MYRP Distribution Program Summaries

Duke Energy Progress, LLC
Docket No. E-2, Sub 1300

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Capacity
Program Summary

Capacity

Program purpose
Capacity upgrades and improvements enhance reliability of service for our new and existing customers and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.
Timeline for construction
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 – September 2026.
Estimated in-service date
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.
Program description
Capacity work is driven by customer load growth, including the expansion of electric vehicles and other distributed technologies. **Retail substation upgrades** focus on work needed within the retail substations that serve distribution customers. Work includes installation of transformers, substation upgrades, and extension of transmission lines to new substation property. Improvements like transformer upgrades increase the capacity available at that substation to meet current and future customer demand for electricity. **Distribution system capacity upgrades** focus on work needed to add capacity on distribution lines. Improvements include new distribution lines and equipment (e.g., regulators, reclosers) or upgrades to existing equipment to increase the maximum current that can be delivered. The use of advanced data analysis, like Morecast and the Advanced Distribution Planning (ADP) toolsets, help to forecast locations where capacity upgrades are most needed. As demand for electricity increases, either from customer growth or installation of large quantities of distributed energy resources, it increases pressure on the system from the points of use upstream to the substation. Upgrading the line to a larger conductor (Figure 1 in the diagram below) by replacing conductors, adding a new circuit, or transferring some load to an adjacent circuit (Figure 2), can help better distribute electricity and provide a reliable experience for all customer needs. This improvement program will drive planners to choose the best and most cost-effective solution for targeted line upgrades to enable sustainable customer load growth and expansion of distributed resources. The picture below represents an actual retail substation. It acts as the interconnection between the transmission and distribution systems.

The picture above represents an actual distribution line. These lines take the power from the substations and allow it to be delivered to our customers.

Projected costs (including capital and O&M expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital Costs	$220.3M	$121.7M	$121.3M	$463.3M
O&M Costs (Installation only)	$3.5M	$2.4M	$2.8M	$8.7M

Grid capabilities enabled

Capacity

- Address changing customer demand by equipping circuit with the capacity needed to meet increasing load
- Promote DER adoption by enabling two-way power flow capacity in more circuits

HB951 Policy Considerations addressed

- Encourages utility-scale renewable energy and storage
- Encourages DERs
- Encourages beneficial electrification, including electric vehicles
- Promotes resilience and security of the electric grid
- Maintains adequate levels of reliability and customer service

Capacity

Customer Benefits

Is the Program required by law?
No.

Explanation of need for proposed expenditure
As customer growth expands and becomes concentrated in some areas, it is important that we ensure our system is ready to support that growth. In addition, the expansion of distributed technologies like battery storage and electric vehicle charging will add increased demands on lines that are nearing capacity or that were not built with these technologies in mind. Expanding the capacity of the line and, in some cases, distributing load to other lines can help support growth and expand distributed technologies while maintaining high reliability for new and existing customers.

Benefits created for customers

Benefit	Description
Improved reliability	Reduce potential outages due to overloaded conductors associated with DER penetration and customer load growth. Upgrades will also help improve resiliency by allowing for additional switching scenarios to address outages and high demand scenarios.
Improved resiliency	Higher capacity lines improve voltage quality and make it easier to troubleshoot outages and restore service. Additional capacity and connectivity can also support self-healing networks in the area to lessen the duration and scope of outages on the system.
Expand solar and renewables	Strategically upgrading capacity supports more efficient DER connection.

Self-Optimizing Grid
Program Summary

Self-Optimizing Grid

Program purpose

The Self-Optimizing Grid (SOG) program, also known as the smart-thinking grid, redesigns key portions of the distribution system and transforms it into a dynamic self-healing network to improve system reliability and resiliency, restore outages faster, and manage the dynamic two-way power flows that expansion of distributed energy resources (DER) will bring.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 – September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description

SOG uses self-healing technology to improve grid reliability and resiliency. To detect potential faults in real time, the system uses sensors, switches, and controls. The self-healing system can automatically detect power outages, quickly isolate the problem, and reroute power to restore service to customers as quickly as possible. This smart, self-healing technology can reduce the number of customers affected by an outage by up to 75% and can often restore power in less than a minute. This system can even detect issues before a customer reports a power outage. The SOG work executed during the 3 yr. MYRP is expected to save annually, 81,000 customer interruptions (CI) and over 15 million customer minutes interrupted (CMI).

The SOG program reduces circuits into switchable segments to minimize the number of customers affected by sustained outages, expands the capacity to support an integrated grid, and ensures the necessary connectivity to allow for rerouting options. The added capacity, smart switching capability, and connectivity necessary for SOG also enables the two-way power flow needed to support more rooftop solar, battery storage, electric vehicles, and microgrids – technologies that will increasingly power the lives of customers and move the state of North Carolina towards a cleaner energy future for all customers.

The SOG program consists of three (3) major components: capacity, connectivity, and automation. The **SOG Capacity** focuses on expanding substation and distribution line capacity to allow for two-way power flow. Increased line capacity through the SOG program reduces line losses and enables DER hosting capabilities. **SOG Connectivity** creates tie points between circuits to allow two-way power flow for automatic reconfiguration. **SOG Automation** provides intelligence and control for the Self Optimizing Grid. Automation projects enable the grid to dynamically reconfigure around trouble and better manage local DER.

Figure 1

Figure 1 shows a Smart Grid system that is composed of intelligent equipment, advanced communication equipment, and distributed energy resources. The figure shows two distribution circuits which are fully optimized that allow power to be fully rerouted in the event of an outage.

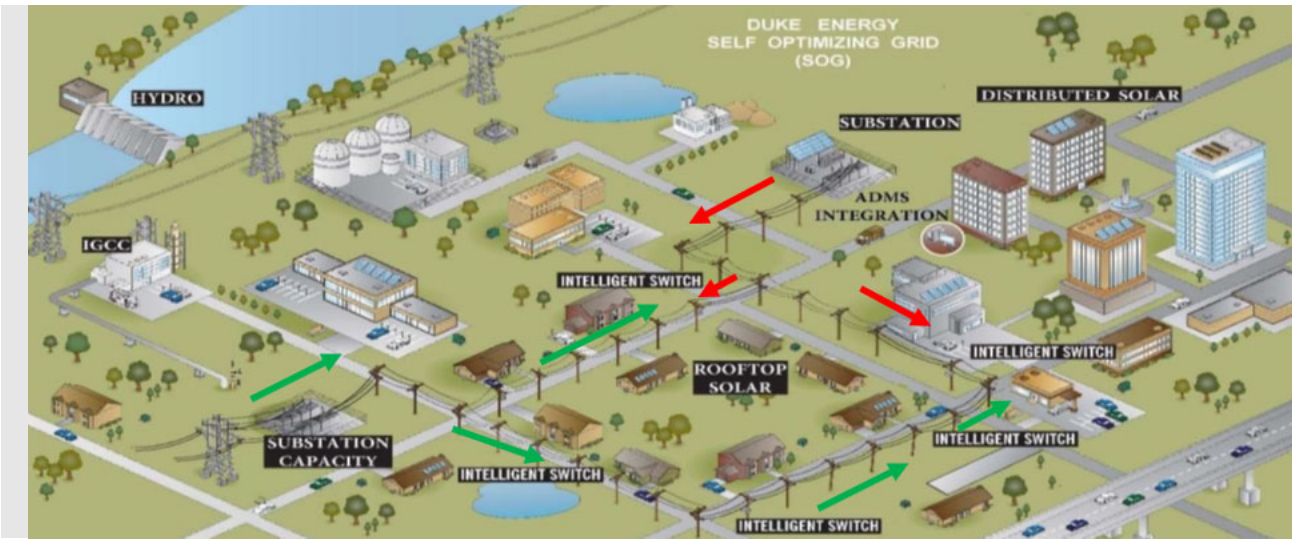


Figure 2

Figure 2 demonstrates how most current state circuits have line segments with a high customer count and do not have two-way power flow capabilities. Therefore, a system fault that results in an outage can impact many customers.

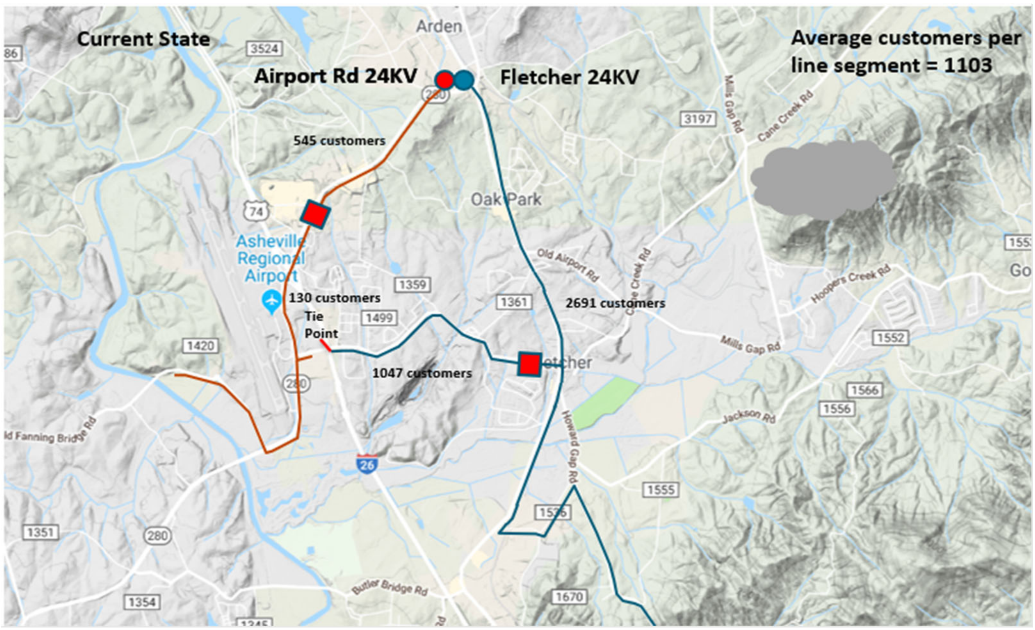
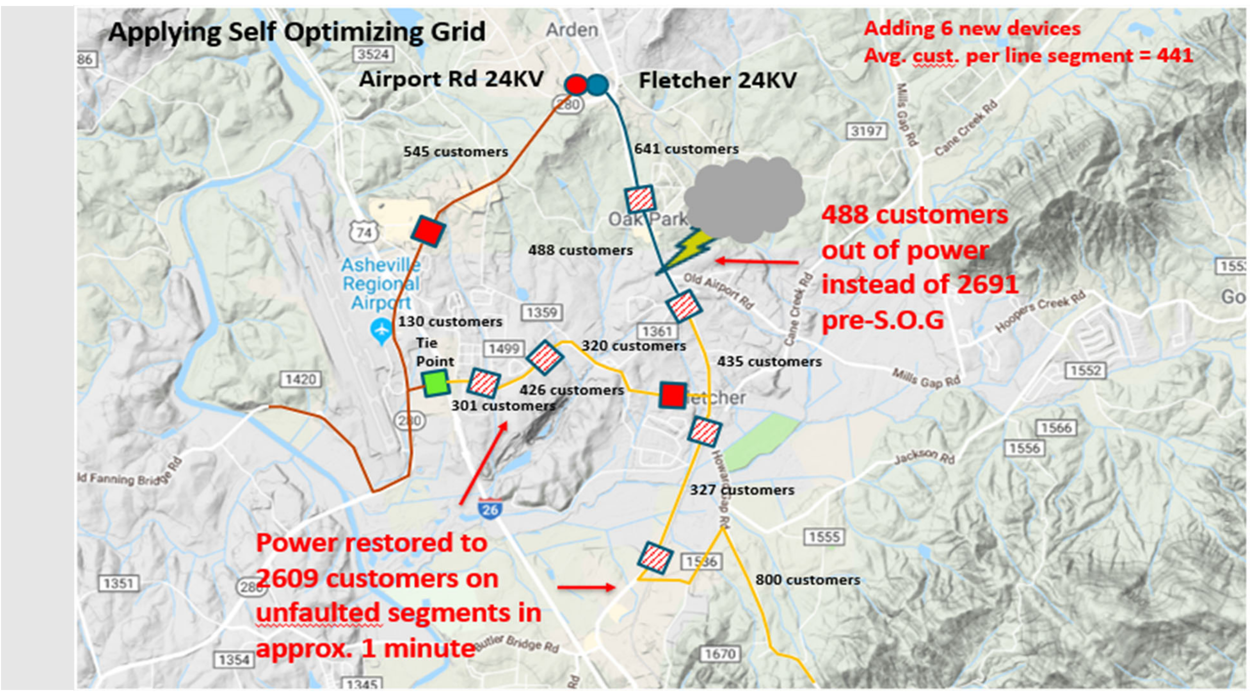


Figure 3

Figure 3 demonstrates the future state under the SOG program in which a circuit with additional segmentation devices and interconnectivity to adjacent circuits allows the system to isolate faults to a small portion of the circuit while all other customers do not experience an outage.



Projected costs (including capital and O&M expenditure) *Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC*				
DEP NC	**Oct '23-Sept '24**	**Oct '24-Sept '25**	**Oct '25-Sept '26**	**Total**
Capital costs	$73.4M	$57.2M	$82.1M	**$212.7M**
O&M costs (Installation only)	$1.0M	$0.8M	$1.1M	**$2.9M**

Grid capabilities enabled	**HB951 Policy Considerations addressed**
Reliability • Improve resiliency to increase grid strength and ability to rapidly restore power Capacity • Promote DER adoption by enabling 2-way power flow capability in more circuits • Address changing demand by outfitting circuits with capacity to meet increasing load	• Encourages DERs • Encourages beneficial electrification, including electric vehicles • Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Automation & Communication • Improve resiliency by detecting faults and rerouting power to self-heal, reducing impact from outages • Promote DER adoption by enabling more efficient resource management	

Self-Optimizing Grid

Cost Benefit Analysis

Is the Program required by law?
No.
Explanation of need for proposed expenditure
The current grid has limited ability to reroute or rapidly restore power, and limited ability to optimize for the growing penetrations of distributed energy resources (DER). The SOG program was established to foundationally address both issues. This smart-thinking grid technology functions as an integrated network with increased capacity, automated switching capabilities and support for two-way power flow. SOG can help to reduce outage impacts, improve reliability and resiliency, and enhance the customer experience. The deployment of SOG brings additional benefits including improved line efficiency along with DER and EV readiness.

Financial cost-benefit analysis	
Total NPV Costs	**$206.4M**
Total NPV Benefits	**$1,128.7M**
Net value of program	**$922.3M**
Benefit to Cost Ratio (BCR)	**5.5**

Description of benefits	
Benefit Category	**Description**
Improve reliability and resiliency	SOG creates a network of interconnected circuits that are split into smaller automatically switchable segments that can isolate faults and reconfigure to greatly reduce the number of customers affected by sustained outages. The program also reduces the number of outages, decreases the duration of outages up to 75% when they do occur, and helps restore power in a matter of minutes.
Expand solar and renewables	SOG creates a network of interconnected circuits with more capacity and support for two-way power flow which accommodates more renewable energy resources.

Voltage Regulation & Management (VRM) Program Summary

Voltage Regulation & Management (VRM)

Program purpose

The Voltage Regulation and Management (VRM) improvement program will modernize the grid by installing devices that will improve voltage management and power quality for all customers, while supporting the growth of distributed energy resources (DER).

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines.
At the program level, construction is planned from June 2022 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates.
At the program level, individual location in-service dates range from May 2024 to September 2026.

Program description

Currently, the electrical distribution systems are designed and operated based on the assumption of centralized generation, with one-way power flow from the distribution substation to the end-use customers. With the increasing penetration of DERs, reverse power flow could occur through the distribution system. Significant reverse power flow may cause operational issues for the distribution system, including over-voltage on the distribution feeder.

This program establishes control of equipment on the distribution grid to optimize delivery voltages to customers and to prepare for two-way power flows on the grid. The Voltage Regulation Management (VRM) program will improve the grid's ability to address intermittency and fluctuations caused by DERs and to enable DER adoption and improve power quality to customers.

There are three levels of the VRM program that will be applied to circuits depending on the projected level of DER penetration (informed by Integrated System Operations Planning (ISOP) and Morecast data) on the circuit. These projects range from minor equipment for circuits with light forecasted DER penetration to major equipment for circuits with heavier forecasted DER penetration.

The first level will install voltage regulators on circuits, which help maintain a constant voltage level, to create more "regulation zones" which improve the voltage management on the circuit by addressing high-end voltage conditions and reducing intermittency caused by solar DER sites. This also improves power quality for customers by maintaining voltage levels within ANSI standard voltage limits. These regulators will have new modernized microprocessor-based controls capable of two-way power flow and communications for remote monitoring, control, and data acquisition, as well as integration to the centralized Distribution Management System. The number of regulators being installed on a circuit will be proportional to the forecasted DER enablement on the circuit. For example, in **Figure 1** below, two new line voltage regulators (the yellow dots) are installed to create three voltage regulation zones.

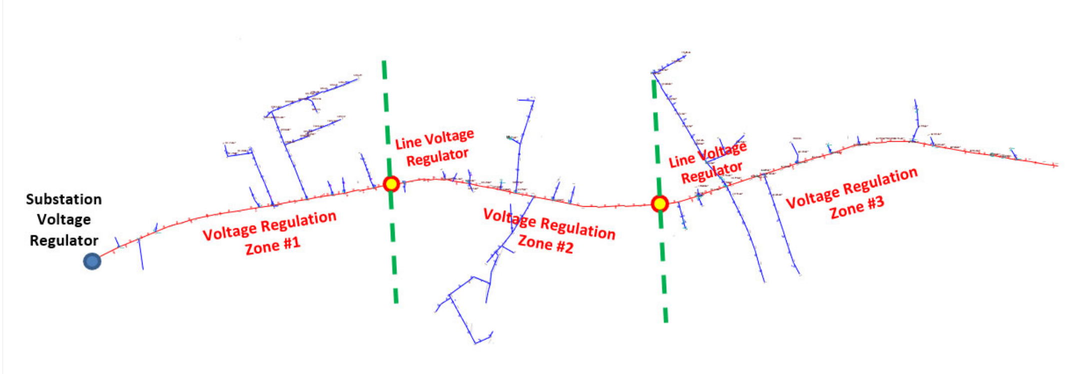


Figure 1: Illustration of voltage "Regulation Zones" on an example circuit (*for conceptual purposes only).*

The next level of the VRM program will install new distribution line capacitors on circuits. The capacitors will help improve voltage management and allow electricity to be distributed more efficiently across the distribution circuits by automatically adjusting the reactive power on the circuits. Capacitors complement the voltage regulators and help maintain the proper voltage levels for customers in each regulation zone. The capacitors will also be equipped with digital microprocessor-based controls capable of two-way communications to the centralized Distribution Management System. Real time communications to the capacitors will ensure the devices are operating properly under all load conditions. The controls will provide remote operation and monitoring functionality that will improve power quality to customers. Sensors will be installed at each new capacitor bank to continuously monitor the flow of power. The sensors can also provide real-time fault detection and location information.

Higher levels of DER penetration will require more specialized equipment like power electronic devices to handle the large and rapid voltage fluctuations that come with intermittent sunshine caused by cloud movement. These devices better equip the distribution system to manage power quality issues associated with increasing DER penetration. Power electronics devices also reduce voltage regulator and capacitor operations on a distribution circuit with high levels of DER.

The current system is limited in its ability to manage and integrate DERs. Investments in VRM will help transition the current grid to the grid of the future with two-way power flow capabilities. As distributed energy resources, such as rooftop solar and electric vehicles, reach deeper levels of penetration, it is essential to automatically manage and maintain proper voltage levels for customers. The implementation of modern, advanced voltage regulators, capacitors, and power electronic technologies based on ISOP modeling of customer DER growth enables effective voltage management under dynamic conditions and keeps pace with customer expectations.

Projected costs (including capital and O&M expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$77.7M	$59.0M	$67.9M	**$204.6M**
O&M costs (Installation only)	$0	$0	$0	**$0**

Grid capabilities enabled	HB951 Policy Considerations addressed
Voltage Regulation • Promote DER adoption by regulating and stabilizing voltage levels to protect customers from disruptive supply spikes or sags • Improve resiliency by reducing intermittency / fluctuations from DER power supply	• Encourages peak load reduction or efficient use of the system • Encourages utility-scale renewable energy and storage • Encourages DERs • Encourages beneficial electrification, including electric vehicles • Promotes resilience and updated security of the electric grid • Maintains adequate levels of reliability and customer service

Voltage Regulation & Management

Customer Benefits

Is the Program required by law?
No.

Explanation of need for proposed expenditure
Distributed Energy Resources (DER) and electric vehicles (EV) are expected to have a significant impact on the distribution system around voltage and reactive power (VAR) support. The distribution system is rapidly becoming more dynamic with two-way power flows driving the need for additional VAR and voltage management capabilities, compared to the current state. The Voltage Regulation and Management Program will modernize the grid and improve voltage management to customers based on the predicted DER penetration for each circuit, with the goal of being proactive instead of reactive. A programmatic approach to place devices will be effective for voltage and Var support. The devices installed in this program will improve power quality to all customers by helping maintain voltage levels within acceptable ANSI standard voltage limitations as the load changes with future increased penetrations of DER.

Benefits created for customers

Benefit	Description
Improves voltage experience for customers	Advanced technologies help maintain proper voltage levels to customers by keeping voltages in the proper range. Additionally, integrating advanced equipment on the grid helps reduce power quality issues associated with increasing DER penetration.
Expands solar and renewables	Increasing the level of distributed energy resources that can be accommodated on the distribution grid reduces the need to curtail or issue moratoriums on customer-owned interconnections.
Gives customers more options and control	Increasing the grid's ability to integrate more renewables and electric vehicles provides customers more options to meet their individual needs.
Transforms the grid to prepare for a cleaner, lower-carbon future	Technologies that enable two-way power flows for increased DER on the grid will allow more customers to interconnect clean forms of renewable generation. This capability helps North Carolina continue to be attractive to businesses with environmental commitments.

