



Utility CEO Forum

ON DEMAND SIDE MANAGEMENT

Proceedings: 6th Meeting

Introduction and participant profile

The sixth meeting of the Utility CEO Forum on demand side management (DSM) was held on 23 July 2014, in New Delhi. It sought to discuss and debate **DSM programmes for buildings** through selective case studies and examples. Anil Razdan, Former Secretary, Ministry of Power, chaired the meeting and 27 other participants representing various state electricity distribution companies, electricity regulatory commissions, central nodal agencies and other stakeholders attended.

Participant profile

Chairman	Anil Razdan, IAS (retired), Former Secretary, Ministry of Power
Electricity Regulatory Commissions (6)	1. Umesh N Panjiar, Chairman, Bihar Electricity Regulatory Commission 2. Niharendu Chakraborty, Chairman, Tripura Electricity Regulatory Commission 3. R N Prasher, Chairman, Haryana Electricity Regulatory Commission 4. Jagjeet Singh, Member, Haryana Electricity Regulatory Commission 5. Shubha Sarma, Secretary, Central Electricity Regulatory Commission 6. Anish Garg, Director, Joint Electricity Regulatory Commission 7. Prabhat K Dimri, Director, Uttarakhand Electricity Regulatory Commission
Utilities (7)	8. N Srivastava, MD, Uttar Gujarat Vij Company Limited 9. Ashok Sethi, Executive Director, Tata Power Mumbai 10. Pramod Deo, Additional VP, DSM and EE, Reliance Infrastructure Limited 11. Ganesh Das, Head of Department, Strategy, Tata Power Delhi Distribution Limited 12. Amita Sharma, Manager, Tata Power Delhi Distribution Limited 13. Mita Saha, DGM, Tripura State Electricity Corporation Limited 14. P K Agrawal, SE, Madhya Gujarat Vij Company Limited 15. Ashok K Gupta, XEN, Jaipur Vidyut Vitran Nigam Limited
BEE	16. Dr. Ajay Mathur, Director General, Bureau of Energy Efficiency 17. Sanjay Seth, Energy Economist, Bureau of Energy Efficiency 18. Pravatanalini Samal, Assistant Energy Economist, Bureau of Energy Efficiency
Others	19. Devender Singh, IAS, Principal Secretary, Power, Government of Haryana 20. Satish Kumar, Vice President, Schneider Electric 21. Aalok Deshmukh, GM, Schneider Electric 22. Aditya Harit, Analyst, IFC 23. Sivaram Krishnamoorthy, Operations Officer, IFC 24. Dr. Mahesh Patankar, Managing Director, MP Ensystems Advisory Private Limited 25. Priya Bhargava, AGM, MP Ensystems Advisory Private Limited 26. Aalok Awalakar, Programme Associate, PACE-D Technical Assistance Programme 27. Govinda Somani, Green Building Analyst, EDS Pvt. Ltd.
Secretariat	28. Saurabh Kumar, Managing Director, Energy Efficiency Services Limited 29. Chinmaya Acharya, Chief of Programmes, Shakti Sustainable Energy Foundation 30. Smita Chandiwal, Programme Manager (Building and Appliances), Shakti Sustainable Energy Foundation 31. Natasha Bhan, Senior Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation 32. Kulbhushan Kumar, Senior Manager, Energy and Utilities, PwC India 33. Neelima Jain, Programme Coordinator GIZ, Energy Efficiency Services Limited i. Vrinda Sarda, Programme Assistant, (Electric Utilities), Shakti Sustainable

Energy Foundation

- ii. N Mohan, Deputy Manager, Energy Efficiency Services Limited
- iii. Vivek Talwar, Regional Manager, Energy Efficiency Services Limited
- iv. S B Datta, Principal Consultant, Energy Efficiency Services Limited
- v. Ashish Sharma, Deputy Manager, Energy Efficiency Services Limited

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Inaugural session

Welcome address and setting the Context



Chinmaya Acharya, Shakti Sustainable Energy Foundation



Anil Razdan, Honorary Chairperson

Chinmaya Acharya, Chief of Programmes, Shakti Sustainable Energy Foundation (Shakti), welcomed the gathering and provided a brief overview of the Forum's activities over the past year.

He thanked the dignitaries for their presence.

Anil Razdan, Chairperson (Chair), thanked all participants for their continued association with the Forum. He stated that although few initiatives have been taken up in the DSM space, they have been mostly restricted to pilots. Moreover, these have been sporadic initiatives. He expressed the need to take a focused stand on DSM. He expressed the need for a concrete roadmap for DSM and stated that buy-in from the Forum of Regulators would only add to its credibility and focus.

The Chair put forth the need to revisit the Energy Conservation Act with an aim to introduce distribution companies as designated consumers. He was of the opinion that DSM measures on a large scale would be taken up only when distribution companies are given an annual DSM target and made to participate in the NEMEE & PAT programs.

On the functioning of the Forum, the Chair suggested that a compendium of all presentations made in the forum meetings be prepared at the end of the year. He also outlined themes for future meetings. These included studying the orders relating to DSM released by various state electricity regulatory commissions as well as evaluating existing DSM programmes to assess their economic viability and accrued benefits.

