes in duct work, relocation of air preheater, change in ID fan etc. SCR systems will also significantly impact the O&M cost of the plant due to excessive power consumption on account of increased pressure drop in the system. There is also a significant repetitive cost of replacing expensive Catalysts every 2 to 3 years. • The efficiency of SCR and SNCR systems reduces when plants are run on partial load – may be an issue in Indian power system context.

Impact of new norms – Water Consumption

A. Sea Water based plants

Interventions required for compliance	Installation of Cooling Tower (CT) as specified, installation of RO system for zero discharge
Timelines for design, procurement and installation of new equipment	12-15 months for installation of Cooling Tower
Broad estimate of expenditure involved	Rs 50 lakhs/MW for installation of Cooling Tower

Issues involved	• Given the technical CoC limitation of 1.5, it is technically impossible for sea water based plants to achieve the norm of 3.5 m3/MWh (with COC of 1.5, the specific water consumption achievable is more than 8 m^3/MWh). Further, sea water based FGD will require water consumption of about 100m3/Mwh.
	• If such limits are insisted upon for coastal plants, they will need fresh water supplies for compliance as with fresh water, the achievable CoC is around 5. However usage of fresh water by coastal plants is highly undesirable as:
	  • Will lead to further strain on already strained fresh water resources
	  • Fresh water as a substitute to sea water may not be available
	  • Basic criteria for siting of coastal plants (availability of sea water) would be defeated
	  • No option but to close down the sea water based plants if the norms are not revised

Impact of new norms – Water Consumption

B. Inland plants

Interventions required for compliance	Installation of Cooling Tower (CT) as specified, installation of RO system for zero discharge
Timelines for design, procurement and installation of new equipment	12-15 months for installation of Cooling Tower
Broad estimate of expenditure involved	Rs 50 lakhs/MW for installation of Cooling Tower
Issues involved	• Conversion from open cycle to closed cycle through Cooling Tower will require significant space availability. Many existing facilities may have to be shifted and extensive changes to the water intake and make up water system may be required. • Use of FGD technology will require additional storage space & additional water for handling of Lime & Gypsum. Such additional water requirement will make the norm on specific water consumption impossible to comply.

Impact of new norms - Summary

- Out of the 175 GW of installed coal based capacity, about 62 GW of plants have residual life less than 10 years for whom **modifications may not be possible** due to design and space constraints. Even if technically feasible, it may not be financially feasible to recover the cost of retrofitting.
- Sea water based plants will find it impossible to comply with the water consumption norms.
- For other existing plants, the modifications will entail **significant additional costs** in the range of Rs 1.25 Cr/MW to Rs 1.5 Cr/MW. Additional capex along with increased opex will lead to tariff increase of about Rs 0.5/kwh to Rs 1.25/kwh.
- **Domestic availability** of required technology/equipment is limited. Even with global suppliers, simultaneous retrofit will be impossible and will lead to time and cost overruns.
- Many of the required technologies are yet **unproven in Indian conditions** (coal quality etc). There are also likely to be largescale collateral impacts such as FGD waste disposal, limestone availability and transportation etc, which would need to be looked into.
- The **timeline for compliance** as prescribed in the Notification is practically impossible to comply - minimum period of 4 to 5 years required for plants with multiple units.
- An average of 6-8 months **shut down time** will be required for retrofitting equipment for each existing plant, assuming that all the required equipment are installed in tandem. As all the power plants will be undergoing modifications and shutdown in the same time period, this will lead to **wide scale disruption in power supply**.

Proposed Implementation Roadmap

- **Viability and feasibility scan** required on technical and commercial aspects to identify where interventions may not be practical (for eg, plants with no additional land availability or plants with less than 8-10 years life remaining). Such plants may be exempted or may be allowed to operate for lesser number of hours to control their carbon footprints before being gradually phased out.
- Considering the limited domestic availability of equipment suppliers, in order to avoid any adverse impact on the current account balance, **technology transfer and capacity ramp up of domestic suppliers may be initiated at the earliest.** This will be a great opportunity for the 'Make In India' initiative of the Government.
- **Phased implementation** is suggested to avoid large scale power supply disruption and to provide opportunity to the domestic manufacturers to scale up capacity:
  - Considering present under-utilization of installed generation capacity, under-construction category of plants can be taken up in the first phase (3-4 years)
  - Second phase - Existing power projects may be taken up in a staggered manner under a region wise roster to be prepared by CEA in consultation with POSOCO.
- **Appropriate subsidy** may be extended by the Government for meeting part cost of implementation to keep the tariff affordable. Support would be required to open a window for adequate financing from bankers because of stressed balance sheets of developers and the fact that banks already have high exposure to power sector.

A guiding document encompassing - phased implementation program with realistic timeframe and enabling framework to manage the Technological, Financial, Regulatory and institutional issues be prepared by CEA in consultation with Industry, State governments, Regulators, Bankers and Manufacturers of Air Pollution control equipment.

Supporting Framework

An effective enabling framework will ensure efficient implementation of the roadmap for compliance with the emission norms while minimizing any adverse impacts on the power sector.

Enabling Environment

Technological

- Technology scan and service provider availability check; identification of alternate technologies
- Cost benefit analysis
- Acquisition of technological solutions at country wide level
- Relaxation of norms where infeasible or unviable

Institutional

- Create an empowered institutional body to oversee, supervise and support the implementation process
- Approve changes required and devise phased implementation programme along with POSOCO
- Arrange technological tie-ups and negotiate favourable blanket terms with vendors
- Facilitate procurement of additional land and other requirements.

Financial

- Appropriate subsidy from GoI to meet part cost of implementation to keep tariff affordable
- Establishing a fund for financing at reasonable terms , NCEF may also be utilized.
- Availability of lower working capital costs
- Relaxation in exposure norms of banks to increase availability of funding
- Extension of COD with no impact on asset classification

Regulatory

- Ensuring full recovery of capital investments under Change in Law provisions with minimum delay
- Approval of tariff increases as per new operating parameters; amendment in PPA
- Deemed Availability during shutdown period – recovery of fixed charges

Points for consideration of the Hon'ble Regulators

In view of the significant financial and viability impact these changes are likely to cause and in the absence of any detailed guidance /documents on the technology options available or suitable in the Indian context, the following points merit consideration:

- The capital investments for the new changes would qualify under Change-in-law provisions and should be a complete pass through
- Generators should have the assurance that the resultant tariff increases, as approved by the appropriate Regulator, would be effected by the Procurers with immediate effect, in full
- During the period of shut-down, the generating units should be considered Deemed Available and the Fixed Charges would be payable by the Procurers to ensure that the issue of Debt Service obligation and fixed recurring expenses are taken care of
- Allow to seek requisite modifications in the granted LTA on account of reduction in the Net Capacity due to increased Auxiliary Power Consumption
- Approve the estimated increase in O&M Expenses and Auxiliary Power Consumption on account of commissioning of the proposed Schemes
- FOR /CERC may recommend to GoI for Appropriate subsidy from GoI to meet part cost of implementation to keep tariff affordable

Thank You

New Emission and Water Consumption Norms

Emission Norms (mg/Nm3)						
		Category 1		Category 2		Category 3
PARAMETER (mg/NM^3)	PREVIOUS NORMS	TPPs installed before 31 Dec 2003		TPPs installed after 1 Jan 2003 up to 31 Dec 2016		TPPs to be installed from 1 Jan 2017
		< 500 MW	> 500 MW	< 500 MW	> 500 MW	For all Units
Particulate Matter	150/50	100		50		30
Sulphur Dioxide (SO2)	None	600	200	600	200	100
NOx	None	600		300		100
Mercury	None	NA	0.03	0.03		0.03
Timeline for compliance		• **Category 1 & 2 Projects: to comply within 2 years form the date of Notification** • **Category 3 Projects have to comply prior to Commissioning**				

Water Consumption Norms (m3/Mwh)			
PREVIOUS NORMS	Once Through Cooling (OTC) Based Plants	Existing CT based Plants	New plants to be installed after 1st January, 2017
None	3.5m3/MWh	3.5m3/MWh	2.5 m3/MWh

These new norms are much more stringent than even World Bank or EU standards

Global Comparison of Emission and Water Consumption Norms (1/2)

Pollutant	India			World Bank	European Union Standards (Under IED- Also UK standard)	China	Indonesia .
	TPP installed before 31st Dec 2003	TPP installed from 1st Jan 2004 up to 31st Dec 2016	TPP installed from 1st Jan 2017				
SOx	**Units < 500 MW** 600 mg/Nm^3 **Units ≥ 500 MW** 200 mg/Nm^3	**Units < 500 MW** 600 mg/Nm^3 **Units ≥ 500 MW** 200 mg/Nm^3	100 mg/Nm^3	a)2000 mg/Nm^3 b) SOx Emission load is to be calculated as below: i) SOx load – upto 500 MW – 0.2 ton/day/MW c) Max. SO2 load in an area – 500 ton/day	50 – 100 MW **400 mg/Nm^3** 100-300 MW **250 mg/Nm^3** >300 MW **200mg/Nm^3**	100 mg/Nm^3 **(New Plants Commissioned from 1st Jan 2012)** 200 mg/Nm^3 **(Specified 28 Province only)** 400 mg/Nm^3 **(4 Province with high Sulphur Coal**	750 mg/m^3 **(Stack Emission limit)**
NOx	600 mg/Nm^3	300 mg/Nm^3	100 mg/Nm^3	Volatile Matter > 10%: 750 mg/Nm^3 Volatile Matter < 10%: 1500 mg/Nm^3	50 – 100 MW **300 mg/Nm^3** 100-300 MW **200 mg/Nm^3** >300 MW **200mg/Nm^3**	100 mg/Nm^3 **(New Plants Commissioned from 1st Jan 2012)** 100 mg/Nm^3 **(Plant commissioned between 2004-2011)** 200 mg/Nm^3 **(Plant commissioned before 2004)**	850 mg/m^3 **(Stack Emission limit)**
SPM	100 mg/Nm^3	50 mg/Nm^3	30 mg/Nm^3	50 mg/Nm^3	50 – 100 MW **30 mg/Nm^3** 100-300 MW **25 mg/Nm^3** >300 MW **20mg/Nm^3**	30 mg/Nm^3 **(Common for new & existing Plant)**	150 mg/m^3 **(Stack Emission limit)**
Mercury	0.03 mg/Nm^3 **(500 MW & above units)**	0.03 mg/Nm^3	0.03 mg/Nm^3	-	Mercury must be tested once a year	0.03 mg/Nm^3	-

