BEFORE THE NORTH CAROLINA UTILITIES COMMISSION
DOCKET NO. E-100, SUB 190

In the Matter of:) **Biennial Consolidated Carbon Plan**) **and Integrated Resource Plans of**) **Duke Energy Carolinas, LLC, and**) **Duke Energy Progress, LLC,**) **Pursuant to N.C.G.S. § 62-110.9 and**) **§62-110.1(c)**)	**CITY OF CHARLOTTE INITIAL COMMENTS ON CARBON PLAN AND INTEGRATED RESOURCE PLAN**

CITY OF CHARLOTTE INITIAL COMMENTS ON DUKE ENERGY PROGRESS, LLC'S AND DUKE ENERGY CAROLINAS, LLC'S CARBON PLAN INTEGRATED RESOURCE PLAN

The City of Charlotte ("City" or "Charlotte""), through the undersigned attorney, respectfully submits the following Comments on the Biennial Consolidated Carbon Plan and Integrated Resource Plans of Duke Energy Carolinas, LLC and Duke Energy Progress, LLC (collectively "Duke Energy") Verified Petition For Approval of 2023-2024 Carbon Plan and Integrated Resource Plans filed August 16, 2023.

I. INTRODUCTION

The City of Charlotte is one of Duke Energy's largest customers and also represents a broad customer base of nearly 900,000 residents. Charlotte's City leadership, residents, and elected representatives recognize the growing urgency of addressing climate change and environmental inequities. In June 2018, the Sustainable and Resilient Charlotte by 2050 Resolution was unanimously passed by Charlotte's City Council. This resolution set ambitious municipal and

community-wide greenhouse gas ("GHG") emissions reduction goals. Specifically, it states that the City will:

- Strive for all City fleet and facilities to be fueled by 100% zero-carbon sources by 2030, and
- Strive for Charlotte to become a low carbon city by 2050 by reducing GHG emissions to below two tons of CO_2-equivalent per person annually.

Partnership with Duke Energy, coupled with the experienced guidance of the NCUC, will be critical to achieving the City's stated goals.

To achieve these targets, the City worked with Duke Energy and other key partners to develop the Strategic Energy Action Plan[1] (SEAP), which holistically addresses equitable carbon reduction in both City buildings and fleet as well as citywide GHG emissions.

Nearly five years later, Duke Energy has been one of the City's key community partners in implementing SEAP actions that have led Charlotte to be recognized as a climate leader. Some achievements of note include: (1) utilization of Duke Energy's Green Source Advantage Bridge Program (GSA)for large customers to procure utility scale renewable energy, (2) partnership with Duke Energy on the High Energy Use Assistance Pilot Program to provide deep energy retrofits on income- and energy-qualified residential customers' homes,(3) partnership with

[1] *Strategic Energy Action Plan,* December 2018. https://charlottenc.gov/CityCouncil/Committees/Documents/Archive%20Doc/Archive%20Doc%20EF/SEAP%20-%20Executive%20Summary%20Full%20Doc%20FINAL.pdf.

Duke Energy alongside other partners to provide innovative electric vehicle charging equipment (PoleVolt) in areas where there are very few at-home charging opportunities, among other smaller and frequent collaborations that fall under our City Sustainable Energy Transition partnership (City SET).

The City's ability to achieve SEAP goals is linked to the carbon intensity of Duke Energy's grid mix, and under the existing regulatory structure, Duke Energy and the NCUC have significant influence. The decisions made in this 2024 Carbon Plan Integrated Resource Plan (CPIRP) process will impact the city's zero-carbon energy and GHG reduction goals, as it also impacts the goals of other local governments in North Carolina. (Attachment 1)

In addition to influencing the City's energy supply, Duke Energy's 2024 CPIRP can also play an essential role in addressing energy burden and existing inequities experienced by low-income Charlotte residents through the transition to a low-carbon economy.

Charlotte and other jurisdictions 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 energy-burdened North Carolinians suffer disproportionately from the impacts of climate change and pollution. Moreover, as responsible stewards of taxpayer money, Charlotte is 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 improving public and environmental health, resilience, and other non-energy benefits.

Across the country and in Charlotte, energy burden is not evenly shared across the community as shown in Figures 1 and 2 in the Appendix. According to this recent study, Black households have higher energy expenditures than white households in the US.[2] Coupled with the fact that high energy bills are one reason that people turn to short-term loan products, energy burdens are increasingly contributing to chronic poverty in the United States.[3] Equity is one of the pillars of the City's SEAP and addressing energy burden in Charlotte is an important strategy for achieving a low carbon and equitable future for Charlotte.

