

MARTY ROSENBERG

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JOE SVACHULA, ERIC HELT INTERVIEW

Q: Hi, and welcome to Grid Talk. The whole world is responding now to the sweeping coronavirus pandemic, and it was time to convene a discussion about it with the largest utility operator in the United States, Exelon Utilities, which has in excess of 10 million customers in 6 states. We're here to talk about how they've used their smart grid investments to be best positioned to deal with this epic disruption in our lives and in our economy. We have with us today Joe Svachula, who's Exelon Vice President of Strategic Planning. Hi, Joe.

A: Hi, Marty.

Q: We also have Eric Helt who is Exelon's Vice President, uniquely situated to comment on what's going on on the ground. He's their Special Projects Incident Duty Officer for COVID-19. Hi, Eric.

A: How are we doing?

Q: Good. You tell us how we're doing. I just read on the internet that you had at least one illness in your work force at a nuclear plant with 23 nuclear reactors at 14 sites, Eric. How are you taking steps to make sure those

plants remain available as needed?

A: Yeah, we ramped up just like the rest of the country about 3-4 weeks ago. We actually had started planning even before that around some of the materials that we will be requiring for our work force, both in the plant and out in the field and in some of our control rooms. About 3 weeks ago, we really started ramping up as the rest of the nation. We started implementing more social distancing, so a lot of our control rooms and control centers had backup facilities, so we started splitting our work force so that they could work with more distance between each other. About 3 weeks ago, we went to remote work, work-at-home, for a number of folks in our business that can work from home, so that also allows us to spread out those folks that have to come in to the office or the control room to practice social distancing, so that was kind of the first step we took a number of weeks ago, and we're just continuing to plan going forward about how this thing could further escalate.

Q: Do you have any sense of how many those 33,000 employees may be sick today?

A: We get numbers on a daily basis. We have not seen a large number of instances yet. We're below 1% on a call-out rate

only. We're about that now. We do have a number of cases that are up for testing. We have a number of positives across our employee body as well. Then, we have a number of folks like others businesses as well that are self-quarantined because they have may have been exposed but are at home just in case they are positive that they don't spread it. The numbers are not high now, but we watch them on a daily basis, and we're looking for trends going forward to potentially step through our process here to potentially escalate responses that we might need to take.

Q: Joe, tell us with your 10 million customers, many of whom we trust are at home now, self-insulating, and many of your companies have shut off operations-- what's been happening to your demand? Has it stayed the same? Do you see major changes in how people are using electricity?

A: We've definitely seen a reduction. We're still learning. I think one way to think about it, what's been relayed to me is I think about every day now as a weekend. Weekends might mean some industry is up, but right now that's full production and a lot more usage of potential customers. Weekends is a good way to approximate and think about this.

Q: You and I have talked extensively over the years over what Exelon and its utilities have been doing in terms of smart

grid investment. Tell us how that has prepared you to deal with a moment such as this. Are you finding that you have capabilities that are really valuable and are key to your operating smoothly in this situation?

A: Absolutely. Let me highlight on a few of the big ones everybody is aware of. Let's start with smart meters. That was one of the first parts of smart grid, if you will. What smart meters have done is taken essentially a big meter reading contingent for us off of the street. They've been redeployed as linemen and elsewhere through the company. If you can imagine 10 million meters that need to be read once every month, our employees were literally touching every home, every business in the service territory on a monthly basis. In addition to that, we get into some of the denser urban areas. A lot of those buildings and the meters that they need to access are multi-unit buildings, so there may be multiple residents in there. During these times, that's exactly the type of situation you want to avoid. Our customers don't want strangers in their properties either, so I think that's probably one of the biggest opportunities right now. Additionally, those meters have added some capabilities as you said that. The capabilities that we're leveraging are