Distribution Hardening & Resiliency: Laterals Program Summary

Distribution Hardening & Resiliency: Laterals

Program purpose

This distribution work improves reliability by targeting lateral sections of an overhead power line, also known as tap lines, identified as a risk for failure, which could lead to a disruptive, unplanned outage. Identifying improvement opportunities in advance of an outage provides the opportunity to engage with customers to complete the work in a way that minimizes disruptions and strengthens the grid against unplanned interruptions of service.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description

This work is focused on the lateral sections, also known as tap lines, which branch from the main feeder lines and feed neighborhoods, businesses, and industrial customers. Targeted work is identified through a data-driven approach based on factors such as historical data and observed condition of the line. Risk factors that are considered when identifying candidates for this program are power lines that have a history of prior outages due to deteriorated wire, evidence of prior damage (fraying, multiple splices, pitting etc.), and small wire that has been identified with a steel core that presents a risk of deterioration.

This work includes replacing at-risk steel core conductor with new all-aluminum segments of conductor, which is extremely rust resistant, and increasing the size in some cases, to accommodate more load. These improvements will help to improve reliability on the line, deliver a better experience for customers and support the high level of performance needed to grow distributed technologies in the area.

Projected costs (including capital and O&M expenditure)

Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$65.9M	$25.3M	$80.4M	**$171.6M**
O&M costs (Installation only)	$1.2M	$0.5M	$1.5M	**$3.1M**

Grid capabilities enabled

Reliability

- Improved resiliency by increasing grid strength and ability to rapidly restore power
- Promote DER adoption by providing consistent power flow

HB951 Policy Considerations addressed

- Maintains adequate levels of reliability and customer service
- Encourages DER
- Encourages beneficial electrification, including electric vehicles.

Distribution Hardening & Resiliency: Laterals

Cost Benefit Analysis

Is the program required by law?	
No.	
Explanation of need for proposed expenditure	
Duke Energy has an obligation to provide reliable service to customers in every community that we serve. Proactively replacing and upgrading damaged, deteriorated or at-risk lateral distribution lines that can lead to unplanned outages is essential for providing safe and reliable service to customers and supports the reliable expansion of distributed resources.	
Financial cost-benefit analysis	
Total NPV Costs	**$146.2M**
Total NPV Benefits	**$1,372.0M**
Net value of program	**$1,225.8M**
Benefit to Cost Ratio (BCR)	**9.4**

Description of Benefits

Benefit Category	**Description**
Improved reliability	Eliminate the risk of overhead conductor failures by upgrading the size and quality of the wire. This improvement will help increase reliability for customers served by the line.
Improved resiliency	More robust design and construction standards can help to avoid outages, but also help crews restore power faster in these areas. Upgrades that help shorten outages can also free up line and tree crews sooner to help with outage restoration in other areas.
Outage cost avoidance	Fewer and shorter outages resulting from grid strengthening work help avoid recurring trips to the same locations to restore power after severe weather and can also make line and tree crews available faster to assist with power restoration in other areas.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more resilient and more conducive to distributed technologies in that area.

Distribution Hardening & Resiliency: Public Interference
Program Summary

Distribution Hardening & Resiliency: Public Interference

Program purpose

This distribution work improves reliability by targeting the company's most outage-prone overhead backbone power line sections that are statistically impacted most by outages and damage from vehicle accidents and other public interference events. Using advanced data analytics, design teams will identify the appropriate hardening and resiliency solution to strengthen the line and reduce the number of outages experienced by customers.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from June 2022 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2024 to September 2026.

Program description

Public interference outages, typically cars hitting overhead power line poles, are outside of the company's control. When these accidents occur, it often results in a long-duration outage due to the severity of the damage caused by the incident. Historical outage data is used to identify the locations where vehicles have been prone to strike poles.

Criteria for consideration in the selection of targeted communities include:

- Service location (i.e., lines must be located on three-phase portions of the circuit)
- Frequency of outages from vehicle accidents

Lines targeted to be hardened will receive a custom solution which may include undergrounding of the overhead line, relocating the line, or changing the design of the infrastructure at the location of the repeat occurrences.

Projected costs (including capital and O&M expenditure)

Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$7.1M	$7.3M	$3.7M	**$18.1M**
O&M costs (Installation only)	$0.1M	$0.1M	$0.1M	**$0.3M**

Grid capabilities enabled

Reliability

- Improved resiliency by increasing grid strength and ability to rapidly restore power
- Promote DER adoption by providing consistent power flow

HB951 Policy Considerations addressed

- Maintains adequate levels of reliability and customer service
- Encourages DER
- Encourages beneficial electrification, including electric vehicles.

Distribution Hardening & Resiliency: Public Interference

Cost Benefit Analysis

Is the program required by law?
No.

Explanation of need for proposed expenditure
Duke Energy Progress has experienced an increasing number of public interference outages in recent years in many parts of its service area. This Distribution Grid Hardening and Resiliency program will improve overall reliability in locations proven to be vulnerable to outages caused by public interference. Addressing areas with outlier outage performance improves reliability, increases public safety, and lowers maintenance and restoration costs for all customers.

Financial cost-benefit analysis	
Total NPV Costs	**$15.7M**
Total NPV Benefits	**$8.4M**
Net value of program	**($7.3M)**
Benefit to Cost Ratio (BCR)	**0.5**

Description of Benefits

Benefit Category	Description
Improved reliability	A stronger grid is more resistant to outages from public interference. Reducing the risk of outages on overhead lines improves reliability and provides a better experience for customers.
Improved resiliency	More robust design and construction standards helps avoid outages and reduces the need for crews to return to the same outage-prone areas, freeing up line and tree crews sooner to help with outage restoration in other areas.
Outage cost avoidance	Fewer and shorter outages resulting from grid strengthening work helps avoid recurring trips to the same locations to restore power.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more conducive to distributed technologies in that area.

Distribution Hardening & Resiliency: Storm Program Summary

Distribution Hardening & Resiliency: Storm

Program purpose

These distribution improvements strengthen the grid in areas vulnerable to severe weather, and in other high-impact areas. Assets will be engineered to better withstand high winds and impacts from snow and ice to help reduce outages and restoration time in areas prone to physical damage during severe storms. Strengthening the grid in these areas improves reliability and can also help free up resources faster to assist with outage restoration in other areas.

Timeline for construction

Refer to the Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from June 2022 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description

The distribution grid across North Carolina was historically built to withstand the typical weather types that are most commonly experienced in the state (e.g., smaller winter storms, an occasional tropical system, summer afternoon thunderstorms). Increasingly, though, we are seeing a rise in frequency and severity of outages in many parts of the state. This trend can become even more pronounced in areas that are more exposed to these extreme conditions.

Distribution hardening and resiliency improvements are targeted to locations of the distribution grid that have been identified, through analysis of historical outage data, as being more vulnerable to outage impacts from extreme weather events. Examples are poles and wires in coastal areas prone to hurricanes, lines in heavily vegetated areas that experience impacts from downed trees, or areas where an outage could potentially impact essential services or large numbers of customers for an extended period of time.

Poles and wires in these areas are being replaced with an upgraded, more robust standard that includes larger poles, shorter spans, and additional guy wiring which helps provide a hardened, more reliable grid during extreme weather events. Planning will assume Grade B & NESC 250B-D loading for solutioning downstream of the targeted devices. The grades of construction (B/C/N) determine the different safety factors for design, with Grade B providing the highest margin of safety. For example, Grade B is required for spans crossing limited access highways, railroads, and waterways. NESC 250B-D defines required wind and ice loading for design.

Projected costs (including capital and O&M expenditure)

Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$19.2M	$18.7M	$39.3M	**$77.2M**
O&M costs (Installation only)	$0.3M	$0.3M	$0.7M	**$1.4M**

Grid capabilities enabled	HB951 Policy Considerations addressed
Reliability • Improved resiliency by increasing grid strength and ability to rapidly restore power • Promote DER adoption by providing consistent power flow	• Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service • Encourages DERs • Encourages beneficial electrification, including electric vehicles

Distribution Hardening & Resiliency: Storm

Cost Benefit Analysis

Is the program required by law?
No.

Explanation of need for proposed expenditure
Storms have increased in frequency and severity over the last decade. Historical data demonstrates that some areas are more vulnerable to the impacts of outages from severe weather than others. Smart, targeted investments in these areas can help to reduce outage impacts on communities and customers in areas prone to extreme weather and keep essential services available when customers depend on them most.

Financial cost-benefit analysis	
Total NPV Costs	**$64.9M**
Total NPV Benefits	**$565.2M**
Net value of program	**$500.3M**
Benefit to Cost Ratio (BCR)	**8.7**

Description of Benefits

Benefit Category	**Description**
Improved reliability	A stronger grid is more resistant to power outages from severe weather. This helps reduce the frequency of long-duration power outages caused by storms.
Improved resiliency	More robust design and construction standards in storm-vulnerable areas can help to avoid outages, but also help crews restore power faster in these areas. Upgrades that help shorten outages can also free up line and tree crews sooner to help with outage restoration in other areas.
Outage cost avoidance	Fewer and shorter outages resulting from grid strengthening work helps avoid recurring trips to the same locations to restore power after severe weather and can also make line and tree crews available faster to assist with power restoration in other areas.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more resilient and more conducive to distributed technologies in that area.

Distribution Automation Program Summary

Distribution Automation

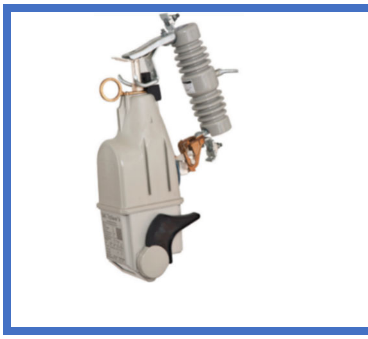
Program purpose
The Fuse Replacement program focuses on modernizing single use fuses with devices capable of intelligently resetting themselves for reuse, restoring power faster for customers and eliminating unnecessary use of resources (inventory, labor, gasoline, etc.) to reset them. The program seeks to improve reliability and minimize customer interruption when an outage occurs, turning what would have been a sustained outage into a momentary blink.

Timeline for construction
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 to September 2026.

Estimated in-service date
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description
The Distribution Automation program (Fuse Replacement) replaces fuses on a distribution line with automated lateral devices like small reclosers. Currently, distribution line fuses are designed to open in the event of a fault, resulting in a sustained outage. Line fuses are one-operation devices, meaning that once a fuse interrupts a fault, the fuse melts and must be manually replaced. Most interruptions on the distribution grid are temporary, such as a tree limb falling on a power line before falling to the ground. But due to the use of fuses, those temporary faults often become sustained outages. The new, automated lateral device (ALD) will open during the temporary fault, but then resets and attempts to close and restore power after a short period of time. If the fault source is cleared, power is restored without manual intervention. The ALD is capable of attempting self-restoration multiple times. If the fault source is sustained, the ALD opens to protect the circuit until a manual repair can be completed to the line. Larger reclosing devices on our lines can sense faults downstream of line fuses and typically open and reclose in an attempt to clear faults without a sustained outage. In these instances, a large portion of customers will still experience a momentary outage. By introducing the ALD, the remaining customers on the circuit will not see a momentary outage like they typically do today. Historically, lateral devices designed to de-energize and re-energize the line to clear faults without an outage were only available in sizes designed to serve larger load segments of our distribution system. With the availability of ALDs, however, reclosing capability can be applied to smaller segments of the circuit traditionally protected by fuses. The Fuse Replacement program focuses on segments of the distribution system where line protections are less robust and where it is likely that even a temporary fault will result in a fuse melting and a sustained outage. These upgrades will provide benefits to help reduce both sustained and momentary outages.

Figure 1: The pictures below respresent two possible ALDs that can be used in this program.



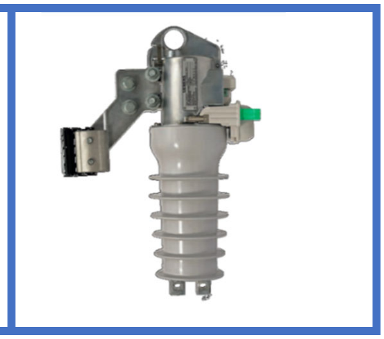
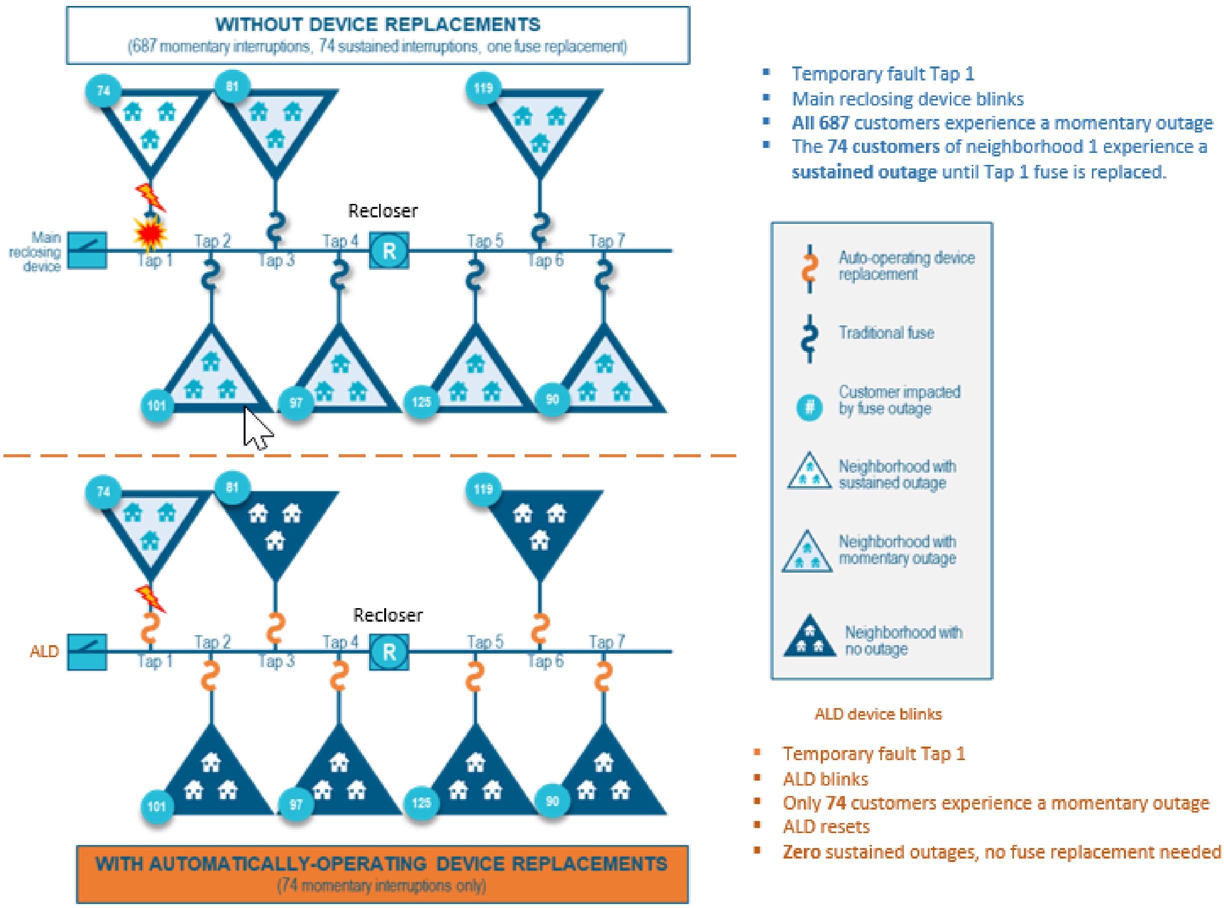


Figure 2: The schematic below represents a pre and post program example. Currently, when a fault occurs beyond a fuse, it's possible that the upstream reclosing device blinks affecting many customers plus the fuse melts with a sustained outage. Future state with an automated lateral device, the fault is isolated, affecting only the customers on the lateral/tap with a momentary blink in most cases.



Projected costs (including capital and O&M expenditure) *Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC*				
DEP NC	**Oct '23-Sept '24**	**Oct '24-Sept '25**	**Oct '25-Sept '26**	**Total**
Capital costs	$25.8M	$12.5M	$12.1M	$50.4M
O&M costs (Installation only)	$0.5M	$0.2M	$0.2M	$0.9M

Grid capabilities enabled	HB951 Policy Considerations addressed
Reliability • Improve resiliency by increasing grid strength and ability to rapidly restore power • Promote DER adoption by providing consistent power flow.	• Encourages DERS • Encourages beneficial electrification, including electric vehicles • Maintains adequate levels of reliability and customer service • Promotes resilience and security of the electric grid

Distribution Automation

Cost Benefit Analysis

Is the Program required by law?
No.

Explanation of need for proposed expenditure
When a fault occurs on a distribution line equipped with traditional fuse protection, the fuse activation typically results in an extended outage for customers until the fuse is manually replaced. The Fuse Replacement program modernizes single-use fuses with devices capable of intelligently resetting themselves for reuse, helping turn a sustained outage into a momentary blink. This smart technology also helps to eliminate unnecessary use of resources (inventory, labor, gasoline, etc.) to reset the fuse, helping improve operational efficiency.

Financial cost-benefit analysis	
Total NPV Costs	**$43.8M**
Total NPV Benefits	**$223.7M**
Net value of program	**$179.9M**
Benefit to Cost Ratio (BCR)	**5.1**

Description of Benefits	
Benefit Category	**Description**
Improve reliability and resiliency	Reduction in customer interruptions benefits all customers where applied, including potential critical need customers. Instead of an extended outage, customers now experience only a momentary outage when clearing a temporary fault.

Equipment Retrofit Program Summary

Equipment Retrofit

Program purpose
This distribution system improvement increases reliability and strengthens the grid against unplanned outages from animal interference, lightning strikes, and spacing issues on the pole. Improvement areas are targeted based on vulnerability to these types of outages, and upgrades are made to make equipment more resistant to these interruptions.
Timeline for construction
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 to September 2026.
Estimated in-service date
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.
Program description
Specific assets targeted in this program are transformers and line arresters, as well as poles where conductor transitions from overhead to underground (i.e., riser poles) occur. Upgrading this equipment reduces the number of outages and customers impacted by animal interference, lightning, and equipment failure. When faults occur after improvements are completed, only customers served by the failed transformer are affected. Previously, all customers between the transformer and the closest upstream protective device experienced an outage.

Transformer Retrofit

During a transformer retrofit, line technicians install a fuse disconnect device on the high-voltage side of the transformer to protect other customers on the circuit from an outage at that transformer. In addition to fuse improvements, animal guards are installed, lead wires are covered, and porcelain arresters are replaced with polymer arresters. These upgrades prevent many outages from occurring and reduce the effects of an outage when it does occur.

Figure 1: Pre-retrofitted transformer (no animal guards, bare lead wire, poor spacing, porcelain arrester)

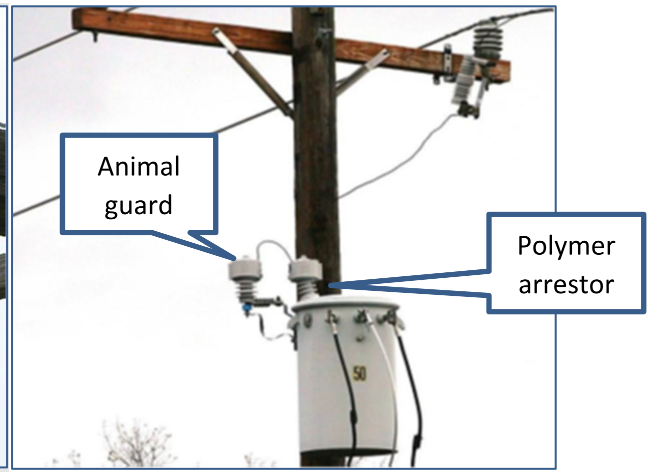


Figure 2: Retrofitted transformer (fused cutout, animal guards, covered lead wire, polymer arrester)

Arrester Station Retrofit

The purpose of an arrester station is to provide protection against an overvoltage on the circuit, typically caused by lightning strikes to the overhead conductor. When an un-retrofitted arrester station operates or is damaged due to lightning, the upstream reclosing device is often required to operate, causing a power outage for many customers on the line. This improvement program installs a local fuse, removes unnecessary ground wires, replaces highly conductive components with non-conductive components, installs animal guards, and increases the equipment spacing at the arrester station. Arrester station locations that are no longer needed are also removed.

Figure 3: Un-retrofitted arrester station (bare lead wires, poor spacing and insulation, porcelain arresters, no fuse protection, no animal guards)

Figure 4: Retrofitted arrester station (covered lead wires, spacing and insulation, polymer arresters, fuse protection, animal guards)

Riser Pole Retrofit

Legacy riser pole design standards can present reliability risks, due to concerns such as the location of equipment on the pole, less than optimal insulation and spacing, and clearance issues. The riser pole retrofit program addresses these issues by upgrading the underground terminations and other conductive components on the pole to be consistent to current design standards. Porcelain arresters are replaced with polymer arresters downstream of the fuse. Damaged equipment is also replaced, along with highly conductive components replaced with non-conductive alternatives, and covering on lead wires installed.

Figure 5: Pre-retrofitted riser pole (highly conductive metal bracket, terminations visibly deteriorated, poor spacing and insulation, no animal guards, porcelain arresters, arresters in unreliable location)

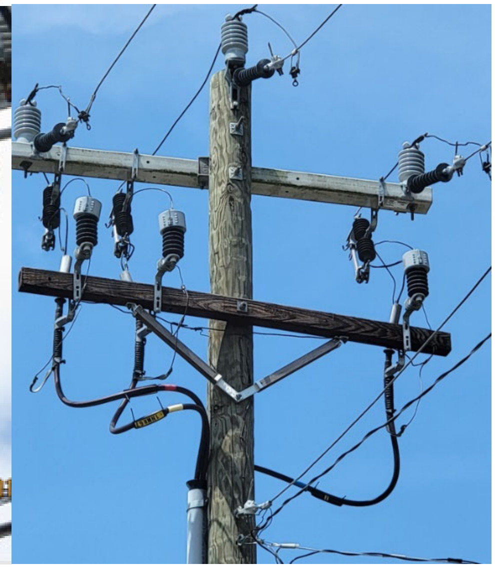


Figure 6: Retrofitted riser pole (polymer arresters, arresters installed in reliable location, wildlife guards installed, covered lead wires, adequate spacing to ensure high insulation, fused protection)

Projected costs (including capital and O&M expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$37.6M	$17.0M	$28.6M	**$83.2M**
O&M costs (Installation only)	$0.08M	$0.04M	$0.06M	**$0.18M**

Grid capabilities enabled	HB951 Policy Considerations addressed
Reliability • Improved resiliency by increasing grid strength and ability to rapidly restore power • Promote DER adoption by providing consistent power flow	• Maintains adequate levels of reliability and customer service • Promotes DER's • Encourages beneficial electrification, including electric vehicles

Equipment Retrofit

Cost Benefit Analysis

Is the program required by law?
No.

