



ENERGY FUTURES GROUP



# NORTH CAROLINA POWER PATHWAYS

## A STAKEHOLDER-DIRECTED SCENARIO ANALYSIS

**Energy Futures Group**

On behalf of the North Carolina Office of the Governor

October 2026



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# INTRODUCTION

In August 2025, Governor Josh Stein signed Executive Order No. 23 creating the North Carolina Energy Policy Task Force (EPTF) and its Technical Advisory Subcommittee (“the Subcommittee”). To assist the Task Force, the North Carolina Office of the Governor commissioned Energy Futures Group (EFG) to lead a stakeholder-driven modeling exercise to inform engagement and action on a wide range of questions pertaining to the state’s electricity system. EFG worked collaboratively with the Subcommittee to design a modeling study premised on three questions:

1. Is there a reasonable resource scenario available to maintain electric system reliability to meet the state’s policy goals?
2. What key assumptions determine overall costs, future risks, and uncertainties for the North Carolina electric grid?
3. Are electric utilities appropriately forecasting future loads, and if assumptions in that forecast are changed, how would the required resource mix change?

To answer these and other questions, EFG collaborated with the Subcommittee to design an analysis similar to that utilized by Duke Energy Carolinas and Duke Energy Progress (“Duke”) to develop its mandated resource plans. EFG’s modeling covers Duke service territories and relies exclusively on data that is publicly available or included as a part of a standard model data license. Across the exercise, EFG utilized and prioritized assumption and scenario development informed by discussion with and input from the Subcommittee.

## SCOPE & RESOURCES

EFG’s modeling included the development of a Base Case scenario representing Duke Energy’s and replicated the utility’s assumptions wherever they were made publicly available. EFG also ran six scenarios and two sensitivities for comparison against the Base Case, representing alternate policy, technology, or cost futures that the Subcommittee deemed most important for assessment. All scenarios were run across a modeling period from 2026 to 2050.

This report presents the result of that scenario assessment. Detailed modeling input assumptions can be found in Appendix 2. Interactive results are also available on the [Power Pathways Results Dashboard](#). Finally, all charts included in this report are available in the **Power Pathways Chart Workbook**.

## SUBCOMMITTEE ENGAGEMENT

The responsibilities for the North Carolina Energy Policy Task Force Technical Advisory Subcommittee as outlined in Executive Order No. 23 are as follows:

1. Advising the Office of the Governor on any commissioned modeling of NC’s electricity system.
2. Developing testable hypotheses and questions that can inform state energy policy.
3. Increasing transparency and public understanding of models used to inform energy policy, including their inputs and outputs, risks, and uncertainties.
4. Providing quantitative and qualitative assessment results and supporting information to other subcommittees.

This modeling exercise, commissioned by the Office of the Governor, falls squarely within the first responsibility outlined. Further, EFG endeavored to design the modeling analysis to inform work toward the other stated responsibilities.

EFG led modeling discussions at six Technical Advisory Subcommittee meetings. This included the presentation of modeling input assumptions and in-depth discussion and formal surveying on proposed scenarios. During meetings, EFG verbally solicited consensus on all presented input assumptions; the team also set a clear threshold – if any assumption was not supported by greater than 70 percent of subcommittee members, EFG would document lack of support and any effort to mitigate participant concerns. While scenarios modeled and input assumptions were limited by publicly available data, there were no documented cases where modeling assumptions were unsupported by the Subcommittee.

EFG presented a set of scenario options and then changed assumptions undergirding them based on subcommittee feedback. Following the introduction of these scenarios and two subsequent discussions, Subcommittee members were given the opportunity to vote on which scenarios they were most interested in exploring. Subcommittee engagement and scenario selection is documented across available meeting minutes and presentations.

## SCENARIOS & MODELING PROCESS

Ultimately, the Subcommittee voted to prioritize six scenarios and two sensitivities. They are listed below, along with the guiding question they target.

### BASE CASE

- **Base Case:** What does a case that mirrors Duke's 2025 Resource Plan assumptions as closely as possible, given publicly available data, look like? (Used as a foundation for comparison.)

### ALTERNATE FUTURES

- **Alternative Large Load:** What if Duke's full large load forecast is not realized, and only those customers that have initiated the interconnection process come online?
- **Path to Net Zero:** What if North Carolina followed a linear path from 2035 to the 2050 carbon goal, paired with a set of supportive policies?
- **Delayed Hydrogen Deployment:** What if Duke's assumption that all new gas plants can be converted to be capable of 100% hydrogen blending by 2050 is overstated? What if those plants reach blending potential on a delayed schedule?

### LARGE LOAD TARGETED POLICIES

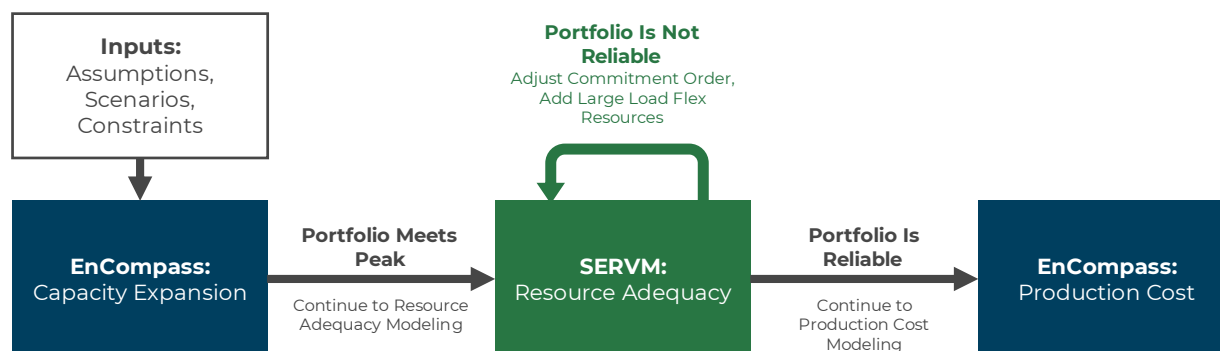
- **Flexible Large Load:** What if large load customers opt into a load flexibility program?
- **Clean Large Load:** What if some portion of large load customers opt into the ownership and operation of 100% non-emitting resources to support operations by 2040?
- **Clean Flexible Large Load:** What if the flexibility and clean energy programs studied in Flexible Large Load and Clean Large Load scenarios were operated in tandem?

### COST SENSITIVITIES

- **High Gas Fuel Cost:** What if the Base Case portfolio is built and then natural gas prices are higher than forecasted?
- **High Gas Capital Cost:** What if the Base Case portfolio is required, but the costs of new gas-fired generators are higher than anticipated?

For the reference Base Case and the six scenarios described above, EFG used EnCompass and SERVM<sup>1</sup> to simulate all generation resources in Duke’s service territory across three steps: (1) run a capacity expansion optimization in EnCompass to determine the number and type of generators required to meet the utility’s peak demand and reserve margin requirements, (2) run a reliability assessment in SERVM to confirm that the portfolio met system-level resource adequacy metrics, and (3) run a production cost simulation in EnCompass to determine the optimal hourly dispatch of the resource portfolio established in the capacity expansion step. This process, as outlined in **Figure 1. North Carolina Power Pathways Modeling Structure**, is detailed in Appendix 1.

**Figure 1. North Carolina Power Pathways Modeling Structure**



## OUTCOME DRIVERS

Ultimately, EFG found that across all scenarios modeled, three main elements drive the resource portfolio selection and its performance.

- 1. Load Growth.** Under the Base Case, annual energy requirements for Duke increase from 165 terawatt-hours (TWh) in 2026 to 265 TWh by 2050, driven primarily by new large load customers. This load growth requires major resource build-out. The Alternative Large Load scenario explores how system build-out would change with lower forecasted load growth. In all scenarios with the base load forecast, substantial amounts of new generating capacity are constructed to meet demand.
- 2. Fossil Retirements.** Across the modeled period, 15.96 gigawatts (GW) of legacy coal and gas plants are retired in accordance with [Duke’s 2025 Resource Plan](#). Given that load continues to increase, these resources must be replaced to maintain existing system reliability. Across all scenarios, they are replaced by a combination of gas, nuclear, solar, storage, and wind resources.
- 3. Net-Zero Goal.** North Carolina House Bill (HB) 951 requires that North Carolina utilities take all reasonable steps to achieve net-zero greenhouse gas emissions by 2050, represented here as a requirement of 95% non-emitting resources by 2050. This goal substantially drives outcomes, particularly from 2040-2050, with major build-out of non-emitting resources in that period. The Path to Net Zero scenario explores how initiating the path to net-zero earlier along with a set of supportive policies would change the resource portfolio and its associated cost.

<sup>1</sup> EnCompass is an integrated capacity expansion and production cost model used by utilities across the country, including Duke, to simulate system operation. SERVM is a probabilistic system reliability model, similarly used by Duke and peer utilities. Both are described in detail in the Modeling Appendix.

This modeling underscores that maintaining adequate and reliable electric service in North Carolina will remain a priority through 2050 and will require high-cost infrastructure build-out amidst major resource retirements across the period. The Base Case represents just one path to meet those needs while the scenarios modeled provide insight into how policy adjustments, cost volatility, or technology developments may alter North Carolina's impending electric grid buildout.

## CONCLUSIONS

North Carolina faces pressure to continue to provide reliable and affordable electricity to all ratepayers, particularly as new large load customers emerge, legacy thermal generators retire, and the state strives to meet its 2050 carbon goal. The scenarios in this study, selected by the Subcommittee, are designed to show how modifications to the Base Case could change the state's energy future. These modifications include changes to assumptions about (i) load growth, (ii) new large customer operations, (iii) resource costs, and (iv) technology availability, as well as an alternative pathway for net-zero compliance. The scenario results make it clear that strategic policy deployment could lead to a cleaner and more affordable energy system for North Carolina ratepayers. EFG presents several key findings:

 **Duke's current load growth and fossil retirement projections will require substantial construction of new generation.**

The magnitude, timing, and expected operation of new large load customers together, along with planned fossil retirements, will require construction of new gas-fired generation as part of a portfolio of other generating resources across all scenarios.

 **The load growth associated with new large load customers makes a dramatic difference in cost and resource outcomes.**

In the Base Case, large load customers are responsible for 5.8 GW of increased demand by 2035. Load forecasting based on actual committed customer demand is a critical tool to mitigate the high risk associated with over-forecasting and large percentage of load growth driven by large customers.

 **To preserve North Carolina's progress toward its decarbonization goal, state utilities must build gigawatts of clean energy and storage resources.**

The Path to Net Zero Case indicates that beginning the transition to net zero emissions earlier and modifying certain assumptions about technology cost and availability (given supportive policies) may reduce overall costs.

 **Across all modeled scenarios, except for those evaluating targeted large load programs, system reliability is maintained.**

For scenarios examining targeted large load programs, reliability is contingent on the ability to implement large load flexibility, on customer willingness to participate in programs, and on the possibility of adjusted commitment order.

 **Heavy reliance on gas-fired generation may expose the system to cost risk, particularly from fuel price volatility.**

# MODELING RESULTS

## EPTF BASE CASE

The EPTF Base Case was designed to mirror the modeling assumptions in Duke's 2025 Resource Plan as closely as possible, while relying only on publicly available information and licensed data. A critical piece of any modeling effort is the creation of a base or reference case against which alternative scenarios can be assessed. The key insights from any individual scenario emerge from how it differs from the Base Case, revealing the impact of changed assumptions. This difference analysis is meant to illustrate the directional impact of any single change or set of changes. No Base Case, including this one, should be interpreted as a precise forecast.

### Input Assumption Transparency

The development of a Base Case showing identical outcomes to Duke's Resource Plan was impossible to achieve given the lack of public information provided by the utility. Duke's Resource Plan report provides very limited insight on the input assumptions modeled. Many inputs aren't provided at all – unlike previous years, Duke provided no public capital cost assumptions for new generators. Thus, as shown in the Modeling Assumptions Index, EFG had to develop cost assumptions based on other utility's public filings or other public reports.

To the extent assumptions were made public, e.g., as part of a stakeholder process, our only option to use that information was to manually pull values from charts using data extraction tools with varying levels of accuracy.

While EFG endeavored to use modeling assumptions that were as close to what Duke utilized for its resource plan, we fully anticipated divergences between this Base Case and theirs given lack of accessible data. Without access to Duke's capital cost assumptions for new resources or operating cost assumptions there is no way to accurately calibrate costs. As such, the cost results for EFG's Base Case and Duke's Base Case differ in important ways, as does the resulting resource buildout. Further, Duke only published results out to 2040, though it modeled the period through 2050. For all the prior stated reasons, we cannot compare cost outcomes from this modeling to any of Duke's IRP modeling.

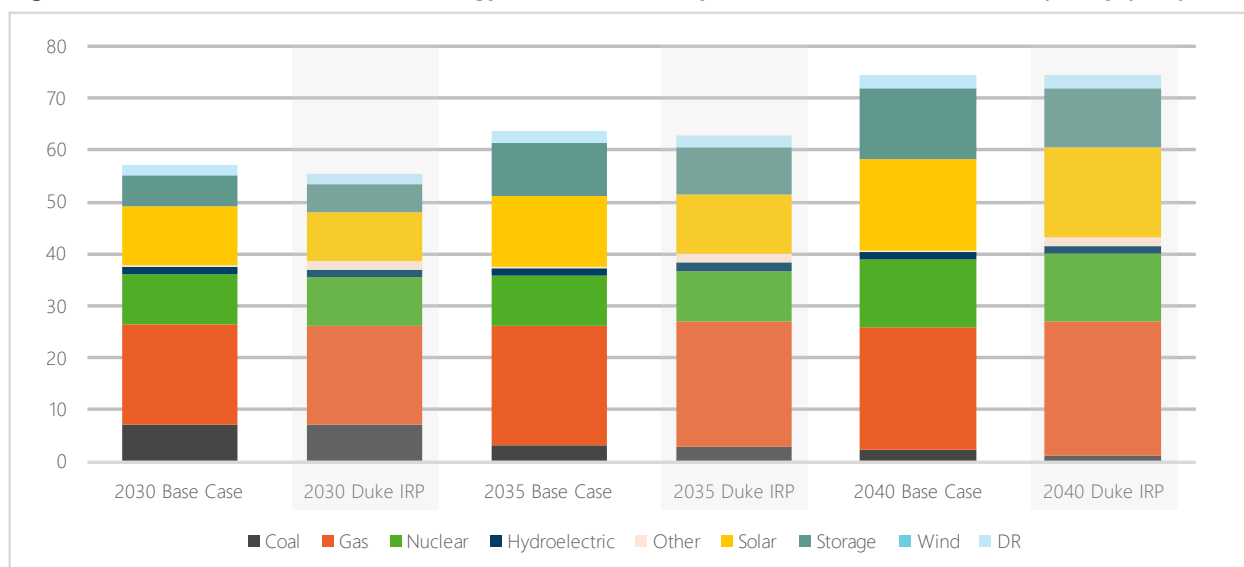
As noted above, we did not anticipate that our cost results would align with Duke's. For their Preliminary Base Portfolio, they find a Present Value of Revenue Requirements (PVRR) of \$164.1 billion through 2050. EFG's modeling finds a PVRR of \$247.99B through 2050, likely due to Duke using lower cost assumptions associated with new resource builds and plant operation than are seen in publicly available sources. However, without Duke's data, we cannot identify the exact source of the difference. There are two takeaways from these cost differences. First, for a system like Duke's, which expects tremendous build-out over the next 25 years, cost input assumptions are critical elements of any planning exercise and should receive high levels of scrutiny. Second, Base Cases should be used primarily to set an analytical foundation for comparison against alternative scenarios. It is critically important to remember that the difference in the resulting cost of the EFG modeled Base Case is not reflective of any policy or resource

changes made by EFG and is simply an artifact of different inputs given the lack of publicly available cost assumptions from Duke's modeling.

