



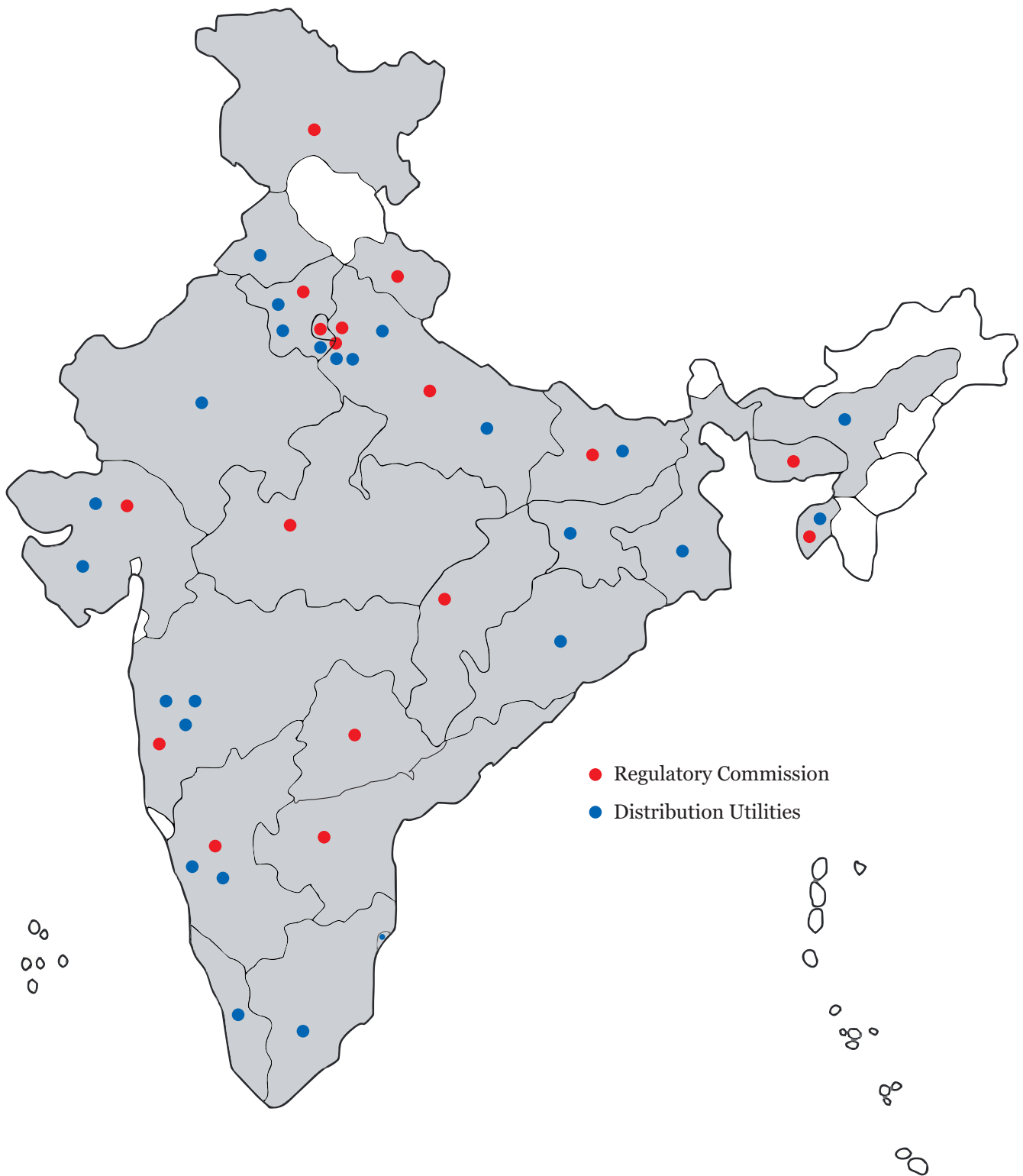
# *Utility CEO Forum*

ON DEMAND SIDE MANAGEMENT

Synopsis 2013-2015

# Utility CEO Forum on DSM

Participating states – Regulatory Commissions and Distribution Utilities



The original map has been sourced from [www.shutterstock.com](http://www.shutterstock.com)

**Utility CEO Forum on Demand Side Management**  
**Synopsis 2013-2015**



---

# Table of contents

---

Introduction	4
Summary of the Forum's meetings	7
Forum's achievements	9
Way forward	12
Synopsis of the Forum's meetings	13
First meeting: February 2013	13
Second meeting: June 2013	14
Third meeting: September 2013	15
Fourth meeting: April 2014	16
Fifth meeting: April 2014	17
Sixth meeting: July 2014	18
Seventh meeting: November 2014	19
Eighth meeting: January 2015	20
Appendix: List of participants	21

---



# Introduction

Economic growth in India, combined with improved access to electricity will drive growth in the country's energy demand. Relying only on conventional supply options may not be adequate. Historically, capacity addition based on fossil fuels has not been able to keep up with the demand, and shortages continue to persist. In such a scenario, Demand Side Management (DSM) emerges as an immediate available and cost effective tool to curb shortages and reduce costs.

Demand side management refers to actions taken by the distribution utility, beyond the meter of the customer, to alter consumption patterns with the objective of reducing the overall cost of energy to the system. DSM programmes help the utility in avoiding high capital investments in incremental generation capacity and the transmission and distribution network, improving end use energy efficiency and thereby resulting in reduced costs and emissions. In the short term, well designed DSM programmes also provide utilities the flexibility to manage peak demand and ensure grid discipline. It is one of the most efficient and effective way to manage spikes in the demand as ramping up and down of conventional thermal plants is inefficient. Having a significant portfolio of demand side resources in the energy mix also implies that a) the procurement of expensive power from short term markets can be reduced and b) generation of expensive power from the marginal capacity in the supply stack can be displaced.

Despite all the benefits mentioned above along with being a low-cost resource, DSM has not been able to take off in India on a large scale. Though some progress has been made in the form of adoption of state DSM regulations by State Electricity Regulatory Commissions (SERCs), the enforcement of these regulations is limited. The responsibility of on-ground implementation continues to rest with the utilities, which have not been able to undertake large-scale programmes due to technical, economic and financial barriers.

Recognizing the constraints in the DSM space, Shakti Sustainable Energy Foundation (SSEF) conceptualised the 'Utility CEO Forum on DSM' (Forum) in 2012. The objective of this Forum is to bring together key individuals in the electricity sector to stimulate fresh ideas, identify critical challenges, replicate best practices, and create an enabling policy environment for scaling up utility driven DSM programmes in the country. PricewaterhouseCoopers (PwC) was appointed as the knowledge and logistics partner to manage and drive the Forum's activities.

Since its launch in February 2013, the Forum has held eight quarterly meetings. Shri Gireesh B Pradhan chaired the first three meetings and Shri Anil Razdan took over as the Chairperson fourth meeting onwards.

We would like to record our sincere thanks to both the Honorary Chairpersons, without whose guidance and leadership the results of the Forum would not have been possible.