Explanation of need for proposed expenditure
Legacy equipment often does not have the same level of outage protection as newer equipment, increasing the risk of outages from animal interference, lightning or failed equipment. Equipment retrofit improvements are part of a forward-looking outage prevention program that identifies vulnerabilities that can cause outages to large numbers of customers. This program modernizes older overhead equipment to deliver the same reliability benefits as new equipment installed today; thus, improving reliability of the grid, and improving the customer experience.

Financial cost-benefit analysis	
Total NPV Costs	**$70.7M**
Total NPV Benefits	**$209.5M**
Net value of program	**$138.8M**
Benefit to Cost Ratio (BCR)	**3.0**

Description of Benefits

Benefit Category	**Description**
Improved Reliability	By retrofitting these assets, failures are reduced at the local asset. And when a failure does occur, it is localized to a smaller set of customers by the local fusing that is installed during the retrofit.
Improved resiliency	More robust design and construction standards can help avoid outages, but also help crews restore power faster in these areas. Upgrades that help shorten outages can also free up line and tree crews sooner to help with outage restoration in other areas.
Outage cost avoidance	Fewer outages resulting from grid strengthening work helps avoid recurring trips to the same locations to restore power.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more resilient and more conducive to distributed technologies in that area.

Long Duration Interruption Program Summary

Long Duration Interruption

Program purpose
This distribution work reroutes segments of main overhead feeder lines in hard-to-access areas to improve accessibility for utility trucks. Improving crew accessibility reduces restoration time for outages in difficult to reach areas and increases worker safety. Moving these line segments to road-accessible locations that are more easily maintained can also help reduce the risk of an outage, improving overall reliability for customers in these areas.
Timeline for construction
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from July 2022 to September 2026.
Estimated in-service date
Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.
Program description
Targeted areas for this program are radial distribution lines that serve entire communities or large groups of customers, as well as inaccessible line segments (i.e., off road, swamps, mountain gorges, extreme terrain, etc.). The areas targeted for improvement experience consistently higher-than-average outage durations and reduced power reliability and customer satisfaction. During extreme weather events, vegetation, erosion, and flooding can create challenges and potentially unsafe conditions for restoration crews trying to restore power, resulting in longer outage times. Addressing these challenges typically involves relocating the lines to road fronts which often requires more line miles. Road accessibility helps improve the customer experience and provides positive benefits to the overall power restoration process as it allows more efficient access to lines and equipment from the road right of way.

Projected costs (including capital and O&M expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$1.3M	$0.0M	$1.3M	**$2.6M**
O&M costs (Installation only)	$0.04M	$0.0M	$0.04M	**$0.08M**

Grid capabilities enabled	HB951 Policy Considerations addressed
Reliability • Improved resiliency by increasing grid strength and ability to rapidly restore power • Promote DER adoption by providing consistent power flow	• Promotes resilience and security of the electric grid • Maintains high levels of reliability and improves customer service • Promotes DERs • Encourages beneficial electrification, including electric vehicles

Long Duration Interruption

Cost Benefit Analysis

Is the program required by law?
No.

Explanation of need for proposed expenditure
Power restoration is more challenging in hard-to-reach areas when outages occur, creating a potential for longer restorations and increased outage time. Long-duration outages have a negative impact on overall system reliability and customer satisfaction. This challenge is increasingly true as more customers work and attend school remotely and rely on electricity for daily functional and productivity needs. In some instances, there are not alternatives to a power line's location. In other situations, the location may be challenging, but reliability good. The lines targeted for this long-duration interruption improvement are experiencing above-average outage durations that would benefit from relocating the line to an area more accessible by utility trucks and crews.

Financial cost-benefit analysis	
Total NPV Costs	**$2.2M**
Total NPV Benefits	**$31.4M**
Net value of program	**$29.2M**
Benefit to Cost Ratio (BCR)	**14.0**

Description of Benefits

Benefit Category	Description
Improved reliability	Strategically relocating outage-prone line segments to more accessible and maintainable locations helps reduce outage risk.
Improved resilience	Relocating the feeder segment to a more accessible and maintainable right of way helps improve resiliency by reducing outages and promoting faster responses when outages do occur.
Reduced outage costs	Relocating these feeder segments from hard-to-reach locations to more maintainable areas helps reduce outages and avoids the need for more specialized and expensive equipment and crew labor needed to repair outages.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line, and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more resilient and more conducive to distributed technologies in that area.

Targeted Undergrounding Program Summary

Target Undergrounding

Program purpose

The Targeted Undergrounding (TUG) program improves reliability by strategically identifying the company's most outage prone overhead power line sections and relocating them underground to reduce the number of outages experienced by customers.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from October 2021 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description

This program uses data analytics to identify overhead line segments with an unusually high frequency of historical outages and place those segments underground.

Criteria for consideration and selection of targeted communities includes:
- Performance of overhead lines
- Age of assets
- Service location (e.g., lines located in backyard where accessibility is limited)
- Vegetation impacts (e.g., heavily vegetated lines are often costly and difficult to trim)

Projected costs (including capital and O&M expenditure)

Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$33.7M	$23.0M	$47.1M	**$103.8M**
O&M costs (Installation only)	$0.02M	$0.02M	$0.03M	**$0.07M**

Grid capabilities enabled

Reliability
- Improved resiliency by increasing grid strength and ability to rapidly restore power
- Promote DER adoption by providing consistent power flow.

HB951 Policy Considerations addressed

- Encourages DERs
- Encourages beneficial electrification, including electric vehicles
- Promotes resilience and security of the electric grid
- Maintains adequate levels of reliability and customer service

Targeted Undergrounding

Cost Benefit Analysis

Is the program required by law?
No.

Explanation of need for proposed expenditure
While the overall electric grid is very reliable, some segments of overhead power lines experience an unusually high number of outages, resulting in decreased customer satisfaction. When these segments of lines fail, they cause problems for customers directly served by them as well as customers upstream. Lines targeted to be moved underground are typically the most resource-intensive parts of the grid to repair after a major storm. Due to the frequent interruptions, equipment on these line segments can experience shortened equipment life and additional equipment-related service interruptions by being exposed to the frequent overcurrent from the faults. The TUG program eliminates exposure to the elements that commonly cause outage events on the overhead portion of the grid. Converting overhead outage prone parts of the system to underground enables us to restore service more quickly and cost effectively for all customers. Addressing areas with outlier outage performance improves service while lowering maintenance and restoration costs for all customers.

Financial cost-benefit analysis	
Total NPV Costs	**$86.2M**
Total NPV Benefits	**$604.2M**
Net value of program	**$518.0M**
Benefit to Cost Ratio (BCR)	**7.0**

Description of Benefits

Benefit Category	**Description**
Improved reliability	By undergrounding the overhead wires, the exposure to failures above ground will be eliminated and will lead to an improved reliability experience for customers on that line.
Improved hardening and resiliency	Improved system resiliency by reducing repeated trips to the same line segments during storms and outage events, freeing up resources faster to restore power to other customers.
Reduced outage costs	Overhead conductor that is converted to underground will not incur vegetation maintenance costs to maintain the right of way.
Improved customer experience	Improving the overall reliability of the line, increasing the resiliency of the line and decreasing restoration times improves the overall customer experience and establishes an operational environment that is more resilient and more conducive to distributed technologies in that area.

Hazard Tree Removal

Program Summary

Hazard Tree Removal

Program purpose

The Vegetation Management Capital Hazard Tree program identifies and takes down dead, structurally unsound, dying, diseased, leaning, or otherwise defective trees from outside the maintained right of way that could strike electrical lines or equipment on the distribution system. Reliability is maintained or improved by minimizing interruptions from tree-caused outages.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, work is planned throughout the MYRP period from October 2023 – September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026. This is based on the understanding that vegetation capital blankets are placed in service monthly.

Program description

All hazard trees are identified by a qualified Duke Energy representative per industry best management practices. Any tree found to present an *extreme risk to infrastructure and failure is imminent* is designated for immediate mitigation. A Duke Energy program manager assigns remaining identified trees to a supplier for property owner/customer notification and consent for pending work (for trees in unmaintained areas, tree mitigation may proceed if supplier made a good faith effort to contact owner but was unsuccessful). As schedule and mobilization allows, suppliers cut down trees following property owner/customer notification.

Projected costs (including capital and O&M expenditure)

Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$20.2M	$14.2M	$13.6M	**$48.0M**
O&M costs (Installation only)	$0	$0	$0	**$0**

Grid capabilities enabled

Reliability and resiliency

- Improved reliability through a better protected grid that can better resist vegetation-based outages
- Improved resiliency by removal of hazard trees that can cause extensive damage to distribution infrastructure and result in longer outage restorations

HB951 Policy Considerations addressed

- Encourages DERs
- Encourages beneficial electrification, including electric vehicles
- Promotes resilience and security of the electric grid
- Maintains adequate levels of reliability and customer service

• Improved power flow consistency and efficiency through fewer vegetation-related outages, which supports the level of reliability needed to promote greater adoption of distributed energy resources	

Hazard Tree Removal

Customer Benefits

Is the Program required by law?
No.
Explanation of need for proposed expenditure
Trees are one of the leading causes of power outages, and damage to the grid from trees outside of the right of way can cause more frequent and longer power outages due to damage these trees can cause. The purpose of the program is to improve reliability by identifying and taking down dead, structurally unsound, dying, diseased, leaning, or otherwise defective trees from outside the maintained right of way that could strike electrical lines or equipment of the distribution system. Reliability is improved by minimizing interruptions from tree-caused outages.

Description of Benefits	
Benefit Category	**Description**
Improve reliability and resiliency	Managing trees and other vegetation to improve reliability and make the grid more resistant to vegetation-related outages.

Infrastructure Integrity Program Summary

Infrastructure Integrity

Program purpose

This infrastructure Integrity work seeks to continually improve and ensure a safe and reliable electrical energy delivery system through identification and mitigation of risk factors such as end-of-service equipment, technology obsolescence, and removal of damaged distribution in-service equipment such as capacitors, regulators, reclosers, and other line equipment. Proactively identifying and planning these improvement opportunities can minimize impacts to customers, turn potential emergency outage response into a planned replacement, strengthen the overall grid against unplanned interruptions of service, and support the increased grid capabilities being implemented to promote DER adoption.

Timeline for construction

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific timelines. At the program level, construction is planned from December 2020 to September 2026.

Estimated in-service date

Refer to Exhibit TC-4: MYRP Distribution Project Details for project-specific dates. At the program level, individual location in-service dates range from October 2023 to September 2026.

Program description

As more automation is added to the system from grid improvements to improve reliability and support DER, the historical system integrity norms are changing to consider the dependency of distribution customer reliability on two-way power flow. Programs that were historically in place to address known risk factors now are evolving to support more devices on the system, changes in device operations due to power intermittency, and newer technologies that deliver new capabilities and challenges for the grid. Examples of infrastructure integrity work include:

- Asset replacement – Inspection-based programs including poles
- Oil mitigation – hydraulic-to-solid dielectric replacement, and replacement of live-front/end-of-life transformers
- Greenhouse gas mitigation – replacement of SF6 switchgear with solid dielectric
- Technological obsolescence – replacement of recloser control panels nearing end of life
- System operability to serve dynamic power flows – replacing non-communicating hydraulic reclosers with new remote-accessible solid dielectric units.
- Major outage root cause studies

This work coincides with other distribution improvement work scheduled at the substation or circuit to optimize crew travel, maximize switching procedure utilization, and improve traffic control zone utilization.

Projected costs (including capital and O&M expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

DEP NC	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Capital costs	$194.7M	$88.2M	$82.2M	**$365.2M**
O&M costs (Installation only)	$3.5M	$1.6M	$1.5M	**$6.6M**

Grid capabilities enabled	HB951 Policy Considerations addressed
Reliability • Improve resiliency by increasing grid strength and ability to rapidly restore power • Promote DER adoption by providing consistent power flow	• Encourages DERs • Encourages beneficial electrification, including electric vehicles • Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Infrastructure Integrity

Customer Benefits

Is the program required by law?	
No.	
Explanation of need for proposed expenditure	
Equipment that is damaged or nearing its end of service is at a higher risk of failure that could lead to an extended power outage. Proactively upgrading or replacing at-risk distribution equipment is a key step to delivering the power quality and service that customers expect. These infrastructure integrity improvements also support changing customer expectations and will ultimately enhance access to cleaner renewable energy resources on the grid.	
Benefits created for customers	
Benefit	**Description**
Improved reliability	Sustaining the integrity of the infrastructure through data-informed replacements will lead to a more reliable power quality experience for customers.
Improved resiliency	Sustaining infrastructure integrity makes it easier to troubleshoot outages and restore service quicker.
Improve the customer experience	Coordinating infrastructure improvements with other planned work helps optimize crew travel, maximizes planned outage and switching procedures, and improves traffic control zone utilization on substation projects.

MYRP Transmission Project Summaries

Duke Energy Progress, LLC
Docket No. E-2, Sub 1300

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System Intelligence Project Summary

System Intelligence

Project / Program purpose
This System Intelligence project is critical to providing grid operators and engineers with enhanced information to respond to changing conditions that challenge reliability. Remote asset monitoring allows proactive decisions to be made when equipment health is threatened, and remote operated switches play a vital part in sectionalizing transmission lines to limit the customer impact of faults from external causes and equipment failures.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from October 2022 to July 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from October 2023 to July 2026.
Project / Program description
System Intelligence and Monitoring This scope of work focuses on a machine-learning platform that can determine when equipment maintenance or repair is needed. Health and Risk Monitoring (HRM) of the transmission system allows asset managers to proactively address equipment issues before catastrophic equipment failures occur. The HRM platform utilizes Condition Based Monitoring (CBM) – the continuous remote monitoring of asset health data which is used to extend asset life or execute mitigating activities to prevent equipment failures. HRM supplements CBM data with information from relays, which record the details of transmission system faults to support the types of post-fault event analysis that drives future system performance improvements. **Electromechanical-to-Digital Relays** This scope of work replaces non-communicating electromechanical and solid-state relays with digital relays. Modern relay design with communications capabilities and microprocessor technology enables quicker recovery from events than the design of the existing electromechanical relays. One digital relay is capable of replacing a variety of legacy single-function electromechanical relays. Two-way communications and event recording capabilities allow digital relays to provide device performance information following a system event to support continuous system design and operational improvements. Additionally, the relays identify line fault locations, which is the ability to use device data to calculate the distance down a line to a line fault, rather than manually assessing and patrolling transmission lines. Relay replacements are prioritized based on failure rates, known deficiencies, function, and location.

Typical electromechanical relays

Typical digital relays

Remote Substation and Asset Monitoring

This scope of work enables operators to remotely monitor and control substations. These improvements include the installation or upgrade of supervisory control and data acquisition system (SCADA) interfaces for substation devices, called remote terminal units (RTUs), and upgrades to associated data communication channels. This scope is a critical enabler for CD programs like Integrated Volt/Var Control and Distribution Automation. Additionally, it upgrades serial communication to IP communication for existing RTUs to collect more data and support more devices. Also included are digital fault recorder (DFR) upgrades providing improved fault locating capability, informing system operators of sectionalizing options and directing field personnel to trouble locations to speeding up restoration efforts.

The Asset Monitoring scope involves installing on-line Condition-Based Monitoring (CBM) equipment to continuously and remotely monitor the condition of critical substation transformers to identify developing problems and allow corrective action to be taken in a planned manner before the transformer fails or otherwise causes an unplanned outage. Transformer CBM could include Electronic Temperature Monitors (ETM), Dissolved Gas Analyzers (DGA), Bushing Monitors (BM) with partial discharge capabilities, and data collection back to the enterprise for further analysis. These online transformer monitors are used to diagnose internal transformer problems. The CBM equipment and HRM are utilized to strategically target replacement of assets based on condition.

Remote Control Switches

This scope of work replaces and upgrades manually operated switches with modern switches enabled with SCADA communication and remote-control capabilities. Sectionalizing, a grid operation used to section off portions of the transmission system in order to perform equipment maintenance or isolate faults to minimize impacts to customers, has historically required a technician to go to a physical location and manually operate one or more line switches. This scope of work increases the number of remote-controlled switches to support faster isolation of trouble spots on the transmission system and more rapid restoration following line faults. Common causes of failures with these switches are heating issues, insulator failures, as well as extreme torsional forces that cause malfunctioning.

Remote-controlled switches

Control box for switch operations

Projected costs (capital expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Projected costs (DEP System)	$53.4M	$27.1M	$13.5M	**$94.0M**

Grid capabilities enabled	HB951 Policy Considerations addressed
• Strengthened grid against outages • Increased resiliency to recover from outages including during extreme weather and storm events • Increased grid operator visibility to system conditions • Improved reliability • Optimized ability to monitor the grid for variable conditions associated with DER deployments	• Encourages peak load reduction or efficient use of the system • Encourages utility-scale renewable energy and storage • Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

System Intelligence

Cost Benefit Analysis

Is the Project / Program required by law?
No.

Explanation of need for proposed expenditure
This System Intelligence project is critical to providing grid operators and engineers with enhanced information to respond to changing conditions that challenge reliability. Remote asset monitoring allows proactive decisions to be made when equipment health is threatened, and remote operated switches play a vital part in sectionalizing transmission lines to limit the customer impact of faults from external causes and equipment failures.

Financial cost-benefit analysis	
Total Project Costs	**NPV as of May 2022**
Project capital	$80.0M
Total Costs	**$80.0M**
Total Project Benefits	
Reliability benefits	$1,075.5M
Total Benefits	**$1,075.5M**
Benefit to Cost Ratio (BCR)	**13.4**

Other qualitative benefits

Benefit Category	**Description**
Improve reliability	Reduce outage duration and number of customers impacted from vegetation and line component failure events.
Increase operational efficiency	Improves grid operators and engineer visibility to system events and equipment health.

Transmission Line Hardening & Resiliency

Project Summary

Transmission Line Hardening & Resiliency

Project / Program purpose
The Transmission Line Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme external events, natural or man-made.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from March 2023 to September 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from October 2023 to September 2026.
Project / Program description
The Transmission H&R project can be broken down into scopes of work that address unique challenges to harden the system to reduce impacts to customers, while enhancing their electric service experience. The **Cathodic Protection** scope extends the life of the existing transmission towers that deliver electricity from power plants to substations for delivery across the grid. Cathodic Protection improvements install passive protective systems onto structures using highly polarized magnesium anodes that mitigate further corrosion to the structure. Similarly, the **Targeted Line Strengthening for Extreme Weather** scope protects some of the higher voltage transmission lines from extreme weather by upgrading vulnerable wooden structures to steel, as well as lattice tower replacements. **The Animal Mitigation** scope hardens the 500-kV transmission system by protecting v-string insulators from buzzard secretion, which can accumulate to the point of causing flashover outages resulting in significant voltage sags on the grid. Altogether, these H&R efforts not only enhance the functionality of individual assets, but substantially improve the overall functionality of the transmission grid, particularly under extreme weather conditions.

Transmission Tower

Transmission H-Frame

Projected costs (capital expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Projected costs (DEP System)	$42.0M	$74.0M	$28.4M	**$144.4M**
O&M costs (DEP System)	$0.0M	$0.4M	$0.4M	**$0.8M**

Grid capabilities enabled

- Strengthened grid against outages from extreme weather and storm events, as well as other threats
- Increased resiliency to recover from outages
- Improved reliability

HB951 Policy Considerations addressed

- Promotes resilience and security of the electric grid
- Maintains adequate levels of reliability and customer service

Transmission Line Hardening & Resiliency

Cost benefit analysis

Is the Project / Program required by law?
No.

Explanation of need for proposed expenditure
The transmission system is an essential part of Duke Energy's power delivery network, and any disruption in the flow of electricity across the system can interrupt service for thousands of customers across entire regions. Severe weather, animal interference and structural corrosion are just some of the external factors that affect the performance of the transmission system. Transmission Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme weather, as well as other physical threats and disruptions.

Financial cost-benefit analysis	
Total Project Costs	**NPV as of May 2022**
Project capital	$160.8M
O&M	$0.7M
Total Costs	**$161.5M**
Total Project Benefits	
Reliability benefits	$656.6M
Total Benefits	**$656.6M**
Benefit to Cost Ratio (BCR)	**4.1**

Other qualitative benefits	
Benefit Category	**Description**
Improve reliability	Reduced outages caused by line component failures. Reduced voltage spikes, sags, and momentary interruptions.
Increase operational efficiency	Reduce or avoid emergency repair or replacement or after-hours work.

Substation Hardening & Resiliency Project Summary

Substation Hardening & Resiliency

Project / Program purpose
The Transmission Substation Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme external events, natural or man-made.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from June 2022 to September 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from October 2023 to September 2026.
Project / Program description
The Transmission Substation H&R project includes substation flood mitigation, animal mitigation, physical security, and ancillary substation equipment upgrades. Each of these transmission Substation H&R scopes address unique challenges, discussed below, to harden the system and minimize impacts to customers. The **Substation Flood Mitigation** scope protects substations most vulnerable to flood damage. The **Animal Mitigation** scope involves installation of equipment specifically designed to prevent animal-induced events from impacting customers directly through an outage or indirectly through a system perturbation such as a voltage depression. The **Physical Security** scope focuses on hardening physical security controls at substations to reduce the risk of external attack. This scope of work strengthens the barriers and controls at substations that are critical to the reliability of the electric transmission system. It focuses on identification of threats, preventative measures, detection, and event monitoring. Duke Energy's layered approach to physical security evaluates the appropriate controls which may include high security perimeter fencing, lighting, intrusion detection technology, security equipment enclosures, hardening of existing control houses, video surveillance cameras, and controls access. The Substation Rebuild scope primarily includes the replacement of legacy wooden structures that support the electrical bus and surrounding substation assets. In addition, targeted transformers, breakers, regulators, circuit switchers, and ancillary equipment such as instrument transformers and switches are upgraded to modern reliability standards as the equipment health dictates. Altogether, these H&R efforts not only enhance the functionality of individual assets, but improve the overall functionality of the system, particularly under extreme weather conditions.

