STATE OF NORTH CAROLINA
UTILITIES COMMISSION
RALEIGH

DOCKET NO. E-100, SUB 190

BEFORE THE NORTH CAROLINA UTILITIES COMMISSION

In the Matter of Biennial Consolidated Carbon Plan and Integrated Resource Plans of Duke Energy Carolinas, LLC, and Duke Energy Progress, LLC, Pursuant to N.C.G.S. § 62-110.9 and § 62-110.1(c)	)))))))	**REBUTTAL TESTIMONY OF PHIL STILLMAN, ANDREW TATE, AND CHRIS EDGE ON BEHALF OF DUKE ENERGY CAROLINAS, LLC AND DUKE ENERGY PROGRESS, LLC**

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I. INTRODUCTION AND OVERVIEW

Q. MR. STILLMAN, PLEASE STATE YOUR NAME, BUSINESS ADDRESS AND POSITION WITH DUKE ENERGY CORPORATION.

A. My name is Phillip O. Stillman, and my business address is 525 South Tryon Street, Charlotte, North Carolina 28202. I am employed by Duke Energy Business Services, LLC as Managing Director of Load Forecasting and Corporate Strategic Regulatory Initiatives.

Q. BEFORE INTRODUCING YOURSELF FURTHER, WOULD YOU PLEASE INTRODUCE THE PANEL.

A. Yes. I am appearing on behalf of Duke Energy Carolinas, LLC ("DEC") and Duke Energy Progress, LLC ("DEP" and together with DEC, the "Companies" or "Duke Energy") together with Andrew Tate and Chris Edge on the "Economic Development and Growth Panel." Witnesses Tate and Edge will introduce themselves.

Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

A. I am a graduate of Catawba College, where I received a Bachelor of Arts Degree in Accounting and Business. I have also received a Master of Business Administration degree from the McColl Graduate School of Business at Queens University of Charlotte. I am a certified public accountant licensed in the state of North Carolina.

Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND EXPERIENCE.

A. I began my career with Duke Power Company (now known as Duke Energy Carolinas, LLC, ("DEC")) in 1986 as a staff accountant and have held a variety of positions in the finance, regulatory, and planning organizations. From 1992 to 2004, I served in various roles in the Financial Budgeting, Strategic Planning, and Load Forecasting areas. During this time, I was named Director of Financial Modeling and Load Forecasting. In 2004, I was appointed Director of Financial and Regulatory Accounting. In this role, I was responsible for the general accounting functions and the books and records of DEC. I joined the Rates & Regulatory Department in 2007 as Director of Regulatory Strategy & Research.

Q. WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT POSITION?

A. In 2014, I became Director of Load Forecasting. My responsibilities were expanded in 2020 to include supporting various strategic regulatory initiatives, and I assumed my current role as Managing Director of Load Forecasting and Corporate Strategic Regulatory Initiatives. I oversee the development of the long-term electric load forecasts for each of Duke Energy's electric service territories, as well as the long-term gas forecast for the Ohio and Kentucky operations. I am also responsible for supporting enterprise-wide regulatory initiatives across all of Duke Energy's six electric utility jurisdictions and assisting with the execution of regulatory strategy.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I have testified before this Commission in support of DEC's general rate case proceedings in Docket Nos. E-7, Sub 909, E-7, Sub 989, and E-7, Sub

1026, and recently submitted testimony in DEC's and Duke Energy Progress, LLC's ("DEP" and together with DEC, "Duke Energy" or the "Companies") rate case proceedings in Docket Nos. E-7, Sub 1276 and E-2, Sub 1300, respectively.

Q. MR. TATE, PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION WITH DUKE ENERGY CORPORATION.

A. My name is Andrew Tate, and my business address is 411 Fayetteville Street, Raleigh, NC 27610. I am employed by Duke Energy as Director, Economic Development for North Carolina.

Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

A. I am a graduate of the University of North Carolina at Chapel Hill with a Bachelor of Arts in Management and Society.

Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND EXPERIENCE.

A. My business background is predominantly economic development in North Carolina, starting with the Henderson County Partnership for Economic Development as Project Coordinator in 2002, Executive Director of the Fuquay-Varina Area Chamber of Commerce in 2004, President & CEO of the Henderson County Partnership for Economic Development in 2007 and Vice President of Real Estate for the North Carolina Railroad Company in 2017. I joined Duke Energy as Director, Economic Development for North Carolina in 2021.

Q. WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT POSITION?

A. My responsibilities include managing Duke Energy's North Carolina Economic Development team, which includes four colleagues with specific geographic territories across the state, in addition to working 22 counties in eastern North Carolina. In total, the team works directly with the 83 counties served by the Companies in North Carolina. The Duke Energy North Carolina Economic Development team collaborates with state, regional, and local economic development organizations to encourage projects that bring capital investment and jobs to the communities we serve. We provide electrical expertise, and a comprehensive energy value proposition that includes delivery timelines, service solutions, programs to meet sustainability goals, and site readiness to improve the marketability of industrial product across the state.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. No.

Q. MR. EDGE, PLEASE STATE YOUR NAME, BUSINESS ADDRESS, AND POSITION WITH DUKE ENERGY CORPORATION.

A. My name is Chris Edge, and my business address is 411 Fayetteville Street, Raleigh, NC 27610. I am employed by Duke Energy as Vice President, Large Business Customers.

Q. PLEASE BRIEFLY SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND PROFESSIONAL QUALIFICATIONS.

A. I received a Master of Science and Bachelor of Science degree from North Carolina State University in Aerospace Engineering, and a Master of Business Administration degree from the University of North Carolina at Wilmington.

Q. PLEASE DESCRIBE YOUR BUSINESS BACKGROUND AND EXPERIENCE.

Since joining Duke Energy (previously, Carolina Power & Light) in 1996, I have held various leadership roles with increasing responsibilities in the areas Customer Policy & Strategy, Energy Efficiency, Demand Response, Product Management, Product Development, Product Delivery, Marketing, Business Development, Origination, Emerging Technologies, and Account Management. I briefly interrupted my tenure at Duke Energy between 2000-2005 to become a founding member and executive officer in an energy services company, PowerSecure, which focused on utility product and service offerings in the areas of distributed generation and energy efficiency.