Participants in the Forum includes senior officials from electricity distribution licensees (utilities), electricity regulatory commissions (ERCs), central nodal agencies (Bureau of Energy Efficiency, Central Electricity Authority, etc.), energy service companies (Energy Efficiency Services Limited and other Energy Service Companies), technology and service providers as well as industry experts from all over the country.

## Honorary Chairpersons



Gireesh B. Pradhan, IAS (Retired)  
Chairperson & Chief Executive, CERC  
Former Secretary, MNRE

**February 2013 – October 2013**



Anil Razdan, IAS (Retired)  
Former Secretary, Ministry of Power

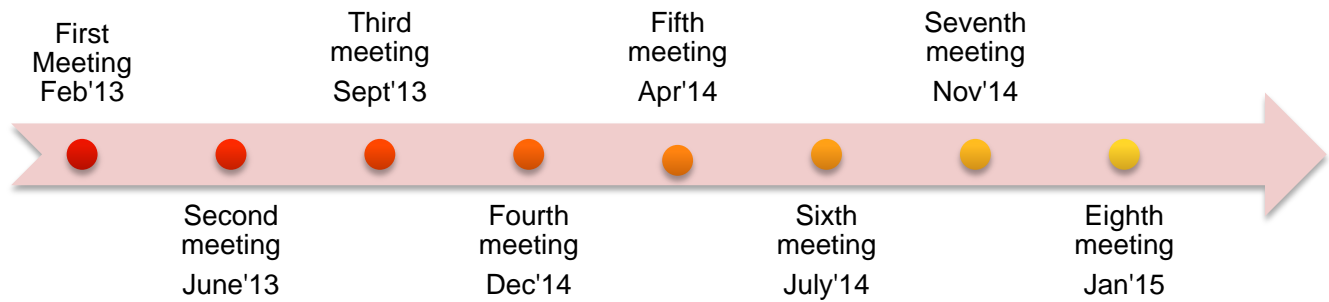
**December 2013 – till date**

---

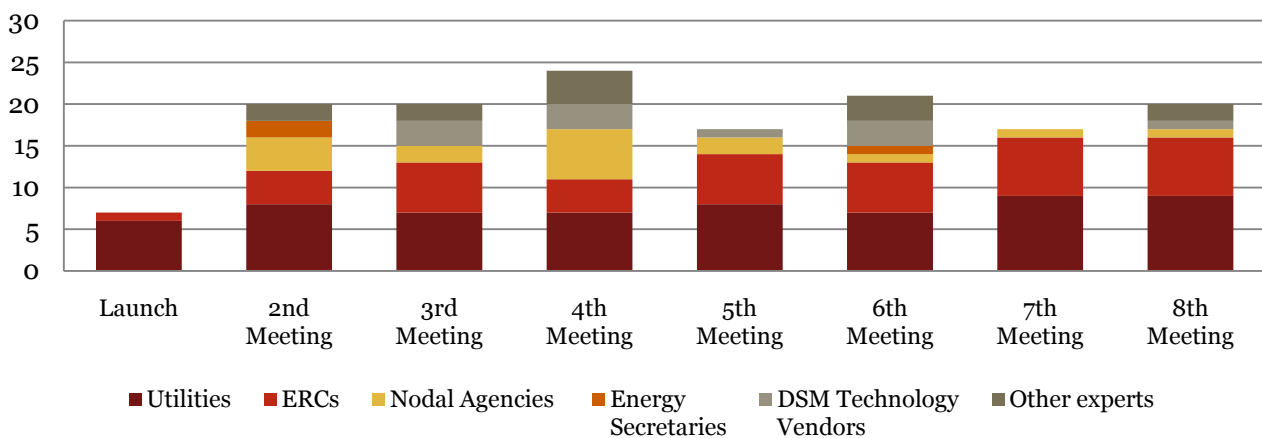
Thematic round table discussions form the core agenda of the Forum's meetings. Themes are chosen in consultation with the participants to discuss the most critical challenges and focus is on advancing solutions driven dialogue among stakeholders. The meetings also include presentations that highlight case studies, success stories and emerging technologies to create awareness about DSM opportunities, markets as well as successful implementation models.



## Forum meetings: Timeline



## Forum meetings: Participant profile



## List of participating organisations

Electricity Regulatory Commissions (ERC)	Electricity Distribution Licensees (Utilities)	Others
<ol style="list-style-type: none"> <li>Andhra Pradesh ERC</li> <li>Bihar ERC</li> <li>Central Electricity Regulatory Commission</li> <li>Chhattisgarh State ERC</li> <li>Delhi ERC</li> <li>Gujarat ERC</li> <li>Haryana ERC</li> <li>Jammu and Kashmir State ERC</li> <li>Joint ERC the state of Goa and Union Territories</li> <li>Karnataka ERC</li> <li>Madhya Pradesh ERC</li> <li>Maharashtra ERC</li> <li>Meghalaya ERC</li> <li>Telangana ERC</li> <li>Tripura ERC</li> <li>Uttar Pradesh ERC</li> <li>Uttarakhand ERC</li> </ol>	<ol style="list-style-type: none"> <li>Assam Power Distribution Company Limited</li> <li>Bangalore Electricity Supply Company</li> <li>BSES Rajdhani Power Limited</li> <li>BSES Yamuna Private Limited</li> <li>Calcutta Electric Supply Corporation</li> <li>Central Electricity Supply Utility of Orissa</li> <li>Chamundeswari Electricity Supply Company</li> <li>Dakshin Haryana Bijli Vitran Nigam</li> <li>Jaipur Vidyut Vitran Nigam Limited</li> <li>Jharkhand Bijli Vitran Nigam Limited</li> <li>Kerala State Electricity Board</li> <li>Madhya Gujarat Vij Company Limited</li> <li>Maharashtra State Electricity Distribution Company Limited</li> <li>North Bihar Power Distribution Company Ltd</li> <li>Paschimanchal Vidyut Vitran Nigam Ltd</li> <li>Puducherry Electricity Department</li> <li>Punjab State Power Corporation Ltd</li> <li>Purvanchal Vidyut Vitaran Nigam Limited</li> <li>Reliance Infrastructure Limited</li> <li>Tamil Nadu Generation and Distribution Company (TANGEDCO)</li> <li>Tata Power Delhi</li> <li>Tata Power Mumbai</li> <li>Tripura State Electricity Corporation Limited</li> <li>Uttar Gujarat Vij Company Limited</li> <li>Uttar Haryana Bijli Vitran Nigam</li> </ol>	<ol style="list-style-type: none"> <li>Alliance for Energy Efficient Economy</li> <li>Bureau of Energy Efficiency</li> <li>Central Electricity Authority</li> <li>Customized Energy Solutions</li> <li>EDS Pvt. Ltd.</li> <li>Greentree Building (P) Ltd</li> <li>Gujarat Energy Development Agency</li> <li>International Finance Corporation</li> <li>MP Ensystems Advisory Private Limited</li> <li>PACE-D Technical Assistance Program</li> <li>Philips Electronics India Limited</li> <li>Principal Secretary, Power, Government of Delhi</li> <li>Principal Secretary, Power, Government of Haryana</li> <li>Probyon Power Consultants</li> <li>Schneider Electric</li> <li>United Nations Development Programme</li> <li>UTC Climate, Controls and Security India</li> <li>Versa Drives Private Limited</li> </ol>