Flooded substation from Hurricane Florence

Projected costs (capital expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Projected costs (DEP System)	$163.1M	$118.9M	$85.3M	**$367.3M**

Grid capabilities enabled	HB951 Policy Considerations addressed
• Strengthened grid against outages including during extreme weather and storm events • Increased resiliency to recover from outages • Improved physical security	• Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Substation Hardening & Resiliency

Cost benefit analysis

Is the Project / Program required by law?
No.

Explanation of need for proposed expenditure
Substations are essential components of the transmission system and often serve as the off-ramps from the high voltage transmission energy highway to the distribution system that carries power throughout a community. Substation outages and disruptions can result in large-scale outage events that can potentially last a long duration. In recent years, storms have increased in frequency and severity in parts of the Carolinas. The region has experienced multiple historic flooding events. And outages from animal interference continue to be a challenge. Add to that, the risk of physical attack remains a very real and disruptive danger that must be addressed. Finally, new technologies and smart capabilities are driving the need to update substations to meet the expanded needs of customers and the desire to enable more renewables and innovative technologies on the grid. The transmission Substation Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme external events, natural or man-made, and ready for the energy opportunities that lie ahead.

Financial cost-benefit analysis	
Total Project Costs	**NPV as of May 2022**
Project capital	$303.8M
Total Costs	**$303.8M**
Total Project Benefits	
Customer benefits	$4,715.4M
Total Benefits	**$4,715.4M**
Benefit to Cost Ratio (BCR)	**15.5**

Other qualitative benefits	
Benefit Category	**Description**
Improve reliability	Reduce outages caused by substation component failures; reduce impacts of extreme weather and external events.
Increase operational efficiency	Reduce or avoid emergency repair or replacement or after-hours work.

Transmission Vegetation Management Project Summary

Transmission Vegetation Management

Project / Program purpose

The Transmission vegetation management project works to create a hardened transmission grid capable of withstanding extreme weather events and reduce the frequency of outages impacting customers.

Timeline for construction

Refer to Exhibit TC-6: MYRP Transmission Project List for specific timelines. At the project level, construction is planned from October 2023 to September 2026.

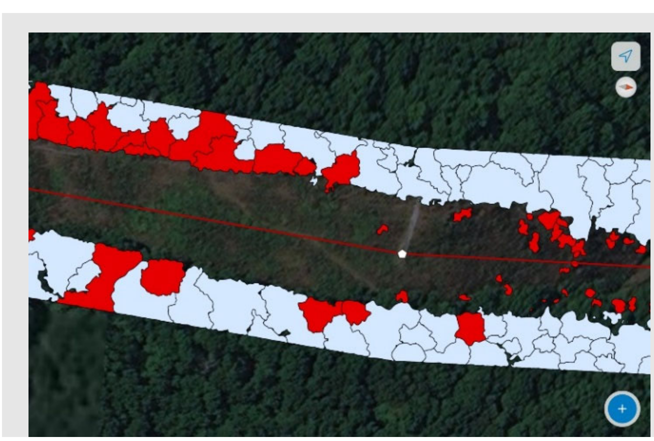
Estimated in-service date

Refer to Exhibit TC-6: MYRP Transmission Project List for specific dates. At the project level, individual location in-service dates range from December 2023 to September 2026.

Project / Program description

Duke Energy Progress's (DEP) Transmission Integrated Vegetation Management (IVM) project is focused on ensuring the safe and reliable operation of the transmission system by minimizing vegetation-related interruptions and maintaining adequate conductor-to vegetation clearances, while maintaining compliance with regulatory, environmental, and safety requirements or standards. Project activities focus on the removal of vegetation within and along the right of way to minimize the risk of vegetation-related outages, and to ensure necessary access within all transmission line corridors.

A multi-year vegetation work plan based on the date of previous work, outage history and line criticality serve as the core work strategy. This plan is then optimized by a threat-based and condition-based approach, incorporating intelligence obtained through remote sensing, inspections, and field assessments.



Tree canopy risk model

Transmission circuit

Projected costs (capital expenditures) *Note: Timing for costs based on in-service dates for associated projects*				
	Oct '23-Sept '24	**Oct '24-Sept '25**	**Oct '25-Sept '26**	**Total**
Projected costs (DEP System)	$33.3M	$47.0M	$38.7M	**$119.0M**

Grid capabilities enabled	**HB951 Policy Considerations addressed**
• Strengthened grid against outages including during extreme weather and storm events • Improved reliability	• Maintains adequate levels of reliability and customer service

Transmission Vegetation Management

Customer Benefits

Is the Project / Program required by law?	
Yes.	
Explanation of need for proposed expenditure	
Transmission outages from vegetation can be extremely disruptive to customers and costly for the company. Additionally, vegetation-based outages can also create regulatory compliance issues for the company. The transmission vegetation management project works to create a hardened transmission grid capable of withstanding extreme weather events and reducing the frequency of outages impacting customers.	
Benefits created for customers *[Describe benefits in the context of the overall filing narrative, which could include the following]*	
Benefit	**Description**
Operational savings	Proactive tree removal leads to less emergency work and less collateral equipment damage.
Reduced customer interruptions	Reduced customer outages; vegetation is one of the leading causes of outages.
Storm hardening	Reduce impact to the grid and customers during extreme weather/storms.

Breaker Upgrades
Project Summary

Breaker Upgrades

Project / Program purpose
The Breaker Replacement project involves replacing degraded transmission circuit breakers, including oil circuit breakers ("OCBs"), typically in conjunction with upgrading the associated protection and control relays. The new communication and control capabilities of this modern technology better positions the transmission and distribution systems to effectively respond electric grid events. These reliable gas and vacuum breakers are also better suited for protecting circuits During high-frequency fault events such as winter storms and hurricanes.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from June 2023 to September 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from October 2023 to September 2026.
Project / Program description
Circuit breakers are electro-mechanical switching devices installed within substations to connect or disconnect transmission or distribution circuits remotely or locally. Similar to smaller breakers in a home or business, these utility-scale circuit breakers allow the normal line or bus current to flow through them and will open very rapidly, when called upon, to interrupt both normal operating load current and the much higher currents that flow during a system fault. Failure to operate fast enough to clear fault currents will activate backup protection systems, potentially leading to a larger outage for customers. Oil circuit breakers are a legacy technology that involved the immersion of energized and current-carrying portions of the circuit breaker within a tank containing insulating mineral oil. These older technologies have been replaced with gas circuit breakers for 69-kV and higher applications, and vacuum circuit breakers for 35-kV and lower needs. Upgrading to newer breaker technology can help avoid maintenance challenges and supply issues for outdated technology, and ensure continued operational compliance and efficiency by reducing reliance on older technologies.

Typical Transmission Oil Circuit Breaker

Typical Transmission Gas Circuit Breaker

Typical Distribution Oil Circuit Breaker

Typical Distribution Vacuum Circuit Breaker

Projected costs (capital expenditures)
Note: Timing for costs based on in-service dates for associated projects

	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Projected costs (DEP System)	$41.3M	$23.4M	$24.0M	**$88.7M**

Grid capabilities enabled	HB951 Policy Considerations addressed
• Allowed for additional capacity on the system • Enhanced reliable fault interrupting capability • Reduced environmental footprint • Improved reliability • Strengthened grid against outages • Increased resiliency to rapidly recover from outages	• Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Breaker Upgrades

Cost benefit analysis

Is the Project / Program required by law?

No.

Explanation of need for proposed expenditure

Circuit breaker technology has advanced in recent years and has moved away from oil-filled breakers to gas and vacuum-based technologies. As the electric grid is modernized and improved to support new functionalities and smarter technologies, it is important that the safety and power management systems advance as well to deliver the energy experience customers expect.

Oil-filled breakers are an increasingly outdated technology, and not replacing this technology increases risk of maintenance delays due to supply chain issues, as well as potential failures from equipment at or near end-of-service. Additionally, the new communication and control capabilities of this modern technology better positions the transmission and distribution systems to respond to electric grid outages and events more effectively. These reliable gas and vacuum breakers are better suited for protecting circuits with higher solar and other variable distributed and variable (inverter-based) energy resource penetration.

Financial cost-benefit analysis

Total Project Costs	**NPV as of May2022**
Project capital	$76.1M
Total Costs	**$76.1M**
Total Project Benefits	
Reliability benefits	$2,365.1M
Total Benefits	**$2,365.1M**
Benefit to Cost Ratio (BCR)	**31.1**

Other qualitative benefits

Benefit	**Description**
Improve reliability	Minimize the number of customers impacted from an outage event, component failures, or slow to operate breaker.
Strengthen the grid and manage risk	Reduce risk of a more extensive grid outage resulting from breaker mis-operation or failure.
Increase operational efficiency	Reduce or avoid emergency repair or replacement of breakers, or after-hours work.

Transformer Upgrades
Project Summary

Transformer Upgrades

Project / Program purpose
The objective of the Transformer upgrade project is to anticipate future transformer failures and replace those transformers in a proactive manner, avoiding the cost and customer outages associated with these failures. Failures can result in significant customer outages, collateral damage, and oil release requiring environmental mitigation.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from July 2023 to August 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from November 2023 to August 2026.
Project / Program description
Predictive and proactive replacement scopes like **Transformer Bank Replacement** significantly reduce impacts and costs of replacement when compared to performing the same work following a catastrophic failure. The power transformer plays a vital role in the transfer of electric energy between generation and distribution. During its operating life, a transformer is exposed to thermal, electrical, chemical, and mechanical stresses. The combination of all these stresses contributes to the deterioration of the condition of a transformer. Critical power transformers in poor condition can fail and result in outages for customers and costly unplanned restoration costs. For this reason, it is important to identify at-risk transformers and replace them under a planned project before they fail. The **3-Phase Regulators** scope reduces failures by eliminating vulnerable “arc-in-oil" load tap changer (LTC) designs, and replacing them with vacuum type LTCs, which are better suited for the higher frequency voltage stepping associated with variable energy resources such as solar. Additionally, internal inspections of many 3-phase regulators have revealed worn out mechanical linkages, often resulting in failures and extended downtimes. The 3 Phase Regulators scope of work ensures the low-side voltages of the substation buses are within ranges suitable for optimal performance and for the increased penetration of distributed energy resources and bi-directional power flow. Power transformers are a critical component of most substations. These devices convert power from one voltage level to another, and can be classified based on the voltages to which they are connected: • Transmission-to-Transmission (T/T) – High-voltage and low-voltage windings operate at 69 kV or higher (e.g., 500 kV/230 kV) • Transmission-to-Distribution (T/D) – High-voltage winding operates at 69 kV or higher; Low-voltage winding operates at 35 kV or lower (e.g., 115 kV/13 kV)

Duke Energy uses a predictive maintenance approach to monitor the health of its substation transformers. Diagnostic tests are performed on a periodic basis, including electrical testing and dissolved gas analysis ("DGA") of the insulating oil which indicates the presence of abnormal heating and moisture.
This information, along with other key parameters, feeds into the Health and Risk Management (HRM) platform, which utilizes machine learning to determine asset health and inform replacement needs. Transformers which indicate deterioration may be subjected to additional or more frequent monitoring and identified for condition-based planned replacement.


Typical transmission transformer

Typical T/D transformer

Projected costs (capital expenditure)
Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC

	Oct '23-Sept '24	Oct '24-Sept '25	Oct '25-Sept '26	Total
Projected costs (DEP System)	$31.1M	$36.1M	$59.6M	**$126.8M**

Grid capabilities enabled	HB951 Policy Considerations addressed
• Strengthened grid against outages including during extreme weather and storm events • Increased resiliency to recover from outages • Improved reliability when accommodating variable conditions associated with DER deployments • Improved performance from vacuum load tap changer (LTC) technology	• Encourages DERs • Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Transformer Upgrades

Cost Benefit Analysis

Is the Project / Program required by law?	
No.	
Explanation of need for proposed expenditure	
The objective of the Transformer upgrade project is to anticipate future transformer failures and replace those transformers in a proactive manner, avoiding the cost and customer outages associated with these failures. Failures can result in significant customer outages, collateral damage, and oil release requiring environmental mitigation.	
Financial cost-benefit analysis	
Total Project Costs	**NPV as of May 2022**
Project capital	$101.8M
Total Costs	**$101.8M**
Total Project Benefits	
Reliability benefits	$2,391.0M
Total Benefits	**$2,391.0M**
Benefit to Cost Ratio (BCR)	**23.5**

Other qualitative benefits	
Benefit Category	**Description**
Improve reliability	Reduced outages caused by transformer and regulator failures.
Strengthen the grid and manage risk	Reduce risk of unplanned events, collateral damage from failed transformers, and environmental threats from oil spills.
Increase operational efficiency	Avoid system loading contingencies due to loss of capacity from failed transformer.

Transmission Capacity and Customer Planning Project Summary

Transmission Capacity and Customer Planning

Project / Program purpose
As demand on the transmission system grows and changes over time, new transmission projects and upgrades are needed to serve retail customers and keep the grid reliable and in compliance with NERC standards. Transmission expansion projects also facilitate the connection of additional utility scale renewable generation sources.
Timeline for construction
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific timelines. At the project level, construction is planned from February 2022 to September 2026.
Estimated in-service date
Refer to Exhibit TC-6: MYRP Transmission Project List for location-specific dates. At the project level, individual location in-service dates range from October 2023 to September 2026.
Project / Program description
In this 2023-2026 MYRP, transmission improvement projects include upgrading equipment such as line conductors, transformers, breakers, and switches to a higher capacity. Shunt capacitors are added in locations of declining voltage. Protective relay systems are upgraded to add redundancy to help reduce the likelihood and severity of critical equipment outages. Transmission expansion projects are also included to prepare the grid for the lower carbon and cleaner energy transition, by uprating and networking key circuits that currently have little margin for additional generation resources. These projects will make ready these segments of the grid for new solar generation interconnections from both internal and external sources. After DEP Transmission Planning identifies future overloads and network upgrades, the plan is screened by the Integrated System and Operations Planning (ISOP) process to identify projects that have the potential to be deferred or avoided by a non-traditional solution (NTS), such as energy storage. A collaborative effort between Transmission Planning and ISOP identifies the locations and specifications required from an NTS to meet the system needs. Even when the NTS is not selected, this ISOP-informed planning ensures the optimal solutions are being selected in the final transmission plan. Together, these transmission upgrades help DEP maintain grid reliability and compliance with NERC Standards as customer demand grows.


Craggy-Enka 230-kV line


230/115-kV Autotransformer


500-kV Breaker

Projected costs (capital expenditure) *Note: Timing for costs based on in-service dates for associated projects; capital includes contingency and AFUDC*				
	Oct '23-Sept '24	**Oct '24-Sept '25**	**Oct '25-Sept '26**	**Total**
Projected costs (DEP System)	$73.7M	$101.6M	$342.6M	**$517.9M**

Grid capabilities enabled	**HB951 Policy Considerations addressed**
• Served increased customer demand • Maintained reliability • Enabled connection of more solar generation	• Encourages utility-scale renewable energy and storage • Encourages DERs • Encourages beneficial electrification, including electric vehicles • Promotes resilience and security of the electric grid • Maintains adequate levels of reliability and customer service

Transmission Capacity and Customer Planning

Cost benefit analysis

Is the Project / Program required by law?
Yes.
Explanation of need for proposed expenditure
As customer demand grows or shifts over time, loading on transmission equipment, including transmission lines and transformers, grows, and voltages on the transmission grid decline. Generator stability margins can decline as well, and the magnitude of fault current that circuit breakers must interrupt can increase over time. NERC and local standards set requirements for transmission system power flows, voltages, stability, and breaker capability to maintain a safe and reliable transmission grid and avoid widespread grid blackouts, as occurred several times in prior decades. In addition, as customer demand on retail and wholesale distribution systems grows and spreads over time, those distribution systems require new deliveries from the transmission system.

Financial cost-benefit analysis	
Total Project Costs	**NPV as of May 2022**
Project capital	$444.6M
Total Costs	**$444.6M**
Total Project Benefits	
Reliability benefits	$697.1M
Total Benefits	**$697.1M**
Benefit to Cost Ratio (BCR)	**1.6**

Other qualitative benefits	
Benefit Category	**Description**
Improve reliability	Meet federal compliance mandates for grid reliability. Maintain grid reliability and stability. Provide capacity upgrades and new connections to serve customer needs.
Societal Benefit	Facilitate clean energy transition.

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECT LIST - DISTRIBUTION

Line No.	MYRP Project Name	Project Forecasted In-Service Date	MYRP Project Description & Scope	Reason for the MYRP Project	Total Project Amount (DEP-NC): Projected In-Service Costs	Total Project Amount (DEP-NC): Projected Annual Net O&M	Total Project Amount (DEP-NC): Projected Installation O&M
1	Coastal - 282 Area Capacity Upgrade Project	Mar-24 - Dec-24	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 33,941,512	$ -	$ 229,104
2	Mountains - 231 Area Capacity Upgrade Project	Mar-24	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 21,641,117	$ -	$ 184,959
3	Triangle North - 262 Area Capacity Upgrade Project	May-24 - Nov-25	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 24,691,052	$ -	$ 138,140
4	Triangle South - 270 Area Capacity Upgrade Project	Jun-24 - May-25	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 39,479,430	$ -	$ 149,053
5	Triangle South - 271 Area Capacity Upgrade Project	Nov-23 - Nov-24	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 60,003,488	$ -	$ 498,948
6	Triangle South - 272 Area Capacity Upgrade Project	Mar-24 - Aug-24	Construct substation bank and feeder breakers. Upgrade existing and/or build new overhead and underground distribution lines to connect new substation to existing distribution system.	Capacity upgrades and improvements enhance reliability of service for our new and existing customers, and support future load growth from electrification and integration of distributed energy resources (DERs), such as rooftop solar and battery storage.	$ 30,127,326	$ -	$ 121,820
7	Substation & Line Projects - Coastal 280	Dec-23 - Mar-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 200,257,419	$ (620,227)	$ 2,972,703
8	Substation & Line Projects - Coastal 281	Oct-23 - Sep-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 218,523,144	$ (472,492)	$ 3,270,499
9	Substation & Line Projects - Coastal 282	Oct-23 - Sep-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 166,262,203	$ (418,139)	$ 2,503,358
10	Substation & Line Projects - Mountains 231	Dec-23 - Feb-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 174,169,857	$ (496,357)	$ 2,585,448
11	Substation & Line Projects - Triangle North 262	Oct-23 - Sep-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 223,717,342	$ (575,162)	$ 3,345,828
12	Substation & Line Projects - Triangle South 270	Oct-23 - Aug-25	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 122,281,977	$ (325,236)	$ 1,873,821
13	Substation & Line Projects - Triangle South 271	Oct-23 - Aug-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 213,316,983	$ (620,901)	$ 3,176,056
14	Substation & Line Projects - Triangle South 272	Dec-23 - Sep-26	See DEP Exhibit TC-5: MYRP Distribution Substation Scope	Enable the following Grid capabilities - Reliability, Capacity, Automation & Communication, Voltage Regulation (where applicable).	$ 244,840,312	$ (630,747)	$ 3,634,509
15	Distribution Hazard Tree Removal - RY1	Oct-23 - Sep-24	The Vegetation Management Hazard Tree program identifies and cuts down dead, structurally unsound, dying, diseased, leaning, or otherwise defective trees from outside the maintained right of way that could strike electrical lines or equipment on the distribution system.	Maintains adequate levels of reliability and customer service. Reliability is maintained or improved by minimizing interruptions from tree-caused outages.	$ 8,980,366	$ -	$ -

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MYRP PROJECT LIST - DISTRIBUTION

					Total Project Amount (DEP-NC)		
Line No.	MYRP Project Name	Project Forecasted In-Service Date	MYRP Project Description & Scope	Reason for the MYRP Project	Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M
16	Distribution Hazard Tree Removal - RY2	Oct-24 - Sep-25	The Vegetation Management Hazard Tree program identifies and cuts down dead, structurally unsound, dying, diseased, leaning, or otherwise defective trees from outside the maintained right of way that could strike electrical lines or equipment on the distribution system.	Maintains adequate levels of reliability and customer service. Reliability is maintained or improved by minimizing interruptions from tree-caused outages.	$ 9,173,769	$ -	$ -
17	Distribution Hazard Tree Removal - RY3	Oct-25 - Sep-26	The Vegetation Management Hazard Tree program identifies and cuts down dead, structurally unsound, dying, diseased, leaning, or otherwise defective trees from outside the maintained right of way that could strike electrical lines or equipment on the distribution system.	Maintains adequate levels of reliability and customer service. Reliability is maintained or improved by minimizing interruptions from tree-caused outages.	$ 9,441,490	$ -	$ -
	TOTALS				**$ 1,800,848,789**	**$ (4,159,261)**	**$ 24,684,246**