Q. WHAT ARE YOUR RESPONSIBILITIES IN YOUR CURRENT POSITION?

A. My current strategic and operational responsibilities include leading the team that is accountable for developing and maintaining relationships with the company's largest commercial, industrial, governmental, and military customers across Duke Energy's franchise gas and electric footprint including North Carolina, South Carolina, Florida, Kentucky, Ohio, and Indiana. This team consists primarily of account managers who have accountability for a portfolio of customers and are responsible for serving as a single point of

contact on all matters related to their electric service with Duke Energy. The expectation of this team is to achieve a high level of customer satisfaction by developing strong professional relationships, providing electrical expertise, resolving issues, facilitating growth and expansion opportunities, developing strategic plans, promoting DSM/EE and renewable options, and advising on other energy related matters. In addition to the above-mentioned account management function, my current leadership responsibilities also include a team of professionals that provide optional product and service solutions to large business customers in the areas of resiliency and electrical infrastructure.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. I previously testified before this Commission to support Progress Energy Carolinas 2009 Integrated Resource Plan E-100, Sub-124 on matters related to demand side management and energy efficiency.

Q. IS THE PANEL SPONSORING ANY EXHIBITS?

A. Yes. We are providing Duke Energy's confidential response to Public Staff Data Request ("PSDR") 36-4 in this proceeding as Confidential Economic Development and Growth Panel Rebuttal Exhibit 1.

Q. MR. STILLMAN, ON BEHALF OF THE PANEL, PLEASE BRIEFLY SUMMARIZE YOUR REBUTTAL TESTIMONY.

A. This Panel's testimony provides additional context and responses to intervenor testimony – Public Staff witnesses John R. Hinton and Patrick A. Fahey, North Carolina Attorney General's Office ("AGO") witness Edward Burgess (Morpho Strategies, LLC), and Tract Capital Management, LP, ("Tract") witness Ronald

J. Moe (Leidos Engineering, LLC) – on adjustments the Companies made for economic development activity to the 2023 spring load forecast ("2023 Spring Load Forecast") supporting the 2023-2024 Carbon Plan and Integrated Resource Plan ("CPIRP" or the "Plan")[1] and the 2023 fall load forecasts ("Updated 2023 Fall Load Forecast") supporting the January 2024 filing of the Supplemental Planning Analysis or "SPA").[2] Mr. Tate and Mr. Edge, based on their responsibilities in their current positions in economic development and large account management, respectively, will describe and provide context on the rapidly growing and dynamic economic development environment in North Carolina and South Carolina (collectively referred to as "the Carolinas") and how critical it is to reflect the results of economic development adjustments in the Companies' long-term resource plans, and how this will sustain and advance future economic development activities in the Companies' service territories. I will respond to the process and methodology of integrating economic development adjustments into the load forecast,[3] and confirm that the load forecast that includes adjustments for economic develop activity, is reasonable for planning purposes.

[1] CPIRP Appendix D (Table D-11) provides a summary of the total adjustments made as a result of 8 economic development projects integrated into 2023 Spring Load Forecast used as input to the Plan's base modeling.

[2] SPA (Table SPA 2- 2) provides a summary of the total adjustments as a result of the 35 economic development projects integrated into the Updated 2023 Fall Load Forecast used as input to the SPA base modeling.

[3] CPIRP Appendix D at 13-15 and SPA at 14-15.

II. UNPRECEDENTED AND ROBUST LEVEL OF ACTIVITY IN CURRENT CAROLINAS ECONOMIC DEVELOPMENT ENVIRONMENT

Q. MR. TATE, PLEASE DESCRIBE CURRENT ECONOMIC DEVELOPMENT ENVIRONMENT IN THE CAROLINAS.

A. The current economic development environment is unprecedented in terms of the number of new businesses seeking to locate in the Carolinas. North Carolina was named CNBC's Top State for Business[4] back-to-back in 2022 and 2023 (rankings for 2024 will come out in July). The Companies have received inquiries from, and on behalf of, potential customers over the past two years at a scale and pace that is well beyond the Companies' historical experience. These recent inquiries reflect a wide range of activities across the economic development process that progresses, from very early discussions and generic information gathering through the various stages of the site and project development processes, in concert and partnership with local and state economic development entities. One need only read the headlines to be aware of the substantial number of new businesses publicly announcing plans to locate to the state and breaking ground on substantial new manufacturing and other facilities, some examples of which are described further below in this testimony.

Since the 2023 Spring Load Forecast was developed, (which served as the basis for the initial CPIRP filing), the Companies have seen continued significant and rapidly developing activity of all types across the economic

[4] With a world-class workforce and a booming economy, North Carolina repeats as America's Top State for Business in 2023 (July 11, 2023) *available at* https://www.cnbc.com/2023/07/11/north-carolina-is-top-state-for-business-led-by-workforce-economy-.html.

development process. Potential new large customer loads include manufacturers, the electric transportation industry, and data centers, with some projects seeking service for projected loads in excess of 100 to 500 megawatts ("MW"). Many of these projects are very high load factor customers with 24x7x365 operations that will require substantial generation and constant energy delivery to ensure reliable service.

Q. MR. EDGE, HOW DOES THIS ENVIRONMENT COMPARE TO THE COMPANIES' EXPERIENCE IN RECENT HISTORY (OVER THE LAST 20 YEARS)?

A. In my role as Vice President of Large Business Customers, I can attest that this level of activity for energy intensive projects is unprecedented when comparing to the past 20 years. Working in concert and partnership with local and state economic development entities, the Companies continue to see significant activity well beyond the Companies' historical experience.

The size, scale and speed of economic development of mega-projects has dramatically increased over the past two years. Duke Energy has played a critical role in partnering with local and state economic development entities to ensure the successful recruitment of these highly competitive mega-projects to the Companies' service areas. In the past 20 years, and even up to just a few years ago, a large project would have been five to ten MW and those projects would have been a rare occurrence. Now we are routinely hearing from businesses that are inquiring about needs over 20 or 50 MW, or even loads of 100 MW and greater. As detailed further below, a number of these projects have

continued to move forward toward construction and commercial operation.

