

**STATE OF NORTH CAROLINA  
UTILITIES COMMISSION  
RALEIGH**

DOCKET NO. E-100, SUB 179

In the Matter of:	)	
Duke Energy Progress, LLC, and	)	<b>JOINT POST-HEARING BRIEF</b>
Duke Energy Carolinas, LLC, 2022	)	<b>OF 350 TRIANGLE, THE</b>
Biennial Integrated Resource Plans	)	<b>ENVIRONMENTAL WORKING</b>
and Carbon Plan	)	<b>GROUP, AND NC-APPPL</b>

Pursuant to the North Carolina Utilities Commission's ("Commission") *Notice of Due Date for Proposed Orders and/or Briefs* entered on October 4, 2022 in the above-referenced docket, 350 Triangle, the Environmental Working Group, and the North Carolina Alliance to Protect Our People and the Places We Live (collectively, "Joint Intervenors"), through undersigned counsel, hereby respectfully submit the following joint post-hearing brief for consideration by the Commission. Joint Intervenors also note at the outset that they support adoption of the re-optimized scenarios developed by Synapse Energy Economics, Inc. as the least cost path towards achieving the carbon reduction goals of House Bill 951 ("HB 951"). Joint Intervenors also note their support for Appalachian Voices' proposed findings and conclusions regarding energy affordability as set forth in its post-hearing brief, as well as the numerous identified errors and related conclusions and recommendations set forth in NC WARN *et al.*'s post-hearing brief filed in this docket.

**SUMMARY**

HB 951 unambiguously directs the Commission to develop a Carbon Plan with utilities and stakeholders that takes all reasonable steps to reduce carbon

dioxide emissions in North Carolina from electric public facilities owned or operated by electric public utilities, including Duke Energy, by 70% from 2005 levels by 2030 and to achieve carbon neutrality by 2050. HB 951 also outlines limited circumstances where the Commission may exercise discretion to delay achieving the authorized carbon reduction goals. Pursuant to HB 951, in this initial Carbon Plan proceeding the Commission must consider the reasonableness of the varying requests from Duke Energy within the framework of “current law and practice with respect to least cost planning”<sup>1</sup> and ensure that any generation and resource changes maintain or improve upon the adequacy and reliability of the existing grid.<sup>2</sup>

A common thread across Duke Energy’s proposed portfolios is their dependence on commercially unavailable and nonviable new nuclear technology. Several parties in this docket, including Joint Intervenors, have raised concerns over the economic and operational risks associated with undue reliance on investments in unproven new nuclear technology in the near term. In its Verified Petition for Approval of Carbon Plan (“Petition”) and direct and rebuttal testimony of the Long Lead-Time Resources Panel, Duke Energy Progress, LLC and Duke Energy Carolinas, LLC (collectively, “Duke Energy” or the “Companies”) are seeking assurances from the Commission that engaging in near-term development activities for long lead-time resources, such as new nuclear technology, is reasonable and prudent and would enable potential selection of this technology on the timelines contemplated in Duke Energy’s proposed portfolios.<sup>3</sup> Duke Energy is

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<sup>1</sup> N.C. Gen. Stat. § 62-110.9(2).

<sup>2</sup> N.C. Gen. Stat. § 62-110.9(3).

<sup>3</sup> Petition at p. 16.

also requesting a determination that, should a long lead-time resource not ultimately be selected and development activities abandoned in the future, such project development costs will be recoverable through base rates over a to-be-determined period of time and at the appropriate time.<sup>4</sup>

Joint Intervenors contend that in order for the Commission to approve Duke Energy's request to pursue near-term development activities for new nuclear technology<sup>5</sup> such that those costs could be potentially recovered, it must satisfy the statutory requirements of N.C. Gen. Stat. § 62-110.7, which authorizes the Commission to assess the prudence and reasonableness of a request to incur project development costs. Under the statutory framework, the Commission must consider sufficient information and documentation prior to supporting the decision to approve project development costs for a potential nuclear electric generating facility while also taking into account the costs that will be passed on to ratepayers if a project is ultimately canceled, and associated project development costs deemed reasonably and prudently incurred. Given that Duke Energy's proposal does not select a specific small modular reactor ("SMR") technology, does not present any information on candidate sites, or include information concerning the operational and economic risks associated with new nuclear technology, the

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<sup>4</sup> Petition at p. 16.

