

THE STATE OF THE BULK POWER SYSTEM

HEARING
BEFORE THE
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
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THE STATE OF THE BULK POWER SYSTEM

WEDNESDAY, MARCH 25, 2026

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

The Committee met, pursuant to notice, at 9:30 a.m. in Room SD-366, Dirksen Senate Office Building, Hon. Mike Lee, Chairman of the Committee, presiding.

OPENING STATEMENT OF HON. MIKE LEE, U.S. SENATOR FROM UTAH

The CHAIRMAN. Good morning. The Committee will come to order.

Today, the Committee will receive testimony on the current state of the bulk power system in the United States. Before giving my opening statement, I will set forth how exactly we are going to proceed this morning. Ranking Member Heinrich and I will each give our opening statements, followed by witness testimony, and then we will move to questions. Members of the Committee will be recognized in order of seniority for those who were here at the gavel, and based on the order of arrival for those arriving after the gavel. I also want to thank Ranking Member Heinrich and his team for working with us on today's hearing.

This hearing is one of a series on the importance of permitting reform to inform our Committee's deliberations on the challenges facing the nation's bulk power system and what Congress should do to address them. We will hear from three experts on this matter. They are Travis Fisher, the Director of Energy and Environmental Policy Studies at the Cato Institute, Todd Snitchler, President and Chief Executive Officer of the Electric Power Supply Association, and Dr. Liza Reed, Director of Climate and Energy at the Niskanen Center. On behalf of the Committee, I want to thank each of you for being here, and we look forward to hearing your testimony.

We are facing a growing imbalance between supply and demand. Over the last decade, we in the United States have retired dozens of gigawatts of reliable, dispatchable generation. For a time, that may have been manageable. Demand was relatively flat. The system had some margin. But that is no longer the case. We are entering a period of sustained demand growth that will require more and more dispatchable energy. Data centers, advanced manufacturing, the electrification of vehicles and home appliances—these are structural changes in our economy that require really large amounts of electricity around the clock. Our grid was designed to

meet peaks. Most of the time it operates with excess capacity. But that cushion is shrinking. In some regions, the margin is already gone and we are running out of headroom. And without additional supply, we face severe consequences—higher costs, greater volatility, and increased risks to reliability.

Some look at this surge in new demand and suggest that the solution should be to limit demand, to slow or restrict data center development, to constrain growth. I don't believe that's consistent with how this country approaches or ought to approach opportunity. The United States has never faced challenges—certainly has never solved them—by capping progress. We solve them by building. The better path is to unlock new supply—to ensure that our regulatory framework allows infrastructure to be built in a timely and a predictable way, to ensure that markets are structured to send the right signals to attract investment, and to ensure that reliability remains the foundation of the system. The Federal Power Act envisioned a robust and interconnected grid, one that spreads costs, one that provides redundancy built into its own system, one that delivers affordable electricity reliably to consumers. That idea still matters, but it requires a system that can respond to these changing conditions.

Right now, we are falling behind that need. Permitting delays are slowing projects across all forms of energy infrastructure. Market distortions are affecting investment decisions, and the pace of innovation in the electricity sector is not where it needs to be. So, we have an opportunity in front of us. If we allow supply and demand to function, if we modernize permitting, and if we ensure that markets are truly competitive, we can solve this challenge. But if we don't, the imbalance we are seeing today will become more severe and the consequences will be felt by American households and businesses.

This hearing is about understanding those risks and identifying solutions to meet them: how can we reform permitting at the federal level? How can we build a regulatory framework that supports reliability and affordability? And how can we foster the kind of innovation the electric sector requires amid this very rapid demand growth? America needs to build and we need to do it in a way that keeps ratepayers at the center of our decisions. This is the standard that we should be aiming for—the benefit to the consumer.

I look forward to hearing from our witnesses.

And now, the Chair recognizes Senator Heinrich, the Ranking Member of the Committee.

**OPENING STATEMENT OF HON. MARTIN HEINRICH,
U.S. SENATOR FROM NEW MEXICO**

Senator HEINRICH. Thank you, Chairman Lee, for holding this hearing on the state of the bulk power system.

The power grid is deeply personal for me. My father, Pete Heinrich, was an IBEW lineman for many decades. However, our grid is undergoing strain from rising electricity demand, largely driven by data centers, advanced manufacturing, and electrification. The demand for electricity is significantly outpacing the rate at which new low-cost generation can connect to the grid. This imbalance has led to electricity bills rising by as much as 13 percent since

President Trump took office. These rising costs are made worse by the administration's fossil-only agenda, which includes propping up uneconomic coal plants, stalling 116 gigawatts of new capacity from coming online, canceling clean energy projects, and starting a war with Iran that is driving up oil and gas prices.

Fortunately, there is a way to bring down electricity costs while strengthening the grid's reliability and resilience. Doing so means taking four "no regrets" actions. First, we need to get more out of the grid that we have. Grid-enhancing technologies (GETs) can unlock 20 to 100 gigawatts of additional capacity when demand is highest. These solutions cost less than one-quarter of the traditional upgrade costs, and can be deployed in three to five years. GETs could reduce grid congestion by 40 percent or more, saving customers \$4 to \$8 billion dollars a year.

The distribution system represents another opportunity to get more from the grid. The U.S. already has 30 to 60 gigawatts of distributed energy resources operating together like a single power plant—referred to as a virtual power plant. Technology providers are already offering the software and hardware allowing data centers to act as VPPs. Deploying another 60 gigawatts could save consumers \$20 billion by 2030. But these are not silver bullet solutions for long-term growth. We must also build high-voltage transmission lines to reduce congestion and reliability risks. Transmission congestion cost consumers \$12.1 billion in 2024 alone. Perhaps even more important, interregional transmission helps keep the lights on during extreme weather by allowing regions to share electricity. Yet, interregional transmission made up only two percent of new circuit miles installed between 2011 and 2020.

Third, we need to bring low-cost generation online faster. More than 2,000 gigawatts of new power plants are stuck in interconnection queues, nearly double the capacity of the existing power plant fleet. Bringing even 10 percent of capacity in queues online in the region would have saved customers \$3.5 billion.

Fourth, new large loads, especially data centers, must bear the costs associated with them coming online. It cannot be on the back of other customers or ratepayers. Data centers want fast, reliable power and are already willing to fund upgrades. Furthermore, one study found that if large loads agree to be flexible with their energy use at a one-percent curtailment rate, the U.S. could unlock 126 gigawatts of new capacity. This creates a once-in-a-generation opportunity to leverage private capital.

The grid is a national asset, like the interstate highway system, ports, or broadband. It is the delivery network for the economy's most universal commodity—electricity. And now is the time to invest in a grid for growth. I very much look forward to this discussion, Chairman.

The CHAIRMAN. Thanks so much.

We will now proceed to our opening statements from our witnesses.

Mr. Snitchler, we will hear from you first.

**STATEMENT OF TODD SNITCHLER, PRESIDENT AND CEO,
ELECTRIC POWER SUPPLY ASSOCIATION**

Mr. SNITCHLER. Chairman Lee and Ranking Member Heinrich, good morning and thank you for the opportunity to come before the Committee to discuss the state of the bulk power system, including the dual mandates of ensuring both grid reliability and electric affordability. My name is Todd Snitchler, and I am the President and CEO of the Electric Power Supply Association (EPSA). EPSA is the national trade association that represents America's competitive power suppliers that compete in all regions of the country that utilize competitive wholesale power markets. Please note that my testimony represents the positions of EPSA, but not necessarily the views of any particular member.

EPSA's members own and operate approximately 225 gigawatts of generating assets, including dispatchable, intermittent, and storage resources across all the RTOs in the country. EPSA's members also share a deep commitment to electric grid reliability. As you know, for the first time in decades, demand for electricity is rising and is expected to rise significantly by the end of the decade in many regions of the country. However, there is a wide disparity about just how much electricity will be needed, when the demand increases will be most prevalent, and how quickly the predicted demand will actually materialize. This uncertainty creates perhaps the greatest risk to both reliability and affordability for electric consumers, and that is the danger of over- or under-producing capacity during a time of volatile demand projections.

My written testimony includes several policies that can help ensure that our nation meets its reliability goals while protecting electric consumers from unnecessary costs or inefficient investments. Protecting consumers while delivering a reliable system will be a consistent theme throughout my testimony. First, over the last 25 years, competitive power markets have definitively proven to be the most efficient and transparent ways to meet our nation's electricity needs while protecting electricity consumers from inefficient investment. How do markets protect ratepayers? When competitive power suppliers, like our members, invest in generation assets, they do so without guarantees for cost recovery and an approved rate of return. The risk of investing in those generation resources remains on the developers and owners of the plants and not the ratepayer.

There are a few ways to help achieve this outcome. First, EPSA encourages policymakers and regulators to continue their commitment to well-functioning competitive wholesale energy markets. Second, an investment environment that encourages and incentivizes voluntary, bilateral, or physical co-location agreements could be transformative in sparking critical investment. Voluntary, bilateral contracting and co-location isolates the investment risk to the contracting parties and should be encouraged wherever possible. Third, as I previously noted, the energy industry is tasked with diagnosing how much additional electricity demand is coming, when it will materialize, and where it will be located. The consequences of inaccuracies could include both reliability shortfalls and investors left with stranded generation assets, which in some non-market regions are backstopped by captive electricity cus-

tomers. In short, accurate load forecasting is foundational and the very core of whether our nation will sufficiently and affordably meet future demand for electricity. EPSA remains engaged with grid operators, regulators, and policymakers to identify ways to ensure that more accurate load forecasts are there for growing demand.

Fourth, permitting reform is perhaps the most impactful benefit that Congress can provide the energy industry to improve reliability and assist in the affordability effort. For brevity's sake, I include several specific policy areas where permitting reform would be particularly helpful in my written testimony. And finally, EPSA believes that any discussion about retail electricity rates should include a close examination of the economic drivers impacting those retail bills. A pair of unaffiliated independent studies in 2025 concluded that increases in retail electricity rates in the last few years are not solely the result of generation charges, rather, the sustained spending on transmission and distribution infrastructure and state policies that have driven higher costs. To be clear, this is not a criticism of necessary utility investment and distribution and transmission assets. Instead, EPSA believes that it is important to identify the economic drivers that impact retail energy bills as regulators are determining where to place investment risk and how to solve these complicated issues.

EPSA and our members maintain a strong commitment to reliability and stand ready to help the nation meet its growing reliability and energy needs. I thank you again for the opportunity to be here today, and I look forward to answering your questions.

[The prepared statement of Mr. Snitchler follows:]



Testimony of Todd Snitchler, President & CEO, Electric Power Supply Association

**Before the U.S. Senate Committee on Energy & Natural Resources
March 25, 2026**

HEARING TO EXAMINE THE STATE OF THE BULK POWER SYSTEM

Chairman Lee and Ranking Member Heinrich, thank you for the invitation to join today's important discussion. On behalf of the competitive power supplier community represented by the Electric Power Supply Association (EPSA),¹ we appreciate the committee's continued focus on both electricity affordability and the present and future reliability of the nation's electric grid during a time of substantial growth in electricity demand. Given the importance of the affordability of electricity, and EPSA's unrelenting commitment to electric grid reliability, I am pleased to highlight how EPSA's policy and regulatory priorities strive to ensure both an affordable and reliable bulk power system.

EPSA is the only national trade association representing America's competitive power suppliers.² EPSA members own and operate approximately 225,000 megawatts (MW) of reliable and competitively priced, environmentally responsible generation facilities in all seven U.S. regions operating competitive wholesale energy markets – markets overseen by an Independent System Operator or Regional Transmission Organization (ISO/RTO), and with one exception, regulated by the Federal Energy Regulatory Commission (FERC).³ EPSA member assets are comprised of a diverse mix of fuels and technologies, including natural gas, nuclear, wind, solar, hydropower, battery storage, geothermal, and coal.

It seems as if a new load forecast announcing significant demand growth not seen in decades is announced almost weekly. It is not an overstatement to say that our nation is at an inflection point relative to demands on the electric grid, and whether these demand increases are driven by the construction of data centers to win the global race to develop Artificial Intelligence (AI), increased domestic manufacturing, digital currency mining, or electrification policies, our nation will need far more electricity in the coming decade (and beyond) than we currently produce. How much more, and when and where that demand will materialize, remains less certain. This uncertainty is not specific just to electricity *demand* but extends to the policy and regulatory environments for building new (and maintaining existing) *supply* as well.

It is this uncertainty that creates perhaps the greatest risks to both reliability and affordability for electricity consumers – the dangers of significantly under- or over-producing capacity during a time of volatile demand projections.

¹ This testimony represents the position of EPSA as an organization, but not necessarily the views of any particular member with respect to any issue.

² <https://epsa.org/about-epsa/>

³ Competitive markets in Texas, administered by the Electric Reliability Council of Texas (ERCOT), are not subject to FERC jurisdiction but rather are regulated at the state level.

Fortunately, there are policy and regulatory tools available to hedge this uncertainty. For your consideration, EPSA has identified five solutions (and one word of caution) where both policymakers and regulators can sharpen a simultaneous focus on reliability and affordability while accounting for volatile and constantly shifting demand forecasts. These solutions include continuing to harness the benefits of competitive wholesale energy markets; encouraging bilateral (or co-located) agreements; improving load forecasting; enacting statutory permitting and siting reform; and recognizing that the drivers of recent increases in retail electricity rates – spending on investment other than generation – is regulated at the state level.

I. A COMMITMENT TO WELL-FUNCTIONING COMPETITIVE WHOLESALE ENERGY MARKETS IS THE MOST CONSEQUENTIAL AND IMPACTFUL WAY TO PROMOTE ESSENTIAL INVESTMENT IN GENERATION WHILE PROTECTING RATEPAYERS FROM INEFFICIENT INVESTMENT

Over the last 25 years, competitive markets administered by ISOs/RTOs have definitively proven to be the most efficient and transparent way to meet our nation's electricity needs at the lowest cost while protecting electricity customers from inefficient investment. Well-functioning competitive markets support a reliable power system, foster competition, reward innovation and efficiency, and drive emissions reductions.⁴

However, competitive markets offer more than electric grid reliability. When investors in power plants – like EPSA members – choose to build new assets or upgrade existing facilities, they do so without a guaranteed rate of return or cost recovery for their investment. Competitive power suppliers rely on markets to send efficient price signals for when and where investment in capacity is required (or not required) and compete for the opportunity to recover their costs through those markets. Competitive markets do not offer a negotiated, guaranteed return on equity (ROE) or rate of return for asset owners. If competitive power suppliers make investments that prove to be inefficient or unnecessary, the investors bear the cost of that mistake. The risk of investing in generation remains on the developers and owners of power plants – *not the ratepayer*.

Of course, investment in power plants is a multi-decadal decision. As is true of all state or regional long-term planning efforts relating to the bulk power system, competitive power suppliers make assumptions about future demand and predictions about how regulatory and political environments will prefer to meet expected demand. However, when incorrect assumptions are made, preferences change, or unpredictable macroeconomic events arise to affect the supply/demand of electricity, competitive power suppliers shoulder the financial burden. One need only think back over the last 25 years to consider the unforeseeable events of significant consequence – including the shale gas revolution, the pace of technology change, the rise of accelerated large load additions to the system, and the ever-evolving political landscape – to recognize the folly in assuming that there is a perfect foresight in the electricity supply industry over the next few decades. That guaranteed uncertainty is why EPSA so strongly advocates for markets that immunize electricity customers from the risk inherent in multi-billion-dollar decisions made about investments in power plants.

⁴ <https://epsa.org/getting-to-the-truth-on-competitive-electricity-markets/>

In short, competitive markets keep the cost of inefficient investment on investors' balance sheets and not on retail electricity bills. For brevity's sake, I will briefly highlight a few other issues regarding EPSA's support for competitive wholesale markets.

- Much attention has been paid to clearing prices in the last three Base Residual Auctions (BRAs) in the PJM Interconnection region. PJM is perhaps the epicenter of the national challenge over the effect of data center development on electricity customers and ensuring that the affected states have sufficient capacity to meet rising demand for electricity.⁵ PJM is in the midst of an intensive stakeholder process to arrive at both short- and long-term solutions to this challenge, and competitive power suppliers are intently engaged in those discussions.

What has received far less attention is the response from competitive power suppliers to higher clearing prices in the BRA. For three capacity auctions prior to the 2025/2026 delivery year, capacity prices in PJM were at record low prices – clearing at or below \$50/MW-day.⁶ However, the auction covering the '25/'26 delivery year (and in the subsequent two BRAs) sent a dramatically different message – PJM needs additional capacity to power the system. I'm proud to say that competitive power suppliers not only heard that message but responded with vigor. Since the '25/'26 BRA results were announced in July 2024, competitive power suppliers have announced over 12 *gigawatts* of new capacity through new investment, uprates, or delayed retirements.⁷ The market is responding as quickly as practicable to a dramatic reversal in price signals.

PJM is grappling with a substantial forecasted increase in demand for electricity, and there is much work yet to be done. But as PJM, stakeholders, and regulators are challenged to find and implement appropriate solutions, we should continue to financially protect ratepayers by ensuring that unnecessary investments or investments that run over budget don't find their way into retail electricity rates.

- While often referred to as “deregulated,” competitive markets are, in fact, subject to significant regulation and are better described as “restructured.” While *states* (noting the caveat of Texas) *do not* have jurisdiction over wholesale markets, markets are subject to multiple and ever-present layers of thorough regulatory oversight. ISOs/RTOs may have independent market monitors internal to their organization working concurrently with separate independent external market monitors, both of which are backed up by the federal regulator – FERC – to constantly monitor and oversee the appropriateness of bids and clearing prices in competitive markets. Electricity customers can be assured that whether wholesale markets are sending an hour-long signal for short-term electricity generation, or offering a year-long commitment for capacity, there is a “cop on the beat” closely watching wholesale market outcomes. Further, ratepayers also should be mindful that *state* regulators oversee and approve their *retail* electricity rates, which include the cost of wholesale generation.

⁵ PJM was also perhaps the epicenter of Winter Storm Fern, bearing the brunt of bitter cold temperatures throughout the Eastern United States in late January, and operating the grid at near peak demand for one of the longest durations in PJM's history. The experience underscores the importance of a well-prepared fleet of dispatchable resources, and as Senator King is fond of saying, “building the church for Christmas Eve Mass” (relating to the importance of meeting peak demand).

⁶ In the three PJM BRAs prior to the '25/'26 delivery year, resources clearing prices were \$28.92 ('24/'25), \$34.13 ('23/'24), and \$50 ('22/'23).

⁷ https://epsa.org/wp-content/uploads/2025/12/P3-New-Generation_One-Page.pdf

- Competitive markets have enabled significant emissions reductions from generation fleets in ISO/RTO regions over the last 25 years. Nationwide, emissions from the overall U.S. power generation sector have fallen dramatically since the advent of competitive markets. Markets administered by ISOs/RTOs reward efficiency and innovation, and in regions where fuel costs and efficiency are significant drivers of competitiveness, the least-cost, most efficient resources will be rewarded. A commitment to wholesale markets has driven emissions and wholesale energy costs down, while improving electric grid reliability.
- EPSA acknowledges that the effect of increased U.S. exports of liquefied natural gas on retail electricity rates is a hotly debated topic. It is notable that despite dramatic increases in LNG exports over the past decade, on balance domestic natural gas prices have remained remarkably stable. However, “affordability” advocates should be mindful that no matter how much LNG is shipped from the U.S., inadequate domestic fuel supply *infrastructure* can have a far greater impact on ratepayers in regions that are unwilling to ensure that a sufficient supply of deliverable fuel can benefit electricity customers.

New England offers a cautionary tale. On the coldest days of the year, New England does not have the necessary supply infrastructure to ensure sufficient levels of natural gas to adequately supply needs for home heating and power generation, requiring the grid operator to lean heavily on older, less efficient oil-fired generators to ensure reliability. January brought bitter cold temperatures to supply-constrained New England, and as a result, natural gas – and wholesale energy – prices increased substantially. The average price of natural gas in New England exceeded \$24/MMBtu for the month – up nearly 63% from December 2025.⁸ Wholesale energy prices in January were 19% higher than December and 14.5% higher than January 2025. When considering the “affordability” of retail rates, it is important to ensure that insufficient fuel supply infrastructure does not adversely raise fuel prices (and thus electricity prices).

II. VOLUNTARY BILATERAL AGREEMENTS, INCLUDING PHYSICALLY “CO-LOCATED” PARTNERSHIPS – WHICH ISOLATE INVESTMENT RISK BETWEEN COUNTERPARTIES – SHOULD BE ENCOURAGED AS A VEHICLE TO PROTECT RATEPAYERS

The growing interest in voluntary bilateral partnerships between power plants (both existing and new) and large demand customers (like data centers) embody the competitive characteristics and ratepayer protection that wholesale markets encourage. Bilateral financial contracts are not new to competitive markets. Both the supply and demand sides of competitive markets have entered into bilateral agreements for years. However, discussions have recently broadened to include physically co-locating large loads with generation that in some cases may be behind-the-meter entirely. Whether limited to bilateral contracts, or including physical co-location, data centers and generators can drive a more rapid buildout of new infrastructure that *isolates the investment risk to the contracting parties and protects ratepayers from shouldering the cost of any inefficient investment.*

EPSA supports allowing large demand customers to procure their own new generation to provide certainty over their supply cost. For an investor like a hyperscaler, the benefit is a hedge against possible long-term price volatility. For a generator, the upside is certainty of revenue over a given period – a benefit that is rare for competitive power suppliers over a multi-year period. EPSA believes that co-location has the potential to accelerate development of new resources and is consistent with the long-standing use of bilateral agreements.

⁸ <https://isoneewswire.com/2026/02/25/monthly-wholesale-electricity-prices-and-demand-in-new-england-january-2026/>

When considering bilateral agreements and/or co-location, it is important to keep in mind timelines for development. Regarding *dispatchable* generation, it takes four or more years to build a new natural gas power plant, while data centers can be built in a fraction of that time.⁹ “Bring your own generation” (BYOG) discussions should be mindful of the practical implication that – in the short-term – BYOG is likely a pairing with an existing generator if the timeframe for data center development is before the end of this decade.

EPSA appreciates and acknowledges all the work that FERC has done – and continues to do – to determine the best way to interconnect large loads while addressing the responsibilities of data centers to shoulder the cost of their energy development and interconnection. There are few blueprints or precedents for FERC to reference, and this issue does not have a single, silver bullet solution. However, a regulatory *and statutory* environment that encourages and incentivizes voluntary bilateral/co-location agreements could be transformative in sparking a wave of innovative investment that can bolster overall electric grid reliability while isolating ratepayers from bearing the cost of inefficient or unnecessary buildout.

III. BOTH COMPETITIVE MARKETS AND TRADITIONALLY REGULATED UTILITIES USE DEMAND FORECASTS AS THE FOUNDATION ON WHICH TO BUILD NEW GENERATION – BLOATED, ASPIRATIONAL, OR IRRATIONAL FORECASTS LEAD TO INEFFICIENCIES AND UNNECESSARY INVESTMENT

The investments required to ensure U.S. dominance over the development of AI and a domestic manufacturing renaissance begin with answers to several important questions. As I mentioned above, the energy industry is tasked with diagnosing how much additional electricity demand is coming, when it will materialize, and where it will be located. These are difficult questions to answer, and the consequences of inaccuracies include both reliability shortfalls and investors left with stranded generation assets, which in some (non-ISO/RTO) regions are backstopped by captive electricity customers.