## Summary of the Forum's meetings

Meeting	No. of Participants	Theme	Outputs
<b>Launch meeting</b>	7	Barriers and enabling mechanisms for advancing megawatt scale DSM programmes in India	<ul style="list-style-type: none"> <li>▪ Discussion paper on the key barriers and enabling mechanisms for advancing megawatt scale DSM programmes in India</li> <li>▪ Consensus amongst participants that 'Load Shedding' cannot qualify as DSM measure for utilities</li> <li>▪ Consensus amongst participants that viable business cases with pilot scale projects can reduce uncertainties in scaling up DSM investments</li> <li>▪ Consensus amongst participants on the need for a model state DSM policy to kick start the process for megawatt scale DSM investments</li> </ul>
<b>Second meeting</b>	20	Model state policy on Electricity DSM	<ul style="list-style-type: none"> <li>▪ A model state policy for promoting utility-driven DSM</li> <li>▪ Consensus on the need for strengthening the policy framework for promoting DSM investments</li> <li>▪ Knowledge about the innovative DSM business models promoted by Energy Efficiency Services Limited</li> <li>▪ Increased awareness about the definitions and boundaries of demand side measures</li> </ul>
<b>Third meeting</b>	20	Load research and DSM Programme Design - Best Practices and case studies	<ul style="list-style-type: none"> <li>▪ Discussion paper on 'Load research and DSM Programme Design - Best Practices and case studies'</li> <li>▪ Consensus amongst the participants that 'load research' is a critical activity to identify and evaluate strategic DSM resources by utilities</li> <li>▪ Awareness about the potential of smart grid applications in realizing DSM</li> <li>▪ Awareness about the various energy efficient lighting solutions and their potential for market transformation</li> </ul>
<b>Fourth meeting</b>	24	Issues and challenges in the Measurement & Verification (M&V) of utility driven DSM programmes	<ul style="list-style-type: none"> <li>▪ Discussion paper on 'Issues &amp; challenges in Measurement and Verification (M&amp;V) of savings resulting from utility driven DSM programmes'</li> <li>▪ Awareness about the existence of various international protocols for M&amp;V and their applicability in the Indian context</li> <li>▪ Awareness about the need for developing M&amp;V guidelines and protocols for commonly sought DSM programmes in India</li> <li>▪ Awareness about the innovative methods for M&amp;V in demand response programmes</li> <li>▪ Awareness about the need for certified M&amp;V</li> </ul>

Meeting	No. of Participants	Theme	Outputs
			professionals to support the growth of DSM investments in India
<b>Fifth meeting</b>	22	Cost effectiveness of utility driven DSM programmes	<ul style="list-style-type: none"> <li>▪ <b>Excel-based tool</b> to assess the cost effectiveness of utility-driven DSM programmes</li> <li>▪ Awareness about the various cost effectiveness indicators and assessment methodologies</li> <li>▪ Awareness about the need for separate regulations and guidelines on cost effectiveness of DSM programmes</li> <li>▪ A <b>web based DSM cost effectiveness tool</b> for utilities and other stakeholders</li> <li>▪ Commitment of Energy Efficiency Services Limited as the co-promoter of the Forum</li> </ul>
<b>Sixth meeting</b>	27	DSM programmes for buildings	<ul style="list-style-type: none"> <li>▪ Awareness about the successful DSM implementation models in commercial buildings</li> <li>▪ Awareness about the emerging technologies for DSM in commercial buildings</li> <li>▪ Awareness about the energy management systems for monitoring and controlling energy use in commercial buildings</li> </ul>
<b>Seventh meeting</b>	17	DSM Regulations - Paving the way to action	<ul style="list-style-type: none"> <li>▪ Recommendations for strengthening the legal framework to promote DSM and related targets submitted to BEE and the Standing Committee on Energy (Sixteenth Lok Sabha) to examine the 'Electricity Amendment Bill, 2014'.</li> <li>▪ Recommendations for strengthening the existing DSM regulations submitted to all the state electricity regulatory commissions</li> <li>▪ Feedback sought from participants on Forum's activities and future direction</li> </ul>
<b>Eighth meeting</b>	23	Successful DSM programmes in India: Case studies and lessons learnt	<ul style="list-style-type: none"> <li>▪ Awareness about successful DSM programme implementation models</li> <li>▪ A concept note on promoting the idea of managing electricity subsidies by leveraging DSM solutions submitted to the Prime Minister's Council on Climate Change</li> <li>▪ Awareness about the On bill financing model for cost recovery of DSM programmes</li> <li>▪ Awareness about super-efficient technology in ceiling fans and its potential for market transformation</li> </ul>

# Forum's achievements

In its first year, the Forum's activities and outputs reached stakeholders across the country. The Forum gained significance as a unique platform for learning about DSM opportunities and successful implementation models. Over a period of time, the Forum has been successful in raising the profile of DSM with state Regulators and Distribution Utilities. A number of participant states (viz. Delhi, Bihar, Uttar Pradesh, Haryana, Karnataka), who notified DSM regulations in 2014-15, appreciated and acknowledged the importance of the Forum in the DSM space. The Forum's activities have also been instrumental in complementing the efforts of the Bureau of Energy Efficiency towards capacity building of utilities to identify DSM opportunities and implement programmes.

With persistent efforts from multiple stakeholders including the Forum, the concept of DSM in India has moved forward considerably over last two years. Prior to that, attempts to implement DSM were sporadic and by few distribution companies. Even DSM Regulations, which is the first step in mainstreaming DSM in any state, had been notified by few SERCs only. However, in the last two years the concept of DSM as a resource has gained traction leading to the following developments:

- 1) **DSM Regulations:** A majority of the SERCs have issued DSM Regulations; the ones remaining are in different stages of issuing them
- 2) **BEE's Capacity Building programme for distribution companies:** The programme focuses on building capacities of executives on project level planning and implementation, which complements the activities of the Forum well. The Forum brings the leadership of the distribution companies and regulators together to exchange experiences and new ideas related to policy and implementation
- 3) **National LED Programme – Domestic Efficient Lighting Programme (DELP):** An important milestone in the DSM space; DELP established the standard offer approach as a successful mechanism to monetize energy efficiency
- 4) **Increased momentum at state level in project implementation:** Discoms of states such as Karnataka, Kerala, Puducherry, and Delhi have initiated DSM implementation at critical scale.

The Forum, though not directly and formally involved in all of the above activities / achievements, has played the role of a facilitator or an influencer to push the concept of DSM ahead. Moreover, some of the Forum's outputs around DSM such as the cost effectiveness tool, state model policy, recommendations to strengthen regulations and legislative provisions, and theme based background papers have been useful to develop knowledge of the stakeholders on technical aspects of DSM.