<sup>5</sup> The requested near-term development activities for new nuclear include: organizing nuclear development staff for new nuclear builds; performing new nuclear alternative siting study; performing new nuclear technology selection; beginning new nuclear early site permit development; choosing the advanced nuclear technology/company to build the first plant(s); and developing new nuclear construction and operating license application. (Tr. vol. 17, p. 101). Project development costs under N.C. Gen. Stat. § 62-110.7(a) is intended to include all "costs of evaluation, design, engineering, environmental analysis and permitting, early site permitting, combined operating license permitting, initial site preparation costs, and allowance for funds used during construction associated with such costs."

Commission cannot undertake an adequate review in this proceeding sufficient to comply with the statutory requirements of N.C. Gen. Stat. § 62-110.7.

Additionally, Duke Energy boldly proposes three portfolios that do not even achieve 70% carbon reductions by 2030—two of which rely on nuclear SMR generation—and has failed to show how these portfolios satisfy the statutory criteria for enabling the Commission to exercise its discretion to delay compliance with HB 951’s statutory deadline in its final Carbon Plan. Relying on undeveloped new nuclear technologies such as SMRs in the near term is not a justification for delaying compliance with the 2030 emissions reduction target outlined in HB 951. In light of these failings, the Commission must reject Duke Energy’s request in this initial Carbon Plan proceeding for approval of its plans to pursue near-term development activities related to new nuclear technology.

### **DISCUSSION**

North Carolina General Statute § 62-110.7 creates a statutory framework whereby utilities may apply to the Commission for an order approving as reasonable and prudent the utility’s decision to incur project development costs for nuclear electric generating facilities.<sup>6</sup> Duke Energy did not meet its burden to demonstrate that the decision to incur project development costs for a yet-to-be-determined and as yet commercially unavailable SMR technology on an aggressive utility-scale development timeline is reasonable and prudent.

Duke Energy has asserted throughout this proceeding that the near-term development activities for which it is seeking approval are to ensure that SMR

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<sup>6</sup> N.C. Gen. Stat. § 62-110.7(b).

technology can achieve commercial operation on a timeline consistent with its proposed portfolios. However, given that the portfolios that include SMR technology do not meet the 70% carbon emissions reduction target until 2034 and that Duke Energy has not satisfied the statutory criteria required to justify compliance delays, the Commission must limit its authorization of the utility's near-term development activities to resources that would support proposed portfolios that align with the 70% decarbonization mandate.

**I. DUKE ENERGY DID NOT CARRY ITS BURDEN OF PRESENTING SUFFICIENT INFORMATION AND DOCUMENTATION TO SUPPORT APPROVAL OF ITS DECISION TO INCUR PROJECT DEVELOPMENT COSTS IN THE NEAR TERM FOR NEW NUCLEAR TECHNOLOGY.**

Under North Carolina law, a public utility may request that the Commission review the utility's decision to incur project development costs if it "include[s] with its request such information and documentation as is necessary to support approval of the decision to incur proposed project development costs."<sup>7</sup> The Commission shall then approve the public utility's decision to incur project development costs if the public utility demonstrates by a preponderance of evidence that the decision to incur such costs is reasonable and prudent.<sup>8</sup> Under HB 951's framework, Duke Energy's proposed near-term development activities for SMRs and the decision to incur associated costs are not reasonable or prudent because they are requested in order to preserve the potential to deploy SMRs on an aggressive in-service timeline for an as yet commercially unavailable technology that is not consistent with the statutory 70% emissions reduction target

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<sup>7</sup> N.C. Gen. Stat. § 110.7(b).

<sup>8</sup> *Id.*

date, as further discussed in Section II below. Instead, Duke Energy seeks to undertake expensive near-term development activities without meaningfully considering commercially viable, low-cost, and proven zero-carbon generation technology.

Duke Energy is targeting the deployment of an SMR in 2032 for purposes of achieving 70% carbon emissions reductions by 2034. The near-term development activities that the Companies are seeking approval to pursue between 2022 to 2024 to make this resource available “on the timelines contemplated in the Companies’ Carbon Plan modeling”<sup>9</sup> include:

2022-2023

- Organiz[ing] a nuclear development staff for new nuclear builds;
- Perform[ing a] new nuclear alternative siting study;
- Perform[ing] a new nuclear technology selection;
- Begin[ning] new nuclear early ESP development;
- Choos[ing] the advanced nuclear technology/company to build the first plant(s); and

2024

- Develop[ing] a new nuclear construction and operating license application.

