

Challenges to Successful Decarbonization in the US and Strategies to Overcome Them was given on October 22, 2020 by Cheryl LaFleur, former Chair and Commissioner, Federal Energy Regulatory Commission. It is part of the Regulatory Policy Program's weekly webinar series.

Joseph Aldy:

Welcome to the Regulatory Policy Seminar. I'm Joe Aldy, the Faculty Chair of the Regulatory Policy Program at the Mossavar-Rahmani Center for Business and Government at the Harvard Kennedy School. Let me open with a few reminders regarding the logistics of our online seminar. We are recording this seminar and we will post it online. If you know someone who is interested but cannot attend the talk live, please let them know that they can access the seminar at the Center's YouTube channel. I'll post in the chat box the link for the YouTube channel for you in just a moment.

Joseph Aldy:

You can also remind friends and colleagues to register for Zoom links for each seminar at the RPP webpage. I'll provide the link in the chat box as well for you. We'll take questions throughout the Q&A function in Zoom. Please click on Q&A at the bottom of your screen and type your questions. At the end of the presentation, I'll take questions and pose them to our speaker. With the preliminary logistics done, I'm now thrilled to introduce our speaker today, we have Cheryl LaFleur who will present her talk, Challenges To Successful Decarbonization in the United States and Strategies to Overcome them.

Joseph Aldy:

Cheryl LaFleur is the distinguished visiting fellow at the Center on Global Energy Policy at Columbia University, and a member of the board of directors of ISO New England. She served as the chairman of the Federal Energy Regulatory Commission, where she was a commissioner for most of the past decade before has considerable private sector experience as well, having served as Executive Vice-President and acting CEO of National Grid USA. She's also an alumna of Harvard Law School. It's great to have a member of our community return. I'll be at virtually to Harvard for a talk.

Joseph Aldy:

With that, let me turn the Zoom room over to Cheryl for her talk today. Cheryl, welcome to the Regulatory Policy Center.

Cheryl LaFleur:

Well, thank you very much, Joe. It's great to be back at Harvard even virtually. As we were talking about earlier, this talk was literally the very first thing on my calendar that was cancelled when it was supposed to be March 12. I remember thinking, "Well, I guess Harvard is just being really conservative." Then within a week or two, another hundred things were cancelled from my calendar. I'm happy we were able to reschedule it and appreciate folks Zooming in.

Cheryl LaFleur:

As you noted, I spent most of the past decade on the Federal Energy Regulatory Commission. If anyone doesn't know what that is, you're lucky. But it's a bipartisan independent agency that oversees

wholesale electric rates and markets, interstate electric transmission, gas and oil pipelines, and the reliability of the grid. I served for six and a half years of the Obama administration, including some time as chairman, and then as part of the Democratic minority for two and a half years of the Trump administration. I had a front row seat for a lot of what was happening in Washington, and got to see what worked and what didn't work on the regulatory as well as the legislative front.

Cheryl LaFleur:

I believe the defining issue for our time for those of us in the energy sector, is how we adapt our energy system to lessen its impact on climate change. I doubt very many people would disagree with the significance of that issue. While climate issues are by definition, global and multi-sector. I'm primarily focused in my own work on how we reduce the climate impact of the US electric system, particularly the electricity grid. Transitioning to a cleaner electric system is a necessary first step to enable greater use of electricity for other sectors like transportation, heating and industrial applications to decarbonize those sectors.

Cheryl LaFleur:

While the US has made some improvements in the carbon intensity of its energy system, I believe the overall level of the US response to climate is far less than our nation is capable of given its natural, technical and financial resources. It's certainly far less than will be required to meet the climate imperative as we increasingly understand it. We have much of the technology we need, although not all, at our disposal, wind and solar power have achieved commercial viability and scale. In addition to central station power, digital technologies allow the coordinated utilization of solar rooftops, home and car batteries and demand management. While we still currently, in my view, need natural gas generation to balance renewables when the wind doesn't blow and the sun doesn't shine.

Cheryl LaFleur:

Some experts believe we could achieve as much as 75% decarbonization of the grid even while using natural gas to balance renewable output. At the same time, a lot of work is underway and needs to continue on substitutes for fossil fuels for that last portion of the balancing resources, long duration storage, carbon capture, hydrogen systems to achieve decarbonization of the balancing resources.

Cheryl LaFleur:

The problem is in primarily technology, but we have not summon the political and public will to go as far toward decarbonization as we're capable of. For the last year, for which figures are available, we're still getting more than half our electricity from fossil fuel generation, and only 17% from renewable resources, including hydro, which is still the largest, wind and solar. We're not making progress at the rate that many of our aspirations to say nothing of the problem would require. I think there's three macro reasons. I've thought a lot about why the US is behind that account for our limited progress. They might be fairly obvious, but you have to know what the problem is before you can start trying to solve it.

Cheryl LaFleur:

The first and I think the biggest problem is that we're not making progress, because there's no national consensus that climate change is a problem that we need to address. Neither the American population, as measured in polls, nor the political establishment have agreed on a threshold issue. Quite obviously, if you don't have a plan to solve a problem, you have a much harder time of doing it. Significantly, as we

all know, those who don't believe in the need for climate action include the current president, his core supporters and key appointees, a majority of the US Senate, and state leadership in some states.

