



**U.S. Department of Energy
Electricity Advisory Committee Meeting
NRECA Conference Center
Arlington, VA
March 12, 2014**

Summary of Meeting

PARTICIPANTS

EAC:

BILLY BALL
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MERWIN BROWN
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The Grid Group

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RALPH MASIELLO
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AES Energy Storage

TOM SLOAN
State Representative, Kansas

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ISO New England

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Nevada Public Utilities Commission

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Speakers, Guests and Members of the Public:

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CHERYL LAFLEUR
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MARY ANN RALLS
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Welcome, Introductions and Developments since our June 2013 Meeting

Mr. Richard Cowart, Electricity Advisory Committee (EAC) Chair, and Mr. David Meyer, EAC Designated Federal Officer welcomed the Committee and the members introduced themselves.

Mr. Cowart noted that all discussion will be recorded in transcripts and available to the

public. He thanked members for their efforts in between meetings.

Update on the U.S. Department of Energy (DOE), Office of Electricity Delivery and Energy Reliability's (OE) 2014 Programs and Initiatives

Mr. Meyer spoke on behalf of Honorable Patricia Hoffman, Assistant Secretary for Electricity Delivery and Energy Reliability (OE), who would be splitting her time between the National Labs meeting and the EAC meeting. Mr. Meyer gave general updates about OE efforts.

Mr. Meyer described the Grid Tech Team (GTT), which is one of six technical teams under Secretary Moniz addressing strategically important topics. The technical teams will affect the budget process going on from April to November.

The Quadrennial Energy Review (QER) is underway, under the direction of the Office of Energy Policy and Systems Analysis (EPSA). Ms. Melanie Kenderdine, Director of EPSA, will give the EAC more detail about the QER later in the meeting. Mr. Meyer explained that the first part of the QER will focus on long term changes in delivery infrastructure. Generation and end use will be addressed in subsequent efforts.

Mr. Meyer described the Quadrennial Technology Review (QTR), which is a parallel effort to the QER developed by DOE. The upcoming QTR will build on the previous version. The GTT will also contribute heavily to QTR.

OE is also developing a Benefit-Cost Initiative for Distributed Energy Technologies. This report will assess net metering and impacts of existing and new distributed energy technologies and the interactions of these technologies. The Distributed Energy Initiative will not address policy issues; instead it will gather metrics, methods, and tools to establish widely shared conventions for distributed energy analyses. Mr. Meyer encouraged the EAC to develop a work group to advise this Initiative. DOE will continue to communicate with the EAC as the effort evolves.

Commissioner Cheryl La Fleur introduced Mr. Jim Pederson, from the Office of Energy Policy Innovation at Federal Energy Regulatory Commission (FERC). Mr. Pederson has been working on the many ways that FERC interacts with DOE and will assist Ms. La Fleur as a liaison between FERC and DOE.

Commissioner La Fleur explained that much of FERC's work supports changes in power supply including infrastructure and market work. She described that FERC is working with the North American Electric Reliability Corporation (NERC) to develop standards for cyber security that will affect reliability, resiliency, and grid security.

Mr. Paul Centolella asked Mr. Meyer about why DOE will stay away from policy questions in the Benefit-Cost Initiative for Distributed Energy Technologies.

Mr. Meyer responded that states have principle responsibility for policy related to

distributed energy, and DOE does not want to script their response. DOE would like to facilitate conversations. The Distributed Energy Initiative is intended to define the taxonomy of benefits and accepted methods.

Mr. Carl Zichella commended DOE on its Benefit-Cost Initiative for Distributed Energy Technologies, which will provide more balance in the conversations about distributed energy.

Mr. Mike Heyeck seconded Mr. Zichella's comment. From the perspective of utilities, new distributed energy technologies have unfair advantages: they are not regulated and get tax benefits.

Ms. Mary Ann Ralls, sitting in for Barry Lawson as a representative of the National Rural Electric Cooperative Association (NRECA), asked if the Distributed Energy Initiative will coordinate with the QER.

