SSDN SOUTHEAST SUSTAINABILITY DIRECTORS NETWORK

August XX, 2022

Re: Comments of North Carolina Local Governments on Duke Energy's Proposed Carbon Plan; Docket No. E-100, Sub 179

Dear Chair Mitchell and Commission Members,

The Town of Boone, Town of Chapel Hill, Chatham County, City of Greensboro, Town of Hillsborough, Town of Matthews, City of Raleigh, and the City of Wilmington (subsequently referred to as "the undersigned") respectfully submit the following comments and recommendations on the proposed Carbon Plan filed by Duke Energy on May 16, 2022 to the North Carolina Utilities Commission (NCUC). These comments are the product of ongoing discussions with dozens of North Carolina local governments, including but not limited to the signatories of this letter, as a collective effort to advance our governments' renewable energy and greenhouse gas (GHG) reduction targets. We welcome the opportunity to collaborate and further discuss any of the issues described herein with the Commission.

I. Introduction

Local governments of all sizes around North Carolina have established long-term sustainability goals to reduce GHG emissions, scale up clean energy investment, create local jobs, and deliver immediate environmental and public health benefits to the communities we serve. These include GHG emission reduction and renewable energy targets, energy efficiency measures in local government facilities, fleet electrification plans, and electric vehicle charging infrastructure deployment. Local governments have two driving interests in ensuring the electricity grid is decarbonized in a thoughtful and cost-effective manner: a desire to meet our own internal goals related to GHG emissions, renewable energy, and other sustainability matters; and our responsibility to the communities we serve, including to protect health, safety, and the environment; promote a green economy; and provide reliable and clean transportation options in ways that promote equity and improve the quality of life.

The undersigned are some of Duke Energy's largest customers and our local governments collectively serve more than 1.4 million North Carolina residents. Combined, our community-wide and government operations constitute more than 18,600 GWh of electricity use annually. Accelerating a transition to a clean energy economy is a shared priority for our communities and the decisions made in the Carbon Plan process, including those regarding generation, transmission, and energy efficiency, will critically impact our ability to meet the objectives listed below. While our individual renewable energy goals and GHG reduction goals vary, the

undersigned all share a vision of a sustainable, reliable, affordable, resilient, and equitable energy system.

The renewable energy and GHG reduction targets of the undersigned local governments include:

- The Town of Boone adopted a resolution establishing the goals of climate neutrality in municipal operations by 2030, 100% clean renewable energy used in municipal operations by 2040, and 100% clean renewable energy used in the entire Town of Boone by 2050. As of February 2022, the electricity that the Town of Boone consumes is from 100% renewable sources.
- The Town of Carrboro
- The Town of Chapel Hill adopted a resolution in 2019 to create a Climate Action Plan and achieve 80% clean, renewable energy in the community by 2030, and 100% by 2050. The Town also has a goal of reducing community GHGs 26-28% by 2025, 50% by 2030, and reaching net-zero emissions by 2050.
- Chatham County adopted a resolution in 2017 to achieve 100% clean energy by 2050 and crafted a Comprehensive Plan focused on sustainable development, quality of life, and resiliency. The Comprehensive Plan's Resiliency section sets a goal to become a carbon negative county. Electrification of transportation, energy efficiency, and cleaning the power supply will play a huge role in achieving and maintaining this goal.
- The City of Durham has set two goals: 1) to achieve carbon neutrality in municipal buildings and operations by 2040 and 2) to power city buildings and operations with 100% renewable energy by 2050. The city recently signed a Memorandum of Understanding with Duke Energy to work together on sustainability issues.
- The City of Greensboro adopted a resolution establishing the goals of reducing GHGs in operations by 40% from 2005 levels by 2025 and to transition to 100% renewable energy in city operations by 2040.
- The Town of Hillsborough adopted a resolution in 2017 establishing a transition from fossil fuel-powered operations to 100% clean and renewable energy by December 31, 2050, or sooner and 80% clean and renewable energy by 2030.
- The Town of Matthews
- The City of Raleigh adopted a goal in 2019 of reducing community GHG emissions by 80% by 2050. In addition, the City's Comprehensive Plan and Strategic Plan include policies and goals that focus on GHG reductions, utilizing alternative and renewable energy, improving energy efficiency, improving equity and resilience, and improving energy security.
- The Town of Wake Forest
- The City of Wilmington adopted a resolution in 2009 establishing a municipal operations GHG goal of 58% by 2050. In 2021 the City of Wilmington passed a resolution adopting Clean Energy goals stating: By 2035 transition from fossil fuel powered municipal operations to 50% clean energy, and electrify 50% of the city's vehicle fleet. And, by 2050 transition from fossil fuel powered municipal operations to 100% clean energy and electrify 100% of the city's vehicle fleet.

