

25<sup>th</sup> Jan., 2018

Mr. Sanoj Kumar Jha  
Secretary, Forum of Regulators,  
C/O Central Electricity Regulatory Commission (CERC)  
3rd Floor, Chanderlok Building  
36, Janpath, New Delhi 110001

**Sub: Report on Feedback for the 11<sup>th</sup> Capacity building/Training programme for officers of Electricity Regulatory Commissions 09 – 11 Dec., 2017, IIT Kanpur Outreach Centre, Noida & 13 – 15 Dec., 2017, Singapore.**

Dear Mr. Jha,

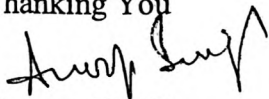
This is with reference to the "11<sup>th</sup> Capacity Building Programme for Officers of Electricity Regulatory Commissions", organized from 09 – 11 Dec., 2017, IIT Kanpur Outreach Centre, Noida & 13 – 15 Dec., 2017, Singapore. We would like to thank the Forum of Regulators for giving us responsibility to organize the above programme. The speakers for the Indian segment were experts in their respective areas. The speakers for the Singapore segment included experts on a variety of topics from Bloomberg New Energy Finance, DNV GL, Singapore, School of Business, Singapore University of Social Sciences, SP Group, Singapore, N. T. U. Singapore. Site visit to a Waste to Energy Plant, Tuas, Singapore and POSOCO, India were also organized.

We are pleased to inform you that the programme was conducted successfully as per the FOR's requirements. The programme agenda and speakers were finalized in consultation with the FOR. I am enclosing herein the programme schedule, a list of speakers, a list of participants, a group photograph and a kit of the program including the session handouts on a pen drive.

It is encouraging to mention that the programme was well appreciated by the participants. A detailed feedback was obtained from the participants. A summary of the feedback is enclosed for your reference. The participants have also given specific feedback/suggestions for design of similar activities in future. These are also provided for necessary action at your end. We would be pleased to provide any assistance, if required.

We thank you for keeping confidence in our abilities to organize this programme. We hope to undertake similar tasks in future as well. We would also like to request to release the final installment as well. An invoice towards the same is enclosed herein.

Thanking You



(Anoop Singh)  
Programme Coordinator

- Encl: 1- Final Programme Schedule  
2- Feedback Form  
3- Feedback score tables  
4- Detailed feedback  
5- List of Participants

**Table: Overall Feedback of the Programme**

Question	Score			Better than expectation		
	Average	Min	Max	Yes	No	As Expected
1a	4.80	4.00	5.00			
1b				14	0	6
2a	4.85	4.00	5.00			
2b				11	0	9
3a	4.55	4.00	5.00			
3b				10	1	9
4a	4.60	4.00	5.00			
4b				13	0	7
5a	4.75	4.00	5.00			
5b				10	2	8

Note: Please refer to the attached feedback form for Question Key

**Table: Session-wise Feedback of the Programme**

	<b>SUMMARY</b>			
	<b>Day 1 - Average Score</b>			
<b>Question</b>	<b>Session I (Mr. Rakesh Nath)</b>	<b>Session II (Dr. Anoop Singh)</b>	<b>Session III (Mr. Rajesh Kumar Mediratta)</b>	<b>Session IV (Mr. Akhil Aggarwal)</b>
<b>1</b>	4.50	4.80	4.48	4.00
<b>2</b>	4.53	4.85	4.58	4.00
<b>3</b>	4.53	4.80	4.55	3.95
<b>4</b>	4.50	4.75	4.53	3.95
	<b>Day 2 - Average Score</b>			
<b>Question</b>	<b>Brainstorm Session I (Dr. Anoop Singh)</b>	<b>Session II (Mr. Shuvendu Bose)</b>	<b>Session III (Mr. Pankaj Batra)</b>	<b>Session IV (Dr. S K Chatterjee)</b>
<b>1</b>	4.65	4.25	4.24	4.13
<b>2</b>	4.55	4.28	4.06	4.23
<b>3</b>	4.65	4.18	3.91	4.25
<b>4</b>	4.53	4.15	3.91	4.18
	<b>Day 3 - Average Score</b>			
<b>Question</b>	<b>Session I (Dr. Y B K Reddy)</b>	<b>Brainstorm Session Continued (Dr. Anoop Singh)</b>	<b>Session III (Mr. K V S Baba)</b>	<b>Field Visit (POSOCO)</b>
<b>1</b>	4.18	4.65	4.53	4.65
<b>2</b>	4.33	4.55	4.60	4.65
<b>3</b>	4.40	4.65	4.60	4.70
<b>4</b>	4.38	4.53	4.60	4.70
	<b>Day 5 - Average Score</b>			
<b>Question</b>	<b>Session I (Mr. Ashish Sethia)</b>	<b>Brainstorm Session II (Dr. Anoop Singh)</b>	<b>Session III (Mr. Ashutosh Sharma)</b>	<b>Session IV (Dr. Youngho Chang)</b>
<b>1</b>	4.63	4.67	4.15	4.25
<b>2</b>	4.73	4.78	4.05	4.23
<b>3</b>	4.73	4.89	4.20	4.25
<b>4</b>	4.68	4.78	4.15	4.35
	<b>Day 6 - Average Score</b>			
	<b>Session I (Mr. Lim Howe Run)</b>	<b>Session II (Mr. Goh Chee Kong)</b>	<b>Session III (Dr. Bikal Pokhrael)</b>	
<b>1</b>	4.43	4.45	4.63	
<b>2</b>	4.35	4.20	4.25	
<b>3</b>	4.55	4.30	4.35	
<b>4</b>	4.50	4.45	4.43	
	<b>Day 7 - Average Score</b>			
	<b>Site Visit - Waste to Energy Plant, Tuas, Singapore</b>			
<b>1</b>	4.80			
<b>2</b>	4.53			
<b>3</b>	4.60			
<b>4</b>	4.75			