Despite the cost difference between EFG's Base Case and Duke's, the modeling results demonstrate that the cost assumptions we developed using publicly available sources result in generally similar build-out to Duke's Base Case on a proportional basis. This affirms that, directionally, our modeling is aligned with the utility's and, as such, our scenario results can reasonably be considered as directionally indicative in guiding discussions around resource planning in North Carolina. This would therefore mean that similar scenarios using Duke's assumptions rather than publicly available data would likely lead to similar changes between Duke's 2025 IRP Base Portfolio and a given scenario as seen between the EPTF Base Case and a scenario or sensitivity here.

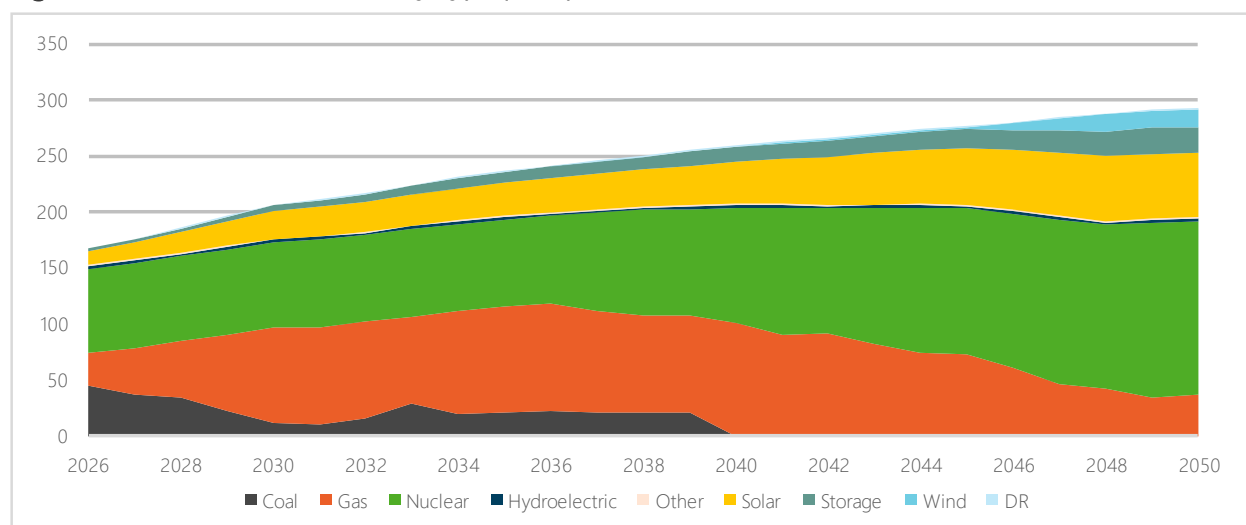
**Figure 2** below shows the difference in total installed capacity between EFG's Base Case and Duke's 2025 Preliminary Base Portfolio. At a high level, the two forecasts reach a proportionally similar set of deployed resources by 2040, and in both forecasts, gas-fired generators constitute the largest share of generation capacity, followed by solar and nuclear. However, EFG's Base Case builds out more storage in the long term and relies on less gas capacity overall.

**Figure 2. EFG Base Case vs. Duke Energy 2025 Preliminary Base Portfolio: Installed Capacity (GW)**



While **Figure 2** above shows that the Base Case has large proportions of gas and solar capacity, nuclear provides the largest proportion of energy in most modeled years, as shown in **Figure 3**, below. The model opts to utilize gas for generation, which is cheaper on a \$/kilowatt-hour (kWh) basis, rather than legacy coal units. Solar, storage, and wind are utilized consistently once online, reflecting their extremely low or zero operating costs. Hydroelectric operation remains around current levels throughout the period.

**Figure 3. Base Case: Generation by Type (TWh)**



As mentioned above, the Base Case is most useful as a comparative foundation against which to test other scenarios. Across the sections that follow, we compare each modeled scenario to the Base Case according to several key metrics, including cost and emissions.

The PVRR associated with capital and operating expenses for the Base Case from 2026-2050 is \$247.99 billion, with a median annual expense of \$21.75 billion. Given that utility costs are ultimately borne by ratepayers, any cost benefit could substantially influence customer rates, though this cost assessment should not be mistaken for a rate impact analysis.

EFG also modeled carbon dioxide (CO<sub>2</sub>) and nitrogen oxide (NO<sub>x</sub>) emissions associated with the operation of each individual unit and, as such, can sum the total emissions in any year and across the modeling period. The Base Case emits about 1.083 billion tons of CO<sub>2</sub> and 210,756 tons of NO<sub>x</sub> across the period.

## SCENARIO COMPARISON

Each of the capacity expansion scenarios modeled represents a different pathway for North Carolina's energy future. The first set of scenarios (the Alternate Futures scenarios), assess how different load, policy, or technology assumptions influence expansion outcomes. They include:

1. **Alternative Large Load:** Requires 6 GW less generating capacity than the Base Case due to a lower near-term load forecast which includes only new large customers that have begun the interconnection process.
2. **Path to Net Zero:** Demonstrates the impact of a portfolio of policies and a linear path to net zero starting in 2035, is relatively more similar to the Base Case, avoiding only 1.3 GW of capacity through 2035.
3. **Delayed Hydrogen:** Changes late-period hydrogen blending assumptions for gas units and sees little near-term impact.

The second set of scenarios (Large Load Targeted Policies), focused on policies targeting new large customers, represent a different kind of assessment, based on the behavior of a certain customer subset.

1. The **Flexible Large Load** scenario models a program where all new large load customers opt in to some level of flexible operation, builds 1.7 GW less gas-fired generation and 1.7 GW less battery

energy storage than the Base Case by 2035. The model chooses storage resources to complement the capacity value provided by the flexible large load resource.

2. The **Clean Large Load** scenario, which assumes half of all new large customers (5.13 GW of demand) meet a 100% clean target by 2040, requires major clean energy build-out, though that build-out is associated specifically with and could be exclusively paid for by those customers opting into the program. Notably, this scenario still requires new construction of gas-fired generation but does avoid 2.6 GW compared to the Base Case.
3. The **Clean Flexible Large Load** scenario, which combines both large load approaches, requires the most substantial build-out of clean energy resource in the near-term, again associated with participating customers.

**Figure 4** demonstrates the near-term (2035) capacity for each scenario by resource type as compared to the Base Case. Detailed descriptions of assumptions made for each scenario are included in Appendix 2. The DR category includes both existing demand response programs and modeled flexibility programs.

**Figure 4. All Capacity Expansion Scenarios: 2035 Capacity by Type (GW)**

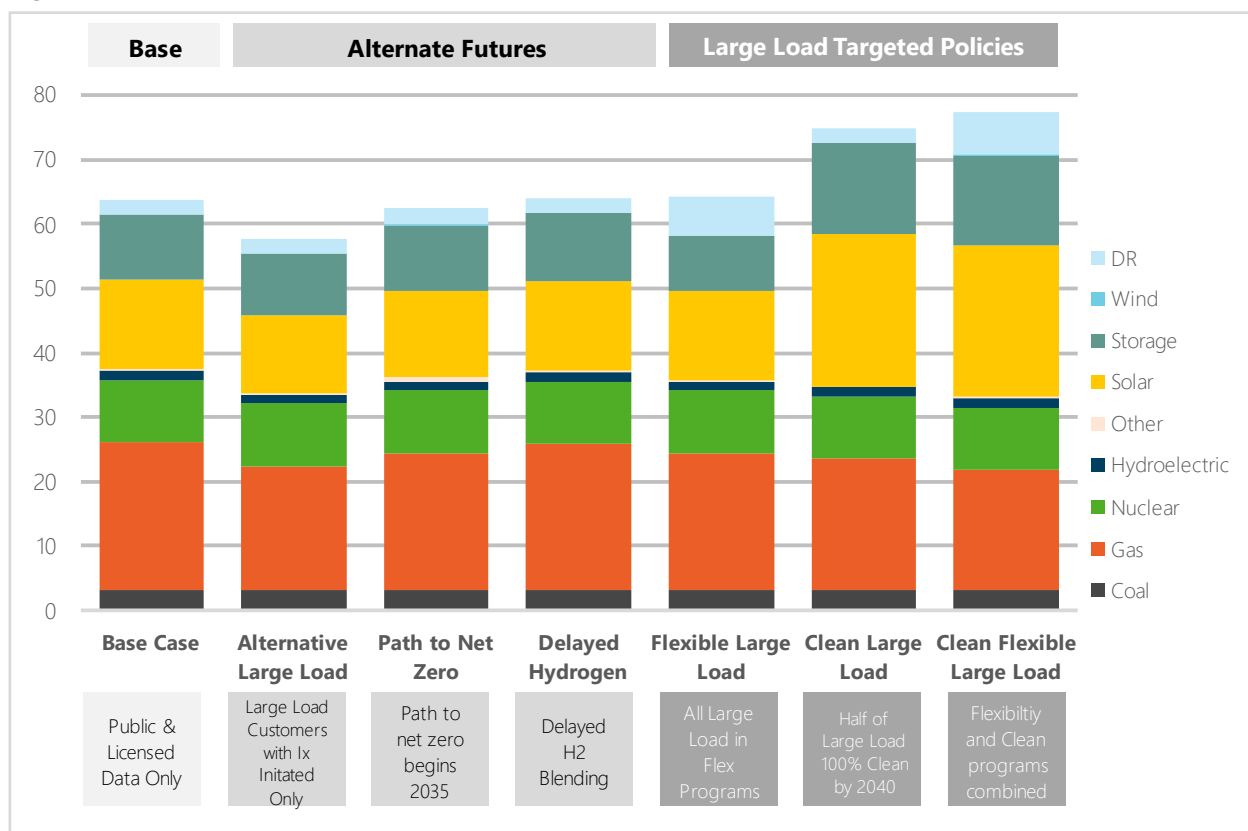


**Figure 5**, below, shows that while some of the near-term trends in scenario comparison hold true, new dynamics emerge from 2035 to 2050. The difference between the Base Case and **Alternative Large Load** scenario becomes more pronounced, with more than an 8 GW difference in capacity between the two, most of which is gas-fired generation. The **Path to Net Zero** scenario also builds less overall gas than the Base Case, relying more heavily on nuclear resources and energy efficiency programs. The delay in

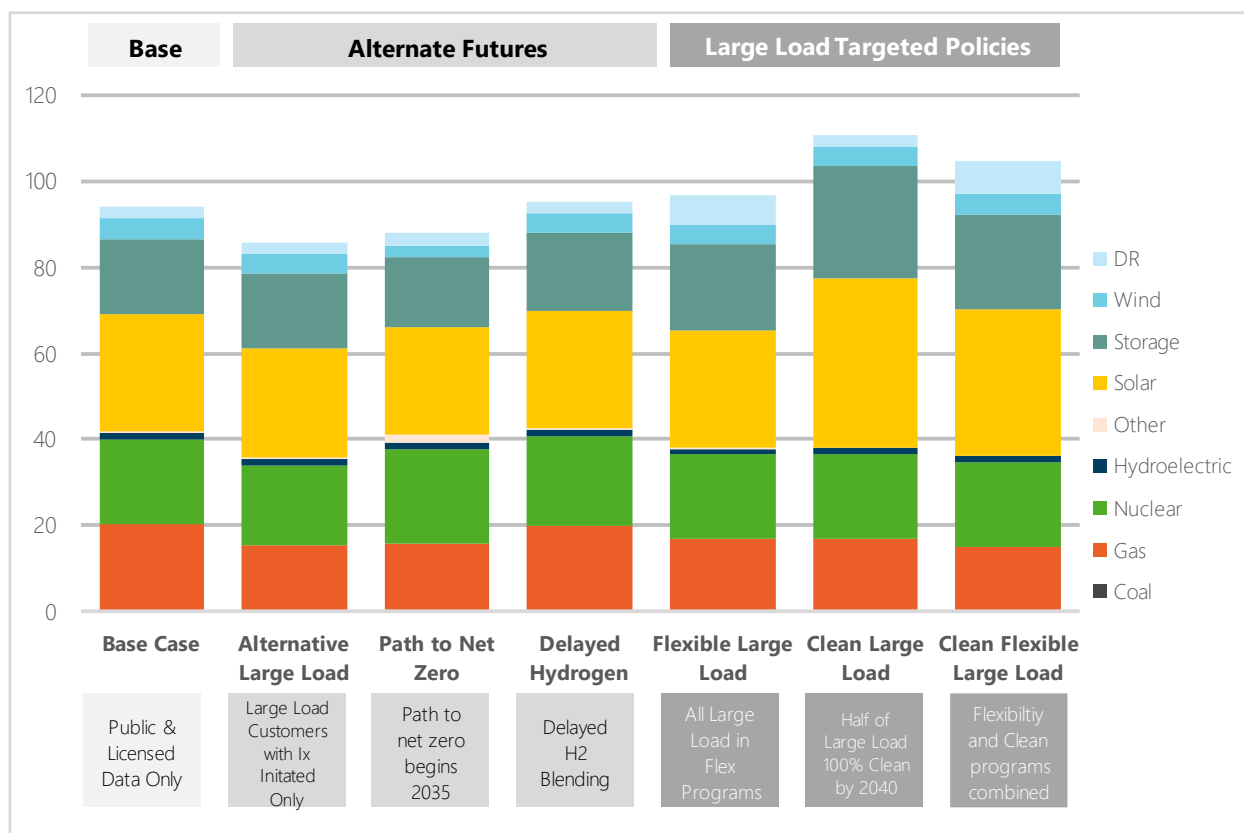
hydrogen blending has relatively less impact, though the **Delayed Hydrogen** scenario has marginally more nuclear and storage capacity, and less gas-fired capacity than the Base Case.

The **Flexible Large Load** scenario avoids build-out in both periods. With the 4.3 GW large load flexibility resource, it requires 3.3 GW less capacity than the Base Case through 2035 and 1.4 GW less through 2050. By 2050, it builds 3.7 GW less gas-fired capacity and 2.3 GW more storage. There is a larger difference in capacity between the Base Case and then the **Clean Large Load** and **Clean Flexible Large Load** scenarios, which must meet both the system-wide net zero target as well as an assumed 2040 100% clean target for half of new large load customers, which drives solar and storage build-out well beyond the Base Case.<sup>2</sup>

As demonstrated by the above discussion, these charts aggregate data for ease of visual understanding, but they also obscure critical differences. A 1 GW capacity difference can hold major cost, reliability, and emissions impacts.

