

## SESSION 4B

### MEASUREMENT AND VERIFICATION IN THE WORLD OF FORWARD CAPACITY MARKETS

*Moderator: Dave Weber, NSTAR Electric & Gas Corporation*

#### PAPERS:

##### **Demand Reduction in the Forward Capacity Market: Verifying the Efficiency Power Plant**

Kathryn Parlin, West Hill Energy and Computing, Chelsea, VT  
Walter Poor, Vermont Department of Public Service, Montpelier, VT  
Jennifer Chiodo, Cx Associates, Burlington, VT  
Al Bartsch, West Hill Energy and Computing, Chelsea, VT

##### **Chaos in the Residential Sector: Evaluation of Conservation & Load Management Programs**

Christopher Palmer, KEMA, Inc., Middletown, CT

##### **Energy Efficiency as a Resource in the PJM Capacity Market**

Elizabeth Titus, Northeast Energy Efficiency Partnerships, Inc., Lexington, MA  
Julie Michals, Northeast Energy Efficiency Partnerships, Inc., Lexington, MA  
Doug Hurley, Synapse Energy Economics, Cambridge, MA  
Edward R. Osann, Potomac Resources, Inc., Washington, D.C.  
Stephen Waite, Consultant, West Haven, CT

#### SESSION SUMMARY:

This session will focus on Measurement and Verification (M&V) requirements for participants in several recently formed Forward Capacity Markets (FCM). These requirements have added a new dimension to the evaluation of savings from state and utility sponsored Energy Efficiency (EE) programs. The elevation of EE to parity with traditional generation as a means of meeting electricity demand has brought with it closer scrutiny by the organizations charged with meeting that demand and maintaining the integrity of the electric grid. In turn, these organizations have developed M&V manuals to assure themselves and their stakeholders that EE savings, particularly peak demand savings, meet rigorous standards of accuracy and precision. Although more expensive and not without serious questions concerning measurement techniques, equipment and error avoidance, successful implementation of M&V requirements will increase resource planners' confidence when making new transmission and distribution infrastructure decisions.

The three papers in this session will give the attendee a perspective on meeting M&V requirements from several levels and points in time. The levels include planning and implementing a statewide effort to verify demand savings from a portfolio of programs over several years, to the determination of a particular program's effect on peak demand. The points in time cover market participant efforts to update and create new evaluation practices in meeting M&V requirements, to M&V planning in the creation of a new regional FCM, based in part on the experience of others.

The first paper, "Demand Reduction in the Forward Capacity Market: Verifying the Efficiency Power Plant", gives us a statewide perspective on organizing, implementing and adjusting plans to meet M&V requirements for participation and payment in an active FCM commitment period. The authors discuss how they addressed a number of issues, including sampling and stratification, establishment of baselines, metering cost and logistics and error avoidance. An important aspect of this paper is the

conclusions and lessons learned as the authors struggled to comply, and their suggestions for modifying certain M&V requirements.

The second paper, “Chaos in the Residential Sector: Program Evaluation of Conservation & Load Management Programs”, presents the details in evaluating a single program while adhering to FCM M&V requirements. The author discusses the significance of sample selection and stratification in producing statistically valid demand reduction values. Several metering scenarios are described and compared in their ability to comply with FCM standards. The paper raises a question concerning the applicability of those standards in evaluations of constant load equipment where voltage drift is present.

The third paper, “Energy Efficiency as a Resource in the PJM Capacity Market”, is an overview of recent developments in the establishment of a capacity market in the mid-Atlantic region. The authors first provide a summary of the stakeholder process and market structure. In the remainder of the paper they go in some detail into M&V requirements, comparing and contrasting PJM with the ISO-New England Forward Capacity Market. They point out that as capacity markets evolve, there will likely be modifications and refinements to M&V procedures as energy efficiency providers and grid operators gain a better understanding of each others’ roles and responsibilities.