Four Thought-Leaders Thoughts on Our Future

Electrification of Everything, Steel for Fuel, Future of Gas, New Business and Regulation Models, Innovation, Black Swans

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With Jan Vrins and Steve Mitnick at the EEI Annual Convention in San Diego

We spoke with several utility industry executives at EEI's Annual Convention in San Diego. Despite specific and diverse perspectives, serving customers across the United States and Canada, they all agree: our industry is changing, and the pace of change is causing significant disruption.

Customers are becoming more demanding. They want new and different energy products and services. They want power from clean-energy sources and more resiliency. They want to save energy, and yes, they also still want lower bills and reduced energy costs.

And then there are all the technological advances in wind, solar, storage, electric vehicles, smart-grid sensors and devices, artificial intelligence, big data, drones, and robotics that are changing the way we produce, deliver, and use electricity. Technology is having an impact on our business. It's changing the generation mix to more gas and renewables. It's making our power grid smarter, with more data available to utilities and their customers. Our grid now must be able to manage intermittent renewables and distributed-energy resources, and utilities are the integrators (and orchestrators), delivering more value to their customers, making it all work and optimizing every single part of it, to keep the overall cost down.

All of this is changing our energy markets, regulatory frameworks and rules, and business models that were developed for a past that no longer exists. The future is here, our industry has changed forever. We discussed the electrification of everything, steel for fuel, the future of gas, new business models, changing regulation, innovation, and black swans. Here's what they shared with us – really interesting topics and conversations!

– Jan Vrins, managing director and leader of Navigant's global energy practice

Brian Bird

CFO, NorthWestern Energy

PUF's Steve Mitnick: Do you have a vision of the electric industry's future?

Brian Bird, CFO, NorthWestern Energy: Here's a little bit of my history. I was the treasurer of NRG right before the bankruptcy. We were in a period, in the early 2000s, where we were going to see load continue to grow and power prices were going to continue to go up, and we were over-paying for green-field development.

When I hear people who believe that the market's going to continue to stay at a low price forever because of fracking, I've got enough gray hair to doubt that. We've gone from that aspect to, well, there's a death spiral. Why are we investing in assets that are longer than ten years?

I actually had somebody tell me they were contemplating limiting their financing to ten years. Because they're not sure those assets will be in service after ten years.

I tend to agree with this most recent iteration, which is electrification of everything. It gets down to a greener profile, and we've heard some of the CEOs talk about this today; it's the younger folks who are going to drive that more than anyone. They're going to demand it from their suppliers, and that includes us. So, we're going to get to that point, and from the electrification standpoint, that's certainly fantastic for the electric industry.

The other thing people tend to forget is we've had disruptions in this industry in the past. We've been around a while. That doesn't mean we have the right to be around forever.

I think about the Puerto Rico video we've seen here at the conference. I wish every one of our consumers and employees could watch that video. It's just an appreciation for what we bring to people's lives every day. What we enable in this economy, the world's greatest economy, is through electricity. So, I feel good about the long-term profile for this industry. Maybe not every CFO is an optimist, but I am an optimist.

Steve Mitnick: There are a lot of changes in generation, and it's changing fast.

Brian Bird: I'd even take it a step further. What is generation? We're starting to look at using distributed generation in our distribution business. If we're putting a solar battery at the end of a radial line, primarily for reliability purposes, is that generation or is that distribution? If it's distribution, do I include that in my resource plan from a generation perspective?

Jan Vrins of Navigant: Is that base load?

Brian Bird: Yes. With a battery, maybe we, longer term, can get to that. I just think some of these resources provide different services. Maybe I went too far on that regard from a generation perspective, but I feel good about the generation space, and I feel good about it from NorthWestern's perspective.

From left: Jeanne Vold, Business Technology Officer; Aaron Bjorkman, Director Tax; Dan Rausch, Treasurer; Crystal Lail, VP and Controller; Travis Meyer, Director Investor Relations and Corporate Finance; Brian Bird, CFO; Mike Nieman, Chief Audit and Compliance Officer. On the speaker phone is John Kasperick, Director of Financial Planning and Analysis.

We are certainly at an all-of-the-above resource plan now. About twenty-two percent of the megawatt-hours that we have are still coal in Montana, and it's certainly higher than that in South Dakota. However, in those high-pressure cold days in November and December, when the wind isn't blowing, hydro's still performing, and coal is going all out those days.

The fact that we're sixty-percent green delivered energy in Montana, and two-thirds of that's hydro, and the other third is wind, we're in a fantastic spot as a company, particularly in Montana. The issue we have in Montana is we're capacity-short today.

We've got a minus twenty-eight percent reserve margin. We're one of the few companies that have a negative reserve margin. That will grow to minus fifty percent if we don't tackle this problem in the decades to come.

The beauty of that is, when we ultimately have to fix this problem, we're going to be able to fix it with the most cost-effective resources.

You can do your forecast today, and it would look like it's all gas-fired generation from an economic perspective, but you do that resource plan every two years. Next time we do a resource plan, we might find out that solar and storage is cheaper than gas-fired generation, from a capacity standpoint.

I'm not saying what it will be, but we believe we're going to be able to rebuild this utility's generation mix with the best resources, and the best prices. A staff member at the Montana Public Service Commission told us when we bought the hydro assets, "you effectively put Montana Power back together, but with the best resources."

We didn't buy all the additional coal-fired generation, so we effectively bought the best resources. Now we have an opportunity to add the most cost effective, and I'm going to argue that over time, it'll likely be greener assets going forward.

We've got a minus 28% reserve margin. We're one of the few companies that have a negative reserve margin. That will grow to minus 50% if we don't tackle this problem.

It's a great opportunity for the company to not have stranded assets, and on top of that, for our customers to have the best price and green mix going forward. I feel really good about the generation space, but I'm going to take you to the next level.

I don't know what we'll call generation ten or twenty years from now. Things will be so distributed. Will you call it generation?

There will be central power, but will you call that generation, or will that be part of your distribution system?

Steve Mitnick: You want to be flexible, and nimble.

Brian Bird: We'll be nimble. Look at fracking and what it's done for not only for gas-fired generation, but for all generation, in terms of reducing overall cost to customers. It's certainly had an impact on coal-fired generation.

One could argue that fracking has done more to reduce coal-fired generation than any environmental activity that's ever happened. The main thing it's done is reduce the overall price for customers, certainly the gas side of business, and it's helped on the electric side as well.

Steve Mitnick: What's that future looking like?

Brian Bird: I love how the CEO of Oracle talked about the three different types of customers. I thought that was perfect.

One of those was the prosumer, a consumer who's going to utilize all the tools he can to reduce to his lowest price.

Hopefully, all of us, from an industry perspective, are going to be working to provide what we can from a lowest-cost perspective. I think the distribution system will change to meet the needs of those three groups of consumers.

From our perspective, the consumers will drive what they look for from us as a provider. At the end of the day, it's information. My kids, when we ultimately transfer their phone plan to them, will have a greater appreciation that it costs more, on a monthly basis, than their electric bill. I think they will all have an unlimited data plan, and they'll pay a fixed price for that.