The annual values for capacity, firm capacity, and generation by resource type for all scenarios, as well as cost and emissions results can be explored in depth on the [NC Power Pathways Dashboard](#). All figures in this report are also available in the **NC Power Pathways Charts workbook**, along with

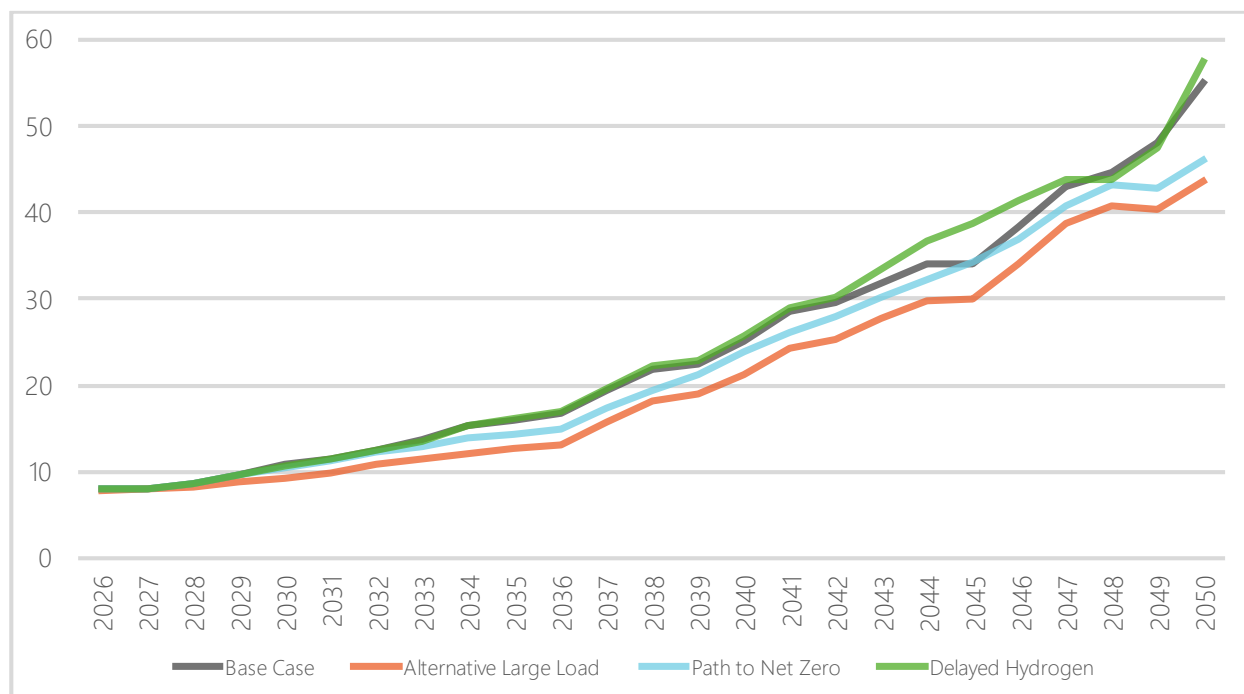
**Figure 5. All Capacity Expansion Scenarios: 2050 Capacity by Type (GW)**



<sup>2</sup> This modeling exercise should not be interpreted as an assessment of the feasibility of the construction of any resource, gas-fired or clean, as all construction is subject to Commission approval, land and equipment availability and appropriate permitting. Instead, this modeling exercise indicates the volume and type of capacity which, in a theoretical optimization, best maintains system reliability and operation at the lowest cost.

These differences in construction and in the resulting operation of the system have cost implications across the system. **Figure 6** shows the annual PVRR for each scenario, demonstrating that those with the lowest load forecasts have the lowest costs. These differences are discussed in detail in the sections below.

**Figure 6. Base Case and Alternate Future Capacity Expansion Scenarios: Total PVRR (Billion \$)**



In the following sections we provide a deeper look into the Alternate Futures scenarios, the Large Load Targeted Policy scenarios, and the specific dynamics at play in each.

## ALTERNATE FUTURES SCENARIOS

**Table 1** shows the PVRR in billions of dollars for the Base Case and each Alternate Futures scenario, as well as the CO<sub>2</sub> emissions for each. Broadly, the Alternative Large Load and Path to Net Zero scenarios cost less and emit less than the Base Case, while the Delayed Hydrogen scenario costs marginally more and emits marginally less. These scenarios are described in further detail below.

**Table 1. Alternate Futures Scenario Comparison**

| Scenario               | PVRR<br>(Billion \$) | Delta with<br>Base Case<br>(Billion \$) | CO <sub>2</sub> Emissions<br>(Million Tons) | Delta<br>(Million Tons) |
|------------------------|----------------------|-----------------------------------------|---------------------------------------------|-------------------------|
| Base Case              | 247.99               |                                         | 1,083                                       |                         |
| Alternative Large Load | 213.74               | - 34.25                                 | 798                                         | -285                    |
| Path to Net Zero       | 233.37               | - 14.62                                 | 934                                         | - 149                   |
| Delayed Hydrogen       | 253.30               | + 5.31                                  | 1,048                                       | -34                     |

## Alternative Large Load Scenario

The Alternative Large Load scenario explores how the Base Case resource portfolio might differ if the load forecast were substantially lower, perhaps due to fewer large data center projects coming to fruition than currently projected. For this scenario, EFG limited large loads to only those which have started the interconnection process. The alternative large load forecast modeled for this scenario forecasts 1,806 MW of new load, all online by 2031, whereas the forecast Duke uses for its Base Case peaks around 6,600 MW.<sup>3</sup> Given that less new capacity is needed with lower load growth, EFG also reverted to using Duke's "moderate" coal retirement dates, which means that the Cliffsides 5 coal unit retires in 2031 (rather than 2033) and the Marshall 3 and 4 units retire in 2032 (rather than 2034.)

The Alternative Large Load scenario demonstrates a substantial reduction in necessary construction to meet system needs, even while the system retires legacy thermal resources. Between 2026 and 2035, EnCompass requires 23.4 GW of new nameplate capacity to fulfill the needs associated with new large customers and retirements in the Base Case, whereas the Alternative Large Load Scenario requires only 17.3 GW, a 6 GW difference. This is directionally aligned, given the ~4.8 GW gap between the two load forecasts. It also results in a \$10.11 billion savings from 2026-2035.

The effect of this lower load forecast continues into the latter portion of the modeling period, though the model must then build to achieve net zero emissions by 2050. The Base Case and Alternative Large Load scenario both build substantially from 2036-2050 (41.7 GW and 38.4 GW respectively.) However, the Base Case relies more heavily on new nuclear facilities while the Alternative Large Load case builds about 1.1 GW less of nuclear facilities, instead using solar and storage capacity. Notably, the load forecast difference enables the model to utilize 5 GW less of gas capacity in the Alternative Large Load case than the Base Case. Across that period, the Alternative Large Load scenario is 13.8 percent less expensive than the Base Case (-\$34.25 billion), driven by both lower capital and operating costs.

Overall, the Alternative Large Load scenario demonstrates that avoiding the buildout of new generation associated with 6.6 GW of new large load customers could avoid the substantial expense and risk associated with each new plant constructed and lead to a system with lower reliance on thermal resources and thus lower emissions (285 million tons less CO<sub>2</sub> than the Base Case).

## Path to Net Zero Scenario

The Path to Net Zero scenario was designed to simulate a future where Duke begins work toward its 2050 carbon goal earlier and where a set of policies are modified to support that transition. While this scenario does not change any assumptions associated with the costs of resources, whether emitting or non-emitting, it does provide more flexibility in build assumptions, assumes improvements across a set of programs, and a lower cost of transmission to reflect Grid Enhancing Technologies (GETs) implementation. The full set of assumptions is as follows, as detailed in the Modeling Assumptions Index.

- 95% carbon emissions limit by 2050, with a linear reduction beginning in 2035.
- Onshore wind first available in 2031, with a cumulative allowance of 1,200 MW.
  - Base Case: First available in 2034, with a cumulative allowance of 1,050 MW.
- Offshore wind first available in 2032, with a cumulative allowance of 2,400 MW.
  - Base Case: First available in 2037, with a cumulative allowance of 3,600 MW.

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<sup>3</sup> More detail on all scenario assumptions can be found in Appendix 2.

- Annual energy efficiency reflects Duke's high energy efficiency and demand response forecast.
- Solar and storage annual limits raised (from 1,200 to 1,800 MW of solar allowed beginning 2032 and 500 MW of annual incremental storage allowed beginning 2028).
- Cliffsides 5 retires in 2031 (Base Case: 2033). Marshall 3 & 4 retire in 2032 (Base Case: 2034).
- Under the Power Pair Program, the state's incentive program for homeowner solar and storage installations, total incremental solar installed reaches 487.5 MW in both Duke Energy Carolinas (DEC) and Duke Energy Progress (DEP) by 2050; 243.75 MW of associated battery capacity is available for dispatch in both DEC and DEP by 2050.
- Duke's High Case for commercial and industrial energy efficiency is utilized. (Base Case: Reference Case)
- GETs reduce interconnection costs by 93%, representing that GETS average roughly 7% of the cost of traditional upgrades.
- Bad Creek II (pumped storage) comes online in 2040.

Ultimately, the Path to Net Zero scenario must still meet the three drivers identified at the beginning of this section: large load growth, legacy thermal retirements, and the 2050 net zero target. As such, in the near-term the scenario still sees substantial construction, though the energy transition supportive programs and policies modeled enable it to build less overall than the Base Case, and about 5.4 GW of new gas as opposed to 7.1 GW.

It is in the long-term that the Path to Net Zero case demonstrates the potential cost and build-out benefit associated with steady progress towards the net zero 2050 carbon goal starting in 2035. By forcing the model to anticipate the goal earlier in the period, it builds non-emitting technologies earlier when they are most cost-effective. Accordingly, and in combination with the reduction in interconnection costs and load, the scenario saves \$14 billion in total costs compared to the Base Case.

### Delayed Hydrogen Scenario

This scenario was designed to assess the impact of delaying Duke's assumptions related to hydrogen blending. In this scenario, newly constructed gas units are only able to hit 55% maximum blending capability by 2050, as opposed to 100%, allowed in the Base Case. Results for that scenario are very similar to the Base Case, with just a small shift toward nuclear rather than gas capacity by 2050. Ultimately, gas remains a very attractive mid-term solution as the model strives to meet growing load, and the model can retain it through the end of the period even with moderate hydrogen blending capabilities. Full outputs for this scenario can be accessed using the Modeling Dashboard.

## LARGE LOAD TARGETED POLICY SCENARIOS

EFG modeled a set of scenarios to assess two emerging topics related to serving new large customers and which have the potential to change the scale and nature of the impact of that major load growth: flexibility and clean energy commitments. Discussed in detail below, the Flexible Large Load scenario avoided some long-term gas generation build-out and provided moderate cost savings. The Clean Large Load scenario relied on major construction of non-emitting resources specifically built to serve large load customers with emissions or renewable energy goals, with cost savings to existing customers relative to those large load customers. The Clean Flexible scenario combined the two and was able to avoid the most gas build-out of any scenario modeled, while providing comparative cost savings for large load customers when compared the Clean Large Load scenario alone.

**Table 2** shows the PVRR in billions of dollars for the Base Case and each Large Load Targeted Policy scenario, as well as the CO<sub>2</sub> emissions for each. Broadly, the Flexible Large Load scenario saves \$7.86 billion compared to the Base Case, though it emits marginally more CO<sub>2</sub> (19 million tons). The Clean Large Load scenario saves \$15.86 billion for all customers that are not participating in the Clean program, while those customers participating see a PVRR of \$28.8B. Once flexibility is added to the Clean Large Load scenario, costs for non-Clean Large customers drop further (\$20.41 billion less than the Base Case), and the cost for Clean Large customers drop substantially (\$16.3 billion as opposed to Clean without Flexibility). Both see emissions reductions compared to the Base Case. The dynamics underlying these scenarios are described in further detail below.

**Table 2. Large Load Targeted Policy Scenario Comparison**

| Scenario                  | System PVRR<br>(Billion \$) | Delta<br>(Billion \$) | Clean Large PVRR<br>(Billion \$) | CO <sub>2</sub> Emissions<br>(Million Tons) | Delta<br>(Million Tons) |
|---------------------------|-----------------------------|-----------------------|----------------------------------|---------------------------------------------|-------------------------|
| Base Case                 | 247.99                      |                       |                                  | 1,083                                       |                         |
| Flexible Large Load       | 240.13                      | - 7.86                |                                  | 1,102                                       | + 19                    |
| Clean Large Load          | 232.31*                     | - 15.67               | 28.8                             | 914                                         | - 169                   |
| Clean Flexible Large Load | 227.58*                     | - 20.41               | 16.3                             | 930                                         | - 153                   |

\*For the Clean Large Load and Clean Flexible Large Load scenarios, the 'System PVRR' represents the PVRR for all customers except those new large load customers that opt into the Clean program, whose PVRR is represented in the 'Clean Large PVRR' column.

## Flexible Large Load Scenario

The Flexible Large Load scenario assesses a future where Duke's full large load forecast is realized, and all new large load customers opt into some kind of flexibility program. Customer load flexibility at its core is a reduction or shift in energy usage during high demand periods, often in exchange for a payment.<sup>4</sup> EFG's approach to modeling flexibility is described in detail in the Modeling Appendix – fundamentally it enables new large load to behave as a demand response resource, reducing consumption.

Overall, the Flexible Large Load scenario relies on much less incremental gas build (3.7 GW less than the base case) and 2.3 GW more storage than the Base Case by 2050. This reflects the added value storage resources when operating in combination with a dispatchable 'resource' like the large load flexibility program simulated in this scenario.

The Flexible Large Load scenario avoids overall nameplate capacity buildout and is cheaper in all years across the modeling period. This scenario saves on capital costs in nearly all years beginning in 2028, with an average annual difference of \$527M. Further, operating costs are lower across the period in the Flexible Large Load Scenario, with a median of \$68M in annual savings from 2026-2039 and \$315M from 2040-2050.

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<sup>4</sup> In our modeling this payment is represented by a dispatch cost adder, which functionally serves as a hurdle rate for the model. No payment is incorporated into the PVRR and is not represented in costs results as reported.

Flexibility alone, as modeled in this scenario, does not reduce overall system emissions. This is because, while the Base Case builds more gas generation to meet peak demand, the Flexible Large Load scenario relies more heavily on thermal generation, operating coal more heavily before it retires and relying on gas and oil peakers in the latter portion of the modeling period.

### Clean Large Load Scenario

The Clean Large Load scenario was designed to assess the potential for a portion of new large load customers to meet their energy demand using exclusively non-emitting resources, fulfilling the renewable energy or emissions goals of prominent large load customers. In this scenario, described in more detail in the Appendix 2, half of all new data center load (estimated at 5.13 GW of a total 10.26 GW) have a zero emissions commitment, which ramps up starting in 2027 to full commitment in 2040. The model selects solar, storage, wind, and nuclear resources to meet these goals.

In 2040, when the clean large load participants hit the 100% non-emitting target, 16.35 GW of solar, 13.40 GW of battery storage, and 0.75 GW of wind is built to meet the 5.13 GW of load. Until that point, when the large load customers become completely reliant on their own portfolio of clean resources, their load is provided by the rest of the system, and because of the enforced target, the entire system is held to a more aggressive standard from 2027 to 2050. As such, the rest of the system sees a different build-out than the original Base Case, with 5.41 additional GW of solar, 2.86 additional GW of storage, and 2.62 GW less of combined cycle gas.

The biggest difference between this scenario and the Base Case is the cost to serve the overall system versus those customers participating in the Clean Large Load program. Across the entire period, the Base Case represents a PVRR of \$248 billion. All customers but those participating in the Clean Large Load program, save \$15.67 billion as compared to the Base Case. The cost of the program to the Clean Large Load customers is \$28.8 billion. Also of note, emissions are substantially lower in the Clean Large Load scenario, resulting in 168.8 million fewer tons of CO<sub>2</sub> emitted across the modeling period.

### Clean Flexible Large Load Scenario

The Subcommittee expressed high interest in both the flexibility and clean energy scenarios described above, as well as in the assessment of a future where those two scenarios are combined. The Clean Flexible Large Load scenario does demonstrate some interesting dynamics associated with combining the two programs. First, this scenario is the only one modeled where gas capacity in 2050 is lower than current levels in 2026 (by about 1.1 GW). Much like the Clean Large Load scenario, this scenario requires a major build-out of non-emitting resources in the medium term, particularly a substantial amount of solar capacity. However, in the long-term, the dispatchable ‘flexibility’ product provided by the large load customers enables this scenario to rely on less storage and gas than its clean-only counterpart.

As expected, given that both the Flexible Large Load and Clean Large Load scenarios reduce price for the total system, this scenario sees combined cost reductions. The total net present value for the Clean Flexible Large Load scenario for all customers not participating in Clean Flexible Large Load programs is \$228 billion (\$20.4B less than the Base Case and \$4.7B less than the Clean Large Load scenario with no flexibility). This scenario also shows that customers participating in the Clean Flexible Large Load program would save if this program was combined with flexibility – spending \$16.3B as program participants, a \$12.5B reduction from the scenario without flexibility offered.

# COST SENSITIVITIES

In addition to the above scenarios, EFG also assessed two different cost sensitivities, where the capacity expansion results were held constant, and a different cost forecast assumption was utilized.

