U.S. Department of Energy
Electricity Advisory Committee Meeting
NRECA Conference Center
Arlington, VA
September 24, 2014

Summary of Meeting

PARTICIPANTS

EAC:

AKE ALMGREN
Orkas Energy Endurance

ANJAN BOSE
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MERWIN BROWN
California Institute for Energy & Environment

MARILYN BROWN
Georgia Institute of Technology

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Analysis Group

RICHARD COWART
Regulatory Assistance Project

ROBERT CURRY
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Electric Power Research Institute (EPRI)

PAUL HUDSON
Stratus Energy Group

GRANGER MORGAN
Carnegie Mellon, Engineering & Public Policy

JEFF MORRIS
Washington State House of Representatives

TIMOTHY MOUNT
Cornell University

CHRIS PETERS
Entergy Services, Inc.

SONNY POPOWSKY
EAC Vice Chair

WANDA REDER
S&C Electric Company; IEEE

PAUL ROBERTI
Rhode Island Public Utilities Commission

HEATHER SANDERS
California Independent System Operator

CHRIS SHELTON
AES Energy Storage

DAVID TILL
Tennessee Valley Authority

GORDON VAN WELIE
Independent System Operator of New England

REBECCA WAGNER
Nevada Public Utilities Commission

AUDREY ZIBELMAN
New York Public Service Commission

CARL ZICHELLA
Natural Resources Defense Council

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Department of Energy

JOSEPH PALADINO
Department of Energy

MATT ROSENBAUM
Department of Energy

REBECCA ROSENBERG
Department of Energy

JOYCE VITALO
Department of Energy

Speakers, Guests and Members of the Public:

JAMES DALY
Northeast Utilities

BEN D'ANTONIO
New England States Committee

CHUCK GOLDMAN
Lawrence Berkeley National Laboratory

KRISTINE MAYES
Arizona State University

JAMES PEDERSON
Federal Energy Regulatory Commission

ANNE PRAMAGGIORE
Commonwealth Edison

JIM SLAUGHTER
Capitol College

MARY TOLER
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ICF/Support:

MAUREEN MALLOY
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Welcome, Introductions and Developments since our September 2014 Meeting and Recognition of Long-Standing Members Departing the Committee

Mr. Richard Cowart, Electricity Advisory Committee (EAC) Chair, and Mr. Matthew Rosenbaum, EAC Designated Federal Officer welcomed the Committee , with a special welcome to new members Ake Almgren, Timothy Mount, Jeffery Morris, Heather Sanders, and Audrey Zibelman.

Mr. Cowart explained that four documents are up for formal approval by the Committee, he made note of the proposal for the formation of a Cyber Security Working Group, and also remarked that all discussion will be recorded in transcripts and made available to the public.

Update on the U.S. Department of Energy (DOE)'s Plans for Summarizing and Distributing ARRA Project Information

Joe Paladino, Senior Advisor, DOE Office of Electricity Delivery and Energy Reliability, provided an update on the results from the American Recovery and Reinvestment Act (ARRA) funded Smart Grid Investment Grants (SGIG) programs. Mr. Paladino presented a data on the SGIG program status. He noted that largest portion of the funding has supported advanced meter infrastructure deployment as well as automated switches and capacitors.

Mr. Paladino presented an applications and benefits matrix for the Smart Grid technology applications to underscore the need for careful accounting of all benefits in evaluating projects and investments, evaluating the Smart Grid implementation issues, including systems integration and interoperability between new and legacy systems, cybersecurity, and customer acceptance.

Mr. Paladino reviewed the SMUD consumer behavior study, noting the study was one of the most advanced pricing studies completed in the United States. He also mentioned the July 5, 2012 storm response in Chattanooga where Smart Grid technology led to millions of dollars of avoided costs to customers and where restoration was completed earlier than expected.

