DATA, DATA EVERYWHERE: MAKING PROGRAMS AND EVALUATIONS BETTER WITH TONS OF DATA

Moderator: Lauren S.M. Gage, Bonneville Power Administration

The Promised Land: Making Use of Data from Smart Meters
Al Bartsch, West Hill Energy & Computing
Chris Burns, Burlington Electric Department
Barry Murphy, Vermont Department of Public Service
Lucas Sanford-Long, West Hill Energy & Computing

Real Time Monitoring and the Internet of Things: Reshaping How We Collect Data
Kevin Price, Evergreen Economics, Inc.
John Cornwell, Evergreen Economics, Inc.
Chad Fulton, Evergreen Economics, Inc.
David Thayer, Pacific Gas and Electric Company

Leveraging Big Data to Develop Next Generation Energy Efficiency Programs and Energy Regulations
Celina Stratton, Energy Solutions
Mike McGaraghan, Energy Solutions
Teddy Kisch, Energy Solutions
Arshak Zakarian, Energy Solutions
Peter Borocz, Energy Solutions
Eric Rubin, Energy Solutions
Carolyn Richter, Energy Solutions
Mary Anderson, Pacific Gas and Electric Company

SESSION SUMMARY:

Big Data is here! This session focuses on how the energy efficiency industry can use the massive amounts of data that are rapidly becoming available to us. Through AMI meters, the Internet of Things, and Web-crawler applications, we now potentially have massive amounts of data at low cost. How can we use these data to effectively evaluate and design programs?

The first paper discusses how government policy and utility investments are rapidly creating a 'smart' electric grid. This paper will cover the following topics: the deployment and availability of the AMI technology, the uses of AMI data in a forward capacity market evaluation and how analysis can be focused on peak hour savings. In Vermont, federal funding has provided the resources for utilities to install AMI at most customer locations. AMI data provides evaluators with opportunities for improving the estimates of energy savings and coincidence factors. Some examples include assessing seasonal and diurnal consumption patterns, deriving load profiles for specific accounts or end uses, and conducting billing analyses for specific populations. Initial research suggests that it is possible to identify the "signature" kW use for specific end uses when AMI data is combined with site specific information.

The second paper focuses on the burgeoning Internet of Things, where new end-use metering data collection methods are available that may revolutionize the way evaluators collect usage and behavior information. For lighting metering in particular, connected lamps may allow for a high degree of certainty regarding the on/off status and other characteristics of the lamp, such as light color or brightness, because the status data is continuously communicated to a centralized hub or controlling device. While there are concerns regarding product connectivity performance and network security,

these issues are not insurmountable. This paper presents a proof of concept of the methodology and a brief overview of illustrative findings from a recently completed assessment of residential, wirelessly-controllable LEDs, as well as potential EM&V implications brought on by new, connected energy efficiency equipment.

The third paper focuses on the application of custom "web crawling" software, whereby it is now possible to cost-effectively collect massive amounts of data to support improved market analyses for efficiency programs and standards. This paper discusses potential uses for web crawler data both to develop more effective energy efficiency incentive programs and energy codes and standards, and to conduct evaluations of these efforts. First, the paper presents five case studies of ongoing web crawler data collection efforts for selected consumer electronic, appliance and lighting products. Next, the paper discusses the potential for leveraging this data to conduct macro-analysis of market trends. Specifically, it shows how big data can greatly improve the accuracy of key metrics, such as incremental measure costs and efficiency distributions for given products. In sum, big data may prove to be a game-changing tool for the energy efficiency industry to maximize energy savings for the next generation of energy efficiency initiatives.