Global Comparison of Emission and Water Consumption Norms (2/2)

Pollutant	India			South Africa	USA	Malaysia
	TPP installed before 31st Dec 2003	TPP installed from 1st Jan 2004 up to 31st Dec 2016	TPP installed from 1st Jan 2017			
SOx	**Units < 500 MW** 600 mg/Nm^3 **Units ≥ 500 MW** 200 mg/Nm^3	**Units < 500 MW** 600 mg/Nm^3 **Units ≥ 500 MW** 200 mg/Nm^3	100 mg/Nm^3	3500 mg/Nm^3	160 mg/Nm^3	500 mg/Nm^3
NOx	600 mg/Nm^3	300 mg/Nm^3	100 mg/Nm^3	1100 mg/Nm^3	117 mg/Nm^3	500 mg/Nm^3
SPM	100 mg/Nm^3	50 mg/Nm^3	30 mg/Nm^3	100 mg/Nm^3	22.5 mg/Nm^3	50 mg/Nm^3
Mercury	0.03 mg/Nm^3 **(500 MW & above units)**	0.03 mg/Nm^3	0.03 mg/Nm^3	none	0.001 mg/Nm^3	0.03 mg/Nm^3

e-Court in Regulatory Bodies : Model Adopted in CERC

8th April 2016

acmis@cercind.gov.in

Introduction

e-Court

An initiative towards e-Governance & Digital India with a view to

- **Increase transparency**
- **Increase efficiency**
- **Paperless**

Court Case Management Automation System (CCMAS)

Court Case Management Automation System (CCMAS)

- **Started in November 2014**
- **Rolled Out in October 2015 (Roll out e-Registration module and e-Filing module was opened on Trial Run mode on 29.10.2015)**
- **Launched on 4th April 2016**

PROCESS FLOW

e-Hearing

e-Filing

Case Information System

Petition Status

Data Store

Data store

External Process

Internal Process at CERC

CERC Web-site

CCMAS Modules

- e-Registration
- e-Filing
- e-Pleading
- Case Information System
- e-Hearing
- Digitization & e-Library

Objectives

- For the parties involved
  - Efficiency
  - Economy
  - Transparency & Access to information

- For CERC
  - Strengthened MIS
  - Improved decision making
  - Easy Data storage & retrieval

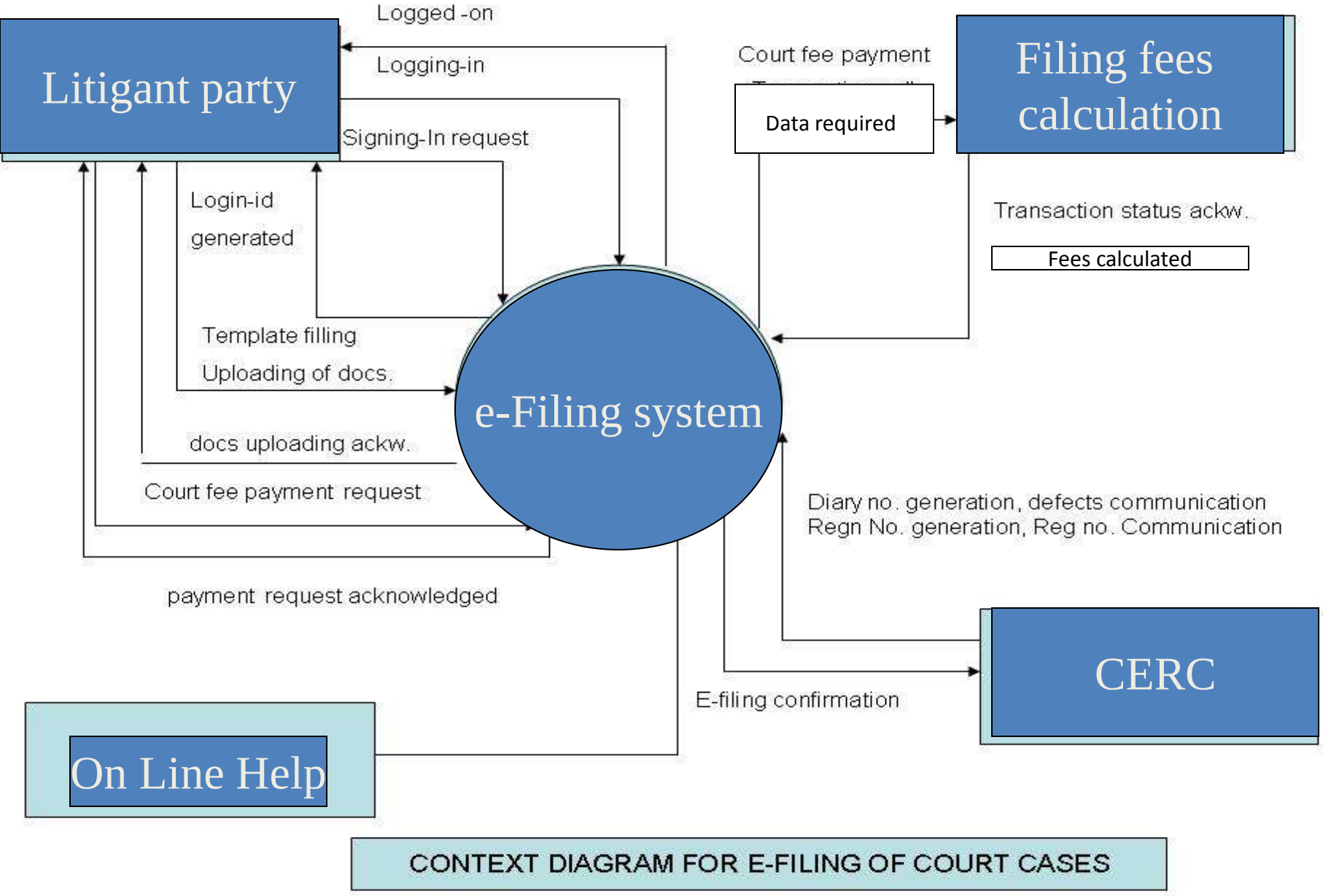
e-Registration

Stakeholders Registration Summary
e-Registration started by CERC on 29th October 2015
(From 29th October – 04th April)

User Type	No of Users applied for e-Registration	No of Users activated by CERC
Organizations	37	27
Advocates	13	9
Employees of already registered organizations	43	39
Individuals	11	1
TOTAL	104	74

e-Filing

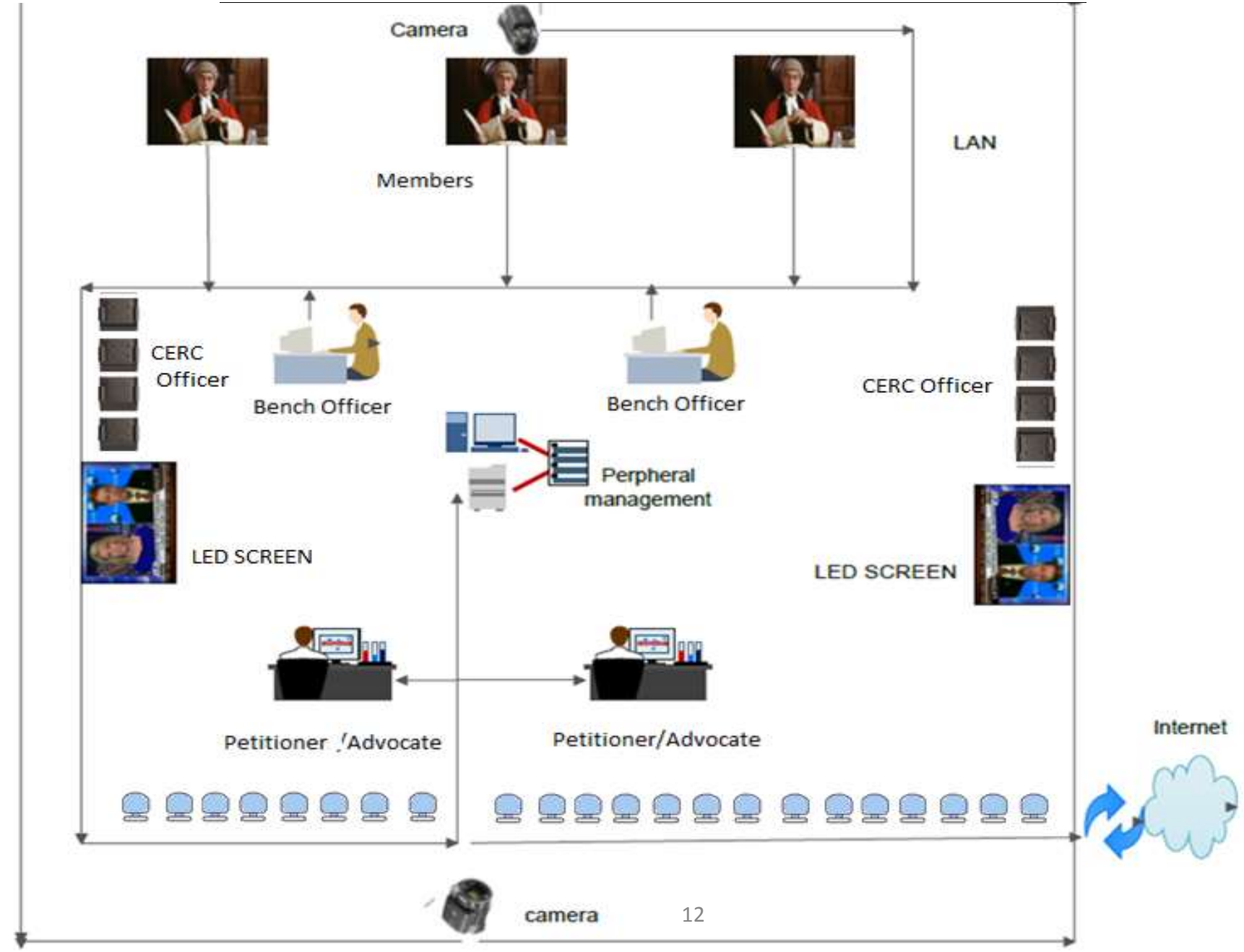
e-Filing in CERC



CONTEXT DIAGRAM FOR E-FILING OF COURT CASES

e-Hearing

A Typical e-hearing Semantic Diagram



Digitization & e-Library

Digitization Steps

Approx. number of pages digitized for live petitions = 2,37,600

Some Glimpse of Court Case Management Automation System

e-Registration

केन्द्रीय विद्युत विनियामक आयोग

Central Electricity Regulatory Commission

के वि वि आयोग
CERC

सत्यमेव जयते

29 Oct 2015

USER LOGIN

Login ID :

