3rd Workshop of Secretaries of Electricity Regulatory Commissions
21 May 2018, Raipur

Regulatory Landscape for the Emerging Power Sector in India

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Emerging Regulatory Landscape

ERC's Governance

- Power Procurement
- Long-term Demand Forecast

Power Procurement Strategy

Generation (Contract) Scheduling

Renewable Energy 'Integration'

Renewable Energy Certificates (RECs)

Electric Vehicles

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ERCs Governance - Key ingredients

Independent

Participative

Transparent

Accountability

Secretaries should uphold the above key aspects of regulatory governance

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Power Procurement

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Need for Demand Forecasting & Power Procurement Planning (PPP)

Long-term Forecast
- Planning for capacity addition/power procurement
- Upgrade transmission facilities

Medium-term Forecast
- Planning for power procurement
- Design tariff structure
- Demand-side management
- Time of use pricing

Short-term Forecast
- Merit order dispatch
- Minimising deviation from schedule
- Decision making for short-term power procurement
- Optimising use of renewable energy

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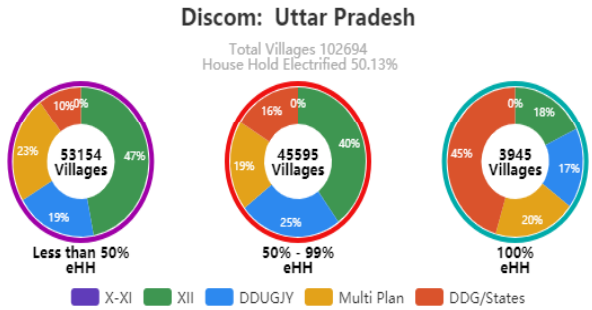
Power For All - A joint initiative of Central Government with the State Government

Objective - Provide 24x7 power

through:
- Village Electrification
- Capacity Addition
- Power Purchase Plan
- Strong T & D
- Encourage Renewable Energy
- Customer Centric Initiative
- Reducing AT & C Losses
- Reducing ACS to ARR difference

Currently, Average power supply *	
Rural areas	18 hours
Tehsil towns and Bundelkhand	20 hours
District headquarters, cities and industries	24 hours

* Source -projections as per census, 24x7 Power for All document



* Source - MOP –GARV Dashboard

Total Rural Households:	**3,01,22,462**
EHH Up to 31st Dec16:	**1,48,13,021 (49 %)**
EHH from 1st Jan17:	**2,86,587 (1%)**
Total EHH :	**1,50,99,608 (50%)**

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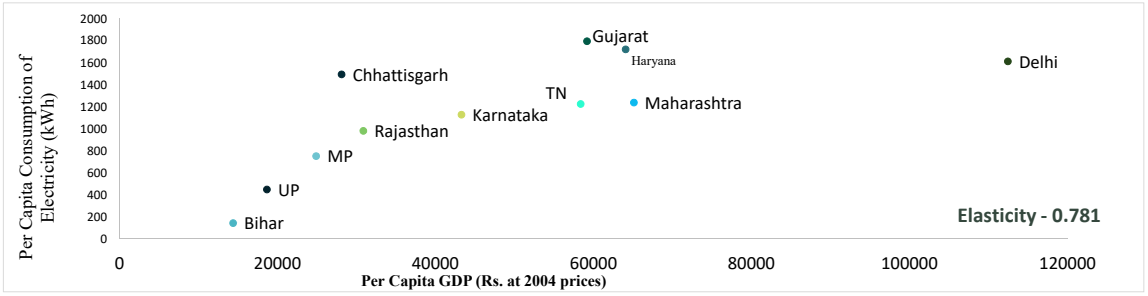
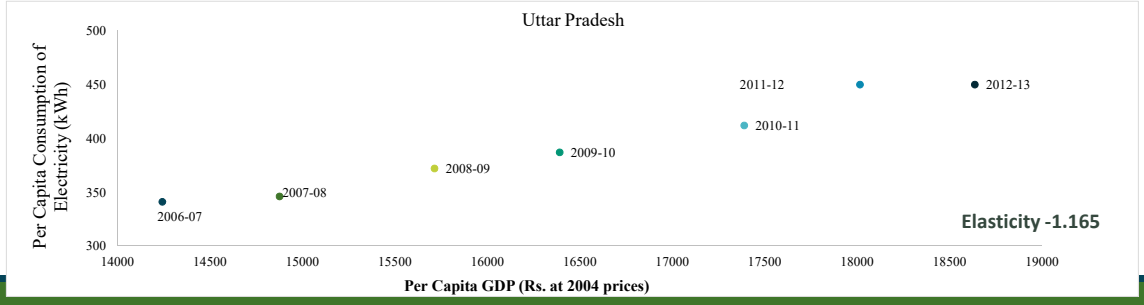
Power supply position in U.P.

Max Unrestricted Demand (MW)	**18,827 MW** (05-06-2017, 22.00
Max Demand Met (MW)	**17,552 MW** (05-06-2017, 22.00)
Max. Energy Requirement	**391.9 MU** (05-06-2017)
Maximum Energy Demand Met	**388.29 MU** (05-06-2017)

Uttar Pradesh different from other states





Methodology – Four Stages

1. Projection of electrical energy demand
2. Load profile analysis & projection
3. GAMS based optimisation model
4. Choosing power procurement strategy

1. Projection of electrical energy demand

Trend Analysis	• Study the past growth pattern
End Use method	• Study category-wise connected load, electricity consumption and growth pattern
Econometric Models	• Forecast considering economic change

2. Load profile analysis & projection

- Inference from historical load profile
- Account for projected solar addition and DSM
- Account for demand profile influenced by supply

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Methodology (contd…)

3. GAMS based optimisation model

- Develop optimisation model considering
  1. Existing & candidate plants' quantum and prices
  2. Projected solar capacity addition and DSM activities
  3. With and without short-term procurement
  4. Generator & contract specific constraints
- Defining different power procurement scenarios

4. Choosing power procurement strategy

- Estimation of social cost and utility cost in different economic and power procurement scenarios
- Identify optimal power procurement strategy

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Forecasting Scenarios

High Growth Scenario

Realistic Growth Scenario

Medium Growth Scenario

Low Growth Scenario

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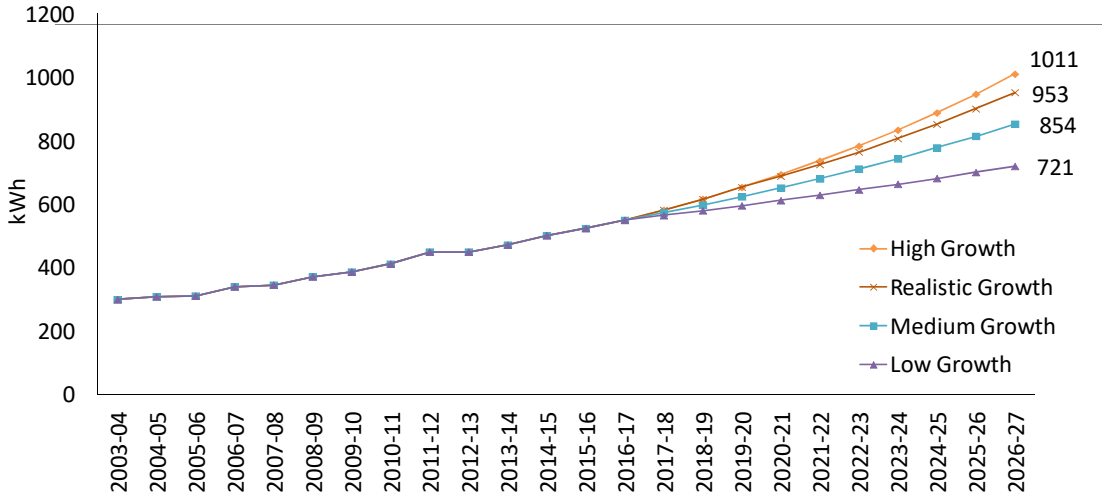
Projected Per Capita Electricity Consumption in U.P