Cheryl LaFleur:

But even when President Obama was in office, when I first moved to DC, disagreements in congress prevented passage of the last serious legislative attempt at a climate strategy, the Waxman-Markey Bill of 2009, even when the democrats had both houses, and the Obama administration attempts to apply the Clean Air Act to regulate carbon were met with strong opposition in many regions of the country.

Cheryl LaFleur:

The second and related issue to the lack of a national plan is that we have a very complicated and disaggregate government structure ... disaggregated decision making structure. I find this when I've done comparative work with European Union, or other parts of the world that have more defined climate goals. In the United States, major energy facilities and policies require the coordinated support of both federal and state authorities and sometimes local authorities. But lacking an overall national strategy, entity decisions are being made at the federal level by multiple different agencies with different agendas in 50 different state house and in thousands of city and town halls, which have a great deal of control over what gets built or what doesn't get built in their town.

Cheryl LaFleur:

Depending on how you count about half the states in the United States haven't placed goals, sometimes very ambitious goals to reduce greenhouse gas emissions in their states. But energy production and transmission is not geographically contained within a state, and is depending on resources and other states and on an interstate network. I found repeatedly that the cross-action of different states and different decision makers prevents effective action. One example would be the extreme difficulty of building long distance transmission lines to move wind and hydroelectric power from the sites where it's best produced to population centers.

Cheryl LaFleur:

If they cross multiple states, they require multiple approvals and agreement on who will pay. It's of course extremely difficult to set gas pipelines in much of the country, even where they would enable replacement of coal generation, and provide gas generation to balance wind and solar in the future. There are simply too many people with veto power, and the overall public system at all levels, the overall political system is much better at slowing things down or making sure things don't happen than moving things forward.

Cheryl LaFleur:

The third macro issue is that even among those who politically believe in the urgency of the issue, I believe we have a public and political failure to acknowledge the difficulty of the solution and therefore act on it. I think if we took the attitude that climate change is the issue of our time, and we're going to work together the way we won World War Two, or put a man on the moon, or choose your cliché, it really will require some change of behavior on virtually everyone's part and their personal consumption and transportation habits that require a willingness to allow renewable generation and transmission to connect it to be built near where people live, which is often really difficult even regions of the country with almost total support for clean energy and print in theory.

Cheryl LaFleur:

It will require trace spacing ... Excuse me. It will require facing the tradeoffs that all forms of energy, even low carbon ones require, and will require attention to the economic dislocation of people in communities whose livelihoods were dependent on the old fossil fuel economy. But there's been a mismatch between people's political support for climate action and their willingness to actually face and accept those costs. It's difficult for politicians to even talk about this because it's so hard to get anything done, then you have to say it's going to be easy. It's going to save the economy. It's going to be cheap. That's just a place political necessity to start getting action. It's easy to name the problems, what should we do about them? Fortunately, at least I think it's fortunate. We may be on the brink of a new presidential administration, and hopefully the opportunity for a reset at how we look at these issues.

Cheryl LaFleur:

First of all, we need to address the problem at the highest level possible, ideally, at the global level since it's a global problem, and I do think the Biden administration if there is one has said they would rejoin the Paris Climate Accord is one of their so called day one actions. But beyond an accord, which is many ways voluntary and loose, it means a strategy at the national level. Putting in place a national climate strategy, one that has actual teeth will be hard. I would suggest the following strategies in order of effectiveness.

Cheryl LaFleur:

By far, the best in my view, would be some national climate legislation. Putting aside that economic relief and COVID response would probably take temporal priority in the new administration. Climate legislation, even when you get to it on the list would not be easy. In my mind, if I were writing it, I would include a national carbon goal and national greenhouse gas reduction goal and either establish a carbon cap and trade system the way the Waxman-Markey tried to, or put in a requirement requiring the EPA to do so by regulation. Like other environmental laws, it could be structured in almost politically, it would have to be structured to allow states to go further than the federal law but not below the federal law, which is the way the Clean Air Act and Clean Water Act are structured.

Cheryl LaFleur:

I personally believe that even legislation to set a consensus target lower than many people think is needed would be way better than no legislation at all. Even if the democrats control the senate, which is of course an unknown, it would still be necessary to compromise with climate cautious Democrats from states with fossil industries. But a bipartisan compromise, in my view, would be more sustainable and enduring. This isn't an area we want to keep reversing course according to who's in power. If you couldn't get legislation to set a carbon target, legislation supporting investment in low carbon infrastructure, potential tax credits, research and development, from what I'm hearing is more likely to have bipartisan support, which is still better than nothing.

Cheryl LaFleur:

Beyond federal legislation, assuming the senate is in a position to confirm new appointments, we can expect that the federal agencies will be repopulated with people who work within their areas of jurisdiction to support climate action, and hopefully get the agencies rowing more in the same direction. Just to cite a few examples. This would mean that the Council on Environmental Quality reverted to a social cost of carbon that reflected the global scientific understanding, which was in the \$40-ish range. Last I saw but probably higher now, rather than what the CEQ was put out under this administration,

which is we only count carbon in the United States. It's \$6 to \$8. That could be done without any new legislation.