Another key indicator of Forum's success is its ability to bring on board Energy Efficiency Services Limited (EESL) as a co-promoter of the Forum. EESL, a joint venture of four public sector undertakings<sup>1</sup>, was established to boost the energy efficiency and DSM related services infrastructure in India by leading investment related actions and creating self-sustaining markets in the country. From its vast implementation experience in various states and sectors, EESL has discussed its success stories and delivery models in the Forum's meetings, thus enabling participants to learn and examine critical information related to ongoing DSM investments. This has helped in advancing on-ground implementation of large scale DSM programmes in various states.

Under the directions of the Chairperson, towards enhancing efficacy of the Forum, we sought feedback and suggestions from participants to assess its performance and future direction. Feedback received from the stakeholders was analysed and will be appropriately incorporated in the future activities of the Forum.

<sup>1</sup> National Thermal Power Corporation, Power Grid Corporation of India, Power Finance Corporation and Rural Electrification Corporation  
Utility CEO Forum on Demand Side Management (DSM)

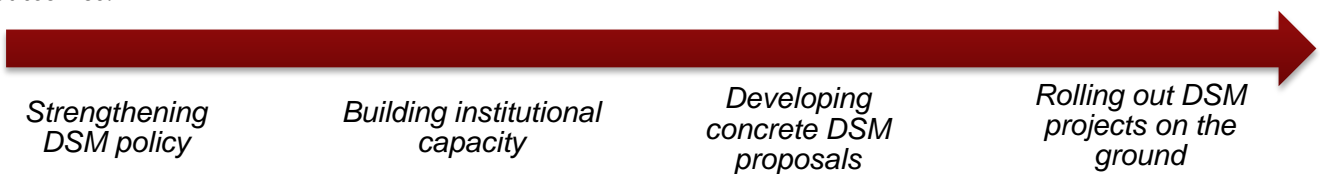
## *Highlights of the participant feedback on Forum's activities and future direction*

A majority of the participants agreed that their association with the Forum till date has been '*very good*' and they believe that participating in the Forum provides the following benefits:

- Facilitating knowledge exchange and improving awareness
- Providing a platform for networking and relationship building opportunities
- Developing useful tools or guidelines and making it available for public use
- Promoting DSM related business services and market opportunities

A majority of the participants agreed that the Forum has progressively voiced the necessity of DSM measures in the Indian electricity sector. They believed that the Forum has been a critical platform in bringing like minded individuals on board to initiate grass-root level changes in the DSM markets.

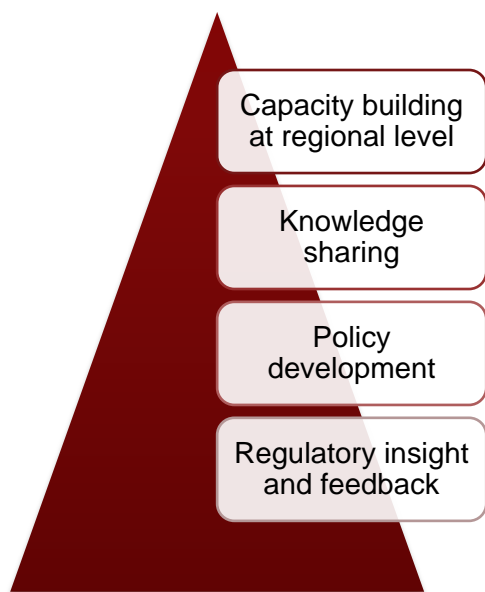
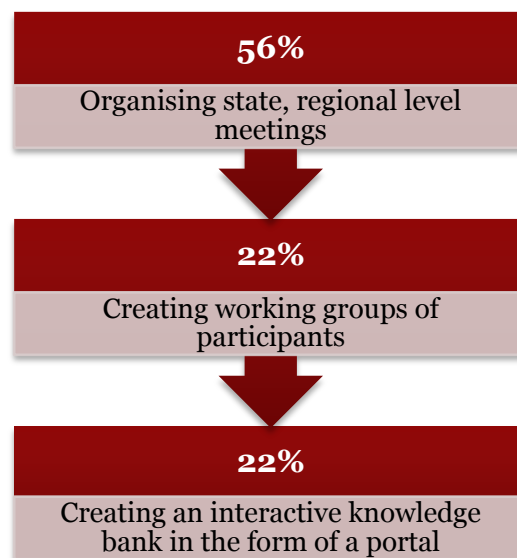
The participants also acknowledged that the Forum has been a catalyst or a facilitator in achieving the following outcomes:



A majority of participants suggested that the Forum should invest in '*capacity building of regional stakeholders*'. Other focus areas suggested in this regard are as follows:

- Influencing cross-industry functioning by roping in more industry-representatives
- Sensitizing more utilities towards need for implementing DSM programmes
- Sharing the experience of successfully implemented DSM projects
- Providing policy and regulatory insights
- Creating awareness about DSM among mass consumers

Participants also believed that the holding regional meetings will help the Forum reach out to a larger number of utilities and other stakeholders. Some participants suggested that stakeholder groups can be extended to include financial institutions, consumer associations and academicians who can affect the understanding about DSM across demographics. Other suggestions included creating a knowledge repository comprising the outputs of Forum meetings, along with blogs or newsletters to reach a larger audience.

*Future direction of the Forum**Ways to make Forum more participative*

# Way forward

The 2015 edition of the Forum will continue to meet regularly in Delhi and also hold regional meetings in states to discuss on-ground implementation. While the meetings in Delhi will focus on national best practices to advance DSM, the regional meetings will centre around challenges, implementation solutions, and delivery models specific to the respective regions. The regional meetings will cover a wider participant profile to include (but not limited to) the utilities, regulatory commissions, municipalities, state designated agencies for energy conservation, technology vendors, private energy service companies, financial institutions, research and academic institutions.

A web portal will be designed to create a knowledge repository of presentations, discussion papers, tools and other outputs of the Forum meetings. The repository will be made available to all the stakeholders in the country. Few themes, as also suggested by the participants, for the Forum's meetings in 2015-16 are highlighted below:

## ***Suggested themes for the Forum's future meetings***

On-ground implementation of DSM projects, expanding on case studies
International experience of successful DSM initiatives
Agriculture demand side management – challenges and way forward
Demand response – potential and best practices
Financing and cost recovery mechanisms for DSM programmes
Realising the DSM potential of smart grid applications
Replicating the success of standard offer based DSM programmes for other appliances
Renewable energy applications for DSM
Review of DSM regulations and policy



# Synopsis of the Forum's meetings

## *First meeting:* February 2013



<b>Theme</b>	<b>Barriers and enabling mechanisms for advancing megawatt scale DSM programmes in India</b>
<b>Background</b>	An assessment of utility-driven DSM programmes in India indicates that most of the programmes are largely in the form of pilot projects and have not been scaled to have greater impact. Moreover, these programmes are limited to the lighting segment in the residential sector and the experience has not been utilized to replicate programmes for other applications and consumers, despite huge potential reported in several studies.

**Chair:** Shri Gireesh B. Pradhan

**Participants:** Central Electricity Regulatory Commission and distribution utilities of Delhi, Mumbai, Haryana, Bangalore and Tamil Nadu.