Mr. Meyer responded that there are no plans for the Distributed Energy Initiative to factor directly into QER. The Initiative is a long term effort to address the changing distributed energy landscape over time.

Keynote: Melanie Kenderdine, Director of the Energy Policy and Systems Analysis (EPSA)

Ms. Melanie Kenderdine, the Director of EPSA, presented on the QER. A Presidential Memorandum on January 9, 2014 called for the QER. The long term goals of the QER will focus largely on climate, and the near term goals will address energy infrastructure issues. EPSA will work with the White House to finalize the scope and distribute the final outline soon.

Ms. Kenderdine briefly described the organization of the QER and staff involved. She presented a four-year road map for the QER: the first year will focus on transmission, storage, and distribution; the second year will focus on supply and demand; and the foci for the third and fourth years have not yet been determined. However, Ms. Kenderdine would like to focus on supply chains during the third year.

Ms. Kenderdine described the universe of energy sources (e.g., electricity, coal transport, solar, wind, etc.) that the QER will address during the first year. The QER will also address limitations in the current system (e.g., aging infrastructure, cost, workforce) and long term vulnerabilities (e.g., climate change, cyber-security, physical threats, supply/demand shifts, interdependencies).

Ms. Kenderdine outlined the analytical framework for the QER. The office will assess baselines at state, regional, and federal levels.

EPSA has extensive plans for stakeholder engagement. The office will reach out to stakeholders within the DOE, across federal agencies, and external stakeholders in Congress; industry; non-government organizations (NGOs); organizations at the state,

local, and tribal levels; the financial sector; academia; and the public. Ms. Karen Wayland, the Deputy Director for State and Local Cooperation under EPSA, explained that there will be a QER website where stakeholders can load comments. EPSA will also hold 15 facilitated meetings around the country addressing various topics related to the QER. With its stakeholder engagement, the office hopes to both capture the expertise of stakeholders and maintain transparency in the development of the QER.

In addition, EPSA will hold a set of technical workshops on topics that will be announced soon. EPSA will also release a range of interim products during the development of the QER.

Mr. Zichella asked about the 2030 timeframe for QER infrastructure scenarios.

Ms. Kenderdine responded that EPSA is still discussing timeframes for various analyses. The 2030 timeframe has been chosen for many, but not all, analyses. Chinese infrastructure has been built out, and models indicate that China's carbon emissions and iron production will drop off in 2030. Similarly, the U.S. needs to modernize its energy infrastructure.

Mr. Zichella encouraged EPSA to consider the costs of the full life cycle of various energy sources, like nuclear power and modular reactors, which are expensive to decommission.

Mr. Bob Curry recommended that the QER address supply chain issues, like transformers, before the third year. Long lead times are required to produce new transformers.

Ms. Kenderdine agreed that there are discrete infrastructure issues that will have to be addressed separately from the QER. The QER will conduct deeper analyses, which might consider trade and investment policy of supply chains.

Mr. Centolella asked about the relationship between the QER and QTR.

Ms. Kenderdine responded that EPSA is aware of the QTR efforts and will routinely communicate with the staff working on the QTR. One of the chief scientists is a liaison between the QER and QTR. The QTR's analysis of certain technologies, for example utility scale storage, will likely inform the QER.

Ms. Ralls asked if the scope of the QER will be shared.

Ms. Wayland replied that EPSA intends to release a scoping document, and if the full document cannot be shared, the office will distribute an abbreviated version. EPSA will publish interim products, like white papers, and conduct stakeholder meetings by mid-2014 to inform the scope and budget.

Mr. Merwin Brown asked if the EAC and its members will be considered one stakeholder or a collection of many stakeholders. He also asked about the procedure for the EAC to submit recommendations about the QER.

Ms. Wayland responded that the EAC will be considered both as individuals and as a Committee with collective expertise. She suggested that the EAC should continue to submit its recommendations to DOE, as required by law, and DOE will inform the EAC on how it might provide input on the QER.

Mr. Cowart commented that the Committee leadership discussed the procedure for offering advice on the QER. The EAC is available to provide a coordinated response. He asked if it would be useful for the EAC to work in advance of the QER release. For example, EAC could comment on specific parts of the draft.

