

**MARTY ROSENBERG**  
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**Grid Talk #220**  
**SHAWN SCHUKAR INTERVIEW**

Q: Welcome to Grid Talk. Today we're very pleased to have with Shawn Schukar, who's the Chairman and President of Ameren Transmission Company based in St. Louis. Hi, Shawn. How are you?

A: I'm doing very good, Marty. Thanks for having me.

Q: Great. Let's start off by letting our listeners know a little bit about the business of Ameren Transmission Company, wholly owned by the Ameren utility. Tell us what your assets are and a little bit of your business strategy.

A: All right. So, Ameren Transmission is part of as you mentioned of Ameren, a Fortune 500 company as we've been doing this business for over a hundred years. Our focus is really on those high-voltage parts of the system where as you know if you think about the highway system, we're the backbone or the interstate highway; that's what the transmission group focuses on. And we focus on primarily in the Midwest, which is Illinois and Missouri which is where we have our traditional utilities. As part of that we have about a little over 8,000 miles of transmission and included in that is about 560 different transmission lines, over 400 substations; covers about 64,000 miles of service territory so a lot of our service territory is

rural and we while have a handful of cities like St. Louis, much of where we build our transmission today is in the rural communities and then we focus primarily on maintaining reliability, which is Job One any time you think about the transmission system or the distribution system. And then looking at it how does that then fit with the cost to our customers and delivering what our customers want. And so as you think about Ameren and what we are trying to achieve, it's really leading that way to a sustainable energy future which as you can hear from those words, it's focused on transitioning which is a lot of what we have going on in our country today; transitioning to a cleaner, less carbon-intensive future, doing that in a way that enables our customers to do what they need to do whether it's increase their business, maintain a household, keep the costs down, maintain reliability and then that issue is becoming bigger and bigger as we see storms and folks depending more on the electricity is, not only reliability but resiliency when things happen on the system. And so, as we focus on not only on today but that future in the 20-30 years out, we really focus on how can we make sure that we're making investments that bring value to our customers to enable them to transition to a cleaner energy; focus on new efficient electrification technologies that then help them to move forward and doing that in a way that

keeps costs down and is cognizant of the changing that technologies that are driving not only the investments we're making today but the investments that we'll be making on the system over the next hundred years.

Q: Shawn, one of the reasons why I'm really pleased to have you with us today is because the country seems to be ready to embark on a major infrastructure investment program. Point to the latest figures from EEI, the industry group. Utilities spend \$140 billion dollars a year on capital expenditure roughly and of that, 30% goes to distribution and 20% to transmission or half of the total. As the Federal government is planning to possibly inject \$73 billion dollars into the grid, what impact that do you think it will have? Where should that money go and is it frankly, enough?

A: So, let's kind of start out with the investment in the grid and we're making investments today, significant investments. We've...if you think about the last 10 years, we have increased the investment in our grid by nine to ten times what we were making 10 years ago. And part of that is the transition; part of that is the increased reliability. And then you talk about...you asked the question, Marty, related to the government and the investments and I assume what you're asking is related to the Infrastructure Bill that is out there and if you look at that,

there are things in there that from my perspective, really can help as we transition and make those investments for the future. One of the areas in this is related to R&D and there is no doubt we are going to need significantly greater investments in the transmission space if we're going to transition to this, whether it's 80% or 100% clean energy, making that transition over the next 10-20 years, it's going to take a lot of transmission; it's going to take a lot of batteries; it's going to take a lot of solar and wind and distribution so the bill is going to help make those investments. Having the best technology and developing technology to enable us to transition not only to allow us to move energy around the system but allowing us to maintain the stability and the reliability on the system and do that in the lowest-cost manner possible, so R&D absolutely is the place that brings value to us. The second area in there is really around some of the permitting and helping to improve the permitting. Now, permitting takes time and if I look at some of the projects that we have embarked on over the last 10 years, sometimes that permitting process can take three to four to five years and then if you get into some sticky areas, it may you quite a while to get through all of that permitting process. So, the investment in helping with the permitting ensuring that we have good coordination across different government agencies is

important...especially when you think about the timeline of getting this done so then...

