



SHAKTI
SUSTAINABLE ENERGY
FOUNDATION



Utility CEO Forum

ON DEMAND SIDE MANAGEMENT

Proceedings: 8th Meeting



Introduction and participant profile

The eighth meeting of the 'Utility CEO Forum on Demand Side Management' was held on 21 January 2015, in New Delhi, with an agenda to discuss the 'Successful DSM programmes in India: Case studies and lessons learnt'. An innovative idea on funding DSM programme costs through electricity tariff subsidies was also presented by the secretariat during the meeting. Anil Razdan, Former Secretary, Ministry of Power, chaired the meeting which was attended by experts and officials from the electricity regulatory commissions, electricity distribution licensees (utility) and other stakeholders across the country.

Participant profile

Honorary Chairperson	Anil Razdan, IAS (retired), Former Secretary, Ministry of Power
Electricity regulatory commissions	<ol style="list-style-type: none"> 1. Jagjit Singh, Chairperson, Haryana Electricity Regulatory Commission 2. M S Puri, Member Haryana Electricity Regulatory Commission 3. M R Sreenivasa Murthy, Chairperson, Karnataka Electricity Regulatory Commission 4. Anand Kumar, Chairperson, Meghalaya Electricity Regulatory Commission 5. Ismail Ali Khan, Chairperson, Telangana Electricity Regulatory Commission 6. S K Chaturvedi, Chairperson, Joint Electricity Regulatory Commission the state of Goa and Union Territories 7. Surendra Singh, Deputy Director, Chattisgarh State Electricity Regulatory Commission 8. Kamlesh Dilliwar, Deputy Director, Chattisgarh State Electricity Regulatory Commission 9. Virendra Kumar Sarngal, Superintending Engineer, Jammu and Kashmir State Electricity Regulatory Commission
Utilities	<ol style="list-style-type: none"> 1. Dr Kajal, IAS, Managing Director, Purvanchal Vidyut Vitaran Nigam Limited 2. Rajesh M Bansal, Vice President, BSES Rajdhani Power Limited 3. Mathivanan, SE, Electricity Department, Puducherry 4. A S Jitendra Rao, EE, Electricity Department, Puducherry 5. Pramod Deo, Additional VP, DSM and EE, Reliance Infrastructure Limited 6. Shekhar Khadilkar, Head (DSM and Power Purchase), Tata Power Mumbai 7. Amita Sharma, Manager, Tata Power Delhi Distribution Limited 8. Arup Gan Choudhury, DGM (Commercial), Tripura State Electricity Corporation Limited 9. P P S Khurana, Deputy CE, Punjab State Power Corporation Ltd 10. Jayant Kumar Dubey, EE (Commercial), North Bihar Power Distribution Company Ltd 11. Pravin P Pardeshi, Executive Engineer, Maharashtra State Electricity Distribution Company Ltd.
Others	<ol style="list-style-type: none"> 1. Sundararajan Muruganandhan, Managing Director, Versa Drives Private Limited 2. Bhaskar Natarajan, Deputy Chief of Party (EE), PACE-D Technical Assistance Programme 3. Mahesh Patankar, Managing Director, MP Ensystems Advisory Private Limited 4. Priya Bhargava, MP Ensystems Advisory Private Limited
Secretariat	<ol style="list-style-type: none"> 1. Krishan Dhawan, CEO, Shakti Sustainable Energy Foundation 2. Chinmaya Acharya, Chief of Programmes, Shakti Sustainable Energy Foundation 3. Deepak Gupta, Senior Programme Manager, Power, Shakti Sustainable Energy Foundation 4. Natasha Bhan, Senior Programme Associate(EU), Shakti Sustainable Energy Foundation 5. Amit Kumar, Partner, PwC India 6. Kulbhushan Kumar, Senior Manager, PwC India 7. Prabhat Kumar, Programme Manager (DSM), Energy Efficiency Services Limited

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Inaugural session

Krishan Dhawan, CEO, Shakti Sustainable Energy Foundation (Shakti), welcomed the gathering and provided brief overview of the agenda, past meetings and associated activities. He stressed on the potential of demand side management (DSM) and its significance in the overall resource mix of electric utilities in India. He further added that this meeting was intended towards discussing successful stories on implementing DSM programmes in the country. He thanked the dignitaries for their participation and encouraged them to voice their views openly during the course of presentations.

Anil Razdan, Honorary Chairperson, thanked the participants for their continued association with the Forum. He appreciated the efforts of the organisations that came forward and presented their success stories. He thanked the participants who took time to provide feedback and suggestions related to **the Forum's activities** and its future direction.



*From left to right: Anil Razdan, Chairperson;
Krishan Dhawan, CEO, Shakti Sustainable Energy Foundation*

Presentations and discussions

An alternative cost-neutral mechanism to manage electricity subsidies in India

Kulbhushan Kumar, senior manager with PwC India, delivered the presentation on utilizing demand side resources to manage electricity subsidies in India while maintaining cost neutrality for the end consumers. The concept was briefly introduced by participants in the previous (seventh) meeting, held in November 2014, who then requested the Secretariat to analyze the feasibility of the concept and present the findings to the Forum.