### Presentations

#### Vision, Mission and Functions of the Forum

- Shakti Sustainable Energy Foundation

#### Barriers and enabling mechanisms for advancing megawatt scale DSM programs in the country

- PwC

#### 'Demand Response' initiative rolled out in Mumbai distribution circle

- Tata Power

#### DSM Measures undertaken by BESCO

- Bangalore Electricity Supply Company



### Outputs:

- Discussion paper on barriers and enabling mechanisms for advancing megawatt scale DSM programmes in India

### Key takeaways:

- Load shedding should not qualify as a DSM measure for the utilities
- Need for building awareness of the significance of load research studies in the DSM resource acquisition process
- Viable business cases with demonstrated pilot projects required to reduce uncertainties for investors
- A Model State DSM policy can set the stage for initiating large-scale DSM investments



## Second meeting: June 2013



Utilities



ERCs

<b>Theme</b>	<b>Model state policy on Electricity DSM</b>
<b>Background</b>	<p>In India, electricity is a concurrent subject; and electricity distribution a state subject. In this context, an enabling policy framework at the state level is critical to scale up utility driven DSM investments in the country.</p> <p>The state governments should take cognizance of the slow progress of DSM investments in the state and notify relevant policies to provide a clear vision, target, obligatory functions, incentives and a roadmap that can guide stakeholders for scaling up the acquisition of cost-effective DSM resources.</p>

**Chair:** Shri Gireesh B. Pradhan

**Participants:** Principal Secretaries (Energy) of Delhi & Haryana, Central Electricity Regulatory Commission and State Electricity Regulatory Commissions of Bihar, Uttar Pradesh & erstwhile Andhra Pradesh, Distribution utilities of Delhi, Mumbai, Assam, West Bengal, Gujarat, Uttar Pradesh and Rajasthan and representatives from Bureau of Energy Efficiency, Central Electricity Authority and United Nations Development Program

### Presentations

#### Model state policy for utility driven DSM

- PwC

#### Renewable energy based DSM solutions in Tamil Nadu

- PwC

#### Energy performance contracting - achievements and potential in India

- Energy Efficiency Services Limited



### Outputs:

- Model state policy for promoting utility-driven DSM

### Key takeaways:

- Awareness about the need for strengthening the policy framework for promoting DSM investments
- Awareness about innovative DSM business models promoted by Energy Efficiency Services Limited
- Awareness about the definitions and boundaries of demand side measures

## Third meeting: September 2013



Utilities



ERCs

<b>Theme</b>	<b>Load research and DSM Programme Design - Best Practices and case studies</b>
<b>Background</b>	Load research marks the beginning of the process of acquiring cost-effective demand side resources by electric utilities. It helps utilities identify strategic DSM measures and quantify resource potential for those measures. In the recent past, many state ERCs have directed distribution utilities to undertake load research in order to estimate the potential of demand side resources available. Similarly, DSM programme design is an integral part of the overall DSM resource acquisition process. Many state-owned electric utilities within the country are still unaware of the commonly adopted methods for load research and successful programme designs for rolling out DSM measures.

**Chair:** Shri Gireesh B. Pradhan

**Participants:** State Electricity Regulatory Commissions of Bihar, Uttar Pradesh, Gujarat, Haryana, Karnataka, Uttaranchal & erstwhile Andhra Pradesh and distribution utilities of Delhi, Mumbai, Odisha and Haryana and representatives from Philips Electronics, MPEnsystems Advisory, and Probyon Power Consultants

### Presentations

#### Load research and DSM Program Design - Best practices and case studies

- PwC

#### Auto Demand Response program - Key features and benefits

- Tata Power

#### Load research and DSM pilot programmes in Mumbai

- Reliance Infra

#### Inovative models to scale up DSM implementation by utilities

- MPEnsystems

#### Energy Efficient Lighting Solutions

- Philips India



### Outputs:

- Discussion paper on Load research and DSM Programme Design - Best Practices and case studies

### Key takeaways:

- Consensus amongst the participants that 'load research' is a critical activity to identify and evaluate strategic DSM resources by utilities
- Awareness about the potential of smart grid applications in scaling-up DSM
- Awareness about various energy efficient lighting solutions and their potential for market transformation

## Fourth meeting: April 2014



Utilities



ERCs

<b>Theme</b>	<b>Measurement and Verification (M&amp;V) Protocols for utility driven DSM programmes</b>
<b>Background</b>	The success of DSM programmes rests on the fact that the impact, in terms of energy/demand savings, can be determined to a degree of accuracy, reliability and a cost that is acceptable to all stakeholders. M&V protocols should provide an impartial, credible, transparent and a replicable process to quantify and assess the impact and sustainability of DSM programmes. Well defined M&V protocols provide the certainty that the reported savings are real and verifiable, which is a necessity for utilities in a regulated environment.

**Chair:** Shri Anil Razdan

**Participants:** State Electricity Regulatory Commissions of Bihar, Tripura, Maharashtra and Goa and Union Territories and distribution utilities of Delhi, Mumbai, Kerala, Gujarat and Karnataka and officials representing BEE, Alliance for an Energy Efficient Economy, Customized Energy Solutions, Greentree Building Pvt Ltd

### Presentations

Measurement and Verification (M&V): Issues and challenges for utility driven DSM programmes

- PwC

DSM initiatives and experience in Delhi

- Reliance Infra

ESCO-based investment models for DSM projects

- Energy Efficiency Services Limited

M&V in demand response programmes

- Customised Energy Solutions

M&V ecosystem in India

- Alliance for Energy Efficient Economy



### Outputs:

- Discussion paper on 'Issues & challenges in Measurement and Verification (M&V) of energy and demand savings resulting from utility driven DSM programmes'

### Key takeaways:

- Awareness about the existence of various international protocols for M&V and their applicability to Indian scenarios
- Consensus on the need for developing M&V guidelines for commonly sought DSM programmes in India; complex protocols used internationally may not be applicable to India
- Awareness about innovative methods for M&V in demand response programmes
- Agreement on the need for certified M&V professionals to support DSM investments in India

## Fifth meeting: April 2014



Utilities



ERCs

<b>Theme</b>	<b>Cost effectiveness of utility driven DSM programmes</b>
<b>Background</b>	<p>Defining cost-effectiveness parameters helps DSM measures compete with conventional supply options and receive the required prioritization and funding. In India, the model DSM regulations notified by the Forum of Regulators (FoR) and the subsequent DSM regulations notified by State ERCs have consistently emphasized the importance of establishing cost effectiveness of DSM programmes for obtaining regulatory approval.</p> <p>Standardization of the methods to evaluate cost effectiveness can provide consistency and transparency to the regulatory process of programme appraisal and approval.</p>

**Chair:** Shri Anil Razdan

**Participants:** State Electricity Regulatory Commissions of Bihar, Tripura, Maharashtra, Madhya Pradesh and Haryana and distribution utilities of Delhi, Mumbai, Haryana, Gujarat and Tripura and officials representing BEE, United Technologies and MPEnsystems

