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WAYNE STENSBY INTERVIEW

Q: Welcome to Grid Talk. Today we have with us Wayne Stensby, who's the President and CEO of LUMA Energy in Puerto Rico. LUMA Energy is a consortium/joint venture set up by Quanta Services, Canadian Utilities (which is owned by ATCO) and I believe Innovative Emergency Management. Hi, Wayne. How are you?

A: I'm fantastic, Marty, and I'm thrilled to spend the next little bit of time with you talking about Puerto Rico and LUMA Energy.

Q: Wonderful. Do I have the structure right---those three entities are what comprise LUMA?

A: You do, indeed. As you said, the LUMA organization---LUMA Energy or LUMA---was formed as a company to move forward with Puerto Rico's electricity transformation and a company named Quanta Services, which is one of North America's largest utility operators, came together with a company named ATCO as you said, that has utilities in many corners of the world and an exceptional approach to customer service. And then we joined up with---together we joined up with IEM to bring some expertise in federal funding management and collectively, we formed this new company here in Puerto Rico called LUMA Energy.

Q: So, let's jump right in; you mentioned FEMA. In a matter of days, I believe it's December 19, PREPA (the Puerto Rico Electric Power Authority), is going to be filing a plan with FEMA to release and secure \$10.5 billion dollars for the work in grid restoration. Is that correct?

A: Yes. So, earlier this year there was an announcement made from the White House and from FEMA that obligated this \$10.5 billion to PREPA for restoration of the electricity system in Puerto Rico and in the next few days as you said, the PREPA team will be responding to that in a way and issuing their own 10-year plan that will set out the priorities as they see it across the 10 years for deployment of that roughly \$10.5 billion dollars.

Q: And I believe LUMA Energy has a 15-year contract to do its primarily T&D work, is that right, to get the transmission distribution line where it needs to be?

A: Yeah, so the way I would describe LUMA's role is we're going to; so, you're absolute right; we have a 15-year contract. The contract was awarded earlier this year in June, on June 22, and we're in a front end transition period where we're building out our plans and our own infrastructure inside of LUMA as we start up a brand-new company. You know, doing lots of plumbing and wiring, all the things you would do to have a substantial

business started up. And in kind of mid-2021, we will begin our 15-year term as the T&D Operator. We will lead all of the customer-facing elements of the business so when customers have a new connection that they would talk with us, they'll approach LUMA. If they have questions or any information they are looking for on their bills or energy efficiency programs, they'll connect and speak to us at LUMA. If they have outages it will be LUMA responding to customer outages. And so, we will have additionally the operations and maintenance responsibilities for all the T&D system in Puerto Rico so that will be bulk transmission as well as distribution. We will, in addition, have responsibilities for system operations and planning functions and so we will be operating their control center and dispatching generation. So, I think another way to look at it is we'll have accountability for all of Puerto Rico's electricity system except for generation.

Q: So, let's start on page one here and go back three years to Hurricane Maria which caused \$94 billion dollars of infrastructure damage, among which was the toppling of 25% of the electric towers for transmission. Is your job primarily to rebuild that, and the second part of this big question is, 15 years from today when your job is done, how will the T&D on the

island of Puerto Rico look different than it did when Hurricane Maria hit?

A: So, I think that's a great way to provide some context, Marty, is---and I might go back even a little bit further than Maria. I think the PREPA infrastructure and the electricity system had been in a series of degradation might be the best word, but in a series of deterioration literally over the last couple of decades and it had faced many, many external pressures and in some cases I think, there were some difficult decisions along the way that were simply not taken, and so, here you had a system that had substantial under-investments and then in fact prior to Hurricane Maria, as you may know, PREPA was placed into bankruptcy, so they weren't able to fulfill their debt obligations and so before Hurricane Maria, Irma and then Maria came along, you had a bankrupt utility that had had substantial underinvestment. Had real serious maintenance and operations concerns and issues and really at that point, needed some significant transformation and then Hurricane Irma, followed very quickly by Hurricane Maria, caused unprecedented scale of damage to Puerto Rico, never mind the electricity system.

Q: So, the question Wayne, really is, a hurricane the scale of Maria which climate scientists are telling us might become more common as climate change works its damage on our atmosphere. Is

it something that can be hardened against, philosophically, or do you think you'll have something that will be more capable of withstanding hurricane-scale gale winds when you're done or is it impossible?

A: For sure. No, no, I mean no absolutely, there's many---I mean from, if you---as we've done our work and as many before us have done their work, the damage that occurred and I suppose that's why I was setting up the context, Marty. The damage that occurred was certainly on bulk transmission and as you say, there were lots of images of transmission towers toppled, etc. But if you think about a resilient system and the ability for a system to withstand storms and then be relatively quickly restored, it goes much---it is possible and it does exist in many parts of the mainland U.S., and it takes investments and it takes systems and it takes methodical approach but it's absolutely possible and it's what people in Puerto Rico deserve and what the economy here frankly requires. It's everything from very basic management of vegetation and management of flood mitigation and substations, to being able to design transmission structures and other structures for potential wind loading. So, it's a very diverse set of requirements and that's what I was pointing to is. There is much to do in the infrastructure today and much improvement that we're very much looking forward to

getting started on because we know if can make a substantial improvement to customers.