Thus, we should not rush headlong into potentially trillions of dollars of energy infrastructure investments without a calculated and realistic projection for what infrastructure is needed. In short, accurate load forecasting is foundational – and at the very core – of whether our nation will sufficiently and affordably meet future demand for electricity.

For an example of how rapidly (and significantly) demand forecasts evolve, in early October 2025, it was reported that an investor-owned utility (IOU) in Ohio reduced its previous demand forecast from data centers from 30 gigawatts to 13 gigawatts and has since been further reduced to 5.7 gigawatts – a meaningful reduction resulting from a tariff change that set out the requirement of a financial commitment from data center developers to address their electricity needs.¹⁰

Accurate load forecasting is critical to ensure that we neither fail to meet the needs of the nation nor spend billions of dollars in capital on what may become stranded assets should load fall short of expectations. Thoughtful load forecasts take time and require more than basing projections on mere inquiries, and EPSA understands that the nation must move quickly to encourage and provide an adequate electricity grid for these investments. But allowing unrealistic or speculative projects to skew demand assumptions – instead of demanding disciplined forecasting – will only harm ratepayers by increasing costs and adding resources that may or may not be needed. EPSA remains engaged with regional grid

⁹ The pressures affecting the building of new dispatchable generation are not unique to competitive power suppliers – rather these challenges are affecting *all* generation developers equally. There is no region in the United States, restructured or vertically integrated, where new dispatchable generation can sidestep the time-consuming processes and supply chain challenges also affecting competitive power suppliers.

¹⁰ <https://www.datacenterdynamics.com/en/news/aep-ohio-slashes-data-center-pipeline-by-more-than-half-report/>

operators and regulators to identify ways to ensure more realistic, accurate, and verifiable forecasts for this growing demand.

IV. PERMITTING REFORM IS PERHAPS THE MOST IMPACTFUL BENEFIT THAT CONGRESS CAN PROVIDE THE ENERGY INDUSTRY TO IMPROVE RELIABILITY AND ASSIST IN “AFFORDABILITY” EFFORTS

For years, generators were often frustrated by prolonged waits in regional interconnection queues to receive interconnection agreements (IAs). However, due to recent efforts in virtually all markets, queue processes continue to deliver meaningful improvements and faster processing times. The current dilemma, however, is energy generators are now experiencing a glut of proposed investments that have received IAs yet continue to be stymied when trying to navigate the permitting process. For example, there are more than 71 gigawatts of resources through the queue in the PJM Interconnection that are not yet adding electrons to the system or under active construction and development.¹¹ In March, the Midcontinent ISO (through its Commercial Operations Date Report) indicated that it had cleared over 75 gigawatts of proposed investment through its queue that now have interconnection agreements that have not yet been constructed, with over 40 gigawatts of that generation “delayed” having run into various hurdles to completion and operation.

EPSA appreciates the broad support for statutory permitting reform in Congress. Permitting reform will minimize development costs and lead to the more efficient construction and interconnection of new generation. However, EPSA recognizes that “permitting reform” can be a nebulous, undefined concept, and would like to highlight several specific examples of excellent work already done on permitting reform (recognizing that the Senate Environment & Public Works Committee also has a key role to play in Senate discussions).

- H.R. 4776,¹² the Standardizing Permitting and Expediting Economic Development (SPEED) Act includes bipartisan language that attempts to provide permitting certainty to protect projects across administrations. Power plants are multi-decade assets – investors value certainty and now is the time to reverse the precedent of permitting whiplash (affecting both dispatchable and intermittent generation) and provide stability to investors.
- In September 2024, EPSA joined an amicus brief¹³ at the U.S. Supreme Court in *Seven County Infrastructure Coalition v. Eagle County, Colorado*, supporting the petitioner’s challenge to what has become an expansive approach to the effects assessed by federal agencies in their National Environmental Policy Act (NEPA) environmental reviews of new infrastructure projects. The SPEED Act provides valuable codification of the NEPA reforms outlined in the Court’s *Seven County* ruling.

¹¹ <https://epsa.org/pjm-interconnection-reform-permitting-barriers/>

¹² <https://www.congress.gov/bills/119th/congress/house-bill/4776>

¹³ <https://epsa.org/wp-content/uploads/2024/09/Supreme-Court-23-975-Seven-County-Merits-INGAA-et-al-Amicus.pdf>

- In the prior Congress, this committee passed the Energy Permitting Reform Act.¹⁴ Title I of the bill includes prudent and responsible guardrails on the legal process for awards and review of key federal permits. EPSA appreciates the inclusion of reasonable timelines for the legal process to unfold and to prevent drawn out, undefined delays in federal permitting. Title V of the bill would wisely create a process for FERC to harness the expertise of the North American Electric Reliability Corporation (NERC) when considering possible adverse impacts on electric grid reliability of proposed federal rules. The language does not appear to put a significant onus on FERC, as its role appears to be limited to directing NERC to conduct reliability analyses and to make those studies public.

As permitting reform negotiations have now restarted in earnest, Senators need not reinvent the wheel when valuable work on impactful reforms has already been done; instead, the Senate can utilize the existing work product to more expeditiously address these crucial issues and deliver development wins for the nation.

- V. RECENT STUDIES HAVE CONCLUSIVELY SHOWN THAT INCREASES IN RETAIL ELECTRICITY RATES HAVE BEEN DRIVEN BY SPENDING ON TRANSMISSION & DISTRIBUTION – NOT FROM GENERATION.

In 2025, both the Lawrence Berkeley National Laboratory¹⁵ (LBNL) and Energy Tariff Experts¹⁶ (ETE, in conjunction with EPSA) released findings from separate studies identifying drivers of retail rates. Both studies – conducted independent of one another – returned remarkably similar conclusions. Increases in retail electricity rates in the last few years *are not* the result of investment in new generation – rather, spending on transmission & distribution (T&D) infrastructure has resulted in higher costs.

LBNL summarized its findings by noting that “Distribution (and transmission) expenditures have contributed to retail price increases, whereas direct generation costs have declined nationally ... Over the last two decades, aggregate investor-owned utility (IOU) spending on distribution and transmission increased in real, inflation-adjusted terms, whereas expenditures on generation generally declined.” LBNL identified several drivers of this T&D spending, including replacing aging equipment, hardening and resilience upgrades, and supply chain challenges. While these upgrades may be necessary, captive electricity customers incur the cost directly.

Regarding the ETE study, which focused specifically on the PJM Interconnection region, the analysis examined “average residential retail electric bills over the past decade to evaluate the costs of generation from the PJM Interconnection market along with other costs such as distribution, transmission, and public policy programs that make up the total bill.” The study clearly found that the cost of wholesale generation in the PJM region — as a percentage of a customer's retail bill — had held relatively steady, or in some cases even declined in the last decade. However, the study found that the cost of building electric transmission & distribution infrastructure has driven retail rate increases along with costs associated with state policy choices.

¹⁴ <https://www.congress.gov/bills/118/congress/senate/bills/4753>

¹⁵ https://eta-publications.lbl.gov/sites/default/files/2025-10/presentation_retail_price_trends_drivers.pdf

¹⁶ https://epsa.org/wp-content/uploads/2025/05/EPSA-ETE-Study_2025.5.14-FINAL.pdf

To be clear, this is not a criticism of utility investments in distribution and transmission assets. Our nation is coming out of a prolonged period of minimal increases in electricity demand, marked by lower wholesale energy prices. There will be an investment cost to not only build new generation, but for the poles and wires to improve and strengthen the transmission and distribution system. For instance, in late 2025, the Edison Electric Institute, which represents U.S. investor owned utilities, estimated that its members will spend over \$1.1 trillion on grid enhancements in the next five years.¹⁷ While these investments are valuable to reliability and grid efficiency, relative to the “affordability” discussion, it is important to identify the economic drivers impacting retail energy bills, and where regulators choose to place the investment risk.

VI. REVERSING COURSE TO ALLOW UTILITY OWNED GENERATION IN RESTRUCTURED MARKETS TURNS A BLIND EYE TO WHY COMPETITIVE MARKETS WERE CREATED, DOESN'T SOLVE THE UNDERLYING CHALLENGES TO INTERCONNECTING NEW GENERATION, AND PUTS RATEPAYERS BACK ON THE FINANCIAL HOOK FOR ILL-ADVISED INVESTMENTS

Rapid demand growth in the PJM Interconnection has led to concerns about whether sufficient capacity will be developed in the coming years to meet that demand. Some have seized on this discussion to advocate for allowing investor-owned utilities to once again build and operate power plants, reversing nearly 30 years of restructured experience. Of course, this proposition is rooted in the requirement that the cost of investing in this new generation would be paid for – with an agreed-upon guaranteed rate of return – through retail electricity rates. As noted above, should unpredictable events render the capacity unnecessary before the end of its useful life, or the technology itself obsolete, ratepayers still foot the bill plus the return on equity. Advocates for this radical change in approach argue that somehow IOUs have a much clearer line of sight into formulating *multi-decadal* projections into the long-term needs of their state/region.

Of course, even with the guaranteed profit through a captive ratebase, no generation developer has a silver bullet for navigating permitting and siting challenges. While improvements have been made, every generation developer faces the same interconnection and permitting processes, regardless of the regulatory framework. Similarly, chronic workforce and supply chain shortages (particularly for natural gas turbines and substation equipment) pose the same challenges to *all* developers and are not somehow overcome with a guaranteed ROE. So, reversing course to allow monopolies that haven't built generation in decades to suddenly put ratepayers back on the hook for new assets overlooks the core reliability and affordability tenants that prompted the creation of competitive markets nearly thirty years ago.

Thank you again for the opportunity to participate in today's hearing, and I look forward to EPSA's continued engagement with the committee on issues affecting electric grid reliability and affordability.

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¹⁷ <https://www.eei.org/-/media/Project/EEI/Documents/Issues-and-Policy/Energy-Grid/Fact-Sheet-Grid-Resilience.pdf>

The CHAIRMAN. Thank you so much, Mr. Snitchler.
Mr. Fisher, you are up next.

STATEMENT OF TRAVIS FISHER, DIRECTOR OF ENERGY AND ENVIRONMENTAL POLICY STUDIES, CATO INSTITUTE

Mr. FISHER. Chairman Lee, Ranking Member Heinrich, members of the Committee, thank you for the opportunity to testify. I am Travis Fisher. I am the Director of Energy and Environmental Policy Studies at the Cato Institute. Cato is a nonpartisan public policy research organization in Washington, DC, dedicated to the principles of individual liberty, limited government, free markets, and peace. The message I want to share today is this: America is exceptional because we uniquely value free enterprise. Our future will be bright if we can reimagine the electricity sector through the lens of American liberty.

The U.S. has one of the most remarkable electric systems ever built. It powered a century of growth, innovation, and rising living standards. In recent decades, however, electricity demand in this country has barely grown. Although we saw some competition in electricity generation, overall, the grid became slower, more regulated, and sclerotic. In fact, over the same period, many states enacted renewable portfolio standards and net-zero mandates, while federal regulations held back electricity supply. Heavy government intervention was manageable in an era of minimal growth, but that ship has sailed. Electricity demand is rising again, sharply, and that is something we should welcome. The growth in artificial intelligence, data centers, and advanced manufacturing is a sign of an expanding, dynamic economy.

But the grid can't keep up. A company can plan and finance a major data center in a matter of months, but getting power to it can take years, sometimes closer to a decade. New generation projects face the same backlogs. The grid has become the rate limiter on economic growth. We don't need to overhaul the bulk power system overnight. We need a way to meet demand quickly without overloading the system or raising costs for existing customers. Consumer-regulated electricity (CRE) is one way to do that. The idea is straightforward: allow new large-scale customers like data centers to develop off-grid power systems under voluntary contracts. These systems would be physically separate from the existing grid. That means no interconnection delays, no reliance on congested transmission networks, and importantly, no shifting of costs or risks onto existing ratepayers. The bottom line is speed. Projects can move at the pace of American businesses, not bureaucrats. That aligns with and complements the administration's focus on speed-to-power and the bipartisan consensus that we need to expand transmission. And it does so while protecting communities because it avoids the need to socialize costs or impose new burdens on the existing system.

CRE creates a parallel path for new investment that doesn't get stuck in bottlenecks. We have settled for a system that is more likely to tell a new customer, "wait a decade," than to say, "yes, we can serve you quickly." We have lost our way. In the famous 1776 pamphlet *Common Sense*, Thomas Paine wrote, "A long habit of not thinking a thing wrong, gives it a superficial appearance of being

right, and raises at first a formidable outcry in defense of custom.” That is how I feel about the past century of electricity regulation. The old way of regulating the grid is hitting the new reality of increased demand, rising rates, and growing risks to grid reliability.

As we greet this new reality, it should be abundantly clear which paths not to take. Europe remains obsessed with net zero and is de-industrializing itself with bad energy policy. China is building massive amounts of electricity generation but has doubled down on central planning and government control. We know subsidies, mandates, and central planning don’t work. What has always worked best is something simpler and quintessentially American—free enterprise. We didn’t beat the Soviets by being more Soviet than they were, and we certainly shouldn’t look to China as the paragon of good governance.

We will win the AI race because we embrace freedom like no one else. I am optimistic that we are on the verge of an AI-powered economic transformation. The question is whether our public policies will hold it back or enable it. As we approach the 250th anniversary of American independence, I urge you to apply our founding principle of free enterprise to the electricity sector.

Thank you, and I look forward to your questions.

[The prepared statement of Mr. Fisher follows:]



Testimony of Travis Fisher

**Director of Energy and Environmental Policy Studies
Cato Institute**

before the

**Committee on Energy and Natural Resources
United States Senate**

March 25, 2026

**Full Committee Hearing to Examine the
State of the Bulk Power System**

Chairman Lee, Ranking Member Heinrich, and distinguished members of the committee:

Thank you for the opportunity to testify on the state of the U.S. bulk power system. The Cato Institute is a nonpartisan public policy research organization dedicated to the principles of individual liberty, limited government, free markets, and peace. At Cato, I am the Director of Energy and Environmental Policy Studies, and my research focuses on the role of free markets in improving the availability and affordability of energy and natural resources.

I. Executive Summary

The U.S. bulk power system has become sclerotic. American families and businesses face rising utility costs, and fast-growing new sectors of the economy—especially the technology sector—struggle to secure new electricity supplies on timelines that align with their business models. Congress should address these issues by reducing regulations, removing barriers to energy production and delivery, and creating opportunities to expand power supply at the rapid pace of American entrepreneurship.

Although many of the Biden administration's policies aimed at reducing energy costs were ineffective, the Trump administration faces the same difficulty in containing costs. The way to a prosperous, high-energy future that everyone can afford is to embrace free enterprise and cut the red tape that holds back a dynamic electricity industry.

Electric energy will be the workhorse for the coming revolution in artificial intelligence (AI). Congress should unleash the nation's resources—including our unique entrepreneurship—and give Americans the best opportunity to work, grow, and flourish in the new economy.

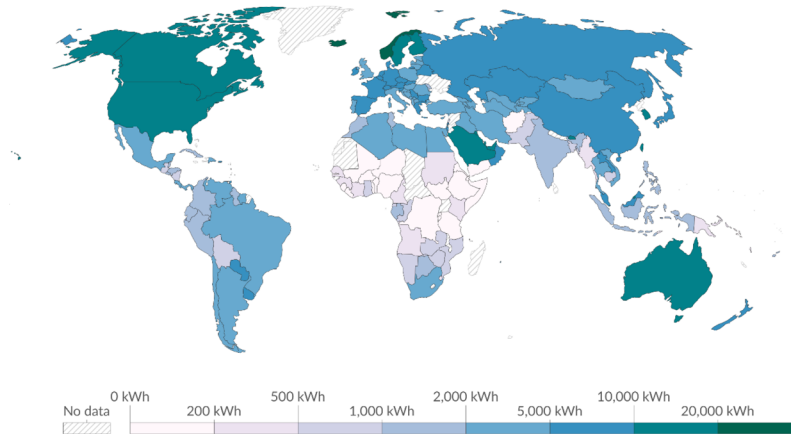
II. Electricity Is the Economy's Foundation

At the turn of the millennium, the National Academies of Engineering ranked the electric grid the greatest engineering achievement of the twentieth century.¹ The main criterion for selection was how much an achievement improved people's quality of life. There is no doubt that reliable, affordable electricity improves the lives of everyday Americans.

¹ Wm. A. Wulf, *Great Achievements and Grand Challenges*, National Academy of Engineering, Sept. 1, 2000, <https://www.nae.edu/7461/GreatAchievementsandGrandChallenges>

Per capita electricity generation, 2025

Annual average electricity generation per person, measured in kilowatt-hours¹.



Data source: Ember (2026); Energy Institute - Statistical Review of World Energy (2025); Population based on various sources (2024)
OurWorldinData.org/energy | CC BY

1. **Watt-hour** A watt-hour is the energy one watt of power delivers for one hour. Since one watt equals one joule per second, a watt-hour equals 3600 joules of energy.

Metric prefixes are used for multiples of the unit, usually:

- kilowatt-hours (kWh), or a thousand watt-hours;
- Megawatt-hours (MWh), or a million watt-hours;
- Gigawatt-hours (GWh), or a billion watt-hours;
- Terawatt-hours (TWh), or a trillion watt-hours.

Consider American families that face energy insecurity.² A Congressional Research Service report on electric utility disconnections highlighted the hardships and threats to energy security faced by many American families:

“Researchers estimate that approximately 1% of households are disconnected each year. Broader measures of energy insecurity (e.g., foregoing other necessary expenses like food or medicine) are higher, with approximately 30% of American households experiencing some form of energy insecurity. Black and Hispanic households appear more likely to be disconnected than non-Hispanic White households. For many American families, electric utility disconnections are the most significant threat to energy security.”³

² Hannah Ritchie, Pablo Rosado and Max Roser, *Access to Energy*, Our World In Data, last revised Jan. 2024, <https://ourworldindata.org/energy-access>

³ Ashley Lawson and Claire Mills, *Electric Utility Disconnections*, Congressional Research Service, Jan. 31, 2023, <https://www.congress.gov/crs-product/R47417>

Policymakers should understand the profound impacts that electricity policy can have on the daily lives of Americans. In living rooms across the country, the availability of low-cost electricity can make the difference between light and darkness, comfort and worry, or prosperity and hardship.

III. Policy Barriers to a Robust Power Grid

Unfortunately, we are still reeling from the previous administration's poor energy policies. In 2023, for the first time ever, the North American Electric Reliability Corporation (NERC) identified energy policy as a leading risk factor for electric reliability.⁴ PJM Interconnection, Inc. (PJM), the largest electricity market in North America by revenue and volume, provided an accurate outline of the concerns facing the electricity industry in its 2023 report titled *Energy Transition in PJM: Resource Retirements, Replacements & Risks*.⁵ PJM identified four major trends (the bullets below are quotes):

- The growth rate of electricity demand is likely to continue to increase from electrification coupled with the proliferation of high-demand data centers in the region.
- Thermal generators are retiring at a rapid pace due to government and private sector policies as well as economics.
- Retirements are at risk of outpacing the construction of new resources, due to a combination of industry forces, including siting and supply chain, whose long-term impacts are not fully known.
- PJM's interconnection queue is composed primarily of intermittent and limited-duration resources. Given the operating characteristics of these resources, we need multiple megawatts of these resources to replace 1 MW of thermal generation.

High prices in the recent PJM capacity auction are further evidence of strain on the PJM system. Capacity prices rose nearly ten-fold between 2023 and 2024, highlighting the increases in new demand, the high cost of early power plant retirements, and the barriers to reliable new supply.⁶

IV. New Paths to Electricity Success

Policymakers are beginning to realize the gravity of the situation and the cost of failing to meet the AI moment. Data centers are the newest consumers on the grid, and their perspective is important to consider. Economist Frederic Bastiat wrote: "Treat all economic

⁴ Robert Walton, *NERC Assessment Identifies New Risk to Grid Reliability: Energy Policy*, Utility Dive, Aug. 23, 2023, <https://www.utilitydive.com/news/nerc-assessment-new-risk-grid-reliability-energy-policy/691590/>

⁵ PJM Interconnection, Inc., *Energy Transition in PJM: Resource Retirements, Replacements & Risks*, Feb. 24, 2023, <https://www.pjm.com/-/media/library/reports-notices/special-reports/2023/energy-transition-in-pjm-resource-retirements-replacements-and-risks.ashx>

⁶ PJM Interconnection, Inc., *PJM Capacity Auction Procures Sufficient Resources To Meet RTO Reliability Requirement*, Jul. 30, 2024, <https://www.pjm.com/-/media/about-pjm/newsroom/2024-releases/20240730-pjm-capacity-auction-procures-sufficient-resources-to-meet-rto-reliability-requirement.ashx>

questions from the viewpoint of the consumer, for the interests of the consumer are the interests of the human race.” New customers on the power grid—such as large data centers—have different needs and priorities from existing customers.

Data centers need a sharp increase in electric capacity on short time frames. Yet these customers often face a wait time of several years before they can interconnect to the grid. Further, the generators that would serve them also face long interconnection queues.⁷ In short, the incumbent system served the 20th century well but is falling short of meeting the rapid growth of the 21st century.

Congress should enact a reform that would retain the benefits of the public grid while allowing fast-moving consumers to take advantage of entrepreneurial speed. One such policy is Consumer Regulated Electricity (CRE), which would enable speed to power for the customers who value it most while not burdening the existing grid.

As laid out in more detail in a Cato briefing paper, CRE “is a reform that would allow privately financed, off-grid electric utilities to serve new customers under voluntary contracts. These utilities would be physically ‘islanded’ from the regulated grid and would not be subject to economic regulation at the state or federal level. Because they would not interconnect with incumbent systems, CRE utilities would impose no costs, reliability risks, or stranded-asset exposure on existing customers. CRE is thus a policy proposal that offers a practical and simple tool for policymakers.”⁸

V. Conclusion

Congress should foster a reliable, low-cost power grid that provides a solid foundation upon which to build a strong and growing American economy. And it is more important than ever that we allow speed to power and unleash some of our fastest-growing sectors, such as data centers. In physics, energy is defined as the ability to do work. Policymakers should remove the barriers erected by unwise energy policy and let Americans get to work building the future.

Sincerely,

/s/

Travis Fisher

Director, Energy and Environmental Policy Studies

Cato Institute

⁷ Alisa Petersen, Katie Siegner, and John Coequyt, *The Interconnection Queue Continues to Be a Barrier to American Economic Competitiveness*, Rocky Mountain Institute, Mar. 17, 2026, <https://rmi.org/interconnection-reform-ai-data-centers-generator-queues/>

⁸ Travis Fisher and Glen Lyons, *The Case for Consumer-Regulated Electricity: Private Electricity Grids Offer a Parallel Path to Energy Abundance*, Cato Institute Briefing Paper No. 196, Feb. 3, 2026, <https://www.cato.org/briefing-paper/case-consumer-regulated-electricity-private-electricity-grids-offer-parallel-path>

The CHAIRMAN. Thanks so much, Mr. Fisher.
Dr. Reed.