Despite robust efforts at the community level, local governments are often constrained in achieving our goals and reducing our total GHG emissions footprints given that we have little to no direct ability to choose and optimize the sources of electricity that power our communities. As a result, cities and counties have a keen interest in finding ways to improve the overall emissions performance of the electricity system. In addition, local governments understand firsthand how energy decisions affect the overall affordability and livability of their communities. High energy costs are a major contributor to economic insecurity, and many low-income North Carolinians also suffer disproportionately from the impacts of climate change and power plant pollution. Moreover, as some of the utilities' largest customers and good stewards of taxpayer money, we are acutely aware of the role that clean energy investments can play in keeping costs reasonable and predictable over the long-term, hedging against volatile fuel prices, and delivering significant economic benefits in terms of ratepayer costs as well as public and environmental health, resilience, and other non-energy benefits.

For all of these reasons, the effective implementation of Session Law 2021-165/House Bill 951, including the development and implementation of North Carolina's Carbon Plan, is a significant priority of North Carolina's local governments. Duke Energy and the NCUC have both been essential partners for implementing our climate and clean energy plans and related priorities and the undersigned see the Carbon Plan as a pivotal opportunity to increase collaboration and achieve more together.

The undersigned ask that the Commission consider the following recommendations in crafting the final Carbon Plan:

- All pathways in NCUC's final Carbon Plan should prioritize meeting the 2030 deadline of reducing carbon emissions by 70% compared to 2005 levels.
- Energy efficiency and demand-side management (DSM) programs should be improved to help local governments and other ratepayers address affordability and climate concerns.
- Duke should adopt commercially proven resource generation technologies, including low-cost renewables, and phase out fossil fuels as soon as possible using the following strategies:
    - Retire and replace coal power plants with clean energy portfolios to improve public health outcomes and reduce ratepayer costs.
    - Run an all-source, competitive solicitation to procure all new generation sources and determine the best replacement resources.
    - Increase the renewable energy procurement opportunities available to all customers, including a more efficient and predictable interconnection process.
    - Value and encourage the development of distributed energy resources (DERs) and build community resilience through the use of DERs.
    - Prioritize and maximize tested technologies that are commercially viable before relying on unproven technologies that carry high risks for ratepayer dollars.
- Load forecasts should be adjusted to proactively and accurately account for the impact of demand side management (DSM) programs and technological advances that reduce

load as well as increased load that may result from transportation and building electrification.
- Transmission planning should be conducted in conjunction with capacity expansion and jointly with neighboring grids.
- NCUC and Duke should ensure that the Carbon Plan builds upon the years of work stakeholders have invested into processes that led to the creation and passage of S.L. 2021-165/HB951, and that there continues to be a robust and inclusive stakeholder engagement process throughout the implementation and evaluation of this and future versions of the Carbon Plan
- Ongoing monitoring of and dynamic adjustment to the Carbon Plan should occur as needed to meet the goals outlined in S.L. 2021-165/HB951.

The following letter provides further detail on each of our recommendations.

II. All pathways in NCUC's final Carbon Plan should meet the 2030 deadline of reducing carbon emissions by 70% compared to 2005 levels as required by S.L. 2021-165/HB951.

Based on Duke's proposed Carbon Plan, only one of four included pathways achieves the 2030 emission reduction target of 70% below 2005 levels as legislatively mandated by the NC General Assembly (NCGA) in S.L 2021-165/HB951. Given that local governments are constrained by the available energy generation mix at the utility level, a Carbon Plan that allows Duke to push the compliance date by multiple years would seriously reduce the likelihood of local governments meeting their climate targets, many of which include milestones similar to the state's 70% reduction by 2030 goal. The undersigned local governments have a duty to responsibly and efficiently utilize public dollars to meet these and other community-driven goals; in addition to increased emissions in the near term, delays in implementation result in increased costs for both local governments and utilities due to inflation and other factors. In addition to statewide carbon emissions reductions, meeting the 2030 goal would also have co-benefits for public health and air quality as mentioned above.

