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Shonta Dunston, Chief Clerk North Carolina Utilities Commission 4325 Mail Service Center Raleigh, North Carolina 27699-4300

> Re: Duke Energy Progress, LLC and Duke Energy Carolina, LLC Biennial Integrated Resources Plans and Carbon Plan - Docket No. E-100, Sub 179A

Dear Ms. Dunston,

Pursuant to the North Carolina Utilities Commission's August 30, 2022 Order Establishing Expert Witness Hearing Procedures ("Scheduling Order"), attached for filing please find Appalachian Voices' Testimony Summary for Rory McIlmoil and Dr. Yunus Kinkhabwala.

Please let me know if you have any questions.

Sincerely,

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Catherine Cralle Jones

Enclosure(s)

cc: Parties of Record

### Appalachian Voices' Summary of Direct Testimony of Rory McIlmoil and Dr. Yunus Kinkhabwala

#### Carolinas Carbon Plan Docket No. E-100, Sub 179

The purpose of the panel testimony is: first, to address the failure to adequately address affordability concerns and rate impacts for customers in the Companies' proposed Carbon Plan; second, to discuss the benefits of grid edge technologies and the Companies' underutilization of such resources; and finally, to present appropriate recommendations to the Commission.

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The panel's affordability testimony focuses on: cost, with a focus on affordability for low-income and otherwise economically vulnerable ratepayers; near term procurement, looking at alternative technologies beyond the expansion of additional gas fired power generation; and EE/DSM/Grid Edge resources, with an emphasis on how targeting investment in those programs for low-income residential customers is a cost-effective way to control energy demand and reduce carbon emissions while mitigating affordability impacts.

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Affordability must genuinely be a central objective of the Carbon Plan because 15 methods exist to reduce carbon emissions while simultaneously reducing energy 16 bills and energy burdens for low-income households. Moreover, the number of 17 households served by the Companies that are in arrears, and deeply so, is 18 significant and unsustainable. The Carbon Plan will exacerbate this problem unless 19 key analytics and mitigative investment targets are incorporated into the Plan 20 21 itself. Nearly one-third of all residential customers in the Companies' North Carolina service base qualify as low-income under federal poverty guidelines. The 22 panel used the Companies' analytics produced for the Low-Income Affordability 23 Collaborative (LIAC) to estimate that 231,165 low-income households (nearly a 24 guarter of all low-income households) have spent six or more months behind on 25

paying their average/regular bill or were behind by two or more times their 1 2 average bill for two or more months, thereby meeting the Companies' stringent definition of "arrears struggling" households. "Arrears struggling" as defined by 3 the Companies does not include those low-income customers who may spend 4 three to five months of the year – possibly including the hottest or coldest months 5 when electric bills tend to be highest - being unable to afford their bill when it is 6 due, and thus vulnerable to disconnection for non-payment. Another 277,000 non-7 low-income households also meet the Companies' arrears struggling definition. 8

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In total, more than half a million customers, or nearly one sixth of the Companies' 10 11 residential customers in North Carolina, qualify per the Companies' definition as "arrears struggling." Further, as of May 2022, more than 570,000 residential 12 customers were reported as being at least 30 days in arrears, owing a total of more 13 14 than \$213 million. The Covid-19 pandemic has exacerbated those arrearages, which increased sharply over the May 2021 to May 2022 period. One primary 15 driver of affordability challenges is energy inefficiency, which is not currently 16 adequately addressed by existing programs because they serve only a very small 17 segment of the low-income customer base, do not sufficiently reduce energy cost 18 burdens, and do not sufficiently address peak winter and summer usage in low-19 20 income households.

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The proposed Carbon Plan is likely to exacerbate, rather than alleviate, affordability challenges for vulnerable customers. Although the Companies list "affordability" as one of the four core objectives of the proposed Carbon Plan, the Plan lacks any attempt to mitigate affordability impacts. Instead of actually addressing affordability, the Companies inappropriately conflate the concepts of affordability and "least cost." "Least cost" simply means "less costly than the

alternative," not necessarily affordable. Despite the arrearage problems described
previously, the Companies nonetheless claim to provide "affordable service,"
"affordable electricity," and "affordable rates" throughout the proposed Plan and
their witness testimony. When asked for any analysis of how each of the four
Carbon Plan portfolios will impact arrearages and disconnections for residential
customers, the Companies responded that the question sought information
outside the scope of the Carbon Plan proceeding.