Password :

Login Reset

Please do not use:

- Back button to submit form again
- Double click on button/link
- "Reload/Refresh" Option in browser

If you are having trouble viewing this site, it may be because you are using a slightly older browser. The site is fully compatible with the following browsers: Internet Explorer 9 and later, Firefox, Safari, Opera and Chrome. If you are using a different browser, you may wish to update Internet Explorer **here** or download **Chrome** or **Firefox**

OTHER LINKS

- HOME
- ROLL OUT PLAN
- E-REGISTRATION (NEW USER)
- FORGET PASSWORD
- FEEDBACK / CONTACT

Digital India
Power To Empower

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Central Electricity Regulatory Commission

Online Help

GO TO LOGIN PAGE

NEW USER REGISTRATION

◉ Organization ○ Advocate ○ Individual ○ Employee (of already Registered Organization)

Organisation Name* :

Short Name* :

Organization Type* : - Select -

Region (Assets dealing with)* : -- Select --

Administrator Name* :

Department* :

Employee Code* :

Designation* :

Permanent Address ≥ Correspondence Address

Login ID* :

Login Id should be 5 to 32 characters.

Address* :

Address* :

State* : - Select -

State* : - Select -

City* : - Select -

City* : - Select -

Pincode* :

Pincode* :

Communication Details

Landline Number* :

Alternate Number :

Mobile* :

Alternate Mobile :

EMail Address* :

Website* :

Other Details

TAN / Registration Number* :

Aadhaar Card Number :

Attachments

Document Type* : - Select -

Browse... No file selected. Add More

(pdf / jpeg files only)

Note : Consolidated, uploaded documents size should not exceed 100 MB.

Undertaking

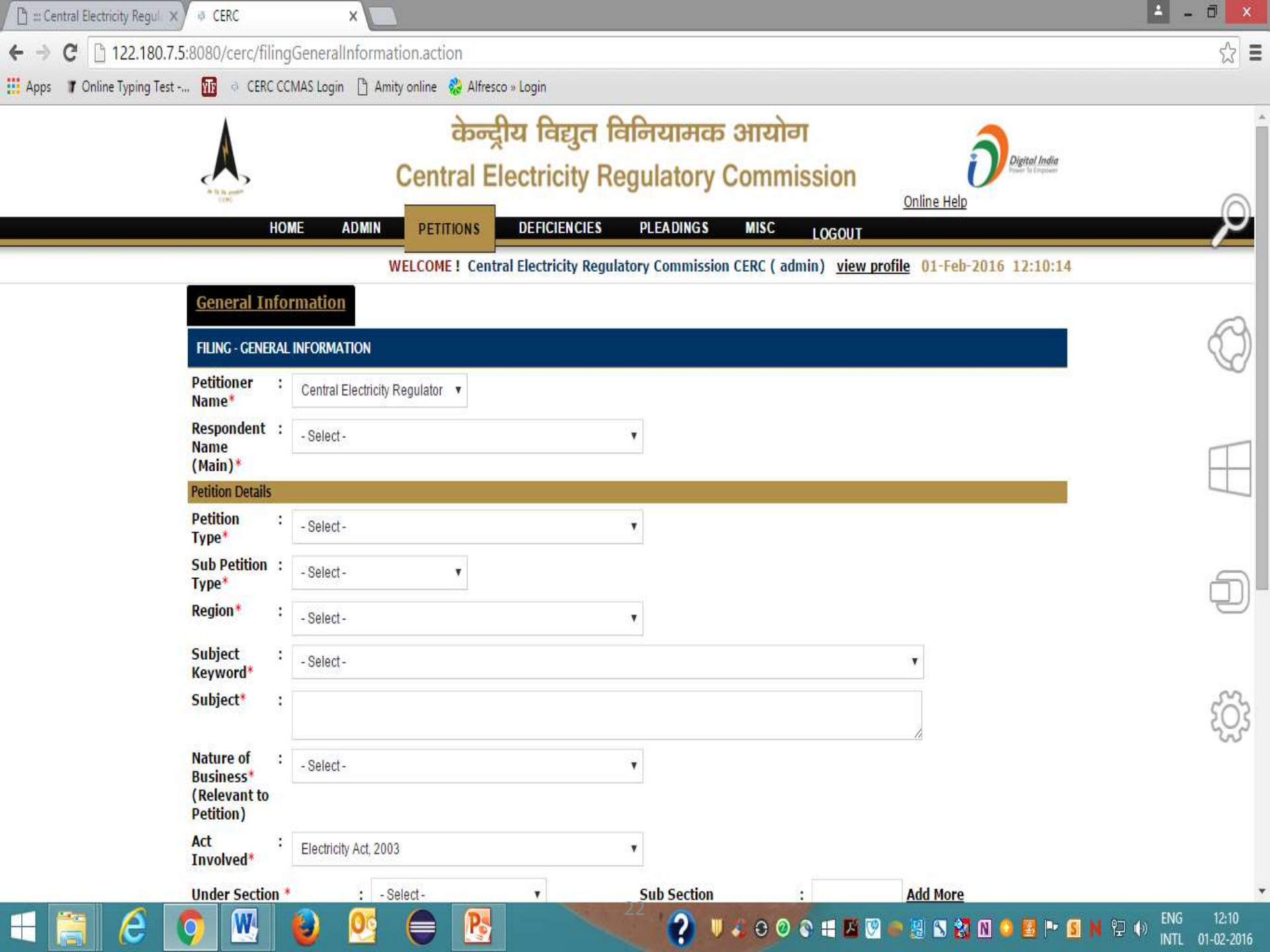
I have read the contents of the site and the instructions given thereof as regards registration and e-filing of petitions/documents before the Commission and agree with the same. I hereby decalre that the information given in the petition/documents are true and correct to the best of my knowledge. I hereby acknowledge and certify that the attachments/enclosures/appendix made alongwiththe petitions/application are true and correct and is valid as per the original documents. I further certify that I have personally or through my counsel completed the petitions/application and have e-filed the same. I understand that any misrepresentation, falsification or omission of information in the petition /application or any document used for registration shall be a valid ground for rejection of the petition/application apart from any other penalty for perjury.

Save Reset Cancel

e-Registration Innovative Features

- **Different categories of registration - organization, advocate, employee of registered organization and individual.**
- **Provision to verify organization administrator by CERC.**
- **Provision of asking Clarification from the stakeholders.**
- **Provision for registering any number of employees of registered organization.**

e-Filing


CERC
122.180.7.5:8080/cerc/filingGeneralInformation.action
Apps
Online Typing Test -...
CERC CCMAS Login
Amity online
Alfresco » Login
केन्द्रीय विद्युत विनियामक आयोग
Central Electricity Regulatory Commission
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HOME
ADMIN
PETITIONS
DEFICIENCIES
PLEADINGS
MISC
LOGOUT
WELCOME ! Central Electricity Regulatory Commission CERC (admin) view profile 01-Feb-2016 12:10:14
General Information
FILING - GENERAL INFORMATION
Petitioner Name*
Central Electricity Regulator
Respondent Name (Main)*
- Select -
Petition Details
Petition Type*
- Select -
Sub Petition Type*
- Select -
Region*
- Select -
Subject Keyword*
- Select -
Subject*
Nature of Business* (Relevant to Petition)
- Select -
Act Involved*
Electricity Act, 2003
Under Section *
- Select -
Sub Section
Add More
22
ENG
INTL
12:10
01-02-2016

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Central Electricity Regulatory Commission

FAQ Online Help

HOME ADMIN PETITIONS PLEADINGS MISC LOGOUT

WELCOME ! Anoop Sharma (Anoop101) 29-Jun-2015 11:20:05

Check List | Summary

General Information | **Respondent Details** | Court Details | Related Petitions | Identical Petitions | Prayer | Attachments

FILING - RESPONDENT DETAILS

Reference No. : 18/2015

Respondent Name* :

Permanent Address

Address* :

State* : - Select -

City* : - Select -

Pincode* :

Correspondence Address

Address* :

State* : - Select -

City* : - Select -

Pincode* :

Communication Details

Contact Number* :

Mobile* :

EMail Address* :