We appreciate that the Carbon Plan begins to address our long-term renewable energy goals and GHG emission reduction goals and hope to be engaged partners as the NCUC determines the best ways to achieve a 70% emissions reduction by 2030 and carbon neutrality by 2050. Due to the urgency of the climate crisis and the implications to the health and well-being of the constituents we serve, it is imperative that the 2030 target be met in the timelines specified in S.L 2021-165/HB951.

III. Energy efficiency and demand-side management (DSM) programs should be improved to help local governments and other ratepayers address affordability and climate concerns.

Energy Efficiency (EE) and DSM programs are not only highly effective and cost-competitive grid resources, but can also tangibly benefit North Carolinians by lowering customer energy bills and decreasing energy burden. Many of the undersigned local governments participated in Duke Energy's 2020 IRP processes and want to reinforce and expand upon those earlier comments in the context of the Carbon Plan.

Local governments and other non-residential customers have significant opportunities to reduce electrical consumption and peak demand–thereby providing both environmental and economic benefits as well as reducing generation needs. Greater EE and DSM programming should be evaluated and implemented as appropriate, including incentives intended to help reduce overall consumption, peak demand, or both.

Recognizing that efficiency not only reduces emissions but also saves customers money, we believe EE and DSM programs in North Carolina can provide a particularly significant benefit for low- and moderate-income (LMI) residents. In 2018, 31% and 26% of households in DEP and DEC, respectively, spent 6% or more of their income on electricity bills. These high energy burdens are disproportionately shouldered by low-income, Black, and Hispanic households, and are often due to factors like insufficient insulation, poor weatherization, older appliances, and an inability to access newer energy-efficient upgrades.[1] Accordingly, the development of EE programs could—and should—have significant equity impacts. The Carbon Plan should enable increased access to EE for low-income residents through both qualification criteria and collaboration with local governments around the state, including leveraging relationships with existing community-based organizations.

Additionally, the undersigned believe that Duke Energy should achieve energy savings above and beyond 1.0% of the full annual retail load. Despite the relatively high per capita energy consumption of North Carolinians, the plan's target is significantly below the performance of many states and just barely meets the national average of states that have energy efficiency resource standards (EERS).[2]

The undersigned commend Duke Energy's efforts to modify the cost-effectiveness test (including in the recent net energy metering settlement proposal), develop an on-tariff financing pilot, and engage stakeholders to improve EE measures and programs through the EE/DSM Collaborative and the Low-Income Affordability Collaborative. However, Duke's Market Potential Study (MPS) underestimated cost-effective EE and DSM as it failed to consider rapidly changing technologies. Instead, program potential inputs are based on historical program participation data. As a result, the MPS does not find cost-effective savings available for heating, ventilation, and air conditioning (HVAC) measures, although research shows that heat pumps and heat pump water heater (HPWH) are two of the highest potential efficiency opportunities in North Carolina.[3] For this reason, the undersigned local governments

[1] Drehobl, Ariel, Lauren Ross, and Roxana Ayala. 2020. How High Are Household Energy Burdens? Washington, D.C.: American Council for an Energy- Efficient Economy. https://www.aceee.org/research-report/u2006.

[2] According to the 2021 State Energy Efficiency Scorecard from the American Council for an Energy-Efficient Economy (ACEEE), North Carolina's 2020 net incremental savings (MWh) is 0.55% of 2020 retail sales, ranking 29th among all states.

[3] Electricity EE supply curve for single-family detached housing stock in North Carolina. Source: Wilson et al. 2017.

recommend that Duke update its analysis methods to fully value the contribution of EE programs and factor in technology advancement, critical tools like on-bill financing, enhanced marketing, and program targeting to accurately evaluate program cost-effectiveness and potential based on suggestions included in the NC Energy Regulatory Process (NERP) report and the NC Energy Efficiency Roadmap.

We suggest that Duke consider new or enhanced customer engagement strategies, including increased collaboration with local governments. The undersigned believe local governments can be important partners to design, develop, and deliver EE and DSM programs to North Carolina residents and businesses in multiple ways, such as improving local ordinances, increasing the uptake and success of utility programs through local networks and targeted outreach, and supporting low-income weatherization. Accordingly, we look forward to collaborating with and supporting Duke Energy in the design and implementation of cost-effective EE and DSM measures, especially ones that target LMI communities, in an effort to ensure expanded program eligibility serves those most in need.

IV. **Resource generation**: Duke should adopt commercially proven resource generation technologies, including low-cost renewables, and phase out fossil fuels as soon as possible using the following strategies:

A. Retire and replace coal power plants with clean energy portfolios to improve health outcomes and reduce ratepayer costs.