Presentations and discussions

BEE's support to discoms and mandate on energy efficiency in buildings: Ajay Mathur, BEE

Dr. Ajay Mathur thanked the chair for the opportunity to address the gathering and lauded the forum for being effective in bringing together various strands of experience in the form of DSM pilots.



Ajay Mathur, DG, Bureau of Energy Efficiency

He spoke about the electricity load in commercial buildings, which, in recent times, has registered a significant gap between peak and base loads owing to increased use of ACs in both urban and peri-urban areas. This implied that rates of high energy consumers will go up to a point of backlash. In such a situation, an option to invest in energy efficient technologies such as thermal storage and DSM measures such as real-time demand response, etc. should be provided for consumers to curtail their load.

The prime barriers to expansion of DSM to a large scale investment include the following:

- Utilities hesitate to make large-scale DSM investments due to fear of loss of revenue coupled with lack of adequate amount of analysis to understand its benefits. He further stressed the fact that only the costs of such initiatives are extensively discussed while benefits are usually not.
- Long payback periods (seven to 10 years) of large scale DSM projects act as a deterrent to entry into this space.

Another key barrier was the unavailability of cheap finance to fund such projects. In order to mitigate this, he suggested a revolving fund be created from the National Clean Energy Fund as well as employing state energy conservation funds.

He mentioned that BEE, through EESL will support over 30 utilities in building the capacity of DSM cells as well as providing expert consulting support to design, implement and monitor large-scale DSM programmes. A roadmap for this initiative will be prepared by the third week of August 2014. In addition to this, BEE has partnered with the National Power Training Institute to form a forum to help strengthen and upgrade the skills of DSM cells. The chair suggested a timeline needs to be designed for the initiatives planned by the BEE. He also suggested that training of Discom personnel be initiated in parallel to the design of DSM programmes.

The regulatory perspective:

The Honorary Chairperson, at this point, invited the Regulators participating in the Forum to cite their own experiences on DSM and also provide some suggestions to expand their roles.

Ashok Sethi, Tata Power, Delhi stressed the importance of load research to be conducted as the first step of any DSM programme. While discussing the commercial sector in Mumbai, he stated that the electricity loads during day and night exhibited a difference of up to 50%. In order to improve the situation, he made the following suggestions:

- Set-up a roadmap to shave off-peaks by employing energy efficient technologies
- Encourage technologies such as thermal storage to shift the load
- Set tangible targets over the next 5 years
- Existing certification of buildings may include load shifting as a parameter



Forum participants during the Discussion

Devender Singh, Principal Secretary, Department of Power, Haryana opined that the fear of loss of revenue held back utilities from taking up large-scale initiatives. He recounted his experience while rolling out Bachat Lamp Yojana, when a utility expressed the same fear. Speaking about the scenario in Hisar district of Haryana where the difference between the cost of power and realization was approximately three to four rupees, he said that load reduction coupled with DSM initiatives will go a long way to provide respite to the utility. R N Prasher, Chairperson, HERC spoke of other small scale pilots that have been successfully implemented in the state of Haryana over the past few years.

The chair opined that any DSM initiative may not be deemed successful until the sub-division as a unit turns to be a profit center. Umesh N Panjiar, Chairperson, BERC stated that although numerous states have notified DSM regulations, the number of projects that have been implemented on ground is still small. He attributed this to the lack of awareness and capacity among relevant stakeholders. He said that BEE's initiative to build capacity will go a long way to remedy this. He also appreciated the progress made by the forum till date, from drafting a state policy to promotion of other key themes.

Building DSM programmes: Energy Efficiency Services Limited

Neelima Jain, EESL, presented the findings of a building energy efficiency project that will address some barriers discussed earlier as well as the evolution of templates and standards while transitioning from a small scale project to large scale. Based on experiences of BEE and EESL, she stated that simple retrofits or initiatives in the commercial building space usually result in 20 to 30% reduction in load. This, she said, was reinforced in their current project of raising the three-star compliance of Yojana Bhawan to five-star compliance.



Neelima Jain, Energy Efficiency Services Limited

demand savings of nearly 6.66 MW per annum.

This was followed by explanation of benefits to discoms and consumers by ERCs providing a 10% tariff rebate for office buildings, both old and new, that get five-star rating from BEE. The chair appreciated the session but requested a clearer presentation of financial parameters such as loan, credit facilities, capex, ESCO contribution, etc.

Monitoring and verification of building DSM programmes: Schneider Electric



Satish Kumar, Schneider Electric

Dr. Satish Kumar, Schneider Electric made this presentation on the implementation of an energy management system (EMS) at the Yojana Bhawan in New Delhi. Such a system allows a user to see the building performance against targets for working days and non-working days, year-to-date and month-to-date energy use and cost numbers and also facilitates comparison of week-on-week or month-on-month energy use and costs. He noted that the project at Yojana Bhawan was based on the notion that visibility of energy use helps promote the right behavior and track energy performance targets.

He mentioned that a special characteristic of the EMS is its ability to track floor-wise energy performance index (EPI) and energy cost index (ECI). Satish Kumar laid special emphasis on the system's easy customization flexibility.