Cheryl LaFleur:

It would mean the EPA and the DOE would reinstate efficiency requirements and start to work to reinstate other suspended regulations. It would mean the federal land and water agencies would support rather than impede green energy development, especially wind, on federal lands and waters and transmission to deliver it rather than actually, in some cases, moving the border of federal land to make sure transmission doesn't happen. Would mean my own former agency, FERC, would work to help wholesale electric markets adapt to state climate initiatives, not actively make them harder to achieve.

Cheryl LaFleur:

We certainly didn't crack the code in the Obama for ... but we were at least trying to go in that direction. I think more has to be done. Even with supportive federal action, states will continue to play a critical role. If there's not a change in federal administration, state climate goals will be the only goals. That means we'll need stronger regional collaboration to allow states to work together to achieve their climate goals, including coordinating citing approvals to avoid building the electrical system of the future and a 50 stove pipes.

Cheryl LaFleur:

We already have the organization set up to do that. Regional market operators would have to continue to work with their stakeholders, the states say serve in FERC to continue to adapt their markets, all of their markets to a new resource mix. Ideally, this could be achieved by internalizing the cost of greenhouse gas emissions and energy markets. But such a system seems to be politically difficult to achieve and other ideas are being discussed. I still think that would be the best way to work collectively to achieve the goal.

Cheryl LaFleur:

The second major imperative, besides changing the governmental decisions is recognizing the cost of getting where we need to go and actually addressing ... being willing to address those costs. I was really happy to see that one of the major planks of Vice President Biden's climate strategy is support for communities dependent on fossil industries, especially mining communities that often have no other industry in their area. I think it was something like support for the people who've kept the lights on for the last century.

Cheryl LaFleur:

I was also really pleased last week to see that several environmental groups reached an agreement in principle with the hydroelectric industry to support the continued use of hydro generation facilities, which are carbon free, but environmentally controversial because of their impact on riverways and fish populations, and the growing use of pumped hydro electric storage. That really bothered me when I was at FERC, how hard it was to get anything done on hydro when it was a carbon free resource that we pretty much already built.

Cheryl LaFleur:

I think the agreement said that some of the more poorly cited dams might be closed, but others could be maximized, or enlarge. More project developers of all types are recognizing the need to assure that

the benefits of their projects are shared with impacted communities, and then the environmental justice issues are addressed. We have a long way to go on all these issues, but we can't move forward without grappling with them.

Cheryl LaFleur:

Finally, I think we have to keep making progress on the ... I'll use this in quotes, easy things while we invent new solutions for the things that we don't have solutions for now. As I said before the US could achieve considerable decarbonization through a combination of building more onshore and offshore wind and the transmission it needs, solar, central station, and distributed, and storage, and maximizing some of the hydro and pump storage while preserving much of the existing hydro and nuclear generation. But it was still need for some time to sustain balancing resources like gas generation to complement those variable resources when they're not available, including when there's limited water for hydroelectricity, which contributed to the rolling outages in California a couple months ago.

Cheryl LaFleur:

Those outages were largely attributable to not having enough balancing resources closing disfavored, one, resources before being able to get their replacements in place. Rather than fighting about whether we continue to use natural gas at all, we can make a lot of progress by maximizing the use of carbon free sources while we develop new carbon free balancing technologies like multi-day storage, economically viable carbon capture for gas generation, which is only possible in certain geographies, and hydrogen. We should also build more long distance transmission to enable more utilization of variable renewable resources, wind and solar across time zones and across weather patterns. The United States is blessed with a large geography. That's what other countries don't have and we should take advantage of it by combining different time zones that have different load patterns.

Cheryl LaFleur:

I think there's a lot of debate right now about will the grid of the future be more decentralized, developing more centralized, it shouldn't really be a debate. It has to be both if we're going to solve this problem. There's no question that the US is poised to make more progress in reducing the climate impact of our energy system, which will enable decarbonization of other sectors of the economy. But the decisions we make in the next five to 10 years about what the legislative or regulatory structure is, within which we get that done, will have a lot to do with whether we get there steadily and effectively, or whether we continue to fight with each other and make progress in fits and starts.

Cheryl LaFleur:

One thing I'm certain of, maybe the only thing I'm certain of, doesn't one of the magazine's have what I think I know what I know I know, what I know I know is that we're going to need the best and the brightest of the next generation to help develop new technologies and policies and push the energy system forward. I also know that baby boomers like me are not going to solve all these problems in our professional lifetimes. That's why I tried to spend time on college campuses, maybe virtually, because they are among the places where you find the best and the brightest of the next generation. With those general remarks to frame the issue, thank you for listening, and I look forward to your questions.

Joseph Aldy:

Great. Thank you, Cheryl. That was fantastic. A reminder If you have questions, you can go to the bottom of your Zoom screen, click on the Q&A tab and type out your question. I am also pleased to say

that my colleague, Professor Bill Hogan is with us, who knows a thing or two about the power system. Bill might have a question or comment? I have a few questions based off of these initial remarks. But I want to see, Bill, if you'd like to kick things off with any initial comments you have.

Cheryl LaFleur:

[crosstalk 00:20:25] Bill's comments and he has just become animated and not been ... not just picture, is now we've us for real. Thank you.

