BEFORE
THE NORTH CAROLINA UTILITIES COMMISSION

DOCKET NO. E-7, SUB 1276

In the Matter of:	)	
	)	
Application of Duke Energy Carolinas, LLC For Adjustment of Rates and Charges Applicable to Electric Service in North Carolina and Performance-Based Regulation	)))))	**DIRECT TESTIMONY OF BRYAN P. WALSH FOR DUKE ENERGY CAROLINAS, LLC**

I. INTRODUCTION AND OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Bryan P. Walsh and my business address is 526 South Church Street, Charlotte, North Carolina.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am Vice President of Central Operational Services and Oversight for Duke Energy Business Services, LLC ("DEBS"). DEBS is a service company subsidiary of Duke Energy Corporation ("Duke Energy") that provides services to Duke Energy and its subsidiaries, including Duke Energy Carolinas, LLC ("DEC" or the "Company") and Duke Energy Progress, LLC ("DEP").

Q. WHAT ARE YOUR DUTIES AS VICE PRESIDENT OF CENTRAL OPERATIONAL SERVICES AND OVERSIGHT?

A. In this role, I am responsible for providing engineering, environmental compliance planning, technical services, and maintenance services, for Duke Energy's fleet of fossil, hydroelectric, and solar (collectively, "Fossil/Hydro/Solar") facilities.

Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL BACKGROUND.

A. I graduated from The Catholic University of America with a Bachelor of Mechanical Engineering degree. I also graduated from the Georgia Institute of Technology with a Master of Science in Mechanical Engineering. I am a registered Professional Engineer in the State of North Carolina. My career with Duke Energy began as part of Duke/Fluor Daniel in 1999 as an associate engineer assisting in the design and commissioning of new combined-cycle power plants. I transferred to Duke Power in 2003 and worked in the Technical Services group for Fossil-Hydro. Since that time, I have held various roles of increasing responsibility in the generation engineering, operations areas, and project management, including the role of technical manager at DEC's Marshall Steam Station, and also station manager at Duke Energy Indiana's Gallagher Station & Markland Hydro Station. I was also the Midwest Regional Manager from 2012 to 2015, with overall responsibility for the Midwest Gas Turbine Fleet and various coal-fired facilities in Indiana and Kentucky. During my time in the Midwest, I also served as Chairman of the Indiana Energy Association's Power Production Committee, which brought together Duke Energy and peer utilities Vectren, NIPSCO, AEP, and IP&L for operational experience exchanges, along with coordination on common industry issues. I was named General Manager for Outages & Projects in the Carolinas in 2015. I became the General Manager of Fossil-Hydro Organizational Effectiveness in 2017. I assumed my current role in 2019.

Q. HAVE YOU TESTIFIED BEFORE THIS COMMISSION OR ANY OTHER REGULATORY BODIES IN ANY PRIOR PROCEEDINGS?

A. Yes. I have submitted testimony to the Commission in DEP's fuel cases in Docket No. E-2, Sub 1272 and Sub 1292, and in DEC's fuel case in Docket No. E-7, Sub 1263. I have testified before the South Carolina Public Service Commission in DEP's and DEC's fuel cases in Docket Nos. 2022-1-E, 2022-3-E, 2021-1-E, 2021-3-E, and 2018-1-E.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY IN THIS PROCEEDING?

A. The purpose of my testimony is to support DEC's request for a base rate adjustment. My testimony will describe the Company's Traditional/Renewable generation assets, provide operational performance results for the period of January 1, 2021, through December 31, 2021 ("Test Period"), update the Commission on capital additions since the 2019 Rate Case through July 31, 2023, explain the key drivers impacting operations and maintenance ("O&M") expenses, and support the Traditional and Hydro capital investments included in the Company's Multiyear Rate Plan ("MYRP"). Walsh Exhibit 1 provides additional details regarding projected cost, schedule, and scope for each MYRP project, as well as the reasoning for each project as required by Commission Rule R1-17B(d)(2)j.

Q. WAS WALSH EXHIBIT 1 PREPARED OR PROVIDED HEREIN BY YOU, UNDER YOUR DIRECTION AND SUPERVISION?

A. Yes.

Q. HOW IS THE REMAINDER OF YOUR TESTIMONY ORGANIZED?

A. The remainder of my testimony is organized as follows:

II. TRADITIONAL/RENEWABLE FLEET

III. HISTORICAL CAPITAL ADDITIONS

IV. O&M EXPENSES

V. PERFORMANCE

II. TRADITIONAL/RENEWABLE FLEET

Q. PLEASE DESCRIBE DEC'S TRADITIONAL/RENEWABLE GENERATION FLEET.

A. The Company's Traditional/Renewable generation portfolio consists of approximately 14,277 megawatts ("MWs") of generating capacity, made up as follows:

Coal -	6,087 MWs
Hydro -	3,357 MWs
Combustion Turbines ("CT") -	2,633 MWs
Combined Cycle Turbines ("CC") -	2,116 MWs
Solar -	71 MWs
Combined Heat and Power ("CHP") -	13 MWs

The coal-fired assets consist of four generating stations with a total of 10 units. These units are equipped with emissions control equipment, including selective catalytic or selective non-catalytic reduction ("SCR" or "SNCR") equipment for removing nitrogen oxides ("NO_x"), and flue gas desulfurization ("FGD" or "scrubber") equipment for removing sulfur dioxide ("SO_2"). In addition, all 10 coal-fired units are equipped with low NO_x burners.

DEC has a total of 31 simple cycle CT units, of which 29 are considered the larger group providing approximately 2,549 MWs of capacity. These 29 units are located at our Lincoln, Mill Creek, and Rockingham Stations, and are equipped with water injection systems that reduce NO_x and/or have low NO_x burner equipment in use. The Lee CT facility includes two units with a total capacity of 84 MWs equipped with fast-start ability in support of DEC's Oconee Nuclear Station. The Company also has the Clemson CHP facility that provides 13 MWs of capacity.

The Company has 2,116 MWs of CC turbines, composed of the Buck CC, Dan River CC and W.S. Lee CC facilities. These facilities are equipped with technology for emissions control, including SCRs, low NO_x burners, and carbon monoxide/volatile organic compounds catalysts.

The Company's hydro fleet includes two pumped storage facilities with four units each that provide a total capacity of 2,300 MWs, along with conventional hydro assets consisting of 59 units providing approximately 1,057 MWs of capacity.

The 71 MWs of solar capacity are made up of 17 rooftop solar sites providing 3 MWs of relative summer dependable capacity, the Mocksville solar facility providing 6 MWs of relative summer dependable capacity, the Monroe solar facility providing 22 MWs of relative summer dependable capacity, Woodleaf solar facility providing 2 MWs of relative summer dependable capacity, Gaston solar facility providing 10 MWs of relative summer dependable capacity and Maiden Creek solar facility providing 28 MWs of relative summer dependable capacity.

Q. CAN YOU COMMENT ON HOW THE COMPANY OPERATES ITS FLEET IN ORDER TO PROVIDE RELIABLE, COST-EFFECTIVE SERVICE TO CUSTOMERS?

A. Yes. While the Company's territory is spread across parts of both North Carolina and South Carolina, the system functions and is operated as an integrated whole. This system allows resources located in both states to be shared across the system in order to serve each of North Carolina's and South Carolina's customers. The Company's economic unit commitment model supports the short-term resource planning and dispatch of the DEC fleet by economically optimizing total system variable cost over a seven-day forecast period. In addition, the Company and DEP can transfer economic energy between each other to optimize the combined generation fleet to serve the Company's customers in North Carolina at the lowest cost. This approach benefits customers by increasing reliability of the system and the efficiency of system dispatch, and by providing the lowest cost energy for customers.

Q. PLEASE DESCRIBE THE INVESTMENTS MADE AND PROCESSES USED BY THE COMPANY TO MAINTAIN AND IMPROVE THE RELIABILITY OF THE FOSSIL FLEET DURING SEVERE WEATHER EVENTS.

A. The Company's operational protocols recognize the importance of rigorous preparation to maximize our plants' reliability during extreme weather events. Duke Energy routinely reviews station performance and risk to ensure reliable performance of its fossil fleet units. Specifically, DEC's routine analysis of fleet and station reliability informs future maintenance activities and investments. For example, during these reviews, the Company has identified opportunities to improve performance by making capital investments including investments related to boiler tubes, generators, and turbine valves for the DEC fleet. As a result, the Company's MYRP includes $74 million in boiler projects, $14 million in generator rewinds, and $11 million in turbine valve projects. These types of targeted capital investments allow the Company to drive reliable operations of the fossil fleet during severe weather conditions as well as year round for the benefit of our customers, and will improve the Company's response to events like Winter Storm Elliott, by reducing the potential for forced outages of our fossil fuel fleet.

DEC also utilizes operating experience to take lessons learned from severe weather events to improve reliability. After the 2014 polar vortex, the Company reviewed each plant's winterization plans and modified their winterization preventative maintenance, including updated insulation inspections, heat trace testing, and equipment draining. In 2017, based on additional cold weather experience, DEC developed Seasonal Preparation Guidelines to more formally document expectations for the generating stations. Each site has a corresponding winter preparation plan that is consistent with these guidelines. The Company utilized these winter preparation plans in anticipation of Winter Storm Elliott, which helped enable additional units to run reliably during the event. In addition, our Operations Working Team (which includes representatives from each operating region) has a standing agenda item to meet at least one month prior to each winter season to report any outstanding items or limitations for winter preparation across the fleet. (Similar action is taken in preparation for the summer/hurricane season.)

More recently, the Company has taken additional actions around winter preparation. In August 2022, the Company issued an engineering standard for Combustion Turbine Generator Operations on Liquid Fuel, which specifies testing expectations for dual fuel units on liquid fuel to keep these units available in the event that natural gas is not available. This standard was a factor in enabling the Company to reliably start up numerous units on fuel oil during Winter Storm Elliott. The Company will utilize lessons learned from 2022-23 winter operation to inform and continued evolution and application of these plans and standards moving into the winter of 2023-24.

Q. PLEASE DESCRIBE THE CONTINUING IMPORTANCE OF THE TRADITIONAL FOSSIL FLEET TO THE CUSTOMERS OF NORTH CAROLINA.

A. The Company's North Carolina customers have benefitted from decades of reliable, cost effective electricity generated from the traditional fossil fleet. The Company's portfolio includes a diverse mix of units that, along with its nuclear capacity, allows DEC to meet the dynamics of customer load requirements in a logical and cost-effective manner. The coal fleet in particular has been a long-time contributor to resource adequacy and an invaluable resource in ensuring fuel and generation adequacy.

Today, the Carolinas primarily rely on a mixture of nuclear, coal, natural gas, pumped storage, and increasing amounts of solar to provide the energy necessary to meet electricity demands. The diversity of the resource and fuel mix, and availability of coal generation during the transition away from coal, must be strategically managed to ensure the remaining coal fleet can reliably contribute to resource adequacy. As the Company makes plans to retire its remaining coal fired assets, and replace those assets with other resources, it is important to keep these remaining units in efficient working order to support the energy needs of our customers. Therefore, costs for these assets will continue to be incurred as appropriate and prudent to ensure that the same reliable cost effective electricity that customers have counted on for decades remains available while the replacement of those units is developed and implemented. Additionally, the combination of generation resources that replaces coal must be able to provide the same level of reliability that the coal units have and continue to provide. Because natural gas is critical to this resource mix, particularly during the winter months and while energy storage capacity is being developed and deployed, the Company will continue to rely on its natural gas fleet as part of the diverse and dispatchable resource mix that will be needed to ensure the reliability of service to DEC customers both now and in the future.