## **Summary of Specific Feedback by Participants**

### **Program Content (Additional issues identified):**

1. It was a very good learning experience and provided exposure to advanced country's practices in this sector.
2. Presentation can be given on comparative study of various regulations in different countries.
3. One presentation can also be given on comparative analysis of decisions of various SERCs on a particular case viz. intra-state power market.
4. Large scale renewable integration, specifically integration of rooftop solar PV installation and its regulatory issues.
5. Impact of charging stations on view of more number of electrical vehicles in the system.
6. The programme may be designed in such a way that senior officers having adequate experience may be included. For fresher or relatively lesser experience separate batch may be considered. By doing so both categories will get benefited and better outcome can be achieved.
7. Officers of relevant theme of the programme may be included from the commissions. For example present programme was relevant to more of clean energy technologies, therefore more relevant to officers dealing with renewable energy.
8. It may kindly include one session on market model and power exchanges.
9. Programme should be organized in more spacious room with chairs comfortable enough to participants to sit the whole day.
10. More field visits such as waste to energy plant, solar PV plant may be included.
11. Impact One session of tariff related issues and international experiences including the treatment of expenses/ income may be included.
12. Senior officials of utilities of the respective countries together with regulations may also explain their perspectives.
13. Such capacity building programme for 2-3 days at IIT-K (Delhi centre) should be organized quarterly / half yearly for officers of commission.

14. May also conduct in some other Asian country and/or if possible Europe destination will be very beneficial for the programme to explore renewable energy sector.
15. Gradual reduction in cross subsidy as mandated in Electricity Act 2003.
16. Participants from each ERC should make presentation.
17. Method of data evaluation and software models.
18. Performance evaluation methods for evaluating DISCOMs contemporary model.
19. Role of regulators in changing environment of power sector.
20. One programme on tariff determination detailing process and timeline is needed to have uniformity in all SERCs.



**11th Capacity Building Programme for  
Officers of Electricity Regulatory Commissions  
09 - 11 December, 2017 at IIT Kanpur Outreach Centre, Noida  
13 - 15 December, 2017 at Hotel Holiday Day Inn, Orchard City Centre, Singapore**

**List of Participants**

<b>S. No.</b>	<b>Name</b>	<b>Designation</b>	<b>Organization</b>
1	Mr. Arvind Kumar Mehta	Secretary	Jharkhand State Electricity Regulatory Commission
2	Mr. Shailendra Saxena	Secretary	Madhya Pradesh Electricity Regulatory Commission
3	Mr. Saktipada Mishra	Joint Director (Engineering)	Odisha Electricity Regulatory Commission
4	Mr. N. Bhanu Prakash	Joint Director (Accounts & Personnel)	Telangana State Electricity Regulatory Commission
5	Mr. Umakanta Panda	Joint Director (Information Technology)	Telangana State Electricity Regulatory Commission
6	Mr. Sidharth Rokade	Deputy Director (Technical)	Maharashtra Electricity Regulatory Commission
7	Mr. M. S. Vidyasagar	Deputy Director (Planning & Power Procurement)	Andhra Pradesh Electricity Regulatory Commission
8	Mr. Vivek Ganodwale	Senior Law Officer	Chhattisgarh State Electricity Regulatory Commission
9	Mr. Pawan Kumar	Deputy Director (Commerce)	Bihar Electricity Regulatory Commission
10	Mr. Sanjeeb Tamuli	Consultant Grade (I)	Assam Electricity Regulatory Commission
11	Mr. Manish Singhal	Deputy Director (Finance)	Haryana Electricity Regulatory Commission
12	Mr. Kanti J. Bhuvra	Deputy Director	Gujarat Electricity Regulatory Commission
13	Mr. Amit Kumar Sil	Joint Advisor (Engineering)	West Bengal Electricity Regulatory Commission
14	Mr. Ghan Shyam	Deputy Director (Technical)	Rajasthan Electricity Regulatory Commission
15	Ms. Punam Rabha	Staff Consultant	Arunachal Pradesh State Electricity Regulatory Commission
16	Mr. Manish Shrivastava	Deputy Director (Tariff)	Madhya Pradesh Electricity Regulatory Commission
17	Mr. Ravinder Kumar	Assistant Engineer	Himachal Pradesh Electricity Regulatory Commission
18	Mr. Raghvinder Singh	Deputy Director	Punjab State Electricity Regulatory Commission
19	Mr. Gaurav Sabharwal	Assistant Director (Finance / Tariff)	Uttarakhand Electricity Regulatory Commission
20	Mr. Hekavi N. Ayemi	Assistant Engineer (Tariff)	Nagaland Electricity Regulatory Commission