Mr. Paladino discussed applying Volt/VAR optimization to improve energy efficiency, conservation voltage reduction (CVR) to lower peak demands and overall energy consumption, and synchrophasor technology for transmission system operations to improve reliability and operational efficiency. Mr. Paladino presented the example of the California-Oregon Intertie where transfers can be increased by 100 MW without new capital investments.

Mr. Paladino summarized that states have been working together to understand what should be the decision framework for Smart Grid technology. Designing an advanced distribution center is critical to supporting the data work.

Mr. Paladino reviewed the "Key Documents of the U.S. Department of Energy's American Recovery and Reinvestment Act Smart Grid Programs (SGIG/SGDP)" document to highlight various forthcoming documents, reports and deliverables.

Mr. Zichella asked if any greenhouse gas analysis has been conducted. Mr. Paladino explained that the intention is to connect peak reductions to emission reductions in future analyses.

Mr. Hudson asked if there were instances where the cost exceeded the benefits of the projects. Mr. Paladino noted that benefits calculations take time because those accrue over time and over the lifetime of assets and include many intangibles related to training and institutional capacity that aren't captured in standard cost-benefit calculations. Assistant Secretary Patricia Hoffman noted that there were lessons learned regarding Smart Grid programs, meters, and cybersecurity.

Mr. Morris commented on the lack of outreach to states and legislative groups and asked if there are taxes based on the location of projects. Mr. Paladino noted the issue of tax implications, explaining the importance of monetizing values to avoid societal costs.

Mr. Shelton commented that costs and benefits should be addressed because the demonstration projects are not expected to be completed for six years. He suggested using today's costs rather than the 2009 costs to advance the benefits of the program.

Ms. Zibelman asked if outage costs to determine to what extent they are non-linear for certain customer classes. Mr. Paladino responded that the Department looked at outages of zero to eight hours in duration and confirmed that the costs are often not linear.

Information and Tool Development to Support Consideration of Future Regulatory Models Panel

Mr. Paul Centolella introduced the Future Regulatory Models panelists including: Audrey Zibelman, NYPSC; Kris Mayes, ASU SDOCL; Anne Pramaggiore, ComEd; and Chuck Goldman, LBNL.

Ms. Audrey Zibelman, Chair, New York Public Service Commission presented on New York's initiative to integrate, monitor, and control distributed energy resources to ensure resiliency, reliability and increase efficiency through fuel diversity and by creating customer choice and third party participation.

Chair Zibelman explained the issues of the current NY Regulatory Model, including aging infrastructure, low load growth, clean energy requirements, increased demand for uninterrupted power, lack of cost transparency, barriers to third party entry, low incentive for utility innovation, and increased adoption of various distribution energy sources. She explained that New York intends to address these issues through the creation of a transparent integrated system resource plan at the distribution level that will support network communication, meet environmental standards, and foster the growth of a robust market while maintaining flexibility. Chair Zibelman outlined the

forthcoming New York outcome based model proposal that addresses regulatory changes and ratemaking issues.

Kris Mayes, Professor, Arizona State University Sandra Day O'Connor College of Law, presented on the changing utility market in the west, some of issues that have arisen, and the necessary improvements for regulatory models. Ms. Mayes reviewed the policies that support distributed generation and energy efficiency. She explained the current utility pressures and described the Arizona dispute surrounding solar PV policies and rates.

Ms. Mayes described the deployment of new technology, the decrease in upfront incentives for PV, and changing customer needs and expectations in the context of changing regulatory models. Some emerging changes in regulatory models include rate making, long term incentives, utility ownership, and integrated distribution planning. Ms. Mayes discussed some of the initiatives already underway in states and other private stakeholders.

The third panelist, Anne Pramaggiore, President and Chief Executive Officer, presented on the current status and future plans of Commonwealth Edison. Ms. Pramaggiore explained that regulatory lag, stranded cost recovery, and declines in electric load growth as the drivers behind current regulatory model reforms. She explained that new customer demands for differentiated products and new technologies are changing service needs.