Save Reset Cancel

FILING - CHECK LIST

Reference No. : 16/2015

S. No.	Name	Description	Status
1		Whether subject matter of the petition / application furnished?	(•) Yes ( ) No ( ) NA
2		Whether provision of Act / regulation under which the Petition / Application is filed has been furnished?	(•) Yes ( ) No ( ) NA
3		Whether any interim relief has been prayed for?	( ) Yes ( ) No (•) NA
4		Whether prescribed fees have been paid?	(•) Yes ( ) No ( ) NA
5		Number and content of pages in both the formats of a Petition are same.	(•) Yes ( ) No ( ) NA
6		Whether all documents filed are legible / clear?	(•) Yes ( ) No ( ) NA
7		Whether petition has been supported by affidavit signed / notarized / attested?	( ) Yes ( ) No (•) NA
8		Whether all annexure referred to in petition has been filed?	( ) Yes ( ) No (•) NA
9		Whether Vakalatnama / Memo of appearance / authorization been filed?	( ) Yes ( ) No (•) NA
10		Details of Order / Judgments, if any, passed by SC or High Court on any of the issues raised in the petition. If so, whether copy enclosed?	( ) Yes ( ) No (•) NA
11		Whether index of documents has been filled and the petition paginated and serially numbered?	(•) Yes ( ) No ( ) NA
12		Whether sufficient copies of petition / application filed?	(•) Yes ( ) No ( ) NA
13		Whether all necessary parties have been impleaded?	(•) Yes ( ) No ( ) NA
14		Whether copies of petition have been served on Respondents?	( ) Yes ( ) No (•) NA
15		Whether petition has been posted in web-site as specified in the regulations?	( ) Yes ( ) No (•) NA
16		Filing of Application for Adoption of Tariff (within 10 days from LoI)	( ) Yes ( ) No (•) NA

FILING - SUMMARY

Petition Reference No. : 16/2015

Reference No.	**16/2015**	**Reference No. Generation Date**	**24/06/2015**
Diary No.	**/**	**Diary No. Generation Date**	
Registration No.		**Registration No. Generation Date**	

Petition Type : **Adoption of Tariff**
Region : **North**
Subject Keyword : **Default in payment of Unscheduled Interchanges (UI) charges for the energy drawn in excess**
Subject : **ferrfe**

S.No.	Section	Sub Section
1	Section 12	

Keyword Details

S.No.	Keyword
1	Bulk Power Transmission Agreement

Regulation Details

S.No.	Regulation
1	Central Electricity Regulatory Commission (Open Access in inter-State Transmission) Regulations, 2013.

Petitioner Details

S.No.	Name	Mobile	E-Mail	Advocate
1.	Shiv Org SO	9818160618	shiv.maikhuri@gmail.com	

Respondent Details

S.No.	Name	Mobile	E-Mail	Advocate
1	Tripura State Electricity Corporation Ltd TSECO	9999999999	gautam.sikka@gmail.com	

Court Details

S.No.	Type	Name	Case Number	Order Date	Interim / Final
1	A	auth	gt/10/2015	01/04/2014	I
2	H	HIGH COURT OF DELHI AT NEW DELHI	TT/54/2014	10/03/2015	I

Prayer Details

S.No.	Description	Updated On
1	Fee exemption	24/06/2015
2	This petition is on remand from ATE in appeal No. 130/2009.	24/06/2015

Fee Details

Calculated	Surcharge	Total Fee	Fee Paid	Balance
2500000		2500000		2500000

Attachment Details

S.No.	Document Type	Document Name	Uploaded On
1	Petition	1435210923367_229_103_ADP_2015 & 104_TL_2015-DGEN-Affidavit.pdf	25/06/2015
2	Petition	1435211497230_229_103_ADP_2015 & 104_TL_2015-DGEN-Affidavit.pdf	25/06/2015
3	Petition	1435211497767_229_status_mapping.xlsx	25/06/2015

Intimation Details

Intimation to : (•) All ( ) Selected

Declaration

☐ I have read the contents of the site and the instructions given thereof as regards registration and e-filing of petitions/documents before the Commission and agree with the same. I hereby decalre that the information given in the petition/documents are true and correct to the best of my knowledge. I hereby acknowledge and certify that the attachments/enclosures/appendix made alongwiththe petitions/application are true and correct and is valid as per the original documents. I further certify that I have personally or through my counsel completed the petitions/application and have e-filed the same. I understand that any misrepresentation, falsification or omission of information in the petition /application or any document used for registration shall be a valid ground for rejection of the petition/application apart from any other penalty for perjury.

<< Previous | File Petition | Reset | Print | Cancel

e-Filing Innovative Features

- **Provision to add nodal officers and advocates dealing with the petitions.**
- **Viewing of petitions by the respondents through their interface after login.**
- **Automatic fee calculations and verification of UTR.**
- **Preliminary Scrutiny Checklist**
- **Real time status of a petition visible online to parties**
- **Online tutorials, FAQ, procedures available on the application.**
- **Application hosted on NIC cloud to have 24x7 access.**

e-Pleading

CERC-Petition Manageme | CERC

192.168.0.205:8080/cerc/cercCommunication.action?struts.token.name=token&token=LLPO2FJVXHO4009VSEWR19ZZ60BMON9D&pleadingBeanId=10908

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Central Electricity Regulatory Commission

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WELCOME ! Central Electricity Regulatory Commission CERC (admin) view profile 18-Jan-2016 14:46:07

Add Comment / Objections | CERC Correspondence

CERC CORRESPONDENCE

Petition No. : 313/TT/2015

Diary No. : 1003/2013 Reference No. :

Petition Details

Diary Number	: 1003/2013	Petition Number	: 313/TT/2015
Petitioner Name	: PGCIL PGCIL	Respondent Name	:
Petition Type	: Transmission Tariff (TT)		
Last Hearing Date	:	Next Hearing Date	:

Subject :

Approval under Regulation-86 of CERC(Conduct of Business) Regulation, 1999 and Regulation-6 of the CERC(Terms and Conditions of Tariff) Regulations 2009 and CERC (Terms and Conditions of Tariff Regulation 2014 for determination of tariff of (i) Truning up transmission Tariff for 2009-2014 tariff block and (ii) Transmission tariff for 2014-2019 tariff block

View Petition Summary

Correspondence Description

Description* :

Documents

Document Type* : - Select - | Choose file No file chosen | Add More

(pdf files only)

Note : Consolidated, uploaded documents size should not exceed 100 MB.

Correspondence / Complaince Details

Petitioner :

Desktop Links 14:46

ADDITIONAL FILING

Search By : Petition Number | Type : Generation Tariff (GT) | Number : 102 | Year : 2015 | Search

Add Written / Other Submission | Add Additional Information Document | Add Comment / Objections

PLEADING LIST

Petition No. : 102/GT/2015

Diary No. : 8/2015 **Reference No. : 10/2015**

Petition Details

Diary Number	: 8/2015	**Petition Number**	: 102/GT/2015
Petitioner Name	: Shiv Org SO	**Respondent Name**	: North Eastern Electric Power Corporation Ltd NEEPCO
Petition Type	: Generation Tariff (GT)		
Last Hearing Date	:	**Next Hearing Date**	:
Subject	: Maintenance of Grid Discipline – Non ?compliance of provisions of the Indian Electricity Grid Code tt		

View Petition Summary

4 items found, displaying all items. 1

Nature Of Document	Party Name	Order Date	Added By	Added On	ACTION
Reply	North Eastern Electric Power Corporation Ltd NEEPCO		North Eastern Electric Power Corporation Ltd NEEPCO	23/06/2015	Rejoinder
Submission	North Eastern Electric Power Corporation Ltd NEEPCO		North Eastern Electric Power Corporation Ltd NEEPCO	23/06/2015	
Additional Information	North Eastern Electric Power Corporation Ltd NEEPCO		North Eastern Electric Power Corporation Ltd NEEPCO	23/06/2015	
Comment	North Eastern Electric Power Corporation Ltd NEEPCO		North Eastern Electric Power Corporation Ltd NEEPCO	23/06/2015	Response

e-Pleading Innovative Features

- **Automatic merging, bookmarking of pleading files**
- **Alerts, emails and sms while sending notifications**
- **Provision for Document Authorization**
- **Provision of downloading full pleading file**

e-Hearing

HEARING
Before Hearing
e-Hearing

MIS STATISTICS
Registration Reports
Payment Related Reports
Preliminary Scrutiny Reports
Petition Filing Reports
Technical Scrutiny Reports
Listing Reports
Petition Statistics
Miscellaneous Reports

SEARCH
Advance Search

List of Petitions to be listed on 01/02/2016 Go!

Sr. No.	Petition Number	Petitioner	Subject	Downloads
1.	08/GT/2016	SJVN Limited SJVN Limited	Petition under section 62 and 79(1) (a) of the Electricity Act, 2003 read with Chapter-V of the CERC(C&B) Regulation 1999 for revision of tariff of Nathpa N... More	Write Notes Local Factsheet
	PLEADINGS	ROP ORDERS	FACTSHEET INPUT	CORRESPONDENCE
2.	07/GT/2016	Udupi Power Corporation Limited Udupi Power Corporation Limited	Truing up Petition under Regulations 20,25, and 27 of CERC (C&B) Regulations 1999 Regulations 2,6, and 7 of CERC(Terms and Conditions of Tariff) Regulations... More	Write Notes Local Factsheet
	PLEADINGS	ROP ORDERS	FACTSHEET INPUT	CORRESPONDENCE
3.	05/MP/2016	NHP Limited NHP Limited	Misc Petition under Section 79(1)(f) of the Electricity Act, 2003 for adjudication of dispute between NHPC Limited and UPPCL regardin	Write Notes Local Factsheet

60/MP/2014 - Microsoft OneNote

File | Home | Insert | Share | Draw | Review | View

Select & Type | Eraser | Lasso Select | Panning Hand | Tools | Color & Thickness | Insert Shapes | Insert Space | Delete | Arrange | Rotate | Edit | Ink to Text | Ink to Math | Convert

Notebooks:

final_hearing

- Homepage
- 283_TDL_2013
- 53_MP_2013
- 60_MP_2014
- 32_MP_2014
- 64_MP_2014

Unfiled Notes

Homepage | 283_TDL_2013 | 53_MP_2013 | 60_MP_2014 | 32_MP_2014 | 64_MP_2014

Search All Notebooks (Ctrl+E)

60/MP/2014

Friday, October 03, 2014
6:52 PM

Pleadings	ROP/Orders	Factsheet/Inputs	CERC Correspondence
TDL 283 2013	ORDER DT 21-04-2014	Additional informati...	TDL 283 2013

Petitoner has to file rejoinder

Procedure for grant of licence

(1) Any person desirous of undertaking inter-State trading in electricity shall make an applicant to the Commission for grant of licence in the manner specified in Form-I appended to these regulations and such applicant shall be accompanied by ,-

(a) Such fee as may be prescribed by the Central Government from time to time and payable through NEFT/RTGS only as per the procedure specified in Central Electricity Regulatory Commission (Payment of Fees) Regulations, 2012 or any subsequent enactment thereof.

