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OVERSIGHT OF THE FEDERAL ENERGY REGULATORY COMMISSION

HEARING

BEFORE THE

COMMITTEE ON ENERGY AND NATURAL RESOURCES UNITED STATES SENATE

ONE HUNDRED FIFTEENTH CONGRESS

SECOND SESSION

JUNE 12, 2018

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OVERSIGHT OF THE FEDERAL ENERGY REGULATORY COMMISSION

TUESDAY, JUNE 12, 2018

U.S. SENATE,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The Committee met, pursuant to notice, at 10:06 a.m. in Room SD–366, Dirksen Senate Office Building, Hon. Lisa Murkowski, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. LISA MURKOWSKI, U.S. SENATOR FROM ALASKA

The CHAIRMAN. Good morning, everyone. The Committee will come to order as we meet to conduct oversight of the Federal Energy Regulatory Commission, the FERC.

I welcome each of you this morning. I just noted that it is exceptionally good to see five witnesses at the table. For a while, for too long, the FERC was down in numbers. Commissioner LaFleur, you certainly knew that full-well, but again, thank you all for joining us this morning.

In the late 1970s, this Committee was re-constituted with a renewed focus on energy. Shortly thereafter, Congress established the Department of Energy and transformed the old Federal Power Commission into what we now call the FERC.

Our predecessors invested our Committee with jurisdiction over national energy policy, including both the Department of Energy and FERC. This complemented our historic role as the stewards of the laws that govern our nation's lands and the Department of the Interior.

At the time, there was a strong preference for a "wide area" view of the energy and resources landscape and a balanced approach to energy law and regulation. I think that remains a good idea today. After all, energy affects the life of every American. Our security, wealth, and capacity for innovation all depend on affordable and reliable energy, and our laws and regulations bear directly on the ability of the energy sector to serve our nation.

During my tenure here, we have had more than a few hearings where we have heard from FERC's Chairman or one of its members, but it has been about a decade now that we have convened a formal oversight hearing with all five Commissioners testifying. So this is somewhat significant this morning. It is perhaps not as significant as the Caps parade going down the street right now, but I think it is significant nonetheless.

[Laughter.]

With a quorum restored last year, four new Commissioners serving, and a host of consequential issues in the news, this is a good moment to review where FERC is headed. We are fortunate to have the Chairman and all of the Commissioners here to take part in the discussion. Because the five of you are so well-known to us here on the Committee, I will simply welcome you and thank you all for being here.

Your testimony touches on several critical issues that are of particular interest.

First, if we are going to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. This resource serves a variety of increasingly critical needs ranging from keeping us warm, to enabling our manufacturing renaissance, and, increasingly, to fueling the electric grid. LNG exports from states like mine, Alaska, represent a significant economic opportunity for many states, scores of communities, and looking abroad, America's friends and allies.

Second is whether, and if so how and when, the Commission will act decisively to address fast-moving changes in the mix of generating plants on the bulk power system. Now I have my concerns with the steps that the Department of Energy is reported to be considering, but I also recognize that they are trying to fill a perceived vacuum. In my view, FERC should be pointing the way on policy improvements that address grid vulnerabilities, while reaffirming our commitment to competition in wholesale power markets. And frankly, as one who has been concerned about this issue for years now, I find it unfortunate that prior Commissions did not lead more effectively.

We must increase the light and lower the heat in policy debates about price formation, state resource preferences, and subsidies. Is it possible for market participants and regulators to step back and determine whether transparent, workable adjustments can be made to the thousands of pages of tariffs that administer the market mechanisms that have, in the main, proven themselves effective over the last 20 years or so? Equally important, can the Commission take steps soon enough to make any necessary adjustments or, alternatively, to pronounce definitively that adjustments are not needed? Again, as both individuals and as a Commission, it is critical for you all to engage.

Third is whether there are modifications to regulations or, if necessary, laws that govern FERC jurisdictional hydroelectric facilities or qualifying facilities under PURPA that could be or should be aligned more closely with today's energy realities.

And then fourth on my list, but certainly not least among my concerns, are the security issues, which are very, very important—that includes cybersecurity, clearly a top priority for us all given the attacks and breaches that we are seeing. It also includes the FERC policies that bear on the physical security of energy facilities, such as the Commission's requirements related to critical energy infrastructure information.

So Mr. Chairman, Commissioners, thank you again for being here with us this morning. Thank you for the work that you do. As we review FERC's regulatory program before the Committee

and how it is working, again, we appreciate your contributions at so many different levels. We have a number of substantive issues to discuss this morning, and I look forward to the conversation.

With that, I now turn to Senator Cantwell.

STATEMENT OF HON. MARIA CANTWELL, U.S. SENATOR FROM WASHINGTON

Senator CANTWELL. Thank you.

Thank you, Madam Chair. Thank you for scheduling this important hearing.

I, too, want to welcome all the FERC Commissioners here. It is good to see a full and functioning FERC. Your responsibilities in overseeing and implementing the Federal Power Act, particularly as it relates to just and reasonable power rates, is something the Pacific Northwest holds very dear.

I know the past six months have been a very busy time for the Commission. The new energy sector that is cleaner, more affordable, and more sophisticated comes with many policy changes. I want to applaud the Commissioners for several important unanimous decisions this year.

In my view, you started things off right by rejecting Secretary Perry's radical proposal to force consumers to bail out uncompetitive coal, and I hope that we can return to that topic in a minute. I really do believe, not only is the underlying policy wrong, but it is a threat on your independence and oversight to be directed this way.

In Order 841 you directed market operators to remove barriers to energy storage, including lithium batteries and pumped hydro in wholesale markets. This was a long-overdue and good step.

Order 843 established a cybersecurity standard for supply chain controls. Cybersecurity will be a never-ending challenge for us, but I strongly urge you to keep building on the progress that you have already made.

I also want to highlight a couple of concerns about the policy issues you were considering.

The State of Washington has never had something like a "minimum offer price rule." After the Commission's recent split decision affecting New England, I am sure glad we do not.

For the sake of consumers across the nation, I hope that the Commission does not double down on Paragraph 22 of your March order. This topic echoes the decisive "standard market design" debate that many of us still remember. The Federal Power Act does not direct the Commission to protect so-called "investor confidence" by undermining legitimate state programs.

I am also concerned about the Commission's recent split decision to analyze fewer climate impacts of natural gas. I am struggling to understand how this squares with the D.C. Circuit Court decision to conduct more climate analysis. The Commission may be creating more uncertainty for the public and industry by not performing the hard look at projects impacted by the National Environmental Policy Act.

Finally, Chairman McIntyre, I know you have announced a potential rewrite of PURPA regulations. I want to point out that Congress has not amended this statute since 2005, and that is no acci-

dent. Before moving forward, I urge you to release a thorough, comprehensive review of each state's implementation of PURPA. This would include issues with contract terms and slow interconnections.

I do want to address what I consider the big elephant in the room. I know people have probably seen various articles that have been written about this. I think, Mr. Chatterjee, you are featured in one with a very prominent picture, but so is Secretary Perry, and many others. I just want to say all of you are getting a lot of attention, and that is because the Commission work is so complex, but it should not really be about bailing out one sector.

There is no mystery behind the radical proposal of the Department of Energy memo before the National Security Council. It was found out that Murray Energy sent a letter to the Trump Administration with prewritten Executive Orders to bail out coal mines, eliminate worker safety, and allow more pollution. He called for an emergency DOE order to keep the plants with fuel onsite open for two years, and that is exactly what DOE is proposing. Well, I know that the President wants to deliver on this, but the grid operators say the emergency does not exist. The PJM said there is "no need for such a drastic action."

It does not matter that this plan would cost consumers billions. Last fall multiple independent estimates found that DOE's narrower proposal to FERC would cost consumers $10 billion a year. As I said, just and reasonable is such an important aspect of what you do in holding down energy costs to consumers. That is your job. That is your day job at the federal level. That is why we have a FERC so that as developments move forward on power, it is just and reasonable rates, unless somebody wants to go back to another day and era where we are doing even more to make sure that we are protecting consumers.

Assistant Secretary Bruce Walker admitted at a House hearing that DOE has conducted zero analysis of this emergency order which could cost consumers and taxpayers.

As I mentioned, one article that I will submit for the record called, "A look at some ominous goings-on in FERC," basically says that some are coming to the Federal Energy Regulatory Commission to guarantee profits for coal. Well, I guarantee you that is not the mission of the Federal Energy Regulatory Commission. So I will submit that for the record, Madam Chair.

The CHAIRMAN. Without objection, it will be included.

[The information referred to follows:]

Vox

Trump's crude bailout of dirty power plants failed, but a subtler bailout is underway

A look at some ominous goings-on in FERC.

By David Roberts | @drvox | david@vox.com | Mar 23, 2018, 9:30am EDT

Mark Wilson/Getty Images

Last year, the Trump administration attempted a **ham-handed bailout of the US coal industry**. In a nutshell, Rick Perry's Department of Energy told the Federal Energy Regulatory Commission (FERC) to guarantee the profits of coal plants.

FERC, to its eternal credit, responded: **No**. No, thank you. That is a very dumb idea, and we shan't be doing that.

It was a rare bright spot in this bleak last year, a blow struck for reasoned, empirically informed policy.

But there are no periods in politics, only commas, and there are still powerful forces pushing to keep dirty old fossil fuel power plants open as long as possible. If they succeed, if FERC accepts their arguments, it could mean higher costs to consumers, more pollution, and uneconomic power plants delaying the market entry of cleaner alternatives. The commission has already sent some unsettling signals, and several fateful rulings will be made over the next year.

In short, it still very much matters what FERC is up to. The problem is that Perry's absurd attempts to manipulate FERC were easy to explain. The decisions FERC is now facing are ... not. I will be frank with you, dear reader: They are hell on wheels to explain. There Will Be Acronyms (TWBA).

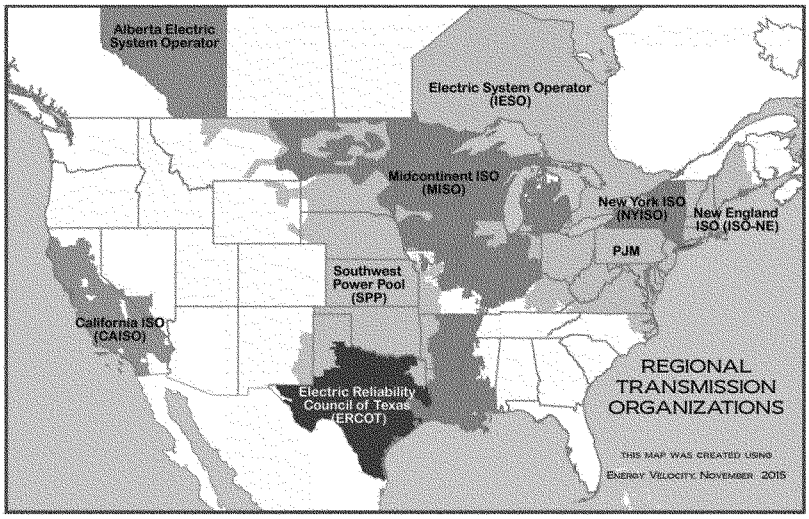
But we are going to do this, together, because the speed at which coal plants retire and renewables come online will determine America's ability to meet the greenhouse gas targets it pledged in the **Paris climate accord**, which someday may matter again.

A bit of background on how electricity markets work

In the 1990s and early 2000s, a wave of reform swept the US electricity sector. Before, power utilities were "vertically integrated monopolies," which meant they owned the entire electricity supply chain, from generator to customer. In "deregulated" areas — which now cover about 70 percent of US customers — the power generation part was split off and handed to competitive wholesale power markets.

Power utilities in deregulated areas still have a monopoly on the local distribution of electricity, but they procure their power from regional markets, in which generation companies (gencos) compete to provide the cheapest electricity.

Wholesale power markets are overseen by Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs). They monitor and enforce the rules.



FERC

While states have jurisdiction over all retail, distribution-level electricity and power plants themselves, the electricity involved in wholesale markets travels on high-capacity transmission lines across state borders, so it comes under federal, i.e., FERC, jurisdiction.

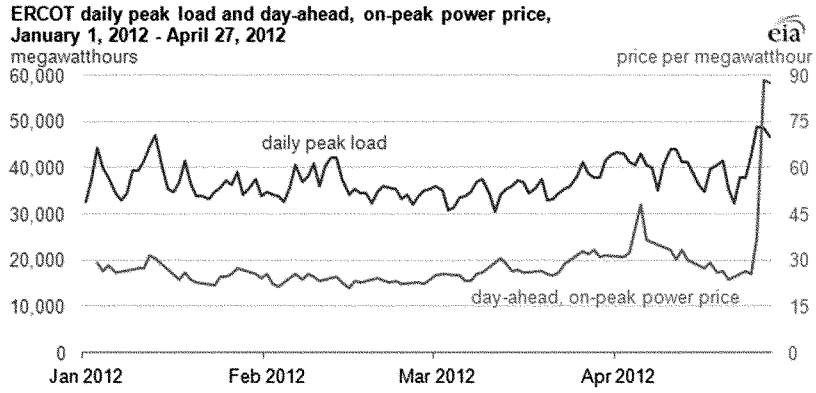
FERC's job is to ensure that ISO/RTOs are operating power markets in such a way as to produce reliable power at "just and reasonable" rates. Gencos, utilities, advocacy groups, and other interested parties can petition FERC to make a new rule or change an existing one. To do so, they have to show that existing rates are not "just and reasonable" and that new rules would be.

The other kind of wholesale energy market

One more important bit of background.

Some power markets, like the one overseen by the Electric Reliability Council of Texas (ERCOT), are pure energy markets, which is to say, there's only one market, and the only product traded on that market is electricity.

Pure energy markets make people in other regions nervous, for a variety of reasons. If power reserves run low, or there's an unexpected surge in demand, it is reflected immediately in prices, which can spike extremely high in some rare instances. Back in the heat wave of 2012, for one fateful hour, wholesale power prices in ERCOT reached a whopping $500 per megawatt-hour (compared to an average in the high 20s).



EIA

That's just markets doing what they are supposed to do — bringing supply and demand into balance — but it scares the pants off politicians and regulators. Price spikes are politically unpopular.

Plus, market operators worry that periodic price spikes will not send the economic signals necessary to induce investment in reserve margins. Without sufficient investment, the buffers of capacity that ensure reliability will grow thin; disaster might strike.

(You'll notice a recurring theme here: When it comes to something as essential to life as electricity, leaders say they want to harness the power of markets, but many of them don't entirely *trust* markets. For the record, ERCOT — which, operating within a single state, is not under FERC jurisdiction — arguably has the best-run energy market in the country, but it is, in fact, **staring down a summer** with projected record-high demand and unusually tight margins. It will be an important test for the energy-only model.)

Thanks to these fears, alongside their power markets, several big ISO/RTOs — ISO-New England, New York ISO, and the PJM Interconnection — also operate capacity markets.

Like power markets, capacity markets are run via competitive auctions, with power plants bidding in and the lowest bid needed to meet demand setting the "clearing price" for all participants. But in a capacity market, what's being offered is not electricity but *availability*. A power plant is pledging to serve as backup capacity, to be available during a specified period of time should it prove necessary. (The Midwest ISO operates a voluntary capacity market.)

Do capacity markets, in fact, bolster reliability, which is their whole reason for existing? According to a **report** from the US Government Accountability Office (GAO) report last year, we don't know. FERC does not have enough, or consistent enough, data to make that determination. So, that's comforting.

What capacity markets have been is a magnet for tinkering by regulators and other interested parties.

Capacity market shenanigans are afoot

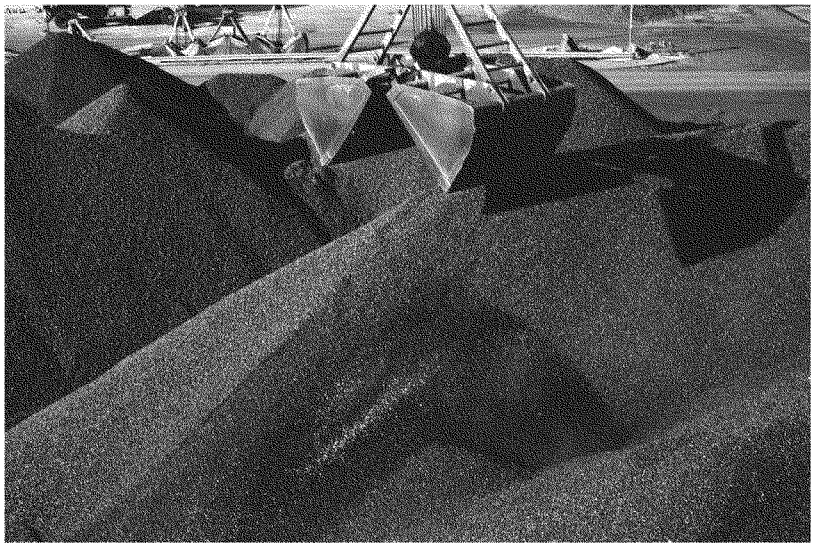
Capacity markets are problematic, for a whole variety of reasons that will have to wait for their own post. What's important to know now is that lots of dirty, old fossil fuel plants are operating in deregulated markets, and they are struggling. Many are staying

alive only via capacity markets. And they would very much like to continue staying alive, which requires that prices on capacity markets remain high.

The low price of new, more efficient natural gas plants, along with **stagnant demand** and the headlong growth of renewable energy, has pushed prices down in both energy and capacity markets. What's more, FERC has recently ruled that **energy storage** and **demand response** (shifting demand around) must be allowed to participate in wholesale markets. Both those resources are getting cheaper every day and can be expected to further suppress prices.

In most markets, when competition from new entrants drives down prices, it's considered good news. When it happens in capacity markets, it causes all sorts of people to panic.

Gencos have seized on low prices to make the following argument: State-level policies that support renewable energy (or, in the case of **New York**, nuclear energy) artificially lower the prices of those resources, thus giving them an unfair advantage and distorting wholesale markets. Because prices of renewable energy have been artificially suppressed, capacity markets won't receive the right economic signals and won't produce enough capacity to maintain reliability.



Sweet, sweet resilience. | Shutterstock

There is, as yet, **not much evidence to support this argument**. All the ISOs and RTOs are currently meeting or exceeding their target reserve margins. There is **no reliability crisis**; there's not even a discernible reliability problem. Renewable energy is growing, and everything is working fine, at least for now.

But some market operators have become convinced that tightening reserve margins mean a future of insufficient capacity. They want capacity market prices back up, to induce more investment.

It is true that state energy policies are getting more ambitious and complex, capacity markets have been **overlain with rule upon rule** to accommodate them, and the whole interaction of federal and state energy jurisdiction around power markets probably needs a rethink. FERC had a **technical conference** on the subject in May 2017. Many of the market tweaks being implemented or pondered are ... not good.

Meet the MOPR, a way to boost "investor confidence" — and prices

So ISO/RTOs want to boost capacity prices. And they've found a strategy, which has already been implemented in a few places and now threatens to expand. I'm sorry to report that it involves more acronyms.

So, think back to capacity markets. Some of the participants are "utility holding companies," which own both distribution utilities and power plants. In other words, they are, through separate affiliates, both providers and purchasers of capacity.

There has always been a worry that they will offer artificially low capacity bids to suppress prices, knowing that they will make it back by buying cheap capacity. To prevent this kind of market manipulation, FERC came up with the "minimum offer price rule" (MOPR), which stipulates that suppliers of capacity that are also buyers of capacity must meet certain minimum price bids, meant to reflect their true operating costs.

So that's the MOPR. Now here's the crucial pivot.

"MOPR, sure, I guess!" | Alex Wong/Getty Images

ISO/RTOs are increasingly using MOPRs on renewable energy (and demand response) participation in capacity markets — requiring minimum bids from those resources, often high enough to price them out of capacity markets. They justify this by effectively defining state renewable energy policies as market manipulation, an artificial suppression of prices.

A MOPR on renewables, by this way of looking at things, restores accurate price signals to capacity markets, ensuring that they properly vouchsafe reliability. It also, coincidentally, ensures higher capacity market prices and serves as a lifeline to old fossil fuel plants.

ISO-NE uses a MOPR like this, though it has long had a 200 MW-per-year exemption for renewable energy. Gencos petitioned FERC to kill the exemption, but FERC **upheld it in April**. (NYISO's 1,000 MW renewables exemption from its MOPR is also being **challenged** before FERC, which has not yet ruled.)

But ISO-NE also submitted another proposal, which would involve killing the exemption altogether. That's what FERC **ruled on last Friday**. Within that ruling were some troubling signals.

FERC's unsettling paragraph 22

The New England ISO faces unique problems — the region is unusually dependent on natural gas, for both electricity and heat. It had particular worries about capacity and wanted to implement something called the Competitive Auctions with Sponsored Policy Resources (CASPR), which would split its capacity market into two phases, replacing the old market and the renewables exemption with it.

Reader, we have our sanity to think about, so I'm not going to get into the complexities of the CASPR. Suffice to say, four of five commissioners approved of it on the merits and the dissenter, Robert Powelson, thought it didn't go far enough. (Powelson thinks state energy policy and competitive wholesale markets are wholly incompatible; if states want to craft their own generation mix, he **wrote in dissent**, they should "also assume the responsibility for resource adequacy and reliability.")

But the commission was *not* similarly united behind one particular part of the ruling — namely, paragraph 22. It says: "Absent a showing that a different method would appropriately address particular state policies, we intend to use the MOPR to address the impacts of state policies on the wholesale capacity markets."

Whaaat now? That is an outright endorsement of the expanding use of MOPRs to counteract the price effects of state renewable-energy policies. It seems to suggest that FERC will be accepting, even pushing, ISO/RTOs to use MOPRs more liberally.

"Yeah, MOPR!" —Neil Chatterjee | FERC

Two commissioners were behind that sentiment, both Trump appointees: Neil Chatterjee and new chair Kevin McIntyre. One Obama-appointed commissioner, Cheryl LaFleur, and another Trump appointee, Richard Glick, made a point of writing in their concurrences that while they approve of the CASPR, they do *not* endorse using MOPRs in this broad fashion.

In fact, as Glick pointed out in his (unusually lucid and forceful) **statement**, given his and LaFleur's dissent on this point, the rationale for broad use of MOPRs "is not adopted by a majority of the Commissioners that support the order."

So, now that we've finally reached the meat of the matter, let's look briefly at why profligate use of MOPRs is such a bad idea.

Using MOPRs to prop up baseload plants makes no dang sense

Using MOPRs to "address the impacts of state policies on the wholesale capacity markets" is, in Glick's immortal words, "ill-conceived, misguided, and a serious threat to consumers, the environment and, in fact, the long-term viability of the Commission's capacity market construct." Here are a few reasons why.

1) It's not FERC's business to mess with state policies.

The Federal Power Act (FPA) clearly leaves responsibility for the electricity generation mix to states. Given the way the US electricity system operates, it is inevitable that decisions states make about that mix will affect wholesale power markets. But that is not a problem for the commission to solve, it is the natural course of things.

When MOPRs are used to raise the prices of renewable sources, it counteracts the effects of state policies meant to lower those prices. It makes state goals that much more difficult and expensive to reach. FERC ought to be accommodating state policy goals, not attempting to purge their effects from wholesale markets.

"While there are times when the Commission must check state action that impermissibly interferes with the wholesale markets," wrote then-Chair Norman Bay in his concurrence on the **order** reaffirming ISO-NE's renewables exemption, "it should endeavor to do so only when necessary. I believe that respect for federalism requires no less." The MOPR, he wrote, puts FERC "in direct and recurring conflict with the states."

2) There is no principled way to distinguish which policies count as "costs."

It is true that state policies like renewable energy standards or New York's zero-emission credits (ZECs) push down the price of low-carbon energy. And insofar as that lowers the clearing price in capacity markets, it is a "cost" to high-carbon capacity sources.

But that way lies madness. There are all sorts of (implicit and explicit) subsidies for energy sources built into policy at every level. *All* energy policy affects the prices of various sources in some way or another. And plenty of non-energy policies do too, as do siting and zoning decisions. The FERC order does not offer any principled way to pick apart which policies impose "costs" that FERC must cancel out and which don't, because there is no principled way.

"The premise of the MOPR appears to be based on an idealized vision of markets free from the influence of public policies," Bay wrote. "But such a world does not exist, and it is impossible to mitigate our way to its creation." The "pervasiveness" of public policy supports for energy sources means it is "futile to attempt to unwind them all."

In short, Bay says, MOPRs for renewables and nuclear are "unsound in principle and unworkable in practice." FERC should only use MOPRs "in the uncommon situation when state action is not permitted under federal law."

162 FERC ¶ 61,205
UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Before Commissioners: Kevin J. McIntyre, Chairman;
Cheryl A. LaFleur, Neil Chatterjee,
Robert F. Powelson, and Richard Glick.

ISO New England Inc. Docket No. ER18-619-000

ORDER ON TARIFF FILING

(Issued March 9, 2018)

Norman C. Bay
@NormanCBay

Worth watching: a fractured Commission approved ISO-NE's latest capacity construct (CASPR) with three separate statements. Commissioner LaFleur concurred; Commissioner Powelson dissented; and Commissioner Glick concurred in part and dissented in part, ferc.gov/CalendarFiles/...

4:51 PM - Mar 10, 2018

14 16 people are talking about this

3) Climate mitigation, in particular, is not a price distortion.

FERC rules do not take greenhouse gases into account. State energy policies do. By giving renewable energy (or nuclear power) credit for a lack of greenhouse gases, state policy is not distorting their prices, it is making their prices *more accurate*. It is giving them credit for a positive externality.

If FERC uses MOPRs to take away that price advantage, it is not only excluding carbon pollution from its decision-making, it is pushing states to do the same. That is not FERC's role, and it's not good policy.

4) A MOPR will force excess capacity.

Placing a MOPR on renewable (or nuclear) resources that have been built as a result of state policy "requires load to pay twice," Bay writes, "once through the cost of enacting the state policy itself and then through the capacity market." That raises prices for consumers.

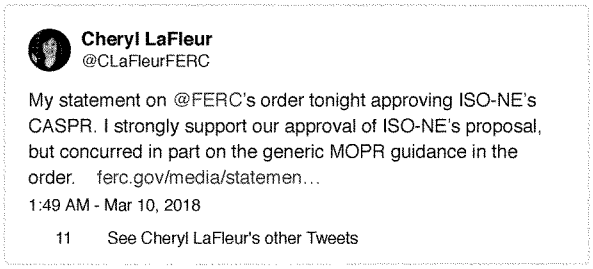
There's no need for it. If a state supplies a capacity source with extra revenue, the capacity market will receive the correct signal in light of that revenue. "Administrative attempts to remove such revenue could result in inefficiently high capacity prices that signal the need for new capacity when no such need exists," Bay writes.

And remember, that's in the context of all ISO/RTOs already meeting their capacity targets, and PJM in particular *over*supplied with capacity.

It's difficult to discern any market logic for MOPRs on renewables and nuclear. It's almost enough to make one entertain dark suspicions.

"By increasing the market-clearing price in the capacity market, the MOPR increases the cost of every unit of capacity that clears the capacity auction," Glick notes. "Indeed, it appears to me that this is precisely the motivation underlying certain generators' support for applying the MOPR to state policies: propping up their capacity-market revenues."

Indeed.



5) "Investor confidence" is some ol' bullshit.

The CASPR ruling cites "investor confidence" several times as a justification for using MOPRs, though it never defines the term or offers any objective way to measure it.

What could it possibly mean? Capitalism is notoriously harsh and unforgiving. Insofar as a market is truly open and competitive, investors take their chances, and many lose their shirts. Insofar as investors have "confidence," it is because a government regulator has stepped in to short-circuit competition and guarantee their investments.

FERC's job is to maintain competitive markets — to "protect competition, but not individual competitors," as Glick puts it. It should give investors (and states, and consumers) confidence by making and enforcing clear rules. Picking and choosing, imposing price constraints on certain generation sources and not others, in certain markets and not others, is not the road to confidence.

Glick summarizes:

> In short, the Commission should get out of the business of mitigating the effects of state public policies and instead encourage the RTOs/ISOs to work with the states to pursue a resource adequacy paradigm that respects states' role in shaping the generation mix and while at the same time ensuring that we satisfy our responsibilities under the FPA.

(If you want to really nerd out, here's an **interesting academic paper** arguing that FERC has been overbroad in its use of MOPRs.)

Next steps

I personally agree with Bay that "the most market-oriented solution with the greatest transparency, simplicity, and, perhaps, efficiency would be to transition over time to an energy-only market." But I also agree with him that such an outcome is extremely unlikely anytime soon.

In the meantime, the fight is over MOPRs and, more broadly, how FERC ought to deal with state energy policies. There's all sorts of regulatory action underway (so many dockets!), but I'll just mention a few upcoming things.

First, petitioners (enviro and clean energy groups, and others) will ask for a rehearing of the CASPR case; if it doesn't go their way, that will likely end up in court. Because of FERC's weird split judgment in the ruling — passing the order with a simultaneous dissent on a particular paragraph — the order is probably vulnerable, as Bay points out:

Norman C. Bay
@NormanCBay

Three implications from CASPR's fractured vote: (1) opponents will re-double their efforts on rehearing; (2) even if rehearing is denied, as a practical matter, the order is weaker on appeal; and (3) what happens to PJM's "jump ball" (two-stage capacity auction and MOPR-Ex)?

1:06 PM - Mar 11, 2018

21 See Norman C. Bay's other Tweets

The "jump ball" in question has to do with a proposal PJM is expected to make to FERC this month, asking FERC to choose capacity market reforms for it, either something like CASPR or expanded MOPRs.

Also, when FERC rejected Perry's coal bailout, it asked ISO/RTOs to report in on grid resilience. Those reports are in, and PJM's contains **yet more requests for various**

stealth bailouts. There are also outstanding dockets on nuclear and offshore wind.

Those upcoming rulings will reveal a great deal about how much FERC has bought into gencos' arguments and plans to support MOPR-type price hikes.

The takeaway

There's a big difference between Perry's crude coal bailout and the use of MOPRs in capacity markets, but both are animated by the same concern: the idea that state clean-energy policies are suppressing prices in capacity markets, which is pushing older coal and natural gas plants off the grid, and reliability is going to suffer as a result.

The first two parts of that are true; it's the third part that's contested.

Gencos say it's true, but they have a vested interest in keeping capacity prices high. Market incumbents don't want competition, they want "confidence." Some regulators and market monitors worry that it's true — as I said, the electricity sector is full of people who talk a lot about markets but don't actually trust them.

But FERC ought to have better evidence of a crisis, a more coherent rationale, and clearer criteria before it authorizes expanded use of price mandates like MOPRs.

The spirit of empirical inquiry that led FERC to reject Perry's coal bailout ought to caution it against this subtler but no less misguided sequel.

Senator CANTWELL. I hope my colleagues stand prepared to join in protecting consumers against this alarming plan, just as we did on the previous one. There is so much to be done. I know that you all working together can accomplish that.

We look forward to today's discussion and the continuing changing of what is happening in the marketplace. But again, FERC must continue to play that role the Federal Power Act gives you on just and reasonable rates.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Cantwell.

We will now proceed to five-minute statements from the Chairman as well as the Commissioners. As I mentioned, you are all well-known to us, so I will forgo your backgrounds and just acknowledge the good work of each of you as a Commissioner and as Chairman.

If you would please lead off, Chairman McIntyre.

Please know that your full statements will be included as part of the record.

Please proceed.

STATEMENT OF HON. KEVIN J. MCINTYRE, CHAIRMAN, FEDERAL ENERGY REGULATORY COMMISSION

Mr. MCINTYRE. Thank you, Chairman Murkowski.

Madam Chair, Ranking Member Cantwell and members of the Committee, thank you for this opportunity to appear before you to discuss the important work of the FERC, an independent federal agency that regulates vital aspects of our nation's electric, natural gas, hydropower and oil pipeline industries.

As you know, those aspects include the wholesale sale of electricity and natural gas and interstate commerce, the determination whether to approve proposals to build liquified natural gas terminals and interstate natural gas pipelines, as well as the licensing of hydropower projects. I am honored to serve as FERC's Chairman.

I joined FERC as Chairman in December 2017. By way of guiding principles and philosophy of governance, I place great weight on the importance of the rule of law. I believe that any consideration of potential action by FERC or, for that matter, by any other governmental body, must begin with a firm understanding of the applicable legal requirements and any action taken must satisfy those legal requirements in full.

I also believe strongly that FERC's policies and procedures should be efficient and effective to ensure that we address, in timely fashion, any and all issues validly brought to us in our service to the public and that we should review our existing policies and procedures from time to time to ensure that they are best enabling us to fulfill our statutory mission and to serve the public.

To that end I have, for example, recently initiated a review of the Commission's natural gas pipeline certificate application program and have reinitiated a review of our long-standing policies under the Public Utility Regulatory Policies Act of 1978 which has been mentioned already, PURPA, to address issues that have arisen on these matters in the past few years. These steps are intended not only to enhance and improve the substance of the Commission's

work in these areas but also to improve our procedures that we use in performing that work.

With those principles in mind, I would like to highlight just a few of the additional issues we have been addressing since I became Chairman and some of the steps the Commission has taken thus far to address them. My full written testimony addresses these issues in greater detail.

A key matter on our agenda this year has been the resilience of the bulk power system. In January we issued an order finding that the Secretary of Energy's proposed rule on grid resilience did not satisfy the requirements of the Federal Power Act and, therefore, we terminated the proceeding that had been initiated by that DOE proposed rule. However, recognizing that resilience in the bulk power system is an important mission that warrants further attention, we also initiated a new proceeding of our own to evaluate the resilience of the bulk power system beginning with the regions operated by regional transmission organizations, RTOs, and independent transmission system operators, ISOs, because they have wide overview over the operations of their regions and, thus, are well positioned to provide insight into region-wide resilience issues.

FERC received many dozens of submittals of comments from interested parties and the public, including the ISOs and RTOs, public utilities, interstate gas pipelines, nuclear entities, coal producers, environmental groups, state public service commissions and other entities. We are now actively reviewing this substantial record and considering whether additional FERC action is warranted to address greater resilience.

In April, we issued a notice of inquiry seeking information and stakeholder perspectives to help us explore whether and, if so, how we should revise the approach we currently follow in determining whether a proposed natural gas pipeline project is or will be required by the present or future public convenience and necessity as the Natural Gas Act has set forth that standard. The currently effective version of FERC's gas certificate policy statement dates to 1999 and, given the changes in the industry since then, it is time for a fresh review and that is what we have undertaken.

Similarly, I recently directed FERC staff to reinitiate a previously begun review of FERC's policies under PURPA. Much has changed in the industry since 1978. I understand that legislation has been introduced both in the Senate and in the House to change certain aspects of PURPA; but at FERC, we expect to be able to build on the previously initiated record and take a close look at whether there are steps that we can take administratively to improve our PURPA program.

There are a host of other important issues that we are devoting our attention to. My fellow Commissioners will address a number of those matters in their testimony.

And with that, I thank you again for inviting all of us to appear before you and look forward to answering your questions.

[The prepared statement of Mr. McIntyre follows:]

Written Testimony of Kevin J. McIntyre
Chairman
Federal Energy Regulatory Commission
Before the Committee on Energy and Natural Resources
United States Senate
June 12, 2018

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee:

Thank you for the opportunity to appear before you to discuss the important work of the Federal Energy Regulatory Commission (FERC). My name is Kevin McIntyre, and I am honored to serve as the Chairman of FERC, an independent agency that regulates vital aspects of our Nation's electric, natural gas, hydropower, and oil pipeline industries. Those aspects include the wholesale sale of electricity and natural gas in interstate commerce, transmission of electricity in interstate commerce, and transportation by pipeline of natural gas and oil in interstate commerce. FERC also reviews proposals to build liquefied natural gas terminals and interstate natural gas pipelines, as well as to license hydropower projects. FERC's mission is to assist consumers in obtaining reliable, efficient, and sustainable energy services at a reasonable cost through appropriate regulatory and market means.

I joined FERC as Chairman in early December 2017. Prior to that, I served as co-lead of the global energy practice at the Jones Day law firm. At the firm, I had the good fortune to counsel and represent clients in nearly all energy industry sectors, largely pertaining to matters before the FERC. My distinguished colleagues that appear before you this morning reflect their own wide-ranging experience and expertise; my fellow commissioners include a former industry executive, a former state regulator, and two former senior advisors from Congress. This diversity of background is a strength for FERC, one that allows us to use our range of experiences in analyzing complex problems to reach well-informed decisions.

I would like to note briefly at the outset that, by way of guiding principles, I believe strongly in the importance of the rule of law. Any consideration of potential action by FERC, or by any governmental body, must begin with a firm understanding of the applicable legal requirements, and any action taken must satisfy those legal requirements in full. Because many situations allow for a range of lawful decisions, including some with profound policy implications, it is critical for FERC to consider all views, including those from stakeholders and the public. It is my goal to ensure FERC's actions are as open and transparent as possible.

I also believe strongly that FERC's policies and procedures should be efficient and effective to ensure we timely address issues brought to us in our service to the public, and that we should review those policies and procedures from time-to-time to ensure they best enable FERC to serve the public. To that end, and as described in more detail below, I have initiated a review of the Commission's gas pipeline certificate application program and re-initiated the review of our Public Utility Regulatory Policies Act of 1978 (PURPA) program to address issues that have arisen on these matters in the past few years. These steps are intended not only to enhance the substance of the Commission's work in these areas, but also to improve the procedures the Commission uses to perform that work.

With those principles in mind, I would like to highlight a few of the issues we have been addressing since I became Chairman and some of the steps the Commission has taken to address these issues.

Resilience of the Bulk Power System

On January 8, 2018, FERC issued an order finding that the Secretary of Energy's proposed rule on grid resilience and reliability did not satisfy the requirements of the Federal Power Act (FPA), and, therefore, we terminated that proceeding. However, recognizing that resilience of the bulk power system is an important issue that warrants further attention, FERC initiated a new proceeding to evaluate the resilience of the bulk

power system in the regions operated by RTOs and ISOs. All seven of the RTOs and ISOs submitted comments in the new proceeding and we also received over 140 comments from other interested entities and the public, including public utilities, interstate gas pipelines, nuclear entities, coal producers, environmental groups, state public service commissions, public power entities, and consumer groups.

FERC is reviewing the submissions and deciding whether additional FERC action is warranted to address grid resilience. As we review the record, we are mindful that the Commission's markets, transmission planning rules, and reliability standards should evolve as needed to address the bulk power system's continued reliability and resilience.

The Commission's oversight of electric reliability involves ensuring that the bulk power system is planned and operated so that instability, uncontrolled separation, and cascading failures do not occur because of a disturbance, equipment failure, or cybersecurity incident. Resilience could encompass a range of attributes, characteristics, and services that allow the transmission grid to withstand, adapt to, and recover from both naturally occurring and man-made disruptive events.

Protecting and promoting the resilience of the bulk power system will remain a top FERC priority during my tenure as Chairman. Resilience is not a new issue for FERC. FERC already has taken steps with regard to reliability and other matters that have helped to address the resilience of the bulk power system. However, we recognize that we must remain vigilant with respect to resilience challenges, because affordable and reliable electricity is vital to the Nation's economic and national security

In addition, we understand that the concept of resilience necessarily involves issues that extend beyond FERC's jurisdiction, such as to the distribution system. For that reason, in our January 8 order, we encouraged RTOs and ISOs and other interested entities to engage with state regulators and other stakeholders to address resilience issues at the distribution level.

Review of the Commission's Certificate Policy Statement

Under the Natural Gas Act, FERC determines whether a proposed natural gas pipeline project is required by the public convenience and necessity. FERC adopted its current policy on reviewing gas pipeline certificate applications in 1999.

Since that time, the natural gas industry has undergone significant changes. Amid such changes, we need to make sure that our gas certification process is as efficient and effective as possible so that the Commission may address certificate applications in a timely and effective manner. I believe that after 20 years we should seek to improve how we review certificate applications, including streamlining the timing of that review and the procedures we use to perform that review, while ensuring that the process is fair to all stakeholders. Therefore, after consultation with my colleagues, on April 19, 2018, FERC issued a notice of inquiry (NOI) that seeks information and stakeholder perspectives to help us explore whether, and if so how, we should revise our approach to determining whether a proposed natural gas project is or will be required by the present or future public convenience and necessity, as that standard is established in section 7 of the Natural Gas Act.

Specifically, in the NOI, we sought input on ways to improve the certification process. We also sought input on whether, and if so how, we should adjust the following: (1) our methodology for determining whether there is a need for a proposed project, including consideration of precedent agreements and contracts for service—that is, contractual commitments by market participants to use the proposed pipeline's capacity—as evidence of such need; (2) our consideration of the potential exercise of eminent domain and of landowner interests related to a proposed project; and (3) our evaluation of a proposed project's environmental impact. Comments on the NOI are due July 25, 2018.

Review of FERC Policies under PURPA

I also would like to mention that I recently directed FERC staff to re-initiate our review of FERC's policies under PURPA. A lot has changed in the energy industry since PURPA was enacted, and FERC initiated a review of its policies under PURPA review a few years ago. I understand that legislation has been introduced in both the Senate and the House to change certain aspects of PURPA. At FERC, I expect that our review will build on the record that the Commission already developed on this matter and will allow for additional robust stakeholder input. Interested stakeholders have raised good questions about whether FERC's PURPA program is serving the public the best that it can. My expectation is that any policy changes that we make at FERC will result in real improvement to how FERC addresses these issues and will make our PURPA program more effective and efficient in dealing with these issues. Commissioner Chatterjee will discuss issues related to PURPA in more detail in his testimony.

Interplay of FERC and State Authority

Another issue of great importance to FERC is the interplay of federal and state responsibilities. Driven largely by the ongoing evolution of wholesale energy markets and the expansion of state policies and programs seeking to shape the mix of resources that serve energy needs within the states, we are facing new questions about how to apply the longstanding dividing lines between FERC's jurisdiction and that of the states.

Although reasonable people can differ on the details and nuances of these issues and how they have developed, I want to make clear that, from my own personal perspective, the Nation's consumers are best served by a firm reliance on competitive markets and, more broadly, market principles across the board. At the same time, however, I respect states' authority to make resource decisions that are within their jurisdiction. FERC, for its part, has statutory obligations relevant to this issue—FERC's mandate to ensure the justness and reasonableness of rates, terms, and conditions applicable to services subject to FERC's jurisdiction. The thoughtful input that we

receive from state officials and wide-ranging stakeholders is essential to our development of just and reasonable solutions.

This federal-state issue arises in many contexts. Indeed, in the past three years the U.S. Supreme Court issued three decisions that address different aspects of this subject: *Oneok, Inc. v. Learjet, Inc., FERC v. Elec. Power Supply Ass'n,* and *Hughes v. Talen Energy Marketing LLC.* Also, in late May, the U.S. Department of Justice (DOJ), after consulting with FERC, filed a brief in the 7th Circuit expressing the view that the Illinois Zero Emissions Credit (ZEC) program, which provides direct compensation to nuclear power plants as compensation for their lack of greenhouse gas emissions, is not preempted by the FPA. That DOJ brief explains that the Illinois program does not warrant preemption because it does not require participation in FERC-jurisdictional wholesale auctions as a precondition to receive ZECs and instead is targeted at an attribute of generation resources over which Illinois has regulatory authority. The brief also explains that if FERC were to determine that the Illinois program has an effect on wholesale rates that renders those rates unjust and reasonable, then FERC could address that concern under its statutory authority rather than as a matter of constitutional preemption. I expect these issues to continue to arise and that the Commission will respond to the issue as appropriate.

Hydroelectric Relicensing

Hydroelectric resources have long played an important role in helping to meet the country's energy needs and I believe that hydropower should continue to play this role. Recognizing the importance of hydroelectric resources to meet our energy needs, over the past few years the Commission has taken steps to improve and streamline the licensing process for hydroelectric facilities. For example, late last year FERC issued a new policy on establishing license terms for original and new licenses for hydropower projects located at non-federal dams—that is, for hydro projects within FERC's jurisdiction. I believe that this action provides more certainty for stakeholders regarding FERC's

regulatory process, reduces regulatory burden, and increases administrative efficiency for all stakeholders. In addition, under Executive Order 13807 (Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects), FERC staff is developing the implementation plan for the One Federal Decision process. As part of this effort, FERC staff is looking at areas to improve communication and coordination with other agencies and project applicants and to provide for concurrent reviews of applications to streamline the process for hydroelectric applications. Finally, to address Executive Orders 13777 (Enforcing the Regulatory Reform Agenda) and 13783 (Promoting Energy Independence and Economic Growth), FERC staff conducted a comprehensive review of FERC's regulations, policies, and practices to determine where the licensing process can be streamlined without the need for legislative action. We also solicited input from industry on areas for improvement. FERC staff is evaluating those reviews. I also understand that there is pending legislation to improve the hydroelectric licensing process. There is always room for improvement and I will continue to work with FERC staff and my colleagues to improve the hydroelectric licensing process.

Cybersecurity

In 2005, Congress gave FERC new authority to review, approve, and enforce reliability standards for the bulk power system, including cybersecurity and physical security standards. Since that time, the Commission has issued 10 mandatory reliability standards addressing cybersecurity of the grid. FERC also has issued a mandatory standard regarding the physical security of the bulk power system.

I appreciate the work of the North American Electric Reliability Corporation (NERC), the stakeholders, and FERC's staff on developing, implementing and enforcing the mandatory cybersecurity standards. Those standards establish a solid defense to cybersecurity threats. However, I also understand that cyber threats to the bulk power system are ever changing and that a standard implemented today may not address a threat

developed and deployed tomorrow. While FERC must continue its work under section 215 of the FPA to improve those mandatory reliability standards, there are other steps that NERC and the industry can take short of developing a mandatory reliability standard, such as the development of voluntary best practices, which may allow industry to more nimbly address or respond to these evolving threats. FERC staff has worked with industry to help identify and disseminate voluntary best practices. I also note that in recent years Commission staff has increased its interaction with its sister agencies, such as the U.S. Department of Homeland Security (DHS) and Department of Energy (DOE), who is identified as the Sector Specific Agency for the Energy Sector, to share information and assist on cybersecurity issues. For example, FERC staff has increased its involvement with DHS's National Cybersecurity and Communications Integration Center and DOE's Cybersecurity Risk Information Sharing Program. FERC staff also has increased its involvement in the Electricity Information Sharing and Analysis Center. I expect these activities to continue, along with the ongoing development of mandatory cybersecurity standards under section 215 of the FPA, to address threats to the bulk power system.

LNG Terminals

The production of natural gas in the nation has increased dramatically in the past decade or so, largely due to technological advancements. One result of that increased production has been an increase in the number of domestic gas producers seeking access to the global gas markets. For FERC, that has meant a rapid and sizeable increase in the number of entities filing applications seeking authorizations to construct facilities to export liquefied natural gas (LNG). By way of example, in 2007 there were *four* LNG applications pending with the Commission. This year, the Commission has *fourteen* pending LNG applications. I also should note that it has not just been the number of applications that has increased, but the size and complexity of the projects has also increased. In addition, the number of construction inspections the Commission must perform has increased due to the ongoing build-out of LNG infrastructure.

FERC has taken concrete steps to address this rapid increase in its LNG work. For example, FERC has hired private contractors to increase the size of its workforce working on these projects. Further, FERC is: (i) seeking to hire additional engineering staff to examine LNG applications; (ii) exploring the reallocation of Commission resources to bring more resources to LNG application reviews; (iii) identifying additional opportunities for direct and third-party contracting assistance; (iv) working with other federal agencies, such as DOE and the Department of Transportation, to improve coordination with the hope of expediting the completion of those entities' roles in the process; and (v) examining FERC's own internal processes to identify potential efficiencies.

CEII

Shortly after September 11, 2001, the Commission developed procedures to control access to, and distribution of, certain critical energy infrastructure information (CEII). At that time, the Commission removed documents from its public files and eLibrary database that were likely to contain detailed specifications about critical infrastructure and required entities seeking such information to specifically request it from the Commission. The Commission determined that it was important to have a process for individuals with a legitimate need to access such information. In 2015, Congress passed the Fixing America's Surface Transportation Act (FAST Act), which required the Commission to revise its CEII regulations to further control, but also encourage, sharing of CEII. The FAST Act also required the Commission to adopt sanctions for unlawful disclosure of CEII.

FERC revised its regulations in 2016 to implement those new FAST Act provisions. Under the regulations, FERC determines whether a requestor is legitimate and whether it has a valid need for access to CEII. FERC's regulations establish that a requestor who needs CEII to participate in a Commission proceeding has a valid need for the information. However, if a requestor's need for the information is not readily

apparent, he would be subject to additional scrutiny and be required to provide additional information to receive access to CEII. If the Commission discloses the CEII to the requestor, the requestor must adhere to a non-disclosure agreement that, among other things, prohibits the requestor from further disclosure of the CEII. In addition, FERC's regulations make clear that any unlawful disclosure of CEII is prohibited. The Commission takes its information disclosure procedures seriously, including its modified CEII procedures. As the FAST Act indicated, the FERC should both control dissemination in certain circumstances, but encourage it in other circumstances. I believe that by enacting its revised regulations, FERC took steps to strike that balance appropriately.

Other Issues before FERC

There is a host of other important issues to which FERC is devoting its attention. My fellow Commissioners are addressing a number of these matters in their testimony. Commissioner LaFleur addresses the wholesale electric markets and FERC's continuing commitment to facilitating the development of needed electric transmission facilities. Commissioner Chatterjee addresses applicability of PURPA in an environment notably different from the time of its enactment, as well as FERC's responsibilities with respect to the reliability of the bulk power system. Commissioner Powelson addresses cybersecurity challenges related to infrastructure over which FERC has a regulatory responsibility, as well as changes and challenges to the electric transmission grid. Finally, Commissioner Glick addresses the potential of several emerging technologies, including electric storage and the aggregation of distributed energy resources.

I thank you again for inviting all of us to appear before you today. I look forward to answering your questions.

The CHAIRMAN. Thank you, Mr. Chairman, I appreciate it.

Commissioner LaFleur, welcome.

STATEMENT OF HON. CHERYL A. LAFLEUR, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Ms. LAFLEUR. Thank you very much, Chairman Murkowski, Ranking Member Cantwell and members of the Committee. My name is Cheryl LaFleur. I've been a Commissioner at FERC for eight years, and I've been fortunate to appear before this Committee several times. I'm very happy to be here today with the full Commission.

During my tenure on the Commission, much of our work has been driven by the ongoing transformation of the nation's power supply. We are, of course, experiencing a significant increase in natural gas, renewable, storage and demand cyber sources, driven by changes in technology, economics and policy. These transformative developments are not being driven by FERC but are shaping much of our work on markets, infrastructure and reliability.

Today I'll discuss our regulation of markets, and in my written testimony I expand on that as well as a bit on our transmission work.

The organized wholesale electricity markets that currently serve more than two-thirds of Americans were launched roughly 20 years ago to promote greater competition in the electric sector. While they continue to require vigilance as resources change, I believe markets have successfully achieved their objectives. They've protected reliability and promoted efficiency and innovation while shifting investment risk from captive customers to investors. They've realized these benefits while incorporating different structures in different regions reflecting different state and regional priorities and prerogatives. The markets have grown dramatically in the past several years with both the mid-continent ISO and the Southwest Power Pool nearly doubling in size.

In the Western United States, the California ISOs energy and balance market now serve 55 percent of the load in the Western interconnection with further commitments from public and private power entities that would bring it to 65 percent by 2020. The California ISO has also announced plans to offer day-ahead market services to participants in the energy and balance market and a group of electricity providers in the Rocky Mountain states are exploring joining the Southwest Power Pool.

Notably, all of these market expansions are being driven by decisions at the regional, state and local level, not from Washington. As the resource mix has evolved over the past decade, the Commissioners work to ensure that markets provide reliable service at fair and reasonable rates. We've taken a number of steps to make sure the markets are fair to all resources, including new technologies like wind, solar, demand response and storage.

We've worked to ensure resilience by overseeing market changes to increase compensation to resources that are online in times of system stress and extreme weather, including baseload resources. In the energy market, we've worked on a number of steps since

2014 to improve price formation to make sure the markets send correct price signals.

Another issue we've focused on extensively in recent years is the interplay between FERC-jurisdictional markets and state policies, particularly in the eastern markets that regulated their generation—deregulated their generation and use mandatory capacity markets to ensure resource adequacy. There's a tension between state initiatives to select specific resources and the operation of the market to select and pay other market-based resources needed for resource adequacy.

I believe it's important that we allow for tailored, regional solutions that seek to adapt market rules to preserve the benefits customers derive from markets while also respecting state policy as much as practicable. I believe a proposal from ISO New England that the Commission recently approved is an example of how the Commission can constructively address this tension.

Finally, our work on electric markets also bears on our work on resilience. The Commission has taken a number of actions over the years to address grid resilience both in our markets and tariff work and in our oversight of reliability standards. The current debate focuses on whether the continued retirement of certain uneconomic coal and nuclear generating facilities threaten grid resilience. To date, I believe we successfully managed the transition in the resource mix without compromising reliability and resilience, and I'm confident we can continue to manage it going forward. Indeed, I believe the resource turnover we're experiencing is an expected consequence of markets, and technological change and the lower prices that result from well-functioning markets are a benefit to consumers, not a problem to be solved, unless reliability is compromised.

The Commission is currently considering the record developed in our pending resilience docket which I hope will help us determine whether any further Commission action is needed to adapt market rules, reliability standards, transmission planning or pro forma agreements in response to changes on the grid. Should we conclude action is needed, I hope we'll do it in a fuel-neutral way that's fair to all resources as we have done in other instances.

Thank you, and I look forward to your questions.