smart meters, so we can talk to them. In years past, we had to send trucks out to investigate problems, so we can ping the meter to determine if there's an outage. We can check voltage on those meters, so essentially, we have the ability to remotely troubleshoot those meters. In times when people move (granted, they have slowed down a little bit), but if people are moving into residences and homes, again, we had to send trucks out to connect people. That could take time, and now, we're able, with a flip of a switch, a remote switch, to connect those meters. I should add too, Marty, a little tangential to this. When people don't pay, we have the ability to terminate service. We have suspended that at all of our utilities, so when people don't pay, we are no longer cutting, and we've grown a step farther. People that were recently terminated for non-pay, we're enacting the process of reconnecting them, so we're trying to get customers connected to keep them in their homes to keep them safe. The other big one is reliability of the grid, so we've added a lot of distribution automation, and all of our utilities are performing up near the top of the industry. I think ComEd had a recent year that they would argue was best in the industry. You can imagine how important reliability is now. It's always

important, but if you're in a home and you have a power outage, you're not able to go to a hotel. You're not able to take the kids to the park or the lakefront downtown. You're basically in your home, so power is as critical as ever, and having very reliable service and just terribly important. It also allows our engineers to access the equipment and troubleshoot it remotely. If we had issues with any of the switches or computer issues, the smart grid also brought along a lot of communication systems, so we're able to talk to the devices, troubleshoot those in the homes, not having to roll trucks, so those are the examples. The theme there is being able to do things remotely and not have people out in harm's way or in the public way doing work. That's not to say we're not doing a lot of critical work. Our crews are at work every day. We're keeping them employed, but they're doing a little bit more critical work than the things I discussed here.

Q: Do you think if the virus like this would have hit 10 years ago before these smart grid investments were made you would be at an operational disadvantage compared to today?

A: Obviously, that's a hypothetical. I don't know with the number of meter readers out there-- we may have them hunker down and we may be estimating meters which would cause a

lot of, I think, financial issues over our systems. We would-- obviously, if people called with trouble, we would have to roll trucks and interact with customers which is something we're trying to avoid, so absolutely, it's been a big help, and it would have been a completely different world a few years ago.

Q: Eric, tell us a little bit what you're seeing at your nuclear plants. Are people self-isolating there? Are there people camped out at the plants? How are you rallying your work forces?

A: No, we are continuing the work plans that we had at all of our nuclear plants. You know that nuclear plants and power plants in general, spring and fall is their outage period so that they can be ready for the load that's required across the grid in the summer peak time, so we have looked at each of our outage windows and cut them back to just the critical work that needs to be done, refueling and some ancillary work, but they are progressing. The ones that are in outage actually have raised their level of screening, and we do have sequestration in our plans for critical control room personnel, but we have not triggered any of those yet. We've not had any illness in the critical limited number of people categories yet, so we

continue to provide safe and clean electricity to the grid. Across our nuclear fleet, a couple of them are in outages, I mentioned, and the rest of them are chugging along just fine.

A: Marty, if I can hop on Eric's comments-- we're essentially a utility, so nuclear is a different operating company within Exelon, so the stuff Eric and I hear on calls, people talk about all their plans, but I think our proxy are closest examples with what Eric talked about in the control rooms. We don't have direct ties with the nuclear station. That's a different part of the company.

Q: Right. Let's take a minute, Joe, and talk about the granular intelligence you're getting through your smart meters and your smart grid in terms of what's actually happening with your 10 million customers that are, those that are home. Can you tell what kind of activities they're doing in the home? Is there anything that you can bring to the public awareness in terms of the demand when it's peaking during the day, how much internet usage is going on?

A: Interesting questions-- I would tell you its a sensitive issue. We don't have the ability to look deeply into what's happening on a moment-by-moment notice or a time

frame with our customers. We view the data as the customers' data; should they choose to offer that to the third party, we make that available to them, but we're not looking at that level of granularity. We also don't have any knowledge of internet usage, obviously like the ISP type of providers. Load, I would tell you, hasn't been heavy. We're at least in our utilities and kind of what we would call the shoulder months where we're coming off of winter. There could be some electric heat, but we're coming off of winter. We're not quite in summer, so air conditioning isn't up and running, so we've not seen heavy volumes yet.

Q: Joe, you and I have talked about your Brownsville micro grid effort. Is there anything that you're learning that makes micro grids even more appealing to you in Exelon's future?