The average energy burden for a Charlotte resident is 4.2%, and the City ranks 14th nationally among major cities for highest percentage of energy burdened households. In 2018, the City had over 120,000 households (31% of households) with a high energy burden at or greater than 6%. The City is also one of 17 cities across the nation where more than 25% of low-income households experience severe energy burden above 14%.[4]

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[2] Eva Lyubich, "The Race Gap in Residential Energy Expenditures," June 2020, https://www.energy.gov/sites/default/files/2022-03/Lyubich%20-%20The%20Race%20Gap%20in%20Residential%20Energy%20Expenditures_0.pdf.

[3] Rob Levy and Joshua Sledge, "A Complex Portrait: An Examination of Small-Dollar Credit Consumers" (Center for Financial Services Innovation, August 2012), https://www.fdic.gov/analysis/cfr/consumer/2012/a-complex-portrait.pdf.

[4] Ariel Drehobl and Lauren Ross, "Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities" (American Council for an Energy-Efficient Economy), April 2016, https://www.aceee.org/sites/default/files/publications/researchreports/u1602.pdf.

The City, Duke Energy, and the NCUC all have a shared responsibility to carefully examine how the decisions made will benefit and burden communities, particularly low-income households. Given the City's carbon reduction priorities and its call to action through the SEAP, as well as the specific interest in ensuring the social and economic benefits of a low carbon energy sector are received by all.

Charlotte welcomes the opportunity to collaborate and further discuss any of the issues described herein with the Commission and ask that the Commission consider the following recommendations in crafting the 2024 CPIRP:

1. Pathways in NCUC's 2024 CPIRP should prioritize meeting the carbon reduction goals established in 2021 HB 951 of 70% compared to 2005 levels.
2. The 2024 CPIRP should fully account for available incentives included in the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA), particularly the Energy Infrastructure Reinvestment (EIR) program, which has significant potential to promote the deployment of carbon free resources in a cost-effective manner.
3. Load forecasts can proactively 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. In the context of increased load forecasts, the 2024 CPIRP should account for the potential impact of improved energy

efficiency programs and up-to-date building codes on the ability of Duke to more effectively manage system load.

4. Energy efficiency and demand-side management (DSM) programs can be expanded to help local governments and other ratepayers address affordability and climate concerns and mitigate impacts related to increased load forecasts.

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

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

    5.2. Run an all-source, competitive solicitation to procure all new generation sources and determine the best replacement resources.

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

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

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

7. 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 CPIRP.

The following provides further detail on each of our recommendations.

Recommendations

1. **All pathways in NCUC's final CPIRP should prioritize meeting the 2030 deadline of reducing carbon emissions by 70% compared to 2005 levels.**

Only one of the three pathways proposed by Duke in their draft CPIRP 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 the existing constraints of available energy generation mix at the utility level, a CPIRP that allows Duke to change the compliance date by 3-5 years (as proposed in Pathways 2 and 3, respectively) would reduce the ability of Charlotte and other local governments with GHG reduction goals to meet their own climate targets, many of which include milestones similar to the state's 70% reduction by 2030 goal. Of particular concern is Pathway 3 which delays compliance with S.L. 2021-165/HB951 by 5 years and includes the highest levels of proposed new natural gas buildout.

In addition to increased emissions in the near term, delays in SL2021-165/HB951 implementation result in increased costs for both local governments and utilities due to fuel price volatility, supply chain delays, inflation, and other factors. In

addition to statewide carbon emissions reductions, meeting the 2030 goal would also have near-term co-benefits for public health and air quality as mentioned above.

The City appreciates that the 2024 CPIRP includes a pathway (Pathway 1) that would support efforts to achieve our long-term renewable energy goals and GHG emission reduction goals, but are concerned that Pathway 1 has not been appropriately valued due to the inclusion of a cost adder on market-tested resources like solar (without a similar analog in Pathway 2 or Pathway 3) that results in higher costs being attributed to Pathway 1. Charlotte encourages the commission to consider Pathway 1 without this cost increase and are willing to remain 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 Charlotte serves.

2. **The biennial CPIRP should fully account for available incentives included in the Infrastructure Investment and Jobs Act (IIJA) and the Inflation Reduction Act (IRA) that have significant potential to promote the deployment of carbon free resources in a cost-effective manner.**

Federal programs created and expanded by the Inflation Reduction Act (IRA) and the Infrastructure Investment and Jobs Act (IIJA) present significant funding opportunities that have the potential to directly benefit communities and influence utility resource assumptions and timing estimates. Duke should take advantage

of these federal incentives to lower project costs, which will contribute to more affordable energy solutions for North Carolina's residents and businesses and will result in a more efficient and sustainable deployment of energy infrastructure.