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECT DETAILS - DISTRIBUTION

				Total Project Amount (DEP-NC)		
Line No.	MYRP Project Name	Location/Task	Location/Task Forecasted In-Service Date	Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M
1	Coastal - 282 Area Capacity Upgrade Project	Wilmington Sunset Park 115kV #2 Capacity	Mar-24	$ 2,722,068	$ -	$ 72,440
2	Coastal - 282 Area Capacity Upgrade Project	Castle Hayne 230kV #2 Capacity	Jun-24	$ 1,530,995	$ -	$ 33,000
3	Coastal - 282 Area Capacity Upgrade Project	Wilmington 421 230 kV Capacity	Dec-24	$ 29,688,449	$ -	$ 123,664
4	Mountains - 231 Area Capacity Upgrade Project	Reems Creek 115kV Capacity	Mar-24	$ 21,641,117	$ -	$ 184,959
5	Triangle North - 262 Area Capacity Upgrade Project	Shotwell 230kV Capacity	Nov-25	$ 23,464,874	$ -	$ 138,140
6	Triangle North - 262 Area Capacity Upgrade Project	Youngsville 115kV Capacity	May-24	$ 1,226,178	$ -	$ -
7	Triangle South - 270 Area Capacity Upgrade Project	Raleigh Atlantic Avenue 115kV Capacity	May-25	$ 18,021,337	$ -	$ 27,902
8	Triangle South - 270 Area Capacity Upgrade Project	Camp Kanata 230kV Capacity	Jun-24	$ 21,458,092	$ -	$ 121,151
9	Triangle South - 271 Area Capacity Upgrade Project	Caraleigh 230kV Capacity	Jun-24	$ 5,598,996	$ -	$ -
10	Triangle South - 271 Area Capacity Upgrade Project	Cary Triangle Expressway 230kV Capacity	May-24	$ 19,705,132	$ -	$ 67,024
11	Triangle South - 271 Area Capacity Upgrade Project	Wake Tech 230kV Capacity	May-24	$ 10,066,786	$ -	$ 164,502
12	Triangle South - 271 Area Capacity Upgrade Project	Fuquay Wade Nash Road 115kV Capacity	May-24	$ 2,721,744	$ -	$ 9,701
13	Triangle South - 271 Area Capacity Upgrade Project	Morrisville 230kV Capacity	Nov-23	$ 19,773,892	$ -	$ 206,683
14	Triangle South - 271 Area Capacity Upgrade Project	New Hill 230kV Capacity	Nov-24	$ 2,136,938	$ -	$ 51,038
15	Triangle South - 272 Area Capacity Upgrade Project	Pittsboro Hanks Chapel 230kV Capacity	Aug-24	$ 21,198,694	$ -	$ 121,820
16	Triangle South - 272 Area Capacity Upgrade Project	Southern Pines Center Park 115kV Capacity	Mar-24	$ 8,928,632	$ -	$ -
17	Substation & Line Projects - Coastal 280	BENSON 230KV	Jan-25	$ 12,177,454	$ (41,556)	$ 180,767
18	Substation & Line Projects - Coastal 280	BLADENBORO 115KV	Feb-25	$ 7,850,694	$ (19,612)	$ 116,539
19	Substation & Line Projects - Coastal 280	CHADBOURN 115KV	Mar-25	$ 12,451,997	$ (19,720)	$ 184,843
20	Substation & Line Projects - Coastal 280	CLIFDALE 230KV	Dec-23	$ 6,278,065	$ (19,893)	$ 93,194
21	Substation & Line Projects - Coastal 280	CLINTON FERRELL ST. 115KV	Dec-23	$ 6,905,504	$ (21,142)	$ 102,508
22	Substation & Line Projects - Coastal 280	CLINTON NORTH 115KV	May-25	$ 10,276,936	$ (45,065)	$ 152,555
23	Substation & Line Projects - Coastal 280	DUNN 230KV	Apr-24	$ 8,300,219	$ (37,335)	$ 123,212
24	Substation & Line Projects - Coastal 280	EDMONDSON 230KV	Jan-24	$ 9,830,557	$ (44,112)	$ 145,929
25	Substation & Line Projects - Coastal 280	ELIZABETHTOWN 115KV	Jan-24	$ 5,022,655	$ (18,926)	$ 74,558
26	Substation & Line Projects - Coastal 280	FAIR BLUFF 115KV	Jan-25	$ 2,741,038	$ (8,186)	$ 40,689
27	Substation & Line Projects - Coastal 280	FAYETTEVILLE SLOCOMB 115KV	Jan-24	$ 3,026,480	$ (7,905)	$ 44,926
28	Substation & Line Projects - Coastal 280	FORT BRAGG MAIN 230KV	Dec-23	$ 1,604,965	$ (5,452)	$ 23,825
29	Substation & Line Projects - Coastal 280	GARLAND 230KV	Dec-23	$ 6,491,013	$ (14,574)	$ 96,355
30	Substation & Line Projects - Coastal 280	GODWIN 115KV	Feb-25	$ 7,406,281	$ (22,624)	$ 109,942
31	Substation & Line Projects - Coastal 280	HOPE MILLS CHURCH ST. 115KV	Feb-25	$ 5,279,185	$ (7,416)	$ 78,366
32	Substation & Line Projects - Coastal 280	HOPE MILLS ROCKFISH RD 230KV	Dec-23	$ 1,766,444	$ (4,460)	$ 26,222
33	Substation & Line Projects - Coastal 280	LAKE WACCAMAW 115KV	Feb-25	$ 7,339,722	$ (28,976)	$ 108,954
34	Substation & Line Projects - Coastal 280	LAUREL HILL 230KV	Jan-24	$ 5,717,913	$ (13,667)	$ 84,879
35	Substation & Line Projects - Coastal 280	LAURINBURG CITY 230KV	Feb-26	$ 8,223,319	$ (24,286)	$ 122,070
36	Substation & Line Projects - Coastal 280	LUMBERTON 115KV	Jan-24	$ 3,293,597	$ (13,405)	$ 48,891
37	Substation & Line Projects - Coastal 280	NEWTON GROVE 230KV	Mar-25	$ 7,000,884	$ (28,261)	$ 103,924
38	Substation & Line Projects - Coastal 280	RED SPRINGS 115KV	Mar-26	$ 11,208,692	$ (22,162)	$ 166,386

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39	Substation & Line Projects - Coastal 280	ROSEBORO 115KV	Jul-24	$ 6,534,255	$ (20,458)	$ 96,997
40	Substation & Line Projects - Coastal 280	ROWLAND 230KV	Jan-24	$ 4,277,577	$ (17,839)	$ 63,498
41	Substation & Line Projects - Coastal 280	SPRING LAKE 230KV	Jan-24	$ 3,131,878	$ (9,189)	$ 46,491
42	Substation & Line Projects - Coastal 280	ST. PAULS 115KV	Jan-26	$ 6,752,948	$ (17,413)	$ 100,244
43	Substation & Line Projects - Coastal 280	TABOR CITY 115KV	Dec-25	$ 6,255,889	$ (9,618)	$ 92,865
44	Substation & Line Projects - Coastal 280	WEATHERSPOON 230KV	Aug-25	$ 20,087,322	$ (68,527)	$ 298,184
45	Substation & Line Projects - Coastal 280	WHITEVILLE-SOUTHEAST REGIONAL PARK 115KV	Jan-24	$ 3,023,936	$ (8,448)	$ 44,889
46	Substation & Line Projects - Coastal 281	ATLANTIC BEACH 115KV	Apr-25	$ 8,176,942	$ 1,336	$ 121,382
47	Substation & Line Projects - Coastal 281	BEAUFORT 115KV	Jan-26	$ 6,218,856	$ (4,747)	$ 92,315
48	Substation & Line Projects - Coastal 281	BEULAVILLE 115KV	Dec-23	$ 1,545,058	$ (10,377)	$ 22,935
49	Substation & Line Projects - Coastal 281	BRIDGETON 115KV	Mar-26	$ 12,353,182	$ (25,363)	$ 183,376
50	Substation & Line Projects - Coastal 281	CATHERINE LAKE 230KV	Mar-26	$ 15,337,453	$ (22,831)	$ 227,675
51	Substation & Line Projects - Coastal 281	DOVER 230KV	Jan-24	$ 4,372,275	$ (24,109)	$ 64,904
52	Substation & Line Projects - Coastal 281	FREMONT 115KV	Dec-23	$ 842,926	$ (7,152)	$ 12,513
53	Substation & Line Projects - Coastal 281	GOLDSBORO CITY 115KV	Aug-24	$ 3,767,265	$ (5,643)	$ 55,923
54	Substation & Line Projects - Coastal 281	GOLDSBORO HEMLOCK 115KV	Dec-23	$ 2,323,462	$ (4,768)	$ 34,490
55	Substation & Line Projects - Coastal 281	GOLDSBORO WEIL 115KV	Dec-24	$ 1,526,420	$ (4,311)	$ 22,659
56	Substation & Line Projects - Coastal 281	GRANTHAM 230KV	Apr-26	$ 7,962,834	$ (19,639)	$ 118,204
57	Substation & Line Projects - Coastal 281	GRIFTON 115KV	Dec-23	$ 6,153,426	$ (36,207)	$ 91,344
58	Substation & Line Projects - Coastal 281	JACKSONVILLE BLUE CREEK 115KV	Feb-26	$ 6,401,002	$ (1,498)	$ 95,019
59	Substation & Line Projects - Coastal 281	JACKSONVILLE CITY 115KV	Aug-24	$ 5,598,114	$ (12,629)	$ 83,101
60	Substation & Line Projects - Coastal 281	KORNEGAY 115KV	Feb-26	$ 8,230,033	$ (11,856)	$ 122,170
61	Substation & Line Projects - Coastal 281	LAGRANGE 115KV	Jan-24	$ 2,413,038	$ (8,292)	$ 35,820
62	Substation & Line Projects - Coastal 281	MOREHEAD 115KV	Sep-26	$ 20,866,789	$ (12,061)	$ 309,755
63	Substation & Line Projects - Coastal 281	MOREHEAD WILDWOOD 230KV	Dec-25	$ 6,889,644	$ (6,700)	$ 102,273
64	Substation & Line Projects - Coastal 281	MT OLIVE 115KV	Mar-26	$ 7,442,887	$ (11,996)	$ 110,485
65	Substation & Line Projects - Coastal 281	MT OLIVE WEST 115KV	Jan-26	$ 10,683,120	$ (22,720)	$ 158,585
66	Substation & Line Projects - Coastal 281	NEW BERN WEST 230KV	Jul-24	$ 8,917,709	$ (32,496)	$ 132,378
67	Substation & Line Projects - Coastal 281	NEW HOPE 115KV	Dec-23	$ 7,512,265	$ (26,685)	$ 111,515
68	Substation & Line Projects - Coastal 281	RHEMS 230KV	Sep-24	$ 5,699,890	$ (17,386)	$ 84,611
69	Substation & Line Projects - Coastal 281	ROSEWOOD 115KV	Jan-26	$ 3,485,072	$ (11,230)	$ 51,734
70	Substation & Line Projects - Coastal 281	SEYMOUR JOHNSON 115KV	Dec-24	$ 2,149,557	$ (982)	$ 31,909
71	Substation & Line Projects - Coastal 281	SWANSBORO 230KV	Sep-26	$ 24,200,439	$ (55,586)	$ 359,241
72	Substation & Line Projects - Coastal 281	WARSAW 230KV	Mar-25	$ 12,182,654	$ (24,015)	$ 180,844
73	Substation & Line Projects - Coastal 281	BAYBORO 230KV	Oct-23	$ 8,079,360	$ (27,802)	$ 134,034
74	Substation & Line Projects - Coastal 281	CHOCOWINITY 230KV	Oct-23	$ 7,191,472	$ (24,747)	$ 119,304
75	Substation & Line Projects - Coastal 282	CAROLINA BEACH 115KV	Jan-25	$ 7,711,621	$ (15,354)	$ 114,474
76	Substation & Line Projects - Coastal 282	CASTLE HAYNE 230KV	May-24	$ 4,939,407	$ (22,176)	$ 73,323
77	Substation & Line Projects - Coastal 282	EAGLE ISLAND 115KV	May-25	$ 14,449,550	$ (32,472)	$ 214,495

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78	Substation & Line Projects - Coastal 282	HOLLY RIDGE 115KV	Dec-25	$ 4,363,789	$ (3,430)	$ 64,778
79	Substation & Line Projects - Coastal 282	LELAND 115KV	May-25	$ 6,811,964	$ (14,527)	$ 101,120
80	Substation & Line Projects - Coastal 282	MASONBORO 230KV	Jan-25	$ 9,919,781	$ (15,798)	$ 147,253
81	Substation & Line Projects - Coastal 282	MURRAYSVILLE 230KV	Sep-26	$ 6,116,848	$ (21,301)	$ 90,801
82	Substation & Line Projects - Coastal 282	ROCKY POINT 230KV	Apr-26	$ 8,735,170	$ (20,698)	$ 129,668
83	Substation & Line Projects - Coastal 282	ROSE HILL 230KV	Mar-26	$ 12,010,494	$ (22,033)	$ 178,289
84	Substation & Line Projects - Coastal 282	SCOTTS HILL 230KV	Jan-24	$ 3,823,887	$ (11,587)	$ 56,763
85	Substation & Line Projects - Coastal 282	SOUTHPORT 230KV	Dec-23	$ 1,769,597	$ (2,519)	$ 26,269
86	Substation & Line Projects - Coastal 282	TOPSAIL 230KV	Jan-24	$ 3,506,001	$ (11,994)	$ 52,045
87	Substation & Line Projects - Coastal 282	VISTA 115KV	Jan-26	$ 4,427,953	$ (4,965)	$ 65,730
88	Substation & Line Projects - Coastal 282	WILMINGTON CEDAR AVE 230KV	Sep-24	$ 4,779,154	$ (8,431)	$ 70,944
89	Substation & Line Projects - Coastal 282	WILMINGTON EAST 230KV	Apr-24	$ 9,631,903	$ (32,735)	$ 142,980
90	Substation & Line Projects - Coastal 282	WILMINGTON OGDEN 230KV	Jun-24	$ 11,851,570	$ (22,558)	$ 175,930
91	Substation & Line Projects - Coastal 282	WILMINGTON WINTER PARK 230KV	Jul-25	$ 14,862,983	$ (29,591)	$ 220,632
92	Substation & Line Projects - Coastal 282	WRIGHTSVILLE BEACH 230KV	Jul-24	$ 11,378,690	$ (42,006)	$ 168,910
93	Substation & Line Projects - Coastal 282	DELCO 115KV	Oct-23	$ 9,134,516	$ (31,433)	$ 151,539
94	Substation & Line Projects - Coastal 282	WILMINGTON RIVER ROAD 115KV	Oct-23	$ 11,088,080	$ (38,156)	$ 183,948
95	Substation & Line Projects - Coastal 282	BURGAW 115KV	Sep-24	$ 4,949,245	$ (14,375)	$ 73,469
96	Substation & Line Projects - Mountains 231	ARDEN 115KV	Aug-24	$ 10,756,272	$ (24,693)	$ 159,670
97	Substation & Line Projects - Mountains 231	ASHEVILLE BENT CREEK 115KV	Jan-24	$ 4,416,135	$ (22,973)	$ 65,555
98	Substation & Line Projects - Mountains 231	ASHEVILLE ROCK HILL 115KV	Jan-24	$ 8,114,659	$ (27,046)	$ 120,457
99	Substation & Line Projects - Mountains 231	AVERY CREEK 115KV	Mar-25	$ 9,240,874	$ (34,954)	$ 137,175
100	Substation & Line Projects - Mountains 231	BALDWIN 115KV	Jan-24	$ 5,436,402	$ (14,761)	$ 80,700
101	Substation & Line Projects - Mountains 231	BARNARDSVILLE 115KV	Nov-25	$ 6,768,023	$ (16,694)	$ 100,467
102	Substation & Line Projects - Mountains 231	BILTMORE 115KV	Feb-25	$ 12,550,029	$ (34,330)	$ 186,298
103	Substation & Line Projects - Mountains 231	BLACK MOUNTAIN 115KV	Dec-23	$ 7,146,108	$ (20,100)	$ 106,080
104	Substation & Line Projects - Mountains 231	CANDLER 115KV	Jan-24	$ 15,930,095	$ (49,558)	$ 236,473
105	Substation & Line Projects - Mountains 231	ELK MOUNTAIN 115KV	Jul-24	$ 12,562,071	$ (45,993)	$ 186,476
106	Substation & Line Projects - Mountains 231	EMMA 115KV	Jan-24	$ 4,962,097	$ (15,887)	$ 73,659
107	Substation & Line Projects - Mountains 231	FAIRVIEW 115KV	Jan-24	$ 9,430,498	$ (35,300)	$ 139,990
108	Substation & Line Projects - Mountains 231	MAGGIE VALLEY 115KV	May-25	$ 10,011,709	$ (18,997)	$ 148,618
109	Substation & Line Projects - Mountains 231	MARSHALL H E PLANT	Jan-26	$ 5,218,721	$ (16,516)	$ 77,469
110	Substation & Line Projects - Mountains 231	MICAVILLE 115KV	Feb-26	$ 10,085,749	$ (26,303)	$ 149,717
111	Substation & Line Projects - Mountains 231	REYNOLDS 115KV	Jan-24	$ 3,401,849	$ (8,122)	$ 50,498
112	Substation & Line Projects - Mountains 231	VANDERBILT 115KV	Apr-24	$ 8,277,295	$ (25,868)	$ 122,872
113	Substation & Line Projects - Mountains 231	WALTERS H E PLANT	Dec-23	$ 1,389,901	$ (6,252)	$ 20,632
114	Substation & Line Projects - Mountains 231	WEAVERVILLE 115KV	Dec-25	$ 22,629,765	$ (41,395)	$ 335,925
115	Substation & Line Projects - Mountains 231	WEST ASHEVILLE 115KV	Feb-24	$ 5,841,605	$ (10,615)	$ 86,715
116	Substation & Line Projects - Triangle North 262	YOUNGSVILLE 115KV	Sep-24	$ 5,476,884	$ (20,772)	$ 81,301

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117	Substation & Line Projects - Triangle North 262	ARCHER LODGE 230KV	Jul-26	$ 25,186,078	$ (44,267)	$ 373,872
118	Substation & Line Projects - Triangle North 262	BAHAMA 230KV	Jan-24	$ 4,367,918	$ (10,212)	$ 64,839
119	Substation & Line Projects - Triangle North 262	ELM CITY 115KV	Jan-26	$ 5,556,644	$ (15,054)	$ 82,485
120	Substation & Line Projects - Triangle North 262	FOUR OAKS 230KV	Dec-23	$ 1,765,070	$ (13,670)	$ 26,201
121	Substation & Line Projects - Triangle North 262	FRANKLINTON 115KV	Dec-23	$ 892,949	$ (7,513)	$ 13,255
122	Substation & Line Projects - Triangle North 262	HENDERSON 230KV	Apr-24	$ 8,817,051	$ (25,193)	$ 130,884
123	Substation & Line Projects - Triangle North 262	KNIGHTDALE 115KV	Dec-23	$ 1,785,850	$ (6,273)	$ 26,510
124	Substation & Line Projects - Triangle North 262	KNIGHTDALE HODGE ROAD 230KV	Jan-24	$ 3,019,126	$ (10,953)	$ 44,817
125	Substation & Line Projects - Triangle North 262	KNIGHTDALE SQUARE D 230KV	Sep-24	$ 7,441,263	$ (20,825)	$ 110,461
126	Substation & Line Projects - Triangle North 262	LITTLETON 115KV	Jan-24	$ 2,724,895	$ (15,271)	$ 40,449
127	Substation & Line Projects - Triangle North 262	LOUISBURG 115KV	Mar-26	$ 19,681,178	$ (39,355)	$ 292,155
128	Substation & Line Projects - Triangle North 262	OXFORD SOUTH 230KV	May-24	$ 10,862,679	$ (43,361)	$ 161,250
129	Substation & Line Projects - Triangle North 262	ROCKY MOUNT 230KV	Apr-25	$ 6,833,886	$ (20,214)	$ 101,445
130	Substation & Line Projects - Triangle North 262	ROXBORO 115KV	Aug-26	$ 22,685,870	$ (39,466)	$ 336,758
131	Substation & Line Projects - Triangle North 262	ROXBORO BOWMANTOWN ROAD 230KV	Dec-24	$ 1,720,478	$ (7,216)	$ 25,539
132	Substation & Line Projects - Triangle North 262	SPRING HOPE 115KV	Jan-24	$ 8,911,845	$ (41,345)	$ 132,291
133	Substation & Line Projects - Triangle North 262	WENDELL 230KV	Jan-24	$ 11,743,481	$ (40,173)	$ 174,325
134	Substation & Line Projects - Triangle North 262	WILSON MILLS 230KV	Sep-26	$ 24,634,548	$ (31,579)	$ 365,685
135	Substation & Line Projects - Triangle North 262	YANCEYVILLE 230KV	Jul-26	$ 19,280,570	$ (39,621)	$ 286,209
136	Substation & Line Projects - Triangle North 262	ZEBULON 115KV	May-25	$ 16,075,531	$ (33,780)	$ 238,632
137	Substation & Line Projects - Triangle North 262	OXFORD NORTH 230KV	Oct-23	$ 5,865,952	$ (20,186)	$ 97,314
138	Substation & Line Projects - Triangle North 262	HENDERSON NORTH 115KV	Oct-23	$ 8,387,596	$ (28,863)	$ 139,148
139	Substation & Line Projects - Triangle South 270	RALEIGH ATLANTIC AVENUE 115KV	Oct-23	$ 3,883,984	$ (13,365)	$ 64,434
140	Substation & Line Projects - Triangle South 270	LEESVILLE WOOD VALLEY 230KV	Jul-25	$ 17,172,183	$ (30,087)	$ 254,911
141	Substation & Line Projects - Triangle South 270	METHOD 230KV	Dec-23	$ 6,036,566	$ (10,052)	$ 89,609
142	Substation & Line Projects - Triangle South 270	MORDECAI 115KV	Jan-24	$ 2,486,151	$ (1,962)	$ 36,905
143	Substation & Line Projects - Triangle South 270	NEUSE 115KV	Feb-25	$ 4,049,183	$ (13,467)	$ 60,108
144	Substation & Line Projects - Triangle South 270	PINE LAKE 230KV	Aug-24	$ 9,691,824	$ (27,101)	$ 143,869
145	Substation & Line Projects - Triangle South 270	RALEIGH 115KV	Dec-23	$ 1,868,242	$ (4,785)	$ 27,733
146	Substation & Line Projects - Triangle South 270	RALEIGH BLUE RIDGE 230KV	Jun-24	$ 9,648,140	$ (32,197)	$ 143,221
147	Substation & Line Projects - Triangle South 270	RALEIGH BRIER CREEK 230KV	Jan-24	$ 3,456,110	$ (22,420)	$ 51,304
148	Substation & Line Projects - Triangle South 270	RALEIGH LEESVILLE ROAD 230KV	Apr-24	$ 6,907,988	$ (18,840)	$ 102,545
149	Substation & Line Projects - Triangle South 270	RALEIGH NORTHSIDE 115KV	Jun-25	$ 11,980,151	$ (8,280)	$ 177,838
150	Substation & Line Projects - Triangle South 270	RALEIGH PRISON FARM 230KV	Dec-23	$ 1,700,000	$ (9,562)	$ 25,235
151	Substation & Line Projects - Triangle South 270	RALEIGH TIMBERLAKE 115KV	Aug-25	$ 7,476,695	$ (24,256)	$ 110,987
152	Substation & Line Projects - Triangle South 270	RALEIGH YONKERS ROAD 115KV	Dec-23	$ 6,222,592	$ (6,652)	$ 92,371
153	Substation & Line Projects - Triangle South 270	CHESTNUT HILLS 115KV	Oct-23	$ 8,144,584	$ (28,027)	$ 135,116
154	Substation & Line Projects - Triangle South 270	RALEIGH HOMESTEAD 230KV	Oct-23	$ 3,039,228	$ (10,458)	$ 50,420
155	Substation & Line Projects - Triangle South 270	RALEIGH SIX FORKS 230KV	Oct-23	$ 3,727,236	$ (12,826)	$ 61,834