From our perspective, why shouldn't it be, that when customers start asking for more data, in terms of services we're providing, and the data we're providing, that we're not going to move to more of a fixed-price approach?

You've got to be careful there, for two reasons. One, we want to make sure for low-income customers that we know how it would impact them. Also, the pushback you'd also get from a higher fixed charge affects conservation, and one must think about that as well.

Speaking to the distribution system, we're going to continue to utilize automation. We're primarily focusing on our side of the meter. What can we continue to do to, from an outage management standpoint, to increase reliability?

We're seeing our commercial and industrial customers and residential customers continue to expect higher levels of service without necessarily thinking about the cost. We need to continue to use technology on our side to continue to provide very reliable service.

We're slower to the game on advanced metering versus our peers. From our perspective, our customers were not clamoring for advanced meters and more information. And, in Montana we had an advanced meter system that is only now reaching the end of its life. We have been watching what the other utilities are doing and seeing how the technology develops.

Now we're starting to see customers start to demand information about their energy use, particularly our younger customers and our better-educated older customers. On top of that, we're seeing that we can add value now with other technology in the distribution system with advanced metering technology, and continue to improve outage management, and other aspects of it. We think the value quotient of advanced metering is there, and it's time to deploy that capital.

Steve Mitnick: Readers might say things are happening in San Francisco, and New York, but Montana and the Dakotas don't have to worry, or change is slower or different. How do you look at that?

Brian Bird: I look at the example of Uber or Lyft. When you first heard about it, you thought, I'm going to take a cab. Now, in Sioux Falls, I don't know if we have cab service anymore, and everyone is using Lyft. Things take off.

I think about electric cars. I'm kind of a car guy. I love cars. There was nothing wrong with a combustion engine until we got our electric hybrid. My wife's car is an electric hybrid, and she loves it. Even though half of the electric vehicles are in California, that's going to change. It's going to hit us.

We're not oblivious to the change, but we also feel that, as a small utility, we have the opportunity to slowly think through that change and make changes at a slower pace than some of the other utilities.

We appreciate that the larger utilities are moving at a faster pace than we are. And, because of their size, have the ability to have a bit more capital at risk, and maybe a bit more expense at risk.

There was nothing wrong with a combustion engine until we got our electric hybrid. Even though half of the electric vehicles are in California, that's going to change.

We appreciate learning from them. There were a lot of comments made at this conference and over the last couple of days about this industry, and how great it is that we can share the information from each other from a best practices perspective.

We really appreciate what's happening there, but to believe it's never coming to Montana, and never coming to South Dakota or Nebraska, we don't buy that, either. It's going to come. It's just going to take a while.

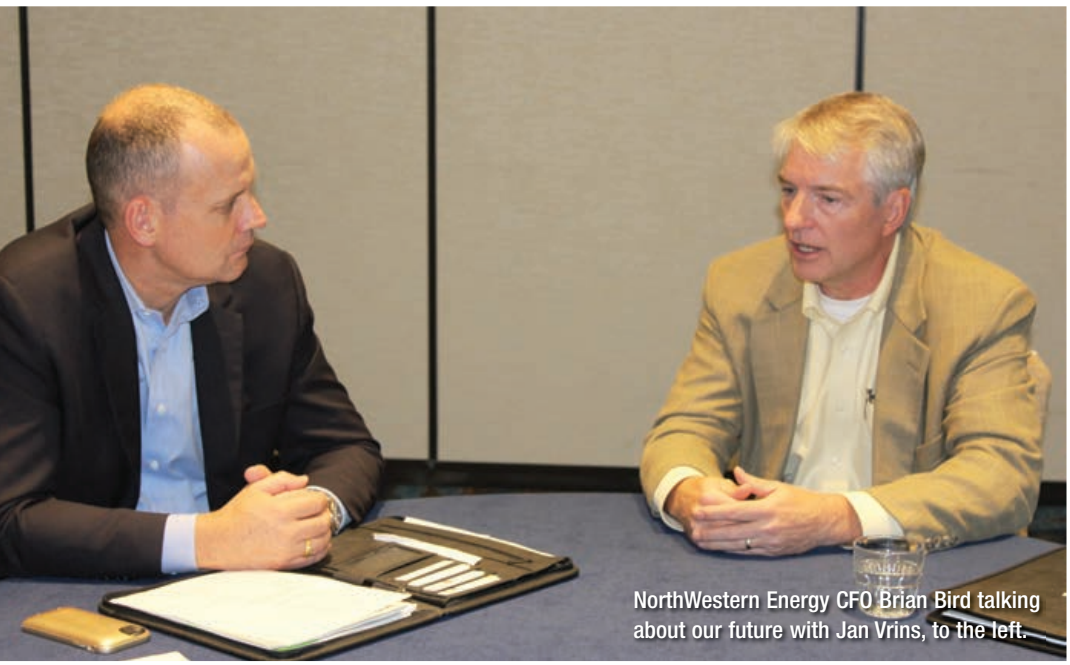
Jan Vrins: You mentioned "our side of the meter." What about the other side?

Brian Bird: We're a hundred-percent regulated utility, primarily because of our history. This is a company that emerged from bankruptcy fourteen years ago.

The utility had nothing to do with Montana Power going into bankruptcy, or with Northwestern Public Service going into bankruptcy. It was the non-regulated businesses that drove those companies into bankruptcy.

We emerged as a fully regulated utility, and initially you start looking at other things on the other side of the meter as, where does that sit on the regulated side? So, we thought through that. I think we needed to start seeing other utilities demonstrate that we should be selling those products on the other side of the meter.

We were more than comfortable going there because we like to operate in a regulated environment. But ultimately, in fairness, if we see a service that we can provide our customers on the other side of the meter, and we can't get to a regulated answer, we'll look at non-regulated.



NorthWestern Energy CFO Brian Bird talking about our future with Jan Vrins, to the left.

We have a fantastic opportunity. We've gone from the ratepayer concept, to the customer concept, and we're doing all those things as a utility. We're having the best customer satisfaction scores in our history. We need to continue to work on that, and as the trusted advisor to our customers, think of other services we're going to need to provide.

We're moving away from kilowatt-hour movement, to a services company, and data's going to drive that more than anything to start. But, as for those other services, we don't even know what they are yet.

We need to be prepared to provide those when they come. Without having that battle today, without having to make those decisions today, we're going to continue to provide even better and better service to our customers by focusing on a lot of things, with technology on our side.

Steve Mitnick: Do you feel you need to prepare for that future with changing processes, organization structure, culture, the kinds of people you bring in, or technology?

Brian Bird: The utilities also have this great opportunity, in terms of transformation of our workforce. We were scared to death five, ten years ago. We were going to lose all of these people. What were we going to do?

So, we've had great success attracting skilled labor to replace those that have recently retired. Everybody that we're bringing in from a technology standpoint is bringing something different and new to the table, and they are going to help us change how we impact our customers; both our external customers and our internal customers. Now, we're less concerned about that big shift than we were a few years ago.

They're going to help us with that transformation, but it's hard. I get a kick out of these larger utilities, particularly California utilities, who are competing for technology folks in Silicon Valley and other large corporate environment.

In Montana and South Dakota, there are few places better to work for than companies like NorthWestern.