**STATEMENT OF DR. LIZA REED, DIRECTOR OF
CLIMATE AND ENERGY POLICY, NISKANEN CENTER**

Dr. REED. Chairman Lee, Ranking Member Heinrich, and distinguished members of the Committee, thank you for the opportunity to testify today on the state of the bulk power system. I am Dr. Liza Reed, the Director of Climate and Energy Policy at Niskanen Center. For over a decade, my work has focused on the challenges of building a transmission backbone to deliver reliable and affordable energy across the country.

Transmission moves electricity from where it's generated to where it's consumed and allows regions to share power with one another. It is this that is essential to reliability, resilience, and affordability. The United States is entering a period of rapid load growth, driven by data centers, advanced manufacturing, and electrification. We are building a more diverse set of energy resources at the same time—gas, nuclear, wind, solar, geothermal, and storage—but no single resource is sufficient on its own. Reliability depends on how these resources work together, and transmission is what allows that coordination to happen and ensures that every American has access to that affordable power. Right now, our system is not built to do that well.

Our electricity system is broken into regional grids with limited ability to transfer power between them. The consequences of those constraints are already clear. During recent winter storms, we have repeatedly seen one region have excess power while another faced shortages and extremely high prices. A Niskanen Center and Grid Strategies analysis of how the grid performed during Winter Storm Fern found that across the Southwest, Midwest, and Mid-Atlantic regions, wind power produced at more than twice the expected level while coal, solar, and natural gas all produced less power than expected. These reliability risks translate to real costs for consumers. Consumers experienced price differences of hundreds of dollars between neighboring regions, including negative power prices, indicating there was power not being used at all because the transmission was not available to move it to where it was needed. Transmission between regions could have captured nearly \$200 million in savings during that one storm alone.

The North American Electric Reliability Corporation (NERC), the entity that Congress and the Federal Energy Regulatory Commission look to for reliability assessments, determined last year that it would be prudent to add 35 gigawatts of interregional transmission to the system to increase reliability. That is a 40 percent increase on our current capabilities to move power. Interregional transmission lines are in the national public interest because of these affordability and reliability benefits that they provide. Yet, they face much higher siting and permitting barriers than other energy infrastructure because the authority to approve interstate projects still rests largely with the states, or even sometimes counties. Existing market structures also create unnecessary barriers to new technologies—for example, high-voltage direct current (HVDC) transmission technology. Grid operators do not allow this HVDC

technology to be compensated for the grid services they provide that provide reliability and balancing, even though they pay generators and other grid participants for those functions.

Our inability to grow and unwillingness to adapt is impacting American competitiveness. China has built tens of thousands of miles of high-capacity transmission in the last two decades to our hundreds, and has adopted this modern high-voltage direct current system to move power long distances. We are behind on increasing capacity. We are behind on adopting modern technology. And this will put us behind on attracting and maintaining top industries.

A shortage of grid capacity is the primary barrier to cost-effective and swift deployment of AI in this country. The data center infrastructure can go anywhere it gets power. It does not have to be here in the U.S., and it will not be if we cannot deliver a dominant grid. We need a narrow and clear federal authority to build inter-regional transmission. We need to remove market barriers to advance technologies to get more grid-enhancing technologies and high-voltage direct current systems online to move power efficiently in our system. Congress can deliver a grid that grows the economy, that provides affordable energy, and that demonstrates America's competitive edge. The next industry can be built anywhere there are electrons. Let's make sure it's right here in the United States.

Thank you very much.

[The prepared statement of Dr. Reed follows:]

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Testimony of

Dr. Liza Reed, Director of Climate and Energy Policy at Niskanen Center

for the United States Senate Energy and Natural Resources Committee Hearing:

“State of the Bulk Power System”

March 25, 2026

Chair Lee, Ranking Member Heinrich, and distinguished members of the Committee, thank you for inviting me to testify on the critical issue of the state of the bulk power system. My name is Liza Reed, and I am the Director for Climate and Energy Policy at the Niskanen Center, a non-partisan think tank founded in 2015. The Niskanen Center has, for 10 years, operated on a central philosophy that market-based policy tools are essential to ensuring a reliable and affordable domestic energy supply.

The topic of today's hearing is one I have worked on for the last decade, starting with my dissertation research at Carnegie Mellon University, where I evaluated technical, economic, and regulatory barriers to adopting more high-voltage direct current transmission technology into our system. As Director of Climate and Energy Policy, I lead a team that researches and educates on the policies needed to build a dominant energy system. Such a system will need to integrate a diverse set of generation resources with a strong transmission backbone to move power across the country, keeping prices low for consumers and enabling growth across industries.

Where does transmission fit into our energy system?

My testimony today will focus on the role of electricity transmission, the wires of the bulk power system. The high-voltage lines of the bulk power system serve two primary roles: one is to move power from where it is generated to the cities and counties where it is consumed. It is the distribution system that then brings it all the way down to the house or retail level. The second role that transmission serves is to move power between regions to ensure reliability, strengthen

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our resilience to changing weather patterns, and ensure affordable energy is available across the country.

Expanding our bulk power system with more high-capacity interregional transmission is an essential part of any solution for growth, affordability, and American competitiveness. Energy consumption is strongly correlated with GDP growth, and increased access to electricity improves everything from productivity to health outcomes. The electricity grid is a strategic asset. The National Academies identified it as the greatest engineering achievement of the 20th century.¹ We cannot squander that in the 21st century by pitting it against other power solutions when, in fact, transmission supports all forms of generation, and all power solutions are necessary for the next stage of growth.

We need more energy and transmission to move that energy.

An important reason to upgrade transmission is its nexus with interconnection. Planning reforms, automation, and islanding certain types of loads can all help, but the quality of the grid infrastructure determines what we can ask of the system. Recognizing this relationship, FERC just approved a merger of the interconnection and transmission planning processes in the Southwest Power Pool, which Commissioner David Rosner called “one of the most innovative, common-sense proposals presented to [FERC] since the inception of open access transmission service.”²

Interconnecting generation depends on a transmission system that can move the power around the region. PJM approved a process in 2025 to ensure dispatchable projects had their interconnection agreements in hand quickly, allowing them to move ahead of other projects that were in the queue. But the projects that came out of PJM’s expedited process still needed billions of dollars of grid upgrades, with one upgrade projected to take up to 7 years to complete.³

The same concerns apply to load. A shortage of grid capacity is the primary barrier to the cost-effective and swift deployment of AI in this country. The data center infrastructure can go anywhere it can get power—it does not have to be here in the U.S. In fact, it won’t be if we cannot update our regulatory systems to build the bulk power lines we need for a dominant grid.

¹ W.A. Wulf, *The Bridge*, National Academy of Engineering, <https://www.nae.edu/File.aspx?id=7327&v=e3a8f2e0>, at 6

² D. Rosner, *Commissioner Rosner’s Concurrence in Southwest Power Pool, Inc.*, Federal Energy Regulatory Commission, <https://www.ferc.gov/news-events/news/commissioner-rosners-concurrence-southwest-power-pool-inc>

³ *Comment and Motion to Intervene of Josh Shapiro, Governor of the Commonwealth of Pennsylvania to FERC*, ER26-1556-000, 20260320-5293, (March 20, 2026), <https://elibrary.ferc.gov/eLibrary/filedownload?fileid=197E92AD-F253-CDB1-9132-9DOCB1000000>. At footnote 15.

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This committee heard sobering stats from Rob Gramlich of Grid Strategies last year: “In the 2020s, China has completed more than 8,200 miles of ultra-high voltage lines while the U.S. has built only 375 miles. European utilities are rapidly increasing the transfer capacity between countries to move power back and forth.”⁴ Competitors are preparing for the future, and we will get left behind if we do not do the same.

To meet the projected load growth, Niskanen estimates that by 2030, the total capacity of peak-capable energy sources in development will reach about 118 gigawatts (GW).⁵ This includes approximately 37 GW from gas and nuclear, 26 GW from wind and solar during peak times, and 55 GW from storage and hybrid resources. Because each of these resources has different availability patterns, fuel constraints, and failure modes, scaling any single source alone would leave the system exposed to correlated outages or performance shortfalls during extreme conditions.

Grid planners evaluate these risks using real-world stress events. Winter Storm Fern offers a concrete example of that complementarity. During the storm, all major resource types experienced some level of stress or underperformance in at least one region.⁶ At the same time, each resource made important contributions to keeping the system operating: gas, coal, nuclear, renewables, and storage all supplied significant power when it was most needed. In most areas, wind exceeded expectations, helping reduce peak demand for other resources, while in others, thermal generation provided steady output. Not one resource is sufficient on its own. Reliability depends on how these resources work together. Transmission enables the system to draw on complementary strengths across regions.

Relying too heavily on any single fuel source creates both reliability and economic risks, since each fuel source faces its own weather-related operational concerns and supply problems. As shown in **Figure 1**, data from the U.S. Energy Information Administration reveal that 22 of the 48 contiguous states rely on a single energy source for 50 percent or more of their electricity mix in 2025, often leading to mismatches between energy supply and demand.⁷ High-capacity,

⁴ R. Gramlich, *Challenges to Meeting Electricity Demand*, testimony before the Senate Committee on Energy and Natural Resources, July 23, 2025, <https://www.energy.senate.gov/services/files/AF68ACFA-8FD9-4611-A936-76F4418E0C7C>, at 4.

⁵ K. Sercy and L. Reed, *The arithmetic of availability: Prospects for American grid dominance in 2030*, <https://www.niskanencenter.org/the-arithmetic-of-availability-prospects-for-american-grid-dominance-in-2030/>

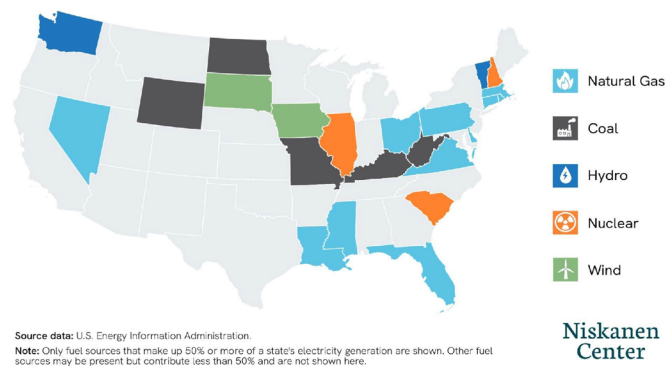
⁶ R. Levine and M. Goggin, *Winter Storm Fern's impact on the price of power, and what to do about it*, <https://www.niskanencenter.org/winter-storm-ferns-impact-on-the-price-of-power-and-what-to-do-about-it/>.

⁷ Adapted from R. Allen and R. Levine, *Unlocking HVDC: How Congress Can Enable a More Resilient Grid*, <https://www.niskanencenter.org/how-congress-can-enable-a-more-resilient-grid/>, Niskanen Center, 2025, at 4. Data from U.S. Energy Information Administration (EIA), Electric Power Operational Data, <https://www.eia.gov/opa/data/browser/electricity/electric-power-operational-data?frequency=annual&data=generation&start=2025&end=2025&sortColumn=period;&sortDirection=desc;>

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interregional transmission would allow these states to diversify their portfolios. Transmission is one of the best tools we have for managing that risk by connecting regions with different generation mixes and weather patterns, drawing from a broader, more diverse supply base.

Figure 1: For 22 states, over 50% of power generated is from a single fuel source



We need to connect electric regions.

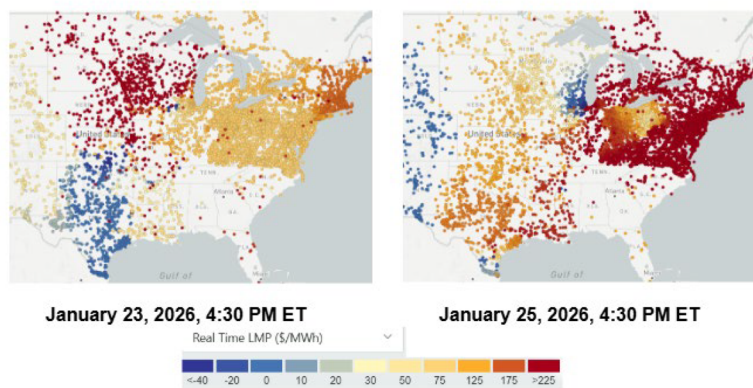
At the highest level, we have three distinct grids, between which there is very little power transfer. These are the Eastern Interconnection, the Western Interconnection, and the Electric Reliability Council of Texas (ERCOT). Within the eastern and western interconnection, there is further distinction into planning regions and then individual utility footprints. These planning regions are important because they are the areas where groups of utilities have come together and agreed to co-plan their transmission systems and coordinate their operations. These were established to support reliability, but have also helped improve energy affordability by sharing power within the region. The Midcontinent Independent System Operator (MISO) and the Southwest Power Pool (SPP) have each undertaken regionwide transmission planning that provided double or more the benefits to consumers in reduced costs compared to the cost of the projects.

Recent weather events illustrate that there's still a lot of money left on the table, particularly between regions, and that cost is borne directly by consumers who have to pay more for energy. During winter storm Fern, locational marginal pricing (LMP) for power changed significantly by day and region as the storm moved across the country, as shown in **Figure 2**. Transmission connecting these regions would have reduced these differences, saving consumers money.

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Severe weather tends to be geographically concentrated and shift over time. If one region is facing a power shortage and, therefore, higher prices, interregional transmission would allow the system to draw from a neighboring region experiencing a surplus. In addition to lower pricing, this also limits the need for every region to overbuild local generation capacity for outlier events.

Figure 2: Power prices during Winter Storm Fern changed significantly by region and day



It is essential to identify and remove the barriers that create these power price divisions and enable the energy arbitrage that captures that value and delivers it back to consumers' pocketbooks. The regulatory processes in place favor incumbent utilities and local solutions over interregional projects and a broader universe of developers.

Interregional transmission is essential to electricity affordability.

Due to lack of interregional transmission, energy is left on the table. During Winter Storm Fern, the solar and wind generation curtailed in SPP could have saved MISO consumers nearly \$37 million if there were enough transmission to deliver it.⁸

⁸ M. Goggin, *Winter Storm Fern Lessons: Supplying Reliable Power to Meet Peak Demand*, testimony before the House Committee on Energy and Commerce, March 17, 2026, Grid Strategies, https://d1dth6e84htgma.cloudfront.net/03_17_2026_ENG_Testimony_Goggin_9c06568654.pdf, at 8.

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Figure 3: Expanding transmission ties by 1 GW between neighboring grid operators could have captured up to \$183 Million in value⁹

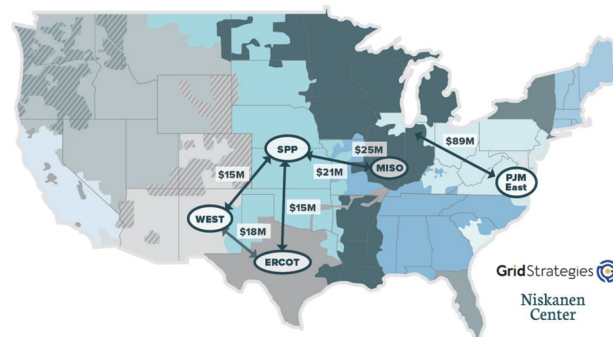


Figure 3 shows the value that expanded interregional transmission could have brought across grid regions. If transmission ties had been expanded by 1 GW between regions, comparable to one new transmission line, ratepayers would have seen up to \$183 million in value between January 23 and February 3, 2026.¹⁰

The lessons aren't singular to Winter Storm Fern. Analysis by Grid Strategies after Winter Storm Elliott found that a single 1 GW transmission line between ERCOT and TVA would have provided nearly \$95 million in value during that five-day event.¹¹ After Winter Storm Uri, Grid Strategies' analysis found that a 1 GW transmission line between ERCOT and the Southeast could have saved Texas consumers nearly \$1 billion.¹² A nation-wide historical analysis by Lawrence Berkley National Lab (LBNL) assessed the price differences from 2012 to 2022 and

⁹ Id.

¹⁰ R. Levine and M. Goggin, *Winter Storm Fern's impact on the price of power, and what to do about it*, Niskanen Center, <https://www.niskanencenter.org/winter-storm-ferns-impact-on-the-price-of-power-and-what-to-do-about-it/>

¹¹ ACORE, *The Value of Transmission During Winter Storm Elliott*, <https://acore.org/wp-content/uploads/2023/02/ACORE-The-Value-of-Transmission-During-Winter-Storm-Elliott.pdf>, at 2.

¹² M. Goggin and J. Schneider, *The One-Year Anniversary of Winter Storm Uri*, GridStrategies, <https://gridstrategiesllc.com/wp-content/uploads/the-one-year-anniversary-of-winter-storm-uri-lessons-learned-and-the-continued-need-for-large-scale-transmission.pdf>, at 8

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found that “additional transfer capacity between regions would have been especially valuable, with a median value of \$116 million per GW per year.”¹³

These statistics are not outliers; they are trends, and we are not on track to fix this problem.

Interregional transmission improves reliability.

In the Fiscal Responsibility Act of 2023, Congress directed the North American Electricity Reliability Corporation (NERC) to assess the current interregional transfer capability and recommend “prudent additions ... that would demonstrably strengthen reliability.”¹⁴ NERC’s report, published in 2025, defined a prudent addition as one that meets three criteria: strengthens reliability, serves load under extreme conditions, and does not create unintended reliability concerns.¹⁵

The report found that U.S. interregional transfer capability is about 84 GW. This capability is not only limited but highly uneven across pairs of regions and even seasonally. According to NERC’s assessment, the U.S. grid needs 35 GW of additional transfer capability for reliability, which is roughly a 40 percent increase over the 84 GW baseline. NERC notes that some of this need may be met by projects already in planning, permitting, or construction, but the gap remains large enough to warrant deliberate policy attention. As noted in Niskanen’s comments to FERC,

[U]nlike in the past decade, the U.S. is no longer experiencing steady load growth. In 2023, the Lawrence Berkeley National Lab (LBNL) ... projected that [data center] load would triple to 12% [of nationwide consumption] by 2028—surpassing the Department of Defense, currently the largest electricity consumer in the U.S.^{16, 17} As a result, the transfer capacity values calculated in the [NERC Interregional Transfer Capability Study (ITCS)] are already outdated and will become increasingly obsolete as data center demand surges toward 2030.

¹³ J. Mulvaney Kemp et al., *Electric transmission value and its drivers in United States power markets*, Lawrence Berkeley National Laboratory, <https://www.nature.com/articles/s41467-025-63143-5>, at 1

¹⁴ Fiscal Responsibility Act of 2023, Pub. L. No. 118-5, § 322, 137 Stat. 10 (2023), <https://www.congress.gov/bills/118/congress/house-bill/3746/text>.

¹⁵ NERC, *Interregional Transfer Capability Study (ITCS) Final Report*, https://www.nerc.com/globalassets/initiatives/itcs/itcs_final_report.pdf, at xiv

¹⁶ *Id.*, at 52

¹⁷ U.S. Department of Defense, *Annual Energy Performance, Resilience, and Readiness Report, FY2023*, <https://www.acq.osd.mil/eie/ero/ier/docs/aeprr/FY23-AEPRR-Report.pdf>, at 1; U.S. Department of Energy, *Total Site-Delivered Energy Use in All End-Use Sectors by Federal Agency (FY2023)*, <https://ctsedweb.ee.doe.gov/Annual/Report/TotalSiteDeliveredEnergyUseInAllEndUseSectorsByFederalAgencyBillionBtu.aspx>

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Winter storms are further instructive of why interregional transmission supports reliability. Winter Storm Uri (2021) primarily affected Texas and the central United States, including the ERCOT, SPP, and MISO regions. During the event, ERCOT experienced outages across all major fuel types, averaging approximately 34,000 MW over two consecutive days, nearly half of its winter peak load.¹⁸ The storm and associated power outages contributed to 246 deaths in Texas alone.¹⁹ Meanwhile, ERCOT was only able to import approximately 800 MW from SPP during the week of the cold snap. By contrast, MISO, which maintained stronger interregional connections, was able to import roughly 13,000 MW at peak, approximately 15 times as much as ERCOT.²⁰ The contrast between these regions shows that when outages occur across multiple resource types simultaneously, the ability to rely on neighboring regions can be the difference between keeping the lights on and widespread blackouts.

Winter Storm Elliott (2022) illustrates how transmission constraints can prevent the system from responding even when resources are available elsewhere. The storm affected a broad portion of the Eastern Interconnection, including PJM, MISO, SPP, and the Southeast. During the event, widespread outages of thermal generation, particularly gas plants affected by fuel supply disruptions, coincided with strong renewable output in parts of the Midwest. On Christmas Eve morning, wind plants in western MISO appear to have been forced to curtail their output while neighboring TVA was experiencing rolling blackouts, with power prices slightly negative in western MISO and exceeding \$8,000/MWh in TVA territory at the same time.²¹

Winter Storm Fern (2026) reinforces this pattern under more recent system conditions. The significant regional price differences indicate that transfer limitations again constrained the system's ability to move surplus power to where it was needed. As with Uri and Elliott, Fern demonstrates that as the load grows and system conditions evolve, the ability to share resources across regions becomes increasingly important for maintaining reliability.²²

¹⁸ M. Goggins and J. Schneider, *The One-Year Anniversary of Winter Storm Uri*, GridStrategies, <https://gridstrategiesllc.com/wp-content/uploads/the-one-year-anniversary-of-winter-storm-uri-lessons-learned-and-the-continued-need-for-large-scale-transmission.pdf>, at 3

¹⁹ P. Svitek, *Texas puts final estimate of winter storm death toll at 246*, Texas Tribune, <https://www.texastribune.org/2022/01/02/texas-winter-storm-final-death-toll-246/>

²⁰ M. Goggins and J. Schneider, *The One-Year Anniversary of Winter Storm Uri*, GridStrategies, <https://gridstrategiesllc.com/wp-content/uploads/the-one-year-anniversary-of-winter-storm-uri-lessons-learned-and-the-continued-need-for-large-scale-transmission.pdf>, at 4

²¹ ACORE, *The Value of Transmission During Winter Storm Elliott*, <https://acore.org/wp-content/uploads/2023/02/ACORE-The-Value-of-Transmission-During-Winter-Storm-Elliott.pdf>, at 2

²² R. Levine and M. Goggin, *Winter Storm Fern's impact on the price of power, and what to do about it*, Niskanen Center, <https://www.niskanencenter.org/winter-storm-ferns-impact-on-the-price-of-power-and-what-to-do-about-it/>

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What are the barriers to the transmission we need?

Interregional transmission lines are in the national public interest, yet they face much higher, often insurmountable, siting and permitting barriers than other energy infrastructure.²³ While transmission lines offer clear regional and national economic and reliability benefits, the authority to approve them rests largely with individual states or, in some cases, individual counties. A regional or interregional transmission line crossing multiple states must satisfy each state's siting process. As a practical matter, this means the slowest state determines when construction can begin. Of the five transmission projects in process at the time of a 2016 Lawrence Berkeley National Lab review, scheduled for completion by 2020, only one had been completed as of 2021, and that was a single-state project.²⁴ The significant interregional benefits that transmission could yield are unlikely to be realized under a system designed around local decision-making.