Mr. Cowart asked if the QER outputs will be policy neutral.

Ms. Kenderdine explained that EPSA will assume a fixed percent reduction of greenhouse gas emissions by 2030 for long term scenarios. However, there are competing national goals, and not all of the QER recommendations will relate directly to climate.

Mr. Tom Sloan asked if the QER policy recommendations will focus on federal agencies or state/local/tribal levels.

Ms. Kenderdine responded that EPSA will consider both federal agencies and state/local/tribal governing bodies. The QER will assess baselines for each group separately.

Mr. Sonny Popowsky asked what policy EPSA will use to regulate liquid natural gas (LNG) exports.

Ms. Kenderdine responded that LNG exports are considered to be in the public's interest unless determined otherwise in case by case determinations under the National Environmental Policy Act (NEPA). The law distinguishes the process for countries with Free Trade Agreements (FTA) versus non-FTA countries. EPSA will consider LNG export terminals in analyses.

Mr. Cowart thanked Ms. Kenderdine and Ms. Wayland for their presentation and discussion. The EAC will look forward to working more with EPSA throughout the development of the QER.

Distributed Resource Integration Panel

Mr. Merwin Brown introduced the distributed resource integration panelists including: Clyde Loutan, CAISO; Colin Murchie, SolarCity; Dan Curran, EnerNOC; and Fred Fletcher, Burbank Water and Power.

Mr. Clyde Loutan, Senior Advisor, Renewable Energy Integration (CAISO) presented on the California energy and policy drivers, current and expected impacts of renewable resources on the CAISO's system, need for flexibility and operational challenges on the distribution and transmission networks. Further he discussed potential challenges Distributed Energy Resources (DER) needs to overcome and meeting operational challenges with high levels of renewable resources connected to the transmission and distribution systems.

Mr. Loutan highlighted the issues non flexible supply creates with dispatch and potential over-generation conditions and the concern with how to incentivize and bring in renewable resources to meet the 2020 goals of bringing greenhouse gases to 1990 levels. He then discussed the distribution network and potential impacts of DER's as well as operational challenges, uncontrollability of resources such as frequency controls, protection, load and transmission. Potential challenges noted were controllability, sustainability and visibility.

Mr. Murchie from Solar City was on the agenda but he did not attend the meeting.

Mr. Dan Curran, EnerNOC, presented an overview of EnerNoc and their operations across the country and internationally. He spoke about their advanced capabilities on Demand Response, DERs and their commercial solutions which include a broad stream of products (Distributed Resources or Demand Response) for capacity, energy and ancillary services. Mr. Curran spoke of energy management, DR in the cloud, broader toolkit to help manage the energy more intelligently. Tools to help engineers understand energy and manage decisions. Mr. Curran stated that DER can be used for storage, integration, etc.

Mr. Curran provided an overview of case studies including the frequency response program in Alberta, load shed service for import (LSSI) and the pilot program, Bonneville Power Administration.

Mr. Fred Fletcher, Burbank Water and Power (BWP), presented on distributed resource integration and provided a summary of BWP. Mr. Fletcher thanked DOE for the grant they received, which was instrumental in setting up systems and discussed their smart grid efforts which began in 2006. He spoke of their integrated automated dispatch system and business planning and operational mechanics. He indicated that their system is designed to handle 33% and discussed how to go beyond this.

Mr. Fletcher noted a key item was the digital technology and the challenge of putting the networks and data elements put together, noting the key item being the – integrated automated dispatch system (ADS) – brain of the BWP system operations. The system computes the cost of energy, regulating capacity, and spin/non-spin contingency reserves. He indicated that big changes in flexibility (storage) will be needed, demand response, and new markets (electricity), and security. He then discussed the business

planning potential – what they can do with rates, to make demand response better, means to automate the most favorable steps to take advantage of the rate structure.