Q: So, Shawn, let me interject real quickly here on the permitting question. The traditional wrap is that farmers and local folks sometimes are ambivalent about having these large transmission lines come through their fields and I know here in the Midwest, in Kansas and across Missouri, there's been some dispute about transmission lines. Is there any sign on the horizon that that can be addressed? Is there any new architecture of transmission that enables as we move to a cleaner grid, a way of kind of dampening down that kind of opposition? Is there any path forward here or is there just going to be a fight?

A: So, I think, Marty, that's a great question and I really think that it becomes a couple of areas that makes this important. One is just getting consistency across the nation on what we're trying to achieve. When you have one state that wants to go a hundred percent clean-clean energy, and the next state next to it that maybe doesn't have policies that are similar and you need to move power back and forth across it, especially when you think about the Midwest and the strong-renewable regions like out in Kansas and the Dakotas and Oklahoma, that...getting that consistency on what we're going to do everywhere helps. But

the other part of it that you talked about is those landowners and as a transmission developer, really making sure that you engage with the landowners and the investment on transmission early thinking about how you can reutilize existing right-of-way's versus building completely new ones and then being cognizant of what's happening in those farm fields. You know, 20 years ago the size of the equipment was much smaller than it is today so where you placed your lines 20 years ago would work for the equipment they had, where today, that may create a problem for the farmers so being willing to move things around and being flexible to work with the landowners to meet their needs is important but also trying to minimize the impact by double-circuiting on the same lines. May not get the same level of reliability but you can get pretty close and that helps to mitigate some of those issues but I think we're always, I mean, there's always been issues with putting in new lines and there will always continue to be some of those but it...I think it's vitally important for us to make sure we engage not only those landowners but those communities early-on. Understand what their concerns are and then try to address them to the point you can and I think that's been an evolution in our business as we have built more and more transmission over the years.

Q: Getting back to the larger point you were making though; you think the overarching need is to get some kind of consistency and objectives across multiple states?

A: Absolutely, absolutely, I mean, if you think about it from just a planning perspective and a cost allocation perspective, which are probably two of the biggest areas that affect transmission, having consistency in how the states and regulators in those states and at the Federal level are thinking about how we should be building the system out and who is getting value from the investments we are making will help us to move forward so getting that kind of consistent view on where we are heading will only help us to move forward and make these investments in the timelines that we are talking about especially either clean energy, 80-100% clean energy by 2035-2040; those can be really challenging if you don't have consistency and are able to make decisions that are showing value to everybody out there.

Q: So, we've been talking about a lot of the activity that takes place in your rural territory. Let me take you into St. Louis, which is your largest service territory I assume. It's one of 25 cities that Bloomberg Philanthropies has selected for its American Cities Climate Change Challenge. What challenges do you face in within an urban area like St. Louis as you get ready

for EVs, increased electrification of real estate and office infrastructure? How are you going to have to rebuild your transmission distribution within the city?

A: Yeah, so great question again and you know as we move to more reliance on electric technologies whether it's electric vehicles, how we heat our homes, cook our meals, all of those types of things, it's not just replacing like for like whenever you change over, but it's really thinking about how do you enhance the reliability on the system and frankly incorporate what is being used. So, if you think about electric vehicles, if you can charge electric vehicles at night versus during the day where today, wind is probably the primary new renewable resource we have here in the Midwest. As you do that, that helps to reduce the loading on the system and that makes it easier for us as we build that out. As you start deploying solar and batteries at the distribution level, at the transmission level, where they're located on the system can help us as we build out the system and then making sure that we're thinking not just moving energy and capacity across the system but looking at the need for stability, the need for higher or actually smaller bandwidth when it comes to voltage fluctuations on the system because of some of these technologies out there and making sure that we are investing in infrastructure that helps to manage that and so

when you talk about the challenges, the challenges are not only building in an urban environment which can be even more difficult than in the rural environments but it's also making sure that we're not making investments today that if we waited two or three years, we could have made a better investment because of the technology and so it's really trying to layer it in, making sure that investments that we are making in those kind of no-regret investments and give us the flexibility as we transition in the future.

Q: To what extent will the intensification of deployment of new technology at end of the line; you mentioned batteries, maybe more solar. To what extent will that mitigate the need for large transmission projects cross-country or is it just the nature of where the solar and wind is that you're going to have to work on both ends?

