

Forging Consensus

Multi-Stakeholder Process: What's the Role of the Utility?

A Conversation with Ahmed Mousa

PSEG

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VoE 3 - AHMED MOUSA INTERVIEW

Q: Welcome to the Voices of Experience: Microgrids for Resiliency podcast. Voices of Experience is a US Department of Energy Advanced Grid Research Division initiative. It captures the experiences, insights, and

lessons learned from utilities at the forefront of implementing merging technologies. This podcast explores the key points of a virtual discussion recently led by Ahmed Mousa who's Manager of the Utilities of the Future at PSEG based in New Jersey. Hi, I'm Marty Rosenberg, an energy journalist and host of this series. The topic of our discussion today is multi-stakeholder processes: what's the role of the utility? Hi, Ahmed. How are you today?

A: Thanks. How are you? Thanks for having me.

Q: Yes. Talk to us about the work you've done at PSE&G to study the feasibility of deploying microgrids across the PSE&G and across New Jersey.

A: Sure. Thanks for the question. Basically, as you may know, around 2012, October 2012, the East Coast got hit by Superstorm Sandy, and that was a game changer for the industry and for the whole energy world. We realized how important having a reliable power system is. After that, we built our system to be more robust, more resilient, more reliable, and our commissioner in New Jersey at the Board of Public Utilities started a town center microgrid initiative for a couple large cities in the state of New Jersey. Basically, they're working on a proposed microgrid. There are some similarities, but there are a

lot of differences between them, and from the 13 that were initially proposed, 8 were in our territory. Common names are important like large cities like Trenton, Camden, Hoboken, and others. They were all very interesting projects, and we worked with the stakeholders from the beginning to kind of help guide the process, provide the required data, the expertise.

Q: Are these 8 underway, functioning, or are they planned and under construction? What is the status of them?

A: Yes, this is the very, very early stage. It's early design and conceptual work. Right now, they are working with the Board of Public Utilities for the next level analysis. They allocated these 4 million dollars in the budget for the year 2020 as to continue working. We are awaiting a decision whether we're going to work with all 8 in our territory or if the EPU would select a fewer number. Currently, we're in the works. The EPU developed a ranking system to kind of rank the different microgrid technical abilities, the benefits, and the other very good information that is available on the website.

Q: Ahmed, let me ask. There's nothing inherent in the technology of microgrid that requires utility participation. Are there any of these surfacing outside of

the utility? Then, let's talk about the advantage of having the utility involved.

A: Sure. As you mentioned, I would say, to take a step back, what is a microgrid? I think that's important to understand. I'm always a big fan of going to a dictionary and googling. When I went to the dictionary and looked up microgrid, there were no results found. If you just google microgrid, you kind of get the definition. It's a small network of electricity users with a local source of supply that's usually attached to a centralized national grid, but it's able to function independently. The common microgrids that are available nowadays are like, you know, university campuses because they are responsible for their own distribution system. The utility will provide them with a medium voltage supply or a transmission supply or sub-transmission supply, and then they are responsible for self-transmission. It is, of course, a much larger scale, but it's easy from that perspective. However, most of the newer-style microgrids, they cover, I would say, multiple locations. In one location, you may be crossing multiple right-of-ways, multiple streets to connect different outside businesses and residents and critical customers at prisons and hospitals, so forth. As a result, there was a

need for the ability to, I would say as an advisor, you all have to support since all the systems are currently supplied 100% by the utility.

Q: New Jersey not only had the destruction of Sandy, but before that, Irene knocked quite a bit out of service, and that led to a rise in discussion about the role of microgrids. Does PSE&G believe that its service territory is going to have more than these pilots eventually? The term grid of microgrids has been batted around. How big do you see this going?

A: I mean, to differentiate between utility in general and the microgrid-- think of it as, yes, that. The microgrid, you know like the motherland, and then Superstorm Sandy and before that Irene, of course there was damage from the flood, so they can use these in Jersey, New York, and others. They will basically rebuild the system to be more resilient, elevate some substations, transformers, converters, some of the on-the-ground transformers so we enhanced the system to be more robust. Hopefully, God forbid, we're not going to have any similar events. However, if we were to be hit by another Sandy, we will be prepared, and then, I would say from the private business and a lot of, I would say, similar campuses and

communities, they got together to evaluate, I guess, the benefit to having a microgrid, and then I would say the microgrid is split into two: those who would be operating in parallel with the utilities which is very important for us to engage. On a 24/7 basis, they are connected to us, so they may have their generation running, but they are also connected to the macrogrid. Those others, they are designed, I would say, for the dooms day scenario that we'll be able to disconnect from the grid if the grid is down for whatever reason and continue functioning properly, so each of those designs have their merits, their challenges. Right now, as I mentioned, from our permission perspective, the expectation is that there would be more microgrids in the area, New Jersey, and others, and we continue to work with all the stakeholders to provide, I would say, the technical expertise that is needed and cost-effective in a reliable marketplace. Again, especially if you're going to operate in a dooms day scenario, if the utility is being hit by a very, very nasty storm, I would say the microgrid must be robust enough that, if our system is down, they are able to survive.

Q: You've been part of a study on distributed energy resources at the New Jersey Center DER initiative. Talk about that.

To what extent are microgrids and distributed energy kind of synonymous?

