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## COUNTY OF DURHAM BOARD OF COMMISSIONERS

July 15, 2022

Re: Comments of Durham County Government on Duke Energy's Proposed Carbon Plan; Docket No. E-100, Sub 179

Dear Chair Mitchell and Commission Members,

Durham County Government ("Durham County") respectfully submits to the North Carolina Utilities Commission ("Commission") the following comments and recommendations on the proposed Carbon Plan filed by Duke Energy on May 16, 2022. The comments below provide more detailed information to complement the oral testimony given on behalf of Durham County by Tobin Freid, Sustainability Manager, at the Commission hearing on July 11, 2022. Both oral and written comments align with written comments from other North Carolina local governments. Durham County welcomes the opportunity to collaborate and further discuss any of the issues described herein with the Commission.



### Introduction

Durham County is one of many large electricity consumers in the region, using more than 24,000 MWh of electricity per year. In addition, we represent the residents and businesses in Durham that use more than 5 million MWh every year. We have enjoyed a long and productive relationship with Duke Energy in making our operations more efficient and improving our community. We appreciate the opportunity to work with the Commission, Duke Energy, and other partners to develop and implement the best possible Carbon Plan to reach our shared vision of a reliable, affordable, resilient, equitable, carbon-free energy system.

Implementing the systematic changes needed to meet the goals of the Carbon Plan is good for the economy of Durham County and North Carolina. Clean energy investment in North Carolina totaled more than \$1.6 billion in 2020 and has contributed \$22.5 billion to gross state product between 2007 and 2020<sup>1</sup>. Durham County is home to many clean energy companies that employ thousands of people in good paying jobs. According to research by the North Carolina Sustainable Energy Association, the state had almost 100,000 clean energy jobs at the end of 2020 with a quarter of those jobs in rural areas.

<sup>1</sup> NC Sustainable Energy Association. *Economic Impact Analysis of Clean Energy Development in North Carolina – 2021 Update*. June 2021.

In 2007, Durham became the first community in North Carolina to adopt a greenhouse gas emissions reduction plan. That plan includes goals to reduce emissions in government operations by 50% and in the community as a whole by 30% by 2030. The Board of County Commissioners subsequently adopted an additional goal in 2019 to transition government operations to 80% renewable energy by 2030 and 100% by 2050 in a just and equitable manner. Durham County has been working towards meeting these goals in partnership with Duke Energy, the City of Durham, Durham Public Schools, and numerous community organizations and we have been making steady progress. Our implementation plan relies on installing on-site and off-site renewables, increasing energy efficiency, and electrifying our buildings and vehicles. We are currently using several Duke Energy programs including Green Source Advantage, Small Business Energy Saver, Smart Saver Business Incentives, and Energy Design Assistance. We have invested staff time and financial resources, implemented policies, and completed numerous projects that have already reduced our energy use intensity by 15% even as our square footage increased by 74%. Even with implementing everything possible within our own control, we will not be able to meet our operational or community goals without significant and swift decarbonization of the electricity grid that includes phasing out fossil fuels and quickly ramping up renewables, energy efficiency, and storage.

Beyond meeting our goals, Durham County has responsibilities to address the climate crisis with urgency to maintain the health and welfare of our residents. Health and welfare of the public are a core responsibility of County governments in North Carolina. Local governments are on the front lines of responding to the threats of climate change to people and infrastructure. We have the responsibility to protect the public health and safety of our community members, promote strong economic growth, and provide clean transportation options that protect air quality, all while promoting equity and a high quality of life for all. The County is responsible for retrofitting infrastructure to be more resilient to challenges imparted by climate change; providing health services for those that suffer the most from health conditions exacerbated by extreme weather, poor air quality, and economic disparities; providing shelters for people who are displaced due to large storms and flooding or who need to escape from extreme heat; and protecting natural lands to provide corridors for species to migrate as their microclimates rapidly change. Therefore, Durham County has a vested human, economic, and moral interest in addressing the climate crisis through the Carbon Plan process.