Existing market structures also create unnecessary barriers to new transmission technologies, particularly high-voltage direct current technology. High Voltage Direct Current (HVDC) lines are a transmission solution that can provide both ancillary support, which helps maintain grid balance, and capacity services, which ensure sufficient supply to meet future demand.²⁵ However, current RTO and ISO regulations do not allow HVDC operators to be compensated for these services, even though grid operators have markets in place to pay generators and other participants for the same functions. Allowing HVDC to compete on its merits to qualify for these payments would improve system reliability and strengthen the economic case for developers to build.

Regulatory structures have also been used to shield incumbent utilities from transmission competition. Over a decade ago, FERC removed the federal "right of first refusal" (ROFR) for regionally-planned, cost-allocated transmission projects in an effort to expand competition. Since then, roughly a dozen states have enacted their own laws,²⁶ granting incumbent utilities priority rights to build new transmission within their service territories, even when competitive

²³ L. Reed, *Transmission stalled: siting challenges for interregional transmission*, Niskanen Center, <https://www.niskanencenter.org/transmission-stalled-siting-challenges-for-interregional-transmission/>

²⁴ J. Eto, *Building Electric Transmission Lines: A Review of Recent Transmission Projects*, Lawrence Berkeley National Laboratory, <https://emp.lbl.gov/publications/building-electric-transmission-lines>

²⁵ R. Allen and R. Levine, *Unlocking HVDC: How Congress Can Enable a More Resilient Grid*, Niskanen Center, <https://www.niskanencenter.org/wp-content/uploads/2025/07/Unlocking-HVDC-How-Congress-can-enable-a-more-resilient-grid-FINAL.pdf>, at 7

²⁶ R. Levine, Z. Norris, and G. Olsen, *ROFR laws fragment America's transmission grid*, Niskanen Center, <https://www.niskanencenter.org/rofr-laws-fragment-americas-transmission-grid/>

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bidding could reduce project costs by 20 to 30 percent.²⁷ These laws suppress competition in wholesale electricity markets because fewer transmission lines mean less ability to move power across regions, thereby concentrating market power among local generators.

What can Congress do?

The lesson from winter storms is clear: no type of generation is immune to severe weather. The geographic footprint of risk shifts from event to event, and the resources most affected change with each storm. Under these conditions, reliability depends not on any single fuel or technology, but on access to resources outside the most affected areas. Interregional transmission provides access by allowing system operators to draw on a broader and more diverse pool of supply, reducing the impact of localized disruptions and improving overall system resilience.

Some grid operators have undertaken regional buildouts that provided affordability and reliability benefits to consumers, but there is a dearth of interregional transmission. NERC's recent report highlights the gap and recommends a significant increase in interregional transmission as a prudent approach to strengthening reliability. The issue is that we lack mechanisms to spur that development, and, in fact, we have specific regulations that deter it.

Congress can change this with legislation that lets markets work. A clear, narrow Federal siting authority for high-capacity interstate transmission lines would cut through state-by-state red tape and incumbent biases, opening the energy markets to more competition. Further, Congress can explicitly support interregional transmission development through planning or capacity requirements. NERC's analysis indicated a significant need for reliability, and many studies have demonstrated the economic value. Planning or capacity requirements are far from risking an overbuild in transmission: analyses by industry and non-industry groups agree that there is plenty of room for growth. Congress can direct FERC to address technology biases that prevent high-voltage direct current lines from receiving compensation for the reliability benefits they can provide, and similarly support grid flexibility solutions that recognize the value data centers bring to the economy and the grid.

These policies will deliver a grid that grows the economy, that provides affordable energy, and that demonstrates America's competitive edge. The next industry can be built anywhere there are electrons; let's make sure it's right here in the U.S.

²⁷ J.P. Pfeifenberger et al., *Cost Savings Offered by Competition in Electric Transmission*, The Brattle Group, https://www.brattle.com/wp-content/uploads/2021/05/16726_cost_savings_offered_by_competition_in_electric_transmission.pdf, at 1

The CHAIRMAN. Thanks, Dr. Reed.

We will now proceed to five-minute rounds of questions. I will go first, then I will be followed by Senator Heinrich, and we will alternate between Republicans and Democrats in order of seniority, subject to the early-bird rule.

Dr. Snitchler, let us start with you. In your testimony, you note the importance of load forecast, which is, of course, a critical process both utilities and power producers undertake to determine how much investment in their systems might be needed and where to place those investments. Demand growth from data centers, electrification, and manufacturing is real, of course, yet amidst all this buildout, in some instances, we have seen utilities drastically reduce initial demand forecasts. Tell us a little bit about that—why it is that load forecasting can be so challenging and sometimes elusive, and why it's so important to get it right, especially when prices have been rising in the last few years.

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

I think the challenge of load forecasting is revealed in a couple of examples. We have seen at least one utility that had a 30-gigawatt projected demand growth that after applying a new tariff has resulted in the actual demand being something closer to six gigawatts of new demand on the system. What that suggests is, they have as much difficulty in determining what projects are real, what projects are potentially being double-counted. It's no surprise that data center developers and hyperscalers are shopping for the best possible alternative based on what their needs are. But when it comes to powering that system, it is vitally important that we know what we are aiming for because in the event that we don't, consumers are going to be burdened with higher costs if we overbuild a system that's unnecessary.

And so, the criticality of getting the load forecast as accurate as you can, conceding up front that it will likely be wrong—but be wrong by a little, let's not be wrong by five or six times—is the best way to mitigate what those costs will be. And if you are a competitive power generator, we bear the risk of the investment in the event that that power plant—if it turns out to be unneeded or unnecessary, we are the ones that lose the revenue and ultimately file for bankruptcy as opposed to being backstopped by the captive customers. And so, we think it is vitally important to make sure that the numbers are as accurate as they can be because that facilitates the investments that will happen while shielding customers from unnecessary costs that are likely to occur if we aim for a large number that may not be based in reality.

The CHAIRMAN. And, just to be clear, when you say the captive customers, meaning when the overbuild happens, that gets built into the rate, into the rate equation. The customers then pay more per kilowatt-hour regardless of whether that demand might be needed. So, if they overshoot, the burden ultimately falls on the consumer.

Mr. SNITCHLER. Correct. When you do ratemaking cases as a regulator at the state level and you are making determinations about what resources are needed, that becomes a non-bypassable charge that's collected over a period of years with a rate of return. It's just

a different approach than what IPPs or competitive generators utilize, but that cost is ultimately passed on to consumers.

The CHAIRMAN. Thank you.

Now, Mr. Fisher, there seems to be some bipartisan consensus in this Committee that we need to build more transmission in addition to generation. They are both important. There is some disagreement, however, as to exactly how much transmission buildout should occur. Expanding transmission can lower costs for consumers, but for some of the same reasons mentioned by Mr. Snitchler, overbuild can also increase cost for consumers and put pressure on rates. My priority for the electric industry is to deliver reliable power that meets demand growth at the lowest cost to consumers. Now, you spent nearly a decade at FERC. Where do you see the opportunities, the best opportunities to improve the existing regulatory framework, and tell us how Congress could help ensure that grid expansion delivers the best value to consumers?

Mr. FISHER. That's an excellent question, Chairman, thank you.

You know, I look at this from the consumer point of view. As you said, we are completely aligned on that, as long as we take a consumer-first approach. Through that lens, transmission expansion could lower costs. We can all agree that the status quo is broken. We are still spending a lot on transmission, it's just not the wisest spending that we could do. So, I think there is a bipartisan consensus to change the status quo. The way we have expanded transmission so far is with very low-voltage local lines built on a reliability or an immediate-need basis. That, in a cumulative way, has become very expensive. So, it's not like we are not spending on transmission. We are, we are just not spending wisely.

So, I think one thing that Congress can do, and already, I thank you for the partial repeal of the IRA. I think that has somewhat changed my posture on this, where if we don't have a bunch of subsidies on the table, expanding transmission could actually benefit consumers instead of those producers. But something has to be done to incentivize the larger transmission builds, and get away from this small-ball.

The CHAIRMAN. And when you refer to, you know, wise decisions, wise allocation, you're not just thinking about people who are smart, like people with, I don't know, fuller, grayer beards, with more experience, you are referring to the ability to receive and interpret market signals. Market signals can tell us how best to allocate, is that the point?

Mr. FISHER. Absolutely, as my beard gets grayer, I rely more on the wisdom of the market than anything that I would want to bring to the table. But yes, absolutely. So, you build the transmission system that customers need. We actually have a great opportunity now to have very large customers, with very high willingness to spend, and very high time preference. I think we could leverage that new set of customers to help build some of this transmission.

The CHAIRMAN. Only after I asked that last question did I realize that both of our male witnesses today have beards, and that one has a beard that is more gray than the other, and I apologize, I didn't mean to make a value judgment there.

Senator Heinrich.

Senator HEINRICH. Do any of you think that we are building—and obviously, I think the affordability argument is well received by everyone on this Committee because all of us have constituents who are under pressure—but do any of you think that we are building enough interregional transmission to service the existing grid and the kind of growth that we would hope for, both in the electric sector and the economy?

Dr. REED. Thank you for the question, Senator.

Senator HEINRICH. Of course.

I will go down and let you all answer that.

Dr. REED. Okay, apologies.

Senator HEINRICH. Yes, I mean, Dr. Reed will start.

Dr. REED. No beards first.

Senator HEINRICH. And we will go the other way. That's fine.

Dr. REED. Thank you so much, Senator.

We are not building the amount of interregional transmission that we need right now. And there are particular barriers that are preventing that from happening. Utilities are not incentivized or even expected to be looking to their neighbors. And so, we are losing the economies of scale, and that is costing consumer purses.

Mr. FISHER. My short answer is no. My longer answer is, we should look back at the history of, you know, FERC Order No. 1000, for example. I think the intent was good, but the track record is very poor. The transmission line miles of the very high-voltage lines—

Senator HEINRICH. Very minimal.

Mr. FISHER. That stat has plummeted. We should acknowledge that fact and try to do something different.

Mr. SNITCHLER. Senator, thanks for the question.

I think it's clear that being able to move electrons from where they are being generated to where they are needed, particularly in times of stress, is critically important. That's how we ensure grid reliability. And as we have seen retirements come off the system and the slow addition of new resources, the importance of that transfer capability continues to be highlighted as an area of importance.

Senator HEINRICH. Dr. Reed, go a little deeper. You talked about how to capture value for customers, how to save them money as opposed to just bringing additional cost onto the rate base. Go a little deeper into how we can capture that value and actually benefit customers.

Dr. REED. Thank you, Senator, I am happy to.

What is causing us to lose this value for consumers is that we are not building the transmission. We have seen a number of economic analyses that find that, on average, \$100 million is lost per gigawatt of transmission line that was not built per year in the last ten years. These transmission lines are not being built for a handful of reasons. One is that they are very complicated. This is an interstate and interregional project, and it does not enjoy a federal siting and permitting authority as natural gas pipelines do. These electrons are moving or intended to move in interstate commerce, and instead they are being held up by processes at the individual states requiring approval. This is duplicative red tape that discour-

ages developers and makes it longer for them to be able to complete these projects.

There also are not expectations at utilities to be looking to the regions to build these interregional lines. We have an opportunity to enable both utilities and private merchant developers, who would not show up on a customer's utility bill, to build more, if we can fix these regulations.

Senator HEINRICH. To your point, I was deeply involved in facilitating and working on one interregional power line, and it took 17 years to get all of the approvals to actually make that a reality.

I think there are a number of places where our incentives are not aligned. You mentioned the issue of compensation for some of the values that those power lines provide. Walk through that a little bit because, obviously, I think there is a mismatch between transmission and generation.

Dr. REED. Yes, I am happy to, Senator, thank you.

High-voltage direct current was the topic of my Ph.D. thesis. I don't think I can cover that in a minute, but I will note that it is semiconductor-based technology that has the ability to act differently than our existing grid system. So, it provides an excellent backbone because it provides different services and different values. It can move power long distances, which captures a value for consumers, but the way that it controls electrons also provides stability to the grid. There are complicated reasons involving voltage and frequency that we can discuss offline, but HVDC ensures that we are keeping electric equipment online by keeping the voltage and frequency where it needs to be.

Senator HEINRICH. One of the tools that has been used very effectively in other parts of the world and sporadically here in the U.S. is grid-enhancing technologies. But we have this model, particularly within state-regulated utilities, where the incentive is often—I mean, the responsible parties, my utility as an example, in central New Mexico, has really leaned into GETs. But there is also an incentive for utilities to build big and then get rate based. How do we create a more aligned incentive with GETs so that we can get more out of the existing grid?

Dr. REED. Thank you, Senator.

There are a number of options that Congress and FERC can pursue to incentivize more of these grid-enhancing technologies. And part of it is expectation—what are we requiring of the grid? We should be using the lines that we built to a higher capacity. Grid-enhancing technologies, through dynamic line rating, power flow control, all of these can help us use those lines better and move the power around. And the way that we set expectations on how reliability is achieved and provide financial incentives to utilities or private developers to provide those services are ways that we can get more of this advanced technology incorporated.

Senator HEINRICH. Thanks.

The CHAIRMAN. Senator King.

Wait, I'm sorry, Senator Hickenlooper was next.

Senator HICKENLOOPER. I will yield to the senior Senator from Maine.

The CHAIRMAN. That is such a wonderful, deferential group of governors now, Senator.

[Laughter.]

Senator KING. Thank you, Senator.

Mr. Snitchler, I was involved in your industry starting in 1983, involved with what was then PURPA, which really was the birthplace of independent power production.

Let me just make a quick statement about permitting reform, which I think all of you have mentioned. I have been an advocate ever since I have been here for permitting reform because I have lived it. However, at this moment, I have no intention of participating in permitting reform discussions as long as this administration is arbitrarily putting its thumb on the scale and canceling wind and solar projects that in many cases have already been permitted, because there is no point. If we have permitting reform and one side of the equation, that is renewables, is essentially killed by the arbitrary actions of the administration, then permitting reform only benefits one side of the equation, that's fossil fuel. I'm not going to participate in that discussion. When the administration decides we are going to play it straight and let all forms of energy compete, then we can have a very profitable discussion. And I think we are in many ways almost there on permitting reform. But I just want to be clear. I feel like I would be dumb to agree to permitting reform which only affected one half of the equation. So, I just want to make that point.

Mr. Fisher, I like what the Cato Institute does, and I like your emphasis on free markets. One of the problems, it seems to me, in transmission and distribution, which we have talked about is, it's not a free market, it's a monopoly in most cases. How do we import the principles of competition and free markets into the development of the grid so that it's not an entirely monopoly operation, and we have this perverse incentive to build and invest rather than do GETs because utilities make their money on a rate of return on how much they invest, so there is an incentive to invest as much as possible. Talk to me about free markets and the virtues of competition.

Mr. FISHER. It's an excellent question, Senator, thank you.

I will note, I brought up the concept of consumer-regulated electricity, which is—I would view that as a private grid that is a parallel path that could—

Senator KING. But does that mean two sets of wires down the road? I don't think that's—

Mr. FISHER. Not necessarily. I would envision it as a very large industrial campus on a single site within a single state. Each state could have their own, if they like. But your question is about the public grid and optimizing the public grid despite the monopoly influence on it. That's where I think we are so far afield from free markets that I think a lot of things are on the table. On the plus side, the status quo is so broken that just about anything you do, any reform you make, is probably going to be positive.

So, on the one hand, mandating—making a monopoly make decisions that it wouldn't otherwise make, in other words, having a heavy-handed regulator to basically say these are investments that we know you wouldn't make given your incentives, but we—

Senator KING. But how about if the regulator says, before you build, before you build new poles, wires, and rights-of-way, you

have to try and incorporate low-cost, no-cost options like dynamic line rating, reconductoring. This conductor will carry twice as much electricity as a similar steel conductor because it has a fiber core. I don't see that as, I mean, I don't know how else we crack this without somebody saying you have got to do the more efficient things first, then tell us about how much you are going to build. Do you see what I am saying?

Mr. FISHER. Yes, and I completely agree with that. And I think the way to implement that is to make sure that there is solid oversight of all of these investments. What we are lacking right now—there is, I believe, a regulatory gap between the voltage level that states coordinate and the voltage level that FERC coordinates. There is a lot operating in the gray area in between that is not subject to strict oversight. So, you could say before building your next transmission project, you have to look at a whole bunch of different alternatives. That, I am very comfortable with.

Senator KING. Everybody's now talking about AI bringing its own power. Has anybody done a calculation? I mean, we have all got this sort of doomsday calculation of increasing demand and increasing demand on the grid and all the construction that's going to—the billions, if not trillions of dollars, that it's going to require. Has anybody done a calculation of if AI—take AI out of that growth projection because theoretically they are going to bring their own power? How much does that reduce this doomsday scenario in terms of the demands on the grid?

Dr. Reed, do you have any thoughts on that?

We ought to make that calculation, it seems to me.

Dr. REED. I am not aware of a particular calculation, Senator King, but we have done analysis on the range of expectations. And even at the lower end of demand expectations, we still find that we need more power and more transmission on the grid.

Senator KING. Okay, well, I hope somebody will do that. I think that's an important calculation, to know—we know we are going to need this much more power, but if 50, 60 percent of that is AI and that's going to have its own power, then that changes all of these discussions, it seems to me.

Thank you, Mr. Chairman.

The CHAIRMAN. Thank you very much.

Senator Hickenlooper.

Senator HICKENLOOPER. Now I am going to yield to the senior Senator from California just because I am trying to get in good with people this week.

The CHAIRMAN. We are going to give you the Mr. Congeniality award.

Senator HICKENLOOPER. Exactly, thank you.

The CHAIRMAN. Senator Padilla.

Senator PADILLA. Thank you, Mr. Chairman, I appreciate my colleague from Colorado, not just for the deference this morning, but you are going to hear me talk in a minute about an exciting new proposal that he has been leading a group of us on.

I want to begin though by recognizing the urgency for today's discussion. We know that families, and businesses for that matter, are paying the price for an aging and overworked grid that is delivering not just higher bills, but more frequent outages and missed

opportunities, frankly, for significant investment and job creation. I would like to think both sides of the aisle here agree when I say that America cannot lead the next generation on a grid built in the past and using older technologies. So, this week, I was proud to work with Senator Hickenlooper and other colleagues from this Committee to build on the bipartisan Energy Permitting Reform Act from last Congress and develop new legislative language to tackle these issues and lead us toward the construction of a next-generation electrical grid. I believe our effort represents not just a common-sense plan, but one that will build a cheaper, stronger, more reliable electrical grid that protects ratepayers, respects communities, and keeps our economy competitive.

So, I am going to start by not just asking us to look at the fault or the shortcomings of the grid of the past, but to envision what the grid could and should look like in the next 20 years. And since the era of Edison and Westinghouse, there has been talk about the potential promise of high-voltage DC transmission, but now these technologies are not just proven, they are ready to provide efficient transfer of power over long distances. I think that's important to recognize.

My first question is for Dr. Reed. If we built out the backbone of an interregional high-voltage DC transmission line over the next couple of decades, what would be some of the benefits in terms of ratepayer bills and reliability, particularly during extreme weather events? If you could touch on that and any other technical benefits that you want to highlight.

Dr. REED. Thank you, Senator, for the question, and I am happy to discuss the benefits of high-voltage direct current because this need for a backbone to our alternating current system is particularly clear when we see severe weather, such as winter storms and even extreme heat, because HVDC can dispatch power long distances very quickly and directionally. In our alternating current system, electrons flow where there is the least resistance. HVDC can move at exactly where it needs to go. And so, it works very well with that alternating current system to move around congestion and provide economic power. Where you have excess power, you can move it to an area that needs power while also providing reliability benefits. There is tremendous opportunity for building this type of transmission, particularly across regional lines for economic and reliability reasons that will ultimately save hundreds of millions of dollars a year.

Senator PADILLA. Are there any key regulatory or procedural barriers that you think are holding us back?

Dr. REED. Thank you, Senator.

There are very specific barriers that are holding us back from adopting HVDC technology. One of them is the siting constraints on interstate and interregional transmission lines. These types of lines face the most number of siting and permitting barriers because even though they are participating in interstate commerce, they are subject to the specific rules and regulations of each state individually. That's an incredible burden for a utility or a merchant developer to take on that risk and that timeline to complete.

We also are not—we do not have the expectation in markets. FERC has not set the expectation that these technologies can re-

ceive compensation for the benefits that they provide. They are providing the same benefits. They are built on the same semiconductor technology of the products that we do allow to be remunerated in the markets.

Senator PADILLA. Thank you.

Before I ask my last question, I just want to associate myself with the comments and the enthusiasm of Senator King in talking about reconductoring and other upgrades and their benefits on a cost-effective manner.

But Mr. Snitchler and Dr. Reed, could each of you please explain where interconnection procedures may be best improved to expedite the connection of generation to the grid?

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

I think it's clear that the interconnection process has been slow. I think at FERC's direction, all of the regions have worked to modify their interconnection queue process in an effort to try to accelerate that, and we have seen improvement to the interconnection process. I don't think it's complete. I don't think anyone would agree that that's the case. But I think there has been improvement. And so, we are going to need to accelerate that process to make sure that studies are done in a different approach than has been used in the past. In fact, FERC recently approved the SPP's model, which is taking a more innovative approach to try and look at interconnection of generation and transmission at the same time in an effort to accelerate it more quickly, and was very enthusiastic in their order of what it could do for the system.

I think thoughts and approaches like that are going to be incredibly helpful to accelerate the need to meet the moment and move speed to power.

Senator PADILLA. Mr. Fisher, anything to add?

Mr. FISHER. I will keep it short and say I agree with Todd.

Senator PADILLA. Thank you, Mr. Chairman.

The CHAIRMAN. Thank you.

Senator Hickenlooper.

Senator HICKENLOOPER. Thank you, Mr. Chair.

I thank all three of you for being here. I think this is kind of an all-hands-on-deck moment. You know, I got a master's in earth and environmental science back in 1979. Back then, we referred to climate change as the greenhouse effect. But much of what we predicted—the droughts, the wildfires, these gyrations in temperature and precipitation—has come true more and more to the point where now in many counties across the United States, a significant number of people can no longer get insurance for their homes. When that happens in small communities, the values of the homes go down. They are not worth as much to anyone, and that means the tax base for those small communities already at risk gets a little worse.

One example I wanted to put out there: we just got, recently—in Leadville, we have a mine called the Climax mine—molybdenum and various sulfides. It's been going for 100 years. They measure the snowfall every year. The average over the last 100 years has been 240 inches. And when it snows, they measure it and then throw it out. It doesn't get compacted. This is a fairly consistent measure. So, the average is 240 per year. The all-time low in 100

years was 182 inches. So, 240 inches average, and then the all-time low is 182 inches. This year we had 60 inches. And we are seeing that all across the West. And I think, as we look at these solutions, the grid is one possible—the reconductoring, the, you know, the interconnections. There is a powerful solution on how do we get clean energy fast and really inexpensively and making our grid better.

Dr. Reed, let me start with you. As you point out in your testimony, we are struggling to build the transmission lines necessary to keep pace with the surging growth and, you know, electric vehicles—you look at all the different places where we are needing more and more advanced manufacturing, all these places where we need more electricity. The U.S. is only building 375 miles a year of new grid, while China is building, whatever it is, slightly over 8,000 miles. We are also falling behind our European partners when it comes to deploying the advanced technologies that you all have been talking about—you know, dynamic line ratings, advanced conductors, et cetera.

