U.S. Department of Energy
Electricity Advisory Committee Meeting

National Rural Electric Cooperative Association Conference Center

Arlington, VA

June 9, 2022

Day 2 Meeting Summary

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Meeting Overview

The EAC's second meeting of 2022 was held on June 8 and 9 in a hybrid format at the National Rural Electric Cooperative Association building in Arlington, Virginia, and via the video conferencing platform Webex. On the second day of the meeting Lola Infante, Electric Power Research Institute (EPRI), moderated a panel on Supply Chain Considerations for Energy Storage that included panelists from the U.S. Department of Energy (DOE), EPRI, Copenhagen Infrastructure Partners, National Grid, Toyota Motor North America, and Ascend Elements. To conclude the day, subcommittee chairs presented updates on subcommittee activities and planned projects.

All presentations, as well as recordings of the meeting, can be found at https://www.energy.gov/oe/events/june-8-9-2022-meeting-electricity-advisory-committee.

Opening Remarks

Chris Lawrence, EAC Acting Designated Federal Officer, welcomed attendees, covered several housekeeping items, took attendance, and officially called the meeting to order. EAC Chair Wanda Reder outlined the agenda and introduced Lola Infante, who made introductory remarks for the day's panel.

Panel: Supply Chain Considerations for Energy Storage

Moderator

- Lola Infante, Executive Director, Government and External Affairs, EPRI

Panelists

- Benjamin Shrager, Engineer, Advanced Grid Research & Development Division, Office of Electricity, U.S. Department of Energy
- Haresh Kamath, Director for Distributed Energy Resources and Energy Storage, EPRI
- Julia Perrier, Director, Copenhagen Infrastructure Partners
- Bill Malee, Vice President, Operations Support, Safety, & Emergency Planning, National Grid
- Matt Stich, General Manager for Battery Lifecycle Solutions, Toyota Motor North America
- Roger Lin, Vice President of Marketing and Government Relations, Ascend Elements

Panelist remarks and presentation slides can be found online at the link provided in the Meeting Overview section above.

Discussion

Bob Cummings thanked panelists for their presentations. He praised an inventive use for used car batteries developed by Southern California Edison. The company aggregated the batteries in trailers to support utility line trucks so that the trucks did not need to stay turned on—and burning fuel—in order to power the corded electric tools used by the line workers.

Mr. Kamath said EPRI was involved in that project with Southern California Edison. He commended the reuse of batteries.

Kimberly Denbow noted that steel manufacturing does not happen without natural gas. She emphasized the importance of DOE examining the role of natural gas in supply chain issues.

Michael Heyeck emphasized and supported Ms. Denbow's point.

Lisa Frantzis encouraged DOE to learn from what happened to the solar industry in the 1980s, when the U.S. dominated it. When a new presidential administration came in and removed policy supports, foreign countries bought out many U.S. companies and the bulk of solar manufacturing moved overseas. She said policy supports should be long term.

Tom Bialek noted that the public will need to be educated about the extent of the need for energy storage and other technologies and infrastructure to support the energy transition. Understanding the importance of that need may help diminish public opposition to the unavoidable environmental impacts that will be associated with, for example, mining the lithium for electric vehicle (EV) batteries.

Ms. Chen referenced the idea of designing components more sustainably, asking if things like a contents list or standardized/modular design could be more widely implemented. She also suggested that policies such as requiring manufacturers to take back products at the end of their life should be passed to encourage recyclability.

Questions and Answers

Q1. Andrew Barbeau asked what the current lead time is for manufacturing and delivery to the customer of power transformers.

Mr. Malee said wait times are approximately 70 weeks but historically were in the range of 20 weeks.

Mr. Barbeau asked for confirmation that there is only one domestic manufacturer of steel suitable for use in power transformers. He asked if anything has been done by DOE to support encouraging additional manufacturing capacity.

Mr. Shrager said the DOE report identifying the single U.S.-based manufacturer of transformer-grade steel only came out in February of 2022, so DOE has not had much time to pursue follow-up activities, but he confirmed that it is on DOE's radar.

Mr. Malee said any additional domestic production of steel would be helpful. He noted that National Grid is mostly looking at foreign sources of production.

Q2. Dr. Infante asked if the long lead times will affect utilities' mutual assistance programs.

Mr. Malee said utilities have partnered to understand overall stocks of backup transformers.

Mr. Heyeck commended National Grid for its focus on transformer procurement. He noted that data centers and EV charging stations also play a role in transformer demand.

Q3. Mr. Barbeau asked if DOE has projected demand for energy storage systems over the next 8 to 10 years and proposed solutions to address any gap. He asked if the various solutions have been analyzed for their feasibility and scalability.

Mr. Shrager said DOE's supply chain reports identified vulnerabilities and opportunities but likely fell short of the type of analysis of various solutions that Mr. Barbeau asked about. He said future DOE reports will investigate the question.

Gil Bindewald said DOE has done some of the kind of analysis referred to by Mr. Barbeau. The challenge, he said, is forecasting future technologies that may become available. He said analysis needs to account for the network of supply issues that drive reliability and resilience as a whole.

Mr. Kamath said much depends on how optimistic one is about alternative energy storage technologies. For example, some say that long-duration energy storage technologies will be commercially available by 2027, rendering the limitations of lithium-ion battery storage technologies moot. However, Mr. Kamath considers that timeline for long-duration energy storage technologies too optimistic. He noted the need for contingency plans.

Mr. Lin said that different batteries are configured differently based on their purpose (e.g., for use in EVs versus in stationary battery energy storage systems).