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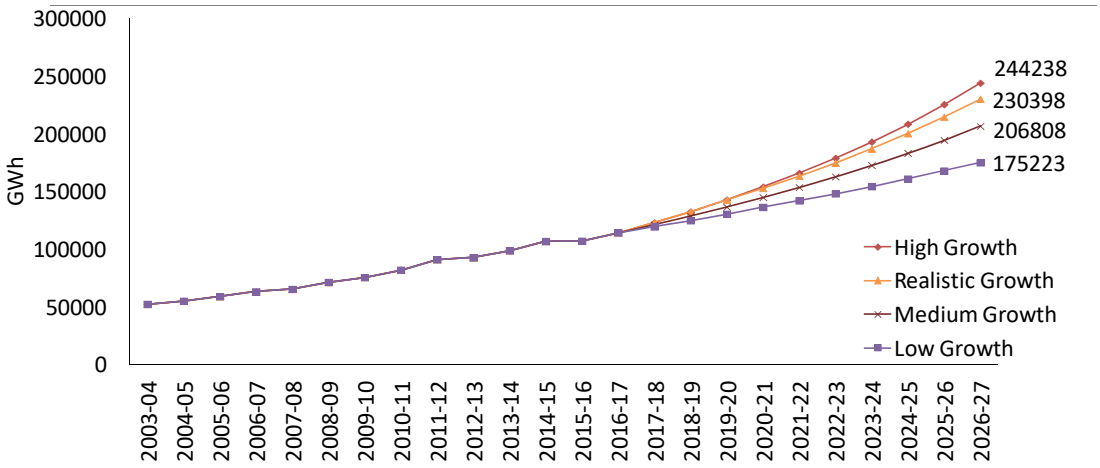
Projected Electrical Energy at Bus-bar for Utility Only



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Results Comparison With Other Reports

Compassion Projected Energy (19th EPS vs Estimated Value) GWh					
FY	CEA	Econometric model results (IIT Kanpur)			
	19 EPS	Realistic	High	Medium	Low
2016-17	108070	114512	114512	114512	114512
2021-22	150797	163562	166115	153757	142298
2026-27	195323	227838	244238	206808	175223

Note: For utilities only
* Without Captive Generation

Projected Total sales (In MU)			
FY	PFA	Econometric Model	Δ %
2016-17	83789	92882	11%
2017-18	95131	101267	6%
2018-19	103173	110511	7%
2019-20	116385	120706	4%
2020-21	126046	130958	4%
2021-22	136700	141753	4%

Note: Energy sold
* Without Captive and losses

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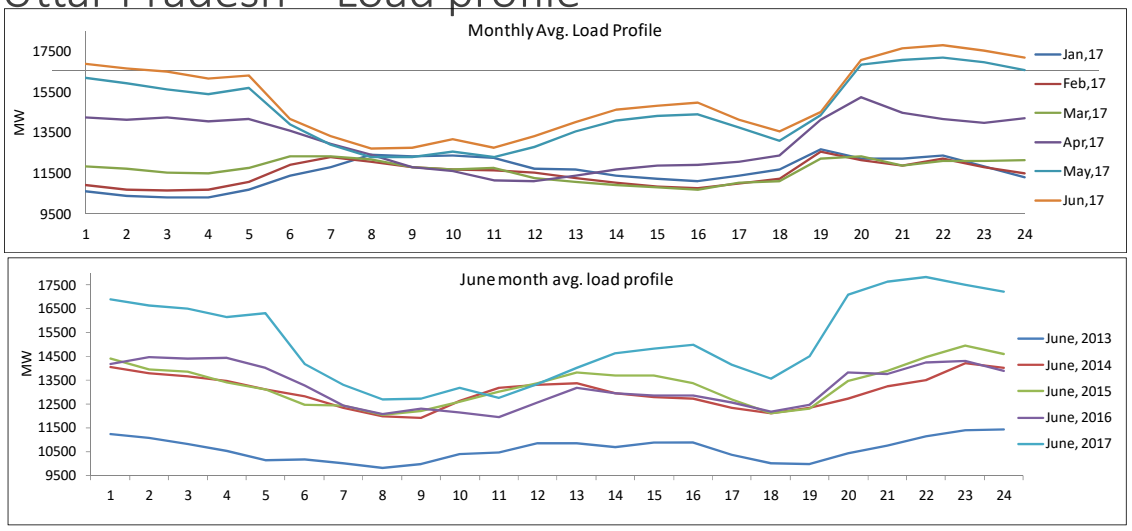
Uttar Pradesh – Load profile



Source - Night Report ,UPPCL

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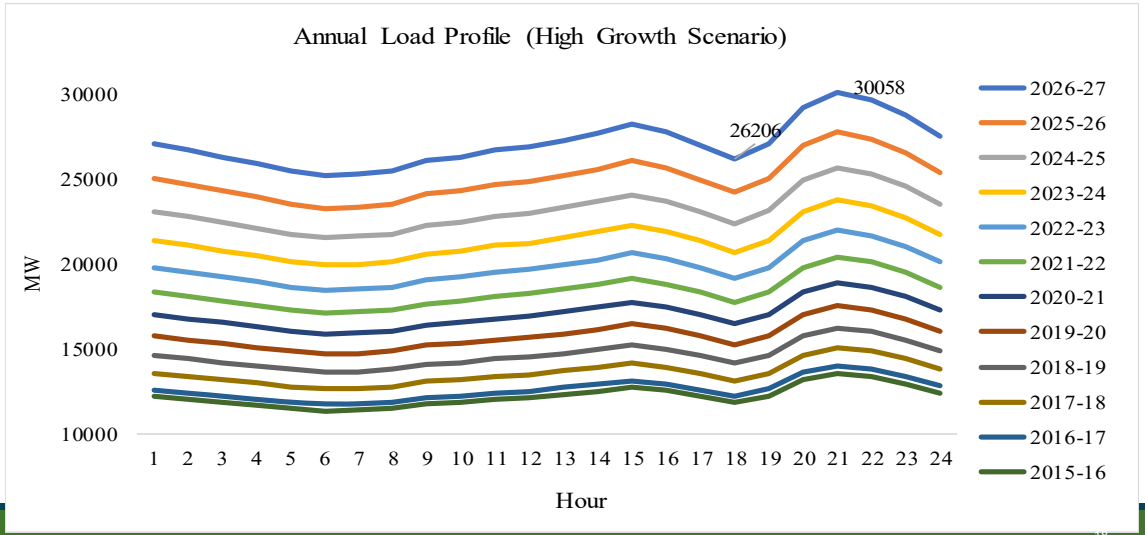
Projected Load Profile – High Growth Scenario



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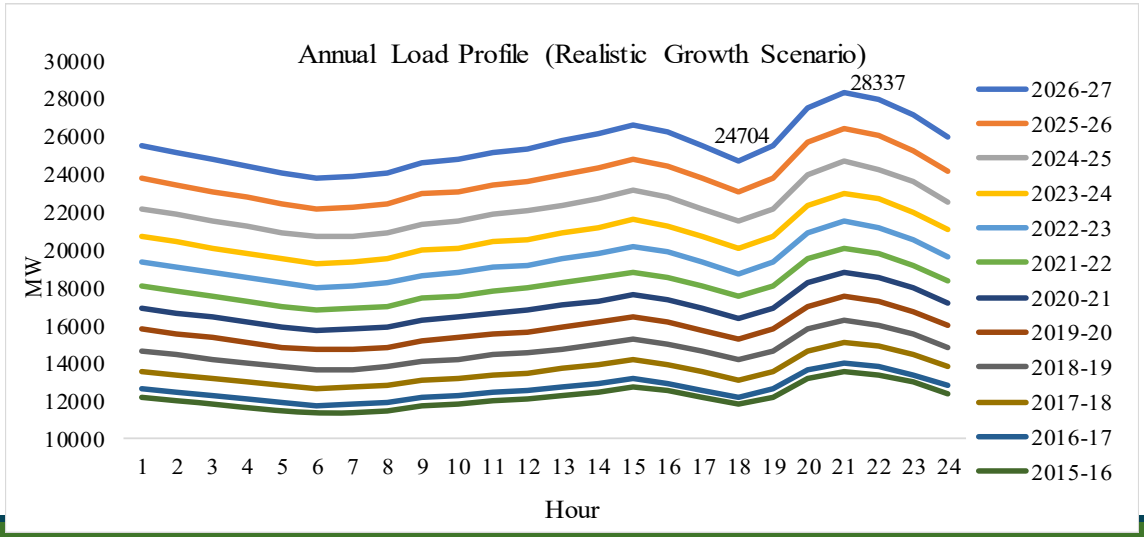
Projected Load Profile – Realistic Growth Scenario