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156	Substation & Line Projects - Triangle South 270	RALEIGH DURHAM AIRPORT 230KV	Nov-23	$ 5,441,996	$ (18,727)	$ 90,281
157	Substation & Line Projects - Triangle South 270	FALLS 230KV	Nov-23	$ 5,051,704	$ (17,384)	$ 83,806
158	Substation & Line Projects - Triangle South 270	RALEIGH HONEYCUTT 230KV	Nov-23	$ 4,297,420	$ (14,788)	$ 71,293
159	Substation & Line Projects - Triangle South 271	CARALEIGH 230KV	Feb-26	$ 9,349,763	$ (15,997)	$ 138,792
160	Substation & Line Projects - Triangle South 271	FUQUAY WADE NASH ROAD 115KV	Jan-24	$ 3,157,100	$ (8,068)	$ 46,865
161	Substation & Line Projects - Triangle South 271	MORRISVILLE 230KV	Sep-24	$ 7,150,285	$ (18,794)	$ 106,142
162	Substation & Line Projects - Triangle South 271	NEW HILL 230KV	Feb-26	$ 8,011,287	$ (20,774)	$ 118,923
163	Substation & Line Projects - Triangle South 271	AMBERLY 230KV	May-24	$ 8,390,202	$ (24,236)	$ 124,548
164	Substation & Line Projects - Triangle South 271	APEX 230KV	Mar-26	$ 12,931,758	$ (18,606)	$ 191,964
165	Substation & Line Projects - Triangle South 271	CARY 230KV	Dec-23	$ 6,114,766	$ (32,500)	$ 90,770
166	Substation & Line Projects - Triangle South 271	CARY EVANS ROAD 230KV	Aug-26	$ 10,858,962	$ (22,828)	$ 161,195
167	Substation & Line Projects - Triangle South 271	CARY PINEY PLAINS 230KV	Aug-24	$ 4,701,038	$ (29,907)	$ 69,784
168	Substation & Line Projects - Triangle South 271	CARY REGENCY PARK 230KV	Jun-24	$ 4,260,717	$ (29,792)	$ 63,248
169	Substation & Line Projects - Triangle South 271	CARY TRIANGLE FOREST 230KV	Jan-24	$ 4,647,471	$ (42,311)	$ 68,989
170	Substation & Line Projects - Triangle South 271	CLAYTON 115KV	Jul-25	$ 18,632,258	$ (52,657)	$ 276,585
171	Substation & Line Projects - Triangle South 271	CLAYTON INDUSTRIAL 115KV	Dec-23	$ 1,400,463	$ (6,390)	$ 20,789
172	Substation & Line Projects - Triangle South 271	CLEVELAND MATTHEWS ROAD 230KV	Feb-25	$ 6,135,640	$ (5,236)	$ 91,080
173	Substation & Line Projects - Triangle South 271	FUQUAY 230KV	Jan-24	$ 8,602,021	$ (34,750)	$ 127,692
174	Substation & Line Projects - Triangle South 271	FUQUAY BELLS LAKE 230KV	Jun-25	$ 14,210,107	$ (37,422)	$ 210,941
175	Substation & Line Projects - Triangle South 271	GARNER 115KV	Jun-24	$ 11,184,326	$ (30,030)	$ 166,025
176	Substation & Line Projects - Triangle South 271	GARNER TRYON HILLS 115KV	Apr-26	$ 12,463,158	$ (16,827)	$ 185,008
177	Substation & Line Projects - Triangle South 271	GARNER WHITE OAK 230KV	Jan-24	$ 2,475,457	$ (15,177)	$ 36,747
178	Substation & Line Projects - Triangle South 271	HOLLY SPRINGS 230KV	Mar-26	$ 12,488,853	$ (29,852)	$ 185,390
179	Substation & Line Projects - Triangle South 271	MILBURNIE 230KV	Jan-25	$ 7,033,968	$ (22,033)	$ 104,415
180	Substation & Line Projects - Triangle South 271	RALEIGH SOUTH 115KV	May-26	$ 23,288,279	$ (67,642)	$ 345,701
181	Substation & Line Projects - Triangle South 271	RALEIGH WORTHDALE 230KV	Jan-24	$ 10,390,264	$ (20,356)	$ 154,237
182	Substation & Line Projects - Triangle South 271	ANGIER 230KV	Oct-23	$ 5,438,840	$ (18,716)	$ 90,229
183	Substation & Line Projects - Triangle South 272	SOUTHERN PINES CENTER PARK 115KV	May-24	$ 8,051,248	$ (24,105)	$ 119,516
184	Substation & Line Projects - Triangle South 272	ASHEBORO NORTH 115KV	Apr-24	$ 8,384,906	$ (11,902)	$ 124,469
185	Substation & Line Projects - Triangle South 272	ASHEBORO SOUTH 115KV	Apr-25	$ 10,822,687	$ (20,091)	$ 160,656
186	Substation & Line Projects - Triangle South 272	ASHEBORO WEST 115KV	Jan-24	$ 10,758,776	$ (31,566)	$ 159,708
187	Substation & Line Projects - Triangle South 272	BISCOE 115KV	Mar-26	$ 12,672,743	$ (21,718)	$ 188,119
188	Substation & Line Projects - Triangle South 272	BYNUM 230KV	Jun-25	$ 14,675,552	$ (35,054)	$ 217,850
189	Substation & Line Projects - Triangle South 272	ELLERBE 230KV	Jan-26	$ 3,357,305	$ (4,253)	$ 49,837
190	Substation & Line Projects - Triangle South 272	HAMLET 230KV	Dec-23	$ 1,979,839	$ (15,544)	$ 29,390
191	Substation & Line Projects - Triangle South 272	JONESBORO 230KV	Aug-25	$ 13,348,364	$ (23,804)	$ 198,149
192	Substation & Line Projects - Triangle South 272	LAKEVIEW 115KV	Mar-26	$ 14,260,096	$ (34,339)	$ 211,683
193	Substation & Line Projects - Triangle South 272	LIBERTY 115KV	Jan-24	$ 5,230,797	$ (30,573)	$ 77,648
194	Substation & Line Projects - Triangle South 272	MONCURE 115KV	Jan-24	$ 2,857,471	$ (18,656)	$ 42,417

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECT DETAILS - DISTRIBUTION

Line No.	MYRP Project Name	Location/Task	Location/Task Forecasted In-Service Date	Total Project Amount (DEP-NC): Projected In-Service Costs	Total Project Amount (DEP-NC): Projected Annual Net O&M	Total Project Amount (DEP-NC): Projected Installation O&M
195	Substation & Line Projects - Triangle South 272	MT. GILEAD 115KV	Mar-26	$ 18,986,999	$ (37,994)	$ 281,851
196	Substation & Line Projects - Triangle South 272	PITTSBORO 230KV	Aug-24	$ 15,136,017	$ (38,943)	$ 224,685
197	Substation & Line Projects - Triangle South 272	RAEFORD SOUTH 115KV	Dec-24	$ 2,274,213	$ (4,520)	$ 33,759
198	Substation & Line Projects - Triangle South 272	RAMSEUR 115KV	Sep-26	$ 23,734,475	$ (76,710)	$ 352,324
199	Substation & Line Projects - Triangle South 272	ROBBINS 115KV	Feb-26	$ 7,072,259	$ (22,543)	$ 104,983
200	Substation & Line Projects - Triangle South 272	ROCKINGHAM 230KV	Feb-26	$ 9,783,273	$ (11,071)	$ 145,227
201	Substation & Line Projects - Triangle South 272	SANFORD GARDEN ST 230KV	Sep-25	$ 25,001,061	$ (56,888)	$ 371,126
202	Substation & Line Projects - Triangle South 272	SEAGROVE 115KV	Jan-26	$ 2,930,460	$ (4,553)	$ 43,501
203	Substation & Line Projects - Triangle South 272	SILER CITY 115KV	Jan-25	$ 5,453,210	$ (22,154)	$ 80,950
204	Substation & Line Projects - Triangle South 272	TROY 115KV	Jan-24	$ 5,312,592	$ (23,430)	$ 78,862
205	Substation & Line Projects - Triangle South 272	TROY BURNETTE ST. 115KV	Dec-25	$ 4,751,410	$ (11,134)	$ 70,532
206	Substation & Line Projects - Triangle South 272	WADESBORO 230KV	Dec-23	$ 1,797,438	$ (5,730)	$ 26,682
207	Substation & Line Projects - Triangle South 272	WADESBORO BOWMAN SCHOOL 230KV	Aug-24	$ 9,848,260	$ (23,176)	$ 146,192
208	Substation & Line Projects - Triangle South 272	WEST END 230KV	Sep-24	$ 6,358,861	$ (20,296)	$ 94,394
209	Distribution Hazard Tree Removal - RY1	Oct 2023 D-VM Hazard Tree Removal Program	Oct-23	$ 813,831	$ -	$ -
210	Distribution Hazard Tree Removal - RY1	Nov 2023 D-VM Hazard Tree Removal Program	Nov-23	$ 813,831	$ -	$ -
211	Distribution Hazard Tree Removal - RY1	Dec 2023 D-VM Hazard Tree Removal Program	Dec-23	$ 813,831	$ -	$ -
212	Distribution Hazard Tree Removal - RY1	Jan 2024 D-VM Hazard Tree Removal Program	Jan-24	$ 635,192	$ -	$ -
213	Distribution Hazard Tree Removal - RY1	Feb 2024 D-VM Hazard Tree Removal Program	Feb-24	$ 635,192	$ -	$ -
214	Distribution Hazard Tree Removal - RY1	Mar 2024 D-VM Hazard Tree Removal Program	Mar-24	$ 635,192	$ -	$ -
215	Distribution Hazard Tree Removal - RY1	Apr 2024 D-VM Hazard Tree Removal Program	Apr-24	$ 635,192	$ -	$ -
216	Distribution Hazard Tree Removal - RY1	May 2024 D-VM Hazard Tree Removal Program	May-24	$ 635,192	$ -	$ -
217	Distribution Hazard Tree Removal - RY1	Jun 2024 D-VM Hazard Tree Removal Program	Jun-24	$ 840,728	$ -	$ -
218	Distribution Hazard Tree Removal - RY1	Jul 2024 D-VM Hazard Tree Removal Program	Jul-24	$ 840,728	$ -	$ -
219	Distribution Hazard Tree Removal - RY1	Aug 2024 D-VM Hazard Tree Removal Program	Aug-24	$ 840,728	$ -	$ -
220	Distribution Hazard Tree Removal - RY1	Sep 2024 D-VM Hazard Tree Removal Program	Sep-24	$ 840,728	$ -	$ -
221	Distribution Hazard Tree Removal - RY2	Oct 2024 D-VM Hazard Tree Removal Program	Oct-24	$ 840,728	$ -	$ -
222	Distribution Hazard Tree Removal - RY2	Nov 2024 D-VM Hazard Tree Removal Program	Nov-24	$ 840,728	$ -	$ -
223	Distribution Hazard Tree Removal - RY2	Dec 2024 D-VM Hazard Tree Removal Program	Dec-24	$ 840,728	$ -	$ -
224	Distribution Hazard Tree Removal - RY2	Jan 2025 D-VM Hazard Tree Removal Program	Jan-25	$ 644,518	$ -	$ -
225	Distribution Hazard Tree Removal - RY2	Feb 2025 D-VM Hazard Tree Removal Program	Feb-25	$ 644,518	$ -	$ -
226	Distribution Hazard Tree Removal - RY2	Mar 2025 D-VM Hazard Tree Removal Program	Mar-25	$ 644,518	$ -	$ -
227	Distribution Hazard Tree Removal - RY2	Apr 2025 D-VM Hazard Tree Removal Program	Apr-25	$ 644,518	$ -	$ -
228	Distribution Hazard Tree Removal - RY2	May 2025 D-VM Hazard Tree Removal Program	May-25	$ 644,518	$ -	$ -
229	Distribution Hazard Tree Removal - RY2	Jun 2025 D-VM Hazard Tree Removal Program	Jun-25	$ 857,248	$ -	$ -
230	Distribution Hazard Tree Removal - RY2	Jul 2025 D-VM Hazard Tree Removal Program	Jul-25	$ 857,248	$ -	$ -
231	Distribution Hazard Tree Removal - RY2	Aug 2025 D-VM Hazard Tree Removal Program	Aug-25	$ 857,248	$ -	$ -
232	Distribution Hazard Tree Removal - RY2	Sep 2025 D-VM Hazard Tree Removal Program	Sep-25	$ 857,248	$ -	$ -
233	Distribution Hazard Tree Removal - RY3	Oct 2025 D-VM Hazard Tree Removal Program	Oct-25	$ 857,248	$ -	$ -

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECT DETAILS - DISTRIBUTION

				Total Project Amount (DEP-NC)		
Line No.	MYRP Project Name	Location/Task	Location/Task Forecasted In-Service Date	Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M
234	Distribution Hazard Tree Removal - RY3	Nov 2025 D-VM Hazard Tree Removal Program	Nov-25	$ 857,248	$ -	$ -
235	Distribution Hazard Tree Removal - RY3	Dec 2025 D-VM Hazard Tree Removal Program	Dec-25	$ 857,248	$ -	$ -
236	Distribution Hazard Tree Removal - RY3	Jan 2026 D-VM Hazard Tree Removal Program	Jan-26	$ 665,449	$ -	$ -
237	Distribution Hazard Tree Removal - RY3	Feb 2026 D-VM Hazard Tree Removal Program	Feb-26	$ 665,449	$ -	$ -
238	Distribution Hazard Tree Removal - RY3	Mar 2026 D-VM Hazard Tree Removal Program	Mar-26	$ 665,449	$ -	$ -
239	Distribution Hazard Tree Removal - RY3	Apr 2026 D-VM Hazard Tree Removal Program	Apr-26	$ 665,449	$ -	$ -
240	Distribution Hazard Tree Removal - RY3	May 2026 D-VM Hazard Tree Removal Program	May-26	$ 665,449	$ -	$ -
241	Distribution Hazard Tree Removal - RY3	Jun 2026 D-VM Hazard Tree Removal Program	Jun-26	$ 885,625	$ -	$ -
242	Distribution Hazard Tree Removal - RY3	Jul 2026 D-VM Hazard Tree Removal Program	Jul-26	$ 885,625	$ -	$ -
243	Distribution Hazard Tree Removal - RY3	Aug 2026 D-VM Hazard Tree Removal Program	Aug-26	$ 885,625	$ -	$ -
244	Distribution Hazard Tree Removal - RY3	Sep 2026 D-VM Hazard Tree Removal Program	Sep-26	$ 885,625	$ -	$ -
	TOTALS			**$ 1,800,848,789**	**$ (4,159,261)**	**$ 24,684,246**

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
DISTRIBUTION SUBSTATION-LINE IMPROVEMENT PROGRAM SCOPE

			Total projected costs by improvement program											
		Total	Capacity uplift	SOG	Voltage Regulation	H&R: Laterals	H&R: Storm	H&R: Public Interference	Distribution Automation	Equipment Retrofit	Long Duration Interruption	Targeted Underground	Distribution Integrity	Vegetation Mgmt.
Projected in-service cost (including AFUDC and contingency)	**Total**	**$1,563,369,235**	**$253,455,832**	**$212,683,527**	**$204,642,962**	**$171,598,252**	**$77,217,169**	**$18,126,481**	**$50,418,439**	**$83,209,559**	**$2,591,209**	**$103,838,195**	**$365,178,418**	**$20,409,191**
	RY 1	*$631,433,830*	*$83,771,193*	*$73,404,326*	*$77,789,276*	*$65,892,872*	*$19,205,333*	*$7,107,553*	*$25,791,698*	*$37,582,167*	*$1,263,619*	*$33,713,385*	*$194,702,142*	*$11,210,266*
	RY 2	*$385,100,763*	*$71,873,881*	*$57,182,766*	*$58,997,931*	*$25,290,870*	*$18,746,799*	*$7,285,242*	*$12,480,409*	*$16,987,325*	*$0*	*$23,023,771*	*$88,232,997*	*$4,998,773*
	RY 3	*$546,834,642*	*$97,810,759*	*$82,096,435*	*$67,855,755*	*$80,414,510*	*$39,265,036*	*$3,733,686*	*$12,146,333*	*$28,640,068*	*$1,327,590*	*$47,101,039*	*$82,243,278*	*$4,200,152*
Estimated one-time installation O&M costs	**Total**	**$23,362,222**	**$7,611,902**	**$2,972,692**	**$0**	**$3,115,520**	**$1,401,947**	**$329,102**	**$963,857**	**$178,465**	**$87,570**	**$71,027**	**$6,630,140**	**$0**
	RY 1	*$9,390,335*	*$2,515,855*	*$1,025,977*	*$0*	*$1,196,344*	*$348,690*	*$129,044*	*$493,064*	*$80,605*	*$42,704*	*$23,060*	*$3,534,991*	*$0*
	RY 2	*$5,782,331*	*$2,158,549*	*$799,247*	*$0*	*$459,178*	*$340,365*	*$132,270*	*$238,590*	*$36,434*	*$0*	*$15,749*	*$1,601,949*	*$0*
	RY 3	*$8,189,556*	*$2,937,498*	*$1,147,467*	*$0*	*$1,459,997*	*$712,892*	*$67,788*	*$232,203*	*$61,426*	*$44,866*	*$32,218*	*$1,493,200*	*$0*
Estimated annual net incremental O&M costs / (savings)	**Total**	**-$4,159,269**	**$0**	**$341,291**	**$348,086**	**-$295,613**	**-$264,506**	**$0**	**$21,670**	**-$72,081**	**-$6,213**	**-$356,000**	**-$3,875,903**	**$0**
	RY 1	*-$2,148,944*	*$0*	*$122,207*	*$134,558*	*-$114,567*	*-$65,787*	*$0*	*$11,125*	*-$33,007*	*-$3,030*	*-$115,789*	*-$2,084,654*	*$0*
	RY 2	*-$931,101*	*$0*	*$90,465*	*$100,854*	*-$43,317*	*-$64,217*	*$0*	*$5,344*	*-$14,547*	*$0*	*-$78,867*	*-$926,815*	*$0*
	RY 3	*-$1,079,224*	*$0*	*$128,619*	*$112,675*	*-$137,729*	*-$134,502*	*$0*	*$5,201*	*-$24,526*	*-$3,183*	*-$161,344*	*-$864,434*	*$0*

		Description and Scope - Improvement programs planned by project											
MYRP Project Name	Wilmington Sunset Park 115kV #2 Capacity	Capacity uplift	SOG (Full and Partial)	Voltage Regulation	H&R: Laterals	H&R: Storm	H&R: Public Interference	Distribution Automation	Equipment Retrofit	Long Duration Interruption	Targeted Underground	Distribution Integrity	Vegetation Mgmt. (Hazard Tree)
Coastal - 280 Area Substation & Line Project	BENSON 230KV Substation	X	X	X				X	X			X	X
	BLADENBORO 115KV Substation		X	X		X		X	X		X	X	X
	CHADBOURN 115KV Substation	X	X	X	X			X	X		X	X	X
	CLIFDALE 230KV Substation			X	X	X		X	X			X	X
	CLINTON FERRELL ST. 115KV Substation	X	X	X				X	X			X	X
	CLINTON NORTH 115KV Substation	X		X		X		X	X			X	X
	DUNN 230KV Substation			X	X	X		X	X			X	X
	EDMONDSON 230KV Substation	X			X			X	X		X	X	X
	ELIZABETHTOWN 115KV Substation				X			X	X		X	X	X
	FAIR BLUFF 115KV Substation		X	X	X			X	X		X	X	X
	FAYETTEVILLE SLOCOMB 115KV Substation	X						X	X		X	X	X
	FORT BRAGG MAIN 230KV Substation			X	X			X				X	X
	GARLAND 230KV Substation	X	X	X	X			X	X		X	X	X
	GODWIN 115KV Substation			X		X	X	X	X			X	X
	HOPE MILLS CHURCH ST. 115KV Substation		X	X		X		X				X	X
	HOPE MILLS ROCKFISH RD 230KV Substation	X		X				X				X	X
	LAKE WACCAMAW 115KV Substation	X		X		X		X	X			X	X
	LAUREL HILL 230KV Substation		X	X				X	X		X	X	X
	LAURINBURG CITY 230KV Substation		X	X	X	X		X	X		X	X	X
	LUMBERTON 115KV Substation	X						X	X		X	X	X
	NEWTON GROVE 230KV Substation	X	X	X				X	X			X	X
	RED SPRINGS 115KV Substation	X		X	X			X	X		X	X	X
	ROSEBORO 115KV Substation		X	X				X	X			X	X
	ROWLAND 230KV Substation		X	X	X			X	X		X	X	X
	SPRING LAKE 230KV Substation	X		X	X			X				X	X
	ST. PAULS 115KV Substation	X	X	X				X	X			X	X
	TABOR CITY 115KV Substation		X	X	X			X	X			X	X
	WEATHERSPOON 230KV Substation		X	X	X			X	X		X	X	X
	WHITEVILLE-SOUTHEAST REGIONAL PARK 115KV Substa			X	X			X	X		X	X	X
	ATLANTIC BEACH 115KV Substation	X	X	X				X	X			X	X
	BAYBORO 230KV Substation	X	X		X			X	X			X	
	BEAUFORT 115KV Substation		X	X				X				X	X
	BEULAVILLE 115KV Substation	X						X	X			X	X
	BRIDGETON 115KV Substation		X	X	X	X		X	X		X	X	X
	CATHERINE LAKE 230KV Substation	X	X	X	X			X	X		X	X	X
	CHOCOWINITY 230KV Substation		X		X			X	X			X	
	DOVER 230KV Substation			X				X	X			X	X