In all of the proposed scenarios, more than 4 gigawatts (GW) of coal would remain online past 2030. In contrast, Energy Innovation has concluded that it would be cheaper to build new wind and solar plants than to continue operating the coal plants in Duke's fleet.[4] The longer these coal plants remain online past their economic life, the more costs customers incur and the more they negatively impact public health, the economy, and the climate. In addition, Duke should better model regulatory risks, such as future carbon taxes or other potential emission regulations which would make the economic case for these coal plants even worse.

Duke has also included more than 3 GW of new natural gas by 2035 in all four scenarios to replace retired coal and meet increasing electricity load. In addition to this being incompatible with North Carolina's decarbonization goals, it doesn't seem to be a prudent economic decision. A recent report found that clean energy portfolios—combinations of renewable energy, efficiency, demand response, and battery storage—are cheaper than more than 80 percent of gas plants proposed to enter service by 2030.[5]

[4] Energy Innovation. Coal Cost Crossover 2.0 Dataset. May 2021, available at https://energyinnovation.org/publication/the-coal-cost-crossover-2021/.

[5] Dyson, Mark, Grant Glazer, and Charles Teplin. *The Growing Market for Clean Energy Portfolios + Prospects for Gas Pipelines in the Era of Clean Energy*. 2019. https://rmi.org/insight/clean-energy-portfolios-pipelines-and-plants.

While fossil fuels like gas and coal are expensive and volatile (especially with the recent jump in natural gas prices[6]), costs of renewables and battery storage have consistently fallen faster than expected over the past few years. Even after accounting for the impacts of the circumvention investigation and inflation, the levelized cost of existing natural gas-fired generation is up 63% in the last year compared to 16% for new solar.[7] NextEra recently announced that its Florida Power & Light subsidiary will add 92 GW new solar and 50 GW new battery storage capacity and achieve zero carbon emissions by 2045 without increasing customer bills.

An increasing number of utilities have been canceling proposed gas plants before construction - one study found that over 50% of proposed gas plants were canceled over the past two years.[8] For example, the New Mexico Public Regulation Commission approved a 100 percent renewable-plus-storage replacement for San Juan coal capacity as the solar-plus-storage option out-competed gas additions.

The cost-effectiveness of renewables can be further advanced if Duke is able to capture economies of scale with bulk transmission and upgraded integration of large-scale renewable developments (discussed again later in this comment). This is especially important to the development of offshore wind, a clean and abundant energy source for North Carolina.

Accordingly, the undersigned local governments urge Duke Energy to produce a more robust risk assessment of its maintenance of coal plants and proposed buildout of natural gas as well as explore clean energy portfolios, ideally through all-source procurement, to help ratepayers avoid the associated risk of stranded costs and help local governments meet our stated climate and equity goals. When retiring coal plants, the undersigned local governments urge Duke to reinvest savings from switching coal to lower cost energy sources into transition assistance to help workers and communities prosper in a decarbonized economy as they face important near-term risks and costs in the transition. We encourage Duke to incorporate equity and environmental justice concerns during the coal retirement process, including environmental remediation to protect these communities over the long term.

Additionally, to ensure the most optimal portfolio, including minimizing stranded asset risk and ratepayer costs, we strongly encourage Duke to use all-source procurement for any additional capacity required. The benefits of all-source procurement are explained in detail below.

B. Run an all-source, competitive solicitation to procure all new generations and determine the best replacement resources.

Transparent and robust all-source competitive procurement processes are critical to achieving carbon-reduction goals at the lowest cost to ratepayers. Section 1(1) of S.L 2021-165/HB951

[6] NREL (National Renewable Energy Laboratory). 2022. "2022 Annual Technology Baseline." Golden, CO: National Renewable Energy Laboratory. https://atb.nrel.gov/.
[7] NextEra Investor Conference, June 2022, available at https://www.investor.nexteraenergy.com/news-and-events/events-and-presentations.
[8] Lauren Shwisberg, Alex Engel, Caitlin Odom, Mark Dyson, *Headwinds for US Gas Power*, 2021, available at https://rmi.org/insight/headwinds-for-us-gas-power/

requires that the Carbon Plan should achieve the least cost path to achieve compliance with the authorized carbon reduction goals.

