U.S. Department of Energy
Electricity Advisory Committee Meeting
Hosted Virtually Via WebEx
October 15, 2020

Meeting Summary

PARTICIPANTS

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American Transmission Company (Ret.)

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National Grid

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Florida Power and Light Company

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Cordova Electric Cooperative

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Electric Power Board of Chattanooga

TOM WEAVER
American Electric Power Company Inc.

JIM YACONE
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MATT ARONOFF
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MERRILL SMITH
Department of Energy

DAN TON
Department of Energy

CYNDY WILSON
Department of Energy

JOHANNA ZETTERBERG
Department of Energy

Registered Speakers, Guests, and Members of the Public:

FATIMA AHMAD
House Select Committee on the Climate Crisis

JAMES ANDRES
Mitsubishi Power

SCOTT BARFIELD-MCGINNIS
National American Electric Reliability Corporation

OLGA CHRISTYAKOVA
Edison Electric Institute

GREG FILIPKOWSKI
American Electric Power

MADELINE FLEISCHER
Dickinson Wright

KATHERINE GENSLER
Solar Energy Industries Association

BRANDON GLEASON
Electric Reliability Council of Texas, Inc.

EUGENE GRACE
American Wind Energy Association

HAGEN HAENTSCH
ONCOR

JUDITH HAFNER
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CHRIS HARVEY
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JOHN HOWES
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DAVID HUNTER
Electric Power Research Institute

SURESH JATTI
ISO New England

KEVIN JONES
Dominion Energy

WILLIAM KELLY
Austin Energy

ANNA LINDEN WELLER
New Mexico Energy, Minerals, & Natural Resources

SCOTT MCKEE
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JAMES SOWELL
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LAURA SCHWARTZ
International Technology and Trade Associates, Inc.

JOHN SPILLMAN
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JEFF TURCOTTE
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DANIEL GRAY
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Meeting Summary

Joe Paladino, from the Department of Energy's (DOE) Office of Electricity (OE), began the second day of the meeting with the third installment of the Big Data Analytics series. He provided opening remarks before leading into two separate panel sessions of three panelists each. The first session included Greg Filipkowski (AEP), Dr. Kevin Jones (Dominion), and Hagen Haentsch (Oncor). There was a roundtable conversation between the panelists, DOE, and EAC members after all the presentations concluded. The second panel session included Suresh Jatti (New England ISO), Bill Kelly (Austin Energy), and David Pinney (NRECA). There was also a roundtable conversation between the panelists, DOE, and EAC members after all the presentations concluded. Tom Bialek, Chair of the Smart Grid Subcommittee, provided an update about the Subcommittee's ongoing initiatives and future outlook. Wanda Reder gave closing remarks before concluding the October 2020 meeting.

DOE Ethics Briefing

DOE's Office of General Counsel gave the annual ethics briefing.

Day 2 Opening Remarks

Ms. Reder gave a brief overview of the day.

Big Data Analytics in the Utility Setting: The Experiences, Barriers, and Future Needs

Session 1—Transmission and Distribution

Mr. Paladino provided opening remarks about the state of big data analytics. This included comments about gaps, emerging technologies, and where DOE can help fit into the picture.

Mr. Filipkowski said utilities and the grid are experiencing a transition. Historically their focus was on transporting and providing electricity to consumers, whereas now data has been integrated creating an entirely new area of data analytics. He spoke about the growth of AEP's data collection methods over the last several years and the opportunities this data provides. Mr. Filipkowski said that communications capacity and real-time analytics capabilities are the two overlying priorities for AEP to address moving forward. He suggested DOE focus on capturing data, managing data (standards), and how to most effectively utilize data.

Dr. Jones gave context to Dominion's data collection infrastructure and strides taken within the last decade. He said the challenges started to arise in the last couple of years as data piled up but they had no analytical tools. Dr. Jones said they do not know how the data will be utilized until they start doing the analysis because of the broad possibilities to pursue. Dr. Jones believes a key model for data analytics is a "step function" that preaches economies of scale. Analytics has to be proposed as "business intelligence" to provide near real-time solutions. Dr. Jones highlighted some of the initiatives Dominion is taking to build data collection methods and improve analytics.

Mr. Haentsch said when doing data analytics there are two types of outcomes that usually occur—improving grid focus decision enhancements or increasing benefits on the customer side. He reviewed case studies Oncor is currently pursuing. Mr. Haentsch said they focus on cross cutting analytics

approaches and do not look into single-function solutions in order to maximize value. He reviewed some of the challenges their utility faces.

Questions and Answers and Moderated Discussion

Q1. Ms. Reder asked the presenters to discuss how they prepare their employees for creating value out of data analytics and their proactive asset management strategies.

Mr. Haentsch said investing within their own workforce is a main strategy because there is naturally low turnover within the industry. This involves providing trainings, mentoring, and giving employees autonomy to discover new skills.

