

ENERGY PANEL: STATUS AND FUTURE OF RENEWABLES

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Levi Andrist: Hi Katie and greetings to everyone. It's a pleasure to be with you today and thank you to the UND School of Law and especially the Law Review and the Board of Editors for putting this awesome event together. I'm Levi Andrist here at GA Group in Bismarck and I've got the pleasure to introduce and moderate a dynamic panel of state, regional, and national leaders on green energy. I'll do a brief introduction of each of them before we hop into some discussion. But I'll also try to have some Q&A both amidst the conversation if you want to chat and offer any questions in the chat feature. We'd welcome that and I'll try to keep an eye on that. I will certainly try to keep some time open for questions and comments and deliberations at the end as well.

So, I'll start by introducing Commissioner Julie Fedorchak, who has served on North Dakota's Public Service Commission since 2012. She's currently Chair of the Commission. She heads the business operations, pipeline, electric transmissions, and energy conversion siting. She heads the railroad portfolio and the reinvigorated consumer affairs portfolios. She's led efforts to enhance and develop the reclamation program, rail safety program, and is currently a board member of the organization of the MISO states, which we hope to be talking about some today. In addition, she's Vice Chair of the National Association of Utility Commissioners or NARUC, the gas committee, and Vice Chair of the NARUC Task Force on Natural Gas Expansion to Unserved Areas. We've got a few of those in North Dakota, Commissioner. One interesting fact, I'll try to share one about each, is Commissioner Fedorchak is especially inspired by her mother, an amazing woman who after 80, published two books and additionally she played the accordion on Sundays for the elderly people at the nursing home. So, great family story

* A recording of the Renewable Energy Panel discussion can be found online at: <https://youtu.be/aRxB9tYL2JM?t=18575>.

Commissioner Fedorchak, thank you for joining us and we really look forward to hearing your insights.

Tony Clark I'd like to introduce next. Tony is a nationally recognized leader in energy policy. He draws on years of government service to provide professionals with analysis and advice on a variety of regulatory and public policy topics. He's currently a senior advisor at the national law firm of Wilkinson Barker Knauer LLP. He's a former FERC Commissioner at the national level as well as a chairman of the... North Dakota Public Service Commission, former President of NARUC, the National Association of Regulatory Utility Commissioners, Labor Commissioner, and a member of the North Dakota legislature. As you can see, Tony brings an unparalleled and pretty unique understanding of the nexus of state and federal utility regulation. An interesting fact about Tony or a couple, as you can see from his background, he is an avid Chicago Cubs fan, so I didn't even know you were going to do that Tony, thank you. And he's also a distinguished Eagle Scout. Tony, thank you for sharing your time and expertise with this great group.

Last and certainly not least is my good friend Andrew Sorbo who is a Senior Manager of Legal and Property with Minnkota Power Cooperative, a regional generation and transmission cooperative that provides wholesale power to 11 member-owner distribution cooperatives in eastern North Dakota and northwest Minnesota, which covers about 35,000 square miles. Andrew was in private practice before joining Minnkota, he's a UND Law School grad, and was admitted to practice in 2012. Couple interesting facts about Andrew, he was starting fullback for the UND team, UND Fighting Hawks, and he is also, very importantly, an avid fan of the Medora Musical which is another tidbit for Andrew. So, Andrew, thank you for bringing your expertise and insights to this group as well.

Before we hop into questions, I just thought I'd set the tone a little bit on renewables in North Dakota. Electricity generation transmission is, I would argue, a top three public policy issue in North Dakota right now. Right next to the pandemic. Right next to things like the Legacy Fund. This is a really ubiquitous area, and for those of you who - I just looked up that word and added it, feel free to look it up, but really what ubiquitous means is everybody is talking about it. And I think that's for good reason. The announced closure of Coal Creek Station, for those of you who read the news, by Great River Energy, and the ensuing local and state government responses have really captured headlines and interest from across the state of North Dakota. For years public policy makers, the private sector, regulators have been studying and debating transmission to figure out how to get electrons out of North Dakota. And as this audience knows, North Dakota is a net exporter of electricity and renewables are certainly no different. The production of renewable

energy in North Dakota actually continues to grow. Notably, in 2020 three wind projects were added into the portfolio in North Dakota which brings the state's wind capacity to more than 4200 megawatts and there is interest for further development in the state given the state's excellent resource. Commercial scale solar is kind of yet to take off in North Dakota. That being said, the Harmony Solar Project in Cass County, notably some of the most fertile land in the world, is the only utility scale solar project that has currently been permitted in the state. And while we'll be focusing on the electricity sector today, it's worth noting for the audience that the state's ethanol industry also continues to grow. The state's newest plant recently opened in Grand Forks. It actually processes sugar beet tailings. The six plants across North Dakota generate over 550 million gallons of ethanol per year. So, suffice to say there's statewide interest in renewables.

And with that I'm going to get out of the way. I'd like to start with Commissioner Fedorchak here, and we'll ask each of the panelists here to answer this question, but what are the greatest challenges and opportunities facing the renewable industry? Commissioner Fedorchak?