A: From a DR perspective, I'm happy to say that New Jersey is number 7, between 6 and 7 in the whole country which is very impressive considering how weak the solar [unclear] is in the East Coast compared to areas like Arizona and California. We have a very, very generous limit. Our goal is to connect as many renewable energy resources as possible. As a result, we do have existing technical requirements that would enable more renewables without basically disturbing the customers' voltage or any other issues. For example, in comparing us to other locations, other states may have very large solar installation, but basically, they are in the middle of a desert connected to a transmission system. However, for us, we don't have that large parcel of land. As a result, all of our renewable connections are tied to our distribution system. The solar farm, a very large one maybe across the street from a house or from a factory or from a data center-- as a result, it's very important to maintain proper voltage and not cause any faulty issues. Again, we're very fortunate from that perspective. Also, another thing that we're proud of is that we allow all the residential interconnections to

connect regardless of the amount of solar connectedness. Now, with respect to microgrids, my expectation is some of the microgrids would have solar only. Others decrease the reliability and may have solar and energy storage. In that case, it would help on non-sunny days or if the solar installed is not sufficient to continue supplying the microgrid. As you know, Superstorm Sandy, that took a couple of days to recover, so there's all this discussion about how much resources you have. I would say from the microgrid perspective right now it's nearly solar and energy storage that we expect to see more of.

Q: Talk about the multi-stakeholder process. There's a lot of diverse people out there, customers with different energy needs. What's the role of the utility in terms of getting them up to speed on the capabilities and complexities of microgrids? Talk about what the utility-- in this case PSE&G-- needs to be doing.

A: I think the first thing that we do which is very important is the education. I think, as you hinted before, although there's an existing microgrid definition, I would say it's really up to the customer and up to the utility and up to the system really. The actual definition varies significantly. What is a microgrid? What are the

components of a microgrid? I mentioned this in the presentation. You know, what would be the reliability score for a microgrid. I think one of the important things is we must educate. As I mentioned, the mode of operation, are you going to be in parallel? Are you going to be operating with kind of on a dooms day scenario? Just educate them about the realizations that are required. How do you disconnect from the grid? How do you come back to the grid from a system of perfection perspective? That's important to discuss and explain to them [unclear] reactive power because, right now, if you have a residential solar on your rooftop solar, you are generating grid power only, and if you have enough solar panels installed compared to your house's load, then you may export some of the generation to the utility. However, the customer's always absorbing or receiving their reactive power required from the grid. Once you disconnect, now, the available assets, whether they are solar only, solar and storage, they are responsible for providing the required [unclear] power and reactive power. You know, stuff like that, from the basics to a more detailed analysis about the communication, about how we're going to disconnect from the grid if the system's completely down, highlight the importance of a robust

system of operations plan, and communication is very important. We start from the earlier stage and explain to them about the loads, the connection. A lot of times, just discuss the distribution system itself.

Q: Just to get back to the question a bit-- how do you analyze the stakeholders? Do you divide them by industrial customers, commercial customers, regulators? How do you define stakeholders, and how do you bring them into the discussion?

A: For example, again, the large effort we have is through the EPU. The town center, that was our commissioner-mandated program. They have worked with the commissioner first, and then we worked with them after, so after they had a very early design. We discuss the proposed plan, the cost that they want to connect. It started from effort from our regulatory bodies. They come into us with asset management and others to provide technical support. We may receive a question or concern about a customer, whether it's an industrial or just commercial customer about data centers. I would say it's usually initiated by the customer themselves or from the regulatory bodies, and then we would provide the required information.

Q: Ahmed, for our last question, I would like to focus on your

day job which is your title as Utility of the Future Manager. Previously, we have had a discussion with Ralph Izzo, your CEO, and I know he's very intently focused on the evolving mission of the utility. To what extent do you think convening the stakeholder process around microgrids is helping define the future of your utility and other utilities?

A: Basically, just a quick summary-- the system of the future or the utility of the future, the main goal basically is to make sure our distribution, our transmission, and the distributed energy resources that are connected to the system are capable to meeting the future. We have a plan by the governor for 100% renewable by 2050, so our goal is to make sure that we have a reliable and resilient system by the year. Very important to us is climate change, so we work towards a better environment, a better climate while again maintaining the reliability and resilient system. It's going to be an ongoing theme, maintaining reliability and resiliency, and in the future, based on the current outset projection, the microgrids will be part of the future, so our job is to, again, ensure that all customers basically have the required liability to operate. The best example that I know of is something like the COVID-19 we

are witnessing right now which was completely changed in the design. However, the system is performing very smoothly, and our ability is well-maintained even though most people are working from home. In short, the current expectation is that we're going to continue to see more and more microgrids connecting to systems in general, whether it's New Jersey or others. Our goal is to ensure that their system is robust, reliable, that there's interconnection that the customer understands what needs to be done, what are the critical items, and then to provide very efficient and technical information to reduce the cost for them and to make sure that their system will basically operate as expected.

Q: Great. Thank you, Ahmed.

A: My pleasure. Thank you.

Q: Thank you for listening to the Voices of Experience: Microgrids for Resiliency podcast. Please subscribe and review this podcast, if you can, on your favorite podcast platform. For more information on the Voices of Experience initiative, please visit SmartGrid.gov.

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