(Tr. vol. 17, p. 101). The projected cost of these activities totals approximately 75 million dollars, (Tr. vol. 29, p. 105), for which Duke Energy would seek cost recovery from its customers.

Environmental Working Group’s (“EWG”) witness Dr. Arjun Makhijani (“Dr. Makhijani”) testified in detail that not only is achieving an in-service date of mid-2032 a speculative and highly ambitious target for commercial deployment of a yet to be specified design, but reliance on this technology for contributing to near term

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<sup>9</sup> Tr. vol. 17, p. 82.

emissions reduction goals has the potential for delays and cost overruns, which would further pose an economic risk to ratepayers and delay compliance with HB 951. (Tr. vol. 24, pp. 93-94, 99-102). Additionally, for the reactor designs that Duke Energy does identify, Dr. Makhijani provided testimony on their likely technical challenges and operational problems. (Tr. vol. 24, pp. 102-107). Furthermore, in his expert report submitted contemporaneously with EWG's initial comments filed in this docket and in his direct testimony, Dr. Makhijani explained that, given Duke Energy's proposed new nuclear generation capacity, a least-cost plan that maintains or improves reliability of the electric grid as required by HB 951 necessitates an evaluation of the availability of water resources, given the climate crisis and its impacts on water supply. (Tr. vol. 24, pp. 96-99). Duke Energy's proposal and direct and rebuttal testimony failed to thoroughly address or present information or documentation regarding such issues for the Commission's consideration. For these reasons, the Commission must reject Duke Energy's request related to the approval of near-term development activities for new nuclear technology and their associated costs.

- A. Duke Energy did not specify the SMR technology it aims to deploy rapidly, nor did it present information or documentation regarding potential sites for a nuclear generating facility.

In his direct testimony, Dr. Makhijani testified that not a single SMR reactor design identified by Duke Energy as a viable resource for contributing to a 2034 70% carbon emissions reductions target has been constructed, much less approved or fully certified by the Nuclear Regulatory Commission ("NRC"). (Tr. vol.

24, p. 89). Duke Energy's witness Chris Nolan ("Mr. Nolan"), acknowledged this in response to cross-examination.

Q. . . . [J]ust to be clear, no SMRs have been built in the United States, correct?

A. Correct.

Q. And they haven't been deployed at a commercial utility scale, correct?

A. That is correct.

Q. . . . [O]ne of the technologies that you identify in your testimony on page 29 is the GE Hitachi BWRX-300 SMR. And on line 4, you state that, Ontario Power Generation is building a BWRX-300 at its Darlington site in Clarington, Ontario. But I just want to be clear, is the BWRX-300 SMR currently being built or are there plans to build it?

A. I think there are plans to build it.

(Tr. vol. 18, pp. 41-42). Mr. Nolan also acknowledged that as presented to the Commission in Appendix L, Table L-4 of its proposed Carbon Plan, Duke Energy inaccurately represents that the 77 MW NuScale SMR reactor design under consideration by the Companies "received design certification approval from the NRC in August 2020,"<sup>10</sup> when in fact it was the 55 MW NuScale reactor design that received a design certification from the NRC.

Q. . . . [W]ould you agree that NuScale previously raised its SMR design's capacity or power output from 50 megawatts, then to 60 megawatts, then to 77 megawatts?

A. They have a design certification for the 50-megawatt module and they're pursuing an SDA for the 77-megawatt module.

. . .

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<sup>10</sup> Duke Energy, Carolinas Carbon Plan, Appendix L, Table L-4 at p. 8; see *a/so* Tr. vol. 29, p. 107.



Q. . . . [W]ould you agree that, since this section of Table L-4 is referencing the NuScale 77-megawatt reactor design, stating that it received a design certification approval in August 2020 in that second bullet, is not entirely accurate?

A. NuScale did receive a design certification approval. It is not for the 77-megawatt. So those two are not aligned. . . .

(Tr. vol. 18, p. 43-44; 45-46).

A 2032 target date for deploying an SMR, even for the NuScale VOYGR design, is entirely speculative. Dr. Makhijani explains, “[t]he NuScale design has an expected online date of 2029. This has been greatly delayed. In 2008, NuScale officials expected an online date of 2015-2016; it took until 2016 for NuScale to even submit its application for certification—for the 50 MW design.” (Tr. vol. 24, p. 90). He further testified that “the VOYGR NuScale reactor listed by Duke Energy is a 77 MW reactor, a capacity more than 50% above the capacity of the certified reactor” and will have to be certified in a separate process. (Tr. vol. 24, p. 89). And as Mr. Nolan confirmed during cross-examination, getting an operating license for the 77 MW reactor design would take time.

