

MARTY ROSENBERG
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Grid Talk #206
TOM FANNING INTERVIEW

Q: Hi, we're here today with Tom Fanning, the President, Chairman and CEO of Southern Company. Hi, Tom.

A: Hey, how are you Marty? Good to see you.

Q: Very good. A couple of issues I want to talk to you about but first up, it's going to be cybersecurity.

A: It never stops.

Q: It never stops and it suddenly is escalating. I know two of the hats you wear at least; I bet there are probably more, but for a number of years, it must be close to a decade, you've been co-chair in the Electric Sub-sector Coordinating Council and more recently I think, Congress has gotten you involved in the Cyberspace Solarium Commission.

A: Yes, I'm the only kind of private citizen, private sector CEO-type on that commission. Otherwise, it's mostly kind of administration or other policy people plus representatives from NSA, FBI, etc., DHS; really good folks.

Q: So, what I want to ask you is; we've been reading about and hearing about since the end of the year or the beginning of the year about this discovery of massive ostensibly Russian invasion of our cyberspace above and beyond of what we had seen in the

past. What's that mean; how do you take it and what does that mean to electric utilities and the venerability of our electric sector?

A: So, let me start with what I think is the most important thing about your question is. We have done a comprehensive review with hunt teams from different agencies, third-party vendors, etc. The energy space, particularly electricity, does not appear to be a target. This looks like an espionage operation that was, in my opinion anyway, wildly successful in that they opened doors to many, many companies, industries, agencies, etc. But here's the thing that I think is very important and probably a warning for everybody. It's pretty clear to me that the hack with Solar Winds in the Orion product et. al., was bigger than just solar winds so as people invariably talk about this as a Solar Wind's hack, there were probably entrees into solar winds that were important; one. Two, we believe they were in Solar Winds since June without detection and in fact, Southern Company stumbled into our own knowledge that, in fact, Solar Winds had had a problem. It really was; we were looking at something else from another nation state and we found about eight files that had been opened and closed and essentially been put back on the bookshelf. And we thought that was really odd that those files had been evaluated, and that

caused us to pursue a trail that ended in solar winds. Now, let me kind of get to point three. So, as we think about what happens when somebody hacks you in this kind of magnitude, there's really two big missions. One is, they try to exfiltrate information. China is famous for exfiltrating intellectual property. The other thing that they try to do is metastasize into an area that can be really troublesome and what you worry about there is not just moving to find more important information, but moving into areas in which they can operationalize an attack; operating systems, that kind of thing. We do believe that, in fact, that there has been since the hack existed since June, we do believe there was plenty of opportunity for this nation state to move and get into other areas like the cloud. So, this has been a really significant big deal and it has not stopped. As soon as you uncover something like this, typically, people like to go to ground and try to cover-up. The last thing, if it is the Russians, the last thing the Russians want us to do is uncover the depth and breadth of their attack. So where else has it gone? I don't think we can answer that question clearly yet. And let me give you the other kind of thing to think about and that is, okay, so the reporting is without confirming or denying that this may have been Russia and that they had been there in a comprehensive way for months;

where do you think China is? Where do you think Iran could be? If they got in through some statecraft, what members of international criminal enterprises now have access to the intel and to the tools that enable them to do this? And what about ultimately ideologues, ISIS, people that have very little to lose? It is a stark reminder for all the advantages the digital economy gives us, how vulnerable we can be if we don't act with the right sense of propriety in protecting those assets. That's why, I think, some of the work of the Cyberspace Solarium now has new oxygen. We need now, more than ever, to take action as a nation.

Q: So, it's been reported for a number of years that Russia, China, maybe others, maybe Iran, can shut down our grid; that they're trying to get the tools to do that. How imminent is that threat that's something you've been exercising against, and has it been heightened as a result of what's happened in the last few months?