We've been very fortunate to capture the in-state talent at the utility. We feel pretty good about that. Are we at the same place our larger peers are? Certainly not. But, we have some time to learn from them and deploy that technology at the speed of value.

For regulation, the issue longer-term we're going to have to deal with is answering this basic question: What do our customers want? How do we develop a plan to meet what our customers want? How do we persuade the regulators that it makes sense?

What do our customers want? How do we develop a plan to meet what our customers want? How do we persuade the regulators that it makes sense?

The thing that's frustrating to us, is many times, it's the regulators and even the consumer advocates who, supposedly, are working for the customer. They're supposed to be acting on behalf of our customers, but we know our customers better than they do.

Regulators are elected in Montana, South Dakota and Nebraska.

We really need to get ourselves and the regulators and the consumer advocates aligned. In fairness, the Montana consumer counsel is very focused on cost, but cost isn't always the most important thing. We've got to be cognizant of that as well.

Steve Mitnick: How do you see the pace of change, including in regulation?

Jan Vrins: And what determines the pace? Who determines the pace?

Brian Bird: I believe customers should determine the pace. What I'm concerned about is, are we going to be too slow to keep up with our customers? Ignoring regulation for a second, that speed, that pace of change is happening so quickly, that we're going to struggle even keeping up with that.

Then to turn around, and in rate reviews and other contested cases, trying to make changes to meet their needs, regulation could fail us.

I'm not just pointing at regulators. We have our part in this too. We collectively could fail our customers if we can't get this figured out. We, and the regulators, have to be faster in dealing with this change.

Elected officials who might want to be elected again, they need to have some courage to make some changes, and do we all have that courage?

Steve Mitnick: What's the opportunity?

Brian Bird: The pace that it's going to hit us is probably slower than we're going to see on the coasts. As long as we can have national experts point to what's happening there, and all of us – consumer counsel, regulators and the company – can look and see what else is happening, that will help.

How can we prevent the bad things that have happened there from happening here? How can we adopt the good things that have happened there to the benefit of our customers? That's where I'm optimistic going forward. ❍

Frank Prager

VP, Policy and Strategy, Xcel Energy

Steve Mitnick: Tell us about your vision for the electricity industry?

Frank Prager, VP, Xcel Energy: When we look at the future of the electricity industry, we're pursuing three significant priorities. The first part of our strategy is to lead the clean-energy transition by rapidly reducing carbon-dioxide emissions in our electric generation.

We've already reduced our emissions by thirty-five percent from 2005 levels and we're headed toward at least a sixty-percent reduction by 2030. We're also adding a lot of renewable energy to the system. Xcel Energy is a long-time leader in wind energy and we continue to take advantage of the low price of wind and the production tax credits by adding twelve new wind projects by 2021.

We're implementing a strategy we call "steel for fuel." The strategy works because it reduces emissions, builds out our system and brings more renewable energy to our customers

We're doing this in a way that reduces customers' energy bills by avoiding the higher cost associated with the fuel used in traditional generation, specifically coal and natural gas. We're very proud of this. It's the core of what we're trying to accomplish.

The second priority is to enhance the customer experience. We're asking ourselves, what do our customers need going forward? How are we going to take advantage of technologies developing today in the energy market place?

Customers using digital technologies such as iPhones have come to expect an even greater control and choice in their daily lives. We want to enhance their energy experience by giving them new technologies and choice in the energy services we provide, in ways they've never had before.

We're doing that by making a lot of investments out on the grid edge, including trying to enhance the intelligence of the grid. We're working on new products with our customers to bring them value, not only in things they can do themselves (like distributed energy resources), but also by enabling interested customers to access really low-cost energy that we can get out of, for example, universal scale renewables. We need to make sure we provide these choices in a way that's fair to all customers.

Our bills are going down because of 'steel for fuel.' We're defraying the cost of the fuel that we were putting in our fossil generating plants and replacing it with the steel.

The third piece and an important priority is this: we've got to do all this at low cost. We're very focused on maintaining our low-cost energy services. That's what "steel for fuel" is about.

If we can bring our customers clean energy and do it in a way that reduces the customer bill, we'll make tremendous progress delivering for our customers.

Throughout our industry, utilities are taking steps to transform the way we do business. I'm proud to say that Xcel Energy is helping lead the industry on these priorities.

Steve Mitnick: It's not much of a clash, as in making bills more expensive?

Frank Prager: Our bills are going down because of "steel for fuel." We're defraying the cost of the fuel that we were putting in our fossil generating plants and replacing it with the steel. It is mostly wind right now, but eventually we'll add a whole lot of solar to our system as well.

We think we can do that while bringing customer bills down. For example, in Colorado, our bills are down nine percent in the last several years, as we've made this clean-energy transition.

Jan Vrins: Is customer choice different across the seven states Xcel Energy serves? How do you go about that as Xcel Energy?

Frank Prager: Every state is different. We serve seven midwestern and western states with a wide range of political opinions and varied policy landscape. One size doesn't fit all. But the one thing that works everywhere is low prices. People like things cheap.

When you're able to invest in wind in Colorado, the Dakotas, southwestern Minnesota, or the Texas Panhandle and give people really low-price energy, political ideology doesn't matter. But providing low-price, reliable energy does, and we can do that.

Steve Mitnick: It seems remarkable, how much cheaper wind has become. Why is that?


Xcel Energy VP Frank Prager talking about our future.

Frank Prager: Technology and development costs are down and they're down dramatically. The wind turbines are bigger, more efficient, and able to adjust to wind conditions. Developers are also providing us with better, less expensive products.

It's more output at lower costs. I worked on wind development projects around 2010, when we were driving toward capacity factors in the thirty-percent range and that was considered good. Now those numbers are unacceptable. They've got to be better. That's due to changing technologies.

The second factor is the production tax credit. Production tax credits are phasing down, and we're taking advantage of them while they exist. But the credit has been a big piece of why we're bringing customers energy at such a low price.

Jan Vrins: These technology costs in combination with higher efficiency, will that catch up with tax credit ultimately, and when?

Frank Prager: I think when we get to the middle of the next decade, with our projections and our supplier's projections, we'll be about comparable without the production tax credit to where we are in 2017, 2018 with the production tax credit.

The wind industry is confident about where it's going, so much so that today it's not asking for an extension of the production tax credit. We're confident too.

One of the challenges of adding significantly more renewable energy, even though we're doing dramatically more than we ever thought possible, is that there is a point beyond which it becomes cost prohibitive.

We're not there yet. A decade ago, our engineers said ten percent was not achievable, and now we're working to integrate up to fifty-percent renewables on our system in the next five years. I think we're at a remarkable level now, and we will continue to grow our wind portfolio for a while. At some point, the concerns of our engineers from a few years ago will come true, and the cost of adding more wind will become prohibitive. That's going to be a very high level of penetration, but it will happen before we get to a hundred-percent renewables.

The high level of seasonal variation makes even storage a challenge. We can't store large amounts of excess renewable energy for months at a time. The cost would be too great.

