



**U.S. Department of Energy  
Electricity Advisory Committee Meeting  
NRECA Conference Center  
Arlington, VA  
September 25, 2014**

**Summary of Meeting**

## PARTICIPANTS

### EAC:

AKE ALMGREN  
Orkas Energy Endurance

ANJAN BOSE  
Washington State University

MERWIN BROWN  
California Institute for Energy & Environment

RICHARD COWART  
Regulatory Assistance Project

ROBERT CURRY  
Curry Energy

CLARK GELLINGS  
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

CARL ZICHELLA  
Natural Resources Defense Council

**DOE:**

HONORABLE PATRICIA HOFFMAN  
Department of Energy

MARY BETH TIGHE  
Department of Energy

DAVID MEYER  
Department of Energy

WILLIAM PARKS  
Department of Energy

CARL PECHMAN  
Department of Energy

MATT ROSENBAUM  
Department of Energy

KAREN WAYLAND  
Department of Energy

**Speakers, Guests and Members of the Public:**

JAY CARRIERE  
Berkshire Hathaway Energy

JAMES DALY  
Northeast Utilities

BEN D'ANTONIO  
New England States Committee

ROBERT ETHIER  
ISO New England

CHUCK GOLDMAN

Lawrence Berkeley National Laboratory

ANDY OTT  
PJM Interconnection

JAMES PEDERSON  
Federal Energy Regulatory Commission

MARY ANN RALLS  
National Rural Electric Cooperative Association

MARY TOLER  
Battelle

JEFF TURCOTTE  
ISO New England

**ICF/Support:**

MAUREEN MALLOY  
ICF International

SAMIR SUCCAR  
ICF International

ANDREA WAGNER  
ICF International

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**DOE Grid Modernization Initiative**

Honorable Patricia Hoffman, Assistant Secretary for Electricity Delivery and Energy Reliability (OE) and William Parks, Senior Technical Advisor, DOE Office of Electricity Delivery and Energy Reliability, delivered remarks on the DOE Grid Modernization Initiative. Assistant Secretary Patricia Hoffman explained regional and policy dimensions across the various levels of the initiative. She noted that DOE spent time determining strong goals and metrics and defining the federal role in this area.

Mr. Parks provided an overview of the coordinated grid modernization activities. Mr. Parks and Assistant Secretary Hoffman highlighted the four broad areas of the Grid Tech Teams (GTT) grid modernization proposal, the aggressive five-year GTT goals, and the six target areas identified in the MYPP aimed to rapidly advance the evolution of the grid.

The Secretary of Energy challenged the National Labs working on grid issues to develop an integrated approach to grid modernization, in order to better leverage lab

capabilities and add value to the transitions occurring today. Mr. Parks explained the structure of the initiative and described the five-year plan and targets for grid modernization. He described the desire to provide cohesive, strategic direction to the labs from the department and for the labs to self-organize into team to carry out the objectives. He described several efforts focused on DG valuation, distribution visibility, as well as on sensing and measurement. Mr. Parks welcomed feedback on the initiative.

### **EAC Members Discussion of the DOE Grid Modernization Initiative**

Mr. Gellings commented on DOE's relationship with National Labs and highlighted the value of cohesive interactions. Mr. Parks stated there should be a national point of contact for the power sector.

Assistant Secretary Hoffman noted that what would be especially useful to the Department would be feedback from the EAC on the quantifiable system capabilities and attributes that DOE's investments in R&D and elsewhere could help provide.

Mr. Brown noted his support for the grid modernization concept over smart grid and asked about the balance between hardware development relative to other priorities and about the scale of demonstration projects that Mr. Parks described.

Mr. Zichella and Mr. Parks discussed the role of the power marketing administrations in the new initiative.

Others raised the suggestion that DOE should not be overly prescriptive in order to allow for adaptive budget priorities and avoid new stovepipes.