A: Just a little bit. That's the ComEd utility in Brownsville that is just south of the Chicago central business district, and ComEd is in the process of deploying about a 7-megawatt micro grid there. It went through the first major milestone late last year, and that was to actually simulate an islanding of the electric footprint of Brownsville. When I say "simulate," we basically did it in

a way that no load flowed through the ties. We didn't actually physically open them, but we modeled it that way, and we did it with a lot of portable generators. That was to basically prove out the controls, and the next step that we'll complete by the end of this year is to add generation into the Brownsville footprint. There's been some pretty neat partnerships. The solar provider is going to put solar panels on the roofs of public housing within that footprint, and we'll have opportunity to lease that solar on a [unclear] basis. In the mean time, on everyday type of usage, the customers in the public housing, more homes will benefit. We'll also be working with group parties on some dispatchable generation, so that all will be put in by the end of the year and fired up, and we will have the functioning micro grid that we want to learn from and to share the learnings. One thing I would add too, Marty, and I love telling this story is as we've worked Brownsville and as we've gotten the community involved, they've given us different definitions, I would say, or different yard sticks to use as how we might measure resiliency. We've talked to them about what this can do for their community. They've encouraged us to explore things like economics. How can you put people to work in our community? How can

you help with crime? How can you bring the next generation along to understand these technologies? We've expanded a little bit of what we've done in a way that some of the projects we've put in we've employed people in the community. We have some street lights that run off the grid, so to speak. There's a battery in the wind and solar. We've moved those closer to places that potentially has primaries, so we are trying to partner with the community, and I think that's, to me, one of the most interesting learnings is that they define things a lot differently than we do. We have a unique opportunity to partner with our communities to understand what their problems and needs are and work with them on solutions.

Q: Joe, I'd like to take a minute and ask you to take it down a different road here as Vice President of Strategic Planning. Exelon's a big business with 34 billion dollars in revenues, and our country is facing an unprecedented economic recession and downturn. There's been talk and action in terms of federal stimulus money. Last time we went down this road after 2008, there were major funds directed into the electric utility sector in terms of stimulating development. Do you see a potential for even greater smart grid deployments as our country starts to

gear up and come out of this recession, and how will your business have to evolve to deal with that and possibly face its own internal challenges as that 34-billion-dollar business has to deal with a new set of realities?

A: We will see how this plays out. The smartgrid, I would say, Marty, is a journey, and the grid is going to continue to evolve. It's not a destination where the grid is now smart. We view our utility structure evolving more towards a platform, and often, that can be an overused term. What I mean when I say we're a platform is we let people connect, right? People can connect solar; people can connect storage, and we enable that. We do it in a way that we can provide for all of the customers. I think that evolution to our platform is going to be really important. Whether there's stimulus funding, I think that remains to be seen. I've already some signals that people don't want to support green new deals, and they don't see how Washington works that out. One area, I think, which may be of interest as a potential stimulus dollars find their way is we have had areas that we're trying to help accelerate the advancement of broadband, so there are some areas in Washington, I've heard, they are underserved communities, and as the schools have moved to e-learning, they're

challenged to get the kids to even connect, and we've got a lot of assets and infrastructures. People, telcos, and others typically attach to our poles. Is there a way to partner those as communication needs expand? Is there a way to potentially use some of our assets or share assets with other customers? I think there may be opportunities that emerge at an intersection between some of the community and utility needs. It's a great question. We are very well aware of it. We sent requests to all of our utilities to start to brainstorm a little bit about where we might want to go with this, and we're going to monitor it and see what happens in Washington.

Q: Let me just follow up with this question. As a utility that's shifting into operating as if you were on permanent weekend for the duration, for how many weeks this crisis lasts, that's going to put a major strain on our business. Do you need to turn to anybody to figure out what kind of steps you might need to take to deal with this unprecedented change? I am thinking of the federal labs that are out there have great analytical and modeling capabilities. Might they be able to help utilities deal with this?

A: I was actually going to pivot that towards Eric. He ran,

in his last job, the dispatch centers and operations at PECO, so he's probably much better to answer that question than I, so Eric, I will put you on the spot with that one.