[The prepared statement of Ms. LaFleur follows:]

Written Testimony of Cheryl A. LaFleur
Commissioner
Federal Energy Regulatory Commission

Before the
Committee on Energy and Natural Resources
United States Senate

Hearing on
Oversight of the Federal Energy Regulatory Commission

June 12, 2018

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee:

My name is Cheryl LaFleur, and I am honored to appear before you today as a Commissioner at the Federal Energy Regulatory Commission (FERC or Commission). I have been at the Commission for nearly eight years now, and have appeared before the Committee several times. I am happy to do so today as part of a full Commission.

During my tenure at the Commission, much of our work has been driven by the biggest energy story of the past decade: the ongoing transformation in our nation's power supply. We are experiencing a significant increase in our reliance on natural gas for electric generation, due primarily to the increased availability and affordability of domestic natural gas, but also to the relative environmental advantages of natural gas and its role in balancing the growing fleet of variable resources. There is also considerable growth in renewable, storage, and demand-side resources, driven by changes in technology, economics, and policy. These new resources have different costs, operational characteristics and geographic characteristics that are impacting the nation's markets and infrastructure. These transformative developments are not being driven by FERC but are shaping much of our work on markets, infrastructure (both natural gas and

electric), and reliability standards. Today I will discuss two of these topics – our regulation of wholesale electricity markets and interstate transmission planning.

Wholesale Markets

I will address five aspects of our work on wholesale markets, all of which relate to the changing resource mix: (1) rulemakings the Commission has undertaken to enhance competition by ensuring that all technologies can fairly participate in the organized electricity markets; (2) market design changes to enhance price formation and improve resource performance during periods of system stress; (3) the expansion of organized electricity markets in the western U.S; (4) the increasing tension between FERC-jurisdictional electricity markets and state policies and (5) ongoing discussions around grid resilience.

The organized wholesale electricity markets that provide electric service to more than two-thirds of Americans are now roughly 20 years old. These markets arose from statutory and regulatory changes at the state and federal levels that were designed to promote greater competition in the electric sector. The hypothesis was that greater competition could yield substantial benefits for customers, and our years of experience with the markets have borne that out. Open and non-discriminatory access to the nation's transmission system has lowered barriers to entry, increased competition, and spurred innovation. Regional planning for, and deployment of, electricity supply resources has yielded substantial efficiency gains and cost savings, while the attraction of at-risk capital into these markets has successfully shifted much of the investment risk from captive customers to investors.

We have realized these benefits while allowing for different regional market structures that reflect varied state and regional prerogatives. Most notably, some regions rely upon mandatory capacity markets to procure an adequate supply of resources to provide reliable

electric service to their customers. In other regions, resource adequacy remains the responsibility of individual states. A common feature across both market structures, however, is the use of competitive markets to price and deliver energy and ancillary services. This reflects the acknowledgment that deployment of available resources across a larger geographic footprint allows for more efficient utilization of those resources.

To increase competition and foster continued innovation in electricity markets, the Commission has worked over the years to ensure that market rules are fair to all technologies, including emerging technologies. These efforts include Order No. 764, which eased barriers to the incorporation of variable energy resources into the wholesale markets; Order No. 745, which addressed compensation for demand response resources; and Order No. 755, which required appropriate compensation for regulation service, including services provided by new resource technologies like energy storage. Most recently, the Commission in February issued Order No. 841 to address energy storage participation in wholesale markets, which Commissioner Glick will discuss.

In 2014, the Commission began an initiative to explore opportunities to improve price formation in energy markets operated by Regional Transmission Organizations, or "RTOs," and Independent System Operators, or "ISOs." The purpose of improved price formation is to send appropriate price signals to the marketplace as to what types of resources are needed by the system to deliver reliable service to customers, inform market participants where new resource entry may be necessary or beneficial, and provide information regarding when load should increase or curtail its energy consumption to minimize cost. To gather information on approaches to improve price formation, the Commission engaged stakeholders through a series of technical conferences. After consideration of that record, the Commission has taken a number

of actions. We issued a final rule to align settlement intervals with dispatch intervals, and to require the triggering of shortage pricing during any operating interval when a shortage of reserves occurs. We also issued a final rule addressing energy offer caps to ensure that resources are sufficiently compensated for the costs incurred to serve load, particularly during tight system conditions. More recently, we directed certain RTOs and ISOs to modify their market rules to address concerns that certain fast-start resources are not able to set market clearing prices when they are called upon to help meet demand. Taken together, these changes will improve the ability of these markets to provide accurate prices that incentivize rational supplier and customer behavior and promote efficient investment decisions.

In addition to price formation, the Commission has also approved market design changes to incentivize reliable generator performance. In response to the changing resource mix and the increasing incidence of extreme weather events, grid operators are placing an emphasis on generator performance during times of system stress. The Commission has approved capacity market design changes in the ISO New England Inc. (ISO New England) and PJM Interconnection, L.L.C. (PJM) regions to address concerns that resources lacked strong incentives to perform reliably during these most critical operational periods. These changes use strong market incentives to signal to resource owners the importance of investing in and maintaining their resources so they are prepared to deliver energy during peak demand periods and when unforeseen system conditions arise.

Another area of development is the expansion of organized electricity markets across the country, reflecting the increasingly broad recognition of the benefits they provide. Since I joined FERC in 2010, entities in Mississippi, Louisiana, Arkansas, Texas, and Missouri have elected to

join the Midcontinent Independent System Operator, Inc. and participate in its energy markets.[1] In 2015, entities in Iowa, Minnesota, Montana, North Dakota, South Dakota, and Wyoming opted to join the Southwest Power Pool, a grid operator and market administrator covering much of the central U.S. The Southwest Power Pool has also developed significant market enhancements in recent years, including adding a day-ahead market for energy and incorporating a price-based Operating Reserve Market.[2]

Today, we are seeing the expansion of markets in the Western U.S. The Western Energy Imbalance Market, operated by the California Independent System Operator Corporation (California ISO), has expanded in recent years to include utilities in Nevada, Arizona, Washington, Oregon, Idaho, and British Columbia. Additional utilities in California, Arizona, and Washington are slated to join by 2020.[3] The Western Energy Imbalance Market allows for trading of energy among participating entities so they can adjust to changing supply and demand in real-time by efficiently dispatching the entities' collective resources across utility and state boundaries. The result is greater grid reliability at lower costs, a value proposition that is incentivizing more Western entities to consider joining the Energy Imbalance Market. The California ISO has also announced plans to offer day-ahead energy market services to its Energy Imbalance Market participants, a development that could drive additional cost savings for Western customers. In addition, a group of electricity service providers in the Mountain West states, known as the Mountain West Transmission Group, is exploring joining the Southwest Power Pool.[4]

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[1] http://timeline.misomatters.org/
[2] https://spp.org/markets-operations/integrated-marketplace/
[3] https://www.westerneim.com/Pages/About/
[4] https://www.wapa.gov/newsroom/NewsReleases/2017/Pages/Mountain-West-SPP-negotiations.aspx

It is notable that these market expansions—both those that have been implemented and those now being contemplated—are being driven at the regional, state, and municipal levels, not by FERC. I believe this speaks to the increasingly broad recognition that sharing resources over a larger footprint can save money for customers by optimizing the use of existing generation and transmission assets and promoting greater competition in the development of new electric infrastructure.

Another issue the Commission has focused on extensively in recent years is the interplay between FERC-jurisdictional markets and state policies. Regions in the eastern U.S. that deregulated their generation years ago rely on FERC-jurisdictional capacity markets to ensure resource adequacy. Recently, however, rather than relying solely on the capacity market to select resources, states are enacting policies to procure a portion of their generation needs outside of the market by mandating bilateral contracting between a state's load-serving utilities and resource developers or owners. The result is a tension between state initiatives and the operation of the capacity market on which grid operators and the Commission rely to satisfy their resource adequacy responsibilities. In May 2017, the Commission held a two-day technical conference to closely examine the interplay of competitive wholesale markets and state policy initiatives, and to consider how ISO New England, the New York Independent System Operator Inc. (New York ISO), and PJM, each of which relies on a mandatory centralized capacity market for resource adequacy, should approach it. At that technical conference, I strongly encouraged those RTOs and ISOs to develop market design proposals to either accommodate or achieve state policy initiatives through forward-looking market reforms. To date, ISO New England and PJM have submitted regional market reforms for the Commission's consideration, and the New York ISO is evaluating carbon pricing reforms to help harmonize state climate policy with the markets.

I am a strong supporter of wholesale capacity markets, which I believe have delivered substantial benefits to customers through regional resource selection and deployment, protecting reliability at least cost, and promoting innovation and efficiency. At the same time, I recognize that these markets exist due to the decisions of the states to change the structure of their regulated utilities, leading the regions to rely upon mandatory centralized capacity markets to sustain resource adequacy and reliability. And as I noted earlier, clean energy policies set by individual states to address climate change and other environmental goals are a key driver of the ongoing transformation in the resource mix. Figuring out how to reconcile potential conflicts between state policy and the wholesale markets is therefore critical to the success of both.

While this is a challenging issue, I believe it is important that we allow for tailored regional solutions that seek to adapt wholesale market rules in order to preserve the benefits customers have derived from those markets while also respecting state policy choices to the extent practicable. Indeed, I believe a proposal from ISO New England that the Commission recently approved is an example of how the Commission can constructively address this tension moving forward.

Finally, our oversight of wholesale electricity markets also bears on our work on resilience. The Commission has taken a number of actions in recent years to address grid resilience, including some of the market reforms mentioned above. The current debate regarding grid resilience focuses on whether the continued retirement of certain uneconomic coal and nuclear generating facilities threaten grid resilience. To date, we have successfully managed the transition in the resource mix without compromising reliability, and I am confident that we can continue to manage that transition going forward. Indeed, the resource turnover we are experiencing is an expected consequence of markets, and the lower prices that result from well-

functioning markets are a benefit to customers, not a problem to be solved, unless reliability is compromised.

However, as with states' increased focus on selecting resources outside the market, much of the discussion around grid resilience stems from concerns about the resources being selected by the wholesale electricity markets, which are increasingly low or zero marginal cost resources with different cost patterns and operational characteristics than conventional resources like nuclear and coal. The Commission is currently considering the record developed in our pending resilience docket, which I expect will help us determine whether any Commission action is needed to adapt our market rules, reliability standards, transmission planning processes, or *pro forma* agreements to the changes occurring on the grid. Should we conclude such action is needed, I hope that, consistent with our longstanding practice, the Commission will define the customer need in a fuel-neutral way, and either allow the market to transparently price it or establish broad, fuel-neutral requirements to ensure that a needed service is provided.

Interstate Transmission Planning

Under the Federal Power Act, the Commission has the authority to regulate wholesale interstate rates and interstate transmission service.[5] In recent years, transmission spending has increased; in 2016, utilities located in regional transmission organization and independent system operator regions spent about $21 billion on capital additions.[6] The primary drivers of these investments include system upgrades and replacement of aging transmission infrastructure, improving grid security, system hardening to minimize the adverse impacts of catastrophic events, and the continued development of geographically-constrained renewable resources.

[5] 16 U.S.C. § 824 (2017).
[6] U.S. Energy Information Administration, *Utilities continue to increase spending on transmission infrastructure* (Feb. 2018), https://www.eia.gov/todayinenergy/detail.php?id=34892.

In light of the changes occurring in the electric industry, and based on the Commission's experience in implementing Order No. 890, in July 2011 the Commission issued Order No. 1000. Order No. 1000 was intended to ensure that the transmission planning and cost allocation requirements of Order No. 890 continued to result in the provision of Commission-jurisdictional service at rates, terms and conditions that are just, reasonable, and not unduly discriminatory or preferential. Building on the nine planning principles in Order No. 890,[7] Order No. 1000 requires each public utility transmission provider to participate in a regional transmission planning process and an interregional coordination process that each include an ex-ante cost allocation method. Order No. 1000 also introduced competition into the transmission planning process by requiring transmission planning regions to allow competitive bidding for certain regional transmission projects or needs.

Nearly seven years after the issuance of this landmark rule, the Commission has now approved all of the regional and interregional compliance filings. While many regions are still in the early stages of implementing their processes, the Commission continues to monitor each region's and pair of regions' Order No. 1000 processes. To date, five transmission planning regions have held competitive proposal windows to evaluate transmission projects or developers. In those five transmission planning regions, proposals by non-incumbent transmission developers, or joint proposals between incumbent and non-incumbent developers, have been selected for several projects. While I am encouraged by these results, I recognize that challenges remain, particularly with respect to the implementation of competitive processes for new regional transmission projects. I remain concerned that the threat of competition has, in some

[7] The planning principles identified in Order No. 890 include: coordination, openness, transparency, information exchange, comparability, dispute resolution, regional coordination, economic planning studies, and cost allocation.

regions, affected the transmission planning process as incumbents seek to shield transmission investment from competitive bidding. Unfortunately, these changes undermine two key goals of Order No. 1000 by discouraging regional transmission development and significantly reducing the benefits customers can receive from competitive bidding processes.

As part of the Commission's monitoring of Order No. 1000 processes, in June 2016 the Commission held a technical conference to explore competitive transmission development since the issuance of Order No. 1000. The topics explored during this two day technical conference included the following: an overview of each region's, or pair of regions', transmission planning processes and discussion of possible improvements; the use of cost containment provisions in the transmission development process and how the subsequent rate filings should be reviewed by the Commission; the interaction of competitive transmission development processes with the Commission's incentives policies, including transmission incentives and return on equity; and the status of interregional transmission development. In addition, the Commission issued transmission metrics reports in March 2016 and October 2017, which assessed transmission investment patterns, and Commission staff continues to monitor transmission planning region stakeholder meetings and actions concerning transmission development. As the Commission continues to work through the remaining policy issues that were delayed by the loss of quorum last year, I hope that we can act on the substantial record developed in the June 2016 technical conference to improve competitive bidding processes and better realize Order No. 1000's potential.

The CHAIRMAN. Thank you, Commissioner LaFleur.

Commissioner Chatterjee, wonderful to welcome you to the Committee.

STATEMENT OF HON. NEIL CHATTERJEE, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Mr. CHATTERJEE. Thank you, Chairman Murkowski, Ranking Member Cantwell, and members of the Committee.

Thank you for the opportunity to appear before you today to provide an update on the important work we are doing at the Federal Energy Regulatory Commission.

This is an exciting and transformational moment in our nation's energy history, and the Commission takes very seriously our role in ensuring that all Americans have reliable and affordable energy. I'd like to focus my remarks on the Commission's efforts on the Public Utility Regulatory Policies Act of 1978, or PURPA, which has been discussed already, and bulk power system reliability as well as a few key areas where Congress and the Commission can continue working together to make progress.

I do want to note that it's an honor to be back here in the United States Senate with so many whose leadership on these issues educated me and prepared me for this role. And I'd be remiss if I didn't recognize the historical significance that today Senator McConnell became the longest-serving Republican leader in the history of this institution, a testament to his dedication to the people of Kentucky and his work ethic. And as a native Kentuckian who had the good fortune to serve him, I'm quite proud of his achievement.

But now, on the first issue I'd like to address today, which is PURPA. Today's energy environment is fundamentally different from that of 1978 when PURPA was enacted and stakeholders are rightly asking whether changes are needed to better align the policy with our modern energy landscape. This has been a top priority of mine since coming to the Commission, and I know it's also of great interest to the Committee as Senator Barrasso recently introduced a PURPA reform bill.

I'm grateful for my friend and colleague, Chairman McIntyre's, recent announcement that the Commission will review its current PURPA policy to ensure it continues to promote development of renewable resources and co-generation while protecting customers and competition. I look forward to engaging with members of this Committee as part of this important exercise and I take seriously your comment, Senator Cantwell, that we have a thorough and transparent record.

Turning to another critical topic, I'd like to discuss our efforts on bulk power system reliability. Congress delegated to the Commission the responsibility to approve and enforce mandatory reliability standards for the grid. With our partners at the North American Electric Reliability Corporation, we're continually reviewing those standards ensuring they evolve with the industry and form an effective baseline for addressing day-to-day grid reliability issues.

The Commission also works to maintain reliability through oversight of jurisdictional wholesale energy capacity and ancillary services markets. For instance, we've taken actions to ensure all new generators provide certain essential reliability services such as

voltage and frequency control. The grid resilience proceeding is another good example of how the Commission continues to refine rules as needed to preserve reliability. I know this Committee is certainly following that proceeding with keen interest given its potential significance to many across the various states you all represent. In fact, I had the pleasure of speaking with Senator Daines at length on the importance of FERC's resilience proceeding during the Energy Summit he hosted in Montana recently. So my colleagues and I welcome engagement with members of the Committee, industry and the states on how FERC can better promote bulk power system reliability.

Because of historically low natural gas prices and technological innovation, our country is experiencing rapid, unprecedented changes in our generation resource mix. These trends promise tremendous benefits to consumers through lower prices and greater choice, but they also highlight a need for vigilance to maintain reliability.

It's a particularly complex regulatory challenge. Here's what I mean. The reliability of our grid is increasingly dependent on natural gas generation and therefore it's supporting pipeline infrastructure. Since 1999 our certificate policy statement has set parameters for predictable regulatory process by which that natural gas pipeline infrastructure has been reviewed. Importantly, the document establishes a framework in which companies, not customers, bear the financial risks of pipeline development.

But much has changed in those nearly two decades. Natural gas generation is displacing other fuel types in our nation's generation mix and for the first time since 1958 the U.S. is a net exporter of natural gas. That accomplishment is attributable, in no small part, to members of this Committee, such as the Chairman and Senator Gardner, who have championed the importance of natural gas export infrastructure in advancing U.S. geopolitical interests.

All of these factors underscore the basis for reviewing our certificate policy as a matter of good regulatory practice. This remains a high priority for the Commission, and I look forward to continued conversations on the path forward which leads me to another important issue facing the Commission which is cybersecurity.

It's no secret that cybersecurity threats to our bulk power system are becoming more frequent and sophisticated. As we rely more heavily on natural gas generation, I have growing concerns that the supporting pipeline system is a particularly attractive target for cyberattacks. Commissioner Glick and I have been collaborating on addressing this risk and I know, Senator Cantwell, you have also been outspoken about your concerns related to this issue. We look forward to working with the Committee on this critical subject.

In closing, I again want to express my appreciation for the opportunity to come before the Committee today, and I look forward to working with you closely in addressing the issues that will define the path forward for American energy.

Thank you.

[The prepared statement of Mr. Chatterjee follows:]

Testimony of Neil Chatterjee
Commissioner, Federal Energy Regulatory Commission
Before the Committee on Energy and Natural Resources
United States Senate
June 12, 2018

Introduction

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee:

Thank you for the opportunity to appear before you today to discuss the important work we are doing at the Federal Energy Regulatory Commission (FERC). I appreciate the Committee's attention to the major energy issues facing our nation and the role that FERC plays in addressing them.

This is an exciting and transformational period for our nation's energy future, and I take very seriously my responsibility to work with my colleagues on ensuring that all Americans have reliable and affordable energy. Today I will focus my remarks on the Commission's efforts on reliability and the Public Utility Regulatory Policies Act of 1978 (PURPA), as well as a discussion of my other priorities as a Commissioner.

Reliability Standards

As you well know, Congress delegated to FERC the responsibility to approve and enforce mandatory reliability standards for the grid in the Energy Policy Act of 2005 (EPAct 2005). This authority is limited to the "bulk-power system," as defined in Section 215 of the Federal Power Act (FPA), and excludes Alaska and Hawaii, as well as local distribution systems.

Under FPA Section 215, FERC cannot directly write or modify reliability standards, but must rely on a FERC-designated Electric Reliability Organization to perform this task. In 2006,

FERC certified the North American Electric Reliability Corporation (NERC) as this Electric Reliability Organization.

Thanks to the Commission's leadership and the dedicated efforts of NERC and industry, the reliability standards have matured considerably since they first became mandatory and enforceable in 2007. The reliability standards now form an effective baseline for addressing day-to-day grid reliability issues, like tree trimming, relay setting, communications, system planning, and emergency operations. The evolution of these baseline reliability standards has allowed FERC and NERC to focus more of their efforts on emerging threats such as cyber security, physical security and the potential grid impact of a geomagnetic disturbance (GMD).

Fuel Security Concerns Arising from Rapid Changes in the Generation Mix

The United States is experiencing rapid, unprecedented changes in its generation resource mix. A number of forces, including historically low natural gas prices and technological innovations, promise tremendous benefits to consumers through lower prices and greater choice. While this transformation may bring positive outcomes for consumers, it's critical that we remain vigilant during this transition to ensure that reliability is not adversely impacted.

For example, shifts in the generation mix which increase reliance on interruptible transportation of natural gas may in turn increase fuel security risks in certain circumstances, such as during periods of cold weather that drive heating demand, unless other resources or fuels are available. While some Regional Transmission Organizations (RTOs) and Independent System Operators (ISOs) have implemented market reforms to provide financial incentives to procure firm gas transportation or back-up fuels, utilities should continue to be mindful of the risk of relying too heavily on a particular pipeline or storage facility and should

develop plans in case such a facility experiences an outage.

Competitive markets generally encourage utilities to make reasonable fuel choices. However, even with competitive markets, reliability requires careful planning and analysis to ensure that risks are anticipated and addressed when necessary. To this end, I would highlight the important work that ISO-New England has done to assess the specific fuel supply vulnerabilities in its region. I think ISO-New England's analysis is an excellent example of how RTOs and ISOs should proactively evaluate their specific regional risks, and I am encouraged that PJM has now begun its own fuel security assessment. I expect that issues of fuel security will continue to be an area of interest for the Commission, both in our discussion of reliability and in our ongoing resilience proceeding.

In addition, given both the increase in cyber threats and our growing dependence on natural gas, I am concerned about the potential impact of a cyber-attack on our natural gas pipeline system. Because multiple generators are often supplied by a single gas pipeline, a cyber-attack against that pipeline could lead to the simultaneous loss of multiple generators, resulting in cascading outages across the grid. While the Transportation Security Administration has the authority to require mandatory cyber security standards for gas pipelines, it has not done so to date, instead relying on voluntary efforts. My colleague, Commissioner Glick, and I have been collaborating on addressing this risk, and I know it's a concern on which Ranking Member Cantwell also has been outspoken. The security of our natural gas pipeline infrastructure is critical to electric reliability, and my colleagues and I are committed to engagement with the members of this committee on this issue.

PURPA

In 1978, Congress enacted PURPA to foster the development of alternative energy resources and conserve what were then thought of as scarce resources, such as natural gas. Since that time, PURPA has played an important role in fostering the development of renewable technologies and the electric industry's transition to competitive markets. However, it's worth noting that the energy landscape that existed when PURPA was conceived was fundamentally different from that of today. That is to say, solar and wind power were fledgling technologies, there was no open access to wholesale electricity markets, and natural gas was in scarce supply. None of those things are true today. Moreover, many states have encouraged the development of renewable generation through renewable portfolio standards, and Congress adopted the Production Tax Credit to further spur renewable development. Congress acknowledged the impact of many of these changes by amending PURPA as part of EPAct 2005.

At our May open meeting, Chairman McIntyre announced that he was directing staff to evaluate potential reforms to the Commission's PURPA regulations. I applaud the Chairman for his leadership on this issue and his willingness to undertake this important work. I support reviewing our existing regulations to ensure that they fulfill PURPA's mandate to encourage the development of renewable and cogeneration resources while protecting customers and preserving competition. As part of our review, I support taking a broad look at the Commission's regulations to look for areas of potential improvement.

Other Priorities

I also would like to note another matter that I view as a priority for the Commission. FERC is currently undertaking a review of its 1999 Certificate Policy Statement, which guides our consideration of new natural gas pipeline certificates. I think it's essential that the Commission get this issue right; we must balance consumers' needs for abundant, affordable energy while

ensuring the rights of landowners are respected. As the Commission considers how we evaluate applications to construct pipelines, I am committed to ensuring that we have an efficient, transparent, and predictable process that encourages landowner participation. The Memorandum of Understanding implementing the Administration's "One Federal Decision" recently executed by the Commission will help achieve those goals.

Finally, I would also like to emphasize my continued commitment to securing our grid against cyber-attacks. While the Administration has taken significant steps to address cyber threats to our critical infrastructure, I believe that these threats will continue to grow. Sophisticated hacking tools are becoming more widely available, and cyber threats are constantly evolving making such attacks more versatile. To combat these evolving threats, both government and industry must remain vigilant and work collaboratively to address these complex issues. At the Commission, I strongly support our two-pronged approach to addressing cyber threats, which consists of a combination of mandatory reliability standards as well as voluntary best practices and information sharing. Still, more work remains on this issue, and I look forward to continued collaboration with my colleagues at the Commission and our partners across the government to ensure we're taking the proper steps to defend against future cyber-attacks.

Conclusion

Again, I appreciate the opportunity to come before you today. It's critical that we at the Commission work together with other agencies as well as Congress to address the various issues currently facing America's energy future, and I look forward to continuing this important dialogue.

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The CHAIRMAN. Thank you so much, Commissioner Chatterjee.

Welcome to you, Commissioner Powelson. Thank you for being here.

STATEMENT OF HON. ROBERT F. POWELSON, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Mr. POWELSON. Good morning Chairman Murkowski, Ranking Member Cantwell and members of the Committee. First off, thank you for bringing us together here. Although it took a decade to get us back, I'm proud to report the band is back together for a reunion tour here.

[Laughter.]

Since joining the Commission last August, I have thoroughly enjoyed the opportunity to work with my colleagues in a bipartisan manner to address some of the complex issues facing the energy marketplace.

Today, my testimony will focus on two areas. First, I will discuss the electric grid and its changing dynamics and the evolving aspect of consumer preferences, technology innovation and, of course, state policy initiatives. Second, I'll also pick up where Senator, or excuse me, Commissioner Chatterjee left off on cybersecurity.

So let me start this morning by saying the nation's bulk power system has seen over the last decade some tectonic shifts. There are several drivers behind these shifts.

First is the participation of renewable energy as part of our bulk power system dispatch. In fact, last year in this country ten percent of our bulk power came from renewable energy resources. I also want to set forth in my conversation with you today some data points. Today in the U.S. there's over 27 gigawatts of installed solar capacity on the grid. In 2005 that number was 2.5 gigawatts. Today, there's 90 gigawatts of installed wind capacity on the grid. In 2005 that number was less than 10 gigawatts. So I share that with you because it, kind of, shows you some of the evolution of our bulk power system. Obviously, it's getting cleaner, it's getting efficient and technology and states and leadership of the FERC and state public utility commissions are driving that.

The second driver I see behind the evolving grid is the shale revolution. Due to advancements in production and technology, many parts of the country are experiencing one of the greatest generation fuel mixes in our history. Today, natural gas represents 32 percent of the overall dispatch compared to only 19 percent back in 2005. In fact, in my home state we are producing 16 BCF a day of natural gas with over 500 trillion cubic feet of supply. In 2010 we were only producing three to four BCF of natural gas, and let me add that in 2004, that is when we embarked on the first exploratory well in the Marcellus region of Pennsylvania. So just another dataset to look at in terms of the evolution of natural gas production in our country.

As Commissioner Chatterjee mentioned, in 2008 as a country, we were importing natural gas into this country. Today we are approving LNG export licenses. One nearby that I recently toured is the Cove Point facility.

Now with the advent of large-scale battery storage and distributed energy resources, innovation has another important driver, is

providing another important driver on the horizon for the bulk power system. I think in recognition of this, the Commission, as Senator Cantwell mentioned, issued FERC Order 841 which directed grid operators to remove barriers for participation in the electric storage resource marketplace and I think, again, this is another benefit not only to the overall power system, but it's also a tremendous opportunity for states like California and Pennsylvania to adopt these new technologies.

Add to this equation the evolution of distributed energy resources, DERs, and we are seeing a whole new grid emerge. In fact, according to a NERC report, DERs have the capability to ride through disturbances, contribute reliability services and follow dispatch signals.

These new technologies have the potential to turn the one-directional, centralized electric grid into a multi-directional, decentralized grid that utilizes technology innovation to produce consumer benefits and increase reliability and resilience to the overall bulk power system. And I should share with you, as we're setting up a conversation about renewable investment and the evolution of gas plays like Marcellus, is a look at the EIA data. It says that for the first time since 1970 in our country, the bulk power system has emitted less CO2 than our transportation sector. Again, a reconfirmation or reaffirmation of where our grid is headed.

As a former state regulator from the great Commonwealth of Pennsylvania, I came to the FERC with a very unique perspective. I understand how important it is for states to have the ability to craft their energy goals and futures and I also think it's important, as it was mentioned earlier by my colleagues, I think the term "tailored regional solutions" is something that is alive and well in how the FERC is conducting its affairs.

I also want to reiterate to this Committee, the FERC does not pick winners and losers in the market. Instead, we create an environment where the market can pick the winners and losers. And while we're talking about winners and losers, I want to take this opportunity to really focus in on the topic that is so critically important to all of us, and that is the protection of our grid and the cyber threats that are constantly evolving.

And I'll talk later this morning about that, but I just want to take this opportunity to commend the work that's been done here at the FERC. I'm proud to report that in the past 12 months the FERC has conducted over a dozen training and network sessions with state public utility commissions. We've developed and distributed cyber checklists to state commissions. My state was one of them before I joined the FERC. We developed incident report response procedures with the State of New Hampshire; we conducted meetings and prepared white papers on security considerations for moving cloud-based architecture; we provided assistance to technical reviews of state cyber plans; and we worked with other state and federal agencies to provide both unclassified and classified briefings.

So I'm very proud of the work that's being done, but this is a work in progress for all of us whether it's the FERC, the DOE or back in our home states with our state police, our state public utility commissions.

And let me conclude by thanking the Committee for bringing us here today, and I look forward to your questions here later on.

Thank you.

[The prepared statement of Mr. Powelson follows:]

Robert F. Powelson
Commissioner
Federal Energy Regulatory Commission

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you for holding today's hearing and for the opportunity to appear before you today. My name is Robert Powelson and I am honored to serve as a Commissioner of the Federal Energy Regulatory Commission (FERC or Commission).

Prior to joining the Commission in August of 2017, I spent nine years as a member of the Pennsylvania Public Utility Commission. My experience as a former state utility regulator and my interaction with colleagues at state commissions across the country has provided a unique perspective on FERC's important mission. From day one, I have approached each decision with a thorough understanding of how our determinations impact families and businesses nationwide. I have made it a priority to engage with stakeholders from all geographic regions that represent a diverse set of interests to ensure that I hear a variety of viewpoints and my decisions are fully informed.

Today, my testimony will focus on two key areas. First, I will discuss the evolving electric grid, and in particular, how the nation's generation resource mix is changing in light of technological innovation, evolving consumer preferences, and state policy initiatives. Second, I will discuss the Commission's cybersecurity initiatives, and specifically highlight how interagency coordination has helped further our goals with respect to pipeline security.

An Evolving Electric Grid

Our nation's electric grid has traditionally been a one-directional, centralized system designed to provide reliable service at the lowest price. Today, shifting consumer preferences and technological innovation are forcing our grid to adapt to new realities.

A primary driver behind the evolution of the grid is the changing generation mix. Due in large part to advancements in production technologies that have unlocked vast shale reserves, the United States now has access to large deposits of affordable domestic natural gas. Because of this, many parts of the country are experiencing one of the greatest generation fuel shifts in our history. Simultaneously, consumer demand for clean energy has spurred increased investment in, and deployment of, renewable energy resources, sparking energy policy discussions in states across the country.

Innovation has also been a key driver behind the changing electric grid with the advent of large scale battery storage, microgrids, and smart cities. These resources have the potential to turn the one-directional, centralized electric grid into a multi-directional,

de-centralized grid that utilizes technological innovation to produce consumer benefits and increase the reliability and resilience of the bulk power system.

Recognizing of these trends, the Commission has been proactive in undertaking efforts to foster continued innovation. In early 2018, the Commission issued a final rule that directed grid operators to remove barriers to the participation of electric storage resources in the wholesale electricity markets. Additionally, in April 2018, FERC held a technical conference to discuss ways to facilitate the participation of distributed energy resources in wholesale electricity markets. The Commission is keenly aware that the electric grid is evolving and is taking steps to ensure that market design also evolves to meet changing needs and demands.

States have also played a major role in the evolution of the electric grid. Some states have proactively influenced the resource mix by creating goals or mandates for the production or procurement of energy from certain types of resources. Other states have reacted to changes in the resource mix by establishing mechanisms to ensure that certain generation resources remain operational. These decisions by states, whether proactive or reactive, have implications for FERC-jurisdictional wholesale markets.

Until the mid-1990s, the nation's electric utilities were vertically integrated. Under this model, state regulators used centralized planning to select the type of generation resources in their state and ensure that the amount of generation was sufficient to meet forecasted energy demand. In an effort to reduce costs and consumers' exposure to costly resource decisions, many state legislatures across the country voluntarily chose to restructure their electric utilities. These states moved away from centralized planning and instead began to rely on regional grid operators to ensure resource adequacy, largely through competitive markets overseen by FERC. Through competition, these markets have done exactly what they were designed to do: procure a reliable and affordable generation mix in a fuel-neutral manner. Consumers in many states across the country have benefitted from competitive electricity markets through lower prices, greater efficiencies, and increased innovation.

In recent years, another trend has influenced the generation mix. The abundance of low-cost domestic natural gas, combined with a reduced demand for electricity, has resulted in declining or flat wholesale energy prices. These low prices have been a factor in the retirement of certain resources, traditionally referred to as "baseload" resources, which cannot compete with cheaper gas-fired and renewable generation. In response, some states in restructured markets have enacted policies to assist or procure certain resources by providing revenue streams outside of the market.

These actions by states, regardless of their motivation, have implications for wholesale energy and capacity markets and determining how to respond to them is complicated. While FERC respects state authority, it is also obligated to ensure that rates

in wholesale electricity markets are just and reasonable. Competitive markets have led to more efficient generation resources, environmental benefits, and lower rates for consumers. As such, a primary focus for FERC is ensuring that wholesale electricity markets continue to provide these benefits. At the same time, the Commission must be willing to consider changes to market mechanisms that effectively balance the often competing interests of states, market participants, and consumers.

Today, numerous proceedings to address the impacts of state policy initiatives in wholesale electricity markets are pending before the Commission and federal courts. In mid-2017, the Commission held a two day technical conference to explore the impacts of state policies on FERC-jurisdictional capacity markets. This proceeding provides the procedural vehicle through which the Commission can provide regulatory certainty and ensure that it effectively responds to the changing marketplace. In addition, the Second and Seventh Circuits of the U.S. Court of Appeals have cases pending regarding the potential preemption of state Zero Emissions Credit (ZEC) programs. Recently, the Commission worked with the Department of Justice to file a brief before the Seventh Circuit expressing its view on preemption with respect to the ZEC program in Illinois.

Until now, intervention in wholesale electric markets has largely been from the states. However, unprecedented steps by the federal government – through the President's recent directive to the Department of Energy to subsidize certain resources – threaten to collapse the wholesale competitive markets that have long been a cornerstone of FERC policy. This intervention could potentially "blow up" the markets and result in significant rate increases without any corresponding reliability, resilience, or cybersecurity benefits. Indeed, PJM Interconnection, LLC, the regional transmission organization that ensures the reliability of the high-voltage electric power system serving 65 million people in 13 states, has stated that "[t]here is no need for such drastic action" because "there is no immediate threat to system reliability."[1]

Cybersecurity

Pursuant to the Energy Policy Act of 2005 (EPAct 2005), the Commission is responsible for overseeing mandatory, enforceable reliability standards for the bulk power system. The Commission takes this responsibility seriously. The reliability standards are developed by the North American Electric Reliability Corporation (NERC) and apply to the users, owners, and operators of the bulk power system. Critical Infrastructure Protection (CIP) standards specify mandatory requirements for utilities regarding cybersecurity, including: guidelines for how to identify and categorize cyber assets and systems; processes and procedures for maintaining these systems; and

[1] *See* "PJM Statement on Potential Department of Energy Market Intervention," dated June 1, 2018, available at: http://pjm.com/-/media/about-pjm/newsroom/2018-releases/20180601-pjm-statement-on-potential-doe-market-intervention.ashx.

safeguards to ensure that only appropriate personnel have access to these systems, among others. Both reliability and cybersecurity standards are approved by the Commission.

Cybersecurity threats are constantly evolving. The Commission must remain vigilant in refining existing standards and developing new standards to address emerging threats. Recently, through its Office of Electric Reliability (OER), FERC initiated rulemaking proceedings to propose: (1) approving new mandatory reliability standards to bolster supply chain risk management protections for the grid; and (2) the development of a revised CIP standard to improve mandatory reporting of cybersecurity incidents.

In addition to developing reliability standards, the Commission conducts outreach to other federal agencies, state utility commissions, and the private sector on cybersecurity issues. Through its Office of Energy Infrastructure Security (OEIS), the Commission works with outside entities to help identify threats to energy infrastructure, share information, and promote voluntary mitigation practices that complement the mandatory security standards. The Commission assists the following agencies in maintaining an awareness of emerging threats and the capabilities of adversaries who may initiate a cyber or physical attack on the nation's energy infrastructure: Department of Energy (DOE), Department of Homeland Security (DHS), Federal Bureau of Investigation (FBI), Nuclear Regulatory Commission (NRC), Department of Defense (DOD), National Security Agency (NSA), U.S. Coast Guard (USCG), and the Transportation Safety Administration (TSA). Engaging with the community on issues of cyber and physical security outside of a traditional FERC proceeding facilitates the useful exchange information and sharing of best practices.

The Commission also participates in DHS's National Cybersecurity Communications and Integration Center, a round-the-clock center for cyber situational awareness, incident response, and management, which serves as a national nexus of cyber and communication integration for the federal government, intelligence community, and law enforcement. At the state and regional level, OEIS staff provides targeted support and involvement with State Fusion Centers to assist with incidents and mitigation, as well as adoption of best practices using new approaches and technology.

The Commission, through its OEIS staff, also works with Information Sharing Analysis Centers (ISACs),[2] including NERC's E-ISAC (electric and hydroelectric), ONG-ISAC (oil and natural gas and LNG terminals), and DNG-ISAC (downstream natural gas facilities). Together with NERC's E-ISAC, the Commission has worked to initiate, develop, and issue security alerts to industry in near real-time to address cyber and physical security threats. Thus, the Commission makes interagency coordination a

[2] An ISAC is a nonprofit organization that provides a central resource for gathering information on cyber threats to critical infrastructure and providing two-way sharing of information between the private and public sector.

priority and participates extensively in intelligence-related collaboration efforts on cyber issues.

The Commission also plays a role in pipeline security. Pursuant to section 7 of the Natural Gas Act, the Commission reviews applications for construction and operation of interstate natural gas pipelines. Under this review, the Commission ensures that applicants certify that they will comply with Department of Transportation (DOT) safety standards. FERC itself has no jurisdiction over pipeline safety or security, but actively works to support other agencies that do have pipeline safety and security responsibilities.

For example, the Commission has been actively engaged with TSA as they update their Pipeline Security Guidelines. TSA developed these guidelines to provide a voluntary security structure for pipeline owners and operators to use in developing their security plans and programs. The guidelines also serve as a standard for TSA's pipeline security assessments. TSA is currently working with stakeholders to update these guidelines and the Commission has provided technical review and assistance throughout this process.

The frequency of cyber and physical threats to the nation's energy infrastructure is only increasing. The Commission is aware of this and has made cyber and physical security a top priority. Through OER and OEIS, the Commission will continue to update its reliability standards and coordinate with its interagency partners to address cyber and physical security risks to jurisdictional energy infrastructure. As evidenced by the collaboration described above, the Commission is always open to working with other federal agencies to address the continually evolving cybersecurity threats.

Chairman Murkowski, Ranking Member Cantwell, and members of the Committee, thank you again for the opportunity to testify today. I look forward to answering your questions.

The CHAIRMAN. Thank you, Commissioner.

Commissioner Glick, good to have you before the Committee.

STATEMENT OF HON. RICHARD GLICK, COMMISSIONER, FEDERAL ENERGY REGULATORY COMMISSION

Mr. GLICK. Thank you, Chairman Murkowski and Ranking Member Cantwell and members of the Committee. Thank you for the opportunity to testify this morning. I'm honored to be appearing again before the Senate Energy and Natural Resources Committee.

I've been a member of the Federal Energy Regulatory Commission for approximately six months. During this time, FERC has continued its efforts, initiated several years ago, to eliminate barriers in jurisdictional markets to new technologies. For example, in February the Commission voted unanimously to approve a final rule requiring regional transmission organizations and independent system operators to facilitate electric storage participation in wholesale electric markets, as has been mentioned by a couple of Commissioners already, by eliminating barriers to electric storage participation in RTO and ISO markets. The final rule will facilitate the development of a class of technologies such as batteries and pumped hydro that has the potential to play a leading role in the transition to the electricity system of the future.

As the cost of electric storage continues to decline, these resources are poised to become a bigger part of the generation mix leading to the development of a more robust, reliable grid that can, among other things, help to accommodate the ever-increasing demand for clean, renewable energy.

The Notice of Proposed Rulemaking (NOPR) that led to the final rule on storage also proposed reforms to remove barriers to aggregated or distributed energy resources such as solar rooftop panels. Although the final storage rule recognized the importance of removing barriers to their participation in wholesale markets, the Commission concluded that it needed additional information before issuing a final rule addressing aggregated distributed resources.

To gather this information the Commission conducted a two-day technical conference in April that examined the potential participation of aggregated distributed resources in wholesale markets and the benefits that these resources can provide. I believe we now have the record needed to move forward with a final rule.

Madam Chairman, a significant amount of emphasis has recently been placed on the resilience of the bulk power system. Many observers suggest that we need to avoid becoming reliant on any one source of electric generation. Diversity is a worthwhile goal and one that we are increasingly realizing. For example, on PJM the resource mix is more diverse than it ever has been with wind, solar, hydro, coal, oil, natural gas, nuclear, energy efficiency and demand response, all clearing in the most recent capacity auction.

Renewable resources are responsible for much of this increased diversity as the increasing cost-effectiveness is causing utilities and their customers to choose renewable resources over more traditional technologies. The Southwest Power Pool set a new record this past March when it served 62 percent of its load with wind energy at just one time. Similarly, solar energy met 50 percent of the

demand in the California Independent System Operator in March, a new record for California.

These new technologies also offer a variety of benefits beyond their contribution to the diversity of the resource mix and the reliability and resilience of the grid. They contribute to economic growth and significantly reduce greenhouse gas emissions. Large technology companies, automobile manufacturers and retail corporations, among others, are increasingly investing in renewable generation, both because it is cost-effective and because their customers want products that are made with clean energy.

I recognize that this sea change also creates uncertainty for the future of older technologies that may no longer be as cost-effective. The closure of uneconomic generation plants may lead to the loss of jobs and tax revenues in communities in which they are located. I am sympathetic to the plight of coal miners who have been disproportionately affected as the coal's share of the generation mix has declined. Many of these same considerations extend to individuals employed at recently, or soon to be, decommissioned nuclear power plants.

We have a history in this country of helping those who, I'm sorry, through no fault of their own, have been adversely affected by technological and market change—but that is a responsibility of Congress and the state legislatures. It's not the role the Federal Power Act provides to the Commission.

FERC has the responsibility to ensure the reliability and resilience of the grid, and we should take our duty seriously. But we cannot try to stop the natural evolution of this industry by claiming that there's a national security emergency unless there is evidence to suggest that an emergency actually exists.

Finally, Madam Chairman, I want to associate myself with Commissioner Chatterjee's comments regarding pipeline cybersecurity. We need to strengthen the security of our natural gas pipelines, and Commissioner Chatterjee and I agree that Congress should consider whether pipelines should be subject to mandatory cyber and physical security standards and whether the TSA is the appropriate agency for overseeing pipeline security.

Chairman Murkowski and Ranking Member Cantwell, thank you again for the opportunity to appear here today, and I look forward to answering your questions and the questions of your colleagues.

[The prepared statement of Mr. Glick follows:]

Written Testimony of FERC Commissioner Richard Glick

Before the
Committee on Energy and Natural Resources
United States Senate

Hearing on
Oversight of the Federal Energy Regulatory Commission

June 12, 2018

Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee. Thank you for the opportunity to testify this morning. I am honored to be appearing before the Senate Energy and Natural Resources Committee again.

I have been a Member of the Federal Energy Regulatory Commission (FERC or Commission) for approximately six months. During this short period, the Commission has been called upon to consider several challenging matters.

For instance, in January, the Commission voted unanimously to terminate the proceeding initiated by the Department of Energy's Proposed Rule on Grid Reliability and Resilience Pricing. Recognizing that the Proposed Rule, in actuality, had little, if anything, to do with resilience, the Commission instead initiated a new proceeding examining the resilience of the bulk power system in a larger context. We are now in the process of reviewing these comments.

In March, the Commission took several actions designed to ensure that ratepayers will benefit from the recently enacted corporate tax reduction in the Tax Cuts and Jobs Act of 2017. The Commission issued show cause orders to 48 electric utilities whose transmission tariffs still reference the higher tax rate. With regard to natural gas pipelines, the Commission issued a

Notice of Proposed Rulemaking that will enable FERC to determine which pipelines may be collecting unjust and unreasonable rates in light of the corporate tax reduction and changes to the Commission's income tax allowance policies. In addition, the Commission issued a Notice of Inquiry seeking information regarding whether and how the Commission should address accumulated deferred income taxes and bonus depreciation.

In April, the Commission began a review of how it evaluates applications to build interstate natural gas pipelines under section 7 of the Natural Gas Act by issuing a Notice of Inquiry. This proceeding will examine whether and how the Commission might revise its procedures in light of changes in the natural gas industry and increased stakeholder interest since the Commission adopted its current policy statement on pipeline certification in 1999. The proceeding seeks input from all affected parties, including communities, states, land owners, concerned citizens, and industry.

I am particularly interested in hearing from stakeholders on two issues. The first is whether and how we should consider evidence beyond precedent agreements when examining the need for new natural gas pipelines, especially when the parties to the agreements are affiliates of the same corporation. The second issue is how the Commission considers the impacts on the environment, including climate change, when evaluating whether a proposed pipeline is in the public interest.

Over the last six months, FERC has continued its efforts, initiated several years ago, to eliminate barriers in jurisdictional markets to new technologies. For example, in February, FERC voted unanimously to approve a Final Rule requiring regional transmission organizations (RTOs) and independent system operators (ISOs) to facilitate electric storage participation in wholesale electric markets. The Final Rule requires each RTO/ISO to establish a participation model for

electric storage resources that recognizes the physical and operational characteristics of those resources. The model must: (1) ensure that electric storage resources are eligible to provide all capacity, energy, and ancillary services that they are technically capable of providing; (2) ensure that such resources can be dispatched and can set the wholesale market clearing price as both a seller and a buyer; (3) account for the physical and operational characteristics of such resources through bidding parameters or other means; and (4) set a minimum size requirement for electric storage resource participation that does not exceed 100 kilowatts. The Final Rule also requires that each RTO/ISO specify that the sale of electric energy from the RTO/ISO markets to an electric storage resource that the resource then resells back to those markets must be at the wholesale locational marginal price.

This Final Rule marks an important step forward in the Commission's regulation of wholesale electric markets. By eliminating barriers to electric storage resources' participation in RTO/ISO markets, today's order will facilitate the development of a class of technologies—such as batteries and pumped hydro—that has the potential to play a leading role in the transition to the electricity system of the future. As the cost of electric storage continues to decline, these resources are poised to become a bigger part of the generation mix, leading to the development of a more robust grid that can, among other things, help to accommodate the ever-increasing demand for clean, renewable resources. In addition, these electric storage resources will enhance the reliability and resilience of the grid, while reducing electric rates.

Today, the cost of using lithium-ion battery technology is less than one quarter of what it was at the start of the decade.[1] Partly as a result of those declining costs, industry forecasts project that the nation's installed electric storage capacity will increase by 750 percent in just five years.[2] According to The Brattle Group, installed electric storage capacity could increase to 50,000 megawatts nationwide if electric storage resources' value is fully captured, which will require further action by the states (e.g., through their integrated resource plans).[3] At least six states have adopted rules to address electric storage resources and 20 have active regulatory proceedings that affect storage. The Commission's action to reduce barriers to electric storage resources' participation in wholesale markets will help to further this remarkable trajectory, all while reducing consumers' energy bills.

The Notice of Proposed Rulemaking that led to the Final Rule on electric storage resources also proposed reforms to remove barriers to aggregated distributed energy resources' participation in wholesale markets. In particular, the Commission proposed to require each RTO/ISO to permit aggregated distributed energy resources to participate in the RTO/ISO markets under the model that best accommodates the physical and operational characteristics of those resources. The Commission's proposal would also have required RTOs/ISOs to remove any unnecessary limitations on how aggregated distributed energy resources must be operated. Although the final

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[1] Claire Curry, *Bloomberg New Energy Finance*, *Lithium-ion Battery Costs and Market: Squeezed margins seek technology improvements & new business models* (July 5, 2017), https://data.bloomberglp.com/bnef/sites/14/2017/07/BNEF-Lithium-ion-battery-costs-and-market.pdf.

[2] GTM Research and Energy Storage Ass'n, *U.S. Energy Storage Monitor: Q4 2017 Executive Summary* 10 (Dec. 2017), file:///C:/Users/geklj2/Downloads/US_ESM___Q4_2017___Exec_Summary.pdf.

[3] Judy Chang et al., The Brattle Group, *Getting to 50 GW? The Role of FERC Order 841, RTOs, States, and Utilities in Unlocking Storage's Potential* (Apr. 18, 2018), http://www.brattle.com/news-and-knowledge/publications/getting-to-50-gw-the-role-of-ferc-order-841-rtos-states-and-utilities-in-unlocking-storages-potential.

storage rule recognized the importance of removing barriers to aggregated distributed energy resource participation in wholesale markets, the Commission concluded that it needed additional information before issuing a final rule addressing distributed resources.

To gather this information, the Commission conducted a two-day technical conference in April that examined the potential participation of aggregated distributed energy resources in wholesale markets and the benefits that these resources can provide. I believe we now have the record needed to move forward with a final rule that eliminates the barriers to aggregated distributed energy resources' participation in wholesale markets. Indeed, based on that record, the Federal Power Act requires the Commission to act to eliminate the barriers to the participation of distributed energy resources in the wholesale markets, which I hope we will do in the near future.

Distributed energy resources are growing rapidly and providing increasing benefits to the grid. Distributed solar accounted for 12 percent of all new generating capacity in 2016.[4] California alone is expected to have 12,000 megawatts of distributed energy generating capacity by 2020.[5] Like electric storage resources, distributed energy resources are capable of providing energy, capacity, and ancillary services efficiently and cost-effectively. In addition, market signals can lead these resources to locate where new capacity is most needed, helping alleviate congestion during peak load conditions and reducing the need for new transmission facilities. The shorter

[4] U.S. Energy Information Administration, *U.S. electric generating capacity increase in 2016 was largest net change since 2011* (Feb. 27, 2017), https://www.eia.gov/todayinenergy/detail.php?id=30112.
[5] California Energy Commission, *Tracking Progress (Renewable Energy)* 5, http://www.energy.ca.gov/renewables/tracking_progress/documents/renewable.pdf ("As of November 1, 2017, almost 10,520 MW of distributed generation capacity was operating or installed in California, with an additional 440 MW pending.").

lead time in developing distributed energy resources may also allow them to respond rapidly to near-term generation or transmission reliability-related requirements.

Facilitating distributed energy resource participation in the wholesale markets will lower prices and, ultimately, consumers' energy bills. In addition, it will give RTOs/ISOs greater understanding of where these resources are located and how they are operating, which helps the RTOs/ISOs operate the grid more reliably. Finally, facilitating the participation of these resources in wholesale markets will also help RTOs/ISOs account for their impacts on energy, capacity, and ancillary services requirements, thereby reducing the risk of over-procurement by improving load forecasting.

In addition, in April, the Commission issued a Final Rule reforming our standard generator interconnection procedures and agreements to improve certainty for interconnection customers, promote more informed interconnection decisions, and enhance the interconnection process in ways that should reduce the number of interconnection requests that are unlikely to reach commercial operation. Among other reforms, the Final Rule reduces potential barriers to large electric storage resources by explicitly including electric storage resources in the definition of generating facility, allowing for interconnection service to be requested below full generating facility capacity, and allowing for the interconnection customer to transfer surplus interconnection capacity. The Final Rule also expands opportunities for interconnection customers to exercise the option to build certain required interconnection facilities themselves, which provides interconnection customers more control and certainty during the design and construction phases of the interconnection process.

A significant amount of emphasis has recently been placed on the resilience of the bulk power system. Many observers suggest that we need to avoid becoming reliant on any one source of electric generation and, instead, encourage diversity of generation resources. Diversity is a worthwhile goal and one that we are increasingly realizing. For example, PJM Interconnection, L.L.C. states that its resource mix is more diverse than ever with wind, solar, hydro, coal, oil, natural gas, nuclear, energy efficiency, and demand response resources clearing in the most recent capacity auction.[6]

Renewable resources are responsible for much of this increased diversity as the increasing cost-effectiveness is causing utilities and their customers to choose renewable resources over more traditional technologies. MidAmerican Energy, for example, announced in 2016 a goal of providing 100 percent renewable energy to its customers, the majority of which will be from wind generators that are already built or under development.[7] And Southwest Power Pool, the first RTO/ISO to serve more than 50 percent of its load at a given time with wind energy, set a new record in March 2018 when it served 62 percent of its load with wind energy.[8] Similarly, solar energy met 50 percent of demand in the California Independent System Operator region in March 2018, a new record for California.[9]

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[6] Stu Bresler, PJM Interconnection, L.L.C., *The value of markets* (May 22, 2018), http://insidelines.pjm.com/the-value-of-markets/; *see also* PJM Interconnection, L.L.C., *Capacity Market (RPM), Commitments by Fuel Type & Delivery Year 2007/08 - 2021/22* (Excel Spreadsheet), http://www.pjm.com/markets-and-operations/rpm.aspx.
[7] MidAmerican Energy, *Our 100% Renewable Vision* (2018), https://www.midamericanenergy.com/our-renewable-energy-vision.aspx.
[8] Tom Kleckner, RTO Insider, *Another Wind Penetration Record for SPP* (Apr. 5, 2018), https://www.rtoinsider.com/spp-wind-penetration-record-89917/.
[9] California ISO, *Monthly Stats: February 2018* (2018), https://www.caiso.com/Documents/MonthlyStats-Feb2018.pdf.