EAC Member Discussion of Key Distribution Resource Integration Issues

Questions and comments for the panel are noted below:

- General question were asked regarding storage optimization, structure, grant opportunities.
- It was asked if there is the ability to do low generation now and if there was information coming in?
- Balancing authorities – 113 balancing authorities. Maybe virtual balancing authorities would help to address some of the system coordination challenges in the West.
- Problems in CA, the areas go it alone. Must be organized, coordinated, can't take advantage of efficiencies of the system. Too many people are doing different things. Look on distribution grid to make bigger blocks. Grid designed to get rid of the past.
- Ms. Wanda Ryder asked how DOE can help keep the ball rolling. Panelists indicated that prior DOE efforts have been productive but that in some cases advanced metering is not advanced enough to support the potential types of applications and DR participation avenues currently envisioned.

EAC Smart Grid Subcommittee Papers and Work Plan for 2014

Ms. Reder gave an overview of the current Smart Grid Subcommittee activities.

Discussion of the Security Governance Paper

Mr. Peters introduced the paper: *Implementing Effective Enterprise Security Governance*, presented for the Committee's approval. He described the evolution of the paper with EAC and DOE feedback. Mr. Peters described that he has already witnessed executives communicating with each other, with trade organizations, and on the hill about how to address cyber issues.

Mr. Cowart asked about the blank contact information at the end. Members agreed that contact information for Mr. Chris Peters and Mr. Andy Bochman should be added in the final version.

Mr. Cowart asked if there is any description of the Cybersecurity Capability Maturity Model (C2M2) model in the paper.

Mr. Peters responded that there is a link to the model included in the references.

Mr. Meyer asked how the GTT should plan ahead to prevent cyber security breaches.

Mr. Peters spoke from his experience at Entergy that it is important to procure technology proactively and consistently, define roles, and implement accountability across the company. Entergy implemented this strategy at the executive level and let it cascade down to substation level.

Mr. Clair Moeller commented that companies should judge their capabilities to see and manage risk. He also asked about compliance with the NERC Critical Infrastructure Protection (CIP) standards.

Mr. Centolella responded that the focus of the paper was on governance. There are not systems in place that are vetted for security. He suggested that DOE could facilitate institutional systems.

Mr. Brown asked if the “chief information officer” should provide ongoing support or bring about transformation in the company that eventually makes the position unnecessary.

Mr. Peters responded that he sees it a permanent position, but the paper is not intended to be prescriptive.

Mr. William Ball recommended sharing best practices across the industry.

Hon. Hoffman asked how DOE should define success in the cyber security arena. She also asked if there is more DOE should do to facilitate discussion about best practices to manage physical security.

Mr. Paul Hudson and Mr. Peters suggested that there are metrics for tracking executive turnover on soft activity. Mr. Peters added that there are also metrics for physical security.

Mr. Heyeck commented that the Transmission Subcommittee’s Grid Resiliency paper does not address cyber issues.

Mr. Curry suggested that DOE should collect and circulate best practices to the Independent System Operators (ISOs).

Mr. Zichella suggested that DOE should work with CEOs to prioritize facilities for protection from physical security attacks.

Mr. Gellings commented that it can be dangerous to identify priority facilities because these facilities become targets. He clarified that the top 100 facilities should be cloaked with security instead of publically identified.

Mr. Ball commented that other organizations are already identifying priority facilities; DOE need not duplicate this work.

Ms. Reder moved to approve the paper, with the addition of contact information at the end, and the motion was seconded.

The paper, *Implementing Effective Enterprise Security Governance*, was unanimously approved.

Discussion of Proposed Regulatory Policy Tools Paper

Mr. Centolella gave an update on the status of the proposed Regulatory Policy Tools paper. The work product would recommend how DOE could make tools available to jurisdictions that want to change their regulatory frameworks. EAC members Mr. Sloan, Mr. Curry, and Mr. Val Jensen, as well as some of Mr. Jensen's colleagues, contributed to the current outline for the work product.

Mr. Centolella described the premise the proposed paper. He gave an overview of the roles that the DOE could have going forward including: developing information and tools for utilities and regulators, facilitating customer choice engines, assessing Volt-VAR Optimization (VVO), assessing the costs and benefits of distributed generation, assessing social costs, and supporting innovation. DOE could also have a role in facilitating stakeholder discussion at the local, state, regional, and national levels.

