

**MARTY ROSENBERG**

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**BEN FOWKE INTERVIEW**

Q: Hi. Welcome to Grid Talk. We're very pleased today to have Ben Fowke, the Chairman and CEO of Xcel Energy. Xcel, of course, has a major presence in Colorado and Minnesota but also has operations in Michigan, New Mexico, North Dakota, South Dakota, Texas, and Wisconsin. Hi, Ben.

A: Hi, Marty. How are you?

Q: Good. Did I miss anything?

A: I don't think so.

Q: I'd like to start off by talking to you about microgrids which has been a major effort on your company's part. Going back to the Pena Station Next Program-- 382 acres near the airport. It's been in operation for several years. What would you say are some of the key insights you've learned from that effort?

A: Thanks, Marty. We do want to see the role that microgrids can play on the bigger grid, supporting the bigger grid. I would say that what we're learning is

just that-- how we can integrate microgrids into the larger grid and do that seamlessly. When I think about the role of microgrids, and the Pena Project will help us with that as will some additional pilot programs that have been approved in Colorado. I see it generally as part of a community resilience type of initiative, you know, that added security that in an event of disruption, whatever the case might be, that the community can continue to provide critical power. In addition to Pena, we have other projects in the works to test that resiliency, and again, what we're learning is how to best integrate and coordinate with the bigger grid.

Q: One of the innovations, I believe, is working with some cutting edge NREL software to both integrate the building load management level and the distribution system models. Tell us how that works and tell us a little bit about the makeup of that microgrid. You have a major installation there of Panasonic, correct, and other facilities, but it's also described, as a transportation hub.

A: Marty, Panasonic has been a great partner in this business. Primarily the power here is, as you can

imagine, battery power supported with renewables. Of course, I think the integration of PVs into microgrids and into the big grid for that matter, is a big part of what the future of the energy grid would look like. Now, the software that you speak to, again, is what I alluded to previously, and it's to support the integration into the bigger grid. It's important to really understand what's happening within the microgrid so that you can get the most efficiency out of the microgrid. More specific than that, I'm probably a bit over my skis to try to tell you how the software actually works in more specific terms than what I outlined generally.

Q: My understanding is you're moving beyond this project, and you have plans for seven microgrids, 23-million-dollar project that should start in the fall, excuse me, in January 2021, is that right?

A: That's right. It's actually a 24-million-dollar pilot project which has 7 different-- we're in the early stages of it, but 7 different projects, testing all sorts of things. Again, it's around that resiliency. For example, DIA, the airport, will be one of those pilot programs. You can imagine the importance of

having power on at all times for some place like an airport. We're really excited about it. There is one project out of the 7 that is probably less about resiliency, Marty, and more oriented towards whether a microgrid could defer some more traditional investment in distribution infrastructure, So we're going to learn a lot just like we have for the Pena Project, and we will continue to take that, and be better informed of what role and at what cost, by the way, that microgrids can and will play a role in the grid going forward.

Q: My understanding is these 7 represent diverse utilizations from middle school to cities to cultural centers as well as the airport. Do you think that applicability is going to be broadly diverse or with certain core principles with each one you're trying to achieve with each one of these demonstrations?

A: For the most part, it's about resiliency. With the exception of the cultural center that I have mentioned to you which is more of a test of how we can defer traditional investment by having the microgrid there, avoiding distribution investment in that particular area. The other ones were all centered around making sure that, in the case of the airport, power stays on.

There's also one in downtown Denver that's really designed to make sure that people in jeopardy, low-income folks, have a safe place to go in the event of a major outage. They might be for different reasons, but the theme is all around resiliency and making sure that, even though obviously the grid is very reliable, there are certain times where I think a community or business or municipality might have a desire for enhanced reliability. By the way, Marty, it's not just in Colorado that we're looking at this. We're doing that across all of our service districts. In some cases, we're working with military bases to enhance their resiliency which clearly is very important to the military.

Q: That point is well taken, but one more question about Colorado. My understanding is 2 years ago there was a law enacted to encourage utilities or enable utilities to develop up to 15 megawatts of storage. Storage is a key component of these microgrids, and I just wonder what is the take away that the industry and your customers should take from the scale of this effort compared to, say, at California which has a mandate to develop 1,325 megawatts of storage by 2024.