Solar is also intermittent, and the same problem exists. You can't get to a hundred-percent wind and solar, even with storage. However, one advantage of solar, is that solar output is more coincident with our customer's peak energy usage. Our challenge is that we've got to pick the right resource, considering both energy and capacity, to serve our customers. Both solar and wind will play a role, as will other resources.

Storage will be helpful and has a lot of value. We're very excited by its possibilities. But it really can't get us to a hundred-percent renewables. The high level of seasonal variation makes even storage a challenge. We can't store large amounts of excess renewable energy for months at a time. The cost, even with advances in battery technology, would be too great.

Steve Mitnick: It's not just adding solar because it's nice; it really complements?

Frank Prager: The load shape complements wind. It's not perfect, and it's not perfectly coincident with the peak. But it is an advantage. When we, for example, look out in our Colorado energy plan, solar will be a big piece of that, as well as storage, which is going to play a bigger role over time.

I look out in the future and with the technologies we have today, we're going to be able to get to 2030 and continue down the path we're on.

Looking beyond 2030, continuing to deeply reduce carbon-dioxide emissions will require new technologies.

Jan Vrins: Have you looked at power-to-gas?

Frank Prager: We're looking at a lot of different things. Like a lot of other new technologies, power-to-gas is not there yet, but it has some exciting potential. There are a lot of options. One might be advanced nuclear. One might be power-to-gas, or some other geothermal-type options. For the nation and Xcel Energy as a company, we need to start to prepare for that day now.

Steve Mitnick: Fortunately, your footprint is where the resources and your load is. But you still need to build a lot more transmission?

Frank Prager: Right. We just went through that. We just completed our CAPX 2020 in the upper midwest. It was a remarkably successful project, and transmission is going to be a big part of the solution.

More transmission lowers the cost for integration. But as companies add more renewables, more transmission lines can get more expensive.

There are a lot of different factors going forward. As we get out toward the mid-century, the system is going to change, and we'll have to make sure a lot of things happen, like new technology, grid intelligence and new transmission infrastructure.

In the meantime, the great thing about working for a utility located in wind rich states that also have abundant solar, is that we've got many options. We're taking advantage of that while we can. We're driving costs down and saving customers money. You can't beat that.

Steve Mitnick: Talk more about the vision on the customer distribution side. That's changing rapidly, too.

Frank Prager: Customers have an expectation that they're going to be able to have their interests represented. So, we've got to be able to work with our customers to meet their choice options and ask, what do they want out of their energy service?

So that means we've got to invest in grid intelligence, and we've got to invest in systems that allow us to control our own system and interact with our customers more efficiently.

Thinking back on this issue of integrating renewables, I think there's a great opportunity working with our customers to add that to the mix as well. In addition to transmission, new technologies, and storage, I think you can also try to help address some of the problems of renewable intermittency through load management.

Jan Vrins: You have done a lot on the efficiency side.

Frank Prager: We offer customers more than a hundred and fifty efficiency and rebate options to help manage their energy use. In fact, the customer's annual savings through the company's efficiency programs were equivalent to powering a hundred and fifty-two thousand average homes with electricity and fueling twenty-one thousand homes with natural gas.

There's also a very exciting pilot project in Colorado, where we're looking at adding a battery, a solar facility, and grid intelligence. We're doing it with Panasonic and with the Denver International Airport.

There's a remarkable opportunity for us to integrate these new technologies. I think one of the items that we'll also be thinking about more is data. How do we take advantage of data to benefit customers, by providing a more efficient service, that is cleaner and more effective?

You can't achieve the carbon-reduction goals that policymakers are interested in without more electrification.

For a utility that hasn't ever done these kinds of things before in the way that a lot of folks, for example in Silicon Valley are doing them, the opportunities are enormous. I just don't know if we fully understand what we can do as we have that new digital technology and that new ability to interact with our customers.

Jan Vrins: What about electrification of heating buildings? What about heavy industries like oil and gas and mining industries that are going to electrify their operations as well? That's part of the puzzle.

Frank Prager: When I think how we're going to go forward in the future, the electric sector must carry its own emission reduction burden. But frankly, it also will likely reduce emissions in a way that will benefit other sectors of the economy.

You can't achieve the carbon-reduction goals that policymakers are interested in without more electrification. Electrification of vehicles, electrification of transportation, can be a huge opportunity for us going forward.

There are untapped opportunities when you think about other sectors. We for years had an initiative to try to electrify natural gas compression. That's been very successful. We think a lot about how can we work with all of our customers – large and small – to ensure that they get the best possible service?

On the issue of heating, we're beginning to work with the American Gas Association on issues like space heating and the local distribution company side of business. At some point, we'll

need to pay close attention to what happens there. One of the key factors is how much does it cost? If a product costs a tremendous amount of money, it's going to be hard for it to be successful.

For example, in space heating, AGA has said that changing the entire natural gas system to electric space heating is very expensive. But it doesn't mean we can't find opportunities in some circumstances where it does make sense.

One item we're very excited about on the residential side, for example, is grid-enabled water heaters, so that you can use the water heater to help with electricity load management, and meet customer load. It's early days, but there may be opportunities here in the future.

Steve Mitnick: Maybe Xcel Energy is changing? Your organizational structure or technologies are changing, and how you recruit. Is that changing too?

Frank Prager: When I started at the utility, almost twenty-three years ago, my father told me, don't go there, you're going to be bored. Dad was a great guy and usually right, but this time he was wrong. I've never been bored a day at Xcel Energy.

It is a very different business now, and this change has been extraordinary. What we could only imagine twenty years ago has come true.

We're almost at the point where things that we couldn't have even imagined have started to come true.

Look at what's happened with the clean energy that we're bringing to our system. Where we're going with the advent of digital technology. All of that's remarkable.

All of these changes come with caveats. You have to make sure, for example, that you have a secure system.

We spent a lot of time thinking, how do you make sure as you enter this new era that you're not leaving your company more vulnerable to a cyber-attack? How do you make sure that you're bringing your customers the benefits we talked about before, without subjecting them to greater resilience risk?

We work a lot on these issues. We try to make sure the grid remains resilient, and reliable. Going back to your specific question, that requires us to start thinking about new groups of people in the organization.

At a time when we're trying to get leaner, we've added more people in the cyber-security side, than we have in any other department in the company. The people who are coming in are not traditional utility employees. They're looking at the risks we're facing and how to meet them.

Jan Vrins: Have you been able to bring in that talent? What about your aging workforce?

Frank Prager: I think we have more millennials in our company then we do baby boomers, and that's not surprising. An aging workforce may not be as big an issue for the industry, but it's getting to be a bigger issue for me personally as the years go on!

I think what we're seeing is that transformation of the workforce is happening at the same time as the transformation of the customer. Our employees reflect our changing customer base. They are people who have engineering backgrounds, but who want to work on clean energy, or who want to work on big data, or artificial intelligence. Those are the kinds of skills we need right now. So, we're bringing in people all the time who are remarkably talented, and who are driving us to be better than we've been.

Jan Vrins: What are Xcel Energy's two biggest opportunities and the two biggest challenges in the next five to ten years?

Frank Prager: The opportunities and challenges are the same. The next five years, the biggest challenges we have are that we want to continue to lead the clean energy transition, and that means implementing the wind and solar projects we've talked about.