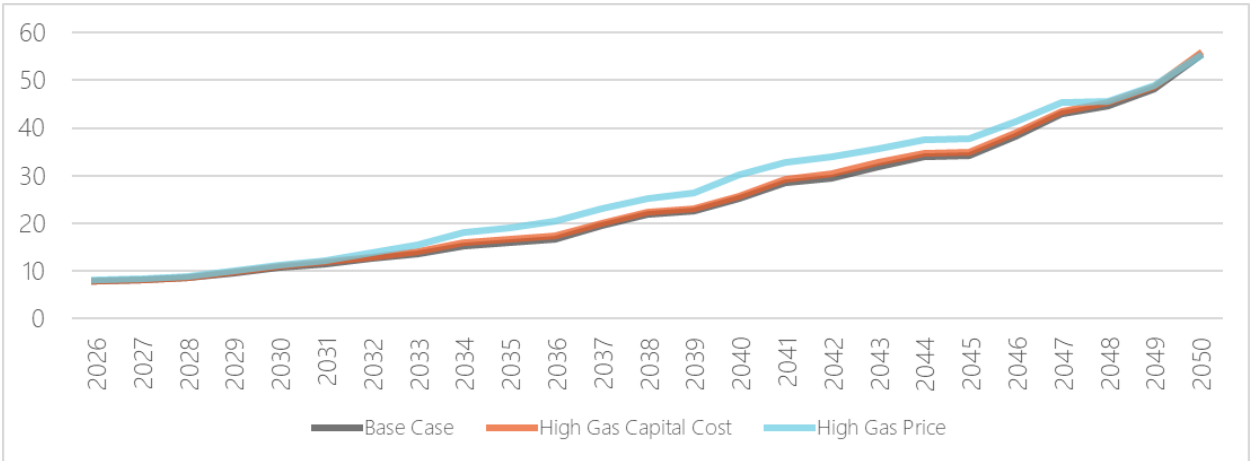
## High Gas Fuel Cost Sensitivity

In the High Gas Fuel Cost sensitivity, EFG modeled the high natural gas price forecast provided in Duke’s 2025 Resource Plan. This sensitivity is meant to demonstrate the potential cost impact associated with a high gas price in a system that is highly dependent on gas-fired generation. For example, gas prices may rise due to unexpected rises in demand, shifts in international exports, or international conflicts. Using the higher gas price forecast raised operating costs substantially, peaking at a \$4.95B difference in annual costs in 2040. Overall, the High Gas Fuel Cost sensitivity PVRR is \$25.47B higher than the Base Case across the period.

## High Gas Capital Cost Sensitivity

Similarly, the High Gas Capital Cost sensitivity is meant to assess the potential scale of impact if the capital cost estimates modeled in the Base Case are lower than the actual costs to build. For this scenario, EFG increased the \$/kilowatt (kW) capital cost associated with new combined cycle and combustion turbine units by 30%. This is a generic increase meant to assist in the directional assessment of cost increases, that could, for example, be spurred by increased construction costs or turbine shortages spurred by recent increases in demand. The cost difference between the High Gas Capital Cost sensitivity and the Base Case is smaller than the fuel cost sensitivity – total PVRR is \$5.42B higher than the Base Case. **Figure 7** shows the annual difference in PVRR, as displayed in the Dashboard, and these values can be explored in further depth there.

**Figure 7. Base Case vs. Cost Sensitivities: Total PVRR (Billion \$)**



## RELIABILITY ASSESSMENT

EFG performed reliability verification to ensure that all portfolios evaluated meet the specified Loss of Load Expectation (“LOLE”) threshold. LOLE represents the expected number of days when there are not enough resources to meet load, resulting in unserved energy.<sup>5</sup> The standard level for LOLE is 1 day in 10 years or 0.1 days per year, while Duke used a 0.165 LOLE threshold representing the reliability value of Duke’s connections with neighboring utilities. This process is described in detail in the Appendix 1.

### Alternate Futures

Each of the capacity expansion plans for the scenarios were evaluated in SERVМ for the 2035 study year. **Table 3** shows the LOLE results for the Base Case, Path to Net Zero, and Alternative Large Load scenarios. The Delayed Hydrogen scenario was not assessed given how similar the resource mix is to the Base Case. All scenarios presented in the preceding sections are less than Duke’s 0.165 LOLE threshold, meaning the scenarios would meet Duke’s reliability requirements.

**Table 3.** SERVМ Loss-of-Load-Expectation (LOLE) Results (days/year)

| Scenario               | LOLE  |
|------------------------|-------|
| Base Case              | 0.135 |
| Alternative Large Load | 0.149 |
| Path to Net Zero       | 0.162 |

### Flexible Large Load

Unlike the three scenarios above, the LOLE for the Large Load Flexibility scenario was initially higher than Duke’s LOLE threshold (at 0.438, 0.273 over the 0.165 threshold). Given this result, we evaluated two sensitivities around an alternative commitment for battery storage resources and the large load flexibility resources (flex resources). We evaluated an alternative commitment order to see if there would be a reduction in loss of load events if the large load flexibility resources were utilized in a way where they would not be committed as the resource of last resort. Instead of relying on the large load flexibility as that last resource that can be called on, these sensitivities test whether committing them ahead of battery storage resources has a meaningful impact on the LOLE result and lower the LOLE to be less than the 0.165 threshold. The sensitivity allowed us to determine whether large load flexibility could be utilized to preserve the battery storage resources to avoid loss of load events.

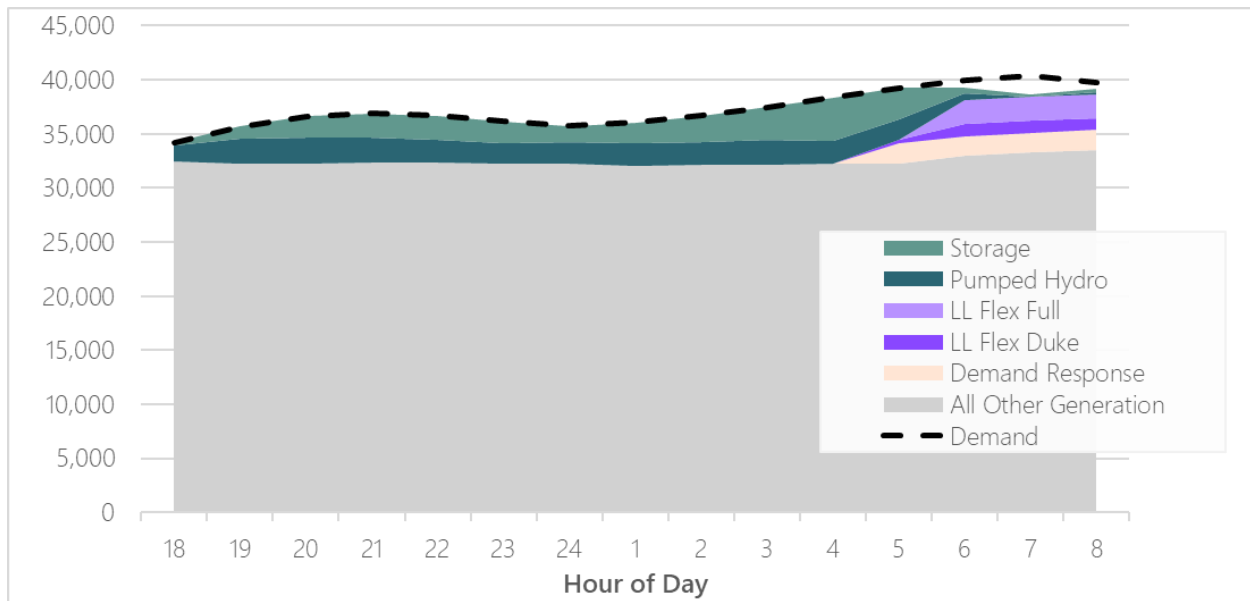
**Figure 8** below shows an example iteration from the 1994 weather year<sup>6</sup> where there is unserved energy that results in a loss of load event when large load flexibility resources are assumed to be the resource of last resort. In this instance, battery storage resources are deployed ahead of the demand response and large load flexibility resources. In this example, the battery storage resources are exhausted, and the demand response and large load flexibility are not enough to address the level of unserved energy that occurs in hours 5 – 8.

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<sup>5</sup> Expected unserved energy or EUE is the total amount of electricity, measured in megawatts hours, that system customers demand that cannot be supplied due to capacity deficits.

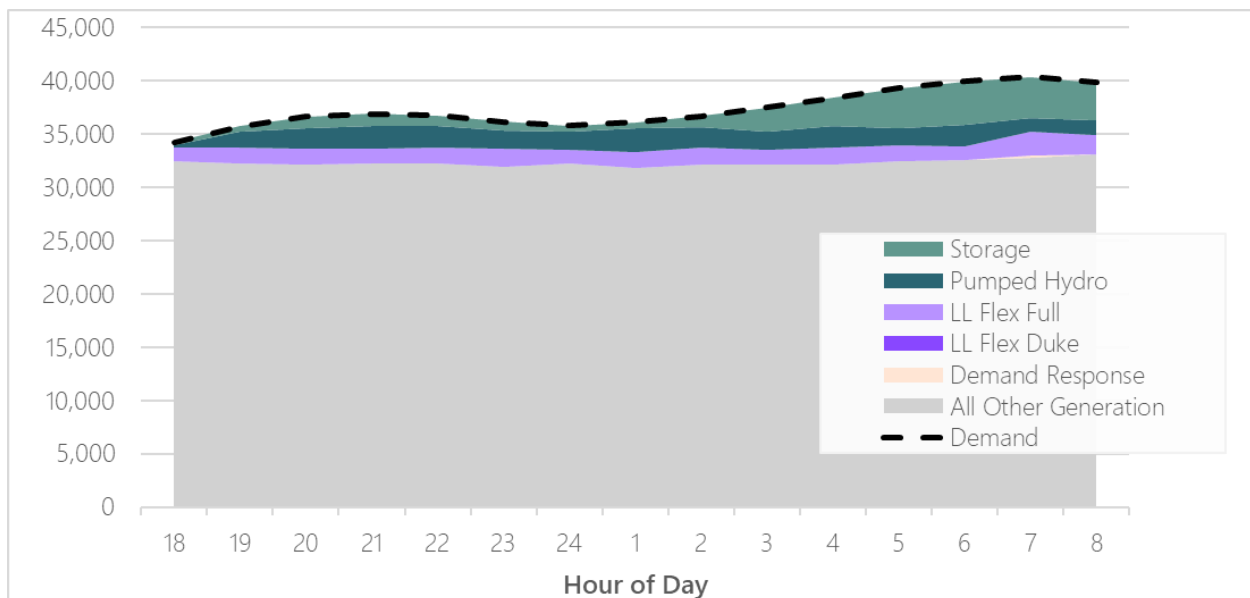
<sup>6</sup> The SERVМ modeling reflects the weather years 1980 – 2024. 1994 was selected for this example because it is a weather year that had unserved energy.

**Figure 8. Iteration Example with Unserved Energy (“EUE”)<sup>7</sup>**



The sensitivity we evaluated contemplates a different commitment order with half of the large load flexibility resources committed ahead of battery storage resources. **Figure 9** shows how the loss of load event depicted in **Figure 8** can be avoided if the large load flexibility resources are deployed earlier, across a 15-hour period in this specific example. In doing this, the battery storage resources can be preserved to address the loss of load that occurred in hours 5 – 8 in **Figure 8**.

**Figure 9. Iteration Example Alternative Commitment**



<sup>7</sup> The Hour of Day axis label represents hours 18 – 8, a 15-hour period in the example weather year 1994, where an unserved energy event occurs between hours 6 – 8.

With this change in commitment order, the LOLE of the Flexible Large Load is reduced and now falls under the Duke LOLE threshold as shown in **Table 4** and **Figure 10** below. Since batteries are duration limited, dispatching them first meant that as load peaked in hours 6 – 8, the available large load flexibility could not satisfy demand since storage was now exhausted. There are two critical questions to answer in order to achieve this result in practice. First, will large customers agree to be interrupted for such a long duration (15 hours in this case) and do we want them to be interrupted for that length of time assuming they revert to using their fossil-fuel fired backup systems? This is a crucial question to answer since modifying the commitment order for the large load flexibility resources is what improved the LOLE result. Second, what information would the control room operators need to know to anticipate whether they might need to hold battery storage for later commitment and dispatch and deploy large load flexibility first?

We also considered a second sensitivity for the Flexible Large Load scenario to test the risk that 20% of the large load flexibility might not commit ahead of battery storage resources. This sensitivity is critical in that it demonstrates the risk if large load customers are not able or willing to commit ahead of battery storage resources. What this means is that 20% of the time, the large load flexibility resource will not be committed before battery storage. Under this sensitivity, the LOLE of the Flexible Large Load scenario is 0.153, which is still under the Duke LOLE threshold.

### Clean Large Load

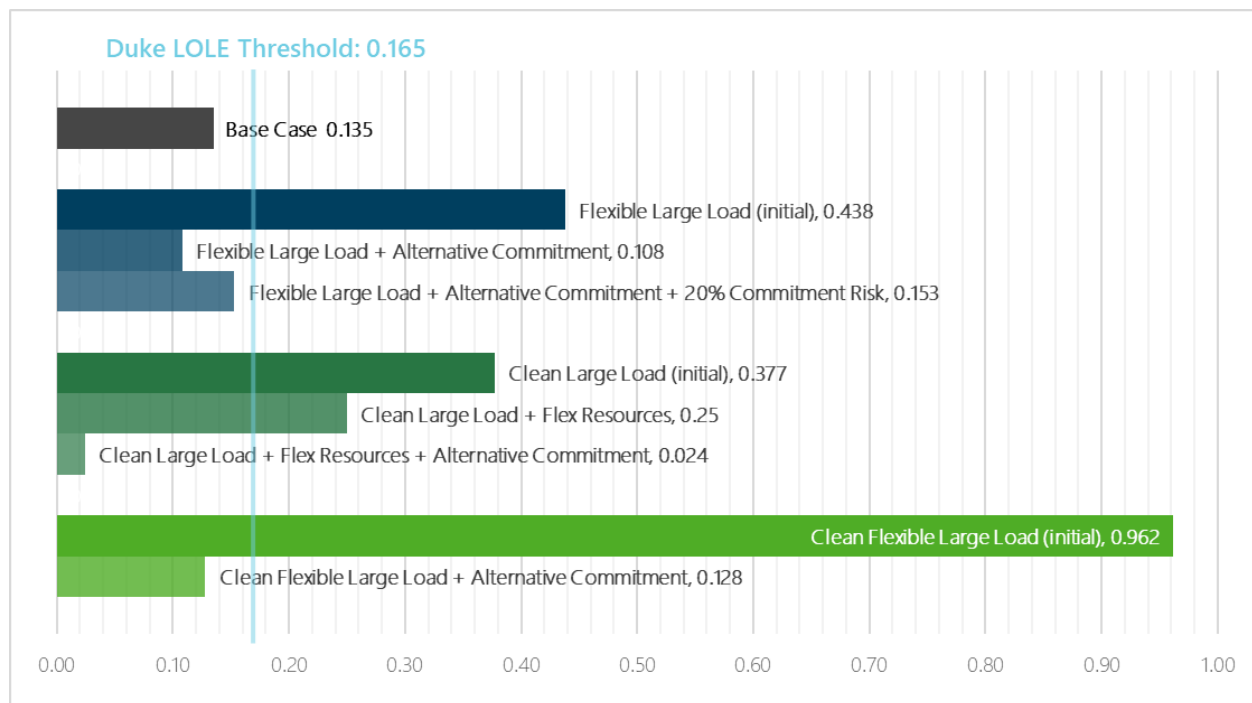
The initial version of the Clean Large Load scenario also does not meet the Duke LOLE threshold. Since it does not meet the LOLE threshold, we evaluated two changes to the Large Load Clean Energy scenario. First, we assumed the same capacity expansion plan for the Clean Large Load scenario, but we incorporated the level of large load flexibility from the Flexible Large Load scenario (“Flex Resources”: 1,266 MW under Duke’s contract option, 2,531 MW under full flexibility). The LOLE results indicate that layering in that large load flexibility is not enough for the scenario to be under the Duke LOLE threshold. The second change incorporated the large load flexibility resource but included the same alternative commitment approach where the large load flexibility resources are committed ahead of the battery storage resources. The combination of incorporating large load flexibility and the alternative commitment order, result in this scenario being under the Duke LOLE threshold (see **Table 4/Figure 10**).