Q. WHAT FACTORS ARE INFLUENCING THIS ENVIRONMENT?

A. There are two primary factors contributing to the robust economic development environment, both of which have been broadly covered by both industry analysts and media. The first factor is federal policies such as the Infrastructure Investment and Jobs Act, the Inflation Reduction Act, and the Creating Helpful Incentives to Produce Semiconductors and Science Act ("CHIPS"), which are incenting a variety of industries, the electrification of transportation, and the onshoring of manufacturing in the U.S.—of which North Carolina's local and state economic development agencies are capitalizing. In addition to expansion of industries such as life sciences, food and beverage and general manufacturing that have previously located in North Carolina, these federal policies have created needs for a diverse set of energy-intensive and high-load factor industries, including mining, semiconductor, battery, and electric transportation manufacturing. Public Staff witnesses Hinton and Fahey noted that there is strong industry interest in locating to the Carolinas "due, in part, to efforts by the Economic Development Partnership of NC and federal legislation such as the clean energy provisions in the Inflation Reduction Act ("IRA") and the CHIPS."[5] The second factor is the growth of energy-intensive artificial intelligence and advanced computing needs.

A recent EFI Foundation report from a workshop consisting of senior level leaders across the electric industry confirmed these economic

[5] Public Staff Hinton and Fahey Direct Testimony at 5.

development factors noted above and found that load growth is likely to accelerate with recent projections likely being underestimated – thus effectively ending the era of flat demand for the foreseeable future.[6] The growth of energy needs to support burgeoning artificial intelligence processing and advanced computing operations is being closely followed by industry analysts. The International Energy Agency ("IEA") reports that U.S. data center demand is expected to grow from 4% of the U.S. electricity demand in 2022 to 6% by 2026, and that energy demand driven by digitalization (data centers, cryptocurrencies, and artificial intelligence) is the largest source of demand growth world-wide.[7] A recent Electric Power Research Institute ("EPRI") white paper analyzing U.S. artificial intelligence and data center energy demand assessed that data centers consumption will certainly increase and in some scenarios could double their current annual electric consumption by 2030, with new hyper-scale data centers significantly growing in size (100 and up to 1,000 MW) and many data centers now co-locating and sharing energy and other infrastructure.[8]

Q. HOW ARE THE COMPANIES FACILITATING NEW ECONOMIC DEVELOPMENT PROJECTS IN THE CAROLINAS?

[6] EFI Foundation, under the leadership of Ernest J. Moniz, the 13th U.S. Secretary of Energy, conducted a workshop with senior leaders across the electric industry including policy makers, nongovernmental organizations, system operators and utilities, customer representatives that addressed the relationship between meeting increased electricity demand and maintaining reliability while achieving decarbonization targets. EFI Foundation, Managing Unprecedented Electricity Demand Growth on the Path to Net Zero Emissions (Apr. 2024).

[7] IEA, Electricity 2024: Analysis and Forecast to 2026, International Energy Agency (Jan. 2024), *available at* https://www.iea.org/reports/electricity-2024.

[8] EPRI, Powering Intelligence: Analyzing Artificial Intelligence and Data Center Energy Consumption, EPRI (May 2024), *available at* https://www.epri.com/research/products/3002028905.

A. First of all, our facilitation is necessary because we have an obligation to serve customers coming to our service territory. Second, while it is our duty to serve, it is also our opportunity to continue to partner with the states for continued growth and prosperity.

The economic development process for new large load customers typically progresses from very early discussions and generic information gathering through the various stages of the site and project development processes, in concert and partnership with local and state economic development entities. Because the economic development process is competitive and numerous factors introduce uncertainty and can impact whether a large load addition will actually come to fruition, the Companies do not consider the new large load "likely" until the customer has either signed an agreement or is in the late-stage discussions of signing an agreement to procure electric service. As a result, there is no "typical" timing for the Companies becoming aware of potential new customer large load additions and it can vary greatly from a few months to a year or more prior to the customer selecting a site in the Companies' service territories, and often several years before the delivery is constructed and the facility begins operations.

Q. HAS THE COMPANIES' ROLE IN FACILITATING NEW ECONOMIC DEVELOPMENT PROJECTS IN THE CAROLINAS EVOLVED IN RECENT YEARS?

A. Yes. In recent years, Duke Energy's voice has become more important than ever before as companies look to locate in the Carolinas given that the

Companies must ensure that we can continue to reliably serve our existing customers while accommodating new projects. In general, the Companies take the following steps to fulfill our service obligations to customers locating facilities in the Companies' respective service territories:

- The Company and a Customer engage over a prospective new project, where energy is one element of the solution necessary to secure the competitive project.
- Duke Energy evaluates the ability to serve said load at the location(s) that the Customer is considering and within the timeframe requested.
- Once a location and timeframe are agreeable to both parties, a Letter Agreement ("LA") is executed by both parties formalizing the location, size, and nature of the load and the load ramp timing
- Execution of the LA commits the customer to reimburse Duke Energy for money spent designing and constructing facilities on behalf of the customer if the facilities are subsequently not used due to the customer not taking service, the load is reduced such that the facilities were overbuilt, or if the customer fails to enter into an Electric Service Agreement ("ESA") in a timely manner once the delivery is ready for energization.
- The Company and the Customer then develop detailed designs for the delivery of power to the customer, initiate equipment and material procurement, and construct the delivery.
- Prior to the service being energized, an ESA is executed by the

Customer and the Company detailing the service provided, the Rate Tariff and any Riders in effect, any Extra Facilities provided and their associated costs and the term of the ESA agreement.

Q. HOW DO YOU RESPOND TO THE ALLEGATIONS THAT PROSPECTIVE ECONOMIC DEVELOPMENT CUSTOMER'S LOAD MAY NOT MATERIALIZE?

A. There will always be some element of uncertainty regarding the actual materialization rate for any single new customers, as multiple external factors beyond the control of the Companies and Customer have the potential to impact a customer's decisions. However, that fact misses the bigger picture. First, as described further below, the Companies have taken a conservative approach to forecasting and have only included the subset of projects that have an executed agreement indicating an intention to obtain service from the Companies or are in an advanced stage of engagement and have generally made commitments. While changes may still (and do) occur, these projects are mature enough that the Companies must begin to plan on providing electric service to these entities, per the Companies' obligation. In other words, given the Companies' obligation to serve new customers, it would be unreasonable not to plan for such customers at such an advanced stage in the process. Additionally, as Mr. Stillman will describe below, an additional discount to projected load will be applied before including these projects in the forecast that is to be used for planning purposes. Second and perhaps more importantly, the fact that any single customer may not materialize or may reduce its projected energy needs over time does not

alter the fact that there remains a robust pipeline of new projects inquiring about service in the Companies' service territory, as described in Confidential Exhibit 1. Generally speaking, there are several customers engaging with the Companies for future service which will ensure continuity of the pipeline should a specific project fail to materialize.