A: Yeah, so I think it's really a combination of what you said, both ends, because regardless of whether it's solar, batteries, wind; it's really an optimization of the system, and we said, okay, we're just going to put all solar and batteries in locally. That, given where technology is at today, is going to have a really large impact on customers. And so if that kind of balance between wind, solar, batteries, transmission, new technologies like hydrogen, then the electric vehicles and how

they may play in and trying to balance that all out to get an optimal solution that not only ensures reliability but helps to keep the costs down to our customers and makes sure that the investments that are being made on the system fit the pace and change that our customers are demanding, whether it's for renewable energy or whether it's for new technologies becoming electric vehicles or other electrification opportunities.

Q: I'd like to, Shawn, focus on two projects that your company's been involved in to help get into the weeds a little more and give our listeners a flavor of what you're doing. One is the Illinois Rivers Project which was completed I believe December, 2020. It was a \$1.4 billion dollar project, your largest ever transmission project that Ameren and it was a part of a multi-state project which gets to your point you made earlier that the need for consistency of infrastructure strategies across a broader region. Tell us a little bit about how it came to be and what you think that its main successes have been.

A: Yeah, so the Illinois Rivers Project was part of what we call the Multi-Value Projects out of the Midcontinent ISO. And these projects were identified back in 2010, approved in 2011 to basically meet three goals. One was to help improve the reliability on the system. Second goal was to ensure that we

were keeping costs down on the system, and the third was to meet policy goals and at that time, it was renewable energy standards. And so, as we built out the system, that Illinois Rivers Project was just one of several projects in the Midcontinent ISO that were all kind of fit together for us to deliver wind energy across the footprint of the Midcontinent ISO and deliver renewable energy to us and so, what was some of the value? When you look at it, first and foremost, the benefits to cost were significant and so just making these investments helping to drive down costs to our customers as we transitioned is one of the unbelievable value points that you got from this. And when you go into it, quite often when you're looking at planning, you're saying things are going to change. What has happened with the Multi-Value Projects which included the Illinois Rivers Project is that the benefits actually increased from what was originally estimated and so that benefit-to-cost ratio has improved over time. And that's valuable as we think about the future and transmission and what we're estimating today because we often get pushback of well, you're not going to see that value. But what we've actually seen is it creates more value. I think one of the other areas is around reliability. If you think about Winter Storm Uri that just happened last February, we had designed the system to flow most of the power

West to East with, you know, you've got strong wind zones and it flows to the East but what happened with Winter Storm Uri was we flowed a ton of energy from the PJM Region across the Midcontinent ISO to the South of the MISO and then also into SPP. That was a benefit by having this strong system as we lost natural gas resources and other renewable resources and that, to the South and Southwest. It allowed us to maintain as much reliability as we could on the system and flowing significant power. I think that's important as we think about that next tranche of investments because as we're flowing more and more power across the system, we're going to see that these transmission lines create values in what ways we may not have thought about when we first went into them. I think that's just one of the learnings. It was also one of the great wins that I see from these Multi-Value Projects. So, if I could add just one more in, Marty, is really the local benefits and when you think about land owners and the impact that we talked about earlier, what we see with the Illinois Rivers Project is going in to it was some hesitancy but we delivered by working with local contractors and bringing revenues whether it's tax revenue or jobs to those communities that we also created a significant amount of value that helps as we think about future investments with transmission.

Q: So, to just put a fine point on it, what you're saying relative to the winter storms that hit in February down in Texas crippling the state, you saw a payback on this investment three months after you electrified it?

A: Absolutely and it wasn't just to Texas. It was to customers here in the Midwest. It was to customers down in the Southwest. It was across the area that was impacted by that winter storm.

Q: The other part of it that I want to take you to caught my eye because when I think of Ameren, I think of a conservative, well-run utility that keeps to its knitting. But you're involved in a New Mexico project called Lucky Corridor that is what, about 180 miles of transmission that's been enable 1,700 megawatts of transmission capacity primarily to help New Mexico bring wind to market. Talk a little bit about that and what brought a St. Louis-based company to New Mexico in the first place?