So, let's start with you, Dr. Reed. Can you talk about the need to have a holistic view of grid modernization that includes both new transmission and improvements to our existing infrastructure?

Dr. REED. Thank you, Senator, for the question. I am happy to discuss the multiple ways that we can bring new technology and new developers into the grid system to provide reliability and affordability.

I will start with grid-enhancing technologies and reconductoring. These are opportunities to use the lines that we already have, the towers that we already have, the rights-of-way that we already have, and get more power through them. That's more value to consumers because it's a less-cost effort for moving more power. It is a shorter-term solution that also buys time for building these larger interregional transmission lines, which are essential for providing long-term reliability and affordability by sharing power between regions.

Senator HICKENLOOPER. Great, thank you.

Either of you, you know, Mr. Fisher—either of you want to opine?

Mr. FISHER. Yes, I will be brief. Excellent question. The way that I view—especially if we are talking about addressing climate change, we, of course, should focus on adaptation in the U.S., but I think if we wanted any chance at mitigating climate change in the long run, we need to promote the kinds of technologies that are going to take hold globally. And I could see the U.S. as a proving ground, not just on the transmission technology front, but on generation technology. And we have a private sector in the U.S. that can lead on this. And then, the goal, because we have to take into account that there is, you know, the iron law of climate that really if you are ever up against economic growth versus climate, everybody chooses economic growth. We have to come up with the technologies where people choose them voluntarily.

Senator HICKENLOOPER. You are exactly right.

Mr. Snitchler.

Mr. SNITCHLER. The only thing I will add, Senator, to your good question is that it's incredibly available now. The technologies exist

to better utilize the wire systems that are already there. The permitting and siting challenges to existing rights-of-way aren't the same as what you would have in doing new greenfield development. And so, deployment of the technologies that already exist on existing technology and existing rights-of-way are a far quicker and generally lower-cost opportunity to enhance the performance of the system in a way that helps achieve all of the objectives that you have been describing.

Senator HICKENLOOPER. Right, thank you.

And I am out of time. I don't know how I got one question in, I got a little too verbose, I apologize. But certainly, our grid is in need of modernization. You all say that. And I think you were all getting to the same point that this data center demand could actually help us fix many of the underlying—and for a long time, we have been accepting subpar grid. This might be our opportunity to really do a lot of things at once.

I yield back.

The CHAIRMAN. Thanks so much.

Okay, I believe Senator Cortez Masto is next.

Senator CORTEZ MASTO. Thank you, Mr. Chairman. Thank you to the panelists. It has been an interesting discussion. I have been listening to it, and read your opening statements.

Yesterday, Senators Murkowski, Shaheen, and I introduced a piece of legislation called the SECURE Grid Act. The legislation would empower states to really assess the risk to their electric grids, including extreme weather, cyberthreats, and other vulnerabilities. So, I want to ask the panelists, and maybe, Dr. Reed, I will start with you. How should the U.S. and the states work to reduce the risk of cyber and physical attacks on the grid?

Dr. REED. Senator, thank you for the question.

I don't want to speak outside my expertise on cybersecurity, in particular, but I will speak to overall security as a reliability metric and providing more interregional transmission. Removing these regulations that make it difficult to build interregional and build HVDC is a security metric because we are able to move power and isolate parts of the grid if they are under attack. There is tremendous opportunity in these new technologies and new transmission, if we can build it.

Senator CORTEZ MASTO. Yes, thank you.

Mr. Fisher, any thoughts?

Mr. FISHER. I am also a touch out of my depth when it comes to security questions, but I will note that anyone who has looked deeply into these questions, the vulnerability of the grid, especially to a coordinated physical attack, especially during times of peak demand, could be devastating. Anybody who has looked into that has been correctly terrified about it. I think the answer is to be resilient. I don't know if we can prevent every attack, but being resilient in recovery.

Senator CORTEZ MASTO. Yes, and it's not just a specific attack, it's extreme weather, as we have seen now that we are dealing with that could be a vulnerability and a risk.

Mr. Snitchler.

Mr. SNITCHLER. Senator, I would share my fellow panelists' desire not to get too far out of my depth, but at the same time, I

think it is clear that the grid is persistently under attack. That is clear. The technology that is being deployed by nation-state actors against our entire electric system is a daily and routine event, and I think you are seeing the industry respond in a favorable way to defend against those attacks. I think further enhancements are likely to be required as we see technology evolving. The benefit and the concern about AI is, of course, what it can do and how quickly we will see these things happen, both for and against kind of the white hat/black hat technologies. And so, I anticipate that we are going to continue to see more and more of this in the future.

I don't have a great answer to your question, other than to say the industry is responding to it and working in ways to try and stay ahead of it because we are perpetually in a situation where they only have to be right once. We have to be defending 100 percent of the time.

Senator CORTEZ MASTO. That's right. Thank you. I appreciate that.

There has been a lot of discussion this morning about new technologies and more transparency in the interconnection queue process that would really better allow all energy sources to hook up to the grid faster. Let me ask, Dr. Reed, maybe start with you or any of the panelists, are there certain RTOs or regions of the country that you believe are taking an innovative approach to queue management that we should be thinking of, or using up, or lifting up as a model? I'm curious.

Dr. REED. Thank you for the question, Senator. I will speak to the Southwest Power Pool, and I believe Mr. Fisher can speak to this as well. So, the Southwest Power Pool is looking at transmission planning, including the interconnection queue and broader transmission planning as a holistic solution. That, I think, has the opportunity to be looking to build more of these high-capacity lines so that we can provide reliability and move power cost-effectively at the same time. We have seen in interconnection queues, even when different RTOs take on solutions where they are moving different types of technology or different generators to the front of the line, we still see that, regardless of how long the study process takes, which does need fixing, there is still the build process afterwards, which inevitably says we need billions of dollars of transmission that we didn't build, and now we need to so that we can get this energy online, of all types.

Senator CORTEZ MASTO. Yes. Anyone else?

Mr. FISHER. Excellent question. I will reinforce the thumbs-up on SPP. The only other new concept I would bring up is this idea that, you know, we have to deal with the queues in the order in which you joined the queue—sort of a first-come, first-serve basis. That, I think, needs to go. We should move beyond that. I have heard some proposals, such as sort of an open-season approach, or requiring new customers to put up more of sort of a financial backing to it. The queues are clogged, and I think there are a bunch of different ways to unclog them, but the theme of the day is that the status quo is broken.

Senator CORTEZ MASTO. Thank you.

Mr. SNITCHLER. I will add that the recent developments in the SPP order from FERC, I think, are instructive. I do think going all

the way back to last June's FERC hearing, which was dealing with issues around interconnectivity, where all of the RTOs participated, as well as industry—the directive was made explicitly clear that accelerating and unclogging the queues is incredibly important. You have seen the RTOs try to do that. PJM, in particular, has gone through the process, and when they re-evaluated the queue, they were able to shed nearly two-thirds of the projects that were in the queue that were holding places that otherwise may or may not have actually allowed them to interconnect with the system and then move projects that had a greater chance of completion to the front of the line.

Senator CORTEZ MASTO. Thank you.

And I know my time is up. I asked the question because last Congress, I had introduced the Expediting Generator Interconnection Procedures Act. We are going to reintroduce it, talking with the very organizations that you have lifted up as a model for innovation. And I do think it is important we move in that direction, and I would invite my colleagues to join on this legislation.

Thank you very much.

The CHAIRMAN. Senator Wyden.

Senator WYDEN. Thank you, Mr. Chairman.

Before she goes, I just want to say that, as usual, my colleague, who also does such good work on these issues on the Finance Committee, is spot-on making the focus innovation. And I want to pick up right where she left off.

And my question for you, Dr. Reed—thank you for working with the staff on the legislation that I am introducing today. It is well understood that a significant portion of the grid is practically from the dark ages. You have to start with that. And it's really a trifecta of punishment for rural communities, and we are seeing it in Oregon, you know, basically the combination of wildfire, drought, and then escalating energy prices comes together and it is why this is such an important hearing. And thank you for scheduling it, Mr. Chairman.

My question to you is, to start with Dr. Reed, how would bills like the one that I am introducing today, the Wildfire and Grid Reliability Act, help us fight this manufactured energy crisis? That's what we are dealing with. This is a crisis we did not have to have. Tell me, if you would, because you have been helpful to us in terms of working through some of the aspects of this, what your thoughts would be on our bill?

Dr. REED. Senator, thank you for the question.

I don't have any specific thoughts on the bill you refer to, in particular, but I can speak to wildfire resilience and the importance of investing in wildfire resilience and investing in a grid that can be resilient to numerous concerns, particularly and including wildfires. There are aspects of that resilience which are difficult to put on a ratepayer because of the small, often rural utility footprint that would then have to pay for it. And there are different mechanisms that I think could be effective for covering those costs. And I think it's really important—

Senator WYDEN. Aren't these small utilities which you describe correctly as the footprints that you are seeing, aren't they really getting clobbered by the circumstances we're seeing right now?

Dr. REED. Wildfires are an incredibly important risk to be addressing. I also want to highlight the value that transmission can provide in wildfire mitigation by being able to move power away from where areas are at extreme risk and route power in different ways so that consumers can still be served while the risk itself can be mitigated.

Senator WYDEN. Well, thank you for your good work.

I am going to spare the other witnesses, unless they would like to contribute, but I think we all ought to start with the proposition that my colleague from Nevada started with. This is a modernization job. I mean, if we stick around with these outdated systems, there's nothing that you can do to waive your wand around and make things get better.

Mr. Fisher, I know you have been interested in this area and you raised your hand. Careful what you wish for, and happy to have—

Mr. FISHER. If I could just briefly agree with you, Senator, violent agreement on the need for innovation.

Senator WYDEN. No violence.

Mr. FISHER. There is far too much—

[Laughter.]

Senator WYDEN. Kidding.

Mr. FISHER. Peaceful agreement on—there is way too much of the grid, there are far too many grid technologies that were patented 100 years ago or more. The fact that Thomas Edison could come back today, if we brought him back, he would recognize much of the technology. Alexander Graham Bell would have no idea what this is [holding up smartphone].

Senator WYDEN. Right.

Mr. FISHER. That is a problem and we need to address it. I agree with you.

Senator WYDEN. Thank you, Mr. Chairman.

Thank you, Mr. Fisher.

The CHAIRMAN. I mean, there is no way we can make Alexander Graham Bell aware now that it exists, but—

[Laughter.]

The CHAIRMAN. Senator Cassidy.

Senator CASSIDY. I will defer to one of my Democratic colleagues as I kind of review the testimony. Could I let one of them go before me?

The CHAIRMAN. Senator Hirono, you're up next.

Senator HIRONO. Thank you so much.

Okay, Dr. Reed, you mentioned that wildfire resilience is a very important aspect of the grid, and knowing that what happened on Maui, which was a massive wildfire and all of that, can you give me an example of how a grid can be made wildfire resilient?

Dr. REED. Thank you for the question, Senator.

I am not a resilience expert, in particular, when it comes to wildfires. I can speak to how transmission can provide resilience, particularly this type of backbone transmission that can move power around so that consumers are still served with electrons they need while isolating areas of the grid or particular lines that could be of high risk of wildfires.

Senator HIRONO. So, do you know if power companies are adopting some of those kinds of suggestions so that they can provide power while the wildfire is occurring and parts of the grid are shut down?

Dr. REED. I'm sorry, I can't speak to any particular power—

Senator HIRONO. Okay, when you mentioned the wildfire resilience, that certainly caught my attention, but I do have a question for you.

Over 100,000 people in Hawaii recently lost power due to a severe storm that caused widespread damage and downed power lines across the islands. And of course, Hawaii cannot rely on power from other states during these instances. What are some of the grid technologies that could be most helpful for increasing the affordability and reliability of power in Hawaii, Alaska, and other remote locations?

Dr. REED. Senator, thank you for the question. It allows me the opportunity to talk about high-voltage direct current, and the ways that this particular technology can be used to restart a grid. So, when there are blackouts, these sort of advanced technologies and innovations, if we bring them more onto the grid, then we find it easier and faster to restart a grid after there is a blackout and to manage the grid itself—the voltage and the flexibility that can cause blackouts so that we don't have blackouts in the first place. So, we need more of this advanced and innovative technology incorporated into the grid and building a backbone of a grid so that we can recover.

Senator HIRONO. And is incorporating this kind of technology into the grid an expensive proposition that is going to result in the ratepayers having to pay a lot more? Because Hawaii ratepayers pay more for electricity than any state in the country.

Dr. REED. Thank you, Senator, for the question. I can't speak specifically to the costs borne by Hawaiians, but I can speak to what we have seen in studies by the North American Electric Reliability Corporation, national labs, and private analysis that inter-regional transmission and advanced technologies save consumers money by investing in the right kinds of transmission infrastructure that we need to move power affordably.

Senator HIRONO. In the long run. Thank you.

Now, the cost of utility-scale battery storage has fallen dramatically—27 percent in 2025 according to a recent estimate from Bloomberg New Energy Finance. Dr. Reed, what role can battery storage play to reduce transmission bottlenecks and reduce the overall cost of power paid by customers, and also, do you think that state and federal regulators should require data centers, which are massive users of energy, to incorporate energy storage to reduce their impact on the grid?

Dr. REED. Senator, thank you for the question, and I would welcome the opportunity to work with your office on the specifics of energy storage. I can speak to the need for more generation and more power on the grid, and energy storage is a valuable way to provide flexibility in the same way that transmission provides flexibility in moving power over time and over distance.

As far as the data center question, I think it's important, when we talk about what data centers need and what industry needs, to

provide options. And the best options are solutions that let the market decide what works best. But one of those options has to be reliable and affordable energy on the grid. If we set expectations of exclusively bringing your own power, then we are telling industries you must be able to adopt high-cost and high-risk choices to thrive in the American economy. If we provide options, that gives markets the ability to develop and compete in the U.S. and thrive.

Senator HIRONO. Speaking of batteries, so this is for Mr. Snitchler, am I pronouncing your name correctly? As I mentioned, Hawaii faces the highest electricity costs in the country, and in March 2025 John Ketchum, the CEO of NextEra, described renewables and batteries as being the cheapest, fastest, and easiest way to meet surging power demand. And if you take renewables and storage off the table, we are going to force electricity prices to the moon. Now, Hawaii is seeking to become energy self-sufficient by 2045, and that means that we need to rely on batteries, et cetera. So, do you agree with the comment that we really should be spending a lot more on bringing batteries online, making those things affordable for our users?

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

Our members actually own and operate some of the largest battery installations in the country and are very supportive of the technology because they are part of the solution on how we are going to address both the reliability and the affordability question in the future because batteries have the ability to have impacts on peak shaving and driving down that cost.

Senator HIRONO. I agree with you as far as the efficacy, so, the question becomes, you know, how quickly can we get more of these things in place for the consumer?

Mr. SNITCHLER. To your follow-up question, I think part of that is dependent on permitting and siting at the state, federal, and local level. I think it's also dependent on supply chain related issues because not only is it the supply of batteries, but it's also the switchgear that is required at substations that ultimately move the power from where it is to the ultimate consumer that continue to feel stress under the current conditions that we're in. It's true for generators, it's true for substation equipment, it's true for transformers. And so, addressing some of those longer-term supply chain issues will be instrumental in trying to accelerate the deployment you are asking about.

Senator HIRONO. Thank you, Mr. Chairman, for letting me go over.

The CHAIRMAN. No problem.

Senator Cassidy.

Senator CASSIDY. I will now again defer to my Republican colleagues.

The CHAIRMAN. To your?

Senator CASSIDY. Or my Democrat colleagues.

The CHAIRMAN. Yes, go ahead.

Senator KING. In a kind of irony, remember the question I asked about how much of the projected load is AI? I asked Claude.

[Laughter.]

Senator KING. And Claude said it's 50 percent—50 percent of the projected load growth over the next 10 years or so is attributable to AI. AI told me that, so, I thought that was kind of interesting.

But I think that's an important point, don't you? I mean, if we can take the AI demand off, then the problem is half of what we think it is. I think that's something we should be discussing.

The second is, with regard to the queue, my understanding is AI, in some cases, has dramatically decreased the time that's important for assessing applications for interconnection. Is that—you are nodding. The record won't show a nod. Could you say yes, Senator, that was—

Mr. SNITCHLER. Yes, Senator, that is correct. In fact, PJM and Google put the Tapestry project together, if I am remembering the name correctly, in an effort to do exactly that, to try and enhance and accelerate the process because everyone recognizes that we need to move more quickly.

Senator KING. And it worked to reduce it from months to days, is that correct?

Mr. SNITCHLER. You would have to ask them to get the specifics on the time horizon, but it actually did reduce it dramatically. I don't have the exact adjustment from weeks to days.

Senator KING. Again, that goes with one of the themes of this hearing, which is utilizing technology effectively—

Dr. SNITCHLER. A hundred percent.

Senator KING [continuing]. To deal with this problem, rather than doing it the way Thomas Edison would have done it 100 years ago.

Ms. Reed, we talked a lot about direct current, and you seem to know a lot about that. DC lines are also less line losses, isn't that correct?

Dr. REED. Yes, Senator, thank you for the question.

DC has a number of efficiencies, including lower line losses because of how the current flows on the line.

Senator KING. Thank you.

Thank you, Mr. Chairman.

Senator CASSIDY. Okay, I will go?

The CHAIRMAN. Yes, go ahead.

Senator CASSIDY. I thank you all.

Mr. Fisher, I was really interested in you from Cato as to your thoughts as to what we should do, but it sounds like, from a libertarian viewpoint, we should just deregulate, and Mr. Snitchler, your testimony kind of said the same thing. It is not the generation cost, it is the transmission cost which is currently driving the increased expense of electricity. Is that fair?

Mr. FISHER. In general, I think that's a fair statement, Senator, although, we should be very sensitive to the costs, especially of input fuels.

Senator CASSIDY. But let me ask as well, because yes, globally, or country-wide, you have a balance of electrons, but if those electrons are being generated by wind in the panhandle of Texas and Oklahoma, but they need to be used in Atlanta, speaking of permitting means, for example—and this is where the kind of Cato tension comes in—expropriating people's land in order to get the high-voltage wires to take it from there to here, correct?

Mr. FISHER. Yes, I believe you are talking about a federal backstop siting authority and the use of eminent domain, and that does, I will be candid, make me nervous.

Senator CASSIDY. So, how does Cato resolve that, because we want a deregulatory environment but the deregulatory environment almost does require, basically—you see where I'm going with this.

Mr. FISHER. I do, and I should note, I am only speaking for myself. Each Cato scholar has their own independent thoughts.

Senator CASSIDY. Of course.

Mr. FISHER. I will note, I very much agree with a 2002 book by Cato that referred to the mandatory open-access model of transmission, which is basically what we are dealing with now, which is the restructuring—I wouldn't call it deregulation—restructuring from the late 1990's, referred to that as "infrastructure socialism." Now, that is, I think, a fair way to characterize the public grid. That's why I have been advocating today for a new parallel path to allow private grids, and I think that could solve a lot of the problems.

Senator CASSIDY. And sir, are you okay with the private grid?

Mr. SNITCHLER. Our members take no position on that. We have talked with Travis and with Glen Lyons, who have helped develop the issue. We think optionality is the way forward. So, we don't think there is one perfect path. There is no silver bullet. There is probably not even silver buckshot. We think having a number of approaches that are applicable to parties that want to contract at arm's length and make determinations about what works best for them, all options should be on the table. So, if they want to pursue CRE, then they should do that. If they want to take power off the system and be a regular customer, they should be able to do that. If they want to co-locate and bring their own gen and they think that is the model that works best for them, then we think they ought to be able to do that.

And we think some of the decisions that FERC has made recently and is currently undertaking are ways to help enable those transactions to both take place and take place—

Senator CASSIDY. But much of that is already happening in Louisiana, so it seems like much of what you just described is currently an option. Do you wish to weigh-in, Dr. Reed?

Dr. REED. I agree with both of my fellow witnesses that optionality is the key here and that if we can provide a reliable, affordable grid, that should be one of the options for growing industry competitively and providing affordable electricity for consumers. And that grid can be built by private developers.

Senator CASSIDY. But let me get back to—because this is the rub—does the Federal Government have a backstop in terms of regulation in which you get electrons from Texas to Atlanta? You follow what I'm saying?

And so, I think everything else we agree on. And the Meta center or Northeast Louisiana, which is, I think, the size of Manhattan, that has all these different ways simultaneously by which to provide electricity, except that I don't think it's bringing electrons from the panhandle of Texas. So, how would you all resolve that? Do you follow my question? Should we on the federal level be basi-

cally endorsing eminent domain to take private property in order to allow high-voltage lines go from interstate settings?

Mr. FISHER. It's a valid question, sir, and I think the answer I would fall back on, personally, is that we should accomplish as much of this as possible through voluntary means. And I think the use of eminent domain should be minimized. I'm not sure that it will ever get to zero, but I think with the class of customer that we have now, the balance sheets that they bring, the speed-to-power, the sort of impetus that they bring to solving this problem, we should take full advantage of that. So, I would look more to the private sector than to the public sector.

Senator CASSIDY. Sir.

Mr. SNITCHLER. And Senator, I would simply add that I think all options need to be on the table. So, if you can locate generation more close to the load, instead of having to move it across long distances, and that is the option that I prefer—

Senator CASSIDY. I accept that but wind right there is really good, right?

Mr. SNITCHLER. Well, that's a separate discussion, and we are a generation-oriented organization, so it won't surprise you that if you want to build a power plant and electrons are closer to where your load is, we would certainly be willing to do that.

Senator CASSIDY. And ma'am?

Dr. REED. Thank you, Senator, for the question.

I think a clear and narrow federal authority for siting interstate transmission lines would be consistent with how we site natural gas pipelines, and that interstate commerce is a necessary and narrow role for the Federal Government. Right now, states use their eminent domain authority, but they also use practices that reduce competition so that we cannot have private developers who are able to access the economic power and move between states. So, we have multiple state regulations and laws in many places that are suppressing competition in ways that are costly to the consumer, and a narrow federal authority could help clarify this.

Senator CASSIDY. Thank you.

The CHAIRMAN. Senator Heinrich.

Senator HEINRICH. Dr. Reed, if each one of these large-load data centers was its own generator, would that be the most efficient use of capital to power that part of the demand sector?

Dr. REED. Thank you for the question, Senator.

I think the most efficient use of capital to power data centers is the choice of the data centers, themselves. And I think the best option that we can provide for American competitiveness and for growing industries here is to ensure that they have those options available to them, both a robust grid that can provide reliable and affordable power, and options for building their own private grids to provide their own power.

Senator HEINRICH. And describe to me any risk associated with customer impact with the sort of private-grid model.

Dr. REED. Thank you for the question.

I think the way that we think about transmission benefits is important to consider here, where if we have a robust backbone to our grid that can provide affordable power, that benefits consumers. The more consumers of electricity that there are on the grid, in-

cluding high consumers such as data centers, there would be more ratepayers who are helping pay for that valuable infrastructure.

The CHAIRMAN. Dr. Reed, I want to start with you. You recently wrote that durable federal permitting reform and enhanced federal siting authority for electric—you wrote about the need for it and enhanced federal siting authority for electric transmission projects. Section 216 of the Federal Power Act, of course, provides siting authority for FERC and DOE. Now, this Section 216 authority has yet to be used to site a line, but it most certainly will be used in the future. If that authority were used in the future, whenever it's used, do you think lines sited using 216 authority would still likely face hurdles under some of our environmental permitting statutes like NHPA, NEPA, and the Clean Water Act?