Kulbhushan provided an overview of the scale and significance of electricity subsidies in India and explained how they can be restructured into providing capital rebates (INR per equipment) for the purchase and use of energy efficient equipment instead of tariff rebates (INR per kWh). He highlighted that reduced energy consumption from the use of energy efficient appliances will compensate for the increased tariff without having any impact on the electricity bills. He further explained that this concept presents a dual advantage of managing the huge burden of electricity subsidy on state governments as well as enhancing the usage of energy efficient appliances by the end users in the economy. In order to demonstrate the applicability of this concept, he presented the results of an analysis, which compared the monthly electricity expenditure of domestic consumers in Kerala before and after the subsidy restructuring. He concluded that the electricity (tariff) subsidy can be a promising source of funds for providing rebates (capital subsidy) on the initial cost of energy efficient equipment or technology.

Discussions

The Chairperson sought to know the feasibility of utilising electricity (tariff) subsidy to provide rebates on energy efficient ceiling fans.

Shuboday Ganta, senior consultant with PwC India, explained that the energy efficient ceiling fans provide substantial energy savings which will compensate the consumers for the withdrawal of subsidy in all slabs of **consumption without imposing any additional burden on consumers' electricity bills.**

Arup Gan Choudhury of the Tripura State Electricity Corporation Limited mentioned that his state is currently surplus in power and the revenue realisation from urban domestic consumers is about 6 INR per unit. In such scenarios, he stressed that the utility continues to pay fixed charges for the allotted capacity, in spite of the reduced electricity consumption resulting from DSM measures.

Dr Kajal, Managing Director of the Purvanchal Vidyut Vitaran Nigam Limited, also stressed that justifying DSM programmes to the regulators becomes difficult in cases of surplus power.

Rajesh Bansal from BRPL mentioned that DSM does not only mean load reduction, but also implies flattening the load curve. He suggested leveraging the power surplus situation in the state to attract energy intensive small scale industries and further provide incentives to encourage power consumption in such industries during the surplus periods.

The Chairperson suggested that the surplus situation be utilised to foster industrial development by way of offering cheaper power. Anand Kumar of the Meghalaya Electricity Regulatory Commission concurred as well as suggested selling the surplus power to states suffering from a deficit.

Forum: Road Map for 2015



Natasha Bhan, Shakti Sustainable Energy Foundation

Natasha Bhan spoke **about the Chairperson's initiative to solicit** participant feedback and suggestions on the **Forum's activities and** future direction. She informed the Forum that feedback had been received from nine utilities and four regulatory commissions during the last quarter of 2014. She highlighted that 'capacity building of stakeholders at the regional level' was a prominent suggestion regarding the future direction of the Forum. and that the Forum is considering this suggestion to expand its reach in 2015. She anticipated that regional meetings will consist of much wider participant profile to also include state nodal agencies for energy conservation, municipalities, state government officials, technology vendors, academicians, financial institutions, and consumer groups. She further apprised the participants that the Forum will have a web portal, which will host all knowledge

resources (presentations, proceedings, concept papers, tools as well as other relevant material discussed during the Forum meetings) in order to create a knowledge bank for the stakeholders.

Puducherry DELP scheme: Cost recovery model



*A S Jitendra Rao,
Puducherry Electricity Department*

A S Jitendra Rao of the Electricity Department, Puducherry (EDP) presented key features of the DSM based efficient lighting programme (DELP) which was implemented in Puducherry in February 2014.

This programme involves distributing three 7W LED self-ballasted lamps to each household in exchange for used ICL bulbs (in working condition) with a payment of only 10 INR per LED lamp. Around 625 thousand LED lamps have been distributed to over 200 thousand households so far.

He highlighted various aspects that are indispensable to a DSM programme of this scale. The regulatory framework and project implementation model (energy performance contracting) are the first of their kind in the country. EESL has adopted the internationally acclaimed Standard Offer Programme Design to purchase the resultant energy savings through long-term contracts at pre-determined rates.

Dr. Kajal enquired about the quality and failure rate of the distributed LED lamps so far to which Rao responded by indicating that number was restricted to a few hundreds among the 625 thousand bulbs distributed.

The Chairperson requested EDP to share all the relevant material with the Forum's Secretariat so that it can be circulated amongst the participants.

Delhi DELP scheme: On-bill financing model



Rajesh M Bansal, BRPL

Rajesh Bansal, Vice President, BSES Rajdhani Power Limited, focused on the on-bill financing model adopted for the DELP scheme that has been recently launched in Delhi. He added that ‘LED at CFL prices’ was their motto and the scheme seeks to replace 15W CFLs with 7W LED self-ballasted lamps in domestic households.

He informed that the scheme requires the consumers to pay 10 INR upfront and the remaining amount in 12 equal installments of 10 INR each. The consumers need to pre-register on a web portal or via SMS before 28th February 2015 in order to be entitled to two LED lamps. Distribution will begin from 1st March 2015.

