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# *Proceedings of the tenth meeting* Utility CEO Forum on Demand Side Management



*June 2016*



# Introduction and participant profile

The tenth meeting of the 'Utility CEO Forum on Demand Side Management' (herein after referred as the 'Forum') was conducted on 28<sup>th</sup> of April 2016 in New Delhi. The meeting sought to discuss and debate 'Synergies between Demand Side Management (DSM) and ongoing electricity reforms in India'. Mr. Anil Razdan, Former Secretary with the Ministry of Power, Govt. of India, chaired the meeting that was attended by officials from ten different electricity distribution licensees (herein after referred as 'utility'), two electricity regulatory commissions and other experts from across the country. Overall, the meeting was attended by key officials from 17 different entities in the power sector.

## Participant profile

<b>Honorary Chairperson</b>	<b>Anil Razdan, IAS (retired), Former Secretary, Ministry of Power</b>
Electricity regulatory commissions	<ol style="list-style-type: none"> <li>1. Desh Deepak Verma, Chairman, Uttar Pradesh Electricity Regulatory Commission (UPERC)</li> <li>2. Abhijit Bose, Advisor Engineer, West Bengal Electricity Regulatory Commission (WBERC)</li> </ol>
Electric Utilities	<ol style="list-style-type: none"> <li>1. M. Sivasankar, Chairman &amp; Managing Director, Kerala State Electricity Board (KSEB)</li> <li>2. Mukesh Chand Gupta, Managing Director, Madhya Pradesh Poorv Kshetra Vidyut Vitran Co. Ltd. (MPPKVVCL)</li> <li>3. Kaushik Sanyal, Head of Group (Business Services), Tata Power Delhi Distribution Limited (TPDDL)</li> <li>4. Sujay K. Saha, Head of Department (DSM), Tata Power Delhi Distribution Limited (TPDDL)</li> <li>5. Pramod Deo, Addl. Vice President, Reliance Infrastructure Limited</li> <li>6. Prem R. Kumar, Chief Executive Officer, BSES Yamuna Private Limited (BYPL)</li> <li>7. Hemant Verma, Addl. Vice President, BSES Rajdhani Private Limited (BRPL)</li> <li>8. Dipak Bhajekar, Chief Electrical Engineer, Electricity Department, Goa</li> <li>9. Surajit Chakraborti, Resident Director, West Bengal State Electricity Distribution Co. Ltd. (WBSEDCL)</li> <li>10. Manoj Kumar Singh, Senior General Manager, Central Electricity Supply Utility of Odisha (CESU)</li> <li>11. Varalika Dubey, Superintending Engineer, Uttar Pradesh Power Corporation Limited (UPPCL)</li> <li>12. Satish Kumar, Consultant to GM (DSM), Bangalore Electricity Supply Company (BESCOM)</li> </ol>
Others	<ol style="list-style-type: none"> <li>1. Sunil Kumar Chaudhary, Secretary, Uttar Pradesh New and Renewable Energy Development Agency (UPNEDA)</li> <li>2. Sanjay Arora, Chief Operating Officer, Amber Enterprises</li> <li>3. Ranjit Bharvirkar, Senior Associate &amp; India Program Manager, Regulatory Assistance Project (RAP)</li> </ol>
Secretariat	<ol style="list-style-type: none"> <li>1. Krishan Dhawan, Chief Executive Officer, Shakti Sustainable Energy Foundation (SSEF)</li> <li>2. Chinmaya Acharya, Chief of Programs, SSEF</li> <li>3. Deepak Gupta, Senior Program Manager, Power, SSEF</li> <li>4. Atul Mudaliar, Senior Program Associate, SSEF</li> <li>5. Vrinda Sarada, Program Associate, SSEF</li> <li>6. Saurabh Kumar, Managing Director, Energy Efficiency Services Limited (EESL)</li> </ol>