Dr. REED. Thank you for the question, Senator Lee.

These interstate and interregional lines that you are describing that would likely be sited under 216 authority would benefit from reforms to NEPA and NHPA. Both the backstop siting authority that you are describing and often these regulations require numerous iterations. So, we need to resolve these iterations that cause delay and clarify and simplify procedures, including that 216 authority, which actually has multiple federal authorities that need to be satisfied before we can even get to approving an interregional or interstate line. So, there is a lot of opportunity for clarification and limitation of procedures for merchant developers.

The CHAIRMAN. Thank you, but these are things we ought to be focused on to make sure that we are ready to go, that can be used.

Mr. Fisher, let's go back to you for a minute. Electric utility rate-making has been noted in this conversation today. It's a complicated process. It varies from region to region. It varies from state to state. You know, according to a report from Monitoring Analytics, which is PJM's independent market monitor, transmission in the PJM region now accounts for a total of 32 percent of total wholesale electricity costs. Now, this is up from 23 percent of total wholesale electricity costs just two years ago. In your view, what happened there? Why this jump?

Mr. FISHER. It's an excellent question, sir. I think the general thesis that I would put forward is that, especially in the wake of FERC Order No. 1000, there was a retreat away from regional and interregional lines toward what I have characterized as small-ball projects. So, in PJM, it's the immediate-need projects that are designed to meet a short-term reliability constraint. They are designed to reduce those. In my opinion, utilities have taken full advantage of that, and in their sort of profit maximization, they have been able to put a lot of small-ball transmission in rate base. And that works very well for them. It does not work very well for the consumer, and it increases the all-in cost of power.

The CHAIRMAN. Right.

Remind me how you define small-ball.

Mr. FISHER. I would characterize it as a voltage threshold distance, so we are talking about shorter lines and lower voltage, and they often operate in this sort of gray area between state jurisdiction and federal. And that, I think, if we wanted to close the regulatory gap there, I think that is an opportunity for Congress to step

in and to clarify that the voltage threshold could perhaps even go lower in terms of federal oversight.

The CHAIRMAN. Okay, but this all factors into the equation that we have been talking about previously about the fact that over-build or inefficient allocation of resources might result where the cost is spread out, perhaps where the utility company is held harmless regardless because the ratepayers are going to make up the difference. Is that right?

Mr. FISHER. That's right.

The CHAIRMAN. Mr. Snitchler, states like New York have weaponized Section 401 of the Clean Water Act, and they have done so, among other things, they have done so to block expansion of natural gas pipelines into New England. During Winter Storm Fern, that bottleneck resulting from that weaponization of Section 401 of the Clean Water Act forced the region to rely heavily on fuel oil in order to keep the power on. Now, according to an industry trade publication, oil-fired generators ran more frequently because natural gas was expensive due to the lack of pipeline infrastructure going to New England. And again, that lack of infrastructure can be traced to the weaponization of Section 401. Lack of gas pipelines led to higher gas prices, which in turn led to higher electricity prices, which in turn led to emissions spiking by nearly a quarter compared to the year before.

So, it's not just that this results in higher costs. It's not just that it's bad for consumers. It's also that it results in more emissions. In your assessment, what would the impact of sufficient natural gas infrastructure going in to New England be on prices and on grid reliability?

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

I think you have identified the two competing issues. The first of which is, how are we going to ensure that you have the commodity that impacts the price of power to be able to be delivered to the generator. That's natural gas in the instance that we are discussing. And how do you get greater access. So, that input cost is what ultimately drives the greater cost of electricity and the inability to move more natural gas into New England necessitates that there is going to be reordering of the units that are dispatched because oil becomes cheaper when gas gets more expensive. So, being able to address the questions about your input cost will ultimately affect what the price for generation will be, and also, to your point about emissions, it will also impact what your emissions profile looks like because there are limits that can be both hit and exceeded in very early parts of the year given a cold winter in New England, and there are still the summer months that have to be accounted for when you are looking at what your emissions limits will be for the course of the year.

So, it really resonates on both the price front and on your emissions limits front.

The CHAIRMAN. That makes sense.

I have one or two more questions I want to ask, but I know I am over time. Do either of you want a second round?

Thank you, Angus.

Mr. Fisher, you have written a fair amount about EPA's authority to regulate emissions from the power sector, in particular.

Thankfully, in 2022, the Supreme Court of the United States ruled against the EPA using very vague statutory language in order to mandate really broad economically impactful changes in the electricity generation sector, largely targeted at retiring coal and gas-fired electric power generation. I am grateful that the Trump administration overturned the EPA's 2009 Endangerment Finding, which created the legal basis for such regulations in the power sector. Now, you released a statement supporting EPA reversing this finding and you argue that this authority rests solely with Congress, of course, and I couldn't agree more.

How have this EPA policy and subsequent regulations affected grid reliability and affordability?

Mr. FISHER. That's an excellent question, sir.

I did support the EPA's reversal of the Endangerment Finding. I think it's fairly straightforward. I am not an attorney but the administrative law record reads to me like the EPA's choice to regulate greenhouse gas emissions, especially in the way that they did, was a major policy question and is subject to the major questions doctrine. Now, where that has the practical impact, or how it impacts the grid is, if the EPA's power plant rules change every four years and these assets are designed to be operated for 40-plus years, you really have a radical degree of regulatory uncertainty.

And so, if Congress could establish durable rules, or no changes in the rules at all, that would, you know, provide the foundation for a more robust power sector. For example, the second iteration of the Clean Power Plan would have essentially shut down a large portion of the existing coal plants, but it also threw a lot of uncertainty into whether or not you could invest in a combined-cycle gas unit, which, in a lot of parts of the country, is the most efficient way to meet new demand. Now, if you were going to operate at above a 40 percent capacity factor, you would have been required to capture the CO₂ emissions. That technology is not proven. So, the basic question of, you know, can you even consider it a best system of emissions reduction if the technology isn't proven? We need a lot more clarity on these things, and the regulatory uncertainty—that sort of dark cloud that has been over the industry since 2009—has been incredible.

The CHAIRMAN. And even just from an emissions standpoint, if you have that kind of environment, then when a demand surge comes, if we're not prepared for it, we all of a sudden see the need to rely on what we saw in New England during Winter Storm Fern—increased use of heating oil that is not good from an emissions standpoint, even from a standpoint of environmental quality that produces some bad outcomes.

Mr. FISHER. Right. So, that's exactly right, and the broader question of how did we get caught so flat-footed in this era of new demand growth? I think it's in part because we were focused too much on the emissions question and not enough on are we building a nimble industry that can respond to new demand? We clearly were not. I believe we are in a new posture now and I credit the EPA for changing that.

The CHAIRMAN. Thank you.
Senator Hickenlooper.

Senator HICKENLOOPER. Thank you, Mr. Chair, and again, I thank all of you for being here.

I don't want to relitigate what you have already covered, and I think there is actually a pretty general consensus that grid modernization is long overdue and essential. I think we could nibble around the perimeter of what is the most efficient way to do that, and to do that in such a way that the public embraces it and supports it. Obviously, people don't like having pipelines or, you know, transmission lines coming across their property. So, we look at reform within our entire permitting process, recognizing that the public comes first. They have to have full transparency. They have to have the right to speak their mind, but ultimately some of these decisions are going to affect a much larger whole and are going to require very difficult decisions. And I think this is one of the challenges when we look at the grid—how do we get to that? I mean, putting lines underground is prohibitively expensive in most situations, similar with pipelines, hard to put them deep underground.

What do each of you, or how would you provide an opinion in terms of how to approach this because that's going to be the question we are all going to deal with. We might not get you up here to testify again, but I would love to, while we have got you, hear your opinion.

So, Mr. Snitchler.

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

I think I may be the only one here who has ever had to vote on a power siting related issue in my prior role as the Chair of the Ohio Power Siting Board. And so, we had a statute that was fairly robust in the jurisdiction that it gave us to make decisions and try to contemplate a statewide or a broader perspective than merely the local community or merely the county level or region that incorporated input from a number of state agencies, as well as the legislative branch, in an effort to make sure that we were getting all of the appropriate input into the decision-making and then could ultimately make a decision that was for the good of the state, as well as ultimately where we fit into the region.

And so, the ability to utilize the subject matter experts, but ultimately have that decision-making authority rest with one body was very effective in being able to allow us to approve projects, whether it's transmission infrastructure intrastate, or whether it was pipelines that were intrastate, or large generating facilities that were under the jurisdiction of the power siting board. And that model worked very effectively because you funneled all of that information in, narrowed the funnel, and left that authority with the power siting board to make those decisions.

Senator HICKENLOOPER. Got it.

Mr. FISHER. At the risk of oversharing my opinion, sir, I believe when some folks have characterized the system as a vetocracy, that resonates with me because it seems like there are too many choke points, that there are too many ways to stop work on a project, there are too many ways to sue a project into oblivion. The more we can limit those choke points, or get complete buy-in up front that a project should move forward, and then have the permit certainty as the project does move forward, that, in itself, would be a game-changer because I have seen firsthand these projects that,

you know, they break ground and they are halfway done, and then there is a new suit or a judge finds something new and, you know, the project has to stop. I would say to my friends in the environmental groups, they are excellent at stopping work, and I think what we need is a regulatory framework that doesn't allow them to do that.

Senator HICKENLOOPER. I hear you, although I would argue that to even contemplate that, we need a really robust public process that's comprehensive and inclusive and where people really feel heard.

Dr. Reed.

Dr. REED. Thank you, Senator, for the opportunity.

I agree that we need a single process. I think a clear narrow federal authority for the types of transmission that are providing interstate and interregional value to consumers is incredibly necessary. What we have right now, we have talked about many different types of permitting, and transmission experiences this level of iteration on the state level and on the federal level, and we have an opportunity here—Congress has an opportunity to clarify and narrow this iteration that is happening by limiting the number of federal actions that need to be taken, by identifying clearly if it is a state or federal decision that needs to be made in the interstate flow of electrons, just as we do in the interstate flow of natural gas, and an opportunity to open up transmission development to private developers who are ready to capture that value and bring it to consumers, but are barred from that by both state regulations and complicated federal restrictions.

Senator HICKENLOOPER. Exactly. And there is a long history there of the interfacing between the utility regulators and private sectors versus the big utilities.

My great grandfather, Andrew Hickenlooper, came back from the Civil War to Cincinnati. I say this, Mr. Snitchler, so he was the Lieutenant Governor of Ohio for two years, hated it, quite rightfully, and had other things he was unhappy with, but he ended up becoming the second president of Cincinnati Gas and Electric because he was one of the few people having a stellar history, personal history in the Civil War, that people trusted. So, as they figured out these conflicts between one neighborhood—and originally, they were just going from neighborhood to neighborhood, the wires were going everywhere—Andrew Hickenlooper became the arbitrator and created the sense of public trust that you could figure out what is the right value to put on this self interest versus that self interest so that we can judge what is the best solution and how do we get the greatest benefit, greatest good for everyone. And I think that is kind of your challenge and our challenge, and we appreciate your help and your wisdom and your experience as we go forward because we are just beginning.

The CHAIRMAN. Martin, anything else?

Great.

All right, as we wrap up, I would like to enter into the record a letter from Toby Rice. He is the CEO of EQT Corporation, a natural gas production and midstream company. In his letter, Mr. Rice notes how high retail electricity rates and insufficient natural gas supply infrastructure are inextricably intertwined with each other.

Specifically, he notes that since 2015, states with the sharpest increase in retail electricity rates are in states that oppose expanding natural gas infrastructure, including Maine, Rhode Island, Massachusetts, Connecticut, and California.

So, I ask unanimous consent that we enter that into the record. Seeing no objection, it will be entered into the record.

[The letter referred to follows:]



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Senator Elizabeth Warren
United States Senate
Washington, DC 20510-2105

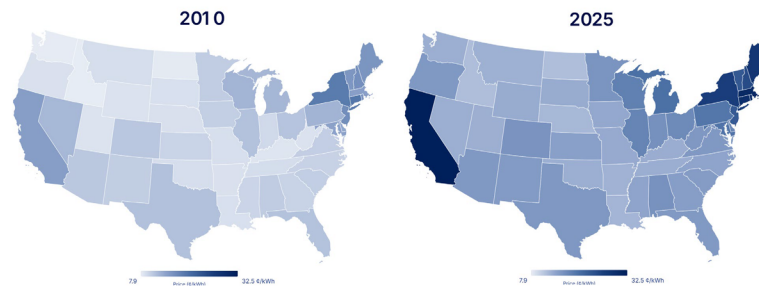
March 17, 2026

Dear Senator Warren:

We strongly agree with the goal of keeping energy affordable and reliable for citizens of the United States. EQT Corporation (EQT) has worked toward this goal for decades. We disagree, however, with the characterization that the growth in exports of liquefied natural gas (LNG) is the cause of the high utility bills being experienced by Americans.

If LNG exports were the cause of high utility bills, the states in which the LNG facilities actually exist would see greater electricity prices than others. That is not the case. Despite having substantially all of the LNG export facilities in the United States, Louisiana (\$0.13/kWh) and Texas (\$0.15/kWh) have below average electricity prices. Conversely, Massachusetts, the only state that continues to *import* LNG, has electricity prices of \$0.31/kWh, or more than double that of Louisiana and Texas.¹

Electricity Prices by State



U.S. Electricity Prices in Context

You are correct in your recognition that the American electricity system is primarily powered by natural gas. As you identified, in 2025, approximately 40% of U.S. electricity generation was fueled by natural gas, followed by nuclear (19%), coal (17%), wind (11%), and solar (7%).² As a result, facilitating low natural gas prices is a prerequisite to addressing affordability for Americans.

Low-cost natural gas has served as a foundation for the U.S. economy since the dawn of the shale boom in the mid-2000s. Importantly, the unlocking of this low-cost resource facilitated a massive and rapid transformation of the United States' power generation mix, with natural gas replacing coal as the leading fuel source for power generation. Not only did this transformation drive significant emissions reductions, with natural gas responsible for 61 percent of the power sector's emissions reductions since 2005, it brought on a sustained period of low electricity prices.³ Since the mid-2000s,

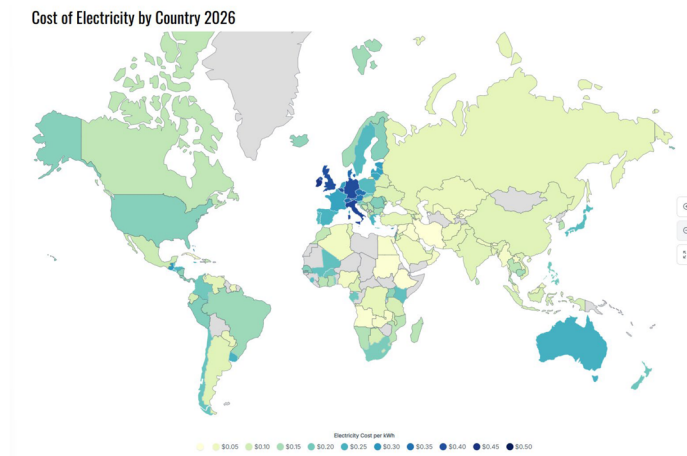
¹ For additional information on the visuals within this letter, please refer to eqt.com/energy-affordability

² U.S. Energy Information Administration (EIA). (2026, January 16). *Solar power generation drives electricity generation growth over the next two years*. <https://www.eia.gov/todayinenergy/detail.php?id=67005>

³ U.S. Energy Information Administration (EIA). (2024, June 9). *Electric power sector CO₂ emissions drop as generation mix shifts from coal to natural gas*. <https://www.eia.gov/todayinenergy/detail.php?id=48296>

the United States has been competitively advantaged as it relates to electricity prices relative to the rest of the developed world.⁴

As you will see below,⁵ alongside Canada and Norway (both significant producers of natural gas), the United States boasts some of the lowest electricity prices in the developed world. Conversely, the highest residential electricity prices are seen in Europe where domestic supplies are constrained, with Belgium, Germany, the United Kingdom, Switzerland and Denmark all having prices more than double that of the United States.

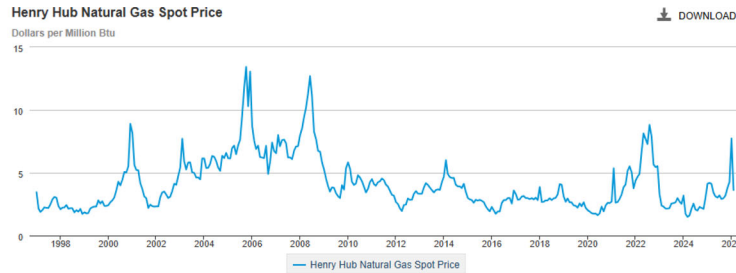


Not only did the boom allow the United States to maintain its energy independence, it unlocked such an abundance of low-cost natural gas that the United States began to export in the form of LNG, almost exactly ten years ago today. And even with the growing export of LNG, U.S. natural gas prices today remain below the 20-year average price of approximately \$4.00/MMBtu.⁶

⁴ More than just a competitive advantage, the geopolitical strength presented by the United States' abundant energy has been on display during recent years, shielding American citizens from price shocks experienced by the rest of the world both in 2022 following Russia's invasion of Ukraine and currently as a result of the blockage of the Strait of Hormuz.

⁵ World Population Review. (2026, March 5). *Cost of electricity by country 2026*. <https://worldpopulationreview.com/country-rankings/cost-of-electricity-by-country>

⁶ U.S. Energy Information Administration (EIA). (2026, March). Henry Hub Natural Gas Spot Price (dollars per million btu). <https://www.eia.gov/dnav/ng/hist/mgwhhdM.htm>

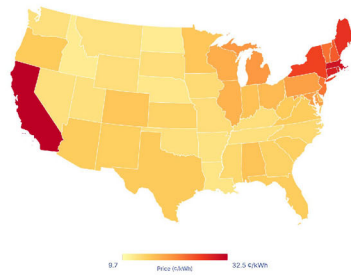


In fact, since the first cargoes of LNG were exported from the United States a decade ago, there has been only one year in which domestic gas prices exceeded the 20-year average – 2022, the year Russia invaded Ukraine.

In the end, despite the United States' surging to become the world leader in LNG exports, domestic electricity prices remained relatively stable for the entirety of the 2010s. Beginning in 2020, however, two regions began to experience rapidly increasing electricity prices: California and New England.

Electricity Price Increase (Absolute) by State Since 2020

2025



New England Prices Explained

Over the past decade, four of the top five highest increases in electricity prices in the Lower-48 have come in New England states – Maine (2), Rhode Island (3), Massachusetts (4), and Connecticut (5)⁷ – and the substantial majority of that has come in the last five years. **From 2020-2025, these four states have seen their electricity prices increase at a rate roughly three times that of the rest of the Lower-48 (excluding California).** In fact, the *increase* in electricity prices in these states represents more than half of the *total* average electricity price for the rest of the country.⁸

A key contributing factor to these outcomes in the 2010s was the approach that New England took toward natural gas infrastructure. When Governor Cuomo of New York effectively blocked the construction of the Constitution Pipeline, it was celebrated by ENGOs, with the Sierra Club noting that his "leadership could inspire a domino effect of related pipeline rejections as other states put the protection of water and our climate before flawed energy projects that do not serve the

⁷ California boasts the largest increase in electricity prices over this period with a whopping 90% increase over the past decade, and over 60% in the last five years.

⁸ Today, California's increase of \$0.12/kWh since 2020 is akin to every citizen in California paying their 2020 electricity bills, and then paying on top of that the 2025 bill of virtually any midwestern or southern U.S. state.

public interest.” This statement proved to be prescient. Together with the Constitution Pipeline, every major interstate pipeline seeking to provide New England with incremental natural gas volumes was blocked – four in total.

One such blocked pipeline was Kinder Morgan’s Northeast Direct Pipeline, a project that would have connected Massachusetts to shale gas supplies from Pennsylvania. At the time of the cancellation, you noted that “this project simply isn’t necessary to meet our energy needs,” and that it was “the wrong project at the wrong time [to] ensure that prices remain affordable for families and businesses.”⁹

Since then, New England’s reliance on natural gas for power generation has only increased, and electricity prices have increased by nearly 50%. As shown below, monthly natural gas power generation within the region has increased from a low of 9.5 TWh in 2016 to 18.6 TWh in 2024, growth that has rapidly outpaced the growth in wind (aqua) and solar (mustard) power generation in the region.



With increased demand and limited accessible supply, regional prices have, not surprisingly, escalated. And while the price increases on their own are concerning, what is alarming is the manner in which they have increased.

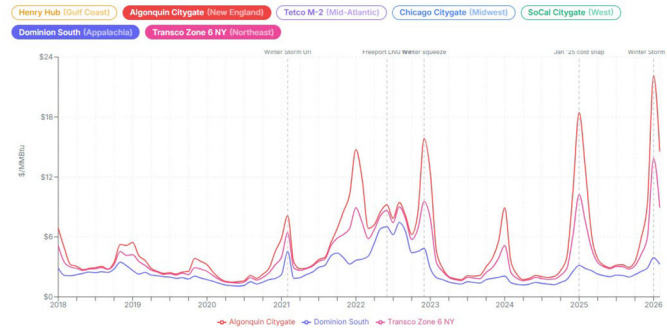
Price is Indicative of Stress

As you will see below, starting in 2021, regional gas price spikes have grown in both frequency and scale. In just five years, we have seen the spikes in monthly prices during the winter steadily increase, with a new record high of \$22/MMBtu in January 2026. Note that during this time period, prices in Appalachia, the source of the pipelines noted above, have remained both muted in volatility and low in cost (\$3.92/MMBtu in January 2026).

⁹ Senator Warren’s Statement on Kinder Morgan’s Decision to Suspend Work on the Proposed Northeast Energy Direct Pipeline. (2016, April 21). <https://www.warren.senate.gov/newsroom/press-releases/senator-warren-and-o39s-statement-on-kinder-morgan-and-o39s-decision-to-suspend-work-on-the-proposed-northeast-energy-direct-pipeline>

Natural Gas Hub Index Prices

Monthly average prices at major U.S. trading points. Click hubs below to toggle visibility.



There are three takeaways from this chart. First, in recent winters, New England has experienced some of the highest natural gas prices *in the world*. In fact, the natural gas that is produced in Appalachia, sent to Louisiana, converted to LNG, shipped to Japan, and subsequently regasified has at times been *cheaper* than the gas sold in New England in the winter. Second, price spikes occur during winter and thus require a solution that is capable of addressing seasonal needs. And third, the spikes are indicative of a growing weakness of the energy system as a whole in the region.

During Winter Storm Fern, natural gas prices in New England reached over \$150/MMBtu, roughly 50 times the average natural gas price in the U.S. last year and the highest levels seen in my lifetime. The scary thing about this is not the price itself; it is that people were *buying* gas at those prices. Buyers do not buy at those prices unless necessary, and they do not buy at those prices when they have alternatives.

The latter part is important to understand. Power demand is both seasonal and variable. Furthermore, power supply must match power demand exactly at all times. And on top of this, each source of power supply has its own unique strengths and attributes.

