Subcommittee on Energy
Hearing on
"Building a 100 Percent Clean Economy: Solutions for the U.S. Power Sector"
October 30, 2019

Mr. Jim Matheson
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The Honorable Greg Walden (R-OR):

1. Given your diverse perspectives and pragmatic views on matters relating to electricity cost, grid reliability, and consumer choice.

   It can be easy to get caught up in all the hype and catchy press releases promising to fight climate change. However, once you drill down deeper, you realize that all these aspirational statements have a catch. If we really want to get serious about reducing emissions, we will need new natural gas plants, new pipelines, new electric transmission lines, renewed nuclear licenses, more windfarms, and more solar panels.

   a. Given that we had to import Russian LNG into Boston Harbor because you can't build a pipeline in New England, what confidence do you have that environmental activists and states like New York will allow the construction of all these new clean energy projects?

      RESPONSE: Diversity of electric generation, including baseload sources, is essential to meeting co-op members' expectations. That's why co-ops have and will continue to diversify their energy portfolios, with a majority of their power now coming from low and no-emissions resources. As you note, this will require electric co-ops to plan, build, and modernize electric generation, transmission, and distribution facilities. Federal, state, and local policymakers and all stakeholders should be mindful of this and support policies to advance that energy diversity while providing long-term certainty and flexibility that protects reliability of the electric grid and minimizes undue economic impact for consumers.

   b. As you look over the horizon, what are the biggest challenges to the siting of renewables such as wind and solar?

      RESPONSE: Siting for any large generation facility is difficult, regardless of the fuel source. Issues surrounding environmental permitting, land access and availability, and repurposing of land or multi-use properties are common. Utilities can also run into concerns from neighbors regarding property value, impacts during the construction

process (such as truck damage to roads and highways), possible environmental impacts to wildlife and their habitats, and other localized issues. The expansive distribution and transmission infrastructure needed to connect and integrate a solar photovoltaic array into the power system might face some of these same challenges and can be very expensive. Additionally, solar, as an intermittent resource that is non-dispatchable, requires back-up power and upgrades to the interconnected utility that are essential to maintain system reliability and safety. It is also important to note that there is often a lack of coordination with the local utility when private entities (energy developers, homeowners, etc.) install distributed generation, such as rooftop solar. Optimized siting can be done by the local utility to safely and reliably maximize the value of distributed generation.

c. Would you agree that infrastructure permitting reform should be recognized as an essential component of any plan to reduce emissions and promote clean energy?

RESPONSE: Yes. The regulatory hurdles for permitting, approving, and building energy infrastructure, including clean energy resources, can present reliability problems and cause costly bottlenecks. Policymakers should ensure that facilities can be planned and built to meet the long-term needs of cooperatives and other load-serving entities to deliver reliable and affordable electric service to their communities. This will require modernizing infrastructure permitting and siting processes. Policy improvements should bring better coordination and consistency to environmental reviews and streamline approvals for utility rights of way that reflect a regional planning process.

2. The climate debate is creating a disconnect in our energy policies. On one hand, our system is setup to ensure reliability—and economical dispatch. On the other hand, the climate related agenda is focusing on incentives to close plants down, and especially plants in regions that are reliant on fossil energy for affordable power.

a. Would federal policies that incentivize closures exacerbate the reliability risks?

RESPONSE: Even as the share of coal capacity is expected to decline, both coal and natural gas will remain a critical source of reliable, affordable power due to the intermittency challenges of renewable power and limited long-term energy storage options. That is particularly true in regions of the country where deployment of renewable sources is neither affordable nor reliable. Both distribution and ‘generation and transmission’ (G&T) cooperatives share an obligation to responsibly serve their members by providing reliable – and affordable – electricity. Federal policies should support efforts to demonstrate and deploy technologies, such as carbon capture and utilization, that allow electric co-ops to continue responsibly utilizing fossil fuel generation while reducing emissions and maintaining reliability.

3. What differentiates electric cooperatives from investor owned utilities, and what special circumstances should Members of Congress evaluate when examining policies that affect co-ops?