**Table 4. SERV M LOLE Results (days/year)**

| Scenario                                                           | LOLE  |
|--------------------------------------------------------------------|-------|
| Flexible Large Load (initial)                                      | 0.438 |
| Flexible Large Load + Alternative Commitment                       | 0.108 |
| Flexible Large Load + Alternative Commitment + 20% Commitment Risk | 0.153 |
| Clean Large Load (initial)                                         | 0.377 |
| Clean Large Load + Flex Resources                                  | 0.250 |
| Clean Large Load + Flex Resources + Alternative Commitment         | 0.024 |
| Clean Flexible Large Load (initial)                                | 0.962 |
| Clean Flexible Large Load + Alternative Commitment                 | 0.128 |

### Clean Flexible Large Load

The Clean Flexible Large Load scenario is also not initially below the Duke LOLE threshold. However, when implementing the alternative commitment order of large load flexibility ahead of battery storage resources, the LOLE falls under the Duke LOLE threshold.

**Figure 10. SERV M LOLE Results (days/year)**

# CONCLUSIONS

## **Duke's current load growth and fossil retirement projections will require substantial construction of new generation.**

The magnitude, timing, and expected operation of new large load customers together, along with planned fossil retirements, will require construction of new gas-fired generation as part of a portfolio of other generating resources across all scenarios.

## **The load growth associated with new large load customers makes a dramatic difference in cost and resource outcomes.**

In the Base Case, large load customers are responsible for 5.8 GW of increased demand by 2035. Load forecasting based on actual committed customer demand is a critical tool to mitigate the high risk associated with over-forecasting and large percentage of load growth driven by large customers.

## **To preserve North Carolina's progress toward its decarbonization goal, state utilities must build gigawatts of clean energy and storage resources.**

The Path to Net Zero Case indicates that beginning the transition to net zero emissions earlier and modifying certain assumptions about technology cost and availability (given supportive policies) may reduce overall costs.

## **Across all modeled scenarios, except for those evaluating targeted large load programs, system reliability is maintained.**

For scenarios examining targeted large load programs, reliability is contingent on the ability to implement large load flexibility, on customer willingness to participate in programs, and on the possibility of adjusted commitment order.

## **Heavy reliance on gas-fired generation may expose the system to cost risk, particularly from fuel price volatility.**

# APPENDIX 1: MODELING METHODS

## ENCOMPASS

EnCompass is a capacity optimization and dispatch model that optimizes capacity expansion along with unit commitment and dispatch. For capacity expansion modeling, EnCompass develops optimized portfolios that minimize system costs given the modeling inputs,<sup>8</sup> subject to constraints, such as the planning reserve margin (“PRM”). Following the development of the capacity expansion plans, those plans can then be passed through the production cost modeling step. In this step, the portfolio is simulated on a chronological 8,760-hour basis in each year of the planning period specified in the model. EnCompass optimizes the chronological dispatch of the existing resources plus any new resources added from the capacity expansion step to meet the load across every hour of the planning period.

For this analysis, EFG licensed EnCompass through Yes Energy and the accompanying National Database through Horizons Energy. The Duke Energy Carolinas (“DEC”) and Duke Energy Progress (“DEP”) systems were modeled as separate Balancing Authorities required to meet the winter reserve margin target as shown in **Table 5** below.

**Table 5.** Winter Planning Reserve Margin Target (“PRM”)<sup>9</sup>

| Year      | PRM   |
|-----------|-------|
| 2026-2029 | 17.0% |
| 2030      | 19.5% |
| 2031+     | 22.0% |

Capacity expansion plans were developed for the DEC and DEP systems, and then those were simulated on an 8760-hour production cost basis to develop the Present Value of Revenue Requirements (“PVRR”) for each scenario modeled. A transfer limit was imposed in the capacity expansion step between the DEC and DEP systems based on the maximum historical transfer observed in the US Energy Information Administration (“EIA”) hourly data.<sup>10</sup> This transfer limit was then relaxed in the production cost step starting in 2030.

## SERVM

Our analysis followed the same approach that Duke uses to evaluate the reliability of the portfolios developed in EnCompass. Duke uses the Strategic Energy and Risk Valuation Model (“SERVM”) software to perform reliability verification to ensure that portfolios meet the specified Loss of Load Expectation (“LOLE”) threshold. LOLE represents the expected number of days when there are not enough resources to meet load. The industry standard planning metric for LOLE is 1 day in 10 years or 0.1 days per year while Duke uses 0.165, described below.

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<sup>8</sup> Modeling inputs include the cost and operational constraints of new and existing resources, load forecast, and fuel price forecasts.

<sup>9</sup> 2025 Carolinas Resource Plan, Appendix C Quantitative Analysis, Table C-2.

<sup>10</sup> [https://www.eia.gov/electricity/gridmonitor/dashboard/electric\\_overview/US48/US48](https://www.eia.gov/electricity/gridmonitor/dashboard/electric_overview/US48/US48)

SERVm evaluates several areas of risk – weather, economic forecast error, load uncertainty, and unit performance – to evaluate reliability events for an electric system. For weather and load related risk, SERVm uses historical weather patterns to develop load profiles for each weather year to predict how loads would respond if the weather experienced in that particular year were to repeat. SERVm then applies load forecast error multipliers with their associated probabilities to capture the potential for uncertainty in economic forecasts. Since economic variables are typically one of the key variable inputs into the development of a load forecast, the load forecast error multipliers simulate the expected probability that the peak demand would be higher or lower because of an error in the economic indicator forecast. The weather years included in the model also reflect the uncertainty around renewable resources, as the profiles for each resource will reflect the expected availability for that resource based on the historical weather profiles. SERVm models the uncertainty around generator unit availability through the simulation of random unit outage draws.

We licensed the Eastern Interconnect dataset from PowerGEM to perform the reliability verification step for a 2035 study year in SERVm. We relied on the weather years, unit forced outage inputs, renewable profiles, and hourly load shapes from PowerGEM's database. The database was updated to reflect the load forecast errors Duke used in the Effective Load Carrying Capability ("ELCC") study from the 2025 Carolinas Resource Plan.<sup>11</sup>

For the 2023 Resource Plan, Duke used SERVm to determine the reliability value of the interconnection with neighboring utilities by evaluating a case that included its interconnection with neighboring utilities, and an Islanded Case that removed any interaction with neighbors. The change between those two cases (0.065 days per year) represents the reliability value of Duke's interconnection with neighboring utilities.<sup>12</sup> That reliability value was then added to the 0.1 LOLE threshold to determine a new LOLE threshold to use for the portfolio verification step (0.165).<sup>13</sup>

Duke took this approach because the standard approach is to simulate neighboring systems, which means that additional corresponding assumptions about projected load and new resources would be necessary when modeling future study years. Since it can be challenging to make those assumptions, Duke's approach assumes that the net market benefit to Duke from the neighboring systems (corresponding to an additional .065 days per year to the LOLE threshold) would remain the same for the future study years and they therefore would not have to simulate the neighboring systems in SERVm.

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<sup>11</sup> 2025 Carolinas Resource Plan, Attachment i. Duke Energy Carolinas and Duke Energy Progress Effective Load Carrying Capability (ELCC) Report, Table 2.4-1 at 2-2.

<sup>12</sup> Duke's 2023 Resource Plan SERVm model reflected interconnections with Associated Electric Cooperative ("AECI"), PJM, Louisville Gas & Electric ("LG&E"), Tennessee Valley Authority ("TVA"), Southern Company ("SOCO"), Santee Cooper, Dominion Energy South Carolina ("DESC"), PowerSouth Energy Cooperative, and Yadkin ("YAD"). See 2023 Carolinas Resource Plan, Attachment I at 13.

<sup>13</sup> 2023 Carolinas Resource Plan, Appendix C Quantitative Analysis at 73. The LOLE of the Base Case under islanded conditions is 0.160 and the Base Case under interconnected conditions is 0.094. The difference of 0.065 is added to the 0.1 LOLE.

# APPENDIX 2: MODELING ASSUMPTIONS INDEX

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Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

BASE CASE

| Assumption                     | Duke 2025 RP                                 | NC EPTF Base Case                            | NC EPTF Source | Notes                                                                                                                                                                                                                            |
|--------------------------------|----------------------------------------------|----------------------------------------------|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Capacity Expansion Model Years | 2025-2040                                    | 2026-2050                                    | Duke 2025 RP   | Duke modeled out to 2050 but public materials only show results through 2040. EFG used the same period, starting in 2026 given the timing of the modeling exercise.                                                              |
| SERV M Model Year              | 2035                                         | 2035                                         | Duke 2025 RP   | EFG had the time and bandwidth to run one SERV M model year for all scenarios. 2035 was chosen because it represents the system portfolio after the first major tranche of buildout to meet new load growth.                     |
| Service Territory              | Duke Energy Carolinas & Duke Energy Progress | Duke Energy Carolinas & Duke Energy Progress | Duke 2025 RP   | EFG modeled the same territories as Duke models for its Resource Plan. DEC and DEP regions were represented separately in the model and transfer limits were relaxed beginning in 2030 to manage expected unserved energy (EUE). |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption        | Duke 2025 RP            |       |      | NC EPTF Base Case | NC EPTF Source      | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------|-------------------------|-------|------|-------------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Planned Additions | Resource                | MW    | Year |                   | Duke 2023 & 2025 RP | <p>EFG modeled all planned additions represented in Duke's 2025 Resource Plan, with the exception of Bad Creek II, which Duke modeled as optional.</p> <p>The removal of Bad Creek II as a fixed planned addition to align with Duke's 2025 Resource Plan was confirmed with the Technical Advisory Subcommittee. A sensitivity that included Bad Creek II was provided as a selectable option to the subcommittee.</p> <p>Further, EFG did not model the Roxboro CC or Marshall CT as fixed resources, because the Duke Resource Plan included conflicting information. Rather, EFG allowed generic CC and CT resources to be selected sooner to bridge the gap between the online dates for Roxboro and Marshall and the generic additions outlined below.</p> <p>We included the forecasted (i.e., already planned) level of solar and battery storage resources reported by Duke in the 2025 Resource Plan for the Duke Energy Carolinas ("DEC") and Duke Energy Progress ("DEP") systems as going in resource additions.</p> <p>Since Duke's Resource Plan did not specify the annual additions, we allocated the total forecasted additions on an annual basis leading up to 2034 for solar and 2032 for battery storage resources.</p> |
|                   | Roxboro CC              | 1,360 | 2029 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Marshall CT             | 850   | 2029 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Bad Creek II            | 1,760 | 2040 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Incremental Solar DEC   | 1,537 | 2031 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Incremental Solar DEP   | 3,149 | 2031 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Incremental Storage DEC | 378   | 2031 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|                   | Incremental Storage DEP | 662   | 2031 |                   |                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                     | Duke 2025 RP       |         | NC EPTF Base Case    |                      | NC EPTF Source     | Notes                                                                                                                                                                                                                                                                                |
|--------------------------------|--------------------|---------|----------------------|----------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Planned Retirements (Coal)     | Resource           | Utility | Winter Capacity (MW) | Retire (2023 Plan)   | Retire (2025 Plan) | Duke 2025 RP<br><br>EFG modeled all coal retirements on the same schedule proposed in Duke's 2025 Resource Plan. Given the publication of the 2025 plan mid-assumptions development, this required an update to the subcommittee, reflecting changes from the 2023 plan, shown here. |
|                                | Allen 1            | DEC     | 167                  | 1/1/2025             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Allen 2            | DEC     | 259                  | 1/1/2025             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Belews Creek 1     | DEC     | 1,110                | 1/1/2036             | 1/1/2040           |                                                                                                                                                                                                                                                                                      |
|                                | Belews Creek 2     | DEC     | 1,110                | 1/1/2036             | 1/1/2040           |                                                                                                                                                                                                                                                                                      |
|                                | Cliffside 5        | DEC     | 546                  | 1/1/2031             | 1/1/2033           |                                                                                                                                                                                                                                                                                      |
|                                | Cliffside 6        | DEC     | 849                  | 1/1/2049             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Marshall 1         | DEC     | 380                  | 1/1/2029             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Marshall 2         | DEC     | 380                  | 1/1/2029             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Marshall 3         | DEC     | 658                  | 1/1/2032             | 1/1/2034           |                                                                                                                                                                                                                                                                                      |
|                                | Marshall 4         | DEC     | 660                  | 1/1/2032             | 1/1/2034           |                                                                                                                                                                                                                                                                                      |
|                                | Mayo 1             | DEP     | 713                  | 1/1/2031             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Roxboro 1          | DEP     | 380                  | 1/1/2029             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Roxboro 2          | DEP     | 673                  | 1/1/2034             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Roxboro 3          | DEP     | 698                  | 1/1/2034             |                    |                                                                                                                                                                                                                                                                                      |
|                                | Roxboro 4          | DEP     | 711                  | 1/1/2029             |                    |                                                                                                                                                                                                                                                                                      |
| Planned Retirements (Non-Coal) | Resource           | Utility | Type                 | Winter Capacity (MW) | Retire             | Duke 2025 RP<br><br>EFG modeled all planned non-coal retirements on the same schedule proposed in Duke's 2025 Resource plan – all legacy gas units.                                                                                                                                  |
|                                | Asheville          | DEP     | CT                   | 370                  | 12/1/2039          |                                                                                                                                                                                                                                                                                      |
|                                | Blewett            | DEP     | CT                   | 164                  | 12/1/2039          |                                                                                                                                                                                                                                                                                      |
|                                | Darlington 12 & 13 | DEP     | CT                   | 264                  | 12/1/2039          |                                                                                                                                                                                                                                                                                      |
|                                | Weatherspoon       | DEP     | CT                   | 164                  | 12/1/2039          |                                                                                                                                                                                                                                                                                      |
|                                | Wayne              | DEP     | CT                   | 975                  | 12/1/2040          |                                                                                                                                                                                                                                                                                      |
|                                | Smith 1 - 6        | DEP     | CT                   | 1,152                | 12/1/2041          |                                                                                                                                                                                                                                                                                      |
|                                | Smith 4            | DEP     | CC                   | 570                  | 12/1/2042          |                                                                                                                                                                                                                                                                                      |
|                                | Lee 7C & 8C        | DEP     | CT                   | 96                   | 12/1/2047          |                                                                                                                                                                                                                                                                                      |
|                                | Smith 5            | DEP     | CC                   | 680                  | 12/1/2051          |                                                                                                                                                                                                                                                                                      |
|                                | HF Lee             | DEP     | CC                   | 1054                 | 12/1/2052          |                                                                                                                                                                                                                                                                                      |
|                                | Sutton             | DEP     | CC                   | 719                  | 12/1/2053          |                                                                                                                                                                                                                                                                                      |
|                                | Lincoln 1 - 16     | DEC     | CT                   | 1,507                | 12/1/2040          |                                                                                                                                                                                                                                                                                      |
|                                | Rockingham 1 - 5   | DEC     | CT                   | 895                  | 12/1/2040          |                                                                                                                                                                                                                                                                                      |
|                                | Mill Creek 1 - 8   | DEC     | CT                   | 751                  | 12/1/2043          |                                                                                                                                                                                                                                                                                      |
|                                | Buck CTCC          | DEC     | CC                   | 718                  | 12/1/2047          |                                                                                                                                                                                                                                                                                      |