Ms. Pramaggiore explained that ComEd has developed a continuum of models to capture all future roles the grid could play. The Enhanced Status Quo Model puts a greater emphasis on performance while the Network Service Provider/Integrator Models mirrors the distribution service platforms that New York is currently looking at. Finally, the full service model envisions an even more comprehensive role for the utility in terms of both operations and services.

The fourth panelist, Chuck Goldman, Principal Investigator and Senior Scientist for Electric Markets Technical Assistance Activities, Lawrence Berkeley National Laboratory, presented the research his group is conducting on the development of tools and models. Mr. Goldman explained that LBNL has been working on the intersection of distributed resources and utility business models with the objective to inform public and private decision making on public interest issues related to energy efficiency and demand response, renewable energy, electricity resource and transmission planning.

Mr. Goldman outlined the process LBNL uses to conduct research on regulatory models and described some of the current research underway. LBNL is developing a distributed resource and utility business model, a distributed energy resources financial impacts model (FINDER), assessments of utility cost reductions from net-metered PV, and analyses of regulatory measures related to PV deployment and ratemaking. He explained the Future Electric Utility Regulation Services concept

papers that aim to review key policy and regulatory issues and distributed energy resources. Mr. Goldman explained the hope that the models will capture the change in the market, provide more accurate predictions, and offer a framework for ongoing policy and utility reform discussions.

EAC Members Discussion of Future Regulatory Models Issues

Members raised issues surrounding barriers to microgrid deployment stemming from exclusive service territory laws currently in place. Panelists acknowledged these issues and provided their perspectives on proposed measures to address these barriers and rate structures that could enable innovative solutions in this space.

Mr. Curry raised the role of incentives and subsidies for solar energy and called for analyses that looked at more real-world finance realities of the technologies in addition to the practical engineering driven analyses that are being done.

Mr. Mount contrasted the belief of incumbent utilities continuing to control electricity services to innovative companies like SMUD that have displayed a better track record on innovation. He asked the EAC members to consider distribution operators and explained how they benefit customers. Ms. Pramaggiore explained that utilities are looking to reduce cost through consolidation and predicting customer behavior and highlighted the need to attract the large amounts of capital required to pursue these types of services. Chair Zibelman elaborated that issues are with the regulatory construct and its ability to incent innovation.

Ms. Reder asked what actions need to take place to develop regulatory models and how the DOE can facilitate it. Chair Zibelman noted the limited resources for many policy makers and stakeholder involvement limitations and the role that DOE could play in supporting commissions so that these solutions would not have to be independently developed across many jurisdictions. Mr. Goldman added that DOE has been researching the fundamental components of regulatory models and suggested DOE play a role in reliability and service customer metrics. Ms. Pramaggiore suggested DOE playing a role in standardizing language and tool structuring in regulatory models to further promote interoperability.

Ms. Brown suggested tools and business model features address a broader set of macroeconomic impacts. Mr. Goldman recounted that the ability to look at public power or municipal entities was built into the model but has never been requested. He acknowledged the value of added functionality but noted that it was outside of their current scope.

Ms. Wagner asked how to get utilities, regulatory bodies, and policy makers to buy into business models so regulatory models can be developed. Ms. Zibelman explained that New York's discussion started with policy makers and she expects more states to open up proceedings to change regulatory models within a year. Mr. Goldman noted that all states will examine regulatory model issues differently but can look to similar

states for conversation. Ms. Pramaggiore agreed that there is dialog taking place in a more consistent way than was previously the case.

Mr. Cowart raised the point that the grid architecture of the future will need to aggressively drive down emission while maintaining reliability and economic viability.

Mr. Popowsky contrasted the industry to residential customer's wants and asked how to devise a system that opens up opportunities for innovation while protecting the customers that just want the default product. Ms. Pramaggiore echoed that equity is an important issue and that the desire for new services by some will need to be reconciled with the needs for all consumers.

Mr. Morris asked if it is possible to look at high structure costs with cheap power in regulatory models to address differing utility regimes. Mr. Goldman responded that the Financial Model allocates a functionalization cost for customers and forecasts the cost into the future but the bigger challenge is sometimes not technical but rather related to skill sets and economies of scale.

