
Proceedings

Fourth Meeting of Utility CEO Forum on Demand Side Management

December 2013



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1. Introduction

The fourth meeting of Utility CEO Forum on demand side management (DSM) was held on 13 December, 2013, in New Delhi, to discuss issues and challenges in the Measurement and Verification (M&V) of utility-driven DSM programmes. The meeting was chaired by Anil Razdan, Former Secretary, Ministry of Power, and was attended by 24 other participants representing various state electricity distribution companies, electricity regulatory commissions, central nodal agencies and other stakeholders.

Participant profile

Chairperson and forum secretariat	List of participants
<i>Chairperson: Anil Razdan, IAS (retired), Former Secretary, Ministry of Power</i> Forum secretariat 1. Krishan Dhawan, CEO, Shakti Sustainable Energy Foundation 2. Chinmaya Acharya, Chief of Programmes, Shakti Sustainable Energy Foundation 3. Natasha Bhan, Senior Programme Associate (Electric Utilities), Shakti Sustainable Energy Foundation 4. Vrinda Sarda, Programme Assistant, (Electric Utilities), Shakti Sustainable Energy Foundation 5. Amit Kumar, Executive Director, (Energy & Utilities), PwC India 6. Kulbhushan Kumar, Senior Manager, (Energy & Utilities), PwC India 7. Shuboday Ganta, Senior Consultant, (Energy & Utilities), PwC India	1. Umesh N Panjiar, Chairman, Bihar Electricity Regulatory Commission 2. M R Karmakar, Chairman, Tripura Electricity Regulatory Commission 3. Dr Ajay Mathur, Director General, Bureau of Energy Efficiency 4. M Sivasankar, IAS, Chairman, Kerala State Electricity Board 5. IM Bhavsar, Chairman, Gujarat Energy Development Agency 6. Saurabh Kumar, Managing Director, Energy Efficiency Services Limited 7. Ashwani Kumar, IAS, Principal Secretary, Maharashtra Electricity Regulatory Commission 8. Arvind Gujral, CEO, BSES Yamuna Power Limited 9. Jayanta Chatterjee, Additional General Manager, Tata Power Delhi Distribution Limited 10. Rajeev Amit, Director, Joint Electricity Regulatory Commission 11. Anish Garg, Director, Joint Electricity Regulatory Commission 12. Pramod Deo, Additional Vice President, Reliance Infrastructure Limited 13. Anant Sant, Deputy Director, Maharashtra Electricity Regulatory Commission 14. Dr Rahul Walawalkar, Vice President, Customised Energy Solutions 15. Parag Kulkarni, Senior Energy Consultant, Customised Energy Solutions 16. Koshy Cherail, President, Alliance for Energy Efficient Economy 17. Ramesh Bhatia, Advisor, Alliance for Energy Efficient Economy 18. Ashok M Shah, System Engineer DSM Cell, UGVCL 19. Kamlesh N Parikh, System Engineer, MGVCCL 20. V Ramakrishna, ex-member, CEA 21. H M Sujatha, Executive Engineer, CESCO, Karnataka 22. Mridula Saripalli, Programme Associate, Alliance for Energy Efficient Economy 23. Aseem Goyal, Greentree Building (P) Ltd

24. Pravatanalini Samal, Asst. Energy Economist,
Bureau of Energy Efficiency
25. Ashish Sharma, Assistant Manager (Tech), Energy
Efficiency Services Limited
26. Neelima Jain, Programme Coordinator, Energy
Efficiency Services Limited

This document highlights some of the key points of discussion held amongst the participants and also presents the opinions, perceptions and suggestions that emerged from the thematic discussion and presentations.

2. Inaugural session

2.1. Welcome note

Krishan Dhawan, CEO of Shakti Sustainable Energy Foundation (Shakti) extended a warm welcome to all the participants and asserted that under Anil Razdan's leadership, this forum will evolve further and be instrumental in driving the megawatt scale DSM programmes in the country.

Dhawan highlighted the tremendous success of DSM investments, by electric utilities, in many parts of the world and further maintained that similar measures can be applied by Indian utilities to meet the rising electricity demand in a sustainable manner. He stressed the importance M&V in the overall DSM process and asserted that understanding the issues and challenges in the M&V of utility-driven DSM programmes is the focus of this meeting.



Krishan Dhawan, CEO, Shakti Sustainable Energy Foundation

He concluded his welcome note by thanking the Chairmen from the State Electricity Regulatory Commissions, Dr Ajay Mathur from Bureau of Energy Efficiency, as well as other dignitaries for participating in this meeting.