As required by the S.L. 2021-165, 2,660 MW of new solar generation will be competitively procured, 55% of which would be owned by the utility and 45% of which would be supplied through power purchase agreements. Although we are glad to see the establishment of partial competitive procurement, the undersigned local governments recommend that Duke utilize all-source solicitations for both power purchase agreements and any replacement resources owned by Duke.

By allowing a full range of potential resources to compete on equal footing, all-source procurement can create a pathway for renewable energy, energy efficiency, demand-side management, and storage to play a critical role in addressing future energy and capacity needs. Selecting for market-based portfolios of optimal utility-scale and distributed energy resources can capture the value of interaction between resources, drive prices down, and benefit consumers. Experiences in multiple states demonstrate that all-source competitive procurement is a proven way to reduce costs for ratepayers while increasing access to cleaner electricity. For example, Xcel Energy Colorado's record-low costs secured by its 2016-2017 all-source competitive solicitation highlights the economic benefits of this approach.[9]

While we recognize that the Carbon Plan process is not the venue for amending S.L. 2021-165/HB951, the undersigned want to emphasize the importance of revisiting this law and the percentages allocated for utility ownership versus competitive procurement. This reassessment should be through the lens of ratepayer affordability, climate benefits outlined in the Carbon Plan, and grid reliability and resilience.

C. Increase renewable energy procurement opportunities available to all customers, including a more efficient and predictable interconnection process.

In addition, the undersigned local governments ask Duke to improve current programs and develop new customer solutions to meet the growing demand for renewables. This is essential for local governments to reach our renewable energy, climate, and equity goals. Ideally, new programs would reflect the decreasing cost of renewables by ensuring long-term savings and allowing for increased flexibility, for example, by providing various contract length options. Additionally, new customer program limits should include those based on energy consumption rather than peak demand in order to be most effective and workable for local governments and other customers that have worked to reduce their demand, including commercial customers, so that they can be sized to cover actual use. In addition, generating resources should be located

[9] Xcel's ASCS returned a $0.0107/kWh bid for wind, a $0.023/kWh bid for solar, and a $0.03/kWh bid for solar-plus-storage, according to a February 2021 Xcel presentation to Michigan regulators.

within Duke Energy's utility territories in North Carolina to ensure that economic and environmental benefits of renewables flow to North Carolinians.

A more efficient and predictable interconnection process is also critical for North Carolina to unlock the potential of renewables and meet decarbonization goals. Currently, the substantial delays in interconnection requests and unpredictable interconnection study processes result in stalled projects and create challenges for local governments to meet our renewable energy and decarbonization goals. We urge Duke to reduce interconnection timelines, accelerate interconnection studies, and improve the transparency of the queue.

The undersigned local governments would like to work with and support Duke in the design and implementation of renewables programs for large energy customers to help us meet local government demand. We are also interested in collaborating to shape new legislation that would extend the benefits of these programs to others in our communities to simultaneously support our GHG reduction and equity goals, such as community solar offerings with a carve-out for LMI customers. We welcome efforts to collaborate in the near future, including during future update cycles of the Carbon Plan and future dockets related to customer facing programs.

D. Value and encourage the development of distributed energy resources (DERs) and build community resilience through the use of DERs.

Distributed energy resources (DERs)—such as on-site solar, battery energy storage, and microgrids—are of significant interest to local governments as methods for supporting energy resilience, improving grid reliability in the face of natural disasters, and reducing probabilities of outages. Microgrids powered by distributed renewables and storage that can island during grid disruption and provide emergency backup power are critical for local responses to outages, and can replace fossil fuel generators, which have historically been the default solution for backup power. Local governments provide essential services and act as the first responders when climate disasters strike, and increased DER deployment would aid our efforts to bolster local resilience and enable us to better respond during emergency situations.

Although the undersigned local governments commend Duke for its pursuit of customer-sited resources and efforts to create rates that support customer-sited clean resources, the NCUC's final Carbon Plan should fully value and capture the benefits of renewables plus storage and microgrids in the plan's modeling.

Nationwide, utilities are increasingly deploying microgrids to improve community resilience. For example, Pacific Gas and Electric (PG&E) commissioned its first hybrid renewable microgrid to protect high fire-threat areas.[10] Green Mountain Power (GMP) plans to create new microgrids

[10] Pacific Gas and Electric Company (PG&E), *More Communities Now Eligible to Pursue Microgrids as a Part of PG&E's Efforts to Build a Stronger, More Resilient Electric Grid*, November 2021, available at: https://www.pge.com/en_US/about-pge/media-newsroom/news-details.page?pageID=bf70f039-7f80-4e31-957d-03a4d8e1283c&ts=1638294656832.

and community resilience zones as outlined in its latest Integrated Resource Plan (IRP).[11] ComEd and the U.S. Department of Energy completed the final tests on ComEd's Bronzeville Community Microgrid, a neighborhood-scale microgrid.

