MARTY ROSENBERG
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RUDOLPH WYNTER INTERVIEW

Q: Welcome to Grid Talk. Today we're with Rudolph Wynter, who's the president of National Grid New York. Hi, Rudy. How are you?

A: Hi, Marty. Thanks for having me.

Q: My pleasure. We are very interested in how the whole ecosystem of energy is changing and a lot is being done in terms of ramping up EVs and EV penetration and also the electrification of more and more sectors of our lives, particularly transportation. How do you see that playing out in New York State particularly in your service territory?

A: So, in New York State, in Upstate New York, we're in electric and gas distribution business and Downstate New York, we are a gas distribution business only and we see the biggest drivers around the electrification, is just decarbonization occurring across the state. We have very ambitions climate goals in New York State, 70% renewable electricity by 2030; 100% decarbonized electricity by 2040. In order to get to those kinds of targets we need to start now. So, across the business on the electric side, we're seeing increased investments in make-ready

programs for EVs as well as some additional investments in our transmission business, especially as that transmission business will play a key role in integrating a more renewables onto the grid. And finally in our gas distribution business, it is very much focused on safe and reliable delivery of gas to our customers across the footprint. But in terms of electrification, it's the electrification of transport. We have an effort underway with the New York EV Make-Ready Program where we plan to add 16,000 ports across our service territory in Upstate New York by 2025, so I think my company and as well as others are just seeing increased investments to make sure our networks are enablers of this EV decarbonization.

Q: How do you see increased penetration of renewables working in your service territory and what challenges do those create?

A: Yeah, so across our footprint particularly in upstate New York where we have the electric footprint, we see a huge increase in renewable energy projects. We've already connected more than 100,000 renewable energy projects since 2013 which equates to just under three gigawatts of electricity and that's helped us to reduce greenhouse gas emissions by three metric tons a year. Now, that's enough electricity to energize about 330,000 homes. Our goal is to make sure that we're making investments in our grid to make it easier for all of those

distributed energy resources to connect to the network, and we hope to reduce the costs of those interconnections, streamline that whole interconnection process as well.

Q: So, how…describe your electric service territory in New York State and tell me how readily EV adoption is occurring in that part of the state?

A: I don't have the exact numbers of EV adoption in Upstate New York. We're very much focused on Make-Ready Programs to make sure we and the network is there to enable the adoption rates to continue but off the top of my head I don't know the EV adoption rate that we currently use.

Q: Is it fair to say that it's lower than in the urban centers?

A: It is largely in urban centers. I think the two spots that we think we need to see more of and we don't see much of it right now, is what I call the large-scale use cases; we don't see it yet meaning a lot of fleet vehicles or in the highway plazas and those are the things we're going to have to attack I think a lot harder primarily because when you look at trucks and busses in New York, while they only make up about 4% of vehicles on the road, they are about 25% of the on-road greenhouse gas emissions so electrifying those types of vehicles is a major opportunity for this climate and for communities. We just

completed a study with Hitachi ABB Power Grids to look at real electrification's impact on our distribution network to understand what are the investments we have to make. We're also looking at highway charging because we think that the thing that's going to have to be fact to relieve what we call that range anxiety, and we're looking hard at that because as you know, many of the highways are actually just parallel to our existing transmission and sometimes distribution networks so I think we have some strategic investments we could make all along the highways to help that along.

Q: Rudy, I'm going to ask you a question about capital expenditure and outlay. When you answer, please try speaking a little closer to the mic because you're fading out a little bit, but we're doing fine. There's a lot of focus right now on infrastructure in this country and the need to upgrade infrastructure, and there is a bill as you know, being debated to put tens of billions if not hundreds of billions into getting electric infrastructure ready for the energy transition for the power system transformation. How needed is that in your view… mind and what do you see the need at National Grid for spending on capital expenditure? How is it increasing and what are you hoping to achieve by it?

A: Four things, Marty. So, we've long advocated it and when you think about the Federal infrastructure investments, we've long advocated for prioritizing federal infrastructure investments to accelerate what we'll call that net-zero transition, to accelerate what the clean energy transition. So, while we're pleased to see that the Senate's passage of the bipartisan infrastructure bill would spur local economic growth and advance clean energy ambitions including some investments in transmission and in investments in hydrogen and energy efficiency technologies and demonstration projects, there's still more work to be done and we look forward to partnering with our communities to advance on those priorities. Within National Grid when we look at our capital investment plans, in Upstate New York we have a pending rate settlement that provides for capital funds for our electric business of about $2.5 billion dollars over the life of that rate plan and about $800 million dollars on the gas network. And those investments are really around just modernizing our core infrastructure to do a couple of things; just make sure we're delivering safe and reliable service while at the same time, making some investments in our transmission network to unlock some existing renewables that are in Upstate New York. In Downstate New York, we have a gas distribution business. Our capital plan there is different

there. We've got about a $3 billion dollar capital investment plan that just came out of a three-year rate agreement and that is very much focused on the safety and reliability of that gas distribution network. A lot of those funds being spent on removing leak-prone pipe to improve system performance and reduce a lot of our greenhouse gas emissions.