These new technologies also offer a variety of benefits beyond their contribution to the diversity of the resource mix and the reliability and resilience of the grid. The fastest growing energy sector jobs are in wind and solar energy, with an estimated 770,000 employees working in renewable energy as of the beginning of 2017.[10] Solar energy employment grew 24.5 percent in 2016, nearly 17 times the rate of job growth in the overall economy.[11] Even more impressive, in 2016, electric storage employment grew 235 percent.[12] These resources also have contributed to the significant reduction in greenhouse gas emissions from the electric sector.[13] In addition, with the increase in renewable generation, consumers are able to get something they want. Large technology companies, automobile manufacturers, and retail corporations, among others, are increasingly investing in renewable generation both because it is cost-effective and because their customers want products made with clean energy.[14]

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[10] Environmental Defense Fund, *In Demand: Clean Energy, Sustainability and the New American Workforce* 10 (2018), http://edfclimatecorps.org/sites/edfclimatecorps.org/files/edf_in_demand_clean_energy_sustainability_and_the_new_american_workforce.pdf?_ga=2.182833637.23745530.1528288588-477339387.1525368196.

[11] *Id.*

[12] *Id.* at 15.

[13] *See* U.S. Environmental Protection Agency, *Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2016*, at 2-11 (Apr. 12, 2018), https://www.epa.gov/sites/production/files/2018-01/documents/2018_complete_report.pdf ("The decrease in coal-powered electricity generation and increase in renewable energy electricity generation have contributed to a 4.8 percent decrease in emissions from electric power generation from 2015 to 2016 . . . , and lower CO2 emissions from fossil fuel combustion over the time series (i.e., 1990 through 2016)."); *id.* at 2-13 ("Total greenhouse gas emissions from the electric power sector have decreased by approximately 0.1 percent since 1990, and the carbon intensity of the electric power sector, in terms of CO2 Eq. per QBtu input has significantly decreased by 12 percent during that same timeframe.").

[14] *See* Brad Plumer, N.Y. Times, *A Year After Trump's Paris Pullout, U.S. Companies Are Driving a Renewables Boom* (June 1, 2018), https://www.nytimes.com/2018/06/01/climate/companies-renewable-energy.html.

Although the increased development of new technologies, such as electric storage resources and aggregated distributed energy resources, offer many benefits, this sea change also creates uncertainty for the future of older technologies that may no longer be as cost-effective. The closure of uneconomic generation resources, while responsive to market signals indicating that these resources should retire, may lead to the loss of jobs and tax revenues in the communities in which they are located. For one, I am sympathetic to the plight of coal miners, who have been disproportionately affected as coal's share of the generation mix has declined. These men and women went to work every day, at considerable risk to their health and safety, to supply coal when it was needed most. Many of those same considerations extend to individuals employed at recently or soon-to-be decommissioned nuclear power plants. We have a history in this country of helping those who, through no fault of their own, have been adversely affected by technological and market change. But that is the responsibility of Congress and the state legislatures. It is not a role that the Federal Power Act provides to the Commission. FERC has the responsibility to ensure the reliability and resilience of the grid—and we should take our duties seriously—but we cannot try to stop the natural evolution of the industry by suggesting that there is an emergency, unless there is evidence to suggest that an emergency actually exists.[15]

Chairman Murkowski and Ranking Member Cantwell, thank you again for the opportunity to appear before the Committee today. I look forward to answering your questions and the questions of your colleagues.

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[15] *E.g.*, PJM Interconnection, L.L.C., *PJM Statement on Potential Department of Energy Market Intervention* (June 1, 2018), http://www.pjm.com/-/media/about-pjm/newsroom/2018-releases/20180601-pjm-statement-on-potential-doe-market-intervention.ashx ("The PJM electrical grid is more reliable than ever, with 23 percent reserve margins and billions of dollars of new investment.").

The CHAIRMAN. Thank you, Commissioner. Thank you, each of you, for your comments this morning and, again, for your leadership on the Commission.

I am just reflecting, really, on what has happened in the space of ten years since we had the full Federal Energy Regulatory Commission before this oversight Committee.

Commissioner Powelson, you used the term "a tectonic shift" and you cite what we are seeing with the role of renewables, the shale revolution, the innovation that has led us to where we are with storage, and it really is remarkable where we have been since the last time we had the FERC before this Committee.

I would like to begin my questions this morning with regard to the retirements controversy. We have been talking about that since 2010 as well, but you have several different things, the federal and state policy choices on the one hand and, then again, the innovation and simple economics to a certain perspective that have really advanced what we all would say is considerable change. This is a big change, tectonic, if you want to use that word.

So the real question is what, if anything, should FERC do about this? What is the role? As I mentioned in my opening, I have been somewhat disappointed in the role of the FERC in years prior, your predecessors who, I felt, were not paying enough attention to the direction that we were headed and where we are now where we have a controversy out there. I think we recognize that each one of you has referenced it in different ways.

As with many controversies with so much at stake in such a heavily regulated industry such as energy, the various interests are locked in. This is battle. This is mortal conflict for some.

Now I have looked at much of the information that FERC has been involved with. You have done a lot in terms of collecting the information across many proceedings. That is important. But what we have not really seen is that decisive action, and in my view, we have this policy vacuum. So now you have the Department of Energy, you have the Administration weighing in.

My question is, it seems that the retirements, in my view, have not reached the point where the quality of electric service has been visibly compromised. Are you confident that this situation will persist, and to try to get into more conversation, I would just ask if you agree, yes or no?

Chairman.

Mr. MCINTYRE. Thank you, Madam Chair. Agree yes or no with the idea——

The CHAIRMAN. With the idea——

Mr. MCINTYRE. ——that we have not been, we have not seen——

The CHAIRMAN. ——the quality of service visibly compromised.

Mr. MCINTYRE. I do, and I do not quarrel with the study you referenced in an earlier remark about how there is no immediate calamity or threat to our ongoing ability to have our bulk power system operate and satisfy the energy needs. However——

The CHAIRMAN. Do the rest of you agree with that?

Mr. MCINTYRE. ——when it comes to resilience I would say that we have to take a longer-term lens——

The CHAIRMAN. Fair.

Mr. MCINTYRE. ——and ask ourselves what should the future landscape of our generation resource mix look like and ensure that we get that right as well.

The CHAIRMAN. Absolutely imperative.

Would the rest of you agree that where we are right now, that the quality has not been visibly compromised?

Ms. LAFLEUR. I agree, Senator. I think the history of electricity in this country for the last century has been one of continual change in resources and we're seeing just that from—when I first got into the industry, we were switching plants from oil to coal because of the oil embargos in the '70s. Now we're seeing yet another, as Chairman—Commissioner Powelson said, tectonic shift.

I think reliability has been protected. I'm confident it can continue to be if we're vigilant about any localized issues or specific issues.

The CHAIRMAN. I want to really focus on that part of it, is whether or not today's situation will continue? To use your point here, Mr. Chairman, we need to be able to, basically, forecast the future here a little bit.

Mr. Chatterjee.

Mr. CHATTERJEE. Madam Chairman, I actually wanted to quote directly from this DOE memo that has drawn so much attention that, "It's understood that most outages to date have been caused by disruption and transmission interruptions triggered by weather, including lightning strikes and hurricanes." That's, you know, we shouldn't assume that that good fortune will continue.

In my view no action is akin to driving a car without a seat belt. You may not get into an accident on your way home tonight, but that doesn't mean that you might not have an accident during rush hour tomorrow, which is why while I agree with the point that quality has not yet been affected to date, I think it is important that we and our partners throughout the Federal Government remain vigilant in ensuring the reliability of our bulk power system.

The CHAIRMAN. Commissioner Powelson.

Mr. POWELSON. Well, I look at this and, going back to the point earlier, to Commissioner LaFleur's point and Chairman McIntyre, I mean, we are actively working with our RTOs. These RTOs put into a capacity market a reliability pricing model. We look at things like reserve margins. And now we're having conversations around cyber protections of those assets.

So I agree with Commissioner Chatterjee. I mean, we have to continue to be vigilant in looking at these issues but at the end of the day—and I use two backdrop issues that seem to be driving this. One is a bankruptcy of an entity that I used to regulate, that I approved a merger of, and that is no different, by the way, than the bankruptcy that happened with the Energy Future Holdings entity in Texas. That company has gone through a bankruptcy, the plant is closed, but there was not one interruption of power or distribution service to customers.

And I'm a little concerned about the narrative that's being put out there. I am not, you know, I come from the fifth or second largest coal production state. I understand that. We're going to need, as it's been said time and time again, we're going to need all these resources.

But I don't think it's appropriate to put the FERC in the arena of creating moral hazards in these markets. These markets are working hyperefficiently right now. Certainly, there are things we need to look at around the edges around resiliency and I think, to Chairman McIntyre's credit, we're having that conversation. But a hard and fast mandate on these markets could really evaporate all the goodwill that consumers have seen and the environment has seen. To erode that would be a real step back for our U.S. bulk power system.

The CHAIRMAN. Let me go to Commissioner Glick.

Mr. GLICK. I agree as well, Madam Chair.

You know, the PJM is where, really, the ground zero for this whole issue really is created where people are arguing at PJM is the area where this is, where people are most affected by the issue of retirement, retirement of generators. PJM says there's actually not an emergency. And Exelon itself suggests that, the Chair of Exelon the other day—and Exelon actually would benefit from what the Department of Energy and the NSC is taking a look at—Exelon as well says there's not an emergency.

I think the question is, we need to keep on being vigilant and monitoring the situation, but we also need to be wary of people using the situation or the potential situation as an excuse to achieve market changes they haven't been able to achieve otherwise.

The CHAIRMAN. Well, I appreciate that.

One of the things that I would like to follow on with this, and my time is up, but I have, kind of, taken the position that I certainly favor competition over regulation for getting the best results, and I think that over the past couple decades we have seen better results through price and through innovation.

So I would certainly favor a market solution, but I would hope that we, you, the FERC, could consider any adjustments such as the thousands of pages of RTO tariffs I mentioned that could address the legitimate reliability or resilience problems that are continuing to mount. But again, how we can address this?

It sounds like you all are in agreement here to a certain extent, but it does cause a question in terms of what is it that the FERC can actually do without, basically, the statutory or the legislating approach?

Let me go to Senator Cantwell.

Senator CANTWELL. Thank you, Madam Chair, and thanks for leading off and starting that discussion because I find this whole thing like head-scratching in so many different ways.

I mean the notion that, first of all from the Northwest perspective, what has driven affordable electricity has driven our economy over and over again. So I am very interested in affordable electricity, bottom line. The notion that someone would supplant the market of delivering affordable electricity with the most available unit of cost-effective energy and supplant it with an order that would say, "buy something more expensive," is disrupting the whole market.

I don't know why we would go back to that. I mean, is the Administration for reregulating electricity? Is that what that position is? Because I don't get it.

The Power Act definitely is there for shortage and shortage only, which you have all just said is not there, and the Defense Act says the same, shortage, which is not there.

We had this debate in Committee once where we were empathetic on our side to the fact that okay, first of all, we created this big policy here in the United States on production of natural gas. We claimed it as a big success, and then it did compete with sources of more expensive energy. I think we voted to say that some of those Midwest coal plants that were getting competed with on rail for supply, we were a little more empathetic. But that is a different story than just out and out charging consumers more just because we want to preference one over the other.

I just find this whole thing almost mind-boggling in the policy element that somebody would be interfering with FERC's standard practice of giving us just and reasonable, lowest cost electricity, at least in those organized markets.

Commissioner Powelson, you used to regulate rates for consumers, and last year the PJM market monitor said the DOE's proposal for FERC would raise the wholesale rate by 84 percent. So you rejected that proposal. Do you think this latest proposal is any different?

Mr. POWELSON. I haven't looked at the analytics. I know that the market monitor has been very vigilant in looking at this and outreaching to state commissions and consumer advocates, and I've also met with those groups.

I do think, Senator, it's critically important to your point. I mean, here we are today at PJM. In 2008 we were in a $14.00 gas market and here we are today in a $2.00 and, you know, Henry Hub, or we'll call it Pennsylvania Lady Hub, in a $2.26 market with ample supply and wholesale power prices have dropped 56 percent. In fact, in my home state, retail customers are paying less for power today, prior to restructuring, I mean, that's—and customers in Pennsylvania and in your home state, I follow what the Commission approved with Microsoft looking for a sustainable energy product. The market will deliver those outcomes. And I think it's critically important for us and, again, I commend our Chairman and my colleagues' work in a bipartisan manner, always remain diligent on reliability, look at the issue of resiliency, but the technology landscape, as I said in my testimony, has changed to just things we couldn't fathom ten years ago.

It's been a great thing for organized markets. We've learned a lot of lessons, as you know. There was a company in Houston that bastardized that construct. I didn't want to go there, but today, it has been a phenomenal success story. In fact, I will say this to you, in a recent presentation the restructuring of these markets is arguably one of the largest wealth transfers to take place in our nation's history, and I think it's something that we should not retreat on.

Senator CANTWELL. Well, I appreciate you mentioning that situation because I do think, in the time of Enron, people tried to get FERC to use all sorts of other standards to look at that problem. And I think that FERC realized that was, that your just-and-reasonable rate clause was the focus and should always be the focus of FERC.

I don't even agree on the security side. I am very well aware of where our cybersecurity attacks are coming from, and some of these have been into our plant operating systems. And so, it doesn't matter what the plant operating source is, the issue is that cybersecurity could disrupt any type.

Our goal here is to try to build better resiliency, backups and information into the system so that we can better track that kind of attack, no matter what the source is. I don't even agree that somehow these other sources could be more reliable or secure. I don't even agree with that.

So anyway, we hope the Commission will keep playing this role. We are reaping the benefits of what we all pushed here, which was to have more natural gas and now it is here. I think we have to let the market continue to play its role.

The CHAIRMAN. Thank you, Senator.

Senator Barrasso.

Senator BARRASSO. Thank you, Chairman Murkowski.

Mr. Chatterjee, on April 26th Senator Risch and I introduced the Update PURPA Act. The legislation makes several commonsense reforms to bring the 40-year-old Public Utility Regulatory Policy Act in line with what modern energy markets are doing to protect consumers from what I believe are unnecessary costs.

Back in '78 when that law was passed, things were different then. We now have open access to electric transmission. We have competitive wholesale energy markets. We have abundant renewable energy. So I believe that the regulations need to be updated to reflect these modern realities and ensure electric utility customers are not footing the bill for power that they really do not need and do not want to pay for.

I am encouraged by the Commission's announcement on May 17th that you are going to be reviewing the PURPA regulations. Would you please give us some additional detail on the scope and the timing of the review and any of the specific rules you believe need to be updated?

Mr. CHATTERJEE. Thank you, Senator.

And again, I commend you for introducing your legislation. I have said repeatedly, I think major changes to PURPA need to be statutory and come from this body, but that said, the time has since passed. We need to take a look at our own regulations and see what we can do.

The Chairman, in his introductory remarks, indicated that we already have a robust record to work from in this area due to the work of Commissioner LaFleur and others.

To me, the one-mile rule and the 20-megawatt rule are probably the two parts of our regulations that have gotten the most attention, but I don't think that we should just limit our focus to those. I support a broad review of all of our existing PURPA regulations to see what's working, what's not working and what needs to be updated to account for our modern energy landscape. Commissioner Powelson has been aggressive in pushing for a fast timetable, and I think with the record that the Chairman referenced, I'm hopeful that we can do that in short order.

Senator BARRASSO. Since you mentioned Commissioner Powelson, anything you would like to add, Commissioner?

Mr. POWELSON. Well, Senator, I want to commend you and Senator Risch for your leadership on this issue.

Look, anything that protects electricity customers from having to pay for unnecessary costs is something we should all get behind. And that's why I join—not to prejudge outcomes here but, again, I want to applaud the leadership from our Chairman on this and also as the former president of the National Association of Regulatory Utility Commissioners, NARUC, has presented testimony on this issue and your legislation, in my view, is, I think it's long overdue.

To your point, the energy landscape since 1978 has changed and I can tell you all of my colleagues, we've met with some of these new technology providers. I'll let them go nameless here. But PURPA is not recognizing new technologies like storage, like oxidized fuel cells, and it's going to be a problem going forward.

So I'm for, as Commissioner Chatterjee mentioned, the one-mile rule reform if we can get our hands around that, the QF reform, and then lowering that 20-megawatt threshold would be something that, I think, would be good for markets.

But to your point of protecting consumers, now more than ever in this low energy cost environment that we're in, we've got to get your legislation moving.

Senator BARRASSO. I appreciate the comments.

Chairman McIntyre, a different question. During the cold snap this past winter, data from the Department of Energy showed that the coldest parts of the country were heavily reliant on baseload coal and nuclear generation sources when they needed power the most. To me, this shows the value of fuel-secure resources to a reliable and diverse generation fleet. I would just ask if you agree that maintaining the role of coal and nuclear power in our generation fleet is critical for grid reliability and resilience of the grid?

Mr. MCINTYRE. Thank you, Senator, for the question.

I have long been a proponent of an all-of-the-above strategy in satisfying our nation's energy needs, and coal is ensured to remain a part of that mix.

Senator BARRASSO. Commissioner Chatterjee, do you have anything specific you would like to add to that?

Mr. CHATTERJEE. Yes, Senator.

Again, I think as to the line of questioning that the Chairwoman had earlier, you know, we need to understand what these rapid transitions in our generation mix mean from a fuel security standpoint, from a fuel diversity standpoint. And I think we need to carefully examine the record.

We did that in evaluating the DOE NOPR last fall. And despite initial sympathy that I had for what Secretary Perry was proposing, having spent time up here with folks like yourself, talking to constituencies who have been hurt by these retirements, I have a new job now and it's evidentiary-based. And the evidence wasn't there to support the action that Secretary Perry had proposed which is why we commenced our new docket. And I'm hopeful that working with my colleagues to remain vigilant that we will be able to ensure the reliability and resilience of the grid.

Senator BARRASSO. Thank you. Thank you, Madam Chairman.

The CHAIRMAN. Thank you, Senator Barrasso.

Senator Heinrich.

Senator HEINRICH. Thank you, Madam Chair.

Commissioner Powelson, I appreciated your written testimony with regard to the President's recent directive to the Department of Energy. I believe you wrote that it "could potentially blow up the markets and result in significant rate increases without any corresponding reliability, resilience or cybersecurity benefits." Talk to us a little bit more about what such an unprecedented command and control approach to the existing wholesale competitive markets would mean.

Mr. POWELSON. Thank you, Senator, for the question.

Let me start with the conversation that we mentioned earlier where these markets value reliability through a reliability pricing model. And those markets, basically, set up a mechanism where you have orderly entry and exit of resources.

If I had a pie chart today showing the PJM marketplace to Commissioner Glick's point—it seems like everything is focused on PJM and there are other parts of the country that we regulate. But if we're going to hone in on the PJM energy mix, it's probably the most diverse it's been since the grid was formed in the dispatch of 2301 Market Street in Philadelphia.

Senator HEINRICH. Right.

Mr. POWELSON. And I think the issue for us, again, is—and Commissioner Chatterjee and the Chairman and my other colleagues, we're looking at this in terms of you hear it from CEOs of companies. Do we want to have an energy dispatch that is reliant on one energy source? No, we don't.

Senator HEINRICH. And do we? Are we reliant on one energy source?

Mr. POWELSON. And currently, in certain marketplaces, we don't. But let me take you to the New England states, after the bomb cyclone. I mean, New England governors, Republicans and Democrats alike, are looking to get new gas capacity into that market. There is a problem in New England. To the credit of the RTO or the independent system operator, they've done a 2025 lookout of that, a bunch of scenarios that are real time that are going to have a dramatic impact on that bulk power system dispatch. And then that's a conversation we need to continue to have.

But to your question, I think, you know, these markets are driving a value proposition of creating diversity in the fleet. And yes, I can tell you unequivocally, there will be profiles of coal plants and nuclear plants that will clear in these markets. We know that. There will be certain assets, coal and nuclear, that won't clear in these markets. That's the market delivering on what it's promised consumers——

Senator HEINRICH. Let me ask you all broadly. Do any of you believe that in the wholesale power markets we are facing an actual national security emergency at the moment?

Ms. LAFLEUR. I do not, Senator. I think the markets are reliable.

Senator HEINRICH. Anyone want to answer that with a yes?

[No response.]

Let's move on then.

Chairman McIntyre, I want to thank you for Order 841, and all of you for the work that went into that order. Storage is obviously

remaking our grid in many different ways, and the logical follow-on would be a similar order with regard to aggregated distributed energy resources. I know you all have been building a record on that. How do you feel about that process and where it is going?

Mr. MCINTYRE. Thank you, Senator.

Yes, I think that our order directing the RTOs and ISOs to eliminate any undue barriers to the participation of storage in our energy markets is a very important step forward and is in line, I think, with, although my colleagues, of course, speak for themselves, I think it's very much in line with the dedication we share to embracing new technologies and seeing that they make their way to our markets in a way that yields benefits to consumers.

And I agree with you that it's now appropriate to focus our attention on DERs, as we call them, distributed energy resources, and see whether there are steps that we can take to do the exact same thing for DERs as we did for storage.

Senator HEINRICH. Do you believe that you are building an adequate technical record to support moving forward on that kind of an order?

Mr. MCINTYRE. I do.

The submittals of comments have been a robust process, and we will work through that record and make the decisions that we think are appropriate and helpful.

Senator HEINRICH. Great.

My time is almost up so I am going to yield back the balance, Madam Chair.

The CHAIRMAN. Thank you, Senator Heinrich.

Senator Capito.

Senator CAPITO. Thank you, Madam Chair.

I want to thank all of you, as Commissioners, not only is it great to see everybody here together but it is great to have a full Commission as well.

Commissioner Chatterjee, I want to talk a little bit about the DOE draft. Obviously, I represent a coal state and a natural gas state, but I feel that the challenge that has been facing our coal baseload generation is one of economics. Years of subsidies of renewable energy and regulations designed to hammer coal production has led to a failure which has basically been punishing these energy sources. The natural gas revolution's impact has laid bare and accelerated the effect of these failures. But the damage done is like scar tissue in our states. You know this being a Kentuckian and certainly Senator Manchin and I can give you time and many, many instances throughout our states where it is difficult. It has been very difficult. Shuttered coal plants, mines and jobs that will not be easily replaced.

The renewable subsidies have been renewed and I support free markets and an all-of-the-above policy, but due to the nature of our utilities, I believe that our electric markets are inherently artificial constructs and that the previous interventions on behalf of particular energy resources merit intervention now to try to restore some balance.

We are also facing challenges with natural gas, but it is mostly related to the infrastructure. We should be working to build out additional pipelines to benefit our producers, reduce our energy costs

and build redundancy into our natural gas and electric generation systems.

Permitting a pipeline takes too long, is subject to too much uncertainty and now states are adding on to the complexities, leaving regions of the country without sufficient access to affordable, domestic energy. When we see this in the DOE memo, it cites New England and the Southwest as those facing the most serious challenges to regional grids.

In this very Committee, we had testimony that during the bomb cyclone, the ISO New England, because of their lack of access to natural gas coming from the Marcellus shale that we have talked about today, they imported natural gas for the Boston area from Russia on LNG. I mean, that sort of raised the hair on the back of my neck, quite frankly. And especially when I live in an area such as Pennsylvania where there is great abundance of natural gas and would greatly benefit those in New England.

So, to get to the question. Can you describe the importance of maintaining baseload generation? You talked about what is happening today but you also talked about where we need to be looking into the future. Could you, kind of, flush that out for me a little bit, please?

Mr. CHATTERJEE. Yes, absolutely. Thank you for the question.

And you are right that we need to take seriously these issues and look at the impact in communities. I appreciated Commissioner Glick's opening remarks when he addressed this.

Senator CAPITO. Right. Thank you.

Mr. CHATTERJEE. I recall a few years ago going to Eastern Kentucky with you and we saw that when these plants close down and there are no alternative avenues for alternative employment, you know, entire communities are threatened by this and we have to be sensitive to that.

Now my role as a market regulator is to ensure the reliability of the grid, but it is entirely appropriate for you, in your leadership, to fight on behalf of these communities. And that's why we have the resilience proceeding that we have currently ongoing.

You know, there's been a lot of talk about this DOE memo and it's a leaked memo. We don't know what the Administration intends to do with it. But I think people are also too quickly dismissing it. I've read the memo. There are a number of points in the memo that are thoroughly well-cited and researched. And I think we can have disagreements about what the remedy may be, but I think they raise a real issue, and you speak to it, that we need to look at it.

And I think pipeline infrastructure, gas infrastructure, has to be a part of that conversation. The reason that we are having this reliability situation, potential resilience situation in New England, is due to the lack of availability of that adequate infrastructure. And so, you raise several tremendous points.

Senator CAPITO. Thank you.

Let me ask you this, in terms of—and you did mention this is just a leaked memo and it is from the DOE—but what, and I can, kind of, throw this open to anybody, I mean everybody sort of alluded to it, but what role would FERC play in this process, or should FERC play any role in the process?

I will start with you, Commissioner Chatterjee, and then if I have some time left we can go through.

Mr. CHATTERJEE. I think from my vantage point it's unclear what role would there be because we need some more details about what implementation would look like.

The one area, and the Chairman has spoken to this, where I could foresee a role, if in fact there were disagreements between, you know, the RTO and the ISO and a generator on rates, you know, that that would, obviously, fall into our wheelhouse.

Senator CAPITO. Alright, I think I have run out of time. Thank you.

The CHAIRMAN. Thank you, Senator.

Senator Wyden.

Senator WYDEN. Thank you very much, Ms. Chairman.

I think I am going to ask this question of you, Mr. Glick. It seems to me the President and Secretary Perry are doubling down on this commonsense defined plan to blow up the energy markets by issuing an emergency order to subsidize uncompetitive energy facilities, and this strikes me as a real abuse of power.

But what I want to get into with you, specifically, is what this is going to mean for consumers' bills. I mean, what is this going to mean for households across America? Because when you set aside all the lingo that we use around here, the Chair and I used to talk about it when I was Chairman of this Committee, half the time you can't even figure out what language is being discussed here. But I can tell you people in homes, they understand what it means for their bills.

Now, we looked at one analysis. I gather they are pretty widely respected. The PJM people, I guess, also are connected to the market monitor, and they determined that the average family would pay about $250 more per year and would not be getting anything. Do you generally share that view?

Mr. GLICK. Well, Senator, thanks for the question.

The numbers I've seen suggest that, there's been a wide range, but suggests that the proposal, if it's implemented, the proposal in the memo could actually increase rates nationwide up to $65 billion. Now that may be on the high mark, but still that's going to be pretty significant. What the memo essentially is calling for, again——

Senator WYDEN. Well, let me stop you there, because I want to hear it.

So, if anything, your take right now is that amount could be low, what I just asked about.

Mr. GLICK. No, no. I think that's an upper boundary——

Senator WYDEN. Okay, so give us the range, the ballpark for the consumer, what you think is most likely?

Mr. GLICK. Well, again, I haven't seen the actual——

Senator WYDEN. Based on what we know, because we've got this independent watchdog which is widely respected. So, go ahead.

Mr. GLICK. Sure.

So basically what the memo is requiring is, if the memo is implemented, would require, essentially, that instead of lower-cost energy being dispatched, they dispatch higher-cost energy. So it's clearly going to raise rates. The question is—how much? I've seen

estimates between $30 billion and $65 billion in terms of what the impact might be. It's something I saw yesterday. But we could provide a greater example for the record.

I want to, Senator, if I could get back to your point because, basically, you made the right point which is you have to actually create a record. You have to have evidence in the record.

When I was at the Department of Energy during the Western Energy Crisis during 1999 and 2000, we actually invoked both statutes that the memo suggests invoking. One of them is the 202C of the Federal Power Act. The other one is the Defense Production Act. In both cases, there was clearly an emergency out West, as you will recall. Companies weren't selling power into California because the California PX and other purchaser power weren't creditworthy.

And so, we created a record. We had the record there truly was an emergency. We issued several orders, primarily using the Federal Power Act to require generators to sell power into California, and once requiring a natural gas provider to sell natural gas into California because there was an emergency regarding supplying a defense facility up there. But again, there was evidence in the record.

In this case, I think what we're trying to do is get to the solution before we actually build a record suggesting that there's actually an emergency.

Senator WYDEN. I think that is way too logical——

[Laughter.]

——and clearly that is not what is being done.

But I am just going to close with this. I am very anxious to work with my colleagues—Senator Manchin, my friend, is here. When I was Chair I went to West Virginia, and there are plenty of things we can work together on.

What I am troubled about, because I just had town meetings at home. Nobody said, hey Ron, we have an emergency here that requires that you go out and raise our power bills. And that is, I think, what people are going to take away from this.

We are going to continue our dialogue and work with colleagues on both sides, and I especially appreciate that last point that you made that this is really jumping the gun here, that there really aren't the facts on the record that would justify treating this as an emergency.

If you are going to raise people's power bills, which Americans understand if you are in a national emergency and the country's well-being is at stake. Everybody, whether they are in West Virginia or Oregon, we step up because we are for the Red, White and Blue. But I sure don't see any evidence of an emergency here that justifies raising people's power bills along the lines of what you have described.

I thank you, and thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator.

Senator Gardner.

Senator GARDNER. Thank you, Madam Chair.

Thanks to the Commissioners for being here. It is good to see all of you. Chairman, welcome.

This issue of power bills and cost, I think, is an important one.

Mr. Chatterjee, real quick, the tax cuts that passed this Congress this past year—we have seen decreases in utility bills as a result. Is that something you have seen as well?

Mr. CHATTERJEE. Yes, absolutely.

I think we wanted to ensure that consumers and not companies be the beneficiaries of those tax cuts. And I think what we have seen is, in terms of those rate reductions that are occurring, that those are being returned to customers.

Senator GARDNER. I agree. I am concerned with the rising power bills. What would happen if the tax cuts were to be reversed?

Mr. CHATTERJEE. I mean, in terms of what actions we would have to take, I'm not entirely sure, but you would certainly see——

Senator GARDNER. But I mean, would these cuts in power bills that have occurred across——

Mr. CHATTERJEE. You would certainly, if the taxes went up, one would foresee, you know, those being reflected in rates.

Senator GARDNER. So people who are concerned about power bills rising ought to be concerned about raising taxes back to what they were because we would see those cuts in utility bills go away.

Mr. CHATTERJEE. I would be concerned, yes.

Senator GARDNER. Yes, thank you.

Chairman McIntyre, the tremendous natural gas supply in the U.S. Rocky Mountains, Utah, Wyoming, Colorado—we have seen remarkable opportunities there.

The U.S. Geological Survey recently determined that recoverable natural gas supplies in the Piceance Basin is 40 times larger than initially thought. It is absolutely incredible. But with U.S. market demand being largely satisfied by supply from other natural gas-producing regions, the only way for U.S. Rocky Mountain gas producers to contribute to U.S. energy dominance, or one of the only ways, is to export that natural gas to our allies, particularly the Asian markets.

The fact is our allies are seeking U.S. opportunities for energy. I have met with leaders in Taiwan, in Japan, in South Korea, who are all looking for ways to do business with U.S. energy producers to diversify their natural gas supplies within the United States. And that means they have to have an LNG export terminal on the U.S. West Coast.

It is a matter of economic security. It is a matter of national security. It is a great soft power of diplomacy that we could utilize. I am very concerned about staff resources though at FERC in that there could be a negative effect on the permitting timelines for these types of projects to satisfy the demand from our allies.

What can the Commission do to help accelerate staffing to ensure that the agency can process these permits in a timely manner when it comes to LNG export facilities?

Mr. MCINTYRE. Thank you for the question, Senator.

And yes, this is all a part of a tremendous American success story, the enormous increase in natural gas production, largely as a result of technological advancements. And yes, that production now is seeking markets and those are global markets, increasingly, which to us here in the United States means we need to get them to LNG terminals and out.

There's a certain amount of this issue that's governed by simple metrics. If we turn the clock back ten years to 2008, there is a grand total of 4 LNG terminal applications pending before the FERC. Today there are 14 and they are larger and they are more complex and they are more expensive. And as you can imagine, the review process is not a simple one. And, of course, our legal processes allow for ample stakeholder input into thoughts on whether the approval should be granted or not. And in addition to those 14 applications, there are six processes now of construction underway which themselves trigger certain needs for FERC review, monitoring inspections and so on.

We are actively looking for creative new ways to embrace and attack this increased workload. For example, we are using—for nonproprietary aspects of the projects and designs—we are using third-party contractors for some of that work. We're actively seeking to hire, so send us good people.

[Laughter.]

And we will hire them in a heartbeat.

Senator GARDNER. Right.

Mr. MCINTYRE. And beyond that we also are looking for internal processes that we can streamline.

Senator GARDNER. Great.

I know with a number of these LNG export applications pending, it is important that we prioritize staff. I hope you are making the appropriate staff prioritization with the limited staff resources available. I know that you are going to have export applications with decisions on precedence, which ones take priority.

A quick question before I run out of time here. The President laid out a two-year deadline for NEPA reviews last year. FERC has traditionally averaged 18 to 24 months for LNG projects. How many LNG export projects do you expect to get done in this two-year timeframe that the President has ordered, and could you talk a little bit more about that, delivering on that promise?

Mr. MCINTYRE. Sure.

You referred to the One Federal Decision process and the Memorandum of Understanding we have executed under that process. It is a two-year, government-wide average approval process target and I expect—I can, of course, only speak from my role at FERC. There are a number of other entities involved, federally. And I expect that, certainly, a majority of the projects that are covered by that goal would be something that we would be able to address in a two-year timeframe. But again, that there's only so much we can do at FERC. We can't control what is done by the Forest Service and so on, or the other federal entities.

Senator GARDNER. Mr. Chairman, thank you.

Than you, Madam Chair.

We may have some questions for the record. Thank you.

The CHAIRMAN. Thank you, Senator.

Senator Manchin.

Senator MANCHIN. Thank you, Madam Chair.

Mr. Powelson, I would like first to, I think, just make a little correction. I think you said Pennsylvania was number two in coal production.

Mr. POWELSON. I did, yes.

Senator MANCHIN. Yes, you are number three. You are about 35 million tons behind us.

[Laughter.]

Mr. POWELSON. I stand corrected, Senator.

Senator MANCHIN. Thank you, sir.

With that said, Pennsylvania has added tremendously over the years because they were a tremendous coal-producing state. And we appreciate all the energy produced for us.

I would like to go through a few things of what is going on. Since 2010, 610 coal-powered plants in 43 states have retired. That is almost 35 percent of the U.S. coal fleet. Sixty-nine thousand megawatts of coal-fired generating capacity has been retired. In 2020, an additional 21,000 megawatts are expected to retire. That is 90,000 megawatts by the end of 2020. About 456 plants contributing 76,000 megawatts are attributed to the EPA regulation.

During the bomb cyclone, the Department of Energy's own National Energy Technology Lab, NETL, found that at the height of the peak of demand on January 5th, 2018, had coal been removed, a 9- to 18-gigawatt shortage would have developed. In early January a winter storm, popularly known as bomb cyclone, combined with unusually cold weather and extremely low temperatures, led to an unprecedented level of natural gas demand as heating needs rose. As a result, in just a few days, gas prices near New York City went from less than $3.00 per million BTU to over $140 per million BTU, and similar pricing surges were experienced all along the East Coast.

Everyone has been talking about cost. I represent a state that has an 18 percent poverty level. We rank 46th in the nation. I don't know what all has happened and how they have talked and how you all have evaluated this rise if the President, which I support very robustly, uses the Defense Production Act in 202(c). I will say Mr. McIntyre, do you believe that is within his authority to do so?

Mr. MCINTYRE. Within the authority of the Secretary?

Senator MANCHIN. The President.

Mr. MCINTYRE. Oh, the President.

Well, under the role——

Senator MANCHIN. Secretary Perry, right, he basically is directing Secretary Perry.

Mr. MCINTYRE. Yes, sir.

Under the roles assigned to the Secretary by Congress it is up to the Secretary of Energy to determine whether the conditions exist for the invocation of the directives under either.

Senator MANCHIN. Do you believe that the Administration has the authority to take measures to preserve the power plants critical for national security?

Mr. MCINTYRE. There's no question that the Secretary does and since the Secretary reports to the President, it stands to reason that that is so.

Senator MANCHIN. Thank you, sir. I know that has been your statement before, and I appreciate that.

Let me tell you what has happened to states like West Virginia. In 2009, the average price per kilowatt-hour was 7.84 cents; 2017, 11.93 cents, 12 cents. In 2009, someone living in the State of West

Virginia with an 18 percent poverty level that we have, $88.16 was our average monthly bill. Now it is $126.10.

I do not know how you all think that you have kept these prices down and you are helping these poor people get through difficult times. You do not want to raise their prices anymore. How can you justify what you have already done to them? I cannot explain that.

It comes as no surprise because of what I believe about what we have and what we need. So if someone, one of you all, could tell me how you define baseload power. What do you consider to be baseload? I thought it was always 24/7, uninterruptible power. No way it could be interrupted 24/7. You tell me what else does that besides nukes and coal? And this is only for 24 months, correct? I mean, the order by Perry, is 24 months? You are acting like it is going to be forever. It is only 24 months and it expires and it has to be reauthorized. Is that correct?

Mr. MCINTYRE. Yeah, there is a—yes, Senator, there's a process for it to reauthorize.

Senator MANCHIN. So we are talking 24 months.

Can anyone tell me how you all define baseload power?

Mr. Glick, do you want to start?

Mr. GLICK. Sure, baseload power is generally, essentially, power plants that are capable of operating all the time unless they're down for repair or something like that. Certainly, coal and nuclear——

Senator MANCHIN. Is there anything else besides coal and nuke that you consider to be baseload?

Mr. GLICK. Some hydro projects are also considered baseload.

Senator MANCHIN. Okay.

Mr. POWELSON. Senator, good morning.

And I applaud you for your leadership, not only when you were Governor of West Virginia, but on this issue.

My definition of baseload would add on top of hydro, natural gas. And the reason I say that is your state, my state, Ohio, Texas, Colorado, if you looked at every new power plant built in this country during the last five years or talk to any utility CEO from the EEI membership or merchant generator, we are building a lot of gas plants. And these are not small gas plants.

Senator MANCHIN. Well, we are tickled to death to have the gas capacity we have which is tremendous in West Virginia, Pennsylvania and Ohio, but it can be interruptible.

Mr. POWELSON. But so are those other sources. And let me pick up on that.

Senator MANCHIN. Sure.

Mr. POWELSON. During the polar vortex I was Chairman of the Pennsylvania Public Utility Commission. I remember Governor Corbett calling me, saying hey, I'm noticing we're having something like a 22 percent forced outage rate. What's going on?

We had nuclear plants. We had coal pits that were frozen. We had interruptible gas lines. We had industrial customers that didn't firm up their gas contracts. And so, a market response to that which has been, and it happened in New England, is putting market roles that drove an outcome now. It's called capacity performance.

So you better make sure during a heat spell or a cold spell that your assets are going to perform or you're going to receive penalties by the grid operator. And I think that's a market construct to your pricing point. I mean, we're seeing historically low prices in PJM. I mean——

Senator MANCHIN. But they are not reflected in the prices in West Virginia.

Mr. POWELSON. Well, let me wear my economic development hat. Okay?

An ethylene cracker coming to Beaver County, Pennsylvania, and you're in the epicenter of that, the West Virginia market with natural gas liquids. These natural gas liquids were predominantly dominated by two states, Texas and Louisiana, and now comes the ability—we could argue a little bit about pricing, but Pennsylvania and West Virginia were not attractive places to build these facilities. These are $5 billion investments that are being made right now, and I think it speaks to the earlier point by the Chairman. This is, the changes that are taking place in——

Senator MANCHIN. We are all for the changes taking place.

My time is, I know I am over time. My time is running out.

But we are all for these changes from the standpoint of an all-in energy policy, but to just throw two under the bus is basically taking us to where we have—for the next 24 months—the need for reliable power.

It says right here, I mean, in fact, the Department of Energy's own NETL, the NETL labs, are saying at the height of the peak of demand, January 5th, 2018, had coal been removed, a 9- to 18-gigawatt shortfall would have developed. They are saying right now it is still—we are not in that fully matured state to where everything is going to take the place of what we have been doing with coal and nuclear.

We are seeing plants that are, basically, the most efficient as far as climate-efficient plants go, with all of the pollution controls. We are talking about scrubbers, low NOx boilers, baghouse of mercury—these are the best of what we have. These are coming off because of market conditions right now, and we are trying to keep those online for a 24-month period to stabilize the system and let the rest of the system mature.

That is all we have asked for, and everybody is coming out of the woodwork thinking they are going to jack their prices up. West Virginia has been hit pretty hard.

The CHAIRMAN. Senator Manchin, you will have an opportunity for a second round.

Senator MANCHIN. Yes.

The CHAIRMAN. I know that you would like to continue the engagement, and it is good.

Let's move on to Senator Portman, get through this first round and we will come back to you.

Senator PORTMAN. It is an important dialogue, and I appreciate my colleague from West Virginia raising it.

I have a really important issue I need to raise with you guys, too, and that is on the permitting front.

As you know, back in the day during the Highway bill, we got into Title 41 of the FAST Act, legislation I introduced with Senator

Claire McCaskill and it is called the Federal Permitting Improvement Act. It creates this Federal Permitting Improvement Steering Council. And we are all talking about permitting now on both sides of the aisle, how to have that infrastructure now or go further.

Energy is a huge part of these projects. In fact, I got involved in this issue initially because a group came to me, AMP in Ohio, and they were working on a hydro plant on the Ohio River. I think at that point it had taken six years to try to get the permits and there were so many federal agencies involved—the right hand not knowing what the left hand was doing. Capital is not that patient, and they were losing capital. They came to me and said, you know, is there any way you can, on these big energy projects like this, help us to actually get a decision, get the federal agencies to coordinate and have someone be held accountable?

So we went to work on it and in the end we got the AFL-CIO Building Trades Council, as well as some environmental groups, as well as the business community on board. Again, I think it is fair to say this has become something that a lot of us are acutely interested in.

One thing it did, and this should not be revolutionary but it is, was it set project deadlines and it made it a requirement that we actually, publicly, allow the parties and the public to see through a dashboard, to be able to see what the deadlines were.

So, as you know, FERC is responsible for taking a leading role in many of these large, complex infrastructure projects, including the non-federal hydropower projects, interstate and natural gas pipelines, storage facilities, liquified natural gas terminals and other huge projects. You are the lead agency on a lot of the in-progress and completed FAST-41 projects, in fact, we appreciate that. A number are listed. You can see them online at permits .performance.gov if anybody watching is interested. There is an online dashboard for that. You also recently signed this Memorandum of Understanding implementing the One Federal Decision under Executive Order 13807 requiring federal agencies to coordinate their NEPA reviews, which I commend you for. I think that was a good decision. I know Senator Gardner raised that.

Here is my question for you and maybe, Chairman McIntyre, you are the right person to answer this question. When we wrote FAST-41 we always intended that every single permitting agency would be required to put its schedule for permitting each project on the dashboard. Again, it is a major part of the legislation. Some people, by the way, on my side of the aisle wanted to have firmer deadlines in place and the other side of the aisle did not want to have any deadlines and this was the compromise, frankly. At least let's put these deadlines out there so the public can see and people know what is going on. It is the only way the bill works, in my view, and it requires agencies to work together to have a complete deadline and timeline and to have one agency be accountable is also important.

My understanding is that FERC has not been willing to post its schedule. Last year we had a hearing of the Permanent Subcommittee on Investigation which I chair and your staff members told me you could not post your timelines because of internal regu-

lations and they said you have to talk to the Commissioners about that.

So here you are, and I'm talking to you. Statutes trump, not to overuse that word, but statutes trump regulations and the statute is clear. I guess my question to you is, does FERC plan to start posting its timelines publicly? If not, why not? And if not, doesn't your lack of participation defeat the purpose of the statute and the very things that, I think, on a bipartisan basis, we are all looking to see here which is that these projects get up and going more quickly?

Mr. MCINTYRE. Thank you for the question, Senator.

I want to begin by thanking you for raising the critical point of the permitting schedules because we understand that and much of the work that we're doing now to improve our own internal processes is with an eye toward making our permitting approvals in the areas you cited, LNG terminals, natural gas pipelines and hydro facilities, more streamlined, more predictable and more transparent. So we're actively working on that.

As to the posting of information and schedules on the dashboard, that's something I will look into with my staff and will be happy to work with you and your staff on as well.

Senator PORTMAN. Well, I appreciate that answer, but I would like a yes——

[Laughter.]

——because it is a statute. You understand the statute. You know what the rules are. So could you commit to us today that you will indeed post your timelines publicly?

Mr. MCINTYRE. I will commit to you today that I will do that which is legally required of us, Senator. Since I have not had the opportunity to discuss this specific point you are raising with my legal team and staff more broadly, I'm reluctant to say more than that at present.

Senator PORTMAN. Okay.

Within a week, I would like to have another conversation with you when you have had an opportunity to do that.

Mr. MCINTYRE. I would welcome that.

Senator PORTMAN. Is that fair?

Mr. MCINTYRE. I would welcome it.

Senator PORTMAN. Good. So, you make a commitment to talk to me within a week and I think when you talk to your staff they will be very well aware of this issue and I will tell you that the statute requires it, but look, I think it is really important.

The FERC has a huge role to play in so many areas, but one is these permittings and, again, I am convinced that we can do better and we are starting to do better. The Permitting Council has finally gotten up and going. It started slowly in the Obama Administration and in the first part of the Trump Administration, frankly, but now it is up and going and we need your help. You are a big part of it.

On implementing the One Federal Decision (OFD), how are you determining which projects will be treated as OFD projects?

Mr. MCINTYRE. As which? I'm sorry, sir.

Senator PORTMAN. As One Federal Decision projects?

Mr. MCINTYRE. Well, the One Federal Decision process establishes essentially a government-wide goal of two years. And we are, excuse me, endeavoring to address that through our FERC processes recognizing, of course, the roles of the other entities involved in that as well.

Senator PORTMAN. Okay, well if you could get back to me on how you are identifying which projects are eligible. My time is expired. I appreciate it. I look forward to talking to you within a week.

Mr. MCINTYRE. I will look forward to our follow-up on that, Senator.

Senator PORTMAN. Yes, and thank you all for being here today. Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Portman.

Senator Cortez Masto.

Senator CORTEZ MASTO. Madam Chair, I am going to allow my good colleague here to go ahead of me.

Senator KING. Thank you, I have a commitment. Thank you, Senator.

The CHAIRMAN. Senator King.

Senator KING. I appreciate it.

First, I am sorry that Senator Gardner is not here. He raised the issue of LNG exports. This is not a question. I just want it on the record, I am gravely concerned that we do not get into exports to the point where it significantly impacts domestic gas prices, because we would be giving up one of the great advantages this country now holds in the world economy. There is one law this body cannot repeal and that is the law of supply and demand. When I hear of 14 projects on the drawing—in the permitting stages and another 6 on the way, I just want to put on the record a note of caution that if we export to the point where it affects domestic prices, we will have injured our manufacturing economy as well as our consumers. That is number one.

Number two, Mr. Chatterjee, I would appreciate it if you could supply for us data on the tax cuts related to lowering electric bills by state, if possible. You do not need to do that now, but if you could supply that for the Committee, I would like to see that. I am not aware of the data on that.

Commissioner LaFleur, you are a New Englander and you have seen the dependency in New England on natural gas go from 5 percent to 50 or 60 percent. I just looked, and it is 46 percent at this very moment. Does that raise concerns for you both about price and reliability in terms of the pipeline network?

I serve on the Armed Services Committee. I think the risk of a cyberattack on our pipelines and our electric grid is something that we need to take account of. We have also talked about the historic low price of gas. What goes down can also go up. Share with me your thinking on that.

Ms. LAFLEUR. Well, thank you, Senator.

I think New England, really uniquely, has a fuel security issue because of the very constrained pipeline capacity coming in to New England.

Senator KING. That is the third issue.

Ms. LAFLEUR. We don't see that situation anywhere else where we have a quite robust pipeline grid.

And——

Senator KING. But what if I am right, for example, and we get into exports in a big way—the price of gas goes from $2.50 to $6.00, and we are in trouble in New England.

Ms. LAFLEUR. What I—I've spent a lot of time with people up there on what they want their future to be and I do not—I have come to the belief that the region does not want new pipelines because, or many, many people in the region have been very opposed to pipelines that have come before us, even ones we've certificated have not actually been built yet.

Senator KING. I am sorry to interrupt, but——

Ms. LAFLEUR. And so, I think they're looking to a future of bringing in more other resources and of having fuel storage in the winter in order to take us through those limited periods where there's not enough gas.

Senator KING. To me the question that really is worth discussing is that we have a price risk and we have an infrastructure risk. And the question is, what are we willing to pay for an insurance policy against those two risks? That may involve keeping some uneconomic coal plants or nuclear plants online somewhat longer. But in order to make that judgment, we need to know the cost of the insurance policy.

Ms. LAFLEUR. At this point——

Senator KING. Let me ask Mr. Powelson his thoughts on that.

Mr. POWELSON. Senator King, first, I agree with you and it is, it comes down to a risk capacity and a risk tolerance equation. And what I mean by that is yes, to Commissioner LaFleur's point and I, too, agree that over the next decade we're not going to be, unfortunately, bringing 30-inch pipe into the New England market. I can share with you why offline.

By the way, if anybody here wants to amend the Jones Act, we would love to move barged natural gas rather than the Russian tanker that had to go into your facility there at Canaport, move that product up. But that's a whole other discussion.

The problem for us and, again, I think where we are trying to manage and work with the RTOs and the ISOs is one, make sure we don't run into a rut where we, to your point about fuel security, and not having enough storage or not having enough nuclear capacity or baseload, as Senator Manchin mentioned. I think we're trying to really be diligent there and do it in a market construct. And if we do that, I think at the end of the day, I think we'll be able to one, assure you, as a policymaker and as a former Governor, that prices aren't going to go through the roof. And two, to the moving of the product efficiently and safely and affordably, that we not compromise on that either.

Senator KING. So there needs to be some real hard analysis of the cost because that is the price of the insurance policy and that is really, I think, the analysis that we need.

A final point, and I am out of time. Mr. Powelson, I found your testimony, all of your—this has been a wonderful hearing. All of your testimony was most informative, data-driven and really impressive.

Mr. Powelson, yours was very thoughtful, I thought. I really commend you for entering into this study on DERs because there is a

dispute, as you know, nationwide about impact of cost on the grid and on other ratepayers. We need a really good analysis of cost and benefits in terms of national security and distributed grid self-healing, and what are the values there that offset cost in terms of storage and those kinds of things.

So I commend you for the storage decision. I think that was very important. And the DER could really help us nationally by establishing what are the benefits and what are the costs and what are the—what is the data building a really strong record that can help us and PUCs across the country to make these decisions.

I thank you for your testimony today.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator King.

Senator Hoeven.

Senator HOEVEN. Thank you, Madam Chairman.

For Chairman McIntyre, the electric resiliency discussion is very important. We need to think about the proper balance between baseload coal, natural gas, nuclear, so forth, and variable energy sources like wind and solar.

In January of this year FERC announced it was rejecting the Energy Department's proposal to require grid resiliency pricing to incentivize coal and nuclear power plants. Instead, FERC subsequently announced a new docket exploring grid resilience at the regional level and soliciting public comment from the stakeholders.

Here are my questions: What is the status of the docket? In your view, what are the key aspects of resiliency? And what role is FERC playing in this larger discussion?

Mr. MCINTYRE. Thank you for the questions, Senator.

The status of the process is that the first step to be taken, pursuant to our directive in our order in January was that the nation's operators of organized wholesale markets, the RTOs and ISOs, begin by providing us their insights into grid resilience within their respective footprints. We took that step because they have broad oversight of the actual operations within those geographic areas. And so, they are best positioned to make observations on the types of effects, resources and conditions that can have resilience-related consequences. They fulfilled that role.

We also provided an opportunity for other stakeholders to comment. That record now has been built and the record is currently being actively studied by our staff at the FERC. And we'll be making determinations next on what steps forward are appropriate.

Senator HOEVEN. Okay.

For both you and for Commissioner Chatterjee, many stakeholders continue to express that current wholesale market rules do not adequately compensate generation that incurs cost to remain on standby but is called upon to meet load and response to variable generation, for example, wind generation, other variable generation.

Is FERC exploring the option of providing system operators with guidance to implement some kind of ramp or standby rate to provide sufficient mitigation to ensure that these generation assets can continue to provide essential service to the grid when called upon to do so?

For you and then also for Commissioner Chatterjee, please.

Mr. MCINTYRE. What we already do, Senator, is we have, in certain markets particularly, mechanisms for compensating generating resources for their reliability-related attributes that they provide to the grid and their ability to perform when called upon. There are both carrots and sticks in that which, I think, is sending proper market signals.

One of the key questions we'll be looking at in the resilience context is whether there are comparable mechanisms that should be focused, not necessarily on reliability, per se, but the longer-term concept of grid resilience and, if so, what should be both the mechanism for providing that compensation and the means of doing the math and getting that right.

Senator HOEVEN. And this is something you are looking at and understand the need for?

Mr. MCINTYRE. Yes, sir.

Senator HOEVEN. Okay.

Neil?

Mr. CHATTERJEE. Just to build on that, Senator, I think, you know, as we build our record and make sure that we have the appropriate supporting evidence and look at central reliability services and what the appropriate compensation mechanism would be, we need to do it in a fuel-neutral way and based on the record that we have.