Mr. Brown explained that all of the stakeholders driving regulatory model change are restricted by short term factors and the challenge is finding a long term stakeholder. Mr. Goldman noted that low gas commodity prices and a rebounding economy has allotted stakeholders extra time to work through regulatory model issues and absorb the necessary cost of infrastructure investment.

Ms. Pramaggiore discussed the need to tie the power industry's success to meeting broader goals for the economy and suggested explaining the price increases in the context of honest conversations about the real tradeoffs. Mr. Centolella added that innovation is an essential driver of the economy and noted that emissions are a global problem that must be taken into account.

EAC Smart Grid Subcommittee Papers and Work Plan

Ms. Wanda Reder reviewed the 2014 Smart Grid Subcommittee guest speakers, panels, and work products. She listed Laney Brown, Joe Paladino, David Wade, and Dan Ton as Smart Grid Subcommittee guest speakers. Ms. Reder reviewed the current Subcommittee work products.

Distributed Storage Paper

Ms. Reder spoke on behalf of work product lead Carlos Coe and explained the definitions, scope and work plan for the Distributed Energy Storage work product. She explained that a DES panel was held in June, an outline has already been drafted, and expert interviews are currently underway.

Research and Development paper

Mr. Gellings discussed the status of the Research and Development paper, explaining that the work product has been completed and is now undergoing the review process. A draft will be circulated to EAC Subcommittees for review and comment following the September meeting.

Regulatory Policy Tools paper

Mr. Centolella reviewed the work product and the recommendations for future investments. Members discussed various proposed changes to the wording of specific passages throughout the document. The Regulatory Models work product and the changes discussed during the meeting were approved by the EAC.

EAC Member Discussion of Smart Grid Subcommittee Plans

Ms. Reder explained the Smart Grid Subcommittee's plan to focus on the Distributed Energy Storage work product and begin a work product on the ARRA projects.

EAC Member Discussion of Workforce Working Group Plans

Wanda Reder provided an overview of the 2012 EAC Workforce Ad Hoc working group members and tiered past recommendations. She reviewed the 2013 Workforce Memo, recommendations, and highlighted the importance of following the DOE ARRA projects on workforce training and education.

Ms. Reder summarized the 2014 observations, which focused on workforce training and education projects. She expressed the need to have one agency (i.e., DOE) responsible for coordinating the collaboration efforts. She reviewed the eight 2014 workforce recommendations. Mr. Bose noted that most projects include an education aspect. He stated that DOE has conducted educational outreach in small parts, but does not have an overall mandate.

Assistant Secretary Patricia Hoffman agreed that capitalizing on investments already made should be a priority.

Mr. Zichella asked if DOE's Office of Electricity Delivery and Energy Reliability (OE) has the authority to move other entities that are not part of its portfolio. He proposed either OE or another part of DOE to coordinate. Ms. Reder responded that the Department of Labor and the National Science Foundation were involved in the working group discussions. Mr. Bose suggested that OE could be the champion for more coordinated action to keep the other agencies engaged.

Ms. Reder moved the workforce working group plans to a vote and members approved the workforce working group plans. Mr. Cowart noted the approval includes the suggestion of assigning OE the lead responsibility and keeping others engaged.

Wrap-up and Adjourn Day One of September 2014 Meeting of the EAC

Richard Cowart, EAC Chair thanked everyone for their comments and adjourned the first day of the meeting.

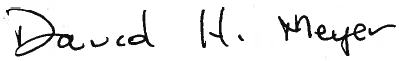
Respectfully Submitted and Certified as Accurate,

Richard Cowart
Regulatory Assistance Project
Chair
DOE Electricity Advisory Committee

12/19/2014
Date

Irwin "Sonny" Popowsky
Pennsylvania Consumer Advocate
Vice-Chair
DOE Electricity Advisory Committee

12/19/2014
Date



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