



**U.S. Department of Energy
Electricity Advisory Committee Meeting**

**National Rural Electric Cooperative Association Conference Center
Arlington, Virginia
February 14, 2024**

Day 2 Meeting Summary

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Meeting Overview

The Electricity Advisory Committee's (EAC) first meeting of 2024 was held February 13 and 14 using a hybrid format at the National Rural Electric Cooperative Association conference center in Arlington, Virginia, with the option of virtual participation via the video conferencing platform Webex. On the second day of the meeting, a panel from the U.S. Department of Energy's (DOE) Office of Electricity (OE) and Grid Deployment Office (GDO)—to include David Howard, OE Director of Grid Components, Sandy Jenkins, OE Director of Grid Controls, Vinod Siberry, OE General Engineer, Dylan Reed, GDO Senior Advisor, Dr. Michael Pesin, OE Deputy Assistant Secretary for Grid Systems and Components, and Dr. Emeka Obikwelu, OE Director of Grid Systems—convened to moderate a discussion on Transmission Infrastructure Improvement Options. Then, Michael Reiner, Policy Analyst, Office of Energy Justice and Equity, briefed the EAC on DOE's Energy Justice and Equity initiatives. Joe Paladino, OE Senior Advisor, and Chris Irwin, OE Program Manager, provided updates on the Smart Grid Systems report and Transport Electrification initiatives, respectively. Finally, the EAC subcommittees briefed the group on their initiatives and work products, and then Wanda Reder adjourned the meeting

All presentations can be found at [Electricity Advisory Committee February 2024 Meeting | Department of Energy](#)

OE Moderated Discussion on Transmission Infrastructure Improvement Options

- **Moderator:** David Howard, Director of Grid Components, Office of Electricity, U.S. Department of Energy
- Dylan Reed, Senior Advisor of External Affairs, Grid Deployment Office, U.S. Department of Energy
- Sandy Jenkins, Director of Grid Controls, Office of Electricity, U.S. Department of Energy
- Vinod Siberry, General Engineer, Office of Electricity, U.S. Department of Energy
- Dr. Emeka Obikwelu, Director of Grid Systems, Office of Electricity, U.S. Department of Energy
- Dr. Michael Pesin, Deputy Assistant Secretary, Grid Systems and Components, Office of Electricity, U.S. Department of Energy

Presenters' presentation slides can be found online via the link provided in the Meeting Overview section above.

Discussion:

Assistant Secretary Rodrigues noted that OE is not only working to advance technology, but to facilitate the technology's transition to the market. He asked David Howard to talk through the White House roundtable on advanced reconductoring.

Mr. Howard said that beginning in 2023, there was an emphasis on increasing capacity in the United States. OE conducted an internal study that layered independent analyses on the topic. As part of this study, OE identified 17 regions that could benefit from capacity expansion. Then, OE engaged with those regions, the Secretary of Energy, and the White House to identify the relevant regional utilities and talk through capacity expansion. This culminated in a meeting between these stakeholders at the White House on February 12, 2024. During this meeting, the government presented the case for expanding capacity and received feedback from utilities. Specifically, utilities noted the challenge presented by conservatism in engineering when implementing new technologies--engineers can be risk averse. OE plans to continue this cross-sector collaboration.

Assistant Secretary Rodrigues noted that OE's approach, to engage with the electricity industry to shape research and testing based on industry needs to help ensure research, is actionable. Assistant Secretary Rodrigues said that another theme at the White House roundtable was utilities' capability to make investments in transmission and the distribution grid. He said that OE intends for the roundtable to grow into an industry-wide conversation, and that OE will invite the EAC to participate.

Mr. Reed discussed transformation investments in transmission deployment. Grid funding announced \$3.5 billion in transmission upgrades. This leveraged a total of \$8 billion among public, private, partnership investments in transmission infrastructure upgrades on a Joint Targeted Investment Que (JTIQ) platform. Siting and permitting are being facilitated with coordinated interagency transmission authorizations and permits. National Interest Electric Transmission Corridors are being identified and prioritized. Rounds of Transmission Siting and Economic Development grants were well subscribed in round 1 and round 2 is pending. Mr. Jenkins noted that the utilization and reliability of electric transmission infrastructure is being improved through the Grid Enhancing Technology (GETs) program, which addresses the findings of the 2022 study of GETs impacts on rate payers.