Durham County asks that the Commission consider the following recommendations in crafting its final Carbon Plan:

- 1. All pathways in the Carbon Plan adopted by the Commission must align with the state goals of a 70% reduction in emissions by 2030 from 2005 levels.**

The United Nations International Panel on Climate Change has made it clear that incremental change over many decades is not sufficient to curb the worst impacts of climate change. Significant emissions reductions brought on by systematic changes are required in the next eight years. Many public and private entities recognize this as evidenced through our own goals and stand ready to continue working with the Commission and Duke Energy to make the necessary changes so North Carolina can meet the goals set out in the State's Carbon Plan.

Only one of the four pathways in the proposed Carbon Plan meets the 2030 reduction targets enumerated in S.L. 2021-165. Because Durham County, like most other North Carolina entities, is constrained by the utility's generation mix, following a Carbon Plan pathway that does not meet the 2030 70% reduction goal would not allow us to meet our

own goals. Because carbon dioxide emissions remain in the atmosphere for over a century, every year that we delay reductions results in compounded levels of heat trapping gases in the atmosphere. The threats to the health and well-being of our residents now and into the future as well as our economic well-being bring significant urgency to addressing the climate crisis by meeting the State's 2030 target.

2. **Increase the role of energy efficiency and demand-side management programs in the Carbon Plan to help all customers address affordability, reduce emissions of greenhouse gases, manage peak loads, and reduce the need for overbuilding generation capacity.**

Energy Efficiency (EE) and Demand-side Management (DSM) programs must be considered as a serious strategy for reducing emissions, avoiding the construction of new generation and transmission infrastructure, and reducing costs for customers. These are cost-competitive grid resources that are undervalued in the proposed Carbon Plan. The plan's target of 1.0% of retail load is significantly below the performance of many states and just barely meets the national average of states that have energy efficiency resource standards (EERS).<sup>2</sup> Residents and families with low to moderate incomes often live in housing that lacks insulation, efficient appliances, and basic weatherization, leaving them to pay a higher percentage of their income on energy or face health issues when they choose to not use heating or cooling. This burden falls more heavily on people of color due to historic racism. EE programs focused on these households can have a high impact on energy use while increasing the health and economic well-being of North Carolinians and increasing equity. We applaud Duke Energy's efforts to develop an on-bill financing pilot and engage stakeholders to improve EE measures and programs through the EE/DSM Collaborative and the Low-Income Affordability Collaborative. We further encourage incorporating more strategies from these processes and those identified in the North Carolina Energy Efficiency Roadmap<sup>3</sup> into the Carbon Plan modeling and the Market Potential Study.

From 2010-2012, Durham County and City provided basic energy efficiency measures to over 700 homes regardless of income through the Neighborhood Energy Retrofit Program and Home Energy Savings Program. Homes ranged in age from barely 5 years old to over 100 years and from 700 square feet to 2,000 square feet all throughout the county. We found that most homes, despite these differences, needed air sealing, duct sealing, insulation, and programmable thermostats. All-electric homes that participated saw an average of 33% efficiency improvement in cooling days and 66% efficiency in heating days. Our experience shows that there is a lot of opportunity for energy savings throughout the housing stock.

3. **Rapidly reduce fossil fuel generation and replace it with commercially proven, low-cost renewables.**
  - a. **Retire and replace coal power plants with clean energy portfolios to improve health outcomes and reduce ratepayer costs while working to mitigate workforce and tax base impacts in affected communities.**

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<sup>2</sup> 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 29<sup>th</sup> among all states.

<sup>3</sup> J. Weiss. *North Carolina Energy Efficiency Roadmap*. Nicholas Institute for Environmental Policy Solutions, Duke University. 2019.

The Carbon Plan should rapidly reduce fossil fuel generation. In all four pathways proposed by Duke, more than four gigawatts of coal generation capacity remain on-line past 2030 and three gigawatts of new natural gas is brought on-line by 2035. Energy Innovation has concluded that 80% of coal could be replaced cost-effectively with local solar and wind energy nation-wide, and specifically, it would be cheaper to build new wind and solar plants than to continue operating all coal plants in Duke's fleet.<sup>4</sup> Adding new natural gas generation is incompatible with the decarbonization goals of Durham and North Carolina. The new natural gas generation will create assets that will need to be decommissioned before the useful end of their lives, leaving rate-payers to foot the bill via stranded costs. New natural gas generation will likely necessitate a new pipeline which, if it could get through the regulatory hurdles, would negatively impact rural and low-income communities and natural systems in its path. In addition, the cost of both coal and natural gas have proven to be volatile and provide greater uncertainty in the future than renewable resources and EE/DSM.