Q: So, there's a lot being spent. Is it going to get the grid where it's needed or is there a major change that's in terms of the architecture grid that you envision?

A: So, great question. I think there is far more that we need to invest in the grid to get it to where we need it to be. I mean, we've got to think about hardening the grid against cyber, against the weather changes that we're seeing and the investments that I just talked about are some of the first steps to get us there, but there is just much more that we need to invest in making sure that the grid is ready for the big electrification in transport and some electrification in heat that we're going to see, but as I said, there's just more needed to invest in resiliency I would call it, whether it's cyber or weather resiliency. For instance, we're doing a lot of work and making some investments in grid modernization technologies like fault-location isolation and service restoration. While we're starting to do that and deploy some of this technology onto our

network with the dollars that I just talked about on and out deployed across the whole network so, to answer your question, more is going to be needed around hardening the grid against cyber and weather events, as well as additional, I'll call it boosting capacity to make sure we're able to interconnect the renewables; we're able to interconnect the EVs as we electrify more things.

Q: Those of us outside the Northeast watched with some horror as we saw the impact of Hurricane Ida with the water pouring into the subways and highways around Manhattan. Given that your metropolitan area infrastructure is more closely aligned with gas, did you see effects of weather-intense, more intense violent weather events on your service territory?

A: So, absolutely and in New York City, it was a very sad event as you know. We lost number a number of people during that severe weather event, so my heart goes out to their friends and families. But, to answer your question, yes, we do see more intense weather events and we're planning our system through the lens of what we call low probability but high impact storm events. We think as if, if it can happen then it will happen so we are looking at projects and designing projects that would reduce the spread of outages if we have significant weather impacts. And that happens by isolating faults, putting in

additional breakers, so we can minimize impact on to our customers. That also includes putting some additional digital technologies and digital substations to help increase availability and reliability across power supplies so we can re-route power on the electric network better than we can stay. In those recent events in Downstate New York, we have the gas distribution system and - we're monitoring it. We were standing at the ready in case there were any interruptions. Fortunately, we did not have any interruptions on the gas network because of that.

Q: Let's talk about the vision of National Grid for the future of its gas business and I'd like to ask you a little bit about hydrogen and the future of the hydrogen economy in New York. And, let's talk a little bit about your vision for Long Island as a hydrogen hub. Could you explain how that is going to work?

A: Sure, so one of the things that we're always looking at is how do we deeply decarbonize cities, towns, suburban areas, and we recently did a piece of work called a Pathway Study looking at New York City in 2030. We did it in partnership with Con Edison, an electric utility in New York City, as well as the Mayor's Office of Sustainability and we wanted to see what are the pathways of decarbonizing New York City. And obviously one pathway is around electrification; electrified transport,

electrified heat. When we look at it that way, the costs to make that happen is very large and it's largely so large because two things I would say about the gas distribution network: Number One. On the coldest day of the winter, the natural gas network in New York City is carrying three times the amount of energy than the electric distribution system is carrying on its peak day, the hottest day of the summer, so you've got a network that's carrying a lot of energy there. To replace it with something else is going to be very costly to consumers. The second point I want to bring up is that you can completely decarbonize the molecules that we're carrying in that natural gas network and you can do that by blending either renewable natural gas or by blending hydrogen into that network. When you do that and you look at that Pathway's study, you can electrify a lot of building stocks out in urban areas. But there will be some hard-to-electrify sectors in parts of the building stock. In most cases, you get that by delivering a low-carbon fuel through the natural gas system. So, we're doing a lot of work, Marty, with Stony Brook University in Long Island to understand what we have to do to the network to get it ready and how much hydrogen can we potentially blend into the gas distribution network. And we're doing some work with Columbia to look at the economics behind it all; use-cases behind it all and the

policies that are needed to make that work. So, we're very much focused on understanding those things in the next few years, studying and also doing some demonstration pilots of blending green hydrogen; hydrogen that's produced by renewables, but blending that hydrogen into the gas distribution network to create a lower carbon fuel in that network.

Q: You mentioned hydrogen produced by renewables. What role do you see offshore wind possibly playing in that?

A: Offshore wind will play a big role because remember I've got about two million customers in Downstate New York and if you fast-forward over the next decade, we are likely going to be building upwards of nine gigawatts of offshore wind just next to them, right; right off the coast of Long Island. What we're seeing take place in Europe is offshore wind playing a great role as the wind turbines are still spinning at night. There isn't necessarily an electric load for them but you can capture that, put it through electrolyzers, create hydrogen and then we could blend that hydrogen into the natural gas network so we do see offshore playing a big role and that role is, it's a way for us to create that green hydrogen pipe scale.