He further added that the EESL will arrange for a provision of GSM or RFID meters to be installed inside the LED lamps on sample basis (500 per 10 lakh consumers) to facilitate the measurement and verification (M&V) of energy savings and peak load reduction by monitoring real time data related to power consumption and hours of usage through a web-based system. The Delhi government and EESL will also appoint an independent agency to determine the actual number of LEDs in use.

DSM success stories in Mumbai



Shekhar D Khadilkar, Tata Power

Shekhar D Khadilkar, Tata Power Mumbai talked about the successful initiatives for advancing utility driven DSM in Mumbai. He mentioned that the existence of DSM regulations is critical for the development and implementation of DSM in a structured manner. Apart from the regulations, he added that the load research exercises are important to make informed investment decisions related to DSM. He further added that the reliability and performance of the technologies deployed for DSM is another critical success factor. He talked about the history and development of DSM in Maharashtra– from pilot studies and preliminary discussions in 2008-09 to the current scenario where several programmes are being deliberated by the DSM Coordination Committee. He further stated that the incentives in DSM programmes must be determined through a formula that takes cost effectiveness evaluations into account. He concluded with a **case study of Tata Power’s Ceiling Fan Exchange Programme** in order to demonstrate the concepts hailed as success factors.

Super-efficient ceiling fans: An overview of the technology



Sundararajan Muruganandhan, Versa Drives Private Ltd

Sundararajan Muruganandhan, Managing Director of Versa Drives gave an overview of the super-efficient technology and its benefits in the rapidly growing markets for energy efficient appliances in the country.

He mentioned that the brushless DC motor technology can result in 50% energy savings with ceiling fans that traditionally use induction motors. He added that the super-efficient ceiling fans promoted by his company use a permanent magnet brushless DC (BLDC) motor and an electronic drive for commutation. He added that the drive contains a small microprocessor for control and uses an active power factor correction to reduce harmonics.

He further provided insights into the various advantages and benefits that could be accrued by consumers and utilities once the complete market

transformation of ceiling fan technology is achieved.

He concluded his presentation by listing numerous ways in which utilities can develop the markets for super-efficient ceiling fans in India by aggregating demand, eliminating distributor margins and facilitating cost reduction.

Discussions



M R Sreenivasa Murthy, Chairman, Karnataka Electricity Regulatory Commission, enquired whether utilities know the exact contribution of lighting load to the overall peak in order to ascertain the impact of DELP and similar schemes on the peak load. **Bansal responded by mentioning that Delhi's peak load** is traditionally between 3 and 4 pm in June or July. Air conditioning is expected to be the major contributor. However, if one considers the other peak which is usually between 9 and 11 pm in summers and is mostly driven by domestic consumers, the primary contribution can be attributed to the lighting load. **Ganta added that EESL's load** research activities, which are currently underway in over 30 utilities under the BEE-DSM capacity building programme, are capturing information necessary for assessing the contribution of various end-use appliances to the overall peak. Murthy also suggested that this information is critical for assessing impact of the DELP scheme on the peak load of utilities. Amit Kumar, Partner with PwC India, added that PwC, EESL and Shakti will present results of the load research activities in future meetings for wider dissemination.

Bhaskar Natarajan observed that utilities and regulatory commissions need to adopt competitive procurement principles, which can help in improving cost efficiencies, and invite service providers to bid for DSM investments in an open and transparent manner. He cited that the Bachat Lamp Yojana programme, which worked on the competitive procurement principles, had substantially brought down the costs of CFL use. He also suggested that organizations implementing or launching DSM programmes should make relevant project documents available in the public domain.

Murthy also agreed on observations made by Natarajan and opined that unless all the relevant information of successful DSM programmes is made available in the public domain, it will be difficult for the utilities and regulatory commissions to replicate the same and make investment decisions. He mentioned that KERC has recently notified DSM regulations on the basis of few successful programmes funded by international agencies with demonstrated results. He opined that there is a need to publish successful DSM programmes such as the Puducherry DELP scheme for wider dissemination of the implementation models, risks, and results.

Bansal presented an interesting perspective that many DSM programmes involving ACs, refrigerators, ceiling fans and other equipment have inherent conflict of interest for the manufacturer supplying the technology at reduced or discounted prices. Such kind of transactions directly with the end users through utilities as well as virtual distribution channels may disturb the regular dealer markets and thereby cause problems to the

manufacturer's conventional supply channels. This conflict of interest can be a major hindrance in supplying energy efficient equipment at discounted prices directly to end users and facilitating DSM programme delivery.

Conclusion

The Chairperson appreciated the value of inputs, ideas and knowledge shared by the participants during the course of the meeting and thanked the participants for their feedback, which is essential to assess the Forum's performance as well as define future actions.

The following action points summarize the way forward to advance the recommendations of the Forum that emerged in this meeting:

- The Forum will submit the concept note on managing electricity subsidy to the state governments, BEE, Forum of Regulators, NITI Aayog as well as other relevant departments in the central government for further deliberation and action.
- The secretariat shall compile the proceedings and discussions from the previous meetings and share it with the forum participants.