

MARTY ROSENBERG
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GIL QUINIONES INTERVIEW

Q: Hi, and welcome to Grid Talk. Today we have with us Gil Quiniones, who's the President and CEO of the New York Power Authority (NYPA). Hi, Gil.

A: Hi, how are you, Marty? Great to be with you.

Q: Wonderful. I'd like to talk about what's going on at NYPA, specifically where the New York REV (Reforming the Energy Vision statewide energy strategy) has evolved and I understand the term now being used is VISION2030. Is that what REV has evolved into and give us the broad outline of its objectives?

A: Well, REV is still around; REV is the statewide initiative to really reimagine the business models for the energy transition here in New York. What really changed was that two years ago, our state passed a legislation called Climate Leadership and Community Protection Act, and that legislation set forth the goals of our state to battle the climate crisis. And that, along with another legislation that was passed last year to accelerate the bill that infrastructure such as transmission, large scale renewables onshore and offshore, really are the ones driving state policy in New York at this

point. Now NYPA, we are one of the major players here in New York in terms of energy policy. We are the largest state-owned electric utility in the United States and we developed a ten-year strategic plan for between now and 2030 and we're calling our strategic plan VISION2030.

Q: So, tell us some of the highlights. I think the biggest fruit I see is \$3.9 billion invested in 67 large-scale renewable projects. What's that all about?

A: The governor, after his State of the State Address this year announced investments are being made not just by NYPA but our sister authority New York State Energy and Research Development Authority, so that's the entity who issued the Request for Proposals for offshore wind, and they made awards; this is, by the way, this is the second round of that, and Equinor in partnership with BP, won the two awards. They have two projects and both projects won in that solicitation. What's interesting with that, Marty, is it's also going to spur the buildout of two manufacturing facilities for offshore wind in New York. One in Albany and one in Brooklyn, and so the assembly, the manufacturing of components for offshore wind will happen there and we're creating jobs and stimulating economic development in our state.

Q: So, as an old Brooklyn resident; went to Lafayette High School, tell me what's going to be built in Brooklyn and where?

A: So, I don't know if you know Brooklyn Army Terminal, right there across from Sunset Park will be the area where this will be built for again, one of the two hubs for manufacturing so it's going to be great. And for NYPA, the governor also announced the buildout of major transmission systems specifically in Upstate New York to bring renewables from Upstate New York down to the load centers in southeast New York; New York City; the suburbs, Long Island, Westchester, etc., and so, there are five projects that are breaking ground this year and early next year. Over 250 miles of transmission will be built. Three of the five projects NYPA is building. The other two; one being built by NextEra in Western New York and another one just south of Albany going south being built by a consortium of utilities in New York State called Transco.

Q: So, let's focus a second on the offshore wind part of it. My understanding of it is there is a vision of 9,000 megawatts by 2035. Is this going to be in New York State waters I would assume around Long Island or where's it going to be and what role will NYPA play in this?

A: Yes, so it will actually be in federal waters so it will be way beyond the New York waters' boundary. A lot of it will be

off Long Island both on the south side, South Shore, and some north, all the way past Montauk. And 9,000 megawatts by 2035, that is the goal. We're almost halfway there from the two first RFPs issued by NYSERDA. So, NYPA's role will be more on the transmission part of it so we partnered with a couple of the winners. In round one of the RFP, we partnered with Orsted and Eversource; they have a project, and NYPA will be responsible for what we call the dry transmission portion, that's as it goes out the ocean and connecting to the LIPA grid that will be our, NYPA's responsibility. Same thing with Equinor now in the round two, one of their projects will go to down along the Long Island Sound all the way to Astoria to our facility in Astoria so again we will take care of the dry portion of the transmission. Now, there's been studies in our state about what should we do with our transmission. The Department of Public Service which is the staff of the Public Service Commission, has been doing grid modernization studies both for onshore to bring renewables from upstate to downstate to the load centers and offshore, and there's a lot of talk on the offshore portion, Marty, that we may need to build what's called a mesh grid or collector grid out in the ocean so that the offshore wind farms are not connecting to Long Island and New York City just on a straight

shot radial basis but there's some kind of connectivity among the offshore wind farms.

Q: So, you probably recall a number of years ago, Google and I believe Mitsubishi had a vision of putting a highway off of the Atlantic Seaboard; the Northeast Transatlantic Wind I think it was called, and are some of those players looking to get involved or who will build that mesh that you're talking about?

A: Well, there are a couple that I know. I know Mitsubishi's looking at it. I know there's a private developer called AMBAR RAY is also proposing one but mostly in the New York-New Jersey area. It will be interesting whether indeed, there will be a way to connect the wind farms from all the way from Massachusetts to Virginia, right, where all the developments are happening. Now, maybe even North Carolina I think, is looking at it. It's hard because those areas are in different RTOs so you have ISO New England, New York ISO, then PJM; it makes it difficult to work out what they call "sea's issues."

Q: Right, so just to finish the picture, you mentioned Albany and Brooklyn as manufacturing sites. These offshore wind devices have to be fairly sophisticated to anchor in stormy weather offshore in seas. What's going to be made near Albany? What's going to be made near Brooklyn?