William Hogan:

Well, thank you. I'm happy to have this opportunity. I do have a question. But before I do, I want to say you can tell from this talk, you just heard why I have such a high regard for Chairman LaFleur. I've known her for a long time and been involved in many interesting conversations and discussions over policy issues. I've often thought of her as an example that we would like to present to our students and our community as the ideal public servant. I think she's a person of great character, and courage, in addition to being very smart. The best, and I'm very happy to have her here. I thank her for her service so far. I thank her for her contributions that are coming in the future as a citizen, because she's really been helpful to the country. Thank you for coming Cheryl.

Cheryl LaFleur:

Thank you very much for those very generous remarks. I was once one of those young people we're bringing alive. Over the decades, that changes.

William Hogan:

Yes. My comments were understated. Let me ask you a question about this. I think broadly speaking, I endorse what you said here. I would emphasize a couple of things. One of them is this is not going to be easy, and pretending that it's going to be easy, in my personal view, is extremely dangerous, because you're promising something you can't deliver. It's going to produce a backlash result. It's actually going to make things harder in the long-run. I think facing up to how hard it really is, is important.

William Hogan:

There, I am telling the truth, in the way that you've brought down it here is just the thing that we need. I would like to frame a question for you, that runs through your talk, and I hope it's going to help sharpen the argument here. But broadly speaking, in this conversation, the problem that we don't have agreement across that you're talking about, we don't have political will, we don't have agreement of what the nature of the problem is. I think that's very severe. The way I would frame the question to you is the ... there are two ways of looking at this problem, if you want to do something. I'm not talking about the other end of the spectrum where you don't do anything, but if you want to do something.

William Hogan:

One way to frame it is kind of the quantity, budget, carbon budget story, 80% clean by such and such a day to 100% clean by such, and say all these quantity, or unit, frameworks. The other way to frame the problem is the cost benefit approach to the problem, which is consistent with what you were talking about pricing and carbon pricing. The difficulty here that we don't seem to come to grips with, but which I think is extremely important is that they produce typically very different answers. Let me give you an example. From last week, when ... I think it was last week. The Federal Energy Regulatory Commission announced their policy statement on carbon pricing in RTOs. You're familiar with that. They basically

said that they had a jurist ... This is mostly a jurisdictional comment. They didn't talk about the numbers, but what would be done. But they said they had jurisdiction over this matter and they could be collaborating with the states in the ways that you're talking about.

William Hogan:

Then in from the trade press last week, a quote, you would said, the FERC initiative produced a "Firestorm" of reaction from environmentalists. "Instead of trying to find new ways to put the right price on pollution, we need to get off fossil fuels altogether." Come from Mitch Jones, Policy Director for the Food and Water Action. This is the tension that worries me, a sensible social cost of carbon of the type that you talked about, may or may not produce elimination of fossil fuels.

William Hogan:

I don't know because the technology change and all the other things that are going to happen. But if it turns out it doesn't, and we have agreed upon essential social cost of carbon, that would be okay with me because we would be balancing the cost and benefits of the merchant. Setting the target in quantitative terms that essentially goes to zero is inconsistent with the arguments typically about carbon pricing and the social cost of carbon. That seems to me a very fundamental attention. How much is enough?

Cheryl LaFleur:

Well, thank you for those comments, and that tough question. I think, although I don't consider myself an economic expert on all the different ways to value carbon in making ... or value greenhouse gases, including methane and carbon and others, and making decisions. That's why I tend to favor a cap and trade with allowances, because you can set the quantity and then use that quantity in some carbon market to bring ... ratchet it down over time, the way we did with SO_x and NO_x and other externalities that were priced in through allowances in EPA regulation, as opposed to a carbon tax, which might actually be quite fair. But then you get to fighting about what you're going to do with the money and all. I think net carbon pricing, where you make them by the allowances, but refunded to the customers ... I understand what net carbon pricing is. You would somehow put in greenhouse gas value in market pricing.

Cheryl LaFleur:

But rather than actually collecting more, you would use it just as an adder and for the fossil units that had to have that added to their cost and therefore change their dispatch and their ... how much they ran, you would refund that to the customers because it would just be a plug. But for the clean units whose price went up because they were getting the plug price, they would keep the money which is of course the whole idea, to get more money in those hands to push their technologies.

Cheryl LaFleur:

But I tend to favor some quantification or cap and trade. Because if what ... I mean, we all use fossil fuels unless you don't have a car and don't heat your home. If the idea is to get the most progress we can, then some valuation of the greenhouse gases is going to force ... the dirty is fossil plants would close before the cleanest fossil plants, or the ones with the best heat rate and the ... it would force other things like transportation all to get in the direction that was going to reduce greenhouse gases the most. That's what markets do. That's we're beautifully, for other externalities like sulfur dioxide and nitrogen

oxide. I know they're less complicated because they were mostly in one sector rather than across the economy.

Cheryl LaFleur:

I think in terms of FERC, I applauded they're having the tech conference out of which the policy statement grew. There was a lot of controversy in the Twitterverse where Ari Peskoe and all his friends live that of whether they had the right people at the conference, and they didn't have anyone at the tech conference. They could have easily made it a couple days that oppose carbon pricing and favored more of a command and control approach to climate response. I think that led to a little bit of an echo chamber where everyone at the conference agreed with each other, but there's this whole other people ... set of people in the environmental community that want a different way.