**Department of Industrial and Management Engineering  
Indian Institute of Technology Kanpur**



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**09 - 11 December, 2017, IIT Kanpur Outreach Centre, Noida  
13 - 15 December, 2017, Holiday Inn Orchard City Centre, Singapore**

**Organised by IIT Kanpur**

**Supported by**



**Forum of Regulators**

# 11<sup>th</sup> Capacity Building Programme for Officers of Electricity Regulatory Commissions

09 - 11 December, 2017 IIT Kanpur Outreach Centre, Noida  
13 - 15 December, 2017, Holiday Inn Orchard City Centre, Singapore

<b>Day 1 – Saturday, 09<sup>th</sup> December, 2017</b>	
0830 Hrs. – 0900 Hrs.	Registration
0900 Hrs. – 0920 Hrs.	<b>Inaugural Function:</b> Chief Guest - Dr. M. K. Iyer, Member, Central Electricity Regulatory Commission (CERC)
0900 Hrs. – 1045 Hrs.	Important Orders of APTEL and the Supreme Court: Implications for Power Sector Regulation, Mr. Rakesh Nath, Former Member, Appellate Tribunal for Electricity
1045 Hrs. – 1115 Hrs.	High Tea
1115 Hrs. – 1315 Hrs.	Long-term Demand Forecasting and Power Procurement Planning for Distribution Utilities, Anoop Singh, IIT Kanpur
1300 Hrs. – 1400 Hrs.	Lunch Break
1400 Hrs. – 1530 Hrs.	Short Term Power Procurement - Regulations and Practices, Mr. Rajesh Kumar Mediratta, Director (Business Development), Indian Energy Exchange Ltd. (IEX)
1530 Hrs. – 1600 Hrs.	Tea / Coffee Break
1600 Hrs. – 1730 Hrs.	UDAY: Challenges and Way Ahead for Power Sector Utilities, Mr. Akhil Aggarwal, Project Manager, KPMG
2000 Hrs. – 2230 Hrs.	Welcome Reception
<b>Day 2 – Sunday, 10<sup>th</sup> December, 2017</b>	
0900 Hrs. – 1030 Hrs.	Electricity Brainstorm Session – I, Anoop Singh, IIT Kanpur
1030 Hrs. – 1100 Hrs.	Tea / Coffee Break
1100 Hrs. – 1230 Hrs.	Solar Rooftop Policy and Regulations Across States, and Future of Utilities, Mr. Shuvendu Bose, Executive Director, Ernst & Young
1230 Hrs. – 1400 Hrs.	Lunch Break
1400 Hrs. – 1530 Hrs.	Smart Grid - Way Ahead for Utilities and Regulators, Mr. Pankaj Batra, Member, Central Electricity Authority (CEA)
1530 Hrs. – 1600 Hrs.	Tea / Coffee Break
1600 Hrs. – 1730 Hrs.	Electric Vehicles - Impact on Utility and Regulatory Interventions, Dr. S K Chatterjee, Jt. Chief (Regulatory Affairs), Central Electricity Regulatory Commission (CERC)