Commissioner Fedorchak: Very good, thank you Levi and thank you UND Law School for hosting this and all those who are taking time to participate. It certainly is a very timely topic, one that there is no shortage of strong opinions on. I think it's one of those things that everyone has an interest in and can relate to. As I started thinking about the challenges and opportunities, I kind of decided that you could probably spend a whole hour just talking about that, but I'm going to try not to do that. I've kind of narrowed them down into three challenges and four opportunities, so I'll try to buzz through them kind of quickly and then we can come back to anything that might be of interest. So, in terms of the challenges, I think that there are a few of them and that is, first of all permitting. In order to develop renewables, you need a lot of renewables but you also need a lot of transmission lines. The head of the MISO, that regional transmission organization that covers much of North Dakota, says if you like renewables you must love transmission. So, I think that's one of the realities and MISO has estimated that just to implement the plans that have been announced by companies or the goals of companies that have been announced would require \$200 billion worth of energy infrastructure. Just to give you a sense, the Dakota Access Project was \$1 billion. So, there's the entire new portfolio of multi-value projects that MISO pursued a number of years ago was around \$10 to 12 billion. \$200 billion is a heck of a lot of infrastructure and it will cover a lot of ground and every single one of those projects needs a permit from the landowners, from

the counties, from the state, in order to develop that. So, permitting is one of those big challenges to achieve the goals that are outlined.

Another big challenge is the operations and the market. Learning how to operate with the large levels of renewables is a challenge for the market, for the grid operators because it's new, it's different and these renewables behave differently on the grid. The market needs to evolve to make sure that the right signals are being sent to the dispatchable resources that are a key part and work hand in hand with the renewables in order to make sure that there is generation available to back up the renewables if they aren't producing at any given time. So, working out the market and operational challenges is something that needs to be done and is a work in progress I would say.

The third challenge is the development of new technologies. Ultimately batteries and storage are going to be needed and I think envisioned to make this all kind of work together and possible to fully take advantage of renewables. There's quite a lot of work that needs to be done to make, you know, large scale batteries both viable and affordable. The development of those technologies needs to hasten in order to meet some of the goals that have been outlined and have been established.

So those would be the main goals, and in terms of opportunities I would say there's significant demand for renewables. The current presidential administration and Congress have a large appetite for renewables and are looking at policies to further advance renewables so that makes for great opportunities for development of more renewables. North Dakota has extremely good wind resources; we're one of the best areas in the nation to develop wind generation facilities. That's a huge advantage and opportunity for North Dakota. Then I think also another advantage for North Dakota is that we're fairly open I think, not entirely open but fairly open, to siting and permitting of these projects. Landowners like to see the benefits of having some of these projects in their land. The transmission lines, we're used to those, we've been an energy exporting state for a long time and I think we're open to transmission lines development, and I think we're open to wind farm development. Those would be the three challenges and four opportunities that I would identify at a high level.

Levi Andrist: Thank you Commissioner. Andrew, the greatest challenges and opportunities facing renewables?

Andrew Sorbo: Thank you Levi and not surprisingly Commissioner Fedorchak certainly hit on some of the high points. One thing she didn't touch on which has been a great opportunity for wind development over the last number of years is the PTC – Production Tax Credit – that has certainly

spurred development. It seems to be on the eve of sunseting forever; it seems like every year there's a sunset on PTC and it keeps getting extended which has been great for the wind industry. They've been able to harvest those PTCs which means they've got access to institutional investors to cover the construction, and because of the PTCs you also have a very competitive market product at the end of the day which is advantageous to utilities and desirable—very desirable. As Commissioner Fedorchak said, the market needs to catch up as well. One of the disadvantages to wind power—while it's great on energy, it's of course an intermittent resource so trying to manage load demand with a resource that's intermittent is always going to be a challenge. MISO and other RTOs [Regional Transmission Organizations] also don't give full capacity credit for wind, so I think MISO is typically at 20 to 25% capacity credit, so certainly the markets are going to have to adapt and be able to change and somehow encourage base load power which has a hard time competing in those markets with extremely low prices to maintain themselves and continue to run and be viable for the purpose of grid stability. Also, as Commissioner Fedorchak mentioned, wind development has spurred to such a large extent that we're running a little bit out of transmission capacity and not just for wind development but any generation within the state and in many parts of the country, that transmission capacity is a resource that's very costly and time consuming to build out. You don't just throw up a 345 line. In order to make sure you don't hit a sunset on a PTC credit it takes lots of time and energy and capital. \$2 billion was the number that Commissioner Fedorchak threw out and I absolutely believe it. It takes lots of time and planning and siting. You have to move through the PSC and the EPA and environmental review and then get the landowners on board and get an appropriate site. Generating the energy is not the issue, it's being able to deliver it and I think those are some of the hurdles that are going to have to be overcome.

Levi Andrist: Thanks Andrew – great insight. Before I head over to Tony, Commissioner Fedorchak could you offer a little background on the siting question as to how local zoning interacts with the state level permitting and perhaps even other jurisdictions that have siting jurisdiction to some degree?