Q: On your website there's mention of a Long Island hydrogen hub. Is that part of what you alluded to with Stony Brook or is that something else?

A: Yeah, so the Long Island hydrogen hub is a conceptual idea we're thinking about. On Long Island we have: (A) A gas distribution network. (B) We also have some generation facilities on Long Island, and then (C) As I mentioned, it's a location where there will be a lot of offshore wind developed over the next decade. So, our concept is, we're going to focus on Long Island to be the spot where we put a lot of our demonstration projects because we have all the pieces there. We've got power plants that potentially burn cleaner hydrogen. We've got a gas distribution network that could also blend in the hydrogen as well. The work we're doing specifically with Stony Brook right now is very much focused on the gas distribution network and understanding what I call the plumbing of it all. How will that network behave when we start introducing different levels of hydrogen?

Q: Do you feel that too much focus right now is going on to the electric side of the business, the energy business when we try to achieve decarbonization and more attention needs to be placed on the gas side or is it proceeding quietly and just not getting the attention that the electric side is getting?

A: That's a great question. Here's what I think; I think to hit the aggressive goals that we must hit and we all embrace that net-zero future, Marty, we're going to need all of it;

we're going to need electric vehicles, we're going to need to electrify big portions of the heating sector. We're going to need battery energy storage. We'll need solar, wind. We'll need carbon capture and storage. But we will also need to identify a role that the existing natural gas network can play and I think there is clearly a role it can play, so I think a lot of attention rightfully so, is on to the electric answer and electrification for deeply decarbonization. We absolutely need to do that, but we also have to make sure that we do this energy transition and nobody gets left behind. We've got to make sure it's affordable to all customers. One way we can do that is by optimizing or repurposing an existing network that is already there. That's the gas distribution network. So, I think more and more efforts are underway of looking at that. We're already doing some pilots in Europe, in the U.K. with it so I think to date, a lot more attention from the electric side. I think you will start seeing hydrogen, discussions of hydrogen blending playing a bigger and bigger role as we go forward.

Q: Rudy, the last area I want to get into with you is to invite you to personally reflect on the changes in the business. You've been with National Grid for 14 years and before that, you were at KeySpan, the gas business that was acquired by National Grid and before that, Brooklyn Union Gas Company, so you've been

around. How has the business changed? What are the new headaches you face and what are the new exciting challenges?

A: So, great question. So, there are a lot of things that remain the same, right. We want to continue providing safe and reliable services to our customers. We think we are an integral part of the communities where we all live, work, and play and we have a deep commitment to those communities. That has not changed. I think what has changed is the climate crisis that we all have to find a way of solving and we've got to figure out how to do that and do that together. That is probably the biggest and most exciting I think, thing taking place across the energy sector. That's where I think we're going to see innovation play a critical role and it's going to play a critical role in pulling technology on our existing networks to optimize and use those better, but it's also going to play a critical role so I think, unlocking some…some answers that we don't have today. So, I was speaking to some new employees recently and I said, "I think this is a great time to be in the energy sector because we've got to rethink how we are making energy. We've got to think how we're using it, and we've got to rethink how we're helping our customers use less of it as well." So, most of the change I see taking place is all around how we get to that clean energy future that we all want.

Q: Are you…what keeps you up late at night these days? Is it weather change? Is it cyber terrorists infiltrating the grid? What are your key worries?

A: Um, so, yeah, I do have worries like everyone in the utilities' sector; we're always watching the weather. We're concerned about extreme weather events and disruptions for our customers. I'm worried about cyber and things like that as well, but to answer your question about what keeps me up at night, one of the things I'm very worried about is talent as well. I'm worried that we're not bringing in all of the talent and really grooming the talent that we're going to need in the energy sector going forward. We're doing a lot of work with investment in New York on workforce development as well to make sure that we're tapping all of our communities to make sure that they play a role in building the energy networks of the future. So, to be honest with you Marty, one of the things that I think about a lot is talent. Are we bringing in enough talent? Are we grooming the talent that we have and are we equipping them all for the future and also, are we reaching out to all of the communities that we serve to make sure our workforce really represents our customer base as well.

Q: Thanks, Rudy. It's been great talking to you.

Q: Thank you. Thanks for your time today.

Q: Our guest has been Rudolph Wynter, who's the National Grid New York president. Please send us feedback or questions to GridTalk@NREL.gov and we encourage you to give the podcast a rating or review on your favorite podcast platform. For more information about the podcast series or to subscribe, please visit SmartGrid.gov.

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