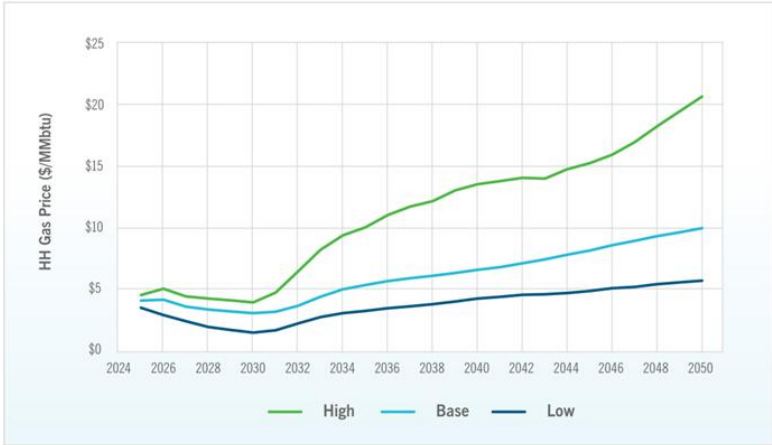
Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                                           | Duke 2025 RP       |                      |                   | NC EPTF Base Case     |                       | NC EPTF Source                                            | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------|--------------------|----------------------|-------------------|-----------------------|-----------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Available New Resources (Duke-Based)                 | Resource           | First Year Available | Annual Limit (MW) |                       | Cumulative Limit (MW) | Duke 2025 RP                                              | For most available new resources, EFG offered resources to the model in the same first year, at the same annual limits, and with the same cumulative limit as in Duke's 2025 Resource Plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                                                      | Solar              | 2030                 | 2030              | 825                   | None                  |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      | 2031              | 825                   |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      | 2032              | 1,200                 |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Storage 4 HR       | 2028                 | 2028              | 500                   | None                  |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      | 2029-             | 1,000                 |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Onshore Wind       | 2034                 | 2034              | 300                   | 1,050                 |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Offshore Wind      | 2037                 | 2037              | 1,200                 | 3,600                 |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Combined Cycle     | 2030                 | 2030              | 1,365                 | 6,825                 |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      | 2031              | 2,730                 |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Combustion Turbine | 2030                 | 2030              | 856                   | None                  |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      | 2031              | 2,140                 |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Pumped Storage                                       | 2040               | 2040                 | 1,760             | 1,760                 |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Available New Resources (Subcommittee Modifications) | Resource           | First Year Available | Annual Limit (MW) | Cumulative Limit (MW) |                       | Revised Duke 2025 IRP assumptions review by Subcommittee. | EFG cannot fully replicate resources in Duke's 2025 Resource Plan where we are limited by the availability of publicly available cost and operational data. Without capital costs available, EFG proposed modeling 8-hour, 24-hour and 100-hour storage, as well as nuclear (large light water reactor) options, as shown here.<br><br>This portfolio of resources is meant to reproduce the role that Duke's 2025 RP storage options (4-hour, 8-hour, 10-hour) and nuclear options (LWR, SMR, Non-LWR) fill in its base case modeling in terms of non-emitting resource options.<br><br>Based on subcommittee feedback, EFG developed assumptions for all of these resources based on publicly available data. |
|                                                      | Storage 8 HR       | 2030                 | 500 MW            | None                  |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Storage 24 HR      | 2033                 | 200 MW            | 1,000 MW by 2040      |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      |                   | 3,000 MW by 2050      |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Storage 100 HR     | 2033                 | 100 MW            | 1,000 MW by 2040      |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      |                    |                      |                   | 3,000 MW by 2050      |                       |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Resource           | First Year Available | Annual Limit (MW) |                       | Cumulative Limit (MW) |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|                                                      | Nuclear LWR        | 2037                 | Each Year         | +1,117                | 11,170                |                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                     | Duke 2025 RP                                                                                   | NC EPTF Base Case | NC EPTF Source | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------|------------------------------------------------------------------------------------------------|-------------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| New Resource Capital Costs     | Duke did not publish capital costs in its 2025 Resource Plan, though it has in previous plans. |                   |                | <p>Duke did not publish its capital costs in its 2025 Resource Plan, although published in the previous RP. Given the public nature of this modeling exercise, EFG compiled capital costs from the following sources:</p> <ul style="list-style-type: none"><li>Duke 2023 Carbon Plan: Onshore and offshore wind cost assumptions from the previous resource plan appear reasonable and EFG did not find a better state-specific cost assumption.</li><li>KU/LG&amp;E IRP: EFG utilized projected solar, storage, and gas costs provided in KU/LG&amp;E's most recent IRP because they are a publicly available source based on recent RFP data.</li><li>LDES Council Report: EFG used LDES Council data to represent the most recent cost estimates for 24-hour storage.</li><li>I&amp;M and NIPSCO IRPs: EFG used publicly available cost estimates provided in both IRPs representing a 100-hour iron-air battery technology.</li><li>Combined Sources: EFG used the estimated cost of Vogtle 3 or 4 if constructed today (15,000 \$/kW) estimated by Shirvan et al, and applied a global 2<sup>nd</sup>-of-a-kind nuclear learning rate (+15%) provided by Rubin et al.</li></ul> <p>Renewable and storage resource costs are escalated at rates provided in NLR’s Annual Technology Baseline. Thermal resource costs are escalated at the rate of inflation.</p> |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Federal Tax Credit Application |                                                                                                |                   |                | <p>EFG modeled all tax credit assumptions as used in Duke’s 2025 Resource Plan.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|                                |                                                                                                |                   |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |

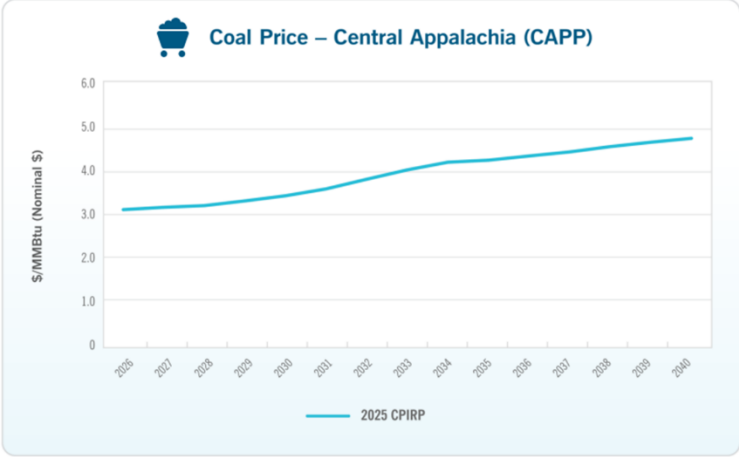
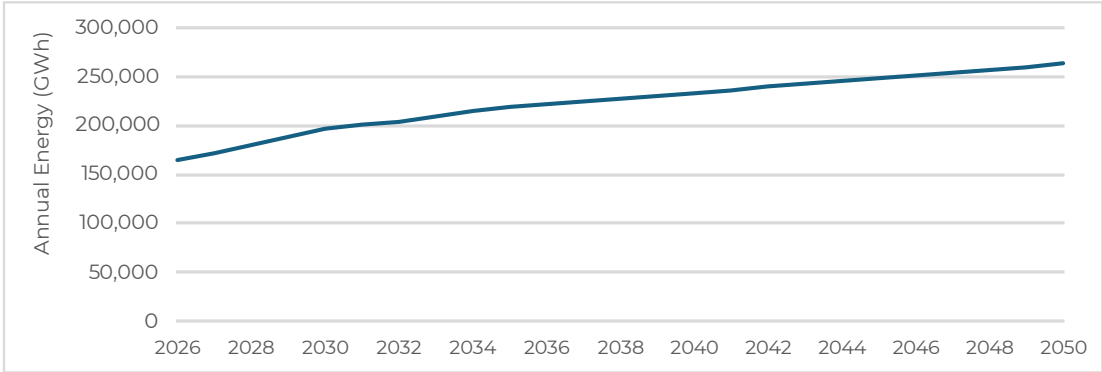
Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                      | Duke 2025 RP                                                                           |                    | NC EPTF Base Case | NC EPTF Source                                                                 | Notes                                                                                                                                                                                                                                                                                         |
|---------------------------------|----------------------------------------------------------------------------------------|--------------------|-------------------|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interconnection Costs           | Resource                                                                               | Ix Cost (\$2025/W) |                   | Duke 25 RP                                                                     | EFG modeled all interconnection cost assumptions used in Duke's 2025 Resource plan.                                                                                                                                                                                                           |
|                                 |                                                                                        | DEC                | DEP               |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Solar                                                                                  | 0.20               | 0.19              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Storage                                                                                | 0.11               | 0.11              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Onshore Wind                                                                           | 0.20               | 0.19              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Offshore Wind                                                                          | -                  | 0.56              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Combined Cycle                                                                         | 0.28               | 0.22              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Combustion Turbine                                                                     | 0.28               | 0.22              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Nuclear SMR                                                                            | 0.28               | 0.22              |                                                                                |                                                                                                                                                                                                                                                                                               |
|                                 | Pumped Storage                                                                         | 0.20               | --                |                                                                                |                                                                                                                                                                                                                                                                                               |
| Natural Gas Fuel Price Forecast | Figure C-7: High, Base, & Low Henry Hub Natural Gas Price Forecasts (Nominal \$/MMBtu) |                    |                   | Henry Hub: Duke 25 RP<br><br>Transco Zone 5 Basis: EnCompass National Database | EFG modeled the Base Henry Hub price forecast included in Duke's 2025 Resource Plan pulled from the graphic provided in public stakeholder slides<br><br>Duke did not provide a hub-specific price, so EFG used the TranscoZone 5 Basis forecast provided by the EnCompass National Database. |
|                                 |     |                    |                   |                                                                                |                                                                                                                                                                                                                                                                                               |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                                     | Duke 2025 RP                                                               | NC EPTF Base Case |              | NC EPTF Source | Notes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------------------------------------------|----------------------------------------------------------------------------|-------------------|--------------|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Firm Gas Transportation Cost                   | Duke did not provide its cost assumptions in publicly available materials. | Resource Type     | Cost (\$/kW) | See note.      | <p>Duke included a cost for firm gas transportation for Combined Cycle (“CC”) and Combustion Turbine (“CT”) resources. For the first three CCs, Duke modeled a firm gas transportation cost, but did not provide that cost assumption in the Resource Plan. We developed a firm gas transportation cost to model from the Mountain Valley Pipeline tariff and applied it to all relevant resources. EFG developed a firm gas transportation cost to model from the Mountain Valley Pipeline tariff and applied it to all relevant resources.</p> <p>For CT resources, Duke assumed that the first CT resources did not reflect a cost for firm transportation, but instead assumed reliance on backup fuel. After the sixth CT, Duke reported that a fuel security hurdle was applied to represent the cost of incremental supply. Duke did not provide the cost assigned as the fuel security hurdle. Given Duke did not provide the cost assigned as the fuel security hurdle, we developed a firm gas transportation cost to model based on the Mountain Valley Pipeline tariff.</p> |
|                                                |                                                                            | CT                | 35.54        |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                                                |                                                                            | CC                | 25.20        |                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Liquid Natural Gas (“LNG”) Fuel Price Forecast | Duke did not provide its cost assumptions in publicly available materials. | Resource Type     | Cost (\$/kW) | See note.      | In order to develop a cost to model for our analysis, we relied on the reported capital and fixed costs for the Oak Creek LNG facility in Wisconsin. This cost is leveled in 2027 dollars and then escalated at WEPCO’s inflation assumption of 3%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Hydrogen Conversion Cost                       | Duke did not provide its cost assumptions in publicly available materials. | Year              | Cost (\$/kW) | See note.      | Our analysis assumes that new CT and CC resources would need to convert to hydrogen to comply with the 2050 carbon limit. Given Duke did not disclose their cost assumptions for hydrogen conversion, our assumption for the cost to convert is based on NIPSCO’s 2024 Integrated Resource Plan (“IRP”), where NIPSCO assumed that the conversion cost would be 30% of original plant capital expenditure costs. The hydrogen conversion cost was only assumed for the new and not existing resources, since the cost for existing resources remains the same across all scenarios evaluated.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption               | Duke 2025 RP                                                                                              | NC EPTF Base Case                                                              | NC EPTF Source                      | Notes                                                                                                                                                                                                                                                                                                                                    |
|--------------------------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Coal Fuel Price Forecast |                         |                                                                                | Duke 25 RP                          | EFG modeled the Central Appalachia coal price provided in Duke's 2025 Resource Plan, pulled from the graphic provided in public stakeholder slides. Duke only provided the forecast out to 2040, so EFG applied a 5-year rolling average for the 2040-2050 period.                                                                       |
| Carbon Mandate           | No interim carbon reduction goal. It is not clear how Duke modeled the 2050 state carbon emissions limit. | 95% carbon emissions limit by 2050, with a linear reduction beginning in 2048. | State Mandate (N.C.G.S. § 62-110.9) | EFG assumes that the state net zero mandate can be reached if the system reaches 95% reductions by 2050. To avoid a substantial final-year overbuild, EFG applied a linear reduction from existing levels down to 95% beginning in 2048.                                                                                                 |
| Load Forecast            |                        |                                                                                | Duke 23 Carbon Plan & 25 RP         | EFG utilized the annual energy forecast provided in Duke's 2025 Resource Plan inclusive of energy efficiency and separately for distributed photovoltaic (PV) (2023) and electric vehicle (EV) deployment (2025). EFG used the Advancing Development forecast provided for large load development, assuming a utilization factor of 90%. |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

# ALTERNATE FUTURES SCENARIOS

## Alternative Large Load

The large load forecast in the Alternative Large Load scenario is based on the reported projects in the interconnection study process, totaling 1,806 MW. Since the project information did not include details on the location of the projects, EFG used the large load split Duke assumed in the Advancing Development forecast to break out the level of large load between systems.

| Assumption    | NC EPTF Base Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Alternative Large Load               | Source & Methodology |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|----------------------|------------------------------------|--------------------------------------|------|-----|---|------|-------|-----|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|------|-------|-------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Load Forecast | <div><table><caption>Estimated Annual Energy (GWh) Data</caption><tr><th>Year</th><th>Duke 2025 RP Advancing Development</th><th>Initiated Interconnection Large Load</th></tr><tr><td>2026</td><td>200</td><td>0</td></tr><tr><td>2028</td><td>1,500</td><td>500</td></tr><tr><td>2030</td><td>3,500</td><td>1,000</td></tr><tr><td>2032</td><td>4,500</td><td>1,500</td></tr><tr><td>2034</td><td>5,000</td><td>1,800</td></tr><tr><td>2036</td><td>5,500</td><td>1,800</td></tr><tr><td>2038</td><td>5,800</td><td>1,800</td></tr><tr><td>2040</td><td>6,200</td><td>1,800</td></tr><tr><td>2042</td><td>6,400</td><td>1,800</td></tr><tr><td>2044</td><td>6,450</td><td>1,800</td></tr><tr><td>2046</td><td>6,480</td><td>1,800</td></tr><tr><td>2048</td><td>6,490</td><td>1,800</td></tr><tr><td>2050</td><td>6,500</td><td>1,800</td></tr></table></div> |                                      | Year                 | Duke 2025 RP Advancing Development | Initiated Interconnection Large Load | 2026 | 200 | 0 | 2028 | 1,500 | 500 | 2030 | 3,500 | 1,000 | 2032 | 4,500 | 1,500 | 2034 | 5,000 | 1,800 | 2036 | 5,500 | 1,800 | 2038 | 5,800 | 1,800 | 2040 | 6,200 | 1,800 | 2042 | 6,400 | 1,800 | 2044 | 6,450 | 1,800 | 2046 | 6,480 | 1,800 | 2048 | 6,490 | 1,800 | 2050 | 6,500 | 1,800 | <p>To develop the alternative large load case, representing data center load limited to that which has initiated the interconnection process, EFG took the following steps:</p> <ul style="list-style-type: none"><li>Identified 8 projects in the Duke territory that had publicly initiated the interconnection process, totaling 1,806 MW of new load.</li><li>Assumed the load ramp assumed in Duke's base forecast from the in-service date to the full load date.</li></ul> <p>Summed annual and cumulative interconnection requests for this load and split between DEC and DEP service territories proportional to the forecast provided in the 2025 Resource Plan.</p> |
| Year          | Duke 2025 RP Advancing Development                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Initiated Interconnection Large Load |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2026          | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0                                    |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2028          | 1,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 500                                  |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2030          | 3,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,000                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2032          | 4,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,500                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2034          | 5,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2036          | 5,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2038          | 5,800                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2040          | 6,200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2042          | 6,400                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2044          | 6,450                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2046          | 6,480                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2048          | 6,490                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 2050          | 6,500                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1,800                                |                      |                                    |                                      |      |     |   |      |       |     |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |      |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

| Assumption                          | NC EPTF Base Case                                        | Alternative Large Load                                   |               |                               | Source & Methodology                                                                                                                                                           |
|-------------------------------------|----------------------------------------------------------|----------------------------------------------------------|---------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Large Load Interconnection Projects | N/A                                                      | Project One                                              | Load (MW) 945 | Full Load Projection 9/1/2030 | See note above.                                                                                                                                                                |
|                                     |                                                          | Two                                                      | 200           | 12/31/2026                    |                                                                                                                                                                                |
|                                     |                                                          | Three                                                    | 46            | 3/1/2030                      |                                                                                                                                                                                |
|                                     |                                                          | Four                                                     | 200           | 12/31/2026                    |                                                                                                                                                                                |
|                                     |                                                          | Five                                                     | 115           | 12/1/2028                     |                                                                                                                                                                                |
|                                     |                                                          | Six                                                      | 300           | 9/30/2028                     |                                                                                                                                                                                |
|                                     |                                                          | Total                                                    | 1,806         |                               |                                                                                                                                                                                |
|                                     |                                                          |                                                          |               |                               |                                                                                                                                                                                |
| Coal Retirement                     | Cliffside 5: Retires 2033<br>Marshall 3 & 4: Retire 2034 | Cliffside 5: Retires 2031<br>Marshall 3 & 4: Retire 2032 |               |                               | EFG used the Moderate coal retirement dates for this scenario under the assumption that lower near-term load growth would enable the existing coal retirement dates to remain. |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