The undersigned local governments recommend Duke incorporate the resilience and GHG reduction benefits of renewably powered microgrids and other cost-effective DERs into the Carbon Plan and create energy resiliency programs that help local governments and communities better prepare for unexpected events. One example of such partnership is the Pepco Resiliency Center in Washington, D.C. The project deployed community solar paired with storage, microgrid, and generator capabilities, and can provide up to three days of backup power to critical loads.[12] The undersigned local governments would like to support the deployment of renewable energy plus storage, microgrids and other DER projects within our communities in order to support emergency services and operations, transit, and other resilience needs.

E. Prioritize and maximize tested technologies that are commercially viable before relying on unproven technologies that carry high risks for ratepayer dollars.

Duke Energy should prioritize proven, cost-effective technologies that are commercially viable and that Duke Energy is able to deploy in a timely manner before relying on energy sources that will require as yet uncertain technology advancement and thus put billions of ratepayer dollars at risk. The Plan assumes hydrogen will be widely available, be cost-effective and can be blended into gas networks at a high percentage to power units that currently run on natural gas. However, research suggests that only up to 20% hydrogen can be safely blended with natural gas in current pipelines and Duke does not include the cost of necessary retrofits (which can be 10-15% of the cost of building a new plant) into resource planning.[13][14] In addition, hydrogen-fired gas turbines that accommodate hydrogen blends higher than 30% are not yet commercially available.[15] If the proposed new natural gas power plants cannot eventually be transitioned to

[11] Green Mountain Power (GMP), *Green Mountain Power (GMP) 2021 Integrated Resource Plan*, available at https://greenmountainpower.com/wp-content/uploads/2021/12/2021-Integrated-Resource-Plan.pdf

[12] Matthew Popkin, Madeline Tyson, *Introducing Community Solar+: the Next Generation of Community Solar*, available at https://rmi.org/introducing-community-solar-the-next-generation-of-community-solar/

[13] Multiple resources indicate that up to 20% can be blended into gas network safely. For example, an article by Dentons mentions "20/80 blend (hydrogen/methane, by volume) is currently considered the upper limit." A research by NREL (National Renewable Energy Laboratory) also concludes that "If the hydrogen level in natural gas increases beyond 20%, the overall risk in service lines can significantly increase".

[14] Siemens Energy, 2020. *Hydrogen infrastructure – the pillar of energy transition*, available at https://assets.siemens-energy.com/siemens/assets/api/uuid:3d4339dc-434e-4692-81a0-a55adbcaa92e/200915- whitepaper-h2-infrastructure-en.pdf

[15] In Appendix O | Low-Carbon Fuels and Hydrogen, it is mentioned that "Turbine manufacturers, such as General Electric ("GE"), Mitsubishi and Siemens, have shown success with cofiring hydrogen and natural gas (up to 30% hydrogen by volume) without significant gas turbine revisions in many of the combined cycle and combustion turbine models currently in operation."

burn 100% green hydrogen, they may become obsolete and decommissioned years before ratepayers finish paying off the costs to build the plants.

Two of the four portfolios Duke proposes also rely on more than 500 MW of nuclear from small modular reactors (SMRs) by 2035, even though this technology has not yet been proven and research indicates there may be significant environmental risks. For example, the SMR project under development by Nuscale in Utah has not received its design certification from the Nuclear Regulatory Commission, although it has been under development for more than a decade.[16] Given the uncertainty of whether SMRs will be commercially and economically viable, the undersigned local governments encourage NCUC to prioritize and maximize proven, beneficial technologies (through all-source procurement as stated above) in the final Carbon Plan, and suggest performing pilot projects or allowing for technological advancement before investing large amounts of ratepayer dollars in unproven technologies. Due to our commitment to the health and safety of our communities, we also have safety and radioactive waste concerns related to SMR. The undersigned local governments recommend that Duke prove safe operations of any new technologies, including SMR, before investing in them at scale. In addition, to be a compelling decarbonization solution, SMRs should also demonstrate a history of reliably serving load and reliably ramping to meet peaks.

