



Reliability Advisory Initiative Meeting Minutes

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July 6th, 2023 – Kickoff Meeting
Reliability Advisory Initiative
2:00pm-3:00pm MDT

MEETING PURPOSE

Explore how ZEROgrid's Reliability Advisory Council ("RAI") can support RTO and corporate collaboration towards achieving a reliable, cost-effective grid of the future.

PARTICIPANTS

RAI Participants:

- MISO
- PJM

ZEROgrid Member Participants:

- General Motors
- Meta
- Salesforce
- **RMI**

MEETING AGENDA

- Introduction
 - Purpose and objectives of the RAI
 - Overview of agenda
- RAI Meeting Structure
 - What do you hope to get from engaging with corporates through the RAI?
 - What other parties would you like to see participate in this Initiative?
 - Is there an ideal meeting size?
 - Are there other do's and don'ts we should be mindful of for these sessions?
- Corporate Activities
 - Currently, what corporate activities do you see that directly support (or do not support) grid reliability?
 - How do you see that set of corporate activities evolving in the next five years?
- Future Meeting Topics
 - What topics should be discussed in future RAI meetings?
- Closing and Next Steps
 - Summarize takeaways from discussion, propose next steps, describe path forward for the RAI.

MEETING SUMMARY AND KEY TAKEAWAYS



- **Goal:** Use the RAI to create a “two-way street” of information sharing between grid operators and corporates, particularly related to how corporates create their energy goals and challenges to grid operators’ reliability mandates. RTOs would be limited to sharing guidance and feedback consistent with what is shared in public forums.
- Expanding RAI participants to other grid operators would be helpful to hear additional perspectives on reliable decarbonization. From the corporate energy buyer side, participation from heavy industry could add value.
- For grid operators, a recent challenge to maintaining reliability and planning transmission has been sudden, rapid load growth in specific areas due to new data centers. Tech companies are also beginning to experience this challenge as they approach the limits of individual utilities. Electrification (e.g., EVs, manufacturing, and buildings) is expected to contribute to this challenge as well.
- Other challenges for grid operators and corporates include:
 - Low visibility to behind-the-meter resource additions for grid operators;
 - Low awareness of grid reliability challenges from those planning data center buildouts, load growth from EV and battery manufacturing;
 - Lack of direct communication between corporates and grid operators;
 - The future grid resource mix potentially not supporting how grid operators traditionally review reliability;
 - An unclear view of load growth from a system perspective;
 - Insufficient investment in more flexible, clean resources;
 - Variable time horizons for different needs and milestones
- For future meetings, topics could include:
 - **Grids of the Future:** RTO perspectives of how grids of the future might look and how the voluntary market is helping, hurting, or could be doing more;
 - **Load Growth:** Corporate insights into EV, data center, building and manufacturing electrification load growth – where, when, and how much;
 - **Data capture and visibility:** How RAI participants can collect and share non-competitive data to support grid planning, project execution, and performance measurement;
 - **Generation:** H2, nuclear, fossil, solar, wind, etc., and ways to bundle or propose projects that make planning easier and support reliability;
 - **Grid hardening equipment and systems:** To support reliability;
 - **Policy:** How the voluntary market can lean in to adopt existing policies, federal funding incentives, or unlock policy roadblocks
- There was no consensus on specific meeting format and frequency, though attendees did express a preference for longer, more in-depth sessions.
- To close, attendees defined success over the next few months as:
 - Understanding what the roadmap looks like;
 - Developing the RAI into a forum;
 - Creating specific recommendations for corporates in various topic areas;
 - Understanding enhancements grid operators can implement to prepare for the future;
 - Creating a playbook for a broad swath of companies in the voluntary market



September 12th, 2023 – RTO/ISO Viewpoints

Reliability Advisory Initiative

9:00am-11:00am MDT

MEETING PURPOSE

The purpose of this meeting was to explore how the Reliability Advisory Initiative (RAI) forum can drive proactive, high-impact, system-level actions that support grid reliability and, in particular:

1. Hear how RTOs/ISOs think corporates could participate differently to support grid reliability;
2. Understand how RTOs/ISOs envision the grid evolving to meet decarbonization policy and load growth projections;
3. Prioritize deeper dive topics to explore in upcoming sessions.

PARTICIPANTS

RAI Participants:

- MISO
- PJM
- NYISO
- ISO-NE

ZEROgrid Collaborator Participants:

- Meta
- Salesforce
- GM
- Akamai
- RMI

MEETING AGENDA

- Introductions & Overview
- Corporate Actions Impact
 - What is the voluntary market is doing that's helpful and harmful for meeting grid operator mandates
 - What grid operator's biggest pain points and concerns are
 - If grid operators could harness the influence of the voluntary market, what they would have it do
- Future of the Grid & Priority Actions
 - How grid operators envision their grids evolving to meet load growth projections, reliability, and decarbonization policies



- Activities corporates and other energy sector participants, such as utilities or developers, could collectively work on to support grid reliability
- Upcoming Agendas
- Closing