Q: So, let's talk about that because we're going to have folks listening in on this podcast from around the United States. To the extent that you have a relatively clean slate to build back with current technology in Puerto Rico, do you think you'll be pushing the envelope in going to beyond let's say what the Gulf States currently have (Louisiana, Texas, Florida) to withstand these kinds of storms? Are you going to be able to move in a new direction and learn lessons and skills and technology that might be applicable on the mainland?

A: I think the short answer to that is, yes and I don't---I think what's very important is that we learn from everybody and from the industry and so in many elements here in Puerto Rico, we have a little bit of an opportunity to do a bit of a leapfrog in technology if I would describe it, and part of this underinvestment has meant that we're not simply---if you think of dispatch systems or outage management systems or some of the technology side of the business---we're not simply faced with the next revision of software on a current platform. We're actually---we have the opportunity and the requirement frankly, to fundamentally install the next platform. And so, I see that as an opportunity for Puerto Rico. I think on the bulk

transmission side and as you know, there has been much conversation and much development on microgrids and some of those approaches to segmentation and being able to make for a more resilient electricity system, which really means one that will bounce-back faster. It will be more resistive to storms and have fewer outages but following storms and subsequent outages, it will be able to come back into service more quickly. I think there's some really interesting opportunities here in Puerto Rico and as we work with our utility partners and the likes of the DOE and many other people, I think there is just what you said, substantial opportunity to make something that works for Puerto Rico, which is, Puerto Rico is a very unique environment.

Q: Let's talk for a little bit about the architecture of the grid that you'll be creating. Puerto Rico has historically had a centralized grid reliant largely on baseload coal and oil and as you know, other parts of PREPA's plans include building substantial amounts of solar, 3,600 megawatts; 1,300 megawatts of battery storage; 8 microgrids. To what extent will this be a centralized grid versus a distributed more digitized grid?

A: I think it will be all of that frankly and I don't mean to sound like I'm not addressing the question because I want to address the question. I think today, we have a blank sheet of paper but in some ways, we also have an existing system, and so,

what you described is very true and that it's substantially an oil-fired, central generating units today with bulk transmission. That isn't going to change tomorrow. That's going to evolve over the next five years and 10 years and so we need to both support that existing system and then we need to move to this more distributed system so I think you end up with a wee bit of a hybrid, which is connecting in these new microgrids, bringing in substantial amounts of solar or renewable generation and integrating that well and smartly into the existing network and enabling that, of course, we'll be responsible for managing connections, queues and supporting that growth. But at the same time, at least for the next few years, there will still be these large central generating stations and for me, what's really important is we apply all of our focus on improving the reliability, kind of moving forward and so I think it's kind of one eye to the future and one eye to present as we get started.

Q: Does it create any challenging planning on your part to build for today with an eye towards tomorrow? In other words, build for a centralized grid with an eye towards a more distributed grid, and what lessons might you have for other parts of the country that are looking at similar kinds of needs?

A: I mean, there's no question, it---I would reframe it almost to say that we see that as one of the opportunities. That's what

gets us excited is being able to---the opportunity to kind of do a little bit of a technology leapfrog where we can---is a huge opportunity. The opportunity to, just as you described, kind of work with today but plan for tomorrow. I think that's what electricity professionals and planning people dream about is the opportunity to work to aggressive timeframes and to implement some very innovative technology in and so I, for sure it does, for sure, there's additional effort involved but I haven't met a person in our industry yet that doesn't get super excited by that opportunity.

Q: So, a lot of people in the industry and the public as well, remember images of people being without electricity for upwards of a year in Puerto Rico as the devastation was difficult to grow back from. One of the causes that was cited was that unlike the United States where utilities have evolved a system of helping each other and send their crews in from around a big footprint to restore a hard-hit area, Puerto Rico being an island, can't have that kind of backup. Is there a way for you to address that failing or that reality as you build the grid; the inability to call on other neighboring utilities for assistance?

A: Yes, and I would say one of the other---I get back to one of the other significant challenges post-run on Maria was, you

had a bankrupt utility that was in really, really, really poor state and I think the way forward for Puerto Rico in terms of: Number One, we need a more resilient system to the storms that are inevitably going to arrive. Number Two, some of the approaches are to make sure we have sufficient trucks and equipment and tools prepositioned if you like, ahead of hurricane season because as you point out, it's not as simple as---and I don't mean to suggest it's simple anywhere, but it isn't---you don't have the benefit of having equipment that can drive across from a neighboring state and so prepositioning of equipment will be important. It will be incumbent on us to do a better job of having standby contracts and plans in place for response. And then at the end of the day, I mean as you need additional line workers or additional crews from outside of Puerto Rico, it's---we will simply need to fly them to get them here. But I don't think any of that makes it impossible. It probably just means we need to be a little bit more purposeful in the way we plan for storm response.

Q: Is there anybody talking about the possibility of having cooperation across the Caribbean of utilities helping each other out?