A: So, as I said, I don't think they have the ability to operationalize an attack and the grid is so complex and it is protected in so many different ways. It's not just, 'can we stop a hack,' okay? I don't think anybody can say that they're invulnerable to these kinds of digital attacks but for example, we have different layers of defense and effectively we can look

at for example, our energy management system going to a much more constrained environment. We call that our "spare tire strategy." That would be, that's the ugly tire you put on your car that can get you from a blowout to a gas station where you can get help so in the event our EMS got attacked, we go to spare tire. At the end of the day, we can go to another strategy called "MacGyver" and that is essentially leaving the digital age, withdrawing from connections to the Internet and running our system as it was run in the 1950s. Now, our vulnerability there will be telecom. In other words, if I send people out manually to throw switches in the field, I've got to be able to talk to them and I still have to be able to communicate. So, part of MacGyver is not just understanding how to operate as we did in the 1950s, manually is the shorthand. But rather also thinking about creative ways to communicate in the event we lose the joint-based systems of cell phones, etc. So, can the electric grid get taken down? I think by its structure, I think it would be extraordinarily hard. One of the other things that I think is important is when you say the grid; part of the work in the Solarium Commission that we did was to call out a new concept and it's really important from a national security standpoint and that is to identify THE most critical assets in the nation that would prevent widespread loss of life,

significant economic dislocation, and preserve the ability to fight back, whether that's seeing or listening or being able to respond kinetically. So, those assets which are critical to those three big circumstances are what we call, it's an unfortunate metaphor, it's called SICI; SICI assets: Systemically Important Critical Infrastructure. If we can essentially create a priority of the most important functions in America that will preserve our American way of life, our ability to enact commerce, our ability to defend ourselves, that says we can't protect everything. This idea of taking the grid down sounds ominous. The ability for the bad guys to get into SICI assets calls out, I think, an important national issue that will preserve, I think, our ability to recover from whatever. So, number one: Can they get to the grid? Eh, probably, in limited ways but I think if we're smart about how we array our defenses, those items for America, those assets for America, those are most critical, will be the best protected.

Q: So, I'd like to segue to another subject and maybe there's a bridge between the two from security to the effort you and other major utilities have launched to get to net zero carbon by 2050 and reduce emissions below 50% below 2007 levels even sooner maybe in the next few years. Talk a little bit about the

paths some of that is on that and is there a security implication of getting greener?

A: Sure there is. Let's kind of go through the big thing. Southern was one of the first companies in our industry to declare what we said then was low to no 2050 and difference between low and kind of thought as 80% reductions and no, obviously zero; really deals with overtime bridges of technology solutions that will get us where we need to be in an economic way. We call that in our desire to reduce carbon; it isn't just carbon as the only guiding factor here. I've been steadfast in saying we need to balance clean, safe, reliable, affordable. I mean, we could eliminate carbon today if we wanted to but at an economic dislocation and the lack of reliability would be enormous. So, balancing clean, safe, reliable, affordable and providing for technology solutions, that get's us low and no, and we were able to commit to that. And you may remember that as an aside, Southern Company is the only company in our industry that has robust proprietary research and development. We are, by far, the biggest research partner of the Department of Energy in our industry. One of the biggest funders of EPRI. Steve Specker, former CEO of EPRI, is on my board. Critical to getting to this future will be the development of technology whether it's battery storage, whether it's hydrogen, whether it's doing

something to attack the carbon atom itself, carbon capture and storage, EVs; there's a whole lot we've got to do as a nation to get there.

Q: Let's just talk for a second about carbon capture and the work you're doing in Alabama. How ready for prime time is that? It's been talked about for decades.

A: Well, you know, we've also done it at Plant Ratcliffe in Kemper County, Mississippi. Technology exists but it's not economic right now. It would be kind of economic at say, six bucks per million BTU natural gas; that's kind of its economic point. But recall also that the purpose of research and development. In one way you can think of it as taking ideas that are currently out of the money and making them in the money. And so, I think that is the challenge, right, is how do we improve on the technology? Make it more efficient so that it is a player sometime in the future and I think its best application will have nothing to do with coal. It will have everything to do with natural gas. How far natural gas survives as an important fuel into electricity generation as you approach 2050.

Q: Part of your carbon strategy is nuclear and you have two plants on the cusp of completion. Many in the industry would say nuclear is out of the money. Are you going to bring it into the money?