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7. Venkatesh Dwivedi, General Manager, EESL
  8. Pooja Shukla, Company Secretary & DM (Legal), EESL
  9. Manu Maudgal, EESL
  10. Amit Kumar, Partner, PwC India
  11. Shuboday Ganta, Manager, PwC India
  12. Samved Patil, Manager, PwC India
  13. Rajesh Verma, Consultant, PwC India

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## *Inaugural session*

Mr. Krishan Dhawan, Chief Executive Officer, Shakti Sustainable Energy Foundation (SSEF), welcomed the gathering with an introductory note. He mentioned that SSEF has been actively supporting the power sector stakeholders to achieve sustainable developmental goals. He briefly highlighted the Forum's journey since its launch in 2013 and emphasized the need to have focused thematic discussions for advancing solutions driven dialogue among stakeholders. He stressed upon the fact that Utility and Government participation is crucial to achieve the intended benefits of Forum meetings. He concluded his note by detailing the agenda for the rest of the meeting and encouraged the dignitaries to voice their views openly during the course of presentations.

Mr. Anil Razdan, Honorary Chairperson, thanked the participants for their active participation in Forum meetings since its launch in 2013 and delivered his note to set the context for Forum's discussion on 'synergies between DSM and electricity reforms in India'. He briefly highlighted the various ongoing/envisaged reforms, explained why these synergies are important in the current scenario and left the floor open for further discussions. He also touched upon the need for accelerating efficiency in the consumption of both energy and water resources to achieve the sustainable developmental goals of state and central governments.



***From left to right: Mr. Saurabh Kumar (MD, EESL); Mr. Anil Razdan, Honorary Chairperson & Mr. Krishan Dhawan (CEO, SSEF)***

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# ***Presentations and discussions***

## ***Theme presentation: Synergies between DSM and ongoing electricity reforms in India***

*Presentation by: Mr. Shuboday Ganta, Manager, PwC India*

Mr. Shuboday set the context for discussions by underlining the promise of DSM for India's power sector stakeholders and how this promise aims to overcome the same underlying issues (viz. electricity deficit, rising power supply costs, rising subsidy burden, climate change and environmental degradation, deteriorating energy security) targeted by the ongoing and envisaged reforms in the power sector.



***Mr. Shuboday Ganta, PwC India***

He illustrated the promise of DSM with concrete examples. He mentioned that the Central Electricity Authority recently cut short the all India electricity demand forecast projected in the year 2021-22 from 298 GW to 239 GW, out of which, 20 GW reduction was envisaged from peak demand reduction resulting from utility scale LED lighting based DSM programs (under EESL's UJALA<sup>1</sup> initiative) active all over the country. He asserted that 80% of 35 million units of energy savings per day reported under the UJALA initiative has been achieved at zero cost to the Utility or state Government. The remaining 20% energy

savings is achieved at 25% cost of the average power supply costs incurred by the utilities. He also argued that since most of the energy savings achieved under the UJALA initiative is in the residential sector, which is subsidized across the country, there could be significant reduction in the subsidy burden on state governments. However, the actual impact on the subsidy burden may require a detailed study of impact of UJALA initiatives in various states. He further mentioned that the DSM market potential has been reestablished (INR 1.6 lakh crores from INR 44,000 crores established six years ago in the NMEEE policy) by the unprecedented success of UJALA. Residential end use applications (viz. bulbs and tubular lamps, ceiling fans, air conditioners), agriculture pumping, and municipal infrastructure are the top three markets contributing to this renewed DSM potential in that order.

He structured the remaining part of the theme presentation to discuss and debate the following critical questions:

- What is the role and significance of DSM in the current structure of reforms?
- How DSM will help accelerate reforms by effectively complementing the existing strategies/initiatives?
- What are the gaps and solutions to reinforce 'DSM' (as one of the main strategies) in achieving the goals of both ongoing and envisaged reforms?

Under UDAY<sup>2</sup>, Mr. Shuboday mentioned that DSM is expected to serve the largest pie of benefits by way of operational efficiency improvement, which is one of the key strategies envisaged to sustain the benefits of

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<sup>1</sup> 'Unnat Jyoti by Affordable LEDs for All', a government of India initiative driven by EESL for distribution of 7 watt and 9 watt LED lamps as replacement for incandescent bulbs. Till date over 10 crore LED bulbs have been distributed to households and institutional consumers across the country.