Commissioner Fedorchak: Sure, I'd be happy to without taking too much time. I'm eager to hear Tony's challenges and opportunities. Also, just to Andrew's point, its \$200 billion in estimated infrastructure, not just transmission lines but generation resources too. A sizable investment.

In North Dakota we defer to the locals in terms of the siting and permitting of wind generation facilities, so they need to get their approvals at the

local level first whether it's a conditional use permit or whatever; local approval needs to be provided. The projects need to get that approval first and then we'll come in and overlay with the state considerations and consider the approval after the locals have given their stamp of approval on a project.

Levi Andrist: Great, thank you Commissioner. Tony, from your perspective, what are the greatest challenges and opportunities for renewables?

Tony Clark: Sure, and first off thanks Levi for moderating this and thanks again to the UND Law School for hosting it. I wish I could be there in person—haven't had a chance to get home much in the last year but got my first shot yesterday so hopefully it'll be sometime soon.

In terms of challenges and opportunities my list is probably going to sound pretty familiar to some of what you'd already heard here today. I think clearly, transmission is both an opportunity but it's a significant challenge. In terms of how you get more transmission built and - clearly in North Dakota if you're going to put a lot more renewables online today, you have to have more transmission. It's not only true nationally and in the region, but North Dakota's getting to the point where it's relatively maxed out in terms of export capability. There are three big hurdles that have to be overcome. Some of them are federal issues, some of them are state and local issues. But the three big things that if you could remove these hurdles for transmission development, you'd probably see a lot more happen which would open the door for more renewable development. Number one, Andrew talked about this, permitting. Permitting can be extraordinarily challenging. I think Commissioner Fedorchak is right. North Dakota is more amenable to permitting probably than some other parts of the country for lots of reasons. We're just more rural in general, have more acceptance of the energy industry in general, can see some local benefits; things like that. Putting a transmission line in a congested urban area or maybe an area that's heavily forested and you're knocking down lots of trees, things like that, gets to be more difficult in other parts of the country. Or, if you're in the western US, anytime you trigger federal lands jurisdiction you're lucky if you can get a major transmission line built in five, ten, or maybe fifteen years because of all of the federal bureaucracy that comes over the top. So, permitting reform would seem to have to be a necessity if we're going to build up the sort of grid that the Biden administration has been talking about.

Number two, cost allocation and cost recovery. These are very thorny issues. They almost always entail litigation between different utilities, between different states. Some states like the cost allocation formulas that FERC comes up with, some do not. But it's very difficult for a transmission

developer or utility to be willing to invest tens of millions, hundreds of millions of dollars in a project if they don't have the sense that there is some sort of certainty, not only around permitting but around their ability to get cost recovery for the investment that they're making. That gets into cost recovery and cost allocation.

And then the third, really, leg of this that plays a major role in whether transmission gets built is returns on equity. Capital will flow to where it can earn, at least have an opportunity to earn, a rate of return. Returns on equity are regulated in the interstate space by FERC. It's not clear which direction FERC may be going with this. There was actually a commission meeting this morning which seemed to indicate that the Commission may be leaning towards driving ROEs down. If you drive ROEs down, it makes it more difficult to attract capital to build transmissions. Those three things are both opportunities and challenges in the space. I would just very quickly highlight two others which have been touched upon I think a little bit. But I would say there is at least technologically right now an upper limit to how far you can go with renewable penetration. That number keeps getting bumped up but even the most zealous advocates for renewables will admit that there does become a point where there is a saturation. You either need more transmission or some other technology to deal with that. The third thing I would mention, which Julie talked about a little bit, is the evolving nature of market rules. The market rules in the RTOs were written in a time when the cost of energy was largely determined by units that had a fuel cost. We're moving towards a time where more and more you have energy markets that are awash in zero cost resources and that has a profound impact on the pricing of energy in these markets. And I would agree that the markets may be a little bit behind in catching up with the reality of where we're at.

Levi Andrist: Excellent. Thanks, great insights Tony. You've all, everyone in the audience here, you've heard this is a pretty technical area as you can hear with lots of terms and nomenclature. We're going to unpack a couple of those shortly. But before we do that, let's talk about the weather a little bit. As many in the audience are likely aware, in February, Texas suffered a major power outage stemming from some severe winter weather. While North Dakotans know how to dress for winter weather, there are other parts of the country that maybe don't know how to dress for winter weather. But over four million homes and businesses lost power for some period of time. Citizens, companies, regulators, policymakers, elected officials, they seemingly were all pointing fingers in various directions. I'm interested in what the panel's thoughts are on what the role of renewables was or wasn't in that

Texas major power outage. Commissioner Fedorchak, do you want to take a stab at it first?