A: I don't know specifically which components yet are going to be assembled or integrated in those facilities but they are going to be major hubs for the assembly of components and then subsequent maintenance that's going to be needed, and you're right, it's not as easy to put it out there. Now, the good thing is that a lot of these companies that are doing offshore wind are coming from the oil industry. You know, Orsted is the former Danish oil company so they're very much familiar in how to do offshore rigs. Same thing with Equinor; used to be Statoil and partnered with BP so they know how to do that properly. There is a small windfarm off, since you're from Brooklyn, Marty, off Block Island so just north of Long Island, there's an offshore wind there, about six-seven large offshore wind turbines owned by Orsted, so there is some level of experience. Although, the projects that are getting built now are going to be much bigger.

Q: Let's turn to the VISION2030 and the vision of a carbon-neutral economy for New York State by 2050. Paint a picture of how that will evolve and the vision of electrifying everything; increased penetration of electrical energy to push out fossil fuels. What's the vision for that evolving?

A: So, the legislation, the law; now law, it's no longer legislation, actually created a climate action council in their various working groups dealing with various sections of what

needs to be done so you have groups looking at energy efficiency, looking at how do you decarbonize energy-intensity industries, agriculture, housing, the transportation, etc., and that's being put together as an integrated package to define the pathway on how do we get from here to 70% renewable by 2030, carbon-free electricity by 2040, and then net zero by 2050, and how do you do that and still have the necessary reliability and resiliency requirements of our grid in New York, specifically in New York City; the financial, communications, media capital of the world? So, it's a daunting task but we are up to it. There are going to be a need to, at least my own opinion, to develop - to have breakthrough technologies in long duration of multiday duration storage, the use of hydrogen, green hydrogen; of course, transmission. We have to modernize our distribution system. More distributed energy resources and flexibility of the mien and flexibility of the grid edge. All of those things are going to be needed to reach our goals and some of those technologies are not here yet, such as multiday duration storage and hydrogen. So, we saw last week how difficult it is. You know, in Texas when you have outages, prolonged outages, the resiliency of the grid becomes very important because it's a matter of public health and safety.

Q: So, let's talk about where we are today and then we can stretch to where we're going. Under VISION2030 I think there's call for 450 megawatts of storage. That's just the beginning. How's that going to unfurl and how big does the storage have to get in New York State?

A: Well, in our legislation there is a goal of 3,000 megawatts of storage by 2030; that's the mandate codified in law. I actually believe we probably need more than just 3,000 megawatts to really reach carbon-free electricity by 2040 and net zero by 2050, and different types of storage. Right now, you have lithium-ion that's good for four hours, maybe eight hours at the max. But as we've seen in the California heatwave this past summer and now what happened in Texas just a week ago, we need multiday, longer duration storage.

Q: How much storage would you say exists today, Gil?

A: Not very many in terms of battery storage. Now, in New York, we're fortunate to have hydro so NYPA produces 25% of all electricity. In New York State, about 80% of that 25% is hydro and for example, we own a very large pump storage in the northwest of the Catskills in Schoharie County. We call it our Blenheim-Gilboa Plant; that's 1,200 megawatts. The big Niagara power project is a combination of hydro and pumped storage. So, we have some baseline; we're neighbors with Québec; they have a

lot of hydro so we want to increase the productivity with Québec. So, all kinds of storage will have to be put in service, energy storage will have to be put in service.

Q: So, Gil, what's the business model for these 3,000 megawatts of storage by 2030? Who will own it? Will the customer own it?

A: Well, it will be a combination. We are NYPA; we are building a big battery storage now in northern New York; 20-megawatt battery storage next door to substations so some of them will be utility-owned and part of them utility assets. Some of them will be owned by third party part of wind farms or solar farms that are going to be built, even offshore wind. I can foresee that storage will be a big component of that and then some will be owned by customers behind the meter and some will be owned by the distribution utilities as part of their distribution operation so there will be different business models I believe, for this to work out but we're in the nascent stage at this point.

Q: What about electrification; how fast is that going to come on in New York State?

A: I believe that it will come at a steady rate in two areas: in one area will be electric vehicles. NYPA; we are building fast-charging stations along our highway system about 200 sites,

800 fast chargers to make EV an easier choice for New Yorkers and remove what's called 'range anxiety' from drivers. We're also building an urban hub so, for example, at JFK. We're building it not for just the use of the Port Authority of New York and New Jersey, but for the ride share; Uber, Lyft and the public. It's the largest fast-charging hub in the Northeast right now, so that's one area. The other area will be for space heating and hot water heating using heat pumps. That's probably going to come a little slower because it's the price points will have to continue downward. Customers will have to be comfortable that they work in cold weather situations; you know we're in a cold weather region here, so the supply chains need to be developed; the contractors who will put it in and the contractors who will maintain it. That eco system is not fully mature.

Q: So, what about the office buildings in Manhattan, iconic tall buildings? Do you see increased use of electrification there and greater penetration of new technology?