Q. PLEASE ELABORATE ON HOW THE COMPANIES COLLABORATE WITH LOCAL, REGIONAL AND STATE ECONOMIC DEVELOPMENT ENTITIES.

A. The Companies' Economic Development team members are engaged by state, regional and local economic development organizations when a project opportunity materializes that needs or can benefit from electric utility information, most often in a competitive process. The Companies' Economic Development team is an imbedded partner working to help seize economic development opportunities that create jobs and taxable investment in the communities served by the Companies. The Companies' Economic Development team provides electrical expertise and a comprehensive energy value proposition that includes the Site Readiness program, project specific energy delivery and timeline solutions, clean energy solutions, pricing and economic development rider estimates, and an understanding of the Companies' direction and growth through the resource plan and generation mix. The state and communities depend on economic growth, and the availability of electricity plays an increasingly significant role.

Q. HOW DO THE COMPANIES ACCOMMODATE REQUESTS FROM EXISTING CUSTOMERS TO EXPAND OPERATIONS IN THE CAROLINAS?

A. Existing customers make the Companies aware of their potential large load addition expansion plans on a varied timeline that can range from a few months or a year or more in advance of the new customer load being added. The expansions in existing locations are often competitive projects considering many sites outside of the Companies' service territory. The Large Account Management team has strong relationships with existing customers and that can lead to growth and expansion of existing customers. Large load additions often require the construction of additional distribution and/or transmission facilities that must be completed in order to serve the new customer load and coordination between the Companies and customers as to timing is important.

Q. WHAT ARE EXAMPLES OF THE COMPANIES' ROLES THAT FACILITATES NEW AND EXPANDING ECONOMIC DEVELOPMENT IN NORTH CAROLINA?

A. **[BEGIN CONFIDENTIAL]** [redacted]

[redacted]

[redacted]

[END CONFIDENTIAL]

[redacted]

Q. PLEASE SUMMARIZE THE COMPANIES' ROLE IN THE ECONOMIC DEVELOPMENT PROCESS.

A. The Companies serve as increasingly crucial partners in the economic development process and are proud to play a critical role in attracting and retaining business in the state, which is in step with the policies and expectations of our states' leaders and policy makers. As the examples above demonstrate, the Companies are not passive participants but instead actively contribute at every step of the process. And as the energy intensiveness of the businesses grow, the Companies' role is even more critical in terms of both engaging in the economic development process and then meeting the Companies' obligation to serve customers' electric service needs in their service territories.

Q. DID ANY INTERVENORS ACKNOWLEDGE THIS CHANGING ENVIRONMENT WITH UNPRECEDENTED LEVELS OF ECONOMIC DEVELOPMENT?

A. Yes. Public Staff witnesses Hinton and Fahey noted "there is a heightened level of interest from industries locating to North Carolina that is beyond previous historical levels of economic development."[13] AGO witness Burgess states in relation to the increased load forecast due to new large load customers across various sectors such as manufacturing, electric transportation, and advanced computing that "[t]here is no doubt that there has been significant recent growth in these sectors across the US, and this may also be having a material impact on

[13] Public Staff Hinton and Fahey Direct Testimony at 5.

Duke's load forecast."[14] Tract witness Moe testifies that "a material number of sponsors of Large Site Developments" have had discussions with the Companies on interconnecting future large loads, indicating an economic development environment growth "phenomenon" different than what the Companies have experienced in recent history.[15] Further, witness Moe confirms Tract's own expectation of high load factor data center development in the Companies' service territories, "assuming the Companies can supply the required electricity" of 500 MW by 2032 and 2,500 MW by the mid-2030's.[16]

Q. PLEASE EXPLAIN THE IMPORTANCE OF THE COMPANIES' LONG-TERM RESOURCE PLANS TO ECONOMIC DEVELOPMENT FOR CURRENT AND POTENTIAL FUTURE LARGE CUSTOMERS.

A. The Companies devote resources to promoting and enabling the long-term economic prosperity of the region, including working with state and local economic development partners to attract new industries and businesses to the area and partnering with these incoming companies to plan for their energy needs as they connect with employees and customers. And, as explained above, the Companies take very seriously their obligation to serve new customers looking to locate in their service areas, or existing customers looking to grow in Duke Energy's service areas. The Companies' investment in new generation is critical to support the vigorous and healthy economy which has been

[14] AGO Burgess Direct Testimony at 20.

[15] Tract Moe Direct Testimony at 10.

[16] Tract Moe Direct Testimony at 3.

cultivated in part due to the team effort of Economic Development and many organizations across the state. Prospective companies considering a location in the Carolinas routinely request insight into the Companies' resource planning efforts, as well as existing and possible generation mix over time.

Q. HOW DO YOU RESPOND TO UNCERTAINTY OF THE ECONOMIC DEVELOPMENT ACTIVITIES AND LARGE SITE DEVELOPMENTS INTEGRATED INTO THE LOAD FORECAST, POTENTIALLY OVERESTIMATING THE FORECAST RAISED BY PUBLIC STAFF[17] AND AGO[18] OR UNDERESTIMATING THE FORECAST RAISED BY TRACT?[19]

A. The Economic Development and Large Account Management Teams are directly part of that process and have confidence that the information regarding large site developments and how it is used to inform the load forecast is reasonable for planning purposes. The process focuses on criteria that establishes a commitment level from large site development projects, of which the respective teams have direct knowledge, prior to integrating such project information into the load forecast process. The criteria for that commitment level are an executed agreement indicating an intention to obtain service from the Companies or are in an advanced stage of engagement with the Companies for the same and demonstrated other indicia of material development activities with respect to the location in question (*e.g.*, obtaining site control, initiation of

[17] Public Staff Hinton and Fahey Direct Testimony at 22-25.

[18] AGO Burgess Direct Testimony at 69-70.

[19] Tract Moe Direct Testimony at 3-4 and 10-16.

rezoning activities, *etc.*). "Advanced stages of engagement" means the economic development project customer has not yet signed an agreement indicating intention to obtain service from the Companies, however they are in active negotiations with the Companies on details of such an agreement while also exhibiting commitment through specific actions such as obtaining formal site control, conducting site preparation or pre-construction activities, or pursuing rezoning.