Commissioner Fedorchak: Sure, I'd be happy to. So, I have read a fair amount on this but I've spent most of my time looking at what is happening in our area and in the MISO region that kind of relates to what we saw in Texas. So, I don't want to speak with a lot of authority about the role of renewables in terms of specifically how many showed up and how many didn't show up and that sort of thing. But that to me, in any power shortage situation, that's what you're interested in is who's generating and how can we get more generation. In ERCOT, the Texas market, nearly 50% of their installed generating capacity—so everything that was installed and potentially able to generate—nearly 50% of it didn't show up at all and was unavailable so that was a big problem and there was a variety of reasons for that. Whether some of it wasn't weatherized, some of it couldn't get fuel, and there's a whole number of reasons why. But I think what the whole situation revealed to me and really tested was, this new system that's evolving is largely, is being looked upon as a renewable based system backed up by dispatchable resources, largely gas. This was a test of that. I think some of the weaknesses that were revealed is that the gas generation that has been brought on. We need to be sure about what their supply is, especially in the winter when there is a lot of demand for gas for home heating. And gas for home heating has secure firm contracts; gas for power generation doesn't often have firm contracts, and so when there's a shortage of gas, they can't get it to generate the electricity and that's one of the big issues that was revealed. That's a challenge. Lack of weatherization in some of these units was a big challenge. Then I think lack of pipeline infrastructure too. I mean, again, that infrastructure piece I think really if we need to drive home anything in this discussion and in this whole transformation that's occurring in the electricity markets, is we need infrastructure, and it includes pipeline infrastructure for natural gas to get to the generation resources to provide redundancy so that you aren't relying on just one pipe. These are the sorts of things that, you know when you hear in the discussion all of the above strategies, resources like coal and nuclear, they have onsite fuel and in a situation like the February event, that's a valuable attribute for those resources. And something that's hard to replace, it's hard to replace with natural gas because it's really much more difficult to store. And it's hard to replace with and achieve with renewables right now because storage is not affordable and the magnitude of it doesn't exist. So, I don't think there's a lot of blame for renewables, that they were promised to be there, and they didn't show up. But the challenge is that the dispatchability of the resources to back up the renewables was jeopardized by some of the situations, and we really

need to double down on efforts to secure those resources and maintain diversity.

Levi Andrist: Great. Thanks Commissioner. Tony, you know, as you've talked about before in state and national media over the past couple months, there's really some fundamental differences in how these markets are designed. Could you just explain a little, maybe contrast the difference between the markets that North Dakota is in and then this ERCOT market down in Texas? What kind of reflections and reactions you're drawing from it?

Tony Clark: Sure. It's interesting for me to think back. When I first got into utility regulation, and just been elected in 2000 and took office in 2001. It was right as the western energy crises in California were happening. And I would say in the last 20 years, the Texas event has probably been the only event that comes close to capturing the attention of the public about electricity market issues and electricity reliability issues as that California event and Enron and all those things that we observed when I was first starting in regulation. Julie's right, the proximate cause, and everyone seems to be pointing at this and FERC and others are taking a look into the technical analysis. But the bottom line seems to be that it was weather related; that cold weather that wasn't expected hit the system and it hit all resource classes, right? So everyone, you know, has their favorite resource, and everybody's got something they can point a finger at, because gas had significant problems. Wind turbines—there's pictures of frozen wind turbines. Nuclear units were going offline because of water lines freezing. Coal units had problems, and there really wasn't any resource that performed perfectly throughout this. It's just that gas is such a huge part of Texas's energy delivery model; the gas sort of gets more fingers pointed at it maybe than anyone else. But to me, the more interesting and maybe longer lasting question that I hope policymakers take a look at is, what's the underlying market and regulatory structure that allows you to get into a space where the system is run at the razor's edge, that close, and where generators weren't investing in the sort of resilience that you need to run the system? That is really the underlying cause. And if all that comes out of this is folks throw up their hands and say, well, it was a bunch of cold weather, let's just winterize for next time, I think there's a missed opportunity in terms of understanding underlying market structure. The challenge in Texas is, which is not the case in North Dakota or in most of the country, is they have a deregulated market where independent power producers, merchant generators, which aren't affiliated with the utilities that actually deliver the power, rely on market signals to determine whether they invest in things like resilience or winter weatherization or things like that. And the way that

the market is structured—there’s not really a mechanism for them to recover the cost of that. So, if they invest in that sort of resilience, they could go in the hopes that maybe someday there’ll be some kind of event that drives up power prices to \$9,000 a megawatt hour. They’re out of business before they ever have an opportunity to recover those costs, because their competitors may not have invested in that type of equipment. And they have then a much higher fixed cost structure and can’t make their money in the market. It really is a pretty fundamental flaw that deals with this missing money issue. And how do you encourage investment in resource adequacy, so that the system is built to absorb those kinds of events like they had in Texas? In other words, you’re building the system to worst case scenarios and not in such a way that it’s just running on razor’s edge and subject to very volatile and high price swings. North Dakota is quite a bit different because we have vertically integrated utilities that are regulated by the PSC. And this is the case in most parts of the country. If a utility in North Dakota feels like, you know, regardless of what the market signals are, we need a certain type of unit. And we need to build that for its capacity value, or we need to add winterization, or resilience measures, or dual fuel capability, or onsite storage to backup natural gas, they can make that investment and then seek recovery from their Regulatory Commission to do that. But that doesn’t exist in some of these deregulated markets. And I think that struggle of figuring out how to compensate for resilience and planning for worst case scenarios is going to be something that has to be at the heart of the discussions.