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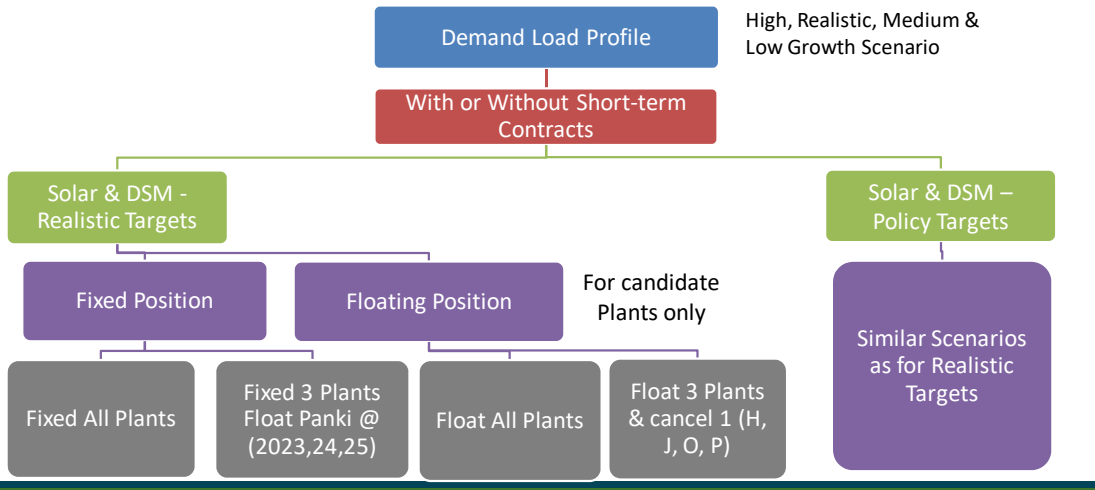
GAMS Simulation for Different Power Procurement Scenario



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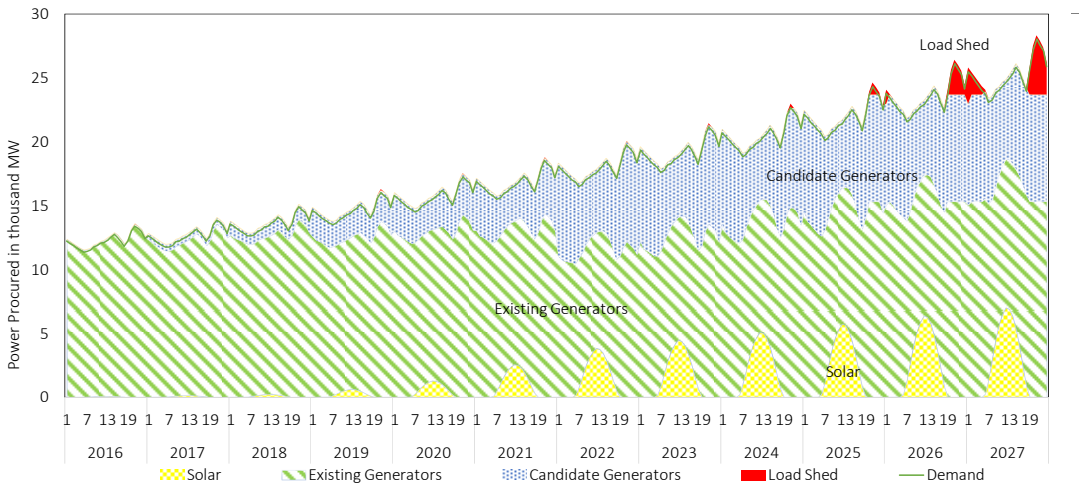
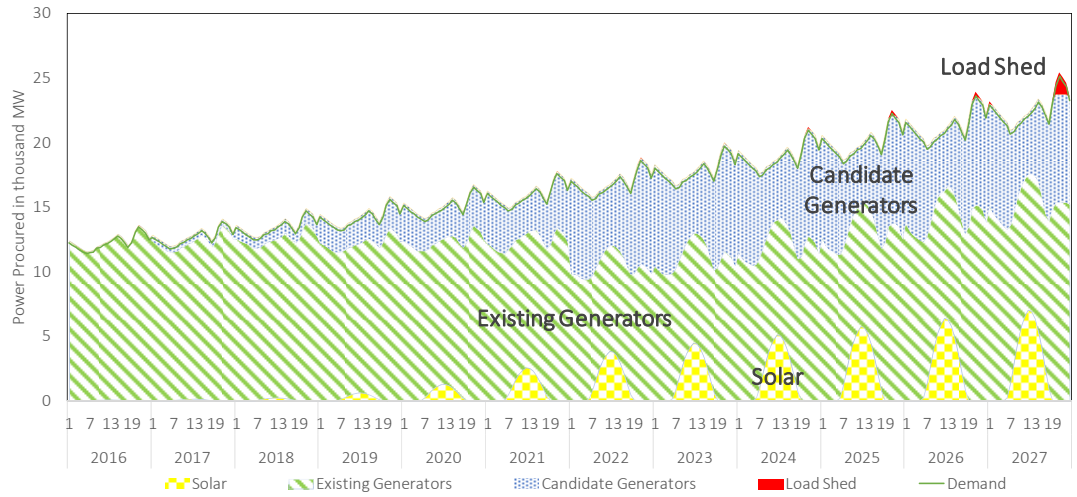
Demand & Gen. Curve for Realistic Growth Scenario (Fix All Without Considering STPP)



Demand & Gen. Curve for Medium Growth Scenario (Fix All Without Considering STPP)



Key Observations

Most optimal strategy 'All Float' case

Certain existing plants/PPAs have low PLF

Progress on DSM and Solar capacity addition should be reviewed for medium-term power procurement

Planned and effective measures should be in place for metering, meter reading, billing and collection

Periodical Power Procurement Analysis (at least every three years)

Extension of Time of Day (ToD) tariff for all large consumers

fair and transparent competitive bidding

Adopt a state-level UMPP model

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Merit Order Despatch and Regulation

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PPC components

Power procurement cost component	Approx % of Tariff
Power purchase cost(Transmission charges and SLDC charges included)	80%
Operation & Maintenance Expense • Employee Expense • Adm & General Expense • Repair & Maintenance Expense	9-10%
Depreciation	3-4%
Return on Capital	6-7%
Income Tax	0.5-1%
Average tariff = Total Cost (Rs)/ Total Units Sold (kWh)	

- PPC accounts for approximately 80% of total cost of power purchase.
- PPC consists of the following components:
  - Energy charges.
  - Transmission or Wheeling Charges.
  - SLDC charges.

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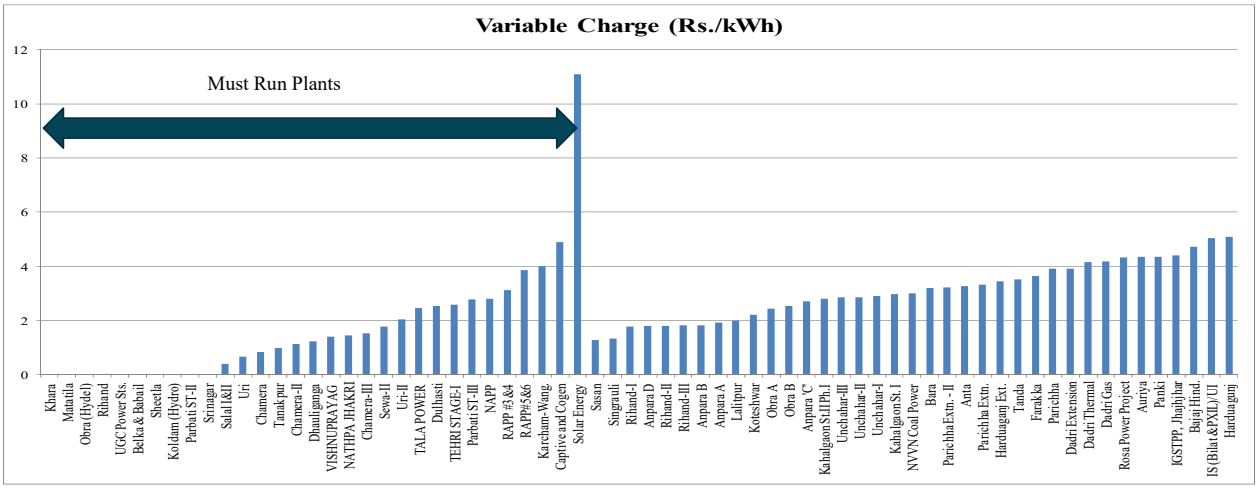
Merit Order for UP