A: Oh, no. I think we have to learn a lot. Just in the last couple of weeks, we've had to make changes to our work plans just to keep the work going. A great example is a lot of our maintenance we would plan for during the day when a lot of people were out and about and at work, so we may have a planned outage to upgrade a particular piece of a circuit, and plan an outage for, you know, noon to 4 PM on a Tuesday afternoon, and that would not be very impactful to, say, a residential community that could plan around it. People are off at school, at work, and all that. Well, that outage in this time and age would be disruptive to a residential development that has everybody at home, homeschool going on, e-learning, remote work going on at the same time, so we've actually had to shift the way that we actually perform the work that we do on a day-to-day basis, so if there's been scheduling work, we've had less work that we dialed back on some work that we would do where we go into customer premises like energy audits and things that are very customer-facing. We have been able to leverage a lot of our digital tools that allow customers to

interact with us more and more over the internet and through apps and not have to speak to a company rep whether it's in-person or a CSR in one of our call centers, so these tools that we put in over the last, say, 10 years are very helpful on a day-to-day basis. We have exercised them over the last number of years in storm situations, and then this pandemic, although it is new, it's allowing us to leverage some of the learnings we've already had but also use some of the technology that Joe spoke about in different ways too, so it's a learning opportunity for us, but it has positioned us well to continue to serve our customers during these times.

Q: Eric, where are you, as we speak?

A: I am in suburban Philadelphia and have been here for 3 weeks, and I've been in touch with all of our utilities on the distribution and transmission side to make sure that we're all planning for contingencies going forward, that we're learning from each other, and sharing best practices. We had pandemic plans that we had exercised in 2009 with the last pandemic round. We did not get this far in, so a lot of them were written and kind of dusted off, and we actually went to a much greater level of detail over the last 3 weeks. It is different. In a lot of those

pandemics, we talked about sequestering employees, perhaps, in some of our work locations. We've done that before during storms where people couldn't get out. But in a situation like this, there's a different lens that you have to look through. A lot of our control centers that are near hotels are actually closed down and wide open, so if we were going to sequester employees at one of our plants or one of our control centers, could we potentially actually just partner with the hotel to say, "We will rent that hotel, move people there, and shuffle them back and forth" because, again, you have to plan for the unknown here. This sequestering type of mode could go on for months.

Q: Eric, are you at home or at the office.

A: I'm actually home. I've been working at home on probably 12-14 hours a day of conference calls working with the folks that are in some of these control centers, planning these contingencies and just putting together the cooperation across the utilities for learning and for communication outwards as to what our plans are.

Q: The folks you're interacting with, are they also at home for the most part?

A: No, a good bit of them are actually in our control centers.

We're not sequestering them right now. We have a limited number of folks who are going back and forth from home to work. We're able to do that because we are doing social distancing when we get there. If you think about it, a lot of our back office employees are at home. We have some of our IT folks that are reported out that out of our 35,000 employees, we have about 18,000 to 19,000 of them that are connected remote, so they are not in our facilities working. That allows the folks that do have to come in on a day-to-day basis more room to spread out and work without being in close proximity to each other which would lower the possibility of anything happening and spreading throughout the work force. We're planning that, but we do have probably about half of our work force across Exelon, that's the plant and the distribution folks and transmission folks that are out working on our grid every day that are either at our control rooms or actually out in the field or the plant making sure that the grid and gas-- gas keep flowing and the electric keeps going to customers homes.

Q: Joe, where are you, and what does your work day look like?

A: I am sitting in my kitchen, actually, in the northwest suburbs of Chicago. My day is interesting. We're still

trying-- as you mentioned, the strategy. We're still trying to push the strategy work forward. In times like this, people obviously get a little bit tactically focused, but when we get through this (and we will), strategy will be every bit as important as it was prior to this, so I'm trying to continue to advance that, and then I'm also starting to shadow a little bit the role that Eric mentioned as a Duty Officer. He just came off of that. Somebody else is sitting in that seat now. I'm shadowing that role because I will take that on in roughly a week or so. We're trying to rotate that Duty Officer role through the team and looking forward to it, I think, until I heard what Eric went through. Looking forward to taking on some of that in the next week or so.