Additionally, the robust pipeline of potential projects beyond those that met established commitment criteria were also considered in the Updated 2023 Fall Load Forecast used for the purposes of developing a "Continued Economic Development" high load modeling sensitivity analysis in the SPA. This is important as an indicator of the depth and robustness of the potential economic development project pipeline and inquiries that the Companies' teams manage on a daily basis. As discussed above, while the Companies focus on committed projects for inclusion in the load forecast process, there is never full certainty that a project will materialize exactly as expected and project scopes can change over time. However, the depth of the pipeline beyond the projects that meet commitment criteria to be included in the load forecast indicates that there is significant demand for excellent sites in North Carolina that meet the criteria of industries and businesses to operate and expand. The Companies see this depth and level of inquiry in the teams' daily work with new prospective customers and discussions with existing customers. Economic development is dynamic by nature, therefore, the Economic Development and Large Account Management

Teams' direct involvement with the Load Forecasting team to integrate first-hand economic development information into the load forecasting process is essential to informing the critical power supply needs of industries and businesses seeking to locate or expand in North Carolina.

III. MATERIAL CHANGES TO THE ECONOMIC DEVELOPMENT ENVIRONMENT NECESSITATES RESPONSIVE CHANGES TO THE LOAD FORECAST

Q. MR. STILLMAN, ARE FORECAST ADJUSTMENTS NECESSARY TO CAPTURE THE UNPRECEDENTED LEVEL OF ECONOMIC DEVELOPMENT DESCRIBED BY MR. TATE AND MR. EDGE?

A. Yes. As noted by Public Staff witnesses Hinton and Fahey, the process to develop the underlying forecast before consideration of the large economic development loads is a process that has "generated forecasts that are reasonable for planning purposes."[20] However, given the size of the load additions, and the speed in which these companies have shown an interest in locating and expanding in the Carolinas, special adjustments to the forecast are needed to capture these anticipated additions.

Q. HAVE OTHER PUBLIC UTILITIES HAD TO RECOGNIZE SIMILAR LARGE LOAD ADDITIONS TO THEIR FORECASTING PROCESS?

A. Yes. While the Carolinas have been widely recognized for their economic development success as mentioned earlier by Mr. Tate, from a broader lens, the Carolinas are not the only states across the country experiencing a sharp upturn in electric load growth stemming from economic development. Examples of

[20] Public Staff Hinton and Fahey Direct Testimony at 7.

similar expected growth in the southeast region of the U.S. can be seen in the recent integrated plan filings from Georgia Power[21] and Dominion Virginia,[22] and reporting from TVA.[23]

Q. WHAT PROCESSES DID YOU IMPLEMENT TO TRACK THESE LARGE LOAD ADDITIONS?

A. As activity accelerated in mid-2023, the Economic Development, Large Account Management and Load Forecasting teams began meeting more regularly in order to share timely updates regarding the many projects being tracked. These updates included sharing the stage in which talks were ongoing with the multiple projects, the likelihood of each project to ultimately select expansion in the Companies' service territory, and the expected timing of the load ramp. While these conversations had been ongoing for many years, the number, speed, and size of the projects under consideration required more frequent conversations, and a more formal format to share this information.

Q. CAN YOU DESCRIBE THE PROCESS FOLLOWED TO INCORPORATE THESE LARGE LOAD ADDITIONS IN THE FORECAST?

A. As described in Appendix D of the CPIRP, care had to be taken to balance these additions between (1) adding too much load considering both the uncertain,

[21] Georgia Power Company's 2023 Integrated Resource Plan Update, Docket No. 55378 (Sept. 6, 2023).

[22] Virginia Electric and Power Company - 2023 Integrated Resource Plan filing pursuant to Va. Code section 56-597, *et seq*. Case No. PUR-2023-00066 (May 4, 2023).

[23] In preparation for the next update of their long-term power plan, TVA projected energy demand annual growth of 0.8% over next decade, higher than flat growth over past decade. See "TVA projects faster power growth in the future", Chattanooga Times Free Press (Dec. 14, 2023).

future-oriented nature of the plans and the risk of double counting with growth predicted by the statistical modeling with the macroeconomic measures, or (2) adding too little load given the policy trends which are incentivizing the onshoring of manufacturing and supporting rapid expansion of infrastructure for cloud computing and artificial intelligence.

To achieve this balancing act, the Companies first classified the projects according to their likelihood to establish service in Duke Energy's service territory. As described by Mr. Tate, only those projects where a customer commitment in the form of an executed agreement, or where the negotiations with the customer were in the advanced stages of engagement, were considered for inclusion in the forecast.

Next, project timing had to be determined. Based on conversations with the customer and institutional knowledge, the timing of each project taking electric service was determined. This detailed, project-by-project analysis resulted in a "full load expectation" of the projects, with the focus on projects with the potential to add 20 MW or more to the system.

Finally, at the portfolio level (*i.e.*, considering the sum-total of all the estimates for projects with material commitments), a discount was applied to address the project location uncertainty, project timing uncertainty, and the possibility of double counting the growth expected in the base forecast.

Q. FOLLOWING THE PROCESS, YOU JUST DESCRIBED, WHAT ARE THE DISCOUNTS YOU APPLIED TO THE ANTICIPATED LARGE LOAD ADDITIONS?

A. In the SPA filing, the Companies began with the "full load expectation" described above and applied to the entire portfolio of projects discounts that amounted to roughly 50% in the earlier years and tapered off to roughly 20% by 2033. It should be emphasized that this discounting was done at the total portfolio level for each jurisdiction, and that focusing on any individual project may produce a different schedule depending on that project's individual timing or circumstances.

Q. WITNESSES HINTON AND FAHEY POINT OUT THAT SOME OF THE PROSPECTIVE LARGE LOAD CUSTOMERS HAVE REDUCED THEIR EXPECTED LOAD ESTIMATES SINCE THE LOAD FORECAST IN THE SPA WAS DEVELOPED."[24] DOES THIS INDICATE THAT THE LARGE LOAD ADDITIONS INCLUDED IN THE FORECAST WAS OVERSTATED?

A. Not at all. As mentioned above, the discounting process employed by the Companies was in anticipation of project delays and timing refinements to these project estimates. Additionally, while many projects were reduced, some projects increased estimates and new projects have emerged. To demonstrate this, I have combined the information displayed in witness Hinton and Fahey's testimony Figures 5 and 6 ("Large Load Energy Forecast" [displayed at full

[24] Public Staff Hinton and Fahey Direct Testimony at 11.

load expectations])[25] with Figures 9 and 10 ("Adjusted and Client Energy Sales" [or the scaled or discounted load included in the forecast])[26]. I also added the May 1st update provided as a response to data request PSDR 36-4, which is Confidential Exhibit 1.