(b) Copies of the annual reports in case of the persons incorporated under the Companies Act, 1956 (1 of 1956) and audited accounts along with the Director's Report, Auditors' Report, the Schedules and notes on accounts for one year immediately preceding the year in which the application has been made and the special balance sheet as on any date falling within 30 days immediately preceding the date of making the application.

This must be adopted

11:36 AM
10/4/2014

e-Hearing Innovative Features

- **e-Noting by Commission**
- **Inbuilt OCR technology**
- **Using Stylus to make notes**
- **Security : Users can protect their notes through passwords**
- **Facilities of linking, tagging, searching, inserting file, audio recording, converting notes to pdf, word format.**

Case Information System

Central Electricity Regul | CERC CCMAS

192.168.0.205:8080/ccmas/login.action;jsessionid=vbOVlKYmAIYLYIftbqia0EsA.undefined

Apps | Online Typing Test -... | CERC CCMAS Login | Amity online | Alfresco » Login

Welcome! Memeber XYZ (mis1234)

GENERAL
- Dashboard

HEARING
- Before Hearing
- e-Hearing

MIS STATISTICS
- Registration Reports
- Payment Related Reports
- Preliminary Scrutiny Reports
- Petition Filing Reports
- Technical Scrutiny Reports
- Listing Reports
- Petition Statistics
- Miscellaneous Reports

SEARCH
- Advance Search

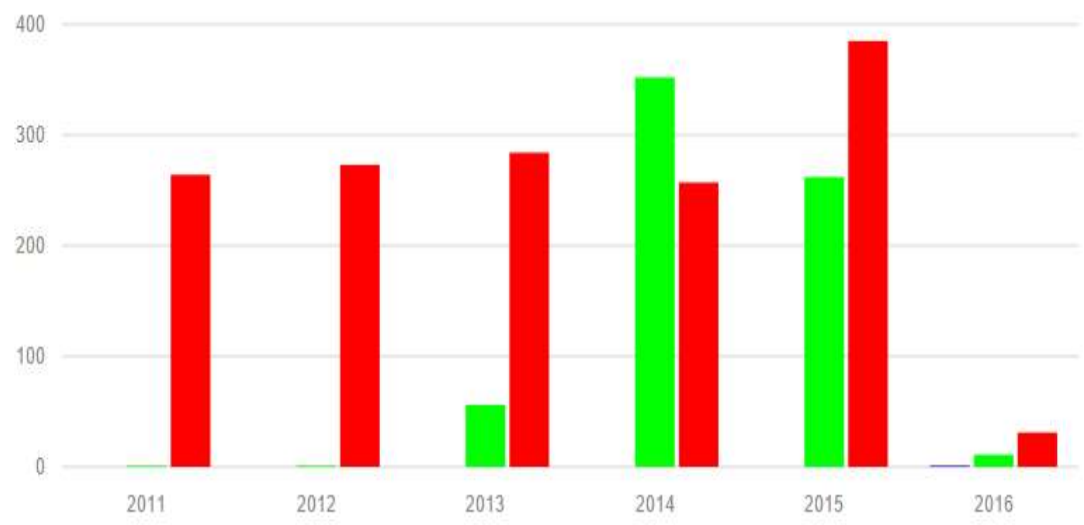
2329 Total Petitions

1 Preliminary Scrutiny

690 Current Petitions

1638 Disposed Petitions

Petition Overview



Petition Status

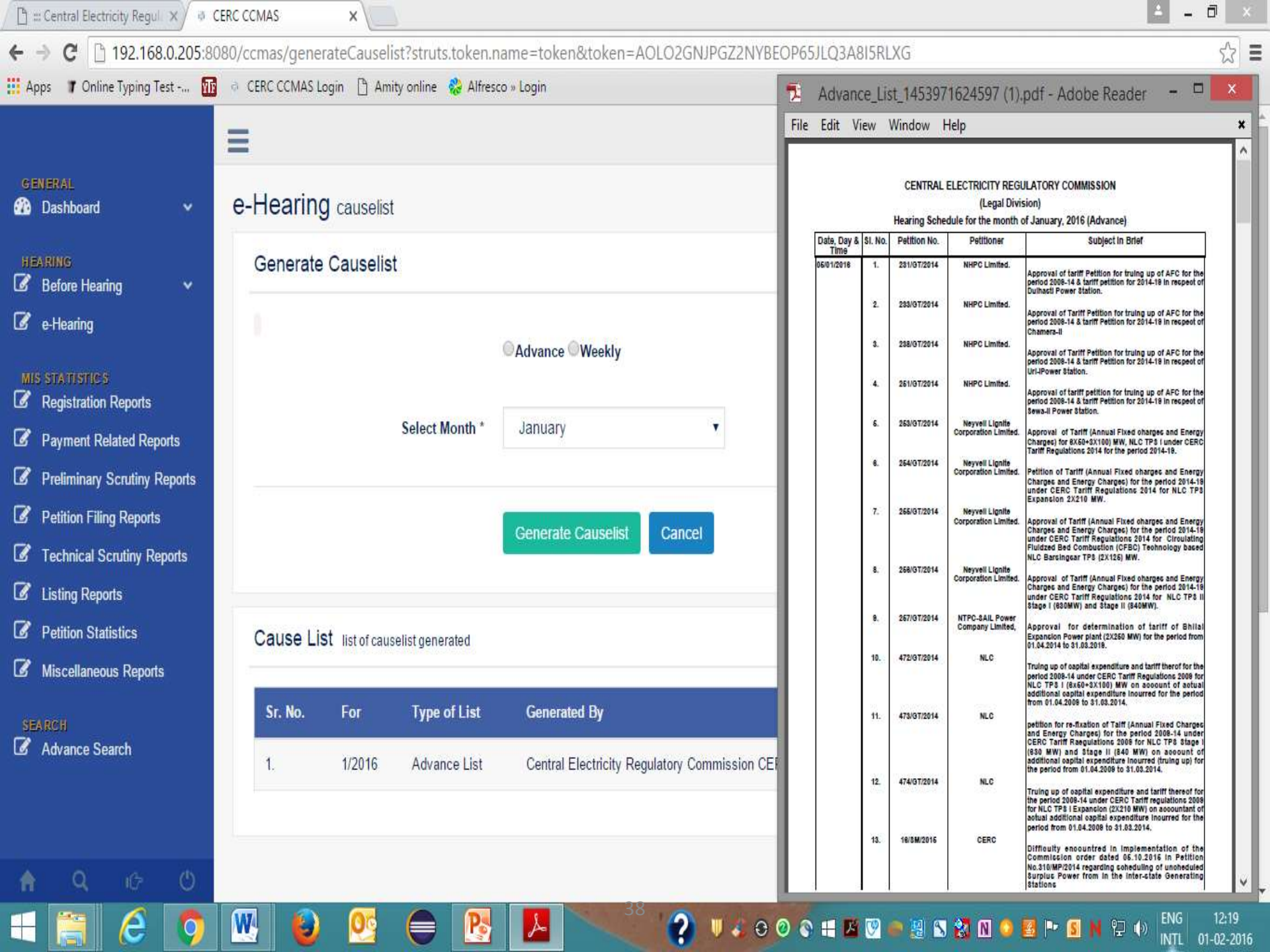
Total Petitions - 100.0%

Preliminary Scrutiny - 0.04%

Current Petitions - 29.63%

Disposed Petitions - 70.33%

ENG INTL 12:11 01-02-2016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CENTRAL ELECTRICITY REGULATORY COMMISSION
(Legal Division)
Hearing Schedule for the month of January, 2016 (Advance)
Date, Day & Time
Sl. No.
Petition No.
Petitioner
Subject in Brief
06/01/2016
1.
231/GT/2014
NHPC Limited.
Approval of tariff Petition for truing up of AFC for the period 2008-14 & tariff petition for 2014-19 in respect of Dulhasti Power Station.
2.
233/GT/2014
NHPC Limited.
Approval of Tariff Petition for truing up of AFC for the period 2008-14 & tariff Petition for 2014-19 in respect of Chamera-II
3.
238/GT/2014
NHPC Limited.
Approval of Tariff Petition for truing up of AFC for the period 2008-14 & tariff Petition for 2014-19 in respect of Uri-IPower Station.
4.
251/GT/2014
NHPC Limited.
Approval of tariff petition for truing up of AFC for the period 2008-14 & tariff Petition for 2014-19 in respect of Sewa-II Power Station.
5.
253/GT/2014
Neyveli Lignite Corporation Limited.
Approval of Tariff (Annual Fixed charges and Energy Charges) for 8X60+3X100) MW, NLC TPS I under CERC Tariff Regulations 2014 for the period 2014-19.
6.
254/GT/2014
Neyveli Lignite Corporation Limited.
Petition of Tariff (Annual Fixed charges and Energy Charges and Energy Charges) for the period 2014-19 under CERC Tariff Regulations 2014 for NLC TPS Expansion 2X210 MW.
7.
255/GT/2014
Neyveli Lignite Corporation Limited.
Approval of Tariff (Annual Fixed charges and Energy Charges and Energy Charges) for the period 2014-19 under CERC Tariff Regulations 2014 for Circulating Fluidzed Bed Combustion (CFBC) Technology based NLC Barsingsar TPS (2X126) MW.
8.
256/GT/2014
Neyveli Lignite Corporation Limited.
Approval of Tariff (Annual Fixed charges and Energy Charges and Energy Charges) for the period 2014-19 under CERC Tariff Regulations 2014 for NLC TPS II Stage I (630MW) and Stage II (840MW).
9.
267/GT/2014
NTPC-SAIL Power Company Limited,
Approval for determination of tariff of Bhilai Expansion Power plant (2X250 MW) for the period from 01.04.2014 to 31.03.2019.
10.
472/GT/2014
NLC
Truing up of capital expenditure and tariff therof for the period 2008-14 under CERC Tariff Regulations 2009 for NLC TPS I (8x60+3X100) MW on account of actual additional capital expenditure incurred for the period from 01.04.2009 to 31.03.2014.
11.
473/GT/2014
NLC
petition for re-fixation of Tariff (Annual Fixed Charges and Energy Charges) for the period 2009-14 under CERC Tariff Regulations 2009 for NLC TPS Stage I (630 MW) and Stage II (840 MW) on account of additional capital expenditure incurred (truing up) for the period from 01.04.2009 to 31.03.2014.
12.
474/GT/2014
NLC
Truing up of capital expenditure and tariff thereof for the period 2009-14 under CERC Tariff regulations 2009 for NLC TPS I Expansion (2X210 MW) on accountant of actual additional capital expenditure incurred for the period from 01.04.2009 to 31.03.2014.
13.
19/SM/2015
CERC
Difficulty encountred in implementation of the Commission order dated 06.10.2015 in Petition No.310/MP/2014 regarding scheduling of unscheduled Surplus Power from in the inter-state Generating Stations
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केन्द्रीय विद्युत विनियामक आयोग
Central Electricity Regulatory Commission