A: Well, sure, I think anybody can go look at the Georgia proceedings. Now, the capital costs has been more than what we wanted but the costs borne by consumers will actually be less than what was promised when we had the initial order to build the plants. That is so under-reported. When we got that order from the Commission, we thought it would be a 12% price increase. We think now it's going to be about ten. Well then, everybody says, well, wait a minute; I thought all these costs went way high. Recall, we had a fixed price commitment from Westinghouse that Westinghouse bore a lot of those overages and ultimately Westinghouse went bankrupt. Recall also that as a result of Westinghouse going bankrupt, we had Toshiba guarantee us \$3.7 billion dollars which we got a hundred cents on the dollar from with the help of the past administration. So, we've been able to buy down a lot of the costs with commercial guarantees from our biggest vendors and so I think Vogtle is going to come in and be a very economic thing. I think its energy will be around equivalent one dollar per million BTUs of natural gas. It will be something like that.

Q: So, where does distributed generation configure in your strategy because a lot of people say that there's security in that by being a less-centralized electrical system?

A: There's security and lack of security, but let me finish the nuclear thing quickly and that is, I don't think you're going to build this technology again. I think in the late 30s to 40s is going to be the so-called Gen IV reactors like the molten salt reactor we're working on with Bill Gates. This is a technology where the core physically can't melt down and therefore, you won't need all the containment structure you have now and therefore, it's more economic. Okay, so let's go to distributive and in fact, one of my principles, Marty, is that one of the greatest harbingers of future failure is past success. Southern Company is one of the great franchises in America, the Southeast and great economic growth and a stable, but tough, a stable regulatory environment where we do all of making, moving, and selling energy with one chain of command, one line of accountability and responsibility. That is so much more effective in my opinion than the so-called organized markets which, I don't need to tell anybody they've had their share of problems. Now, in 2016 we bought a company called PowerSecure and to cut to the chase, what we have done is merge a lot of what PowerSecure does with what our other company, our IPP, that has been so big particularly solar and now we're moving into wind a little bit, Southern Power. And what we're doing there is to essentially miniaturize the iconic model of

make, move, and sell on a single entity to where I can make, move, and sell on your corporate real estate at a Home Depot store or at a factory or at a server farm. Now, when I do that, I can do what I can distributive infrastructure; that is, I can build a microgrid. This is a little bit of an old statistic. But what we have done is about two years old so excuse me if it's out of date but at least one magazine said Southern Company had 85% market share of microgrids in America. Now, there are tiny microgrids but still we are out there and so we have microgrids. We have distributive storage. We have distributive generation. We have proprietary switchgear. And it is moving like nobody's business. The good news is, is that kind of infrastructure can be exceedingly resilient. Now, it does provide a different set of problems though in making it resilient.

Q: Before we get to that, just for scale here, Southern Power is in 13 states, has 50 facilities, "little over 11,000 megawatts" from California to Kansas where I sit, Minnesota, Texas, so you're everywhere. This microgrid kind of small system of making, moving, and selling that you're talking about; potentially, how large of that 11,000 megawatts could it grow?

A: Okay, so it's tiny. A lot of 11,000 megawatts are what I would call full requirements or wholesale agreements or big bi-laterals. The microgrid business, it's tiny. I mean, it's almost

not even discernible from a profit standpoint at Southern. But what we think it is, is a window on the world and in fact, a year ago during better times or maybe it was two years ago now, several of us traveled through Europe trying to sense what went right and what went wrong in their period of turmoil and market structure, and I think that this is something that could grow. And so, the way I think about this whole microgrid distributed infrastructure business is something that really is small and doesn't matter much to net income but should it get oxygen which I think it will, then we are poised not only to participate in a robust way but perhaps to even be a leader in influencing how that market occurs. So, this is another one where it looks like an option that's out of the money, but we're working very hard to understand it so that if some chemicals do come together in the ocean and something does crawl up on the beach that we'll be able to take advantage of it appropriately.

Q: So, you're a giant with \$118-\$120 billion dollars in assets. To what extent are you sitting on the beach waiting to see what crawls out versus making the head about this and possibly popping some energy intent evolution?