### Presentations

#### Cost effectiveness of utility driven DSM programmes

- PwC

#### Cost effectiveness assessment of DSM programmes in Mumbai

- Reliance Infra

#### Cost effectiveness of EESL's projects - Case studies

- Energy Efficiency Services Limited

#### Sustainable energy efficiency in HVAC Systems

- United Technologies



### Outputs:

- **Excel-based tool** for cost effectiveness assessment of utility driven DSM programmes demonstrated to participants
- A **web based DSM cost effectiveness tool, subsequently developed** for use by the DSM stakeholders ([dsm-india.org](http://dsm-india.org))

### Key takeaways:

- Energy Efficiency Services Limited comes on-board as co-promoter of the Forum
- Awareness about various cost effectiveness indicators and assessment methodologies
- Awareness about the need for regulations and guidelines on cost effectiveness of DSM programmes



## Sixth meeting: July 2014



Utilities



ERCs

<b>Theme</b>	<b>DSM programmes for buildings</b>
<b>Background</b>	The commercial building segment consumes about 8% of the total electricity generated in India and is growing at around 12% annually. Despite the efforts to regulate energy consumption in the commercial buildings through mandatory performance standards, there is enormous potential for energy efficiency and conservation. For utilities, commercial buildings provide immense potential for managing peak demand deficits.

**Chair:** Shri Anil Razdan

**Participants:** Central Electricity Regulatory Commission and State Electricity Regulatory Commissions of Bihar, Tripura, Haryana, Uttarakhand and Goa and Union Territories and distribution utilities of Delhi, Mumbai, Gujarat, Tripura and Rajasthan and officials representing BEE, Schneider Electric, IFC, MP Ensystems Advisory, Environmental Design Solutions and PACE-D Technical Assistance Program

### Presentations

#### DSM opportunities and potential in commercial buildings

- Energy Efficiency Services Limited

#### M&V of DSM programs for buildings

- Schneider Electric

#### DSM measures and technologies for commercial buildings

- SuPerB

#### DSM measures and programmes in Haryana

- Energy Department, Govt. of Haryana

#### DSM programs for residential households in Delhi

- Tata power



### Key takeaways:

- Awareness about successful DSM implementation models in commercial buildings
- Awareness about emerging technologies for DSM in commercial buildings
- Awareness about energy management systems for monitoring and controlling energy use in commercial buildings

## Seventh meeting: November 2014

8

Utilities

7

ERCs

<b>Theme</b>	<b>DSM Regulations - Paving the way to action</b>
<b>Background</b>	<p>Indian DSM Regulations have evolved only in the last five years and so far played a critical role in institutionalizing DSM in the country. Between 2010 and 2014, 14 ERCs have notified DSM regulations, which are currently guiding utilities in planning, implementation, monitoring and evaluation of DSM programmes and associated activities.</p> <p>Despite an enabling regulatory framework in place, megawatt scale DSM resources have not seen the light of day. In this regard, there was a need to review the Indian DSM regulations, focusing on critical gaps that are delaying utility efforts towards large scale DSM resource acquisition.</p>

**Chair:** Shri Anil Razdan

**Participants:** Electricity Regulatory Commissions of Bihar, Maharashtra, Jammu & Kashmir, Uttar Pradesh, Delhi and Goa and Union Territories and distribution utilities of Delhi, Mumbai, Kerala, Jharkhand, Gujarat and Maharashtra and BEE

### Presentations:

#### DSM Regulations - Paving the way to action

- PwC

#### BEE's Capacity-Building Programme on DSM for Utilities

- Energy Efficiency Services Limited

#### Regulatory appraisal of DSM based efficient lighting program in Puducherry

- Joint Electricity Regulatory Commission

#### DSM opportunities and programs for UGVCL

- Energy Efficiency Services Limited



### Outputs:

- Background paper on 'Indian DSM Regulations: Paving way to action'.
- Recommendations for strengthening the legal framework to promote DSM and related targets submitted to BEE and the Standing Committee on Energy (Sixteenth Lok Sabha) to examine the 'Electricity Amendment Bill, 2014'.
- Recommendations for strengthening existing DSM regulations submitted to all the state electricity regulatory commissions

### Key takeaways:

- Feedback received from participants on Forum activities till date and future direction

## ***Eighth meeting: January 2015***



Utilities



ERCs

<b>Theme</b>	<b>Successful DSM programmes in India: Case studies and lessons learnt</b>
<b>Background</b>	The theme aimed to demonstrate the applicability of utilizing DSM to manage electricity subsidies in India while also maintaining cost neutrality for end users. The concept was introduced by the participants in the seventh meeting, held in November 2014.

**Chair:** Shri Anil Razdan

**Participants:** Electricity Regulatory Commissions of Haryana, Meghalaya, Telangana, Chhattisgarh, Jammu & Kashmir and Goa and Union Territories and distribution utilities of Delhi, Mumbai, Uttar Pradesh, Puducherry, Tripura, Punjab, Bihar and Maharashtra and officials representing Versa Drives, PACE-D Technical Assistance Program and MPEnsystems Advisory

### **Presentations**

#### Managing electricity subsidies by leveraging DSM solutions

- PwC

#### Utility CEO Forum on DSM - Road Map for 2015

- Shakti Sustainable Energy Foundation

#### Puducherry DELP scheme - Cost recovery model

- Electricity Department, Puducherry (EDP)

#### On-bill financing model for Delhi DELP scheme

- Energy Efficiency Services Limited

#### DSM success stories in Mumbai

- Tata Power Mumbai

#### Super-efficient ceiling fans - An overview of the technology

- Versa Drives



### **Outputs:**

- A concept note on promoting the idea of managing electricity subsidies by leveraging DSM solutions submitted to the Prime Minister's Council on Climate Change

### **Key takeaways:**

- Awareness about successful DSM programme implementation models
- Awareness about the On-bill financing model for cost recovery of DSM programmes
- Awareness about the super efficient technology in ceiling fans and its potential for market transformation

# Appendix: List of participants

## First Meeting

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Secretary, Central Electricity Regulatory Commission
3. Chief Operating Officer, Tata Power Delhi Distribution Limited
4. Sr. Executive V.P - Operations, Reliance Infra (Mumbai Distribution)
5. Additional V.P - DSM, Reliance Infra (Mumbai Distribution)
6. Head, Demand Side Management and Power Purchase, Tata Power (Mumbai Distribution)
7. Chief Engineer, R&D, Tamil Nadu Generation and Distribution Company
8. DGM - DSM, Bangalore Electricity Supply Company (BESCOM)

### **Secretariat**

9. Chief of Programmes, Shakti Sustainable Energy Foundation
10. Sr. Programme Associate, Shakti Sustainable Energy Foundation
11. Associate Director, PwC
12. Senior Manager, PwC