Mr. Siberry discussed grid scale energy storage technologies; large, bi-directional systems that can store then dispatch. These technologies must interact with all grid systems, generation, transmission, and distribution for a reliable grid. They are highly flexible and provide benefits from behind the meter up to transmission and generation level including islanding, planned islanding, and high impact value spinning reserve services. He discussed the Nantucket case evaluated by Pacific Northwest National Laboratories that indicated storage delivering the same value as an additional transmission line on a peak day with loss of existing transmission. Sandia National Laboratories is evaluating storage as a transmission asset, virtual transmission. Another storage program in OE is the Wind Energy Technology Office Small Business Innovation Research funding targeting wind/storage hybrids for long duration storage to manage resource intermittency. Transformational investments in long duration storage include the LDES shot with \$365 million of investments including \$19 million for remote communities and military installations.

Clay Koplin noted use cases in Alaska in which the Kodiak Electric Association supported the energy storage system with a flywheel which relieved congestion and helped to manage wind energy and port crane power fluctuations. The other use case was the Fire Island, where Chugach Electric Association balanced intermittent wind with a flywheel-BESS hybrid storage system. There is also a project in development to manage data center loads in response to intermittent hydro availability.

Deputy Assistant Secretary Pesin provided an overview of the DC transmission advantages, noting that in order for utilities to be comfortable with new research and technology, they must be engaged in the conversation throughout. Roadblocks include expensive converter stations and limited manufacturing among four companies in Europe, Japan, and China. The US could build a supply chain to reduce converter costs by creating demand to pull the technology in. Offshore wind transport is creating an opportunity to innovate. DC systems are extremely complex; multiple connections to the same DC line requires multiple converter terminals, and controls and protection present challenges.

Dr. Emeka Obikwelu noted that DOE has engaged in initiatives in the past to work regionally with end users to affect change in regions and OE remains committed to driving technological innovation targeted at engaging communities and stakeholders. He reaffirmed Mr. Pesin's moonshot initiative due to expressions of interest in HVDC, which should be viewed as a multi value proposition. There are benefits to embedding HVDC transmission in synchronous space which are separable when adjacent regions are oversubscribed for renewables. He said that the United States is significantly behind other regions such as China, , and Europe in implementing High Voltage Direct Currents (HVDC). One of the biggest barriers the United States is a highly fragmented regulatory infrastructure. A challenge in the US utility sector is convincing decision-makers that we need to make investments in transmission and distribution to benefit them.

Bob Cummings said that increasing the capacity of a single transmission line can increase overall risk. The strength and resiliency of a system lies in lower voltage infrastructure, which must exist to share resources between areas. A large transmission line exposes increased requirements. Additionally, Mr. Cummings noted that the government has not discussed advanced storage since the 1970s. This is a proven technology that is not part of the conversation regarding long-term reserve storage. Mr. Cummings said that pumped storage hydropower is the largest form of grid storage and should be part of the conversation regarding increasing capacity.

Dylan Reed noted that DOE's Grid Deployment Office received \$750 million for hydropower pumped storage. Emeka noted that pumped storage checks all the boxes for grid storage services.

Michael Pesin noted that specific geography is necessary for pumped storage hydropower, which presents challenges.

Vinod Siberry noted that DOE's Office of Energy Efficiency and Renewable Energy (EERE) leads the research and development for pumped storage hydropower. EERE does research on modular technology for battery types.

Dr. Obikwelu validated the point that increasing the capacity of a single transmission line could increase risk but noted that a responsible deployment of technology is necessary. The value proposition presented by an HVDC is notable and should be paired with technology and methods to help ensure grid reliability and resilience. Industry standards and viable, realistic scenarios are important to conceptualizing and deploying an HVDC in a responsible way.

Paul Stockton noted a near-term use case in which a lab is proposing construction of a high-voltage transmission line over sensitive pueblo land and is proposing to apply GETS to mitigate requirements for the transmission line. He added that the conversation should also include black start and restoration as a critical value proposition, and that PJM is a leader for blackstart units.