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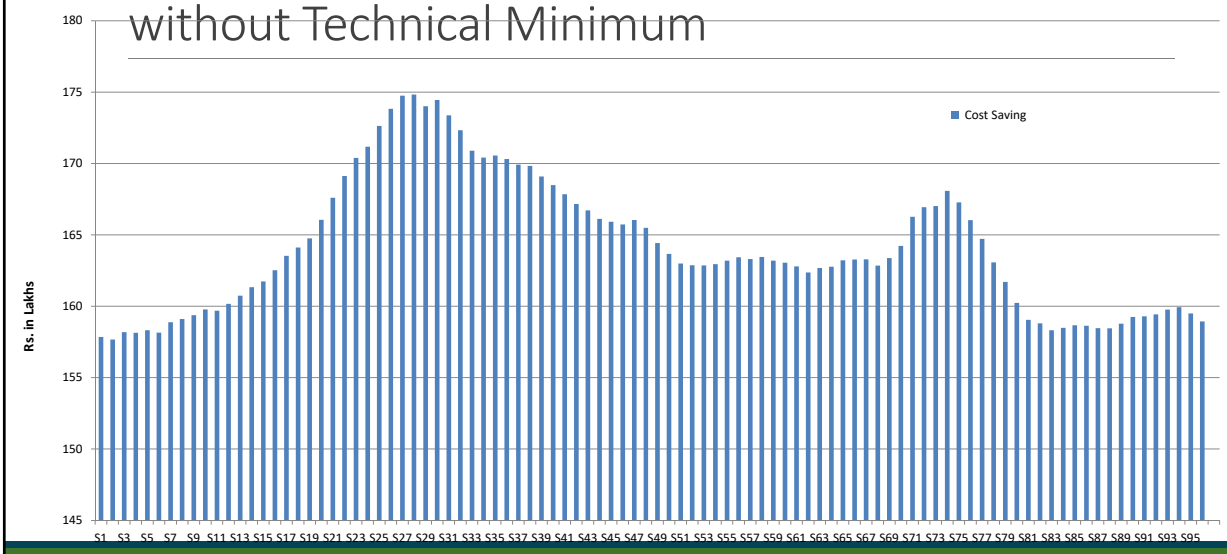
Block-wise Merit Order Based Cost Savings without Technical Minimum



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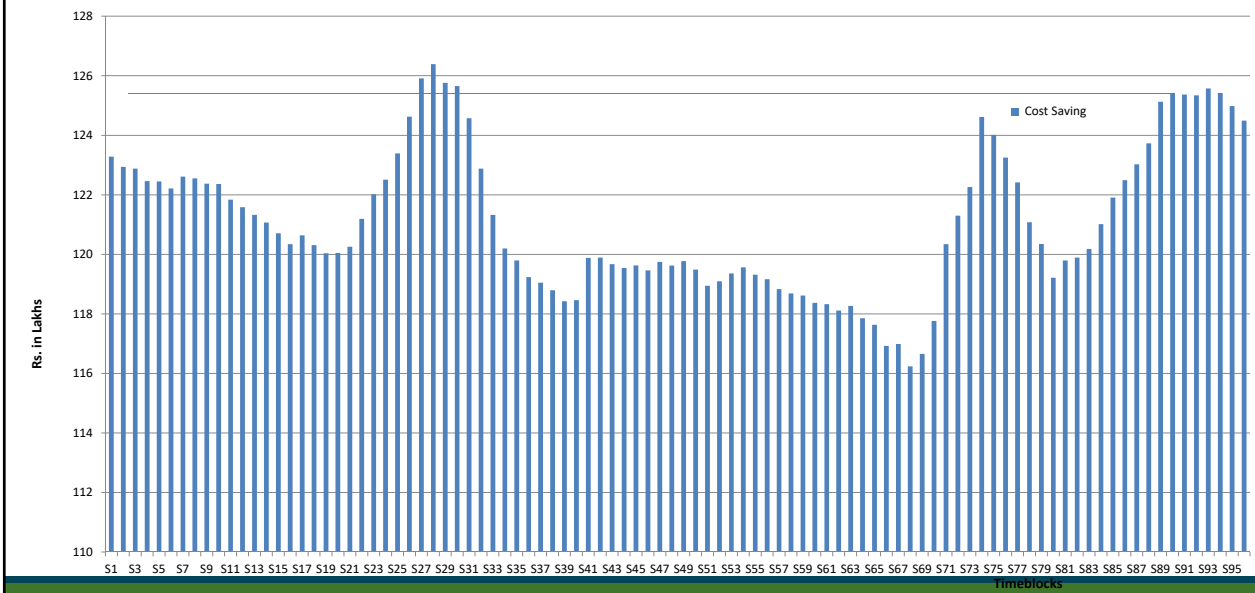
Blockwise Merit Order Based Cost Savings with Technical Minimum (TM)



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Renewable Energy Certificates/Credits (RECs) - Advantages

- Provide flexibility in meeting RPO of discoms/SEBs (Compliance market)
- Expand participation in promotion of RE (Voluntary market)
- Promote efficiency in investment
- Assist choice of appropriate technology
- Provide incentives for cost reduction
- Provide benchmarks for innovation in RE applications
- Avoid transmission of electricity generated through RE sources
- Assist efficient implementation of promotional policies by the government. (esp. off-grid RE based rural electrification)

Suggestions for future Development of REC Market

- Fungibility of RECs & RECx multiplier
- RPO Compliance framework
- Need to link FiT and REC mechanisms (Participation of disocms under FiT regime).
- No need for floor and forbearance price
- 'Buy out policies' (penalty for RPO shortfall).
- Linking PAT and REC mechanism
- Voluntary Market
- Banking (and Roll over?)
- Stand-alone systems

Do markets obviate 'need for regulation'

Public Monopoly

Private Monopoly

Markets

Regulation wishes to achieve an outcome of 'competitive markets'

All 'markets' are not competitive enough

Role of Regulators shifts from 'delivering good regulation' to 'ensuring good regulation of markets'

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Full Retail Competition – Story of developed world

Context of retail competition

- Private Utilities
- Commercially operated
- Strong metering infrastructure
- Consumers aware supported with vibrant consumer organisations
- Consumer end generation (PV) and storage yet to emerge

New realities

- Significant inroads by Solar PV and Storage
- Growth of Electric Vehicles
- Distributed Microgrids

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Full Retail Competition – The Emerging India Story

Access of electricity to all yet to be achieved

Large consumption remains unmetered

High Distribution losses (theft)

Lopsided tariffs – leading to cherry picking

Subsidy and Cross-subsidy

Competition from within 'open access to retailers to be granted for the outset'

Success of telecom

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Disruptive Technologies

Smart Grid

EV

Interactive Storage (Consumer end)

Mini-grids (Rural to Urban areas?)

