

Summary of June 19, 2018 MADRI Meeting Philadelphia, PA

Approximately 30 people attended the June 2018 MADRI meeting in Philadelphia, including in-person and webinar attendees. This reflects lower attendance than most MADRI meetings. We can only speculate on the reasons, as an unusually high number of people who had pre-registered for the meeting did not in fact attend.

The meeting focused on the topic of electricity system planning.

Distribution Utility Planning

For the morning session, the group heard three different examples of how MADRI-state utilities currently plan for the maintenance and expansion of their distribution systems. The speakers also reflected on how their planning practices are evolving, especially to account for the growth in customer-owned and third party-owned distributed energy resources (DERs). Lastly, the three speakers reflected on planning challenges. The three speakers represented PPL (PA), First Energy (a holding company with utilities in MD, NJ, OH, PA, and WV), and PECO (PA). PPL and PECO are owned by holding companies that also have utilities in other states and countries. Each speaker suggested that planning practices are similar across all the utilities owned by their holding companies, with an increasing push to harmonize practices. However, the planning challenges arising from DERs are of course more pronounced in jurisdictions with higher DER deployment than in areas with little or no deployment.

The three companies were very similar in some respects, but also identified some differences in their approaches to planning. All three develop 5-year distribution system plans, and all three focus on the same core planning goals: reliability, power quality, and system protection. DERs pose challenges for these goals. Reliability depends on having adequate capacity on the distribution system, which requires accurate load forecasting. But behind the meter DERs are modifying customers' net loads in ways the utility can't see. Customers' true capacity needs – which the utility must be prepared to meet whether the customers' DERs are operational or not – are “masked” and hard to predict. DERs also have impacts on power quality, especially voltage, that can vary with the level of deployment and the location of DERs on individual circuits. And finally, DERs complicate efforts to identify faults and recover from outages. All three utilities are modifying their load forecasting methods, their energy management systems, and their interconnection standards and procedures to try to address these challenges.

Surprisingly, the three speakers identified few significant differences in their companies' planning practices. They indicated that this is largely because EPRI shares information and best practices among its member utilities on this topic. At least two areas were mentioned for which there were differences. PECO appears to have somewhat different challenges than the other utilities on the panel, due to having a more urban service territory with shorter lines, older assets on average, and other factors. PECO is also the only utility on the panel that offers an online hosting capacity “heat map” to help customers understand where interconnection of DERs will be relatively easy or difficult.

RTO Planning

The afternoon session began with a presentation from a PJM representative on how the RTO's load forecasting and planning practices are changing to account for the impacts of DERs. In addition to 8 GW of demand response resources that practice actual load shedding, about 2 GW of distributed generation resources currently participate in PJM's wholesale electricity markets. PJM estimates that an additional

7 GW of DERs are interconnected but do not participate in the wholesale markets. DERs thus account for about 4% of the generation resources on PJM's 170 GW system. PJM has limited or no "visibility" of these non-wholesale DERs but is adapting its load forecasting practices to estimate their impacts.

From 2015-2017, PJM made a concerted effort to better forecast the expected generation from DERs participating in the wholesale markets in hourly and 5-minute (same day) increments. Now, in 2018, PJM is building, testing, and hopes to implement a strategy for forecasting the expected generation from non-wholesale DERs in hourly increments and incorporate that generation into a net load forecast, around which wholesale resources can be scheduled and dispatched. For the purposes of longer term capacity planning, PJM first estimates the actual historical generation from DERs and then adds that to historical load data to see what the load would have been, absent DER generation. Next, they use a forecast of future cumulative DER deployment and the expected generation from that to modify the future load forecast.

The most significant question for the PJM speaker was, what does the RTO do to coordinate with utilities on this kind of load forecasting? The answer is that PJM has a DER subcommittee that looks at wholesale DERs and barriers to participation in markets. That group also considers these load forecasting questions, to some extent. Also, PJM monitors state PUC proceedings that will affect DER deployment.

IDP Paper Discussion

In the final session of the day, the group discussed plans for developing a guide for MADRI state utility commissions on integrated distribution system planning (IDP). RAP proposed a drafting process and timeline for completing the guide by the end of 2018. RAP also solicited volunteers to help with the research and drafting of the guide, and requested information about useful references documents and subject matter experts that might potentially be interviewed.

Only a couple of people offered to help with drafting the guide, or named reference documents that could help, but most people in attendance indicated they would check with colleagues in their organizations and respond to an email follow-up from RAP (which was sent on June 25, 2018). Several attendees commented on the draft outline for the guide. More than one suggested that the outline's use of the term "barriers" to IDP came across as unnecessarily negative and didn't reflect the opportunities inherent in IDP challenges. Several attendees also suggested topics that were missing from the outline (which will be added before drafting commences in July).