Tom Bialek noted that HVDC technology applications are profound, but operators may not always know or understand the model for HVDCs. Line workers and crews will have to adopt technology with specific requirements and must receive tools and training to do so, the particular requirements for advanced conductors for example. Engagement with unions and workforce associations is critical for this training and workforce development. Additionally, most suppliers conduct short-term transient analyses that do not incorporate long-term dynamic considerations, and it would be useful to model and simulate dynamics for the long-term. The group discussed how human factors are critical in the HVDC space. The whole continuum needs to evolve, from technology down to human factors.

Assistant Secretary Rodrigues noted that part of the White House roundtable discussion centers on nationwide training and next steps will include labor unions and other labor stakeholders to ensure their considerations and input are incorporated into planning.

Lauren Azar congratulated the DOE for engaging with the White House. She said that utilities are replacing the transmission grid in the United States from like-kind to like-kind and that the DOE is at risk to miss the opportunity for a more efficient utility system. Ms. Azar surmised how DOE can support increasing efficiency and driving down utility bills for consumers. Utilities will spend money replacing or updating the grid because the current grid infrastructure is aging. Ms. Azar noted that spending on grid infrastructure is important, and that Europe and China have de-risked HVDC lines and implemented them at scale. DOE can educate regulators on the de-risked technology that works because regulators can mandate that utilities consider advanced conductors. Technology has improved since the 1960's and 1970's and installing advanced conductors is costly at first but saves consumers in the long run. Utility incentives are not always aligned with customers.

Lisa Frantzis said that utilities need incentive to build updated assets and invest capital into a more efficient grid. Regulators can help develop a viable business case for utilities to do this.

Mr. Howard said that in the Fall of 2023, DOE participated in a collaboration with the Lawrence Berkeley National Laboratory to work on a reconducting economic tool. This financial analysis tool was intended to help utilities see the long-term value in investing in reconducting technologies. The beta version of this tool will be finished at the end of March 2024. At that point, DOE will hold a webinar on the tool. In May, the tool should be ready.

Kimberly Denbow noted that electricity bills will increase and consumers will pay higher rates with new technology. New technology should include realistic considerations regarding how people will afford increased utility bills.

Q. Representative Don Parsons said that he interacts with the public in Georgia. Georgia has a reliable grid and low utility costs. Georgia Power does not feel that they need to invest in the grid because it is already reliable and delivers low-cost energy to consumers. The willingness to invest in the grid depends on regional preference. Representative Parsons said that a significant sum of infrastructure funding went towards developing clean coal technology and asked whether DOE is considering supporting clean coal in any way.

Assistant Secretary Rodrigues noted that resources and preferences vary by region and that DOE is also engaging with the fossil fuel industry. He said that DOE could bring officials working with the fossil fuel industry to a future EAC meeting, to discuss priorities and considerations.

Q. Darlene Phillips asked what factors DOE is considering regarding resiliency in planning. For example referencing “avoided costs” rather than “savings” or “reductions”. Using HVDC as a capacity resource presents operational challenges – how can it address congestion versus constraints? With resiliency as a driver, what factors drive resiliency versus reliability?

Mr. Howard said that DOE is considering resiliency factors such as weather, foreign adversaries, and cybersecurity, among others. Resiliency is key to DOE's and utilities' ability to continue to deliver power. Incorporating new technology is challenging because utilities are risk averse. DOE can engage utilities and help to show them how to incorporate and benefit from new technologies. The economic tool previously discussed will help to facilitate this.

Discussion: Jon Wellinghoff noted that utilities are not incentivized to improve transmission systems presently. They are incentivized to spend money, but not to become more efficient. The national highway system Federal plan can serve as a model for a similar national place for this issue. The Federal Energy Utility Commission (FERC) can set a structure for this. FERC currently requires NERC 1000 periodically – interregional coordination, and are now working on developing an order for interregional planning.