   RESPONSE: As cooperative and not-for-profit utilities, each co-op is locally governed through a board of directors elected by their consumer-members and all excess revenues are returned to those consumer-members. All costs incurred by the co-op, however, are also ultimately passed on to the consumer-members, with no shareholders to help shoulder that burden. Additionally, the cost of serving the sparsely populated communities of electric co-ops, on a per-consumer basis split across fewer meters per mile, is higher than the densely populated areas served by investor-owned or municipal utilities. As a result, electric cooperatives have often found that a mix of financial incentives, technical assistance, financing options (ex: Clean Renewable Energy Bonds), and direct payment of tax credits or transferable tax provisions can be most effective in reducing costs and addressing barriers to adopting advanced and innovative technologies.

4. Why is a diverse energy mix so important to co-ops like the utilities across rural America that your organization represents?

   RESPONSE: Diversity of electric generation, including baseload sources, is essential to meeting co-op members' expectations. As engines of economic development focused on responsibly delivering affordable, reliable electricity in communities across the nation, electric co-ops thoughtfully explore all ideas that promote these core principles as they work to meet the evolving energy needs of their local communities. That's why co-ops have and will continue to diversify their energy portfolios, with a majority of their power now coming from low- and zero-emissions resources. Ultimately, and most importantly, every cooperative's resource mix is unique and will continue to vary greatly depending on existing resources and assets, consumer-members' evolving interest in lower carbon energy options, the impact on rates for consumer-members, reliability implications, the availability of alternative electric generation, geographic location, and other local circumstances.

5. Why are co-ops so sensitive to compliance costs and electricity rates?

   RESPONSE: As not-for-profit entities, any costs incurred by an electric co-op are ultimately passed on to the consumer-members, with no shareholders to help shoulder that burden. The average electric co-op household uses significantly more electricity every month than other utility customers, due in part to mostly single-unit or manufactured housing that endures significant exposure to the elements. Many co-op members live in areas with harsh winters and without access to natural gas or affordable heating alternatives. Further, the average household income for co-op consumers is 11 percent below the national average. These factors make it especially important for co-ops to keep electric rates affordable while

maintaining reliability and improving sustainability, particularly for those who can ill afford increased electricity costs.

6. What are the risks of a one-sized fits all federal mandate – such as a national portfolio standard or a carbon tax?

   RESPONSE: Every cooperative's resource mix is unique and will continue to vary greatly depending on existing resources and assets, the impact on rates for consumer-members, growing consumer-member interest in reducing carbon emissions, reliability implications, the availability of alternative electric generation, geographic location, and other local circumstances. Nationwide, federal policies that attempt to impose a 'one-size fits all' approach are unable to appropriately and realistically balance the priorities of maintaining energy diversity for electric co-ops, protecting reliability of the electric grid, and minimizing undue economic impact for consumers – especially those in rural and persistently poor communities. What may work in the Pacific Northwest may not be achievable in the Midwest. For these reasons, our members have often found that a mix of research, development, and deployment support, financial incentives, technical assistance, and financing options are most successful in allowing electric cooperatives, as local decisionmakers, to cost-effectively adopt low- to zero-emission technologies that meet their own respective needs.

7. Your testimony describes the significant progress electric co-ops are making to reduce emissions.

   a. What are some of the broad trends affecting electric co-ops, and what can Congress do to support your member utilities?

      RESPONSE: As you note, NRECA members are part of the American energy sector that has already made substantial reductions in carbon dioxide (CO2) emissions, with those emissions from the electric sector in 2019 decreasing to around 1985 levels. This continuing emissions reduction exceeds projections from even a few years ago. Carbon dioxide emissions in 2019 from cooperative-owned generating facilities were 18 percent below 2005 levels.

      Electric co-ops will continue to deploy low- and zero-emission technologies and reduce CO2 emissions as they work to meet the evolving energy needs of their local communities and their co-op members' expectation. Congress can support these efforts by advancing policies to reduce the costs of these technologies and remove barriers to their adoption. Among those policies NRECA supports:

      - H.R. 4447, the EASE Act, which provides an energy storage grant and technical assistance program for co-ops.