A: I believe so. It's not going to be easy. You're in Manhattan because as you know, from 96th Street in Manhattan all the way down south to the tip of Manhattan, many buildings are heated by steam, like ConEdison steam. ConEd has a steam network here and they use natural gas to make that steam right now so I

think there will have to be better technology developed and it's tight spaces; you're going to retrofit large high-rise buildings; is not as easy, but I think we'll get there. I'm optimistic with American ingenuity and its ability to innovate and I think that we will do that.

Q: How do you see - you talk about distributive generation. How do you see solar growing in in New York State?

A: It's been growing really fast. I've been surprised. In the last RFP process, Marty, our sister authority NYSERDA, most of the winners in fact, I would say 95% of the winners were solar farms in Upstate New York. So, that's growing fast here in New York. Community solar NYPA, we are actually using government buildings, state and local government buildings, and under-utilized land, sites for community solar and what we're doing is targeting that to disadvantaged communities and environmental justice communities because it's harder for them to access solar energy or renewable energy.

Q: How does the Biden administration push towards addressing climate change make all these plans either on a faster track or speed-up; you talk about the need for new battery technology. Do you anticipate seeing more federal resources going into that kind of research?

A: Yes, I am expecting a more robust support from the Federal Government and more robust programs. They have already said that they're going to do an all-government approach meaning every agency will somehow play important role in battling climate change. They are already committing more money for the research and development for our National Labs. I suspect there will be a big energy/climate component of the infrastructure bill that they're planning to put together and I think just in the case of policy and regulatory thinking, it's very much aligned with the goals here in New York so it will be a harmonized relationship or more harmonized relationship between New York State and the Federal Government.

Q: So, what is the hardest part of this transition as it comes along in terms of preparing your workforce and getting all the financial resources you need lined up?

A: We do need to upscale and rescale our workforce. We're becoming more and more of a digital economy so that's needed. More STEM education. We have been at NYPA making a huge commitment in supporting STEM education and partnership with IBM. We're doing what they call P-TECH, a very much proven technology to increase the pipeline of STEM. Educated students who will hopefully go eventually to engineering schools so that's going to be needed. To me, the two big issues that we

need to think about are resiliency, and cyber risk and physical security risk. As we go through this transition, we have to design in and incorporate cyber and physical security and other severe weather-related projections going forward into - when we do capital programs and when we retrofit our equipment and infrastructure. It's so clear just what we saw in California and last week in Texas that we need to embed every step of the way, resiliency, into how we design our systems for the future.

Q: On your website you describe, NYPA describes itself as, "the first end-to-end digital utility." How is this enhance your operations and how has it made you more vulnerable to things like cyberattacks?

A: Well, when we decided to embark on this digital transformation; this is really all the way back to 2013-2014, we made a conscious decision that we will look at cyber physical security and climate adaptation issues and make sure that they are taken into account from the beginning and every step of the way going forward. It's already giving us a tremendous return. By the way, when we said digital transformation, it's not just on the operations side of our business, but we're digitizing the products and services we provide to our customers. The way we engage with our customers. Internally, we're digitizing our internal operations whether it's human resources, it's legal and

finance, etc., so it's really end-to-end and inside and out. The productivity savings has been there. The enhanced provision of services to our customers are there and in fact I would say, we are more agile, flexible, and resilient this time around than we were back in 2014. When COVID hit us; as you know we were the epicenter of COVID here, we were able to go to work-from-home mode in two days. It was because of the digital infrastructure that we have invested in our company.

Q: So, sitting here a week after the disaster in ERCOT, what advice do you have for your friends down in Texas?

A: Yes, I've been talking to them during this past week and you know, I tweeted a thread on this a few days ago. I think first of all, I think we should wait for the full after-action report where we really get all the facts on what happened, but just looking from afar, it's clear to me that at the very least, you have to winterize or weatherize your power plants, your gas wells, gas gathering systems and pipelines so that you're not caught short. In New York, we are required to winterize our power plants. NYPA owns natural gas power plants in New York City and Long Island and we winterize them, the controls, the pipes, we have heat tracing to make sure they don't freeze up. Number two, in New York also are big plants, combined cycle plants and burn either gas or oil, so if there's no gas, we can

burn low-Sulphur diesel or jet terracing to power our plants. So, those are the kind of things I believe our friends in Texas will consider. They're going to ask states where you are, Kansas, Minnesota, Chicago; what do you do up there to your power plants? How do you winterize them, New York? And I'm sure a lot of those practices will be adopted in Texas.

Q: Okay. Well, it's great catching up with you, Gil.

A: Thank you, Marty. It's always great to be with you. I know we've done this a few times and I look forward to do more with you.

Q: Likewise. Thanks for listening to Grid Talk. Our guest today is Gil Quiniones, President and CEO of the New York Power Authority. We thank him for sharing his insights about changes both at NYPA and New York State and across the industry. You can send feedback or questions to us at GridTalk@NREL.gov and we encourage you to give the podcast a rating or review on your favorite podcast platform. For more information or to subscribe, please visit SmartGrid.gov

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