2.2. Setting the context

Anil Razdan began by stating that the Utility CEO Forum on DSM is a unique experiment from the Shakti Sustainable Energy Foundation. He asserted that while the forum is intended for utilities, the participation of the BEE and the electricity regulatory commissions is also critical in order to take informed discussions and deliberate over key issues persisting in the way of accelerated DSM investments.

Razdan stressed the need for demand side solutions in a mature electricity system such as India. He asserted that electricity regulatory commissions have a pivotal role to play in the near future, and will need to provide concession to the utilities investing in DSM resources. He concluded by arguing that no demand side solution is complete without M&V and cited the role of M&V in the success of Bachat Lamp Yojana (a CFL distribution scheme, commissioned by BEE).



Anil Razdan, Former Secretary, Ministry of Power

3. Thematic presentation and round table discussion

This presentation was delivered by Kulbhushan Kumar, Senior Manager at PwC India. The presentation initially focused on the spectrum of M&V activities, various steps in the M&V process and other key interactions with the DSM process. Key differentiating characteristics of M&V options defined under the international measurement and verification protocol (IPMVP) were explained. The presentation further explained the ways in which these M&V options are adopted in order to manage the risks perceived (or real) under DSM investments made by utilities.



Kulbhushan Kumar, Senior Manager, PwC India

Two case studies were presented in order to demonstrate the ways in which different M&V options were adopted in order to manage risks and cost-effectively monitor energy savings. Subsequently, the presentation identified key issues as well as challenges in carrying out M&V for utility-driven DSM programmes in India. International experience was also captured and the key lessons derived were highlighted.

The presentation finally highlighted concrete recommendations to improve as well as standardise the M&V framework for DSM investments in India.

3.1. Key points of discussion

Lack of awareness

Umesh N Pajiar, Chairman of BERC, asserted that most of the utilities in the country are still unaware of the methods to acquire verifiable energy savings through megawatt scale DSM programmes. He argued that this is the current scenario in spite of the existence of DSM regulations across many states in the country.

Karmakar of Tripura electricity regulatory commission also argued that the awareness about DSM measures, energy saving potential, and M&V is limited in the north-eastern parts of India.

Arvind Gujral, CEO, BYPL argued that the Peak demand in Delhi is growing at a faster rate and the system is demanding more capacity of power as compared to energy. In such scenarios, he mentioned that the utilities in Delhi would welcome any kind of support from the Forum and BEE to advance the idea of DSM investments.

Mr. Panjiar argued that the Forum's recommendations to develop programme-specific M&V guidelines as well as protocols would guide the efforts of utilities in planning for megawatt scale DSM investments.



UN Panjiar, Chairman, Bihar Electricity regulatory Commission



MR Karmakar, Chairman, Tripura Electricity Regulatory Commission

Capacity building of utilities

Sivasankar of KSEB argued that the utilities are facing difficulties in commercially structuring energy saving opportunities into viable projects linked with a suitable M&V approach.

Dr. Ajay Mathur of BEE argued that BEE is willing to help the utilities or regulatory commissions to make the case of DSM investments stronger, by studying the electricity saving potential in the respective jurisdictions. Mathur mentioned that BEE is also willing to fund the cost of procuring consultants and help utilities in building their capacity. In order to effectively derive the value from outsourcing, he argued that utility staff must deploy dedicated staff (DSM cell) to work with consultants and ensure capacity building at the same time. Mathur suggested that in the states, which are yet to notify DSM regulations, the first task of such DSM cells must be to promote the importance of DSM regulations and M&V guidelines.



Dr Ajay Mathur, DG, BEE



M Sivasankar, MD, Kerala State Electricity Board

Impact of DSM programs on retail tariff

Jayanta Chatterjee of Tata Power, asserted that the DSM programmes in Delhi, which is surplus in power, should lead the tariff reduction initiative and create a win-win situation to both utilities as well as consumers. However, he also argued that there is a general perception among utilities that DSM programmes lead to

reduction in sales and subsequently the revenues resulting from electricity sales. The loss of sales is creating a cloud of uncertainty over the benefits of DSM.

Anish Garg of the Joint Electricity Regulatory Commission also argued that there is a general perception that DSM investments are tariff neutral in nature. However, this may not be the case for all the energy saving opportunities.

Pramod Deo of R Infra also mentioned that some of the up-scaled DSM programmes have failed the tariff neutrality test in the past. Therefore, the tariff neutral perception of the commissions is one of the challenges to take off megawatt scale DSM investments.

Razdan stressed that the impact of DSM investments on tariff should be studied in detail and the Forum would support any utility in mitigating this uncertainty.