A: Yes, another great question, Marty, so just to step back, we are looking at making transmission investments where we can utilize our skillsets and our capabilities to bring value to the customers. And as we look at not only what we do here in the Midwest, but we also look for opportunities in other areas, and in this case, we became aware of an opportunity where a private project had been developed. It was in need of capital, it was in

need of some planning, engineering capabilities to kind of help bring it along. And what was so interesting to us is it ties into a region, the northeast of New Mexico that has really strong solar and wind resources but it doesn't have a very strong transmission infrastructure to be able to get back those resources out. And so, in looking at our capabilities to design, build, operate, transmission; looking at the value this could bring to the customers not only in New Mexico who are driving towards a clean energy environment but could open up access to resources that could then support Arizona and Colorado, California and areas like that. We just looked at that and said, hey, this is an opportunity that makes a lot of sense, that matches up our capabilities with the needs of the customers in those areas. And so, we continue to work with the local customers but also with developers to identify and put in place, transmission assets that's going to open up that area and once you open it up as we've seen other areas, once you get in and open up that area, that just helps to build more and more, whether it's economic development in the north of New Mexico or it's access to that larger level of renewables and high-quality renewables which we're going to need across the country.

Q: Shawn, I'd like to move to another topic just to get your insights on it. There's a lot of concern about grid security

with bad actors, nation states, criminals hacking into the system, and our country and our industry have done it a number of exercises and put procedures in place to address that. In terms of your job overseeing Ameren Transmission, how has that changed your work? How prepared do you think you are? Do you have a lot of new policies in place? Is your comfort level fairly high or do you go to bed every night a little nervous about what might come over the horizon?

A: It's one of the areas I think that we continue to make improvements on. And you mentioned the work that's going on across the industry and what I'm really proud of in our industry is how we all work together to continue to improve whether it's on response to storms or the safety with our co-workers or in this case, the resilience and reliability of our system from a cyber perspective. And so, we do a lot, whether it's trying to reinforce our systems to the extent possible, making sure that all of our employees are ready and are looking for things like phishing attacks and that. But at the same time, we recognize that this is an ever-changing landscape that we are participating in and every day, the actors, the threat-actors are getting better and better which means that we have to continue to get better and better so when you ask if I'm comfortable, the answer is, I think we're doing things that we

need to, but I'm not sure I ever get 100% comfortable because the threat-actors are getting better and better and we have to keep upping our game every day and that takes a lot of focus on making sure that we're making the right investments in systems. We're making the right investments in our employees so that they are prepared. And then that we are coordinating with others to make sure that we are as aware as we can be as to what threat-actors look like.

Q: The last question I'd like to ask you, Shawn is, you've been in this industry if I recall correctly, 30 plus years from your bio.

A: That's correct.

Q: Tell me how the business is different now in terms of the intellectual challenge and the personal gratification as the world that you deal with is changing much more rapidly in the challenges to your assignment. It seems to me to be getting infinitely more complex. How is that as a place to work and how are you personally dealing with it?

A: So, I...it has changed and you know you think back in the 80s when I first came into this industry, it was pretty steady kind of work. Not a lot changing. We weren't...where we had low growth, we didn't have the significant changeout in our generation resources. We didn't have all of the changes that are going on

today and we absolutely didn't have the issues that you were talking about just before with the cyber and so, those kinds of things have really accelerated for us whether it's how quickly we're going to change over the energy resources. How our customers are demanding higher and higher levels of reliability. Or how we have to make investments that meet those while keeping the costs down and I personally find that exciting. I'm an engineer by training. As engineers, our job and our training is how do you solve problems and make sure that you're getting the right opportunity and so I think that this is an exciting industry to be in with what we're trying to achieve to help with the energy transition, to reduce the impacts of carbon and our society, we're right in the middle of it and we're providing solutions that help to enable other technologies while helping to keep our costs down and keeping the reliability for our customers which is vital. So, it's an exciting place to be and I can tell you if I was a new engineer coming out today, this is absolutely an industry I would look at because we have the opportunity to provide solutions to issues that matter to all of society. What a great place to be.

Q: Thanks, Shawn. I appreciate talking with you today, Shawn. Thanks very much for joining us.

A: Well, I appreciate the time today, Marty. Thank you very much.

Q: And thanks for listing to Grid Talk. Our guest has been Shawn Schukar, who's the Chairman and President of the Ameren Transmission Company. Please send us your feedback or questions to [GridTalk@NREL.gov](mailto:GridTalk@NREL.gov) and we encourage you to give the podcast a rating or review on your favorite platform. For more information about the podcast series or to subscribe, visit [SmartGrid.gov](http://SmartGrid.gov).

END OF TAPE