He concluded by reminding the opportunity cost of not scaling-up DSM and EE pilot projects. In his opinion, this would act as a deterrent to private players to invest in such initiatives. He reiterated the roles and responsibilities of various stakeholders in the DSM process.

Commercial building DSM programme: Institute for Sustainable Performance of Buildings



Aalok Deshmukh, SuPerB

Aalok Deshmukh presented on DSM Design Assistance Programme for super-efficient new buildings. He listed the following barriers to EE in buildings: Lack of public awareness and thus the absence of a premium for energy efficient real estate, cost of EE (perceived or real) and the unwillingness of developers or owners to look beyond a two to three year payback, a 10% increase in design effort for EE, non-availability of reliable ROI information to the developers and owners and the lack of expertise for EE in the building design industry. He also touched upon some market transformation approaches

and the status of such initiatives.

He showcased the Infosys building in Hyderabad and CEPT building in Ahmedabad as examples which have exhibited building energy performance of 60 kWh/m² as against a performance of 250 kWh/m² in the business-as-usual case and the ECBC benchmark value of 90 kWh/m². He explained that the cost of design accounts for 2 to 4% of the total programme cost and the incremental cost of efficient design is only 10% of the design cost. Investing this small incremental cost could ensure optimisation of design parameters such as orientation, daylight autonomy, window-to-wall ratio, shading and light shelves, radiant cooling, etc. The chair, at this point, advised that standardized construction materials should be used in order to ensure the success of such designs. Mr. Deshmukh emphasized the complexity of such programmes, which involve numerous variables and players over a lifetime of designing, construction and operation.

In conclusion, he stressed the point that utilities should tap the building EE resource and create success stories to effectively drive market transformation and boost the adoption and continuing improvement of codes and standards. According to him, utilities can also project a green image and cost-effectively demonstrate a progressive stance on EE and DR; while strengthening relationships with key customers.

DSM measures in Haryana

This presentation was made by Devender Singh, Principal Secretary, Power, and Haryana. He stressed upon the importance of load research and explained the current status and the importance of DSM measures to be implemented in Haryana. He followed this up by citing some case studies; HAREDA green building and the proposed NET-ZERO building of UHBVN, both at Panchkula.

He stated that the domestic sector constituted 22% of total sales in the state. The Bachat Lamp Yojana resulted in a reduction of 10.23 MW of connected load and provided an annual saving of 15.73 MUs in Sonapat and Yamunanagar, which account for 13% of the state's domestic consumers. He noted that load curve flattening is being done through peak load exemption charges for industrial consumers and other DSM measures such as Time-of-Day tariffs for commercial and non-domestic consumers in the state. Other DSM measures implemented in Haryana were Agriculture DSM, solar



Devender Singh, Principal Secretary – Power, Haryana

water heating systems for domestic users, promotion of CFLs for lighting, reliability charges, replacement of street lamps under the ESCO mode and promotion of four-star rated appliances. Benefits and barriers faced by each initiative were explained in detail.

He talked of the MoU signed with BEE, wherein EESL will hire two DSM consultants for UHBVN, the cost of which will be funded by BEE. Through this MoU, EESL would provide support to develop an approach and methodology as well as provide technical support for conducting load survey, load research, load strategies and development of a DSM action plan for the discom.

Residential DSM programme: Tata Power Delhi

The presentation by Ganesh Das, Tata Power Delhi Distribution Ltd (TPDDL), centered on the proposals made by Tata Power to the state regulator and the status of the demand response programme initiated earlier. Mr.



Ganesh Das, Tata Power Delhi

Das presented an analysis of the load curve prevalent in Delhi, which provided the average contribution by various consumer categories to the load.

He stated that TPDDL, in association with EESL, had formulated three DSM programmes based on the findings of a Load survey:

- DSM based efficient lighting programme (DELP)
- Air conditioner replacement programme

An overview of each of the above schemes was given by Ganesh Das. A point to note was that implementation of these schemes is a tariff neutral proposition and will result in net savings in power procurement cost even after making payment to EESL. It would also result in avoiding cumulative peak power requirement of approximately 68.4 MW.

Conclusion



The chair thanked all the participants for their continued association with the forum and appreciated their valuable inputs to the theme DSM programmes for buildings. He reiterated the important discussion points and key barriers to the implementation of large scale DSM programmes in the country. He also suggested some possible themes that may be taken up for the subsequent forum meetings.

The action points suggested to the Secretariat by the Honorary Chairperson and the progress till date are detailed in the table below:

Action points	Progress till date
Studying DSM related orders released by various state electricity regulatory commissions.	<i>The Study has been initiated & results would be presented during the Forum's next meeting</i>
Analyzing DSM projects across the country to assess their economic viability and accrued benefits.	<i>Shakti Sustainable Energy Foundation has commissioned a grant to IIT Bombay to evaluate the success of a few DSM programs undertaken till date</i>
Developing a framework to set long term objectives for the Forum, design a roadmap as well as a measurement mechanism	<i>Work on the framework has been initiated & results would be presented during the Forum's next meeting</i>