SESSION 5A

GIVING BACK: COGENERATION AND RENEWABLE ENERGY SYSTEMS

Moderator: Ann M. Clarke, Long Island Power Authority

PAPERS:

Power to the People: The Benefits of a De-Centralized Reporting Strategy for Tracking the Performance of Publicly Funded Renewable Energy Systems in Massachusetts

Shawn Shaw, The Cadmus Group Inc.
David Beavers, The Cadmus Group Inc.
Emma Kosciak, The Cadmus Group Inc.
Kelly Dexter, Massachusetts Technology Collaborative
Tyler Leeds, Massachusetts Technology Collaborative
Jon Abe, Massachusetts Technology Collaborative

Performance Assessment of Cogeneration Systems in California

Brad Souza, Itron Inc.
Kumar Chittory, Itron Inc.
Pierre Landry, Southern California Edison
George Simons, Itron Inc.

The Impact of Distributed Generation Facilities on California's Transmission and Distribution System

George Simons, Itron Inc.
Snuller Price, Energy and Environmental Economics
Ron Davis, Davis Power Consultants

SESSION SUMMARY:

Cogeneration and renewable energy systems are increasingly the recipients of rate-payer and tax-payer funded incentives for their numerous benefits to customers, the environment, and the electric system. Because it is so important to ensure that these funds are being spent wisely, system performance evaluation is necessary. This session focuses on a unique strategy for tracking the performance of renewable energy systems in Massachusetts, a performance assessment of cogeneration systems in California, and then examines the effect of all distributed generation on California's T&D system.

In the first paper, the authors demonstrate that centralized, single-source packaged Data Acquisition Systems (DAS) are not necessary to insure accurate and reliable reporting. With the proper reporting system such as the Production Tracking System (PTS), supported by the Massachusetts Technology Collaborative (MTC), it is possible to interface human and automated reporting systems. This decentralization of the reporting process has several key benefits: identification and correction of malfunctions, increased competition among DAS providers, reductions of RE system costs, and increased RE system owner involvement.

The authors examine technologies associated with tracking renewable energy (RE) system performance, current performance tracking at the state level, the benefits of decentralized performance tracking methods, and recommendations that policymakers can utilize in designing/revising RE programs to reduce program costs, increase public benefits, and improve program participation.

The second paper presents the results of an in-depth performance evaluation that was conducted for California's Self-Generation Incentive Program (SGIP) Working Group to evaluate the effectiveness of useful thermal energy recovery of on-site cogeneration systems receiving incentives from the program. In an earlier study, an initial evaluation of cogeneration system cost-effectiveness was performed for SGIP. This study raised some interesting questions regarding the actual operational efficiencies of cogeneration systems. Incorporating fuel consumption, thermal energy recovery and prime mover performance data obtained through the Program's measurement and evaluation monitoring efforts, actual measured performance was compared with the engineering estimates of performance for each project

This paper also explores some of the key drivers behind the unexpectedly low thermal energy recovery and overall plant performance. Because the performance data include the actual timing (hour and month) of cogeneration system operation, the effects of this distributed generation resource is evaluated taking into account the large differences between peak and off-peak energy costs and benefits. This program-level distributed generation analysis can help program designers and policy makers to understand the limitations of smaller cogeneration applications relative to those systems envisioned under PURPA and thus may have important policy implications for the future of cogeneration and distributed generation programs throughout the U.S.

The third paper examines the impact of distributed generation (DG) facilities on California's transmission and distribution (T&D) system. Distributed generation (DG) technologies have been portrayed as an emerging face of tomorrow's electricity system. DG facilities are expected to provide a significant and wide variety of benefits to grid operations, including reduced peak loading on distribution feeders, lower congestion on transmission lines, increased system reliability, and cost reductions associated with deferred or eliminated need for new or expanded distribution or transmission infrastructure. To date, limited penetration of DG technologies has made it difficult to accurately estimate their impacts on the T&D system. Under California's Self-Generation Incentive Program (SGIP), over 1000 DG facilities representing approximately 260 megawatts (MW) of capacity have been installed and monitored. Measured generation performance data for DG facilities operating during calendar year 2006 were used to assess their affect on the T&D system.