Year wise Petitions Abstract

(2011 to 2016)

Year	Car. Fwd.	Filed	Total	Registered	Disposed *	Pending
2011	346	235	581	235	264 (57)	317
2012	317	306	623	306	273 (90)	350
2013	350	328	678	328	284 (63)	394
2014	394	611	1005	611	257 (78)	748
2015	748	347	1095	347	385 (79)	710
2016	710	12	722	11	31 (0)	691

Petitions filed during the period :	1839
Petitions registereded during the period :	1838
Petitions disposed during the period :	1494
Petitions pending at the end :	691

** Number of petitions in bracket '()' are filed and disposed in same year.*

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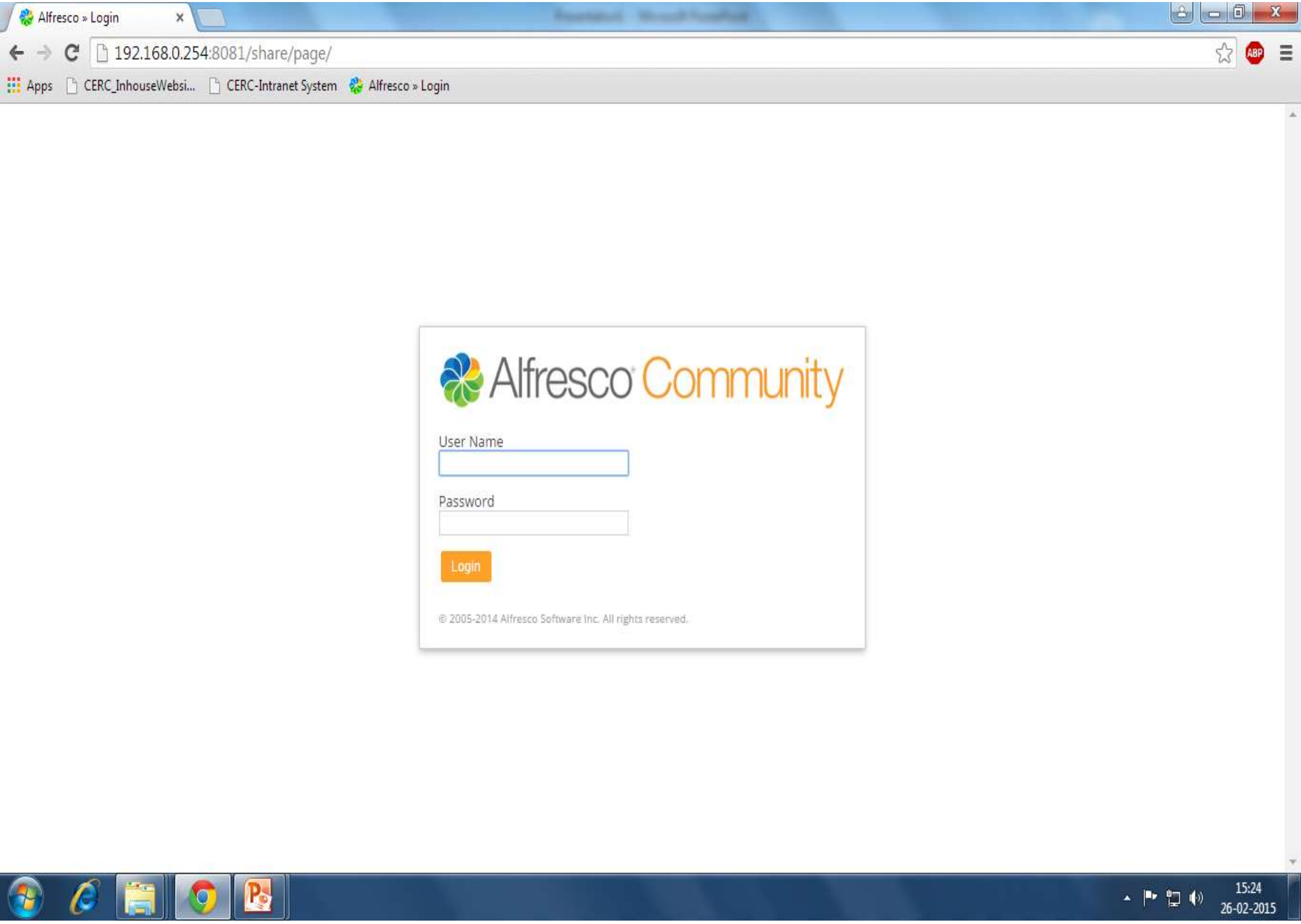
CMIS Innovative Features

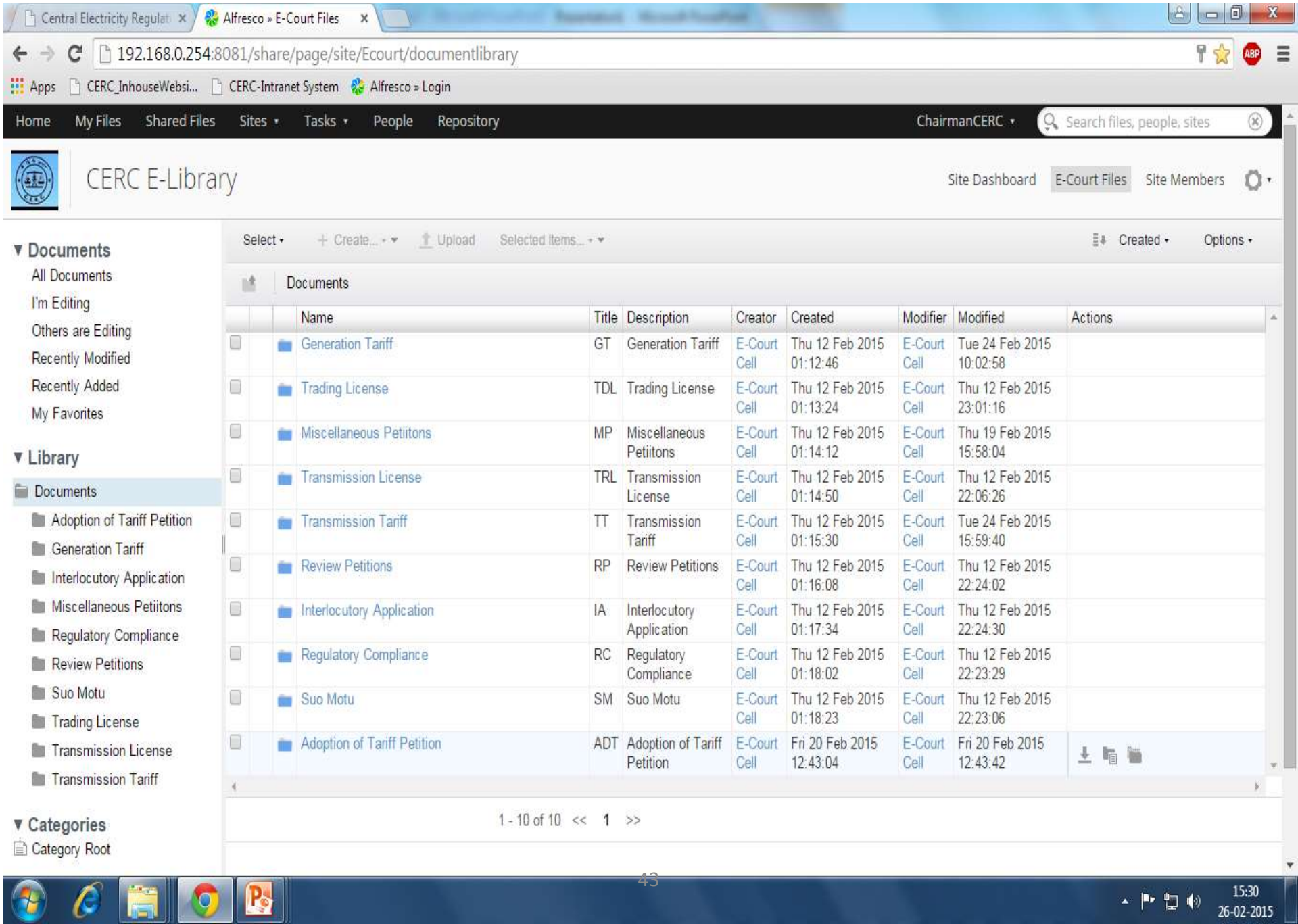
- **Dashboards for better decision making**
- **Around 100 Standard and Customize Reports**
- **Availability of time series data**
- **Automated Workflow**
- **Integrates with other System**
- **Generates cause list, hearing notice, ROP, Order templates**