Cheryl LaFleur:

Then they put out the policy statement right of way. It seems to had the ironic impact of making carbon pricing look like some Republican generator thing when it really, in my mind, is not. I think that's just a little bit of a political firestorm. But I favor something that values the greenhouse gases in some way through a cap or trade or through a plug in the market, because I think it's going to get us there the most cost effective way. If we just do a lot of command and control and say, "We're going to do this, we're going to do that," and then I fear that we could have a snap back, like we did with the nuclear overruns in the '70s and the '80s where people say, "Oh, my God that's costing too much. Why don't we keep the gas plants around longer than we need to, because we don't like the command and control decisions that our government is made." I'm more in the quantity camp.

Joseph Aldy:

Bill, I'll come back to you in a moment. We have a few questions from some of our colleagues that I want to get to and part of this gets to this issue of the veto points, Cheryl, that you referenced in your remarks. I'm going to read two questions here, because I think they get at this key issue in the context of the veto points when it comes to say, expanding our transmission system. One is from an attendee of Quebec, who notes that they're having a difficult time building lines to send their carbon free hydro power to neighboring US states. People want carbon free electricity, but not the lines, how can this issue be managed?

Joseph Aldy:

Then related to that is a question from our colleague in the economics department, Jim Stock. But thanks you for a great presentation, notes that you mentioned the challenge of transmission construction. He asked us, FERC need new authorities for citing, such as eminent domain, or perhaps something else would allow it to push transmission projects forward. Is it enough to restrict new transmission to existing right away corridors as in the recent FERC transmission report? Welcome and encourage your thoughts on how do we address the multitude of veto points that tends to slow down the citing and construction of new long distance transmission?

Cheryl LaFleur:

Well, I'll take the first question first. I'm quite familiar with that situation, because I'm not only virtually in Massachusetts. I'm actually in Massachusetts as well. Massachusetts has been trying to buy hydro power from ... or expand its purchases of hydrocarbon from Quebec. I mean, we built some of those lines back in the '90s that are there now. But they don't, as everyone knows, border Quebec. First, they

tried to go through New Hampshire, and the state blocked them. Now they've been in quite a little difficulty trying to go through Maine where there was going to be a referendum on the budget to block the project. Then I believe the Maine Attorney General, or the court said, it wasn't an appropriate referendum. They're still working on that project.

Cheryl LaFleur:

I think it's easier to say than to accomplish. But to the extent that I think Hydro-Quebec is just an example. We saw many of the same problems with a clean line projects that were intended to take Midwest wind to from the states with the most wind to the population centers, a couple states further east. Anytime you have to cross the state with a line when the population center you're serving is not in that state that can be politically difficult. I think part of the solution is if the states align. In a perfect world, if there were several states that all wanted carbon free electricity, and they use some valuation to figure out where they could get it cheaper, they'd say, "Hey, guess what, building a line from Quebec is cheaper than X other things. We'll build that line together." The people who are going to use the power will pay for it, but we'll have to cross places. The same with getting wind from the Midwest.

Cheryl LaFleur:

But in reality, it's often a feature that you have to make sure you share some of the benefits of the project with either share some of the direct benefits of the project with the state you're crossing, which is what Hydro-Quebec has tried to do with Maine now. Have it in a portfolio project like the Midcontinent ISO did with the MVP projects where, "Okay, that one is from Massachusetts, but here in this other project is for Vermont," or whatever, a portfolio where there's something for everything, is something for everyone. Because if people don't see the benefits, they're going to be even more opposed, and people are pretty opposed to transmission lines anyway.

Cheryl LaFleur:

As far as transmission construction, I've testified several times with zero impact, as far as I can tell, that one of the most important things congress could do would be to reinvigorate the backstop transmission citing in Section 216 of the Federal Power Act, which was intended not to give for complete authority as it has over citing of, for example, gas pipelines, but to be able to designate ... in that case, it was corridors with a lot of congestion. It might be if they were to update the law would be corridors that were important for climate mitigation, as well as congestion. Although eventually if you build a wind farms without transmission, you're going to get congestion. But I mean, it would be better to tie it directly to some goal.

Cheryl LaFleur:

It foundered in a couple of the circuit courts. One, there was a dispute about when the state said no and what counted and another one about how you set the corridors. Just that one action could help a lot. I always thought there'd be some sort of ... if I'm using the word correct, hortatory effect, we're just knowing FERC was there and everyone's terrified of them making a decision would force the states to maybe agree among themselves. I think that would be a step, less than giving FERC complete eminent domain authority as they have pipelines or not. But that would help a lot.

Joseph Aldy:

Does the congestion authority ... Does it actually work in addressing congestion? I mean, my sense is there's periodic studies that are undertaken, has it actually led to building more transmission lines?

Cheryl LaFleur:

I think there might have been one line. But DOE suppose to do a study and look at corridors? Then that's what the Ninth Circuit, if I remember, a case was about that they said, "Oh, no, you have to change the way you look at corridors," and they made it much, much harder for DOE to do that work. The statute needs a relook. Although I actually have a paper in my briefcase to peer review that about a way to do backstop transmission citing under the existing law. I look forward to reading that. Maybe that'll come out. But I think a tweak of the law would be very valuable.