- H.R. 1166, the USE IT Act, which provides needed certainty for electric cooperatives as they look to deploy CCUS technologies.
- Investments in research, development and deployment of emerging technologies. This includes:
  - H.R. 2909, the Promoting Grid Storage Act, and H.R. 2986, the Better Energy Storage Technology Act;
  - H.R. 3597, the Solar Energy Research and Development Act;
  - H.R. 3607, the Fossil Energy Research and Development Act;
  - H.R. 3609, the Wind Energy Research and Development Act;
  - H.R. 3306, the Nuclear Energy Leadership Act (NELA) and H.R. 6097, the Nuclear Energy Research and Development Act;
  - H.R. 4091, the ARPA-E Reauthorization Act; and
  - H.R. 6084, the Water Power Research and Development Act
- Financial incentives, technical assistance, financing options (ex: Clean Renewable Energy Bonds), and direct payment of tax credits or transferable tax provisions that reduce costs and address barriers to adopting innovative technologies.
- Funding research and development programs that enable the use of artificial intelligence and technology to get the most out of grid-enabled devices.
- Investments in programs that promote more efficient data transfer and feedback between transmission and distribution systems, and support for the development of distributed energy resources.
- Modernizing infrastructure permitting and siting processes to assist electric co-ops as they plan, build, and modernize electric generation, transmission, and distribution facilities.
- Incentives for deployment of electric vehicles and funding for charging infrastructure, particularly in rural areas where the electric distribution equipment may also need to be upgraded.

8. Some investor-owned utilities have announced aspirations or goals to achieve net-zero emissions by 2050. Of course, there is always a catch. In some cases, these depend on a carbon tax or new technologies that haven't even been invented yet.

   a. Why aren't we seeing these types of aspirational statements from NRECA member companies?

      RESPONSE: Co-ops have been adjusting their generation mix for some time in response to market forces and the expectations of their consumer-members. These changes over time have resulted in lower greenhouse emissions from co-op generation (see response to Question 7). And an increasing number of electric co-ops are making some level of commitment, including Tri-State Generation and Transmission Association, Holy Cross Energy, Great River Energy, and North Carolina's Electric Cooperatives, among others. However, as noted in other

responses, local factors drive local decision-making at each cooperative, including whether to make such commitments. The diversity of cooperatives across the nation, the relatively young age of many of our facilities built under the requirements of the 1978 Fuel Use Act, and the need to focus on affordability have combined to have co-ops moving at a deliberate and thoughtful pace as they contemplate their future generation profile. (See responses to questions 5, 6, and 15.)

b. Who ultimately pays for these lofty plans – isn't it the ratepayers?

RESPONSE: Correct. As not-for-profit entities, any costs incurred by an electric co-op are ultimately passed on to the consumer-members, with no shareholders to help shoulder that burden. This makes it especially important for co-ops to keep electric rates affordable while maintaining reliability and improving sustainability, particularly for those who can ill afford increased electricity costs.

9. Investor-owned, for-profit utilities can take advantage of significant tax incentives for wind and solar, while your member co-ops must rely on long-term power purchase agreements with private developers.

a. How does this aspect of the federal tax code complicate your long-term planning and decision making?

RESPONSE: Rural electric cooperatives operate at cost and are not-for-profit entities. Most of our members are exempt from federal income tax, although they pay state and local taxes which are not based on income. In order to utilize energy tax incentives, our members can either indirectly take advantage of the tax credit through negotiations of a Purchase Power Agreement (PPA) or they would have to engage in complex and expensive "flip transactions." Allowing our members to have the option of a direct pay or refundable tax credit would give them the option to use the credit directly to lower the cost of ownership or negotiate a more favorable PPA. Additionally, reinstating New Clean Renewable Energy Bonds, which were repealed by the Tax Cuts and Jobs Act of 2017, or a similar type of financing mechanism, would help our members' ability to fund renewable projects at the lowest possible cost.

10. How do the various RTO/ISO market rules interact with the resource planning conducted by electric co-ops?

RESPONSE: The market rules in the three eastern RTOs/ISOs (New England, New York, and PJM) have "buyer-side" market-power mitigation rules that adversely affect the resource planning conducted by electric co-ops in those regions. An issue has arisen in the PJM market that is of particular concern for electric co-ops. The Federal Energy Regulatory

Commission (FERC) required PJM to expand this mitigation, known as the "Minimum Offer Price Rule" (MOPR), to apply to any state-subsidized resources, including zero-emission credits and renewable portfolio standards. With FERC's approval, PJM now deems all new electric cooperative resources to be state-subsidized and subject to the MOPR.