Path to Net Zero

| Assumption     | NC EPTF Base Case                                                                                                                                                                                                     | Path to Net Zero                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Source & Methodology                                                                                                       |
|----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| Carbon Mandate | 95% carbon emissions limit by 2050, with a linear reduction beginning in 2048.                                                                                                                                        | 95% carbon emissions limit by 2050, with a linear reduction beginning in 2035.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | After discussion, the Subcommittee voted to explore a scenario that began in 2035.                                         |
| Offshore Wind  | Onshore wind first available in 2034, with project size of 300 MW and a cumulative limit of 1,050 MW.<br><br>Offshore wind first available in 2037, with project size of 1,200 MW and a cumulative limit of 3,600 MW. | Onshore wind first available in 2031, with a project size of 300 MW. Cumulative 1,200 MW of wind allowed by 2033.<br><br>Offshore wind first available in 2032, with a cumulative allowance of 2,400 MW by 2034.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | For the Path to Net Zero scenario, EFG allows wind builds up to the levels represented in the 2024 Duke Carbon Plan Order. |
| EE & DR        | Energy efficiency incorporated in overall demand forecast.                                                                                                                                                            | EFG utilized the 'high' energy efficiency ("EE") and demand response forecasts modeled in Duke's 2025 Resource Plan as the basis of its assumptions for the Path to Net Zero scenario. In the 2025 Resource Plan, Duke states that "the 2025 EE forecast is based on an independent third party's Market Potential Study used to develop the 2023 EE forecast but has been updated to reflect projected impacts from federal home efficiency rebates based on DOE guidance and state rollouts as of October 1, 2024." The "high case" forecast assumes "1.5% of eligible load annual minimum" with the total eligible load having been adjusted by Duke "to remove EV-related load to ensure that the utilization of an annual minimum EE savings assumption does not create an unrealistic and unattainable long-term forecast of EE savings."<br><br>EFG adjusted the savings assumptions it applied to modeling to more fully reflect the savings potential that could exist absent the current policy constraint that provides opt-out provisions for large load customers. EFG reviewed "Appendix B All Customer APS" in the Duke Energy North Carolina Energy Efficiency and Demand-side Management Market Potential Report dated July, 2023, which "estimated achievable potential with the full customer base" including opt-out customers. EFG used the 2027, 2032, and 2047 all-customers savings estimates from the Report as the basis to project opt-out savings for the remaining years of the study period in a base case and then scaled those estimates for use in modeling by the percentage increase assumed by Duke going from its base case to its high case for the Path to Net Zero. |                                                                                                                            |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption              | NC EPTF Base Case                                        | Path to Net Zero                                                                                                                                                                |            |                   |                           | Source & Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                     |                                         |
|-------------------------|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-----------------------------------------|
| Available New Resources | As detailed on page 5 of this document.                  | Resource                                                                                                                                                                        | First Year | Annual Limit (MW) |                           | Cumulative Limit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Source                              |                                         |
|                         |                                                          | Solar                                                                                                                                                                           | 2030       | 2030              | 825 MW                    | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          |                                                                                                                                                                                 |            | 2031              | 825 MW                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          |                                                                                                                                                                                 |            | 2032              | 1,800 MW                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          | Storage 4 HR                                                                                                                                                                    | 2028       | 2028              | 500 MW                    | None                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          |                                                                                                                                                                                 |            | 2029              | 1,000 MW                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          |                                                                                                                                                                                 |            | 2030              | 1,500 MW                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          |                                                                                                                                                                                 |            | 2031+             | 2,000 MW                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Duke 25 RP High Case (Annual Limit) |                                         |
|                         |                                                          | Onshore Wind                                                                                                                                                                    | 2031       | 2031              | 150 MW DEC and 150 MW DEP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 900 MW for DEC and 1,200 MW for DEP | Duke 25 RP High Case (Cumulative Limit) |
|                         |                                                          |                                                                                                                                                                                 |            | 2032              | 150 MW DEC and 300 MW DEP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | Duke 25 RP High Case (Cumulative Limit) |
|                         |                                                          |                                                                                                                                                                                 |            | 2033              | 150 MW DEC and 300 MW DEP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | Duke 25 RP High Case (Cumulative Limit) |
|                         |                                                          |                                                                                                                                                                                 |            | 2034              | 150 MW DEC and 300 MW DEP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | Duke 25 RP High Case (Cumulative Limit) |
|                         |                                                          |                                                                                                                                                                                 |            | 2035              | 300 MW DEC and 150 MW DEP |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     | Duke 25 RP High Case (Cumulative Limit) |
|                         |                                                          | Offshore Wind                                                                                                                                                                   | 2037       | 2034              | 2,400 MW in 2034          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2,400 MW through 2039               | Informed by Duke 23 Base Case           |
|                         |                                                          |                                                                                                                                                                                 |            | 2040              | 1,200 MW in 2040          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3,600 MW through 2040               | Informed by Duke 23 Base Case           |
|                         |                                                          |                                                                                                                                                                                 |            | 2041              | 1,200 MW in 2041          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4,800 MW through 2041               | Informed by Duke 23 Base Case           |
|                         |                                                          |                                                                                                                                                                                 |            | 2046              | 1,200 MW in 2046          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 6,000 MW through 2046               | Informed by Duke 23 Base Case           |
|                         |                                                          |                                                                                                                                                                                 |            | 2048              | 1,200 MW in 2048          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7,200 MW through 2050               | Informed by Duke 23 Base Case           |
|                         |                                                          | CC, CT, Nuclear, and 8-, 24- and 100-Hour Storage all included using Base Case assumptions.                                                                                     |            |                   |                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                     |                                         |
| Coal Retirement         | Cliffside 5: Retires 2033<br>Marshall 3 & 4: Retire 2034 | Cliffside 5: Retires 2031<br>Marshall 3 & 4: Retire 2032                                                                                                                        |            |                   |                           | EFG used the Moderate coal retirement dates for this scenario under the assumption that more near-term available resources would enable the existing coal retirement dates to remain.                                                                                                                                                                                                                                                                                                                                                                                   |                                     |                                         |
| Power Pair Program      | Not included.                                            | Total incremental solar installed reaches 487.5 MW in both DEC and DEP by 2050; 243.75 MW of associated battery capacity is available for dispatch in both DEC and DEP by 2050. |            |                   |                           | The level of PowerPair solar and battery storage resources modeled in the Path to Net Zero scenario are based on assumptions of higher adoption compared to what Duke assumed in its base case for the 2025 Resource Plan. The Path to Net Zero maintained Duke’s PowerPair assumptions from 2026 – 2029, but starting in 2030, we assumed that the pilot ceiling of 30,000 kW for DEC and 30,000 kW for DEP would be met annually until 2035. The solar and battery storage incentive costs are based on Duke’s reported incentives in the Joint Annual Status Report. |                                     |                                         |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption                         | NC EPTF Base Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Path to Net Zero                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Source & Methodology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
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| Energy Efficiency Opt-Out          | Not included.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Combined Commercial & Industrial Energy Efficiency (MW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | EFG reviewed “Appendix B All Customer APS” in the Duke Energy North Carolina Energy Efficiency and Demand-side Management Market Potential Report dated July 2023, which “estimated achievable potential with the full customer base” including opt-out customers. EFG used the 2027, 2032, and 2047 all-customers savings estimates from the Report as the basis to project opt-out savings for the remaining years of the study period in a base case and then scaled those estimates by the percentage increase assumed by Duke going from its base case to its high case for the Path to Net Zero. |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <table><tr><th>Year</th><th>DEC</th><th>DEP</th></tr><tr><td>2025</td><td>0</td><td>0</td></tr><tr><td>2026</td><td>0</td><td>0</td></tr><tr><td>2027</td><td>14</td><td>1</td></tr><tr><td>2028</td><td>54</td><td>17</td></tr><tr><td>2029</td><td>96</td><td>34</td></tr><tr><td>2030</td><td>139</td><td>52</td></tr><tr><td>2031</td><td>182</td><td>70</td></tr><tr><td>2032</td><td>225</td><td>87</td></tr><tr><td>2033</td><td>269</td><td>105</td></tr><tr><td>2034</td><td>313</td><td>123</td></tr><tr><td>2035</td><td>357</td><td>141</td></tr><tr><td>2036</td><td>401</td><td>159</td></tr><tr><td>2037</td><td>446</td><td>177</td></tr><tr><td>2038</td><td>491</td><td>196</td></tr><tr><td>2039</td><td>537</td><td>214</td></tr><tr><td>2040</td><td>582</td><td>232</td></tr><tr><td>2041</td><td>627</td><td>251</td></tr><tr><td>2042</td><td>674</td><td>270</td></tr><tr><td>2043</td><td>721</td><td>288</td></tr><tr><td>2044</td><td>768</td><td>307</td></tr><tr><td>2045</td><td>816</td><td>326</td></tr><tr><td>2046</td><td>864</td><td>346</td></tr><tr><td>2047</td><td>944</td><td>369</td></tr><tr><td>2048</td><td>1025</td><td>393</td></tr><tr><td>2049</td><td>1107</td><td>417</td></tr><tr><td>2050</td><td>1190</td><td>441</td></tr></table> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Year | DEC | DEP | 2025  | 0   | 0   | 2026    | 0   | 0   | 2027         | 14  | 1   | 2028          | 54 | 17  | 2029           | 96  | 34  | 2030               | 139 | 52  | 2031        | 182 | 70  | 2032           | 225 | 87 | 2033                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 269      | 105                                       | 2034 | 313 | 123 | 2035  | 357   | 141   | 2036    | 401  | 159  | 2037         | 446   | 177   | 2038          | 491 | 196   | 2039           | 537   | 214   | 2040               | 582   | 232   | 2041        | 627   | 251   | 2042           | 674   | 270 | 2043                                                                                                                                                                                                                                                                                                                                                                                  | 721 | 288 | 2044 | 768 | 307 | 2045 | 816 | 326 | 2046 | 864 | 346 | 2047 | 944 | 369 | 2048 | 1025 | 393 | 2049 | 1107 | 417 | 2050 | 1190 | 441 |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DEC  | DEP |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2025                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0    | 0   |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 0    | 0   |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2027                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 14   | 1   |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
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| 2049                               | 1107                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 417                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| 2050                               | 1190                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 441                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Grid Enhancing Technologies (GETs) | <table><tr><th rowspan="2">Resource</th><th colspan="2">Ix Cost (\$2025/kW)</th></tr><tr><th>DEC</th><th>DEP</th></tr><tr><td>Solar</td><td>200</td><td>190</td></tr><tr><td>Storage</td><td>110</td><td>110</td></tr><tr><td>Onshore Wind</td><td>200</td><td>190</td></tr><tr><td>Offshore Wind</td><td>-</td><td>560</td></tr><tr><td>Combined Cycle</td><td>280</td><td>220</td></tr><tr><td>Combustion Turbine</td><td>280</td><td>220</td></tr><tr><td>Nuclear SMR</td><td>280</td><td>220</td></tr><tr><td>Pumped Storage</td><td>200</td><td>--</td></tr></table> | Resource                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Ix Cost (\$2025/kW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      | DEC | DEP | Solar | 200 | 190 | Storage | 110 | 110 | Onshore Wind | 200 | 190 | Offshore Wind | -  | 560 | Combined Cycle | 280 | 220 | Combustion Turbine | 280 | 220 | Nuclear SMR | 280 | 220 | Pumped Storage | 200 | -- | <table><tr><th rowspan="2">Resource</th><th colspan="2">GETS Ix Cost (\$2025/kW)<br/>93% Reduction</th></tr><tr><th>DEC</th><th>DEP</th></tr><tr><td>Solar</td><td>14.67</td><td>13.93</td></tr><tr><td>Storage</td><td>8.07</td><td>8.07</td></tr><tr><td>Onshore Wind</td><td>14.67</td><td>13.93</td></tr><tr><td>Offshore Wind</td><td>-</td><td>41.07</td></tr><tr><td>Combined Cycle</td><td>20.53</td><td>16.13</td></tr><tr><td>Combustion Turbine</td><td>20.53</td><td>16.13</td></tr><tr><td>Nuclear SMR</td><td>20.53</td><td>16.13</td></tr><tr><td>Pumped Storage</td><td>14.67</td><td>--</td></tr></table> | Resource | GETS Ix Cost (\$2025/kW)<br>93% Reduction |      | DEC | DEP | Solar | 14.67 | 13.93 | Storage | 8.07 | 8.07 | Onshore Wind | 14.67 | 13.93 | Offshore Wind | -   | 41.07 | Combined Cycle | 20.53 | 16.13 | Combustion Turbine | 20.53 | 16.13 | Nuclear SMR | 20.53 | 16.13 | Pumped Storage | 14.67 | --  | For the Path to Net Zero Scenario, EFG used an assumption that GETs average roughly 7% of the cost of traditional upgrades, implying a 93% reduction in required investment. This cost differential was determined by taking the average of savings across power flow control, dynamic line rating, and topology optimization GETs as estimated in Interconnected in PJM (RMI, 2024). |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Resource                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Ix Cost (\$2025/kW)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | DEP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Solar                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 190                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Storage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 110                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Onshore Wind                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 190                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Offshore Wind                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 560                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Combined Cycle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Combustion Turbine                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Nuclear SMR                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 280                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 220                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | Pumped Storage                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 200                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Resource                           | GETS Ix Cost (\$2025/kW)<br>93% Reduction                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
|                                    | DEC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | DEP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Solar                              | 14.67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 13.93                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Storage                            | 8.07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 8.07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Onshore Wind                       | 14.67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 13.93                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Offshore Wind                      | -                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 41.07                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Combined Cycle                     | 20.53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 16.13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Combustion Turbine                 | 20.53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 16.13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Nuclear SMR                        | 20.53                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 16.13                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |
| Pumped Storage                     | 14.67                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | --                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |      |     |     |       |     |     |         |     |     |              |     |     |               |    |     |                |     |     |                    |     |     |             |     |     |                |     |    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |          |                                           |      |     |     |       |       |       |         |      |      |              |       |       |               |     |       |                |       |       |                    |       |       |             |       |       |                |       |     |                                                                                                                                                                                                                                                                                                                                                                                       |     |     |      |     |     |      |     |     |      |     |     |      |     |     |      |      |     |      |      |     |      |      |     |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

| Assumption   | NC EPTF Base Case | Path to Net Zero | Source & Methodology                                                                                                                                                                                   |
|--------------|-------------------|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Bad Creek II | Not Included.     | Added in 2040.   | Based on the subcommittee polling, EFG did not include Bad Creek II in the Base Case but did include it, with all assumptions proposed in the Duke 25 RP sensitivity in the Path to Net Zero scenario. |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

