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Before the

U.S. House of Representatives
Committee on Energy and Commerce
Subcommittee on Energy, Climate, & Grid Security

"Keeping the Lights On: Enhancing Reliability and Efficiency to Power American Homes"

September 13th, 2023

Introduction to Mid-Carolina Electric Cooperative & America's Electric Cooperatives

Thank you Chairman Duncan, Ranking Member DeGette, and members of the Subcommittee for holding today's legislative hearing and inviting me to testify.

My name is Bob Paulling, and I am CEO of Mid-Carolina Electric Cooperative, speaking on behalf of the member-owners of our cooperative in South Carolina. I want to thank Chairman Duncan for his attention to the issues of reliability and grid security for many years, going all the way back to his service in the South Carolina state legislature.

Mid-Carolina Electric Cooperative has brought power to its members in the central region of South Carolina since 1940. As a member-owned electric distribution utility, we currently provide power to nearly 60,000 accounts across 4,408 miles of lines in five counties. Unlike investor-owned utilities, Mid-Carolina Electric is not-for-profit. It operates at cost and without a profit incentive. We share excess revenue back with the people we serve in the form of annual capital credits.

As an added benefit to our members, we formed affiliate company CarolinaConnect internet cooperative in 2016 to offer faster, more reliable, more affordable internet service. We've also created a breakthrough peak hours rate structure that is designed to encourage energy conservation during periods of high demand. Members may shift energy-intensive activities to off-peak hours, and this gives them more control over their power bills.

We are deeply invested in the community and demonstrate this through our annual support of local events, charitable organizations, and civic initiatives that enrich the lives of our members and strengthen the fabric of the communities we serve. From the original power lines that carried electricity to rural areas that needed it most to innovations that help prepare for growing energy demands, Mid-Carolina Electric is deeply committed to delivering safe, reliable, cost-efficient utilities and innovative solutions to our members.

As a cooperative, it is important that we work closely with our state and national partners on issues that affect our consumer-members. To that end, Mid-Carolina Electric is a member of the Electric Cooperatives of South Carolina (ECSC), a statewide trade association that represents 18 not-for-profit distribution cooperatives, and Central Electric Power Cooperative, a not-for-profit generation and transmission (G&T) cooperative that purchases and supplies electricity to all of South Carolina's cooperatives. Together, these electric cooperatives provide electricity to nearly 2 million people – almost two-fifths of South Carolina's population. Cooperatives cover 70% of the state's land mass over more than 72,000 miles of power line. Electric cooperatives serve consumer-members in all 46 South Carolina counties, including some of the most rural and some of the most impoverished areas of our state.

Mid-Carolina Electric is also a member of the National Rural Electric Cooperative Association (NRECA), the national trade association representing 900 not-for-profit electric cooperatives and other rural electric utilities. America's electric cooperatives are owned by the people they serve and comprise a unique sector of the electric industry. Electric cooperatives power one in eight Americans and serve as engines of economic development for 42 million people across 56% of the nation's landscape. Electric cooperatives are focused on providing affordable, reliable, and safe electric power in an environmentally responsible manner and support common sense solutions to environmental impacts.

NRECA's member cooperatives include 62 G&T cooperatives and 831 distribution cooperatives. The G&Ts generate and transmit power to distribution cooperatives that provide it to the end of line co-op consumer-members. Collectively, cooperative G&Ts generate and transmit power to nearly 80 percent of the distribution cooperatives in the nation. The remaining distribution cooperatives receive power directly from other generation sources within the electric utility sector. Both distribution and G&T cooperatives share an obligation to serve their members by providing safe, reliable, and affordable electric service.

Federal Policies Impacting Grid Reliability

Providing affordable, reliable, and safe electricity is paramount for electric cooperatives. A resilient and reliable electric grid that affordably keeps the lights on is the cornerstone of American social, economic, energy security, and national security needs. However, the United States is facing a number of challenges to maintaining reliable electricity that I would like to highlight for the Subcommittee today.

Electrifying the economy: As a nation, we are heading towards a future that depends on electricity to power more of the economy. Recent modeling by the Electric Power Research Institute concluded that achieving net-zero economy-wide emissions by 2050 could require generation capacity to increase by as much as 480% compared to what is in place today[1]. Electrifying other sectors of the economy could require a three-fold expansion of the transmission grid and up to 170% more electricity supply by 2050, according to the National Academies of Sciences[2].