Duke should prioritize and maximize investment in currently deployable solutions, such as energy efficiency, renewables, and storage, while other innovative strategies are under development and testing. The undersigned local governments encourage NCUC to include at least one portfolio that doesn't rely on SMRs in the final Carbon Plan.

V. Load forecasts should be adjusted to proactively and accurately account for the impact of DSM programs and technological advances that reduce load as well as increased load that may result from transportation and building electrification.

Duke's load forecasting should account for the reduced demand resulting from DSM programs as well as technological advances such as increased appliance and HVAC efficiencies.

The rapid electrification of transportation and buildings represents a significant tool to aid North Carolina in achieving the decarbonization goals set by S.L 2021-165/HB951. As the electric vehicle (EV) market grows and state building codes shift to encourage electrification and efficiency, traditional load shapes will also change. Duke Energy should accurately analyze the impacts of electrification on the electric system, implement best practices for managing load growth and matching increased demand with clean, affordable, and reliable generation, so that EVs and appliances such as heat pumps can act as flexible assets on the grid.

The NCUC's Carbon Plan should revise the EV penetration rate proposed by Duke in its draft Plan to better reflect changing market conditions and related federal and state policies, such as Governor Cooper's Executive Order 246, North Carolina's participation in the multistate Medium- and Heavy-Duty Zero Emission Vehicle Memorandum of Understanding, and the

[16] Design Certification Application – NuScale, the U.S. Nuclear Regulatory Commission (NRC)

distribution of Volkswagen Settlement Funds.[1718] Accurate load forecasting can improve utility planning and load management.

EV loads can and should be well utilized to manage system peaks and integrate renewable energy. Matching EV charging demand with renewable energy supplies can offer greater grid and decarbonization benefits. Through the Charge Forward pilot program run by Pacific Gas & Electric and BMW, eligible EV drivers agree to delay charging to better align with available renewable energy in exchange for lower charging rates, creating an average of $325 in estimated grid savings annually per vehicle.[19] Researchers also found that smart charging can reduce carbon emissions for EVs by 32% on average, and enable EVs to accept an additional 1,200 kWh of renewable energy per vehicle per year.[20] Accordingly, the undersigned local governments recommend Duke further work to optimize charging behaviors and thus manage load and integrate more renewable energy sources on the grid through rate design that incentivizes off-peak charging, and explore the potential of Vehicle-to-Grid (V2G) to tap the synergies between EV charging and the operational needs of the grid in ways that maximize the benefits for all customers.

Similarly, the Carbon Plan should better forecast and incorporate the long-term load impacts of building code improvements and the growing trend toward beneficial electrification. As widespread electrification adds loads, effective demand management will mitigate system costs and aid renewables integration within a power system that increasingly rely on variable renewable energy. Accordingly, the undersigned recommend Duke plan for consequent increase of electricity consumption earlier, and proactively enable growth of building electrification, support the integration of renewable energy, thus addressing grid and peak load impacts. Such consideration of beneficial electrification could have a positive impact on the cost of implementing the Carbon Plan.

VI. Transmission planning should be conducted in conjunction with capacity expansion and jointly with neighboring grids.

Proactive, large-scale, long-term transmission planning approaches driven by future generation needs can drive cost-effective power system transformation. For example, the estimated average costs of coordinated onshore wind upgrades for renewables, including up to 17 GW of offshore wind, is significantly lower than the average costs of total network upgrades for current

[17] On July 15, 2020, Gov. Cooper joined a bi-partisan group of 15 states and the District of Columbia in signing a Memorandum of Understanding (MOU) committing to the electrification of medium- and heavy-duty vehicles.
[18] https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement
[19] BMW ChargeForward. BMW USA. Retrieved June 28, 2022 from https://www.bmwchargeforward.com/#/home.
[20] UC Berkeley Transportation Sustainability Research Center (TSRC), *New TSRC Report Shows Benefits of Optimizing EV Charging*, August 23, 2020, available at: https://its.berkeley.edu/news/new-tsrc-report-shows-benefits-optimizing-ev-charging

interconnection requests—totaling 15.5 GW offshore wind.[21][22][23] This difference implies that proactive, integrated grid planning for larger volumes of capacity additions can offer economies of scale and scope.

Planning transmission and generation together can help unlock North Carolina's high offshore wind energy potential in a cost-effective manner. Unit transmission costs of offshore wind expansion could be reduced further by planning appropriately for high-capacity lines to enable access to large resource areas, which would be more efficient than an incremental, piecemeal expansion approach. This could capture economies of scale and reduce redundancies by building fewer lines to support more renewables. Inter-regional coordination and transmission expansion would further reduce cost. Researchers calculate that such approaches could reduce the system cost of electricity in a 100%-renewable US power system by 46% compared with a state-by-state approach.[24] Accordingly, the undersigned local governments recommend that Duke Energy integrate transmission planning into resource planning and procurement as well as plan jointly with neighboring grids.