'Social Market place' & Block Chain

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Electric Vehicles

We can't stop their emergence
So, prepare for their arrival

Issues

CEA - Charging as a Service – VGF
Managing G2V and V2G
New Tariff Category

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GOVERNMENT OF INDIA
MINISTRY OF POWER

UK Government

Launch Ceremony

CER
Centre for Energy Regulation

CENTRE FOR ENERGY REGULATION

May 17, 2018 | Hotel Le Meridien, New Delhi

Knowledge Partner

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Need for the Centre

Key institutional gaps in power sector

1. Institutional gaps in regulatory agencies
   - Inadequate staff strength and skills
   - Lack of knowledge management
   - Inadequate capacity building across hierarchy
   - High reliance on external experts to carry out research and analysis
   - Lack of knowledge sharing platform
2. Lack of Sustained interventions for institutional strengthening
3. Research and Implementation exist in different silos
4. Discrete regulatory information

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Objectives of Establishing CER

1. Enhanced regulatory-academia-utility interaction
2. To support research based studies, opinions impacting the power sector and its regulation
3. To develop knowledge base and database repository related to power sector for informed and well-evidence policy and regulatory decisions
4. Promote active platforms for peer to peer learning amongst ERCs

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Key Differentiators

Key Differentiators

- **Inclusive approach** to regulatory research and creating capacities bottom up
- **Collaboration** with researchers national and international
- **Hands on involvement and learning** by engaging staff in regulatory research
- **Information and analytical database for enabling decision making**
- **Online learning & Tools** for skill development
- **Continuous engagement** through innovative approaches and platforms
- **International exposure** through structured programs

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CER Ecosystem

Three Pillars of CER Activities

Regulatory Research

- Regulatory Research Camp (RRCs)
- Regulatory Research Network (RRN)

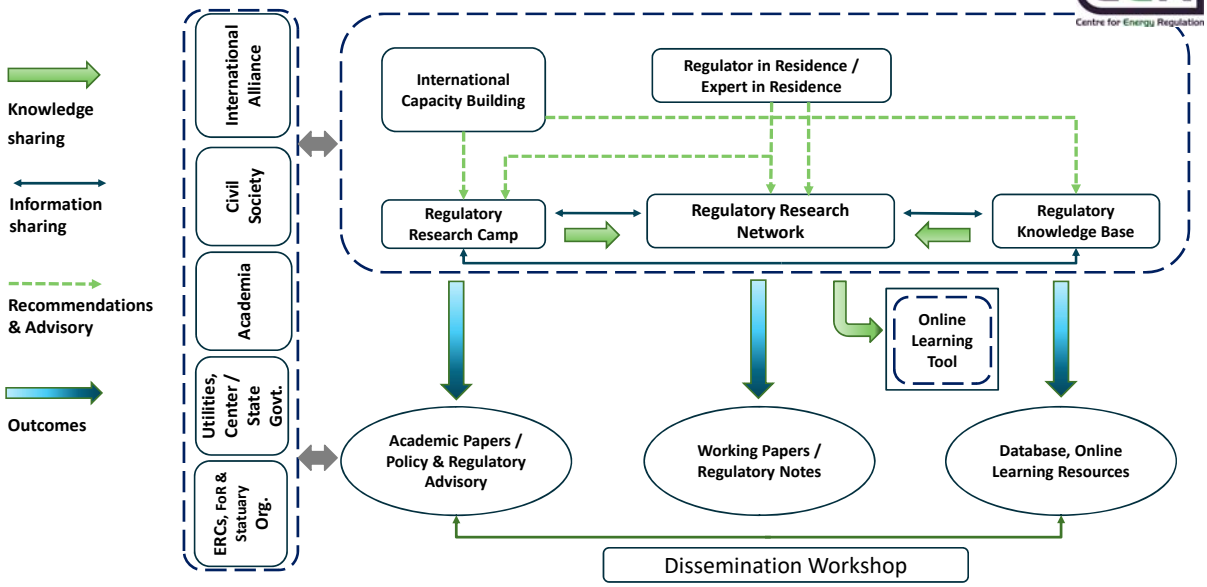
Regulatory Knowledge Base

- Regulatory Database
- Online Learning Environment & Tools (OLET)

Institutional Capacity Building

- International Capacity Building (ICB)
- Regulator / Expert in Residence (RiR/EiR)

Activities



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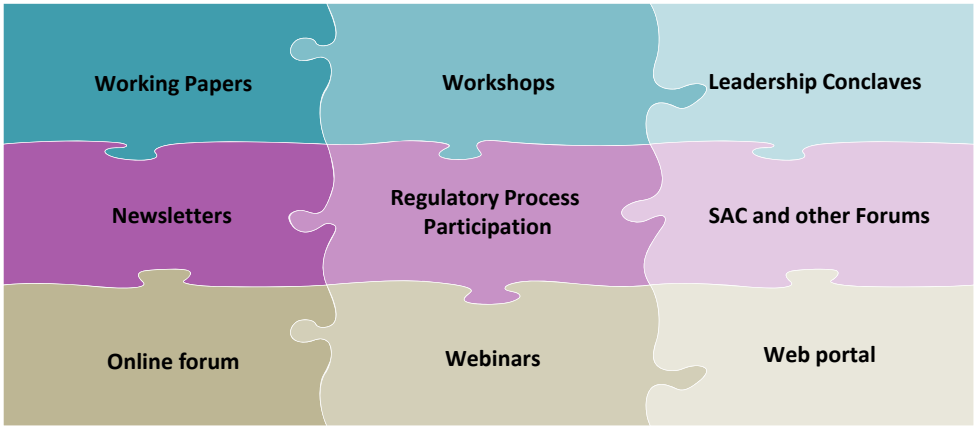
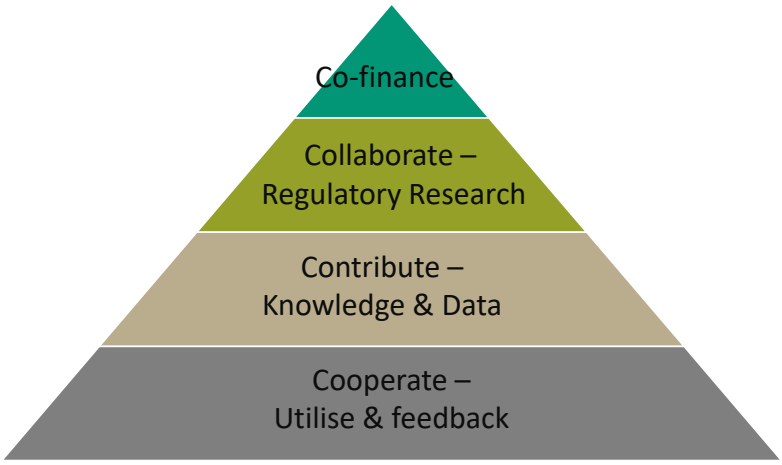
Communication and Outreach



CER and Regulatory Engagement with ERCs



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Stakeholders of CER

Role of Regulatory Commissions & Forum of Regulators

Activity	Role of ERCs and FOR
Regulatory Skill Mapping	▪ Registration at CER portal ▪ Input to Design of Activities and Identification of Participants
Regulatory Research Camps	▪ Suggestions for Research Topics ▪ Resource Commitment (Participation) ▪ Feedback on Outcomes
International Capacity Building	▪ Resource Commitment (Participation) ▪ Institutional Alliances
Dissemination Workshops cum Leadership Conclave	▪ Resource Commitment (Participation) ▪ Discussion by Sector Leaders

Role of Regulatory Commissions & Forum of Regulators

Activity	Role of ERCs and FOR
Regulatory Database	▪ Scope of Database - Prioritisation ▪ Data Accessibility ▪ Database Review ▪ Utilisation and Assimilation ▪ Feedback
Online Learning Tools	▪ Topics for Learning modules ▪ Prioritisation for Visualisation Tools ▪ Utilisation and Assimilation ▪ Feedback
Regulatory Database	▪ Scope of Database - Prioritisation ▪ Data Accessibility ▪ Database Review ▪ Utilisation and Assimilation

Role of Regulatory Commissions & Forum of Regulators

Activity	Role of ERCs and FOR
Online Learning Tools	▪ Topics for Learning modules ▪ Prioritisation for Visualisation Tools ▪ Utilisation and Assimilation ▪ Feedback
Online Discussion Forum	▪ Inputs for developing the online Discussion Forum ▪ Participation in Discussion Forum ▪ Feedback
Working Papers	▪ Expert Review ▪ Dissemination and Utilisation
Regulatory Newsletter	▪ Inputs for coverage of newsletter ▪ Content Contribution ▪ Dissemination and Utilisation ▪ Feedback

CER – Collaborate, Engage and (provide) Resources

Collaborate	Engage	Resources
• Collaborate on regulatory research • Network with Regulatory Peers • Contribute to Discussion Forum	• Input to Regulatory Processes • Identifying areas of regulatory research – RRC & OLET • Scope of Database • Learning Tools	• Time • Intellectual • Financial

CER – Institutional Sustainability

Institutional Building is time and resource consuming exercise.

It needs engagement and commitment of stakeholders.

Stakeholders, particularly, the ERCs need to engage with the Centre and each other.

