**via posting**

**TO:** Interested Industry Parties

**FROM:** Elizabeth Mallett, Director, Wholesale Gas Quadrant and Retail Markets Quadrant

**RE:** Final Minutes from November 15, 2023 WEQ Business Practices Subcommittee (BPS), RMQ BPS, and WEQ Cybersecurity Subcommittee (CSS) Meeting

**DATE:** November 20, 2023

**WHOLESALE ELECTRIC QUADRANT**

**RETAIL MARKETS QUADRANT**

**Business Practices Subcommittees and Cybersecurity Subcommittee**

**Conference Call**

**November 15, 2023 – 1:00 PM to 3:00 PM Central**

**FINAL MINUTES**

1. **Welcome**

Mr. Phillips welcomed the participants to the meeting. Ms. Trum provided the antitrust and other meeting policies reminder. The participants introduced themselves. Mr. Phillips reviewed the agenda. Mr. Brooks moved, seconded by Mr. Galloway, to adopt the agenda as final. The motion passed a simple majority vote without opposition.

The participants reviewed the draft minutes from the October 23, 2023 meeting. Ms. Lee was added to the attendance list. Mr. Watson moved, seconded by Mr. Galloway, to adopt the revised minutes as final. The motion passed a simple majority vote without opposition.

The final minutes for the October 5, 2023 meeting can be viewed at the following link: <https://naesb.org/pdf4/weq_bps_css_rmqbps100523fm.docx>.

1. **Continue to Discuss** **2023 WEQ Annual Plan Item 3.d 2023 RMQ Annual Plan Item 4.a – Review cybersecurity protections, such as Public Key Infrastructure (PKI), that may be necessary to secure electronic communications for distributed energy resources (DERs), and develop business practices as needed**

Mr. Phillips stated that four workpapers were posted for the meeting to facilitate further discussion on the scope of the response to the annual plan items: [DER Communication Paths Diagram](https://naesb.org/pdf4/weq_bps_css_rmqbps111523w1.pdf), [DER Communication Path Interactions Chair Work Paper](https://naesb.org/pdf4/weq_bps_css_rmqbps111523w2.docx), [NIST Cybersecurity Framework Spreadsheet](https://naesb.org/pdf4/weq_bps_css_rmqbps111523w3.xlsx), and [NIST Framework-Roadmap for Smart Grid Interoperability Standards Release 4.0](https://naesb.org/pdf4/weq_bps_css_rmqbps111523w4.pdf)

The subcommittees reviewed the DER Communication Paths Diagram ([DER Diagram](https://naesb.org/pdf4/weq_bps_css_rmqbps111523w1.pdf)). Ms. Lee asked whether the DERs represented by the triangles were home-based. Mr. Pence stated that one example of the individual DERs in the triangles could be rooftop solar resources communicating back to a DER Aggregator. Mr. Galloway asked whether DER Aggregators would be the only middlemen contemplated between DERs and Distribution System Operators in the DER Diagram. He suggested that the diagram be expanded to include more than one communication path or intermediary, as there may be co-ops or municipal entities involved with DER activity that could work with the DER Aggregator as well. Ms. Lee agreed and noted that third parties may also perform intermediary roles.

Mr. Watson stated that North Carolina does not participate in a regional electricity market and, therefore, the communication paths above Communication Path D may not be applicable. The subcommittee modified the DER Diagram to add footnotes to considering potential variances in different markets, including multiple levels of intermediaries between the DER and ISO/RTO (e.g., co-op or municipality), non-RTO markets, and third parties interacting with individual DERS that communicate back to the DER Aggregator. Additionally, the subcommittee added a note to consider whether a path existed between a grid operator and a distribution utility. For example, a utility ISO sending dispatch signals to the utility to dispatch a battery on the utility’s system. Mr. Brooks stated that DER Aggregator is not so much an entity, but a role that could be filled by several entities. He stated that the line between bulk system operator and Distribution utility is missing. The subcommittee added arrows on the left side of the diagram to represent communications, such as those between the New York ISO to ConED.