The City applauds Duke for integrating some of the IRA and the IIJA into their resource planning and the CPIRP. We recognize that Duke's CPIRP modeling made strategic use of the tax incentives provided by the IRA, adapting the CPIRP to include IRA criteria for base and bonus production and investment tax credits by updating the cost assumptions it used. The inclusion of these tax credits in resource plan modeling is crucial for maximizing affordability for consumers and helping the utility meet its environmental, equity, and operational goals.

An additional opportunity for Duke to integrate the potential IRA savings opportunities into its resource planning is to integrate the Energy Infrastructure Reinvestment program (EIR)[5] in the CPIRP.

The EIR, established by the Inflation Reduction Act, offers up to $250 billion in federal loans for projects aimed at lowering the cost of the energy transition. This program provides loans at favorable rates, slightly above the Treasury rate, for terms up to 30 years, offering a financially viable route for Duke to finance its decarbonization efforts at even lower costs. The EIR can enable acceleration in the retirement of fossil infrastructure and investment in clean and low-emission resources, substantially easing the economic burden on ratepayers compared to

[5] Title 17 Clean Energy Financing – Energy Infrastructure Reinvestment, see https://www.energy.gov/lpo/energy-infrastructure-reinvestment

traditional financing methods. Utilities are statutorily required to pass the savings from EIR to their customers and fossil communities impacted by the transition, making it a likely integral component for achieving North Carolina carbon reduction goals at the least cost. These savings could take the form of community benefits plans that ensure job training and replacement with highly skilled, high paying job opportunities for workers and communities displaced by the shift away from fossil resources. Local governments have a vital role in ensuring that communities in North Carolina that have historically relied on fossil fuel-related industries benefit from the decarbonization of the power sector, but they will be stymied in those efforts if Duke misses this financing opportunity.

Duke should consider including the EIR in the resource planning scenarios. In addition to the economic impact, the inclusion may reveal a timelier and more cost-effective portfolio that meets the states' emission reduction targets. Integration of EIR is likely a crucial component in capacity expansion modeling given that not all investments would be eligible for EIR financing. As such, the supply curve for certain technology costs is likely altered by the potential for EIR applicability, offering a lower cost of clean generation and grid investments, vital for North Carolina's affordable decarbonization transition.

The EIR loan authority is set to expire in September 2026, making the 2024 CPIRP the primary planning opportunity for the Commission to evaluate the potential savings this federal funding could offer the state. The incorporation of EIR into Duke's carbon plan will capitalize on low-cost federal funding to foster a more cost-effective and efficient transition to cleaner energy infrastructure. We

encourage Duke to reassess its carbon plan and include EIR as a central component of its capacity expansion modeling. This inclusion will align with Duke's environmental goals and offer substantial economic benefits to its ratepayers, promoting a sustainable and community-centric approach to energy transition.

3. **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. In the context of increased load forecasts, the 2024 CPIRP should account for the potential impact of improved energy efficiency programs and up-to-date building codes on Duke's ability to more effectively manage system load.**

Large load increases forecasted by Duke in its revised filings[6] from January 31, 2024 may result in an overreliance on new natural gas infrastructure, thus making it even harder to reduce carbon emissions. To address this, the City suggests Duke's load forecasting should account for the reduced demand resulting from DSM programs and 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)

[6] NCUC Docket No. E-100 Sub 190, Duke Energy's Verified Amended Petition For Approval Of 2023-2024 Carbon Plan and Integrated Resource Plans

market grows and building electrification and efficiency increases, traditional load shapes will also change. Duke can pair the analysis of the impacts of electrification on the electric system with the implementation of best practices for managing load growth, and then match increased demand with clean, affordable, and reliable generation so that EVs and energy efficient appliances (such as heat pumps) can act as flexible assets on the grid.

The CPIRP should revise the EV penetration rate proposed by Duke in its draft Plan to 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 distribution of Volkswagen Settlement Funds.[7,8] 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. Researchers also found that smart charging can reduce carbon emissions for EVs by 32% on average and enable EVs to

[7] 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.

