

Grid Focal Point

Evaluating the Intersection of Microgrids, Renewables and Resiliency

A Conversation with Christina Alston

Georgia Transmission Corp.

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Interviewee: Marty Rosenberg

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Q: Welcome to the Voices of Experience: Microgrids for Resiliency podcast. Voices of Experience is a US Department of Energy Advanced Grid Research Division initiative. It captures the experiences insights and lessons learned from utilities at the forefront of implementing emerging technologies. This podcast explores the key points of a virtual discussion recently led by Christina Alston who heads up transmission development for the Georgia Transmission Corporation. I'm Marty Rosenberg, an energy journalist and host of this series. The topic of our discussion is evaluating the intersection of microgrids, renewables, and resiliency. Hi, Christina.

A: Hi, Marty.

Q: Tell us what this intersection looks like to you today and what's new about this intersection as you go about your job planning transmission development.

A: I think for us in the utility world, one of the key points or topics that we wanted to discuss was the reliability versus resiliency. In our industry, many times, you will hear those two topics kind of used interchangeably. What we were looking at was how to make sure that we differentiated the reliability versus resiliency. The way we did that was looking at the way our industry looks at it as a utility and the way other industries look at it. What we came up with was that reliability is the outcome, and resiliency is the way you achieve the outcome. The reason this is very important in terms of differentiating between these two terms was because, when we talk about renewables and we talk about microgrids, many people have the impression that, if you put in a renewable solution, that you will in fact be putting in a solution that provides increased reliability, and therefore, your resiliency is actually better. What we wanted to do in this particular endeavor was to look at reliability, the resiliency, and how renewables play into that conversation.

Q: Let's back up for a second and just talk about the Georgia Transmission Corporation. You serve 38 members that cover 70% of the land mass of the state. You have-- what-- about half a dozen microgrids deployed?

A: Actually, we are now entering into the microgrid area. We're working actively on four projects, and what we are actually doing is we are comparing those projects against a traditional-wires alternative. On the transmission side of the house, what we would do is look down through the distribution, and our members would say, "We have a problem" whether it's a reliability problem, whether it's thermal loading on the distribution, whether it's an overloaded transformer, and so that would now become your basis or your problem statements that you're trying to solve. What we're doing is we're actually looking at putting microgrids and putting in renewables and putting in battery energy storage systems as a way of comparing how those benefits would stack up against a regular-wires alternative.

Q: Of these four projects, do they all have elements of renewables incorporated? Describe what the power source is.

A: Most of them have some type of renewable aspect to them.

Then, they would be paired with battery energy storage systems. The example that we actually went over in the presentation last week was specifically a situation where we have an area that has had-- it's a rural community in South Georgia, and they have suffered with poor reliability and excessive outages due to a very long [unclear], so the way we've actually addressed that in the past is by putting in diesel generators. We're at the point now, 20 years on, where the diesel generators are approaching end-of-life, and so we still have to maintain a level of reliability in this community. Now, this gives us an opportunity to say, okay, instead of us going back with a traditional solution of maybe building another transmission line or another solution which is replacing the Caterpillar diesel generators that we have, how can we now look at a microgrid and how does that microgrid then stack up as a resiliency solution compared to other solutions that we could implement?

Q: Are those pathways on par financially, or is there is a higher cost one way or the other?

A: Well, that was one of the things that we talked about in the [unclear] discussion. It's not so much just the upfront capital cost. There's also the operation and

maintenance cost, and then there's also a technical evaluation. At GTC, we tend to do a 35-year net present worth analysis because that's typically what you would actually look at in terms of your transmission facilities. When we look at the depreciation schedule, one of the things that you have to take into consideration is how long this renewable and battery energy source system going to last versus my traditional-wires alternative and versus looking at the lifespan of, say, a diesel generator.

Q: Looking out over the future, I would assume you would say this is really at its infancy or just getting started. Covering a significant swath of the state of Georgia, an area that's prone to storms and hurricanes, would you say the promise of this technology, if it proves out, is going to ramp up and lead to greater and greater deployments?

A: I feel that way. I think that-- when I first got into the industry, back in the early '90s, I was very much on the band wagon with the biomass co-generation, and it's amazing that we're coming full circle when we start talking about renewables. I do feel that because of the landscape in Georgia, the availability of transmission, how strong the transmission grid is here, I do think that you will start to see a ramping up of these types of alternatives.

There's a lot of renewables being developed in Georgia.

The question is if those renewables add to the resiliency when we have specific case studies.

Q: Talk for a minute about today's battery technology, how much it meets your needs, how costly it is, how fast you anticipate those costs coming down.