Mr. Brooks stated that the Electric Reliability Council of Texas (ERCOT) has deployed a substantial amount of DERs on their system. He stated that only authorized parties should have access to the configuration. Mr. Watson stated that the concern is how the utility verifies that it is an authorized party providing the directions. Mr. Brooks agreed and noted that DERs are developed by various manufacturers with no standardized path for access and control. Ms. Lee suggested that the participants review the publicly available National Renewable Energy Laboratory (NREL) work on DERs communications and use cases. She explained that there are regulators, including California, that are currently working to come up with relevant requirements. Ms. Lee stated that California is now developing standardized requirements for DERs and, during a recent meeting, the Solar Advisory Panel, noted that their work could potentially conflict with this NAESB effort. She stated that she would take an action item to reach out to the group. Mr. Phillips stated that the threat vector focuses on DERs and the communications between the DER Aggregator, the Distribution Utility, and the individual DERs is ambiguous. Ms. Lee agreed and stated that there is minimal security between the DER Aggregator and the DERs.

Mr. Brooks stated that the distinction between access control and authorization is not well understood by the layman. Ms. Lee agreed and noted that a digital signature is not access control. Mr. Brooks asked the whether the standards development effort should merely cover access control or add in authorization as well. He asked for a description of the difference between the two concepts. Mr. Galloway explained that, in this context, access control is identifying what is allowed to communicate between the DER and the working grid. He stated that authorization is a business-concept expressing the expectation that the communication is legitimate and approved as opposed to other attempts at communications. Mr. Galloway stated that the terms are intertwined, but are different decisions because managing access is at the level of communication exchange, but managing authorizations is done on the basis of what is approved or not on the basis of that channel.

Mr. Brooks presented an analogy of a stadium to further illustrate the difference between access control and authorization. He explained that checking that the potential attendee has a ticket is access control, just like presenting a Public Key Infrastructure (PKI) certificate to a DER. Mr. Brooks stated that authorization is what you can do once you have entered the stadium. For example, whether you are allowed to enter a specific box suite. He summarized that access control is the need to prove you can access the device and, once allowed in, the DER authorization takes over. Mr. Brooks noted that Mr. Galloway mentioned meter readers which is a good example of an entity that has an authorization role. Mr. Galloway stated that the authorization will vary and that access control from an entity to a DER should also contemplate the DER communicating back. The participants added additional notes to the DER Diagram to further consider both access control and authorization control for Paths C, D, and E.

The discussion turned to additional potential threat vectors, and vulnerability exploitation, including the Cybersecurity and Infrastructure Security Agency (CISA) Known Exploited Vulnerabilities (KEV). Mr. Galloway stated that some virtualization work aims to ensure that if one takes control of the communication path and uses the network, the protections can be managed without interfering with the functioning of the technology and what is installed in the DER.

Mr. Phillips asked whether the participants should discuss the difference between DER types, virtual power plant systems, distribution level assets such as solar/battery. The question was added to the list on the DER Diagram. Mr. Brooks stated that it would be great if a NIST representative could join the subcommittees and explain the Smart Grid Interoperability activities and from Green Mountain Power on their virtual power plant systems activities with power walls. Ms. Trum encouraged the participants to review the NIST Framework for Smart Grid Interoperability which was recently updated and focuses on DER models and system interfaces. She stated that she will reach out to members with active DER programs to potentially speak at upcoming meetings, along with any other groups the participants recommend.

1. **Other Business**

There was no other business discussed. The next WEQ CSS, WEQ BPS, and RMQ BPS meeting is scheduled for December 5, 2023. During that meeting, the subcommittee will continue work on the annual plan.

**4. Adjourn**

The meeting adjourned at 2:26 PM Central on a motion by Mr. Galloway, seconded by Mr. Brooks.

**5. Attendance**

| **First Name** | **Last Name** | **Organization** |
| --- | --- | --- |
| Dick | Brooks | Reliable Energy Analytics |
| Michelle | Coon | OATI |
| Keith | Dalia | Bonneville Power Administration |
| Katie | Davis | BPA |
| John | Galloway | ISO-New England |
| Annabelle | Lee | Nevermore Security |
| Elizabeth | Mallett | North American Energy Standards Board |
| Todd | Pence | Southwest Power Pool |
| Joshua | Phillips | Southwest Power Pool |
| Lisa | Sieg | LG&E and KU |
| Danielle | Smith | Sacramento Municipal Utility District |
| Karen | Stampfli | Tennessee Valley Authority |
| Caroline | Trum | North American Energy Standards Board |
| Sam | Watson | North Carolina Utilities Commission |