Daniel Brooks said that he interacts with utility Chief Executive Officers and Chief Operating Officers and noted three key points: 1) Utilities want to deploy Grid-Enhancing Technologies (GETS) but do not have the personnel to plan, operate, acquire, inspect, and maintain GETs. Utilities need a venue for asking questions, and national laboratories can help to promptly answer questions as they arise; 2) Data needs to be obtained and distributed; and 3) There are remaining questions that need research to obtain answers. Utilities operate on specifications and standards and need to understand how to procure and deploy at scale, then inspect and maintain. DOE can also assist in developing standards.

Mario Hurtado applauds HVDC transmission work which has been more solution and action oriented than in the past, a good step from where they have been. Europe and China have already scaled HVDC solutions, and the United States should be able to do so as well.

Q. Andrew Barbeau asked how DOE is using infrastructure funding to deploy GETs. Grid failure resulting from unaddressed vulnerabilities can cause massive disruptions in society. The Bipartisan Infrastructure Law included \$52 billion for highway resurfacing to improve commuter speeds, but only a few billion dollars were invested in a transmission system that needs \$500 billion in investments over the next ten years.

Dylan Reed agreed but noted that DOE has spent a portion of its infrastructure spending to date and has another \$3.9 billion, plus formula spending for states, tribes, and utilities. DOE is conducting additional concept paper reviews. He noted the GDO Transmission Facilitation Program is a revolving loan program and DOE will remove itself from associated contracts before lines go up. The return on investment for loan programs is better than grant programs. About 350 organizations were received from 350 organizations representing hundreds of billions of dollars so there is lots of demand. Challenges such as permitting can be a roadblock in implementing infrastructure funding.

Discussion: Louis Finkel said that incentives need to be in place rather than telling people to apply for grants.

Chris Ayers encouraged DOE to get the word out on economic reconditioning tool the DOE is developing through e-mails directly from DOE and from other organizations such as consumer advocate organizations and associations. These tools are helpful in vetting what utilities bring forward for cost recovery and allows regulators to be less reactive.

Erik Takayesu noted that technology advances from DOE testing and innovation can relieve affordability issues. Engineers are excited about advanced conductors, but performance history is limited and we don't yet know what we don't know. For instance, engineers have trouble finding information on recovering from failures and managing emergencies.

Mr. Howard said that DOE recently made an advanced conductor scan public, in which DOE queried 44 utilities to collect information on advanced conductors. This scan addresses performance history. DOE has built a strong partnership with EPRI which has proved valuable in getting DOE assistance gathering and disseminating information.

Assistant Secretary Rodrigues added that the industry can build upon strong partnerships that currently exist between DOE and industry and will continue to do so.

DOE Energy Justice and Equity Briefing

- Michael Reiner, Policy Analyst, Office of Energy Justice and Equity (EJE), U.S. Department of Energy

The presenter's remarks and presentation slides can be found online via the link provided in the Meeting Overview section above.

Q. Clay Koplin asked what the mechanisms are for engagement between industry and manufacturers to accelerate the deployment of needed technologies, and whether there were any associated new funding opportunities.

Mr. Reiner said that DOE Funding Opportunity Announcements reflect DOE's areas of priorities and signals those priorities to the public. These open up dialogue and opportunities for pilot projects. This dialogue can accelerate deployment and solve a supply/demand chicken and egg problem.

Q. Kimberly Denbow noted that the presentation was focused primarily on electrification. Electrification makes sense where it is affordable, but the presentation could have been more balanced around the affordability of natural gas. Air source heat pumps, for example, can be an efficient and affordable way to reduce costs, but doubles electrical home load and can exacerbate transmission and resource adequacy pressures. Ms. Denbow added that she would like to see electrification initiatives that were affordable to low-income communities.

Mr. Reiner said that EJ's work approaches electrification from a strategic perspective rather than advocating for specific technologies.

Q. Jon Wellinghoff asked whether DOE researched power quality in low-income neighborhoods. Total harmonic distortions (THD) in low-income neighborhoods might indicate that people in those areas have to pay more for electricity.

Mr. Reiner said that EJ is trying to identify funding to examine THDs with better sensors for real-time power quality monitoring and ISP devices on distribution infrastructure. Other countries have installed in-home devices to do this.