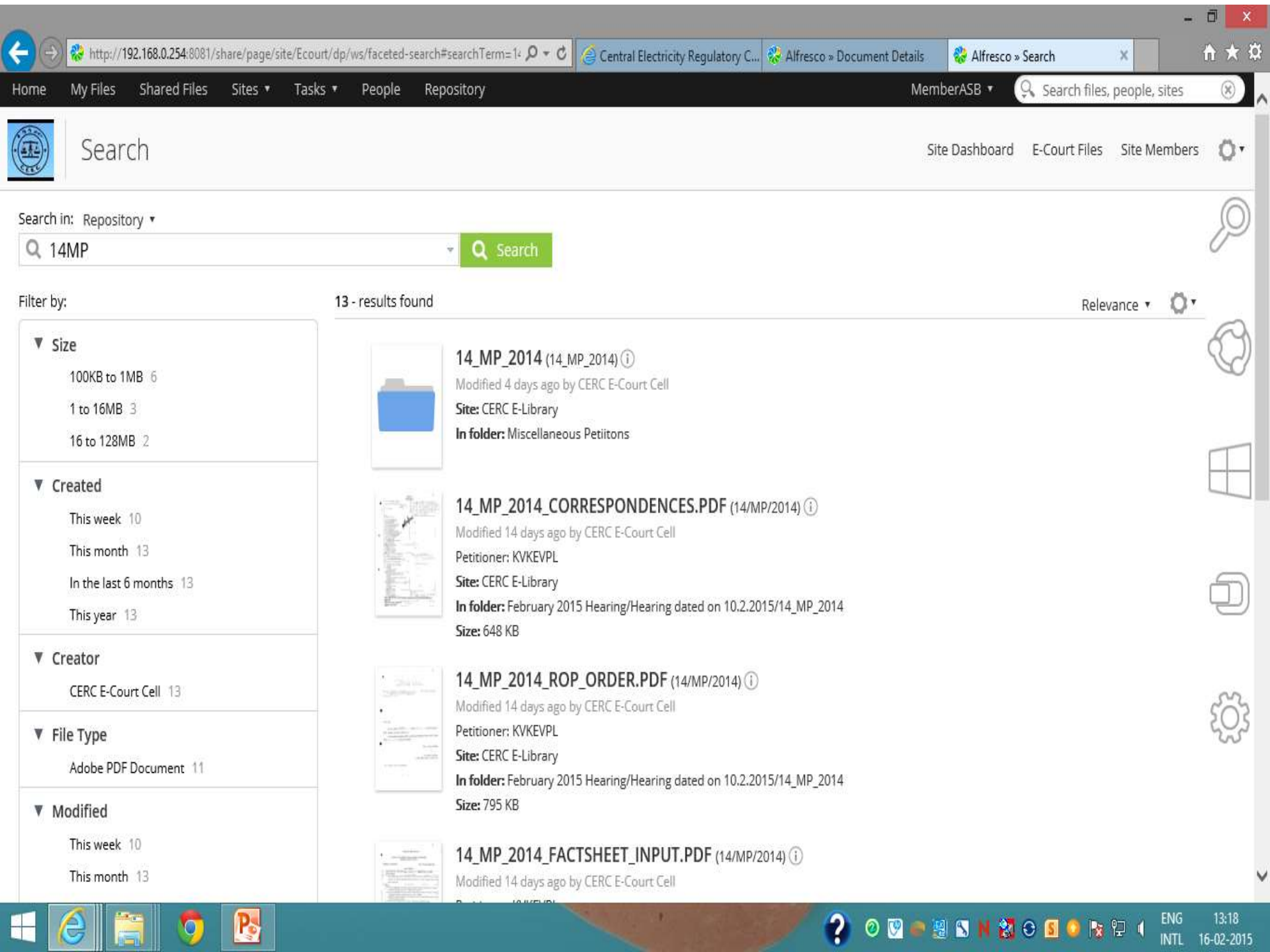
Digitization & e-Library

Step2 : Enter your Login and Password



Step 3 : Click on Type of Petition you want to see

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1 to 16MB 3
16 to 128MB 2
Created
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File Type
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Petitioner: KVKEVPL
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Petitioner: KVKEVPL
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e-Library Innovative Features

- **Easy searching and retrieval of records.**
- **Preparing data in advance via digitization of current petition records.**
- **Open Source Document Management System used.**

CERC Initiatives for Implementation

- **Business process reengineering**
- **Standardization of Data and reports**
- **Handling Change management**
- **Spreading awareness via advertisements, letters etc.**
- **Dedicated helpdesk to address user concerns**
- **Conducting training and workshops on regular basis.**
- **Adopting Open Source & latest technology.**

What next in e-Court Version 2.0

- Use of digital signature for serving CERC Orders to parties
- Stakeholders to submit digitally signed documents through CERC e-Filing portal
- Online Payment Gateway
- Automatic Cause List Generation Algorithm
- Conducting hearings through Videoconferencing for outstation stakeholders
- Launch of real time petition status Mobile App


THANK
YOU

UPERC (Mini-Grid Renewable Energy Generation and Supply) Regulations, 2016

Vikas Chandra Agarwal

Director (Distribution),

Uttar Pradesh Electricity Regulatory Commission

July 27, 2016

Agenda

- Introduction
- Definition
- Business Models
- Key features of Regulation

Photo courtesy: opic.gov

Introduction

- Access to adequate electricity at household level in UP is a serious concern of UPERC
- In UP, nearly 40 lakh households do not have electricity connection.
- NTP, 2016 intends to provide adequate & uninterrupted power to all categories of consumers by 2021-22
- Also, mandates all Regulatory Commissions to notify necessary Regulations to safeguard investments in Micro Grid Projects
- UP being a large State with sizable number of un electrified households, realizes importance of access to affordable & reliable energy
- Thus to create a framework of mini and micro grid UPERC is in the process to notify **Mini-Grid Renewable Energy Generation and Supply Regulations, 2016**

Definition

Compulsory Supply Hours (CHS)

- Minimum 5 hours of Electricity supply during 1700 hrs to 2300 hrs every day

Feed-in-Tariff (FIT)

- Tariff as per UPERC (Captive and Renewable Energy Generating Plants) Regulations, 2014 for technology specific Mini-Grid Projects

Grid Arrival

- Extension of Distribution Licensee's system within 100 meters of operation of Mini-Grid Projects

Mini-Grid Area

- Rural areas and areas having inadequate supply of electricity during peak hours and/or CHS

Mini-Grid Operator (MGO)

- A person, a group of persons, local authority, Panchayat Institution, users' association, co-operative societies, non-governmental organizations, a Company that builds, commissions, operates and maintains the Mini-Grid Project within Uttar Pradesh for generation and supply of electricity to consumers and/or sale to Distribution Licensee in Mini-Grid Areas under these Regulations

Definition

Mini-Grid Project

- RE based electricity generation system up to 500kWp, supplying electricity to consumers through PDN and/or to Distribution Licensee at interconnection point

Mini-Grid Renewable Energy System (MRES)

- Stand alone or grid interactive power plant generating electricity using RE source in Mini-Grid Areas for supply to consumers through PDN and/or injection at inter-connection point to Distribution Licensee

Power Distribution Network (PDN)

- Distribution infrastructure owned by MGO for supplying electricity to consumers

Standards of Performance (SoP)

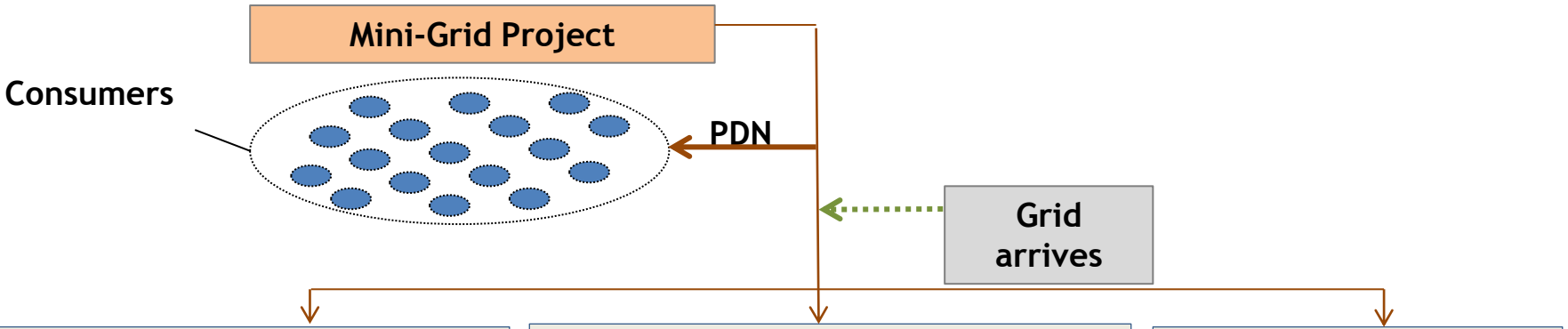
- Supply to all willing domestic consumers within 40 meters of PDN
- Deploy minimum 10% of the Project Capacity to cater to domestic consumers in areas where such demand exists,
- Continuous or intermittent supply for minimum 5 hours during CHS every day to all connected consumers,
- Adhere to SoP within 6 months from date of commencement of supply of electricity

Tariff to Consumer

- Mutually agreed or as per UP Mini-Grid Policy, 2016 if availing subsidy

Models for Business Operations- No existence of Grid

- **MGO implements Mini-Grid Project for generation & supply of electricity through PDN in areas where Distribution Licensee's System doesn't exists**
- **MGO to intimate the project details to the Commission, SNA and Distribution Licensee**



Option #1
Continue to supply entire quantum of electricity generated to consumers as per SoP through PDN at applicable/mutually agreed tariff