Delayed Hydrogen Deployment

| Assumption        | NC EPTF Base Case |      |         | Delayed Hydrogen Deployment | Source & Methodology                                                                                                                                                |
|-------------------|-------------------|------|---------|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hydrogen Blending | Year              | Duke | Delayed |                             | In this scenario, EFG models a ten-year delay in Duke's hydrogen blending assumption (the percentage of hydrogen blended with natural gas in operating gas plants). |
|                   | 2040              | 1%   | 1%      |                             |                                                                                                                                                                     |
|                   | 2041              | 2%   | 2%      |                             |                                                                                                                                                                     |
|                   | 2042              | 3%   | 3%      |                             |                                                                                                                                                                     |
|                   | 2043              | 3%   | 3%      |                             |                                                                                                                                                                     |
|                   | 2044              | 3%   | 3%      |                             |                                                                                                                                                                     |
|                   | 2045              | 100% | 12%     |                             |                                                                                                                                                                     |
|                   | 2046              | 100% | 21%     |                             |                                                                                                                                                                     |
|                   | 2047              | 100% | 29%     |                             |                                                                                                                                                                     |
|                   | 2048              | 100% | 38%     |                             |                                                                                                                                                                     |
|                   | 2049              | 100% | 47%     |                             |                                                                                                                                                                     |
|                   | 2050              | 100% | 56%     |                             |                                                                                                                                                                     |
|                   | 2051              | 100% | 65%     |                             |                                                                                                                                                                     |
|                   | 2052              | 100% | 74%     |                             |                                                                                                                                                                     |
|                   | 2053              | 100% | 82%     |                             |                                                                                                                                                                     |
|                   | 2054              | 100% | 91%     |                             |                                                                                                                                                                     |
|                   | 2055              | 100% | 100%    |                             |                                                                                                                                                                     |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

# LARGE LOAD TARGETED POLICIES SCENARIOS

## Flexible Large Load

For the Flexible Large Load scenario, we assumed that half of the new large load would opt for Duke’s contract option of curtailing up to 50% of load for 100 hours per year<sup>14</sup> and half of the large load would allow for full flexibility or be able to be called upon up to the full load with an unlimited number of hours per year.

The large load flexibility resources were initially modeled as the resource of last resort. This was modeled in EnCompass by assigning a dispatch cost adder with a cost priced right after the most expensive peaking unit on the DEC and DEP systems. Under this approach, there was not a direct cost assigned to the large load flexibility resources that is incorporated into the PVRR.<sup>15</sup> For the portion of large load that we assumed would follow Duke’s contract, those resources were specified with a 100 hour per year call limit and flexibility of up to 50% of the load. The portion of large load with full flexibility was modeled with no constraints or limits on the numbers of calls per year.

| Assumption       | NC EPTF Base Case | Flexible Large Load                                                           |      |                                                       | Source & Methodology                                                                                                                                                                                                                                                                              |
|------------------|-------------------|-------------------------------------------------------------------------------|------|-------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Load Flexibility | N/A               | Data center load was modeled as a fixed “dispatchable” resource in the model. |      |                                                       | EFG assumed that half of data center customers will meet Duke’s proposed option to curtail either up to 95% for 50 hours/year or 50% of load for 100 hours/year.<br><br>EFG assumed that the other half of data center customers would be able to curtail up to 100% of load with no call limits. |
|                  |                   | Demand-Side “Dispatchable” Data Centers                                       | GW   | Curtailment                                           |                                                                                                                                                                                                                                                                                                   |
|                  |                   | Flexible Duke Option                                                          | 2.57 | 95% for 50 hours/year<br>or<br>50% for 100 hours/year |                                                                                                                                                                                                                                                                                                   |
|                  |                   | Flexible No Call Limits                                                       | 2.57 | Up to 100% with no call limits                        |                                                                                                                                                                                                                                                                                                   |

<sup>15</sup> In EnCompass, a dispatch cost adder acts as a hurdle rate in the cost to dispatch the resource. For example, if the dispatch cost adder is \$100/MWh, EnCompass will commit and dispatch that resource after any resources that have a dispatch cost that is less than \$100/MWh.

Clean Large Load

The projected level of data center load in the Duke economic development pipeline informed the level of large load clean energy commitments modeled in this scenario. In October 2025, Duke presented information that the economic development pipeline total was 46 GW, with data centers comprising approximately 39.8 GW of that pipeline, which translates to data centers representing 87% of Duke’s economic development pipeline. Given our decision to model a Clean Large Load program applicable only to data centers, we used the 87% as our first adjustment to determine the large load customers that would meet the clean energy commitment. The second adjustment we implemented assumed that 50% of the data center load would want to meet a clean energy commitment by 2040. We implemented these by adjusting the large load forecast for the 87% and then reducing that adjusted amount by 50% to reflect the total level of large load that would pursue the clean energy commitment in this scenario.

Our basis for determining the starting point for the clean energy commitment is taken from an example of Microsoft planning to add 250 MW of solar for a 900 MW data center load in Wisconsin. Under an assumption of a 24% capacity factor for the solar resource and a 90% utilization rate for the data center, the solar energy comprises approximately 7.41% of the annual energy. This percentage (7.41%) then became the basis for the 2027 starting renewable energy commitment for the Clean Large Load scenario. The renewable energy percentage requirement then increased linearly to the 100% requirement in 2040.

Solar, battery storage, wind, and nuclear resources could be selected by EnCompass for the large load clean energy commitment. The first-year available dates were accelerated for solar and battery storage resources to allow for meeting the clean energy commitments starting in 2027. The solar and battery storage resources available for selection were also not limited by the build limits specified for the Base Case scenario. We removed the first year available and build limits to ensure that there were sufficient resources available to meet the annual clean energy commitments. We did not modify the first year available or build limits for nuclear or wind resources specified in the Base Case scenario.

| Assumption              | NC EPTF Base Case                                                     | Clean Large Load                                                                 | Source & Methodology                                                                                  |
|-------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| Participating Customers | No clean energy commitments assumed for any new large load customers. | 50 percent of all new data center load (5.13 GW) make a clean energy commitment. | Docket No. E-100, Sub 208. NCUC Technical Conference. Duke Energy Large Electric Load Additions at 4. |

| Assumption          | NC EPTF Base Case           | Clean Large Load                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Source & Methodology                                                                                                                 |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|---------------------|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|-------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|--------|------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Commitment Ramp     | N/A                         | <div>Clean energy commitment ramps up from 2027-2040.</div> <table><tr><th>Year</th><th>Clean Energy Commitment (%)</th></tr><tr><td>2027</td><td>7.41%</td></tr><tr><td>2028</td><td>14.53%</td></tr><tr><td>2029</td><td>21.65%</td></tr><tr><td>2030</td><td>28.77%</td></tr><tr><td>2031</td><td>35.90%</td></tr><tr><td>2032</td><td>43.02%</td></tr><tr><td>2033</td><td>50.14%</td></tr><tr><td>2034</td><td>57.26%</td></tr><tr><td>2035</td><td>64.39%</td></tr><tr><td>2036</td><td>71.51%</td></tr><tr><td>2037</td><td>78.63%</td></tr><tr><td>2038</td><td>85.75%</td></tr><tr><td>2039</td><td>92.88%</td></tr><tr><td>2040</td><td>100.00%</td></tr></table> | Year                                                                                                                                 | Clean Energy Commitment (%) | 2027 | 7.41% | 2028 | 14.53% | 2029 | 21.65% | 2030 | 28.77% | 2031 | 35.90% | 2032 | 43.02% | 2033 | 50.14% | 2034 | 57.26% | 2035 | 64.39% | 2036 | 71.51% | 2037 | 78.63% | 2038 | 85.75% | 2039 | 92.88% | 2040 | 100.00% | EFG’s basis for determining the starting point for the clean energy commitment is taken from an example of Microsoft planning to add 250 MW of solar for a 900 MW data center load in Wisconsin. Under an assumption of a 24% capacity factor for the solar resource and a 90% utilization rate for the data center, the solar energy comprises approximately 7.41% of the annual energy. This percentage (7.41%) then became the basis for the 2027 starting renewable energy commitment for the Clean Large Load scenario. The renewable energy percentage requirement then increased linearly to the 100% requirement in 2040.<br>( <a href="https://www.cnbc.com/2025/09/18/microsoft-wisconsin-data-center.html?msockid=2e42423f0a5468fb2b1456c70b5569e7">https://www.cnbc.com/2025/09/18/microsoft-wisconsin-data-center.html?msockid=2e42423f0a5468fb2b1456c70b5569e7</a> ) |
| Year                | Clean Energy Commitment (%) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2027                | 7.41%                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2028                | 14.53%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2029                | 21.65%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2030                | 28.77%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2031                | 35.90%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2032                | 43.02%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2033                | 50.14%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2034                | 57.26%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2035                | 64.39%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2036                | 71.51%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2037                | 78.63%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2038                | 85.75%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2039                | 92.88%                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 2040                | 100.00%                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                      |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Available Resources | N/A                         | EFG allowed the construction of the following resources, using the same cost assumptions used in the Base Case: solar PV, battery storage (4-, 8-, 24-, 100-hour), onshore wind, offshore wind, nuclear.                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | EFG allowed the construction of all generic non-emitting resources specifically for the purpose of meeting clean energy commitments. |                             |      |       |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |        |      |         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

Clean Flexible Large Load

| Assumption         | NC EPTF Base Case | Clean Flexible Large Load                                                                                                                                                                                                                                | Source & Methodology                        |
|--------------------|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Combined Scenarios | N/A               | The Clean Flexible Large Load scenarios use the assumptions set for the Clean Large Load and Flexible Large Load scenarios individually.                                                                                                                 | Previous scenario assumptions listed above. |
| Load Flexibility   | N/A               | For data centers without clean energy commitments, load flexibility is modeled as described for Flexible Large Load above.<br><br>For data centers with a clean energy commitment, data centers were available for full flexibility with no call limits. | Previous scenario assumptions listed above. |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

COST SENSITIVITIES

High Gas Fuel Cost

| Assumption     | NC EPTF Base Case                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | High Gas Fuel Cost                             | Source & Methodology                                                                                                                                                                                                        |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
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| Assumption     | Duke Base Henry Hub Natural Gas Price Forecast                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Duke High Henry Hub Natural Gas Price Forecast | EFG modeled the High Henry Hub Natural Gas Price Forecast from Duke's 25 RP for this sensitivity.                                                                                                                           |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
|                | <p>Figure C-7: High, Base, &amp; Low Henry Hub Natural Gas Price Forecasts (Nominal \$/MMBtu)</p>  <table><caption>Estimated HH Gas Price (\$/MMBtu) from Figure C-7</caption><tr><th>Year</th><th>High (\$/MMBtu)</th><th>Base (\$/MMBtu)</th><th>Low (\$/MMBtu)</th></tr><tr><td>2024</td><td>4.0</td><td>4.0</td><td>4.0</td></tr><tr><td>2026</td><td>5.0</td><td>4.0</td><td>3.5</td></tr><tr><td>2028</td><td>4.0</td><td>3.5</td><td>2.5</td></tr><tr><td>2030</td><td>4.0</td><td>3.0</td><td>2.0</td></tr><tr><td>2032</td><td>6.0</td><td>3.5</td><td>2.5</td></tr><tr><td>2034</td><td>9.0</td><td>5.0</td><td>3.0</td></tr><tr><td>2036</td><td>11.0</td><td>6.0</td><td>3.5</td></tr><tr><td>2038</td><td>12.0</td><td>6.5</td><td>4.0</td></tr><tr><td>2040</td><td>13.0</td><td>7.0</td><td>4.5</td></tr><tr><td>2042</td><td>14.0</td><td>7.5</td><td>4.8</td></tr><tr><td>2044</td><td>15.0</td><td>8.0</td><td>5.0</td></tr><tr><td>2046</td><td>17.0</td><td>9.0</td><td>5.2</td></tr><tr><td>2048</td><td>19.0</td><td>9.5</td><td>5.5</td></tr><tr><td>2050</td><td>21.0</td><td>10.0</td><td>6.0</td></tr></table> |                                                | Year                                                                                                                                                                                                                        | High (\$/MMBtu) | Base (\$/MMBtu) | Low (\$/MMBtu) | 2024 | 4.0 | 4.0 | 4.0 | 2026 | 5.0 | 4.0 | 3.5 | 2028 | 4.0 | 3.5 | 2.5 | 2030 | 4.0 | 3.0 | 2.0 | 2032 | 6.0 | 3.5 | 2.5 | 2034 | 9.0 | 5.0 | 3.0 | 2036 | 11.0 | 6.0 | 3.5 | 2038 | 12.0 | 6.5 | 4.0 | 2040 | 13.0 | 7.0 | 4.5 | 2042 | 14.0 | 7.5 | 4.8 | 2044 | 15.0 | 8.0 | 5.0 | 2046 | 17.0 | 9.0 | 5.2 | 2048 | 19.0 | 9.5 | 5.5 | 2050 | 21.0 | 10.0 | 6.0 |
| Year           | High (\$/MMBtu)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Base (\$/MMBtu)                                | Low (\$/MMBtu)                                                                                                                                                                                                              |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2024           | 4.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.0                                            | 4.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2026           | 5.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 4.0                                            | 3.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2028           | 4.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.5                                            | 2.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2030           | 4.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.0                                            | 2.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2032           | 6.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3.5                                            | 2.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2034           | 9.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5.0                                            | 3.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2036           | 11.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6.0                                            | 3.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2038           | 12.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6.5                                            | 4.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2040           | 13.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.0                                            | 4.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2042           | 14.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 7.5                                            | 4.8                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2044           | 15.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 8.0                                            | 5.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2046           | 17.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9.0                                            | 5.2                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2048           | 19.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9.5                                            | 5.5                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| 2050           | 21.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10.0                                           | 6.0                                                                                                                                                                                                                         |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |
| Model Settings | Capacity Expansion, Production Cost                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Production Cost                                | This is a sensitivity, aka cost-only, run. Thus, EFG uses the fixed resource portfolio from the Base Case capacity expansion run, adjusted the cost assumption above, and re-runs the scenario in the production cost mode. |                 |                 |                |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |     |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |     |     |      |      |      |     |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.

High Gas Capital Cost

| Assumption     | NC EPTF Base Case                   |                       |                   | High Gas Capital Cost | Source & Methodology                                                                                                                                                                                                        |
|----------------|-------------------------------------|-----------------------|-------------------|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Capital Cost   | Resource                            | Original Cost (\$/kW) | High Cost (\$/kW) |                       | In this sensitivity, EFG assessed a capital cost increase of 30 percent for all thermal units built in the Base Case, an agreed-upon level by the subcommittee.                                                             |
|                | Combined Cycle                      | \$2,120               | \$2,756           |                       |                                                                                                                                                                                                                             |
|                | Combustion Turbine                  | \$1,901               | \$2,471           |                       |                                                                                                                                                                                                                             |
|                |                                     |                       |                   |                       |                                                                                                                                                                                                                             |
| Model Settings | Capacity Expansion, Production Cost |                       |                   | Production Cost       | This is a sensitivity, aka cost-only, run. Thus, EFG uses the fixed resource portfolio from the Base Case capacity expansion run, adjusted the cost assumption above, and re-runs the scenario in the production cost mode. |

Unless otherwise noted, all assumptions were presented to the Technical Advisory Subcommittee with opportunity for comment and feedback.