## Second Meeting

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Chairman, Bihar Electricity Regulatory Commission
3. Principal Secretary (Energy and Finance), Government of Delhi
4. Principal Secretary to the Government of Haryana and CMD, Uttar Haryana Bijli Vitran Nigam Limited and Dakshin Haryana Bijli Vitran Nigam Limited
5. Chairman, Assam State Electricity Board and CMD, Assam Power Distribution Company Limited
6. Member, Uttar Pradesh Electricity Regulatory Commission
7. CEO, Tata Power Delhi Distribution Limited
8. MD, Energy Efficiency Services Limited
9. Senior Executive VP - operations, Reliance Infra (Mumbai distribution)
10. Executive Director, Calcutta Electric Supply Corporation (CESC) Limited
11. Additional VP - DSM, Reliance Infra (Mumbai distribution)
12. Former Additional Deputy, Comptroller Auditor General of India (retired)
13. Deputy Director Distribution, Andhra Pradesh Electricity Regulatory Commission
14. Advisor (RE), Central Electricity Regulatory Commission
15. Chief Engineer, Central Electricity Authority
16. Former Member, Central Electricity Authority
17. Programme Specialist, United Nations Development Programme
18. Superintending Engineer, Madhya Gujarat Vij Company Limited



19. Superintending Engineer, Paschimanchal Vidyut Vitran Nigam Ltd
20. Superintending Engineer, Paschimanchal Vidyut Vitran Nigam Ltd
21. Executive Engineer, Jaipur Vidyut Vitran Nigam Limited
22. Project Engineer, Bureau of Energy Efficiency

### ***Secretariat***

23. CEO, Shakti Sustainable Energy Foundation
24. Chief of Programmes, Shakti Sustainable Energy Foundation
25. Sr. Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation
26. Associate Director, PwC India
27. Senior Manager, PwC India

## **Third Meeting**

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Chairman, Haryana Electricity Regulatory Commission
3. Chairman, Karnataka Electricity Regulatory Commission
4. Chairman, Gujarat Electricity Regulatory Commission
5. CEO, Tata Power Delhi Distribution Limited
6. DGM, Tata Power Delhi Distribution Limited
7. Senior Executive VP - Operations, Reliance Infra (Mumbai distribution)
8. Additional VP - DSM, Reliance Infra (Mumbai distribution)
9. Managing Director, MP Ensystems Advisory Private Limited
10. Chief Commercial Officer, Central Electricity Supply Utility of Orissa
11. Former Member, Central Electricity Authority
12. Director (generation), Uttar Pradesh Electricity Regulatory Commission
13. Director (costing and licensing), Uttarakhand Electricity Regulatory Commission
14. Joint Director (engineering), Andhra Pradesh Electricity Regulatory Commission
15. General Manager, Operations, DHBVN, Rewari Circle, Uttar Haryana Bijli Vitran Nigam Limited and Dakshin Haryana Bijli Vitran Nigam Limited
16. Technical Consultant, Bihar Electricity Regulatory Commission
17. Director and Head - Lighting Application Services, Philips Electronics India Ltd.
18. General Manager – Infrastructure Key Accounts India Region, Philips Electronics India Ltd.
19. Director, Probyon Power Consultants
20. Assistant Manager (Tech.), Energy Efficiency Services Limited

### ***Secretariat***

21. CEO, Shakti Sustainable Energy Foundation
22. Chief of Programmes, Shakti Sustainable Energy Foundation
23. Sr. Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation
24. Executive Director, PwC India
25. Senior Manager, PwC India

## Fourth Meeting

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Chairman, Bihar Electricity Regulatory Commission
3. Chairman, Tripura Electricity Regulatory Commission
4. Director General, Bureau of Energy Efficiency
5. Managing Director, Energy Efficiency Services Limited
6. Chairman, Kerala State Electricity Board
7. Chairman, Gujarat Energy Development Agency
8. Principal Secretary, Maharashtra Electricity Regulatory Commission
9. CEO, BSES Yamuna Power Limited
10. Additional General Manager, Tata Power Delhi Distribution Limited
11. Director, Joint Electricity Regulatory Commission
12. Director, Joint Electricity Regulatory Commission
13. Additional Vice President, Reliance Infrastructure Limited
14. Deputy Director, Maharashtra Electricity Regulatory Commission
15. Vice President, Customized Energy Solutions
16. Senior Energy Consultant, Customized Energy Solutions
17. President, Alliance for Energy Efficient Economy
18. Advisor, Alliance for Energy Efficient Economy
19. System Engineer DSM Cell, Uttar Gujarat Vij Company Limited
20. System Engineer, Madhya Gujarat Vij Company Limited
21. Former Member, Central Electricity Authority
22. Executive Engineer, Chamundeshwari Electricity Supply Corporation, Karnataka
23. Programme Associate, Alliance for Energy Efficient Economy
24. Greentree Building (P) Ltd
25. Asst. Energy Economist, Bureau of Energy Efficiency
26. Programme Coordinator, Energy Efficiency Services Limited

### **Secretariat**

27. CEO, Shakti Sustainable Energy Foundation
28. Chief of Programmes, Shakti Sustainable Energy Foundation
29. Sr. Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation
30. Programme Assistant (Electric Utilities), Shakti Sustainable Energy Foundation
31. Executive Director (Energy & Utilities), PwC
32. Senior Manager (Energy & Utilities), PwC
33. Senior Consultant (Energy & Utilities), PwC
34. Assistant Manager (Tech), Energy Efficiency Services Limited

## Fifth Meeting

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Director General, Bureau of Energy Efficiency
3. Chairman, Madhya Pradesh Electricity Regulatory Commission
4. Chairman, Bihar Electricity Regulatory Commission
5. Chairman, Gujarat Electricity Regulatory Commission
6. Chairman, Haryana Electricity Regulatory Commission
7. Chairman, Karnataka Electricity Regulatory Commission
8. Member, Maharashtra Electricity Regulatory Commission
9. Director, Maharashtra Electricity Regulatory Commission
10. Managing Director, Uttar Gujarat Vij Company Limited (UGVCL)
11. Chairman & MD, Tripura State Electricity Corporation Limited
12. Additional VP, DSM and EE, Reliance Infrastructure Limited
13. Senior Executive VP, Business Development, Reliance Infrastructure Limited
14. Head of Group, Strategy, Tata Power Delhi Distribution Limited
15. Group Head, Demand Side Management and Assistant General Manager, Tata Power Mumbai Distribution Limited
16. Chief Engineer, Uttar Haryana Bijli Vitran Nigam
17. Advisor, Regulatory Services, BSES Yamuna Private Limited
18. Superintending Engineer, Madhya Gujarat Viji Company Limited
19. Assistant Energy Economist, Bureau of Energy Efficiency
20. Associate Director, UTC Climate, Controls and Security India
21. Senior Manager, UTC Climate, Controls and Security India
22. Managing Director, MP Ensystems Advisory Private Limited
23. Former Member, Central Electricity Authority

### **Secretariat**

24. CEO, Shakti Sustainable Energy Foundation
25. Managing Director, Energy Efficiency Services Limited
26. Chief of Programmes, Shakti Sustainable Energy Foundation
27. Senior Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation
28. Programme Assistant (Electric Utilities), Shakti Sustainable Energy Foundation
29. Senior Manager (Energy and Utilities), PwC India
30. Senior Consultant (Energy and Utilities), PwC India
31. Programme Co-ordinator, Energy Efficiency Services Limited
32. Company Secretary, Energy Efficiency Services Limited
33. Deputy Manager, Energy Efficiency Services Limited
34. Assistant Manager, Energy Efficiency Services Limited