Mr. van Welie commented on the value of supporting the development of technology components rather than specifying market outcomes and Ms. Reder commented on DOE's impact on reliability and resiliency in order to connect the technology goals to grid architecture themes and distribution topology design. Representative Morris added that different demonstration models might enable innovation and promote the adoption of new technologies.

Mr. Peters asked about the development of the security and emergency response goal. Assistant Secretary Hoffman explained that this goal was created around the need to have continuous monitoring tools, the ability to share information and the ability to do the forensics and analysis.

Mr. van Welie suggested the DOE build tools and analyze the possible outcomes of pursuing different technology components rather than prescribing outcomes themselves. Mr. Bose noted that metrics appropriate for grid modernization such as reliability, resiliency and security are essential but are also hard to quantify.

Members discussed international efforts in Germany and elsewhere that could be

leveraged to reach specific objectives and to help further inform the effort more broadly.

Ms. Reder asked how the EAC can be most helpful in DOE's efforts to modernize the grid. Mr. Parks responded that clear and transparent reviews are critical to the process and encouraged the EAC to be involved in the yearly national summit and provide feedback on the balance between DOE and stakeholders. Assistant Secretary Hoffman requested that the EAC or the subcommittees review and provide feedback to grid modernization updates on a regular basis. She supported making the EAC more formally engaged in the process.

### **Gas-Electric Issues Panel – Regulatory Mechanisms to Ensure Fuel Adequacy**

Paul Roberti introduced the Gas-Electric panelists including: Robert Ethier, Vice President of Market Operations, ISO New England; Andy Ott, Executive Vice President of Markets, PJM Interconnection; James Daly, Vice President of Energy Supply, Northeast Utilities; and Ben D'Antonio, Counsel and Analyst, New England States Committee on Electricity.

Mr. Robert Ethier, Vice President of Market Operations, ISO New England, presented on the market-based enhancements ISO-NE is implementing to meet natural gas-electric interdependency challenges. Mr. Ethier explained that oil, coal, and nuclear energy generation are declining and low gas prices are driving the market, changing the use of infrastructure. He discussed reasons for increased forced outages and winter energy shortages in New England. Mr. Ethier explained the forward capacity market design changes ISO-NE has proposed to address these issues. He discussed the FERC forward capacity market enhancements order and the Pay-for-Performance order that addresses performance issues through market changes.

The second panelist, Andy Ott, Executive Vice President of Markets, PJM Interconnection, presented on ensuring fuel adequacy in the face of increasing natural gas demand driven by economic and regulatory considerations. Mr. Ott discussed the issues with meeting the natural gas demand capacity and scheduling issues that need to be resolved between the two sectors. He noted that gas distribution companies have paid for infrastructure to meet fuel demand and noted the power side should articulate their needs to the gas industry to facilitate building of the appropriate infrastructure as well.

Mr. Ott discussed the evolution of supply towards more flexible gas, renewables, and the innovations in grid services. He discussed the need for commodity infrastructure, flexibility through storage, infrastructure investment responsibility, and product definition changes.

The third panelist, James Daly, Vice President of Energy Supply, Northeast Utilities, presented on the need for change in the energy market. He reviewed the issues posed

with current energy markets structures and offered potential solutions to those problems. Mr. Daly explained the projects already underway, including a proposal, in collaboration with NESCOE, to promote the development of natural gas infrastructure and electric transmission development and the support of an ISO tariff to build electric and gas infrastructure using forward capacity market, forward incentives, and locational market prices as tools. He discussed the resource plans driving the natural gas market model and the electricity model which is not well aligned to meet future infrastructure needs for power generation in deregulated states.