Joseph Aldy:

Okay. A question from another one of our attendees, is your thoughts on the role that nuclear energy should and will play in the coming decades in the United States?

Cheryl LaFleur:

Well, there's no question that nuclear energy is carbon free and produces electricity. I mean, that's been pretty solidly established in the United States and in other parts of the world. I think that if you price to carbon in ... or greenhouse gases, whether in an allowance system or some kind of a plug in the market, according to the studies I've seen, one of the first things that the market structure was select is retention of existing nuclear as long as it can be safely used, because that's already built.

Cheryl LaFleur:

Building new nuclear is much, much harder. If you think it's hard to cite transmission lines, try building a nuclear plant. I know there's a lot of effort. I was on a panel with Kristine Svinicki, their chairman of the NRC a few weeks ago. I know there's a lot of effort going into the expedited licensing process for small modular reactors. I'm somewhat skeptical that we'll get the political support in many regions of the United States. Of course, the waste issue is unsolved. But I would think retaining the existing food ... where it can be safely retained would be an important strategy. We're seeing small modular go up in other parts of the world that have easier citing regimes, like China. I'm not even sure you'd call it a citing regime. I believe they're building some. That maybe we'll have demonstration models we can look at.

Joseph Aldy:

It seems like in the case of energy infrastructure, whether we're talking about transmission, or building new generating facilities, there are a number of laws. As you noted, your marks, their federal, their state, their local, that all have important implications for how quickly we can move in the investment in some of this infrastructure. I think it does raise some important questions about how we think we're balancing the trade offs, when we think about the entirety in the overlay of all these different kinds of laws and regulations that influences decisions.

Cheryl LaFleur:

I mean, don't add me. As I say, on Twitter, don't add me. But if climate change is existential, that you hear the environmental community say climate change is existential. But then when you're trying to locate something, it's a specific species or a specific impact on a specific fish, which, again, I'm not saying the fish aren't important and all, but it's like existential until you try to do something. Then it's like, "Well, why don't we just fight climate change another way, I don't like this facility." That's the difference between the macro support and the micro support.

Joseph Aldy:

Our colleague, Matt Bond, who's done a good bit of work thinking about nuclear in the past, ask a question for you about where we are with respect to an effort that began early in the Trump administration. As you recall, the Secretary of Energy, Matt uses the term ordered. Using an authority which I will admit, as someone who used to work in the government did not know existed till the Secretary of Energy ordered forth to do this, to put it in a rule that would subsidize all of the country's coal and nuclear plants on the basis of ensuring resilience.

Joseph Aldy:

Now, in the end, FERC declined to do this, because you've been order FERC to consider it, but not to actually do it, I think is technically how it plays out. FERC declined to do it. They launched a study of resilience. Matt's question is what's the status of this and how might it relate to how we think about climate change? The potential risk climate change may pose the resilience of some of our energy generating assets ... our generating assets.

Cheryl LaFleur:

Well, I remember that extremely well. It's a provision, I believe, in the Federal Power Act, or it might have been in the DOE organization act from 1978. But it is a provision in the law that the Secretary of Energy has various moves he or she can make to get things done at FERC. They can suggest something as Secretary Moniz did when he suggested FERC do something about methane leaks in pipelines. I think I was chairman, we put out a policy statement on rate trackers for methane leak reduction and cited in the first footnote, Secretary Morris asked us to do this. There's a much more muscular way which the DOE can issue a notice of proposed regulation that FERC has to consider. But it's still proposed. That's what Secretary Perry did. It had only been done I think with gas in the 1980s. I remember the history.

Cheryl LaFleur:

It was requiring an adder in the competitive markets for facilities that had 90 days of fuel on hand, which would have included many coal plants, or at least they could decide they're going to have 90 days now, and nuclear, which generally does have 90 days of fuel on hand. We felt as a group, and it was a bipartisan vote under our late Chairman Kevin McIntyre that they hadn't made out the basis that those specific facilities were essential to protecting the resilience of the grid. We rejected it. Because of the people who had wanted to do it, we send it to further study, kind of like, "Oh, we'll send this to a study committee." I don't know if we're ever going to see anything come out of that resilience process. I don't know. Of course, I've been gone from FERC a year, but nothing had come out while I was there. Maybe it will.

Cheryl LaFleur:

But I think the resilience issue is not dead. We're seeing NERC, the North American Electric Reliability Corporation, and certainly the markets who look at ... and minus one, and what they actually look at that. It's the issues there. I don't know whether that document will yield for ... I don't know.

Joseph Aldy:

Okay. Since you mentioned our friend, Ari Peskoe who twitted on Twitter, Ari has a question for you. What's the path forward for achieving New England's state's clean energy goals through a regional framework?

Cheryl LaFleur:

That's not a hard question. Ari, I was just praising you before by saying I don't bother to listen to FERC meetings anymore. I just watch your Twitter, it's more efficient. Well, that's something that's obviously ongoing right now, as the New England got ... well, first of all, New England already operates in original framework. If you look at the way New England keeps the rights on right now, the lines that came down from Quebec, even before the creation of ISO New England were regionally funded, the nuclear plants in New England were all regionally funded. The transmission that was built in the early part of this century to reduce all the congestion in our Mars was originally funded.