Key Activities like **Regulatory Database, Learning Tools, Regulatory Research, Newsletter** need to be continuously updated and improved upon.

Models of support

- MoU with FOR
- 'Social' Corpus

Regulatory Skill Mapping

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Thank you

A healthy 'CEREAL' for the Power Sector

Centre for Energy Regulation

ENERGY ANALYTICS LAB

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Electric Vehicles – Policies and Implementation

21 May 2018

Agenda

- Need for electrification of transportation
- Lessons learned from international best practices
- Policies related to EVs
- Technical Impact of EVs on the grid
- Possible business models
- Tariff Impacts of EVs

Need for electrification of transportation

- 1/3rd of crude imports in India attributed to transportation; 80% in the road transportation
- National Electric Mobility Mission Plan 2020, notified by Department of Heavy Industries puts emphasis on EVs as a key mitigation strategy
  - Co-benefits of EVs include **curbing air-pollution**; substantive benefits ambient air quality in the urban centers
- Recently published reports by NITI Aayog argue in favor of EVs; utilities can use EVs as mobile assets – specifically with higher penetration of REs
- An electric vehicle is propelled by an electric motor – charging of EVs can happen onboard (as hybrid), plugged in hybrid or entirely externally charged through dedicated charging points

Lessons Learned from International Best Practices

			US		Norway	France	China	Japan
			Vermont	California				
Policy Support	Targets for EVs		✓	✓	✓	✓	✓	✓
	Government commitments / legislation for EVs		✓	✓	✓✓	✓	✓✓	✓
Fiscal incentives provided	Direct subsidies on EV purchase	Upfront	✓	✓	✓✓	✓✓	✓✓	✓
		Offered to leased vehicles		✓✓	✓✓	✓✓	✓✓	✓✓
		Available for Company vehicles		✓✓	✓✓	✓✓	✓✓	✓✓
		Available for a definite period	✓	✓✓	✓✓	✓	✓	✓✓
	Indirect incentives (Road tax waiver, VAT waiver, access to reserved lanes, free parking)		✓	✓✓	✓✓	✓	✓✓	✓✓
Regulatory directives and role of utilities	Directives from regulator on EVs			✓		✓		
	Regulatory orders			✓				
	Approval of Budget/electrical tariff		✓	✓	✓	✓	✓	✓
	Utility initiatives and programs		✓	✓	✓	✓	✓	✓
	Time of use tariff		✓	✓✓	✓	✓	✓✓	✓
Domestic EV Auto Industry	Local EV manufacturer			✓✓	✓	✓✓	✓✓	✓✓
	Battery manufacturing			✓	✓	✓	✓✓	✓✓
EVSE business	Private players		✓	✓✓	✓✓	✓✓	✓	✓✓
	Utility/Government		✓	✓✓	✓✓	✓	✓✓	✓

Excerpts from international examples

- **Regulators** in California and Vermont have approved the **capital expenditure towards EV Supply Equipment (EVSE)** installations as a part of rate base.
  - A formal decision by the CPUC allows 15 projects with a combined budget of $ 42 million to be spent on creating EV enabling charging infrastructure (early 2018)
- Electricity distribution companies have offered **attractive time-of-day tariffs** to promote off-peak charging [Cost-to-serve consumer categories is well defined]
- They have also played a key role in the development of public charging infrastructure.
- US, Japan and China experimenting utilization of EVs as grid assets, - **demand response** resource or **ancillary services** through Vehicle-to-Grid technologies.
- Governments have offered **substantial direct and indirect incentives** to EVs. Direct incentives include purchase subsidy for EVs and subsidy for installation of chargers while indirect benefits range from tax breaks to access to reserved lanes and parking spots,
- **France** offers an CO_2 emission based **"feebate"** system, which subsidizes electric vehicle purchase while penalizing higher-emission vehicles

EVs need charging infrastructure spread across a large area

On your phone

Find an available charging station with our mobile app

In your car

Go hands-free with our real-time charging data in your car's nav system

Where you go

Charge your car at more than 15,000 places

Charging times and range

Table 1: Charging Times, Range, Battery Size, and Efficiency of Selected EV Models.

Manufacturer	Model	Charging Time		Electric-only Driving Range	Battery Size (kWh)	Fuel Economy[1]
		120 volt AC	240 volt AC			
		Hours	*Hours*	*Miles*	*kWh*	*MPGe*
BYD	***e6***[2]	20	8-9[3]	186	61	97
Chevrolet	***Volt (PHEV)***[4]	10-16	4	38	17	94[5]
Chevrolet	***Spark***[6]	20+	7	82	20	119
Fiat	***500e***[7]	23	4	80 (est.)	24	108
Ford	***C-MAX Energi (PHEV)***[8]	7	2.5	21	8	100
Ford	***Focus Electric***[9]	20	4	76	23	105
Ford	***Fusion Energi (PHEV)***[10]	7	2.5	21	8	100
Honda	***Fit EV***[11]	20+	4	82	20	118
Mia[12]	***mia***	--	3 or 5	50 or 78	8 or 12	
Mitsubishi / Citroën / Peugeot	***i-miEV / C-Zero / iON***[13]	22.5	7	62	16	112[14]
Nissan	***LEAF***[15]	--	7	75	24	116
Opel	***Ampera (PHEV)***[16]		4	46	16	235
Renault	***Zoe***[17]	--	3.5[18]	130	22	--
Renault	***Fluence***[19]	--	6-9	115	22	--
Tesla	***Model S***[20]	30+	4-6	265	85	95
Toyota	***Prius Plug-In (PHEV)***[21]	3	1.5	11-15	4.4	95 est.
Toyota	***RAV4 SUV***[22]	44-52	6.5-8	103	41.8	76

Electricity consumption related to EVs in India

Table 10: Calculations related to annual electricity consumption from vehicle stock using public infrastructure

Vehicle Stock	Average Distance Travelled (kms)#	Electricity consumption, kWh/100km^	Electricity consumption, kWh/km	Annual energy consumption in MkWh (MUs)	
				Low Growth	High growth
4 Wheelers	10,000	36	0.36	1,152	1,440
2 Wheelers	8,000	8	0.08	3,072	3,072
Buses	50,000	175	1.75	14,000	17,500
3 Wheelers	25,000	15	0.15	218	244
Light Commercial Vehicles	30,000	36	0.36	1,620	1,836
			Total with 2-wheelers	20,062	24,092
			Total without 2-wheelers	16,990	21,020

Notes: # Average distance travelled are assumed based on interviews with the market players

^ Electricity consumption numbers are from Office Memorandum of Department of Heavy Industries dated 26 March 2015 (highest number of the range of values are considere here)

Need for charging infrastructure

Table 8: Charging Infrastructure required for NEMMP + scenario					
	Low Growth		High growth		Sources
	Level 2	Fast DC	Level 2	Fast DC	
4 Wheelers	40,000	28,000	45,000	30,000	Proposed scenario based on aggressive targets being taken up by the GOI
2 Wheelers					
Buses	32,000	13,000	35,000	15,000	
3 Wheelers	8,500	1,500	10,000	2,000	
Light Commercial Vehicles	25,000	5,000	32,000	8,000	
Sub Total	1,05,500	47,500	1,22,000	55,000	
Cost per unit, INR (all types except buses)	36,000	2,00,000	36,000	2,00,000	Target costs by industry players
Cost per unit, INR (buses)	1,00,000	4,00,000	1,00,000	4,00,000	
Total Cost, INR Crores	585	1,210	663	1,400	
Grand total (Rs. Crore)	1,795		2,063		

Technical impact of penetration of EVs related to Indian grids

- Impact of slow and fast charging on the voltage levels simulated in MATLAB on residential and commercial distribution transformers
- Impacts need to assessed at macro (national grid) and local distribution
  - No impact on the entire grid with **5000 MW of peak loads**
- Simulation results show no adverse impact on the voltage levels
  - The transformer can be **safely loaded with a split of 60%-40% for residential loads and electric vehicle load** respectively.
  - a baseline **50% loaded commercial feeder can safely absorb up to 20% of additional EV load from fast charging**, similarly the **residential feeder, can be safely handle a ratio of 60%:40% from Residential load and EV load**
- The peak co-incident charging scenario showed that a loading of around 20% from fast chargers should be the threshold
- **Limitations –** impact on each grid points – distribution networks – need to develop specific expansion plans