However, capacity resources that an electric cooperative self-supplies through owning generation or participating in a bilateral contract to meet its capacity requirements are not subsidized resources and should not be subject to PJM's MOPR. If new self-supplied resources are subject to PJM's MOPR, the co-op faces the risk of paying twice to meet its PJM-specified capacity requirements: once for its preferred self-supplied capacity, which is improperly subject to PJM mitigation that may render it uneconomic under PJM's market rules; and a second time for PJM-preferred capacity procured by PJM. This double payment unnecessarily results in higher rates for electric co-op consumer-members.

11. Hydropower is often an overlooked renewable resource, but the fact of the matter is that hydro accounts for almost half of our total renewable generation. For electric co-ops, hydro remains the primary source of zero-emission renewable generation.

    a. Can you expand on the important role of hydropower?

       RESPONSE: Electric cooperatives have a rich tradition of harnessing the carbon-free power of water resources. From the 1930's New Deal's Rural Electrification Administration, federal funds were lent to electric cooperatives, power districts and other public entities to harness the power from our nation's rivers and federal dams. The effect of these investments is still palpable today. Over 600 of NRECA's 900 cooperatives receive power from the federal hydropower program. Including federal and private hydropower, 10 percent of the electricity delivered to consumers by co-ops comes from hydropower resources. Hydropower's important role as a clean energy source is expected to increase as it can provide needed flexibility to the grid to complement the increase in variable energy resources.

12. As more intermittent renewables come online, we will need commercially viable grid-scale batteries and other forms of storage to make sure the lights stay on.

    a. Can you share some of the experiences that electric co-ops have had with battery storage?

       REPONSE: Electric co-ops across the country are deploying battery storage for a variety reasons, but above all to improve grid resiliency and reduce costs. The most common applications for these battery deployments include reducing co-op peak demand (demand management), deferring infrastructure investments at the transmission and distribution level, integrating renewable energy, and incorporating microgrids for resiliency. While most projects range in size between 500 kW and 10

MW, a few co-ops in Hawaii and Oklahoma have (or are soon deploying) systems sized between 20-200 MW. The vast majority of battery deployments use lithium-ion technology, which is a short-duration option. However, Great River Energy in Minnesota is launching a pilot with Form Energy to test the capabilities of a long-duration energy storage system to better integrate increasing amounts of renewable energy.

b. What are some of the challenges with respect to commercial cost and battery performance?

RESPONSE: As the battery energy storage industry is still maturing, there are several challenges related to cost and performance. While battery hardware (cells and modules) costs are coming down, they still remain relatively high. Additionally, many projects are custom-made and many utilities do not have experience with battery storage, so soft costs and integration costs also remain high. Business models that promote cost-effective integration of batteries need to be more standardized. For this reason, NRECA supports the EASE Act, H.R. 4447, which provides an energy storage grant and technical assistance program for co-ops. This program will help co-ops identify, evaluate and design energy storage projects, develop plans for commercialization, and create workable business models to share with other co-ops.

Battery performance is also an issue. The most common technology, lithium-ion, is steadily improving, but is not well-suited for long duration energy storage needed to successfully integrate an increasing share of renewable power over a period of days. The lack of an economically viable and commercially proven long-duration battery storage technology is a key challenge for the industry. In addition, lithium-ion is the only economically viable option today for most co-ops. Commercializing and bringing down the cost of other technologies would be beneficial.

Beyond commercial costs and battery performance, other challenges to more widespread battery deployment include:

- Methods and protocols to derive multiple value streams from energy storage;
- Energy storage control device standardization; and
- Communication systems connecting energy storage devices to utility systems.

The federal government can play a key role in supporting battery storage by devoting funding and research to solve those challenges in partnership with electric utilities.