Levi Andrist: Thanks, Tony. Andrew, has Minnkota ever come close losing, or to having a major power outage because of weather? And what are the types of things that, you know, a G&T does to kind of avoid the type of scenario that Tony and Julie just described?

Andrew Sorbo: Yeah. Great question, Levi. And, you know, we’ll maybe get into this a little bit further. But it all stems back to just resource adequacy and ensuring that you have a robust enough system to meet the demand. And as we think about it, it’s always the demand of our joint system and members. We’re MISO market participants, so we play a role there with grid stability and getting signals for MISO. One thing that has always helped us out is our baseload. We have baseload resources, we have several coal units, at Milton R. Young station. And we also have through the joint system access to power for the joint system from Coyote, those are mine to mouth plants. So, when you hear Tony talk about things like frozen gas pipelines, we have plants literally built on top of the fuel supply. So, there’s no additional infrastructure required to ensure that fuel supply’s there. We’ve

obviously been in North Dakota and been operating for a long time, so cold weather has never been an issue for us. But it's really the larger markets and the larger transmission constraints that you really have to watch out for, regardless of whether you have the generation or not. It can still sneak up and get you. We have a robust Demand Response Program to help level out some of that volatility. And that seems to play a major role for us as a G&T.

Levi Andrist: Great. Thanks, Andrew. Commissioner Fedorchak, let's talk about resource adequacy a little bit; we've heard that term a few times. Can you just explain resource adequacy and maybe given your role with MISO, explain what's going on in the market?

Julie Fedorchak: Sure. Resource adequacy is just kind of a fancy way of saying having enough electricity available to meet the peak demand in all situations. So, it's a term that utilities work on constantly, like Andrew was saying, I mean, that's their mission is to provide electricity to their customers. And as regulators, we work with our regulated utilities to make sure that, you know, we approve their plans for having the resources available, the right resource mix available to maintain that reliable service in all conditions. The challenges that, like Tony was just talking about, some markets like Texas don't have that regulated situation where somebody, a regulator, like myself and my colleagues, are overlooking the company's plans. It's a competitive market, everyone's trying to bid in and make their own plan work. The challenge, though, for even utilities in a regulated market, and with the regional transmission organization setting the electricity market, utilities, they want to serve customers and have to serve customers. But they also want to make earnings for their investors. And so, they want to have resources that perform well in the marketplace. And as we've talked and have been alluded to a couple times, the market currently, the market is MISO, the one I'm talking about, it pretty much treats all the resources equally. They're bid in, and they're paid their marginal costs, which is their fuel costs. So for renewables, there is no fuel costs, so they can bid in at zero, a coal unit might be \$18, just say for this discussion purposes. So, until the price gets up to \$18, until they need enough energy to pull in that \$18 megawatt, the coal units aren't really even being used unless they're saying, well, we'll bid in at whatever the price is. And so then they're making a loss. And so, with the flood of renewables into the marketplace at these zero costs, it's put a huge blanket on prices, a big suppression on the prices. And so, therefore, the utilities that own those units, they often are operating those units at a loss. And so that's not very big incentive to invest in those units. But yet, at the same time, we see that when we need, you know in serious weather situations, or who knows what other

kind of unusual situations we have, and that's where the big discussion about resilience is, those are the kind of units you have to have. You have to have stuff that's available for dispatch no matter what. And so, the adjustments that are occurring in MISO and in SVP and in the various regional markets are to try to find ways to incentivize and reward those dispatchable units for what they're providing to maintain the reliability of the grid both when they're needed and when they're not needed, and technically being dispatched in the market. And so that's the big challenge. It hasn't been solved yet. But there's a lot of ideas out there. And that's what the folks like myself and others who are engaged in that arena are working on.

Levi Andrist: Thank you Commissioner, there's your tutorial on resource adequacy everyone. Tony, would you mind giving us a little tutorial on something that's related, but often confusing? You know, there's lots of technical terms and nomenclature in electricity markets. We've heard about resource adequacy now. But could you take just a moment or two to explain the difference between capacity and energy, and then maybe also put some North Dakota context to that, if you could?

Tony Clark: Sure, so this is actually a really important concept. And one that I think especially in the general public is sometimes lost a little bit because we do throw around terms like generating capacity and energy and things like that almost interchangeably, but there in effect, is a bit of difference. Energy is just what any particular unit is producing at any given time. Utilities—I should step back and say utilities, when they're building out a portfolio of resources, procure both energy type products and capacity type products. So, in a sense, you have to think about capacity and energy as two different products that equal deliverability to customers to make sure that resource adequacy is met to be able to provide power 24/7/365. Energy is just what a unit puts off at any given time when it's running. Capacity is the ability to produce generation. So, if you think about a renewable, the value of renewables and why utilities build them is to fill that energy niche. When they're producing energy, they're effectively a price hedge for the utilities consumers because they don't have a fuel cost. And they're a very effective hedge in that way. That's why utilities tend to build it because it's good for their consumers to be able to avoid those sorts of costs, it drives down their energy prices. But renewables are not rewarded in particular, very much at least, or aren't given a lot of credit for capacity. The reason they're not given credit for capacity is because they're intermittent in nature, and so they don't receive as much of that credit. In that case, a utility has to also procure energy capacity. These tend to be the dispatchable units, which oftentimes are