Mr. Heyeck commented that this work is far-reaching and suggested that the work should also address adjacent markets versus competitive markets.

Mr. Centolella responded that DOE may be able to facilitate discussion in this area but the work group does not currently have suggestions for tool development regarding adjacent and competitive markets.

Ms. Phyllis Reha commented that rich discussions have already been initiated by state commissions and other organizations around the country that the work group should try to capture.

Mr. Centolella agreed and commented that DOE could help coordinate these discussions.

Mr. Popowsky voiced concern that this effort would prescribe policy to state legislators.

Mr. Curry commented that state commissions struggle to address the fact that distributed generation is currently a monopoly. The EAC should address the basic level of sophistication for financing and cost of this generation.

Mr. Gordon van Welie commented that DOE should not orchestrate regulatory events but encourage stakeholders to join existing efforts. Mr. Centolella noted that state and regional discussions that could potentially benefit from DOE facilitation. Mr. van Welie questioned if DOE facilitation would create a confrontational dynamic.

Hon. Hoffman commented that the states have asked DOE to assess and comment on rate models in the past. DOE needs to develop a better process for giving feedback.

Mr. Meyer explained that there is sensitivity about DOE developing questions to address while facilitating state or regional discussions. DOE could support these efforts, but it should not shape the questions.

Mr. Sloan responded that the group did not intend the Regulatory Models paper to be prescriptive. The EAC has a broad perspective and its members can anticipate regional issues better than DOE. Thus the EAC can suggest how to develop models and account for microgrids.

Mr. Gellings noted that the Public Utilities Commission Act of 1978 encouraged states to hold hearings and investigations, and it was very effective. The Act did not force states to comply but suggested that they should consider certain issues. Mr. Gellings believed that states would be receptive to DOE's recommendations.

Mr. Brown suggested a joint meeting between National Association of Regulatory Utility Commissioners (NARUC) and DOE.

Mr. Moeller suggested adding text about what the report is not. For example, retail choice states might misinterpret these recommendations as a "standard market design."

Mr. Zichella commented that in addition to states, utility executives should be part of the conversation on business models around distributed generation. He seconded Mr. Brown's suggestion of using a NARUC meeting as a non-threatening venue.

Ms. Reder commented that this effort is tremendous and overdue. She clarified that the aim is to disseminate best practices. As the paradigm changes, the electricity industry and governing bodies need to change their methods. Ms. Reder and Mr. Centolella asked for the EAC's support to move forward with this work product and welcomed additional help.

Mr. Hudson asked why the interaction between DOE and states is so sensitive.

Hon. Hoffman responded that the federal government can set national goals, but it cannot mandate that states create or implement policy. DOE can only provide technical support to help states implement policies.

Mr. Shelton raised concern about DOE prescribing policy on analysis.

Mr. Curry countered that DOE could only be prescriptive by restricting funding based on what it is used for.

Mr. Cowart suggested modifying the term “best practices.” The EAC and DOE can provide great examples, but they may not be the “best.” Even if they are currently the best practices, the technologies will evolve.

Mr. Popowsky commented that retail rate making is uniquely states’ expertise. DOE should not recommend that policies need to be amended for states to think about these issues.

Mr. Shelton talked about the need for some federal autonomy to foster innovation. He gave an example of the Internet, which was designed by the federal government; research was not confined to policies of all 50 states.

Due to time constraints, Mr. Brown’s update about the Distributed Energy Storage work product was moved to the Energy Storage Subcommittee discussion slot on Thursday March 13th.

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

Hon. Hoffman commended the EAC discussions on grid modernization and security.

DOE’s 2015 budget was released, including increased funding for distribution and advanced control technologies. Hon. Hoffman also welcomed the EAC’s suggestions on transactive energy and better facilitation of emergency response for grid resiliency.

Hon. Hoffman thanked the new EAC members and welcomed the returning members back.

Day one of the meeting was adjourned.