We need to protect the grid, and, as we approach new regulatory paradigms, we want to be sure that the grid remains reliable and modern.

That means getting the projects approved, getting them built, and getting them permitted. We're a business. We want to make sure that along the way, we're meeting our shareholders expectations, and they're more profitable. That's important.

The second thing is, as we continue to make investments in digital technology, we need to make sure we're doing what gets the rules right. We have to make sure that the regulatory compact is right.

We must make sure that we're getting the right people, we're sending the right price signals, that we're connecting value with cost for the customers, and that we're avoiding those kinds of cross-subsidizations that distort the market.

Jan Vrins: It's clear that the existing or the old regulatory frameworks don't apply anymore?

Frank Prager: We believe it's important to disenthrall ourselves from some of the old regulatory structures that don't make sense.

Two-way power flows, declining energy usages, all those things are different. We've got to think anew about how we approach them. That said it's also true that the grid is still the thing that makes our industry work. It's still the greatest invention of the last century. We need to protect the grid, and, as we approach new regulatory paradigms, we want to be sure that the grid remains reliable and modern. The right kind of regulation is the kind that assures that the grid and the utility can continue to do the thing they've always done, providing reliable, low-cost power in the new energy landscape.

Mike Deggendorf

CEO, Grid Assurance

Steve Mitnick: Do you have a vision of electricity's future?

Mike Deggendorf, CEO, Grid Assurance: Yes. It's going to be much more interesting if you look at it, starting with the consumers, with their ability to be more engaged in the energy consumption and energy production.

We are still in that age where many utilities think they've got three, maybe four, customer types. I've got residential, commercial, industrial and low income, when pressed. That's certainly true when you're selling a commodity that is uniform in terms of its options, sources and profile.

But people are much more demanding of having a say in their consumer choices, and technology has really allowed that to come to fruition. It's being able to be much more responsive to customers in not just their tastes but their ability to participate in that market.

It's now a world where people ride-share, share Airbnb property, bike-share and car-share. The technology that enabled that to occur on the auto side, can occur on the energy side as well. Sharing of information, asset capacity and load, I think it's going to move in that direction.

Steve Mitnick: Where are we going, and is that a future to be embraced, or to be worried about?

Mike Deggendorf: We definitely have to embrace it. It's like trying to hold back a wave. If you try, it will engulf you. The ability to understand and figure out how you play, how you can benefit the stakeholders and then enable that market, is really what it's all about.

For example, in 2010, as KCP&L was trying to see how technology and customers might work together, we took a little different approach in terms of the smart grid. [Deggendorf has served as senior vice president for corporate services of KCP&L.] A lot of folks were taking a mile-deep and an inch-wide part of that value equation, were putting in all advanced meter infrastructure, and were putting in a certain component of what was called the smart grid.

KCP&L took a section of its service territory and took another approach. It had a very broad definition that included both distribution capabilities and generation, so we put in solar, and battery. It also put in the document management system, as well as the advanced meter infrastructure, and finally a number of customer programs to see how customers would respond.

A Grid Assurance subscriber, AEP, in a recent transformer move.

Grid Assurance CEO Mike Deggendorf talking about our future with Jan Vrins, to the right.

Jan Vrins of Navigant: Was this geographical, or was this for a certain group of customers?

Mike Deggendorf: It was geographic. It was about fourteen-thousand homes. KCP&L wanted to see how this creation would behave. Would it be much like your iPhone evolved to do things you didn't originally anticipate? You never thought you would be taking heartbeat readings through it, setting your thermostat or half the things that we do with them. It was something that innovated as it went.

One of the take-aways was understanding customers more thoroughly. Customers will adopt things in a much different fashion and a much different speed, and their willingness to dig in and really truly understand was something we under-anticipated. It required much more communication, and much more education.

KCP&L also learned through that process that the customers' initial expectations of savings to participate was not in line with actual savings. It was not going to necessarily just be a price-driven decision. It was going to be one where customers would have a number of different reasons for participating, but not necessarily a price savings.

It was additional value. Just the willingness to participate and be more sustainable in their own efforts was a big part of it. It was bragging points at parties. People like to have that new technology.

Jan Vrins: Were EVs part of that as well?

Mike Deggendorf: EVs were not in that pilot. Since then KCP&L was one of the first utilities to deploy a large public-facing charging station network. EV charging is a perfect example of the new customer dynamic, it just continues to grow in terms of the options, the technologies and the interest of the customers. Customers are much more knowledgeable now about the option and the flexibilities. It's going to continue to get more interesting, not just on the demand side close to the customer, but also on the supply side.

I worry about market pricing reflecting the value of each of those sources, particularly around reliability and security.

Jan Vrins: Was this regulated, unregulated or both?

Mike Deggendorf: This was a regulated product offering. KCP&L is a vertically integrated utility in Kansas City. One of the benefits of that regulated product offering, and one of the challenges with any of the new technology, is tracking it back to see who gets the benefit.

For example, the pilot included a one-megawatt battery that was installed at a substation and the value and benefit of having that security as it was close to a sizeable hospital, but also the cost savings to not have to upgrade circuits at the substation with distributed solar and energy efficiency.

Capacity, energy and infrastructure are all things that get to be somewhat difficult to prove to a regulator and fairly distribute the value as well.

Jan Vrins: This was probably one of the first non-wire alternative type of deals? Putting local distribution resources as targets probably meant getting better service or the same service at a lower cost.

Mike Deggendorf: That was the core of what KCP&L wanted to prove. At the end of the day, does it make sense, does it work together, do customers embrace it, are we getting the full value, and how does it pay out?

Steve Mitnick: What's your vision of where generation is going?

Mike Deggendorf: It's going to be more interesting. Diversity of generation mix is going to continue to evolve. I believe coal, nuclear, gas, and central solar and wind all have a place in that mix, as well as the distributed generation at a customer basis.

I worry about market pricing reflecting the value of each of those sources, particularly around reliability and security. Some utilities are heavy in the wind area, where we're at, and we've all seen the performance of those wind turbines get better and exceed the limits of what we thought we could integrate. That continues to go well.

Part of this transition we've made and are making has gone a lot easier because of the natural gas supplies and prices that

we've enjoyed. A lot of that could create a sense of security that we probably shouldn't get too comfortable with.

The success of recognizing these new supply portfolios needs to have a market signal that reflects not just the short-term but the long-run cost, reliability and security. I'm not sure if we are there yet on how markets value the various pieces of supply.

Jan Vrins: Are you worried that it's going be a natural gas role play long term? That it becomes less diverse because of micro mechanisms and price?

Mike Deggendorf: Yes. That is what I'm concerned about.

Jan Vrins: Would storage help, or is that not big enough?

Mike Deggendorf: Storage is a flywheel. It dampens the effect. I don't know that it really addresses what I'm worried about, which is the long-term security. For example, many utilities have wanted to have several weeks of coal at the plants.

Steve Mitnick: What's our future in terms of security of the grid?

Mike Deggendorf: The grid and its security is foundational for the existing and future of our industry. If you look at what's going on in the customer side, and what's going on in the supply side, the connective tissue is the grid. Some of the debate reminds me of what we saw with the computer industry. The early move away from the mainframes. Things were always going to be on desktops, and now we put more and more in the cloud.

