U.S. Department of Energy
Electricity Advisory Committee Meeting

National Rural Electric Cooperative Association Conference Center

Arlington, Virginia

June 8, 2023

Day 2 Meeting Summary

CONTENTS

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Meeting Overview

The Electricity Advisory Committee's (EAC) third meeting of 2023 was held June 7 and 8 using a hybrid format at the National Rural Electric Cooperative Association building in Arlington, Virginia, with the option of virtual participation via the video conferencing platform Webex. On the second day of the meeting, the EAC's Smart Grid Subcommittee held a panel, entitled "Understanding the Issues Surrounding Distribution Edge Resources," which was followed by extensive discussion. Next, the Energy Storage Subcommittee and Smart Grid Subcommittee Chairs provided updates on subcommittee activities and work products. The meeting concluded with a discussion on reliability and resource adequacy.

All presentations, as well as recordings of the meeting, can be found at https://www.energy.gov/oe/june-7-8-2023-electricity-advisory-committee-meeting.

Opening Remarks

Jayne Faith, EAC Designated Federal Officer, welcomed attendees, took attendance, and officially called the meeting to order. EAC Chair Wanda Reder outlined the agenda and introduced the first speaker.

Panel and Discussion: Understanding the Issues Surrounding Distribution Edge Resources

Moderator

- Dr. Lynne Kiesling, EAC member

Panelists

- Dr. David Kathan, President, Kathan Energy Consulting
- Dr. Johanna Mathieu, Associate Professor, Electrical Engineering & Computer Science, University of Michigan
- Robert Tucker, Subject Matter Advisor, TRC Companies
- Alex Pratt, VP Strategic Business Development, AutoGrid Systems

Moderator and panelist remarks and presentation slides can be found online via the link provided in the Meeting Overview section above.

Discussion

Bob Cummings said that the biggest challenge with virtual power plants (VPPs) is location. The aggregation of generation sources must take into account location and the constraints associated with the given distribution, sub-transmission, and transmission systems of which it is a part.

Mr. Pratt agreed and said that there needs to be more regulatory guidance on resource aggregation.

Dr. Kathan added that Federal Energy Regulatory Commission (FERC) Order 2222 partially addressed that issue by directing independent system operators and regional transmission organizations to facilitate aggregation on as geographically broad a scale as technically feasible.

Questions and Answers

Q1. Rick Mroz pointed out that there is basically no central planning for the integration of grid edge resources and asked the most effective way to plan for that integration into the grid of the future.

Dr. Kathan said that the development of agreed-upon definitions for terms would be a good starting point.

Howard Gugel said that as increasing amounts of grid edge resources begin to have implications for the reliability of the bulk power grid, it makes sense for the North American Electric Reliability Corporation to play a central role in planning.

Q2. Chris Ayers asked Mr. Pratt what role he thinks DOE could have in relation to VPPs.

Mr. Pratt sees a role for DOE in supporting pilot projects and their implementation (e.g., by encouraging load-serving entities and markets to adopt VPPs). Greater regulatory clarity and consistency would also be a major help, as well as supporting standards and interoperability.

Q3. Daniel Brooks asked how data is obtained for the Distributed Energy Resource (DER) Registry maintained by Collaborative Utility Solutions.

Dr. Kathan said that data were obtained from both individual distributed energy resource (DER) owners submitting their information and load-serving entities collecting the information.

Q4. Mr. Brooks asked what data exists for VPP performance under different operating conditions (e.g., extreme weather).

Mr. Pratt said that AutoGrid has a lot of that data; however, the industry needs to do better in collecting that information.

Q5. Tom Bialek asked how to fix the data availability problem and how DOE can help.

Dr. Kathan said that DOE's Energy Information Administration's (EIA) data collection should be improved, including by the recognition of wholesale demand response. DOE could publicize the Distributed Energy Resource Registry.

Dr. Mathieu added that DOE could play a role in funding collaborative groups to define what types of data should be collected across various use cases, including best practices for data privacy.

Q6. Lisa Frantzis pointed out that, increasingly, it will not just be utilities but also car companies and tech companies that own large amounts of energy-related data (derived from electric vehicles and their charging stations, behind-the-meter assets, and other sources). She asked how EIA would incorporate that data and whether companies need to be informed about the kind of data that EIA will need.

Mr. Pratt said that there is a lot of activity related to full home energy management and companies are competing to dominate that space. It will be the role of whichever entity aggregates those resources and interfaces with the electricity market to provide that data.

Andrew Barbeau said that there is a significant opportunity for DOE to collect and provide data on the performance of edge devices.