thermal, coal, gas, nuclear. And so, utilities are building both of them. One of the things that I think has been so challenging for coal especially nationwide, not just in North Dakota, but is the way that gas plays in both the energy side and in the capacity side. As I said, utilities will build out wind, solar, others as an energy resource, and that does compete somewhat against coal on the energy markets. The reason gas is so challenging for some of the older units, including nuclear, by the way I would note, is because not only can it compete pretty effectively on energy costs, because gas prices are so cheap right now and seem to be for the foreseeable future. But it also competes as a capacity resource, because it's dispatchable. And so, it can be ramped up and down and respond to signals very, very quickly. So it's, again, a very important concept and understand that utility building for resource adequacy has to procure resources, and both produce energy, but those that have capacity value as well.

Levi Andrist: Thanks, Tony, quick follow up on that. You know, if we focus on energy, not capacity, I think everybody can objectively agree that North Dakota's a powerhouse. And we're also in an interesting position, because we're also a huge exporter, which I think everybody can agree on. So, as it relates to having a lot of energy, and a lot of energy that we don't have a demand for in North Dakota, what do you see on the horizon regarding changes to federal law or policy that will affect renewables in North Dakota and beyond?

Tony Clark: Yeah, so a few things Levi. I mean, number one, just because of the nature of North Dakota being such an energy export, it almost means by definition that North Dakota is going to be impacted by broader things happening in the marketplace. We're talking about market rules with the ISOs and the RTOs. Things that are going on at FERC. Some of these things are outside of the state's control. But in order to sell electrons into that broader marketplace, it means that the state's going to be a participant in one way or another if it wants to do that. Things that are coming down the line that could impact that: we've already talked a fair amount about transmission, so I won't go over that again. But clearly transmission policy is going to have an impact. There are things that are moving through Congress, which could have an impact one way or another. And it's not clear exactly yet what will pass and what will not, but two things that are discussed quite a bit in this new Congress and in the Biden administration are either a carbon tax or a clean energy standard. What's not clear is if there's the political will in Congress to get those passed, and the mechanisms for doing that. A carbon tax has typically—economists tend to promote it, because it's a relatively

straightforward way to put a price on something in the marketplace and discourage the use of one resource to encourage the use of another, which is after all the intent of a carbon tax in and of itself. But it's tough for Congress to want to do that because members of Congress lose seats over imposing large new tax increases. And the Democratic majority in the House is about as thin as it can possibly be, I think with, right now, it sits at like two seats. So, you couldn't lose very many votes if you're the Democratic majority wanting to push through a carbon tax. And in the Senate, it's even closer—it's tied—and you'd have to have every democratic vote and have the vice president break a tie. And it's not clear if someone like Senator Manchin from West Virginia would ever go for that. A clean energy standard for the longest—and I should say a carbon tax could probably be pushed through the budget reconciliation process, which only takes 50 votes, which is because it's a budgetary measure, there's a lower vote threshold. The clean energy standard, I think most folks that traditionally thought you would need to break the filibuster and get 60 votes, which probably isn't going to happen. But more and more you've heard in recent weeks, in fact, I just read an article this morning, Secretary Granholm from the Department of Energy and others talking about, "we think we can craft a clean energy standard and make it through the budget reconciliation process." It's not entirely clear to me how parliamentary, and I'm not an expert on parliamentary rules in the US Senate, but it seems a little more difficult, but it's sort of a bank shot attempt to use crediting mechanisms that they argue are plausibly within the federal budget to get that through. Again, you have the same issues. Can you get 50 plus one through a Congress on a very contentious issue that is going to be a difficult vote for members from certain districts?

Levi Andrist: Excellent, thanks. Yeah, you can't imagine a more integral nonpartisan job than the United States Senate Parliamentarian. Boy, that office is getting a workout currently and I imagine they will for the next two years. So yeah, for those of you - the Robert's Rules of Order, those of you follow the North Dakota Legislature, they follow Mason's Rule of Legislative Procedure. So, I know all of you in the room are avid readers of Mason's. But boy, lots of interesting parliamentary questions that are implicated even with energy policy. Andrew, what are some of the federal policies that you and your team have your eye on from a G&T perspective, either encouraging or keeping you up at night?

Andrew Sorbo: Sure, thanks Levi, and Tony addressed some of the big ones: clean energy standards or carbon tax. Obviously, with Minnkota as the owner and operator of coal units, those two things hit home. So, we're

certainly watching all that unfold. And it's on top of mind and to every extent possible, trying to participate in the shaping of those federal policies. Then kind of to piggyback off of policies or some tax codes that are very important to us. And some of them require legislation to promote and promulgate. 45 Q is a big one for us. And anybody that's looking at carbon capture and sequestration technology, you heard Professor Anderson and Senator Bell mention, it's important technology to implement and to look at and to invest in for the nation and for the world. It allows, you know, a tax revenue stream in the form of tax credits, based on sequestered and stored CO₂ on a per ton basis. So that's in place, 45 Q is in place and available, and we're certainly looking at it as we explore things like Project Tundra, and other utilities as well. And then 48 A has been getting a lot of discussion and there's really some things that can help bolster carbon capture within 48 A. Both bolster and promulgate 45 Q and also allow things like direct pay. So rather than needing tax equity, to come in with giant liabilities balances, in order to harvest those tax credits, there's an ability to harvest it in a more direct manner. And it really opens up the market for institutional investors to be able to invest in that kind of technology and those resources. So, certainly things that we are actively watching.