The fourth panelist, Ben D'Antonio, Counsel and Analyst, New England States Committee on Electricity, presented on regulatory mechanisms that could ensure fuel adequacy. Mr. D'Antonio reviewed regional challenges of reliability and economic disparity in New England and discussed the possibility of using the electric tariff as a vehicle for cost recovery to get infrastructure developed. He explained the New England Governors' Infrastructure Initiative that aims to improve system reliability, economic competitiveness, incorporate cleaner energy, diversify energy sources, and mitigate energy price volatility by expanding pipeline capacity and electric transmission. He reviewed the status of state discussions and feedback requests, including the Massachusetts' bill to procure levels of clean power and explained the NESCOE request to postpone a proposed Massachusetts tariff in order to evaluate options for moving forward with regional solutions to energy infrastructure challenges.

### **EAC Members Discussion of Gas-Electric Integration Topics**

Mr. Roberti and Mr. Ethier discussed methods to meet customer demands during periods of stress in the winter, including the use of generators, procurements as a way to drive pipeline capacity, short term measures, and long term market reforms.

Mr. Roberti asked about state-based approaches in case a FERC-approved tariff approach is not feasible. Mr. Roberti and Mr. D'Antonio discussed state level cost allocation methodologies including the NESCOE model, the use of a tariff, and the use of local energy rates to fund a pipeline.

Mr. Morgan, Mr. Daly, and Mr. Ethier discussed facility reimbursement, utilization, and cost of onsite gas storage. Mr. Morgan and Mr. Daly discussed the LNG solution, increased use of Canadian gas storage, and pipeline expansion as potential solutions to New England's fuel shortages. Mr. Ethier explained cost recovery mechanisms for fuel storage facility investments in the New England capacity market.

Mr. Cowart and Mr. Ott discussed collection of capacity payments by power generators. Mr. Ott raised the role of general product definitions and superior pay-for-delivery-of-energy approaches to ensure generator delivery reliability through market mechanisms instead of prescribing a specific solution like firm transport.

Mr. Daly and Mr. D'Antonio reviewed the barriers for generator to enter contracts and

recover costs. They discussed cost effective approaches to deal with those barriers and the split incentives for individual generators versus the system as a whole when deciding between different infrastructure options such as pipelines or dual fuel capability.

Mr. Popowsky asked if the consumer perspective is being considered. Mr. Daly discussed the pros and cons of using tariff mechanisms to fund new pipelines and acknowledged the need for a solution to the current fuel adequacy problem. Mr. D'Antonio reiterated that the New England Governors' are beginning to work with stakeholders to solicit suggestions for reaching objectives with minimum impact to the market.

Pr. Mount noted the importance of moving towards a low carbon economy and discussed more efficient ways to use gas. Mr. Ethier suggested using CHP rather than solar generation in New England and noted the need to change current state subsidies. Mr. Ott agreed with Mr. Mount that combining energy and heat generation would increase resiliency. Mr. Daly added that onsite generation incentives are expected to rise with fuel prices. Mr. D'Antonio noted New England's current dependency on oil for space heating and the capacity issues that are created as this moves towards gas.

### **EAC Energy Storage Subcommittee Activities and Work Plan**

Mr. Merwin Brown gave a review of the Energy Storage Subcommittee plans. The Subcommittee expects to make the distributed energy storage work product a priority, to create a work product on the role of electric vehicles as grid storage, and create a work product on the role of energy storage in grid asset utilization and economic efficiencies.

Assistant Secretary Hoffman suggested the Energy Storage Subcommittee examine standardization and utilization of energy storage to mitigate the need for unique design or to conversely define specific capabilities that products should meet.

### ***Storage Testing and Safety Paper***

Mr. Brown explained that the Storage Testing and Safety paper's urgency has somewhat reduced due to recent DOE initiatives in storage safety and members agreed with the Subcommittee's suggestion of incorporating the Storage and Safety paper topics into the Distributed Energy Storage paper.

### ***Biennial Storage Program Assessment***

Mr. Brown thanked all who contributed to the work product, explained the nature of the 2014 Biennial Storage Assessment report that fulfills the Subcommittee's obligation to the Energy Independence & Security Act of 2007, reviewed the work product recommendations, and members discussed various proposed changes to the document.