Dr. Jones said it is important to have bottom-up solutions, letting employees feel empowered. They utilize outside partnerships to fill gaps because sometimes the best people to do a job are working elsewhere.

Mr. Filipkowski agreed with Dr. Jones' comments regarding back and middle office operations. For the second question, Mr. Filipkowski said AEP is investing in inventory tools to help track their assets and these tools will populate data.

Q2. Mladen Kezunovic asked if the panelists see storage and computer capabilities choking up as data collection grows, and if so, what actions their organizations are taking. He also asked how the presenters see current legacy solutions meeting the change in design for systems moving forward.

Dr. Jones said a solution for his first question is taking a cloud-based approach for storing data, ideally with third party support.

Mr. Haentsch said data storage comes down to cost, whether it is more competitive to store data on site versus through cloud software. These technologies can be invested in as long as they are producing net benefits to the customer or shareholder.

Mr. Filipkowski said they phase out some of their data after a few months or years because short-term intervals (~15 minutes) are not needed to look at long-term patterns. For legacy solutions, he said AEP is looking at how to utilize Phasor Measurement Unit (PMU) data instead of Supervisory Control and Data Acquisition (SCADA) system data for real-time scenario planning.

Q3. Jay Morrison asked if there is information the participants are not willing to put on the cloud due to cyber security concerns and to what degree do the projects the presenters were talking about become realistically scalable?

Dr. Jones said they feel comfortable putting information on the cloud, but there are a few things that have not made it on the cloud yet. He believes it is only a matter of time they get added. To the scalability question, he said the absolute minimum would be two to three but even with a team of ~20 everyone would still be busy.

Mr. Haentsch replied it is not necessarily new staffing positions, rather these practices need to be incorporated into everyday operations.

Mr. Filipkowski said there are some things they do not put in the cloud, but this will change over time.

Q4. Darlene Phillips asked for clarification about value proposition methods within Mr. Filipkowski's presentation. She also asked if the presenter's organizations have advanced their data retention policies for data management.

Mr. Filipkowski replied AEP had conversations around real-time capture, transport, and use as a replacement for SCADA. He spoke about development projects underway. For data management, he said it is a constant work in progress.

Mr. Haentsch said the challenge they face with stored data is figuring out how to best organize it. The data is being used for a lot of use cases causing many copies to be made, which only makes things more difficult.

Q5. Dr. Bialek asked the panelists what they would like DOE to do.

Dr. Jones replied DOE would create a partnership with Dominion to analyze data. A more realistic approach would be to incentivize people to learn data analytics skills early in their careers.

Mr. Haentsch would like to see DOE as an accelerator in the data analytics evolution. It would be neat if DOE created some type "Google Earth" for utilities that finds and analyzes areas of interest.

Mr. Filipkowski would like to see DOE grow and push the workforce development of data analytics. DOE can also help with promoting and encouraging standards for interoperability along with network capacity requirements.

Dave Herlong commented that DOE can incentivize "new players" to get involved with the utility industry to foster new partnerships for machine learning.

Big Data Analytics in the Utility Setting: The Experiences, Barriers, and Future Needs

Session 2—Operators, Municipal, and Cooperative Utilities

Mr. Jatti spoke about different types of data collection technologies and the value they provide. Mr. Jatti sees the cloud storing for data to be just as safe as storing data onsite, if not more secure.

Mr. Kelly spoke about how utilities are impacted by environmental factors (wildfires) and how they respond in real time. Four major challenges they face are predictive analytics, cyber security, resources, and interoperability. A successful pilot program they launched is the Distribution Fault Anticipation. This technology is put at the beginning of a feeder and is supposed to communicate when a potential arcing situation or fault on the line is going to occur.

Mr. Pinney brought up some of the data integration challenges co-ops face because they have smaller operations with less capital and resources. Mr. Pinney spoke about the potential of machine learning and how that will unlock new opportunities for the National Rural Electric Cooperative Associations' (NRECA) members. He said that challenges will continue to increase with new sensor deployments.

Questions and Answers and Moderated Discussion

Q1. Ms. Reder asked what their organizations are doing for data analytics relative to DERs.

Mr. Jatti replied data analytics has been embedded throughout their programs rather than a specific data analytics team.

Mr. Kelly said they also utilize a decentralized approach with a focus on local approaches.

Mr. Pinney said there is a lot of interest finding DERs. He sees the ability to control load and small generators as another area gaining traction.

Q2. Dr. Bialek asked what data ingestion problems the panelists see and what a potential roadmap for new applications would look like. Dr. Bialek also asked about benefits of hypothetically getting DOE more access to data for research and development of technology.

Mr. Pinney replied the processes they see are ad-hoc. He said they are willing to try anything for the sensor roadmap; cost is their biggest barrier though for new technology.