The DOE NOPR last fall which attempted to compensate certain generation sources for having onsite fuel and that question of onsite fuel—the record simply did not support taking that action. So any action that we take going forward has to be supported by the record and be legally defensible and be done in a fuel-neutral way and, in my preference, in a way that doesn't destroy markets.

Senator HOEVEN. Right.

But it has to start happening or you are going to lose some of that baseload that we may need, right?

Mr. CHATTERJEE. So that is, you know, that is the question for us is, you know, the sense of urgency in completing this action. I had actually, in my concurrence to dispensing with the DOE NOPR, proposed a show cause order to work with the RTOs and the ISOs to identify where their resilience challenges may be and give them an opportunity to amend their tariff if it was so necessary. And so, I do believe there is an urgency to doing this examination, but we have to do it right. We can't cut corners. We have to have the record and it has to be legally defensible.

Senator HOEVEN. If you had recommendations for legislation in this area, it would be good to know what they are to the extent you are allowed to do that and so forth. I would be very interested in that. Okay?

Mr. CHATTERJEE. Thank you, sir.

Senator HOEVEN. Commissioner Powelson, you were commenting on moving natural gas. We have to build more, not only natural gas pipelines, but other pipelines as well. What can FERC do to help make that happen?

Mr. POWELSON. Well, Senator, I think again, I think Chairman McIntyre alluded to in Senator Portman's question about, you know, really applying what I call value engineering and how we go about permitting and do it, you know, not to cut corners on safety,

adhering to federal statutes like NEPA and the Clean Water Act, but really making sure that, you know, and not—and doing it in a transparent manner with public input.

I think for us, it's just really, you know, the FAST Act is certainly a starter there and expedited permitting. So to the earlier point, I think Commissioner Chatterjee mentioned, you know, these pipeline projects, there's a lot of capital that needs to be deployed, there's a lot of risk capital when there are delays and we need to provide some type of, I'll say, regulatory certainty. And I think it starts with the efficiency in the permitting process.

And I'll leave you with one last point. Last year in our state of the market, we put about 800 miles of new pipe into service, okay. That's across the 50 state footprint. Less than 10 of it went into New England.

Senator HOEVEN. Fine. I appreciate your comments very much. Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator.

Senator Cortez Masto.

Senator CORTEZ MASTO. Thank you, Madam Chair.

I want to echo some of the comments. This has been a great conversation. Every single one of you, thank you very much, very, very informative.

I want to associate myself with Senator Heinrich's comments. I, too, want to applaud you for taking action in view of Order 841. I know you are continuing to look at this space, and I look forward to the rulemaking and what comes of it. So thank you.

I would like clarification just to make sure. I have done some research here and what I found is that most electricity outages occur because of transmission and distribution outages, not because of problems with generation. In fact, what I found is that 96 percent of electricity outages are from transmission and distribution problems, not from a lapse in generation. Would anybody disagree with that?

Ms. LAFLEUR. That's correct, Senator.

The vast majority of problems are actually on the distribution network and are usually weather related. Sometimes other things like pole hits and lightning—oh, lightning is weather—pole hits and animals and so forth.

Then the second is the transmission network. We don't use the big high voltage lines as much, but sometimes we do. The far fewer than one percent of outages are related to generation. The way the system is built when you lose a generating unit for any reason, you're supposed to use the wires to put another one back in.

Senator CORTEZ MASTO. Thank you.

That is why I am interested in the conversation that we are having about how FERC can improve transmission planning processes to encourage construction of a stronger, more resilient grid, an electric grid.

I know some of you have commented. Does anybody else want to comment on that?

Mr. MCINTYRE. Senator, I would simply add that much of that very important work goes on at the state level in the state counterparts to the FERC, the state public utility service commissions.

Senator CORTEZ MASTO. Thank you.

That has not been brought up, so that is an important component of this, that cooperation at the state level as well.

Mr. POWELSON. Yeah, I would agree.

As a former state regulator, you know, to your point earlier, I'll let, you know, dealing with Hurricane Sandy restoration, you know, the power plants were running pretty much. It was the distribution network, the wires and poles. And thanks to the efforts of mutual assistance, we did a remarkable job, but I mean, there are certainly—these weather events have, you know, wreaked havoc on the distribution system.

And to the credit to the Chairman's point, state public utility commissions monitor what we call these CAIFIs (Customer Average Interruption Frequency Index) and SAIDIs (System Average Interruption Duration Index) and many public utility commissions have started electric safety divisions to really drive home that there's investment in vegetation management and that there's grid hardening at the distribution level. And to Commissioner LaFleur's point, yeah, about 90 percent of the outages are caused by, at the distribution level.

Senator CORTEZ MASTO. Okay.

Mr. CHATTERJEE. Just to make a slightly different point and build on this. Your state has been at the epicenter and been the beneficiary of competitive transmission. And I think that is an important role in this as well.

Senator CORTEZ MASTO. Thank you.

Ms. LAFLEUR. I think, Senator, we've done a lot to try to promote transmission planning and cost allocation.

I was honored to be in North Las Vegas when the online was energized and there definitely is more transmission that will be needed in order to promote the use of location-constrained renewables in places like Nevada. But I think both with our rate-making and our planning work, we are trying to promote transmission.

Senator CORTEZ MASTO. I appreciate that. Thank you.

Mr. GLICK. Senator?

Senator CORTEZ MASTO. Please.

Mr. GLICK. If I could just add quickly to that. As you know the West has, in a number of past years, been ravaged by forest fires and I think that's a significant impact. Obviously, with climate change we're going to be seeing a lot more of that and that's a grave concern. I think we need to take into account the ability of the transmission grid to withstand and build a transmission in a more resilient manner to make it withstand more forest fires.

Senator CORTEZ MASTO. Yes, I think we would get agreement here from this Committee on that subject. It has been a topic of conversation thanks to the Chair and Ranking Member in conversations we have had.

But Mr. Glick, while I have you, I have about a minute left.

In terms of fuel security in the role of onsite fuel, how do you view the role of other technologies? We were talking a little bit about that, such as renewables and distributed energy resources, as providing that fuel-secure energy, and you touched on it in your opening statement.

Mr. GLICK. That's a great point because we spend most of our time, when we talk about fuel security, we talk about big baseload

power plants, coal, nuclear, for instance and so on. But I think you're exactly right, that if we actually can increase our resilience and our reliability of the grid by looking at some of these other technologies—storage, obviously, distributed energy resources, microgrids. Microgrids are a great example. I know this Committee has done a lot of work on that. If we're serious about making our grid more reliable and especially making our military bases more reliable, I think we look more at those technologies and not at the bigger power plants.

Senator CORTEZ MASTO. Thank you.

Thank you all, I notice my time is up. Thank you so much for the conversation today.

The CHAIRMAN. Thank you, Senator.

Senator Lee.

Senator LEE. Thank you, Madam Chair.

I want to thank each of you for being here today and being willing to answer our questions.

I want to start with you, Chairman McIntyre. I want to talk briefly about the Lake Powell pipeline project in Southwestern Utah. As you know, this is one of the fastest-growing population centers in the entire country, and this is a project that has been going on for some time and is badly needed for the local population.

After a decade of FERC acting as the lead agency for the project, the Commission indicated a few months ago that it had not yet determined whether it has jurisdiction over a very significant portion of the project. The abrupt notice of this development at such a late stage in the process has obviously introduced a whole lot of uncertainty into the project and could result in significant time delays and the expenditure of a lot of money that the state has invested in this project over the last decade or so.

You may recall that my colleagues and I from Utah's Congressional delegation sent you a letter on January 23rd asking about this issue. In December, the Utah Board of Water Resources filed a petition for a declaratory order with FERC to clear up ambiguity regarding FERC's jurisdiction over the Lake Powell pipeline. You responded to my January 23rd letter with a letter that you authored on February 23rd and you acknowledged that we had sent the letter and said that you would do everything you could to take into account our concerns and to address them.

Here we are nearly four months later, and we still do not have an answer. Now the state had requested in its letter, in its petition in December, for FERC to take some action by February but we still do not have action by the Commission.

Can you explain to me why FERC is just now, in the last few months, questioning its jurisdiction over the project?

Mr. MCINTYRE. I presume, Senator, that you're referring to communications from our Office of Energy Projects and I will commit to you now to look into this promptly and I hope it will be acceptable to you that I be in touch with you and your staff so that we can advance the ball on this.

Senator LEE. That would be great. I would really appreciate that a lot. Can you give me any indication as to when the Commission might be able to make a final determination on this matter?

Mr. MCINTYRE. Well, I'll be in touch with you within the week.

Senator LEE. Okay.

Mr. MCINTYRE. And we can discuss that matter at that time, if that's acceptable to you, Senator.

Senator LEE. Thank you. Yes, I appreciate that.

Commissioner Powelson, you stated that the President's directive to the Department of Energy to subsidize certain energy sources could potentially blow up competitive electricity markets. Aside from the market impact, can you tell us how the directive could affect FERC's operations and its resources?

Mr. POWELSON. Senator, I apologize. I might have toned it down a little bit using the word "blow up"——

[Laughter.]

——would have a profound impact.

[Laughter.]

I worry, as I said earlier in my testimony, these markets, as I said earlier, are working hyperefficiently right now. We've come from, you know, in 2008 when I was a public utility commissioner, $14 gas. We were importing gas. Power prices were pretty, at high marks in these organized markets. Now we're in a low $2.21 and change market with new supply.

And so, I worry, if I'm a current investor—let's just again go back to the PJM example. I'm a merchant generator that has cleared the capacity auction. I'm a combined-cycle gas plant. And all of a sudden, a federal agency puts this new mandate down that will basically usurp the marketplace and cause my investment to be stranded. That's what I worry about. And it could be a combined-cycle gas operator. It could be another renewable energy resource.

I want you to keep in mind that when governors like Tom Ridge and Christy Todd Whitman and George W. Bush and others did electric restructuring back in the '90s, customers paid a competitive transition charge for all of those generation assets.

So I don't want to go back, I think it was expressed earlier by Commissioner LaFleur, I don't want to go back to that model of integrated resource planning and putting added charges into these markets the customers have already paid for. And now we're seeing the best of all worlds—new resources, cleaner resources, more efficient resources coming into the marketplace. The markets are creating orderly entry and exit and to put someone's risk capital at play, I have grave concerns about that. It goes against everything we talk about in terms of supply and demand-side economics.

Senator LEE. Thank you.

Madam Chair, if I could ask one follow-up question on this? Back to Mr. McIntyre, are there things that FERC can do and that industry can do to enhance grid resilience that do not involve subsidies for specific energy resources?

Mr. MCINTYRE. Yes, I think there are, Senator. Indeed, we have taken such measures.

We've taken steps to, for example, grant pre-approvals for sharing of cost of spare transformers. Something that, undeniably, helps to promote resilience. We've taken other actions in that vein as well.

Resilience is a complex concept and, indeed, part of our ongoing work in our grid resilience proceeding is to ensure that we fully un-

derstand all aspects of the concept. They're probably reflected in our decision-making.

Senator LEE. Thank you very much.

The CHAIRMAN. Thank you, Senator Lee.

Senator Smith.

Senator SMITH. Thank you, Madam Chair, and thanks to all of you for being here.

I regret that I missed some of the back and forth between you and my colleagues a little earlier, but I really appreciated your testimony which I looked at last night. So thanks very much.

I understand that there was a good discussion around the Administration's proposals around, sort of, favoring coal and nuclear even if they are not price competitive. One thing I wanted to ask you about is related to that a little bit.

My understanding is that demand for electricity in the United States is actually not growing. And even if we were all to start using electric cars tomorrow, that would, sort of, only temporarily postpone an expected long-term decline in energy use.

My question, maybe I will ask this of you, Mr. Glick. At this time when we would actually have more generation than we even need even with reserves, if we were to pursue a policy that would favor one method of generation over another—of course, I care about this being from the Midwest where we have such strong wind energy—could you just talk a little bit about—you have background in this as well—what impact that might have on wind energy producers in the Midwest?

Mr. GLICK. Well, I think certainly to the extent certain facilities that were intended to be shut down or subsidized or somehow kept around for different reasons, that would certainly suppress other generation, other generation would run. It certainly would be out of the money, and otherwise, that other generation would otherwise be economic, but for that subsidy of keeping the other plants open. So I think it would certainly have a depressive effect on investment in the market.

I think we're actually seeing these markets work and actually ensuring that our older, less-efficient generation is retiring. Xcel utility, that obviously serves a big part of Minnesota, recently announced that they were going to shut down a couple of coal plants and invest more in renewable energy, not necessarily because there's any state requirement—there isn't, they've already met their state requirements—it's primarily because those plants are cheaper.

Senator SMITH. Right.

Mr. GLICK. And then better for their customers.

Senator SMITH. Exactly. It is more, it allows them and Minnesota to meet our goals of having affordable, reliable and clean energy. It also strikes me that this could potentially stifle other innovation that we see happening all over the place around wind, solar, storage, and all those issues. Would you say that is right?

Mr. GLICK. I think that's absolutely right. It wouldn't just affect generation resources, it would affect other alternatives, obviously, at the distributed resource level and everything else, essentially make other products less economic and therefore less likely to succeed in the market.

Senator SMITH. Yes.

I just have another thing I would like to touch on a little bit.

FERC has, for some time, resisted the idea of accounting for climate risk when permitting energy infrastructure. Last year, as I understand it, a court suggested that FERC had not properly evaluated the effects of greenhouse gas emissions when it approved the Southeast Market Pipeline Project. There was a split vote, as I understand it, on the Commission.

So my question is this. I'll go to Mr. Glick again. Can you explain the tools that are available to FERC right now that would allow it to include the impact of greenhouse gas emissions when you evaluate a project?

Mr. GLICK. Sure.

Well, so the issue in the court case you were talking about out of the DC Circuit was essentially downstream emissions. So FERC does take a look at the greenhouse gas emissions associated with actually building the pipeline.

Senator SMITH. Right.

Mr. GLICK. But what the Commission has been reluctant to do on most occasions is look at the downstream impact and also the upstream impacts. So essentially when you burn the natural gas downstream, the greenhouse gas emissions and upstream when you produce it, the methane and other greenhouse gas emissions, as well associated with production of natural gas.

And so, I think the Commission, essentially, has suggested that it's not that, at least announced in recent policy, that the Commission is not going to, and a majority of the Commission announced that's it's not going to take a look at, in many cases, not going to take a look at the greenhouse gas emission. It's not necessarily that you're going to ask the developer where the gas is going, not going to essentially ask how the gas is going to be used and also where the gas is coming from. And again, I think that actually violates both the Natural Gas Act and NEPA, in large part because we're required to take a look at all reasonably foreseeable impacts on the environment. And clearly, climate change has a significant impact on the environment.

And secondly, we're required to take a look at the public interest, examine whether a pipeline is in the public interest. I find it difficult to look at the public interest if you're not going to ask the question about what the emissions are going to be associated with that pipeline.

Senator SMITH. Okay, thank you.

Does anyone else want to comment on that?

Ms. LAFLEUR. I would also agree that this is something we've been thinking about for a long time, but the DC Circuit case was really a watershed moment and it's saying that we hadn't properly considered the indirect impacts of the pipeline.

And the only thing I'd add that Commissioner Glick didn't say is we're currently looking, taking a broad look at how we do our pipeline work. And I think this is one of the most important points to look at, how much information we get in the docket as to what's really driving the need for the pipeline. Who is going to use it? That will help us figure out, first of all, if we need the pipeline, if it's in the public interest and do a much better assessment of all

of the environmental impacts, including the landowners impacts as well as climate.

Senator SMITH. Thank you very much. I appreciate it.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Smith.

Senator Daines.

Senator DAINES. Chairman Murkowski, thank you.

It is historic to have the entire Federal Energy Regulatory Commission before us here today. I can count every one of them right here. And it cannot come at a better time as there has certainly been some dramatic shifts occurring across the country in our energy markets.

Commissioner Chatterjee, you made history two weeks ago, you know you kind of wonder what I am going to say next. Two weeks ago tomorrow, you were in Colstrip, Montana. You were the first Commissioner to ever visit the Colstrip Power Generating Station. It is one of the largest coal-fired plants west of the Mississippi and the largest economic driver in our state. In fact, you also participated in my Energy Summit the following day where we discussed the importance of an all-of-the-above energy approach, the importance of the Colstrip plant and the benefits it provides in relation to baseload generation. This plant has an outsized impact on Montana: about 350 highly paid employees, $52 million in annual payroll; the Rosebud Mine, 380 jobs, 3,700 indirect jobs statewide; taxes, $104 million in state and local taxes. This is how we continue to keep funding our schools, our teachers, infrastructure.

Thanks to Colstrip, Montana is a net energy exporter. In fact, that plant alone generates enough power for 1.5 million homes. Forty percent of this power serves customers in the State of Washington, the other 25 percent to states other than Montana. There would be a significant gap in service for homes and businesses in other states without Colstrip.

The 500-kV line also carries a large portion of electricity for Montana. Without the Colstrip plant there would be a significant gap in capacity on this line. We talk about grid resiliency and reliability. Without that plant, it makes the grid vulnerable and the reliability of service to Montana families at risk. The longevity of coal plants in Montana like Colstrip and the reliability of the transmission line demand close attention by the Commission and all the Federal Government including the DOE.

I know there has likely been some discussion regarding DOE's leaked memo on protecting coal and nuclear plants for national security. I know the devil is in the details. I don't think you can argue though with the importance that baseload generation is to grid resiliency and national security. Just look at Australia, look at Taiwan, look at Germany as case studies. They have gone before us. They shifted from baseload generation like coal and nuclear too quickly and they experienced blackouts. In fact, I was in Taiwan not long after the August blackout they had a year ago. Higher energy costs and a lack of access to reliable electricity.

My point is not that coal and nuclear should be our only source of power. In Montana we have hydro. We have wind. We have solar. We have biomass. We have coal. We have oil. We have nat-

ural gas. I think it should be diverse, and we should not put all our eggs in any one basket.

Commissioner Chatterjee, could you share with this Committee some of your impressions on Montana's energy challenges and how important you think baseload generation, like coal generation, are to meeting our nation's energy needs and grid resiliency?

Mr. CHATTERJEE. Thank you for the question, Senator, and thank you again for hosting me in Montana.

Seeing Colstrip, visiting both the plant and the mine that feeds it, I came away appreciating the significance of energy in Montana, but also in that community. That community exists because of that plant and because of the mine that feeds it. And if the plant closes and the mine subsequently shuts down, people in that community were concerned that that town would cease to exist.

Probably the most powerful moment of the visit to me was at the townhall that you convened with the mayor. I stayed back a little bit and lingered and the two police officers who were in the room observing the meeting, protecting us, they were waiting for me at the door as I left. And I had expressed during the townhall my sympathy having seen the devastation in Kentucky communities when these plants and mines shut down and I expressed that sympathy. And they pulled me aside and said, you know, we don't pretend to know the complexity of these issues that you guys are dealing with, but thank you for somebody in Washington being concerned and thinking about communities like this. And that really struck me about the human impacts of this broader, hypertechnical conversation that we're having about grid resilience and reliability. That is not something that we factor into our record. We will look at plants like Colstrip and make a determination based on the reliability impacts and its significance to that region and whether there would be threats to reliability in the event that the plant is shut down. But that's certainly something that is well within your purview, and I do appreciate everything you're doing to fight for that community.

Senator DAINES. Well, thanks for taking time away from your family to make the long trek out to Montana.

If I could summarize and make a closing remark, Chair Murkowski? I hope we can move the dialogue in this country to not pitting a battle between either you are in the renewable camp or you are either for it or against it. We really do need to say renewables are an important part of our energy portfolio; but so is coal, so is natural gas, so is oil.

We had Japanese visitors at our energy summit there in Montana. After the great Fukushima quake in March 2011 I was running a software business there in Japan from Bozeman, Montana, back then when my vice president called me from downtown Tokyo after they just experienced a 9.0 quake. It is a pretty chilling kind of conversation to have.

What happened in Japan? They used to have 53 nuclear plants. They decommissioned them because of the problem they had with some contamination from a 9.0 quake. They brought up about 7 of those 53 but what are they doing? They are pivoting over to coal, to coal as well as renewables, but that is a very important part of their long-term energy plan for grid resiliency and grid reliability.

What do they want? They want more U.S. coal because President Xi has militarized the South China Sea where they have Australian and Indonesian sources of coal. Montana and Wyoming coal has lower sulfur so it is more environmentally friendly. It is a little lower cost. It could help us in our economy in the United States and in Montana. It will help Japan, a critical ally. I just hope we can have a commonsense discussion.

There is Japanese investing in clean coal technology. We can do the same thing here in America and protect that important source of energy which is still about 30+ percent of the supply of energy here across the United States.

So thank you for making the long trek.

Thank you, Madam Chair.

The CHAIRMAN. Thank you, Senator Daines.

I so appreciate the very good conversation that we have had here this morning. We have kept you a while. I am just going to ask one, maybe two, questions and then we can wrap up.

There has been a great deal of discussion about the changes that we have seen in the energy sector, again, in this past decade and all that that means to the regulatory agency that has this oversight for review.

As we look to your role, one of the things that we keep coming back to here in this Committee is it is wonderful to have the resource. We have a lot of resources in Alaska, whether it is oil or gas or coal or what have you, but if you cannot move the resource to where the market is, where the demand is, it is just sitting there.

The discussion is about how we deal with this growing need for new pipeline infrastructure in this country and a recognition that you have a lot of people that want to enjoy the benefits of what is coming down that pipe, but they really would rather not see it. They do not want to see it in their state, do it somewhere else, but I think we recognize when you are talking about resilience and reliability, affordability, and safety, we have to figure out how we facilitate greater pipeline infrastructure.

Chairman McIntyre, you mentioned the review that is underway. Can you just flush it out a little bit more for me in terms of how you see the FERC moving forward with this very critical and very necessary review relating to our infrastructure?

We have been talking for about a year and a half now about the possibility for a big infrastructure package. From the energy side of things, I think we have some pretty good ideas, some shovel-ready issues, if you will, as it relates to that pipeline infrastructure. But can you share with me FERC's role in how we work to meet the need that we clearly have, particularly in areas of very high need in the Northeast?

Mr. MCINTYRE. Yes, Madam Chair, happy to do that.

The actual steps to our construct for this goes back to the 1930s, but our most recent, at the FERC, our most recent vehicle for setting out our internal policy for how we process and advance natural gas pipeline projects dates to 1999. And so, it's time for us to take a fresh look at that, hence my announcement earlier this year that we would do precisely that. And I am, of course, but one of five voices on this Commission and my colleagues are very thoughtful

regulators in their own right and I anticipate the thoughtful input from each of them that I have come to expect.

I will say for my own part though, that I did not, I have no interest in initiating a review of our gas certificate policy area for the purpose of slowing anything down. My interest is in streamlining and making more efficient processes that we have.

So I agree with the suggestion of your statement that we need to be efficient in this area and I, for my own part again, endeavor to do exactly that.

The CHAIRMAN. Well, I appreciate what you have just added there at the end, that it is your intention that this review moves us toward a process that is more efficient, more prompt, more clear as it relates to issuing these FERC pipeline certificates.

I know the question, it was actually asked by Senator Gardner with regards to adequate staffing within FERC and you indicated that you are looking to hire and we understand that, certainly from Alaska's perspective, we have a very significant proposal before the FERC. When I say significant, it is massive in size and you all know that because you probably have boxes in your office as it relates to that.

But it has been an issue of mine and I continue to ask the question whether you believe the FERC is allocating the resources, really, the staffing, the resources to whether it is the LNG exports that Senator Gardner asked about or pipeline applications from states like Alaska.

It is one thing to say you are hiring, but are you satisfied with the resources that you have for the Commission?

Mr. MCINTYRE. Senator, I'm never satisfied. We are continuing to explore creative new ways to make our processes more efficient and to enable ourselves to address this significant amount of work that lies before us.

I completely agree with your acknowledgement of the importance of, not only the Alaska project, but the many other projects that are pending. The Alaska one certainly is quite a massive one, and it's garnered a lot of attention within our staff and is a matter of ongoing work as it should be.

The CHAIRMAN. One last question for you and this is as it relates to hydropower.

Commissioner Powelson, I appreciated that you mentioned that when we think about baseload, in addition to nuclear and coal, hydropower can also be that source of baseload, if you will, and a very critical part of our overall energy portfolio. Certainly significant for us in Alaska, about 25 percent of our energy comes from hydro and we certainly see the benefit of clean and renewable power. But when you think about the impact of hydro it is, kind of, one of those ones that nobody really talks much about, but powering about 30 million homes, providing 100 gigawatts of the nation's energy, and displacing 200 million metric tons of carbon dioxide emissions that we see each year.

I am a big proponent of hydro and recognize that we have about a third of the nation's existing hydropower projects that will require license renewals by the year 2030—not too far off. Again, we have heard the testimony in this Committee that when you are looking at a relicensing, not a licensing for a new dam but a reli-

censing, it can take over a decade and costs can reach into the $50 million range.

Senator Cantwell and I have worked on some improvements to the licensing process that add accountability, transparency and coordination amongst the agencies, but the question, and I will throw it out to any of you, is what we can do to ensure that unnecessary regulatory costs and delays do not result in the loss of existing hydropower projects because, when you think about it, if you are looking at a decade or more to go through the processing, millions of dollars, folks get a little bit discouraged and they throw in the towel. We cannot have that happening.

So how do we work to make sure that there is an efficiency, that we are working to reduce costs and, really, what FERC can do administratively to improve the licensing process because this is something that we are all going to be dealing with in the not-too-distant future here.

I throw that out to whoever wants to jump in.

Mr. MCINTYRE. I'll kick it off, and then allow my colleagues to chime in.

The CHAIRMAN. Thank you.

Mr. MCINTYRE. We have taken some steps intended toward being helpful reforms recently. Last year, for example, we extended the standard license term. We also are looking at processes to streamline the stakeholder input process so that that, too, does not become something that slows down the hydro licensing process in and of itself. And we're actively considering additional measures that we can take in addition to ensuring that we have proper staffing to address these projects.

The CHAIRMAN. Alright, because that is a piece of it as well.

Commissioner LaFleur.

Ms. LAFLEUR. I was going to mention the increase in the license term also, and I would say that the cycle of hydro relicensing is very well known and the people in energy projects have been staffing up to be able to meet that cycle for some time. We've known for some time we're hitting this high.

I would say one of the bigger issues that we face is, well, under the Federal Power Act we're supposed to take into account not just electricity but water use, fish, irrigation, environment, recreation and there are a number of other agencies on whom we rely for orders, Fish and Wildlife, Army Corps, state water agencies and so forth. I think the Memorandum of Understanding that Chairman McIntyre signed was intended to provide a discipline of the process so the other agencies, even though we already have the right to set a timeline for them, we just can't enforce it, but there would be some more voluntary compliance and more keeping to the timelines because that's frequently one of the biggest drivers of delays in the processes is the interdependency.

Mr. POWELSON. Senator, just to pick up on that. I'd also add, as you mentioned with the swath of applicants fast approaching, I mean, we look at many of these assets. They've been, you know, they're 1950 vintage, but the components inside are modernized from new Siemens to GE turbines. And my point there would be is, kind of, making sure that if we have these boxes checked at the state level from the environmental regulator to the Army Corps

that we could provide some type of conditional approval. That might help alleviate some of these concerns.

But I pledge to you, I think we all will, to work with you and your colleagues to make sure that these projects are done in an efficient manner and approved in an efficient manner.

Mr. GLICK. Madam Chair, I just wanted to add, Commissioner LaFleur kind of hit on it, but one of the big problems, obviously, is the other resource agencies and it's bureaucratic. It's difficult. But I know that the energy bill that you all worked on that passed the Senate in the last Congress had a number of provisions really designed to improve that coordination. So, for instance, improve having the ability of the resource agencies to participate in the FERC process, the FERC licensing process up front which actually gives them the type of education of maybe they could go back to their agencies and maybe move a little more quickly on their part of the relicensing.

The CHAIRMAN. Commissioner Chatterjee.

Mr. CHATTERJEE. I would just add I did everything I could to get that bill signed into law.

[Laughter.]

The CHAIRMAN. Thank you, yes.

We do recognize that we do have some very important provisions that were included in the energy bill that this Committee moved out and we want to get that across the line, because I do think that is an important piece of what it is that you do, recognizing that you can't necessarily control these agencies, but there has to be a little bit better process. And we think that we outlined some of that.

We appreciate your assistance with that. So know that is something that we want to continue to work with you on.

I think that this has been a very, very instructive and informative discussion here this morning as you saw from the participation from both sides of the aisle, very keen interest in what is going on within the Commission and certainly the insight and guidance that you all provide.

Clearly, a great deal of discussion yet to be had as you work through these important initiatives and as we continue our role as the oversight Committee here working with an Administration that also is weighing in on, again, a subject of great importance to folks around the country.

Thank you for your leadership and, again, thank you for the significant time that you have provided the Committee today.

With that, we stand adjourned.

[Whereupon, at 12:33 p.m. the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED

U.S. Senate Committee on Energy and Natural Resources
June 12, 2018 Hearing: *Oversight of the Federal Energy Regulatory Commission*
Questions for the Record Submitted to the Honorable Kevin J. McIntyre

Questions from Chairman Lisa Murkowski

Question 1: If we expect to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. By law, FERC must process, across the board, all pipeline and LNG export applications in a timely fashion.

- What steps have you taken to ensure that FERC is allocating sufficient resources and time to all of its LNG exports and pipeline applications?

Answer: A tremendous American success story of innovation, ingenuity, and productivity continues to unfold as our shale gas production revolution evolves, with ever-increasing natural gas production levels from various regions of our country. As a result of this remarkable ongoing success, and in order to ensure that our nation and economy garner its benefits, these natural gas volumes require access to global gas markets, which means that it is essential that our nation possess sufficient infrastructure to move this gas by pipeline to liquefied natural gas export terminals. In light of these historic production levels and associated market conditions, it is not surprising that a number of highly important LNG projects have been proposed to FERC and are awaiting FERC action. This situation presents obvious and unavoidable challenges, but, from my perspective, that comes with the territory, and I am committed to working through these challenges to ensure that we process our pending infrastructure applications in as efficient and sensible a manner as possible.

We are moving forward with multiple strategies to achieve short-, medium-, and long-term solutions to ensure sufficient resources are available to process the large number of LNG proposals before FERC. For example, FERC is: (i) hiring additional LNG engineering staff to review LNG applications and conduct LNG project construction and operational inspections; (ii) reallocating available staff vacancies to the LNG branches of its Office of Energy Projects; (iii) identifying additional opportunities for third-party contracting assistance; (iv) examining FERC's own internal processes to identify potential efficiencies; and (v) working with other federal agencies, such as the Department of Energy (DOE) and the Department of Transportation, to improve coordination with the hope of expediting the completion of those entities' roles in the process. I am happy to report that in recent days we have made significant strides in reforming the LNG permitting process with our federal partners, eliminating duplicative efforts and instituting streamlined procedures to reduce our LNG timelines.

- What steps have you taken to ensure that FERC is just as capable of acting in a timely manner as it has been since 2008?

Answer: Please see my response immediately above. Also, it is worth noting that a number of factors have affected processing timelines since 2008. Since then, LNG proposals have shifted from a nearly exclusive *import* focus to a nearly exclusive *export* focus, the latter of which presents more complex design issues, involving larger facilities, more miles of facility

piping, and increased chemical hazards. By way of example, in 2011, there was one export and three import applications pending here, and at present, there are 13 export applications and zero import applications pending here in addition to three LNG export proposals that are currently in the pre-filing review process. Further, FERC has experienced a substantial increase in greenfield LNG export projects, which require a more extensive environmental review than modifications or expansions to existing LNG facilities. Ten of the 13 pending LNG export project applications are proposing greenfield LNG export facilities. Again, these trends are reflective of our nation's tremendous progress in gas production since that time. FERC LNG staff are also engaged in regular construction inspections of authorized LNG projects that are under construction (currently, six LNG projects are under construction), and operational inspections for approximately 16 to 17 LNG projects each year.

- Given your urgent desire to find and hire more people to process pipeline and LNG applications, and given the dislocations that Commissioner Glick noted in industries related to traditional baseload energy supply, would you consider establishing a formal program to recruit FERC staff from among the highly-qualified engineers who have worked in industry but are at risk of being displaced?

Answer: Yes and such a program is consistent with our ongoing hiring efforts. We continue to look for opportunities to recruit qualified staff; however, we have not found that the highly specialized engineers we require are being displaced. We have found that the requisite expertise is more difficult to attract than one might hope or suspect, and this challenge, too, is one that we are striving to overcome. Needless to say, we would welcome any and all referrals of qualified individuals to add to our projects team. This is a priority for FERC—and for me personally.

Question 2: Given record-setting numbers on both the demand for natural gas as well as its production, most observers contend that the United States is badly in need of new pipeline infrastructure. Such new infrastructure could make natural gas more secure, and make it easier for Americans to be confident that natural gas will be available for all of its many uses, including enabling the manufacturing renaissance and producing electricity on the coldest and hottest days of the year.

- What have you been doing as Chairman to advance the goal of getting new pipelines built?

Answer: Since I have taken office, FERC has approved a total of 40 natural gas pipeline projects, totaling in the aggregate approximately 450 miles of pipeline—the equivalent of 673,985 horsepower of compression—which in turn totals 8.04 Bcf per day of capacity. To make sure that our gas certification process is as efficient and effective as possible, I have ordered a review of FERC's gas pipeline certificate application program. The currently effective version of the FERC policy statement applicable to this process dates to 1999, and therefore the review I have ordered is timely if not overdue. On April 19, 2018, FERC issued

a Notice of Inquiry (NOI) that seeks information and stakeholder perspectives to help us explore whether, and if so how, we should revise our approach to determining whether a proposed natural gas project is or will be required by the present or future public convenience and necessity. The NOI proceeding and associated inquiries raise inherently complex issues, and public statements on the issues thus far suggest that my colleagues and I hold different views on some of these issues. For my part, on numerous occasions, I have stated publicly that I initiated this review not to slow anything down, but rather to look for ways to make our processing of infrastructure applications more straightforward, efficient, predictable, and transparent. It is my hope that that will be the result of the ongoing NOI proceeding. I also am pleased to note that on FERC's behalf, I joined 10 other federal agencies in signing the One Federal Decision Memorandum of Understanding (MOU), issued on April 9, 2018. The MOU's goals are to streamline environmental review of major infrastructure projects, including natural gas pipelines, and improve the coordination and timing among federal agencies in that review process. FERC staff is currently developing an implementation plan for the One Federal Decision process.

- Please elaborate on your answer during the hearing about how the Commission's review of its 1999 pipeline policy statement might advance the goal of streamlining the process and making it clearer, more certain and more prompt.

Answer: Please see my answer immediately above.

Question 3: In recent years, I have asked whether the United States will soon lose its pre-eminence in the field of nuclear energy. The United States appears to be in steady retreat, while China, Russia, and others are taking the lead. Early retirements of commercial reactors, which produce emission-free power for civilian uses, accelerate this trend. We are at risk of losing the know-how, the work force, the industrial base, and therefore the credibility to be a leader on the world stage. Our lagging deployment of advanced nuclear technologies is equally, if not more, worrisome.

- Do you agree that nuclear is an important part of our energy mix and must remain so going forward? And, if so, what can be done to stop this trend in retirements?

Answer: As a supporter of an "all-of-the-above" strategy for satisfying our nation's energy needs, I recognize the important system operational and market benefits provided by nuclear generating resources, along with other resource types. These resources also yield environmental benefits owing to the absence of GHG emissions. FERC is in the process of evaluating comments from regional market operators, industry, and other stakeholders in Docket No. AD18-7-000, Grid Resilience in Regional Transmission Organizations and Independent System Operators. In that proceeding, we seek to identify areas of resilience risk, understand how that risk is assessed, identify the resilience attributes and services that are needed to address these risk issues, maintain and improve resilience, and consider associated issues regarding compensation for such attributes and services, whether provided by nuclear or other categories of generating facilities. The capacity and energy produced by

our nation's generating fleet must be able to make their way to energy markets at which power is sold at prices and under terms and conditions that are just and reasonable. The statutory standard cited in the question is intended to ensure that a seller has the opportunity to be compensated and to appropriately incentivize the entry of new generating resources into the marketplace.

- The words "just and reasonable" and "public interest" in the Federal Power Act require more than merely adopting expert predictions about the cost of fuels over the next few years. What is FERC's role in preserving the "just and reasonable" sales of nuclear power at wholesale in order to serve the critical "public interest" of America in nuclear energy?

Answer: FERC, where possible, uses market mechanisms to ensure just and reasonable rates and, therefore, focuses on approving market rules for needed services and to compensate resources for the specific services they provide without favoring one resource type over another. In our ongoing proceeding in Docket No. AD18-7-000, FERC seeks to identify areas of resilience risk, understand how that risk is assessed, identify the resilience attributes and services that are needed to address these risk issues, maintain and improve resilience, and consider associated issues regarding compensation for such attributes and services.

- Is the public interest served if nuclear power plants selling their output into FERC-regulated wholesale markets cannot compete on the price that is derived from auctions conducted pursuant to FERC's tariffs? Is tariff reform an option to address anomalies in price formation or otherwise to take into account the benefits of nuclear power?

Answer: The described circumstances would present obvious and significant challenges with regard to the public interest. Tariff reforms are indeed among the options that could improve the situation. As noted above, FERC, where possible, uses *market mechanisms* to ensure just and reasonable rates and therefore focuses on approving market rules that yield needed services and compensate resources for the specific services they provide without favoring one resource type over another. FERC has recently taken several actions related to price formation in energy markets, and continues to look at options for making further improvements to appropriately value the services provided by all resources.

- Are you confident that predictions about continued low prices for natural gas during most hours of the year are correct? What do you foresee not only with respect to natural gas prices but also with respect to the future viability of nuclear generation selling into FERC-regulated wholesale markets?

Answer: I would not presume to predict the price of natural gas, but data assembled by the U.S. Energy Information Administration (reflected in its short-term energy outlook for natural gas, which was most recently published on July 10, 2018), and other public sources suggest that gas prices will remain relatively low for the next year. As noted above, FERC, where possible, uses market mechanisms to ensure just and reasonable rates and therefore

focuses on approving market rules designed for needed services and compensate resources for the specific services they provide without favoring one resource type over another.

- As one of the five Commissioners with obligations to ensure just and reasonable rates, what will you say to the public if you allow nuclear plants to retire, only to see a market demand for such power in a few years if the experts were wrong in their predictions about natural gas prices?

Answer: The posited scenario raises questions that, to my mind, go more directly to broad issues such as what our nation's electric generating landscape should look like in the future to ensure grid resilience—which we are addressing in our ongoing grid resilience proceeding—than to simpler questions pertaining to compensation and market demand. FERC has long regarded competitive markets as an appropriate mechanism for compensating resources for the services they provide to the electric grid, independent of resource type, as well as for the appropriate means to encourage or incent resources to enter or to stay in the market. This reliance on market principles means that, from time to time, prices will change (both rise and fall) as market fundamentals change. FERC's role is to ensure those market rules are appropriate to ensure just and reasonable rates. FERC will continue to monitor and improve market rules where appropriate to ensure that markets are properly valuing the attributes provided by particular resource types.

Question 4: At a recent open meeting of the Commission, FERC issued a series of tax orders while the trading markets were open, which some have claimed resulted in an over-reaction by the markets and the needless destruction of wealth invested in natural gas pipeline infrastructure. Investors reportedly needed more time to understand the FERC issuances, and that is hard to do when the worldwide trading markets are open. Badly-timed orders can result in pointless market swings. Friday evening seems to be the best time for reducing the adverse impacts on Asian and European trading markets, and it gives investors an entire weekend to digest what could be hundreds of pages of FERC issuances. For market-moving tax-related issuances by FERC, wouldn't a Friday evening release be more prudent? If so, will you commit to release the next potentially market moving tax order or set of tax orders on Friday evening? And, if not, why not?

Answer: I cannot commit today to a plan on issuing each order that you describe, as there may be other factors that contribute to when FERC as an independent regulatory agency must do its job. However, I commit to work with my colleagues to consider timing issues as appropriate.

Question 5: As Puerto Rico's electric grid continues to be restored in the aftermath of Hurricanes Irma and Maria, the Government of Puerto Rico is considering legislation to partially privatize their grid, as well as reform the Puerto Rico Energy Commission (PREC). Has FERC been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery, and moving forward, what role can you offer for FERC in providing regulatory assistance to the PREC or any future energy regulatory body in Puerto Rico?

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Answer: FERC has not been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery. FERC did offer to assist with the effort through DOE, the lead for Emergency Support Function-12, and we stand ready to assist in any way that we can. I note that we have personnel on FERC staff with expertise in generation and transmission systems planning and operations.

Question 6: On an annual basis, FERC requires many electric utilities to submit data on the operation of their power grid, in FERC Form No. 715. Not only does this form require a utility to submit maps and diagrams of the grid, but also submit actual grid data in electronic format. FERC acknowledges that this data is Critical Energy Infrastructure Information (CEII) and treats it as such. FERC's policy generally revolves around releasing that data to the public on the basis of the public's "right to know." While transparency is important, when it comes to critical energy infrastructure information (e.g., schematics etc.), it seems reasonable to be more circumspect.

- On January 23, the Committee held a hearing on the cold weather event at the beginning of this year, and PJM questioned FERC's policy concerning the disclosure of CEII data submitted by electric utilities. Further, our military and intelligence agencies do not operate under a policy that the public has a "right to know" this type of information. Instead, such sensitive information is shared in a very limited way, even among people who are already cleared based on a "need to know." Do you believe that FERC should reconsider its process for releasing data it holds in Form No. 715 and its other CEII?

Answer: FERC created Form 715 in 1993. Under 16 U.S.C. § 824*l*(b), FERC is directed to "promulgate a rule requiring that information be submitted annually to the Commission by transmitting utilities which is adequate to inform potential transmission customers, State regulatory authorities, and the public of potentially available transmission capacity and known constraints." Prior to September 11, 2001, this information was routinely available in FERC's public files. Shortly after September 11, 2001, FERC took steps to control the distribution of information designated as CEII, including removing documents from its public files and eLibrary database that were likely to contain detailed specifications about critical infrastructure.

In November 2016, FERC implemented provisions of the Fixing America's Surface Transportation Act (FAST Act) and revised its CEII regulations. One of those changes was to require a more detailed statement of need from a person requesting CEII.

The vast majority of requestors seek CEII for valid business purposes. For example, requesters include individuals whose land is impacted by proposed energy infrastructure so they may learn of the proposals, resource developers to identify suitable locations for generation interconnections, and existing utilities to analyze potential transmission capacity and system constraints, conduct economic modeling and to verify transmission data.

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FERC balances the legitimate need for access to Form 715 data with the responsibility to safeguard CEII through FERC's CEII regulations and procedures.

- What is your level of confidence that a pledge to the Commission in the form of a non-disclosure agreement (NDA) regarding FERC's CEII will be honored in every instance?

Answer: Since its inception in 2003, the Commission has required an NDA as a part of its CEII request and approval procedures. It appears that NDAs are effective in protecting the unauthorized disclosure of CEII. First, FERC is not aware of any instances of an intentional breach of an NDA. Second, NDAs are similar to the protective orders and protective agreements that are routinely used in FERC proceedings. For example, parties to FERC cases routinely receive access to CEII through such means. Requestors that are confirmed legitimate by FERC staff have been as reliable as the parties that receive such information in FERC proceedings through protective orders or protective agreements

I appreciate that no form of agreement can prevent improper behavior, especially by those that intend on acting badly. However, I would not like to leave you with the notion that FERC protects CEII simply by asking the recipient to sign an NDA. A requestor receives CEII after FERC determines that the requestor is legitimate and that its need is valid. In addition, under our regulations we can impose additional conditions on a requestor's access to the CEII above and beyond what the form of NDA requires. Further, in the event of a breach of the NDA, FERC has the authority to impose sanctions. Finally, an individual who purposely falsifies a request for CEII, could be subject to criminal prosecution under 18 U.S.C. § 1001.

- To what extent does FERC investigate the background of organizations that may be associated with an individual receiving FERC's CEII under an NDA? Does FERC always explore the background of such organizations with the Federal Bureau of Investigation? If not, why not?

Answer: After staff has verified the legitimacy of the requestor and the validity of the need for the information, FERC staff produces the information pursuant to an executed NDA. In verifying the legitimacy of the requestor, FERC staff requires references to confirm requestors' backgrounds and utilize established research tools such as the Westlaw Clear system or comparable Nexis research instruments among other measures, as needed. To date, FERC staff has not encountered a situation that required the assistance of the Federal Bureau of Investigation.

Question 7: On March 1, Robert Lee testified before the committee about the need for a regulatory freeze on new cyber standards, in order to allow the industry to shift its focus away from constantly updating its minimum standards and towards a more pro-active approach of anticipating and finding the new and evolving threats to the energy sector.

- What are your thoughts on the costs and benefits of a regulatory freeze?

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Answer: In his testimony, Mr. Lee recommends "for a period of three to four years that no new regulations be imposed under NERC CIP to . . . allow the electric asset owner and operator community to spend a period of time innovating and thinking of new best practices informed by experience."

A regulatory freeze would limit FERC and NERC's ability to require industry to address gaps that may arise in the existing Reliability Standards. For example, FERC is currently considering proposed Reliability Standards developed by NERC to address vulnerabilities presented by compromised cyber supply chains and has proposed to direct NERC to develop requirements for reporting cyber security incidents that are more rigorous. A freeze would have precluded such improvements. Further, because the general paradigm for the cybersecurity Reliability Standards has been in place since 2013, it is unclear what a freeze would achieve other than to prevent FERC from filling gaps that have arisen or from making improvements.

Also, to the extent the freeze theory is based on burden concerns, please be aware that in the event FERC approves a revision to the cybersecurity Reliability Standards, FERC works with NERC to allow entities the time to integrate compliance with the requirements into their cybersecurity programs to minimize implementation burdens.

- Without a regulatory freeze, how can the security professionals working within the industry adequately shift their focus towards the new and evolving threats, and away from being dedicated to compliance with new regulations?

Answer: I believe that security professionals should be able to comply with the Reliability Standards and keep their focus on evolving threats. FERC and NERC encourage industry to take voluntary actions that go beyond the baseline created by the NERC-developed Reliability Standards, recognizing that the Reliability Standard development and approval process does not permit FERC and NERC to address new cyber threats in real-time. FERC has supported NERC's efforts to address emerging threats outside of the Reliability Standard context though the Electricity Information Sharing and Analysis Center (E-ISAC). The E-ISAC gathers and analyzes security data, shares appropriate data with stakeholders, coordinates incident management, and communicates mitigation strategies with stakeholders. FERC works closely with other federal agencies, state partners, and industry to provide cybersecurity threat briefings, and assist with the development and identification of best practices for cybersecurity risk mitigation.

Question 8: While other federal agencies are not required by law to comply with FERC's Integrated Licensing Process (ILP), FERC has many options to encourage more efficient and timely performance.

- Are you considering any further reliance on existing law, or changes to FERC rules or policies to encourage better performance by other federal agencies?

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Answer: As you noted, the ILP is not a statutory requirement. Rather, it is a process option, largely for the pre-filing stage, that is in FERC's regulations as the default process. It is not mandatory on applicants inasmuch as an applicant can request to use either the traditional or an alternative process. While FERC sometimes disagrees with stakeholders, including other agencies, on the information that needs to be developed during the ILP, we have not identified a problem with agencies not actively participating in the ILP. However, FERC has no ability to compel other federal agencies to act.

- Do you think Congress should mandate compliance with the ILP, at least with respect to the models and studies resulting from the ILP?

Answer: I believe that FERC has sufficient tools—including rejecting applications as deficient and denying non-meritorious applications—to ensure compliance with modeling and study requests. I note that, should Congress decide to act in this area, it might wish to consider legislation applicable to all of FERC's licensing processes, rather than only the ILP.

- Because the ILP is binding on project applicants, do you think that this obligation should be relaxed so that applicants are granted the same flexibility that is granted to federal agencies?

Answer: The ILP currently is the default process. However, applicants can request other licensing processes under FERC's current regulations. The ILP, which was developed through a collaborative process that include industry, federal agencies, and other stakeholders, was designed to front-load the information-gathering stage of the licensing process to the pre-filing period. The goal of doing so was to avoid delays related to additional information gathering once an application has been filed. If an applicant decides to not conduct the studies required under an ILP, it has the option of filing an application without that information. In doing so, however, it runs the risk of having a deficient application and/or receiving an extensive additional information request.

Question 9: How can FERC improve its communication with the Department of Interior, the Forest Service, and the Bureau of Land Management in ways that enhance resiliency and reliability by ensuring that easements and rights of way are properly managed, particularly in those areas likely to be affected by wildfires? What is the role of FERC in ratemaking and cost recovery associated with vegetation management? What have been the actions taken by FERC with respect to the reliability standards that are associated with vegetation management?

Answer: It is through the mandatory NERC Reliability Standards that FERC plays a role in ensuring rights of way are properly managed for reliability and resilience purposes. NERC Reliability Standard FAC-003-4, Transmission Vegetation Management requires entities to manage vegetation to prevent encroachments into the applicable minimum vegetation clearance distance between vegetation and transmission lines generally operated at or above 200 kV to prevent flashover, a potential cause of fires and power outages. I note that the Edison Electric

Institute, the Utility Arborist Association, the Department of the Interior (including the Bureau of Land Management), the Department of Agriculture (including the Forest Service), and the Environmental Protection Agency entered into an MOU in 2016 to "facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline [rights-of-way] and associated facilities" to enhance utilities' ability "to provide uninterrupted electrical service to customers and address public safety."

FERC's role over ratemaking and cost recovery provides utilities the opportunity to recover prudently incurred costs that result in just and reasonable rates to consumers. FERC's transmission ratemaking mechanisms provide the opportunity for utilities to recover prudently incurred vegetation management costs in their transmission rates charged to customers. Generally, FERC presumes that a utility's expenditures are prudent in the absence of evidence casting doubt on such prudence.

FERC first approved Reliability Standard FAC-003 in 2007, and FERC has since approved three versions of NERC Reliability Standard FAC-003, including the currently enforceable version 4, under which FERC required NERC to increase the clearance distance between vegetation and power lines based on the results of a FERC-directed study of the minimum flashover distance to ensure that clearances were adequate to prevent faults that could cause a power outage. Further, FERC has approved penalties of $4.1 million for the 114 violations of FAC-003, which have been filed with FERC since the reliability standard became mandatory and enforceable in 2007.

Question 10: According to the billings of PJM, what is the total annual revenue received by all of the power plants in PJM, collectively, broken down by energy and capacity? Roughly what percentage of the available capacity in PJM consists of coal and nuclear plants that are widely expected to retire within the next two years?

Answer: According to the PJM Market Monitor, total PJM billing in 2017 was $40.17 billion. Of that, capacity market revenue was $8.76 billion. Energy and ancillary services market revenue represents approximately 78 percent of total billings, and capacity market revenue represents approximately 22 percent of total billings.

Regarding retirements, according to the PJM Market Monitor, there are 6,935.9 MW of planned retirements through 2020. Of that, coal units account for 4,620.0 MW and nuclear units account for 1,419.5 MW. As of January 1, 2017, installed capacity in PJM was 182,410.7 MW, so the planned coal and nuclear retirements represent approximately 3 percent of the available capacity in PJM.

The PJM Market Monitor also quantifies units at risk of retirement, which he defines as units that have not recovered avoidable costs from total market revenues in two of the last three years, or, aside from nuclear, have not cleared the prior two years' capacity auctions. Based on that criterion, the PJM Market Monitor estimates that 21,039 MW of coal and 7,673 MW of nuclear units are at risk of retiring. Together, that represents 15.7 percent of the available capacity in

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PJM. The PJM Market Monitor characterizes this as a high estimate of units at risk of retirement. It also offers an alternative low estimate, which for coal units is the 17,302 MW receiving less than 90 percent of their avoidable costs, and for nuclear units is the 2,939 MW that cover avoidable costs based on forward prices. The PJM Market Monitor defines avoidable costs here as equal to fuel costs, operating costs, and 50 percent of capital expenditures. Together, this low estimate of units at risk of retirement represents 11 percent of the available capacity in PJM.

Question 11: After the 2014 polar vortex, many began to consider whether the gas generators in PJM and ISO-New England should be able to show that they held sufficient rights to firm contracts for the transportation of gas to their power plant.

- Since firm pathways would seem to be inherently more secure than interruptible pathways, is FERC actively considering the need for gas generators to show a firm pathway for their gas, especially on the coldest days of the year when gas demand is highest?

- What do you see as the benefits of requiring a firm pathway, and what are the costs?

- Would fears about handicapping certain gas generating plants be a sufficient reason for FERC to avoid imposing a requirement for firm service on those power plants?

- What are the prospects for an intermediate firm service?

Answer: Electric generators procure natural gas under a variety of arrangements, including firm transportation, interruptible transportation, and delivered product from marketers. It is difficult to determine the extent to which increased use of firm natural gas pipeline transportation contracting would improve fuel security in a cost-effective manner. For example, an increased use of firm contracting may not address the impacts of certain emergency events, such as the polar vortex, that trigger force majeure. FERC is not actively considering the imposition of a requirement for firm service on power plants. As for costs, the imposition of a requirement for firm service would need to be carefully considered because the higher cost of fuel procurement associated with firm contracts would be reflected in a resource's bids into the power market and their order in the dispatch queue. Further, pipelines provide a variety of services, and should a pipeline propose intermediate firm service, FERC would carefully consider that proposal.

Question 12: What are the proceedings before FERC today where a market participant is proposing market changes that it contends will improve the efficiency of an existing FERC market? Please provide examples.

Answer: The relevant proceedings are listed below. Each proceeding is pending before FERC.