Dignitaries from BYPL, Tata Power-Delhi, Reliance Infra Mumbai, JERC, and CES

Up scaling of DSM pilots

Ashwani Kumar of MERC asserted that in spite of DSM regulations in Maharashtra, since 2010, there is no megawatt scale investment in DSM. He mentioned that there have been several pilots in the past focusing on refrigerators, fans as well as other HVAC equipments. However, utilities have failed to scale these pilots into megawatt scale programmes. Therefore, scalability issues are prevalent and hindering the growth of DSM investments.

Saurabh Kumar of EESL highlighted the potential of innovative program designs to overcome the scalability issues and ensure greater acceptance. He gave an example of the standard offer model, which allows the utilities to purchase verified energy savings at a pre-determined cost (Rs per kWh). He further argued that lack of standard M&V framework could also be a potential threat to up scaling of DSM pilots.

Metering Infrastructure and M&V eco-system

Ramakrishna argued that M&V requires good metering infrastructure in order to accurately monitor energy consumption. In the current scenario, there is no such infrastructure, especially in the agriculture feeders within the rural areas. Therefore, policymakers as well as utilities need to address this gap along with other issues.

Razdan proposed that DSM investments in such scenarios can be focused in areas where there is adequate metering. Distribution areas managed by private companies or distribution franchisees can be an example of such areas.

Koshy Cherail of AEEE argued that one of the challenges in the M&V ecosystem is the availability of M&V expertise. He further highlighted that the AEEE has certified 100 M&V professionals so far through an international certification programme.



Ashwani Kumar and Anant Sant from MERC



V Ramakrishna, ex-member, CEA.

4. Industry speak on DSM

4.1. BSES Yamuna Power Limited: DSM initiatives and experience

This presentation was delivered by Arvind Gujral, CEO of BYPL, to highlight the DSM initiatives undertaken and the experience of BYPL so far. He argued that the typical intent of DSM initiatives is to flatten the load curve by modifying the usage pattern of electricity by the end users. He asserted that flattening the load curve will lead to an effective utilisation of generation as well as distribution of resources. He also asserted that consumer awareness and regulatory approval for capex-driven DSM projects are some of major barriers for delivering DSM initiatives.



Arvind Gujral, CEO, BYPL

4.2. Energy Efficiency Services Limited: ESCO-based investment models for DSM projects

This presentation was delivered by Saurabh Kumar, Managing Director at EESL. He began by arguing that while the M&V process is critical to drive any DSM programme, it must also not become a burden on the programme managers. He mentioned that more than 60 municipal corporations within the country have sought to engage energy service companies, in the last two years, for upgrading street lighting systems that offer savings opportunity of up to 60%. However, there has been no success in engaging energy service companies in spite of huge energy saving potential.



Saurabh Kumar, Managing Director, EESL

He argued that this is largely because of the unacceptable M&V approach defined in these engagement tenders.

He further argued that one of the primary challenges for the current M&V approach endorsed by several municipalities is that a majority of the existing street lighting systems are not functional. Hence, when energy service companies replace 100% of the existing street lights, the electricity bill of the municipalities may even

see an increase rather than a reduction. He also argued that majority of existing street lighting systems do not provide the desired lux levels (defined by the Bureau of Indian Standards) on the streets. Therefore, when energy service companies replace the existing system with the ones which meet the BIS criteria, the energy consumption may again increase. Hence, under such scenarios, he argued that linking the payments to ESCO with the electricity bill reduction is not justified and unacceptable to the ESCO community.

He mentioned that EESL has developed a toolkit, which has addressed all these gaps by adopting an improved M&V approach that is acceptable to all the stakeholders.

4.3. Customised Energy Solutions: Demand response programmes

This presentation was delivered by Rahul Walawalkar and Parag Kulkarni from Customised Energy Solutions.

Walawalkar began by arguing that utilities must refrain from adopting load shedding as a DSM intervention and only then the benefits of demand response (DR) programmes can be realistic and significant. He further explained the benefits of DR programmes adopted in the state of New York. He also argued that the awareness of demand response programmes and its benefits among consumers is low and therefore, the role of a DR Service provider is essential in order to ensure significant participation within the DR programmes of utilities.



Rahul Walawalkar, CES

He further argued that the M&V process is critical in order to ensure the success of DR programmes.