These figures show that as of May 1st, DEC's full load expectation (Figure 1) is now higher than what was originally expected, and well above the discounted amount that was included in the SPA forecast. DEP's full load expectation (Figure 2) has decreased to a level that is currently below the discounted levels included in the SPA. When looking at the total portfolio of projects across DEC and DEP, (Figure 3) the full load expectation over the planning horizon remains similar to the original SPA estimates, and the discounted load included in the SPA filing still captures the appropriate anticipated load accounting for project uncertainty and double counting.

[25] Public Staff Hinton and Fahey Direct Testimony at 15.

[26] Public Staff Hinton and Fahey Direct Testimony at 24-25.

Figure 1: DEC Economic Development Forecasts

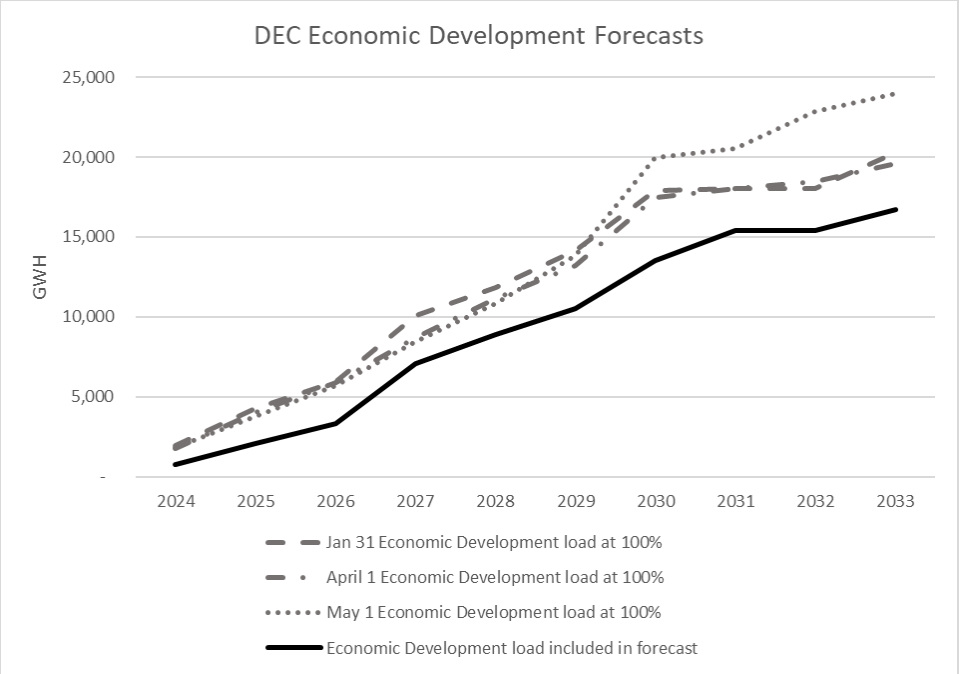


Figure 2: DEP Economic Development Forecasts

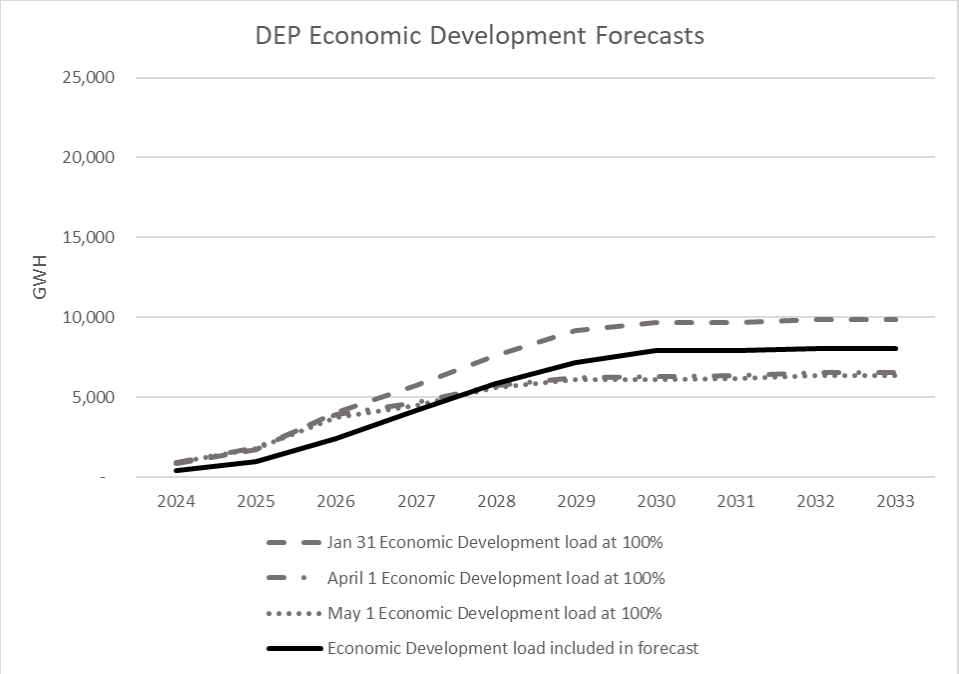
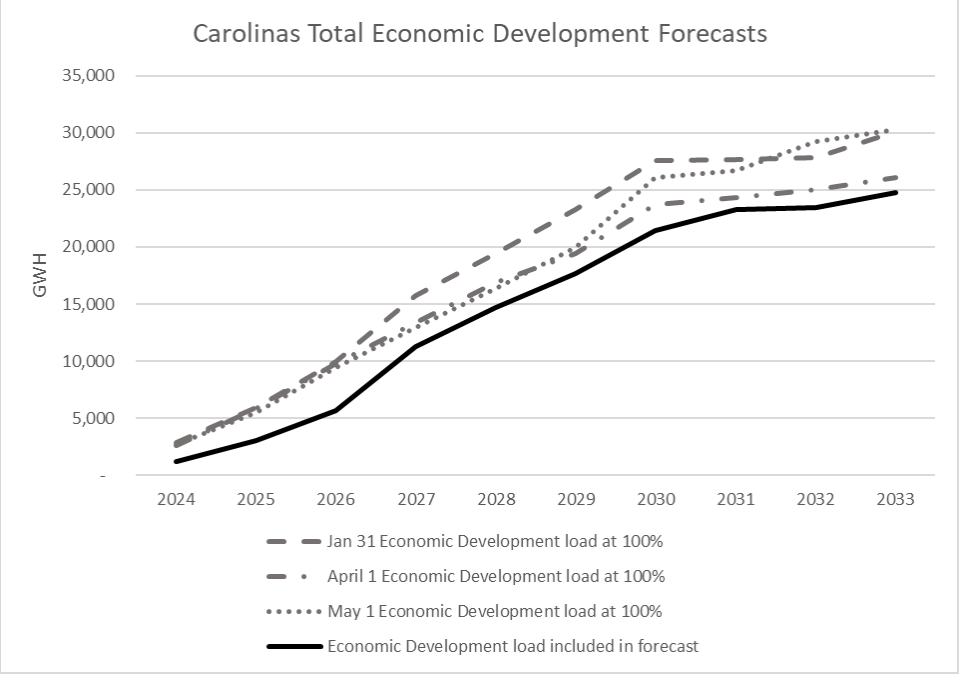