Nuclear is relatively inelastic – i.e., it has little flexibility to adjust the amount of electricity it puts onto the system, but it is also highly consistent in its delivery of that power. Renewables are intermittent – i.e., they have the lowest level of predictable delivery of power amongst fuel sources, and they cannot be reactively ramped up. Natural gas is unique among fuel supplies in that it has a high predictability in delivering power but is also able to ramp up and down to match demand needs.

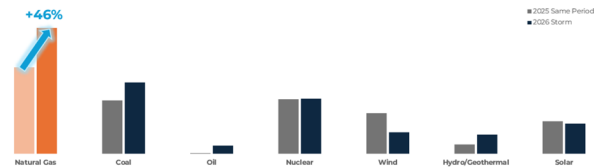
Electricity Generation – New England

Source: Wind, Solar



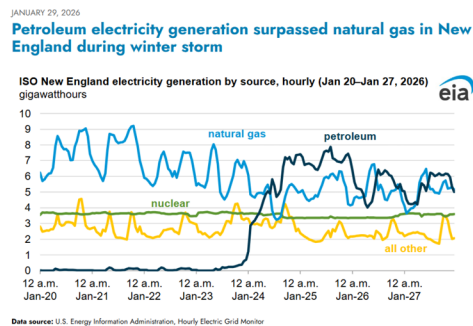
The intermittency of renewables can be seen above. Unlike the clean spiraling in power generation shown for natural gas earlier, the generation from renewables, while directionally describable, is not predictable. Yes, we can say that solar will be more consistent in the summer months and have limited generation in winter months. And yes, there are seasonal attributes of wind as well. But in no event can we say that we have a high degree of predictability of their output. And with that lack of predictability, they are not tools that can be ramped up to respond in periods of peak demand.

Winter Storm Fern demonstrated this concept well. During the storm, U.S. electricity demand peaked at 612 GW. As you will see below, natural gas generation increased by 46% compared to the same period the previous year, *despite it being priced at historically high levels*.³⁰ This is because the competition for natural gas was virtually non-existent. Renewables could not ramp up, nor could nuclear.



As explained by New England's regional grid operator, "[d]emand on the gas system has been elevated during this cold period. High demand, *coupled with limited capacity to transport gas into New England*, prompted high prices." (emphasis added).³¹

Furthermore, the combination of high prices – a direct result of lack of infrastructure – and home heating having priority for natural gas resulted in something unprecedented: oil temporarily became the primary source of power generation in the region. As more gas was consumed by home heating and power demand surged, the only answer for New England was to turn to one of the dirtiest fuel sources available, an option that was only allowed because the U.S. Department of Energy and ISO-New England temporarily waived emissions criteria during the storm.



³⁰ Fact sheet: Energy department prevented blackouts & saved American lives during winter storms. Energy.gov. (2026, February 6). <https://www.energy.gov/articles/fact-sheet-energy-department-prevented-blackouts-saved-american-lives-during-winter-storms>

³¹ ISO-NE provides update on cold weather operations. (2026, February 3). ISO Newswire. <https://isonewswire.com/2026/02/03/iso-ne-provides-update-on-cold-weather-operations/>

A Time for Reflection and Re-evaluation

Which brings me back to the alarm. The increase in the frequency and scale of the price spikes seen of late in New England are demonstrating that the system is highly stressed. A well-functioning system does not see annual and increasing price spikes of the magnitude being experienced in New England, nor does it have to unwind emissions rules to allow dirtier fuels to carry it through times of stress.

If the intent of blocking natural gas infrastructure into the region was to allow for the design of a power system that was both more affordable and cleaner, those goals have not been achieved. I personally believe those goals are laudable and should be pursued, and I have advocated for them for many years.

To achieve those goals, it is imperative that you take action. New England's affordability issue cannot be solved with the status quo. The same permitting tools that were used to halt major energy infrastructure projects in the region in the past remain in place today, and they are being applied to energy projects of all types. Therefore, to address affordability, we need to adopt comprehensive permitting reform.

We also need to be realistic about what tools are needed to address the current affordability issue. As you rightly acknowledged, America is a natural gas-based electricity system. Natural gas is what provided the United States with its competitive advantage over the past two decades. Against that backdrop, and as it relates to the solutions needed to address affordability, context matters. The pipelines that were cancelled or delayed nationally in the last decade could have supported up to approximately 50 GW worth of power generation, an amount roughly four times the total power generation of New England and 100 times that of the likely generation of the delayed Revolution Wind project.

As I explained over four years ago when I first wrote to you on this topic, solving our nation's permitting problems is of critical importance. We have to get back to a place where we can build critical infrastructure on a cost-effective basis. That does not happen without permit reform. And in New England, the affordability (and reliability) issues will not be solved unless and until new pipeline infrastructure is constructed.

Sincerely,



Toby Z. Rice
President and Chief Executive Officer

The CHAIRMAN. That will conclude today's hearing. I want to thank our witnesses for their outstanding contributions. Your testimony has been insightful and very, very helpful to us.

The record will remain open both for submitting questions for the record and for adding statements to the record from members. We will keep that open until 6:00 p.m. next Wednesday, April 1st.

Thank you again to our witnesses for your testimony today. The Committee stands adjourned.

[Whereupon, at 11:08 a.m., the hearing was adjourned.]

APPENDIX MATERIAL SUBMITTED



Todd Snitchler, President & CEO, Electric Power Supply Association

U.S. Senate Committee on Energy & Natural Resources
Hearing to Examine the State of the Bulk Power System
March 25, 2026

Questions for the Record
April 10, 2026

Questions from Ranking Member Martin Heinrich

Question 1: If we want to build new energy infrastructure, including power plants, in the country to meet the growing need, we need as much certainty as we can get. Energy projects can take years to develop. Can you explain how important permitting certainty is to members of your organization?

Question 2: You mentioned during the hearing that we need to accelerate generator interconnection processes, and cited at least one region using artificial intelligence to dramatically reduce the interconnection study times. Multiple regions have used advanced computing and software to speed the study time, with the Midcontinent Independent System Operator, Inc. announcing last week that the Phase 1 Study of the 2025 Generator Interconnection Queue was completed in only 54 days, a new record for the regional transmission organization that it credits to its new automation capabilities. How can Congress support the continued use of new technologies like advanced automation, artificial intelligence, and new software to continue speeding up generator interconnection processes?

Answer of Mr. Todd Snitchler:

- 1) Permitting certainty is a critical component of a regulatory environment that recognizes the importance of stability and predictability. Competitive power suppliers – like EPSA members – invest in multi-billion dollar, multi-decadal generation assets without a guaranteed rate of return. Thus, indefinite delays or uncertainty depress incentives to invest. We have seen this uncertainty adversely affect energy generation projects that are both dispatchable and intermittent, as well as non-generation assets like electric transmission and natural gas and oil pipelines. As I mentioned in my prepared testimony, EPSA strongly supports the permitting durability language included in H.R. 4776,¹ the Standardizing Permitting and Expediting Economic Development (SPEED) Act, approved by the U.S. House of Representatives in late 2025. The language attempts to blunt any possible volatility or whiplash plaguing vital energy investments, and EPSA urges the Senate to include this language in any possible permitting agreement.

¹ <https://www.congress.gov/bill/119th-congress/house-bill/4776>

- 2) As I alluded to in my testimony, we have seen meaningful improvements in interconnection queue processes and the awarding of interconnection agreements. Regarding the potential for technology to speed interconnection queue processes, there may not be an immediate or direct nexus for Congress to legislate. However, Congress can – and should – exercise its traditional oversight role to encourage both the Federal Energy Regulatory Commission (FERC) – the federal regulator of six of the U.S. Independent System Operators and Regional Transmission Organizations (ISOs/RTOs) – as well as leadership at the ISO/RTO level. If Congress desires to encourage actions at FERC or the grid operators, even without approving formal legislation, it can still offer valuable support during often contentious stakeholder processes.

Questions from Senator Ron Wyden

Question 1: As large new loads like data centers come online, what mechanisms exist in competitive markets to ensure those customers are paying their full share of system costs, rather than shifting costs onto residential ratepayers?

Question 2: There's ongoing debate about whether competitive markets are delivering lower costs for consumers. How should we understand recent data showing higher average retail prices in some regions with competitive markets, and what factors are driving those outcomes?

Question 3: Capacity markets signal when the energy system needs more reliable supply. Given recent high prices, is the U.S. seeing sufficient new resources being built, and if not, what barriers are preventing that investment?

Question 4: In competitive markets, where there isn't a single entity responsible for ensuring enough generation is built, how is long-term reliability maintained, and who is ultimately accountable if there is a shortage of energy supply and electricity rates skyrocket?

Answer of Mr. Todd Snitchler:

- 1) On March 4, 2026, seven of the nation's largest developers (and operators) of data centers signed the Ratepayer Protection Pledge² in a White House ceremony – a gesture that commits the companies to “protect American consumers from price hikes due to data center energy and infrastructure requirements, and lower electricity costs for consumers in the long term.” As to how the Pledge is being codified, FERC is currently developing a proposed rule or policy regarding the interconnection of large loads (like data centers) into the bulk power system. The U.S. Department of Energy began this process with an Advanced Notice of Proposed Rulemaking in October 2025,³ with a request for FERC to act by April 30, 2026. FERC's actions are expected to outline the “rules of the road” for data centers to reliably interconnect – and finance – any needed upgrades to the transmission system.

² <https://www.whitehouse.gov/releases/2026/03/ratepayer-protection-pledge/>

³ <https://www.ferc.gov/rm26-4>

Regarding the generation side of the data center commitments, the PJM Interconnection – the largest grid operator in the United States – is currently developing specifics for a one-off, ad hoc capacity auction (possibly conducted in the Fall 2026) that may direct proposed data centers to enter into multi-year contracts to cover the cost of capacity needed to meet data center demand. Multi-year contracting by data centers with capacity assets was an issue endorsed in an agreement between the governors of every state in the PJM Interconnection footprint and the National Energy Dominance Council (NEDC) on January 16, 2026.⁴ As I mentioned in my testimony, EPSA strongly supports the ratepayer protections inherent in bilateral or physically “co-located” agreements that isolate the investment risk for capacity to power a data center between two voluntary counterparties (a data center and a generator), immunizing ratepayers from shouldering the financial cost for any unnecessary or inefficient investment. Congress could provide a powerful demonstration of its commitment to ratepayer protection by voicing its support for FERC and PJM in these actions.

- 2) First, when considering the recent rise in retail rates in various regions of the United States, I would strongly recommend an examination of the two 2025 studies (from both the Lawrence Berkeley National Laboratory and Energy Tariff Experts) that I highlighted in my prepared testimony. For brevity’s sake – both studies conclude that recent increases in retail rates were primarily driven by investments in *transmission and distribution* (T&D) spending – not generation. Of course, this T&D spending (and its guaranteed rate of return) flow directly into retail electricity rates.

However, from a broader perspective, EPSA strongly rejects the often-discredited attempts to compare retail electricity prices in a single region (or state) operating competitive markets to a cherry-picked example of retail rates in a vertically integrated region. Such attempts to make apples-to-apples comparisons usually conveniently omit important variables – outside of the competitive market structure – that affect retail rates. For example, many of these “analyses” examine *percentage* growth of retail rates while often ignoring that states with lower retail rates may see retail rates rising faster as a *percentage* of baseline rates, while higher cost states may claim their rates are rising at a slower rate as a *percentage* of the status quo.

For additional examples of variables to recognize, in my testimony I highlight a region (New England) that has – for years – seen significant adverse consequences from an inability (or unwillingness) to alleviate well-documented fuel constraints that drive up wholesale electricity costs. Another conveniently overlooked variable important to this discussion is the rate at which some states have advanced emissions reduction policies, resulting in the retirement of politically undesirable – yet economically viable – dispatchable assets. Some states are blessed with abundant native, low-cost fuel sources – like large scale hydropower in the Northwestern United States or natural gas assets in Texas. However, not every region has this luxury – other regions must rely on imported fuels or electricity to ensure reliability. These are several of many factors that must be examined for a true appreciation for retail electricity rates.

⁴ <https://www.energy.gov/documents/statement-principles-regarding-pjm>

- 3) As perhaps the epicenter of data center load growth in the U.S., the PJM Interconnection has seen “recent high prices” in its capacity market. In its recent *State of the Market Report*,⁵ PJM’s independent market monitor clearly stated that “Data center load growth is the primary reason for recent and expected capacity market conditions, including total forecast load growth, the tight supply and demand balance, and high prices.” As I noted in my testimony, prior to the last three capacity auctions, capacity prices in PJM *cleared at historic lows*. The message being sent to capacity owners or investors was clear – the PJM region is long on capacity and does not place a significant value on your resource.

However, the last three capacity auctions have clearly indicated that, as demand is rising, the region now needs to retain existing capacity and to build additional generation as well. I would point you to the findings that I highlighted in my testimony from the PJM Power Providers⁶ (P3) noting that “substantial capital investment is rapidly mobilizing.” P3 details over *12 gigawatts* of “new generation expected to enter the PJM regional grid, evidencing a definitive and robust market response” since July 2024. You may also be aware that typically capacity auctions are run (and results are announced) 12 months apart, providing competitive power suppliers and the investment community with considerable time to reflect and respond to results. However, due to regulatory processes that compressed the schedule for several of the most recent auctions, the last three auctions were conducted in roughly half the traditional timeframe.

Your question asks about possible “barriers” to investment. It is important to recognize that the last three capacity auctions in PJM have been conducted with a cap on prices through an administrative price “collar.” It is certainly true that proactively depressing prices in the short term will affect retail rates. And while no formal decisions have been announced by FERC, it is very possible that the next two auctions will be subject to a price cap as well. EPSA appreciates that both PJM and the NEDC have urged the region to reemphasize the core fundamentals of competitive markets; however, it is fair to ask if the region is indirectly diminishing needed investment by proactively depressing wholesale market prices frustrating the goal of adding new resources.

- 4) Perhaps the most direct answer is that individual states are responsible for resource adequacy as states determine what resources are built and are able to operate in their state. However, in regions where utilities are part of an ISO/RTO, resource adequacy is achieved differently among those states.

While perhaps not specifically asked in your question, it is important to remember that when demand for capacity rises, prices should rise to indicate an enhanced value of existing and new capacity. If policymakers want to reap the economic and national security benefits from data centers to power AI, investments in domestic manufacturing, and electrification policies, the nation will need to invest in the bulk power system. It is unrealistic to support development policies that will bring potentially *tens of gigawatts* of new demand onto electric grid while expecting wholesale generation costs to stay at historic lows. As I emphasized numerous times in my testimony, EPSA strongly supports

⁵ https://www.monitoringanalytics.com/reports/PJM_State_of_the_Market/2025/2025-som-pjm-vol2.pdf

⁶ https://epsa.org/wp-content/uploads/2025/12/P3-New-Generation_One-Page.pdf

the ratepayer protections inherent in competitive markets and endorses other policies to hold ratepayers harmless from inefficient investment that do not exist in non-market regions. However, the energy industry derives no benefit from an unrealistic discussion of the importance of economic growth and winning the AI race without being candid and clear-eyed about the investments needed to power those assets reliably.

Questions from Senator Catherine Cortez Masto

Question 1: From your perspective, what are the top two-to-three policies that Congress must include in a permitting reform package, in order for the U.S. to adhere to growing energy demand?

Question 2: In February 2025, President Trump issued an Executive Order to exert more control over independent agencies across the federal government, including the Federal Energy Regulatory Commission (FERC). According to the Order, independent regulatory agencies must submit Federal Register proposals for White House review – before official publication can occur. You’ve previously applauded commitments from recent FERC nominees to uphold FERC’s independence.

What is your interpretation of the February 2025 Executive Order? Do you agree that future FERC decisions should be free of interference from the President and this Administration? Why or Why Not?

Question 3: Building on our conversation during the hearing, can you please provide any additional thoughts on how the U.S. can better protect the grid from vulnerabilities – such as extreme weather, or physical and cyber attacks?

Answer of Mr. Todd Snitchler:

- 1) For brevity’s sake, I will reiterate several key permitting policies that I highlighted in my prepared testimony.
 - The SPEED Act includes bipartisan language that attempts to provide permitting certainty to protect projects across administrations. Power plants are multi-decade assets – investors value certainty and now is the time to reverse the precedent of permitting whiplash (affecting both dispatchable and intermittent generation) and provide stability to investors.
 - In September 2024, EPSA joined an amicus brief⁷ at the U.S. Supreme Court in *Seven County Infrastructure Coalition v. Eagle County, Colorado*, supporting the petitioner’s challenge to what has become an expansive approach to the effects assessed by federal agencies in their National Environmental Policy Act (NEPA) environmental reviews of new infrastructure projects. The SPEED Act provides valuable codification of the NEPA reforms outlined in the Court’s *Seven County* ruling.

⁷ <https://epsa.org/wp-content/uploads/2024/09/Supreme-Court-23-975-Seven-County-Merits-INGAA-et-al-Amicus.pdf>

- In the prior Congress, this committee passed the Energy Permitting Reform Act.⁸ Title I of the bill includes prudent and responsible guardrails on the legal process for awards and review of key federal permits. EPSA appreciates the inclusion of reasonable timelines for the legal process to unfold and to prevent drawn out, undefined delays in federal permitting. Title V of the bill would wisely create a process for FERC to harness the expertise of the North American Electric Reliability Corporation (NERC) when considering possible adverse impacts on electric grid reliability of proposed federal rules. The language does not appear to put a significant onus on FERC, as its role appears to be limited to directing NERC to conduct reliability analyses and to make those studies public.
- 2) On at least two occasions,⁹ EPSA has highlighted the tremendous value of regulatory stability in an environment where investors do not have a guaranteed rate of return, and the potential for adverse consequences if that stability is altered.

However, to be clear, EPSA does not base its argument on Supreme Court precedent or interpretation of Constitutional text. No matter how one views the appropriateness of independent agencies (like FERC) via the intent of the Framers, the current process by which FERC commissioners are nominated, confirmed by the U.S. Senate, and serve their term provides a level of certainty and predictability that is valuable to competitive power suppliers. As we acknowledge in our prior statements, the FERC chair typically reflects the priorities of the administration and thus sets the agenda for the Commission. But turnover among commissioners is designed to be deliberate and for the swings of the political pendulum to be relatively modest. EPSA hopes, no matter the outcome of the relevant Supreme Court deliberations, that regulatory whiplash will be minimized during a period when demand growth is almost certain but is being preceded by volatile demand growth projections.

- 3) It is always worth remembering that the bulk power system – including competitive power suppliers – is the only industry that owns and operates critical infrastructure that is subject to *mandatory and enforceable* security standards. Critical Infrastructure Protection (CIP) standards are designed and proposed by the nation's Electric Reliability Organization (the North American Electric Reliability Corporation (NERC)) and ultimately approved by FERC. No other industry in the United States that owns critical digital infrastructure is subject to similar standards.

CIP standards have been in place for close to 20 years. Of course, CIP standards — while mandatory and enforceable — are only a baseline, not a ceiling. And the standards have evolved through several iterations over the last few decades. In addition, NERC's Board of Trustees recently approved recommendations, developed by its Modernization of Standards Processes and Procedures Task Force, which aim to more effectively and efficiently develop future CIP Standards to calibrate with the pace of emerging bulk power system risk.

⁸ <https://www.congress.gov/bills/118/congress/senate/bills/4753>

⁹ <https://epsa.org/ferc-regulatory-stability-power-generation-investment/>
https://epsa.org/wp-content/uploads/2025/11/EPSA_SpeedToPowerRFI_Nov62025.pdf

Highlighting CIP standards is not intended to minimize the threats facing owners of bulk power system assets; however, CIP standards are designed to ensure at least a minimum level of security at bulk power system sites.

I would also like to highlight the work of the Electricity Subsector Coordinating Council (ESCC)¹⁰ as the “the principal liaison between the federal government and the electric power industry” tasked with disseminating information relating to possible or ongoing threats to the bulk power system. As the trade association representing approximately 225 gigawatts of installed capacity, EPSA proudly served as a member of the ESCC until 2023. Since that time, the ESCC Executive Committee has been narrowed, along with ESCC’s “formal” membership, and EPSA is no longer involved in any internal role with the ESCC; competitive power suppliers that represent more than 25% of the installed generation in the country remain without a seat or a voice in the ESCC’s operations and engagement with our government partners which seems like a significant missed opportunity.

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¹⁰ https://www.electricitysubsector.org/-/media/Files/ESCC/Documents/ESCC_Brochure.pdf?la=en&hash=ABA1C484F2450EE402131C900F1916BEEC631612

**U.S. Senate Committee on Energy and Natural Resources
March 25, 2026 Hearing: *The State of the Bulk Power System*
Questions for the Record Submitted to Dr. Liza Reed**

Questions from Ranking Member Martin Heinrich

Question 1: During last week's hearing, you mentioned FERC's approval of the Southwest Power Pool's Consolidated Planning Process or CPP. What is the CPP, and how can it change the way the grid is planned today?

The CPP replaces SPP's separate transmission planning and generator interconnection processes with a single integrated framework. Under the legacy approach, transmission planners studied system needs in one process while interconnection engineers studied individual generator requests in another, and each recommended transmission upgrades. This produced duplicative studies, unpredictable costs, and median interconnection timelines of 51 months. The CPP consolidates these into a recurring three-year cycle: a 20-year assessment that identifies long-term transmission needs and pre-approved interconnection locations, and an annual 10-year assessment that integrates interconnection cluster studies with regional planning.

By planning transmission and generation connections simultaneously, SPP estimates it can avoid over \$100 million in duplicative transmission costs and cut interconnection timelines to roughly 10 months. Uncertain and highly variable upgrade costs will be replaced with a standardized, upfront per-megawatt charges that gives developers cost certainty when they enter the queue. FERC unanimously approved the CPP on March 13, 2026.

Every region faces the same problem the CPP was designed to solve: interconnection queues that are years long, unpredictable costs, and transmission plans disconnected from generation needs. SPP shows these problems are solvable through process reform.

Question 2: You have discussed how current regional transmission organizations' and independent system operators' rules fail to compensate High Voltage Direct Current operators for ancillary support and capacity services. What specific steps can Congress, or FERC, take to ensure that HVDC lines are compensated for the reliability services that they provide?

Ancillary services provide essential support functions that help stabilize the grid, while capacity services ensure there's enough generation to meet future demand. In practical terms, this means that HVDC can strengthen the grid's resilience, helping it withstand and recover from outages and reduce the need for costly local capacity by delivering lower-cost power from distant sources. Together, these capabilities enhance both reliability and affordability.

Invenergy, an independent HVDC developer, requested that FERC hold a Technical Conference with the goal of establishing a federal framework for compensating HVDC owners

**U.S. Senate Committee on Energy and Natural Resources
March 25, 2026 Hearing: *The State of the Bulk Power System*
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for these services. Although the 2022 docket generated significant interest in such a convening, as of now, no conference or rulemaking has resulted from the request.

Congress could pass legislation to compel FERC to initiate a rulemaking (based upon the 2022 Technical Conference) to codify rules and processes by which HVDC transmission providers can participate in existing ancillary and capacity markets in the FERC Order 1000 transmission planning regions.

Questions from Senator Catherine Cortez Masto

Question 1: From your perspective, what are the top two-to-three policies that Congress must include in a permitting reform package, in order for the U.S. to adhere to growing energy demand?