<sup>2</sup> Ujwal DISCOM Assurance Yojana

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financial restructuring of Utilities. He suggested that there is a need to set clear DSM related performance milestones with a robust mechanism for monitoring and verification. He also suggested to create adequate incentives to motivate the Utilities for scaling up DSM activities.

In the other major ongoing reforms such as the National Tariff Policy Amendments 2016 and including the envisaged ones (viz., Electricity Amendment Bill 2014 and Draft National Renewable Energy Act 2015), he opined that the demand side resources lack the kind of impetus laid for promotion of renewable energy sources like 8% solar RPO by 2022, renewable generation obligations, 100% procurement from waste to energy systems etc. He argued that there is a need to explicitly recognize 'demand side resources' as alternative resource option in the energy resource basket of Electric Utilities. Further, the legal and policy framework must provide provisions to allow state electricity regulatory commissions to stipulate 'demand side resource purchase obligations' just as renewable purchase obligations and solar purchase obligations. To address this, Mr. Shuboday outlined two options for the policy makers:

- In the first option, the 'demand side resources' can be defined and emphasized as stand-alone independent resource apart from the conventional and renewable energy sources. This however requires legislative action to empower the state regulatory commissions for effective enforcement and consideration of DSM as a resource by the Utilities and central /state governments.
- In the second option, the 'demand side resources' can be recognized as a qualifying resource under the definition of renewable energy sources in the existing legal and policy framework.

Mr. Shuboday suggested that the Utilities consider and evaluate demand side resources at the planning stage<sup>3</sup> to enable integrated resource planning (IRP). He argued that in the absence of IRP, when Utilities pursue for demand side resources and avoid purchase of power from the committed generators, they still end up paying the fixed costs of the boxed down generators. This substantially reduces the cost effectiveness of demand side resources for the Utilities.

He concluded the presentation by posing several important questions for deliberating the above mentioned problems and solutions by participants, so as to achieve policy driven growth of DSM resource acquisition by Electric Utilities.

## ***Key points discussed***

Mr. Desh Deepak Verma, Chairperson, UPERC raised a concern that the supply centric treatment to DSM could be challenging given that it is a dynamic market with ever changing technology trends and other externalities. He suggested that instead, Utilities must consider the impact of ongoing and planned DSM activities in the demand forecasting exercise and make appropriate adjustments to the peak demand forecasts. This would also kick start the use of IRP amongst Utilities and enhance the cost effectiveness of utility DSM investments.

Mr. Sivasankar, appreciated the policy gaps identified in the theme presentation and suggested that treating DSM as renewable energy resource, can overcome these gaps effectively. He further suggested that notifying Utility as 'Designated Consumer' under the regulatory ambit of Energy Conservation Act (EC Act) 2001 will initiate a new dawn of energy conservation reforms for Electric Utilities.

Mr. Anil Razdan also favored in bringing the Utilities under the regulatory ambit of EC Act 2001. Mr. Krishan Dhawan, CEO, SSEF added that this would allow BEE to notify energy performance related targets under the second cycle of Perform Achieve and Trade (PAT) scheme and regulate the electricity demand in a more effective way.

Ms. Varalika Dubey said that significant achievements had been reported on the DSM front in various states despite abysmal resource allocation from the Governments and absence of favorable policy framework. She further acceded to the policy gaps identified in the theme presentation and mentioned that the current policy framework did not lay any proper impetus for promotion of DSM.

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<sup>3</sup> While evaluating power purchase options to meet the forecasted short term and long term electricity demand  
PwC

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Mr. Prem R Kumar favored Ms.Varalika's comments by citing the tremendous reponse of consumers towards EESL's UJALA (LED lighting) initiative in Delhi. He further made a strong case for setting DSM targets for Utilities to promote policy driven DSM.