Q: Eric, real briefly, what is the Duty Officer do? I mean, you're monitoring the entire 11,000 miles of transmission, 10 million customers and just watching for apparitions?

A: No, each of the OpCos has a control room, a control center, and an ERO that is watching it at the granular level. As we pull together the Exelon family of utilities, it's really 6 operating companies, and what we wanted to do is be coordinated on things, as Joe mentioned, like shutting off, or no longer disconnecting customers if they aren't

able to pay. It would be kind of weird for a company as big as ours with 6 offices to potentially announce that in one city and not announce it the other cities, so it really is coordination between utilities. What are you thinking of doing? What are you seeing? If you're seeing it there, potentially should we look at it in other OpCos as well? Should they start planning for it? Maybe you're just first seeing it, and the other ones will do it that will make them better prepared. If there's a need you see from your customers, should we potentially do something across the fleet of utilities and implement it at one time in a very coordinated fashion? We saw some of that. That way, we can kind of doing it at a local level and also a national effort-- things like connecting customers when different jurisdictions when to sequestration or shelter-in-place. As Joe mentioned, using the smart grid technology-- the smart meter. We can actually turn on customers who were just turned off without visiting their location. While it would be nice as a company as ours to be good cooperate stewards and do that every where at the same time and not wait for people to ask, it really is coordinating the response from all of our OpCos, making sure the messaging's consistent, the action's consistent, and that we're sharing

best practices as we work through. These are unprecedented times. We're learning things along the way. One of the advantages of being in a family of companies like Exelon is the ability to share learnings very quickly across, so that happens in real time as we have different instances, as we've had some people test positive-- with the cleaning techniques, how do you go about doing that? The other utilities are actually able to learn from each other without even having to experience the events, so it's a beneficial structure, and my role is to just make sure those communication lines stay open.

Q: I need to ask a question about cybersecurity because electricity is even more critical, if that's possible, now that people are so traumatized by this health crisis. Over the years, it's been reported that utilities are bombarded by bad actors on a daily basis. Do you see any uptick in that or anything out of the ordinary in terms of cybersecurity, or is it all proceeding as normal? Joe, I will ask you that and then Eric.

A: As part of our response, Exelon has stood up their crisis management team which actually is headed by Chris Crane, our CEO, and the Senior Executives from across the organization. A big part of that structure is our

cybersecurity group. They report out on daily activities, the amount of bad actors out there. They stay in contact with some of the other national and government agencies to make sure we're up to speed on that. One of the different stories here is with the number of people working remotely, there was a push from our employees to say, hey, do I not have to do things like reset my password as often as I used to? Could you relax those rules? We actually talked about it and said, no, cybersecurity and the diligence required for it is even more important in this day and age, so we actually didn't do that. We monitor that. They have noticed an uptick in just general phishing attempts and a lot of malware based on COVID-19 messaging and things like that. That's part of our normal, daily protocol. It is part of our response to the situation as well, and we continue to monitor it, so we have seen increased activity but continue to stay diligent on that.

Q: Joe, I will give you the last word. Did you ever think you'd be living through a situation like this as a utility professional?

A: Boy, I don't think anybody-- I don't think they could anticipate what we're all going through now. Eric did mention some of the pandemic planning in the past, and

whether it was Swine Flu or Bird Flu, I forget which one, I do remember going through some pretty intense planning, and each of us in utility operations was given a big box. At the time, this was many years ago, in the box were things we are looking for today: masks and gloves, Tamiflu. We did all train on this many, many years ago, and I think that's been helpful today. To your question, if I thought that would be reality, absolutely not, and I don't know that anybody could have anticipated what we're going through now.

Q: Good luck to both of you on keeping the lights on.

A: Thank you.

A: Thank you.

Q: Thanks for listening to Grid Talk and our special edition smart grid in the age of Corona. Thanks to our guests, Joe Svachula and Eric Helt of Exelon. You can send us feedback or questions at GridTalk@NREL.gov. That's the National Renewable Energy Lab. We encourage you to give the podcast a rating or review on your favorite podcast platform. For more information about the series or to subscribe, visit SmartGrid.gov. Thanks.

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