Q. . . . [b]ecause the project that is identified is proposing to deploy that 77-megawatt NuScale design, would that design have to undergo a separate review process by the Nuclear Regulatory Commission?

A. So there's three ways you can enter the part 52 licensing process. You can use a certified design; an SDA, a standardized design approval; or a site-specific application.

Q. Okay. So would you agree, though, that neither of those processes would constitute approval to build or operate a reactor?

A. It would time -- it would take time to get an operating license.

(Tr. vol. 18, p. 46).

As part of its broad request for assurances to incur project development costs in this proceeding, Duke Energy fails to select an SMR technology or provide information or documentation related to all designs the Companies are considering. By failing to do so, the Companies have disadvantaged other parties and the Commission from evaluating the development timelines, projected costs, and potential operational risks associated with all designs under consideration.

Mr. Nolan confirmed that the Companies are considering other technologies when asked whether there are different designs outside the scope of what was presented to the Commission for the first SMR planned for mid-2032. (Tr. vol. 18, pp. 40-41). Adding more uncertainty to the mix, when asked whether he knew the expected timeframes for the un-specified designs under consideration, Mr. Nolan did not believe any of them had an expected operation date. (*Id.*).

In addition to not having chosen a technology, Duke Energy did not present any information or documentation related to any sites under consideration for the construction of an SMR plant. During cross-examination, Mr. Nolan admitted that Duke Energy had not even identified a prospective site. (Tr. vol. 17, p. 184). Perhaps most telling of the unreasonableness of the Companies' decision to incur substantial project development costs in the near term for an unspecified SMR design at an undetermined location is the fact that Mr. Nolan stated in response to questioning from the Commission that Advanced Reactors are more suitable for certain sites than SMRs. (Tr. vol. 18, pp. 110-112). Advanced Reactors are not modeled in the Companies' Carbon Plan until 2038. (Tr. vol. 17, p. 97).

In light of these glaring omissions, the Commission must reject Duke Energy's request to incur and potentially recover project development costs associated with its near-term development activities related to SMRs.

- B. Duke Energy's request for approval to pursue near-term development activities ignores potential operational risks and cost overruns associated with its unrealistic timeline for deployment of any of the SMR designs identified in its Carbon Plan.

Duke Energy's request in this initial Carbon Plan proceeding is underdeveloped because it has failed to meaningfully evaluate the potential operational risks associated with new reactor designs, especially given the rapid rate at which the new and unproven designs would be commissioned. Joint Intervenor's contend that Duke Energy overestimates the anticipated benefits associated with the rapid deployment of new nuclear technologies while simultaneously underestimating likely early operational and costly difficulties. Dr. Makhijani presented for this Commission's consideration testimony regarding a concept known in the nuclear industry as the "bathtub curve," which demonstrates that there are more problems in the early and late parts of the operating life of reactors." (Tr. vol., p. 102). Even for the new nuclear designs that Duke Energy does identify in its request, such issues are likely to materialize. As Dr. Makhijani explained in his direct testimony:

New designs or modifications of existing designs raise the risk of such early operational difficulties. For instance, the NuScale reactors will have their steam generators inside the reactor vessel. In contrast, existing commercial pressurized water reactors ("PWRs") have their steam generators outside the reactor vessel but within the secondary containment where they can be repaired or replaced. Problems with steam generators, which have had to be prematurely replaced in existing PWRs, would be more complex with the steam generator inside the reactor vessel.

(Tr. vol. 24, pp. 94-95).

Dr. Makhijani also presented substantial testimony on the well-known historical delays and cost overruns associated with developing and constructing nuclear facilities. (Tr. vol. 24, pp. 75-78). On this point, Duke Energy's Witness, Mr. Nolan, claims that the "historic or recent cost escalations in the most recent nuclear plant projects (e.g., Vogtle Units 3 & 4) are not valid comparisons because of the differences in characteristics of SMRs and ARs." (Tr. vol. 29, p. 108). However, Duke Energy overlooks its own promotion of SMR technology throughout this proceeding emphasizing the exact same design principles as the light-water-cooled reactors it now seeks to distinguish.