Mr. Jatti said they mainly get PMU and some weather data externally. They face challenges when trying to make strong business cases that present value for the outcomes. Another potential challenge arises once there is a mass scale of sensors on the grid so protocols and standards need to be put in place to not overwhelm collection systems. Mr. Jatti said his organization has the challenge of sharing data with researchers and third parties due to proprietary restrictions, so this leaves researchers with limited information. Mr. Jatti said it would be especially helpful getting DOE more involved in data analytics development.

Mr. Kelly replied they can integrate and communicate with third party technology as long the process is standards based. He said most of their data is within their ecosystem, not with third-party servers. Mr. Kelly said a partnership with DOE would help with the overall lack of resources for research and development (R&D). He would like to see DOE emphasize the security of data that utilities share.

Q3. Dr. Kezunovic asked where DOE can contribute to help alleviate challenges (highest priority) the panelists' organizations face.

Mr. Jatti said weather-related events pose their biggest uncertainty. Predictive tools would help them take proactive measures when extreme weather events are forming nearby.

Mr. Pinney replied the best contribution would be researchers who can further develop technology and technical assistance from the National Labs.

Mr. Kelly agreed with Mr. Jatti that predictive technology for weather-related events would be the biggest help.

Q4. Rick Mroz asked how to prioritize the critical pathway for technology development and how it will impact their organizations.

Mr. Kelly replied they face challenges being a municipality-owned utility. He is interested in programs that address the resilience hardening of the grid. It would also be helpful for the labs to provide technical assistance to identify areas where they can operate more efficiently.

Mr. Pinney replied the ease of use is a major barrier they face.

Mr. Jatti said DOE can help with cloud-based large-scale storage and standardization of new sensors.

Mr. Paladino recapped the two big data sessions and provided his takeaways.

Dr. Bialek commented about two themes where data analytics is lacking. The first is feasibility of integrating data from outside sources into a utility's data set. The second is identifying gaps within data sets.

Q5. Mr. Paladino asked the EAC and panelists about the role they see the government taking regarding data standardization.

Dr. Kezunovic replied the professional community (IEEE) mainly creates the standards. He does not see the government play a role creating standards. The government can help address challenges with interruptions.

Q6. Mr. Paladino asked Mr. Pinney to clarify some of his comments regarding machine learning and about areas of opportunity.

Mr. Pinney spoke about the benefits provided by working with the National Labs. He sees machine learning playing an integral role addressing control gaps.

Q7. Mr. Paladino asked the panelists about the value of potential working groups that would better address lab/industry partnerships.

Dr. Bialek said this would be beneficial. The biggest assets the Labs have are their technical experts and computing resources.

Smart Grid Subcommittee Update

Ms. Phillips provided an update about the State-Federal Coordination initiative. She laid out a road map and presented interview questions that are being asked to identified interviewees. Chris Lawrence stressed the importance of keeping the recommendation within DOE's jurisdiction.

Dr. Bialek recapped the Big Data Analytics series of presentations and discussed next steps for providing recommendations to DOE. A key theme will be figuring out how to best leverage DOE and the National Labs. The relationship between utilities, other industry stakeholders, DOE, and the National Labs is a constant work in progress. Several members had a conversation about furthering use case opportunities for data analytics.

Dr. Bialek gave an overview of the Advanced Grid Design effort of what a future grid might look like and the steps needed to make this happen. Dr. Bialek spoke about a scenarios document to guide the recommendations. This led to members discussing their vision of a future grid.

Mr. Paladino gave an update about the status of the 2020 Smart Grid Systems Report. Mr. Paladino is looking to sharpen the controls section and, aside from that, it is done. He is hoping to have the report out within the next few weeks. Several members said they are willing to review the document and provide input.

Dr. Bialek brought up the pending new effort of "resiliency." It is in the early stages and will be discussed in more depth during future Subcommittee meetings. A few members provided suggestions about where to begin the conversation and difficulties with scoping the conversation. One of the biggest challenges is that everyone views resilience from a different perspective.
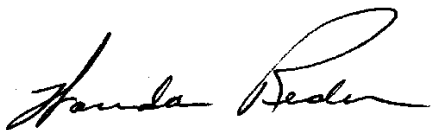
Public Comments

No comments were received.

Wrap-Up and Adjourn October 2020 Meeting of the EAC

Ms. Reder reviewed the presentation throughout the two-day meeting. She reminded attendees about a few action items and to start thinking about panels for the February meeting.

Respectfully Submitted and Certified as Accurate,

Wanda Reder
Grid-X Partners, LLC
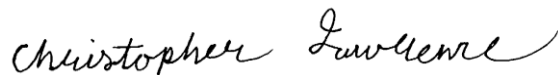Chair
DOE Electricity Advisory Committee

1/12/2021
Date

Michael Heyeck
The Grid Group, LLC
Vice-Chair
DOE Electricity Advisory Committee

1/12/2021
Date

Christopher Lawrence
Office of Electricity
Designated Federal Official
DOE Electricity Advisory Committee

1/12/2021
Date