A: For sure, there is and I have spoken to some of my fellow utility leaders across the Caribbean and I do think that's a

real possibility provided, of course, that whatever storms Puerto Rico has faced haven't in turn, impacted neighboring utilities. So, I think for sure, that's an obvious solution as I said as long as we don't have that kind of related impact to our neighboring utilities. And there's a bit of a scale conversation in that as well, which is some of the Caribbean utilities are larger, obviously than others and have simply have more capacity.

Q: Wayne, you are on the island of Puerto Rico right now as we talk is that right?

A: That's right. I'm speaking to you from San Juan, my new home.

Q: And it's a very poor island. There's a lot of poverty there and you and I are talking about a plan to bring in \$20 billion dollars to build up the grid in coming decade and beyond, and what's your thought seeing the island with your eyes where it is today. What role that spending can do to transform that island?

A: Yeah, it---you know, Marty, as I reflect on what this can mean for Puerto Rico, it's what gets everyone on my team up every day and excited to do what we're doing. You know, electricity is for us, not just about poles and wires. It's about economic development and prosperity, right, and when you're here and you see literally, the electricity going out

two, or three, or four times a week where you live and you understand the impact of that on residential customers and small businesses; the dry cleaner, the restaurant, or the grocery store, and you understand that virtually all of these businesses have some form of backup generation that they wouldn't have in most parts of the world, but they've had to invest in. So, that capital's precious and taking that capital away from their small business or their large business gets in the way of their own growth and then you think of the pharmaceutical industry here and the medical device industry and Puerto Rico has a number of very powerful economic drivers that today being hindered by electricity and so when I think of the opportunity to make a fundamental change to that to bring reliable electricity to people and as you mentioned, the very significant amount of capital funding itself will create thousands and thousands of jobs for Puerto Ricans. Never mind when we improve the reliability and resiliency of the system. The secondary and kind of tertiary impact of people being able to count on electricity and then the rest of the economy beginning to fire on a few more cylinders and the jobs and economic impact of that I don't know---that's the greater purpose, right, is to make a fundamental improvement to Puerto Rico and that's what we're so excited to be doing.

Q: So, I believe your efforts entail a workforce of 2,200 people. Is that number correct, and how are you going to be recruiting locally? Is that underway already? How many people will you be relying...?

A: Yeah, we started---so you know, the vast, vast---so LUMA is a Puerto Rican company, the vast, vast number of our employees will be Puerto Rican. We began recruiting about six weeks ago and our priority is for existing PREPA employees so we're working hard to connect to the existing PREPA employees and bring that knowledge and that dedication and that professionalism that many employees across PREPA show kind of every day in very difficult circumstances, so we want to bring those people into LUMA. And then, of course, we will supplement them with some additional skills as needed. We see thousands of jobs for us and so that's a very large element of what we're doing.

Q: I don't know what percentage of---is 2,200 a correct figure number of jobs and what percentage of jobs...?

A: No, I think---we're likely to have many, many more jobs than that. I don't have an exact figure for you today but it is substantial for sure.

Q: And what---two questions: what percentage do you think will be a former PREPA employees and more to the point, do you worry

about the corporate culture of bringing over people that were in a utility that, as you said, has been mired by bankruptcy and problems for decades?

A: Yeah, I mean, I see it as a huge opportunity so we're creating---LUMA was formed by as we started this conversation, by Quanta and ATCO and we've brought the values of those organizations into LUMA and then created something here for Puerto Rico. So, I see an opportunity to kind of reset the culture. We're creating; this is a fresh company, fresh culture. We're going to put safety first. We're going to put customers first. And, I'm excited for PREPA people to join us. I don't know how many or what percentages. I do hope we get a majority of the people but at the end of the day it will be up to the PREPA employees if they want to continue to progress their career with us. I---we're going to work very, very hard on culture and as I say I think for many people and I will say many of the PREPA people I've spoken to, they're excited for the fresh sheet of paper if you like. Sometimes it's kind of enabling or freeing to kind of be out of the old system and into something new and fresh, and so that's what we offer.

Q: Thanks, Wayne.

A: Yeah, you're very welcome, Marty. It was a great conversation. For me, I'll just sum up; I think this is about

leadership. This is obviously about technology and a bunch of other things but I think it's really about leadership and real and lasting transformations takes strong leadership. We have a phrase in the company that I work for: "Leaders must lead." And I don't think it's ever been more evident than in this effort and so I look to all of the stakeholders we're working with to show strong leadership in the next few months and years and help all of us get focused on making things in the electricity system better for Puerto Ricans.

Q: Well, you may be over the horizon but there will be a lot of folks watching what you're up to. It's going to be interesting to track.

A: I look forward to talking perhaps sometime in the future, Marty, and updating you on our progress.

Q: Let's do it and thank you all for listening to Grid Talk. We've been talking to our guest, Wayne Stensby, who's the President and CEO of LUMA Energy in Puerto Rico. You can send us your feedback or questions at GridTalk@NREL.gov. We encourage you to give the podcast a rating or review on your favorite podcast platform. And for more information or to subscribe, please visit SmartGrid.gov.

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