In response to Mr. Prem Kumar's comments, Mr. Anil Razdan argued that the DSM specific targets for Utilities must be accompanied with appropriate incentives to help Utilities achieve such targets in a cost effective manner.

Mr. Sujay K. Saha suggested to introduce tariff based incentives linked to DSM performance for industrial and commercial sector as it is easier to audit the resulting savings. He further stressed that 'energy audit' is an important tool to monitor and evaluate operational efficiency of Utilities.

Mr. Anil Razdan proposed that all important information related to DSM including the DSM regulations in various states, action plans, specific regulatory orders, presentations from speakers in Forum meetings etc. be made available to stakeholders on a common e-platform.To this end, Mr. Deepak Gupta mentioned about their initiative of 'Creating a virtual Centre of Excellence at Indian Insitute of Technology Bombay (IIT-B)'. He shared that under this initiative, IIT-B had developed various knowledge resources like Demand Response (DR) frameworks, DSM landscape and technology assessment reports, Monitoring and Verification protocols which could be accessed at the [www.dsm-india.org](http://www.dsm-india.org) website.

## ***DSM & Energy Efficiency Initiatives by Tata Power***

*Presentation by: Mr. Kaushik Sanyal, Tata Power Delhi Distribution Limited (TPDDL)*

Mr. Kaushik began by presenting the key findings of the recent load research study and its significance in identifying and evaluating DSM opportunities for Tata Power. He highlighted the DSM potential identified across various end use applications for all categories of consumers. He further explained the impact of various DSM programs planned and initiated by TPDDL. He emphasized that the program targeting to replace twenty thousand old air conditioners (AC) with BEE 5 Star or Inverter technology ACs is approved by the Delhi Electricity Regulatry Commission (DERC). The program is expected to deliver 11.4 million units (MU) of energy savings and 10.2 MW of avoided peak power capacity for TPDDL. He added that TPDDL has launched a comprehensive LED program to cater to the demand of 9 – 12 Watt LED lamps, in collaboration with a reputed supplier. The program is expected to deliver a demand reduction of 13-14 MW in a project life of 6 months.



***Mr. Kaushik Sanyal, Tata Power Delhi Distribution***

upfront energy savings realised by the utilities.

He mentioned that a 3 MW rooftop solar Photo Voltaic (PV) panels had been installed in the TPDDL consmer premises for reducing afternoon peak. He further revealedabout TPDDL's plans to launch BEE 5 star rated fan program for domestic consumers and efficient chiller retrofits for Industrial and commercial consumers. He confirmed that the chiller based DSM programs is yet to receive the approval from DERC.

This apart, Mr. Kaushik drew audience's attention by highlightingthe importance of Utility's role in ensuring success of DSM programs. He explained that Utilities are in direct contact with the consumers by virtue of the transactional relationship with the consumers and hence, a greater onus lies with them for ensuring the success of DSM programs.

He further mentioned that in the ongoing UJALA initiative, the consumers are stocking the purchased LED bulbs and were not replacing their old Incandescent lamps(ICLs) or Compact Fluorescent Lamps (CFLs), due to which there are no

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Mr. Kaushik concluded his presentation by stating two important aspects that needed consideration before launching any DSM program - brand of the product being distributed and the complaint resolving mechanism of the supplier to replace / repair faulty products. He affirmed that these two aspects are crucial to drive the uptake of DSM solutions by the consumers and ensure adequate participation.

## ***Discussions***

Mr. Anil Razdan, suggested that a compensatory mechanism for exchange of old equipment, including the ICLs or CFLs can ensure effective replacement of end use equipment targeted by the DSM program and help Utilities realize the projected energy savings. He added that this solution worked well in the Bachat Lamp Yojana, which aimed to replace ICLs with CFLs in the past.

## ***Demand Side Management: Uttar Pradesh Perspective***

*Presentation by: Ms. Varalika Dubey, Uttar Pradesh Power Corporation Limited*

Ms. Varalika began by proposing that the Utilities must treat DSM as the top priority instead of exploring the synergies with ongoing reforms. She then gave an overview of the DSM programs and achievements in UP.