Ms. Hoffman commented on the Recommendation 4, suggesting that the EAC look into the current projects of the DOE Technology Transfer Office.

The 2014 Biennial Storage Assessment and the changes discussed during the meeting were approved by the EAC.

### **Update on the DOE Quadrennial Energy Review**

Ms. Karen Wayland, DOE Office of Energy Policy and Systems Analysis, provided an overview of the Quadrennial Energy Review (QER). Ms. Wayland reviewed the recent QER technical workshops and 12 stakeholder meetings that all have summaries and transcripts posted online. She explained that there will be one final stakeholder meeting before the public comment period closes followed by an informal engagement to summarize the stakeholder results.

Ms. Wayland explained that there are plans underway to do an extensive survey of the literature to avoid duplicating efforts. Contracts are in place to complete modeling work, and future grid reliability work streams with the National Labs are underway. A database tool is expected to become available once the report is complete. Carl Pechman also provided an overview of the grid architecture efforts being undertaken as part of the QER.

### **EAC Members Discussion of the DOE Quadrennial Energy Review**

Carl Zichella provided an overview of the short-term DOE and National Lab green architecture project that uses grid architecture as a way to evaluate policy. He described the short-term program preliminary and second workshops and summarized that DOE hopes to evaluate the relationship between the different electric technologies and determine if the appropriate pricing mechanisms are in place.

Mr. Shelton asked if the DOE meeting on grid-related storage needed additional input and Ms. Wayland confirmed that she would provide an update on the grid-related storage meeting.

### **EAC Power Delivery Subcommittee Activities and Plans**

Mr. David Till began with a reviewed the 21<sup>st</sup> Century Grid work product and recommendations in the interest of time.

#### ***21<sup>st</sup> Century Grid Paper***

Mr. Till walked through the work product recommendations and Members discussed various proposed changes to the document.

The 21<sup>st</sup> Century Grid work product and the changes discussed during the meeting were approved by the EAC.

### **Cyber Security Working Group**

Mr. Peters proposed the creation of a Cyber Security Working Group to the Committee. He suggested the working group would discuss risks associated with cyber security and recommendations for DOE future investment in this area. Mr. Cowart explained that the working group would consist of EAC members and outside experts with the expectation that the group would produce work products similar to the ones described at the meeting.

Assistant Secretary Hoffman highlighted several areas where the EAC's input would be valuable including DOE's role in addressing physical risks, cyber risks and climate risks to the system; and alternative financing and financing mechanisms to address the full scope of future investments needed. She also noted three vacancies for DOE senior executive positions.

Mr. Brown noted that the QER report will be available for public comment in January 2015 and suggested that the Committee convene to make a comment during the public comment period.

Mr. Popowsky suggested that the Committee comment on the grid architecture section of the QER and noted that PNNL is drafting a report of their input on the QER process. Mr. Shelton and Mr. Zichella discussed past EAC work product reoccurring grid architecture themes, including eliminating inefficiencies in the system and the need to identify the upfront investments necessary for grid architecture development over the next 50 years.

### **Public Comments**

There were no public comments.

### **Wrap-up and Adjourn of the September 2014 Meeting of the EAC**

Richard Cowart, EAC Chair thanked everyone for their comments and adjourned the September meeting.

Respectfully Submitted and Certified as Accurate,



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Richard Cowart  
Regulatory Assistance Project  
Chair  
DOE Electricity Advisory Committee

12/19/2014

Date

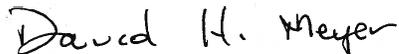


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Irwin "Sonny" Popowsky  
Pennsylvania Consumer Advocate  
Vice-Chair  
DOE Electricity Advisory Committee

12/19/2014

Date



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David Meyer  
Office of Electricity  
Designated Federal Official  
DOE Electricity Advisory Committee

12/19/2014

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Matthew Rosenbaum  
Office of Electricity  
Designated Federal Official  
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12/19/2014

Date