Discussion: Andrew Barbeau said that the City of Chicago maintains outage data at the census tract level as part of performance metrics and grid planning. Based on this data, Chicago found that Hispanic communities are more likely to experience long-duration outages. It may be that some low middle income (LMI) regions are more welcoming as corridors for upgrades and can reap some of the benefits. Undergrounding can increase grid resilience and the Electric and Gas sectors can be part of the answer. Translating findings like these into investments is important.

Assistant Secretary Rodrigues said that DOE is focused on how to engage and make an impact through action. He said that DOE and the electricity industry can focus on communications to help translate findings and research into investments. DOE can engage in the conversation that gas is also part of affordability.

Darlene Phillips said that there is a certain level of awareness regarding making informed decisions regarding integrating equity into grid planning. She suggested that DOE could provide utilities with a short list of equity-centered considerations or questions to incorporate into their decision-making processes. She also noted that many homes have gas heating, but gas is a significant percentage of the electric bill. Gas heating is a 2x to 3x efficiency multiplier of efficiency over gas turbines or internal combustion engine (ICE) technologies for electricity production.

Q. Sharon Allan said that utilities are not sure how to approach matters of equity in electricity and said that successful location-specific use cases would be helpful. However, it is difficult to find good data on this topic. Utilities are looking for case studies and information on how to make electricity equitable. The Administration's new Davis-Bacon requirements and Build American / Buy American provisions in the DOE Funding Opportunity Announcements add complexity to deploying the programs.

Tom Bialek said that in the past, he has received pushback from utility commissions to move forward with energy equity projects.

Q. Mario Hurtado said that strategic partnerships or alliances to facilitate the development of energy equity projects might increase their effectiveness. He asked whether DOE is considering such partnerships early in the process to proceed (e.g. NEPA processes, etc.).

Mr. Reiner said that implementing energy equity projects is a new area for DOE. His office is developing the fundamentals of successful implementation of energy equity projects to provide the needed clarity and transparency on their value to utilities. Feedback from the EAC is valid and useful to developing this foundation.

Q. Chris Ayers mentioned the real-world deployment impact of transitioning from coal to other forms of electricity and the cost metrics these introduce to consumers around the fairness principle. He asked whether DOE is examining that issue.

Mr. Reiner said that DOE is supportive of a just transition in the fossil industry.

Discussion: Louis Finkel noted that the group should not conflate environmental justice with energy justice. Energy prices are economically regressive, and DOE should be mindful of the economic impact of energy prices on vulnerable communities.

Darlene Phillips emphasized the importance of providing decision-making structures that map over to people's incomes. The big decisions matter, but little decisions about where dollars are spent for maintenance and other activities can integrate equity considerations for utilities.

Q. Andrew Barbeau asked whether energy justice is involved in conversations to incorporate these issues in the electricity interruption cost estimation tool. Historically, it has been challenging to value the long duration outages and low-income outages effectively where there can be higher burdens on lower incomes.

Mr. Reiner said that some work has been done value and equity of resilience. While integrating equity considerations into the tool would be positive, more deliberate regulations and policies are needed in this space.

David Herlong noted three considerations: 1) consider community and regional based solar in the southeast region to increase equity. 2) Resiliency is important to consider, because systems are ill-equipped for large scale events such as storms and the associated recovery. Income interruptions stemming from outages have a larger economic impact on low to moderate income populations than shaving costs on an electric bill. 3) Mutual assistance can show up last for Cooperatives which may not be as well connected to the Federal Emergency Management Agency and other resources.

Louis Finkel suggested that instances of slow response for Cooperatives were isolated events involving a remote location in one case and an entity that wasn't enrolled in a mutual assistance program in another case. Others worked well within the mutual assistance platforms and recovered in timely manners.

Update from OE on Smart Grid Reports and Transport Electrification Initiatives

- Joe Paladino, Senior Advisor, Office of Electricity, U.S. Department of Energy
- Chris Irwin, General Engineer, Office of Electricity, U.S. Department of Energy

Presenters' presentation slides can be found online via the link provided in the Meeting Overview section above.