That means that everything goes from the desktop and local storage to some large, often remote storage capacity. Networks that can support this is the big thing that is growing now; a more robust grid. The ability to transmit data back and forth at high speed, very reliably.

That's what I see when I look at our grid. When the wind blows, and you get the economy of scale with central renewables to where load centers are, and then flexibility as weather patterns change, it's truly distributed to customer level, and requires a robust grid.

When I think about that, the issue of resilience becomes much more important. I think about resilience consisting of design, protection and the recovery. All of those must work well together. On the design and putting in that level of rigor, more attention is being paid to that and the RTOs have helped foster that.

It's also much more attention to protection, which is what CIP 14 focused on. Recovery is the one area where we have the furthest to go. That's where I'm spending the bulk of my time. I'm thinking about the large-scale events. We are all concerned about what happened in the past and are trying to make sure it doesn't happen today.

A lot of these events are really low-probability, high-impact events.

As an industry, we're very good at fire-fighting; I think we can do a better job of fire prevention.

Our hats are off to the efforts to restore in Puerto Rico. We saw this in our operations when there was a disaster, that folks rallied around and came through. We've got a long history of that. Sometimes we feel so good about fire-fighting that we can lose sight of the value of fire prevention.

There's lot of lessons learned as you look back about having the agreements in place, having materials staged, and being positioned for a fast recovery. We are becoming more dependent on the grid because of the changing profile and the needs.

Customers are becoming less and less tolerant of outages. That nexus between increasing dependency and high customer expectation means that we've really got to be sharp about being able to respond.

We spend so much time debating specific threats; how is this going to happen, and argue whether it will, or it won't, and how often and the impact, that we don't spend enough time talking about when it happens, what are we going to do?

Customers are becoming less tolerant of outages. That nexus between increasing dependency and high customer expectation means we've got to be sharp about being able to respond.

Jan Vrins: Will resilience be easier to solve in a distributed high renewable infrastructure or will it be harder? Will it be more complex, or be the same?

Mike Deggendorf: The dynamic is going to change things. I'm not yet ready to say it's going to be easier. You hear some folks say, well, with this distributed energy do we really need the transmission grid?

That is overly simplistic. There is an evolution that when this technology comes into play, it unlocks a lot of hidden value. I'll just use the Uber scenario where you've got this transportation capacity that is not being used because it needs to find a market. Once new technology was applied to the opportunity, a new industry was created.

If a resource is not needed locally it should be going where it can clear a price that markets find attractive. How's that going to happen? It has to go out over the grid. I'm not sure exactly how that evolves specifically, but I do know that anytime you can move that energy to a higher-priced market, it's going to find value.

Steve Mitnick: Are you making changes in processes, people, organizational structure, attitude, culture, or regulation?

Mike Deggendorf: Yes, all the above. I've spent quite a bit of my career in the transmission and the competitive transmission space as well as Grid Assurance. Putting a brighter light on how can transmission congestion be relieved more efficiently, and

how can we do it more cost effectively is going to continue. That means people need to really understand how the business works and how you can extract or reduce cost from the ultimate price to the customer.

We're trying to do that while we're trying to improve the reliability. We have a more engaged stakeholder group as we're building transmission now. The profile of the stakeholders we're talking to is much broader. We stress-test our ability to engage and to get creative and partner, while driving out cost and meeting those reliability expectations.

Most interesting is that sometimes our planning horizon gets pretty short and we debate cost-effectiveness criteria. I worry that the capacity that we've grown into over the years will be valued in the next cycle of construction. I use the example that you want to be cost-effective, but no one ever built a house and said, I'm unhappy that I had too much closet space.

It always gets used, and a lot of this capacity that we're building is going to get used to clear this energy. It could be in ways we don't expect, but we looked for a long time along the capacity that we built during the fifties. As we're building again, I worry about folks starting to short-arm some of that capacity.

Jan Vrins: Regardless of what is causing it, that's a whole different discussion. That comes at a price too.

Mike Deggendorf: It does. One of the bigger challenges when you're talking about resilience is, how do you say what "good" looks like? NARUC authored a great white paper on resilience and it recognizes that some of the old metrics for resilience efforts and cost-benefit analysis were a bit dated and needed to be reviewed.

High-impact, low-probability events are incredibly difficult to calculate. For instance, if I asked anybody, if we lost the city of San Diego for six months, how much is that worth? When you pose these black-swan scenarios, a lot of these conversations start to change.

We have been working with utilities on this issue and created a model that considers high-impact, low-probability events: EMPs, earthquakes, or whatever. It's all in there. We give it to the utilities and say you can argue with the assumptions or you can change the assumptions all you want, but here is a model that basically identifies what looks good for their system.

It generates a tremendous amount of conversation from the CEO level all the way to the engineering level about being prepared and what are expectations? But if you're a utility company and a terrorist group with drones took out the substations that served your major metropolitan area, how quickly do you want service restored and at what level?

What are you planning for? Are you saying three weeks is good? Are you saying three months is good? Are you saying, I don't know?

The model identifies what that risk profile looks like and what it will require in terms of equipment and logistics. It may be that you need to have thirteen of these and twenty-seven of those. What's the next step? You can buy some redundant equipment. Or maybe you can have a subscription that is essentially a call option on this equipment, but each of those has a cost.

Using an insurance analogy, would you self-insure up to a point, just to make sure you've got this much money in the bank to cover on it, but do you want to have unlimited exposure? Maybe you want to buy a policy to have access to those funds and not tie up your money.

Grid Assurance is that coverage for physical assets that is more affordable to self-supply. We see this evolving nature of folks thinking about resilience and recovery capability and being able to make that argument in front of regulators and customers.

Jan Vrins: Is that resilience as a service?

High-impact, low-probability events are incredibly difficult to calculate. For instance, if we lost the city of San Diego for six months, how much is that worth?

Mike Deggendorf: It's a physical inventory that they tap into. Domestically warehoused and ready to deploy.

Jan Vrins: There are companies starting to offer resilience as a service. What do you think about that?

Mike Deggendorf: I've seen companies offer resilience recovery assistance, which is part of our industry's strong culture. But Grid Assurance is the only company that is building new capacity for these new threats. It's complimentary to the existing industry assistance.

Steve Mitnick: How do you see that in the next few years? Is this going to be accelerating, slowing down, or are we going to catch up?

Mike Deggendorf: I think it will accelerate. I don't think it's going to be one in which you can't manage around because you've got diverse stakeholder groups. Regulators are going to want to have a lot to say on that and the models of support. We have all seen the issues with getting models to adapt to the new changes.

One goal, as we go through this, is to bring regulators and other stakeholder with us. Utilities and regulators need to be open to what customers are asking for and to be ready to adapt.

I think that it's going to take some time to work through. But if you bring folks together collectively, it's going to take more time, but it will be worth it.

Jan Vrins: If the pace of change accelerates and the stakes are getting higher, what's the biggest risk? Will we see failures, will we see big disasters, whether it's cyber, whether its physical disaster that we can't cope with, like more Puerto Rico's on the mainland?