Possible business models for licensees and other players

Distribution Licensee-owned EV charging infrastructure	•Supply of electricity to vehicle owners would be part of the activities of the Distribution Licensee

- The retail supply tariff for supplying to the electric vehicle owners will be determined by the SERC

Distribution Licensee franchised EV charging infrastructure	•Utility can authorize a third party (Franchisee) to install and/or operate charging stations on its behalf in its area of supply. The franchisee can also be a public private partnership (PPP)

- Charging stations can receive electricity at a single point as bulk supply. The single point supply tariff as well as the tariff cap for retail sale will be determined by the SERC
- Franchisee can be allowed to purchase power through open access without applying Cross Subsidy Surcharge

Privately-owned battery swapping stations	•Utility, its distribution franchisee or any other third party can aggregate the demand for batteries and set up battery swapping stations

- Battery swapping will not amount to electricty resale and hence third parties can set up the stations with intimation to the Distribution Licensee to avail special category tariff.
- The Charging Station can receive electricity in bulk at single point from a distribution licensee or through open access to charge the batteries, as per provisions of the Act.
- The bulk supply tariff/single point supply tariff will be determined by the SERC

13 April 2018 order of MOP through an order clarified that charging of batteries of electric vehicles does not require any license under the Electricity Act 2013

Comparing business models

	Investor	O&M Responsibility	Risks	Scalability	Tariff Structure	Financial support accessibility	Ability to adopt new technology
Distribution licensee-owned EV charging infrastructure	Distribution licensees	DL – directly or through a third-party		Low	SERC will set tariffs (variable)	Low	Low
Distribution licensee franchised EV charging infrastructure including public-private partnership	Franchisee	Franchisee	Franchisee	Medium	Pre-agreed tariff cap	High	High
Privately-owned battery swapping stations	Third Party / Private player	Third party /private investors and operators	Third Party / Private player	Medium	With or Without Pre-agreed tariff cap	High; can attract private equity and/or partner supply-chain partners	High

Tariff impact of investments in the EV charging infrastructure

- Two scenarios studied–
  - NEMMP targets and corresponding EV charging infrastructure requirements and
  - An aggressive target termed the NEMMP+[1]
- Both NEMMP and NEMMP+ scenarios use Low Growth and High Growth options
- Tariff impact assessment was carried out in two formats –
- Entire investment socialized to all the consumers of the licensee and
- Investments charged only to the EV category

- NEMMP vehicle stock numbers
  - Low Growth scenario (2.2 lacs vehicles excluding 2-wheelers)
  - High Growth scenario (4 lacs vehicles excluding 2-wheelers)
- NEMMP+ vehicle stock numbers
  - Low Growth scenario (4.95 lacs vehicles excluding 2-wheelers)
  - High Growth scenario (8.4 lacs vehicles excluding 2-wheelers)
- Investments in the charging infrastructure
  - NEMMP scenario
    - Low growth (2,873 MUs and INR 603 Crores investment) – 547 MW additional load
    - High growth (5,322 MUs and INR 834 Crores investment) – 1013 MW additional load
  - NEMMP+ scenario
    - Low growth (7,993 MUs and INR 1,142Crores investment) – 1,521 MW additional load
    - High growth (25,218 MUs and INR 3,372 Crores investment) – 4,798 MW additional load

[1]based on Ministry of Power's draft note with specific vehicle stock numbers

Summarizing Tariff Impacts – insignificant tariff impacts noticed

Scenario	Business models	Growth options	Tariff Impact (Rs./kWh)
NEMMP	Scenario 1A: Investments socialized to all the consumers	Low Growth	0.0007
		High Growth	0.0010
	Scenario 1B: Investments charged only to EV category sales	Low Growth	0.2810
		High Growth	0.2097
NEMMP+	Scenario 2A: Investments socialized to all the consumers	Low Growth	0.0013
		High Growth	0.0040
	Scenario 2B: Investments charged only to EV category sales	Low Growth	0.1912
		High Growth	0.1790

+ Tariff scenarios and recommendations on Time of Day tariffs – example from Maharashtra

	Impact on the Average Cost of Supply with incremental tariffs	Highest incremental charges socialized across all consumers	Highest incremental charges with only EV consumers paying the charges	Highest incremental charges socialized across all consumers	Highest incremental charges with only EV consumers paying the charges
6	Total charges at ACoS, INR/kWh (=1+4)	6.36	6.64	6.36	6.55

		NEMMP	NEMMP+
Electricty consumed by EVs in MSEDCL area	MUs	532	2521.75
Capacity utilization factor	%	100%	100%
Annual hours*	hours	3650	3650
Maximum stranded capacity that can be utilised	MW	145.80	690.89
Total incentive to be offered to the EVs	INR Crore	91.15	431.93
Maximum ToD incentives	INR/kWh	1.71	1.71

Key recommendations

- Regulators to allow pass through of investments made in EV charging infrastructure by the Distribution Licensees in tariffs
- Create simplified framework for franchise agreements between the DLs and private sector/interested Public Sector Undertakings/associations to set-up charging infrastructure
- Appoint multiple and non-exclusive franchisees within its area of supply for setting up public charging infrastructure
- Create new tariff category for EVs by allowing recovery of incremental cost of infrastructure through wheeling charges over and above the average cost of service
- Allow special ToD structure for EV charging infrastructure accounting for use of backed-down assets in the night time
- Allow Open Access to EV charging infrastructure aggregators without cross subsidy surcharge. Also allow banking of RE generation to promote reduced tariffs

- Moderated Questions and Answers

Thank you

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Tariff impact of investments in the EV charging infrastructure (slide in the Annexure)

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SERVICE MATTERS RELATED TO SERC

By Mahesh Gupta,
Assistant Chief (Accounts),
CERC

Legal Provisions

Section 89. (Term of office and conditions of service of Members):

1. The Chairperson or other Member shall hold office for a term of five years from the date he enters upon his office:

   Provided that the Chairperson or other Member in the Central Commission or the State Commission shall not be eligible for re-appointment in the same capacity as the Chairperson or a Member in that Commission in which he had earlier held office as such

   Provided further that no Chairperson or Member shall hold office as such after he has attained the age of sixty-five years.

2. **The salary, allowances and other terms and conditions of service of the Chairperson and Members shall be such as may be prescribed by the Appropriate Government**:
   Provided that the salary, allowances and other terms and conditions of service of the Members, shall not be varied to their disadvantage after appointment.

Legal Provisions

Section 91. (Secretary, officers and other employees of Appropriate Commission): ---

1. The Appropriate Commission may appoint a Secretary to exercise such powers and perform such duties as may be specified.
2. The Appropriate Commission may, **with the approval of the Appropriate Government**, specify
   - the numbers,
   - nature and
   - categories of other officers and employees.
3. **The salaries and allowances payable to, and other terms and conditions of service of, the Secretary, officers and other employees** shall be such as may be specified with the approval of the Appropriate Government.
4. The Appropriate Commission may **appoint consultants** required to assist that Commission in the discharge of its functions on the terms and conditions as may be specified.

Approval of the Appropriate Government required for

1. The numbers, nature and categories of other officers and employees;
2. The salaries and allowances payable to, and other terms and conditions (pay, allowance, terminal benefits, promotion, absorption etc) of service of:
   - -Secretary,
   - -officers, and
   - -other employees

Terminal Benefits to the Chairperson, Members of SERC

As per terms and conditions envisaged in SERC/JERC (Terms and Conditions of service of Chairperson and Members) Rules…

- Leave
  - *Illustrative terms and conditions envisaged in the Rules:*
    - *The Chairperson and Members shall be entitled to thirty days earned leave for every year of service. The payment of leave salary during the leave shall be governed under the provisions of rule 40 of CCS (Leave) Rules, 1972*
      - *In such circumstances, Leave encashment is not allowed.*
    - *Leave encashment is allowed to the extent of 50 per cent of leaves.*
    - *Thus, the leave encashment is based on the terms and conditions envisage by the appropriate Government.*
  - *If provisions are silent, clarification may be sought from the appropriate government.*
- Gratuity and Pension
  - Not admissible

Terminal Benefits to the Chairperson, Members of SERC –Provident Fund (cont..)