Discussion:

Mr. Paladino provided an update on the Smart Grid System report and this presentation is provided in the Meeting Overview section above. The presentation focused on the grid edge, the intersection of utility systems and customer or third-party systems and distributed energy resources (DERs). Microgrids, non-wires alternatives, etc. are starting to use these tools. The paper discusses them and the application to DERs. Recent examples are Southern Cal Edison's visibility into 50MW of energy storage via Stem CLOUD. DER aggregators are becoming entities that can provide visibility to utilities.

Mr. Paldino discussed there are five barriers as challenges:

- **Integrated Planning.** Only five states are using integrated distribution planning and only 22 are using any kind of distribution planning at all. We need tools to do what if planning scenarios.
- **Operational Coordination.** With a mixed set of DERs with mixed ownership, the paradigm has shifted from control to control and coordination. We need rules for management and oversight.
- **System Technology Requirements.** Assets are highly complex and dynamic. Engineering tools are needed to handle and orchestrate energy resources, dynamic models, visibility, and dynamic data models. NVidea is working with PGE, utilizing a chip to get situational awareness of assets and optimize them with the utility. It can embed within a distribution system to provide intelligence. Grid components with flexible operation are needed.
- **DER Valuation and Compensation.** It is evolving but is very confusing for DER aggregators because every state has a different set of rules. For community-level opportunities, great value can be delivered to consumers, but utilities are chasing how it is going to land on the system. Will there really be enough value to support the model of DER aggregators?
- **Observation;** states are developing distribution level solutions to DER products. The process is inefficient because each state has to reinvent the wheel. What level of standardization is needed and to what extent? This is an evolving space that needs consideration.

Chris Irwin followed and presented information on the Department's transport electrification initiatives. Mr. Irwin discussed how OE has collaborated with DOE's EV Technology office, the emerging joint office of DOE and the U.S. Department of Transportation, as well the Office of Technology Transitions and Cybersecurity, Energy Security, and Emergency Response (CESER), among other offices. OE and collaborating offices created an ad hoc working group to compare notes on advancing EVs, and interactions, needs, and opportunities with the grid. This evolved into an active collaboration called Grid Assist. Grid Assist enables DOE to deduplicate efforts, develop a uniform DOE perspective, and serves as a method for engaging the public. Grid Assist meets on a bi-weekly basis for working meetings and on a quarterly basis for leadership meetings. Mr. Irwin noted that the amount of battery storage from EVs dwarfs stationary energy storage. OE would like power storage engineers to think of EV batteries as energy storage batteries. Report topics include V1G charging, V2X charging, or charging buildings without grid integration, and more.

DOE is attempting to understand issues around smart charge management and associated characteristics, which grid efforts are underexplored, and how this translates into the conversation around Distributed Energy Resources (DER). DOE is also exploring the distinctions between charging infrastructure grid connection methods (e.g. load service request or interconnection request). DOE is working on methods to help ensure people understand the distinctions in this topic. DOE is also working to understand flexible load service software.

Mr. Irwin added that grid transparency and the emergence of multi-stakeholder access have been an topics of interest for the EAC, and these developments exceed all regulatory systems. He said that incentives for charger scale and sites are needed, and that methods to triage Level 4 charging locations, incentives for Level 1 charging, or co-locating storage would be helpful on a regional basis.

EV load forecasting tools are needed to effectively plan for – building energy load models (through NREL’s building load forecasting tool). We can’t just stack EVs with building load, so adding EVs to building load models, homes with EVs with them, homes with Air Source heat pumps with them, etc. We need to consider how the least-resourced utilities can access and deploy these tools as they evolve. Load service requests may become interconnect applications (a transmission rather than distribution system application) for 10, 20, 60 MW L4 charging stations.

EVs and resilience – if an entity or resource can source resilience, it gets credit – what about the utility that anticipates the weather event and changes the incentive to get a 2-hour jump start on an outage scenario. Green Mountain Power is incentivizing resilience at the home (storage).

Additionally, multilateral data resources across stakeholders and increased data access could facilitate planning for DERs. However, solutions like hosting capacity maps are difficult to implement and data transparency comes with its own perceptions of risk. The resolution of data across stakeholder groups also has high value in questions of energy justice and equity to make informed decisions.