Mike Deggendorf: There are so many unique things with Puerto Rico, but it is the black-swan events that I worry about. Sometimes we're so focused on the immediate issues that are coming in, and there are several. This is one of the reasons I felt so attracted to Grid Assurance as the right step to take for the industry. It's what drew me to the effort.

Is it the 9/11 scenario that folks in retrospect stop and say, well, this wasn't that inconceivable, why didn't you guys plan for it? It's the reason Grid Assurance was formed; to anticipate, plan and prepare for catastrophic events so that we can address the new risks to our system.

If you think about it, can a 9/11 type attack happen on our grid and are we prepared? We can't be unprepared for that. We just can't. ❍

Jim Laurito

EVP, Business Development, Fortis

Steve Mitnick: What is your vision on the electric industry's future? Are you optimistic?

Jim Laurito, EVP, Fortis: We are significantly bullish about the future. Five years ago, there was a lot of talk as industry trends were changing. The talk was about a shift to cleaner energy driving a big change in the industry, customer demands shifting, electric vehicles, and battery storage.

All of these were described as disruptors. It was said that utilities were going to find themselves in what they call the death spiral, within that vortex. We don't believe in the death spiral.

As you look at the trends that are driving the future that I just described, all are significant investment opportunities for the utility. They're all areas of the sector that the utility should be the central focus in.

As we think about the future, and cleaner energy sources, utilities should be the hub of that.

And, in getting closer to your customer through deeper customer engagement, utilities should be the hub of that as well. In cyber security, physical security, and automation of the grid for allowance of two-way power flow, all of those things are enabled by the utility.

We think the future is extremely bright. There is investment opportunity in all of those areas, as far as the eye can see. We don't buy the theory of the death spiral or the demise of the utility.

Having said that, the phrase, utility of the future, tends to be a bit overused. Utilities need to remake themselves and transform in different ways.

I don't think that the needed changes are so dramatic that we can't pull it off. Utilities get a bit of a bad reputation for not being innovative, but we live in a very regulated world, so we can only innovate at the pace of regulation. At our core, we are very innovative and always have been.

The responsibility of a CEO and his team, or her team, is really to educate and advocate with regulators and other external stakeholders to drive the adoption of these industry trends so that they can prosper and do so in the best interest of customers.

There is investment opportunity in all of those areas, as far as the eye can see. We don't buy the theory of the death spiral or the demise of the utility.

One of our mantras is, we don't make any investments that aren't in the customers' best interests. That's part of a regulated utility executive's DNA. You don't invest money just to invest it. It's got to be good for the customer.

There are so many things we can do for the customer that are good, and that'll move us away from the stereotype of a very distant, nebulous, monopolistic, utility, to be the customer's valued energy advisor. That's where we have to get to.

Jan Vrins of Navigant: It does sound like the utility is not doing this alone. It is central, the hub, but you will partner with others to provide new products and services to customers, right?

Jim Laurito: Absolutely. Being the hub does not mean you have to do everything. Why are we the appropriate enabler for that? Because most of our companies have been in business over a hundred years and we have brand loyalty with our customers. That's a tremendous enabler for our partners to sell new products and services.

Even though our customers tend to stereotype us in certain ways, our brand loyalty is priceless. We are a 24/7, 365-day organization. So, who better to talk about serving customers in the home than your utility?

I always like to tell this story. Picture yourself at 11:45 p.m. on Christmas Eve, and something goes wrong in your home. Maybe it's your furnace that goes out. Maybe it's your cooktop or your stove.

Are you going to call your plumber? You can, but you're going to get a voice mail. If you call your utility, we're obligated to be there within a forty-five-minute response time. Somebody's coming out to fix your problem even though it's Christmas Eve,

because we're always on. That's our business.

We talk about other companies that are disrupting and taking over the home. They're large enough that if they wanted to, they could do it at no cost, because they have other ways that they make money. Is it really in their interest to do that? Do they have that capability? I don't think so. I think it's the domain of the utility bringing in those partners.

At one of our subsidiaries, Central Hudson, in New York, we're involved as a leader in this reforming-the-energy-vision initiative. One of the customer-engagement initiatives that we've deployed, in addition to using social media, and revamping the website, is a customized, personalized web portal for customers.

This is a place where customers can go to get their information timely, and accurately. They can also do a deeper dive if they want to get into time-of-use pricing, and a little more refined use of their knowledge of their energy consumption and take control over it. They can also click through seamlessly to where we have an Amazon-like marketplace where they can buy products and services from us.

For example, if they want LED light bulbs, they go in, buy LED light bulbs, and if they come with a rebate, they're clicking on that and their rebate is done in real time. When you bring that kind of convenience to a customer of a utility, it's an aha-type experience for the customer, because they don't expect that from their utility.

That's just a small example of how we have to transform ourselves into providing the type of convenience and seamless capabilities that add value to customers that other technology companies have already started to do.

Jan Vrins: Is there a Nest thermostat set in that marketplace?

Jim Laurito: There is, and there probably will soon be others.

Jan Vrins: Then you can take care of the installation service as well or be the intermediate?

Jim Laurito: Yes, or we can bring in a third party to do so. Back to the concept of being a hub, the actual service is a one-stop shop enabled by the utility and that's what people want. That's what we think people want. That's a void that utilities need to shift to and move into, or someone else will.

Steve Mitnick: Talk about the distribution on the customer's side, what's your vision of that, five or even ten years from now, on what Fortis Companies will be doing?

Jim Laurito: If you think about what's happening in each of our jurisdictions, it's a little different depending on the regulatory regime. In New York and Arizona for instance, we have a lot of interest in distributed-energy resources.

On one hand, in New York, our Central Hudson subsidiary is doing targeted demand-response projects where they have parts of their service territories that are more rural, where circuitry might need to be upgraded. If we can get customers to sign on to reduce usage at certain times of the year when called upon, and pay them to do so, we can defer capital investment into the future.

Some would say that's sort of an oxymoron for utilities to not want to spend capital, but it goes back to that mantra of doing what's best for the customer. If we can find those pockets in the territory where we don't have to add investment, we can get customers to participate with us, and we share the savings that creates for customers, the regulator is in favor of that. Those are initiatives we have gotten approved.

We'll see more of those, no question. I think the future of that will grow. The future of energy efficiency can grow even more to where, as we invest money in energy efficiency, why would we not be able to take that investment and put it in a rate base just like we would put it transmission line in the rate base.

It's a resource. Customers are benefiting from it. If that is the most cost-effective resource for the customer to deploy, then the utilities should earn a return on it, just like we're earning on anything else. I think that's part of the future as well.

Are you going to call your plumber? You can, but you're going to get a voice mail. If you call your utility, we're obligated to be there within a 45-minute response time.

That's the beauty of our Fortis business model, where we have a semi-autonomous business model. All of our ten subsidiaries around North America, the Caribbean and Central America, run their own businesses.

Local management is in control. They make the decisions. They work with the regulator. Regulators really respect that and really like that model. In Arizona for instance, where there's a lot more solar, speaking to the future, what do we see?