13. What's the role of natural gas in the generation mix of your member co-ops?

RESPONSE: Natural gas plays a very important role in the generation mix of electric cooperatives across the nation. From 2005 to 2017, the average utilization of co-op natural gas combined cycle (NGCC) generation increased from 27 percent to 40 percent. At the same

time, co-op ownership of NGCC facilities more than doubled from 4.8 GW to 11.6 GW, with more projects planned in the coming years. Of new capacity planned from 2020-2027 across the entire power sector, 31% is projected to be generated from natural gas. A significant portion of co-op CO2 emission reductions is the result of natural gas generation replacing retiring coal power plants.

a. Are you concerned that we could become overly reliant on natural gas?

RESPONSE: We do not anticipate any reliability concerns based on future projections of the portion of electricity to be provided by natural gas-based generation, though as noted in response to question 13(c) below we do have concerns related to the ability to continue to site natural gas pipelines needed to maintain a stong and reliable natural gas supply network.

b. How important is natural gas pipeline and other infrastructure to your co-ops?

RESPONSE: As the use of natural gas increases, so does the importance of natural gas pipelines and associated infrastructure. Some electric cooperatives do also provide retail natural gas distribution to their consumer-members. One issue that has arisen, however, is the need for a remedy in situations where an interstate natural gas pipeline company overcharges a consumer – in this case the cooperative. To resolve this problem, NRECA supports H.R. 5718, the Protecting Natural Gas Consumers from Overcharges Act of 2020. This bill would give FERC the discretion to order a limited refund once a consumer satisfies the burden of proof to establish that an overcharge exists.

c. Are you concerned by the opposition to siting natural gas pipelines and other infrastructure?

RESPONSE: We do share the concerns over siting natural gas pipelines. A transition to additional natural gas-fired electric generation will be needed to provide support for variable renewable generation and still reduce carbon emissions. For electric cooperatives, however, the impact on siting of transmission facilities is one of the more pressing concerns. The siting of an interstate high voltage transmission grid is appropriate when it will help utility systems meet their obligations to the states and their customers and it has been specifically reviewed and determined by an appropriate multi-state regional planning process to be necessary for the reliable economic operation of the regional transmission grid. Opposition to the siting of a high voltage transmission facility that satisfies these tests would generate concern among co-ops.

14. During an April hearing this year on the climate policy, we entered into the record a letter for the City of Rock Falls, Illinois, which has owned and operated a municipal electric utility since 1895. Let me quote:

"Should federal or state policies force premature closure of our existing resources, we'd still have to procure the energy we had been counting on our coal-fired generation to deliver. This would be like building a home with a 30-year loan and then being evicted sometime in the first 10 t0 15 years. We still must pay the mortgage on the home we've lost while also paying for a new place to live."

a. Are the risks and burdens of stranded assets a concern for your members?

RESPONSE: Yes. As not-for-profit utilities, all costs incurred by co-op generators, including the construction and maintenance of electric generation sources, ultimately are passed on to consumer-members. That is why co-ops are committed to generating power as efficiently and cost-effectively as possible. There are no equity investors that can absorb these costs. Federal policies that result in stranded assets would increase electric costs for consumer-members and significantly impact local economies that can least afford to endure these costs.

15. Is there also regional disparity in the utilities commitments to long-term assets that must be amortized? Are some areas more vulnerable to stranded assets than others?

RESPONSE: While geographic location may contribute to the threat of stranded assets (as noted below), the type, age, type of financing, and book value of a generation facility tend to have a greater impact than where the facility is located. For example, about 60 percent of co-ops' currently operating coal capacity was built under the mandates of the 1978 Powerplant and Industrial Fuel Use Act (before it was repealed in 1987). Under this law, any new baseload generation for self-generation built by generation and transmission cooperatives was mandated to be "coal capable" to preserve natural gas supplies for non-electric and non-industrial purposes. Many co-ops at the time could not purchase affordable generation from other utilities, which necessitated the building of self-generation. As a result, co-ops had little choice but to build coal plants. In addition, to comply with revised environmental standards, such as the Mercury and Air Toxics Standards, co-ops invested heavily in pollution controls which added to the book value of their coal units.

Today, however, practical and geographic limitations prevent many of these facilities from converting to natural gas while still providing competitively priced electricity. Electric cooperative consumer-members should not be burdened with loss of these reliable resources that were developed based on federal government policy.