		Description and Scope - Improvement programs planned by project											
MYRP Project Name	Wilmington Sunset Park 115kV #2 Capacity	Capacity uplift	SOG (Full and Partial)	Voltage Regulation	H&R: Laterals	H&R: Storm	H&R: Public Interference	Distribution Automation	Equipment Retrofit	Long Duration Interruption	Targeted Underground	Distribution Integrity	Vegetation Mgmt. (Hazard Tree)
Coastal - 281 Area Substation & Line Project	FREMONT 115KV Substation							X				X	X
	GOLDSBORO CITY 115KV Substation		X	X				X	X			X	X
	GOLDSBORO HEMLOCK 115KV Substation		X	X				X				X	X
	GOLDSBORO WEIL 115KV Substation			X	X			X				X	X
	GRANTHAM 230KV Substation		X	X	X			X	X			X	X
	GRIFTON 115KV Substation			X				X				X	X
	JACKSONVILLE BLUE CREEK 115KV Substation	X	X	X	X			X	X			X	X
	JACKSONVILLE CITY 115KV Substation	X		X		X		X	X			X	X
	KORNEGAY 115KV Substation	X	X	X				X	X		X	X	X
	LAGRANGE 115KV Substation	X		X				X				X	X
	MOREHEAD 115KV Substation	X	X	X		X		X	X		X	X	X
	MOREHEAD WILDWOOD 230KV Substation	X	X	X	X			X	X			X	X
	MT OLIVE 115KV Substation		X	X	X			X	X		X	X	X
	MT OLIVE WEST 115KV Substation	X	X	X	X			X	X		X	X	X
	NEW BERN WEST 230KV Substation			X	X			X	X		X	X	X
	NEW HOPE 115KV Substation			X				X	X			X	X
	RHEMS 230KV Substation		X	X		X		X	X		X	X	X
	ROSEWOOD 115KV Substation	X		X				X				X	X
	SEYMOUR JOHNSON 115KV Substation		X	X				X	X			X	X
	SWANSBORO 230KV Substation		X	X	X			X	X		X	X	X
	WARSAW 230KV Substation	X	X	X				X	X		X	X	X
Coastal - 282 Area Substation & Line Project	BURGAW 115KV Substation			X		X		X				X	X
	CAROLINA BEACH 115KV Substation	X		X		X		X	X			X	X
	CASTLE HAYNE 230KV Substation	X		X		X		X				X	X
	DELCO 115KV Substation	X	X		X			X	X			X	
	EAGLE ISLAND 115KV Substation	X	X	X	X	X		X	X		X	X	X
	HOLLY RIDGE 115KV Substation		X	X	X			X	X			X	X
	LELAND 115KV Substation	X	X	X	X			X	X		X	X	X
	MASONBORO 230KV Substation		X	X	X	X		X	X			X	X
	MURRAYSVILLE 230KV Substation			X	X			X			X	X	X
	ROCKY POINT 230KV Substation			X	X	X		X	X			X	X
	ROSE HILL 230KV Substation		X	X	X			X	X		X	X	X
	SCOTTS HILL 230KV Substation	X		X				X	X		X	X	X
	SOUTHPORT 230KV Substation		X						X			X	X
	TOPSAIL 230KV Substation			X	X	X		X				X	X
	VISTA 115KV Substation		X	X	X			X				X	X
	WILMINGTON CEDAR AVE 230KV Substation	X	X	X		X		X	X			X	X
	WILMINGTON EAST 230KV Substation	X		X	X	X		X	X		X	X	X
	WILMINGTON OGDEN 230KV Substation	X	X	X		X		X	X		X	X	X
	WILMINGTON RIVER ROAD 115KV Substation	X	X					X	X		X		
	WILMINGTON WINTER PARK 230KV Substation	X	X	X	X	X		X	X			X	X
	WRIGHTSVILLE BEACH 230KV Substation		X	X		X		X	X		X	X	X
Mountains - 231 Area Substation & Line Project	ARDEN 115KV Substation	X	X	X	X			X	X			X	X
	ASHEVILLE BENT CREEK 115KV Substation		X	X	X			X	X		X	X	X
	ASHEVILLE ROCK HILL 115KV Substation					X	X	X	X		X	X	X
	AVERY CREEK 115KV Substation	X		X	X	X		X	X		X	X	X
	BALDWIN 115KV Substation	X		X		X		X	X			X	X
	BARNARDSVILLE 115KV Substation	X	X	X				X	X			X	X
	BILTMORE 115KV Substation	X		X				X	X		X	X	X
	BLACK MOUNTAIN 115KV Substation	X	X	X	X	X		X	X			X	X
	CANDLER 115KV Substation	X			X	X		X	X	X	X	X	X
	ELK MOUNTAIN 115KV Substation	X		X	X	X		X	X		X	X	X
	EMMA 115KV Substation	X			X	X		X				X	X
	FAIRVIEW 115KV Substation	X			X			X	X			X	X
	MAGGIE VALLEY 115KV Substation	X	X	X	X			X	X			X	X
	MARSHALL H E PLANT Substation		X		X			X	X		X	X	X
	MICAVILLE 115KV Substation		X		X			X	X	X	X	X	X
	REYNOLDS 115KV Substation	X	X	X	X			X	X			X	X
	VANDERBILT 115KV Substation	X	X	X		X		X	X			X	X
	WALTERS H E PLANT Substation				X			X	X			X	X
	WEAVERVILLE 115KV Substation	X	X	X	X			X	X		X	X	X
	WEST ASHEVILLE 115KV Substation	X		X				X				X	X

		Description and Scope - Improvement programs planned by project											
MYRP Project Name	Wilmington Sunset Park 115kV #2 Capacity	Capacity uplift	SOG (Full and Partial)	Voltage Regulation	H&R: Laterals	H&R: Storm	H&R: Public Interference	Distribution Automation	Equipment Retrofit	Long Duration Interruption	Targeted Underground	Distribution Integrity	Vegetation Mgmt. (Hazard Tree)
Triangle North - 262 Area Substation & Line Project	ARCHER LODGE 230KV Substation	X	X	X	X	X		X	X			X	X
	BAHAMA 230KV Substation		X	X				X	X			X	X
	ELM CITY 115KV Substation		X	X	X			X	X			X	X
	FOUR OAKS 230KV Substation	X						X				X	X
	FRANKLINTON 115KV Substation							X				X	X
	HENDERSON 230KV Substation		X	X	X	X		X	X		X	X	X
	HENDERSON NORTH 115KV Substation	X	X		X			X	X			X	
	KNIGHTDALE 115KV Substation	X						X	X			X	X
	KNIGHTDALE HODGE ROAD 230KV Substation	X		X				X				X	X
	KNIGHTDALE SQUARE D 230KV Substation	X		X	X	X		X	X			X	X
	LITTLETON 115KV Substation			X				X	X			X	X
	LOUISBURG 115KV Substation	X	X	X	X	X		X	X			X	X
	OXFORD NORTH 230KV Substation	X	X		X			X	X			X	
	OXFORD SOUTH 230KV Substation	X	X	X	X	X		X	X			X	X
	ROCKY MOUNT 230KV Substation	X	X	X	X			X	X			X	X
	ROXBORO 115KV Substation	X	X	X	X	X		X	X		X	X	X
	ROXBORO BOWMANTOWN ROAD 230KV Substation			X		X		X				X	X
	SPRING HOPE 115KV Substation	X	X	X		X		X	X			X	X
	WENDELL 230KV Substation	X			X			X	X		X	X	X
	WILSON MILLS 230KV Substation	X	X	X	X			X	X			X	X
	YANCEYVILLE 230KV Substation		X	X	X	X		X	X		X	X	X
	YOUNGSVILLE 115KV Substation	X	X	X				X				X	X
	ZEBULON 115KV Substation	X	X	X	X	X		X	X		X	X	X
Triangle South - 270 Area Substation & Line Project	CHESTNUT HILLS 115KV Substation	X	X		X			X	X			X	
	FALLS 230KV Substation		X		X			X	X			X	
	LEESVILLE WOOD VALLEY 230KV Substation	X	X	X	X	X		X	X		X	X	X
	METHOD 230KV Substation	X	X	X				X	X			X	X
	MORDECAI 115KV Substation		X	X				X	X			X	X
	NEUSE 115KV Substation	X		X				X				X	X
	PINE LAKE 230KV Substation	X	X	X				X	X			X	X
	RALEIGH 115KV Substation	X		X				X				X	X
	RALEIGH ATLANTIC AVENUE 115KV Substation	X	X		X			X	X			X	
	RALEIGH BLUE RIDGE 230KV Substation	X	X	X		X		X	X			X	X
	RALEIGH BRIER CREEK 230KV Substation	X						X				X	X
	RALEIGH DURHAM AIRPORT 230KV Substation		X		X			X	X			X	
	RALEIGH HOMESTEAD 230KV Substation		X		X			X	X			X	
	RALEIGH HONEYCUTT 230KV Substation		X		X			X				X	
	RALEIGH LEESVILLE ROAD 230KV Substation	X		X		X		X	X			X	X
	RALEIGH NORTHSIDE 115KV Substation	X	X	X		X	X	X	X			X	X
	RALEIGH PRISON FARM 230KV Substation			X				X	X			X	X
	RALEIGH SIX FORKS 230KV Substation	X	X					X	X			X	
	RALEIGH TIMBERLAKE 115KV Substation	X	X	X				X	X		X	X	X
	RALEIGH YONKERS ROAD 115KV Substation	X		X		X		X	X			X	X
Triangle South - 271 Area Substation & Line Project	AMBERLY 230KV Substation	X						X				X	X
	ANGIER 230KV Substation	X	X		X			X	X			X	
	APEX 230KV Substation	X	X		X			X	X		X	X	X
	CARALEIGH 230KV Substation	X	X	X		X		X	X			X	X
	CARY 230KV Substation	X			X			X	X		X	X	X
	CARY EVANS ROAD 230KV Substation	X	X	X				X	X			X	X
	CARY PINEY PLAINS 230KV Substation	X						X				X	X
	CARY REGENCY PARK 230KV Substation		X					X	X			X	X
	CARY TRIANGLE FOREST 230KV Substation	X						X				X	X
	CLAYTON 115KV Substation	X		X	X	X		X	X		X	X	X
	CLAYTON INDUSTRIAL 115KV Substation				X			X				X	X
	CLEVELAND MATTHEWS ROAD 230KV Substation		X					X				X	X
	FUQUAY 230KV Substation	X			X			X	X		X	X	X
	FUQUAY BELLS LAKE 230KV Substation	X			X	X		X	X		X	X	X
	FUQUAY WADE NASH ROAD 115KV Substation	X						X				X	X
	GARNER 115KV Substation	X	X	X	X	X		X	X		X	X	X
	GARNER TRYON HILLS 115KV Substation	X		X	X	X	X	X	X		X	X	X
	GARNER WHITE OAK 230KV Substation			X				X	X			X	X
	HOLLY SPRINGS 230KV Substation	X	X	X	X			X				X	X

		Description and Scope - Improvement programs planned by project											
MYRP Project Name	Wilmington Sunset Park 115kV #2 Capacity	Capacity uplift	SOG (Full and Partial)	Voltage Regulation	H&R: Laterals	H&R: Storm	H&R: Public Interference	Distribution Automation	Equipment Retrofit	Long Duration Interruption	Targeted Underground	Distribution Integrity	Vegetation Mgmt. (Hazard Tree)
	MILBURNIE 230KV Substation	x	x					x	x			x	x
	MORRISVILLE 230KV Substation	x	x	x				x	x			x	x
	NEW HILL 230KV Substation		x	x	x	x		x	x			x	x
	RALEIGH SOUTH 115KV Substation	x	x	x	x	x		x	x		x	x	x
	RALEIGH WORTHDALE 230KV Substation	x	x		x	x	x	x	x			x	x
Triangle South - 272 Area Substation & Line Project	ASHEBORO NORTH 115KV Substation		x	x	x			x	x			x	x
	ASHEBORO SOUTH 115KV Substation	x	x	x	x	x		x	x			x	x
	ASHEBORO WEST 115KV Substation	x			x	x		x	x			x	x
	BISCOE 115KV Substation	x	x	x	x	x		x	x		x	x	x
	BYNUM 230KV Substation	x	x	x	x	x		x	x			x	x
	ELLERBE 230KV Substation		x	x	x			x	x			x	x
	HAMLET 230KV Substation							x	x			x	x
	JONESBORO 230KV Substation	x	x	x	x	x		x	x			x	x
	LAKEVIEW 115KV Substation	x	x	x	x			x	x			x	x
	LIBERTY 115KV Substation	x						x	x		x	x	x
	MONCURE 115KV Substation	x	x			x		x	x			x	x
	MT. GILEAD 115KV Substation	x	x	x	x	x		x	x		x	x	x
	PITTSBORO 230KV Substation	x	x		x	x		x	x		x	x	x
	RAEFORD SOUTH 115KV Substation	x		x				x	x			x	x
	RAMSEUR 115KV Substation	x	x	x	x	x		x	x		x	x	x
	ROBBINS 115KV Substation			x	x	x		x	x			x	x
	ROCKINGHAM 230KV Substation		x	x	x			x	x			x	x
	SANFORD GARDEN ST 230KV Substation	x	x	x	x	x		x	x			x	x
	SEAGROVE 115KV Substation	x		x				x	x			x	x
	SILER CITY 115KV Substation	x	x	x	x	x		x	x			x	x
	SOUTHERN PINES CENTER PARK 115KV Substation	x		x	x	x		x	x			x	x
	TROY 115KV Substation	x		x	x	x		x	x		x	x	x
	TROY BURNETTE ST. 115KV Substation		x	x	x			x	x		x	x	x
	WADESBORO 230KV Substation		x	x				x	x			x	x
	WADESBORO BOWMAN SCHOOL 230KV Substation		x	x	x			x	x			x	x
	WEST END 230KV Substation	x	x	x	x			x	x		x	x	x

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECTS - TRANSMISSION

Line No.	MYRP Project Name	Project Forecasted In-Service Date	MYRP Project Description & Scope	Reason for the MYRP 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
1	Breakers	Oct-23 - Sep-26	The Breaker Replacement project involves replacing degraded transmission circuit breakers, including oil circuit breakers ("OCBs"), typically in conjunction with upgrading the associated protection and control relays.	The new fault interrupting and communication/control capabilities of this modern technology better positions the transmission and distribution systems to effectively respond to electric grid events. These highly reliable gas and vacuum breakers are also better suited for protecting circuits with higher solar and other variable energy resource penetration.	$ 88,678,850	$ -	$ -
2	Capacity & Customer Planning	Oct-23 - Sep-26	The DEP Transmission System is required to meet NERC Standards and reliably serve customers. NERC and local standards set requirements for transmission system power flows, voltages, stability, and breaker capability to maintain a safe and reliable transmission grid and avoid widespread grid blackouts, as occurred several times in prior decades.	As demand on the transmission system grows and changes over time, new transmission projects are needed to keep the grid reliable for customers and in compliance with NERC Standards. DEP is also required to connect new transmission delivery points for retail and wholesale customers.	$ 517,948,432	$ -	$ -
3	Substation H&R	Oct-23 - Sep-26	The Transmission Substation H&R project work includes substation flood mitigation, animal mitigation, physical security, and 3 phase regulators along with ancillary substation equipment upgrades.	The Transmission Substation Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme external events, natural or man-made.	$ 367,315,053	$ -	$ -
4	System Intelligence	Oct-23 - Jul-26	The Transmission System Intelligence work includes system intelligence and monitoring, electromechanical to digital relays, remote substation monitoring, and remote control switches.	This System Intelligence project is critical to provide grid operators and engineers with enhanced information to respond to changing conditions that threaten reliability. Remote asset monitoring allows proactive decisions to be made when equipment health is threatened, and remote operated switches play a vital part in sectionalizing transmission lines to limit the customer impact of faults from external causes and equipment failures.	$ 94,135,160	$ -	$ -
5	T Line H&R	Oct-23 - Sep-26	The Transmission Line H&R work includes cathodic protection, targeted line strengthening for extreme weather, and animal mitigation.	The Transmission Hardening & Resiliency (H&R) project works to create a stronger and more resilient transmission grid capable of withstanding or quickly recovering from extreme external events, natural or man-made.	$ 144,354,399	$ -	$ 850,000
6	Transformers	Nov-23 - Aug-26	The Transformer Bank Replacement project involves replacing degraded transmission transformers, typically in conjunction with upgrading the associated protection and control relays.	Catastrophic failures often result in significant oil spills, requiring expensive cleanup and other mitigation. Proactive replacement also reduces contingent material inventory needed, since replacements have a 12-24-month manufacturing lead time.	$ 126,851,672	$ -	$ -
7	Vegetation Management	Oct-23 - Sep-26	Duke Energy Progress' (DEP) Transmission Integrated Vegetation Management (IVM) program is focused on ensuring the safe and reliable operation of the transmission system by minimizing vegetation-related interruptions and maintaining adequate conductor-to vegetation clearances, while maintaining compliance with regulatory, environmental, and safety requirements and standards	The Transmission vegetation management project works to create a hardened transmission grid capable of withstanding extreme weather events, and reduce the frequency of outages impacting customers.	$ 119,000,005	$ -	$ -
	TOTALS				**$ 1,458,283,571**	**$ -**	**$ 850,000**