The modeling for the Carbon Plan should include regulatory risks including future limits to carbon through carbon pricing or taxes, per recommendations in the North Carolina Energy Regulatory Process<sup>5</sup> and the increase in climate-related litigation towards utilities and fossil fuel companies around the world.

**b. Increase renewable energy procurement opportunities available to all customers who want more than what the grid provides.**

Durham County, like many local governments, has renewable energy goals that far exceed what will be available through the grid. Therefore, we need additional opportunities to purchase renewable energy. The Carbon Plan should include improvements to current programs and development of new customer solutions to meet the growing demand for renewables. Some suggested improvements are programs that allow participants to realize the benefits of the decreasing cost of renewables and storage and provide increased flexibility in contract length options. Additionally, new customer programs should be based on energy consumption rather than demand so that they can be sized to cover actual use, which aligns with our goals. Finally, any renewable projects related to customer procurement programs should be located within North Carolina to enhance the economic and environmental benefits in the state.

Durham County is eager to continue working with Duke Energy and other partners to design and implement new and improved renewable energy programs. In addition, we would like to collaborate on future legislative proposals that would extend the benefits of these programs to others in our communities, such as community solar offerings with options for low-to-moderate income customers to participate.

**c. Encourage the development of distributed energy resources by fully valuing them in the modeling, improving the interconnection process, and upgrading transmission infrastructure.**

The value of distributed energy resources (DERs) should be included in modeling for the NCUC's final Carbon Plan. The proposed plan does not fully account for the benefits of

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

<sup>5</sup> NC Department of Environmental Quality. *North Carolina Energy Regulatory Process*. 2020.

DERs. On-site solar, battery energy storage, and microgrids can support energy resilience and reduce probabilities of outages in the wake of severe weather or other grid disruptions. Durham County relies on fossil fuel generators for backup power to critical infrastructure and those generators will have to be phased out per our Renewable Energy Plan. Microgrids powered by distributed renewables and storage would be ideal options for replacing the generators because they can island during grid disruption. DERs have other environmental and economic benefits beyond resilience and emergency management. For example, battery storage can help reduce demand during peak loads and can provide electricity back into the grid when additional resources are needed.

The interconnection process as well as the transmission and distribution (T&D) system need to be improved to enable more DERs onto the grid. The interconnection process currently involves very long waits between submittal and approval, delaying generation, decreasing predictability, and increasing project costs. These issues need to be addressed in order to bring on the renewable resources necessary to meet renewable energy and decarbonization goals.

The necessary T&D infrastructure upgrades will not only allow for more DERs, but can also result in their own efficiency improvements, thus reducing overall load growth. New efficiency standards from the Department of Energy for transformers along with improved technologies such as high-voltage alternating current lines and flexible AC transmission system devices, would allow for greater efficiency, reliability, and flexibility in integrating DERs and intermittent generation sources.

**d. Prioritize proven technologies that are commercially viable rather than relying on unproven technologies that carry high risks to ratepayer dollars.**

Two of the four pathways in the proposed Plan include SMRs to generate more than 500 MW of nuclear energy in 13 years. However, this technology has not yet been proven and has not received design certification from the Nuclear Regulatory Commission nor have international licensing frameworks been adjusted. Once these barriers are overcome, it would take many years before they are commercialized and mass produced to gain economies of scale<sup>6</sup> and longer before they could be sited and permitted. The Nuclear Energy Agency estimates initial prototypes may be available by 2030 and that timeframe does not align with the Carbon Plan. The cost and public safety concerns related to nuclear waste management is also a concern to be considered. With the urgency of meeting the 2030 goals, relying on a lengthy and uncertain R&D and regulatory process is imprudent.