III. CAPITAL ADDITIONS

Q. PLEASE DESCRIBE THE MAJOR TRADITIONAL/RENEWABLES CAPITAL INVESTMENTS COMPLETED SINCE THE COMPANY'S LAST RATE CASE PROCEEDING.

A. Since the 2019 Rate Case, DEC has or will have by July 31, 2023, made capital investments in its Traditional/Renewable fleet totaling approximately $1.38 billion.

Capital maintenance for the coal fleet cost approximately $728 million. Dual fuel capability was added at both the Belews Creek and Marshall stations, giving an additional source of reliable, low cost power to our customers. As a part of the dual fuel projects at Belews Creek and Marshall, capital leases totaling approximately $302 million were executed for pipeline leases, which is included in the $728 million total noted above. A bioreactor waste water treatment system was installed at Cliffside due to an EPA change in the rules for Steam Electric Generating Effluent Limitations Guideline's ("ELG") (40 C.F.R. § 423). The Technology Based Effluent Limits for Flue Gas Desulfurization wastewater were set based on bioreactors treating the wastewater. To meet the new permit technology based effluent limit for total arsenic, total mercury, total selenium and nitrate/nitrite, a bioreactor was installed to treat the Unit 5 FGD Wastewater below the NPDES permit limits. Other capital maintenance items include but are not limited to valve replacements and repairs, basket replacements, a power distribution system at Marshall, and catalyst replacements.

Hydro capital costs during the period totaled approximately $393.5 million. Two uprate projects at Bad Creek were completed, increasing the capacities of Units 1 and 2 by 80 MWs each. Other projects completed included replacement of turbine runners, valve replacements, mechanical and electrical life extensions, access areas, a diversion dam structure modification, and stator rewinds.

At the CC/CT stations, capital maintenance cost approximately $131.1 million, including hot gas path inspections, valve repair and replacement work.

Solar capital costs totaled approximately $125.5 million. The Maiden Creek and Gaston solar facilities were completed, providing 27.7 MWs and 10.0 MWs firm summer capacities respectively.

Q. MR. WALSH, WILL THESE CAPITAL ADDITIONS BE USED AND USEFUL IN PROVIDING ELECTRIC SERVICE TO DEC'S ELECTRIC CUSTOMERS IN NORTH CAROLINA BY JULY 31, 2023?

A. Yes. All of the capital additions listed above are commercially operational and providing electric service to customers, or will be so before July 31, 2023.

Q. IN YOUR OPINION, HAVE THE COSTS RELATED TO THE COMPANY'S CAPITAL ADDITIONS BEEN PRUDENTLY INCURRED?

A. Yes. DEC controls costs for capital projects and O&M using a cost management program. The Company controls costs through routine executive oversight of project budget and activity reporting with new projects requiring approval by progressively higher levels of management depending on total project cost. The Company controls ongoing project and O&M costs through strategic planning and procurement, efficient oversight of contractors by a trained and experienced workforce, rigorous monitoring of work quality, thorough critiques to drive out process improvement, and industry benchmarking to ensure best practices are being used.

IV. O&M EXPENSES

Q. PLEASE DESCRIBE THE O&M EXPENSES FOR THE TRADITIONAL/RENEWABLE FLEET.

A. For the fossil units, approximately 83% of DEC's required O&M expenditures are fuel-related for the Test Period. The majority of non-fuel expenditures are for labor costs from Company or contract resources that operate, maintain, and support the Traditional/Renewable facilities. Finally, the Company continues to be challenged by costs driven by inflationary pressures for labor and materials.

Q. HOW DOES THE COMPANY CONTROL AND MITIGATE O&M EXPENSE INCREASES? PLEASE PROVIDE EXAMPLES.

A. The Company has many efforts in place for controlling and/or minimizing costs. For example, DEC optimizes outages based on run time, which is affected by fuel market prices, weather cycles, and changes in generation resources. This optimization has provided labor and materials savings.

Duke Energy joined forces with other power companies to share best practices and learning opportunities with the Generation Networking Group ("GNG," formerly known as the Fossil Networking Group). The GNG includes

Southern Company, Dominion Energy, American Electric Power, and the Tennessee Valley Authority. The Company has seen benefits associated with safety and operations based on its membership in the GNG.

The Company runs its business in a disciplined manner and continuously balances cost management with safety and reliability to generate electric service for our customers. Cost to customers is a key concern and the Company's diverse portfolio allows us to reduce overall fuel expense**.**

V. <u>PERFORMANCE</u>

Q. PLEASE DISCUSS THE OPERATIONAL RESULTS FOR THE DEC TRADITIONAL/RENEWABLE FLEET DURING THE TEST PERIOD.

A. The Company's Traditional/Renewable generating units operated efficiently and reliably during the Test Period. Several key measures are used to evaluate the operational performance depending on the generator type: (1) equivalent availability factor ("EAF"), which refers to the percent of a given time period a facility was available to operate at full power, if needed (EAF is not affected by the manner in which the unit is dispatched or by the system demands; it is impacted, however, by planned and unplanned maintenance (*i.e*., forced) outage time); (2) net capacity factor ("NCF"), which measures the generation that a facility actually produces against the amount of generation that theoretically could be produced in a given time period, based upon its maximum dependable capacity (NCF *is* affected by the dispatch of the unit to serve customer needs); (3) starting reliability ("SR"), which represents the percentage of successful starts; and (4) equivalent forced outage factor ("EFOF"), which quantifies the number of period hours in a year during which the unit is unavailable because of forced outages and forced deratings. Based on these metrics, DEC's Traditional/Renewable fleet performance was comparable in a number of areas, particularly with respect to the natural gas fleet, to the results from the North American Electric Reliability Counsel ("NERC") Generating Unit Statistical Brochure representing the period 2017-2021.

Q. HOW MUCH GENERATION DID EACH TYPE OF GENERATING FACILITY PROVIDE FOR THE TEST PERIOD?

A. For the Test Period, DEC's system total generation was approximately 98.1 million megawatt-hours ("MWHs"). The Traditional/Renewable fleet provided approximately 38.2 million MWHs, or approximately 38%. The breakdown includes approximately 21% contribution from the coal-fired stations, 16% from gas facilities, and approximately 1% from renewable facilities, primarily hydro.

Q. IN YOUR OPINION, HAS DEC PRUDENTLY OPERATED ITS TRADITIONAL/RENEWABLE FLEET DURING THE TEST PERIOD?

A. Yes. The Company's performance data supports the conclusion that DEC has reasonably and prudently operated and maintained its Traditional/Renewable resources to maximize unit availability, minimize fuel costs, and provide safe and reliable service to its customers.

VI. PROPOSED MULTIYEAR RATE PLAN CAPITAL ADDITIONS

Q. DOES THE COMPANY'S PROPOSED MYRP INCLUDE TRADITIONAL/RENEWABLE PROJECTS?

A. Yes. One hundred and forty-one Traditional and Hydro projects are included in the Company's proposed MYRP and supported by my testimony and Walsh Exhibit 1. Witness Justin LaRoche addresses solar projects included in the MYRP and Witnesses Laurel Meeks and Evan Shearer address storage projects included in the MYRP.

Q. WHAT PROCESS AND CRITERIA DID THE COMPANY USE TO SELECT THESE PROJECTS FOR INCLUSION IN THE PROPOSED MYRP?

A. The Company leveraged the project prioritization process that it typically utilizes to plan for capital projects for the Traditional and Hydro fleets to identify the projects that are proposed for the MYRP. Pursuant to this process, the Company uses a Project Prioritization ("Stack/Rank") Process to assign an initial score (0-1000) to capital projects. The scoring process factors in safety and environmental risks, economic evaluation, and unit operating priority depending on the project category. Projects required to address regulatory issues are scored as 1000 and included in the Compliance Mandate category. Project categories include:

- Compliance Mandate
- Safety
- Environmental

- Committed (In-flight and Long-Term Service Agreements)
- Growth & Strategy
- Routine Reliability (Outage and Ongoing Maintenance)
- Economic Reliability
- Infrastructure

After further evaluation, the Traditional and Hydro projects included in the proposed MYRP were identified based on their projected timing.

Q. HOW WERE THE PROJECTED COSTS FOR THE PROJECTS CALCULATED?

A. The Company's Project Management Guidelines, which include guidance for project scope development and cost estimating, were applied to the calculation of projected costs for the Traditional and Hydro MYRP projects. Cost estimates can be based on a combination of vendor quotes or budgetary estimates for labor and materials, estimates for internal labor and warehouse materials, and previous experience on similar projects. Estimates for direct costs were entered into the PowerPlan project management tool where overheads, labor loadings, and AFUDC were calculated, to produce an overall projected cost.

Q. WERE ANY OF THESE PROJECTS PRESENTED AT THE NOVEMBER 2, 2022 TECHNICAL CONFERENCE HELD IN THIS PROCEEDING?

A. No. The technical conference addressed only the Transmission and Distribution ("T&D") projects in the proposed MYRP, and none of the Traditional or Hydro projects are T&D.

Q. WILL ANY OF THE TRADITIONAL OR HYDRO MYRP PROJECTS REQUIRE A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY ("CPCN") FROM THE COMMISSION?

A. No. The Lincoln CT 17 project already received a CPCN from the Commission in Docket No. E-7, Sub 1134, and no other projects require a CPCN.

Q. ARE ANY OF THESE PROJECTS INCLUDED IN THE CARBON PLAN?

A. None of the projects are specifically identified in the Carbon Plan, but the Carbon Plan states that "expanding the flexibility of the Companies' existing natural gas fleet in the Carolinas"[1] will be required to meet the targets of HB 951 and identifies "smaller unit flexibility projects on existing CCs"[2] as a near term action for the 2022-2024 time frame. Several traditional projects on DEC's MYRP list are considered natural gas unit flexibility projects. Notwithstanding the Carbon Plan, the Company considers these projects as a necessary part of prudent utility resource planning.

Q. HOW DO THE IIJA FEDERAL GRANTS FACTOR INTO YOUR PLANNING PROCESS?

A. Duke Energy is actively engaged in the ongoing implementation of the federal Infrastructure Investment and Jobs Act ("IIJA") at the state and federal levels. Duke Energy is participating in Requests for Information ("RFIs"), discussions with federal agencies, and potential partnerships that would benefit customers. While federal agencies are making progress, they are still in the early phases of

[1] Carolinas Carbon Plan, Appendix M at p. 5, Docket No. E-100, Sub 179 (filed May 16, 2022).
[2] *Id*. at Chapter 4 at p. 10.

their overall IIJA implementation, with many new programs actively under development. Recently, Duke Energy partnered with Battelle – the largest nonprofit applied science and technology organization, Dominion Energy, Southern Company, TVA, and LG&E & KU on a Southeast Hydrogen Hub Coalition, which was announced November 1, 2022. The Coalition is working towards an application to be filed April 1, 2023, for Phase 1 Department of Energy ("DOE") funding for a regional hydrogen hub that will explore initial planning and analysis of a hydrogen economy in the region. To be clear, DEC is pursuing IIJA funding opportunities for the benefit of our customers and will ensure that customers receive that benefit. However, the projects included in this MYRP request are needed and will benefit customers regardless of whether or not IIJA funding is received. None of the cost estimates submitted with DEC's pre-filed materials assume IIJA funding is received.