MEETING SUMMARY AND KEY TAKEAWAYS

Corporate Actions Impact

- Pain Points and Concerns:
 - Across large parts of the east, renewables additions are primary driven by **state policy** rather than the voluntary market. In places where the voluntary market plays an important supplemental role to grid operator markets (based on the regions discussed), the current volume of corporate procurement is not viewed as an issue, and virtual PPAs are still a great option in the near- to medium-term for adding renewable energy capacity.
 - **Resource adequacy** remains the primary worry of most, if not all, grid operators because the pace of replacement capacity is not currently expected to keep up with fossil retirements and load growth. There's a perceived threat to resource adequacy in the near-term linked to price- or policy-driven fossil retirements.
 - The trend toward **24/7 procurement** appears welcome because it's viewed as putting a premium on resources that can generate in all hours to better match the customer load shape.
- How Corporates Could Support:
 - It would be useful for RTOs to know how behind the meter (**BTM**) resources will be operated by corporates. Much of the solar built in the Northeast is small enough to avoid having to participate in the wholesale electricity market, which will eventually become a challenge in some ISO regions.
 - Increased **off-taker certainty** produces higher quality projects with potentially shorter interconnection times.
 - **Demand must become much more flexible.**
 - It's difficult to know when demand-side resources can respond to reliability situations. Many states remain hesitant to expose any customer class to variable prices that could send a price signal to reduce load. Over the long term, as minute-to-minute variability increases on the supply side, grid operators will need higher flexibility on the demand side. **Wholesale market participation** defines the current gold standard. Since this won't be possible for every load, grid operators would like greater transparency on loads participating at the utility level as well.
 - **Cleantech/reliability pilots** are essential.

- Grid operators expressed a desire to see more evidence supporting the viability of emerging technologies. Otherwise, their default is to use traditional technologies.
- Despite a desire to have more emerging technologies participate directly in wholesale markets, RTOs have limited staff capacity to evaluate emerging technology projects internally. Corporate support for emerging technologies could be helpful in getting these adopted more.
- It was noted that some companies look at more than price signals, such as at reliability and decarbonization-related outcomes, to inform their energy-related actions.
 - A voluntary market that internalizes reliability and emissions values could allow faster uptake of emerging technologies in traditional energy and ancillary services markets.
 - While voluntary markets can support wholesale ISO ancillary services markets, they should remain separate as ISOs use ancillary services to maintain reliability. In other words, the ancillary services market must remain price responsive.

Future of the Grid

- **The importance of forecasting and planning:** Grid operators emphasized the critical role of forecasting and planning in understanding how the electricity system is going to evolve. They stressed that early information sharing can facilitate more proactive planning.
- **Load forecast:** ZEROgrid collaborators expressed interest in understanding how grid operators put together load forecast and how corporates could help inform them. Grid operators shared that they used different levels of information from different sources to form the forecast and were willing to invite their experts to walk through their forecasting process in future sessions. Industrial load growth from industries and data centers and widespread load growth from electrification and EVs were highlighted.
- **Interconnection:** ZEROgrid members asked about how to place load infrastructure closer to generation lines and were interested in discovering approaches for how to place infrastructure closer to where it is most needed.
- **Optimizing Existing Infrastructure:** The participants discussed the importance of maximizing the use of the existing grid system. In particular, grid-enhancing technologies (GETS) and clean repowering of retired or retiring fossil generation sites that already have interconnection could reduce the reliability impact of early retirement and long lead times for new renewable energy capacity interconnection.
- **Two-way Information Sharing:** Two-way information sharing between grid operators and developers at an early stage is key to being able to proactively plan the grid rather than always be reactive. For example, some grid operators were trying to provide tools of load locations to help customers be more informed when they submit new projects.
- **Stranded Transmission Capacity:** The potential for stranded transmission capacity due to excessive but unrealized load forecasts was raised. This apparently had happened in the past, although, high anticipated load growth may mitigate this now. ZEROgrid members expressed interest in working with grid operators to address this issue by exploring ways to place their load infrastructure along planned transmission lines by knowing where it is going in advance.

Upcoming Agendas (Tentative)





The group explored potential agenda topics to discuss in greater depth in upcoming sessions. A few potential topics included:

- Load growth
- Dynamic Load
- Behind the meter technologies
- Building electrification & datacenters
- Transportation charging infrastructure and manufacturing electrification
- Interconnection
- Transmission
- Two-way information sharing to support proactive planning
- New technology projects

Closing

- **Additional Experts:** ZEROgrid members and grid operators shared their interest in inviting other load growth and infrastructure planning experts to meetings, as applicable, to share more technical information.
- **Explore Deeper Problem Solving:** Participants want to get into deeper problem solving in the RAI forum now that the RAI has explored the bigger picture in the last two sessions.
- **Meeting Format:** Longer and less frequent meeting occurrences is still preferred so the RAI will continue following a bi-monthly cadence. RMI will work with the RAI members and corporate participants to identify and prioritize deeper dive topics and questions to explore over the next several sessions.