Mr. Heyeck said he does not expect the U.S. to build out the amount of storage that will be needed in this decade. He added that the terminology for lead-acid batteries should be updated to sound less negative (as it has the highest sourcing in the US for battery types).

Q4. Phil Herman asked what Copenhagen Infrastructure Partners (CIP) is investing in now.

Ms. Perrier said that at a high level, CIP has already deployed several million dollars across North America and is committed to spending at least $4 billion in the coming years. CIP sees a tremendous amount of energy transition infrastructure that needs to get built out, and a player with a large balance sheet and patient capital is in the best position to do so. CIP can sit on long-term development assets, manage development risks, and hold diverse forms of capital in its portfolio. It has a fair amount of wind and storage assets under development. She noted the importance of bolstering domestic manufacturing capabilities.

Q5. Mr. Herman asked if Toyota's battery-as-a-service offering allows customers to use a battery without owning it.

Mr. Stich said Toyota's strategy goes beyond battery leasing and battery swapping. Toyota offers information to customers about how to preserve and extend the life of their car battery.

Mr. Herman said that Toyota does not separate ownership of the car battery from ownership of the car.

Mr. Stich confirmed that Toyota does not currently offer this arrangement, but it is considering it. He sees separate ownership of batteries as something that is more viable with fleet services.

Q6. Mr. Herman asked for Toyota's outlook on the comparative economics of battery electric cars versus hydrogen electric cars.

Mr. Stich said Toyota's approach is to provide a diversified portfolio for the consumer depending on their use case.

Q7. Lisa Frantzis asked to hear what DOE is doing to promote seasonal storage.

Mr. Shrager said DOE's new Long Duration Storage for Everyone, Everywhere Initiative has $500 million to spend on long-duration deployments. One of the demonstration projects is intended to show weekly, monthly, or seasonal duration. He encouraged comments on the related request for information.

Mr. Malee said National Grid is exploring how best to operate the gas and electric networks in concert to provide seasonal storage. The natural gas supply network functions as a large storage system.

Mr. Hamath said hydrogen has a great deal of potential as a storage mechanism in a variety of different applications. He added that the ebb and flow of funding for things like seasonal-duration storage creates challenges. Consistent research and development funding is critical.

Ms. Perrier said pumped storage can provide seasonal storage and that CIP is designing its assets to participate in solicitations that call for seasonal-length storage. The challenge she sees is with economic competitiveness, and she encouraged the creation of government incentives to build the assets.

Q8. Jennifer Chen asked if there would be a way to provide more information at charging stations to EV owners to facilitate provision of grid services. For example, telling the EV owner that if they charge their vehicle at this charging station location at this particular time, they could help avoid wind curtailments.

Mr. Malee said National Grid is investing in advanced distribution automation systems, which will allow it to gain the kind of information Ms. Chen is referencing. He sees the need for more market development so customers have price signals.

Mr. Kamath said EPRI is facilitating discussions between utilities, automotive original equipment manufacturers (OEMs), and other stakeholders to understand how things are going to evolve related to charging infrastructure. He echoed Mr. Malee in saying some of the big challenges are not technological but economic in nature, associated with developing appropriate incentives.

Mr. Stich said Toyota's goal is to transition from a traditional automotive OEM into a mobility company, which involves intersecting with industries they have not traditionally partnered with.

Lynne Kiesling promoted the use of transactive platforms to allow for price signals that will inform consumers.

Q9. Acting Principal Deputy Assistant Secretary Gil Bindewald asked what challenges are structural versus cyclical.

Mr. Malee said National Grid faces both structural and cyclical challenges. He noted that demand for materials is expected to grow robustly in the coming years and decades, which will exacerbate challenges.

Subcommittee Updates

Energy Storage Subcommittee

Dr. Infante, Subcommittee Chair, provided an update on the subcommittee's efforts to date and work plan for the Biennial Energy Storage Review, a congressionally mandated report the EAC submits to DOE every two years. She discussed the timeline for completion of the report, which is expected to be voted on by the end of the year. The EAC will provide input and guidance on Bipartisan Infrastructure Law (BIL) issues brought forward by DOE, and the EAC will participate in BIL stakeholder processes as determined by the EAC.

Grid Resilience for National Security Subcommittee

Paul Stockton, Subcommittee Chair, provided written remarks that were read by Mr. Lawrence. He overviewed the previous day's in-person subcommittee meeting, which took place prior to the start of the full EAC meeting. His comments then addressed the subcommittee's planned panel presentation for the October EAC meeting, which will address supply chain security for nuclear fuel for the U.S. Navy.

Smart Grid Subcommittee

Dr. Bialek, Subcommittee Chair, overviewed the subcommittee's ongoing projects and work products: Section 8008 Voluntary Model Pathways, advanced grid distributed energy resources

integration, transmission planning working group, electric vehicle integration data interoperability, and resiliency. For the Model Pathways effort, a draft work product has already been created, and a final vote by the EAC on the work product is expected during the October 2022 EAC meeting.

Public Comments

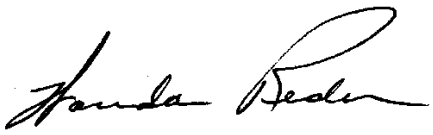
No public comments were submitted.

Concluding Remarks

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

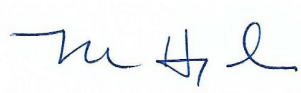
Signature Page

Respectfully Submitted and Certified as Accurate,



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

10/12/2022
Date



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