Q. DID THE COMPANY CONDUCT COST BENEFIT ANALYSES ("CBA") FOR THE PROJECTS YOU ARE SUPPORTING?

A. Yes. Pursuant to the Company's Stack/Rank guidelines, a number of the projects require an economic evaluation. Specifically, projects in the Economic Reliability or Growth & Strategy categories noted above, with an estimated cost greater than $100,000, require an economic analysis in the PowerPlan project management tool. The economic evaluation models project benefits based on expected future operation of the plant, compared with the cost to implement, and estimates an internal rate of return and net present value of the project. Typical benefits may include restoring reliability to avoid future forced outages or derates, and improved heat rate. Project categories that do not require an economic evaluation are scored based on risk assessment for the stack/rank process. Since the MYRP involves future projects, those projects that require an economic evaluation for stack/rank scoring may be preliminary or not yet completed if they fall outside the two-year budget planning window.

Q. DO ANY OF THE PROJECTS OFFER PROJECTED OPERATING BENEFITS?

A. No quantified projected operating benefits were identified for the proposed projects. The qualitative benefits of completing the projects are that they will enable DEC to maintain safe and reliable operation of the Traditional and Hydro fleets. The specific benefits of each project are presented in further detail in Walsh Exhibit 1.

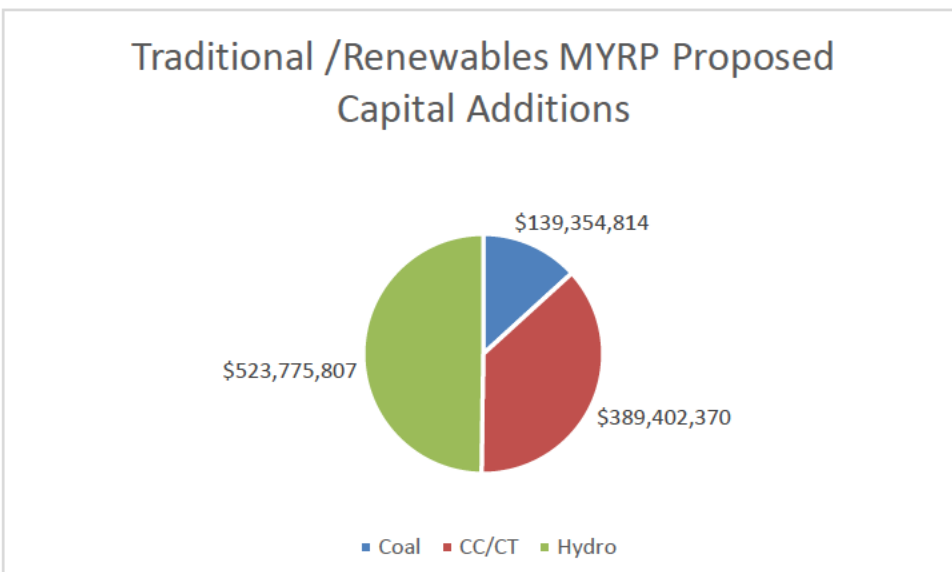
In addition, the Clemson Hydrogen Project discussed below may qualify for certain credits under the recently enacted Inflation Reduction Act of 2022 ("IRA"). Potential IRA impacts and savings constitute operational benefits within the meaning of N.C. Gen. Stat. § 62-133.16(c)(1)(a). The testimony of Witness John Panizza summarizes the key tax related components of the IRA and provides an overview of the changes most applicable to DEC. While the Company believes the Clemson Hydrogen Project will likely qualify for IRA production tax credits ("PTCs"), no IRA tax impacts were included in the original evaluation of the project as there remains too much uncertainty around the details of the PTCs for hydrogen to accurately estimate the benefits for this Project at this time.

Q. IN YOUR VIEW, IS THE COMPANY'S DECISION TO INVEST IN THESE PROJECTS PRUDENT, JUST, AND REASONABLE FOR THE PROVISION OF SAFE AND RELIABLE SERVICE TO CUSTOMERS AND IN THE PUBLIC INTEREST?

A. Yes. The Company has prudently and reasonably decided to invest in these projects in order to continue to provide safe, reliable, and affordable service to customers.

Q. PLEASE PROVIDE ADDITIONAL DETAIL REGARDING THE PROPOSED TRADITIONAL AND HYDRO MYRP PROJECTS AND WHY THEY ARE BEING PROPOSED FOR THE MYRP.

A. The Company proposes to spend approximately $1 billion on capital investments associated with Traditional and Hydro MYRP projects over the January, 2024, through December, 2026, time period, broken down as shown below:



The vast majority of these projects are being undertaken to comply with regulatory requirements and maintain these units in good, efficient, and reliable working order. In the case of the Lincoln CT Unit 17, as discussed below this project is being completed to meet an identified capacity need. Finally, the Clemson Hydrogen Project discussed below is being undertaken to develop hydrogen generation technology as part of Duke's Energy's transition to a cleaner energy future. Additional discussion regarding these projects, organized by fuel technology (coal, combined cycle/combustion turbine, and hydro), is provided below. Walsh Exhibit 1 provides additional details regarding projected cost, schedule, and scope for each project, as well as the reasoning for each project as required by Commission Rule R1-17B(d)(2)j.

Q. WHAT ARE THE MYRP CAPITAL INVESTMENTS THAT THE COMPANY IS PROPOSING TO MAKE AT ITS COMBINED CYCLE AND COMBUSTION TURBINE UNITS?

A. Carolinas Gas projects, including CC and CT projects, total approximately $389 million.

One of these projects is the Unit 17 advanced CT at the Lincoln County Combustion Turbine Station ("Lincoln County"). DEC's 2016 Integrated Resource Plan showed a need for a 468 MW CT in the 2024 time frame. Based on that identified need, DEC requested and received from the Commission a CPCN for a new state-of-the-art CT at the Lincoln County site. The proposal included Siemens Energy as the Engineering, Procurement and Construction ("EPC") contractor for the project, including supply of the advanced gas turbine unit. The new to market technology (SGT6-9000HL) is Siemens Energy's first 60Hz HL-class turbine and major components (turbine rotor, generator etc) were manufactured at their Charlotte facility.

As part of the innovative agreement with Siemens Energy, the EPC installed and is conducting testing of the advanced turbine at the station. The new advanced CT unit can generate enough energy to power more than 300,000 homes. It is designed to run longer between maintenance cycles and will be the most efficient of its type in Duke Energy's fleet (about 34% more efficient than the existing combustion turbines at the Lincoln County site). Based on recent tests, it has been certified with the official Guinness World Records title for the "most powerful simple-cycle gas power plant" with an output of 410.9 MWs. The unit's fast start and high ramp rate capability will support the increase in renewables DEC is placing on its system and complement Duke Energy's journey to net-zero carbon from electricity generation by 2050. This project also includes the transmission facilities associated with the advanced CT.

The Company is also undertaking a number of other projects to ensure continued reliability of the natural gas units to provide reliable service for customers. For example, DEC is performing unit flexibility projects at its Buck, Dan River and WS Lee combined cycle plants. These modifications include fast start and low-load capabilities to respond to grid fluctuations due to existing and future renewables generation. Additionally, based on testing and ongoing monitoring, several generator field and stator rewinds are planned for the Rockingham CT plant to ensure continued reliability of the units at this station.

Walsh Exhibit 1 provides a full list of these and the other proposed MYRP projects for the natural gas fleet with additional details.

Q. WHAT ARE THE MYRP CAPITAL INVESTMENTS THAT THE COMPANY IS PROPOSING TO MAKE AT ITS COAL UNITS?

A. Carolinas Coal projects included in the proposed MYRP total approximately $139 million. These projects are needed to keep the active coal units in reliable operating condition while they are still providing power for our customers during the energy transition.

For example, capital valve component replacement projects will be conducted at Belews Creek, Marshall and Cliffside steam stations. This work is based on unit starts and operating experience to maintain unit reliability.

Several boiler tube section replacements are also planned for Marshall Unit 3 based on tube leak and tube erosion experience. The turbine condensers for Marshall Units 3 and 4 will also be re-tubed. Over time, tubes are plugged due to leaks and eventually affect unit performance, especially during the summer months when lake cooling water is warmer.

Finally, DEC plans to replace a catalyst layer in the Belews Creek Unit 1 Selective Catalytic Reduction (SCR) system. Catalyst layers are replaced based on material testing to restore NOx removal capability to maintain compliance with pollution control requirements.

Walsh Exhibit 1 provides a full list of these and the other proposed MYRP projects for the coal fleet with additional details.

Q. WHAT ARE THE MYRP CAPITAL INVESTMENTS THAT THE COMPANY IS PROPOSING TO MAKE AT ITS REGULATED RENEWABLE UNITS?

A. Carolinas Renewables projects total approximately $524 million. All of these projects involve the hydroelectric stations. The projects are needed to maintain these units, which have reliably provided service in some cases for over 100 years, to keep them running and meet federal regulatory requirements.

For example, the Bad Creek Pumped Storage Unit 4 uprate project will complete the upgrades of all four units at the site. The scope of the Unit 4 project includes upgraded turbine/pump design, upgraded generator/motor design, increased capacity step-up transformers and other auxiliary equipment to handle increased unit output. As a result of these projects, each unit will increase generator capacity by 80 MWs and pump capacity by 65 MWs. This increased capacity can also function as additional storage to accommodate solar generation.

In addition, FERC regulations now require that all licensees/owners of dams evaluate the ability of each of their dams to withstand and/or safely pass significant inflows from newer postulated extreme weather events (rainfall). Preliminary studies of Cedar Cliff Dam indicated insufficient means to manage increased inflows and maximum possible flood events. To meet the new requirements, the capacity of the auxiliary spillway at Cedar Creek will be increased, and a fuse gate system will be installed, that will allow increasing amounts of water to pass without overtopping the dam.

Walsh Exhibit 1 provides a complete list of these and the other proposed MYRP projects for the hydro fleet with additional details.

Q. ARE THERE ANY OTHER MYRP CAPITAL INVESTMENTS THAT YOU WOULD LIKE TO HIGHLIGHT?

A. Yes. The Clemson Hydrogen Project is an operational demonstration project for which Duke Energy has partnered with Clemson University and Siemens Energy. The project will be located at the recently built and Duke Energy-owned Clemson CHP facility and will test the dispatchable operational abilities of an integrated hydrogen production, compression, storage, and generation system. Future cost-effective production of clean hydrogen will require agile production and storage technologies that can maximize the integration and availability of excess renewable generation. The project will be operated based on current grid profiles as well as simulated future projected grid conditions, and will provide valuable operational experience. It will benefit from a 2022 DOE-funded design study specific to this project that addressed existing unit integration, schedule, and cost estimates, and will allow for cost efficiencies during project implementation and operation to maximize value, due to Siemens' expertise and utilizing existing land. This project will help define the future development requirements and operational needs to reduce the technology introduction risk for a utility-scale hydrogen system. Learnings will include improved understanding of the required cost, operational procedures, safety needs, future workforce needs, and environmental and social impacts of such a project.

VII. CONCLUSION

Q. IS THERE ANYTHING YOU WOULD LIKE TO SAY IN CLOSING?

A. Yes. The Company has a proven history of experience-based, safe, reliable, and cost competitive operations of a diverse generation portfolio. The Company has been active and diligent in making the right investments that continue, and build on, DEC's solid history of safely providing reliable, efficient, and cost-effective generation, while reducing environmental impacts and ensuring compliance with state and federal regulations. Our customers reap the benefits of the Company's diverse generation assets through the economic dispatch of our energy across North Carolina and South Carolina, which dispatches lower cost energy first, saving customers money.