Communities of color and low-income communities often face the most health and environmental impacts from fossil fuel plants and energy infrastructure but often lack the resources and information to take part in the decision-making process related to the development of transmission projects. We encourage Duke to incorporate equity and environmental justice concerns in the transmission planning process and ensure historically underrepresented communities are included in this process.

VII. **Stakeholder engagement**: NCUC and Duke should ensure that the Carbon Plan builds upon the years of work stakeholders have invested into processes that led to the creation and passage of S.L 2021-165/HB951, and that there continues to be a robust and inclusive stakeholder engagement process throughout the implementation and evaluation of this and future versions of the Carbon Plan.

Over the last several years, NC local governments have been actively involved in utility planning processes at the NC Utilities Commission. The City of Asheville, Buncombe County, and the City of Charlotte formally intervened in the 2020 Integrated Resource Plan proceeding (Docket

[21] PJM's feasibility and system impacts studies for current interconnection requests totaling 15.5 GW of offshore wind estimate $6.4 billion in total network upgrade costs, which is as high as $400/kW. However, PJM's Offshore Wind Transmission Study published in 2021 estimated the cost of coordinated onshore upgrades for 75 GW of renewables, including up to 17 GW of offshore wind, at $3.2 billion, an average cost of just $40/kW. Such a significant difference implies that proactive, integrated grid planning for larger volumes of capacity additions can offer economies of scale and economies of scope.

[22] Based on costs from PJM's feasibility and system impact studies for individual generation interconnection requests as reported in Burke and Goggin, Offshore Wind Transmission Whitepaper, October 2020 at p. 40.

[23] PJM, Offshore Transmission Study Group Phase 1 Results, presented to Independent State Agencies Committee (ISAC), July 29, 2021.

[24] The Value of Inter-Regional Coordination and Transmission in Decarbonizing the US Electricity System.

No. E-100, Sub 165), a first for local governments in the state. Twelve other North Carolina local governments and elected officials submitted written comments in this same integrated resource planning docket, including many of the undersigned. Additionally, numerous local governments have participated in Duke Energy's stakeholder engagement around their electric transportation pilot programs.

Local governments have also been active participants in numerous energy policy development processes at the state level. The City of Asheville, Town of Cary, City of Charlotte, City of Durham, Durham County, City of Greensboro, and City of Raleigh actively participated in the Clean Energy Plan stakeholder process in 2019, with several local governments also contributing to the carbon reduction policy design and NC Energy Regulatory Process (NERP) stakeholder processes that followed. Involvement in current state initiatives, including EO 246 and IIJA funding implementation, remain priorities of the undersigned local governments.

Despite this robust engagement and interest in collaborating with Duke, the undersigned are unclear how local government feedback is being received and are concerned that the comments we have provided to date have been underutilized in developing the Carbon Plan. The undersigned local governments urge the NCUC to adopt a Carbon Plan that builds upon these collaborative processes and includes recommendations that were the result of the above energy policy and utility planning processes. The undersigned request that there be better integration of existing feedback from stakeholders into the Carbon Plan, including a record of where and how Duke and the NCUC integrate that feedback. This is a common best practice of local governments facilitating complex stakeholder engagement and planning processes.

We have a history of partnering with Duke on energy programs that benefit our residents, businesses, and local government operations. We look forward to and are committed to working with Duke and the NCUC to enable the solutions outlined in this letter that we believe will accelerate a more affordable, clean, equitable, resilient, and reliable energy system. Through continued partnership, we can demonstrate to both North Carolinians and the nation what collaborative clean energy leadership looks like.

VIII. Conclusion

The undersigned local governments appreciate the North Carolina Utilities Commission's consideration of our recommendations and we look forward to continued engagement in the development of the Carbon Plan. We are optimistic that with the incorporation of our recommendations, the effectiveness of this process will only improve and the final Carbon Plan approved by the NCUC will reflect the input and interests of local governments and their constituents, while setting North Carolina on a path to meet its emission reduction goals.

Thank you for the opportunity to provide comments. If you need additional information, please contact [CONTACT], who will direct your inquiry to the appropriate local government representative.