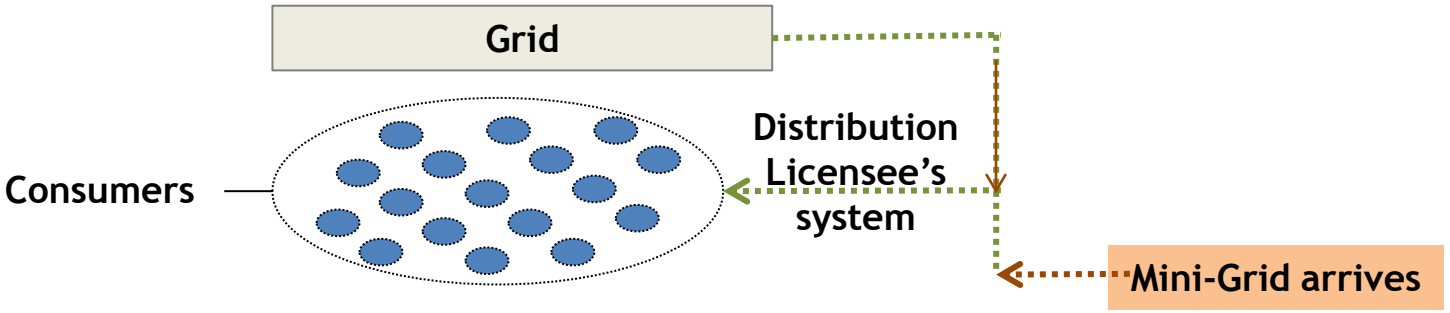
Option #2
Supply electricity to consumers at applicable/mutual tariff as per SoP & sell excess/surplus electricity to Distribution Licensee at interconnection point at FiT

Option #3
Supply entire electricity generated to the Distribution Licensee at interconnection point at FiT

- **MGO allowed to migrate to any of the options**
- **MGO allowed to act as Distribution Franchisee**

Models for Business Operations- Grid pre-exists

- **MGO implements Mini-Grid project in areas where Grid exists, Capacity to be intimated**
- **Allowed to supply electricity, after supplying electricity to consumers for a minimum period of 6 months**



Option #1
Continue to supply entire quantum of electricity generated to consumers through PDN at applicable/mutually agreed tariff

Option #2
Supply electricity to consumers at applicable/mutually agreed tariff & excess/surplus to Distribution Licensee at interconnection point at FiT

Option #3
Serve in option 1 & 2 for at least 3 years, then supply entire electricity generated to the Distribution Licensee at interconnection point at FiT

- **MGO allowed to migrate to any of the options**

Key features of Regulations

Construction of PDN

- Projects with capacity ≤50kWp, follow minimum technical standards
  (PCC Poles, PVC covered aluminum cable supported with GI wire, Service connection through junction box mounted on Pole)
- Mini-Grid Projects with capacity >50 kWp, PDN standards as per RESSPO, UPPCL or CEA (Measures relating to Safety and Electric Supply) Regulations, 2010

Inter-connection of MRES with Grid

- As per CEA (Technical Standards for connectivity of the Distributed Generation Resources) Regulations, 2013
- Cost of inter-connection to be borne by MGO

Safety Measures

- As per CEA (Measures of Safety and Electricity Supply) Regulations, 2010

Metering Arrangement

- As per CEA (Installation and Operation of Meters) Regulations, 2006
- Meter(s) at Generation end and at each of outgoing feeder(s)
- Distribution Licensee to install (with cost) meter at interconnection point.

Key features of Regulations

Renewable Purchase Obligation

- Electricity generated from MRES interconnected with Distribution Licensee's System to qualify for RPO for Distribution Licensee
- MGO that intends to exit from Mini-Grid Area upon Grid Arrival, allowed to sell PDN (conforming to Distribution Licensee's standards) to Distribution Licensee based on depreciated value of assets
- Distribution Licensee refusing to purchase such PDN , RPO availed by them till date from Mini-Grid Project stands withdrawn, against Project capacity intimated by MGO
- If sale value is less than depreciated value of PDN, Distribution Licensee shall pay differential amount based on applicable floor price of REC, as per technology of MRES
- If Distribution Licensee refuses to enter into PPA, RPO availed till date from MRES will stand withdrawn

Key features of Regulations

Exit Options

- MGO allowed to exit from Mini-Grid Area providing 90 days prior intimation to the Commission, SNA and Distribution Licensee

Grievance Redressal Mechanism

- Grievance of any consumer to be redressed as per UPERC (CGRF & Electricity Ombudsman) Regulations, 2007

Technical Committee

- Headed by Officer of UPERC, represented by members of SNA, Distribution Licensee, not below ranks of Chief Engineer, representatives of MGO to be invited during meetings
- Committee to facilitate & supervise implementation of Mini-Grid projects in UP
- Facilitate/ resolve dispute between MGO and Distribution Licensee
- Aggrieved party can approach the Commission if dispute not resolved within 3 months.

Commission's Role

- Role of UPERC is more of a Facilitator than of Regulator.
- The Regulation aims at ensuring quality and quantum of electricity rather than regulation of tariff

Quarterly Project Details

MGO to submit following details to the Commission (UPERC), SNA (UPNEDA) and Distribution Licensee on quarterly basis:

- **Name of MGO,**
- **MRES details:**
  - Village
  - Tehsil
  - District
  - Revenue Village
  - Capacity of MRES (kW)
  - Network length of PDN (circuit kilometers)
- **Consumer details:**
  - Domestic households
  - Commercial consumers
  - Consumers with connected load above 5kW
  - Total number of consumers

Thank you

Economic Survey of India on Power

Challenges and way forward

Shri R. N. Sen

Chairperson, WBERC

Challenge: Complexity of tariff schedules preventing economic actors from responding sufficiently to price signals

Way Forward:

- Introduction of differential tariff for different voltage level with grade-wise losses
- Ensuring common tariff for all category of consumers in the same voltage level
- Govt. to subsidize agriculture & domestic sector from the collected duty/govt. assistance
- Roadblock in Open Access shall also be removed through this plan
- By offering competitive tariff for large industrial consumers the need of captive generating units will not be there, this may favour high efficient plants of larger capacity like UMPPs

Challenge: Average tariffs in some cases are set below the average cost of supplying electricity

Way Forward: Voltage level wise tariff as per pre-page

Ratio of LT Dom Tariff Hi/Low:

WBSEDCL	CESC	DVC	DPL
1.76	1.82	-	1.45

Present Status				
Tariff Category	Tariff in % of Avg. Cost of Supply (ACS)			
	WBSEDCL	CESC	DVC	DPL
LT Domestic	97.92	91.43		90.63
HT Industrial at 11 KV	118.98	101.01		105.90
HT Industrial at 33 KV	107.75	95.01	101.18	105.49
HT Industrial at 132 KV	88.16		93.013	93.69
HT Commercial	119.67	115.35		120.81
Public Utility	104.67	110.34		98.31
Public Water Works	105.68	100.23		104.21
Govt. Schools	69.53	71.01		
Agriculture	61.66			92.05
Avg. Cost of Supply	656.04	697.47	476.54	499.10

Challenge: High industrial tariffs and variable quality of electricity adversely affects "Make in India"

Industrial Tariff is dependent on the average cost of supply.

WBERC's MYT was last declared for the years 2014-15 to 2016-17. Pos MYT, the impact in cost for recent development

Impact of different policy decision of Central Govt. on Power Sector			
Policy Decision	**Impact on tariff (paisa/kWh)**		
	2015-16	**2016-17**	**2017-18**
Clean cess on coal	35.00	35.00	35.00
Service tax on railway freight	2.00	2.00	2.00
Impact of new environment Act	-	-	62.00
Impact on coal cost (paisa /kWh)	**37.00**	**37.00**	**99.00**
Total Projected sale in W.B (all DISCOMs) (in MU)	**44944**	**47641**	**50499**
Energy sourced from Coal (81%)	**36404**	**38589**	**40904**
Total Impact of coal cost [Rs in Crore]	**1347**	**1428**	**4049**
Cost of REC to meet solar RPO	0.63	6.00	9.00
Increase in power purchase cost by purchasing MSW based RE.	-	0.50	2.00
Additional impact (paisa /kwh)	**0.63**	**6.50**	**11.00**

Challenge: High industrial tariffs and variable quality of electricity adversely affects "Make in India" contd…

Issues:

Impact due to hike in coal and related cost					
	2017-18	**2018-19**	**2019-20**	**2020-21**	**2021-22**
All India projected energy [net BU]	1234	1308	1386	1469	1558
Loss %	20%	20%	20%	20%	20%
Available energy [in BU]	987.2	1046.4	1108.8	1175	1246.4
Energy from coal (84%) [in BU]	829.25	878.98	931.39	987.17	1046.98
Increase in unit cost of coal power [Rs per kWh]	0.99	0.99	0.99	0.99	0.99
Additional cost of power from Coal [in Crore]	**820950**	**870186**	**922078**	**977300**	**1036506**

Challenge: High industrial tariffs and variable quality of electricity adversely affects "Make in India" contd…

Issues:

- **Cost of coal power is increasing rapidly, India is heavily dependent on coal based power plant (84%) that automatically increases tariff**

- **Distribution sector is already under financial crisis, GoI has addressed the 4.5 lakh crores of bank loan of DISCOMs through UDAY**

- **Higher cost of coal power increase Avg. cost of supply & thus may impact the "Make in India" programme and further deteriorate financial health of DISCOMs as coal based power may continue to dominate another 15-20 years.**

Way Forward…Generation

In addition, to optimize cost of coal fired generation & re visit environment norms, cess on coal, etc which are adversely affecting coal power. action plan may be drawn in mission mode for

- Ensuring low ash, sized coal at power plant by coal companies to minimize capital expenditure to meet new environment norms & higher boiler efficiency.
- Bringing down the net heat rate near design level of all the existing generating units through planned intervention.
- Improving old units through planned renovation and modernization (R&M) programme.
- R&D on coal gasification of underground mines to minimize environmental impact and cost of fuel

Way forward: Distribution

Progressive tariff schedules for domestic consumers is already existing in WBERC

–By shifting to voltage based tariff, there will be no cross subsidies by industrial/commercial consumers to domestic consumers

Reduction in AT&C Loss from existing 31% to 10% can be achieved through

- **Improving quality of power & reduction of technical loss through HVDS**
- **Reduction of commercial loss through ABC/UG cable system, Pole mounted metering system and Smart /pre-paid metering arrangement**

- **Imposing stringent norms by regulators separately for Technical & Commercial Loss**