[8] NC Volkswagen Settlement Program, NC Division of Air Quality. Available at https://deq.nc.gov/about/divisions/air-quality/motor-vehicles-and-air-quality/volkswagen-settlement

accept an additional 1,200 kWh of renewable energy per vehicle per year.[9] As a result, Charlotte recommends Duke further optimize charging behaviors and 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 CPIRP should forecast and incorporate the long-term load impacts of building code improvements and the growing trend toward beneficial electrification, which is a current focus for City of Charlotte municipal buildings, for example. Updating building codes is a cost-effective way to reduce overall energy consumption and lower the overall load on the grid. The North Carolina Building Code Council found that the commercial and residential provisions of the proposed 2024 NC Energy Conservation Code (NCECC) are expected to be cost effective.[10] Adoption of the 2024 NCECC has the potential to realize annual energy savings of $0.23 per square foot for commercial buildings, and save the average NC household roughly $400 a year in utility bill savings.[11] As widespread electrification adds loads, effective demand management will mitigate system

[9] 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

[10] Fiscal Note for 2024 Energy Conservation Code, NC Building Code Council. December 12, 2023. https://www.ncosfm.gov/b-21-2024-ncecc-fiscal-note/open

[11] Ibid.

costs and aid renewables integration within a power system that increasingly relies on variable renewable energy.

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

EE and DSM programs are not only highly effective and cost-competitive grid resources but can also tangibly benefit Charlotte residents by lowering customer energy bills and decreasing energy burden.

To further reinforce this opportunity, there are increased potential benefits of deeper investments in EE, especially in light of the large increase in system-wide electricity load that the utility forecasted in January.[12] Implementing EE and DSM measures is a key lever that local governments can utilize to make progress towards their emissions targets, and local governments and other non-residential customers can provide significant opportunities to reduce electrical consumption and peak demand. Doing so provides both environmental and economic benefits to communities, including residents and businesses, and reduces system-wide generation needs. Greater EE and DSM programming should be evaluated and implemented as appropriate, including utility performance incentives intended to help reduce overall consumption, peak demand, or both.

[12] NCUC Docket No. E-100 Sub 190, Duke Energy's Verified Amended Petition For Approval Of 2023-2024 Carbon Plan and Integrated Resource Plans

Recognizing that efficiency not only reduces emissions but also saves customers money, Charlotte strongly supports EE and DSM programs in North Carolina which provide a particularly significant benefit for low- and moderate-income (LMI) residents. High energy burdens are disproportionately shouldered by low-income, Black, and Hispanic households, and are often due to factors such as insufficient insulation, poor weatherization, older appliances, and an inability to access newer energy-efficient upgrades.[13] Accordingly, the development of EE programs could—and should—have significant equity impacts. The CPIRP should enable increased access to EE programs for low-income residents through both qualification criteria and collaboration with local governments throughout the state, including leveraging relationships with existing community-based organizations. As mentioned above, the High Energy Use Assistance Pilot Program, of which Charlotte is partnering with Duke Energy currently and contributed 1M to enable health and safety work to further the deep energy retrofits, is a prime example of a program that can be expanded and built upon.

Additionally, there is an opportunity to yield 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 below the performance of many states and barely meets the national average of states that have energy efficiency resource standards (EERS).[14]

[13] 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.

[14] According to ACEEE, North Carolina's 2021 net incremental savings (MWh) is 0.64% of 2021 retail sales, compared to a national average of 0.68%.

Duke and the NCUC should be applauded for their efforts to modify the cost-effectiveness test for DSM programs, 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, the Market Potential Study (MPS) likely underestimated cost-effective EE and DSM strategies as it failed to consider rapidly changing technologies or modified program implementations. The 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.[15] For this reason, Charlotte suggests 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 evaluate program cost-effectiveness and potential based on suggestions included in the NC Energy Regulatory Process (NERP) report and the NC Energy Efficiency Roadmap.

Charlotte looks forward to our continued collaboration with, and support for, Duke in the design and implementation of cost-effective EE and DSM program offerings, especially ones that target LMI communities to ensure expanded program eligibility serves those most in need.

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

5. 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:

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

Duke's proposed CPIRP Pathways 2 and 3 include more than 7 gigawatts (GW) of coal remaining online past 2030 compared to just over 2 GW in Pathway 1 and compared to only 4 GW of coal remaining online past 2030 in the 2022 Carbon Plan proposal. In contrast, Energy Innovation has concluded that it would be significantly cheaper to build new wind and solar plants than to continue operating the coal plants in Duke's fleet.[16] The longer these coal plants remain online past their economic life, the more costs customers incur and the more the coal plants negatively impact public health, the economy, and the climate. The CPIRP approved by the Commission should seek to retire coal assets consistent with the schedule proposed in Pathway 1.