A: Well, I think it's about really going slow and understanding through the pilot programs and these smaller initiatives exactly what the role of battery technology can be. I think batteries can play a big role in the grid, Marty, but I also think that there are limitations. The cost of batteries have come down; that's great, but one of the things I'm advocating for is that we need to start investing today in technologies that will get that last 20% of carbon off the grid, and then the reality is we cannot reliably run a grid with renewables with battery backup for many, many different reasons including the seasonal nature of renewables, etc. They definitely will play a role, and they have multiple uses. I think we will understand that better as we use these pilot programs. We will be better informed to make larger investments in battery technology going forward. It's a little bit different philosophy, I suppose, between the 2 states.

Q: This June, you became Chairman of the Edison Electric Institute. Putting on that hat for a second as well as your role at Xcel, these innovations and technology on microgrids, for example, that your team is developing, are you on the cutting edge and how fast do you see

this technology spreading and these demonstrations popping up in other utilities around the country?

A: Marty, I think Xcel is on the cutting edge of carbon reduction, and I'm sure you're very familiar with our Steel for Fuel program. We were the first utility to announce a carbon-free goal by 2050 and an 80% carbon reduction by 2030. By the way, many of my colleagues have announced similarly aggressive goals. We've already achieved a 44% carbon reduction at the end of 2019. There are 2 other principles that go with that. The product has to be affordable, and it has to be reliable.

I think microgrids will play an increasing role in delivering energy in the future, but I also believe they will always come at additional costs, so again, I go back to the communities and the businesses and the very stakeholders that need that extra resiliency and quite frankly might be willing to pay for it. Of course, we support that. We can understand what sort of infrastructure investments that microgrid might help us avoid and make sure that that is the partnership with the community. I believe that the grids will be the principle avenue to achieving these really aggressive carbon

reduction goals. They will play a role, and again, the role is really around resiliency, which, of course, in modern society is more important than ever. I don't know if I have given you a full answer to that, Marty, but the technologies that I think about to get that last 20% out are things like the hydrogen-- development of hydrogen fuel as well as storage, advanced nuclear, carbon capture, dispatchable renewable generation, and of course additional storage and demand side management type opportunities. Those are the things I think we have to start investing in today. That's really one of the 3 key initiatives that I want to lead as the Chair of EEI for this next year.

Q: You get about a quarter of your energy now from coal generation. Do you see that staying up? You've got some retirement plans. Is that percentage going to go down, and how fast do you think carbon capture will become a viable tool for you all?

A: I don't know if carbon capture will be our answer. It could be advanced nuclear. It could be hydrogen, but I think we need to assess that technology and let the economics drive it. In your question to coal, I ultimately think we'll be very close to being out of coal by the end of this decade with the announced

retirements and things that I anticipate might come out of the various resources planning processes that we're undergoing. We need to make sure we don't sacrifice reliability as we move away from coal. I think natural gas needs to continue to play a significant role in providing that reliability. The interesting thing is, Marty, under our Steel for Fuel initiatives, we don't use the gas plants as much as you might think, but they are there for back up. We're using as much energy as we can from renewable sources (wind and solar) because that energy is less expensive than natural gas, even with low natural gas prices today. Gas, as a reliability backstop, will have to play a big role until we develop those technologies that will get that last 20% out.

Q: Wind is about one-fifth of your generation now; solar, 3%. You've moved very aggressively into wind with 12 wind farms in 7 states. Do you think that 21% is the upper limit for wind and 3% for solar, or do you see those percentages growing?

A: Oh, no. I see them growing significantly. In fact, by the middle of this decade, wind will be the largest energy source on our system. If you fast forward to

2030, we are probably looking at wind and solar at about 60% roughly. Things could change but roughly 60% on our system by 2030. By far, it will be the largest energy source on the grid. Again, we will have almost completely exited coal, and we will be using gas as backup and preserving our existing nuclear fleet in the Upper Midwest. Yeah, we will have a lot more wind in just a few short years in our system.

Q: While you've mentioned advanced nuclear, are you referring to modular, smaller units or possibly fusion? What is your vision of advanced nuclear technology?

A: Fusion would be great, but I haven't seen any kind of realistic time frame for that. What I really think the opportunity is is with smaller, modular nuclear for a number of reasons. The passive safety design, the capital outlays that make it plausible, the ability to have most of it completed. Those are all things that are interesting to me. Of course, again, right now, nuclear is the only carbon-free dispatchable resource. I think it's important that we preserve the existing nuclear fleet and seriously invest in what could be the next generation of nuclear. Again, if hydrogen turns out to be more economic, that's great. If carbon

capture turns out to be more economic, that's great too. If there's something on the drawing board that we're not even thinking of, that's fine as well. I think we need to invest today to be able to achieve the goals that I think we all want to have. Of course, we have that zero carbon goal by 2050.