As per terms and conditions envisaged in SERC/JERC (Terms and Conditions of service of Chairperson and Members) Rules…

- Contributory Provident Fund is admissible
- *Illustrative terms and conditions envisaged in the Rules:*
  - *The Chairperson and Members shall be governed by the provisions of the Contributory Provident Fund Rules, 1962 and no option to subscribe under the provisions of the General Provident Fund Rules,(Central Services) 1960 shall be available. Additional Pension and Gratuity shall not be admissible for the service rendered in the Commission.*
  - *Some of the SERC do not provide for any PF Benefit*

Terminal Benefits to the Chairperson, Members of SERC – Provident Fund (cont…)

- *In most of the State Governments, CPF Scheme is not operational or operational for only existing officials as most of the employees shifted to GPF plus Pension after government granted option to its employees to shift from CPF to 'GPF plus Pension'. CPF scheme (Under CPF Rules 1962) is operational in some of the States e.g. J&K, Punjab and Uttrakhand (Source Finance and Accounts of various States page 474 as downloaded from the website of CAG office).*
- *At Union Government stage, the scheme is in operation in some of the Tribunals (e.g Mahanadi Water Dispute Tribunal and Cauvery Water Dispute Tribunal). These funds are managed by the CCA/Controller of Accounts of the Respective Ministries (Ministry of Water Resources). In respect of States the funds are managed by PAG/AG (A&E) or State Finance whosoever maintains the Accounts of GPF of the State Government employees.*

Terminal Benefits to the Chairperson, Members of SERC – Provident Fund (cont…)

- *Some of the SERCs are collecting contributions from the Chairperson and Members and making equal contribution and depositing the same in the Bank (FDs) and making payment to them at the time of demitting office by them. Some SERC are not contributing anything for CPF of Chairperson and Members as per terms and conditions decided by the appropriate government.*
  - *The former is not in conformity with the Rules prescribed by the appropriate government;*
  - *The contribution from the official is not eligible for Income Tax deduction under Section 80C and payment to the officials at the time of demitting office may become taxable in the hands of the official.*

Contributory Provident Fund Rules (India), 1962

- The CPF Rules are applicable to every non-pensionable servant of the Government belonging to any of the services under the control of the President. A subscriber, at the time of joining the Fund is required to make a nomination in the prescribed form conferring on one or more persons the right to receive the amount that may stand to his credit in the Fund in the event of his death, before that amount has become payable or having become payable has not been paid.
- A subscriber shall subscribe monthly to the Fund when on duty or foreign service but not during a period of suspension. Rates of subscription shall not be less than 10% of the emoluments and not more than his emoluments. The employer's contribution at that percentage prescribed by the Government will be credited to the subscriber's account and this is presently 10%.

Contributory Provident Fund Rules (India), 1962 (cont…)

- The Rules provide for drawal of advances / withdrawals from the CPF for specific purposes. As in GPF Rules, the CPF Rules also provide for Deposit linked Insurance Revised Scheme.
- **Earlier, the Government was giving option to CPF subscribers to switch over from CPF Scheme to GPF Scheme (Pension Scheme). The last such option was allowed based on the recommendations of Fourth CPC.**
- As a number of options have already been allowed as and when substantial improvement were made in the pension scheme and the practical difficulties involved in retrieval of records and adjustments to be made, demand for further option was not recommended by the Fifth CPC and there is no proposal with the Government to consider any further change in options.

(Source Website of the DOPT)

Way forward

- SERC may approach State Finance or AG/PAG(A&E) to deposit the funds whosoever manages GPF of the State Government Employees to keep this deposit under Major Head 8009 with Minor Head 102.
- If managing CPF is not feasible, SERC may by explaining the facts and circumstances about the CPF Scheme, approach appropriate Government to amend the SERC/JERC (Terms and Conditions of service of Chairperson and Members) Rules
  - It **may** provide for Employees Provident Fund Scheme instead of existing provisions for Contributory Provident Fund Scheme.
- Under sub section 4 of Section 1of the Employees' Provident Fund and Miscellaneous Provision Act, 1952, EPF can be allowed even if number of officials are less than 10. This can be handled departmentally or Services of the consultants can be availed at a one time nominal charges.

Pay and allowances on deputation

- **Exercise of option**
  - Pay scale of the foreign service post

    Or
  - Pay in the parent Department plus deputation allowance;
  - Option once exercised shall be final.
- **Revision of option**
  - Proforma promotion, NFU, etc.;
  - Reversion to lower grade in the parent cadre;
  - Revision in the pay on the basis of which his emoluments are regulated or ex-cadre post held on deputation either prospectively or retrospectively.

Leave salary, Pension/NPS contribution – Deputation from Government

- **Leave salary** –11 per cent of Pay (band pay plus grade pay in 6th CPC) **actually drawn** in foreign service.
- **Pension Contribution**
  - **Specified percentage** of **pay in the parent cadre** at the time of proceeding on deputation for active period of service (No LSPC for the period of EL, HPL or CCL).
- **NPS**
  - NPS contribution payable every month at the rate of 10 per cent of pay to the parent department. In addition contribution towards gratuity and leave is also payable but contribution towards Pension is not payable to parent department. (Person can be covered either under Pension or NPS)

Leave salary, PF and Gratuity contribution--- Deputation from PSE/ABs

- To be decided on mutual consent.
- Thumb Rule:
  - Gratuity- 15/26 of average monthly salary in parent department;
  - Leave Salary 11 percent of the actual pay drawn;
  - PF (CPF/EPF) as per rules of the parent department;
- No decision at the time of deputation
  - Normally disadvantageous to the official
    - All leaves may not be encashed and not transferred also.
    - Gratuity may not be paid.
    - Gratuity and Leave may be settled at the pay at the time of going on deputation.

Retirement benefit schemes in the appropriate Commission –Staff other than Commission

- As decided by the appropriate government
  - Gratuity (1/2 or 15/26 of monthly average pay for each year of completed service;
  - Leave Encashment (EL+HPL) subject to ceiling of 300 days at the rate of last pay;
  - NPS (10 per cent) or CPF (10 per cent) or EPF (10 if number of employees are less than 20, Else 12 per cent).

On absorption

Terms and conditions as decided by the Appropriate Government

- **Past Leave**
  - No benefit in the Appropriate Commission, Leave to be encashed from the parent department;
- **Gratuity**
  - Official is given option either to
    - Deposit the gratuity received from the Parent office to the appropriate Commission
      - For the purposes of Gratuity from the appropriate Commission, past service will be counted.

    or
    - Retain gratuity received from parent department
      - Past service is not counted for Gratuity purposes only

On absorption

- **Pension**
  - To be received from the parent department as per their rules;
  - No consideration is given in the appropriate Commission.
- **Provident Fund** –If the scheme in the parent department and appropriate commission is same, it will continue. Else, the official has to be governed by the scheme in vogue in the appropriate Commission. The official may opt to:
  - transfer GPF/EPF/CPF to EPF/CPF
    or
  - to retain (Transfer requires the approval of both departments)
- NPS
  - if there is NPS scheme in the appropriate Commission, the official will continue to subscribe it.
  - if there is no NPS scheme in the appropriate Commission but CPF or EPF
    - NPS is not transferred to PF Account and the amount cannot be withdrawn before the age of 60 years in normal circumstances. Appropriate Commission can approach appropriate Government to allow more than one scheme or switching over to NPS, if employees are more interested in continuation with NPS.

CPF Scheme

- Contributory Provident Fund Scheme is applicable to those Government employees who have been appointed on or before 31.12.2003;
- Rules of GPF and CPF are same except the following
  - Contribution by employee
    - Minimum 10 per cent of pay
    - Maximum 100 per cent of pay
  - Contribution by the employer
    - 10 per cent of pay
    - In case of GPF, contribution is made by employee only at minimum of 6 per cent and maximum of 100 per cent of pay.

Terminal Benefits to regular staff of the SERCs

- Gratuity
  - For service rendered in the appropriate commission
    - if gratuity received from previous department is not deposited in the appropriate commission.
  - For Service rendered in the appropriate commission and previous department
    - if gratuity received from previous department is timely deposited in the appropriate commission.
- Leave Encashment
  - Allowed for the leave accumulated during the service rendered in the appropriate Commission subject to the ceiling of 300 days without any consideration to the leave encashed in previous service.
- PF
  - As admissible to directly settled by the appropriate authorities.

Discussion