Additionally, Duke should model regulatory risks, such as the possibility of future carbon taxes or other potential emission regulations which would make the economic case for these coal plants even less viable.

[16] Energy Innovation. Coal Cost Crossover 3.0 Dataset. January 2023, available at https://energyinnovation.org/publication/the-coal-cost-crossover-3-0/.

Duke has also included almost 9 GW of new natural gas over the next 10 years to replace retired coal and meet large, forecasted load increases, representing one of the largest gas build outs nationally. 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 proposed gas plant capacity.[17]

While fossil fuels like gas and coal are expensive and volatile, the 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.[18] NextEra recently announced that its Florida Power & Light subsidiary will add 92 GW of new solar and 50 GW of 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 from 2019-2021.[19] 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

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[17] 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.

[18] NextEra Investor Conference, June 2022, available at https://www.investor.nexteraenergy.com/news-and-events/events-and-presentations.

[19] 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/

again later in Section 7 of this comment letter). This is especially important to the development of offshore wind, a clean and abundant energy source for North Carolina.

Accordingly, it would be advisable for Duke 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, Duke should consider reinvesting 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. In addition, incorporating equity and environmental justice considerations during the coal retirement process, including environmental remediation to protect these communities over the long term, is important for North Carolina communities.

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

5.2. Run an all-source, competitive solicitation to procure all new generation sources 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 requires that the CPIRP 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 partial competitive procurement is a step in the right direction, which the City recognizes and applauds, Duke should 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 equally, 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. Selections based on 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.[20]

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

In addition, Charlotte encourages Duke to increase current voluntary customer programs and develop new customer solutions to meet the growing demand for renewables in a manner that meets the intent of regulatory surplus. This is essential for Charlotte, as well as all local governments to reach our renewable energy, climate, and equity goals. Charlotte is a proud partner on the GreenSource Advantage Bridge Program and appreciate this opportunity. Moving forward, 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 to be most effective and workable for local governments and other customers that have worked hard to reduce their demand, including commercial customers, so that the program limits can be sized to cover actual use.

It is important that local governments and other customers have access to customer programs that are flexible, easy to use, and available in a timely, cost-

[20] 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.

effective manner. It is also critical to ensure that participation results in the procurement of additional zero-carbon resources above and beyond the amount set by the Carbon Plan that would have been implemented otherwise (i.e., result in additionality or regulatory surplus). Local governments have expressed interest in such programs in relevant dockets at the Commission and are eager to partner with the utility to develop such programs that are workable for customers of multiple types.[21]

Charlotte would like to work with and support Duke in the design and implementation of renewables programs for large energy customers to help the city meet its demand. Charlotte is also interested in collaborating to extend the benefits of these programs to others in our community to simultaneously support our GHG reduction and equity goals, such as community solar offerings with a carve-out for LMI customers. Charlotte welcomes efforts to collaborate with Duke and the Commission on such offerings.

Additionally, an efficient and predictable interconnection process is critical for North Carolina to unlock the potential of renewables and meet decarbonization goals. Charlotte suggests Duke work to reduce interconnection timelines and accelerate interconnection studies.

[21] NCUC Docket No.s E-2 Sub 1314, E-7 Sub 1289, E-2 Sub 1315, and E-7 Sub 1288; SSDN Local Government Comments on Customer Programs.

5.4. 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 Charlotte 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. Charlotte and other 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 respond better during emergency situations.

Charlotte commends Duke for its pursuit of customer-sited resources and efforts to create rates that support customer-sited clean resources, and the City suggests that the 2024 CPIRP 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.[22] Green Mountain Power (GMP) plans to create new microgrids and community resilience zones as outlined in its latest Integrated Resource Plan (IRP).[23] ComEd and the U.S. Department of Energy completed the final tests on ComEd's Bronzeville Community Microgrid, a neighborhood-scale microgrid.

Charlotte recommends Duke incorporate the resilience and GHG reduction benefits of renewably powered microgrids and other cost-effective DERs into the CPIRP and create energy resiliency programs that help local governments and communities better prepare for unexpected events. One example of such a 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.[24] Charlotte supports the future deployment of renewable energy plus storage, microgrids and other DER projects within our community to support emergency services and operations, transit, and other resilience needs.

All three pathways Duke proposes also rely on more than 600 MW of nuclear energy from small modular reactors (SMRs) by 2035. The SMR project previously under development by Nuscale in Utah spent more than a decade under development before it received its design certification from the Nuclear

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[22] 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.