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California ISO		
Docket No.(s)	**Order Cite**	**Description**
EL18-177	Non-Applicable	CXA La Paloma recently filed a complaint against the California Independent System Operator, Inc. (CAISO) alleging that the fragmented short-term resource adequacy framework in the California wholesale power market results in insufficient revenues for relatively new and efficient generators, which in turn allegedly causes the owners of such generators to enter bankruptcy or otherwise forces resources to exit the market. CXA La Paloma asserts that the solution to this problem is centralized resource adequacy procurement administered by the CAISO, which would feature resource flexibility requirements, a downward-sloped demand curve, market power mitigation and performance incentives. CXA La Paloma is asking FERC to direct the CAISO to provide transitional payments to resources that provide capacity benefits until such a centralized capacity market is implemented.
ISO-NE		
Docket No.(s)	**Order Cite**	**Description**
EL18-154	Non-Applicable	New England Power Generators Association (NEPGA) filed a complaint against ISO-NE, contending that if the Mystic 8 and 9 generating units are retained for fuel security reasons for the capacity commitment periods 2022-2023 and 2023-2024 and are offered into the associated Forward Capacity Auctions at a zero price, the resulting auction rates will be unjust and unreasonable. NEPGA requests that the Commission direct ISO-NE to submit the Mystic units into the Forward Capacity Auctions at offer prices reflective of their actual costs so as to, among other things, avoid "inefficient displacement of otherwise economic resources."
Midcontinent ISO		
Docket No.(s)	**Order Cite**	**Description**

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EL16-108, EL17-29, EL17-54, EL17-89	Non-Applicable	Tilton, AMP, and Dynegy filed complaints seeking, among other things, changes to MISO's tariff as necessary to eliminate what they allege are inappropriate congestion charges assessed by MISO for resources pseudo-tied into PJM, and AEP filed a complaint seeking, among other things, changes to MISO's tariff as necessary to eliminate what it alleges are inappropriate congestion charges assessed by MISO for load pseudo-tied into SPP. Complainants generally claim that such congestion charges distort price signals and ultimately result in a less efficient dispatch.
EL17-8	*Indianapolis Power & Light Company v. Midcontinent ISO*, 162 FERC ¶ 61,266 (2018)	Indianapolis Power & Light (IPL) filed a complaint against MISO seeking, among other things, changes to MISO's tariff to allow electric battery storage resources to provide all products that they are technically capable of providing, so that customers can receive the benefits of battery storage resources that can provide certain services more efficiently than traditional generators. The Commission granted the complaint in relevant part in a February 2017 order (158 FERC ¶ 61,107), and directed MISO to revise its tariff to accommodate the participation of all electric storage resources, regardless of the technology, in all MISO markets in which they are technically capable of participating, taking into account their unique physical and operational characteristics. The Commission issued an order on rehearing and compliance in March 2018 (162 FERC ¶ 61,266). The proceeding is currently pending on further compliance with the March 2018 order.
New York ISO		
Docket No.(s)	**Order Cite**	**Description**
EL13-62	Non-Applicable	The Independent Power Producers of New York (IPPNY) filed and then amended a complaint seeking to apply the MOPR to units under RMR contracts and repowered units. The Commission denied the complaint but required NYISO to establish a stakeholder process to consider, and submit an informational report on, whether to expand its

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		Minimum Offer Price Rule (MOPR) to the Rest of State, among other issues.
EL16-92	*New York State Public Service Commission, et al., v. New York ISO*, 158 FERC ¶ 61,137 (2017).	The New York Public Service Commission filed a complaint seeking a blanket exemption for new Special Case Resources (demand response) from NYISO's MOPR. The Commission granted the blanket exemption. IPPNY filed a request for rehearing, asserting that the Commission erred in finding that SCRs have limited or no incentive and ability to artificially suppress NYISO's ICAP market prices.
PJM Interconnection		
Docket No.(s)	**Order Cite**	**Description**
EL17-31	Non-Applicable	Northern Illinois Municipal Power Agency alleges that PJM double-counts congestion costs related to service located in one balancing authority area electrically transferred to another balancing authority area using a pseudo-tied resource.
EL17-37	Non-Applicable	American Municipal Power (AMP) alleges PJM is collecting charges from generators that are pseudo-tied out of the Midcontinent Independent System Operator, Inc. (MISO) balancing authority area into the PJM balancing authority area when these charges are duplicative of the congestion charges that MISO assesses these generators in relation to transmission service on the MISO transmission system. AMP argues that PJM's settlement of congestion charges for a pseudo-tied generating resource using a nodal, rather than an interface price, violates market rules.

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EL17-64; EL17-65; ER18-87	*ESA v PJM and RESA v PJM*, 163 FERC ¶ 61,157 (2018).	Energy Storage Association and Renewable Energy Systems Americas allege violations to PJM's OATT and OA regarding changes made to PJM's Regulation Market. The parties are currently participating in settlement procedures.
EL18-170	Non-Applicable	DC Energy contends PJM's collateral and minimum capitalization requirements in the FTR market are unjust & unreasonable, because they do not minimize the size and likelihood of potential defaults. DC Energy argues to minimize potential defaults PJM should: be subject to a volumetric $0.05/MWh collateral requirement; and be subject to a minimum based on subsequent market-to-auction valuations. Additionally, DC Energy contends the minimum capitalization requirements should be reasonably commensurate with the amount of risk a market participant assumes in the FTR market.
EL16-49	Non-Applicable	Calpine seeks to expand PJM's MOPR to offers to sell capacity from existing generation capacity resources when such resources are subsidized by state-approved out of market payments.
EL17-32, EL17-36	*Old Dominion Electric Cooperative and Direct Energy, et al., v PJM*, 162 FERC ¶ 61,160 (2018)	Complainants request that the Commission extend the ability of Base Capacity Resources to participate in RPM auctions and institute processes to move to a seasonal capacity construct.
EL17-62	Non-Applicable	Potomac Economics requests that the Commission direct PJM to eliminate PJM's capacity market rule requiring external resources to be pseudo-tied into PJM in order to be eligible to offer capacity to the PJM region.
EL17-82	Non-Applicable	The Independent Market Monitor for PJM filed a complaint arguing that PJM misapplied its Tariff in granting a Competitive Energy Exemption from the Minimum Offer Price Rule to a participant ineligible for such an exemption under the applicable rule.
EL18-169	Non-Applicable	Complainants allege that PJM's Tariff is unjust and unreasonable because it does not include any

		provisions to effectively prevent the suppression of prices by resources receiving state subsidies.

Question 13: Some generators can submit negative bids in the energy markets because they receive tax subsidies. To what extent do those negative bids have an impact on either prices or generating resources in the FERC markets? Have any state policies, such as those that encourage renewable energy, had any impact on either prices or generating resources in the FERC markets?

Answer: Regional transmission organization/independent system operator markets seek to minimize the cost to serve load by dispatching the resources with the lowest bids first, subject to transmission and reliability constraints. Generally, resources with negative bids will be dispatched before higher cost resources. Prices are set by the marginal, or highest cost, resources needed, so negative bids tend to set prices only when there is an oversupply of generation relative to system needs.

State policies may affect prices and generating resources in the FERC markets. Generally, any policy that provides a payment to a resource (like a renewable energy credit), or reduces a cost to a resource (like a property tax break), has the potential to impact prices because such payments tend to change the resource's bidding behavior. Similarly, state policies that impose costs (like environmental restrictions) will likely impact a resource's bidding behavior and, thereby affect prices. Resources may make short-term bidding decisions and long-term entry or exit decisions that affect the markets based in part on the revenues and costs of state policies. FERC held a technical conference on the interplay between state policy goals and wholesale markets in 2017, and regional transmission organization/independent system operator markets continue to have stakeholder discussions to explore changes to market design in light of these tensions. These issues are also pending in several cases before FERC. Thus, I am not able to comment further on these matters.

Question 14: How many times has FERC permitted modifications to the energy and capacity markets in PJM and ISO-NE since they were formed? Please provide a chart of the significant changes in PJM and ISO-NE markets, organized by docket, and containing a short description of the changes to the tariff that were requested, with citations to the significant FERC orders in each of those dockets. To the extent that it would be convenient for you to provide a web link for your citations, that would be appreciated.

Answer: In the ISO-NE region, FERC has approved significant market rule modifications roughly 30 times since 2003. Among those are the following:

ISO-NE Capacity Market

Docket No.(s)	Order Cite	Description
ER03-563	*Devon Power, L.L.C.*, 115 FERC ¶ 61,340 (2006)	Under a Settlement Agreement the Forward Capacity Market (FCM) establishes annual auctions for capacity. Capacity resources eligible to participate

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		include traditional generating resources as well as renewable resources and demand-side resources. The capacity will be sold on a per-megawatt of deliverable capacity basis. The Forward Capacity Auctions (FCAs) will procure capacity three or more years ahead, thus allowing for a planning period for new entrants and allowing potential new capacity to compete in the auctions.
ER10-787, EL10-50, EL10-57	*ISO-NE and NEPOOL, et al.*, 135 FERC ¶ 61,029 (2011)	ISO-NE and NEPOOL filed Settlement provisions for the FCM. The Commission rejected the Alternative Capacity Price Rule (APR) and the modeling of capacity zones and related mitigation aspects of the proposed changes that were the subject of the paper hearing, while finding, with one exception, that issues related to calculating the Cost of New Entry (CONE) were moot.
ER12-1154	ISO-NE and NEPOOL – Issued Under Delegated Letter Order April 18, 2012	ISO-NE and NEPOOL submitted Tariff revisions to the rules governing participation in the forward capacity market to: (1) add an incremental capital expenditure recovery schedule to be used in the evaluation of de-list bids by the Internal Market Monitor; and (2) clarify that any risk that can be quantified and analytically supported, and that is not already reflected in the formula for Net Risk-Adjusted Going Forward Costs, may be included in a de-list bid as an opportunity cost.
ER12-1392	ISO-NE and NEPOOL – Issued Under Delegated Letter Order May 25, 2012	ISO-NE and NEPOOL filed Tariff revisions to change the FCM rules relating to Demand Resource Performance Incentives. Under the revisions, incentives payments will be distributed among over-performing resources located in the Capacity Zone where Demand Resource Penalties are collected.
ER12-2393	ISO-NE and NEPOOL – Issued Under Delegated Letter Order September 21, 2012	ISO-NE and NEPOOL filed revisions to Market Rule 1 of the Tariff to FCM rules to allow Existing Generating Capacity Resources and Existing Demand Resources to submit partial Non-Price Retirement Requests when only a portion of a resource needs to retire.
ER12-2625	ISO-NE and NEPOOL – Issued Under Delegated Letter Order November 9, 2012	ISO-NE and NEPOOL filing revisions to Market Rule 1 of the to terminate a resource if a Project Sponsor fails to provide a critical path schedule report or if the critical path schedule report does not provide all the information required under the Forward Capacity Market rules. Additionally, ISO-NE will have the

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		right to terminate a resource once the Project Sponsor covers a resource's Capacity Supply Obligation for two Capacity Commitment Periods, because the resource may not be making sufficient progress towards achieving commercial operation.
ER12-953	*ISO New England, Inc.,* 143 FERC 61,198 (2013)	ISO-NE filed Tariff revisions related to the duration of mitigation, to become effective May 30, 2013. The Commission rejected ISO-NE's alternative tariff provisions that would have provided for the modeling of eight zones, and accepted ISO-NE's proposal to retain four zones.
ER13-1742	*ISO New England Inc.*, 144 FERC ¶ 61,140 (2013)	ISO-NE filed Tariff revisions to: (1) the baseline calculation provisions providing for full integration and compensation of demand response resources in the energy market; (2) address the treatment of demand response resources that can produce net supply (i.e., inject energy into the electrical grid) in the FCM; and (3) reinstate the adjustment for transmission losses for demand response resources participating in the FCM.
ER13-1880	ISO-NE and NEPOOL – Issued Under Delegated Letter Order October 15, 2013	ISO-NE filed Tariff revisions to: revise the market clearing function of the FCA such that it will seek to maximize social surplus instead of minimize total cost and achieve those outcomes with less complexity and risk.
ER13-612	ISO-NE and NEPOOL – Issued Under Delegated Letter Order January 22, 2013	ISO-NE filed Tariff revisions to the FCM rules regarding the submittal of Static De-List Bids to allow Lead Market Participants to modify or withdraw Static De-List Bids during a seven-day window immediately after ISO-NE issues its Qualification Determination Notifications.
ER14-1050, EL14-52	*ISO New England Inc., and New England Power* Pool, 147 FERC ¶ 61,172 (2014)	ISO-NE and NEPOOL filed two alternate proposals to revise ISO-NE's Tariff to address fleet-wide resource performance problems in New England. The Commission instituted a proceeding under section 206 of the Federal Power Act (FPA) requiring ISO-NE to submit Tariff revisions reflecting a modified version of its proposal (significant changes to the FCM design) and an increase in the Reserve Constraint Penalty Factors, consistent with NEPOOL's proposal.
EL16-15, ER14-1639	*ISO New England, Inc. and New England Power*	The Commission found ISO-NE and NEPOOL's Tariff provisions preferential because it applied vertical demand curves within constrained zones,

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	Pool, 153 FERC ¶ 61,338 (2015)	which did not sufficiently address concerns such as price volatility and a susceptibility to the exercise of market power as part of FCM rules. As a result, the Commission instituted a section 206 FPA proceeding requiring ISO-NE to submit Tariff revisions that provide for inclusion of zonal sloped demand curves in its FCM rules. Those changes implemented a system-wide sloped demand curve, eliminated certain system-wide administrative pricing rules, and adopted a limited exemption from the minimum offer price rule for certain renewable resources.
ER14-2440	*ISO New England Inc.*, 148 FERC ¶ 61,185 (2014)	ISO-NE filed Tariff revisions to allow a non-commercial capacity resource to file with the Commission a request for a one-year deferral of its Capacity Supply Obligation under certain circumstances.
ER14-463	*ISO New England Inc.*, 146 FERC ¶ 61,038 (2014)	ISO-NE's filed Tariff revisions setting forth the administrative pricing for existing resources in situations of Inadequate Supply and Insufficient Competition.
ER15-2404	*ISO New England Inc., and New England Power Pool*, 153 FERC ¶ 61,017 (2015)	ISO-NE and NEPOOL filed Tariff revisions to incorporate the system-wide sloped demand curve used in ISO-NE's FCAs into the Annual Reconfiguration Auctions.
ER16-1434	*ISO New England Inc., and New England Power Pool*, 155 FERC ¶ 61,103 (2014)	ISO-NE and NEPOOL filed Tariff revisions to provide sloped zonal demand curves and a new sloped system-wide demand curve for use in ISO-NE's FCM.
ER16-551	*ISO New England Inc.*, 155 FERC ¶ 61,029(2016)	ISO-NE filed Tariff revisions to revise the FCM rules to provide a means for capacity suppliers to price the potential retirement of existing resources and to address the potential exercise of market power associated with the retirement of existing resources.
ER18-619	*ISO New England Inc.*, 162 FERC ¶ 61,205 (2018)	ISO-NE filed Tariff revisions to modify its FCM to better accommodate actions taken by New England states to procure certain resources outside of ISO-NE's wholesale markets. The revisions, referred to as Competitive Auctions with Sponsored Policy Resources (CASPR), adds a secondary auction to the Forward Capacity Auction process to facilitate the transfer of capacity supply obligations from existing

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		capacity resources, which commit to permanently exit ISO-NE's wholesale markets, to new state-supported resources.

ISO-NE Energy Market

Docket No.(s)	Order Cite	Description
ER03-1318	*NEPOOL and ISO-NE*, 105 FERC ¶ 61,204 (2003)	NEPOOL and ISO-NE filed revisions to Market Rule 1 proposing to implement a Forward Reserve Market in New England. This proposal will enable the advance market-based purchase of 10-minute non-spinning and 30-minute operating reserves thereby allowing suppliers with off-line resources.
ER11-3568	ISO-NE, NEPOOL, and the Participating Transmission Owners Administrative Committee (PTO AC) on behalf of the PTOs – Issued Under Delegated Authority June 30, 2011.	NEPOOL and ISO-NE filed revisions to sections of the ISO-NE Tariff to change several aspects of the Financial Transmission Right (FTR) market design include: (1) revisions to several aspects of the annual and monthly FTR auctions process and corresponding provisions of the Auction Revenue Rights allocation process; and (2) new tariff sheets to allow earlier implementation to convert Qualified Upgrade Awards to Incremental Auction Revenue Rights.
ER12-1155	*ISO-NE and NEPOOL.*, 139 FERC ¶ 61,047 (2012)	ISO-NE and NEPOOL filed revisions to Market Rule 1 of ISO-NE's Tariff to implement Coordinated Transaction Scheduling between New England and New York over certain alternating current interfaces. CTS was developed as a joint effort between ISO-NE and the NYISO to enhance the market efficiency of external transactions between the two regions.
ER13-1733	ISO-NE and NEPOOL - Issued Under Delegated Authority June 30, 2011.	ISO-NE and NEPOOL filed revisions to the ISO-NE Tariff to improve the performance incentives in the Forward Reserve Market by making limited changes to the calculation of the Forward Reserve Failure-to-Reserve Penalty and to the "trigger" that is used to determine whether a resource should be assessed a Forward Reserve Failure-to-Activate Penalty.

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ER13-895	*ISO-NE and NEPOOL*, 143 FERC ¶ 61,065 (2013)	ISO-NE and NEPOOL filed revisions to Market Rule 1 of the ISO-NE Tariff to provide for earlier clearing of the day-ahead energy market and earlier completion of the initial Reserve Adequacy Analysis process than under the existing Tariff, for purposes of coordinating the timing of the gas and electricity markets.
ER14-1537	*ISO-NE,* 147 FERC ¶ 61,135 (2014)	ISO-NE and NEPOOL filed Tariff revisions to ISO-NE's Regulation Market that were rejected because the Commission found the changes would restrict the ability of limited-energy resources, such as energy storage to participate in the Regulation Market.
ER14-1147	ISO-NE and NEPOOL – Issued Under Delegated Authority July 9, 2014.	ISO-NE and NEPOOL filed Tariff revisions to implement redesigned Net Commitment Period Compensation credit rules in Appendix F to Market Rule 1 and include conforming revisions to the market power mitigation rules in Appendix A to Market Rule 1 to align the rules with the implementation of the energy market offer flexibility changes.
ER13-1877	ISO-NE and NEPOOL, 147 FERC ¶ 61,073 (2012)	ISO-NE and NEPOOL filed Tariff revisions to provide locked-out market participants with significant additional flexibility to submit updated fuel price information. Additionally, the Tariff revisions specifically provide that updated reference levels will be made available to resources whenever calculated, as opposed to daily.
ER14-2918	*ISO-NE and NEPOOL*, 149 FERC ¶ 61,268 (2014)	ISO-NE and NEPOOL filed Tariff revisions provide market participants with non-generation resources three dispatch options: (1) a new energy-neutral dispatch signal using the existing trinary dispatch method, (2) an energy-neutral version of the relative response rate dispatch method currently used by generating resources, or (3) the standard (i.e. not energy neutral) AGC dispatch method in use today for generation resources.
ER15-257	*ISO-NE and NEPOOL*, 150 FERC ¶ 61,007 (2015)	ISO-NE and NEPOOL filed Tariff revisions to fully integrate demand response resources into its wholesale energy markets, including its reserve markets.
ER15-1238	ISO-NE and NEPOOL – Issued Under Delegated Authority April 17, 2015	ISO-NE and NEPOOL filed Tariff revisions that included a new, replacement LMP Calculator (i.e., part of ISO-NE's system dispatch software that calculates prices in the real-time energy market) that

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		will ensure that dispatch rates and real-time energy market prices are more closely aligned.
ER15-2716	ISO-NE and NEPOOL - Issued Under Delegated Authority October 19, 2015	ISO-NE and NEPOOL filed Tariff revisions to improve real-time price formation when fast-start resources are deployed. Additionally, the dispatch, pricing, and compensation revisions are necessary to improve market inefficiencies that result when fast-start resources are committed and dispatched.
ER16-1838	ISO-NE and NEPOOL - Issued Under Delegated Authority July 26, 2016	ISO-NE and NEPOOL filed Tariff revisions to change the settlement interval in the real-time energy and reserves markets from hourly intervals to five-minute intervals.

- In the PJM Region, FERC has approved significant market rule modifications over 50 times since 2002. Among those are the following.

PJM Capacity Market

Docket No.(s)	Order Cite	Description
EL03-236, PL04-2	*PJM Interconnection, L.L.C.*, 110 FERC ¶ 61,053 (2005)	PJM filed revisions to its Tariff to add Part V (Generation Deactivation) in order to clarify its deactivation procedures. Part V governs both retirement and mothballing.
ER05-1410, EL05-148	*PJM Interconnection, L.L.C.*, 117 FERC ¶ 61,331 (2006)	PJM filed revisions to Attachment DD of its Tariff, Schedule 6 of its Reliability Assurance Agreement (RAA) and to its Operating Agreement pursuant to a settlement agreement. The key elements of PJM's Reliability Pricing Model (RPM) include: Three Year Forward Auctions; Variable Resource Requirement; the Ability of Transmission and Demand Resources to participate; and the Minimum Offer Price screen.
ER11-3322	*PJM Interconnection, L.L.C.*, 138 FERC ¶ 61,138 (2012)	PJM filed revisions to its Tariff, Operating Agreement and RAA addressing performance of demand response capacity resources (Capacity DR). PJM illustrated how aggregation will be achieved under the Peak Load Contribution-based performance measurement methodology.
ER14-503	*PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,060 (2014)	PJM filed revisions to Attachment DD of its Tariff and Schedules 6 and 10 of the RAA to recognize limits on the amount of capacity from external generation

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		resources that can be reliably committed in the PJM forward capacity auctions.
ER14-504	*PJM Interconnection, L.L.C.*, 146 FERC ¶ 61,052 (2014)	PJM filed revisions to its Tariff and RAA to, *inter alia*, change how Limited and Extended Summer DR is cleared in the market.
ER14-822	*PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,103 (2014)	PJM filed revisions to its Tariff (Attachment DD, Attachment K-Appendix), RAA (Schedule 6) and Operating Agreement (Schedule 1) to more efficiently and cost-effectively integrate capacity demand response resources into its markets.
EL14-94, ER16-1291	*PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,281(2016)	*Sua sponte* 206 examination of the calculation of marginal cost in determining Market Seller Offer cap used in annual Base Residual Auction (BRA). Determined that use of cost-based offers in all circumstances is inconsistent with PJM's market design. PJM filed revisions to Attachment DD § 6.8(d) of the Tariff.
ER14-503	*PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,060 (2014)	PJM filed revisions to Attachment DD of its Tariff and Schedules 6 and 10 of the RAA to recognize limits on the amount of capacity from external generation resources that can be reliably committed in the PJM forward capacity auctions.
ER15-623, EL15-29	*PJM Interconnection, L.L.C.*, 151 FERC ¶ 61,208 (2015)	PJM filed revisions to its Tariff and RAA to establish a new capacity product, Capacity Performance Resources. The annual capacity product defines performance standards and set penalties for not meeting them.
EL16-6, ER16-121	*PJM Interconnection, L.L.C.*, 156 FERC ¶ 61,180 (2016), *on reh'g*, 158 FERC ¶ 61,093 (2017).	Due FTR underfunding, PJM filed a complaint under section 206 of the FPA asking the Commission to declare its current market design unjust and unreasonable, and to make appropriate reforms. PJM filed revisions to its Tariff and Operating Agreement to remove provisions that permit the allocation of balancing congestion to Financial Transmission Rights holders.
ER17-367	*PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,159 (2018)	PJM filed revisions to its Tariff, Definitions, Attachment DD and RAA to allow resource aggregation for purposes of submitting combined capacity market sell offers; granting of winter-period Capacity Interconnection Rights; and DR measurement and verification.
ER18-870	*PJM Interconnection,*	PJM filed revisions to its Tariff and RAA to establish a procedure to facilitate the implementation of any

	L.L.C., 163 FERC ¶ 61,029 (2018)	restrictions imposed on energy efficiency resources (EERs) by a relevant electric retail regulatory authority authorized by the Commission to opt-out and restrict the sale of EERs into PJM's market.

PJM Energy Market

Docket No.(s)	Order Cite	Description
ER02-1326	*PJM Interconnection, L.L.C.*, 99 FERC ¶ 61,227 (2002)	PJM filed revisions to Attachment K-Appendix of its Tariff and Schedule 1 of the Operating Agreement (Economic Load Response Program) to establish a multi-year Economic Load Response Program. The Economic Load Response Program provides a method by which PJM compensates end-use customers for voluntarily reducing load.
EL03-236, PL04-121	*PJM Interconnection, L.L.C.*, 114 FERC ¶ 61,076 (2006)	PJM filed revisions to its OATT (sections 1 Definitions and 6.4, 6A Attachment K-Appendix) Operating Agreement (Schedule 1) to provide alternate compensation for Frequently Mitigated Units (dispatched out-of-merit order for reliability). Commission found that higher bid caps are just and reasonable for must run generation. *See* also *PJM Interconnection, L.L.C.*, 107 FERC ¶ 61,112 (2004)
ER14-381	*PJM Interconnection, L.L.C.*, 147 FERC ¶ 61,043 (2014)	PJM filed revisions to its Tariff and amended its *pro forma* Interconnection Service Agreement to comply Order No. 764 (Variable Energy Resources). Order No. 764 required public utilities to offer intra-hourly transmission scheduling at 15-minute intervals.
ER14-2705	*PJM Interconnection, L.L.C.*, 149 FERC ¶ 61,091 (2014)	PJM filed revisions to Schedule 1 of the Operating Agreement 6.4.2, which sets forth the rules related to Offer Price Adders for generation units making price-based offers that are frequently offer capped (Frequently Mitigated Units, or FMU). PJM proposed changes to the existing Offer Price Adders for generation units making price-based offers that are FMU due to evolving market mechanisms, and PJM's implementation of its capacity market auctions.
ER16-372	*PJM Interconnection, L.L.C.*, 155 FERC ¶ 61,282 (June 2016	On August 16, 2016, PJM filed revisions to the PJM Tariff and Operating Agreement in compliance with the Commission's June 17, 2016 order to revise certain elements of PJM's market rules to detail a Fuel Cost Policy review and approval process, and to

	order); 158 FERC ¶ 61,133 (2017)	provide Market Sellers greater flexibility to submit offers throughout the Operating Day. On February 3, 2017, the Commission accepted the August 16, 2016 Compliance Filing but ordered PJM to make certain changes through an additional compliance filing.
ER17-775	*PJM Interconnection, L.L.C.*, 162 FERC ¶ 61,150 (2018)	PJM filed revisions to its Tariff (Definitions, Attachments K-Appendix & DD), Operating Agreement (Definitions, Schedule 1), and its RAA to comply with Commission Order No. 825 as a part of the Commission's Price Formation efforts. Order No. 825 requires PJM to settle transactions at same time interval it set prices in its markets.
ER17-1567	*PJM Interconnection, L.L.C.*, 161 FERC ¶ 61,153 (2017); 163 FERC ¶ 61,002 (2018)	PJM filed revisions to its Tarff (Attachment K) and its Operating Agreement (Schedule 1) to comply with Commission Order No. 831 as a part of the Commission's Price Formation efforts. Order No. 831 requires PJM to amend caps on incremental energy offers, verification procedures for energy offers, and apply those amended caps and procedures to other resource types.

Question 15: The Public Utility Regulatory Policies Act (PURPA) was enacted almost 40 years ago in response to the 1970s oil crisis. At the time, this major policy innovation helped to secure a market for emerging cogeneration and small power production facilities, known as "Qualifying Facilities" (QFs). However, with enactment of the 2005 Energy Policy Act, Congress amended the PURPA statute to eliminate the mandatory purchase requirement where QFs have access to competitive markets.

Members of the committee have been concerned that PURPA's mandatory purchase obligation is forcing utilities in the west and elsewhere outside of the competitive RTO markets to buy power they do not need. We've heard testimony in this committee from a Pacific Northwest utility that is locked into a QF "must purchase" contract at rates that are 43 percent higher than the market price – forcing customers to pay an incremental $1.1 billion over a decade for electricity the company does not even need.

In November 2015, I authored a letter to then Chairman Norman Bay, which was also signed by Fred Upton and Ed Whitfield on the House Energy and Commerce Committee, on the need for a technical conference at FERC on PURPA reform. While FERC eventually conducted the technical conference, the Commission failed to take any further action.

Notwithstanding any benefits that PURPA enactment brought in the 1970s and 1980s, today it seems clear that PURPA has been raising energy costs for many customers. In addition, since PURPA can benefit some projects that are "qualifying facilities" under the regulations, but not other projects with differing characteristics, I am concerned that PURPA is allowing some

less efficient QFs to displace more modern and efficient power projects. For these reasons, an emerging consensus seems to be prevailing that FERC itself needs to update its regulations on PURPA.

- FERC recently announced a PURPA review – will you commit to taking the leadership actions that will ensure that this matter can be promptly voted?

- To what extent are you willing to act on matters within FERC's authority, and not wait for Congressional action?

Answer: While my colleagues and I have acknowledged that there are aspects of PURPA that only Congress can change, I intend FERC's review of its PURPA regulations to identify changes in FERC's regulations that would be appropriate in light of changes in the electric industry in the years since the passage of PURPA in 1978 and the subsequent passage of the Energy Policy Act of 2005. I expect that FERC will act on such matters even without congressional action.

Questions from Ranking Member Maria Cantwell

Question 1: By revising its policy about setting the length of hydroelectric project license terms last year (in Docket No. PL17-3-000), the Commission made welcome progress toward removing a perverse incentive that has led licensees to delay investing in project upgrades during the term of a current license. However, some uncertainty remains under the new policy about what types of pre-relicensing investments the Commission will consider eligible for a longer license term.

I understand that the Commission may be hesitant to commit to a particular treatment of a particular investment, but under the new policy licensees may still defer significant investments to replace, rehabilitate, or otherwise modernize major equipment that does not qualify for a longer license term. Will you commit to evaluating further whether certain types of pre-relicensing investments, including major generating equipment upgrades, should be eligible for a longer license term under the new policy?

Answer: In the policy statement, FERC stated that it will consider, on a case-by-case basis, measures that enhance power and developmental purposes, as well as those that enhance non-developmental project purposes (i.e., environmental, project recreation, water supply), to determine whether they are significant enough to warrant the granting of a license term longer than 40 years. FERC will address these matters as they arise.

Question 2: In light of the Commission actions this year to address the potential overcollection of income taxes from ratepayers by utilities and pipelines, is there any sound policy reason why Congress should not amend section 5 of the Natural Gas Act to create the same refund authority with respect to natural gas pipelines that already exists in section 206 of the Federal Power Act?

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Answer: The decision to change the Natural Gas Act (NGA) resides with Congress and FERC will, of course comply with any changes to the law. I do note, however, that granting FERC refund authority under the NGA would be an additional way in which FERC could address consumer interests.

Question 3: The nation's electric grid is becoming increasingly reliant on natural gas. In 2005, Congress required the Commission to issue mandatory reliability standards for the bulk power system. The natural gas pipeline network, in contrast, has only voluntary guidelines in place, administered by the Transportation Security Administration (TSA).

Given the emerging threat environment and the 15 years that have passed since TSA was given authority to set guidelines and standards, I believe it is time to revisit the current statutory framework. Last year, I requested a study by the Government Accountability Office to assess this framework that is due this fall. I was pleased to see Commissioners Chatterjee and Glick this week call for mandatory cybersecurity standards for the millions of miles of natural gas, oil, and hazardous liquid pipelines.

A. Are you comfortable that our nation's pipeline network is currently adequately protected from cyber attacks?

Answer: There should be no aspect of our nation's critical energy infrastructure that is left unprotected in a cyber-sense, by whatever means we need to do that. It is my understanding that the TSA has the authority to establish mandatory cybersecurity regulations for natural gas pipelines. FERC staff stands ready to assist the TSA in any way that it can.

B. Do you believe that pipelines should be subject to mandatory standards just as the bulk power system is subject to such standards?

Answer: Congress is in the best position to assess current natural gas pipeline security authority and determine if natural gas pipelines should be subject to additional or mandatory cybersecurity standards. It is my understanding that the TSA has the authority to establish mandatory cybersecurity regulations for natural gas pipelines.

C. Is TSA the best-suited federal entity to issue cybersecurity standards for pipelines? If not, which federal entity is?

Answer: I defer to Congress on the appropriate entity to oversee pipeline cybersecurity. It is my understanding that the TSA has the authority to establish mandatory cybersecurity regulations for natural gas pipelines. FERC staff stands ready to assist TSA in any way that it can. If Congress decides to change existing obligations regarding pipeline cybersecurity, my hope is that Congress makes clear that a single agency is in charge of the effort, though that agency may call on the expertise of other relevant agencies for assistance as appropriate.

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Question 4: As the Commission revisits its 1999 Policy Statement on certifications of natural gas pipelines, I hope you will focus on the issue of excess pipeline capacity in some regions. The Department of Energy has estimated that average pipeline utilization rates were below 60 percent for most of the last two decades and projects them to remain at that level through 2030. I understand the gas supply constraints in some regions, but excess capacity in other regions can also cause significant problems. As part of your review of the 1999 Policy Statement, will you:

A. Consider evidence of underutilization of existing pipelines when evaluating the need for a new pipeline and the public interest of certificating it?

Answer: FERC will consider the entire record of the proceeding, including any issues in the record regarding the specific issues that you mention. As to pipeline utilization, I note that interstate pipelines are designed for peak day, or maximum usage, to ensure all that have contracted for service on the pipeline can receive deliveries of gas when needed during periods of peak usage. As a result, a pipeline's utilization rate may be lower than its maximum utilization rate when averaged across a year, but this does not mean that a pipeline is underutilized.

B. Consider the long-term risk of stranded costs for overbuilt pipeline networks?

Answer: Yes. Under FERC's currently effective 1999 Interstate Natural Gas Pipeline Certificate Policy Statement, FERC analyzes whether a new proposed natural gas project has eliminated or minimized any adverse effects the project might have on existing pipelines in the market and their captive customers as part of its process in determining whether the project is in the public convenience and necessity. FERC's April 19, 2018 Notice of Inquiry (NOI) seeks stakeholder comment on several questions in this area including whether FERC should change the way it considers the impact of a new pipeline project on competing existing pipeline systems or their captive shippers; and, if so, what that analysis would look like in practice. The NOI also asks for stakeholder perspectives on whether FERC should assess need differently if multiple pipeline applications to provide service in the same geographic area are pending before FERC. The NOI also seeks comment on whether FERC should consider adjusting its assessment of need to examine, among other things, if existing infrastructure can accommodate a proposed project and if demand in a new project's markets will materialize.

C. Evaluate what entity or entities should be responsible for potential stranded costs?

Answer: Although the NOI seeks information and stakeholder perspectives to help FERC explore whether, and if so how, it should revise its approach under its generally applicable Interstate Natural Gas Pipeline Certificate Policy Statement, FERC's determination of whether a specific interstate natural gas pipeline is able to recover the costs of existing capacity that may have become stranded may be more appropriately addressed through a general NGA section 4 rate case. A general NGA section 4 rate case provides all interested parties the opportunity to examine the changes that have occurred on the pipeline system

with regard to costs, throughput and customer commitments, and how those changes affects the pipeline's overall rates.

D. Consider analyzing available capacity on existing pipelines in a given region before certificating a new pipeline?

Answer: As I have noted, FERC will consider all matters raised in response to the notice of inquiry. With regard to the specific issue you mention, available capacity on existing pipelines is currently considered during the processing of natural gas pipeline applications. Staff queries companies in docketed proceedings to provide available capacity on other pipelines in the vicinity and will continue to seek information relevant to each proceeding. In addition, shippers on a pipeline system contract for service to meet its peak demands; this is the subscription rate of the pipeline. These demands are not always required and a shipper can release a portion of its capacity into the secondary market. This release of capacity will account for unutilized capacity. All pipelines are required to ensure the Electronic Bulletin Board is up to date with all available capacity, be it released by a shipper or due to a contract expiring, on its pipeline. The release of a shippers' capacity allows another entity to use the pipeline on an interim basis, until a time the shipper has higher demands and needs the full peak service it has contracted.

Question 5: The Commission's March 9, 2018, order (and individual commissioners' accompanying concurrences and dissents) on ISO-NE's tariff filling (Docket No. ER18-619-000) repeatedly discussed the issue of mandatory capacity auctions as the primary mechanism for ensuring resource adequacy in New England. For example, in his dissent, Commissioner Powelson stated that "unless the states are willing to reassume complete responsibility for resource adequacy, they must accept that the Commission is required to take action to ensure the viability of the capacity markets."

A. What is your understanding of the current resource adequacy paradigm in ISO New England and PJM with respect to the past decision, if any, by states within the footprints of those market operators to surrender responsibility for ensuring resource adequacy?

B. Can you share documentation of the states' actions to that effect?

Answer: In response to high electric costs in the Northeast and PJM regions in the 1990s, most states in the Eastern regional transmission organizations (RTOs) passed legislation to partially de-regulate generation and retail rate-setting. This change included directing electric utilities to divest their generation assets allowing for competition in the provision of electric service to end-use customers. This transition is commonly referred to as "retail restructuring." By the early to mid-2000s, in the face of generator retirements and concerns that the then-current wholesale market design may not sufficiently incent investment in generating resources to serve expected, growing future demand (i.e., to ensure resource adequacy), RTOs and independent system operators (ISOs) developed rules for mandatory participation capacity markets where nearly all of the region's capacity needs would be

procured through a centralized market. Initial mandatory capacity market designs were adopted in both the ISO-NE and PJM regions. Many intervening parties, including numerous state regulatory entities, participated in those proceedings. Over time, ISO-NE and PJM, with input from their regional stakeholders, have proposed market rule changes to meet changing system needs and market conditions. FERC has continued to review those proposed changes to ensure they result in just and reasonable rates.

Issues regarding state policies and wholesale markets are pending before FERC in both the ISO-NE case you cite as well as several complaints and a tariff proposal concerning the PJM market. Because these proceedings are pending, I am limited in my ability to discuss my thoughts regarding the current ISO-NE or PJM tariffs and their effect on state actions.

Question 6: Several commissioners and senators commented during the hearing that the energy sector is different now than when the Public Utility Regulatory Policies Act (PURPA) was enacted in 1978. Congress recognized this fact when it authorized exemptions in 2005 from the requirements of Title II for states that had joined competitive organized electric markets.

As the Commission considers whether to make any administrative changes to the implementation of Title II, I refer you to my letter dated February 11, 2016, raising concerns about several PURPA implementation issues. Among those concerns was a lack of publicly available data comparing states' implementation of PURPA, including issues like the length of a standard offer contract for Qualifying Facilities (QFs), average interconnection times for QFs, and whether a state has in place requirements for all-resource (i.e., fuel-neutral) generation procurement. I believe the Commission's review of PURPA implementation would benefit greatly now and in the future by making this data publicly available online. I appreciated Commissioner Chatterjee's commitment at the hearing to making such information available.

Will the Commission move ahead to release this kind of comparative PURPA data, including collating information it already has and gathering appropriate information it currently lacks?

Answer: Under PURPA, the states oversee the requirement for standard rates for QFs with a design capacity of 100 kW or less, the interconnection of QFs to the utilities that purchase the electric energy the QFs produce, and utility generation procurement. FERC does not collect information on this matter.

Question 7: Fuel cell technology has advanced significantly since the Commission last updated PURPA's implementing regulations. The statute itself only requires that a cogeneration facility produce electric energy and other forms of useful energy. Electric fuel cells in general meet this statutory requirement by producing electric energy as well as thermal energy that is used internally in the reformation process to convert gas to hydrogen. The Commission's more stringent regulatory definition of a cogeneration facility has had the effect of denying fuel cells QF status and creating an uneven playing field in the market for a distributed energy resource that can achieve efficiencies (as high as 65 percent) that exceed the efficiency requirements of the existing PURPA regulations.

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As the Commission reviews its PURPA regulations, will you commit to evaluating whether fuel cells should qualify as cogeneration QFs under PURPA?

Answer: PURPA defines a "cogeneration facility" as "a facility which produces (i) electric energy, and (ii) steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating, or cooling purposes." 16 U.S.C. § 793(18)(A) (2012). Whether a particular generator type would qualify as a cogeneration facility would depend on whether it meets these requirements. I am discussing the format, scope, and timing of our PURPA review with my colleagues.

Question 8: The Energy and Natural Resources Committee has spent significant time evaluating various physical, cyber, and weather-related threats to energy infrastructure and developing bipartisan solutions to improve the reliability and resilience of the electric grid. For example, S. 1460, the bipartisan comprehensive energy bill, includes several cybersecurity, transmission right-of-way, and grid modernization provisions. As part of the omnibus Fiscal Year 2018 appropriations bill this year, Congress enacted one of these provisions to improve the management of vegetation on federal lands that starts wildfires when it comes into contact with nearby power lines.

A. Do you think improvements may be necessary to FERC's current cost recovery process to better account for natural disaster-related threats to electric reliability, such as damages incurred by utilities resulting from wildfires?

Answer: I believe FERC's current cost recovery mechanisms are adequate. FERC's transmission ratemaking mechanisms provide the opportunity for utilities to recover prudently incurred costs for restoration and repairs, less any recoveries already provided by insurance policies, in their FERC-jurisdictional transmission rates. Generally, FERC presumes that a utility's expenditures are prudent in the absence of evidence casting doubt on such prudence. Utility rates typically include mechanisms to take into account non-routine scenarios and emergencies in order to provide utilities with the funding needed sooner for repairs and recoveries. If assets need to be entirely replaced, utilities may seek to recover such costs over a longer period. I note that in 2014, San Diego Gas & Electric Company recovered $23.3 million in wildfire costs through FERC-jurisdictional transmission rates.

B. With respect to improving coordination between FERC and federal resource management agencies, would you support developing a memorandum of understanding between the agencies to better protect key infrastructure affected by fires on federal lands?

Answer: I do not oppose an MOU between FERC and federal resource management agencies regarding infrastructure on federal lands. However, the issue seems to be that utility companies need timely access to federal lands to maintain clearances on easements and rights of way. I note that the Edison Electric Institute, the Utility Arborist Association, the Department of the Interior (including the Bureau of Land Management), the Department

of Agriculture (including the Forest Service), and the Environmental Protection Agency executed an MOU in 2016 to "facilitate cooperation and coordination among the parties regarding vegetation management within and immediately adjacent to existing and future powerline [rights-of-way] and associated facilities" to enhance utilities' ability "to provide uninterrupted electrical service to customers and address public safety."

Questions from Senator John Barrasso

Question 1: I am encouraged by the Commission's announcement on May 17 that it will review its regulations under the Public Utility Regulatory Policies Act of 1978. Please provide details on the timing and scope of this review.

Answer: I am discussing the format, scope, and timing of our PURPA review with my colleagues. However, I intend that the effort consider changes in the regulations that would be appropriate in light of changes in the electric industry in the years since the passage of PURPA in 1978 and the subsequent passage of the Energy Policy Act of 2005.

Question 2: As a part of the Commission's review of its regulations under the Public Utility Regulatory Policies Act of 1978, will the Commission review the following: (1) reforming the "one-mile rule" to prevent gaming; (2) lowering the 20 MW threshold for a rebuttable presumption of nondiscriminatory market access contained in 18 CFR § 292.309; (3) providing state regulatory agencies and non-regulated electric utilities with the authority to waive the mandatory purchase obligation if a state regulatory agency or non-regulated electric utility determines that it does not need additional power; (4) amending 18 CFR 292.304(d) to provide that no electric utility shall be required to purchase energy or capacity at a rate that exceeds the avoided cost calculated at the time of delivery; (5) requiring that avoided cost be determined by requests for proposals or other types of competitive solicitations?

Answer: Please see my answer to the previous question.

Question 3: I have heard from LNG export project developers that the Commission's lengthy approval process is a barrier to the development of the export facilities we need. Does the Commission have the resources it needs to process these applications in a timely manner? Are there any internal procedures that can be improved to streamline the review process?

Answer: FERC has taken a number of steps in an effort to improve the timeliness of our review of these proceedings. For example, the Commission is (i) hiring additional LNG engineering staff to review LNG applications and conduct LNG project construction and operational inspections; (ii) reallocating available staff vacancies to the LNG branches of its Office of Energy Projects; (iii) identifying additional opportunities for third-party contracting assistance; (iv) working with other federal agencies, such as DOE and the Department of Transportation, to improve coordination with the hope of expediting the completion of those entities' roles in the process; and (v) examining FERC's own internal processes to identify potential efficiencies.

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Questions from Senator Ron Wyden

Question 1: At the April Technical Conference on Distributed Energy Resources, panelists clearly articulated a need for FERC to partner with state Commissions.

What is FERC doing to foster this collaboration?

Answer: FERC sought public comment after the conference on questions regarding the participation of distributed energy resource (DER) aggregations in wholesale markets, including information on the potential ways for regional transmission organizations/independent system operators, distribution utilities, state commissions and other local authorities, and DER aggregators to coordinate the integration of a DER aggregation into wholesale markets. FERC is reviewing the record, and I look forward to working with my colleagues to address these important issues.

Question 2: In your opening statement, you said FERC is exploring whether there are steps it can take administratively--based on the existing record--to improve the Commission's PURPA program.

Please elaborate. What types of actions could FERC potentially take with respect to PURPA based on its existing authority and record?

Answer: Although any major changes to PURPA must come from Congress, there are aspects to the PURPA program under FERC's regulations that FERC may change without congressional action. I am discussing the format, scope, and timing of our PURPA review with my colleagues.

Question 3: During the hearing, I expressed my concerns to Commissioner Glick regarding what the draft DOE emergency order to support uncompetitive power plants would do to Americans' utility bills.

Most of the focus on this draft order has been the potential impact on wholesale markets. What could the impact be on vertically-integrated utilities (i.e. utilities in regions without wholesale power markets)?

Answer: DOE has not taken any action to date on this issue and, therefore, I cannot address any potential impacts.

Question 4: I have been closely following the Commission's application proceedings regarding the license transfer for four dams on the Klamath River. The States of Oregon and California have signaled support for moving this matter forward, and have recently issued draft water quality certifications under the Clean Water Act.

I am very interested in timely disposition of these applications. Is there anything I, or my office, can do to assist the Commission in moving these applications forward?

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Answer: I appreciate your offer for assistance on this matter. FERC is committed to addressing these applications in a timely manner, presuming the full cooperation of the applicants and their commitment to provide all information needed to address the issues presented by their proposal.

Questions from Senator James E. Risch

Question 1: The Federal Energy Regulatory Commission (FERC or the Commission) is charged with the authority to issue licenses to operate hydropower facilities. Yet, that authority relies upon the cooperation of other federal and state agencies that have permits and approvals the Commission must include before issuing the license. FERC has provided Congress a list of projects that are delayed five, ten years or longer while waiting on other agency action – such as state Clean Water Act water quality certifications or ESA biological opinions.

Please describe the difficulties FERC experiences when other agency decisions are delayed? And what statutory changes are needed, or what else does Congress need to do, to resolve this issue?

Answer: The primary difficulty from FERC's perspective is not being able to act on a license application in a timely and efficient manner when other agencies decisions are delayed. In such situations, if the delay is significant, there is a risk that the information in the record could get stale and that environmental measures or facility improvements that could be included in the license are delayed. Congress could elect to resolve this issue by revising the various statutory provisions that give other agencies the ability to act in timeframes that prevent FERC from acting in a timely manner.

Question 2: With the Administration pursuing infrastructure permitting reform, are there administrative or policy changes that FERC could implement itself to reduce costs and delays and unnecessary regulatory burden? Is FERC examining its rules, regulations and policies to see where changes could be implemented? How could these changes significantly improve the timeline for license approvals?

Answer: Under Executive Order 13807 (Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects), FERC staff is developing an implementation plan for the One Federal Decision process. As part of this effort, FERC staff is looking at areas to improve communication and coordination with other agencies and project applicants and to provide for concurrent reviews of applications to streamline the process for hydroelectric applications. To address Executive Orders 13777 (Enforcing the Regulatory Reform Agenda) and 13783 (Promoting Energy Independence and Economic Growth), FERC staff conducted a comprehensive review of FERC's regulations, policies, and practices to determine where the licensing process can be streamlined without the need for legislative action. We also solicited input from industry on areas for improvement. FERC staff is evaluating those reviews. There is always room for improvement, and I will continue to work with FERC staff and my colleagues to improve the hydroelectric licensing process.

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Questions from Senator Mike Lee

Question 1: For almost a decade, FERC has acted as the lead federal agency for permitting purposes for the Lake Powell pipeline project in southern Utah. Additionally, the state of Utah has been operating under the assumption that FERC has jurisdiction over the entire downhill portion of the project.

Can you please explain why FERC stated in its Ready for Environmental Analysis notice last December that "The Commission has not yet determined whether these water delivery pipelines will be included as part of the licensed hydro facilities"?

Answer: It is my understanding that staff made that statement to reflect the fact that the Lake Powell Pipeline raises jurisdictional issues that FERC will have to address.

Question 2: Can you give me an update on when FERC will make a final determination on its jurisdiction over the Lake Powell pipeline project?

Answer: FERC's regulations preclude me from providing a date for proposed FERC action. However, my fellow Commissioners and I are aware of the significance of the issues raised in the petition for declaratory order filed by the Utah Board of Water Resources and will act on that petition as soon as possible.

Question 3: Can you please explain why FERC's March 15 revised policy statement regarding master limited partnerships did not include a notice and comment period?

Answer: Although FERC did not have a formal notice and comment period prior to issuing the Revised Policy Statement, FERC did seek public comment on the issues addressed in the Revised Policy Statement before it issued that document. In *United Airlines, Inc. v. FERC,* 827 F.3d 122 (D.C. Cir. 2016), the U.S. Court of Appeals for the District of Columbia Circuit (D.C. Circuit) held that FERC failed to demonstrate there was no double recovery of income tax costs when permitting SFPP, L.P., an MLP, to recover both an income tax allowance and a return on equity determined by the discounted cash flow methodology. On December 15, 2016, before the Commission acted on the *United Airlines* remand, FERC issued a notice of inquiry and solicited input from the industry and other interested stakeholders on these issues. *Inquiry Regarding the Commission's Policy for Recovery of Income Tax Costs*, 157 FERC ¶ 61,210 (2016). FERC received comments from a wide array of industry participants regarding the double-recovery issue. After careful consideration of the D.C. Circuit's decision and comments received to the notice of inquiry, on March 15, 2018, FERC issued two orders in response to the D.C. Circuit's decisions: an order on remand implementing *United Airlines* by denying SFPP an income tax allowance in its cost of service, and the Revised Policy Statement you mention revising FERC's 2005 income tax policy to indicate that MLPs no longer may recover an income tax allowance in their cost of service.

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In addition, let me clarify that a policy statement by itself does not apply to the specific facts of any particular case, nor does it resolve any specific controversy. Although the purpose of the Revised Policy Statement was to provide stakeholders with guidance, FERC intends to evaluate specific proposals based on the facts and circumstances relevant to each applicant and to address any concerns regarding the application of the criteria on a case-by-case basis.

Question 4: Does FERC intend to provide additional guidance regarding its March 15 revised policy statement?

Answer: These issues are pending before FERC in multiple proceedings, including on rehearing of the cases identified above. Under the Commission's *ex parte* rules, I am not able to comment on the nature or timing of FERC's action on the pending proceedings. I assure you, however, that we are evaluating the records in these proceedings and will act upon them as soon as we can.

Questions from Senator Debbie Stabenow

Question 1: It is my understanding that the FERC and Department of Energy have given final approval for LNG exports to "non-free trade agreement" countries that would equate to nearly 32 percent of U.S. demand in 2017. In addition, final approval has been granted for exporting nearly 77 percent of 2017 U.S. demand to "free trade" countries. This is a staggering amount of natural gas that is being approved for 20-30 years into the future, and I remain very concerned about the impact this would have on domestic manufacturers and consumers.

Do you support putting responsible safeguards in place to protect U.S. consumers if prices are impacted? For example, should the Department of Energy be able to reduce the volume of LNG exports if U.S. gas prices spike as result of increased exports?

Answer: FERC is responsible for authorizing the siting and construction of onshore and near-shore LNG export facilities. The Department of Energy (DOE) is responsible for reviewing applications to export the LNG commodity and, for countries that do not have a free trade agreement with the United States, determining whether approval of such applications is consistent with the public interest. Therefore, it is for DOE to consider the effects of LNG export on domestic natural gas supplies.

Question 2: Many utilities have raised questions about whether QFs that produce less than 20 MW have non-discriminatory access to wholesale markets, arguing that a much lower threshold is necessary to reflect today's market realities. PURPA developers, on the other hand, argue that the current 20 MW standard, which was established as a result of policies enacted by Congress in 2005, is appropriate. Is there sufficient data currently available upon which FERC can evaluate the validity of the current threshold? If so, can FERC commit to compiling this data and examine whether there is non-discriminatory access to wholesale markets?

Answer: The 20 MW threshold currently found in FERC's regulations is used to determine whether a QF is rebuttably presumed to have nondiscriminatory access to wholesale markets or

that a QF is rebuttably presumed not to have such access. If the Commission decides to propose a change in its regulations, I would anticipate that a robust and public stakeholder process would provide FERC any additional information necessary to evaluate whether the current 20 MW threshold should be changed.

Questions from Senator Joe Manchin III

Question 1: Energy infrastructure is typically built with private capital. I am not aware of a pipeline or transmission asking for financial support from the federal government.
These companies can finance these projects by utilizing low cost energy sources and getting them to market. One way that companies are able to do that is buying and incorporating as an MLP or master limited partnership. This type of partnership is attractive to energy investors. FERC recently issued a policy statement in response to a court decision and that statement concerned many in the energy sector looking to finance projects. I believe that Congress intended this structure to be an incentive for building infrastructure.