Electrification initiatives are already underway in South Carolina and nationwide, spurred by investments and consumer actions from the Infrastructure Investment and Jobs Act, Inflation Reduction Act, and other programs. In fact, South Carolina has been a leader in electrification, recruiting a parade of economic development projects in recent years tied to the production of electric vehicles (EVs) and the components that power them. Those projects have brought thousands of high-paying jobs to our state, including to rural, economically depressed areas that have waited decades for this kind of opportunity. But these plants also require large amounts of electricity, and we must be ready to serve them.

We need to prepare for this rapid rise in demand for electricity. We must act soon to expand power generation, preserve the resources we have, and reduce the red tape and regulations that stand between us and a prosperous future.

"Disorderly" retirement of existing generation: In South Carolina, we desperately need more electricity and more options for electricity production as we work to meet the skyrocketing

[1] Electric Power Research Institute. LCRI Net-Zero 2050: U.S. Economy-Wide Deep Decarbonization Scenario Analysis, Executive Summary. Last updated March 9, 2023. Available at: https://lcri-netzero.epri.com/en/executive-summary.html
[2] National Academies of Sciences, Engineering, and Medicine. Accelerating Decarbonization of the U.S. Energy System. 2021. Available at https://nap.nationalacademies.org/catalog/25932/accelerating-decarbonization-of-the-us-energy-system

demand for power. It is hard to believe that new power generation resources have not been built in South Carolina for nearly two decades, even as demand has risen due to population growth, economic development and, more recently, the electrification of the economy. South Carolina is the third fastest-growing state in the country, according to the U.S. Census. The state has been on an economic development roll, with many of those projects tied to manufacturing electric vehicles and EV components. Last year alone, South Carolina attracted more than $10 billion in outside investment. And we expect demand to rise significantly as more South Carolinians begin purchasing and driving the electric vehicles that are being produced in our state.

We need more power supply – lots of it – to keep up with these trends. In addition to building new power plants, we also need to preserve the existing generation fleet, no matter the fuel source, until adequate replacements and reserves are in place.

Unfortunately, the Environmental Protection Agency (EPA) recently proposed rules to further regulate power plant carbon emissions that will exacerbate existing challenges to reliability. The proposed rules, and their reliance on promising but unproven carbon capture and hydrogen technologies on an unachievable timeline, will directly jeopardize the ability of South Carolina's electric cooperatives to provide affordable, reliable electricity to their consumer-members by expediting the retirement of always available baseload power.

We fear this EPA rulemaking, as currently written, poses serious harm to cooperative members across South Carolina. ECSC and all 18 of its distribution cooperatives like mine have filed comments opposing the EPA's proposed power plant regulations. These comments are among the 55,000 that have been submitted nationally by cooperative consumer-members to the EPA in

opposition to the proposed rules and make clear to the EPA that its chosen path forward is unworkable for the people of our state and our country.

Permitting challenges: Electric cooperatives rely on a diverse suite of resources to affordably and reliably meet their consumer-members' energy needs, including many low- and zero-emission renewable energy resources. Policies enacted in the Inflation Reduction Act – particularly the "direct pay" tax credits for not-for-profit entities and the Department of Agriculture's Empowering Rural America (New ERA) program – are expected to help more rural Americans transition to lower-carbon, affordable, and reliable energy. But the promise of these programs will falter if the federal environmental review and permitting process is not modernized to meet the needs of this energy expansion.

Current federal and state permitting costs and timelines are unreasonable and unacceptable. They present significant obstacles to building new electric generating assets and other energy infrastructure, including transmission lines that will be required to accommodate additional generation and natural gas pipelines necessary for reliable and affordable natural gas power generation.

Further compounding our permitting challenges is the ability for nearly anyone to bring forth a lawsuit challenging permitting and construction. This, too, must be addressed. While important reforms to the National Environmental Policy Act (NEPA) were recently enacted in the Fiscal Responsibility Act (P.L. 118-5), more must be done to increase the efficiency of the federal environmental review and permitting process, which can involve multiple agencies depending on the federal permits, authorizations, and other approvals required for a project.