Q7. Mr. Gugel asked whether frequency response modeling includes the characterization of current inrush for compressor starts, because that heavily impacts frequency response calculations.

Dr. Mathieu said that they do include this in their modeling.

Q8. Brian Lipscomb asked whether small independent power producers could use the VPP products that AutoGrid offers.

Mr. Pratt said that they could.

Q9. Ms. Frantzis asked whether companies like AutoGrid are learning lessons about VPPs from the experiences of international companies, such as those operating in Europe. She suggested that DOE could help facilitate this learning.

Mr. Pratt said that AutoGrid is actively trying to incorporate learnings from companies operating in Europe, Australia, and elsewhere.

Q10. Mr. Barbeau asked for reflection on situations where the cost of telemetry outweighs the benefits of the data provided by that telemetry, and whether DOE might have a role in bringing down the cost of telemetry.

Dr. Kathan agreed that the cost of telemetry can be prohibitive. FERC Order 2222 puts the obligation on the aggregator, who is the market participant that collects the data from individual resources. DOE support for reducing the cost of telemetry would be very helpful.

Energy Storage Subcommittee Update

The Subcommittee submitted the 2022 Biennial Energy Storage Review for approval at the February 2023 EAC meeting.[1] The Office of Electricity provided its response in May 2023.[2]

Smart Grid Subcommittee Update

Dr. Bialek, Subcommittee Chair, provided a summary of the Subcommittee's efforts and plans. The Subcommittee is planning a panel on flexible load and DER for the October 2023 EAC meeting. The Subcommittee has begun working on a reliability work product. The Subcommittee will review and provide input on DOE's Smart Grid System report.

Public Comments

No public comments were submitted.

Concluding Remarks

Mike Heyeck, who is concluding his third consecutive 2-year term on the EAC, read from the 2009 EAC report "Keeping the Lights on in a Changing World":

> "There has never been a time, post World War II, with more excitement, challenges, and opportunities to enhance and reshape the United States' electricity infrastructure to meet the challenges and the needs of future years. But the action has to start now for the challenges to be overcome and the threats to become opportunities."

Mr. Heyeck sees the need for an updated report of the same kind that takes a holistic look at what the grid needs, particularly as it relates to resource adequacy. He sees the following as missing from the current conversation: the energy transition will require more energy sources than just

[1] https://www.energy.gov/sites/default/files/2023-02/EAC%202022%20Biennial%20Energy%20Storage%20Review%20%281%29_0.pdf
[2] https://www.energy.gov/sites/default/files/2023-05/OE%20Response%20to%202022%20EAC%20Biennial%20Storage%20Review.pdf

renewables, to include nuclear and hydrogen; EIA's projections on electricity demand are understated; and the distribution system will not change until incentives are provided for doing so. He touched on other issues to keep in mind. He emphasized the need for EAC recommendations to be actionable by DOE. He thanked fellow EAC members for their public service.

Ms. Reder prompted a discussion on reliability.

Mr. Cummings said that the EAC and DOE can work to encourage greater homogeneity of state-level regulations and standards.

Dr. Bialek said that DOE could help promote interoperability among DER, which is currently a major hurdle to overcome in order to fully integrate DER into the grid.

Darlene Phillips said that the Smart Grid Subcommittee's reliability work product will take into consideration the capacity and transmission needs associated with the energy transition. Two ancillary topics are communications/data sharing and energy equity.

Jay Morrison said that there are critical shortages of distribution transformers due to supply chain challenges, and that DOE could help address the issue. He pointed out that the vast majority of utilities are small entities without the capacity to fully utilize DER.

As a process improvement, Mr. Brooks said that prepared remarks should take up no more than half the allotted time during panels to allow for a fuller discussion.

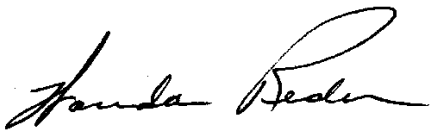
Mr. Ayers said that the most helpful panels have been those where DOE staff are involved and receive input from panelists on what DOE needs to know and what the panelists believe the industry most needs from DOE.

Dr. Kiesling said that more unstructured, less formal interactions and conversations with DOE (that still fall within Federal Advisory Committee Act guidelines) would be helpful. Mr. Cummings supported the idea.

Ms. Reder thanked everyone for their contributions and provided closing comments. Ms. Faith adjourned the meeting.

Signature Page

Respectfully Submitted and Certified as Accurate,



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

8/17/2023
Date

Jayne Faith
Office of Electricity
Designated Federal Officer
DOE Electricity Advisory Committee

8/17/2023
Date