Cheryl LaFleur:

New England has a long history of operating as a region. I think that ISO New England has certainly taken on board that it's part of its responsibility to adapt its processes and markets to the region's clean energy goals. But as for the specifics of how that will happen, that's very much a work in progress right now, between the states, the ISO, the stakeholders. But it's interesting when I go to other regions of the country. They look at New England like they're all exactly alike, all these blue states on the map, what could possibly be controversial among those states, when you look at other regions. But in fact, there's quite a lot to work through about the different interests of the states. But regionally is the way to get it done.

Joseph Aldy:

Now, we have up here in New England, these efforts to try to reduce the carbon intensity of our grid that's through both the state renewable portfolio standards through the Regional Greenhouse Gas Initiative. We now have as well a regional compact trying to address carbon emissions in transport. Given the potential for a future in which we actually increase electricity generation, as we electrify transport and meet the energy demand in a sector that historically had not been addressed by generation of power. How does that inform how you think about in your new hat at ISO New England, how do you think about longer term planning for a world which is fairly uncertain, but could have a big increase in demand because of transport?

Cheryl LaFleur:

Well, I think someone used the word resilience earlier and I've used balancing resources which is another word in that family. I think it changes how you think about the consequences of outages if we're dependent on the grid, not just for all the things that use electricity, which is a pretty large component of what society does. But even more things, and we've all read studies, I think, I read that load could go up 70% to 90% if you take on all these new end uses. It means that if the grid does not work as intended, whether because of cybersecurity, or running out of resources, or anything else, you have an even bigger consequence, because you're resting on it even more.

Cheryl LaFleur:

I think it ups the ante for making sure that we have the resources in place. We've thought collectively about what the best way is to make this transition while sustaining reliability and even enhancing reliability. I think micro-grids and home batteries might be a part of the long-term solution. But I think you're also going to need a strong grid. In the actual talking about it, nobody wants to take a chance on electric reliability, especially when we might be relying on our grid for even more. I think it's definitely something to think about. I mean, ISO New England ... I don't know how to say this. When I hear in electric company say, "Oh, you're going to have all these electric cars and all," I see like dollar signs in their head, like, "Oh, yeah, of course, you like electric cars." But ISO New England doesn't make money.

It's just trying to respond to the needs of the region. I don't know how much load will grow. But if load grows, we have to have the grid and the resources to support that load.

Joseph Aldy:

We've spent a lot of time in our conversation here today focusing on the power sector, our colleague, Ashley Brown, inquires about how we should think about ensuring that climate policy takes a balanced approach in regard to all sources of carbon emissions. With the current focus, not just in our conversation, but certainly when we look at policy at the state level, and even some of what has been in the past proposed by EPA, focusing on the power sectors, how should we make sure that we also are adequately addressing sources of emission in transportation, land use, agriculture, forests, et cetera? How would you think about this as part of the discussion about the future decarbonization of the economy?

Cheryl LaFleur:

Well, if I were the policy queen of the world, which I most assuredly I'm not, we would have some kind of a multi-sector goal, where if the cheapest way to get our next production was to close a methane leak and a gas pipeline, you do that next, or if it was to keep a nuclear plant alive, you do that next, or if it was to move the UPS fleet to electricity, you do that next, I think that would be probably even harder to ... I mean, not just probably. I believe it would be harder to achieve than a climate goal for the electric sector. I'm not counting on that to get us there.

Cheryl LaFleur:

I think we're going to see policy be made in an ... Unfortunately, this is another form of disaggregation, that people who make electric policy hopefully they at least talk to the people who make pipeline policy and all that, those are cousins, or closer than cousins. But the people who make transportation policy and then something I don't know that much about but everyone's read about agriculture impact and how you reduce methane and so forth, are probably going to be done in somewhat different silos. But hopefully, the appropriators, if they're done through some pricing, awesome. If they're done through command and control, hopefully, the appropriators are keeping an eye on it, and not just spending money on super expensive, sexy things when they could be spending money on less sexy things that get more carbon reduction. But I see it coming about more separate than together.

Joseph Aldy:

You've emphasized the importance of carbon pricing. You've talked about how you think an approach that say could build on a cap and trade framework that would be economy-wide would be a preferred legislative next step, as we try to deal with climate change. But to this point on, the disaggregation, the action and multiple levels of government, our colleague, Rob Stowe asked about the carbon adder that the New York ISO has been thinking about and working on and wondering about your thoughts about how to think about these state level policies that explicitly price carbon, how they might interact with how a federal policy should work, should all add in, should the federal government preempt some of these state efforts, or should we think about them all trying to work in tandem if the state society wouldn't continue to say in the context of New York with their price adder in our power system?

Cheryl LaFleur:

Well, as I said, I think the best would be some kind of national pricing that then would all the markets would align. But I think if we don't have national pricing, the ideal structure would be looking within the

scope of the regional markets. You could have ... I mean, my understanding is, say you had PJM, and they had some states in it ... Well, right now PJM has some states in RGGI and some state's not in RGGI. RGGI has worked beautifully. It's state control. The only problem with RGGI is that they price carbon at five bucks or something and the effective price of carbon in the other things the governors and the RGGI states are doing as much, much higher than that.