DEC is positioned to continue as a leader in the industry with a solid base of knowledge and experience. As the Company progresses towards retiring and replacing its coal fleet, it is critical to keep these units running in good working order to provide the dependable, low cost electricity on which our customers depend, and to maintain the efficient and reliable operation of the natural gas fleet. This base rate increase will allow the Company to continue its tradition of operational excellence and focus on safe operations and reliable generation. The MYRP projects that the Company is seeking approval of in this case will do the same over the next several years as DEC continues to transition toward a cleaner energy future.

Q. DOES THIS CONCLUDE YOUR PRE-FILED DIRECT TESTIMONY?

A. Yes.

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

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1	Bad Creek U1 Replace Control System	Hydro Plant in Service	12/1/2026	Bad Creek U1 Control System Replacement	Existing Forney Controls Hardware is obsolete, and Forney no longer manufactures. Replacement parts are becoming more difficult to obtain and could cause down time in the future.	$ 4,545,182	$ -	$ 657,570	BA010091
2	Bad Creek U2 Replace Control System	Hydro Plant in Service	12/1/2026	Bad Creek U2 Control System Replacement	Existing Forney Controls Hardware is obsolete, and Forney no longer manufactures. Replacement parts are becoming more difficult to obtain and could cause down time in the future.	$ 1,537,280	$ -	$ -	BA020027
3	Bad Creek U3 Replace Control System	Hydro Plant in Service	12/1/2026	Bad Creek U3 Control System Replacement	Existing Forney Controls Hardware is obsolete, and Forney no longer manufactures. Replacement parts are becoming more difficult to obtain and could cause down time in the future.	$ 1,537,279	$ -	$ -	BA030016
4	Bad Creek U4 MW Uprate	Hydro Plant in Service	1/1/2024	Upgrade of runner, generator, step-up transformers, and iso-phase bus cooling system.	Unit will increase generator capacity by 80MW and pump capacity by 65MW. This increased capacity can work as additional storage to accommodate solar generation.	$ 31,504,390	$ -	$ -	BA040005
5	Bad Creek U4 Replace Control System	Hydro Plant in Service	12/1/2026	Bad Creek U4 Control System Replacement	Existing Forney Controls Hardware is obsolete, and Forney no longer manufactures. Replacement parts are becoming more difficult to obtain and could cause down time in the future.	$ 1,537,280	$ -	$ -	BA040009
6	Bad Creek Unit Transformers Loadcenters	Hydro Plant in Service	7/1/2025	Replace 1,2,3,4TGA Transformers & 1,2,3,4LGA switchgear.	Operating restrictions are currently in place to keep the 1LGA-2LGA load center tie breaker OPEN. The same restrictions will be in place with 3LGA-4LGA once the U4 MW uprate is placed in service (September 2023). In this condition, a single TGA-LGA load center cannot support 2-unit operation (original station design).	$ 2,630,166	$ -	$ -	BA002992
7	Belews Creek BC FGD Lighting Replacement	Steam Plant in Service	9/1/2026	Replace all lighting with upgraded LED lights in the Absorber, Reagent Prep, and Dewatering buildings and the booster fan areas.	Lighting is very dim making it hard to work and creates a walking & slip hazard. Existing lighting system is 15 years old. Existing lighting in scrubber (FGD) areas is all hard-wired, thereby requiring a Lock-Out, Tag-Out (LOTO) every time a light requires replacement. New LED lights will be plug-ins.	$ 2,198,093	$ -	$ -	BC000951

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

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Exhibit 1

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8	Belews Creek BC01 SCR Catalyst Replacement	Steam Plant in Service	5/1/2025	BC01 SCR catalyst layer replacement.	SCR catalyst layer replacements maintain DEQ-required NOx removal rate based on analysis of samples of catalyst layers.	$ 2,752,086	$ -	$ -	BC010717
9	Belews Creek Boiler Outage - Coal (2025)	Steam Plant in Service	12/1/2025	Belews Creek Boiler 2025 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 400,000	BC00xxxx
10	Belews Creek Boiler Outage - Coal (2024)	Steam Plant in Service	12/1/2024	Belews Creek Boiler 2024 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 2,769,412	BC00xxxx
11	Belews Creek Boiler Outage - Coal (2023)	Steam Plant in Service	12/1/2023	Belews Creek Boiler 2023 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 2,400,000	BC00xxxx
12	Bridgewater Replace 9070 to 3i Controls	Hydro Plant in Service	6/1/2026	Replace Bridgewater 7i controls to 3i (Unit 1, 2, 3, and SCC)	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,004,630	$ -	$ -	BW000025
13	Buck BK11 OpFlex Fast Start	Other Production Plant in Service	10/1/2025	GE to perform OpFlex Fast Start - Purge Credit modifications on the Buck Unit 11 gas turbine. Also includes scope required for burner duct purging.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,167,783	$ -	$ -	BK1100XX
14	Buck BK12 OpFlex Fast Start	Other Production Plant in Service	10/1/2025	GE to perform OpFlex Fast Start - Purge Credit modifications on the Buck Unit 12 gas turbine. Also includes scope required for burner duct purging.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,167,783	$ -	$ -	BK1200XX
15	Buck CC Oily Water Separator (OWS) Replacement	Other Production Plant in Service	12/1/2026	Capital replacement of the existing OWS with an above ground OWS.	New separator to be installed above ground for easier access and inspection to reduce risk of environmental events.	$ 2,734,154	$ -	$ -	BKCC0186
16	BUCK CC Unit Flex Enhancement Prjts	Other Production Plant in Service	12/1/2025	Extend low-load capability to accommodate Solar generationby implementing GE's Op-Flex controls enhancements.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,257,982	$ -	$ -	BKCC0134

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

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Exhibit **1**

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17	CC Cycling Project GMA	Other Production Plant in Service	12/1/2025	WS Lee PB1 CC Unit Flexibility Upgrade	Install HRSG damage monitoring system to calculate real time creep and fatigue life of pressure parts (WS Lee PB1)	$ 695,000	$ -	$ -	FHGC0086
18	CC Cycling Project GMA	Other Production Plant in Service	12/1/2025	Dan River PB1 CC Unit Flexibility Upgrade	Install HRSG damage monitoring system to calculate real time creep and fatigue life of pressure parts (Dan River PB1)	$ 695,000	$ -	$ -	FHGC0087
19	Cedar Cliff Civil Life Ext HeadTailra Gates	Hydro Plant in Service	12/1/2024	Cedar Cliff Hydro -Civil Life Extension-Head & Trailrace Gates	Headgate to be engineered to satisfy confined space entry program and Lock-Out, Tag-Out (LOTO) boundary. Tailrace to be installed to isolate personnel from tailrace for maintenance. Will eliminate need for confined space rescue team for unit maintenance and reduce safety concerns with engineering isolation points.	$ 2,684,321	$ -	$ -	CE000023
20	Cedar Cliff Electrical Life Extension	Hydro Plant in Service	5/1/2025	Cedar Cliff Electrical Life Extension	Electrical components in Cedar Cliff Powerhouse are original to the plant from 1952. Switchgear, Controls, Protective Relaying, and Station Service all are at end-of-life and need to be replaced with modern engineered components.	$ 3,565,262	$ -	$ -	CE000021
21	Cedar Cliff Generator Stator Rewind	Hydro Plant in Service	5/1/2025	CE Generator, Stator Rewind - New coils and core steel	Stator last rewind was in 1985. Stator is degraded from oil leak from upper bearing. Unit is undergoing a flow uprate on a separate project replacing the turbine. Generator capability will be evaluated to capture increased power output.	$ 2,596,459	$ -	$ -	CE000052
22	Cedar Cliff Install Turbine Inlet Valve	Hydro Plant in Service	12/1/2024	Cedar Cliff Install Turbine Inlet Valve	Installing a turbine inlet valve will allow water to be shut off to the turbine in case there are problems with the headgate due to rock slides or other abnormal operating conditions. This will also allow working on the main unit without dewatering the penstock. This would allow the min flow unit to operate when working on the main unit.	$ 2,906,533	$ -	$ -	CE000043
23	Cedar Cliff Mechanical Life Extension	Hydro Plant in Service	5/1/2025	Cedar Cliff Mechanical Life Extension	The turbine components and governor are all original construction. Recent trends show that plant major components are nearing end of life and need to be replaced. These upgrades and repairs are necessary to support continued plant operation for the remainder of the FERC operating license.	$ 6,678,647	$ -	$ -	CE000048

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

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24	Cedar Creek Replace 9070 to 3i Controls	Hydro Plant in Service	5/1/2025	Replace Cedar Creek Station/Unit Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,224,384	$ -	$ -	CC001222
25	Clemson Hydrogen Project (CHP) H2 Project	Other Production Plant in Service	7/1/2026	This operational pilot at the recently built and Duke-owned Clemson Combined Heat & Power (CHP) facility will test the dispatchable operational abilities of an integrated hydrogen production, compression, storage, and generation system. This will serve to define the future development requirements and operational needs to reduce the technology introduction risk for a utility-scale system.	Results will define the future development requirements and operational needs for utility-scale hydrogen fueled generating plants.	$ 59,386,417	$ -	$ -	CUCH0083
26	Cliffside Boiler Outage - Coal (2024)	Steam Plant in Service	12/1/2024	Cliffside Boiler 2024 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 1,302,958	CS00xxxx
27	Cliffside Boiler Outage - Coal (2025)	Steam Plant in Service	12/1/2025	Cliffside Boiler 2025 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 400,000	CS00xxxx
28	Cliffside Boiler Outage - Coal (2023)	Steam Plant in Service	12/1/2023	Cliffside Boiler 2023 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 150,000	$ -	$ 1,400,000	CS00xxxx
29	Cliffside CS06 Template Turbine MajorValve	Steam Plant in Service	5/1/2026	CS06 2026 Turbine Major Inspection and Turbine Valves. This project includes the scope and costs according to the turbine and turbine valve templates. This does not include Boiler Feed Pump Turbine scope.	Replace capital valve components of the Cliffside Unit 6 Steam Turbine based on Duke Turbine/Generator Services recommended maintenance interval.	$ 3,428,418	$ -	$ -	CS060059
30	Compressor Blade Replacement	Other Production Plant in Service	6/1/2024	Address clashing in 7EA compressor by replacing stationary blades as identified by CT Engineering. S1-S5 and additional scope as identified by inspections.	The 7EA combustion turbine fleet is experiencing several compressor related issues. Replacing the stationary compressor blades will mitigate the cracking issues found on other units.	$ 1,102,739	$ -	$ -	MK050001
31	Cowans Ford Bank 2 GSU Replacement	Hydro Plant in Service	9/1/2023	Replace Cowans Ford bank 2 generator step up (GSU) transformer.	Bank 2 generator step-up (GSU) transformer is 55 years old and at end of life. Environmental impact if failure occurred as oil-cooled unit sits over the tailrace. Will maintain plant reliability as 2 units are connected to the transformer.	$ 3,469,118	$ -	$ -	CF000134