We see dramatic changes in the distribution grid. Historically everything's been centered around control centers that control transmission systems, and power systems. The future is distribution-system control centers, where we're going to be looking at various points of distributed generation, and other forms of distributed-energy resources out in the service area.

They are behind the meter. We're going to be expected to at least recognize and then perhaps control and dispatch some of those resources. If you think about what that means for the utility, it means two things.

First, it means tremendous investment in systems in order to support that, because we don't have that in place today. If you think about distributed generation, other distributed resources, electric vehicles, and all the sensors and devices in the home, we use the phrase, big data. Now you've got millions and millions of data points coming in to a distribution system control center that

must be dealt with.

Those are big data and big data analytics that we never really had to deal with before, so there's a huge investment opportunity. Then you think about the actual hardware out in the grid. If you get a proliferation of distributed generation in your service territory, all of your distribution system is going to need to be more robust to handle that.

You're going to be rebuilding distribution grids for quite some time. You're going to be automating those grids to communicate back to that distribution-system control center.

Eventually that's going to cascade up into your transmission system, back up through the sub-station into the transmission system. Back to the fundamental premise of how we see the future, all of those things are tremendous investment opportunities that we see ourselves being involved in the hub for decades to come.


Fortis EVP Jim Laurito talking about our future.

Steve Mitnick: Do you have a vision for the value chain there?

Jim Laurito: From a transmission perspective, as we see this shift to cleaner energy and you see more renewables come onto the grid, every wind generating site needs to have a set of transmission assets to make that wind deliverable. Why?

Because we're not building wind in the middle of Manhattan. We're building it out in rural Iowa, Wisconsin, and all through the midwest. Transmission is the linchpin to bring that economical generation to the market.

We think there are tremendous opportunities for transmission build-out, and a lot of those opportunities are going to couple themselves with storage, because when you think about the way the markets are set up today, between the various regional transmission organizations around the country, they're not set up so that the price formation between various RTOs and scenes are where they need to be.

If I'm producing high-volume wind in the midwest, in Iowa, and I don't need it right now, I'm shipping that out of my RTO into an adjoining RTO. That's suppressing the prices of existing baseload generation such as nuclear, natural gas, coal.

That's a challenge that the RTOs and the regulators maybe need to really dive into. In any of those scenarios, you need much more transmission than you have today, in your RTO and across the scenes. We're extremely bullish about transmission.

Storage can be part of that solution, but it's going to take a while to get there. We're all-in on transmission and are very bullish about the future of electric transmission. Our ITC Holdings company is the gold standard of that in the United States, so we're happy to have them on board.

Now you've got millions and millions of data points coming in to a distribution system control center that must be dealt with.

Steve Mitnick: How are the companies in the Fortis family in Canada and the U.S., preparing for this future? Are they reorganizing, changing their culture, bringing in new people?

Jim Laurito: I think it is all the above. It depends upon the jurisdiction. In the last four or five years, we did three large transactions in the United States, about twenty billion dollars of acquisitions to where we are now larger in the United States than we are in Canada. About sixty percent of our assets and earnings are U.S.-based.

We have a lot of organizational development going on. We're bringing in the next generation of utility leaders. We focus a lot on internships to do that, bringing in young engineers and accountants to get them into the organization, and systems people.

I think you find that across the entire organization. We also see the culture of the organization shifting from mindset of growth through acquisition, as you hear our CEO, Barry Perry, say quite often, shifting from growth through acquisition to growth through organic capex.

All the CEOs and their teams are really focused on maximizing capital investments that are good for customers but also good for shareholders, and over the last year have been executing on

that shift and that transformation internally, which sets us up to execute on all the items we just touched on.

Steve Mitnick: Are we going to settle down after this frenzy, or do you see the pace continuing or even accelerating?

Jim Laurito: I'm a firm believer that the pace of technological innovation is never going to slow. The greatest example of that is in the natural gas and oil industry where fifteen years ago we anticipated heavy imports of liquified natural gas and were willing to pay twelve dollars per million BTU as a competitive price to pay for that import of liquified natural gas.

Then within several years, we all of a sudden have discovered, through technology, shale resources for both natural gas and oil that could make us energy independent, and now we're in an LNG export position as a nation.

When you think about the stark contrast in those import-export scenarios and the size of the global companies that made the wrong call, it's amazing. We all thought there was going to be a shortage of natural gas and oil, and here we are an exporter. All due to technological innovation.

I always say to people, I'm sure I don't have the numbers right, but directionally, if today we have enough oil and natural gas for the next hundred years, how much will we have in fifteen years?

My bet is technology will have figured out how to get us at least another hundred years. If you bring that down to our industry, none of us can predict the pace of change or adoption of things like electric vehicles or battery storage. No one can predict that with any accuracy, but if you're betting against it, you're on the wrong side of the table.

Part of that is that technology is going to continue to evolve and improve. Regardless of the pace of adoption, it's our responsibility to position our companies to be at the forefront of taking advantage of those technological innovations and implementing those in the best interest of our customers, regardless of the pace of adoption. We're all-in on all that because we believe that is the future.

Steve Mitnick: In electrification of transportation, do you think that's going to be accelerated?

Jim Laurito: Absolutely. Fortis is a member of the Alliance for Transportation Electrification that was formed within the last several months. We have a lot of large auto makers in there, many of the large utilities in North America, original equipment manufacturers.

It's really geared toward making sure that the utilities are at the hub of this EV adoption cycle and that we are establishing that infrastructure on an open platform basis so that all partners can participate, and that we're not making the market proprietary to any particular proponent for a piece of the sector. That's what we think our job is as utilities.

Jan Vrins: What will be the biggest challenge for utilities as we implement new technologies, new products and services? Will it be funding, business models, regulatory framework, or people that can support those new businesses?

Jim Laurito: All of those will be challenges, but the linchpin or the key challenge, is bringing the regulatory framework along so that we can keep up with the pace of innovation. What we need to do as utilities is we need to be very close partners with our regulators.

We think there are tremendous opportunities for transmission build-out, and a lot of those opportunities are going to couple themselves with storage.

We need to collaborate with them, educate them on why certain technologies and the implementation of those are good for customers, put in cost-effective mechanisms to either recover or set up the appropriate risk-reward balance such that the investor-owned utility is incentivized to invest, but the regulator understands that that investment is just-and-reasonable test.

That could mean the rate structures are completely different than they are today.

It's incumbent upon us to really take the initiative with our regulator. It's incumbent upon them to be open-minded and collaborate so that we can go down this path together. At the end of the day, you will hear our new EEI chair [Duke Energy CEO Lynn Good] coming in say that her platform for her year of chairmanship is customer centricity.

That's what this industry is all about. It's about taking care of the customer with safe, reliable affordable clean energy service. That's where this business is headed. That's where we have to be a leader. PUF

Powelson Goes to NAWC

The National Association of Water Companies board just selected FERC Commissioner Rob Powelson to serve as the CEO of this association of investor-owned water utilities.

Prior to FERC, Powelson served on the Pennsylvania Public Utility Commission, including as Chair from 2011 to 2015.

Powelson is a past president of NARUC, and also chaired the NARUC Committee on Water. And he served as president of the Mid-Atlantic Conference of Regulatory Utilities Commissioners as well.