Cheryl LaFleur:

RGGI would be a wonderful tool if states decided to use it more robustly. But the states that have RGGI, PJM add that adder to the prices that resources in those states better the LSCs, whatever, and they don't add it to the other states. States can have different goals. They just have to be worked through in the markets. New York is, of course, its own regional market. My understanding is that it's really been the reluctance of the state government to pull the trigger on allowing the New York ISO to price carbon. I don't think it's a state federal issue. I know Governor Cuomo has had a few other things to think about recently. But that's a state where they have just as California has CARB, which is also like RGGI prices at rather low, but it's in one state, the California is almost. They just serves that state. They have a teeny bit in Nevada. They just put it through.

Cheryl LaFleur:

I think just as RGGI works, if states collectively, and ideally in regional bloc's decided to price carbon that could work. Well, national is better, but we can't make perfection be the enemy of the good here.

Joseph Aldy:

Right? You mentioned the importance of a number of different renewable power resources. Of course, there's different kinds of policy tools that could address these resources. We've had tax credits of one form or another supporting, say, wind and solar and geothermal for quite some time. I will acknowledge as a parenthetical in the middle of someone else's question. I don't think that PTC has been the right price for wind consistently since 1992. Simply because at some point, the price was probably too high, and other times the price is probably too low. But just the nature of the way congress works in writing the tax code, they set something in the 1992 Energy Policy Act, and every time they extend it, with only a couple of modifications in recent years, they just continue it at the same price.

Joseph Aldy:

But the question that comes to what do you think might be an area where we have the most underdeveloped, at least in terms of their potential commercial application of renewable resources, where if we made an investment, whether it's a new deployment policies, maybe it's a new R&D policies, where we might get the biggest potential impact for the power system?

Cheryl LaFleur:

Well, that's a great ... I mean, they're really almost all underdeveloped. I mean, you see a lot of wind in Texas, and the Mid-South. But there's vast resources that could be developed in other parts of the country. Although California has so much solar, it has to turn it off. There's many other regions of the country that have barely scratched the surface. I think hydro, I mean, it's well known that there's thousands of locations that could be electrified, but that's difficult to license.

Cheryl LaFleur:

I'm a terrible technologist, because ... but I would say right now, wind and solar look like the most promising with some battery or other pump storage or flywheels storage. But who knows what will turn out to be better as technology develops. As far as the tax credits, I probably don't have a competent basis for opinion on whether they're too high or too low or should be adjusted. But the system of letting them lapse every three years and then fighting about them until December 31 or January 15th, and then backdating them is stupid. FERC has all kinds of cases like, "Oh no, my interconnection queue, my thing is lapsing." They fight about all that and that's just stupid. They should just set them at whatever they think is fair. They could maybe adjust but not setting them and then letting them lapse and then fighting about it again and resetting them. That's a waste of ... The lobbyists make money. But other than that, it's a waste of societal resources.

Joseph Aldy:

Now, as the former Chair of the Federal Energy Regulatory Commission, you get to make decisions that then various stakeholders can challenge by taking you to the courts. Those decisions by the regulatory agencies are subject to judicial review. You mentioned in your remarks how ... if there is a change in administrations, we'll see new political leadership at a number of regulatory agencies where they could take actions to use their existing statutory authorities to advance regulations on climate change. But as someone who's had to seek courts review your work, does the evolution of the courts, when we look at the people who've been named to federal bench over the past four years, give you pause about how aggressive one can be and using existing statutory authorities to advance climate change goals?

Cheryl LaFleur:

Cool. Oh, that's a great question, because I think we've had a bit of the situation that because the agencies including the EPA, trying to use the Clean Air Act to regulate carbon and so forth, it's given the agencies a lot more power in the courts, a lot more power than if we had clearer statement of congressional intent. I think, speaking to personally, they're very lucky because I believe more than half the cases, if I'm correct, go to the DC circuit, which knows FERC well, and has generally done quite well on complicated cases. But the cases by far that are the ... I mean, I can think of cases that were affirmed on appeal. But then were a dead letter in implementation and others that were pushed down in appeal, and then of settlement was forced. There's no one way to get there.

Cheryl LaFleur:

I mean, the PGM cost allocation case was pushed down twice by the Seventh Circuit. All of the stakeholders agreed on something that was affirmed. But I think that the ... in summary, the things I've seen happen at FERC, that have bipartisan support, and are a little more incremental, and more squarely within FERC's authority have a far cleaner path at the courts.

Joseph Aldy:

Great. It is unfortunately 1:00 because I would like this conversation to continue.

Cheryl LaFleur:

Oh God.

Joseph Aldy:

But before we wrap up, two final comments. First, let me remind all of our attendees that we'll meet again next week, Thursday, October 29th, at 12:00 p.m., Eastern Time, for a presentation on Current

Priorities and Consumer Financial Protection by Kathy Kraninger, the Director of the Consumer Financial Protection Bureau. Then finally, please join me in thanking Cheryl LaFleur for her fantastic presentation discussion today. Thank you, Cheryl. It's great to see you.

Cheryl LaFleur:

Thank you so much.

Joseph Aldy:

Great. Let me also say thanks to all of our attendees for joining us. I hope you have an enjoyable afternoon. Take care.

Cheryl LaFleur:

Thank you.