***Ms. Varalika Dubey, Uttar Pradesh Power Corporation Limited***

She made a point that the ever rising increase in UP's power demand and consequent increase in the power purchase bill would be much greater than the reduction observed due to planned Transmission & Distribution (T&D) loss reduction efforts. Therefore, DSM offers a great opportunity to manage the rising power demand without imposing a huge financial burden on the Utilities. Ms. Varalika cited the success of EESL's UJALA initiative in Uttar Pradesh (UP) to justify her argument. She mentioned that about 1 crore LED lamps have been distributed in Uttar Pradesh. On similar lines, super-efficient fan program and AC program are planned to be launched in UP.

Ms. Varalika concluded that lack of priority and implementing agency for DSM program at the state level can be construed as the major barriers for rapidly scaling up DSM initiatives in UP.

## ***New DSM initiatives by EESL***

*Presentation by: Ms. Pooja Shukla, Company Secretary, EESL*

Ms. Pooja began her presentation by reflecting upon the targets for reduction in emission intensity committed by Indian authorities as per the new international policy framework (UN Paris Agreement) to combat climate change. In this context, she highlighted about the CO<sub>2</sub> emission reductions resulting from the 10 crore LEDs distributed till then under UJALA initiative.

She then introduced their plans of a LED tube light program for residential, commercial and industrial consumers. After successful implementation of UJALA for LED bulbs, LED tubular lamps had been realized as the most financially feasible energy saving options in India. Ms. Pooja added that under this program, 18 W LED tube -lights would be distributed to replace 36/52 W conventional tube-lights.



***Ms. Pooja Shukla, Energy Efficiency Services Limited***

She explained that the annual energy saved per tube-light per consumer is approx. 61.20 kWh resulting into savings of INR 245 per year per tube-light for domestic consumers. She further added that among the different cost recovery models available with EESL; on bill financing would be adopted for the proposed LED tube light program, in which the cost of LED tube lights would be recovered from participating consumers as monthly instalments via the electricity bills.

She concluded her presentation by underlining the role of state Government, EESL and electric utilities, in collectively scaling up EESL's LED tube

light program with similar success as UJALA.

## ***Discussions***

Mr. Anil Razdan opined that EESL should explore financing from the Global Environment Facility's (GEF's) Clean Technology Fund to reduce the cost of LED tube lights for the consumers and repeat the success story of UJALA. He also stressed about the importance of proper and safe disposal of the old conventional tubes to avoid environmental degradation.

Mr. Desh Deepak Verma favored Mr. Anil Razdan's suggestions for ensuring similar success for EESL's LED tube light programs in line with the UJALA program.

## ***Introduction to the Inverter AC technology***

***Presentation by: Mr. Sanjay Arora, Chief Operating Officer, Amber Enterprises India Pvt. Ltd.***

Mr. Sanjay commenced the presentation with a brief introduction about the company and its business verticals. He mentioned that Amber manufactures all components for room air conditioners except for compressors. He drew audience's attention towards room AC market growth, penetration among Indian households, market share by star rating, region wise sales and other industry trends.



***Mr. Sanjay Arora, Amber Enterprises Pvt, Ltd.***

He affirmed that the industry is swiftly shifting towards Inverter technology which is the most efficient technology currently available in the market.

He further explained the benefits of Inverter AC technology and how it consumes lesser electricity than the conventional compressors. He added that Inverter ACs are poised to be considered for BEE star rating by the end of 2017.

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## *Discussions*

Mr. Desh Deepak Verma enquired if there was a potential to improve the design of the conventional compressor technology beyond the current 5 star rated models to achieve the same efficiency as inverter technology models available in the market.

Mr. Amit Kumar argued that making a non-inverter AC as much efficient as an inverter technology is not economical due to the high cost of raw material required. He further emphasized that the shift to inverter ACs is bound to happen in the future.