Q. Mr. Irwin mentioned that from an engineering perspective, we need ways to triage legacy infrastructure. Mr. Irwin asked the EAC what kind of research OE can conduct to help this. He noted that data and information sharing is crucial, and there is a need to reaffirm the roles of regulators, utilities, and communities to help ensure collaboration occurs and make informed decisions.

Tom Bialek noted that consumer behavior is implicit to understanding decisions. There are additional considerations in the context of this conversation. For instance, considering what customers want and actions customers are willing to undertake is important. If the consumer buys a product or service, they want the flexibility to use the product or service as they see fit. It is important to consider consumer incentives and methods, such as any kick-backs consumers might get from integrating their EVs with the grid.

Mr. Irwin said that we need a way to access services from DERs and make them reliable and predictable. In particular, reliability in engineering, behavior, and statistics is important.

Clay Koplin discussed a use case in which a distribution utility installed geolocated transformer sensors. The utility also has a fire detention package, and shares its cloud with the fire department.

Transmission operators could have similar visibility into distribution system operations.

Darlene Phillips mentioned that it would be useful to develop the five questions that a regulator or system operator needs to know for stable operations.

Rick Mroz referenced Mr. Paladino's comment of providing reserves and asked who would regulate that process. There is a new set of emerging responsibilities and obligations on services like reserves, which come with security issues.

Mr. Irwin noted that data needs are increasing and surmised what an electric sector data strategy could look like, and what energy sector data products could offer society.

EAC Subcommittee Updates

Energy Storage:

- Jay Morrison discussed the subcommittees plans to develop the 2024 Biennial Energy Storage Review. The last BESR was issued in the February 2023. Some of the key issues that the subcommittee will focus on will be lessons learned since the last BESR, battery recycling and reuse, realistic timing of technology implementation and how energy technology relates to other technology growth, the value of storage when stacking benefits, workforce, safety, cold weather's impact on batteries, and more.

Grid Resilience for National Security (GRNS):

- Dave Herlong discussed how the subcommittee is working on papers in response to guidance issued by the Office of Electricity. The papers are related to mitigating security risks associated to grid decentralization.
- Drew Fellon is working on a commercial/industrial innovation paper.
- Daniel Brooks is working on a pre-islanding paper.
- Missy Henriksen is working on a workforce development paper.
- Clay Koplín is working on a data security paper.
- Tom Bialek is working on a paper related to grid-forming inverters and opportunities for additional security.

Smart Grid:

- Tom Bialek advocated for a conversation on secure data portals. He said that the Smart Grid Subcommittee will review the Smart Grid Systems Report.
- Wanda Reder said that Kimberly Denbow will lead a working group and present recommendations regarding electric/gas coordination efforts at the June 5-6, 2024 EAC meeting. Darlene Phillips said that she would support Kimberly Denbow in electric/gas coordination efforts.

Assistant Secretary Rodrigues expressed gratitude for the EAC for their attention on critically important topics. He added that translating topics to actionable recommendations is critical for DOE.

Public Comment Period

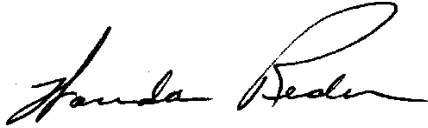
Ms. Reder opened the floor for public comments and Ms. Faith informed the group that there were no public comments.

Wrap-up and Adjourn February 2024 Meeting of the EAC

Wanda Reder said that it is important to develop an actionable and holistic roadmap focused on reliability, resiliency, affordability and security for the energy transition. The EAC will work to develop specific recommendations for DOE that are actionable. It is important to coordinate between regions and sectors and develop a national plan. Additionally, education and effective communications are important so that the public and stakeholders understand the issues, considerations, and challenges surrounding the energy transition. Missy Henriksen's paper in June will outline some of these aspects as it relates to workforce development.

Signature Page

Respectfully Submitted and Certified as Accurate,



04/25/24

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

Date



04/25/24

Clay Koplin
Cordova Electric
Chair
DOE Electricity Advisory Committee

Date



04/25/24

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

Date