The proposed plan includes the assumption that natural gas will be blended with high percentages of hydrogen to be used in natural gas plants. The National Renewable Energy Laboratory finds that hydrogen cannot exceed 20% of a natural gas/hydrogen blend before increasing risk to service lines.<sup>7</sup> The necessary retrofits to facilities to allow hydrogen can be 10-15% of the cost of building a new plant and are not included in the resource planning costs in the proposal.<sup>8</sup> Turbine technology does not yet exist to burn more than 30% hydrogen. The assumption that natural gas plants will be able to transition to green hydrogen is purely hypothetical and not a valid justification for building new

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<sup>6</sup> Nuclear Energy Agency. *Small Modular Reactors: Challenges and Opportunities*, NEA No. 7560. OECD 2021.

<sup>7</sup> M.W. Melaina, O. Antonia, and M. Penev. *Blending Hydrogen into Natural Gas Pipeline Networks: A Review of Key Issues*. NREL/TP-5600-51995. 2013.

<sup>8</sup> Siemens Energy, 2020. *Hydrogen infrastructure – the pillar of energy transition*. 2021



natural gas plants that may need to be decommissioned before the end of their useful life, leaving rate-payers to bear the costs of the stranded assets.

The Carbon Plan should rely on proven, cost-effective technologies that are commercially viable to increase the probability of meeting the goals and reducing risk to rate-payers. As the effectiveness, costs, and regulatory approval of new technology develops in the future, those technologies can be incorporated into biennial updates to the plan to speed up decarbonization, reduce costs, improve reliability, and provide additional benefits. Building the first Carbon Plan around technology such as small modular reactors (SMRs) and “green hydrogen” which are not technologically available and have unknown costs is risky.

**4. Adjust load forecasts to account for changes due to beneficial electrification and decreases due to demand side management and technological advances to improve utility planning and load management.**

Durham County, along with other local governments, state government entities, and private businesses are planning to accelerate the pace of building and transportation electrification to meet our climate and renewable energy goals. The Carbon Plan models should reflect EV penetration rates that align with market estimates, Governor Cooper’s Executive Order 246, and the Medium-and-Heavy-Duty Zero Emission Vehicle Memorandum of Understanding. Models should also include building electrification projections, particularly the transition from natural gas heating to efficient heat-pumps that will increase electricity use in the state. Proactive planning for these changes will result in more cost-effective solutions.<sup>9</sup>

There are several forces in play that will mitigate the growth from beneficial electrification and these should be incorporated into the models for the Plan. These include load impacts of building code improvements, improving Federal appliance efficiency standards, and technology advances for equipment.

The forecasts in the proposed pathways do not reflect these anticipated market and technology changes related to beneficial electrification and general improvements in building and appliance efficiency. This is a missed opportunity to manage the new loads through rate design to match vehicle charging and battery storage with renewable generation as well as implementing solutions such as vehicle-to-grid technologies and policies.

**5. Incorporate robust and inclusive stakeholder engagement through implementation, evaluation, and iterative versions of the Carbon Plan.**

Durham County has been actively involved in many stakeholder processes with Duke Energy that benefit our operations and community, including the Clean Energy Plan stakeholder process, North Carolina Energy Regulatory Process, and the North Carolina Governments and Duke Energy Climate Collaborative. Stakeholder engagement leads to better products and helps all participants understand the constraints and opportunities of the other parties. Durham County urges the Commission to use the resources and recommendations from these processes and others to shape the Carbon Plan. Further we recommend that a process be developed to continue meaningful stakeholder

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<sup>9</sup> J. Weiss, J. Hagerty, M. Castaner. *The Coming Electrification of the North American Economy*. The Brattle Group. 2019

engagement into the implementation and evaluation phases and through each biennial iteration of the Plan.

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.

### **Conclusion**

Thank you for the opportunity to provide written and oral comments in the process to develop North Carolina's first Carbon Plan. Durham County appreciates the Commission's consideration of our recommendations, and our long-standing partnership with Duke Energy, and is committed to continued engagement in the development and implementation of the Carbon Plan. If you need additional information or clarification, please contact Tobin Freid, Durham County Sustainability Manager ([tfreid@dconc.gov](mailto:tfreid@dconc.gov)).



Brenda Howerton, Chair  
Durham County Board of Commissioners