From my perspective as a transmission expert, changes to how transmission is evaluated and sited are important parts of permitting infrastructure quickly. First, a consolidated federal siting authority for interstate transmission would clarify roles and reduce delays. A transmission line crossing multiple states must obtain separate approvals from each state's siting authority. Any single state can block a project that would benefit millions of ratepayers. The SunZia transmission line in New Mexico and Arizona took 17 years to permit, and Independence Energy Connect, a project proposed by Transource and approved by the regional grid operator in 2017 is still undergoing litigation related to state siting disagreements. FERC already has analogous authority for interstate natural gas pipelines under the Natural Gas Act. Congress could extend a comparable Federal authority to electricity transmission.

Second, transmission technologies, such as high voltage direct current transmission (HVDC) face market barriers that Congress can correct. The modern HVDC technology, demonstrated in the 1990s, can stabilize grid voltage and frequency, provide blackstart services, and provide capacity services. These are income streams currently available only to generation, through ancillary and capacity markets. Congress could pass legislation to compel FERC to initiate a rulemaking to codify the processes by which HVDC transmission providers can participate in existing ancillary and capacity markets in the FERC Order 1000 transmission planning regions.

Finally, the grid will fall short if planning processes fail to identify the transmission that is needed. Interregional planning today is largely voluntary and has produced almost no new capacity in over a decade. Niskanen Center analysis found that most interregional borders fall well below the transfer capacity needed to maintain reliability during extreme weather. During Winter Storm Fern, some regions saw prices of hundreds of dollars per megawatt-hour while neighboring regions had surplus power – a direct consequence of insufficient transfer capacity. Congress could direct FERC to establish an interregional capacity requirement or an

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interregional planning requirement to spur the identification and development of this missing infrastructure.

**Senator Hyde-Smith, Statement for the Record on the State of the Bulk Power System
Hearing on Wednesday, March 25, 2026**

Mississippi is not experiencing some of the issues raised related to bulk power due to its effective regulatory models.

In fact, Mississippi has some of the lowest rates in the country, with rigorous oversight by the Public Service Commission of Mississippi, which is elected by our residents, and the Tennessee Valley Authority Board, which is Presidentially appointed and Senate confirmed.

Investor-owned utilities in my state are setting the standard thanks to our vertically integrated market model, with Entergy Mississippi's rates 20% below the national average and Mississippi Power's rates 23% below the national average.

Mississippi's low rates and favorable regulatory environment are attracting global investment in Mississippi, highlighted by Amazon's announced \$13 billion hyperscale AI data center projects in Madison and Warren counties, along with Avaio's announced \$6 billion hyperscale data center project in Rankin County. In addition, Compass Data Centers in Meridian, Mississippi, is building a multi-billion-dollar facility with Mississippi Power's transmission facilities upgrades well underway to meet an in-service date in the coming months.

Thanks to Governor Tate Reeves, the Mississippi legislature, and the Mississippi Public Service Commission's leadership in partnering with our utilities, my state is delivering at lightning speed. In fact, the first AWS data centers in Mississippi have been operating for more than a year due to that public/private partnership that can deliver energy for these projects at the speed of business.

At the same time, Entergy Mississippi will ensure more than \$2 billion in customer benefits. At the same time, data center partners have agreed to pay their fair share for infrastructure upgrades, which is in line with the President's Ratepayer Protection Pledge.

As conversations continue in Congress, I believe it's important to understand that energy issues in this country are regional. Our regulated and public utilities in Mississippi are meeting the moment to protect our customers and deliver AI and energy dominance for our country.



Transmission Priorities for Federal Permitting Reform

January 2026

The U.S. is experiencing rapid growth in electricity demand from data centers, manufacturing, and other strategic industries, with recent analyses projecting load increases of roughly 25% by 2030 and more than 75% by 2050 relative to 2023 levels.¹ Yet the high-voltage transmission system needed to move power to homes and businesses is not being built fast enough to keep up. Recent power system studies demonstrate that U.S. transmission capacity could be roughly doubled by 2035 by replacing antiquated wires with advanced conductors, at a fraction of the cost and time required for new construction.² Accelerated transmission expansion can reduce national electricity system costs by roughly \$270-\$490 billion through 2050 via lower congestion and improved access to least-cost generation.³ A modern, well-planned grid lowers costs for consumers, improves reliability during extreme weather, and supports economic development across the country. It also allows new energy resources to be delivered using fewer new corridors, reducing impacts on communities, wildlife, and sensitive habitats.

Federal permitting reform is a key opportunity to expand and modernize the grid by improving agency coordination, streamlining reviews, and ensuring projects are sited responsibly. The National Wildlife Federation (NWF) supports a permitting framework that delivers reliable, affordable energy while protecting the nation's lands, waters, wildlife, and communities.

NWF recommends that Congress include ten key transmission provisions in federal legislation on permitting in order to ensure a modern and reliable electric grid able to support new load growth. Together, these provisions are designed to advance:

- *Existing infrastructure capacity maximization*: Policies and incentives that encourage use of grid-enhancing technologies, advanced conductors, and reconductoring to increase transmission capacity within the existing system where cost-effective, efficient, and technically and environmentally feasible
- *Existing right-of-way prioritization*: Planning and permitting practices that incentivize and prioritize transmission upgrades and expansion in existing degraded rights-of-way to minimize new land disturbance, habitat fragmentation, and community impacts
- *Predictability*: Clear, durable federal and regional decision-making that reduces uncertainty for communities, developers, and agencies
- *Efficiency*: Streamlined, coordinated reviews that shorten timelines without compromising analytical rigor
- *Grid reliability & resilience*: Transmission planning and standards that anticipate extreme weather, shifting load, and long-term grid needs
- *Affordability*: Consumer-focused approaches that reduce congestion costs and ensure fair distribution of project benefits and costs nationwide
- *Accountability*: Transparent planning, modeling, and benefit standardization frameworks that ensure decisions reflect public interest, not narrow state or utility incentives

¹ Batra et al., *Rising current: America's growing electricity demand*, ICF (2025), https://www.icf.com/-/media/files/icf/reports/2025/energy-demand-report-icf-2025_report.pdf

² *Advanced conductors provide path for grid expansion*, University of California Berkeley (Sep. 19, 2025), <https://erg.berkeley.edu/news/advanced-conductors-provide-path-grid-expansion>

³ U.S. Dep't of Energy, *National Transmission Planning Study* (2024), <https://www.energy.gov/sites/default/files/2024-10/NationalTransmissionPlanningStudy-ExecutiveSummary.pdf>

- *Wildlife & habitat stewardship*: Transmission planning and siting that avoid high-conflict wildlife areas where possible and incorporate mitigation where needed
- *Community engagement*: Early, consistent, and well-resourced Tribal, local, and landowner participation to avoid conflict and improve project outcomes
- *Environmental integrity*: Strong, science-based environmental reviews that maintain public trust while enabling timely, coordinated decisions

Recommended legislative provisions include:

1. Strong interagency coordination & federal capacity for permitting

Congress should strengthen federal coordination for transmission buildout by:

- Increasing technical staffing capacity at the Federal Energy Regulatory Commission (FERC), the Department of Energy (DOE) Grid Deployment Office, and the Department of Interior (DOI);
- Requiring unified federal permitting schedules for transmission projects, with concurrent (rather than sequential) environmental and land management reviews wherever technically feasible;
- Directing DOE and FERC to maintain integrated, transmission-focused geospatial and system planning tools (such as interregional transfer capability maps, congestion/curtailment data, resource adequacy forecasts, and existing right-of-way inventories) to guide corridor planning and reduce redundant analysis;
- Requiring early federal coordination on large load forecasts (e.g., data centers, industrial electrification, hydrogen hubs, and manufacturing clusters) and integrating these projections into long-range grid modeling and transmission planning;
- Establishing project-level interagency dispute resolution mechanisms that set timelines for resolving technical disagreements without bypassing environmental protections or public participation;
- Requiring federal agencies to publish consistent data standards, modeling inputs, and scoping expectations for multi-state transmission reviews to reduce contradictory requirements between FERC, DOE, Bureau of Land Management (BLM), U.S. Forest Service (USFS), and other permitting entities;
- Requiring federal agencies to apply coordinated, predictable linear infrastructure permitting timelines and analytical standards across DOE, FERC, DOI, and the U.S. Army Corps of Engineers, so clean energy transmission is not procedurally disadvantaged relative to fossil pipelines, while maintaining robust environmental, Tribal, and community protections;
- Allowing federal agencies to adopt joint environmental documents and coordinated comment periods for transmission lines crossing multiple jurisdictions, reducing duplicative analysis while strengthening review quality; and
- Providing federal funding and staffing support for state and Tribal governments so they can engage meaningfully in transmission planning and federal permitting processes.

This tackles the real drivers of delay such as fragmented roles, inconsistent modeling requirements, insufficient staffing, and uncoordinated review processes, rather than diluting the rigor of environmental analysis.

2. Tailored judicial review process for transmission projects

Congress could adopt judicial review provisions tailored to large linear transmission projects by establishing for such projects:

- A *reasonable* statute of limitations of at least one year after Federal Register publication of the final Record of Decision, ensuring communities and Tribes have meaningful time to prepare challenges while preventing multi-year uncertainty;
- Exclusive initial review in a single, predetermined federal court of appeals, with venue selection specified by statute (e.g., assigning multi-state or interregional transmission projects to the D.C. Circuit and single state projects to the circuit where the project is located), to ensure consistent interpretation of federal environmental statutes and avoid forum shopping;

- Procedural coordination measures that promote transparency and efficiency, such as consolidated administrative records and coordinated briefing schedules, implemented consistent with the Federal Rules of Appellate Procedure and applicable circuit rules, and without altering substantive rights, evidentiary standards, standing, remedies, or judicial discretion;
- A requirement that agencies timely compile and disclose a complete administrative record before expedited appellate review, preventing rushed litigation based on incomplete information and protecting the integrity of scientific and environmental analysis while preserving existing rights to challenge the adequacy of the record;
- Clear, affirming provisions for intervenor participation that preserve timely and meaningful access for Tribes, nongovernmental organizations, affected communities, and landowners (e.g., clear timelines for intervention, early resolution of participation status, consolidation of intervenor input where appropriate), to reduce late-stage procedural challenges; and
- Judicial remedies that expressly preserve courts' traditional equitable authority, including the ability to vacate unlawful permits, without statutory constraints on how that authority is exercised.

These provisions provide predictability and timeliness for high-value transmission projects while fully preserving meaningful judicial oversight, community access, and environmental review.

3. Grid-enhancing technologies, reconductoring, and right-of-way sequencing

Congress should direct FERC to require that transmission providers and project developers include a standardized alternatives analysis as part of transmission planning and federal permitting reviews that evaluates:

- Reconductoring using advanced conductors;
- High-voltage direct current (HVDC) overlays where alternating current (AC) reinforcements are inefficient;
- Co-location opportunities along existing linear infrastructure (e.g., pipelines, rails, highways, and existing transmission rights-of-way);
- Dynamic line ratings with fully deployed sensor infrastructure;
- Advanced power flow control devices (e.g., flexible alternating current transmission siting devices and phase-shifting transformers);
- Improving grid layouts to relieve major constraints;
- Wildlife-compatible design (e.g., line marking, structure design, avian-safe spacing, and use of native vegetation and restoration practices); and
- Opportunities for dynamic and static reactive power compensation to increase thermal headroom on existing lines.

This requirement reduces new greenfield disturbance and habitat fragmentation, improves public acceptance, minimizes land conflicts, and speeds reviews by demonstrating structured avoidance. It may be structured as a requirement or an incentive.

4. Wildlife-safe, ecosystem-protective, Tribal-forward, community-centered siting standards

Congress should establish technical siting standards for major transmission lines that prioritize use of existing rights-of-way and previously disturbed landscapes wherever feasible. These standards should be grounded in a clear mitigation hierarchy of avoidance, minimization, and mitigation to reduce impacts to wildlife, biodiversity, water resources, and communities. Specific elements should include:

- Designating enhancements of existing transmission lines (e.g. reconductoring, repowering with HVDC, expansions within a reasonable extent) and work in existing degraded rights-of-way as eligible for streamlined and tiered environmental review under *National Environmental Policy Act* (NEPA), including programmatic and corridor-level analyses where warranted;
- Early-stage evaluation of opportunities to avoid greenfield impacts by routing along existing rights-of-way, infrastructure corridors, or other low-conflict areas before proposing new corridors;

- GIS-based mapping of wildlife corridors, rare and sensitive ecosystems, high biodiversity areas, surface and groundwater resources, and fragmentation-sensitive habitats, including migratory flyways and ungulate corridors;
- Landscape-scale cumulative impact analysis for multiple linear infrastructure projects across the same region, including combined effects on habitat connectivity, water resources, and habitat integrity;
- Early phase Tribal engagement, incorporating cultural resource surveys and capacity support;
- Community benefit frameworks (e.g., reliability upgrades, local bill savings, community resilience hubs, local jobs, and vegetation management co-benefits);
- Clear thresholds for when undergrounding must be evaluated (e.g., near Tribal cultural sites or sensitive habitats); and
- Public release of siting constraints maps and alternatives that are rejected, including documentation of how avoidance and minimization options were assessed.

This approach avoids high-conflict routing, improves environmental outcomes, and reduces litigation risk by embedding mitigation strategies and technical safeguards into transmission siting decisions.

For additional guidance on wildlife-compatible transmission siting, see NWF's *Wires and Wildlife* reports on [western wildlife migration](#) and [marine ecosystems](#), which outline siting considerations, avoidance strategies, and mitigation measures to reduce transmission impacts on wildlife habitats.

5. Strong long-range, scenario-based regional & interregional planning

Congress should create a statutory long-range transmission planning requirement under the *Federal Power Act* that directs FERC to establish rules that:

- Use 15-20 year forward planning horizons capturing electrification, large load development (e.g., interconnections from data centers and industrial facilities), and thermal fleet retirements;
- Include scenario-based modeling, including extreme weather stress tests, wildfire risk, high-impact reliability events (heat domes, polar vortices, and drought-induced hydropower constraints);
- Incorporate probabilistic planning methods to reflect non-linear reliability risks and resource variability;
- Require evaluation of transmission and generation portfolios on a coordinated basis, instead of siloed analysis;
- Identify clear triggers for neighboring regional transmission organizations (RTOs) and independent system operator (ISOs) to conduct joint planning when reliability metrics fall below thresholds, transfer capability is insufficient, grid congestion persists, or when there are sustained regional price gaps indicating signal system stress;
- Require standardization of benefit metrics across RTO and ISO seams (i.e., reliability, economic, and resilience values quantified using uniform tools) and quantification of multi-value benefits (including congestion relief, emissions reductions, and avoided generation capacity) to ensure consistency; and
- Ensure public availability of core modeling assumptions and key grid data used in planning studies to allow for independent technical review.

This helps close the current regulatory gap where regional planning is conducted inconsistently, with no enforceable cross-seam obligations, and which often trigger major outages and price spikes.

6. Functional federal backstop for multi-state transmission (modernized national interest corridor + FERC siting authority)

In the long term, Congress should modernize national interest electric transmission corridor (NIETC) criteria and federal backstop siting authority by:

- Updating NIETC designation to apply to areas with quantifiable reliability, resilience, and affordability constraints (not solely congestion metrics);
- Allowing FERC to issue a construction permit if a state:
 - Fails to act within a defined period,
 - Denies a project without substantial evidence, and
 - Imposes conditions inconsistent with federal reliability standards;

- Requiring concurrent programmatic NEPA analyses (and other environmental reviews under the *Endangered Species Act*, *National Historic Preservation Act*, etc.) for corridor-level wildlife, habitat, and cultural impacts;
- Embedding government-to-government Tribal consultation, with early scoping and capacity support; and
- Requiring FERC to consider HVDC vs AC topology tradeoffs, inverter-based resource integration needs, and regional load forecast uncertainties.

This creates a technically rigorous federal path for projects with multi-state system value, without weakening environmental review.

7. **Public lands transmission reforms**

Congress should establish a dedicated federal framework for permitting transmission on federal lands, applicable across land management agencies including BLM, USFS, U.S. Fish and Wildlife Service (FWS), the National Park Service (NPS), and other relevant agencies. Such a framework should:

- Require programmatic, corridor-level transmission planning on federal lands that incorporates ecological integrity, biodiversity, watershed protection, fragmentation sensitivity, and Tribal/cultural resources into siting layers;
- Prioritize use of existing designated corridors, previously disturbed lands, and other lower conflict areas on federal lands before proposing new greenfield routes, with transparent justification when new corridors are needed;
- Create a uniform, transparent process for Notices to Proceed (NTPs), including publication of timelines, required conditions, and appeals processes;
- Provide dedicated capacity funding for federal land management agencies to support interdisciplinary staff, such as biologists, NEPA analysts, and engineers;
- Accelerate reconductoring, HVDC upgrades, and capacity expansions within existing rights-of-way through programmatic review, tiered site-specific analysis, and expedited permitting pathways that maintain environmental protections, and with agencies retaining discretion to apply existing NEPA tools, such as categorical exclusion, consistent with public notice and comment requirements;
- Establish a coordinated, multi-agency review schedule (in collaboration with DOE) for multi-jurisdiction lines to eliminate duplicative consultations and conflicting data requests; and
- Develop cross-agency geospatial tools for wildlife, hydrology, watershed sensitivity, fire risk, and other environmental constraints.

This reduces uncertainty, ensures consistent application of federal siting standards, and accelerates high-value transmission development while minimizing new land disturbance and environmental conflict.

8. **Beneficiary pays, multi-value standardization of benefits**

Congress should direct FERC to adopt a benefit standardization framework with consistent benefit categories that include:

- Quantifiable reliability benefits (e.g., loss of load expectation and effective load carrying capability improvements, and reduced forced outage risk);
- Economic benefits (e.g., production cost savings, congestion cost reduction, and least mean power convergence);
- Resilience benefits (e.g., loss of load probability under extreme events and fuel supply risk mitigation);
- Capacity benefits (e.g., avoided or deferred new generation plus storage investment);
- Flexibility benefits (e.g., ability to integrate inverter-based resources and co-optimize across seams);
- Wildfire risk mitigation where appropriate (e.g., reducing congestion on constrained paths during fire events);
- Distributional equity impacts, including effects on low-income customers;
- Voltage support and stability benefits (e.g., dynamic reactive power support, reduced risk of cascading outages, and improved transfer stability margins);

- Resource adequacy and diversity benefits (e.g., reduced coincident peak risk, diversity in load and renewable generation profiles, and improved capacity sharing across regions); and
- Reduced curtailment and improved utilization of existing generation and storage.

This will help reduce litigation, align regional assumptions, and prioritize projects that deliver system-wide value, not politically expedient routing.

9. Minimum interregional transfer capability standards (federal reliability requirement)

Congress should direct FERC to establish minimum interregional transfer capability requirements, similar to North American Electric Reliability Corporation (NERC) reliability standards, including:

- A minimum interregional transfer capability (e.g., at least 20-30% of peak load should be available for import/export between neighboring regions);
- Capacity defined as firm, available transfer capacity (rather than raw thermal capacity), accounting for N-1-1 contingencies (i.e., the ability to withstand the failure of one major element, recover, and then withstand a second major failure without uncontrolled temporary shutdowns);
- Required demonstration that transfer capability is sufficient for extreme weather scenarios and loss of major generation nodes; and
- RTO/ISOs must file compliance plans detailing reinforcements, reconductoring, the use of advanced grid devices that increase how much power existing lines can safely carry, and new HVDC or AC expansions.

This reduces the frequency of load shedding events, improves emergency power sharing, decreases the number of new intraregional lines required, lowers cumulative wildlife and habitat disturbance, and reduces congestion and peak event price spikes for consumers by building high capacity, high value interregional links.

10. Transmission investment tax credit (ITC) to enable high-voltage multi-regional lines

Through legislation complementary to a permitting proposal, Congress should establish a targeted Transmission Investment Tax Credit to reduce the capital cost and financing barriers for major regional and interregional upgrades. A federal ITC should:

- Apply to high capacity, multi-value regional and interregional transmission lines (e.g., ≥ 345 kV AC or HVDC lines delivering quantifiable reliability, congestion, and resilience benefits);
- Cover both new lines and major capacity increasing upgrades (e.g., HVDC conversion, reconductoring with advanced conductors, and adding sensors for dynamic line rating);
- Be structured to avoid subsidizing unnecessary local lines, with eligibility tied to demonstrated system-wide benefits validated through regional planning processes;
- Require developers and transmission owners to demonstrate benefit-cost ratios and avoided cost justification as part of ITC eligibility, to ensure the credit supports projects that deliver measurable reliability and affordability benefits rather than overbuilt or low-value local upgrades;
- Allow bonus credit rates where projects: reuse existing rights-of-way, reduce cumulative land disturbance, institute wildlife habitat restoration practices, and/or demonstrate co-benefits for reliability and affordability across multiple regions;
- Include strong transparency requirements on ratepayer impacts to ensure savings from the credit flow through to consumers; and
- Be available to both transmission-owning utilities and independent transmission developers under a technology-neutral structure.

A transmission ITC accelerates capital intensive, high-value lines that regional planning consistently identifies but that often fail due to upfront cost, financing risk, or state-level political barriers.

For more information on the National Wildlife Federation's transmission priorities, please contact: Shriya Pai, PhD, Senior Transmission Policy Specialist, PaiS@nwf.org.



Stands for American Steel.

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Brandon Farris

Executive Vice President

March 25, 2026

The Honorable Mike Lee
Chairman
Committee on Energy and Natural Resources
U.S. Senate
Washington, D.C. 20510

The Honorable Martin Heinrich
Ranking Member
Committee on Energy and Natural Resources
U.S. Senate
Washington, D.C. 20510

Dear Chairman Lee and Ranking Member Heinrich:

The Steel Manufacturers Association appreciates the opportunity to submit a statement for the record for the hearing to "Examine the State of the Bulk Power System."

SMA stands for American steel. Our members operate in communities across the country and range from the nation's largest publicly traded steel producers to single-facility, family-owned businesses. Steel manufacturers generate \$149.4 billion in annual economic impact, employing 87,266 men and women in community-sustaining jobs at an average annual wage of \$142,730. They create the essential material that underpins American industry and national security.

The United States is entering an electricity crisis. In 2025, PJM, the nation's largest regional power market saw wholesale electricity prices surge by a staggering 56%. These increases are not just a burden on consumers; they pose a direct threat to national security. American steel production, a cornerstone of industrial strength, depends on affordable, reliable, dispatchable power. Within the PJM footprint alone, the steel industry supports more than 56,000 jobs and generates approximately \$94 billion in annual economic activity.

Energy is one of the largest cost drivers in making steel, accounting for 20% to 40% of total production costs depending on the process. For electric arc furnaces (EAFs), electricity is consistently among the top two or three expenses. Each EAF operates with a load ranging from 40 to 200 megawatts, and with more than 100 mills nationwide, the industry consumes roughly 10–11 gigawatts of power around the clock. That figure will only rise as significant expansion plans move forward.

The urgency is clear for policymakers to act to stabilize the grid, lower power prices, protect American industry, and support economic growth. Over the the coming weeks, steel manufacturers

look forward to working with Congress and the Administration to advance policy proposals that maintain grid reliability while making it easier to site and build new energy facilities.

Thank you for your consideration.

Sincerely,

Brandon Farris
Executive Vice President
Steel Manufacturers Association