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The Carbon Plan contains no proposals for any new programs or investments 9 targeting low-income or otherwise vulnerable customers and defer that 10 11 responsibility to future years and other proceedings. If the Companies seriously intended to address affordability as a core objective of the Carbon Plan, they must 12 go beyond a "least cost" approach and incorporate directed programs and 13 14 investments targeted to address affordability challenges. Such programs and investments should include arrearage management programs, community and 15 distributed solar options, long-term investments in energy efficiency and demand-16 side management, as well as expanded bill assistance, and low-income rate 17 designs. Such improvements would not only enhance affordability but would 18 contribute to decarbonization, improved grid reliability and resiliency, and reduce 19 20 the need for additional capacity and transmission infrastructure, all further lowering customer costs. 21

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The proposed Carbon Plan currently includes 2.4 gigawatts (GW) of new gas combined cycle facilities and 0.8-1.1 GW of new gas combustion turbines, for a total of 14,470 GWh of gas-dependent electricity in 2030. As proposed, the Plan puts unnecessary constraints on the timing and capacity of alternative resource deployment, including on- and offshore wind, distributed energy resources such as

solar, and energy efficiency. Moreover, the Plan cannot determine the true "least 1 2 cost" set of resources since it excludes grid edge resources from the EnCompass modeling runs and caps their rollout at low levels. Updating the EnCompass model 3 to actively select these resources when they are cost-competitive would enable a 4 fair comparison of their ability to meet capacity needs. The proposed peaking gas 5 combustion plans could likely be replaced with utility-scale energy storage, a 6 nationwide trend, and additional peak needs could be met with offshore wind 7 deployed earlier than proposed, as well as with energy efficiency, demand 8 response, and distributed storage. These resources have the potential to obviate 9 the need for new gas plant investments and speed decarbonization, improve grid 10 11 resilience and flexibility, and reduce health impairments from air pollution. Use of these resources, including energy efficiency investments such as weatherization 12 and distributed energy such as solar, can also contribute to affordability by 13 14 reducing demand and therefore costs, providing more consistent bills and savings. Additional grid edge resources, such as vehicle-to-grid systems and smart 15 appliances can provide additional flexibility and location-specific grid benefits such 16 17 as deferral of distribution system investments and reduction in peak demand.

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Finally, increased investment in energy efficiency and other grid edge resources 19 20 targeted toward low-income households is a cost-effective method to lower energy demand and peak loads while bridging the affordability gap for all 21 customers. Increasing energy efficiency targets to 2 percent of retail sales per year 22 23 from the proposed target of 1 percent of eligible load could provide 14,300 GWh of energy savings and 2,500 MW of demand reductions beyond the Companies' 24 current proposal, greatly reducing the need to construct new gas plants. While 25 many states and utilities across the country have consistently achieved greater 26 efficiency targets, the Companies' target of 1 percent is roughly the same as 27

Companies' current historical pattern of achievement and thus not ambitious as 1 2 the Companies claim. Moreover, the majority of the proposed efficiency targets are based on short-term behavioral interventions so that their benefits do not 3 accumulate over time as they would for targets associated with physical 4 improvements that last typically between 10 to 20 years. Additionally, Duke's 5 comparatively high residential use suggests significant improvements can be made 6 through enhanced energy efficiency investments in the North Carolina service 7 area. Targeted grid-edge resources such as efficiency, demand response, and 8 community solar alongside financing strategies such as the resources included in 9 the 2022 Inflation Reduction Act have the potential to greatly improve 10 11 affordability. We estimate that such resources could reduce the energy affordability gap - the total amount of money spent on energy beyond 6% of 12 household incomes - for North Carolina's low-income and vulnerable households 13 14 in the Companies' service territory by as much as 95% if all households participated. By contrast, unnecessary capital investments in the construction of 15 new gas plants have the potential to exacerbate affordability challenges, 16 particularly considering escalating natural gas prices. 17

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The Carbon Plan must, as a core and integrated objective of the plan, directly 19 20 address existing and future energy affordability challenges and impacts for North Carolina households, particularly those low-income and otherwise vulnerable 21 households. Doing so will also contribute to the achievement of the state's 22 23 decarbonization goals as well as the improvement of economic and public health of North Carolinians. The Panel therefore makes several recommendations to the 24 Commission. Briefly, those are that the Commission: 1) require the Companies to 25 define and assess affordability as a key component of the Plan; 2) require that the 26 final Plan incorporate substantial investments in and model the affordability and 27

decarbonization benefits of customer bill assistance and arrearage management 1 2 programs, energy efficiency investments, and distributed energy and demand reduction investments; 3) reject the Companies' proposal to expand the definition 3 of income-qualified eligible customers for low-income assistance and energy 4 efficiency programs to 300% of Federal Poverty Guidelines; 4) require the 5 Companies to model how a regional competitive wholesale market and 6 performance-based regulation would impact resource selection and portfolio costs 7 for the Carbon Plan and, by extension, carbon emissions and customer 8 affordability; 5) disallow the build-out of new natural gas power infrastructure and 9 require the Companies to enable alternative energy and grid-edge resources to 10 11 compete within the Encompass model rather than be capped at arbitrarily low deployment rates. 12

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14 This concludes the summary of the panel's direct testimony.