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7Sub 1276

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Exhibit **1**

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32	Dan River DR08 OpFlex Fast Start	Other Production Plant in Service	10/1/2025	GE to perform OpFlex Fast Start - Purge Credit modifications on the Dan River Unit 8 gas turbine. Also includes scope required for burner duct purging.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,167,783	$ -	$ -	DR080036
33	Dan River DR09 OpFlex Fast Start	Other Production Plant in Service	10/1/2025	GE to perform OpFlex Fast Start - Purge Credit modifications on the Dan River Unit 9 gas turbine. Also includes scope required for burner duct purging.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,167,783	$ -	$ -	DR090041
34	DRCC Unit Flex Enhancement Projects	Other Production Plant in Service	12/1/2026	Extend low-load capability to accommodate Solar generationby implementing GE's Op-Flex controls enhancements.	Modifications for fast start and low-load capabilities allow units to respond to grid fluctuations due to existing and future renewables generation.	$ 1,257,982	$ -	$ -	DRCC0155
35	FERC Bridgewater Fonta Flora Access Area	Hydro Plant in Service	12/1/2025	Bridgewater Fonta Flora Access Area	Lake access and public infrastructore projects are included in the FERC Catawba Relicensing Requirement	$ 3,777,616	$ -	$ -	BW001210
36	FERC Bridgewater Pocket Park At Dam LJ Loop	Hydro Plant in Service	12/1/2026	Install Parking, Picnic Facilities, Overlooks, Bank Fishing Trail as part of FERC Catawba Relicensing Requirement	Lake access and public infrastructore projects are included in the FERC Catawba Relicensing Requirement	$ 2,402,249	$ -	$ -	BW001211
37	FERC Cedar Cliff Dam DF Spillway&Gate House	Hydro Plant in Service	7/1/2024	Capacity of the auxiliary spillway at Cedar Creek will be increased along with the installation of a fuse gate system that will allow increasing amounts of water to pass without overtopping the dam.	FERC has required that all licensees/owners of dams evaluate the ability of each of their dams to withstand and/or safety pass significant inflows from newer postulated extreme weather events (rainfall). Preliminary studies of Cedar Cliff Dam indicate insufficient means to manage inflows incrementally (spillways) as well as maximum possible flood (inflow Design Flood or IIDF).	$ 170,569,964	$ -	$ -	CE000012
38	FERC Cowans Ford Stumpy Creek Access Area	Hydro Plant in Service	12/1/2024	FERC Stumpy Creek Access Area	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 2,166,986	$ -	$ -	CF001208
39	FERC Fishing Creek Floodgate Life Exten Ph II	Hydro Plant in Service	9/1/2024	This scope of work is for turn-key services to procure, fabricate, remove and install new and existing equipment for eleven (11) floodgates.	FERC license was recently renewed for the next 40 years at this facility. Existing equipment has been in service for over 100 years. Relacing aging floodgates will maintain unit reliability for the remaining operational life.	$ 15,960,856	$ -	$ -	FC003677

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

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Exhibit **1**

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40	FERC Great Falls Pedestrian Bridge	Hydro Plant in Service	9/1/2025	FERC Lower Great Falls Reservoir Canoe/Kayak Launch pedestrian bridge	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 4,688,763	$ -	$ -	GF000058
41	FERC Linville Canoe Kayak Access Area	Hydro Plant in Service	6/1/2026	FERC LinvilleCanoe / Kayak Access Area	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 1,387,194	$ -	$ -	BW001212
42	FERC Lookout Shoals Upper Access Area	Hydro Plant in Service	2/1/2025	Upper Lookout Shoals Access Area Construction	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 2,805,842	$ -	$ -	LK001205
43	FERC Mountain Island Dam Seismic	Hydro Plant in Service	1/1/2026	FERC has required that all licensees/owners of dams evaluate the seismic stability of each of their dams utilizing newer criteria. Mountain Island (MI) preliminary analysis indicates that an adequate factor of safety does not exist.	Upgrades to Mt. Island dam to meet new FERC seismic and flood event requirements.	$ 89,326,498	$ -	$ -	MI000028
44	FERC Moutain Island Riverbend Access Area	Hydro Plant in Service	12/1/2025	Riverbend Access Area	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 5,108,386	$ -	$ -	MI001205
45	FERC Oxford Gate Guides for Floodgates	Hydro Plant in Service	12/1/2025	Floodgate guide replacement (First 10') for 10 floodgates.	Existing floodgates guides are collapsing and binding the gates. Installing new gate guides will maintain reliable operation for the renewed 40-year FERC license.	$ 6,993,715	$ -	$ -	OX000050
46	FERC Oxford Spillway Piers Bulkhead	Hydro Plant in Service	12/1/2025	Concrete repairs to ensure infrastructure life is extended.	Spillway and bulkhead concrete is cracking and spalling due to age. Restore degraded concrete elements to original plant configuration to maintain reliability for remainder of 40-yr FERC license renewal.	$ 17,304,036	$ -	$ -	OX000006

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness Bryan Walsh
Exhibit 1

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47	FERC Thorpe Hydro Trout Crk Pipeline Coatings	Hydro Plant in Service	7/1/2026	FERC issue, coatings of Thorpe pipeline at the Trout Creek crossing	Replace coating on main pipeline around the Trout Creek crossing to prevent corrosion and maintain pipeline integrity.	$ 1,648,954	$ -	$ -	TH000011
48	FERC WA Flood Management	Hydro Plant in Service	12/1/2023	Spillway Modifications for Flood Management at Wateree Hydro in Accordance with Catawba Wateree License	Renewed Catawba Wateree FERC License mandates additional 10,000 cfs water passage capability through the Wateree dam/powerhouse. Additional 10,000 CFS of flow will reduce the amount of residential flooding on Lake Wateree during high rain events will provide capability to better prepare for storm inflows by proactively passing more	$ 30,019,959	$ -	$ -	WA001213
49	FERC Wateree Taylor Creek Bank Fishing	Hydro Plant in Service	12/1/2025	FERC Taylor Creek Bank Fishing	Lake access and public infrastructure projects are included in the FERC Catawba Relicensing Requirement	$ 1,160,704	$ -	$ -	WA001206
50	Fishing Creek Replace 9070 to 3i Controls	Hydro Plant in Service	12/1/2026	Replace Fishing Creek Station/Unit Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,500,302	$ -	$ -	FC001225
51	Fishing Creek U2 Replace Turbine Gate Casing	Hydro Plant in Service	7/1/2025	Replace turbine gate casing. Includes bottom ring, head cover, wicket gates, arms, links, pins, operating ring, servo motors and associated equipment. All bushings and wear pads to be greaseless.	Foreign material damage to the distributor system and age of equipment (particularly the cast iron head cover) warrant replacement of turbine gate casing components.	$ 7,049,591	$ -	$ -	FC020024
52	Fishing Creek U3 Headgate Replacement	Hydro Plant in Service	8/1/2025	Headgate Replacement Unit 3	FERC dam safety requirements include ensuring head gate and pressure boundary integrity, with emergency closure capability. Scope is to replace aged 1910's vintage head gates to maintain station functionality.	$ 2,286,314	$ -	$ -	FC030009
53	Fishing Creek U3 Replace Wear Rings	Hydro Plant in Service	12/1/2026	Replace Fishing Ck U3 Wear Rings	Replacing worn turbine wear rings will maintain unit efficiency.	$ 1,146,481	$ -	$ -	FC031204

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7Sub 1276

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Exhibit **1**

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54	Fishing Creek U4 Headgate Replacement	Hydro Plant in Service	8/1/2026	Headgate Replacement Unit 4	FERC dam safety requirements include ensuring head gate and pressure boundary integrity, with emergency closure capability. Scope is to replace aged 1910's vintage head gates to maintain station functionality.	$ 1,862,805	$ -	$ -	FC040010
55	Fishing Creek U5 Headgate Replacement	Hydro Plant in Service	8/1/2026	Headgate Replacement Unit 5	FERC dam safety requirements include ensuring head gate and pressure boundary integrity, with emergency closure capability. Scope is to replace aged 1910's vintage head gates to maintain station functionality.	$ 1,862,805	$ -	$ -	FC050008
56	Great Falls Replace Headworks Rake and Racks	Hydro Plant in Service	9/1/2024	Replace the aging trask rake at the Great Falls Headwork and replace with a new system that runs off EAL. Project would be to remove existing equipment and track and to install a new track and rake. Major damage has also been found to the trash racks and all ten require replacement. Dredging in front of the headworks will be required to ensure racks are fully uncovered for replacement.	Replace the old intake trash rake system which has had several repairs to cracked welds and hydraulic leaks. New trash racks will be installed (10 locations), along with correcting the grating on top of the racks	$ 2,138,210	$ -	$ -	GF000039
57	HCA Dust BC 6C7C6D7D Transfer	Steam Plant in Service	12/1/2026	Install a conveyor transfer system between the head of 6C and the load zone of 7C and between the head of 6D and the load zone of 7D.	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The coal conveyor transfer systems between 6C and 7C and between 6D and 7D allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting in the room during material handling. Currently, this fugitive material has to be manually removed to maintain compliance with Combustible Dust	$ 2,727,437	$ -	$ -	BC020315
58	HCA Dust BC23 Conv Trans Repl	Steam Plant in Service	12/1/2023	Replace Belews Creek 2-3 coal transfer conveyor.	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The material transfer systems between 2 and 3 coal conveyors allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting in the room during material handling. This fugitive material has to be manually removed to maintain compliance with the	$ 1,840,046	$ -	$ -	BC001465
59	HCA DustBC 1 Head Chute Repl	Steam Plant in Service	8/1/2025	#1 head end chute replacement this is the chute going into the 90 ton surge bin. (remove old chute and old magnetic seperator. replace with a flow directive chute made from stainless steel and lined with impact resistant 1" ceramic. the new chute should control the flow towards the center of the bin	#1 Head end coal chute is at end of life. The old magnetic separator needs to be removed from service and chute modified to control combustible dust. New chute will control dust and reduce chances of dust build up for mitigation.	$ 1,517,307	$ -	$ -	BC000199

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

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60	HCA DustBC 6A6D Vibratory Fdrs	Steam Plant in Service	12/1/2024	Install vibratory feeder and slide gates on 6A, 6B, 6C, & 6D hoppers.	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The material transfer systems between Surge Bin and Conveyors 6A, 6B, 6C, and 6D allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting in the room during material handling. This fugitive material has to be manually removed to maintain compliance with the Governance Procedure	$ 1,896,384	$ -	$ -	BCCM0023
61	HCA Transfer House Wash Down	Steam Plant in Service	11/1/2023	HCAD Transfer House Wash Down System	Provide a fixed washdown system of piping and spray nozzles to remove coal dust from the Transfer House through the operation of one or more valves. Compliance with Combustible Dust Governance Procedure.	$ 1,590,146	$ -	$ -	MS000747
62	Jocassee Replace 9070 Controls	Hydro Plant in Service	11/1/2025	Replace Jocassee Station/Unit Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 2,722,207	$ -	$ -	JO001239
63	Jocassee DFSP Ramp Replacement	Hydro Plant in Service	12/1/2025	The boat ramps at the Main Entrance and the Villas have fallen into disrepair and need to be replaced	The boat ramps at the main entrance and villas have fallen into disrepair and need to be replaced in oder to maintian public access to Lake Jocassee	$ 1,739,296	$ -	$ -	JO000204
64	Jocassee Exterior Life Extension	Hydro Plant in Service	12/1/2024	Replace Jocassee Alpha Intake crane controls; update main & polar hoists with new components including motors and main cable; new cylinder gate seals; and coat entire super structure, cylinder gate, and exposed bridge steel. Also includes the tailrace structure, powerhouse roof deck structure coatings.	Having been in operation for more than 40 years, a number of major exterior components of the power plant have exceeded their design life. These components need to either be completely replaced or significantly rehabilitated in order to reliably extend the operational life the plant.	$ 19,731,322	$ -	$ -	JO001249
65	Jocassee Station Motor Control Center	Hydro Plant in Service	1/1/2024	Replace Station Motor Control Centers that are original plant equipment (40+ years) and no longer supported by OEM.	Components (breakers, starters, operators, etc.) are experiencing age related wear which can cause reduced reliability of this equipment.	$ 1,877,543	$ -	$ -	JO000095
66	Jocassee U1 U2 Motor Control Center	Hydro Plant in Service	12/1/2024	Replace Unit 1 and Unit 2 Motor Control Centers that are original plant equipment (40+ years) and no longer supported by OEM.	Components (breakers, starters, operators, etc.) are experiencing age related wear which can cause reduced reliability of this equipment.	$ 1,600,695	$ -	$ -	JO010055