For example, while discussing SMRs in his direct testimony, Mr. Nolan states that "[t]he modular design of these new reactors allows for more off-site construction and decreases production timelines." (Tr. vol. 17, p. 96). Mr. Nolan further explains how "the new generation of nuclear plants include inherent safety features," meaning that "the system can turn off and cool indefinitely with no operator intervention." (*Id.* at pp. 96-97).

Similarly, Georgia Power's Plant Vogtle Units 3 & 4 will use the Advanced Passive 1000 reactors designed by Westinghouse Electric Company, LLC. Mr. Nolan acknowledged during cross-examination that the "AP1000 was one of the first designs to include passive features, so it enhanced the safety." (Tr. vol. 18, p. 29). Additionally, as explained in the direct testimony of NC WARN *et al.*'s witness, William E. Powers:

The manufacturer Westinghouse and utilities such as Duke Energy had claimed that the “Advanced Passive (AP) 1000” reactor would avoid the large cost overruns and mid-stream cancellations of the first generation of US nuclear power plant construction projects. That promise was largely based on plans for off-site construction of various modules that could then be pieced together at each proposed site. The AP1000 plan was not successful.

(Tr. vol. 22, p. 200). To achieve a standardized modular design and compensate for the loss of economies of scale associated with SMRs, Dr. Makhijani testified that factory manufacturing is a standard way to lower costs for industrial products. (Tr. vol. 24, pp. 86). Therefore, “a significant order book will be necessary for the projected economies of standardizing the design to be realized.” (*Id.* at 87). However, a readily available supply chain does not yet exist because there is no current SMR anywhere in the world that is generating power and providing it for commercial operation. (Tr. vol. 17, p. 183-184).

As stated in the direct and rebuttal testimony of the Long Lead-Time Resources Panel, Duke Energy intends to closely monitor first-of-a-kind reactor projects to obtain refined cost estimates as these projects develop and present such information to the Commission in future proceedings. (Tr. vol. 17, pp. 78-79; Tr. vol. 29, p. 109). Mr. Nolan even acknowledged during cross-examination that “there is uncertainty in the pricing” of SMRs. (Tr. vol. 18, p. 37). This fact shows the imprudence and impulsive nature of the Companies’ decision to incur substantial costs related to an unavailable and unlicensed technology to which no realistic cost estimates or construction timelines exist. For these reasons, the Commission must reject Duke Energy’s requests for relief associated with its decision to incur project development costs for potential cost recovery.

- C. Duke Energy's request in this initial Carbon Plan proceeding omits any information or documentation related to climate-related risks that would impact the selection of new nuclear technologies and severely affect system reliability.

The directive to develop the least cost path towards carbon neutrality that meets or exceeds present grid reliability levels is a cornerstone of HB 951.<sup>11</sup> With respect to thermo-electric power plants, maintaining reliability requires resilience planning that takes into account the climate crisis and its impacts on water supply. As global temperatures rise, high water temperatures may result in a de-rating of thermal generation capacity during summer peaks. Therefore, the decision to pursue near-term development activities for a least-cost plan that maintains or improves system reliability necessitates an analysis of the vulnerabilities associated with the water resource challenges ahead. Such consideration or evaluation is notably absent from Duke Energy's request to potentially recover project development costs associated with deploying new nuclear technology, which, as Dr. Makhijani testified, "would create large new demands on water resources, increasing vulnerability in times of heat waves—when capacity is most needed." (Tr. vol. 24, p. 98).

During cross-examination, Mr. Nolan acknowledged that, as part of the siting of new nuclear-generating facilities and the early site permit process, there should be an assessment of water availability risks during extreme heat events. However, when asked whether he was aware of discussions or documentation concerning any types of climate-related risks in the Companies' Carbon Plan in the

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<sup>11</sup> N.C. Gen. Stat. § 62-110.9(3).

context of new nuclear generation, he was unable to offer evidence of such a discussion despite the Companies' determination to incur project development costs for early site permitting. (Tr. vol. 18, p. 53).

In sum, Duke Energy's requests related to SMRs in this initial Carbon Plan proceeding are premature. The Companies have failed to meet their burden of proof and propound information and documentation to support a finding that the decision to incur costs in the near term for potential cost recovery is reasonable and prudent. As explained by Dr. Makhijani in his direct testimony, "if there is unexpected progress in terms of cost and expedited schedules in the next few years in one or more of Duke Energy's identified reactor types, the issue could be more appropriately revisited at that time." (Tr. vol. 24, pp. 107-108). Until more information is available and adequately presented for review, the Commission should reject Duke Energy's request for approval to pursue initial development activities related to SMRs.