Did you anticipate the market reaction that occurred when you issued the statement?

When can we expect responses on the filings for rehearing that several companies have submitted?

Answer: FERC addresses a number of important issues throughout the year, and there are many factors that contribute to when FERC as an independent regulatory agency issues its orders. That said, I will work with my colleagues to consider timing issues as appropriate.

I also note that, although there was some initial market volatility, the markets seem to have stabilized.

As you note, several companies requested rehearing. While I am not able to comment on the nature or timing of FERC's action on pending proceedings, I assure you that FERC is evaluating the records in these proceedings and will act upon them a soon as possible.

Question 2: West Virginia's largest source of renewable power is hydro. The Jennings-Randolph project is a proposed 14 MW project on the North Branch of the Potomac River that sits right between Barnum in Mineral County, West Virginia and Swanton, Maryland. The project will generate clean, renewable power for over 6,000 homes and create construction and permanent jobs for project operators. I have a bill – S. 710 - that would give your commission the authority to extend the Jennings-Randolph's hydropower dam license so the project has time to secure other required permits and commence construction before its FERC 2-year license expires. It passed this Committee and now it's sitting waiting to be cleared by the Senate along with a handful of other extension bills for projects in Alaska, New York, North Carolina, Virginia, Montana, Louisiana, Washington and Alaska. And I know Chairman Murkowski has a bill – S. 724 – that would give you the authority to do this without an act of Congress which makes sense.

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Can you outline for me the challenges a hydro project developer faces if their FERC certificate hangs in limbo?

Answer: Whether a developer can secure the additional permits that may be required to commence construction after it has received a FERC license is beyond FERC's control. It is my understanding that some developers do not apply for such permits until after they receive a FERC license, and that some developers feel that they need a FERC license in order to attract the financing necessary for their projects to get to the construction stage. Both practices can make it difficult to meet the deadline for start of construction. I also understand that in some instances the cost of alternative power makes hydropower projects marginally economic, thus discouraging project development.

Do you believe FERC should have the authority to issue a license extension for projects like Jennings-Randolph?

Answer: Should Congress elect to give FERC additional authority to extend commencement of construction deadlines, FERC will be prepared to use that authority in an appropriate manner.

Question 3: I'd like to touch on the rulemaking you have started to examine the process by which FERC issues a "certificate of public convenience and necessity" for a new interstate pipeline. This policy guidance has not been updated since 1999. While I support examining and updating regulations as a part of good governance, I want to be sure that any changes FERC makes to the process do not have unintended consequences. The process of permitting a pipeline is already pretty costly and time consuming. That said, West Virginians want these pipelines must be built in an environmentally stakeholder way and with landowner buy-in and sufficient public engagement.

How do you intend to ensure that this process does not impede progress towards the expansion of energy infrastructure in constrained areas?

Answer: One of FERC's stated goals of the April 19, 2018 Notice of Inquiry (NOI) is to improve the efficiency and effectiveness of the pipeline certification process, and the NOI seeks input on how it may do that. I am committed to the goal of making our process more efficient.

Question 4: One of the specific topics you are seeking comment on is stakeholder engagement and the public comment process. I agree there could be some improvements here. Please comment on what you believe is outdated about that process. Will you be addressing the website? Will you be seeking new ways to host public meetings?

Answer: I have not reached a conclusion as to whether any particular aspects of FERC's process warrant revision, and am open to considering the views expressed by commenters on the issues you mention.

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Question from Senator Martin Heinrich

Question: At the May 17th FERC opening meeting, you expressed a desire to update the regulations implementing PURPA. One issue that has not gotten much attention is the impact that FERC's implementing regulations are having on natural gas powered, all-electric fuel cells. As I understand it, under FERC's regulatory definition, to qualify as a QF a cogeneration facility must produce electric energy and thermal energy for an industrial purpose. The underlying statute only requires that a cogeneration facility produce electric energy and other forms of useful energy. According to industry, this more stringent regulatory definition has had the effect of denying natural gas powered all-electric fuel cells QF status, creating an uneven playing field in the market. In the 2005 Energy Policy Act, Congress specifically directed FERC to update PURPA regulations to ensure "continuing progress in the development of efficient electric energy generating technology." Though, all-electric natural gas powered fuel cells were not commercially available in 2005, the technology is now commercial, economical and can achieve efficiencies as high as 65%, exceeding the efficiency requirements under PURPA regulations. Because of the restrictive regulatory definition of a cogeneration facility, FERC's regulations are having the opposite effect of what Congress intended under the Energy Policy Act of 2005.

As part of your ongoing update of FERC's regulations, will you commit to reviewing FERC's treatment of natural gas powered, all electric fuel cells under PURPA?

Answer: PURPA defines a "cogeneration facility" as "a facility which produces (i) electric energy, and (ii) steam or forms of useful energy (such as heat) which are used for industrial, commercial, heating, or cooling purposes." 16 U.S.C. § 793(18)(A) (2012). Whether a particular generator type would qualify as a cogeneration facility would depend on whether it meets these requirements. I am discussing the format, scope, and timing of our PURPA review with my colleagues.

Question from Senator Mazie K. Hirono

Question: As you know, as an island state, Hawaii does not fall under FERC's jurisdiction over interstate electric power transmission and sales. What aspects or consequences of an order requiring grid operators to pay electric generators made by the Department of Energy under the authorities granted under a) the Defense Production Act, and/or b) Section 202c of the Federal Power Act would be subject to FERC review, and would such reviews apply to electric power transactions within Hawaii?

Answer: The Secretary of Energy has authority pursuant to the Defense Production Act and section 202(c) of the Federal Power Act. Because to date the Secretary has taken no such action, I cannot speculate as to what, if any, action FERC might take.

Nonetheless, if the Secretary were to exercise that authority with respect to wholesale sales of electricity in interstate commerce, then FERC may play a role in determining appropriate compensation for those affected sales. If FERC were to be play such a role, any FERC action

would be based on the relevant record and applicable statutory requirements. Although there is no precedent with respect to the issue, I would not expect that any such review conducted by FERC would apply to electric power transactions within Hawaii.

Questions from Senator Tammy Duckworth

Question 1: Under the Federal Power Act (FPA), Federal Energy Regulatory Commission (FERC) intervention in State actions, such as establishing State-level Zero Emission Credit (ZEC) and Renewable Portfolio Standards programs, would only be justified when unjust and unreasonable rates will result. PJM filed a proposal on April 9, 2018, in regard to State-level ZEC programs, an instance where that threshold has clearly not been met. This proposal falls short in proving that State-level ZEC programs, which are not otherwise preempted under the FPA, result in price suppression in wholesale markets. In fact, the mechanisms in the April 9, 2018, proposal would likely result in higher electricity bills for consumers with no corresponding public benefit.

Mr. Chairman and Commissioners, I am concerned that FERC approving the April 9, 2018 request would be contrary to the public interest by undermining State policies that lower harmful emissions, while also discouraging other States from taking the lead in promoting clean energy generation with just and reasonable rates. Would you agree that upholding federal statute and maintaining states' authority should be a FERC priority?

Answer: I respect states' authority to make resource decisions that are within their jurisdiction. FERC, too, has authority relevant to this issue – its statutory obligation to ensure just and reasonable wholesale electricity rates. However, as you note, this issue is currently pending before FERC. Thus, I am unable to comment on this question at this time.

Question 2: On May 18, 2018, FERC issued a 3-2 decision restricting NEPA considerations on climate change for future natural gas pipeline projects. This decision stated that upper-bound estimates to understand climate impacts will no longer be considered if the effects are not cumulative or indirect impacts. They further state that analysis to understand the climate impacts from natural gas production and consumption will only be conducted "when those effects are sufficiently causally connected to and are reasonably foreseeable effects of the proposed action."

While forecasts should always be reasonable, incorporating uncertainty is vital in understanding the full range of potential impacts. We cannot know what is "sufficiently likely" if we do not do our due diligence by using available modeling tools to fully understand potential upstream and downstream activities, the resulting impacts, and their probabilities.

Mr. Chairman and Commissioners, in the case of natural gas and understanding possible downstream activities, is it not reasonably foreseeable that the gas will likely be combusted? Do available tools allow for estimates of resulting greenhouse gas emissions?

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Answer: The issue you raise is one that FERC has been considering in the last year. It is my belief that FERC should develop a complete record that will allow it to consider all matters entrusted to it under law. I anticipate continuing to work with my colleagues to ensure that this occurs. Comments filed in response to our April 19, 2018 Notice of Inquiry on the Interstate Natural Gas Pipeline Certificate Policy Statement may inform any future decisions.

Question 3: In a recent case in Illinois, an electric company was able to collect a refund of just over $6 million from a transmission company that was overcharging subtransmission rates. With this refund, the electric company was able to refund their customers the overcharges from the date of when the complaint was filed with FERC, as mandated under the Federal Power Act (FPA). Conversely, this option is not available to natural gas consumers under the Natural Gas Act (NGA). For natural gas transmission complaints, a company is only able to pay lower rates after the FERC resolves the complaint, with no opportunity to recover the overcharges collected previously – likely a period of several years.

FERC has issued a Notice of Proposed Rulemaking and a Notice of Inquiry to revise interstate pipeline tariff rates where a reduction in the corporate tax rate has resulted in over collections. The Natural Gas Act does not allow for refunds of over collections, resulting in consumers paying pipelines for costs they are not incurring.

Mr. Chairman and Commissioners, are there any mechanisms that FERC can use to refund these over collections? If not, do you agree that FERC should have the authority to refund over collections under the Natural Gas Act in the same way it has the authority under the Federal Power Act?

Answer: As you note, under FPA section 206, FERC has the authority to order refunds to customers that have been charged unjust and unreasonable rates for a period ending 15 months after a refund effective date. NGA section 5 does not have similar refund authority. The decision to change the NGA resides with Congress. I note that making this change could address consumer interests.

Question from Senator Bill Cassidy

The Administration is attempting to provide financial incentives for "fuel secure" generation for the purposes of national security.

Question: If successful, would a nationwide incentive be necessary to provide sufficient reliability to the electric sector, or would this incentive only be necessary in regions with high single energy source generation?

Answer: Since the details of proposed DOE Emergency Order are not available and have not been shared with FERC, it would not be appropriate to speculate as to the impacts, if any, the DOE Emergency Order would have.

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Questions from Senator Catherine Cortez Masto

Question 1: I want to applaud you and your fellow commissioners for taking action via Order 841 which removed barriers for energy storage resources. It was a good, first step, and I trust FERC will continue to focus on responding to demand from consumers for clean energy resources. This is important because as noted in the letter you recently received on this subject from myself and several of my colleagues on May 23 - providing distributed energy resources, like rooftop solar, better access to America's power distribution system will help to grow a more flexible and resilient grid with lower prices for consumers. I'm very concerned that ready and available systems are currently sitting idle when they could be providing services to our grid. Nevada has seen up's and down's in this area before. And, thankfully, all parties worked together to reopen our rooftop solar market last year. The results have been overwhelming positive. Applications for rooftop solar in Nevada are on the rise—from 287 in 2016 to 3,308 in 2017. I want to ensure that FERC's work in the future complements the progress we're making in Nevada on this subject. How will FERC ensure that barriers preventing the participation of distributed storage in wholesale markets are removed in a timely fashion?

A. Are you considering how existing and future home solar and battery systems, which have already been paid for, can serve the grid?

Answer: In its proposal to remove barriers to the participation of distributed energy resource aggregation participation in the wholesale markets, FERC acknowledged that the recent proliferation of, and technological advancements in, distributed energy technologies, as well as their decreasing costs, create opportunities for distributed energy resource aggregations to be eligible to provide a variety of services to the organized wholesale electric markets. In its Final Rule removing barriers to electric storage participation in the wholesale markets, FERC stated that while it continues to believe that removing barriers to distributed energy resource aggregations in the regional transmission organization/independent system operator markets is important, more information is needed with respect to those proposals. Therefore, FERC convened a technical conference on April 10-11, 2018, and FERC sought public comment after the conference regarding the participation of distributed energy resource aggregations in wholesale markets. FERC received robust comments these issues. FERC is reviewing the record, and I look forward to working with my colleagues to address these important issues.

Question 2: Older, less efficient power generation assets that are no longer able to compete in today's electricity markets are set to retire in the coming years. If the Administration were to demand that these plants be kept online, despite their higher costs, how would those additional costs be paid?

A. Would ratepayers or taxpayers ultimately be responsible for paying these retiring plants to stay online?

B. Would the U.S. Government be requiring its citizens to subsidize power companies and coal companies?

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Answer: Because no such action has yet been taken, I cannot speculate as to its potential impacts. If FERC were to be involved in the determination or allocation of costs related to any such action, any determination would be based on the record and applicable statutory requirements.

Question 3: Considering there is no emergency to respond to, it's hard to envision how propping up coal and nuclear plants might be implemented under the auspices of national security. Can you talk about what an emergency order to keep plants online might look like?

Answer: Because no such action has yet been taken by the Administration, I cannot speculate as to any potential impacts.

A. Do we know for sure that keeping obsolete plants would be provide a benefit to the electric grid?

Answer: Please see my answer to the previous question.

B. Since there is no energy shortage and these plants are not low-cost generators, is it possibly that these plants would be kept from retirement – yet also not generate any power?

Answer: Please see my answer above.

C. If the plants are neither retired nor generating power, what would the net effect be on employment and rates in the related markets? Essentially, who would be benefitting, just the owners?

Answer: Please see my answer above.

Question 4: Are there vulnerabilities to cleaner energy sources, such as natural gas or renewables, as that other power sources do not experience, or vice-versa? For instance, is cyber security somehow a larger concern for these resources than for coal or nuclear?

Answer: Resource classes, which all have different characteristics, inherently bring various services and attributes to the grid, which are influenced by different circumstances such as weather, operational limitations, and physical vulnerabilities. However, all resource classes share some common vulnerabilities and threats, such as geomagnetic disturbances, computer or telecommunications infrastructure disruptions, and cyber attacks.

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Questions from Senator Rob Portman

Question 1: Under Title 41 of the FAST Act (FAST-41) (42 U.S.C. § 4370m), the facilitating or lead agency on each covered project "shall establish a permitting timetable that includes intermediate and final completion dates for action by each participating agency on any Federal environmental review or authorization required for the project." The term "participating agency" means "any agency participating in an environmental review or authorization for a covered project in accordance with section 4370m-2 of this title." 42 U.S.C. § 4370m(17). The statute does not make any distinction between independent agencies and executive branch agencies. FERC frequently serves as either the lead or participating agency on covered projects, but in numerous cases, has declined to post its required dates on the timetable citing internal agency regulations.

On September 7, 2017, at a hearing before the Senate Permanent Subcommittee on Investigations, the FERC Director of the Office of Energy Projects, testified that this policy would be revisited under the newly-comprised full commission. In response to Questions for the Record from a December 12, 2017 Senate Committee on Energy and Natural Resources Hearing, Mr. Turpin stated that "Under 18 CFR § 3c.2(b), the Secretary of the Commission has the exclusive authority for the public release of information regarding the timing of any Commission action. Staff has been instructed that, once the Commission has determined when it will likely be in possession of all information needed to issue a decision, the Office of the Secretary will issue a notice disclosing the Commission's intended order date. After this is done, Commission staff will update the Permitting Dashboard with this information."

In practice, how does this approval and release process work when FERC is coordinating with other agencies to set a comprehensive permitting timetable?

Answer: When a project is added to the FAST-41 dashboard, staff reaches out to all of the cooperating and participating agencies to establish the dates on the dashboard. FERC staff populates all of the milestones and publishes to a public facing page the completed dashboard. Pursuant to the FAST-41 guidance, FERC staff updates this information on a quarterly basis. If there are any questions or concerns, staff reaches out to the other agency's working group member or chief environmental review and permitting officer (CERPO) to resolve the issue.

Question 2: Will FERC commit to publishing a permitting timetable, as required by FAST-41, in conjunction with the other participating agencies on each project, at the start of the permitting process?

Answer: Yes.

Question 3: Under Executive Order 13,807 and the Memorandum of Understanding implementing One Federal Decision, a "major infrastructure project" means "an infrastructure project for which multiple authorizations by Federal agencies will be required to proceed with construction, the lead Federal agency has determined that it will prepare an environmental

impact statement (EIS) under the National Environmental Policy Act (NEPA), 42 U.S.C. 4321 et seq., and the project sponsor has identified the reasonable availability of funds sufficient to complete the project."

What is FERC's role in determining which projects qualify as major infrastructure projects under One Federal Decision?

Answer: FERC is the lead agency on the natural gas, liquefied natural gas, and non-federal hydropower projects. As lead agency, it is FERC's responsibility to review the application to determine if the proposed project qualifies under the MOU.

Question 4: What is the process by which FERC and other agencies, as applicable, determine that a project qualifies as a major infrastructure project?

Answer: FERC staff will review an application and determine if a project will require multiple authorizations by federal agencies to proceed with construction and that it will prepare an environmental impact statement under the National Environmental Policy Act. This determination will be made after review of the issues and in consultation with the cooperating agencies.

Question 5: During the hearing, several commissioners mentioned efforts FERC has been undertaking to improve its permitting processes.

What do those efforts entail?

Answer: FERC is working on its implementation plan for the One Federal Decision as contemplated in the MOU. During this process, staff is looking at ways to engage cooperating agencies early and providing information in a timely manner to allow for concurrent reviews.

On April 19, 2018, FERC issued a Notice of Inquiry (NOI) initiating FERC's review of its 1999 policy statement on the certification of new natural gas transportation facilities. The NOI seeks information and stakeholder perspectives to help FERC explore whether, and if so how, it should revise its approach under its currently effective policy statement to determine whether a proposed natural gas project is or will be required by the present or future public convenience and necessity, as that standard is established in section 7 of the Natural Gas Act. I believe consideration of the role of LNG exports when determining whether a proposed project designed to bring natural gas to an export facility is required by the public convenience and necessity can be included in the scope of the NOI.

To address Executive Orders 13777 (Enforcing the Regulatory Reform Agenda) and 13783 (Promoting Energy Independence and Economic Growth), FERC staff conducted a comprehensive review of FERC's regulations, policies, and practices to determine where the natural gas and hydropower licensing processes can be streamlined without the need for

legislative action. We also solicited input from industry on areas for improvement. FERC staff is evaluating those reviews.

Question 6: What improvements is FERC currently implementing and what improvements does it plan to implement?

Answer: Please see my answer to the previous question.

Question 7: Has FERC coordinated those efforts with the Federal Permitting Improvement Steering Council? If so, what have those coordination efforts entailed? If not, why not?

Answer: FERC staff meets regularly with the working group for the Federal Permitting Improvement Steering Council (Council). FERC staff also participates in the Council meeting. In addition, the CERPO meets with other cooperating agency CERPOs on a project specific basis to determine what steps are needed to process an application.

At the last Council meeting in April 2018, FERC staff participated in the discussion regarding cooperating agencies and methods to improve the process. Staff will continue to participate in these discussions with agencies and provide guidance to other FERC staff working on the projects.

Questions from Senator Shelley Moore Capito

Question 1: If the Administration uses its authorities under the Federal Power Act or the Defense Production Act to direct baseload generation units slated for retirement to continue operating, what will FERC's role be?

Answer: Because no such action has yet been taken by the Administration, I cannot speculate as to FERC's potential role. If FERC were to be involved, any action would be based on the relevant record and applicable statutory requirements.

Question 2: What impact will the finalization of the proposal, or lack thereof, have on FERC's own review of the grid's reliability and resiliency?

Answer: FERC's work on its Grid Resilience in Regional Transmission Organizations and Independent System Operators proceeding in Docket No. AD18-7-000 is not dependent on any possible action the Administration may be considering under the FPA or the Defense Production Act. However, if the Administration does act in a manner that implicates FERC's work in that proceeding, I would expect that FERC would take such action into consideration in that proceeding as appropriate.

Question 3: Is FERC conducting any oversight of the RTOs' own reliability and resiliency reviews, like the one PJM is undertaking. If so, in what form?

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Answer: As part of our proceeding in Docket No. AD18-7-000, FERC has solicited input on how each regional transmission organization and independent system operator (RTO/ISO) assesses resilience in its geographic footprint, and evaluates options to mitigate risks to grid resilience. FERC is still in the process of reviewing the material provided in order to decide whether additional action is warranted to address grid resilience. In addition, FERC will evaluate any market rules or tariff changes proposed by RTOs/ISOs to address reliability and resilience concerns.

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Questions from Chairman Lisa Murkowski

Question 1: If we expect to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. By law, FERC must process, across the board, all pipeline and LNG export applications in a timely fashion.

- What steps have you taken to ensure that FERC is allocating sufficient resources and time to all of its LNG exports and pipeline applications?

Answer: As Chairman McIntyre explained, we have seen a high volume of LNG and pipeline projects come in front of the Commission in recent years. The Commission is moving forward with multiple strategies to achieve short-, medium-, and long-term solutions to ensure sufficient resources are available to process the large number of LNG proposals before FERC. For example, FERC is: (i) hiring additional LNG engineering staff to review LNG applications and conduct LNG project construction and operational inspections; (ii) reallocating available staff vacancies to the LNG branches of its Office of Energy Projects; (iii) identifying additional opportunities for third-party contracting assistance; (iv) examining FERC's own internal processes to identify potential efficiencies; and (v) working with other federal agencies, such as the Department of Energy (DOE) and the Department of Transportation, to improve coordination with the hope of expediting the completion of those entities' roles in the process. I am happy to report that in recent days we have made significant strides in reforming the LNG permitting process with our federal partners, eliminating duplicative efforts and instituting streamlined procedures to reduce our LNG timelines.

- What steps have you taken to ensure that FERC is just as capable of acting in a timely manner as it has been since 2008?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- Given your urgent desire to find and hire more people to process pipeline and LNG applications, and given the dislocations that Commissioner Glick noted in industries related to traditional baseload energy supply, would you consider establishing a formal program to recruit FERC staff from among the highly-qualified engineers who have worked in industry but are at risk of being displaced?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 2: Given record-setting numbers on both the demand for natural gas as well as its production, most observers contend that the United States is badly in need of new pipeline infrastructure. Such new infrastructure could make natural gas more secure, and make it easier for Americans to be confident that natural gas will be available for all of its many uses, including

enabling the manufacturing renaissance and producing electricity on the coldest and hottest days of the year.

- What have you been doing as Chairman to advance the goal of getting new pipelines built?

Answer: I refer to the answer of Chairman McIntyre regarding the volume of pipeline projects that FERC has recently considered. As the Chairman explained, on April 19, 2018, FERC issued a Notice of Inquiry that seeks information and stakeholder perspectives to help us explore whether, and if so how, we should revise our approach to determining whether a proposed natural gas project is or will be required by the present or future public convenience and necessity. I hope that this ongoing notice of inquiry will provide an opportunity for additional consideration of what types of information the Commission should require in its pipeline applications to assist with both our needs analysis and our environmental review. I also look forward to an open and productive conversation on how the Commission should consider climate change in our environmental reviews and am hopeful that this conversation will yield a better path forward in this aspect of our work. These are important conversations for everyone to be a part of because need and environmental review informs our public interest determination on pipeline projects.

- Please elaborate on your answer during the hearing about how the Commission's review of its 1999 pipeline policy statement might advance the goal of streamlining the process and making it clearer, more certain and more prompt.

Answer: Please see my answer immediately above.

Question 3: In recent years, I have asked whether the United States will soon lose its pre-eminence in the field of nuclear energy. The United States appears to be in steady retreat, while China, Russia, and others are taking the lead. Early retirements of commercial reactors, which produce emission-free power for civilian uses, accelerate this trend. We are at risk of losing the know-how, the work force, the industrial base, and therefore the credibility to be a leader on the world stage. Our lagging deployment of advanced nuclear technologies is equally, if not more, worrisome.

- Do you agree that nuclear is an important part of our energy mix and must remain so going forward? And, if so, what can be done to stop this trend in retirements?

Answer: I agree that nuclear is an important part of our energy mix, and I expect that, notwithstanding the economic challenges that some units currently face, it will continue to be part of our energy mix going forward. As you note, nuclear power provides significant emission-free power, yet the climate value of that emission-free power is largely uncompensated at the state and federal levels. I believe that a broad-based carbon regime, whether in the form of a carbon tax, cap-and-trade system, or some other mechanism, could

help support the continued operation of nuclear facilities in a way that is consistent with competitive market operation

- The words "just and reasonable" and "public interest" in the Federal Power Act require more than merely adopting expert predictions about the cost of fuels over the next few years. What is FERC's role in preserving the "just and reasonable" sales of nuclear power at wholesale in order to serve the critical "public interest" of America in nuclear energy?

Answer: Under the Federal Power Act, FERC must ensure that rates are just and reasonable, but also that rates are not unduly discriminatory or preferential. In meeting that obligation, for decades the Commission has focused on developing and supporting competitive, resource-neutral wholesale electric markets. I support the Commission's continued commitment to the evolution and preservation of those markets, and I question whether a focus on preservation of a specific set of resources, in the absence of a clearly demonstrated reliability need, would be consistent with the Commission's longstanding support for market-based reliability solutions.

- Is the public interest served if nuclear power plants selling their output into FERC-regulated wholesale markets cannot compete on the price that is derived from auctions conducted pursuant to FERC's tariffs? Is tariff reform an option to address anomalies in price formation or otherwise to take into account the benefits of nuclear power?

Answer: As I have previously stated, resource turnover is a natural consequence of markets, and the reduced prices that result from greater competition are a benefit to customers, not a problem to solve, unless reliability is compromised. Where the Commission has seen evidence of a need for market reforms, the Commission has historically been willing to act – for example, in approving capacity market reforms in PJM and ISO New England to improve resource performance during periods of system stress, or in the various actions the Commission has already taken under its price formation effort. In considering whether further market reforms are needed, I believe the Commission should first determine whether there is a customer need, and if so, rely upon evidence to define it in a fuel-neutral way, and either allow the market to transparently price it or establish broad requirements to ensure that a needed service is provided.

- Are you confident that predictions about continued low prices for natural gas during most hours of the year are correct? What do you foresee not only with respect to natural gas prices but also with respect to the future viability of nuclear generation selling into FERC-regulated wholesale markets?

Answer: I refer you to the answer submitted by Chairman McIntyre.

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- As one of the five Commissioners with obligations to ensure just and reasonable rates, what will you say to the public if you allow nuclear plants to retire, only to see a market demand for such power in a few years if the experts were wrong in their predictions about natural gas prices?

Answer: Under the Federal Power Act, FERC's responsibility is to ensure that rates are just and reasonable, and I believe we should endeavor to ensure that the market rules we rely on preserve reliability at the lowest cost. As noted above, resource turnover is a natural consequence of markets, and a corollary consequence of markets is that, as the resource mix changes over time, so too will the prices generated by those markets. I continue to believe that adherence to market principles, even through periods of higher prices, is overall better for customers than attempting to predict the future and select a specific set of resources that might be preferable under hypothetical future scenarios.

Question 4: At a recent open meeting of the Commission, FERC issued a series of tax orders while the trading markets were open, which some have claimed resulted in an over-reaction by the markets and the needless destruction of wealth invested in natural gas pipeline infrastructure. Investors reportedly needed more time to understand the FERC issuances, and that is hard to do when the worldwide trading markets are open. Badly-timed orders can result in pointless market swings. Friday evening seems to be the best time for reducing the adverse impacts on Asian and European trading markets, and it gives investors an entire weekend to digest what could be hundreds of pages of FERC issuances. For market-moving tax-related issuances by FERC, wouldn't a Friday evening release be more prudent? If so, will you commit to release the next potentially market moving tax order or set of tax orders on Friday evening? And, if not, why not?

Answer: I am certainly open to adjusting when the Commission issues major orders that might unnecessarily cause market disruptions, and agree that Friday evening issuances would be a prudent way to minimize the risk of those disruptions. While the scheduling of non-statutory orders is generally determined by the Chairman, I am very willing to work with him and my other colleagues to address these issues.

Question 5: As Puerto Rico's electric grid continues to be restored in the aftermath of Hurricanes Irma and Maria, the Government of Puerto Rico is considering legislation to partially privatize their grid, as well as reform the Puerto Rico Energy Commission (PREC). Has FERC been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery, and moving forward, what role can you offer for FERC in providing regulatory assistance to the PREC or any future energy regulatory body in Puerto Rico?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 6: On an annual basis, FERC requires many electric utilities to submit data on the operation of their power grid, in FERC Form No. 715. Not only does this form require a utility to submit maps and diagrams of the grid, but also submit actual grid data in electronic format. FERC acknowledges that this data is Critical Energy Infrastructure Information (CEII) and treats

it as such. FERC's policy generally revolves around releasing that data to the public on the basis of the public's "right to know." While transparency is important, when it comes to critical energy infrastructure information (e.g., schematics etc.), it seems reasonable to be more circumspect.

- On January 23, the Committee held a hearing on the cold weather event at the beginning of this year, and PJM questioned FERC's policy concerning the disclosure of CEII data submitted by electric utilities. Further, our military and intelligence agencies do not operate under a policy that the public has a "right to know" this type of information. Instead, such sensitive information is shared in a very limited way, even among people who are already cleared based on a "need to know." Do you believe that FERC should reconsider its process for releasing data it holds in Form No. 715 and its other CEII?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- What is your level of confidence that a pledge to the Commission in the form of a non-disclosure agreement (NDA) regarding FERC's CEII will be honored in every instance?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- To what extent does FERC investigate the background of organizations that may be associated with an individual receiving FERC's CEII under an NDA? Does FERC always explore the background of such organizations with the Federal Bureau of Investigation? If not, why not?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 7: On March 1, Robert Lee testified before the committee about the need for a regulatory freeze on new cyber standards, in order to allow the industry to shift its focus away from constantly updating its minimum standards and towards a more pro-active approach of anticipating and finding the new and evolving threats to the energy sector.

- What are your thoughts on the costs and benefits of a regulatory freeze?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- Without a regulatory freeze, how can the security professionals working within the industry adequately shift their focus towards the new and evolving threats, and away from being dedicated to compliance with new regulations?

Answer: I refer you to the answer submitted by Chairman McIntyre.

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Question 8: While other federal agencies are not required by law to comply with FERC's Integrated Licensing Process (ILP), FERC has many options to encourage more efficient and timely performance.

- Are you considering any further reliance on existing law, or changes to FERC rules or policies to encourage better performance by other federal agencies?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- Do you think Congress should mandate compliance with the ILP, at least with respect to the models and studies resulting from the ILP?

Answer: I refer you to the answer submitted by Chairman McIntyre.

- Because the ILP is binding on project applicants, do you think that this obligation should be relaxed so that applicants are granted the same flexibility that is granted to federal agencies?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 9: How can FERC improve its communication with the Department of Interior, the Forest Service, and the Bureau of Land Management in ways that enhance resiliency and reliability by ensuring that easements and rights of way are properly managed, particularly in those areas likely to be affected by wildfires? What is the role of FERC in ratemaking and cost recovery associated with vegetation management? What have been the actions taken by FERC with respect to the reliability standards that are associated with vegetation management?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 10: According to the billings of PJM, what is the total annual revenue received by all of the power plants in PJM, collectively, broken down by energy and capacity? Roughly what percentage of the available capacity in PJM consists of coal and nuclear plants that are widely expected to retire within the next two years?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 11: After the 2014 polar vortex, many began to consider whether the gas generators in PJM and ISO-New England should be able to show that they held sufficient rights to firm contracts for the transportation of gas to their power plant.

- Since firm pathways would seem to be inherently more secure than interruptible pathways, is FERC actively considering the need for gas generators to show a firm pathway for their gas, especially on the coldest days of the year when gas demand is highest?

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- What do you see as the benefits of requiring a firm pathway, and what are the costs?
- Would fears about handicapping certain gas generating plants be a sufficient reason for FERC to avoid imposing a requirement for firm service on those power plants?
- What are the prospects for an intermediate firm service?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 12: What are the proceedings before FERC today where a market participant is proposing market changes that it contends will improve the efficiency of an existing FERC market? Please provide examples.

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 13: Some generators can submit negative bids in the energy markets because they receive tax subsidies. To what extent do those negative bids have an impact on either prices or generating resources in the FERC markets? Have any state policies, such as those that encourage renewable energy, had any impact on either prices or generating resources in the FERC markets?

Answer: How to address the interplay of competitive wholesale markets and state policy initiatives is one of the most important and complex issues facing the Commission and the nation's electricity markets. I am a strong supporter of wholesale capacity markets, which I believe have delivered substantial benefits to customers through regional resource selection and deployment, protecting reliability at least cost, and promoting innovation and efficiency. At the same time, I recognize that these markets exist due to the decisions of the states to change the structure of their regulated utilities, leading the regions to rely upon mandatory centralized capacity markets to sustain resource adequacy and reliability.

As the Chairman states, regional transmission organization/independent system operator markets seek to minimize the cost to serve load by dispatching the resources with the lowest bids first, subject to transmission and reliability constraints. Generally, resources with negative bids will be dispatched before higher cost resources. Prices are set by the marginal, or highest cost, resources needed, so negative bids tend to set prices only when there is an oversupply of generation relative to system needs.

State policies may affect prices and generating resources in the FERC markets. Generally, any policy that provides a payment to a resource (like a renewable energy credit), or reduces a cost to a resource (like a property tax break), has the potential to impact prices because such payments tend to change the resource's bidding behavior. Similarly, state policies that impose costs (like environmental requirements) will likely impact a resource's bidding behavior and, thereby affect prices. Resources may make short-term bidding decisions and long-term entry or exit decisions that affect the markets based in part on the revenues and

costs of state policies. FERC held a technical conference on the interplay between state policy goals and wholesale markets in May 2017, and regional transmission organization/independent system operator markets continue to have stakeholder discussions to explore changes to market design in light of these tensions. These issues are also pending in several cases before FERC. Thus, I am not able to comment further on these matters.

Question 14: How many times has FERC permitted modifications to the energy and capacity markets in PJM and ISO-NE since they were formed? Please provide a chart of the significant changes in PJM and ISO-NE markets, organized by docket, and containing a short description of the changes to the tariff that were requested, with citations to the significant FERC orders in each of those dockets. To the extent that it would be convenient for you to provide a web link for your citations, that would be appreciated.

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 15: The Public Utility Regulatory Policies Act (PURPA) was enacted almost 40 years ago in response to the 1970s oil crisis. At the time, this major policy innovation helped to secure a market for emerging cogeneration and small power production facilities, known as "Qualifying Facilities" (QFs). However, with enactment of the 2005 Energy Policy Act, Congress amended the PURPA statute to eliminate the mandatory purchase requirement where QFs have access to competitive markets.

Members of the committee have been concerned that PURPA's mandatory purchase obligation is forcing utilities in the west and elsewhere outside of the competitive RTO markets to buy power they do not need. We've heard testimony in this committee from a Pacific Northwest utility that is locked into a QF "must purchase" contract at rates that are 43 percent higher than the market price – forcing customers to pay an incremental $1.1 billion over a decade for electricity the company does not even need.

In November 2015, I authored a letter to then Chairman Norman Bay, which was also signed by Fred Upton and Ed Whitfield on the House Energy and Commerce Committee, on the need for a technical conference at FERC on PURPA reform. While FERC eventually conducted the technical conference, the Commission failed to take any further action.

Notwithstanding any benefits that PURPA enactment brought in the 1970s and 1980s, today it seems clear that PURPA has been raising energy costs for many customers. In addition, since PURPA can benefit some projects that are "qualifying facilities" under the regulations, but not other projects with differing characteristics, I am concerned that PURPA is allowing some less efficient QFs to displace more modern and efficient power projects. For these reasons, an emerging consensus seems to be prevailing that FERC itself needs to update its regulations on PURPA.

- FERC recently announced a PURPA review – will you commit to taking the leadership actions that will ensure that this matter can be promptly voted?

- To what extent are you willing to act on matters within FERC's authority, and not wait for Congressional action?

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Answer: I refer you to the answer submitted by Chairman McIntyre.

Questions from Ranking Member Maria Cantwell

Question 1: By revising its policy about setting the length of hydroelectric project license terms last year (in Docket No. PL17-3-000), the Commission made welcome progress toward removing a perverse incentive that has led licensees to delay investing in project upgrades during the term of a current license. However, some uncertainty remains under the new policy about what types of pre-relicensing investments the Commission will consider eligible for a longer license term.

I understand that the Commission may be hesitant to commit to a particular treatment of a particular investment, but under the new policy licensees may still defer significant investments to replace, rehabilitate, or otherwise modernize major equipment that does not qualify for a longer license term. Will you commit to evaluating further whether certain types of pre-relicensing investments, including major generating equipment upgrades, should be eligible for a longer license term under the new policy?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 2: In light of the Commission actions this year to address the potential overcollection of income taxes from ratepayers by utilities and pipelines, is there any sound policy reason why Congress should not amend section 5 of the Natural Gas Act to create the same refund authority with respect to natural gas pipelines that already exists in section 206 of the Federal Power Act?

Answer: As I have stated previously, I support legislative changes to the refund effective date in section 5 of the Natural Gas Act. The current statutory structure may hamper the ability of the Commission to ensure just and reasonable rates for customers. I believe, the inability to authorize refunds from the date a case is filed may incentivize pipeline operators to extend the legal proceedings in any section 5 case in order to postpone having to pay any refunds that might be ordered to customers. In addition to encouraging settlement by removing the incentive to engage in protracted litigation, reforms to section 5 could eliminate the asymmetry of leverage between pipelines seeking a rate increase under section 4 and complainants or the Commission under section 5. Absent Commission authority to set a refund effective date upon institution of a complaint, a pipeline can threaten to file to increase rates, which might go into effect (albeit subject to refund) before the resolution of the section 5 proceeding. This dynamic, coupled with the incentives to delay, may hamper the Commission's efforts to ensure just and reasonable rates.

Question 3: The nation's electric grid is becoming increasingly reliant on natural gas. In 2005, Congress required the Commission to issue mandatory reliability standards for the bulk power system. The natural gas pipeline network, in contrast, has only voluntary guidelines in place, administered by the Transportation Security Administration (TSA).

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Given the emerging threat environment and the 15 years that have passed since TSA was given authority to set guidelines and standards, I believe it is time to revisit the current statutory framework. Last year, I requested a study by the Government Accountability Office to assess this framework that is due this fall. I was pleased to see Commissioners Chatterjee and Glick this week call for mandatory cybersecurity standards for the millions of miles of natural gas, oil, and hazardous liquid pipelines.

A. Are you comfortable that our nation's pipeline network is currently adequately protected from cyber attacks?

Answer: I believe prevention of cyber-attacks across all elements of critical infrastructure is a constant effort. While I know pipelines have some protections in place, I believe stronger requirements could increase the level of protection.

B. Do you believe that pipelines should be subject to mandatory standards just as the bulk power system is subject to such standards?

Answer: Yes, I believe pipelines should be subject to mandatory standards.

C. Is TSA the best-suited federal entity to issue cybersecurity standards for pipelines? If not, which federal entity is?

Answer: Ultimately, the decision about which agency to vest with that authority is left to Congress. In my view, a number of agencies could, if given the responsibility, effectively implement mandatory cybersecurity standards for pipelines. However, I also believe that there could be value in designating an agency that has existing responsibilities for other aspects of the natural gas pipeline network, which would help concentrate expertise and avoid the further fragmentation of pipeline oversight across multiple agencies.

Question 4: As the Commission revisits its 1999 Policy Statement on certifications of natural gas pipelines, I hope you will focus on the issue of excess pipeline capacity in some regions. The Department of Energy has estimated that average pipeline utilization rates were below 60 percent for most of the last two decades and projects them to remain at that level through 2030. I understand the gas supply constraints in some regions, but excess capacity in other regions can also cause significant problems. As part of your review of the 1999 Policy Statement, will you:

A. Consider evidence of underutilization of existing pipelines when evaluating the need for a new pipeline and the public interest of certificating it?

Answer: I think the ongoing notice of inquiry on the Certificate Policy Statement should take a broader look at how we assess need. I hope we discuss with stakeholders what additional types of information the Commission should require in its pipeline applications to assist with

our needs analysis. Pipeline utilization is the type of evidence that could be included in the Commission's need determination and part of a public interest determination.

B. Consider the long-term risk of stranded costs for overbuilt pipeline networks?

Answer: Some of the questions in the notice of inquiry on pipeline review ask commenters to weigh in on the types of information the Commission should seek as part of its pipeline review process including specific questions on the Commission's need analysis. Because pipeline facilities are long-lived assets, I support discussing whether and how the risk of stranded costs can be included as part of the Commission's need determination.

C. Evaluate what entity or entities should be responsible for potential stranded costs?

Answer: I refer you to the answer submitted by Chairman McIntyre.

D. Consider analyzing available capacity on existing pipelines in a given region before certificating a new pipeline?

Answer: In circumstances of multiple projects proposed in the same region, with similar timing, I believe we should, in the future, consider a regional review for the development of natural gas infrastructure to assess both the need for pipeline capacity in the region, and the environmental impacts of multiple proposed pipelines on the region. I know that questions on this topic were included in the notice of inquiry on the Certificate Policy Statement, and I look forward to engaging with stakeholders on how a regional look at pipeline projects could support both our needs determination and our environmental review.

Question 5: The Commission's March 9, 2018, order (and individual commissioners' accompanying concurrences and dissents) on ISO New England's tariff filling (Docket No. ER18-619-000) repeatedly discussed the issue of mandatory capacity auctions as the primary mechanism for ensuring resource adequacy in New England. For example, in his dissent, Commissioner Powelson stated that "unless the states are willing to reassume complete responsibility for resource adequacy, they must accept that the Commission is required to take action to ensure the viability of the capacity markets."

A. What is your understanding of the current resource adequacy paradigm in ISO New England and PJM with respect to the past decision, if any, by states within the footprints of those market operators to surrender responsibility for ensuring resource adequacy?

B. Can you share documentation of the states' actions to that effect?

Answer: I refer you to the answer submitted by Chairman McIntyre.

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Questions from Senator Debbie Stabenow

Question 1: It is my understanding that the FERC and Department of Energy have given final approval for LNG exports to "non-free trade agreement" countries that would equate to nearly 32 percent of U.S. demand in 2017. In addition, final approval has been granted for exporting nearly 77 percent of 2017 U.S. demand to "free trade" countries. This is a staggering amount of natural gas that is being approved for 20-30 years into the future, and I remain very concerned about the impact this would have on domestic manufacturers and consumers.

Do you support putting responsible safeguards in place to protect U.S. consumers if prices are impacted? For example, should the Department of Energy be able to reduce the volume of LNG exports if U.S. gas prices spike as result of increased exports?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 2: Many utilities have raised questions about whether QFs that produce less than 20 MW have non-discriminatory access to wholesale markets, arguing that a much lower threshold is necessary to reflect today's market realities. PURPA developers, on the other hand, argue that the current 20 MW standard, which was established as a result of policies enacted by Congress in 2005, is appropriate. Is there sufficient data currently available upon which FERC can evaluate the validity of the current threshold? If so, can FERC commit to compiling this data and examine whether there is non-discriminatory access to wholesale markets?

Answer: As the Chairman states, the 20 MW threshold currently found in FERC's regulations is used to determine whether a QF is rebuttably presumed to have nondiscriminatory access to wholesale markets or that a QF is rebuttably presumed not to have such access. If the Commission decides to propose a change in its regulations, I would anticipate that a robust and public stakeholder process would provide FERC any additional information necessary to evaluate whether the regulations' current 20 MW threshold should be changed.

It is perhaps helpful to note that utilities are expressly permitted to petition the Commission for relief from the mandatory purchase obligation,[1] and the Commission has granted such requests on occasion.[2] In addition, Section 210(m) of PURPA provides for the termination of the requirement to enter into a new obligation or contract to purchase from a QF, if the QF has nondiscriminatory access to certain types of markets specified in section 210(m) of

[1] *See* 16 U.S.C. § 824a-3(m)(3) ("Any electric utility may file an application with the Commission for relief from the mandatory purchase obligation pursuant to this subsection on a service territory-wide basis."); see also 18 C.F.R. § 292.310(a) (2013).
[2] *See, e.g., City of Burlington Vermont*, 145 FERC ¶ 61,121 (2013).

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PURPA. In Order No. 688 the Commission found that all RTO/ISO markets meet this criteria.[3]

Questions from Senator Joe Manchin III

Question 1: Energy infrastructure is typically built with private capital. I am not aware of a pipeline or transmission asking for financial support from the federal government.
These companies can finance these projects by utilizing low cost energy sources and getting them to market. One way that companies are able to do that is buying and incorporating as an MLP or master limited partnership. This type of partnership is attractive to energy investors. FERC recently issued a policy statement in response to a court decision and that statement concerned many in the energy sector looking to finance projects. I believe that Congress intended this structure to be an incentive for building infrastructure.

Did you anticipate the market reaction that occurred when you issued the statement?

When can we expect responses on the filings for rehearing that several companies have submitted?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 2: West Virginia's largest source of renewable power is hydro. The Jennings-Randolph project is a proposed 14 MW project on the North Branch of the Potomac River that sits right between Barnum in Mineral County, West Virginia and Swanton, Maryland. The project will generate clean, renewable power for over 6,000 homes and create construction and permanent jobs for project operators. I have a bill – S. 710 - that would give your commission the authority to extend the Jennings-Randolph's hydropower dam license so the project has time to secure other required permits and commence construction before its FERC 2-year license expires. It passed this Committee and now it's sitting waiting to be cleared by the Senate along with a handful of other extension bills for projects in Alaska, New York, North Carolina, Virginia, Montana, Louisiana, Washington and Alaska. And I know Chairman Murkowski has a bill – S. 724 – that would give you the authority to do this without an act of Congress which makes sense.

Can you outline for me the challenges a hydro project developer faces if their FERC certificate hangs in limbo?

Answer: I refer you to the answer submitted by Chairman McIntyre.

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[3] New PURPA Section 210(m) Regulations Applicable to Small Power Production and Cogeneration Facilities, Order No. 688, FERC Stats. & Regs. ¶ 31,233 (2006), order on reh'g, Order No. 688-A, FERC Stats. & Regs. ¶ 31,250 (2007), aff'd sub nom. Am. Forest & Paper Ass'n v. FERC, 550 F.3d 1179 (D.C. Cir. 2008).

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Do you believe FERC should have the authority to issue a license extension for projects like Jennings-Randolph?

Answer: I refer you to the answer submitted by Chairman McIntyre.

Question 3: I'd like to touch on the rulemaking you have started to examine the process by which FERC issues a "certificate of public convenience and necessity" for a new interstate pipeline. This policy guidance has not been updated since 1999. While I support examining and updating regulations as a part of good governance, I want to be sure that any changes FERC makes to the process do not have unintended consequences. The process of permitting a pipeline is already pretty costly and time consuming. That said, West Virginians want these pipelines must be built in an environmentally stakeholder way and with landowner buy-in and sufficient public engagement.

How do you intend to ensure that this process does not impede progress towards the expansion of energy infrastructure in constrained areas?

Answer: I support the goal of processing pipeline applications as efficiently as possible while fully carrying out our responsibilities under the Natural Gas Act and the National Environmental Policy Act. I hope that the ongoing notice of inquiry on the Certificate Policy Statement will provide an opportunity for additional consideration of what types of information the Commission should require in its pipeline applications to assist with both our needs analysis and our environmental review. I also look forward to an open and productive conversation on how the Commission should consider climate change in our environmental reviews and am hopeful that this conversation will yield a better path forward in this aspect of our work. These are important conversations for everyone to be a part of because need and environmental review informs our public interest determination on pipeline projects.

Question 4: One of the specific topics you are seeking comment on is stakeholder engagement and the public comment process. I agree there could be some improvements here. Please comment on what you believe is outdated about that process. Will you be addressing the website? Will you be seeking new ways to host public meetings?

Answer: I believe these are appropriate issues to consider in our ongoing notice of inquiry on the Certificate Policy Statement.

Questions from Senator Tammy Duckworth

Question 1: Under the Federal Power Act (FPA), Federal Energy Regulatory Commission (FERC) intervention in State actions, such as establishing State-level Zero Emission Credit (ZEC) and Renewable Portfolio Standards programs, would only be justified when unjust and unreasonable rates will result. PJM filed a proposal on April 9, 2018, in regard to State-level

ZEC programs, an instance where that threshold has clearly not been met. This proposal falls short in proving that State-level ZEC programs, which are not otherwise preempted under the FPA, result in price suppression in wholesale markets. In fact, the mechanisms in the April 9, 2018, proposal would likely result in higher electricity bills for consumers with no corresponding public benefit.

Mr. Chairman and Commissioners, I am concerned that FERC approving the April 9, 2018 request would be contrary to the public interest by undermining State policies that lower harmful emissions, while also discouraging other States from taking the lead in promoting clean energy generation with just and reasonable rates. Would you agree that upholding federal statute and maintaining states' authority should be a FERC priority?

> **Answer:** As a general matter, I agree that the Commission has a responsibility to uphold federal statutes while respecting matters within states' authority. To the extent possible, I believe that FERC should endeavor to design market structures that achieve the economic benefits of markets while accommodating or achieving state policy objectives.

Question 2: On May 18, 2018, FERC issued a 3-2 decision restricting NEPA considerations on climate change for future natural gas pipeline projects. This decision stated that upper-bound estimates to understand climate impacts will no longer be considered if the effects are not cumulative or indirect impacts. They further state that analysis to understand the climate impacts from natural gas production and consumption will only be conducted "when those effects are sufficiently causally connected to and are reasonably foreseeable effects of the proposed action."

While forecasts should always be reasonable, incorporating uncertainty is vital in understanding the full range of potential impacts. We cannot know what is "sufficiently likely" if we do not do our due diligence by using available modeling tools to fully understand potential upstream and downstream activities, the resulting impacts, and their probabilities.

Mr. Chairman and Commissioners, in the case of natural gas and understanding possible downstream activities, is it not reasonably foreseeable that the gas will likely be combusted? Do available tools allow for estimates of resulting greenhouse gas emissions?

> **Answer:** Pipelines are driving the throughput of natural gas, connecting increased upstream resources to downstream consumption. With respect to downstream impacts, I believe it is reasonably foreseeable, in the vast majority of cases, that the gas being transported by pipelines we authorize will be burned for electric generation or residential, commercial, or industrial end uses. In those circumstances, there is a reasonably close causal relationship between the Commission's action to authorize a pipeline project that will transport gas and the downstream GHG emissions that result from burning the transported gas. We simply cannot ignore the environmental impacts associated with those downstream emissions, which is what the majority chose to do with its new policy regarding downstream impacts announced in the May 18th *New Market* order.

I believe the Commission should explore the development of a fuller record on both the need for a proposed pipeline and its environmental impacts. An identified end-use would enable the Commission to more accurately assess downstream GHG emissions by calculating gross and net GHG emissions. However, I reject the view that if a specified end-use is not discernible, we should simply ignore such environmental impacts. In that case, we should disclose what we can, such as a full-burn calculation of GHG emissions. I consider the downstream information relevant to the Commission's public interest determination under the Natural Gas Act and believe the Commission has broad discretion in considering factors bearing on our public interest determination.

I believe we could better account for changes in GHG emissions resulting from the combustion of the transported gas by calculating the Social Cost of Carbon which more accurately reflects the climate change impacts of a particular project. I believe we should discuss how the Commission could effectively use the Social Cost of Carbon, and more broadly, how the Commission should consider climate change impacts in our environmental reviews as part of the notice of inquiry on the Certificate Policy Statement.

Question 3: In a recent case in Illinois, an electric company was able to collect a refund of just over $6 million from a transmission company that was overcharging subtransmission rates. With this refund, the electric company was able to refund their customers the overcharges from the date of when the complaint was filed with FERC, as mandated under the Federal Power Act (FPA). Conversely, this option is not available to natural gas consumers under the Natural Gas Act (NGA). For natural gas transmission complaints, a company is only able to pay lower rates after the FERC resolves the complaint, with no opportunity to recover the overcharges collected previously – likely a period of several years.

FERC has issued a Notice of Proposed Rulemaking and a Notice of Inquiry to revise interstate pipeline tariff rates where a reduction in the corporate tax rate has resulted in over collections. The Natural Gas Act does not allow for refunds of over collections, resulting in consumers paying pipelines for costs they are not incurring.

Mr. Chairman and Commissioners, are there any mechanisms that FERC can use to refund these over collections? If not, do you agree that FERC should have the authority to refund over collections under the Natural Gas Act in the same way it has the authority under the Federal Power Act?

Answer: As I have previously stated, I support legislative changes to the refund effective date in section 5 of the Natural Gas Act. The current statutory structure may hamper the ability of the Commission to ensure just and reasonable rates for customers. I believe, the inability to authorize refunds from the date a case is filed may incentivize pipeline operators to extend the legal proceedings in any section 5 case in order to postpone having to pay any refunds that might be ordered to customers. In addition to encouraging settlement by removing the incentive to engage in protracted litigation, reforms to section 5 could eliminate the asymmetry of leverage between pipelines seeking a rate increase under section 4 and

complainants or the Commission under section 5. Absent Commission authority to set a refund effective date upon institution of a complaint, a pipeline can threaten to file to increase rates, which might go into effect (albeit subject to refund) before the resolution of the section 5 proceeding. This dynamic, coupled with the incentives to delay, may hamper the Commission's efforts to ensure just and reasonable rates.

Questions from Senator Catherine Cortez Masto

Questions: DOE's latest attempt seems to be a route to avert a direct FERC ruling, but do you expect that FERC will have a role in responding to or implementing any DOE order under the Federal Power Act or the Defense Production Act? How would your need to respond or implement that DOE order impact the Commission's ability to address other important issues before it, such as the pending Distributed Energy Resource guidance? Is there a risk that work would stall?