Figure 3: DEC and DEP Combined Economic Development Forecasts



IV. LOAD FORECAST IS REASONABLE FOR PLANNING PURPOSES AND EXISTING CHECK AND ADJUST PROCESSES CAN SERVE TO ADDRESS NEEDS FOR FUTURE UPDATES

Q. DID ANY INTERVENORS SUGGEST ALTERNATE LOAD FORECASTS TO USE FOR MODELING PURPOSES?

A. Yes. Witnesses Hinton and Fahey developed an alternative load forecast using a modified methodology that begins with the forecast from the 2022 Carbon Plan,[27] that is then used by Public Staff witness Thomas as input to a lower load forecast modeling sensitivity.[28] While witnesses Hinton and Fahey offer an alternate forecast, witness Thomas used the Companies' Updated 2023 Fall Load Forecast including economic development adjustments to develop all their base modeling scenarios.

Tract Witness Moe suggests that the Updated 2023 Fall Load Forecast developed by the Companies as an input to a higher Continued Economic Development load forecast modeling sensitivity in the SPA should be used by the Companies for base case modeling purposes given the information the Companies had about Large Site Developments at the time.[29]

Q. HOW ARE THE PIPELINE OF ADDITIONAL PROJECTS USED TO DEVELOP THE CONTINUED ECONOMIC DEVELOPMENT FORECAST INFORMING THE LOAD FORECAST?

[27] Public Staff Hinton and Fahey Direct Testimony at 25-29.

[28] Public Staff Thomas Direct Testimony at 119-120.

[29] Tract Moe Direct Testimony at 4, 16-17.

A. The Updated 2023 Fall Load Forecast (or "high scenario") was developed for the SPA using actual projects that are being worked by the Economic Development and Large Account Management Teams. At the time of the SPA filing, these were merely projects that were not yet mature enough and had not met the commitment criteria outlined in the methodology described above to include in the base forecast. Since that time, some of these projects have now executed agreements and have been incorporated in the May 1st update provided in response to PSDR 36-4 and shown in the above figures. The Companies will continue to monitor the progress of these 35 to 40 projects (as well as other projects that emerge) and include in future forecasts once they meet the required commitment criteria and become certain enough to include.

Q. WITNESSES HINTON AND FAHEY RECOMMEND THAT "THE COMPANIES CONSIDER USING ADVANCED PREDICTIVE METHODS . . . THAT ARE FORWARD LOOKING AND USE PROBABILITIES THAT EXPLICITLY ACCOUNT FOR POSSIBLE PROJECT CANCELATIONS, DELAYS, AND OTHER FORMS OF UNCERTAINTY, SUCH AS A MONTE CARLO SIMULATION SIMILAR TO THE ONE EMPLOYED BY GEORGIA POWER."[30] DO YOU FEEL THIS WOULD ENHANCE THE COMPANIES' FORECASTS?

A. No. As I understand the process that Georgia Power used, many of the steps that I detailed above accomplish many of the same processes used by Georgia Power

[30] Public Staff Hinton and Fahey Direct Testimony at 30.

in their Load Realization Model ("LRM"). Based on filed testimony, there also appear to be some variations in the process that would likely increase the Companies' economic development expectations that were incorporated in the forecast. This includes the LRM model considering less mature projects that the Companies only included in the high case.[31] The process I describe above follows the basic structure of Georgia Power's LRM—by starting from a load projection and assigning the likelihood of development to that project—and is informed by the customer and company experts which leads to a more informed forecast. Additionally, as described above, routine updates are shared amongst the Economic Development, Large Account Management, and Forecasting teams allowing the Companies to routinely weigh project updates and check/adjust the forecasting methodology.[32] So if, or when, additional information comes to light that makes a persuasive case for a change, it can be incorporated into subsequent plans.

Q. WHAT IS YOUR RESPONSE TO INTERVENOR SUGGESTIONS FOR LOAD FORECASTING METHODOLOGY CHANGES? [33]

A. The Companies always look to evaluate forecasting methodologies and the experience of peers for best practices and integrate changes as appropriate. We

[31] *See* detailed review and critique of the Load Realization Model assumptions and approach, particularly regarding assumptions on project success and treatment by industry sector, by the Georgia Public Service Commission Public Interest and Advocacy Staff, Direct Testimony and Exhibits of Robert L. Trokey, Kathellen A. Kelly, and Karan A Pol at 19-33, Georgia Power Company's 2023 Integrated Resource Plan Update, Docket No. 55378 (filed Oct. 2023).

[32] CPIRP Chapter 4 at 38.

[33] Public Staff Hinton and Fahey Direct Testimony at 30-31; AGO Burgess Direct Testimony at 76-77; SACE et al. Wilson Direct Testimony at 11.

view these continuous improvement activities as essential to providing the most suitable forecast for planning purposes.

The Companies' Grid Edge and Customer Programs Panel have included specific responses to Southern Alliance for Clean Energy, the Sierra Club, and the Natural Resources Defense Council ("SACE et al.") witness James F. Wilson's (Wilson Energy Economics) suggestions regarding differentiating customers and specific customer tariff provisions.