**II. IN LIGHT OF THE TIMELINE FOR COMPLIANCE WITH THE INTERIM TARGET DATE CONTEMPLATED BY DUKE ENERGY'S PROPOSED PORTFOLIOS, IT IS NOT APPROPRIATE TO APPROVE DUKE ENERGY'S REQUEST TO PURSUE NEAR-TERM INITIAL DEVELOPMENT ACTIVITIES FOR NEW NUCLEAR TECHNOLOGIES.**

At the outset, Joint Intervenors support the arguments and analyses presented by other parties in this docket concerning the Commission's limited authority to extend the 2030 interim 70% carbon emission reduction target pursuant to House Bill 951 ("HB 951").<sup>12</sup> HB 951 makes clear that the Commission

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<sup>12</sup> See Responsive Comments of the Attorney General's Office at pp. 7-11; Carolinas Clean Energy Business Association at pp. 2-4; CLEAN Intervenors at pp. 6-8; Clean Power Suppliers Association at pp. 2-5.

may exercise this authority only in limited circumstances and must otherwise ensure compliance with the carbon reduction goals by the timeframes clearly specified in the statute.<sup>13</sup> Extending the 70% reduction deadline to 2032 would only be warranted to allow for the implementation of solutions that would have a more significant and material impact on carbon reduction.<sup>14</sup> In this docket, Duke Energy did not demonstrate that inclusion of SMR technology in any of its portfolios that comply with the 70% emissions reduction target date on or beyond 2032 would have this material effect.

Extending the 70% reduction deadline beyond 2032 is only permissible under narrow circumstances—either “in the event the Commission authorizes construction of a nuclear facility or wind energy facility that would require additional time for completion due to technical, legal, logistical, or other factors beyond the control of the electric public utility”<sup>15</sup> or “in the event necessary to maintain the adequacy and reliability of the existing grid.”<sup>16</sup> Notably, in making such a determination, HB 951 compels that the Commission “shall receive and consider stakeholder input.”<sup>17</sup> In this docket, no authorization for construction of a nuclear facility has been sought or approved. Furthermore, modeling presented by other Intervenor, such as the CLEAN Intervenor, provides the Commission with a variety of scenarios that maintain the adequacy and reliability of the existing grid;

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<sup>13</sup> See N.C. Gen. Stat. § 62-110.9(4).

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

<sup>17</sup> *Id.*



therefore, exceeding the statutory deadline beyond 2032 is not a necessary or appropriate determination.

Three of Duke Energy's four proposed portfolios (P2, P3, and P4) do not satisfy the statutory criteria that would justify a delay in achieving the 70% interim carbon reduction. Two portfolios, P3 and P4, include an unrealistic timeline for commercially deploying SMR technology in the early 2030s. Joint Intervenors recognize that the Commission is not being asked to select a single portfolio in this Carbon Plan proceeding; however, because Duke Energy is requesting approval to pursue near-term development activities to ambitiously put an advanced nuclear unit "online in mid-2032,"<sup>18</sup> to contribute to a 2034 emissions reduction date,<sup>19</sup> the Commission should limit its approval of near-term development activities to those that will support portfolios that achieve the statutorily mandated 70% emissions reductions target on time.

### **CONCLUSION**

For all the above-described reasons, among others, Joint Intervenors respectfully request that the Commission reject Duke Energy's request in this initial Carbon Plan proceeding concerning approval for plans to pursue near-term development activities related to new nuclear technology and its request for additional determinations relating to this technology as set forth in its Petition.

*[Signatures Follow on Next Page]*

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<sup>18</sup> Duke Energy, Carolinas Carbon Plan, Appendix L at p. 10.

<sup>19</sup> Duke Energy, Carolinas Carbon Plan, Executive Summary at pp. 12-13.

Respectfully submitted this 24th day of October, 2022.

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**CERTIFICATE OF SERVICE**

I hereby certify that I have on this day served a copy of the foregoing *Post-Hearing Brief of 350 Triangle, the Environmental Working Group, and NC-APPPL* upon each of the parties of record in these proceedings or their attorneys of record by electronic service.

This the 24th day of October, 2022.

LAW OFFICE OF F. BRYAN BRICE, JR.

By: /s/ Andrea C. Bonvecchio

Andrea C. Bonvecchio

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