Answer: Should DOE proceed with the rumored plan to direct, under the Federal Power Act and Defense Production Act, that certain generation resources remain in operation, I do expect that FERC will have a role in considering the impacts of such a directive. Specifically, I expect that the Commission would be tasked with reviewing the rates charged for any such service, determining who must pay for those services, and responding to complaints or other filings that seek to change market rules to account for the market impacts of such an order.

I am also concerned about the impact that the rumored DOE directive could have on the Commission's other work. For example, DOE's Notice of Proposed Rulemaking concerning certain baseload resources definitely impacted the Commission's ability to process other pending matters last fall and winter. Those impacts not only included the internal time that key staff could otherwise have spent on pending Commission work, but significant time spent by the commissioners and staff on external meetings with interested stakeholders. While I cannot point to any specific matter that would necessarily be delayed if the DOE acts, I am concerned that the DOE action would generally slow the Commission's ability to address other pending work before it.

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Questions from Chairman Lisa Murkowski

Question 1: If we expect to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. By law, FERC must process, across the board, all pipeline and LNG export applications in a timely fashion.

- What steps have you taken to ensure that FERC is allocating sufficient resources and time to all of its LNG exports and pipeline applications?

Answer: Please refer to the answer submitted by Chairman McIntyre. I agree wholeheartedly with him on the need for a multi-pronged effort to ensure that FERC has adequate technical and legal resources to support expeditious review of currently-pending and anticipated natural gas pipeline and LNG export project applications — as well as FERC's continuing regulatory oversight of certificated facilities. I strongly support those specific approaches outlined in the Chairman's answer to addressing FERC's short, medium and long-term resource needs.

But I do not believe FERC's efforts should be limited to those measures. FERC's timely review of natural gas transportation and export infrastructure applications is a critical issue for *all* stakeholders. Landowners and community activists deserve an opportunity for their voices on natural gas transportation and export infrastructure to be heard. Project developers need regulatory certainty for their pipeline and export facilities projects to be bankable. Shippers need to know whether adequate pipeline and export infrastructure will be available in time to meet the demand for their product within U.S. and international markets. End use natural gas customers here in the U.S. need to have confidence that natural gas will be available to heat their homes and run gas-fired electric generation facilities. And international customers need to be able to depend on reliable supplies of U.S. LNG exports as an alternative to LNG supplied by foreign competitors, including potentially hostile nations. So FERC's timely review of natural gas pipeline and export facilities is a high-stakes issue: thousands of potential jobs across the country, U.S. geopolitical interests, and the way of life of landowners and affected communities hang in the balance.

The importance of the issue underscores the need for the Commission to ensure that FERC has and will continue to have adequate technical and legal resources to meet the challenge. The protracted delays in FERC's review of LNG export applications in particular make it clear that much work needs to be done here, and fast. There are currently 13 pending applications for LNG export facilities alone before the Commission, representing nearly 23 Bcf/d of additional LNG export capacity. Some of those applications have been around since 2015. Meanwhile, additional natural gas pipeline and LNG export facility project applications continue to roll in.

The scale and duration of this backlog demands consider creative, outside-the-box approaches. In my mind, that could mean exploring how we can modify our compensation scales to recruit and retain top-tier talent in the face of deep pocketed private-sector competition; creating new FERC regional offices to ensure that potential hires are not deterred or constrained

by challenges associated with relocating to FERC's headquarters in D.C.; or creating additional internship and new fellowship opportunities to identify and cultivate the next generation of talent. I am committed to working with my fellow Commissioners in engaging Congress and the Administration should the above or any other creative approaches identified require additional financial authorizations or statutory changes.

- What steps have you taken to ensure that FERC is just as capable of acting in a timely manner as it has been since 2008?

Answer: Please refer to my answer immediately above, as well as the answer submitted by Chairman McIntyre.

- Given your urgent desire to find and hire more people to process pipeline and LNG applications, and given the dislocations that Commissioner Glick noted in industries related to traditional baseload energy supply, would you consider establishing a formal program to recruit FERC staff from among the highly-qualified engineers who have worked in industry but are at risk of being displaced?

Answer: Please refer to the answer submitted by Chairman McIntyre. And I am open to exploring Commissioner Glick's suggestion further as an example of the sort of creative, outside-the-box thinking I called for in my answer above.

Question 2: Given record-setting numbers on both the demand for natural gas as well as its production, most observers contend that the United States is badly in need of new pipeline infrastructure. Such new infrastructure could make natural gas more secure, and make it easier for Americans to be confident that natural gas will be available for all of its many uses, including enabling the manufacturing renaissance and producing electricity on the coldest and hottest days of the year.

- What have you been doing as Chairman to advance the goal of getting new pipelines built?

Answer: Please refer to the answer submitted by Chairman McIntyre for details on current FERC activities. I note that, when I joined the Commission and served as Chairman, pipeline applications were a priority for me. As my colleagues and I addressed the backlog which had developed in the no-quorum period, we issued a number of certificates in short order. Now, I'm working with the Chairman, my colleagues and staff as we explore avenues to address greater resources toward evaluating project applications.

- Please elaborate on your answer during the hearing about how the Commission's review of its 1999 pipeline policy statement might advance the goal of streamlining the process and making it clearer, more certain and more prompt.

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Answer: Although I am supportive of our current policies, I welcome the opportunity to consider how FERC exercises its statutory obligations. I believe we should identify not only opportunities for potential improvement and greater efficiencies, but also what the Commission is currently doing right, so we can continue our existing approach where appropriate. I believe the process can be streamlined while preserving stakeholder input and protecting our environment.

Question 3: In recent years, I have asked whether the United States will soon lose its pre-eminence in the field of nuclear energy. The United States appears to be in steady retreat, while China, Russia, and others are taking the lead. Early retirements of commercial reactors, which produce emission-free power for civilian uses, accelerate this trend. We are at risk of losing the know-how, the work force, the industrial base, and therefore the credibility to be a leader on the world stage. Our lagging deployment of advanced nuclear technologies is equally, if not more, worrisome.

- Do you agree that nuclear is an important part of our energy mix and must remain so going forward? And, if so, what can be done to stop this trend in retirements?

Answer: Please refer to the answer submitted by Chairman McIntyre. My concurrence to the Commission's January Order in Docket No. AD18-7-000, Grid Resilience in Regional Transmission Organizations and Independent System Operators, noted the significant contributions of nuclear generation resources to bulk power system resilience, and expressed my desire to ensure that the retirement of those and other generation facilities would not adversely impact bulk power system resilience. I look forward to expeditious consideration with my colleagues of comments submitted on this issue within Docket No. AD18-7-000.

- The words "just and reasonable" and "public interest" in the Federal Power Act require more than merely adopting expert predictions about the cost of fuels over the next few years. What is FERC's role in preserving the "just and reasonable" sales of nuclear power at wholesale in order to serve the critical "public interest" of America in nuclear energy?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- Is the public interest served if nuclear power plants selling their output into FERC-regulated wholesale markets cannot compete on the price that is derived from auctions conducted pursuant to FERC's tariffs? Is tariff reform an option to address anomalies in price formation or otherwise to take into account the benefits of nuclear power?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- Are you confident that predictions about continued low prices for natural gas during most hours of the year are correct? What do you foresee not only with respect to

natural gas prices but also with respect to the future viability of nuclear generation selling into FERC-regulated wholesale markets?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- As one of the five Commissioners with obligations to ensure just and reasonable rates, what will you say to the public if you allow nuclear plants to retire, only to see a market demand for such power in a few years if the experts were wrong in their predictions about natural gas prices?

Answer: Please refer to the answer submitted by Chairman McIntyre, as well as my answer above. My concurrence to the Commission's January Order in Docket No. AD18-7-000, Grid Resilience in Regional Transmission Organizations and Independent System Operators, emphasized the importance of taking a hard look at potential resilience consequences from the staggering scale and pace of change in our nation's generation resource mix, lest we later come to regret having failed to do so. Recent and projected economic retirements of nuclear generation facilities underscore the urgency of that inquiry: the unique licensing regime, technical and operational complexity, and expense of nuclear generation facilities would make it nearly impossible to bring new nuclear generation resources online in a timely manner to meet changes in market demand.

Question 4: At a recent open meeting of the Commission, FERC issued a series of tax orders while the trading markets were open, which some have claimed resulted in an over-reaction by the markets and the needless destruction of wealth invested in natural gas pipeline infrastructure. Investors reportedly needed more time to understand the FERC issuances, and that is hard to do when the worldwide trading markets are open. Badly-timed orders can result in pointless market swings. Friday evening seems to be the best time for reducing the adverse impacts on Asian and European trading markets, and it gives investors an entire weekend to digest what could be hundreds of pages of FERC issuances. For market-moving tax-related issuances by FERC, wouldn't a Friday evening release be more prudent? If so, will you commit to release the next potentially market moving tax order or set of tax orders on Friday evening? And, if not, why not?

Answer: I share the Committee's concern regarding the severe disruption to financial markets resulting from issuing more than 150 pages of complicated, high-consequence, tax-related orders during the Commission's March 2018 open meeting. The tumult associated with the real-time sell-off of natural gas infrastructure investments as the Commission announced its tax-related issuances during U.S. market hours was entirely predictable and avoidable. And the subsequent stabilization of natural gas pipeline share prices emphatically does not mean that everything turned out all right: anyone with a rudimentary understanding of financial markets knows that there were significant sums of money lost and gained in the intervening interval as the investment community reacted to the timing rather than the content of our issuances.

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I have stated publicly that I and my colleagues should have been more sensitive to the timing of those market-moving issuances on affected regulated entities and their investors. I will endeavor to work with Chairman McIntyre and my fellow Commissioners to try to ensure that, going forward, the timing of our tax-related issuances reflects the lessons learned last March.

Question 5: As Puerto Rico's electric grid continues to be restored in the aftermath of Hurricanes Irma and Maria, the Government of Puerto Rico is considering legislation to partially privatize their grid, as well as reform the Puerto Rico Energy Commission (PREC). Has FERC been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery, and moving forward, what role can you offer for FERC in providing regulatory assistance to the PREC or any future energy regulatory body in Puerto Rico?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 6: On an annual basis, FERC requires many electric utilities to submit data on the operation of their power grid, in FERC Form No. 715. Not only does this form require a utility to submit maps and diagrams of the grid, but also submit actual grid data in electronic format. FERC acknowledges that this data is Critical Energy Infrastructure Information (CEII) and treats it as such. FERC's policy generally revolves around releasing that data to the public on the basis of the public's "right to know." While transparency is important, when it comes to critical energy infrastructure information (e.g., schematics etc.), it seems reasonable to be more circumspect.

- On January 23, the Committee held a hearing on the cold weather event at the beginning of this year, and PJM questioned FERC's policy concerning the disclosure of CEII data submitted by electric utilities. Further, our military and intelligence agencies do not operate under a policy that the public has a "right to know" this type of information. Instead, such sensitive information is shared in a very limited way, even among people who are already cleared based on a "need to know." Do you believe that FERC should reconsider its process for releasing data it holds in Form No. 715 and its other CEII?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- What is your level of confidence that a pledge to the Commission in the form of a non-disclosure agreement (NDA) regarding FERC's CEII will be honored in every instance?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- To what extent does FERC investigate the background of organizations that may be associated with an individual receiving FERC's CEII under an NDA? Does FERC always explore the background of such organizations with the Federal Bureau of Investigation? If not, why not?

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Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 7: On March 1, Robert Lee testified before the committee about the need for a regulatory freeze on new cyber standards, in order to allow the industry to shift its focus away from constantly updating its minimum standards and towards a more pro-active approach of anticipating and finding the new and evolving threats to the energy sector.

- What are your thoughts on the costs and benefits of a regulatory freeze?

Answer: I believe that cybersecurity is one of the most challenging and important issues that the Commission is currently addressing. Section 215 of the Federal Power Act obligates the Commission to ensure that the NERC Reliability Standards provide for a reliable bulk power system. The statute specifically includes cybersecurity. Given this obligation, I don't believe that a "regulatory freeze" *per se*, would be appropriate; however, as a practical matter, I would highlight that the core requirements of the NERC Critical Infrastructure Protection (CIP) standards are approaching steady state and that the Commission in recent years has limited its directives to develop new CIP standards to two issues, discussed further below, that I believe are critical to address. In 2013, the Commission approved Version 5 of the NERC CIP standards. This represented a sea change in the CIP standards paradigm that better aligned the CIP standards with the risk-based approaches used in other cybersecurity standards. Since that time, most of the changes to the CIP standards have been to address certain limited and discrete issues that the Commission identified when it approved the Version 5 standards. However, since approving the Version 5 standards the Commission has ordered NERC to address two issues that I believe are critical to maintain an adequate level of cybersecurity.

First, in 2016, the Commission directed NERC to develop a standard to address supply chain security. In September 2017, NERC filed its proposed standard and in January 2018, the Commission issued a notice of proposed rulemaking (NOPR) proposing to accept the standard. I supported the NOPR because I believe supply chain security is a significant vulnerability that must be addressed.

Second, in December 2017, the Commission issued a NOPR proposing to direct NERC to develop a Reliability Standard that would require reporting of certain attempted and successful network compromises to the Electricity-ISAC and the Department of Homeland Security. I supported the NOPR because I believe that current reporting requirements are insufficient as described in the NOPR. I would note that the objective of this directive is consistent with the first concern described in Mr. Lee's prepared testimony, the need for better information regarding the existing threat landscape.

In sum, while I am sensitive to the difficulties and burdens associated with implementation of mandatory Reliability Standards, I think it is important for the Commission to direct changes to the NERC CIP standards when necessary.

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- Without a regulatory freeze, how can the security professionals working within the industry adequately shift their focus towards the new and evolving threats, and away from being dedicated to compliance with new regulations?

Answer: Please see my answer immediately above.

Question 8: While other federal agencies are not required by law to comply with FERC's Integrated Licensing Process (ILP), FERC has many options to encourage more efficient and timely performance.

- Are you considering any further reliance on existing law, or changes to FERC rules or policies to encourage better performance by other federal agencies?

Answer: I agree with Chairman McIntyre that we have not identified a problem with other federal agencies' willingness to participate in the ILP. However, I understand that the licensing process can be quite lengthy, and I'm hopeful that the MOU developed under President Trump's Executive Order 13807 will help agencies cooperate on permitting.

- Do you think Congress should mandate compliance with the ILP, at least with respect to the models and studies resulting from the ILP?

Answer: Please refer to the answer submitted by Chairman McIntyre.

- Because the ILP is binding on project applicants, do you think that this obligation should be relaxed so that applicants are granted the same flexibility that is granted to federal agencies?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 9: How can FERC improve its communication with the Department of Interior, the Forest Service, and the Bureau of Land Management in ways that enhance resiliency and reliability by ensuring that easements and rights of way are properly managed, particularly in those areas likely to be affected by wildfires? What is the role of FERC in ratemaking and cost recovery associated with vegetation management? What have been the actions taken by FERC with respect to the reliability standards that are associated with vegetation management?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 10: According to the billings of PJM, what is the total annual revenue received by all of the power plants in PJM, collectively, broken down by energy and capacity? Roughly what percentage of the available capacity in PJM consists of coal and nuclear plants that are widely expected to retire within the next two years?

Answer: Please refer to the answer submitted by Chairman McIntyre.

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Question 11: After the 2014 polar vortex, many began to consider whether the gas generators in PJM and ISO-New England should be able to show that they held sufficient rights to firm contracts for the transportation of gas to their power plant.

- Since firm pathways would seem to be inherently more secure than interruptible pathways, is FERC actively considering the need for gas generators to show a firm pathway for their gas, especially on the coldest days of the year when gas demand is highest?
- What do you see as the benefits of requiring a firm pathway, and what are the costs?
- Would fears about handicapping certain gas generating plants be a sufficient reason for FERC to avoid imposing a requirement for firm service on those power plants?
- What are the prospects for an intermediate firm service?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 12: What are the proceedings before FERC today where a market participant is proposing market changes that it contends will improve the efficiency of an existing FERC market? Please provide examples.

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 13: Some generators can submit negative bids in the energy markets because they receive tax subsidies. To what extent do those negative bids have an impact on either prices or generating resources in the FERC markets? Have any state policies, such as those that encourage renewable energy, had any impact on either prices or generating resources in the FERC markets?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 14: How many times has FERC permitted modifications to the energy and capacity markets in PJM and ISO-NE since they were formed? Please provide a chart of the significant changes in PJM and ISO-NE markets, organized by docket, and containing a short description of the changes to the tariff that were requested, with citations to the significant FERC orders in each of those dockets. To the extent that it would be convenient for you to provide a web link for your citations, that would be appreciated.

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 15: The Public Utility Regulatory Policies Act (PURPA) was enacted almost 40 years ago in response to the 1970s oil crisis. At the time, this major policy innovation helped to secure a market for emerging cogeneration and small power production facilities, known as "Qualifying

Facilities" (QFs). However, with enactment of the 2005 Energy Policy Act, Congress amended the PURPA statute to eliminate the mandatory purchase requirement where QFs have access to competitive markets.

Members of the committee have been concerned that PURPA's mandatory purchase obligation is forcing utilities in the west and elsewhere outside of the competitive RTO markets to buy power they do not need. We've heard testimony in this committee from a Pacific Northwest utility that is locked into a QF "must purchase" contract at rates that are 43 percent higher than the market price – forcing customers to pay an incremental $1.1 billion over a decade for electricity the company does not even need.

In November 2015, I authored a letter to then Chairman Norman Bay, which was also signed by Fred Upton and Ed Whitfield on the House Energy and Commerce Committee, on the need for a technical conference at FERC on PURPA reform. While FERC eventually conducted the technical conference, the Commission failed to take any further action.

Notwithstanding any benefits that PURPA enactment brought in the 1970s and 1980s, today it seems clear that PURPA has been raising energy costs for many customers. In addition, since PURPA can benefit some projects that are "qualifying facilities" under the regulations, but not other projects with differing characteristics, I am concerned that PURPA is allowing some less efficient QFs to displace more modern and efficient power projects. For these reasons, an emerging consensus seems to be prevailing that FERC itself needs to update its regulations on PURPA.

- FERC recently announced a PURPA review – will you commit to taking the leadership actions that will ensure that this matter can be promptly voted?

- To what extent are you willing to act on matters within FERC's authority, and not wait for Congressional action?

Answer: As I noted at the hearing, I strongly support efforts to update the Commission's PURPA regulations to ensure they align with our modern energy landscape. While I appreciate the efforts of this Committee and other members of Congress to propose legislative solutions, I believe the Commission can and should move forward with a comprehensive review of its regulations. While the Chairman is generally responsible for determining the timing of Commission actions, I commit to working with my colleagues to determine the appropriate format, scope, and timing of our review.

Questions from Ranking Member Maria Cantwell

Question 1: By revising its policy about setting the length of hydroelectric project license terms last year (in Docket No. PL17-3-000), the Commission made welcome progress toward removing a perverse incentive that has led licensees to delay investing in project upgrades during

the term of a current license. However, some uncertainty remains under the new policy about what types of pre-relicensing investments the Commission will consider eligible for a longer license term.

I understand that the Commission may be hesitant to commit to a particular treatment of a particular investment, but under the new policy licensees may still defer significant investments to replace, rehabilitate, or otherwise modernize major equipment that does not qualify for a longer license term. Will you commit to evaluating further whether certain types of pre-relicensing investments, including major generating equipment upgrades, should be eligible for a longer license term under the new policy?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: In light of the Commission actions this year to address the potential over-collection of income taxes from ratepayers by utilities and pipelines, is there any sound policy reason why Congress should not amend section 5 of the Natural Gas Act to create the same refund authority with respect to natural gas pipelines that already exists in section 206 of the Federal Power Act?

Answer: The determination regarding whether to amend section 5 of the Natural Gas Act to provide FERC with the same refund authority as exists in section 206 of the Federal Power Act lies with Congress. I believe doing so would provide additional protection to consumers.

Question 3: The nation's electric grid is becoming increasingly reliant on natural gas. In 2005, Congress required the Commission to issue mandatory reliability standards for the bulk power system. The natural gas pipeline network, in contrast, has only voluntary guidelines in place, administered by the Transportation Security Administration (TSA).

Given the emerging threat environment and the 15 years that have passed since TSA was given authority to set guidelines and standards, I believe it is time to revisit the current statutory framework. Last year, I requested a study by the Government Accountability Office to assess this framework that is due this fall. I was pleased this week to see you and Commissioner Glick call for mandatory cybersecurity standards for the millions of miles of natural gas, oil, and hazardous liquid pipelines.

A. Are you comfortable that our nation's pipeline network is currently adequately protected from cyber-attacks?

Answer: Over the past several decades, natural gas fired power plants have become an increasingly important (and in some regions, dominant) source of power generation. With the increasing use of natural gas for power generation, the potential impact of a successful attack on the pipeline system has grown drastically. In addition, cyber-threats against critical infrastructure systems in the United States, including pipelines, are expected to increase. As you know, Commissioner Glick and I recently co-authored two articles expressing our concern about the

security of the natural gas pipeline system. I stand ready to work with you, other members of this Committee, and the Administration to address this important issue.

B. Do you believe that pipelines should be subject to mandatory standards just as the bulk power system is subject to such standards?

Answer: I believe that cybersecurity of the natural gas pipeline system should be subject to regulatory oversight similar to that of the electric grid. While there have been many lessons learned and refinements implemented along the way, I believe that the NERC Critical Infrastructure Protection (CIP) standards have had a positive impact on the cybersecurity posture of the electric industry. However, I do not necessarily believe that the NERC CIP standards are a "one-size-fits-all" solution for all critical infrastructure sectors. Instead, any mandatory cybersecurity standards for gas pipelines would need to address the unique threats, vulnerabilities, and impacts associated with the gas pipeline industry.

C. Is TSA the best-suited federal entity to issue cybersecurity standards for pipelines? If not, which federal entity is?

Answer: The decision regarding which federal agency should be responsible for the cybersecurity of natural gas pipelines rests with Congress. While I believe that it would be beneficial for such authority to rest with an agency that understands the growing interdependencies of the electric and natural gas sectors, the question of which federal entity should be responsible for oversight is secondary to ensuring that the responsible agency implements adequate measures to ensure that our nation's natural gas infrastructure is protected against cyber-attacks.

Question 4: As the Commission revisits its 1999 Policy Statement on certifications of natural gas pipelines, I hope you will focus on the issue of excess pipeline capacity in some regions. The Department of Energy has estimated that average pipeline utilization rates were below 60 percent for most of the last two decades and projects them to remain at that level through 2030. I understand the gas supply constraints in some regions, but excess capacity in other regions can also cause significant problems. As part of your review of the 1999 Policy Statement, will you:

A. Consider evidence of underutilization of existing pipelines when evaluating the need for a new pipeline and the public interest of certificating it?

Answer: Please refer to the answer submitted by Chairman McIntyre.

B. Consider the long-term risk of stranded costs for overbuilt pipeline networks?

Answer: Please refer to the answer submitted by Chairman McIntyre.

C. Evaluate what entity or entities should be responsible for potential stranded costs?

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Answer: Please refer to the answer submitted by Chairman McIntyre.

D. Consider analyzing available capacity on existing pipelines in a given region before certificating a new pipeline?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 5: The Commission's March 9, 2018, order (and individual commissioners' accompanying concurrences and dissents) on ISO New England's tariff filling (Docket No. ER18-619-000) repeatedly discussed the issue of mandatory capacity auctions as the primary mechanism for ensuring resource adequacy in New England. For example, in his dissent, Commissioner Powelson stated that "unless the states are willing to reassume complete responsibility for resource adequacy, they must accept that the Commission is required to take action to ensure the viability of the capacity markets."

A. What is your understanding of the current resource adequacy paradigm in ISO New England and PJM with respect to the past decision, if any, by states within the footprints of those market operators to surrender responsibility for ensuring resource adequacy?

B. Can you share documentation of the states' actions to that effect?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Questions from Senator Ron Wyden

Questions: In response to a question from my colleague, Senator Barrasso, you said that FERC was examining its record to determine if there are actions the Commission can take with regard to PURPA. You mentioned that the "One-Mile Rule" and the "20 Megawatt Rule" have gotten the most attention, but expressed your view that FERC should conduct a broader review of PURPA.

What specific aspects of PURPA do you anticipate the Commission reviewing?

Answer: As I stated at the hearing, I believe the Commission should look beyond the "One-Mile Rule" and the "20 Megawatt Rule" and consider whether other changes to our regulations are necessary to better align PURPA with our modern energy landscape. I look forward to discussing the format, scope, and timing of our review with my colleagues.

Do you believe PUPRA has sufficient authority and existing record to make changes to the "One-Mile Rule" and the "20 Megawatt Rule?"

Answer: Yes.

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Questions from Senator Debbie Stabenow

Question 1: It is my understanding that the FERC and Department of Energy have given final approval for LNG exports to "non-free trade agreement" countries that would equate to nearly 32 percent of U.S. demand in 2017. In addition, final approval has been granted for exporting nearly 77 percent of 2017 U.S. demand to "free trade" countries. This is a staggering amount of natural gas that is being approved for 20-30 years into the future, and I remain very concerned about the impact this would have on domestic manufacturers and consumers.

Do you support putting responsible safeguards in place to protect U.S. consumers if prices are impacted? For example, should the Department of Energy be able to reduce the volume of LNG exports if U.S. gas prices spike as result of increased exports?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: Many utilities have raised questions about whether QFs that produce less than 20 MW have non-discriminatory access to wholesale markets, arguing that a much lower threshold is necessary to reflect today's market realities. PURPA developers, on the other hand, argue that the current 20 MW standard, which was established as a result of policies enacted by Congress in 2005, is appropriate. Is there sufficient data currently available upon which FERC can evaluate the validity of the current threshold? If so, can FERC commit to compiling this data and examine whether there is non-discriminatory access to wholesale markets?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Questions from Senator Joe Manchin III

Question 1: Energy infrastructure is typically built with private capital. I am not aware of a pipeline or transmission asking for financial support from the federal government.
These companies can finance these projects by utilizing low cost energy sources and getting them to market. One way that companies are able to do that is buying and incorporating as an MLP or master limited partnership. This type of partnership is attractive to energy investors. FERC recently issued a policy statement in response to a court decision and that statement concerned many in the energy sector looking to finance projects. I believe that Congress intended this structure to be an incentive for building infrastructure.

Did you anticipate the market reaction that occurred when you issued the statement?

Answer: Please refer to my earlier answer to Chairman Murkowski's Question 4 on the same topic.

When can we expect responses on the filings for rehearing that several companies have submitted?

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Answer: Please refer to the answer submitted by Chairman McIntyre. I am committed to working closely with Chairman McIntyre and our fellow Commissioners to ensure that we act as soon as practicable on requests for rehearing of the Commission's March tax-related issuances. Prompt action on those rehearing requests will both provide regulatory certainty to regulated entities, as well as expedite the flow-through to ratepayers of the benefits of the Tax Cuts and Jobs Act of 2017 and the decision of the U.S. Circuit Court of Appeals for the District of Columbia in *United Airlines v. FERC*, 827 F.3d 122 (D.C. Cir. 2016).

Notwithstanding my commitment to working for prompt action on those rehearing requests, Commission regulations at 18 C.F.R. § 3c.2(b) prevent me from identifying a precise date the Commission will act on those requests.

Question 2: West Virginia's largest source of renewable power is hydro. The Jennings-Randolph project is a proposed 14 MW project on the North Branch of the Potomac River that sits right between Barnum in Mineral County, West Virginia and Swanton, Maryland. The project will generate clean, renewable power for over 6,000 homes and create construction and permanent jobs for project operators. I have a bill – S. 710 - that would give your commission the authority to extend the Jennings-Randolph's hydropower dam license so the project has time to secure other required permits and commence construction before its FERC 2-year license expires. It passed this Committee and now it's sitting waiting to be cleared by the Senate along with a handful of other extension bills for projects in Alaska, New York, North Carolina, Virginia, Montana, Louisiana, Washington and Alaska. And I know Chairman Murkowski has a bill – S. 724 – that would give you the authority to do this without an act of Congress which makes sense.

Can you outline for me the challenges a hydro project developer faces if their FERC certificate hangs in limbo?

Answer: I understand that projects sometimes face delays that are outside the applicants' control. I supported FERC's April 19, 2018, order granting the Jennings Randolph project an additional year to commence construction. I note that, in the time since these Questions for the Record were submitted, S. 710 has, indeed, passed the Senate and is currently awaiting the President's signature. That legislation will allow the applicant to request an additional extension of time from the Commission.

Do you believe FERC should have the authority to issue a license extension for projects like Jennings-Randolph?

Answer: As Chairman McIntyre noted in his responses, should Congress elect to give FERC additional authority to extend commencement of construction deadlines, FERC will be prepared to use that authority in an appropriate manner.

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Question 3: I'd like to touch on the rulemaking you have started to examine the process by which FERC issues a "certificate of public convenience and necessity" for a new interstate pipeline. This policy guidance has not been updated since 1999. While I support examining and updating regulations as a part of good governance, I want to be sure that any changes FERC makes to the process do not have unintended consequences. The process of permitting a pipeline is already pretty costly and time consuming. That said, West Virginians want these pipelines must be built in an environmentally stakeholder way and with landowner buy-in and sufficient public engagement.

How do you intend to ensure that this process does not impede progress towards the expansion of energy infrastructure in constrained areas?

Answer: Please refer to the answer submitted by Chairman McIntyre, noting that among the Commission's stated goals in its review of the 1999 Certificate Policy Statement within Docket No. PL18-1-000 is to identify greater efficiencies in the Commission's review of natural gas pipeline applications. I note also that the Commission's April 2018 Notice of Inquiry initiating that review explains that the Commission's review of the record developed in Docket No. PL18-1-000 will be informed by the Commission's commitment to advancing the purpose of Executive Order 13807, Establishing Discipline and Accountability in the Environmental Review and Permitting Process for Infrastructure Projects, of improving the efficiency, timing, and overall predictability of the Commission's certification process.

The current Certificate Policy Statement has provided a clearly defined and effective process for evaluating natural gas pipeline projects for nearly twenty years. However, I believe it is good regulatory practice to periodically review regulatory policies for any possible improvements. Like the Chairman, I am committed to the goal of making our process more efficient.

Question 4: One of the specific topics you are seeking comment on is stakeholder engagement and the public comment process. I agree there could be some improvements here. Please comment on what you believe is outdated about that process. Will you be addressing the website? Will you be seeking new ways to host public meetings?

Answer: I have encouraged landowners and pipeline companies to work with the Commission to maximize public engagement, because I believe that a cooperative process leads to the best results for all stakeholders. The Certificate Policy Statement review provides an opportunity for input on our process, and I'm encouraged by the breadth and depth of the comments we have received to date. I am open to considering any ideas which could improve our process.

Question from Senator Angus S. King, Jr.

Question: In response to a question, you noted that electricity consumers were receiving benefits from the reduction in the corporate tax rate. Could you please provide any data or information

that you have to support that statement, either as a result of changes in FERC-jurisdictional utility rates, or other utility rate information that you may have?

Answer: Public electric transmission utilities subject to the Commission's jurisdiction generally recover their annual costs-of-service requirements through either (1) stated rates setting forth fixed line item inputs that can only be changed by a filing to the Commission or by Commission action, or (2) formula rates specifying Commission-approved cost-of-service calculation methodologies in which the federal corporate income tax rate is either a fixed line item within the formula rate, or a variable data input that is updated to reflect changes in that federal corporate income tax rate from one year to the next.

Many public electric transmission utilities employ formula rates of some sort. For most of those transmission utilities that have formula rates on file with the Commission, the federal corporate income tax rate is a variable data input that will update without Commission action to reflect the reduction in the federal corporate income tax rates introduced by the Tax Cuts and Jobs Act of 2017. Fifteen others employ formula rates in which the federal corporate income tax rate is a fixed line item. Thirty-three other public electric transmission utilities have stated rates on file with the Commission.

The Commission's March tax-related issuance in Docket Nos. EL18-72-000, et al., required the fifteen public electric transmission utilities with formula rates on file with the Commission in which the federal corporate income tax rate is a fixed line item to either modify their tariffs to reflect the reduction in corporate income tax rates or demonstrate why no such modification is necessary. As of July 16, 2018, nine of those entities had submitted or planned to submit tariff revisions adjusting their federal corporate income tax rates, and another six had submitted or planned to submit responses indicating that no rate reduction was necessary. The Commission is reviewing all those submissions for further action.

The Commission's March tax-related issuance in Docket Nos. EL18-62-000, et al., required the thirty-three public electric transmission utilities with stated rates on file with the Commission to either modify their tariffs to reflect the reduction in corporate income tax rates or demonstrate why no such modification is necessary. As of July 16, 2018, nineteen of those entities had submitted tariff revisions adjusting their federal corporate income tax rates, and another fourteen had submitted responses indicating that no rate reduction was necessary. The Commission is reviewing all those submissions for further action.

Lastly, the Commission's March tax-related issuance in Docket No. RM18-12-000 solicited public comment on, inter alia, whether additional Commission action is needed to adjust the rates of non-transmission public electric utilities to reflect the reduction in the federal corporate income tax rates introduced by the Tax Cuts and Jobs Act of 2017. The Commission is in the process of reviewing the approximately seventy comments received in that proceeding to determine what further action, if any, is necessary.

Questions from Senator Tammy Duckworth

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Question 1: Under the Federal Power Act (FPA), Federal Energy Regulatory Commission (FERC) intervention in State actions, such as establishing State-level Zero Emission Credit (ZEC) and Renewable Portfolio Standards programs, would only be justified when unjust and unreasonable rates will result. PJM filed a proposal on April 9, 2018, in regard to State-level ZEC programs, an instance where that threshold has clearly not been met. This proposal falls short in proving that State-level ZEC programs, which are not otherwise preempted under the FPA, result in price suppression in wholesale markets. In fact, the mechanisms in the April 9, 2018, proposal would likely result in higher electricity bills for consumers with no corresponding public benefit.

Mr. Chairman and Commissioners, I am concerned that FERC approving the April 9, 2018 request would be contrary to the public interest by undermining State policies that lower harmful emissions, while also discouraging other States from taking the lead in promoting clean energy generation with just and reasonable rates. Would you agree that upholding federal statute and maintaining states' authority should be a FERC priority?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: On May 18, 2018, FERC issued a 3-2 decision restricting NEPA considerations on climate change for future natural gas pipeline projects. This decision stated that upper-bound estimates to understand climate impacts will no longer be considered if the effects are not cumulative or indirect impacts. They further state that analysis to understand the climate impacts from natural gas production and consumption will only be conducted "when those effects are sufficiently causally connected to and are reasonably foreseeable effects of the proposed action."

While forecasts should always be reasonable, incorporating uncertainty is vital in understanding the full range of potential impacts. We cannot know what is "sufficiently likely" if we do not do our due diligence by using available modeling tools to fully understand potential upstream and downstream activities, the resulting impacts, and their probabilities.

Mr. Chairman and Commissioners, in the case of natural gas and understanding possible downstream activities, is it not reasonably foreseeable that the gas will likely be combusted? Do available tools allow for estimates of resulting greenhouse gas emissions?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 3: In a recent case in Illinois, an electric company was able to collect a refund of just over $6 million from a transmission company that was overcharging subtransmission rates. With this refund, the electric company was able to refund their customers the overcharges from the date of when the complaint was filed with FERC, as mandated under the Federal Power Act (FPA). Conversely, this option is not available to natural gas consumers under the Natural Gas Act (NGA). For natural gas transmission complaints, a company is only able to pay lower rates

after the FERC resolves the complaint, with no opportunity to recover the overcharges collected previously – likely a period of several years.

FERC has issued a Notice of Proposed Rulemaking and a Notice of Inquiry to revise interstate pipeline tariff rates where a reduction in the corporate tax rate has resulted in over collections. The Natural Gas Act does not allow for refunds of over collections, resulting in consumers paying pipelines for costs they are not incurring.

Mr. Chairman and Commissioners, are there any mechanisms that FERC can use to refund these over collections? If not, do you agree that FERC should have the authority to refund over collections under the Natural Gas Act in the same way it has the authority under the Federal Power Act?

Answer: While the decision regarding whether to amend section 5 of the Natural Gas Act to provide FERC with the same refund authority as exists in section 206 of the Federal Power Act resides with Congress, I believe doing so would provide additional protection to consumers.

Questions from Senator Shelley Moore Capito

Question 1: Can you describe the importance of maintaining baseload generation and a diverse fuel mix in the electric fleet, including fuel-secure generation? Opponents of the Administration's draft proposal argue that prices are currently low, so there is no crisis. What would the loss of coal and nuclear baseload mean for rates and price stability, both generally and during extreme weather or other crisis events?

Answer: My concurrence to the Commission's January Order in Docket No. AD18-7-000, Grid Resilience in Regional Transmission Organizations and Independent System Operators, noted the significant contributions of fuel-secure, nuclear and coal generation resources to bulk power system resilience—and that many of those resources are retiring under financial pressure. I expect that the Commission's review of comments submitted in Docket No. AD18-7-000 will explore the importance of retention of those resources to rate stability in normal and emergency conditions.

Question 2: Do you agree with Chairman McIntyre that the DoE would be well within its authority to address those challenges through its 202(c) authorities? If so, what role should FERC play in the process, after its rejection of the Department's NOPR in January?

Answer: Section 202(c) of the Federal Power Act establishes the framework and requirements for the Department of Energy to evaluate the requests before it. As I mentioned in my testimony, it is unclear what role, if any, FERC would play because we do not yet know the details about what the Department of Energy might propose. In the event a related proceeding comes before FERC, we would evaluate it accordance with the relevant statutes. I also note that FERC continues to evaluate grid resilience in the proceeding established in Docket No. AD18-7-000.

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Question 3: If the Commission moves forward with drafting a new natural gas certificate policy statement, what modifications can be made to ensure expeditious deployment of natural gas pipelines? Should downstream manufacturing benefitted by natural gas liquids be included in "national interest" considerations for the purpose of FERC reviews? What about exports and their importance to the domestic economy and in supporting our allies?

Answer: I believe the process can be streamlined while preserving stakeholder input and protecting our environment, and I am open to any ideas for improvement. The Commission's Certificate Policy Statement addresses the consideration of projects under the public convenience and necessity standard in Section 7 of the Natural Gas Act, which does not cover natural gas liquids pipelines. FERC has jurisdiction over rates, terms and conditions of service for interstate natural gas liquids pipelines, but not over their siting. The Department of Energy is responsible for reviewing whether exports of natural gas are in the public interest.

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Questions from Chairman Lisa Murkowski

Question 1: If we expect to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. By law, FERC must process, across the board, all pipeline and LNG export applications in a timely fashion.

- What steps have you taken to ensure that FERC is allocating sufficient resources and time to all of its LNG exports and pipeline applications?
- What steps have you taken to ensure that FERC is just as capable of acting in a timely manner as it has been since 2008?
- Given your urgent desire to find and hire more people to process pipeline and LNG applications, and given the dislocations that Commissioner Glick noted in industries related to traditional baseload energy supply, would you consider establishing a formal program to recruit FERC staff from among the highly-qualified engineers who have worked in industry but are at risk of being displaced?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: Given record-setting numbers on both the demand for natural gas as well as its production, most observers contend that the United States is badly in need of new pipeline infrastructure. Such new infrastructure could make natural gas more secure, and make it easier for Americans to be confident that natural gas will be available for all of its many uses, including enabling the manufacturing renaissance and producing electricity on the coldest and hottest days of the year.

- What have you been doing as Chairman to advance the goal of getting new pipelines built?
- Please elaborate on your answer during the hearing about how the Commission's review of its 1999 pipeline policy statement might advance the goal of streamlining the process and making it clearer, more certain and more prompt.

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 3: In recent years, I have asked whether the United States will soon lose its pre-eminence in the field of nuclear energy. The United States appears to be in steady retreat, while China, Russia, and others are taking the lead. Early retirements of commercial reactors, which produce emission-free power for civilian uses, accelerate this trend. We are at risk of losing the know-how, the work force, the industrial base, and therefore the credibility to be a leader on the world stage. Our lagging deployment of advanced nuclear technologies is equally, if not more, worrisome.

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- Do you agree that nuclear is an important part of our energy mix and must remain so going forward? And, if so, what can be done to stop this trend in retirements?

- The words "just and reasonable" and "public interest" in the Federal Power Act require more than merely adopting expert predictions about the cost of fuels over the next few years. What is FERC's role in preserving the "just and reasonable" sales of nuclear power at wholesale in order to serve the critical "public interest" of America in nuclear energy?

- Is the public interest served if nuclear power plants selling their output into FERC-regulated wholesale markets cannot compete on the price that is derived from auctions conducted pursuant to FERC's tariffs? Is tariff reform an option to address anomalies in price formation or otherwise to take into account the benefits of nuclear power?

- Are you confident that predictions about continued low prices for natural gas during most hours of the year are correct? What do you foresee not only with respect to natural gas prices but also with respect to the future viability of nuclear generation selling into FERC-regulated wholesale markets?

- As one of the five Commissioners with obligations to ensure just and reasonable rates, what will you say to the public if you allow nuclear plants to retire, only to see a market demand for such power in a few years if the experts were wrong in their predictions about natural gas prices?

Answer: I agree that nuclear technology is important on many levels and should remain so going forward. Like many sources of energy, nuclear power provides tremendous benefits to customers. Nuclear power plants provide a reliable, clean, and emissions-free source of electricity, which is important for the environment. And as you note, the health of the domestic nuclear supply chain has implications for our country's global standing.

However, I am troubled by the increasingly common notion that, in response to challenges faced by certain power plants, the government must step in to advocate for or against specific resources. FERC has a duty to ensure that jurisdictional rates are "just and reasonable." However, FERC's statutory mandate also requires that we avoid "undue discrimination." In order to undue discrimination, it is important that we adopt a fuel-neutral approach.

It is possible that nuclear power is struggling precisely because government entities historically have acted to favor certain resources, such as renewables, at the expense of other resources, like nuclear. Nevertheless, if the goal is to retain existing nuclear power plants, I believe that implementing a price on carbon – an approach that could be harmonized within existing markets – would be the least discriminatory means of doing so.

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Question 4: At a recent open meeting of the Commission, FERC issued a series of tax orders while the trading markets were open, which some have claimed resulted in an over-reaction by the markets and the needless destruction of wealth invested in natural gas pipeline infrastructure. Investors reportedly needed more time to understand the FERC issuances, and that is hard to do when the worldwide trading markets are open. Badly-timed orders can result in pointless market swings. Friday evening seems to be the best time for reducing the adverse impacts on Asian and European trading markets, and it gives investors an entire weekend to digest what could be hundreds of pages of FERC issuances. For market-moving tax-related issuances by FERC, wouldn't a Friday evening release be more prudent? If so, will you commit to release the next potentially market moving tax order or set of tax orders on Friday evening? And, if not, why not?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 5: As Puerto Rico's electric grid continues to be restored in the aftermath of Hurricanes Irma and Maria, the Government of Puerto Rico is considering legislation to partially privatize their grid, as well as reform the Puerto Rico Energy Commission (PREC). Has FERC been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery, and moving forward, what role can you offer for FERC in providing regulatory assistance to the PREC or any future energy regulatory body in Puerto Rico?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 6: On an annual basis, FERC requires many electric utilities to submit data on the operation of their power grid, in FERC Form No. 715. Not only does this form require a utility to submit maps and diagrams of the grid, but also submit actual grid data in electronic format. FERC acknowledges that this data is Critical Energy Infrastructure Information (CEII) and treats it as such. FERC's policy generally revolves around releasing that data to the public on the basis of the public's "right to know." While transparency is important, when it comes to critical energy infrastructure information (e.g., schematics etc.), it seems reasonable to be more circumspect.

- On January 23, the Committee held a hearing on the cold weather event at the beginning of this year, and PJM questioned FERC's policy concerning the disclosure of CEII data submitted by electric utilities. Further, our military and intelligence agencies do not operate under a policy that the public has a "right to know" this type of information. Instead, such sensitive information is shared in a very limited way, even among people who are already cleared based on a "need to know." Do you believe that FERC should reconsider its process for releasing data it holds in Form No. 715 and its other CEII?

- What is your level of confidence that a pledge to the Commission in the form of a non-disclosure agreement (NDA) regarding FERC's CEII will be honored in every instance?

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- To what extent does FERC investigate the background of organizations that may be associated with an individual receiving FERC's CEII under an NDA? Does FERC always explore the background of such organizations with the Federal Bureau of Investigation? If not, why not?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 7: On March 1, Robert Lee testified before the committee about the need for a regulatory freeze on new cyber standards, in order to allow the industry to shift its focus away from constantly updating its minimum standards and towards a more pro-active approach of anticipating and finding the new and evolving threats to the energy sector.

- What are your thoughts on the costs and benefits of a regulatory freeze?

- Without a regulatory freeze, how can the security professionals working within the industry adequately shift their focus towards the new and evolving threats, and away from being dedicated to compliance with new regulations?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 8: While other federal agencies are not required by law to comply with FERC's Integrated Licensing Process (ILP), FERC has many options to encourage more efficient and timely performance.

- Are you considering any further reliance on existing law, or changes to FERC rules or policies to encourage better performance by other federal agencies?

- Do you think Congress should mandate compliance with the ILP, at least with respect to the models and studies resulting from the ILP?
- Because the ILP is binding on project applicants, do you think that this obligation should be relaxed so that applicants are granted the same flexibility that is granted to federal agencies?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 9: How can FERC improve its communication with the Department of Interior, the Forest Service, and the Bureau of Land Management in ways that enhance resiliency and reliability by ensuring that easements and rights of way are properly managed, particularly in those areas likely to be affected by wildfires? What is the role of FERC in ratemaking and cost recovery associated with vegetation management? What have been the actions taken by FERC with respect to the reliability standards that are associated with vegetation management?

Answer: Please refer to the answer submitted by Chairman McIntyre.

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Question 10: According to the billings of PJM, what is the total annual revenue received by all of the power plants in PJM, collectively, broken down by energy and capacity? Roughly what percentage of the available capacity in PJM consists of coal and nuclear plants that are widely expected to retire within the next two years?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 11: After the 2014 polar vortex, many began to consider whether the gas generators in PJM and ISO-New England should be able to show that they held sufficient rights to firm contracts for the transportation of gas to their power plant.

- Since firm pathways would seem to be inherently more secure than interruptible pathways, is FERC actively considering the need for gas generators to show a firm pathway for their gas, especially on the coldest days of the year when gas demand is highest?
- What do you see as the benefits of requiring a firm pathway, and what are the costs?
- Would fears about handicapping certain gas generating plants be a sufficient reason for FERC to avoid imposing a requirement for firm service on those power plants?
- What are the prospects for an intermediate firm service?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 12: What are the proceedings before FERC today where a market participant is proposing market changes that it contends will improve the efficiency of an existing FERC market? Please provide examples.

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 13: Some generators can submit negative bids in the energy markets because they receive tax subsidies. To what extent do those negative bids have an impact on either prices or generating resources in the FERC markets? Have any state policies, such as those that encourage renewable energy, had any impact on either prices or generating resources in the FERC markets?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 14: How many times has FERC permitted modifications to the energy and capacity markets in PJM and ISO-NE since they were formed? Please provide a chart of the significant changes in PJM and ISO-NE markets, organized by docket, and containing a short description of the changes to the tariff that were requested, with citations to the significant FERC orders in each of those dockets. To the extent that it would be convenient for you to provide a web link for your citations, that would be appreciated.

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Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 15: The Public Utility Regulatory Policies Act (PURPA) was enacted almost 40 years ago in response to the 1970s oil crisis. At the time, this major policy innovation helped to secure a market for emerging cogeneration and small power production facilities, known as "Qualifying Facilities" (QFs). However, with enactment of the 2005 Energy Policy Act, Congress amended the PURPA statute to eliminate the mandatory purchase requirement where QFs have access to competitive markets.

Members of the committee have been concerned that PURPA's mandatory purchase obligation is forcing utilities in the west and elsewhere outside of the competitive RTO markets to buy power they do not need. We've heard testimony in this committee from a Pacific Northwest utility that is locked into a QF "must purchase" contract at rates that are 43 percent higher than the market price – forcing customers to pay an incremental $1.1 billion over a decade for electricity the company does not even need.

In November 2015, I authored a letter to then Chairman Norman Bay, which was also signed by Fred Upton and Ed Whitfield on the House Energy and Commerce Committee, on the need for a technical conference at FERC on PURPA reform. While FERC eventually conducted the technical conference, the Commission failed to take any further action.

Notwithstanding any benefits that PURPA enactment brought in the 1970s and 1980s, today it seems clear that PURPA has been raising energy costs for many customers. In addition, since PURPA can benefit some projects that are "qualifying facilities" under the regulations, but not other projects with differing characteristics, I am concerned that PURPA is allowing some less efficient QFs to displace more modern and efficient power projects. For these reasons, an emerging consensus seems to be prevailing that FERC itself needs to update its regulations on PURPA.

- FERC recently announced a PURPA review – will you commit to taking the leadership actions that will ensure that this matter can be promptly voted?
- To what extent are you willing to act on matters within FERC's authority, and not wait for Congressional action?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Questions from Ranking Member Maria Cantwell

Question 1: By revising its policy about setting the length of hydroelectric project license terms last year (in Docket No. PL17-3-000), the Commission made welcome progress toward removing a perverse incentive that has led licensees to delay investing in project upgrades during the term of a current license. However, some uncertainty remains under the new policy about

what types of pre-relicensing investments the Commission will consider eligible for a longer license term.

I understand that the Commission may be hesitant to commit to a particular treatment of a particular investment, but under the new policy licensees may still defer significant investments to replace, rehabilitate, or otherwise modernize major equipment that does not qualify for a longer license term. Will you commit to evaluating further whether certain types of pre-relicensing investments, including major generating equipment upgrades, should be eligible for a longer license term under the new policy?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: In light of the Commission actions this year to address the potential overcollection of income taxes from ratepayers by utilities and pipelines, is there any sound policy reason why Congress should not amend section 5 of the Natural Gas Act to create the same refund authority with respect to natural gas pipelines that already exists in section 206 of the Federal Power Act?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 3: The nation's electric grid is becoming increasingly reliant on natural gas. In 2005, Congress required the Commission to issue mandatory reliability standards for the bulk power system. The natural gas pipeline network, in contrast, has only voluntary guidelines in place, administered by the Transportation Security Administration (TSA).

Given the emerging threat environment and the 15 years that have passed since TSA was given authority to set guidelines and standards, I believe it is time to revisit the current statutory framework. Last year, I requested a study by the Government Accountability Office to assess this framework that is due this fall. I was pleased to see Commissioners Chatterjee and Glick this week call for mandatory cybersecurity standards for the millions of miles of natural gas, oil, and hazardous liquid pipelines.

A. Are you comfortable that our nation's pipeline network is currently adequately protected from cyber attacks?

B. Do you believe that pipelines should be subject to mandatory standards just as the bulk power system is subject to such standards?

C. Is TSA the best-suited federal entity to issue cybersecurity standards for pipelines? If not, which federal entity is?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 4: As the Commission revisits its 1999 Policy Statement on certifications of natural gas pipelines, I hope you will focus on the issue of excess pipeline capacity in some regions. The

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Department of Energy has estimated that average pipeline utilization rates were below 60 percent for most of the last two decades and projects them to remain at that level through 2030. I understand the gas supply constraints in some regions, but excess capacity in other regions can also cause significant problems. As part of your review of the 1999 Policy Statement, will you:

A. Consider evidence of underutilization of existing pipelines when evaluating the need for a new pipeline and the public interest of certificating it?

B. Consider the long-term risk of stranded costs for overbuilt pipeline networks?

C. Evaluate what entity or entities should be responsible for potential stranded costs?

D. Consider analyzing available capacity on existing pipelines in a given region before certificating a new pipeline?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 5: The Commission's March 9, 2018, order (and individual commissioners' accompanying concurrences and dissents) on ISO New England's tariff filling (Docket No. ER18-619-000) repeatedly discussed the issue of mandatory capacity auctions as the primary mechanism for ensuring resource adequacy in New England. For example, in your dissent, you stated that "unless the states are willing to reassume complete responsibility for resource adequacy, they must accept that the Commission is required to take action to ensure the viability of the capacity markets."

A. What is your understanding of the current resource adequacy paradigm in ISO New England and PJM with respect to the past decision, if any, by states within the footprints of those market operators to surrender responsibility for ensuring resource adequacy?

B. Can you share documentation of the states' actions to that effect?

Answer: My understanding, which is shaped by many years as a state public utility commissioner in a PJM state, is that the current resource adequacy paradigm generally works well for the states in both PJM and ISO New England. As the Chairman notes in his response, many issues regarding state policies and wholesale markets are pending before FERC. Therefore, I am limited in my ability to discuss my thoughts regarding these issues, particularly following the March 9, 2018 order. However, I will note that in the Commission's May 2017 technical conference in docket number AD17-11, the New England States Committee on Electricity (NESCOE) submitted comments which shed some light on this issue. NESCOE is a non-profit entity that represents the collective perspective of the six New England Governors in regional electricity matters and advances the New England states' common interest in the provision of electricity to consumers at the lowest possible prices over the long-term, consistent with maintaining reliable service and environmental quality. In their comments on that proceeding, NESCOE said "current state laws in

connection with resource procurements do not foretell that New England will significantly alter the role of the wholesale markets in serving as the central mechanism for securing resource adequacy in our region," and "the relative roles of wholesale energy and capacity markets and state policies . . . in shaping the quantity and composition of resources are more likely than not to remain static in New England over the coming years." These assertions suggest that the states are comfortable with the current resource adequacy paradigm in New England.

Questions from Senator Debbie Stabenow

Question 1: It is my understanding that the FERC and Department of Energy have given final approval for LNG exports to "non-free trade agreement" countries that would equate to nearly 32 percent of U.S. demand in 2017. In addition, final approval has been granted for exporting nearly 77 percent of 2017 U.S. demand to "free trade" countries. This is a staggering amount of natural gas that is being approved for 20-30 years into the future, and I remain very concerned about the impact this would have on domestic manufacturers and consumers.