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

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67	Jocassee U3 U4 Motor Control Center	Hydro Plant in Service	12/1/2025	Replace Unit 3 and Unit 4 Motor Control Centers that are original plant equipment (40+ years) and no longer supported by OEM.	Components (breakers, starters, operators, etc.) are experiencing age related wear which can cause reduced reliability of this equipment.	$ 1,626,782	$ -	$ -	JO030016
68	Jocassee Warehouse Replace Siding Roof	Hydro Plant in Service	12/1/2026	Jocassee Whse Replace siding & roof	Existing Jocassee warehouse roof and siding are degraded and need of replacement.	$ 1,296,456	$ -	$ -	JO000151
69 /1	Lincoln CT 17	Other Production Plant in Service Transmission Plant in Service	12/1/2024	Construction of one Advanced 1X1 J-Frame simple cycle unit (367 MW summer / 404 MW winter) at the existing Lincoln CT site.	Duke Energy Carolinas (DEC) has a 468MW CT need in the 2024 timeframe as referenced in its Integrated Resource Plan (IRP) filed with the North Carolina Utilities Commission (NCUC) in September 2016. Project amount also includes associated transmission assets that have previously been placed in service and now can be included for recovery per the associated CPCN order.	$ 183,882,453	$ 4,254,133	$ -	LC170001
70	Lookout Shoals Repl Jr Generator Penstock Liner	Hydro Plant in Service	12/1/2025	Penstock Replacement - Junior Generators	The carbon steel piping is starting to have interior corrosion issues that need to be addressed. Wall thinning is occuring and leading to through wall leaks of the piping that is above the poured concrete decking. Multiple patches have been installed over the years to repair pin hole leaks.	$ 1,011,925	$ -	$ -	LK001228
71	Lookout Shoals Replace Jr Generator Headgate	Hydro Plant in Service	5/1/2025	This headgate replacement is for the junior generators.	The main generator head gates were replaced in the 90's with steel and concrete construction while the junior generator headgate was not. To ensure continued reliability for the junior generators (min-flow unit) the original construction head gate needs to be replaced.	$ 1,113,714	$ -	$ -	LK000029
72	Marshall - Replace Fuel Handling Trnsfr 2024	Steam Plant in Service	11/1/2024	Install new coal conveyor transfer system for 1A/B to 4A/B and 2B Transfers at Marshall Station	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The conveyor transfer systems between 1A and 1B and 4A/4B/2B allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting during material handling. This fugitive material has to be manually removed by to maintain compliance	$ 2,428,161	$ -	$ -	MS000745
73	Marshall - Replace Fuel Handling Trnsfr 2025	Steam Plant in Service	11/1/2025	Install new coal conveyor transfer system for - F6A/F6B to 4A/B Transfers at Marshall Station	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The conveyor transfer systems between F6A/F6B to 4A/B Transfer allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting during material handling. This fugitive material has to be manually removed by to maintain compliance	$ 2,625,469	$ -	$ -	MS000746

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
74	Marshall Aux Boiler	Steam Plant in Service	10/1/2026	Provide auxilliary steam to start Units 3 & 4 when Units 1 & 2 are offline. Units 1-2 expected to retire in 2028.	Aux steam is required to startup Marshall U3 and U4, requiring another boiler on line to produce steam for startup. If all units were offline U1 or U2 would be needed for startup to get U3 or U4 online. U1 & 2 are projected to retire in 2028 and aux steam source for MS3 & 4 will be needed.	$ 12,696,667	$ -	$ -	MSCM1242
75	Marshall Coal Blending PLC Replacement	Steam Plant in Service	12/1/2023	Replace Marshall coal blending programmable logic controllers (PLC).	Bringing coal blending system controls into the plant Ovation digital control system will provide more efficient operation and facilitate troubleshooting for maintenance.	$ 1,332,432	$ -	$ -	MS001315
76	Marshall Common Boiler Outage - Coal (2025)	Steam Plant in Service	12/1/2025	Marshall Boiler 2025 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 525,000	$ -	$ 1,925,000	MS00xxxx
77	Marshall Common Boiler Outage - Coal (2024)	Steam Plant in Service	12/1/2024	Marshall Boiler 2024 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 6,131,250	$ -	$ 3,438,655	MS00xxxx
78	Marshall Common Boiler Outage - Coal (2023)	Steam Plant in Service	12/1/2023	Marshall Boiler 2023 Capital and O&M Outage - Coal	Boiler and Balance of Plant reliability projects	$ 1,781,250	$ -	$ 4,475,000	MS00xxxx
79	Marshall Crusher Motor Chillers Alt Feed	Steam Plant in Service	9/1/2023	Marshall - Coal Crusher Motors Chillers Alternate Feeder	Crusher Motors Chiller power is currently fed from Unit 1 with no backup/alternate source. Crusher motors cannot run without cooler skid. Providing chiller backup power will increase reliability of coal crusher motors.	$ 1,303,455	$ -	$ -	MS000926
80	Marshall MS01 600V 1XS MCC Replacement	Steam Plant in Service	10/1/2024	MS01 - 600V 1XS MCC Replacement	Parts for the Marshall Unit 1 Motor Control Centers (MCC) are obsolete and are harder to obtain. Some failures have occurred resulting in unit trips.	$ 959,945	$ -	$ -	MS011378
81	Marshall MS1 600V 1XD MCC Replacement	Steam Plant in Service	10/1/2025	600V 1XD MCC Replacement	Parts for the Marshall Unit 1 Motor Control Centers (MCC) are obsolete and are harder to obtain. Some failures have occurred resulting in unit trips.	$ 999,352	$ -	$ -	MS011394
82	Marshall MS1 MSU Transf Cooler and Pump	Steam Plant in Service	10/1/2024	Replace Marshall Unit 1 Main Step-Up (MSU) transformer oil coolers and pumps.	Transformer coolers and pumps are starting to leak and fail.	$ 1,561,748	$ -	$ -	MS010109
83	Marshall MS2 4kV Relay System replacement	Steam Plant in Service	10/1/2025	MS2 4KV Relay System replacement	The existing electromechanical relays on the Marshall Unit 2 4kV system are original equipment. Spare parts for the electro-mechanical relays are getting hard to obtain. The new digital relays are easier to program and have additional protection schemes. The new relays will also reduce the arc flash ratings on the existing gear which will facilitate maintenance on the feeder breakers.	$ 964,159	$ -	$ -	MS020111
84	Marshall MS2 MSU Xfrmr Cooler and Pump	Steam Plant in Service	11/1/2025	Replace Marshall Unit 2 Main Step-Up (MSU) transformer oil coolers and pumps.	Transformer coolers and pumps are starting to leak and fail.	$ 1,625,475	$ -	$ -	MS020064

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
85	Marshall MS3 Blr SH Pend Pla Asbly	Steam Plant in Service	5/1/2026	Replace Marshall U3 Bloiler Superheat Pendant Platen Tube Assemblies	Inspection of the boiler superheat platen outlet header and terminal tube penetrations identified 40 areas that needed repair. The superheat pendant tube assembly lower loops also have a history of failing due to intergranular stress corrosion cracking. This replacement would include the entire pendant platen assemblies extending to the platen outlet header.	$ 11,068,510	$ -	$ -	MS031264
86	Marshall MS3 Centerwall Replacement	Steam Plant in Service	5/1/2026	Marshall U3 Boiler Centerwall Replacment and thermal spray application for fireside corrosion protection	Marshall Unit 3 Boiler Center Wall tubes are experiencing corrosion. Replacement tube assemblies will be coated to increase corrosion protection to maintain unit reliability.	$ 11,426,102	$ -	$ -	MS031310
87	Marshall MS3 FD Fan Bearing Oil System	Steam Plant in Service	5/1/2024	Marshall Unit 3 Forced Draft (FD) FAN BEAR NG O L SYSTEM REPLACEMENT	Existing lube oil system is 50yrs old. Current performance of lube oil skids is deteriorating and forced draft (FD) fan bearings could be damaged in the event the skid fails. Unit 3 FD fan lube oil skids are outdated, and replacement parts are difficult to find. New skids will also allow for oil filtration and sampling for condition which will reduce the	$ 910,430	$ -	$ -	MS030130
88	Marshall MS3 Retube Condenser	Steam Plant in Service	6/1/2025	Retube Unit 3 Condenser	As the age of the condenser and hours of operation increase the number of tube failures are also increasing. A tube leak results in the tube being plugged to seal off the tube, preventing the leak. As a result of sealing off tubes the heat transfer area is declining. This adversely affects the unit's performance and deteriorating the heat rate, especially during summer months	$ 4,995,222	$ -	$ -	MS031304
89	Marshall MS3 SH Division Panel Assembly	Steam Plant in Service	5/1/2026	Marshall Unit 3 Superheat (SH) Division Panel Assembly	The boiler superheat (SH) Division Panel Tube Assemblies are experiencing fire side corrosion noted mostly on the outer loops near the right side wall. Division Panel Tube Spacers are failing due to dissimilar metal welds between the spacer tubes and each division panel. There are also tube failures in the division panel wrapper tubes due to intergranular stress corrosion cracking. There are two (2) horizontal spacer tubes per Division Panel for a total of sixteen (16). Both front and rear Superheat division panels need to be replaced.	$ 12,533,431	$ -	$ -	MS031266
90	Marshall MS4 APH REPL	Steam Plant in Service	5/1/2026	Marshall Unit 4 air preheater (APH) basket replacement	Installing new baskets will reduce resistance on the forced draft fans so that they can supply more combustion air when running on natural gas to make up for the loss of combustion air normally provided by the pulverized coal system when running on coal.	$ 5,922,883	$ -	$ -	MS040197