Q: Ben, you've become Chairman of EEI right in the middle of the worst health crisis in a century in this country. How are utilities faring both operationally in terms of their work forces and financially in terms of the economic downturn and the impact on sister utilities around the country?

A: That's a really good question, Marty. There's obviously been a financial impact with reduction of sales. At Xcel, we've anticipated that and many of my colleague companies have as well. Most of us, including Xcel, believe we can absorb the majority of those costs or the revenue reduction stream cost reductions. At Xcel we're in the midst of a multiyear continuous improvement effort, and we're really trying to accelerate those efforts. I think it's really bearing fruit for us. Many utilities are working with their commissions. They're getting deferrals so that bad

debt expense doesn't become too hard to manage. We could get some additional recovery associated with that. In terms of reliability, that's going to vary-- first of all, reliability has stayed where it needs to be, but some utilities have had workers on the premise so that those critical workers can continue to do the great jobs that they're doing. We haven't had to do that at Xcel Energy yet, but we are prepared to do that. I am in constant touch not only with the industry but internally making sure that we are monitoring all the conditions and responding to it so that the lights do stay on and reliability remains high. Again, I like to just do a shout out to those workers, those critical workers that are out there each and every day either out in in the field or working in the field or keeping our power plants running. They're making extraordinary sacrifices. I think we all should be proud of them.

Q: What would you say is the percentage of your work force working remotely from home?

A: It's about 50/50 right now. Half of our workforce is working remotely. It's interesting. We had plans to begin having offerings at work-at-home options. Of

course, we had to implement those plans within a week, and it has worked surprisingly well. There's a few folks, maybe 20% of that 50% that I mentioned that are not as efficient working from home. Those are the ones that we will carefully and cautiously think about bringing back first, and it's a lot harder than you think to bring people back safely than you might imagine, but we're working through that, so we will be conservative with how we bring people back. By and large, I've been really excited about it. I think going forward, post COVID-19, I think it will be an important option you're going to need offer employees to attract and retain great employees.

Q: The last question I want to ask you-- is your ambitious goal to get an 80% reduction in your carbon footprint in the next decade-- how will the business of Xcel Energy look differently? How will your business model change? What new activities are you going to be launching? What growth opportunities do you see?

A: Well, the good news, Marty, is that we believe with the existing technologies today that we can achieve that 80% carbon reduction by 2030 and keep our prices at or below the level of inflation and maintain higher

liability. As I mentioned, we will continue to add more renewables into our mix. We will begin aggressively exiting coal. We will have gas backup. At the same time, we also want to develop more options for our customers. Customers want to understand more increasingly where their energy is coming from. They want different billing options. They want you to assist with them on electric vehicles. We have some great programs that basically allow for a more seamless transaction through customers that are electing to buy an EV and then giving them billing opportunities that help them save money and actually support the entire grid, so as you integrate more renewables, we are going to want to, I think, offer customers different ways that they can take their energy and, at the same time, encourage their load shifting things like that to better incorporate renewable energy. This has only been accelerated with COVID-19. I think customers are increasingly looking for more and more digital interaction, and we are in the midst of really ramping up and transforming the entire customer experience for the good, and I'm really excited about that. I think at the same time, our customers will expect us to

continue to support our communities. We have very aggressive plans to do that building on the platform we've already established. You put all that together, and will be a much more customer-centric, focus 10 years from now than it is today, and we are much more customer-centric, focused than we were 10 years ago. That experience, I think, will continue to grow, and hopefully, we continue to delight our customers.

Q: Great. Thank you, Ben.

A: Thanks, Marty. It's been a pleasure.

Q: Thanks for listening to Grid Talk. Thanks to our guest, Ben Fowke, the Chairman and CEO of Xcel Energy, for sharing his insights about changing in his company and in this industry. You can send feedback or questions to us at [GridTalk@NREL.gov](mailto:GridTalk@NREL.gov). We encourage you to give the podcast a rating or review on your favorite podcast platform. For more information about this series, we now have an inventory of 18 interviews like this one and growing, please visit [SmartGrid.gov](http://SmartGrid.gov).