Q. WHAT IS YOUR RESPONSE TO INTERVENOR SUGGESTIONS TO INCLUDE AS PART OF THE LOAD FORECASTING PROCESS INDEPENDENT FORECASTERS OR INDEPENDENT EVALUATIONS OF FORECASTED LOAD?[34]

A. The Companies believe that involving an independent entity along with the timely input of our Economic Development and Large Account Management teams would not add value and would likely only lengthen the timeline for producing these forecast products. Forecasting load is a core utility function and the Companies utilize the most current and cutting-edge tools and methodologies available. None of parties offering such recommendations have offered any evidence based on the described procedures to establish that a third party would have any superior ability to accurately forecast load. And, further, the CPIRP itself serves as the forum in which the Companies' load forecast is subject to independent third-party review—it is not clear why further third-party review is needed or what value it would provide. The Economic

[34] AGO Burgess Direct Testimony at 76-77 and SACE et al. Wilson Direct Testimony at 11.

Development and Large Account Management teams are already working directly with economic development projects, potential, new, and existing customers to help inform our data, and as I mentioned a formal process has been established to share more timely and more complete updates regarding project additions and changes. The Companies are confident in their methodologies and approach and believe that third party involvement would impose substantial additional costs and reduce efficiency while not providing any material improvement in accuracy. Additionally, Public Staff witnesses Hinton and Fahey noted in their testimony that the Companies' process for developing the underlying forecast before consideration of the large economic development loads has "generated forecasts that are reasonable for planning purposes."[35]

Q. IS THE UPDATED 2023 FALL LOAD FORECAST, INCLUDING THE ECONOMIC DEVELOPMENT ADJUSTMENTS, REASONABLE FOR PLANNING PURPOSES OF THIS CPIRP?

A. Yes. The Companies stand by their load forecast, which we view as expressing a reasonable center path through a range of possible futures for demand and energy in the Companies' service territories. While noting Tract witness Moe's statement regarding the base load forecast that "the Companies executed the methodology as well as or better than any of their peers whose load forecasts I have reviewed,"[36] the Companies welcome the feedback that has been provided as part of this proceeding, including much that has been positive, and re-affirm a

[35] Public Staff Hinton and Fahey Direct Testimony at 7.

[36] Tract Moe Direct Testimony at 6.

commitment to continuous improvement in this process as new data and methods are made available for evaluation. The ample stable of projects at a preliminary stage makes the Companies more confident in the longer-horizon forecasts, as they are tied to specific sites that can be developed by future customers if there is a revision in plans.

Q. WHAT IS YOUR RESPONSE TO PUBLIC STAFF'S SUGGESTION OF QUARTERLY REPORTING ON ECONOMIC DEVELOPMENT ACTIVITY RELATED TO LOAD FORECASTS?

A. Additional quarterly reporting is unnecessary and would impose additional costs without commensurate benefit. The biennial nature of the CPIRP already provides ample opportunities to check and adjust the load forecast on a reasonable timeframe. If rapid material changes to the load forecast occur between any of these updates, prompted by economic development activities or other factors, these updates can be addressed with off-cycle updates (relying on our check/adjust philosophy described on page 38 of Ch. 4) and notifications similar to how the development of the SPA was prompted based on the Updated 2023 Fall Load Forecast.

V. INTEGRATING ECONOMIC DEVELOPMENT INTO LONG-TERM RESOURCE PLANS IS CRITICAL TO SUPPORTING CURRENT AND ADVANCING FUTURE ECONOMIC DEVELOPMENT ACTIVITY

Q. MR. TATE, WHAT ARE YOUR PERSPECTIVES ON MR. STILLMAN'S TESTIMONY ON THE NEED FOR ECONOMIC DEVELOPMENT ADJUSTMENTS AND CURRENT SUPPORTING DATA IN LOAD FORECASTS?

A. As stated earlier in testimony, historical changes in the level and depth of economic development activity in North Carolina that accelerated in 2022 and that the Companies are continuing to experience first-hand prompts a need for load forecasting to respond – and both our Economic Development and Large Account Management teams are directly involved with the Load Forecasting team in that process. The development of the Updated 2023 Load Forecast and SPA that integrates significant and rapidly emerging economic development activity is appropriate and necessary to inform the Companies, potential customers, stakeholders, regulators, and policy makers on the resources needed to support this vibrant and growing state.

Q. HOW HAVE THE LARGE SITE DEVELOPMENT PROJECTS INTEGRATED INTO THE LOAD FORECAST CHANGED SINCE THE SPA FILING?

A. As mentioned earlier, the economic development environment and related projects integrated into the load forecast are dynamic in nature. Mr. Stillman pointed out in Figures 1 through 3 how those projects with greater certainty have changed since the filing of the SPA. As of the Companies' update response to PSDR 36-4, which tracked updates as of May 1st, while there have been additions and subtractions, Figure 3 shows that in total, we still expect a similar level of additions as we did at the time we filed the SPA. On balance, the overall level of economic development activity continues on a consistent level as projects previously in earlier stages of development have since moved to later stages of commitment.

Q. HAS THE ECONOMIC DEVELOPMENT ENVIRONMENT IN THE CAROLINAS CONTINUED TO BE ROBUST WITH SIGNIFICANT LEVELS OF ACTIVITY SINCE THE SPA FILING?

A. Yes. The level of economic development activity in the Carolinas continues to be robust.

Q. WHAT ARE THE IMPLICATIONS FOR ECONOMIC DEVELOPMENT IF THE COMPANIES' LONG-TERM RESOURCE PLANS DO NOT SUPPORT LOAD GROWTH THAT INCLUDES ECONOMIC DEVELOPMENT AS FORECASTED?

A. The implications from the perspective of economic development will be that potential for growth in jobs and taxable capital investment from new and expanded opportunities will shift away from the Carolinas and the environment will shrink as rapidly as it has expanded in the past couple years. Per CNBC, business and the economy in North Carolina have been on a tear since the pandemic, and the state has scarcely looked back. 2023 was the second consecutive year that CNBC selected NC as America's Top State for Business—a rare feat in the study, which launched in 2007.[37] The Companies need a long-term resource plan that supports the generation capacity to meet the economic development forecasted load growth locating in the Companies' service territories that we are obligated to serve. This ensures that the state remains competitive and "open for business."

[37] With a world-class workforce and a booming economy, North Carolina repeats as America's Top State for Business in 2023 (July 11, 2023), CNBC, *available at* https://www.cnbc.com/2023/07/11/north-carolina-is-top-state-for-business-led-by-workforce-economy-.html.

Q. DOES THIS CONCLUDE THE PANEL'S REBUTTAL TESTIMONY?

A. Yes.

Economic Development and Growth Panel Rebuttal Exhibit 1 Has been Filed with the Commission Under Seal

Duke Energy Carolinas, LLC
Duke Energy Progress, LLC
Docket No. E-100, Sub 190