## Sixth Meeting

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Principal Secretary, Power, Government of Haryana
3. Director General, Bureau of Energy Efficiency
4. Chairman, Bihar Electricity Regulatory Commission
5. Chairman, Tripura Electricity Regulatory Commission
6. Chairman, Haryana Electricity Regulatory Commission
7. Member, Haryana Electricity Regulatory Commission
8. Secretary, Central Electricity Regulatory Commission
9. Director, Joint Electricity Regulatory Commission
10. Director, Uttarakhand Electricity Regulatory Commission
11. Managing Director, Uttar Gujarat Vij Company Limited
12. Executive Director, Tata Power Mumbai
13. Additional VP, DSM and EE, Reliance Infrastructure Limited
14. Head of Department, Strategy, Tata Power Delhi Distribution Limited
15. Manager, Tata Power Delhi Distribution Limited
16. DGM, Tripura State Electricity Corporation Limited
17. SE, Madhya Gujarat Vij Company Limited
18. XEN, Jaipur Vidyut Vitran Nigam Limited
19. Energy Economist, Bureau of Energy Efficiency
20. Assistant Energy Economist , Bureau of Energy Efficiency
21. Vice President, Schneider Electric
22. GM, Schneider Electric
23. Analyst, IFC
24. Operations Officer, IFC
25. Managing Director, MPEnsystems Advisory Private Limited
26. AGM, MPEnsystems Advisory Private Limited
27. Programme Associate, PACE-D Technical Assistance Programme
28. Green Building Analyst, EDS Pvt. Ltd.

### **Secretariat**

29. Managing Director, Energy Efficiency Services Limited
30. Chief of Programmes, Shakti Sustainable Energy Foundation
31. Programme Manager (Building and Appliances), Shakti Sustainable Energy Foundation
32. Sr. Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation
33. Senior Manager, Energy and Utilities, PwC India
34. Programme Coordinator, Energy Efficiency Services Limited
35. Programme Assistant, (Electric Utilities), Shakti Sustainable Energy Foundation
36. Deputy Manager, Energy Efficiency Services Limited
37. Regional Manager, Energy Efficiency Services Limited

38. Principal Consultant, Energy Efficiency Services Limited
39. Deputy Manager, Energy Efficiency Services Limited

## **Seventh Meeting**

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Chairman, Bihar Electricity Regulatory Commission
3. Director General, Bureau of Energy Efficiency
4. Member, Maharashtra Electricity Regulatory Commission
5. Member, Uttarakhand Electricity Regulatory Commission
6. Director, Joint Electricity Regulatory Commission
7. Joint Director, Uttar Pradesh Electricity Regulatory Commission
8. Joint Director, Delhi Electricity Regulatory Commission
9. Superintending Engineer, Jammu and Kashmir State Electricity Regulatory Commission
10. Managing Director, Kerala State Electricity Board
11. Managing Director, Jharkhand Bijli Vitran Nigam Limited
12. Head of Department, Strategy and Business Relations, Tata Power Delhi Distribution Limited
13. Head, Demand Side Management and Power Purchase, Tata Power Mumbai
14. Vice President, BSES Yamuna Power Limited
15. Superintending Engineer, Uttar Gujarat Vidyut Company Ltd.
16. Executive Engineer, Maharashtra State Electricity Distribution Co. Ltd
17. Executive Engineer, Madhya Gujarat Vij Company Limited

### ***Secretariat***

18. CEO, Shakti Sustainable Energy Foundation
19. Managing Director, Energy Efficiency Services Limited
20. Senior Programme Manager, Power, Shakti Sustainable Energy Foundation
21. Senior Programme Associate, Electric Utilities, Shakti Sustainable Energy Foundation
22. Senior Manager, PwC India
23. Senior Consultant, PwC India
24. DSM Consultant, Energy Efficiency Services Limited
25. Programme Manager (DSM), Energy Efficiency Services Limited

## **Eighth meeting**

1. Chairperson, Utility CEO Forum on Demand Side Management
2. Chairperson, Haryana Electricity Regulatory Commission
3. Member, Haryana Electricity Regulatory Commission
4. Chairperson, Karnataka Electricity Regulatory Commission
5. Chairperson, Meghalaya Electricity Regulatory Commission
6. Chairperson, Telangana Electricity Regulatory Commission

7. Chairperson, Joint Electricity Regulatory Commission the state of Goa and Union Territories
8. Deputy Director, Chattisgarh State Electricity Regulatory Commission
9. Deputy Director, Chattisgarh State Electricity Regulatory Commission
10. Superintending Engineer, Jammu and Kashmir State Electricity Regulatory Commission
11. Managing Director, Purvanchal Vidyut Vitaran Nigam Limited
12. Vice President, BSES Rajdhani Power Limited
13. SE, Electricity Department, Puducherry
14. Executive Engineer, Electricity Department, Puducherry
15. Additional VP, DSM and EE, Reliance Infrastructure Limited, Mumbai
16. Head (DSM and Power Purchase), Tata Power Mumbai
17. Manager, Tata Power Delhi Distribution Limited
18. DGM (Commercial), Tripura State Electricity Corporation Limited
19. Deputy CE, Punjab State Power Corporation Ltd
20. Executive Engineer (Commercial), North Bihar Power Distribution Company Ltd
21. Executive Engineer, Maharashtra State Electricity Distribution Company Ltd.
22. Managing Director, Versa Drives Private Limited
23. Deputy Chief of Party (Energy Efficiency), PACE-D Technical Assistance Programme
24. Managing Director, MP Ensystems Advisory Private Limited
25. Assistant General Manager, MP Ensystems Advisory Private Limited

***Secretariat***

26. CEO, Shakti Sustainable Energy Foundation
27. Chief of Programmes, Shakti Sustainable Energy Foundation
28. Senior Programme Manager, Power, Shakti Sustainable Energy Foundation
29. Senior Programme Associate, Shakti Sustainable Energy Foundation
30. Partner, PwC India
31. Senior Manager, PwC India
32. Programme Manager (DSM), Energy Efficiency Services Limited

*This document has been prepared for general guidance on matters of interest only, and does not constitute professional advice. You should not act upon the information contained in this publication without obtaining specific professional advice. No representation or warranty (express or implied) is given as to the accuracy or completeness of the information contained in this publication, and, to the extent permitted by law, PwC, its members, employees and Shakti Sustainable Energy Foundation accept no liability, and disclaim all responsibility, for the consequences of you or anyone else acting, or refraining to act, in reliance on the information contained in this publication or for any decision based on it.*

Shakti Sustainable Energy Foundation works to strengthen the energy security of India by aiding the design and implementation of policies that support energy efficiency and renewable energy. Shakti works in sectors with the maximum potential for energy and carbon savings: Power, Transport, Energy Efficiency and Climate Policy. A Section 25 non-profit organization under the Companies Act, Shakti is governed by a national board of directors, and supported by both Indian and international philanthropies. It convenes NGOs, universities, business, think tanks, and domestic and international experts to design and implement smart energy policies in India. For more information, please visit [www.shaktifoundation.in](http://www.shaktifoundation.in).