Mr. Sivasankar, highlighted that officials in his organization had observed high correlation between significant voltage drop and high penetration of Inverter ACs in many regions served by their utility. He further argued that the reactive power generated by inverter ACs could be one of the main causes for this anomaly. He also stressed on the urgency of a common destruction facility and underscored that while replacing old technology, the cost pertaining to the appropriate disposal and destruction must also be considered in the overall cost effectiveness evaluation of DSM programs.

Mr. Amit Kumar enquired if the demand for Inverter ACs was aggregated, would the upfront price of procurement see a downward trend as observed in the case of LED lamps or other energy efficient end use applications. He also asked whether the Inverter AC industry would be able to handle the price competitiveness with conventional compressor technology.

Mr. Desh Deepak Verma further requested to understand the potential of upfront cost reduction in Inverter ACs; if sufficient volumes are generated to leverage the economies of scale in manufacturing, supply and distribution.

In response to these queries, Mr. Sanjay mentioned that with an assurance of market size, the manufacturers of inverter ACs might agree to bring the costs down.

Mr. Manu Maudgal sought some clarification over why inverter window ACs are not manufactured and supplied globally. He further added that window ACs are much superior to the split ones and that the installation plays a crucial role in realizing the efficiency of the split ACs.

In response to this, Mr. Sanjay clarified that split ACs are more efficient than the window ACs, citing the different standards set by BEE for the two categories. He also underlined that the industry keenness to manufacture window ACs is entirely driven by demand.

Mr. Anil Razdan claimed that the US market is dominated by window ACs and not the split ones. He further argued that the split technology often experiences blockages and leakages in the heat carrying pipes between compressor and AC kits. He suggested Mr. Dhawan to kindly make note of all the issues and concerns over the usage of inverter ACs and convey them to the Ministry of Power in order to find out suitable solutions.

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# Conclusion

Mr. Anil Razdan, Honorary Chairperson, thanked all the participants for sharing their valuable inputs, insights, and knowledge during the course of the meeting. Mr. Krishan Dhawan sought inputs from the participants over potential themes for the forthcoming meetings of the Forum. Some of the promising themes discussed by participants are listed below:

1. Agriculture Demand Side Management – potential, challenges, solutions and implementation models
2. Integrated Resource Planning – international experience, Indian context, challenges and roadmap
3. Leveraging ICT for Monitoring, Verification and Evaluation of DSM Programs
4. Role and significance of DSM in the implementation of India's INDC (intended nationally determined contributions)
5. Smart grid enabled DSM Solutions – opportunities and potential, synergies with Govt. of India's 'Smart Grid Vision and Roadmap'
6. Rooftop solar photovoltaic systems – DSM potential, challenges and solutions for scale up
7. Municipal Demand Side Management – potential, challenges, solutions and implementation models

The participants showed keen interest in discussing smart grid based DSM solutions, rooftop SPV systems and municipal DSM from above for the next Forum meeting.

Furthermore, Mr. Sivasankar shared his positive experience with the Forum meetings and highlighted that he had the opportunity to attend four meetings in his tenure since its launch in 2013. He admitted that both Kerala state Government and KSEB have benefitted immensely from the knowledge and experiences shared in the Forum meetings. He strongly urged the senior management of all the electricity distribution companies and other key organizations in the power sector to participate in the Forum gatherings and learn from the collective experiences. Mr. Krishan Dhawan thanked Mr. Sivasankar for his kind words and requested an endorsement letter from his office for sharing with other senior officials of various Utilities for motivation.

Mr. Deepak Gupta and Ms. Vrinda Sarma together demonstrated the DSM India portal (<http://dsm-india.org/>) and its key features to disseminate DSM related information and knowledge. They added that together SSEF and IIT Bombay had been managing the DSM-India portal, which provides information about important DSM events/workshops, Forum updates, best practices and e-learning DSM tutorials for interested stakeholders.

Mr. Krishan Dhawan in his concluding remarks applauded the efforts of his colleagues towards DSM-India portal and underlined that it has the potential of acting as an excellent resource of information for DSM stakeholders in the country. He thanked all the participants for coming together to discuss and debate on ideas for promoting DSM.

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