Levi Andrist: Excellent, thank you. This is kind of a follow up and related a little bit, Andrew, but to me, one of the most interesting dynamics going on, not only in renewable electricity and energy, but also traditional energy is access to capital. The environmental, social, and corporate governance movement known as ESG. It's definitely taken heat in the capital markets, as best I can read just from, you know, being a bit of an outsider, it's really a means of certain capital interests to measure sustainability and societal, kind of impact of investments. Minnkota invests in both traditional and renewable energy and you're currently seeking investment in a massive CO₂ project called Project Tundra. Would you please just share some thoughts on ESG? Explain what it's like to gain access to capital in renewable generation? And then maybe contrast that to access to capital and an undertaking like Project Tundra?

Andrew Sorbo: Sure Levi. It's a good question and, you know, somebody like Tony may be able to address what it's like to go out for capital on renewables from a [different] standpoint. Minnkota as a cooperative because of the tax credits available and really supercharging some of the available capital on the renewable markets, you know we get most of our renewables, predominantly all of them, through PPAs—purchase power agreements. So, we secure those contracts—on the backside in the renewables is usually

going to be some type of a tax flip structure, with tax equity that's able to harvest those tax credits. And as long as the PTC is available, and the returns are there, you heard Tony address it, but if there's an adequate return the capital will follow. And so far, the capital seems to be there for the renewable projects. That doesn't seem to be an issue. The due diligence related to investing in renewables is rather a well-oiled machine at this point. And it holds broad public support, certainly, political motivations. ESG for corporations. Renewables is typically broadly supported on both a federal and a state level in general. I have not seen the Sierra Club come after anybody because their renewable portfolio was too robust. So certainly, from that standpoint, an ESG standpoint, capital for renewables is a lot easier. On Project Tundra, and if I could just expand a little bit on what is Project Tundra, we've heard carbon capture and we've heard it discussed. Project Tundra is a project Minnkota has been working on for a long time, several years now. And what it is, is a post combustion carbon capture, we want to retrofit the Young station with a carbon capture infrastructure on the backside of the unit, which will pull out 100% of the flue gas, suck the carbon out, throw it into deep saline solutions, securely store that in those saline solutions. And then there's tax credits available on a per ton basis for that carbon. But as you go out into the markets, capital for a project like that is rather intensive, we're looking at a billion plus for capital and infrastructure, you need to be able to generate some revenue and return to pay for that infrastructure. That comes in large part from tax incentives. But then also, when you hit that broader market, because of ESG. You know, there are institutional investors that even though what we're doing is retrofitting, we're retrofitting a coal unit to maintain baseload power and grid stability and capturing all the carbon off of that. Even with that clear goal in mind, and what seems to be a great solution to some of the problems we face, wanting to maintain a stable grid, but also in a carbon managed future, which I don't think anybody can dispute certainly seems to be the future and certainly in the current administration, but certainly institutional investors for ESG, or political motivations or otherwise, still may shy away from that just because it involves coal. Even though it's, you know, we call it clean coal. Taking all the carbon out, even though it involves coal on a project of that scale and magnitude, it just will shy away some investors, but we're confident in the vision. We're confident in the project. And we're confident that we'll find those strategic investors and partners to make a go of that. Our goal is not to be the largest carbon capture project in the world forever. Our goal is just to be one of the first, happens to be the largest, but one of the first of many, and we sure see it as a real potential for a solution.

Levi Andrist: Appreciate that, very interesting, thanks. Commissioner Fedorchak: access to capital is a major factor in how much energy development occurs. North Dakota included, of course. How busy is the PSC these days? Does your docket have renewable projects currently seeking approval?

Julie Fedorchak: Yeah, we do Levi, we have one project that we just received in the last couple of weeks. A pretty significant new wind farm in the southwestern part of the state. And we have a couple of others. I mean, we're always hearing about projects that are being developed. So, I know there's many others out there that are in various stages of development. And one of the big challenges is, as Tony referred to, and Andrew, all of us, is the grid restrictions. You know that the grid is pretty full in North Dakota, and we need more transmission to make room for more new renewable projects. And we also have a number of pipeline proposals. We permit natural gas. Well, we permit a wide variety of different pipelines, transmission pipelines, there were a few of those in the docket. And then we have a transmission line in our docket, too. So, it's a pretty steady pace. And it has been that way in the eight years that I've been on the commission, we just see a steady interest in North Dakota energy development.

Levi Andrist: Excellent. Thank you. Tony, you work a lot with IOUs, investor-owned utilities, like MDU, Xcel, Ottertail, those types of companies. Maybe you could offer a regional or national insight to companies like that - IOUs with shareholders. Do they have ready access to capital for renewables?