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
91	Marshall MS4 BCP Valve Replacement	Steam Plant in Service	6/1/2026	Replace Boiler Circulating Pump (BCP) valves on Marshall Unit 4	The Marshall Unit 4 A and B boiler circulating pump (BCP) suction, discharge, bypass valve and recirculation valve are reaching end of life. The valves are original equipment to the plant from the late 1960's. Repairs have been made over the course of their existence to keep them in operation, but due to the age and condition of these valves, they are beginning to require more repairs. This is resulting in forced outages from packing and seal leaks. There were two occurrences recorded in the past three years of forced outages caused by these faulty valves. The decline in condition will only increase this trend	$ 2,080,404	$ -	$ -	MS040111
92	Marshall MS4 Condenser Retube	Steam Plant in Service	6/1/2026	NET Retube Unit 4 Condenser	As the age of the condenser and hours of operation increase the number of tube failures are also increasing. A tube leak results in the tube being plugged to seal off the tube, preventing the leak. As a result of sealing off tubes the heat transfer area is declining. This adversely affects the unit's performance and deteriorating the heat rate, especially during summer months.	$ 6,364,856	$ -	$ -	MS041278
93	Marshall MS4 FD Fan Bearing Oil System	Steam Plant in Service	4/1/2024	Marshall Unit 4 Forced Draft (FD) FAN BEAR NG O L SYSTEM REPLACEMENT	Existing lube oil system is 50yrs old. Current performance of lube oil skids is deteriorating and forced draft (FD) fan bearings could be damaged in the event the skid fails. Unit 4 FD fan lube oil skids are outdated, and replacement parts are difficult to find. New skids will also allow for oil filtration and sampling for condition which will reduce the	$ 936,837	$ -	$ -	MS040117
94	Marshall MS4 D fan motor LCI replacement	Steam Plant in Service	6/1/2024	Replace existing Synchronous Induced Draft (D) Fan Motors with Induction Motors. Replace Obsolete LCI Fans Speed Controllers with New Generation variable frequency drive (VFD) Speed Controllers. Replace current motor vibration equipment.	The MS4 Induced Draft (D) Fan Motors and variable speed LCI drives are 35 years old and are obsolete. Spare parts and knowledgeable vendor technical support are difficult to obtain. Replacing with modern equipment will maintain unit reliability.	$ 7,210,208	$ -	$ -	MS040139
95	Marshall MS4 replace ME in absorber tank	Steam Plant in Service	12/1/2026	Replace the Flue Gas Desulfurization (FGD) absorber vessel mist eliminators with upgraded material that can withstand the higher exhaust gas temperatures associated with the natural gas conversion.	Upgrade to modern materials to allow reliable unit operation when firing on natural gas.	$ 1,169,550	$ -	$ -	MS040168
96	Marshall Station - Replace #3 chiller and air handling unit (AHU).	Steam Plant in Service	12/1/2023	Marshall Station - Replace #3 chiller and air handling unit (AHU).	Equipment has been repeatedly failing and is in need of replacement. These chillers provide cooling to all DCS controls and control room for running the plant control systems.	$ 951,160	$ -	$ -	MS001093
97	Marshall Station - Replace #4,#5 chiller and air handling units (AHU).	Steam Plant in Service	12/1/2024	Marshall Station - Replace #4,#5 chiller and air handling units (AHU).	Equipment has been repeatedly failing and is in need of replacement. These chillers provide cooling to all DCS controls and control room for running the plant control systems.	$ 1,638,890	$ -	$ -	MS001094

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System) Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
98	Mill Creek CT - Replace U1-8 Turbine Controls	Other Production Plant in Service	11/1/2025	Replace the GE MKVI turbine control systems on Mill Creek Units 1 thru 8 with equivalent controls or current technology controls.	GE support for the existing legacy MkVI controls is expected to be discontinued in 2024.	$ 2,525,572	$ -	$ -	MKC00006
99	Mountain Island Replace 9070 Controls	Hydro Plant in Service	9/1/2025	Replace Mountain Island Station/Unit Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,291,761	$ -	$ -	MI001215
100	Mountain Island U3 Trash Racks Stop Logs System	Hydro Plant in Service	12/1/2026	Project to replace existing trash racks with new upstream Unit isolation with procurement and installation of new universal trash racks stop logs system attached to the forebay.	Units cannot be isolated using existing Lee Head Gate due to safety concerns. Installation of an integrated Trash Racks / Stop Logs (TRSL) system will provide the needed unit isolation.	$ 5,400,695	$ -	$ -	MI030004
101	NA GSU Transformer Replacement	Hydro Plant in Service	12/1/2024	Replacement of the failed transformfer at Nantahala and potential hot spare.	The Nantahala 3-phase general step-up (GSU) transformers need replacement. The GSUs are/were 1947 vintage and beyond their useful lifespan. Bank #2 failed due to an internal fault and was replaced in 2022 with a non-matching used transformer on an emergent project to get the generator back to full capacity. The used transformer and original bank #1 GSU from 1947 both need to be replaced with new GSUs specifically designed for the site to maintain reliable generation and recreational flow requirements	$ 3,153,075	$ -	$ -	NA000643
102	Nantahala Hydro Tainter Gate Hoist Replacements	Hydro Plant in Service	1/1/2026	Replace and automate 4 tainter gates at the Nantahala spillway.	This is a dam safety/reliability project. The current gates are only able to be monitored and operated locally. An operator is dispatched to site during a flood event to manually operate. New automated gate system will allow for remote operation for faster response to flood events.	$ 3,342,718	$ -	$ -	NA000498
103	Ninety Nine Island U4 Turbine Runner Replacement	Hydro Plant in Service	12/1/2026	Replace turbine runner at Ninety-nine island Unit 4	Turbine and internal components are being eroded over time due to sandy river water which degrades performance. Replacing major turbine components will maintain unit reliability.	$ 9,157,859	$ -	$ -	NN040001
104	OPTIM Combustion Turbine Hot Gas Path (HGP) Dan River Unit 8	Other Production Plant in Service	11/1/2023	Perform a HGPI on Dan River Unit 8 CT per the latest OPT M Model.	Perform a standard hot gas path inspection in accordance with OEM and company engineering standards. GE 7F Gas Turbines require major maintenance at set intervals based on the number of run hours. t is projected that this unit will reach or exceed the number of run hours required to perform this maintenance in 2023.	$ 16,953,177	$ -	$ 50,000	DR080050

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System) Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
105	OPTIM Combustion Turbine Hot Gas Path (HGP) Dan River Unit 9	Other Production Plant in Service	11/1/2023	Perform a HGPI on Dan River Unit 9 CT per the current OPT M Model.	Perform a standard hot gas path inspection in accordance with OEM and company engineering standards. GE 7F Gas Turbines require major maintenance at set intervals based on the number of run hours. t is projected that this unit will reach or exceed the number of run hours required to perform this maintenance in 2023.	$ 16,954,004	$ -	$ 50,000	DR090055
106	OPTIM Exciter MJR U2HP	Steam Plant in Service	6/1/2026	Belews Creek Unit 2 HP Exciter Major Inspection per OPTIM and Generator Program Manager/SME recommendations. Workscope to be performed offsite by various vendors. Includes full inspection/testing of rotor, base, and stator components; stationary (stator) coil rewind; base refurbishment; and cooler retubing	BC2 HP exciter base, wiring and field coils are 40+ years old. Field coil insulation issues are developing, which is a unit reliability risk. The exciter base is distorted. Exciter component contamination, especially the diode wheel, from airborne particles has significantly increased since the installation of the gypsum handling facility on the east side of the powerhouse. Diode wheel contamination can provide a path for electrical shorts.	$ 2,066,233	$ -	$ -	BC020271
107	OPTIM Exciter MJR U2LP	Steam Plant in Service	5/1/2026	Belews Creek Unit 2 LP Exciter Major Inspection per OPTIM and Generator Program Manager/SME recommendations. Workscope to be performed offsite by various vendors. Includes full inspection/testing of rotor, base, and stator components; stationary (stator) coil rewind; base refurbishment; cooler retubing; and conversion of exciter housing to Positive Pressure Ventilation.	BC2 LP Exciter Major Inspection per OPT M recommendations. Exciter base, wiring and field coils are 45+ years old. Field (stationary) coil insulation issues are developing, which is a unit reliability risk. The exciter base is distorted. Exciter component contamination, especially the diode wheel, from airborne particles has significantly increased since the installation of the gypsum handling facility on the east side of the powerhouse. Diode wheel contamination can provide a path for electrical shorts.	$ 1,192,693	$ -	$ 738,524	BC020275
108	OPTIM ST Valve CRV MS4	Steam Plant in Service	6/1/2026	MS4 Combined Reheat Valves Replacement	Replace capital valve components of the Marshall Unit 4 Steam Turbine based on Duke Turbine/Generator Services recommended maintenance interval.	$ 2,193,145	$ -	$ 81,008	MS040203
109	OPTIM ST Valve RHSVIVTVGV U2	Steam Plant in Service	5/1/2024	Belews Creek Unit 2 Capital Turbine Valve Replacements	Replace capital valve components of the Belews Creek Unit 2 Steam Turbine based on Duke Turbine/Generator Services recommended maintenance interval.	$ 4,587,937	$ -	$ 282,745	BC020371
110	OPTIM ST07 Valves 2023	Other Production Plant in Service	11/1/2023	Rebuild the Dan River Steam Turbine Valves per the Outage Template and OPTIM Target. Valves include Control/Governor/Stop/Throttle/RHS/Intercept/CR/Vent/Blow Valves	Replace capital valve components of the Dan River CC Steam Turbine 7 Valves based on Duke Turbine/Generator Services recommended maintenance interval.	$ 1,290,776	$ -	$ 658,282	DR070023
111	Ovation Evergreen Upgrade	Other Production Plant in Service	12/1/2025	Evergreen upgrade of the Ovation DCS system.	Maintain Lincoln CT plant control system reliability by replacing aging/obsolete digital control system (DCS hardware). Upgrade the Lincoln Emerson Ovation DCS to the latest revision. Upgrade HMIs to latest Windows operating system to continue to support patching	$ 1,584,656	$ -	$ -	LCC00139

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
112	Oxford OX Replace 9070 to 3i Controls	Hydro Plant in Service	12/1/2024	Replace Oxford Station/Unit Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,047,103	$ -	$ -	OX001222
113	Oxford Replace Spillway Gantry Girders	Hydro Plant in Service	12/1/2025	Replace existing crane rail support beams to increase design wind speed to 45 MPH for movement between gates and transporting of stop log sections.	The Oxford Hydro station is equipped with a spillway that has ten spillway gates. These spillway gates are operated by two gantry cranes. The existing crane rail support beam system was designed with a wind load rating that is limited to 25 MPH for the cranes to move unloaded and a design wind load of 15 MPH while in motion transporting their heaviest loads, the stop log sections. Two new cranes manufactured by Reel COH were installed on the old gantry rail system. These new gantry cranes are designed for 45 MPH design wind speed for operation carrying a load and 90 MPH when parked. Upgrading the old crane rail system will allow the new cranes to be operated at the new wind load ratings	$ 6,465,101	$ -	$ -	OX000048
114	Oxford U2 Replace Mandoors	Hydro Plant in Service	12/1/2026	Oxford Unit 2 Mandoors	Oxford U2 Mandoors - existing door is original to the station and the cast iron door and bolting flange have deteriorated to the point that achieving a seal is not possible.	$ 1,042,362	$ -	$ -	OX020008
115	Replace Filtered Water Riser - Marshall	Steam Plant in Service	11/1/2023	Replace filtered water riser piping at Marshall Steam Station	Piping is showing signs of significant corrosion. Replacement of this piping is required to ensure future reliability and purity of the Filtered Water System.	$ 2,051,863	$ -	$ -	MS000577
116	Replace Marshall Coal Crusher Transfer Feeder Belts and Chutes 2026	Steam Plant in Service	9/1/2026	Replace Marshall Coal Crusher Transfer Feeder Belts and Chutes 2026	Combustible Dust Governance Procedure states that dust layers in classified areas cannot exceed 1/8" on surfaces. The conveyor transfer systems in the Dumper House between feeders F1A and F1B --1A and 1B--- 3A and 1A and between 3B and 1B and the Crushers allow fugitive material to escape the transfer systems and spill on the structural members and floor. These systems are also contributing to the dusting in the house during material handling. This fugitive material has to be manually removed to maintain compliance with the	$ 2,541,562	$ -	$ -	MS000480
117	Replace Marshall Unit 2 Air Preheater (APH) baskets	Steam Plant in Service	12/1/2023	Repl Marshall Unit 2 air preheater (APH) baskets with updated ABS dsgn	Current air preheater (APH) baskets are at end of life. Replacing degraded and plugged baskets will reduce risk of derates from induced draft (ID) fan capacity limits.	$ 3,728,617	$ -	$ -	MS020175