Do you support putting responsible safeguards in place to protect U.S. consumers if prices are impacted? For example, should the Department of Energy be able to reduce the volume of LNG exports if U.S. gas prices spike as result of increased exports?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: Many utilities have raised questions about whether QFs that produce less than 20 MW have non-discriminatory access to wholesale markets, arguing that a much lower threshold is necessary to reflect today's market realities. PURPA developers, on the other hand, argue that the current 20 MW standard, which was established as a result of policies enacted by Congress in 2005, is appropriate. Is there sufficient data currently available upon which FERC can evaluate the validity of the current threshold? If so, can FERC commit to compiling this data and examine whether there is non-discriminatory access to wholesale markets?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Questions from Senator Joe Manchin III

Question 1: Energy infrastructure is typically built with private capital. I am not aware of a pipeline or transmission asking for financial support from the federal government.
These companies can finance these projects by utilizing low cost energy sources and getting them to market. One way that companies are able to do that is buying and incorporating as an MLP or master limited partnership. This type of partnership is attractive to energy investors. FERC recently issued a policy statement in response to a court decision and that statement concerned many in the energy sector looking to finance projects. I believe that Congress intended this structure to be an incentive for building infrastructure.

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Did you anticipate the market reaction that occurred when you issued the statement?

When can we expect responses on the filings for rehearing that several companies have submitted?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 2: West Virginia's largest source of renewable power is hydro. The Jennings-Randolph project is a proposed 14 MW project on the North Branch of the Potomac River that sits right between Barnum in Mineral County, West Virginia and Swanton, Maryland. The project will generate clean, renewable power for over 6,000 homes and create construction and permanent jobs for project operators. I have a bill – S. 710 - that would give your commission the authority to extend the Jennings-Randolph's hydropower dam license so the project has time to secure other required permits and commence construction before its FERC 2-year license expires. It passed this Committee and now it's sitting waiting to be cleared by the Senate along with a handful of other extension bills for projects in Alaska, New York, North Carolina, Virginia, Montana, Louisiana, Washington and Alaska. And I know Chairman Murkowski has a bill – S. 724 – that would give you the authority to do this without an act of Congress which makes sense.

Can you outline for me the challenges a hydro project developer faces if their FERC certificate hangs in limbo?

Do you believe FERC should have the authority to issue a license extension for projects like Jennings-Randolph?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 3: I'd like to touch on the rulemaking you have started to examine the process by which FERC issues a "certificate of public convenience and necessity" for a new interstate pipeline. This policy guidance has not been updated since 1999. While I support examining and updating regulations as a part of good governance, I want to be sure that any changes FERC makes to the process do not have unintended consequences. The process of permitting a pipeline is already pretty costly and time consuming. That said, West Virginians want these pipelines must be built in an environmentally stakeholder way and with landowner buy-in and sufficient public engagement.

How do you intend to ensure that this process does not impede progress towards the expansion of energy infrastructure in constrained areas?

Answer: Please refer to the answer submitted by Chairman McIntyre.

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Question 4: One of the specific topics you are seeking comment on is stakeholder engagement and the public comment process. I agree there could be some improvements here. Please comment on what you believe is outdated about that process. Will you be addressing the website? Will you be seeking new ways to host public meetings?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question from Senator Mazie K. Hirono

Question: Your testimony noted the Commission's recent final order on removing barriers to the participation of energy storage in wholesale electricity markets, and its recent conferences to examine how to expand the participation of distributed energy sources in wholesale power markets. I thank you and the other commissioners for your work on these important issues. What specific benefits to consumers do you foresee from expanded access for energy storage and distributed generation?

Answer: There are many potential benefits to consumers from the expanded participation of electric storage and distributed energy resources in the wholesale markets. These can include avoided capacity payments, lower peak prices, reduced need for traditional generators to cycle, facilitating effective ramp management, avoiding generator start-up and shutdown costs, and absorbing over-generation. Furthermore, recognizing the characteristics of these resources can lead to more efficient dispatch and utilization of resources and ultimately, lower costs for consumers.

Questions from Senator Tammy Duckworth

Question 1: Under the Federal Power Act (FPA), Federal Energy Regulatory Commission (FERC) intervention in State actions, such as establishing State-level Zero Emission Credit (ZEC) and Renewable Portfolio Standards programs, would only be justified when unjust and unreasonable rates will result. PJM filed a proposal on April 9, 2018, in regard to State-level ZEC programs, an instance where that threshold has clearly not been met. This proposal falls short in proving that State-level ZEC programs, which are not otherwise preempted under the FPA, result in price suppression in wholesale markets. In fact, the mechanisms in the April 9, 2018, proposal would likely result in higher electricity bills for consumers with no corresponding public benefit.

Mr. Chairman and Commissioners, I am concerned that FERC approving the April 9, 2018 request would be contrary to the public interest by undermining State policies that lower harmful emissions, while also discouraging other States from taking the lead in promoting clean energy generation with just and reasonable rates. Would you agree that upholding federal statute and maintaining states' authority should be a FERC priority?

Answer: Please refer to the answer submitted by Chairman McIntyre.

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Question 2: On May 18, 2018, FERC issued a 3-2 decision restricting NEPA considerations on climate change for future natural gas pipeline projects. This decision stated that upper-bound estimates to understand climate impacts will no longer be considered if the effects are not cumulative or indirect impacts. They further state that analysis to understand the climate impacts from natural gas production and consumption will only be conducted "when those effects are sufficiently causally connected to and are reasonably foreseeable effects of the proposed action."

While forecasts should always be reasonable, incorporating uncertainty is vital in understanding the full range of potential impacts. We cannot know what is "sufficiently likely" if we do not do our due diligence by using available modeling tools to fully understand potential upstream and downstream activities, the resulting impacts, and their probabilities.

Mr. Chairman and Commissioners, in the case of natural gas and understanding possible downstream activities, is it not reasonably foreseeable that the gas will likely be combusted? Do available tools allow for estimates of resulting greenhouse gas emissions?

Answer: Please refer to the answer submitted by Chairman McIntyre.

Question 3: In a recent case in Illinois, an electric company was able to collect a refund of just over $6 million from a transmission company that was overcharging subtransmission rates. With this refund, the electric company was able to refund their customers the overcharges from the date of when the complaint was filed with FERC, as mandated under the Federal Power Act (FPA). Conversely, this option is not available to natural gas consumers under the Natural Gas Act (NGA). For natural gas transmission complaints, a company is only able to pay lower rates after the FERC resolves the complaint, with no opportunity to recover the overcharges collected previously – likely a period of several years.

FERC has issued a Notice of Proposed Rulemaking and a Notice of Inquiry to revise interstate pipeline tariff rates where a reduction in the corporate tax rate has resulted in over collections. The Natural Gas Act does not allow for refunds of over collections, resulting in consumers paying pipelines for costs they are not incurring.

Mr. Chairman and Commissioners, are there any mechanisms that FERC can use to refund these over collections? If not, do you agree that FERC should have the authority to refund over collections under the Natural Gas Act in the same way it has the authority under the Federal Power Act?

Answer: Please refer to the answer submitted by Chairman McIntyre.

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Question from Senator Bill Cassidy

FERC recently announced that it is reviewing its policies regarding the review and authorization of interstate natural gas pipelines. Regarding the demonstration of need, long-term, firm contracts tend to be weighed heavily by FERC based on the 1999 policy. To date, FERC has depended on those contractual arrangements as a credible, market-based, concrete evidence of need.

Question: Considering the expanding LNG export capacity in the United States, how should the FERC factor potential national security or international trade benefits, in the public interest determination?

Answer: FERC is responsible for authorizing the siting and construction of onshore and near-shore LNG export facilities. However, it is the Department of Energy (DOE) that is responsible for reviewing applications to export the LNG commodity and, in certain circumstances, determining whether approval of such applications is consistent with the public interest.

Question from Senator Catherine Cortez Masto

Question: In the context of discussions around various market reforms, what is the role of FERC in ensuring properly functioning markets so businesses can invest in markets to provide affordable, reliable, and resilient power?

Answer: I believe that a fuel-neutral, market-based approach is the appropriate regulatory "platform" that best ensures reliability at least cost to consumers. Such a platform provides a degree of regulatory certainty to customers and businesses. Additionally, harnessing the power of competition through functioning markets has the added benefit of accelerating technological change and innovation, providing benefits to customers, and avoiding the unnecessary involvement of government decision-makers in resource planning.

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Questions from Chairman Lisa Murkowski

Question 1: If we expect to remain a prosperous nation with strong growth and affordable energy, we need our interstate pipeline network and LNG facilities to continue to meet customer demands for natural gas. By law, FERC must process, across the board, all pipeline and LNG export applications in a timely fashion.

- What steps have you taken to ensure that FERC is allocating sufficient resources and time to all of its LNG exports and pipeline applications?

Answer: As Chairman McIntyre notes, FERC is "moving forward with multiple strategies to achieve short-, medium-, and long-term solutions to ensure sufficient resources are available to process the large number of LNG proposals before FERC." These actions include hiring additional engineering staff, reallocating available staff vacancies, identifying additional opportunities for third-party contracting assistance, examining FERC's internal processes to identify potential inefficiencies, and working with other federal agencies to improve coordination.

- What steps have you taken to ensure that FERC is just as capable of acting in a timely manner as it has been since 2008?

Answer: Please refer to Chairman McIntyre's response to the very same question.

- Given your urgent desire to find and hire more people to process pipeline and LNG applications, and given the dislocations that Commissioner Glick noted in industries related to traditional baseload energy supply, would you consider establishing a formal program to recruit FERC staff from among the highly-qualified engineers who have worked in industry but are at risk of being displaced?

Answer: As Chairman McIntyre states, "such a program is consistent with our ongoing hiring efforts." Recruiting FERC staff from among the highly-qualified engineers who are at risk of being displaced due to changes in the energy industry would be a good strategy to consider.

Question 2: Given record-setting numbers on both the demand for natural gas as well as its production, most observers contend that the United States is badly in need of new pipeline infrastructure. Such new infrastructure could make natural gas more secure, and make it easier for Americans to be confident that natural gas will be available for all of its many uses, including enabling the manufacturing renaissance and producing electricity on the coldest and hottest days of the year.

- What have you been doing as Chairman to advance the goal of getting new pipelines built?

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Answer: The question was directed to the Chairman, so I defer to Chairman McIntyre's response to this question.

- Please elaborate on your answer during the hearing about how the Commission's review of its 1999 pipeline policy statement might advance the goal of streamlining the process and making it clearer, more certain and more prompt.

Answer: This question, again, is properly addressed to the Chairman as he made the statement that is referenced. I do believe it is always incumbent on federal agencies to act as expeditiously as possible to provide certainty to both the public and regulated industries. However, at the same time, we must ensure we are properly carrying-out the responsibilities that Congress provided the Commission. I strongly support FERC's review of the 1999 Policy Statement applicable to FERC's gas pipeline certificate application program. The primary goal of that review should be to ensure that FERC adequately assesses whether a proposed interstate pipeline is in the public interest.

Although we sometimes hear complaints from industry that the Commission's review of applications for certificates pursuant to section 7 of the Natural Gas Act is too lengthy, the facts do not bear that out. For instance, since 2010 it has taken on average 20 months for the Commission to complete a full Environmental Impact Statement and just nine months to finalize an Environmental Assessment under the National Environmental Policy Act. In comparison, the federal government as a whole takes more than five years on average to complete an Environmental Impact Statement.

Question 3: In recent years, I have asked whether the United States will soon lose its pre-eminence in the field of nuclear energy. The United States appears to be in steady retreat, while China, Russia, and others are taking the lead. Early retirements of commercial reactors, which produce emission-free power for civilian uses, accelerate this trend. We are at risk of losing the know-how, the work force, the industrial base, and therefore the credibility to be a leader on the world stage. Our lagging deployment of advanced nuclear technologies is equally, if not more, worrisome.

- Do you agree that nuclear is an important part of our energy mix and must remain so going forward? And, if so, what can be done to stop this trend in retirements?

Answer: The Commission should not and does not favor specific electric generation technologies. Instead, the Commission generally relies upon markets to promote competition to ensure that jurisdictional electric rates and service meet the requirements of the Federal Power Act. One important aspect of promoting competition is removing barriers to entry so that all resources can compete in the wholesale markets to provide a defined service. As a result, although different resource types can have different attributes, they can compete to provide a comparable service to the grid. It is not the Commission's role to pick winners and losers and it certainly is not the Commission's role to prevent the retirement of generating facilities because some believe the future of a particular technology is threatened.

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- The words "just and reasonable" and "public interest" in the Federal Power Act require more than merely adopting expert predictions about the cost of fuels over the next few years. What is FERC's role in preserving the "just and reasonable" sales of nuclear power at wholesale in order to serve the critical "public interest" of America in nuclear energy?

Answer: The Commission has the responsibility under the Federal Power Act to ensure that jurisdictional rates are just and reasonable and not unduly discriminatory or preferential. This does not entail preserving sales from a particular technology, such as nuclear power. Rather, as discussed in my answer to the prior question, the Commission typically relies on markets to ensure just and reasonable rates for jurisdictional services.

- Is the public interest served if nuclear power plants selling their output into FERC-regulated wholesale markets cannot compete on the price that is derived from auctions conducted pursuant to FERC's tariffs? Is tariff reform an option to address anomalies in price formation or otherwise to take into account the benefits of nuclear power?

Answer: As Congress determined when it enacted the Federal Power Act, the public interest is served when jurisdictional rates are just and reasonable and not unduly discriminatory or preferential. If the Commission were to authorize nuclear power plants to charge rates at levels higher than the just and reasonable level then the public interest would not be served. Our markets are designed to procure a uniform product, which nuclear power plants provide the same as other types of generation. There are not anomalies in price formation because nuclear generators might not be able to compete. Tariff reform is an option to the extent there are externalities that can be priced into the market (e.g., carbon pricing).

- Are you confident that predictions about continued low prices for natural gas during most hours of the year are correct? What do you foresee not only with respect to natural gas prices but also with respect to the future viability of nuclear generation selling into FERC-regulated wholesale markets?

Answer: FERC is not in the business of making predictions about future prices. As Chairman McIntyre notes, "the U.S. Energy Information Administration (reflected in its short-term energy outlook for natural gas, which was most recently published on July 10, 2018), and other public sources suggest that gas prices will remain relatively low for the next year." If natural gas prices remain low, I expect that some nuclear power plants will remain cost competitive and others may be less so.

- As one of the five Commissioners with obligations to ensure just and reasonable rates, what will you say to the public if you allow nuclear plants to retire, only to see a market demand for such power in a few years if the experts were wrong in their predictions about natural gas prices?

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Answer: It is not the Commission's decision to "allow" a nuclear plant to retire. As Chairman McIntyre notes, "FERC has long regarded competitive markets as an appropriate mechanism for compensating resources for the services they provide to the electric grid, independent of resource type, as well as for the appropriate means to encourage or incent resources to enter or to stay in the market. This reliance on market principles means that, from time to time, prices will change (both rise and fall) as market fundamentals change."

Question 4: At a recent open meeting of the Commission, FERC issued a series of tax orders while the trading markets were open, which some have claimed resulted in an over-reaction by the markets and the needless destruction of wealth invested in natural gas pipeline infrastructure. Investors reportedly needed more time to understand the FERC issuances, and that is hard to do when the worldwide trading markets are open. Badly-timed orders can result in pointless market swings. Friday evening seems to be the best time for reducing the adverse impacts on Asian and European trading markets, and it gives investors an entire weekend to digest what could be hundreds of pages of FERC issuances. For market-moving tax-related issuances by FERC, wouldn't a Friday evening release be more prudent? If so, will you commit to release the next potentially market moving tax order or set of tax orders on Friday evening? And, if not, why not?

Answer: Please refer to Chairman McIntyre's response, as it is up to the Chairman to set the schedule for issuing orders.

Question 5: As Puerto Rico's electric grid continues to be restored in the aftermath of Hurricanes Irma and Maria, the Government of Puerto Rico is considering legislation to partially privatize their grid, as well as reform the Puerto Rico Energy Commission (PREC). Has FERC been asked to participate or provide technical assistance with regard to Puerto Rico's grid recovery, and moving forward, what role can you offer for FERC in providing regulatory assistance to the PREC or any future energy regulatory body in Puerto Rico?

Answer: As Chairman McIntyre explains, FERC has not been asked to be involved in Puerto Rico's grid recovery, but did offer to assist through the U.S. Department of Energy.

Question 6: On an annual basis, FERC requires many electric utilities to submit data on the operation of their power grid, in FERC Form No. 715. Not only does this form require a utility to submit maps and diagrams of the grid, but also submit actual grid data in electronic format. FERC acknowledges that this data is Critical Energy Infrastructure Information (CEII) and treats it as such. FERC's policy generally revolves around releasing that data to the public on the basis of the public's "right to know." While transparency is important, when it comes to critical energy infrastructure information (e.g., schematics etc.), it seems reasonable to be more circumspect.

- On January 23, the Committee held a hearing on the cold weather event at the beginning of this year, and PJM questioned FERC's policy concerning the disclosure

of CEII data submitted by electric utilities. Further, our military and intelligence agencies do not operate under a policy that the public has a "right to know" this type of information. Instead, such sensitive information is shared in a very limited way, even among people who are already cleared based on a "need to know." Do you believe that FERC should reconsider its process for releasing data it holds in Form No. 715 and its other CEII?

Answer: This is an important question, and one which the Commission should continue to take seriously. Chairman McIntyre sets forth in his response the Commission's CEII policies and notes that "FERC balances the legitimate need for access to Form 715 data with the responsibility to safeguard CEII through FERC's CEII regulations and procedures."

- What is your level of confidence that a pledge to the Commission in the form of a non-disclosure agreement (NDA) regarding FERC's CEII will be honored in every instance?

Answer: As Chairman McIntyre explains, we have no reason to believe that NDAs are not effective in protecting the unauthorized disclosure of CEII. In addition to requiring an NDA, Chairman McIntyre notes that a "requestor receives CEII after FERC determines that the requestor is legitimate and that its need is valid," the Commission "can impose additional conditions on a requestor's access to CEII above and beyond what the form of NDA requires," and the Commission can impose sanctions or refer individuals for criminal prosecution in the event of a breach of the NDA or a purposefully falsified request for CEII.

- To what extent does FERC investigate the background of organizations that may be associated with an individual receiving FERC's CEII under an NDA? Does FERC always explore the background of such organizations with the Federal Bureau of Investigation? If not, why not?

Answer: As Chairman McIntyre states, as part of the process for verifying the legitimacy of a requestor, FERC staff requires references and uses research tools to confirm requestors' backgrounds, but has not to date required the assistance of the Federal Bureau of Investigation.

Question 7: On March 1, Robert Lee testified before the committee about the need for a regulatory freeze on new cyber standards, in order to allow the industry to shift its focus away from constantly updating its minimum standards and towards a more pro-active approach of anticipating and finding the new and evolving threats to the energy sector.

- What are your thoughts on the costs and benefits of a regulatory freeze?

Answer: It is understandable that industry can occasionally be frustrated with having to make frequent changes to comply with mandatory cyber security requirements. However, we also need to recognize that the threats to the grid are constantly evolving and it is NERC's and the Commission's responsibilities to ensure that bulk power system operators are

adequately equipped to address these threats. As National Intelligence Director Dan Coats recently pointed out, the threat of cyber-attacks from Russia and other adversaries continues to grow and we need to remain vigilant against this ever-changing threat.

- Without a regulatory freeze, how can the security professionals working within the industry adequately shift their focus towards the new and evolving threats, and away from being dedicated to compliance with new regulations?

Answer: I believe the security professionals working for bulk power system operators will be able to both address new and evolving threats and comply with new regulations, many of which will be focused on attempting to ensure that the bulk power system is protected against threats, both new and existing.

Question 8: While other federal agencies are not required by law to comply with FERC's Integrated Licensing Process (ILP), FERC has many options to encourage more efficient and timely performance.

- Are you considering any further reliance on existing law, or changes to FERC rules or policies to encourage better performance by other federal agencies?

Answer: As Chairman McIntyre states, the Commission has not "identified a problem with agencies not actively participating in the ILP."

- Do you think Congress should mandate compliance with the ILP, at least with respect to the models and studies resulting from the ILP?

Answer: I agree with Chairman McIntyre that, should Congress seek to amend Part I of the Federal Power Act, it should seek to improve the hydroelectric licensing process overall, not just the ILP.

- Because the ILP is binding on project applicants, do you think that this obligation should be relaxed so that applicants are granted the same flexibility that is granted to federal agencies?

Answer: As Chairman McIntyre notes, "the ILP currently is the default process. However, applicants can request other licensing processes under FERC's current regulations."

Question 9: How can FERC improve its communication with the Department of Interior, the Forest Service, and the Bureau of Land Management in ways that enhance resiliency and reliability by ensuring that easements and rights of way are properly managed, particularly in those areas likely to be affected by wildfires? What is the role of FERC in ratemaking and cost recovery associated with vegetation management? What have been the actions taken by FERC with respect to the reliability standards that are associated with vegetation management?

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Answer: As the Chairman states in his answer, FERC plays a role in ensuring rights of way are properly managed for reliability and resilience purposes through mandatory NERC Reliability Standard FAC-003-4, Transmission Vegetation Management. Since initial FERC approval of this standard in 2007, FERC has approved three updated versions and approved penalties for violations of the standard.

Question 10: According to the billings of PJM, what is the total annual revenue received by all of the power plants in PJM, collectively, broken down by energy and capacity? Roughly what percentage of the available capacity in PJM consists of coal and nuclear plants that are widely expected to retire within the next two years?

Answer: Chairman McIntyre provides this information in his response, which I will defer to rather than repeating the information.

Question 11: After the 2014 polar vortex, many began to consider whether the gas generators in PJM and ISO-New England should be able to show that they held sufficient rights to firm contracts for the transportation of gas to their power plant.

- Since firm pathways would seem to be inherently more secure than interruptible pathways, is FERC actively considering the need for gas generators to show a firm pathway for their gas, especially on the coldest days of the year when gas demand is highest?

Answer: As Chairman McIntyre notes, "FERC is not actively considering the imposition of a requirement for firm service on power plants."

- What do you see as the benefits of requiring a firm pathway, and what are the costs?

Answer: The Commission would first have to determine whether there are benefits associated with requiring a firm pathway. I believe that we should first monitor the impact of ISO-NE's and PJM's performance-based capacity market requirements, which penalize generators if they are unable to meet their capacity commitments, before we consider other options. These markets procure a new capacity product that includes a strict obligation to deliver energy during emergency conditions, for example during periods of shortage in energy and reserves, with enhanced financial penalties for non-performance and rewards for good performance. In this way, the market rules are designed to create incentives for capacity sellers to make the investments necessary to provide sustained, predictable operation over the entire delivery year, including having an adequate supply of fuel.

- Would fears about handicapping certain gas generating plants be a sufficient reason for FERC to avoid imposing a requirement for firm service on those power plants?

Answer: Please see my answer to the preceding question.

- What are the prospects for an intermediate firm service?

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Answer: As Chairman McIntyre notes, "should a pipeline propose intermediate firm service, FERC would carefully consider that proposal."

Question 12: What are the proceedings before FERC today where a market participant is proposing market changes that it contends will improve the efficiency of an existing FERC market? Please provide examples.

Answer: Chairman McIntyre provides a chart of pending proceedings in his response.

Question 13: Some generators can submit negative bids in the energy markets because they receive tax subsidies. To what extent do those negative bids have an impact on either prices or generating resources in the FERC markets? Have any state policies, such as those that encourage renewable energy, had any impact on either prices or generating resources in the FERC markets?

Answer: Generators may submit a negative bid into FERC markets in certain locations where generation is constrained due to transmission congestion and lack of available transmission capacity. In such cases of limited transmission, generators bid negative prices for multiples reasons, including the inability of conventional generation to ramp down during a local transmission outage or as a result of access to certain forms of tax incentives. Instances of negative bids have occurred during low demand hours and have a short duration, leading to negligible impact on average power prices. However, as transmission capacity and utilization improves, allowing for the least cost generation to be deliverable to load, instances of negative bids have become increasingly rare.

The Federal Power Act is clear that the states, not the Commission, are the entities responsible for shaping the generation mix while providing the Commission with jurisdiction over wholesale sales of electricity as well as rates and practices affecting those wholesale sales. The Federal Power Act's division of jurisdiction over the electricity sector will result in FERC and states affecting matters in each other's jurisdiction. State policies, as well as federal or local policies, all have the potential to impact prices or generating resources in FERC-jurisdictional markets, but an impact does not necessarily mean there is a problem. A multitude of public policies are designed to lower the cost of fossil fuel, reduce risk, encourage generation, and reduce capital costs for all energy sources, which may directly or indirectly impact the number or type of generation facilities affecting wholesale rates.

Question 14: How many times has FERC permitted modifications to the energy and capacity markets in PJM and ISO-NE since they were formed? Please provide a chart of the significant changes in PJM and ISO-NE markets, organized by docket, and containing a short description of the changes to the tariff that were requested, with citations to the significant FERC orders in each of those dockets. To the extent that it would be convenient for you to provide a web link for your citations, that would be appreciated.

Answer: Chairman McIntyre provides the requested charts in his response.

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Question 15: The Public Utility Regulatory Policies Act (PURPA) was enacted almost 40 years ago in response to the 1970s oil crisis. At the time, this major policy innovation helped to secure a market for emerging cogeneration and small power production facilities, known as "Qualifying Facilities" (QFs). However, with enactment of the 2005 Energy Policy Act, Congress amended the PURPA statute to eliminate the mandatory purchase requirement where QFs have access to competitive markets.

Members of the committee have been concerned that PURPA's mandatory purchase obligation is forcing utilities in the west and elsewhere outside of the competitive RTO markets to buy power they do not need. We've heard testimony in this committee from a Pacific Northwest utility that is locked into a QF "must purchase" contract at rates that are 43 percent higher than the market price – forcing customers to pay an incremental $1.1 billion over a decade for electricity the company does not even need.

In November 2015, I authored a letter to then Chairman Norman Bay, which was also signed by Fred Upton and Ed Whitfield on the House Energy and Commerce Committee, on the need for a technical conference at FERC on PURPA reform. While FERC eventually conducted the technical conference, the Commission failed to take any further action.

Notwithstanding any benefits that PURPA enactment brought in the 1970s and 1980s, today it seems clear that PURPA has been raising energy costs for many customers. In addition, since PURPA can benefit some projects that are "qualifying facilities" under the regulations, but not other projects with differing characteristics, I am concerned that PURPA is allowing some less efficient QFs to displace more modern and efficient power projects. For these reasons, an emerging consensus seems to be prevailing that FERC itself needs to update its regulations on PURPA.

- FERC recently announced a PURPA review – will you commit to taking the leadership actions that will ensure that this matter can be promptly voted?

Answer: Please refer to Chairman McIntyre's response, as it is up to the Chairman to set the schedule for issuing orders.

- To what extent are you willing to act on matters within FERC's authority, and not wait for Congressional action?

Answer: Congress took the opportunity to substantially review PURPA in 2005 and chose to retain the utility "must purchase" requirement except for regions where the QF has access to sufficiently competitive markets. I do not believe it is appropriate for FERC to make any changes to PURPA which would impact the "must purchase" requirement absent additional legislative guidance.

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Questions from Ranking Member Maria Cantwell

Question 1: By revising its policy about setting the length of hydroelectric project license terms last year (in Docket No. PL17-3-000), the Commission made welcome progress toward removing a perverse incentive that has led licensees to delay investing in project upgrades during the term of a current license. However, some uncertainty remains under the new policy about what types of pre-relicensing investments the Commission will consider eligible for a longer license term.

I understand that the Commission may be hesitant to commit to a particular treatment of a particular investment, but under the new policy licensees may still defer significant investments to replace, rehabilitate, or otherwise modernize major equipment that does not qualify for a longer license term. Will you commit to evaluating further whether certain types of pre-relicensing investments, including major generating equipment upgrades, should be eligible for a longer license term under the new policy?

> **Answer:** As Chairman McIntyre notes, FERC stated in the policy statement "that it will consider, on a case-by-case basis, measures that enhance power and developmental purposes, as well as those that enhance non-developmental project purposes (i.e., environmental, project recreation, water supply), to determine whether they are significant enough to warrant the granting of a license term longer than 40 years. FERC will address these matters as they arise."

Question 2: In light of the Commission actions this year to address the potential over collection of income taxes from ratepayers by utilities and pipelines, is there any sound policy reason why Congress should not amend section 5 of the Natural Gas Act to create the same refund authority with respect to natural gas pipelines that already exists in section 206 of the Federal Power Act?

> **Answer:** It is essential that Congress amend the Natural Gas Act to include the same refund authority that exists pursuant to the Federal Power Act. As written today, the Natural Gas Act will permit natural gas pipeline companies to unduly delay changing their rates to reflect the recently enacted federal tax rate reductions. In turn, these companies can reap a windfall through rates established using the prior tax levels without any risk that the billions of dollars in excess income will have to be refunded to consumers. Natural gas consumers deserve the same protections Congress has provided to electric ratepayers

Question 3: The nation's electric grid is becoming increasingly reliant on natural gas. In 2005, Congress required the Commission to issue mandatory reliability standards for the bulk power system. The natural gas pipeline network, in contrast, has only voluntary guidelines in place, administered by the Transportation Security Administration (TSA).

Given the emerging threat environment and the 15 years that have passed since TSA was given authority to set guidelines and standards, I believe it is time to revisit the current statutory framework. Last year, I requested a study by the Government Accountability Office to assess this framework that is due this fall. I was pleased this week to see you and Commissioner Chatterjee

call for mandatory cybersecurity standards for the millions of miles of natural gas, oil, and hazardous liquid pipelines.

A. Are you comfortable that our nation's pipeline network is currently adequately protected from cyber-attacks?

Answer: No. As Commissioner Chatterjee and I pointed out in our article, it does not appear that the Transportation Security Administration (TSA) has the resources to adequately oversee what the media has described as a growing threat to our natural gas pipeline infrastructure—potential cyber and physical attacks on pipelines. Both Commissioner Chatterjee and I believe that it makes better sense to entrust another agency, such as the Department of Energy, to oversee pipeline security.

B. Do you believe that pipelines should be subject to mandatory standards just as the bulk power system is subject to such standards?

Answer: Yes. Currently, natural gas and oil pipeline cyber security is governed by a set of voluntary standards established by the TSA. All it would take is one pipeline company ignoring those voluntary standards for there to be a successful attack on a critical component of our energy infrastructure. Both Commissioner Chatterjee and I in our article called upon Congress to enact a regulatory regime that would subject natural gas pipelines, in a manner similar to bulk power system operators, to mandatory cyber security standards.

C. Is TSA the best-suited federal entity to issue cybersecurity standards for pipelines? If not, which federal entity is?

Answer: See my response to Question 3A.

Question 4: As the Commission revisits its 1999 Policy Statement on certifications of natural gas pipelines, I hope you will focus on the issue of excess pipeline capacity in some regions. The Department of Energy has estimated that average pipeline utilization rates were below 60 percent for most of the last two decades and projects them to remain at that level through 2030. I understand the gas supply constraints in some regions, but excess capacity in other regions can also cause significant problems. As part of your review of the 1999 Policy Statement, will you:

A. Consider evidence of underutilization of existing pipelines when evaluating the need for a new pipeline and the public interest of certificating it?

B. Consider the long-term risk of stranded costs for overbuilt pipeline networks?

C. Evaluate what entity or entities should be responsible for potential stranded costs?

D. Consider analyzing available capacity on existing pipelines in a given region before certificating a new pipeline?

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Answer: I agree all of these questions should be considered in the Commission's review of the 1999 Policy Statement. It is important that the Commission look beyond precedent agreements in determining whether there is a need for proposed new pipeline capacity, especially in instances where a precedent agreement is between affiliates. I hope that what comes out of the Commission's review of the 1999 Policy Statement is an improved process that considers factors beyond precedent agreements, including assessing whether existing pipeline capacity in a given region is capable of being used more efficiently to meet any new demand for gas and what impacts there may be on customers and others if pipeline capacity is overbuilt.

Question 5: The Commission's March 9, 2018, order (and individual commissioners' accompanying concurrences and dissents) on ISO New England's tariff filling (Docket No. ER18-619-000) repeatedly discussed the issue of mandatory capacity auctions as the primary mechanism for ensuring resource adequacy in New England. For example, in his dissent, Commissioner Powelson stated that "unless the states are willing to reassume complete responsibility for resource adequacy, they must accept that the Commission is required to take action to ensure the viability of the capacity markets."

A. What is your understanding of the current resource adequacy paradigm in ISO New England and PJM with respect to the past decision, if any, by states within the footprints of those market operators to surrender responsibility for ensuring resource adequacy?

Answer: I am not aware of any state in the ISO New England or PJM regions surrendering its authority to ensure resource adequacy.

B. Can you share documentation of the states' actions to that effect?

Answer: Please see my answer to Question 5A.

Questions from Senator Debbie Stabenow

Question 1: It is my understanding that the FERC and Department of Energy have given final approval for LNG exports to "non-free trade agreement" countries that would equate to nearly 32 percent of U.S. demand in 2017. In addition, final approval has been granted for exporting nearly 77 percent of 2017 U.S. demand to "free trade" countries. This is a staggering amount of natural gas that is being approved for 20-30 years into the future, and I remain very concerned about the impact this would have on domestic manufacturers and consumers.

Do you support putting responsible safeguards in place to protect U.S. consumers if prices are impacted? For example, should the Department of Energy be able to reduce the volume of LNG exports if U.S. gas prices spike as result of increased exports?

Answer: While FERC is responsible for authorizing the siting and construction of onshore and near-shore LNG export facilities, FERC does not have authority over the decision to

export natural gas. It is up to both the Department of Energy and Congress to establish safeguards to protect consumers should exports adversely impact prices.

Question 2: Many utilities have raised questions about whether QFs that produce less than 20 MW have non-discriminatory access to wholesale markets, arguing that a much lower threshold is necessary to reflect today's market realities. PURPA developers, on the other hand, argue that the current 20 MW standard, which was established as a result of policies enacted by Congress in 2005, is appropriate. Is there sufficient data currently available upon which FERC can evaluate the validity of the current threshold? If so, can FERC commit to compiling this data and examine whether there is non-discriminatory access to wholesale markets?

Answer: Non-discriminatory access to the wholesale markets is the fundamental basis for FERC offering any form of exemption from the must purchase requirement under PURPA. I agree that the Commission's administrative review of PURPA should include evaluation of all aspects of whether QFs, of any size, have non-discriminatory access in the wholesale market.

Questions from Senator Joe Manchin III

Question 1: Energy infrastructure is typically built with private capital. I am not aware of a pipeline or transmission asking for financial support from the federal government.

These companies can finance these projects by utilizing low cost energy sources and getting them to market. One way that companies are able to do that is buying and incorporating as an MLP or master limited partnership. This type of partnership is attractive to energy investors. FERC recently issued a policy statement in response to a court decision and that statement concerned many in the energy sector looking to finance projects. I believe that Congress intended this structure to be an incentive for building infrastructure.

Did you anticipate the market reaction that occurred when you issued the statement?

Answer: In *United Airlines, Inc. v. FERC*, 827 F.3d 122 (D.C. Cir. 2016), the D.C. Circuit concluded that permitting an MLP to include in its rates costs associated with income tax payments amounts to double recovery at the expense of consumers. Given the court's relatively clear ruling as well as the long legal proceeding, I find it difficult to believe the market or stakeholders following this process would not have been prepared for the Commission's 5-0 vote issuing guidance in accordance with that court decision.

When can we expect responses on the filings for rehearing that several companies have submitted?

Answer: I am not able to comment on the nature or timing of FERC's action on pending proceedings.

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Question 2: West Virginia's largest source of renewable power is hydro. The Jennings-Randolph project is a proposed 14 MW project on the North Branch of the Potomac River that sits right between Barnum in Mineral County, West Virginia and Swanton, Maryland. The project will generate clean, renewable power for over 6,000 homes and create construction and permanent jobs for project operators. I have a bill – S. 710 - that would give your commission the authority to extend the Jennings-Randolph's hydropower dam license so the project has time to secure other required permits and commence construction before its FERC 2-year license expires. It passed this Committee and now it's sitting waiting to be cleared by the Senate along with a handful of other extension bills for projects in Alaska, New York, North Carolina, Virginia, Montana, Louisiana, Washington and Alaska. And I know Chairman Murkowski has a bill – S. 724 – that would give you the authority to do this without an act of Congress which makes sense.

Can you outline for me the challenges a hydro project developer faces if their FERC certificate hangs in limbo?

> **Answer:** Given the potentially lengthy siting and permitting process for hydroelectric facilities, it is important that FERC attempt to provide as much certainty as possible. However, as Chairman McIntyre states, "[w]hether a developer can secure the additional permits that may be required to commence construction after it has received a FERC license is beyond FERC's control."

Do you believe FERC should have the authority to issue a license extension for projects like Jennings-Randolph?

> **Answer:** Yes. I support the legislative provision that would give FERC the authority to grant license extensions for hydroelectric facilities and was disappointed that the bill did not pass during the last Congress.

Question 3: I'd like to touch on the rulemaking you have started to examine the process by which FERC issues a "certificate of public convenience and necessity" for a new interstate pipeline. This policy guidance has not been updated since 1999. While I support examining and updating regulations as a part of good governance, I want to be sure that any changes FERC makes to the process do not have unintended consequences. The process of permitting a pipeline is already pretty costly and time consuming. That said, West Virginians want these pipelines must be built in an environmentally stakeholder way and with landowner buy-in and sufficient public engagement.

How do you intend to ensure that this process does not impede progress towards the expansion of energy infrastructure in constrained areas?

> **Answer:** I do believe it is always incumbent on federal agencies to act as expeditiously as possible to provide certainty to both the public and regulated industries. However, at the same time, we must ensure we are properly carrying-out the responsibilities that Congress provided the Commission. I strongly support FERC's review of the 1999 Policy Statement

applicable to FERC's gas pipeline certificate application program. The primary goal of that review should be to ensure that FERC adequately assesses whether a proposed interstate pipeline is in the public interest.

Although we sometimes hear complaints from industry that the Commission's review of applications for certificates pursuant to section 7 of the Natural Gas Act is too lengthy, the facts do not bear that out. For instance, since 2010 it has taken on average 20 months for the Commission to complete a full Environmental Impact Statement and just nine months to finalize an Environmental Assessment under the National Environmental Policy Act. In comparison, the federal government as a whole takes more than five years on average to complete an Environmental Impact Statement.

Arguably, the outcome of the Notice of Inquiry proceeding will help bring more certainty to the certification process, not only in terms of timeline, but also by reducing some of the uncertainty that now exists for projects on appeal by providing a clearer framework for determining whether a project is in the public interest.

Question 4: One of the specific topics you are seeking comment on is stakeholder engagement and the public comment process. I agree there could be some improvements here. Please comment on what you believe is outdated about that process. Will you be addressing the website? Will you be seeking new ways to host public meetings?

Answer: I agree public participation and stakeholder engagement are critical elements of Commission activity, and there is always room for improvement. In particular, a recent audit report from the DOE Inspector General's office stated that "FERC had not fully ensured that its natural gas certification process was transparent to stakeholders." The report notes there are a number of ways that FERC informs stakeholders about the natural gas certification process, including scoping meetings, the FERC website, and the landowner pamphlets. The specific areas identified for improvement include process transparency, public access to FERC records, tracking stakeholder comments, and data integrity.

Question from Senator Mazie K. Hirono

Question: In your oral testimony, you noted that the President's recent order to the Department of Energy to determine ways to subsidize facilities that would otherwise not be economic, like certain coal-fired plants, would depress demand for more affordable sources of power, including wind, and could stifle development of innovative new resources at the distribution level, like energy storage. By stifling innovation in energy storage, distributed generation systems, and other innovations, could the President's order slow development of the technologies that could yield a more reliable and resilient grid?

Answer: Yes, by keeping uneconomic generation from retiring it will stunt the development of other technologies that could actually provide what the marketplace is demanding.

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Questions from Senator Tammy Duckworth

Question 1: Under the Federal Power Act (FPA), Federal Energy Regulatory Commission (FERC) intervention in State actions, such as establishing State-level Zero Emission Credit (ZEC) and Renewable Portfolio Standards programs, would only be justified when unjust and unreasonable rates will result. PJM filed a proposal on April 9, 2018, in regard to State-level ZEC programs, an instance where that threshold has clearly not been met. This proposal falls short in proving that State-level ZEC programs, which are not otherwise preempted under the FPA, result in price suppression in wholesale markets. In fact, the mechanisms in the April 9, 2018, proposal would likely result in higher electricity bills for consumers with no corresponding public benefit.

Mr. Chairman and Commissioners, I am concerned that FERC approving the April 9, 2018 request would be contrary to the public interest by undermining State policies that lower harmful emissions, while also discouraging other States from taking the lead in promoting clean energy generation with just and reasonable rates. Would you agree that upholding federal statute and maintaining states' authority should be a FERC priority?

> **Answer:** I am not able to comment on the nature or timing of FERC's action on pending proceedings. In general, many state policies focus on the significant externalities associated with electricity generation. Addressing these externalities is at the core of the authority over "generation facilities" that Congress gave to the states when it enacted the FPA. Rather than interfering with state policies that address externalities associated with electric generation, such as greenhouse gas emissions that contribute to the existential threat of climate change, I believe that the Commission should be striving to accommodate and give effect to those state initiatives.

Question 2: On May 18, 2018, FERC issued a 3-2 decision restricting NEPA considerations on climate change for future natural gas pipeline projects. This decision stated that upper-bound estimates to understand climate impacts will no longer be considered if the effects are not cumulative or indirect impacts. They further state that analysis to understand the climate impacts from natural gas production and consumption will only be conducted "when those effects are sufficiently causally connected to and are reasonably foreseeable effects of the proposed action."

While forecasts should always be reasonable, incorporating uncertainty is vital in understanding the full range of potential impacts. We cannot know what is "sufficiently likely" if we do not do our due diligence by using available modeling tools to fully understand potential upstream and downstream activities, the resulting impacts, and their probabilities.

Mr. Chairman and Commissioners, in the case of natural gas and understanding possible downstream activities, is it not reasonably foreseeable that the gas will likely be combusted? Do available tools allow for estimates of resulting greenhouse gas emissions?

> **Answer:** I agree it is the Commission's obligation to thoroughly consider the environmental impacts of each pipeline application. The National Environmental Policy Act requires

agency consideration of not only the direct environmental impacts, but also indirect impacts which are reasonably foreseeable. For downstream emissions, where the Commission may not have exact information regarding the expected use of the transported gas supply, the record often includes information to conclude that it is reasonably foreseeable that the gas will ultimately be combusted and result in greenhouse gas emissions. The Commission has developed useful methodologies and expertise to calculate the expected greenhouse gas emissions associated with downstream consumption, as applied prior to the policy change. The Commission also has applied a methodology from the U.S. Department of Energy's National Energy Technology Laboratory to calculate potential greenhouse gas emissions associated with incremental upstream natural gas productions, particularly methane. Finally, in the open Notice of Inquiry of the Certificate Policy Statement (Docket No. PL18-1-000), the U.S. Environmental Protection Agency submitted to the record additional information and available tools to support the Commission's effort in evaluating upstream and downstream greenhouse gas emission impacts.

Question 3: In a recent case in Illinois, an electric company was able to collect a refund of just over $6 million from a transmission company that was overcharging subtransmission rates. With this refund, the electric company was able to refund their customers the overcharges from the date of when the complaint was filed with FERC, as mandated under the Federal Power Act (FPA). Conversely, this option is not available to natural gas consumers under the Natural Gas Act (NGA). For natural gas transmission complaints, a company is only able to pay lower rates after the FERC resolves the complaint, with no opportunity to recover the overcharges collected previously – likely a period of several years.

FERC has issued a Notice of Proposed Rulemaking and a Notice of Inquiry to revise interstate pipeline tariff rates where a reduction in the corporate tax rate has resulted in over collections. The Natural Gas Act does not allow for refunds of over collections, resulting in consumers paying pipelines for costs they are not incurring.

Mr. Chairman and Commissioners, are there any mechanisms that FERC can use to refund these over collections? If not, do you agree that FERC should have the authority to refund over collections under the Natural Gas Act in the same way it has the authority under the Federal Power Act?

Answer: It is essential that Congress amend the Natural Gas Act to include the same refund authority that exists pursuant to the Federal Power Act. As written today, the Natural Gas Act will permit natural gas pipeline companies to unduly delay changing their rates to reflect the recently enacted federal tax rate reductions. In turn, these companies can reap a windfall through rates established using the prior tax levels without any risk that the billions of dollars in excess income will have to be refunded to consumers. Natural gas consumers deserve the same protections Congress has provided to electric ratepayers.

June 7, 2018

The Honorable Lisa Murkowski
Chairman
Senate Committee on Energy & Natural Resources
304 Dirksen Senate Office Building
Washington, D.C. 20510

The Honorable Maria Cantwell
Ranking Member
Senate Committee on Energy & Natural Resources
304 Dirksen Senate Office Building
Washington, D.C. 20510

Dear Chairman Murkowski and Ranking Member Cantwell:

We are writing on behalf of America's consumer-owned, not-for-profit electric utilities to respectfully request you to urge the Federal Energy Regulatory Commission (Commission) to respect state and local regulatory authority when "behind-the-meter" and other distributed energy resources (DERs) are aggregated for purposes of participating in wholesale electricity markets. We are concerned that the Commission may adopt rules on third-party aggregation of DERs that would further expand Commission regulation into areas that have traditionally been jurisdictional to states and localities under the Federal Power Act. We hope you will agree with the importance of respecting state and local jurisdiction to protect consumers' access to safe, reliable, and affordable electric service in the communities our members serve.

The Commission is now considering a proposal to enable third-party aggregators to bid DER aggregations into the wholesale electricity markets administered by independent system operators (ISOs) and regional transmission organizations (RTOs) under the Commission's jurisdiction. Because DER aggregation by third parties poses extremely local technical, economic, and policy issues, the American Public Power Association (APPA) and National Rural Electric Cooperative Association (NRECA) believe that the "relevant electric retail regulatory authority"—which may be the state public utility commission or the local governing board of a consumer-owned utility—is best positioned to decide whether to authorize third-party aggregators to transact with local retail consumers. Expressly reserving that authority to the relevant electric retail regulatory authority would also better reflect the allocation of federal and state jurisdiction laid out in the Federal Power Act.

In February 2018, the Commission issued Order No. 841, which requires ISOs and RTOs to amend their wholesale market rules to better enable electric storage resources to participate. Order No. 841 also established a separate proceeding to consider similar rule changes to enable third-party aggregators to bid DER aggregations into wholesale markets. The Commission held a technical conference on April 10–11 to gather more information before taking final action on this proposal (Commission Docket No. RM18-9-000). Comments are due in this docket on June 26, 2018.

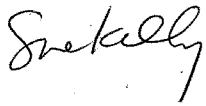
As amply explained by witnesses at that technical conference, the industry must address many complex technical questions and make substantial investments in supporting infrastructure before third-party DER aggregators can participate in wholesale markets. Such participation will require RTOs and ISOs to coordinate with local distribution utilities in ways never before needed. The ability of local utilities to continue to provide safe, reliable, and affordable electric service to their communities could be

diminished. In some communities and regions, it may make sense to move forward addressing these questions and making the needed investments; in others, it may not, at least not yet.

Although Order No. 841 does not address DER aggregators themselves, it does adopt rules governing wholesale market participation by "behind-the-meter" and other electric storage resources on local utility distribution systems that might be aggregated for this purpose. Order No. 841 does not adopt language that the Commission used when it previously provided for the participation of demand response aggregators in ISO and RTO markets (in Commission Order No. 719). That language expressly allows the relevant electric retail regulatory authority to decide whether such aggregators would be allowed to aggregate loads subject to its jurisdiction to participate in wholesale markets.

APPA and NRECA are urging the Commission to follow that wise precedent in fashioning its rules for electric storage resources and DER aggregators. For this reason, we have requested rehearing of Order No. 841. We will continue to advocate that approach in the Commission's final rule on DER aggregation. We strongly believe that this is the best long-term course to enabling these emerging technologies to benefit the consumers we serve, and we ask you for your support.

Sincerely,



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June 12, 2018

Utilities Technology Council
Statement for the Record
Senate Energy and Natural Resources Committee

Full Committee Oversight Hearing of the Federal Energy Regulatory Commission

The Utilities Technology Council (UTC) thanks Senate Energy and Natural Resources Committee Chairman Murkowski and Ranking Member Cantwell for the opportunity to submit these comments for the record in the above-referenced hearing. Established in 1948, UTC is the global trade association representing energy and water providers on their needs related to the deployment of reliable and resilient Information and Communications Technology (ICT) systems. Electric, natural gas, and water providers use ICT networks as the backbone for the infrastructure that delivers safe, reliable, and secure energy and water services. These networks are essential for the reliability, safety, resiliency, and security of utility services.

UTC commends the Committee for holding an oversight hearing of the Federal Energy Regulatory Commission (FERC), particularly in light of the Administration's focus on energy resilience issues. UTC's membership consists of energy and water entities of all sizes and ownership types, from large investor-owned utilities to small publicly and cooperatively-owned utilities often located in rural areas. Such diversity means each of our members face their own challenges in providing reliable electric, gas and water services.

More than likely the focus of today's hearing will be on the resilience of the nation's electric infrastructure, including the transmission and distribution systems which deliver electricity to all corners of the country, along with the generation resources providing such electricity. These are undoubtedly worthwhile issues to discuss. UTC would like to note that resilience is not new to the electric utility industry. Because electricity is the most essential commodity for powering our economic lifestyles and general wellbeing, our nation's utilities meet and exceed strict reliability standards in order to keep the lights on and the system resilient each and every day.

UTC takes no position on the question regarding onsite fuel resources and resilience. In comments filed this past May in FERC's ongoing resilience proceeding (Docket No. AD18-7), we indicated our recognition that our nation's utilities and regional transmission organizations (RTOs) are taking proper steps to support energy resilience.[1] As we detailed in our May 8 comments, however, we would like to highlight another aspect of energy resilience that requires this Committee's attention. Members of this Committee are well aware of the rapid transformation occurring in the energy sector. Key facilitators of this change are the ICT networks that utilities, RTOs, and ISOs deploy on their transmission and distribution systems. These networks underpin the towers, wires, and poles that deliver reliable, resilient, and affordable power safely to homes and businesses all over the U.S.

[1] UTC comments in Grid Resilience in Regional Transmission Organizations and Independent System Operators https://utc.org/wp-content/uploads/2018/05/UTC_Comments_Grid_Resilience.pdf

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Utilities use ICT networks for the following essential functions:

- Real-time monitoring of medium and high-voltage networks
- Protective relays
- Energy management
- Outage management
- Distribution management
- Smart metering
- Substation automation

These networks improve the reliability and resiliency of the grid by supplying real-time situational awareness to control-room operators. Additionally, these networks enable integration of distributed energy technologies such as battery storage, smart meters, rooftop solar, and the development of Smart Cities.

For the most part, utilities have built and maintained their own ICT networks, which operate on both wireless and wireline technologies. Depending on the size, location, terrain, and geography of a utility's service territory, along with the expense of laying fiber lines to these potentially remote locations, many utilities rely on wireless communications for substantial parts of their ICT networks.

Like any wireless network, utility ICT systems need radio frequency spectrum to function, and the reliability of the wireless communications can be affected by radio frequency interference. Interference, which occurs when there is too much wireless traffic in a particular spectrum band, can displace signals, potentially disabling the ability of a critical wireless transmission to reach its destination. Because of the critical nature of utility services, interference within their ICT networks is intolerable. Therefore, access to adequate and interference-free spectrum is required if these networks are to work as intended. Although spectrum policy resides at an agency outside of this Committee's jurisdiction—the Federal Communications Commission (FCC)—we encourage members of this Committee to consider the importance of interference-free spectrum to the continued reliable and resilient operation of the nation's energy systems.

Spectrum policy is managed by the FCC under the Communications Act of 1934[2]. Under law, the FCC is required to manage spectrum in the public interest. In the Balanced Budget Act of 1997, Congress authorized the FCC to award spectrum through auction, although it also exempted utilities from competitive bidding of spectrum, given the importance of utility services to the country[3]. Despite this congressional requirement, the FCC continues to treat utilities as any other commercial entity when it comes to spectrum acquisition. As a result, utilities often find themselves unable to compete with other enterprises for interference-free spectrum. As this Committee knows—the nation's electric utilities deliver essential public services to all Americans. FERC's own regulations require electric utilities to meet stringent reliability standards in order to provide the highest levels of reliable service as demanded by the government and, more importantly, the industry's customers. Although spectrum policy is managed by the FCC, we have asked both FERC and the FCC to consider establishing formal and

[2] See Communications Act of 1934, as amended, 47 U.S.C. § 151 et seq.
[3] H. Rept. No. 105-217, Section 3002(a), (1997)

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recurring meetings so as to acknowledge the interdependencies between the utility industry and the communications sector. Today, we ask that this Committee support this endeavor.

As the energy and telecommunications industries become more interdependent, policy issues impacting both sectors must be addressed comprehensively. This Committee understands the importance of electricity to our nation's wellbeing and could help advance good-governance policies by encouraging cross-jurisdictional discussions. If the transition to a smarter, more consumer-centric, distributed utility industry is going to be realized, a clear recognition of these cross-sector interdependencies must be understood and collaboration across government must occur regardless of jurisdictional boundaries.

FERC has held routine meetings with other federal agencies including the Nuclear Regulatory Commission, the Department of Energy, and the Environmental Protection Agency. On behalf of our members, we ask the Committee to encourage FERC to consider extending its outreach to the FCC as well.

Thank you for the opportunity to submit these comments. UTC is supportive of efforts to analyze grid resilience and appreciates your consideration of our concerns.

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