A: Well, we're participating it and in fact, this is one within the world of business, this is one of a classic example of pursuing creative destruction. Everything we do to make this

union of Southern Power and PowerSecure successful has the potential to start to eat into our own franchise business in the Southeast. But what's interesting about PowerSecure is we're in virtually in all 50 States, and where you are most vulnerable is where companies don't have adequate reliability to satisfy big customers. They don't have low prices so they have high prices, poor service, bad brand. They want to secure their own future and so, that is where we've been able to make the most progress. We're fortunate in the Southeast where we've got great brand, we've got low prices, we've got great service so I'm hopeful that we'll be able to fight most of these wars on other people's beaches, but we are not immune, rest assured.

Q: So, Tom, the net zero carbon 2050 strategy involved in a number of major utilities in addition to Southern; while Trump was President, and now we have an administration that's very much more engaged, plan to build a clean energy system. Does it make a difference to you what's happening in Washington or is this evolution central to where utilities are going regardless of who's in Washington?

A: Well, and you pointed out and I really didn't finish the rest of the story; I was probably taking too much time, but we moved from low and no to net zero and we said 2050. It's clear to me that we can advance that if we want to. I've already sent

a letter to President Biden that says, Southern Company stand ready to help him on his initiatives, so if he wants to accelerate the timeframe to 2045 or 2040 or 2035, we will work with him and help inform policy makers as to the big choices that they'll be making along the way. And I think with our capability and research we will be able to point to different avenues that will make this transition and better balanced in terms of clean, safe, reliable, affordable profile. So, these are things we've got to do now. When I think about stark differences between Trump and Biden, like the Paris Accords, Trump withdrew; Biden's back in. In my view, the pursuit of the net zero future for America is almost independent of that. We progressed along this way. I think at 2019, we reduced our carbon by 44%. We had an intermediate goal of 50% by 2030; we're going to blow through that. We're going to accomplish that by 2025 or sooner.

Q: Much of that was the pandemic and the economic downturn, right? You think it's going to...

A: No, that 44 was 2019; that was before the pandemic, okay? So, a lot of that was natural gas going so cheap and closing down a bunch of uneconomic coal. Okay, I'll certainly agree to that, but the whole industry irrespective of whether you're in something like Paris or not, I think understands the importance

of achieving a low carbon, low carbon future, and so we're going to do that anyway. We are doing it. We've got a great track record.

Q: The last thing I'd like to ask you to come back to is your statement, "*the biggest harbinger of future failure is past success.*" It's funny, my last podcast was with Raiford Smith and he quoted you as saying that so it resonates with a number of people. What past successes are your personal greatest challenges? What, from your past successes, are you struggling most to overcome at this point?

A: Yeah, I would say it's Southern Company has this great franchise business in the Southeast now for over one hundred years and we've earned the right, I think, to have that franchise. That is, we have provided the lowest prices, the best service. We treat customers at the middle of every priority we got and I think people understand that. Further, we are bigger than our bottom line. We have taken as a mission to make the communities we serve better off because we're there. We are citizens where we serve in the broadest sense, okay? That is a very kind of praise-worthy track record; however, it does not insulate us against compounding changes both in the sense of available energy technologies, whether that's generation or consumption or whether it is a changing marketplace,

particularly in customer demands as we move to a more digital economy. And so, we've always got to understand that we are not in a cocoon. That the barbarians at the gate are out there and unless we performed to the best of our ability to promote our customer interest at all times, we will be assaulted. There is no question in my mind about that. One last thing, I think I'm the only CEO that's ever been a CIO in our industry. That stands for Chief Information Officer, head of IT. So many days, I thought that stood for Career Is Over; it is a hard job. The threat against the sanctity of our electric grids and our ability to enact digital commerce have never been higher. And so, at the same time while we're running these franchise businesses as well as we can in light of all this technology change, we always have to keep in mind that we have an obligation to protect and serve and we run the most critical. You know, what did somebody say: we're 6 or 7% of the nation's economy? But, we're the first 6 or 7% and if we don't do our jobs, nobody does their jobs, so it is a special obligation that we owe America. Those are the big challenges I see.

Q: Well, thanks. We've been talking with Tom Fanning, the Chairman, President and CEO of Southern Company. Thanks, Tom.

A: Great being with you. See you soon.

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