A good example of permitting issues unnecessarily prolonging needed improvements in South Carolina is Central Electric Power Cooperative's attempts to upgrade overloaded infrastructure in the areas surrounding the Town of McClellanville. Efforts by the local distribution cooperative and Central to build a needed new transmission line has stalled for nearly two decades in part due to the complicated federal regulatory process and the lack of required coordination and streamlining among federal agencies. When there is a lack of consensus and coordination between the multiple federal agencies that have jurisdiction over these types of projects, entities can "ping-pong" back and forth between agencies, projects are delayed and the people of these communities, and in communities across South Carolina, suffer as a result. The process is back on track, but it was begun in 1999 and that is much too long for a needed transmission project to take.

Supply Chain Delays: On top of these difficulties, electric utilities are facing significant challenges and delays in their supply chains. These challenges are contributing to an unprecedented shortage of the most basic machinery and components that are essential to ensuring continued reliability of the electric grid. Electric cooperatives are waiting a year, on average, to receive distribution transformers. Additionally, lead times for large power transformers have grown to more than three years. And orders for electrical conduit have been delayed five-fold to 20 weeks, with costs ballooning by 200% year-over-year. As a result, new projects are being deferred or canceled, and electric cooperatives and other electric utilities are concerned about their ability to respond to major storms due to depleted stockpiles.

The entire utility industry has experienced supply chain delays over the last few years. There are several reasons, and they are not all related to disruptions by the COVID-19 pandemic. Utility

companies across the country are focused on building more resilient systems, and that requires new transformers as they put infrastructure underground. Solar farms require massive amounts of three-phase transformers. Electric vehicle charging stations also have created a demand for three-phase transformers. At Mid-Carolina Electric, we have been trying to build one single substation for over two years. We needed it to be energized this past summer to relieve another substation that is at maximum capacity. We are still waiting on the high-side breakers for that station, and the delivery dates keep changing. We hope to have it energized before the winter peaks.

Availability of Natural Gas: The U.S. is increasingly reliant on natural gas for baseload power and as a backstop for intermittent generation sources. The availability of natural gas for power plants has been challenged by several recent extreme weather events.

Last December, as many families prepared for Christmas Day festivities, we faced a power supply crisis. Low temperatures drove the demand for electricity to record highs and sent power grids to the brink. As a result, many utilities across the Southeast, including South Carolina, were forced to implement rolling blackouts across their systems, leaving hundreds of thousands of customers without power on Christmas weekend. Fortunately for Mid-Carolina Electric members, there were no rolling blackouts at our co-op. But we may not be so lucky the next time.

This is a particularly critical reliability issue in South Carolina, where natural gas-fired generation accounts for more than a quarter of our power generation mix. Natural gas is important to us for a number of reasons. It is dependable. It is cost-effective. And it helps us reduce carbon emissions.

The electricity that South Carolina's electric cooperatives rely upon today is produced with 40% fewer carbon emissions than 2005 levels, in large part because we have retired coal-fired power plants and replaced them with lower-emitting natural gas-fired power plants, mostly through power purchase agreements (PPAs). The expansion of renewable resources in South Carolina, such as large-scale solar farms, is dependent upon being able to pair those intermittent resources with dependable natural gas-fired units that can produce more or less power as needed depending on the variable output of those solar panels.

Simply put, if we fail to act on these reliability challenges, we will struggle to keep up. Blackouts and brownouts will become a routine part of our lives, and jobs and industry will flee not only South Carolina, but the country. The sick and the elderly cannot be made to endure days of intense South Carolina heat without air conditioning or nights of extreme cold without heating. As Winter Storm Uri in Texas taught us just two years ago, people will die if we can't reliably deliver the electricity they need. We cannot be content having weathered this near miss, nor can we choose to be complacent.

Analysis of the Department of Energy's Distribution Transformer Proposed Rule, H.R.4167, and the GRID Act

As noted above, supply chain challenges and delays are a major threat and concern to electric reliability for cooperatives. On top of these challenges, the Department of Energy (DOE) unveiled a Notice of Proposed Rulemaking (NOPR) last December to increase efficiency standards for distribution transformers. The timing and substance of this proposed rule are extremely problematic, and it should not move forward as proposed.

Before addressing those concerns more in depth, I should note that electric cooperatives have a long history of supporting energy efficiency and are committed to finding cost-effective solutions that help their consumer-members save money. Given that electric cooperatives are not-for-profit entities, any new costs borne by an electric cooperative must ultimately be passed to the end-of-the-line consumer. As such, electric cooperatives actively identify ways to save energy and pass those savings to their consumer-members as part of their commitment to providing affordable and reliable electric service.