[23] 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

[24] 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/

Regulatory Commission.[2526] Given the uncertainty of whether SMRs will be commercially and economically viable at scale, it would be advisable for Duke and the NCUC to maximize proven, beneficial technologies (through all-source procurement as stated above) in the CPIRP, and suggest performing pilot projects or allowing for technological advancement to prove cost effectiveness before investing large amounts of ratepayer dollars in unproven technologies.

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.

6. Transmission planning should be conducted proactively, in conjunction with capacity expansion, and jointly with neighboring grids.

Charlotte commends Duke for their expansion and enhancement of its transmission infrastructure to facilitate interconnection of solar, which reflects a forward-thinking approach to upgrading their transmission network and supports the City's decarbonization goals. The strategy to identify and develop transmission capabilities in these 'Red Zones' is a notable effort in facilitating the integration of renewable energy.

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

[26] NuScale, 2023. *Utah Associated Municipal Power Systems (UAMPS) and NuScale Power Agree to Terminate the Carbon Free Power Project (CFPP)* [press release]. https://www.nuscalepower.com/en/news/press-releases/2023/uamps-and-nuscale-power-agree-to-terminate-the-carbon-free-power-project

Duke has recognized the need for and is considering introducing a multi-value transmission planning process. A multi-value approach to transmission planning is essential as it encompasses a broader range of benefits, including reliability, economic efficiency, and alignment with renewable energy policies. This approach would not only enhance the coordination of Duke's transmission planning but also ensures more informed decision-making for the Commission. By adopting this method, Duke can better anticipate and meet the evolving demands of the energy landscape, particularly in integrating renewable resources like offshore wind. This forward-looking planning is also in line with regulatory expectations and stakeholder interests, as it provides a holistic view of the transmission system's needs.

Duke should evaluate and, to the greatest extent possible, quantify a wide range of pertinent benefits proposed in the Notice of Proposed Rulemaking (NOPR) that the Federal Energy Regulatory Commission (FERC) issued in 2022 to select transmission projects. This approach should entail assessing a broad spectrum of potential benefits, weighing both immediate and long-term effects, and aligning them with the project's specific objectives and requirements. Some potential benefits include reliability and resource adequacy benefits, generation capacity cost savings, and market benefits.

Charlotte also encourages the Commission to extend their focus from local planning to regional and inter-regional transmission planning. Charlotte suggests adopting the proactive, multi-value transmission planning approach regionally and inter-regionally in addition to just locally within Duke's territories. Reports like

"The Value of Transmission During Winter Storm Elliott" from ACORE underscore the importance of such connections for improving resilience and reliability, particularly during extreme weather events. Additionally, the joint GE and NRDC study on interregional transmission highlights the vast benefits of expanding interregional transmission throughout the Eastern Interconnection. This approach would not only diversify energy sources and enhance load management but also contribute significantly to the resilience and efficiency of the regional energy infrastructure, all while lowering costs for consumers.

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 interconnection requests—totaling 15.5 GW offshore wind.[27,28,29] This difference implies that proactive, integrated grid planning for larger volumes of capacity additions can offer economies of scale and scope.

[27] 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.

[28] 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.

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

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.[30]

Black, Indigenous, and people of color (BIPOC) and low-income communities often face the most health and environmental impacts from fossil fuel plants and energy infrastructure. However, they frequently encounter barriers such as limited resources and information which prevents meaningful participation in the decision-making process related to the development of transmission projects. Charlotte encourages Duke to incorporate equity and environmental justice considerations in the transmission planning process and ensure historically underrepresented communities are included in this process.

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

7. NCUC and Duke should ensure that the 2024 CPIRP 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, including Charlotte, 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 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 plan docket. Local governments were also deeply engaged in the 2022 Carbon Plan proceeding, both as stakeholders in Duke's pre-filing stakeholder process, and as formal interveners and commenters.

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 City of Charlotte.

Charlotte will continue to engage directly with Duke and other stakeholders on important projects, as well as with Duke and the NCUC at the policy level. The City looks forward to continued robust engagement and request that there be a process to integrate existing feedback from stakeholders, including all local governments into the 2024 CPIRP.

Conclusion

Charlotte appreciates the opportunity to work both directly with Duke to achieve our shared goals and with the North Carolina Utilities Commission, as they consider our recommendations and comments. Charlotte is optimistic that with the incorporation of our recommendations the effectiveness of this process will only improve, and the 2024 CPIRP approved by the NCUC will reflect the input and interests of Charlotte and our constituents, while setting North Carolina on a path to meet its emission reduction goals.