Ramakrishna argued that DR programmes can also be used by utilities in order to maintain GRID frequencies and minimise the penalties paid under the UI regime. He also argued that DR programmes have more potential for participation with industrial consumers than commercial consumers. Walawalkar of CES responded by admitting that industrial consumers have more options to shift loads as compared to commercial consumers. Amit Kumar of PwC India sought to clarify whether DR programmes are sustainable in the long run without automation. Walawalkar responded that auto DR programmes require high capital investments and therefore, need the right price signals or incentives for consumers to mitigate the high risk of failure. Kumar also sought to clarify whether participants in the Mumbai DR programme will continue to participate in the future DR events. Kulkarni of CES responded that the current participation is around 70%, and most of the consumers value their participation in the DR programme. Chinmaya Acharya of Shakti Sustainable Energy Foundation argued that DR programmes act as catalytic agents in accelerating the adoption of energy efficient technologies by participants.

4.4. Alliance for Energy Efficient Economy: M&V ecosystem in India

This presentation was delivered by Ramesh Bhatia, advisor with the AEEE. He began by giving an introduction of the AEEE and its activities in India. He mentioned that AEEE has been designated as the international training partner for the efficiency valuation organisation (EVO) for training M&V professionals in India, and the AEEE conducts professional training as well as examination on behalf of the EVO. He mentioned that so far, the AEEE has certified 100 M&V professionals in India.

He explained the need and the rationale for baseline adjustments for carrying out the M&V process in most of the energy-efficiency projects. He also argued that in the context of DSM programmes, which cater to a wide scale of consumers, unlike individual energy-efficiency projects, evaluation of programmes play a crucial role and hence evaluation, measurement and verification (EMV)

becomes more relevant to DSM programmes. Evaluation involves impact evaluation and process evaluation of DSM programmes.

He further explained the use and application of the International Performance Measurement and Verification Protocol to train and certify M&V professionals in the country. He also presented the distribution of certified M&V professionals (CMVPs) globally as well as in India.



Ramesh Bhatia, Advisor, AEEE

5. Concluding session

In this session, Dhawan of Shakti Sustainable Energy Foundation requested the participants to further deliberate on the following questions and make conclusively recommendations.

1. The inability of utilities and ESCOs to agree on how the energy savings can be measured and verified is impeding the megawatt scale DSM investments by utilities in India. True or False?
2. What are the challenges and issues that arise, in the context of M&V, while scaling up the pilot DSM programs to megawatt scale programs?
3. Does the existence of M&V guidelines and protocols play a crucial role in supporting large scale DSM investments by utilities?
4. Which institution/s in India should lead the development of M&V guidelines?
5. How can we improve the M&V eco-system in India?

Saurabh Kumar of EESL acknowledged the applicability of IPMVP for developing M&V guidelines. However, he indicated that the guidelines must suit the current baseline challenges and be as simple as possible. Dhawan mentioned that Shakti is currently working on simplifying the energy performance contracts and these models must help the industry to apply M&V concepts in a more robust manner. I M Bhavsar of GEDA highlighted the impact of DSM programmes in the agriculture pumping sector. He requested that the forum should initially focus on developing M&V protocols for agriculture pumping before any other application. Ramakrishna highlighted the need to involve financial managers of DSM programmes in the development of M&V guidelines. He asserted that the final payments in DSM programmes are approved by the financial managers and their concurrence or understanding of the M&V procedures is essential for the smooth functioning of DSM programmes. Mathur of BEE asserted the importance of M&V for DSM programmes in the agriculture pumping sector. He further explained the experience of M&V in the Solapur pilot project developed by the BEE, and highlighted some of the key lessons derived from the issues faced in this project. He indicated that engineering formulas for water table adjustments must be a part of the M&V plan, and agreed upon at the contractual stage. He also asserted that the complexity of DSM measures must define the scope of M&V and, therefore stressed the need for separate M&V guidelines for commonly sought DSM measures in India.

Key takeaways

- ✓ The lack of M&V guidelines and protocols is a key barrier impeding the megawatt scale DSM investments by utilities.
- ✓ The Forum of Regulators could lead the development of M&V guidelines and protocols in India. The M&V guidelines and protocols should provide a standardized framework for establishing energy savings resulting from the Utility driven DSM measures.
- ✓ There are only a handful of DSM programs commonly adopted by Indian electric utilities to acquire cost effective energy savings. The M&V guidelines and protocols should be specific to these programs and the M&V approach should consider the prevailing challenges in baseline and metering infrastructure.
- ✓ M&V protocols for utility driven Agriculture DSM programs should be given top priority while developing M&V guidelines.
- ✓ The finance and accounting staff in utilities should be educated about the M&V guidelines and protocols.

Way forward

The Forum seeks to meet every quarter in the year 2014, with a thematic discussion, to understand and resolve the most pressing challenges impeding DSM investments by Indian electric utilities.