For example, I was involved in the very beginning of the Help My House program in South Carolina, a national model program aimed at providing low-cost loans for home energy efficiency improvements. One of the first homes we retrofitted at our local cooperative saw major savings. The homeowner's power bill was cut by nearly 80%. That was through weatherizing the house: fixing doors, sealing windows, installing modern HVAC equipment, and adding insulation. More importantly, we helped the homeowner understand how to properly use a thermostat. All those things are very helpful to saving energy, even on the coldest days – like at 12 degrees on Dec. 24th, 2022 – when the home's heating system auxiliary heat strips or natural gas pack would run constantly no matter how much weatherization had been performed.

Energy Conservation Program: Energy Conservation Standards for Distribution Transformers Notice of Proposed Rulemaking: DOE's proposal to revise efficiency standards for distribution transformers injects harmful uncertainty into the transformer market, upending potential progress in increasing production of transformers. There are currently not enough transformers to meet today's demand, and lead times have only continued to grow. We need to

expand the market for transformers rather than constrict it by driving traditional grain-oriented electrical steel (GOES) distribution transformers out of the market as DOE's NOPR would accomplish. The utility industry needs manufacturers to be 100% focused on increasing output, not adapting to new, government mandated efficiency requirements that are not technologically feasible nor economically justified.

To assist with increasing output, electric cooperatives have been at the forefront of advocating for additional workforce training, funding, and development. To that end, we applaud and fully support the bipartisan $1.2 billion in funding passed by the Senate Appropriations Committee in July for financial assistance, procurement, technical assistance, and workforce support to enhance the domestic supply chain for the manufacture of transformers. In particular, we appreciate Senator Lindsey Graham's role in advancing the Energy & Water appropriations bill on a 29-0 vote, and we encourage the House and Senate to maintain this vital funding in a final spending agreement.

Protecting America's Distribution Transformer Supply Chain Act: Electric cooperatives appreciate the extensive bipartisan Congressional correspondence to DOE outlining concerns with the Proposed Rule, including those from many of the Energy Subcommittee's Members. I also want to thank Chairman Duncan as well as South Carolina's Joe Wilson, William Timmons, and Ralph Norman for their vocal opposition to the proposed rule. Despite numerous and bipartisan Congressional calls for DOE to change course, the agency appears to be moving ahead with the rulemaking.

To provide electric transformer manufacturers and others in the supply chain with more time to increase output of existing – and already highly efficient – distribution transformers, the utility

sector and Mid-Carolina Electric support H.R.4167, the Protecting America's Distribution Transformer Supply Chain Act, and appreciate its introduction by Rep. Richard Hudson. This bill would delay the proposed DOE transformer efficiency rule for five years and allow transformer manufacturers time to focus on alleviating their current backlog of orders in the midst of unprecedented supply chain challenges.

H.R.4167 is a good first step. Electric cooperatives urge the Committee to continue moving forward on this important issue, and we encourage close bipartisan collaboration with the Senate Energy and Natural Resources Committee as DOE gets closer to finalizing this rule.

In the absence of Congressional action ultimately delaying or modifying the rule, DOE should keep the existing efficiency standard in place, as permitted by statute, and instead focus on other means for incentivizing amorphous steel core transformers that could allow for potential expansion in the manufacturer market without jeopardizing electric reliability.

Grid Reliability and the Guaranteeing Reliable Infrastructure Development (GRID) Act: Electric cooperatives appreciate the Committee's work to require greater coordination among Federal agencies on regulatory actions that affect the reliable operation of the bulk-power system. As noted earlier in this testimony, electric cooperatives have significant concerns with both DOE and EPA regulatory actions that are expected to negatively impact electric grid reliability.

Unfortunately, EPA in particular has continued to pursue regulatory actions without adequate or sufficient consideration of grid reliability impacts, including in its proposed Section 111 power plant carbon regulations. As I mentioned above, cooperatives serve some of the most rural,

economically depressed areas of our state – including all 12 of South Carolina's persistent poverty counties. Our members cannot afford the electric rate hikes, nor can they be asked to suffer through the blackouts that would result from the forced closure of some of our most important, dependable power plants.

It is encouraging that the Federal Energy Regulatory Commission will review and analyze these proposed regulations and how they will affect reliability at an upcoming conference. The draft GRID Act would ensure earlier and more robust evaluations of grid reliability impacts from proposals like EPA's actions. I appreciate the focus of the Committee on this topic.

Thank you again for inviting me to testify. I look forward to answering your questions.