A: As far as the cost, one of the things that we're noticing is-- when we're looking at the battery solution and we're stacking benefits for the battery solution, one of the issues that I'm finding when I look at my financial considerations is either the initial cost or how I depreciate the battery over time as what really impacts the project. If I can depreciate the battery beyond the ten-year mark into, say, a fifteen-year mark, all of a sudden, my economics become a lot more favorable against soiree of my wires alternatives. On the other side, if my capital investment is lower, then of course it looks better than my wires alternative. My wires alternative typically, when I'm looking at, say, in this situation where we're looking at 16 miles of transmission line, in this case, the battery solution, the initial upfront cost is less than the transmission solution. However, where it becomes more complicated is when you start looking at the other factors

such as operational requirements and such as the way we are actually depreciating that asset over time. That's when we start seeing that the numbers actually cross over. If you look at it for the life of the project, at that point, the wires alternative actually looks better over the 35 years. What I'm finding when I run my numbers, specifically, is that those are the two numbers I have to look at for the battery energy storage. For this particular project, that we looked at when we were comparing it to the 16 miles of transmission, the battery energy cost needed to dip below 290 dollars per KWH, or I would have needed a depreciation schedule to extend to 15 years in order for those two projects to actually be in line with each other.

Q: What hurdles do you face in terms of getting that kind of depreciation life? Is it a fast-beat consideration? Is it state regulation? What needs to change?

A: I think it's the cost of the batteries themselves and the technology. When you order batteries now, there's a schedule in which you are going to exercise that piece of equipment. When you look at your warrantee versus how you are exercising that or using that piece of equipment, that is what's going to dictate to you how long you're going to be able to use it in terms of the depreciation schedule.

If you have a battery that you're not going to use very battery, then you may be able to extend the life of the battery, but having said that, if you're going to make such a substantial investment, you really want to use your battery. It's an asset that you have in your fleet, and you want to be able to use it. I do think though, as more and more utilities get into looking at battery energy storage systems, I definitely think that those costs will come down. If they're going to come down within 12 months, I'm not sure, but definitely at the 18- to 24-month mark, I do think that you'll see the cost of the batteries go down.

Q: As you look at out across your 38 members, do you find some of the boards of these co-ops more reluctant than others to go down this route of relying on more distributed generation?

A: I would not say it's a reluctance. I think it's-- within the co-op world, you have early adopters based on their member profiles and what their members are bringing to them as well because, at the end of the day, the EMCs represent the people who live in Georgia. They're reflective of their values. If you find an EMC that is very progressive, then they are very high adopters. They may not be as concerned. They may want to jump in early on and say, you

know, we understand that the economics are not there, but we're very interested in testing the technology. The same way on the other side-- you have some member co-ops who are maybe more conservative and say, "We'd like to see something a little bit more proven before we put it on our system." We're fortunate here in Georgia where we have the full spectrum, where we have the ability to see across the state and look at our early adopters and work with them closely in trying to deploy projects while looking at some of our other co-ops who would like to see more proven technology and then have those results that the early adopters came on board with and show yours to those who are more "let's see how this works." Then, we're kind of stacking those projects along as well.

Q: Having this technology at hand and having the possibility of considering it for deployment, how is that changing the relationship between your member co-ops and their customers? Is it recalling on a greater degree of sophistication and engagement of customers?

A: I wouldn't say that we're not there yet. I would say that those projects that are coming online with our early adopters are being heralded-- you know, they're putting out press releases, and that information is being disseminated

to their communities. We do look for those cases where we make what we call the "noteworthy" and "newsworthy" types of solutions. I do think it's almost like on the EV side. If you're in an area that has a high adoption of electric vehicles, then those consumers are definitely going to be much more interested in you having a solar and battery energy storage project.

Q: Talk for a second about your entity, Georgia Transmission Corporation, which has, as I take it, around 3 billion dollars in assets. Does this become an important business model consideration for you-- the ability to forestall significant investments by deploying more diverse technologies?

A: I think for us it's mainly another tool in your arsenal, so to speak. It's another thing that we can look at. It may even be transitional. It may be where we deploy batteries in a situation where we still have every intention of putting in a regular-wires alternative, but we may need more time to either develop that alternative or develop the load in the area. I see it more as a tool as opposed to a substitution for wires alternatives. I see it where it complements us in areas where we may have a situation now where we say, okay, in 36 or 48 months, we may need to look

at this again. Since we work on a five- and ten-year planning horizon, this may be the five-year solution, and then the ten-year solution might be putting in your traditional-wires alternative based on load growth and based on the area reliability. I see it more as being something more complementary to the transmission system.

Q: Great. Thank you, Christina.

A: Thank you, Martin.

Q: We have been listening to Christina Alston who oversees transmission development for Georgia Transmission Corporation. Thank you for listing to the Voices of Experience: Microgrids for Resiliency podcast. For more information on the Voices of Experience initiative, please visit SmartGrid.gov. Please subscribe and review the podcast on your favorite podcast platform.

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