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
118	Rhodhiss RH Replace 9070 to 3i Controls	Hydro Plant in Service	12/1/2024	Replace Rhodhiss Station/Unit Control Systems from 9070 to 3i (U1, 2, and SCC)	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,036,822	$ -	$ -	RH000029
119	Rhodhiss Spillway Debris Gate	Hydro Plant in Service	6/1/2024	Install gate in spillway to pass floating debris. Part of Rhodhiss Life Extension.	Bypassing floating debris before it submerges and builds up in the intake will reduce clogging of trash racks on the unit that impacts unit performance. Will also reduce frequency of dredging the intake.	$ 3,628,878	$ -	$ -	RH000039
120	Rockingham CT RK00 Combustion Dynamics Monitoring System (CDMS) Autotune System	Other Production Plant in Service	10/1/2024	Rockingham CT Combustion Dynamics Monitoring System and Autotune System Installation	Current system requires tuning based on gas properties and ambient conditions. Failure to tune can result in derates and excess NOx. New autotune system will minimize both NOx and seasonal tuning. There should also be a benefit of minimized unloading situations based on the system automatically adjusting to prevent them.	$ 3,132,146	$ -	$ -	RK001265
121	Rockingham CT RK01 Gen Stator and Rotor Rewind	Other Production Plant in Service	11/1/2025	Generator Rewind (Stator and Rotor)	Inspection reports indicate partial discharge (PD) activity which could lead to generator failure. PD activity indicates breakdown in the insulation between copper bars which results in improper flow of current and can eventually create an open circuit or the circuit going to ground, which could lead to generator failure.	$ 6,020,000	$ -	$ -	RK010068
122	Rockingham CT RK02 Gen Stator and Rotor Rewind	Other Production Plant in Service	5/1/2026	Generator Rewind (Stator and Rotor)	Inspection reports indicate partial discharge (PD) activity which could lead to generator failure. PD activity indicates breakdown in the insulation between copper bars which results in improper flow of current and can eventually create an open circuit or the circuit going to ground, which could lead to generator failure.	$ 6,022,971	$ -	$ -	RK020002
123	Rockingham CT RK03 Gen Stator and Rotor Rewind	Other Production Plant in Service	11/1/2025	Generator Rewind (Stator and Rotor)	Inspection reports indicate partial discharge (PD) activity which could lead to generator failure. PD activity indicates breakdown in the insulation between copper bars which results in improper flow of current and can eventually create an open circuit or the circuit going to ground, which could lead to generator failure.	$ 6,020,000	$ -	$ -	RK030040
124	Rockingham CT RK04 Gen Stator and Rotor Rewind	Other Production Plant in Service	11/1/2026	Generator Rewind (Stator and Rotor)	Inspection reports indicate partial discharge (PD) activity which could lead to generator failure. PD activity indicates breakdown in the insulation between copper bars which results in improper flow of current and can eventually create an open circuit or the circuit going to ground, which could lead to generator failure.	$ 6,094,155	$ -	$ -	RK040015

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System) Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M	Funding Project
125	Rockingham CT RK05 Gen Stator and Rotor Rewind	Other Production Plant in Service	3/1/2026	Rewind Generator (Stator and Rotor)	Inspection reports indicate partial discharge (PD) activity which could lead to generator failure. PD activity indicates breakdown in the insulation between copper bars which results in improper flow of current and can eventually create an open circuit or the circuit going to ground, which could lead to generator failure.	$ 6,005,878	$ -	$ -	RK050001
126	Thorpe Hydro Generator Replacement	Hydro Plant in Service	12/1/2025	Rewind Generator (Stator and Rotor) based on condition assessment	Rewind Generator (Stator and Rotor) based on condition assessment	$ 2,979,922	$ -	$ -	TH000071
127	Thorpe Hydro GSU Replacement	Hydro Plant in Service	3/1/2026	Replace Thorpe Hydro General Step-Up (GSU) transformer with modern equipment.	Thorpe Hydro's Main Tranformers are original to the plant and are well past their life expectancy. These units currently have no protection outside of differential current trips, and should be replaced with modern assets.	$ 6,305,509	$ -	$ -	TH000052
128	Wateree U1 Wear Ring Replacement	Hydro Plant in Service	10/1/2026	Wateree U1 Wear Ring Replacement	Replacing worn turbine wear rings will maintain unit efficiency.	$ 2,961,948	$ -	$ -	WA011203
129	Wateree U2 Wear Ring Replacement	Hydro Plant in Service	10/1/2026	Wateree U2 Wear Ring Replacement	Replacing worn turbine wear rings will maintain unit efficiency.	$ 1,595,405	$ -	$ -	WA021201
130	WS Lee CC Ammonia Tank Upgrade	Other Production Plant in Service	7/1/2024	Replace 15,000 gallon ammonia tank with an upsized model.	Add ammonia storage capacity to accommodate varying chemical delivery times without running low during operation to maintain emission limits. Adding 15,000-gal tank would provide same total storage (30,000 gals) as Smith Combined Cycle Power Block 5.	$ 1,063,671	$ -	$ -	LSCC0136
131	WS Lee CC LS11 HRH and CRH Isolation Valves	Other Production Plant in Service	11/1/2026	Install hot reheat and cold reheat isolation valves on HRSG 11.	WS Lee combined cycle plant does not have double isolation on the hot reheat (HRH) steam and cold reheat steam (CRH) between each heat recovery steam generator (HRSG) and the headers. During 1x1 operations (one combustion turbine + one steam turbine), the existing single isolation valves are not sufficient to prevent steam from leaking by.	$ 1,643,821	$ -	$ -	LS110016
132	WS Lee CC LS12 HRH and CRH Isolation Valves	Other Production Plant in Service	11/1/2026	Install hot reheat and cold reheat isolation valves on HRSG 12.	WS Lee combined cycle plant does not have double isolation on the hot reheat (HRH) steam and cold reheat steam (CRH) between each heat recovery steam generator (HRSG) and the headers. During 1x1 operations (one combustion turbine + one steam turbine), the existing single isolation valves are not sufficient to prevent steam from leaking by.	$ 1,643,821	$ -	$ -	LS120015

DUKE ENERGY CAROLINAS
RRE MYRP PROJECT LIST
DOCKET NO. E-7 Sub 1276

Witness **Bryan Walsh**
Exhibit **1**

Line No.	MYRP Project Name	FERC Function	Forecasted In-Service Date	Project Description & Scope	Reason for the Project	Total Project Amount (System): Projected In-Service Costs	Total Project Amount (System): Projected Annual Net O&M	Total Project Amount (System): Projected Installation O&M	Funding Project
133	WS Lee CC Spare GSU Containment	Other Production Plant in Service	8/1/2025	Installation of the foundation/containment for the Spare GSU & purchase of spare GSU	Due to the long lead time for a General Step-Up (GSU) Transformer delivery, Duke Energy is considering purchasing a spare transformer for WS Lee CC with a milestone payment in 2025 and installation in 2026. The Spare GSU will require a concrete base with containment, drain with valve and include electrical service for the coolant's heaters. Having the Spare GSU Transformer shortens unit downtime if there is a GSU failure.	$ 1,578,351	$ -	$ -	LSCC0146
134	WS Lee CC Unit Flex Enhancement Prjcts	Other Production Plant in Service	10/1/2026	WS Lee CC Unit Flex Enhancement Prjcts	WS Lee CC Unit Flexibility Projects to accommodate future renewables generation. Engineering analysis will determine the best option for WS Lee. Possible projects include advanced drum level control, exhaust gas cooling, site automation improvements, CT Purge credits, thermal fatigue tracking software, Reheat attemperator upgrades. And would facilitate increased turndown to lower loads, faster ramp rates, increased Megawatts, etc.	$ 2,103,915	$ -	$ -	LSCC0111
135	WS Lee CC WSL U11 OPTIM LTSA MAJOR	Other Production Plant in Service	11/1/2026	WS LEE CC - U11 HOT GAS PATH/ MAJOR NSPECTION S EMENS LTSA	Perform a standard hot gas path inspection in accordance with OEM and company engineering standards. Siemens 501F Gas Turbines require major maintenance at set intervals based on run hours. t is projected that this unit will reach run hours required to perform this maintenance in 2026.	$ 20,069,758	$ -	$ 3,288,157	LS110035
136	WS Lee CC WSL U12 OPTIM LTSA MAJOR	Other Production Plant in Service	11/1/2026	WS LEE CC - U12 HOT GAS PATH/ MAJOR NSPECTION S EMENS LTSA	Perform a standard hot gas path inspection in accordance with OEM and company engineering standards. Siemens 501F Gas Turbines require major maintenance at set intervals based on run hours. t is projected that this unit will reach run hours required to perform this maintenance in 2026.	$ 20,069,758	$ -	$ 3,288,157	LS120032
137	WS Lee CT 7C and 8C Spare GSU Containment	Other Production Plant in Service	8/1/2026	Installation of the foundation/containment for the Spare GSU & purchase of spare GSU	Due to the long lead time for a GSU Transformer delivery, Duke Energy is considering purchasing a spare transformer for WS Lee CT 7C/8C as a backup for Oconee. As Oconee's blackstart backup, if there was a XFMR GSU switching failure, Oconee would be at risk. The Spare GSU will require a concrete base with containment, drain with valve and include electrical service for the coolant's	$ 1,885,369	$ -	$ -	LSC00075
138	WS Lee CTs 2024 Ovation Evergreen	Other Production Plant in Service	10/1/2024	2024 WS Lee CTs Ovation Evergreen	A workstation refresh is needed in 2024 at WS Lee CT 7C and 8C, specifically targeting Windows Server 2012 machines and any other aging hardware. t is a CYBER SECURITY requirement that we be able to do Windows Security patching on all of WS Lee CT's control system assets with updated Ovation versions.	$ 1,201,663	$ -	$ -	LSC00100
139	WSL Unit 11 Siemens FX Upgrade	Other Production Plant in Service	11/1/2026	Upgrade CT11 with Siemens FX turbine parts for increased output and heat rate improvements.	Siemens FX turbine parts upgrade will increase unit output (20MW) and improve heat rate.	$ 4,928,024	$ -	$ -	LS110040

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140	WSL Unit 12 Siemens FX Upgrade	Other Production Plant in Service	11/1/2026	Upgrade CT12 with Siemens FX turbine parts for increased output and heat rate improvements.	Siemens FX turbine parts upgrade will increase unit output (20MW) and improve heat rate.	$ 4,928,024	$ -	$ -	LS120036
141	Wylie Replace 9070 to 3i Controls	Hydro Plant in Service	12/1/2025	Replace Wylie Station/Unit GE Control Systems	The existing GE 9070 Controls hardware is obsolete and no longer manufactured by GE. Replacement parts are becoming harder to obtain and could cause down time in the future.	$ 1,057,548	$ -	$ -	WY001223
	TOTALS					**$ 1,052,532,991**	**$ 4,254,133**	**$ 27,605,468**	

/1 In service date is Oct 2024 but in the revenue requirement model a date of Dec 2024 is being used according to CPCN restrictions