Attachment 1 – Other Local Government Goals

- 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 Cary is currently developing a Municipal Pathways Assessment to define updated greenhouse gas (GHG) targets to reduce 25% from 2018 levels by 2030 and net-zero emissions for Town operations by 2050. The GHG targets build upon the previously adopted Strategic Energy Action Plan, adopted in 2012 and updated in 2015.
- 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, 59.31% 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 Town of Davidson has adopted a municipal operations goal of achieving carbon neutrality by 2037 and a community-wide carbon neutrality goal by 2050. The Town adopted a Climate Action Plan on April 9, 2024, which sets forth goals, strategies, and actions to reduce emission levels based on a 2019 greenhouse gas inventory to meet their carbon neutrality goals.
- Durham County adopted a greenhouse gas emissions reduction goal in 2007 of reducing government emissions by 50% and community emissions by 30% from 2005 levels by 2030. The County also adopted a goal of transitioning operations to 80% renewable energy by 2030 and 100% by 2050. In addition, the newly adopted Durham City-County Comprehensive Plan includes a goal for all of Durham to be carbon-neutral by 2050.
- The City of Greensboro adopted a resolution establishing the goals of: reducing GHGs in city operations by 40% from 2005 levels by 2025, reducing energy consumption in city-owned buildings by 40% from 2005 levels by 2025, and transitioning to 100% renewable energy in city operations by 2040. In addition, Greensboro's adopted comprehensive plan, GSO2040, contains high-level goals for prioritizing sustainability through environmental stewardship, social equity, and economic resilience.

- 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.
- Orange County adopted a resolution in 2017 to transition to 100% renewable energy by 2050 and a resolution to proportionally uphold the Paris Climate Agreement to reduce greenhouse gas emissions between 26 and 28 percent by 2025 from 2005 levels. Orange County's Climate Action Plan, adopted in November 2023, further committed to reducing greenhouse gas emissions by 50% by 2030 and 100% by 2050.
- 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.

Attachment 2 - Energy Burden Maps

Figure 1: Energy Burden Above 6 Percent Map - https://www.equitymap.org/

Energy Burden Above 6 Percent

Energy Burden is the percent of median yearly income that households pay for electricity and gas bills. Households nationally on average pay about 3% of their income on energy bills. A household that pays more than 6% of their income on energy bills is considered to have high energy burden, while a household that pays more than 10% is considered to have severe energy burden. These indicators show the number of households with energy burdens above the 3% national average, the 6% threshold for high energy burden, or the 10% threshold for severe energy burden across different census tracts.

Visual Indicator

Highest (1030)