Tony Clark: Sure, so in terms of investing in any assets, any investor, company, utility, otherwise, you basically get money from one of just a few buckets, it's either cash reserves that you have on hand, it's equity financing, or it's debt. And in the case of public utility companies, it tends to come through debt and equity. So, in terms of ability to have access to capital to build renewables, it's certainly there. The pressures that you had mentioned with regard to ESG, though, are very real in terms of how utilities balance the various interests that they have and the multiple constituencies that they have to meet. So, if you're a public utility, you are accountable to your customers, and providing them with reliable service at reasonable rates. You're accountable to your public policymakers, your regulatory commissions, making sure that you're being accountable to them, you're also accountable to the owners of your company, which are the shareholders. There are a number of very large institutional funds who have major stakes in utility companies who are talking about E, S, and G measures and metrics. And so, utilities have been very attentive to that, making sure that they're meeting those

multiple constituencies. Now investors, shareholders, even those pushing ESG understand, that a utility company still needs to meet reliability and cost deliverability in ways that meet their customers and regulators expectations, but there's definitely a nudge for utility companies to move in a less carbon intensive and more environmentally friendly direction. And utilities will pay attention to that. You don't want to be in a position where you've got major investors shorting your stock, which then makes it that much more difficult for you to raise the equity that you need to invest in capital projects that can benefit the transition and benefit your customers and meet the expectations of your regulators. So, it's a balancing act for sure. Capital is certainly available, but utilities need to be cognizant of the multiple stakeholders that they have to make sure that they're meeting.

Levi Andrist: Excellent. Thanks, Tony. Well, we've got a question here from the audience. Very thoughtful question. North Dakota's energy economy has thrived because it historically has an all of the above strategy. In the wake of Great River Energy's announcement it intends to retire Coal Creek, both Mercer and McLean counties instituted moratoriums on wind energy development, even if this might not reduce market pressures on lignite fired generation. What is the best way to maintain market share or grow the pie rather than essentially having moratoriums? Anybody want to tackle that one from the audience? I can imagine their transmission is probably one of the answers to that. But, Tony, you've unmuted.

Tony Clark: Well, I mean, transmission's certainly one of the answers. I think the broader question points to something about, you know, potential moratoriums, which is important to point out, which is that none of these things happen in a vacuum. And so, a moratorium in, you know, one county or even one state isn't going to change the dynamics of the regional market. So you might be, through a moratorium, ensuring that certain investment doesn't happen in your state or your county or your region. But it effectively doesn't aid the resources that you're hoping that it aids because they're competing in a much more broader [sic] regional market, in which case, you could end up with the worst of both worlds, which is a challenge to existing plan and the failure to capture new investment that the region might otherwise have. So, I think a good part of the answer is transmission, making sure that you have access to a variety of markets and then just setting a legal, tax, and regulatory climate that is aligned so it accepts all different sorts of investment and prepares the state to get that investment regardless of what these broader markets do. So that you have some kind of functional avenues to maintain

investment regardless with how the market that the state itself doesn't always control regardless of which way it goes.

Levi Andrist: Excellent. May I take a liberty and say the proverbial whack a mole it sounds like. So, in other words, if you can't sounds like if you can't build in jurisdictions with moratoriums, they might just be built in the same grid. That would have the same market effect. Commissioner Fedorchak, Andrew, any responses to that, or?

Commissioner Fedorchak: Sure, I'd be happy to add on. So in, in our role here at the commission, as regulators, we've really come at this in two different ways. One, in our siting and our permitting, we're very much about what Tony said, trying to be part of setting a very fair and open legal, tax, and regulatory environment, us being kind of a regulatory environment, that treats resources fairly and we're indifferent in terms of which resource is coming to us for a permit, whether it's a fossil fuel or renewable, I'm indifferent. I look at the law and try to apply the law to every resource equally and fairly. And I think that we've got a really great history of that at the Commission. I think that that's been a strength for North Dakota. As a North Dakotan, I look at our energy resources. And am just amazed at how blessed we are. I mean, you go to other states, and they don't have even one of the things that we have, and we have oil, gas, coal, and wind, and you know, even some solar, we've got thermal. We're just really, really blessed. This is a huge opportunity for us. And we need to provide the environment for developing all these resources for the benefit of the citizens of our state and people who depend on the resources for power. Then when we look at things from working with our regulated utilities and providing the resources that they need to serve reliably, it's a slightly different perspective, because then I'm looking at the mix and making sure that they aren't getting too dependent on one or the other. And they have a good balance of resources that can cover all contingencies, keep prices low, you know, environmental impact low and ring all the bells really. And so that's a little bit of a different perspective. But also, again, fuel agnostic, just looking at what the attributes are making sure that there's a good mix of them to address the customer's needs and keep costs low.

Levi Andrist: Excellent. Well, what a wonderful way to end this distinguished panel. Commissioner Fedorchak, Tony, Andrew, it's been an honor and a pleasure to serve as your moderator. And to the UND School of Law and its notable law review staff, thank you so much for putting on the event.

You all are set for another great speaker after this in Kate Black so, thank you to our panelists Andrew, Commissioner Fedorchak and Tony.

6:09:00