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<b>Day 3 – Monday, 11th December, 2017</b>	
0900 Hrs. – 1030 Hrs.	Competitive Bidding for Conventional, Solar and Wind Energy, Dr. YBK Reddy, DGM (Solar), Solar Energy Corporation of India (SECI)
1030 Hrs. – 1100 Hrs.	Tea / Coffee Break
1100 Hrs. – 1230 Hrs.	Electricity Brainstorm Session – I, Continued
1230 Hrs. – 1400 Hrs.	Lunch Break
1500 Hrs. – 1600 Hrs.	Power System Operation and Market for Ancillary Services Mr. K V S Baba, CEO, Power System Operation Corporation Limited (POSOCO)
1600 Hrs. – 1630 Hrs.	Tea / Coffee Break
1630 Hrs. – 1730 Hrs.	Field Visit (POSOCO Operations/monitoring room)
<b>Day 4 – Tuesday, 12th December, 2017</b>	
	Travel to Singapore: Departure from Delhi on 12 Dec.
<b>Day 5 – Wednesday, 13th December, 2017</b>	
0900 Hrs. – 1030 Hrs.	Renewable Energy and Future of the Electric Utilities, Mr. Ashish Sethia, Head of South & Southeast Asia, Bloomberg New Energy Finance, Singapore
1030 Hrs. – 1100 Hrs.	Tea / Coffee Break
1100 Hrs. – 1230 Hrs.	Electricity Brainstorm Session – II, Anoop Singh, IIT Kanpur
1230 Hrs. – 1400 Hrs.	Lunch Break
1400 Hrs. – 1530 Hrs.	Performance Benchmarking for Electricity Distribution Utilities, Mr. Ashutosh Sharma, DNV GL, Principal Consultant, Singapore
1530 Hrs. – 1600 Hrs.	Tea / Coffee Break
1600 Hrs. – 1730 Hrs.	Regulation of Power Sector in Singapore - Development and Current Practices, Dr. Youngho Chang, School of Business, Singapore University of Social Sciences

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<b>Day 6 – Thursday, 14th December, 2017</b>	
0900 Hrs. – 1030 Hrs.	Managing transition to Retail Competition for Electricity: Experience in Singapore, Mr. Lim Howe Run, Managing Director, GCEO's Office, SP Group
1030 Hrs. – 1100 Hrs.	Tea / Coffee Break
1100 Hrs. – 1230 Hrs.	Electric Mobility in Singapore - Roll Out Strategy and Role of Distribution Utilities, Mr. Goh Chee Keong, Head of Strategic Development, SP Group
1230 Hrs. – 1400 Hrs.	Lunch Break
1400 Hrs. – 1530 Hrs.	Power Market Developments in Singapore/South East Asia, Dr. Bikal Pokharel, Principal Power Analyst at Wood Mackenzie, Nanyang Technological University, Singapore
1530 Hrs. – 1600 Hrs.	Tea / Coffee Break
1600 Hrs. – 1700 Hrs.	<b>Valedictory Function:</b> Chief Guest, HE Mr. Jawed Ashraf, High Commissioner of India to Singapore
<b>Day 7 – Friday, 15th December, 2017</b>	
0900 Hrs. – 1030 Hrs.	Site Visit - Waste to Energy Plant, Tuas, Singapore
1030 Hrs. – 1100 Hrs.	Tea / Coffee Break
1100 Hrs. – 1230 Hrs.	Site Visit - (Contd.)
1230 Hrs. – 1400 Hrs.	Lunch Break
1400 Hrs. – 1530 Hrs.	Site Visit
1530 Hrs. – 1600 Hrs.	Tea / Coffee Break
1600 Hrs. – 1730 Hrs.	Site Visit
<b>Day 8 – Saturday, 16th December, 2017</b>	
	Departure from Singapore to New Delhi Intl. Airport

## Objective 2.8: DSO Functions Considering Regulation and Market Design ((Y2Q1-Y4Q3)

### 2.8.1 Addressing market and regulatory Issues (IITK, IITD, IITR, WSU)

IITK(AS,SCS), IITR  
(NPP),  
TERI (KR), IITD  
(ARA)

CES, PGCIL, BRPL

- Regulatory provisions for behind-the-meter generation
- ‘Peer-to-Peer’ interactions amongst ‘prosumage’
- Renewed ‘Open access’ and ‘Open access customers’ in Indian context with network pricing
- Redefine four pillars of market architecture for DSO
- Retail energy market design for low voltage system
- Integration of distribution level market with transmission level market

### 2.8.2 Distribution market development (MIT)

IITK(AS), IITD  
(ARA)

- Determine the DSO role and objective to interact with lower level LAs as well as higher level transmission system operator (TSO)
- Determine the role and objectives of LAs in presence of empowered residential end-users and DER devices that are able to bid following DR incentives
- Determine the hierarchical market framework to capture the procurement strategies of a DSO

### 2.8.3 Integration of market mechanisms with frequency regulation and volt-var control (MIT)

IITD (ARA)

CES

- Determine the TSO and DSO roles to facilitate the interaction in TSO market and DSO market.
- Determine the framework to combine the transmission-level market (which includes frequency regulation) with distribution-level market (which includes volt-var control)