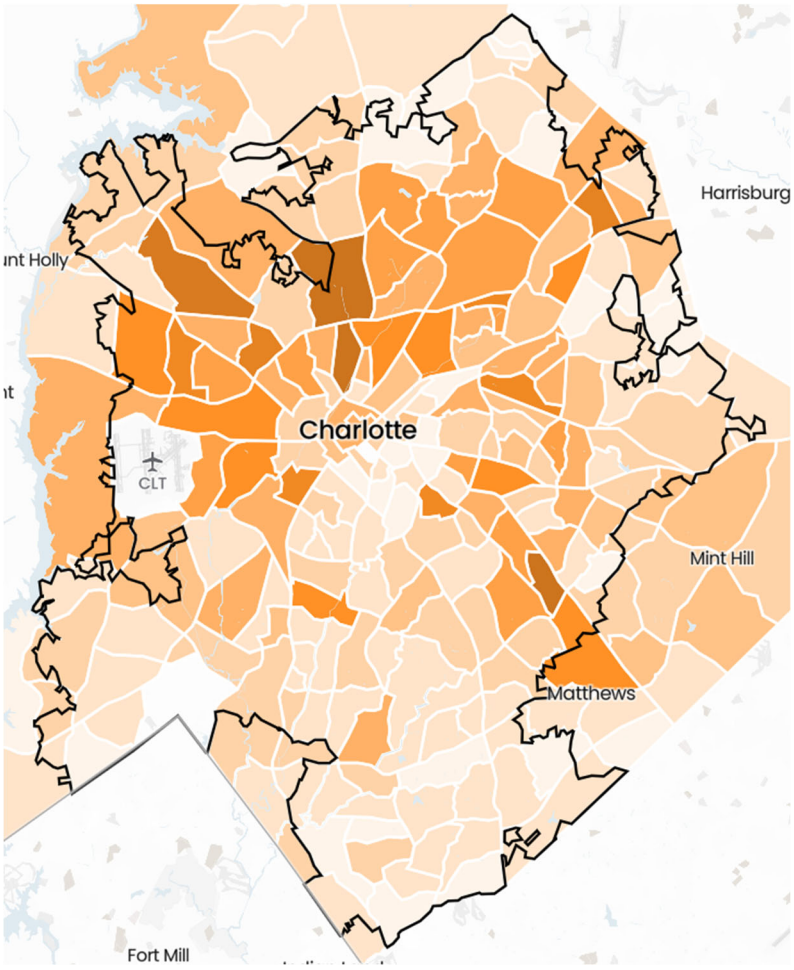


Figure 2: Energy Burden Above 6 Percent and Demographics -

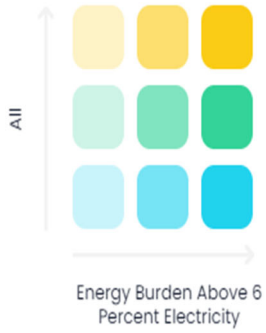
https://www.equitymap.org/

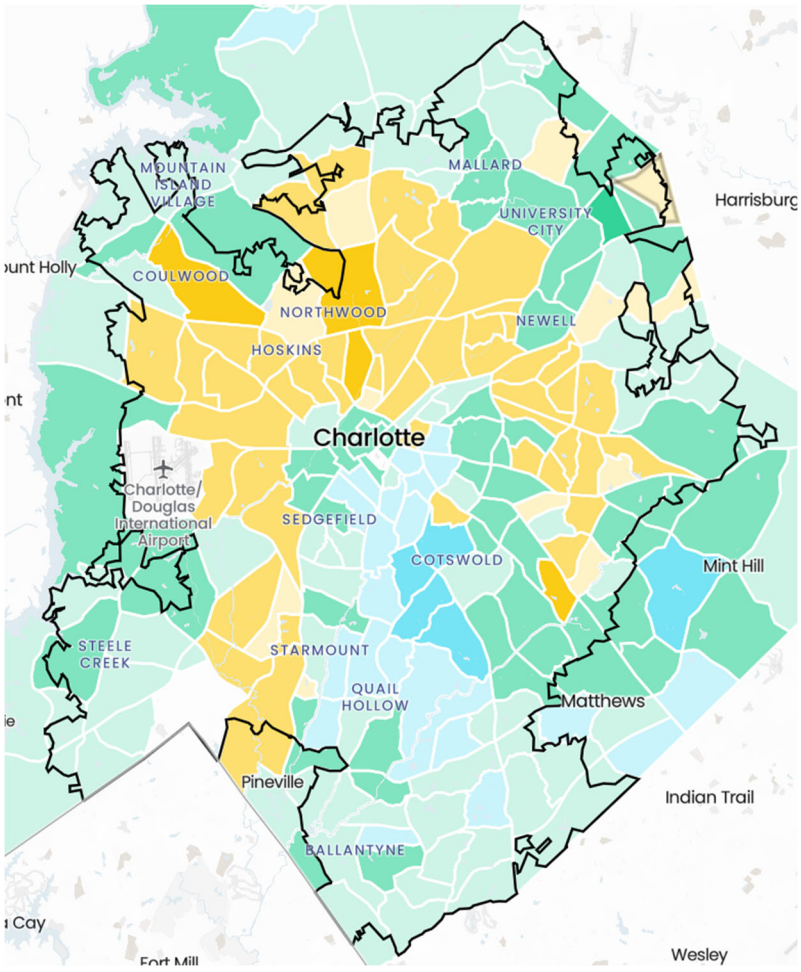
Utility Burden: Households with Above Average Energy Burden

Energy Burden is the percent of median yearly income that households pay for electricity and gas bills. Households nationally on average pay about 3% of their income on energy bills. A household that pays more than 6% of their income on energy bills is considered to have high energy burden, while a household that pays more than 10% is considered to have severe energy burden. These indicators show the number of households with energy burdens above the 3% national average, the 6% threshold for high energy burden, or the 10% threshold for severe energy burden across different census tracts.

Demographics: Racial Composition

Shows the median percentage of all racial groups.





CERTIFICATE OF SERVICE

I hereby certify that all persons on the docket service list have been served true and accurate copies of the foregoing Initial Comments by electronic mail or by first class mail deposited in the U.S. Mail, postage pre-paid.

This the 28th day of May, 2024.

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