DUKE ENERGY PROGRESS, LLC
TECHNICAL CONFERENCE
MYRP PROJECT DETAILS - TRANSMISSION

				Total Project Amount (System)		
Line No.	MYRP Project Name	Location/Task	Location/Task Forecasted In-Service Date	Projected In-Service Costs	Projected Annual Net O&M	Projected Installation O&M
1	Breakers	Asheville Rock Hill 115kV - Replace DOIL Breakers	Sep-24	$ 462,354	$ -	$ -
2	Breakers	Auburn 230kV - Replace DOIL Breakers	Sep-24	$ 580,653	$ -	$ -
3	Breakers	Baldwin 115kV - Replace DOIL Breakers	Sep-24	$ 462,354	$ -	$ -
4	Breakers	Benson 230kV - Replace DOIL Breakers	Sep-24	$ 333,351	$ -	$ -
5	Breakers	Bladenboro 115kV - Replace DOIL Breakers	Sep-26	$ 470,789	$ -	$ -
6	Breakers	Buies Creek 230kV - Replace DOIL Breakers	Sep-24	$ 457,002	$ -	$ -
7	Breakers	Burgaw 115kV - Replace DOIL Breakers	Sep-24	$ 336,522	$ -	$ -
8	Breakers	Cary 230kV - Replace DOIL Breakers	Sep-24	$ 333,351	$ -	$ -
9	Breakers	Cary Regency Park 230 Replace Breaker	Feb-24	$ 4,859,066	$ -	$ -
10	Breakers	Chestnut Hills 115kV - Replace DOIL Breakers	Nov-23	$ 937,129	$ -	$ -
11	Breakers	Clinton Ferrell Street 115kV - Replace DOIL Breakers	Sep-24	$ 704,304	$ -	$ -
12	Breakers	Cumberland 500kV - Replace TOIL Breakers	Jul-24	$ 2,308,115	$ -	$ -
13	Breakers	Delco 230kV - Replace Breaker	Jul-24	$ 662,623	$ -	$ -
14	Breakers	Elm City 115kV - Replace TOIL Breaker	Mar-26	$ 2,553,099	$ -	$ -
15	Breakers	Franklinton 115kV - Replace TOIL Breakers	Nov-23	$ 2,657,275	$ -	$ -
16	Breakers	Fuquay 230kV - Replace DOIL Breakers	Sep-26	$ 853,084	$ -	$ -
17	Breakers	Garner 115kV - Replace DOIL Breakers	Sep-24	$ 209,699	$ -	$ -
18	Breakers	HNP - Replace Breakers	Jul-26	$ 4,292,319	$ -	$ -
19	Breakers	Jacksonville Northwoods 115kV - Replace DOIL Breakers	Sep-24	$ 673,133	$ -	$ -
20	Breakers	Knightdale 115kV - Replace DOIL Breakers	Mar-26	$ 597,430	$ -	$ -
21	Breakers	Kornegay 115kV - Replace DOIL Breakers	Sep-25	$ 463,961	$ -	$ -
22	Breakers	Lake Waccamaw 115kV - Replace DOIL Breakers	Mar-26	$ 470,015	$ -	$ -
23	Breakers	Laurinburg 230kV - Replace TOIL Breakers	Oct-24	$ 9,234,302	$ -	$ -
24	Breakers	Leland 115kV - Replace DOIL Breakers	Mar-26	$ 342,599	$ -	$ -
25	Breakers	Masonboro 230kV - Replace DOIL Breakers	Sep-26	$ 598,221	$ -	$ -
26	Breakers	Maxton Airport 115kV - Replace DOIL Breakers	Mar-26	$ 470,015	$ -	$ -
27	Breakers	Method 230kV - Replace 115kV Breaker	May-25	$ 1,560,031	$ -	$ -
28	Breakers	Method 230kV - Replace DOIL Breakers	Nov-23	$ 450,172	$ -	$ -
29	Breakers	Method 230kV- Replace #1 230kV Autobank MOAB	Oct-23	$ 534,849	$ -	$ -
30	Breakers	Milburnie 230kV - Replace Breakers	Nov-25	$ 9,368,577	$ -	$ -
31	Breakers	Moncure 115kV - Replace DOIL Breakers	Mar-26	$ 597,430	$ -	$ -
32	Breakers	Moncure Allied Fibers 115KV - Replace DOIL Breakers	Oct-23	$ 338,742	$ -	$ -
33	Breakers	Morrisville 230kV - Replace DOIL Breakers	Mar-26	$ 470,015	$ -	$ -
34	Breakers	Mt. Olive West 115kV - Replace DOIL Breakers	Sep-24	$ 462,354	$ -	$ -
35	Breakers	Neuse 115kV - Replace DOIL Breakers	Sep-24	$ 685,155	$ -	$ -
36	Breakers	New Hill 230kV - Replace 230kV Breaker	Jul-26	$ 777,357	$ -	$ -
37	Breakers	Oxford North 230kV - Replace DOIL Breakers	Sep-24	$ 457,002	$ -	$ -
38	Breakers	Raleigh Oakdale 230kV - Replace DOIL Breakers	Sep-25	$ 589,523	$ -	$ -
39	Breakers	Raleigh Timberlake 115kV - Replace DOIL Breakers	Sep-25	$ 589,523	$ -	$ -
40	Breakers	Ramseur 115kV - Replace TOIL Breakers	Oct-23	$ 2,825,077	$ -	$ -
41	Breakers	Rockingham 230kV - Replace Breakers	Feb-24	$ 9,197,655	$ -	$ -
42	Breakers	Rocky Mount 230kV - Replace DOIL Breakers	Sep-26	$ 470,789	$ -	$ -
43	Breakers	Roseboro 115kV - Replace DOIL Breakers	Jan-25	$ 9,064,134	$ -	$ -
44	Breakers	Rowland 230kV 115kV - Replace DOIL Breakers	Sep-25	$ 338,399	$ -	$ -
45	Breakers	Southport 230kV - Replace DOIL Breakers	Sep-26	$ 470,789	$ -	$ -
46	Breakers	Spring Lake 230kV - Replace DOIL Breakers	Sep-25	$ 463,961	$ -	$ -
47	Breakers	Swannanoa 115kV - Replace DOIL Breakers	Sep-24	$ 210,690	$ -	$ -
48	Breakers	VANDER 115KV - Replace DOIL Breakers	Sep-26	$ 470,789	$ -	$ -
49	Breakers	Wake 500kV - Replace 500kV Breaker	Jul-26	$ 679,731	$ -	$ -
50	Breakers	Walters H.E. Plant - Replace Breaker	Nov-23	$ 1,836,878	$ -	$ -
51	Breakers	Wilson 230kV - Replace TOIL Breakers	May-24	$ 7,371,471	$ -	$ -
52	Breakers	Wrightsville Beach 230kV - Replace DOIL Breakers	Sep-25	$ 463,961	$ -	$ -
53	Breakers	Bethune 115kV - Replace DOIL Breakers	Sep-24	$ 336,522	$ -	$ -
54	Breakers	Florence 230kV - Replace DOIL Breakers	Sep-24	$ 588,186	$ -	$ -
55	Breakers	Marion 230kV - Replace DOIL Breakers	Sep-25	$ 686,320	$ -	$ -
56	Capacity & Customer Planning	Baldwin 115kV Tap - Construct New Tap Line	Nov-25	$ 6,970,134	$ -	$ -
57	Capacity & Customer Planning	Camden Camden Dupont 115kV - Line Rebuild	May-24	$ 2,329,543	$ -	$ -
58	Capacity & Customer Planning	Camden Junction DPC Wateree 115kV - Line Rebuild	Dec-25	$ 8,929,436	$ -	$ -
59	Capacity & Customer Planning	Cape Fear West End 230kV line - Conductor Uprate	May-24	$ 1,083,964	$ -	$ -
60	Capacity & Customer Planning	Cape Fear West End 230kV line - Conductor Uprate	Apr-26	$ 75,630,142	$ -	$ -
61	Capacity & Customer Planning	Castle Hayne 230 kV-Folkstone - Conductor Uprate	Oct-23	$ 1,057,806	$ -	$ -
62	Capacity & Customer Planning	Castle Hayne 230 kV-Folkstone - Conductor Uprate	Dec-25	$ 90,775,919	$ -	$ -
63	Capacity & Customer Planning	Craggy-Enka 230kV - Construct New Line	Jan-24	$ 15,641,495	$ -	$ -
64	Capacity & Customer Planning	Craggy-Enka 230kV - Construct New Line	Jun-24	$ 17,965,152	$ -	$ -
65	Capacity & Customer Planning	Craggy-Enka 230kV - Construct New Line	Nov-24	$ 10,859,095	$ -	$ -
66	Capacity & Customer Planning	Craggy-Enka 230kV - Construct New Line	Dec-24	$ 36,614,587	$ -	$ -
67	Capacity & Customer Planning	Craggy-Vanderbilt 115kV Line - Conductor Uprate	Aug-24	$ 610,844	$ -	$ -
68	Capacity & Customer Planning	Erwin-Fayetteville 115kV - Line Rebuild	Jun-25	$ 24,862,434	$ -	$ -
69	Capacity & Customer Planning	Erwin-Fayetteville East 230kV - Line Rebuild	Nov-24	$ 1,614,210	$ -	$ -
70	Capacity & Customer Planning	Erwin-Fayetteville East 230kV - Line Rebuild	Oct-25	$ 1,291,439	$ -	$ -
71	Capacity & Customer Planning	Erwin-Fayetteville East 230kV - Line Rebuild	Jun-26	$ 81,985,576	$ -	$ -
72	Capacity & Customer Planning	Fayetteville Fayetteville Dupont - Conductor Uprate	Dec-24	$ 15,722,182	$ -	$ -
73	Capacity & Customer Planning	Fayetteville 230kV Substation - Add Capcaitor	Jul-24	$ 4,953,368	$ -	$ -
74	Capacity & Customer Planning	Havelock 230/115kV - Replace Banks 1&2	Dec-23	$ 8,632,610	$ -	$ -
75	Capacity & Customer Planning	Havelock 230kV Substation - Station Uprate	Jul-26	$ 7,213,051	$ -	$ -
76	Capacity & Customer Planning	Jacksonville 230kV - Add Capacitor	Aug-26	$ 7,707,351	$ -	$ -
77	Capacity & Customer Planning	Jacksonville 230kV - Add Second 115kV Tie Breaker	Dec-25	$ 669,621	$ -	$ -
78	Capacity & Customer Planning	Montauk Renewables - Construct New Customer Station	Mar-24	$ 15,174,667	$ -	$ -
79	Capacity & Customer Planning	New Bern 230kV - Add Redundant Bus Protection	Jul-24	$ 566,998	$ -	$ -
80	Capacity & Customer Planning	Richmond 500kV Substation - Station Uprate	May-24	$ 985,725	$ -	$ -
81	Capacity & Customer Planning	Robinson Plant Rockingham 230kV - Line Rebuild	Nov-24	$ 385,258	$ -	$ -
82	Capacity & Customer Planning	Robinson Plant Rockingham 230kV - Line Rebuild	Sep-26	$ 37,808,346	$ -	$ -
83	Capacity & Customer Planning	Rockingham West End 230kV - Line Rebuild	May-26	$ 2,166,043	$ -	$ -
84	Capacity & Customer Planning	Roxboro 115kV- Add Capacitor	Dec-23	$ 4,744,953	$ -	$ -
85	Capacity & Customer Planning	Sutton Plant Wallace 230kV line - Condutor Uprate	Apr-25	$ 868,091	$ -	$ -
86	Capacity & Customer Planning	Weatherspoon - Marion 115kV - Line Rebuild	Jun-26	$ 11,200,356	$ -	$ -
87	Capacity & Customer Planning	Fayetteville - Fayetteville DuPont - Line Rebuild	Jun-26	$ 10,289,618	$ -	$ -
88	Capacity & Customer Planning	Milburnie 230kV Substation - Add Redundant Bus Protection	Aug-25	$ 7,095,416	$ -	$ -
89	Capacity & Customer Planning	Smithfield 115kV Sw Sta - Add Capacitor Station	Oct-24	$ 3,543,002	$ -	$ -
90	Substation H&R	Amberly 230kV - Install Animal Fence	May-25	$ 904,868	$ -	$ -
91	Substation H&R	Apex 230kV - Replace CCVT	Aug-24	$ 123,366	$ -	$ -
92	Substation H&R	Asheboro 230kV - Rebuild Substation	Jun-24	$ 1,618,778	$ -	$ -
93	Substation H&R	Asheboro South 115kV - Rebuild Substation	Nov-23	$ 6,258,147	$ -	$ -

94	Substation H&R	Ashville S.E. Plant - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
95	Substation H&R	Atlantic Beach 115kV - Rebuild Substation	Oct-23	$ 8,585,629	$ -	$ -
96	Substation H&R	Benson 230kV - Rebuild Substation	May-25	$ 13,154,033	$ -	$ -
97	Substation H&R	Bethune 115kV - Rebuild Substation	Aug-25	$ 635,422	$ -	$ -
98	Substation H&R	Blewett H.E. Plant - Security Enhancement	Mar-24	$ 1,639,706	$ -	$ -
99	Substation H&R	Brunswick Nuclear Plant Unit 1 - Disconnect Switch Replacement	Jul-24	$ 1,183,607	$ -	$ -
100	Substation H&R	Brunswick Nuclear Plant Unit 1 - Disconnect Switch Replacement	Jul-26	$ 4,572,728	$ -	$ -
101	Substation H&R	Brunswick Nuclear Plant Unit 2 - Disconnect Switch Replacement	Jul-25	$ 4,263,721	$ -	$ -
102	Substation H&R	Brunswick Plant Unit 1 - Disconnect Switch Replacement	Jul-26	$ 374,122	$ -	$ -
103	Substation H&R	Camp Lejeune #2 230kV - Replace Capacitor Equipment	Jan-24	$ 216,101	$ -	$ -
104	Substation H&R	Cane River 230kV - Add 2nd Bus	Apr-26	$ 22,417,955	$ -	$ -
105	Substation H&R	Carolina Beach 115/23kV - Rebuild Substation	Nov-25	$ 7,668,995	$ -	$ -
106	Substation H&R	Cary 230kV - Install Animal Fence	Oct-23	$ 902,879	$ -	$ -
107	Substation H&R	Chadbourn 115kV - Rebuild Substation	Jun-24	$ 6,883,038	$ -	$ -
108	Substation H&R	Cumberland 500kV - Security Enhancement	Oct-24	$ 8,476,913	$ -	$ -
109	Substation H&R	Darlington County Plant - Rebuild Substation	Jul-26	$ 1,554,556	$ -	$ -
110	Substation H&R	Delco 230kV - Replace CCVT	Mar-24	$ 190,021	$ -	$ -
111	Substation H&R	Durham 500kV - Rebuild Substation	Feb-26	$ 1,558,002	$ -	$ -
112	Substation H&R	Durham 500kV - Security Enhancement	Aug-24	$ 7,821,819	$ -	$ -
113	Substation H&R	Fair Bluff 115kV - Rebuild Substation	Aug-26	$ 7,080,728	$ -	$ -
114	Substation H&R	Fairmont 115kV - Rebuild Substation	Oct-23	$ 5,002,161	$ -	$ -
115	Substation H&R	Fayetteville East 230kV - Replace CCVT	Apr-24	$ 190,776	$ -	$ -
116	Substation H&R	Florence 230kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
117	Substation H&R	Florence Dupont 115kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
118	Substation H&R	Florence West 230kV - Rebuild Substation	Nov-23	$ 311,366	$ -	$ -
119	Substation H&R	Garner 115kV - Install Animal Fence	Nov-23	$ 883,109	$ -	$ -
120	Substation H&R	Greenville 230kV - Flooded Substation	Oct-23	$ 6,526,265	$ -	$ -
121	Substation H&R	Hartsville 115kV - Rebuild Substation	Jun-24	$ 223,674	$ -	$ -
122	Substation H&R	Henderson North - Substation Rebuild	Jul-25	$ 8,079,374	$ -	$ -
123	Substation H&R	Henderson North 115kV - Install Animal Fence	Jul-26	$ 890,384	$ -	$ -
124	Substation H&R	Holly Springs 230kV - Install Animal Fence	May-24	$ 883,702	$ -	$ -
125	Substation H&R	Kingstree 230kV - Replace CCVT	Apr-24	$ 190,735	$ -	$ -
126	Substation H&R	Lee 230kV - Replace CCVT	Apr-24	$ 190,246	$ -	$ -
127	Substation H&R	Liberty 115kV - Rebuild Substation	Sep-26	$ 9,662,051	$ -	$ -
128	Substation H&R	Marion 230kV - Replace CCVT	Apr-24	$ 191,556	$ -	$ -
129	Substation H&R	Masonboro 230kV - Install Animal Fence	Jul-26	$ 890,384	$ -	$ -
130	Substation H&R	Mayo 500kV - Security Enhancement	Aug-24	$ 5,023,633	$ -	$ -
131	Substation H&R	Milburnie 230/115kV - Substation Rebuild	Oct-23	$ 8,512,353	$ -	$ -
132	Substation H&R	Mobile Storage Facility	Oct-23	$ 11,123,205	$ -	$ -
133	Substation H&R	Mordecai 115kV - Rebuild Substation	Nov-23	$ 16,427,645	$ -	$ -
134	Substation H&R	Morehead Wildwood 230kV - Replace circuit switcher	Feb-24	$ 656,453	$ -	$ -
135	Substation H&R	New Bern 230kV - Replace CCVT	Jul-25	$ 125,549	$ -	$ -
136	Substation H&R	Person 500kV - Security Enhancement	Aug-24	$ 7,832,105	$ -	$ -
137	Substation H&R	Raeford 115kV South - Rebuild Substation	Feb-25	$ 10,729,031	$ -	$ -
138	Substation H&R	Raeford 230 kV Substation - Add Redundant Bus Protection	Nov-23	$ 2,067,385	$ -	$ -
139	Substation H&R	Raleigh 115kV - Rebuild Substation	Mar-25	$ 16,215,678	$ -	$ -
140	Substation H&R	Raleigh Foxcroft 230kV - Install Animal Fence	Jul-26	$ 897,589	$ -	$ -
141	Substation H&R	Raleigh South 115kV - Install Animal Fence	Oct-23	$ 927,500	$ -	$ -
142	Substation H&R	Rockingham 230kV - Replace CCVT	Jul-24	$ 123,095	$ -	$ -
143	Substation H&R	Rockingham West 115kV - Rebuild Substation	Oct-25	$ 6,919,969	$ -	$ -
144	Substation H&R	Rocky Mount 230kV - Replace CCVT	Jul-24	$ 123,095	$ -	$ -
145	Substation H&R	Roxboro Plant - Rebuild Substation	Jul-24	$ 474,898	$ -	$ -
146	Substation H&R	Shearon Harris 230kV - Security Enhancement	Jan-24	$ 10,413,015	$ -	$ -
147	Substation H&R	Siler City 115kV Rebuild Substation	Jan-24	$ 990,883	$ -	$ -
148	Substation H&R	Siler City 230kV - Replace CCVT	Jul-24	$ 123,095	$ -	$ -
149	Substation H&R	South River EMC Halls Pond 115kV - Replace CCVT	Apr-24	$ 190,103	$ -	$ -
150	Substation H&R	Southern Pines Center Park 115kV - Replace Capacitor Bank	Oct-23	$ 1,876,714	$ -	$ -
151	Substation H&R	Southport ADM 230kV - Replace CCVT	Jul-25	$ 125,751	$ -	$ -
152	Substation H&R	Spring Hope 115kV - Rebuild Substation	Aug-26	$ 7,824,024	$ -	$ -
153	Substation H&R	Spring Hope 115kV - Replace CCVT	Jul-25	$ 125,751	$ -	$ -
154	Substation H&R	Spruce Pine 115kV - Rebuild Substation	Aug-26	$ 10,861,405	$ -	$ -
155	Substation H&R	Station Camden Junction 115kV - Replace CCVT	Jul-25	$ 125,751	$ -	$ -
156	Substation H&R	Sutton Plant 230kV - Security Enhancement	Mar-24	$ 5,148,508	$ -	$ -
157	Substation H&R	Vander 115kV - Replace CCVT	Jul-25	$ 125,751	$ -	$ -
158	Substation H&R	Vanderbilt 115kV - Rebuild Substation	Dec-23	$ 507,843	$ -	$ -
159	Substation H&R	Vanderbilt 115kV - Rebuild Substation	Apr-24	$ 1,026,171	$ -	$ -
160	Substation H&R	Vanderbilt 115kV - Rebuild Substation	Jun-24	$ 304,788	$ -	$ -
161	Substation H&R	Vanderbilt 115kV - Rebuild Substation	Nov-24	$ 29,274,499	$ -	$ -
162	Substation H&R	Vanderbilt 115kV - Rebuild Substation	Dec-24	$ 1,596,370	$ -	$ -
163	Substation H&R	Wake 500kV - Replace CCVT	Jul-25	$ 125,751	$ -	$ -
164	Substation H&R	Wake 500kV - Security Enhancement	Aug-24	$ 8,076,428	$ -	$ -
165	Substation H&R	Wake Forest 115kV - Rebuild Substation	Nov-23	$ 1,044,710	$ -	$ -
166	Substation H&R	Wallace 230kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
167	Substation H&R	Walters Plant - Security Enhancement	May-25	$ 5,760,080	$ -	$ -
168	Substation H&R	Weatherspoon 230kV - Rebuild Substation	Sep-25	$ 5,303,318	$ -	$ -
169	Substation H&R	Weatherspoon Plant - Security Enhancement	Mar-24	$ 5,007,847	$ -	$ -
170	Substation H&R	Whiteville 230kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
171	Substation H&R	Wilmington Corning 230kV - Install Animal Fence	Nov-24	$ 920,006	$ -	$ -
172	Substation H&R	Wilson 230kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
173	Substation H&R	Zebulon 230kV - Replace CCVT	Jul-26	$ 128,063	$ -	$ -
174	Substation H&R	Bethune 115kV - Rebuild Substation	Aug-25	$ 4,778,644	$ -	$ -
175	Substation H&R	Fair Bluff 115kV - Rebuild Substation	Aug-26	$ 1,257,661	$ -	$ -
176	Substation H&R	Florence West 230kV - Rebuild Substation	Nov-23	$ 5,856,832	$ -	$ -
177	Substation H&R	Hartsville 115kV - Rebuild Substation	Jun-24	$ 8,150,496	$ -	$ -
178	Substation H&R	Hemingway 115kV - Install Animal Fence	Jul-24	$ 884,046	$ -	$ -
179	Substation H&R	Olanta 230kV - Rebuild Substation	Jul-25	$ 7,003,285	$ -	$ -
180	Substation H&R	Sumter North 230kV - Rebuild Substation	Dec-23	$ 2,171,592	$ -	$ -
181	Substation H&R	Tabor City 115kV - Rebuild Substation	May-24	$ 8,032,241	$ -	$ -
182	Substation H&R	Weatherspoon 230kV - Rebuild Substation	Sep-25	$ 1,025,150	$ -	$ -
183	System Intelligence	Asheville SEP 11 - Condition Based Monitoring	Apr-24	$ 868,922	$ -	$ -
184	System Intelligence	Barnard Creek 23 - Condition Based Monitoring	Apr-24	$ 894,611	$ -	$ -
185	System Intelligence	Barnard Creek 230 - Segment BNP Line	Mar-24	$ 11,624,288	$ -	$ -
186	System Intelligence	Biscoe 230kV - Condition Based Monitoring	Mar-24	$ 870,017	$ -	$ -
187	System Intelligence	Blewett Plant 115kV - Relay Upgrade	Jul-25	$ 688,514	$ -	$ -
188	System Intelligence	BNP U1 - Upgrade Protective Relays	Mar-24	$ 2,042,841	$ -	$ -
189	System Intelligence	Brunswick U1 - Replace Protective Relays	Apr-24	$ 2,723,687	$ -	$ -
190	System Intelligence	Cane River-Craggy 115kV - Upgrade Switch	Oct-25	$ 1,225,767	$ -	$ -
191	System Intelligence	Canton-Pisgah 115kV - Remote Operated Switch	Dec-23	$ 1,688,634	$ -	$ -
192	System Intelligence	Cape Fear SEP 23 - Condition Based Monitoring	Jan-24	$ 863,203	$ -	$ -
193	System Intelligence	Concord 230kV - Condition Based Monitoring	Mar-24	$ 864,522	$ -	$ -
194	System Intelligence	Craggy-Vanderbilt 115kV - Remote Operated Switch	Apr-25	$ 1,226,387	$ -	$ -
195	System Intelligence	Delco 230kV - Condition Based Monitoring	Dec-25	$ 783,098	$ -	$ -
196	System Intelligence	Delco-Whiteville 115kV line - Remote Operated Switch	Apr-25	$ 1,229,312	$ -	$ -

197	System Intelligence	Durham 500kV - Condition Based Monitoring	Dec-25	$ 782,582	$ -	$ -
198	System Intelligence	Erwin 230kV - Relay Upgrade	Jun-26	$ 2,792,977	$ -	$ -
199	System Intelligence	Falls 230kV - Condition Based Monitoring	Dec-25	$ 782,719	$ -	$ -
200	System Intelligence	Falls 230kV - Relay Upgrade	Jun-25	$ 3,228,184	$ -	$ -
201	System Intelligence	Fayetteville 230kV - Condition Based Monitoring	Dec-25	$ 782,582	$ -	$ -
202	System Intelligence	Fayetteville East 230kV - Upgrade Protective Relays	Dec-25	$ 1,254,295	$ -	$ -
203	System Intelligence	Folkstone-Jacksonville 230kV - Remote Operated Switch	Dec-25	$ 1,228,449	$ -	$ -
204	System Intelligence	Franklinton-Spring Hope Sw Sta 115kV - Remote Operated Switch	Jun-25	$ 1,513,738	$ -	$ -
205	System Intelligence	Ft Bragg Woodr - Condition Based Monitoring	Mar-24	$ 830,249	$ -	$ -
206	System Intelligence	Grants Creek 230kV - Condition Based Monitoring	Oct-24	$ 874,610	$ -	$ -
207	System Intelligence	Harlowe 230kV - Condition Based Monitoring	Oct-24	$ 856,603	$ -	$ -
208	System Intelligence	Henderson 230kV - Replace Protective Relays	Nov-23	$ 3,663,662	$ -	$ -
209	System Intelligence	Kinston 115kV - System Intelligence	Nov-24	$ 7,775,849	$ -	$ -
210	System Intelligence	Latta 230kV - Relay Upgrade	Aug-25	$ 2,717,846	$ -	$ -
211	System Intelligence	Laurinburg 230kV - Condition Based Monitoring	Dec-25	$ 782,582	$ -	$ -
212	System Intelligence	Marion-Whiteville 115 - Remote Operated Switch	Oct-23	$ 3,954,463	$ -	$ -
213	System Intelligence	Mayo Plant Start-Up 230kV - Add Remote Operation	Jul-24	$ 158,332	$ -	$ -
214	System Intelligence	Raeford 230kV - Condition Based Monitoring	Dec-25	$ 782,719	$ -	$ -
215	System Intelligence	Richmond 500kV - Relay Upgrade	Aug-24	$ 2,817,269	$ -	$ -
216	System Intelligence	Robinson Plant - Upgrade Switch	Jul-24	$ 2,251,993	$ -	$ -
217	System Intelligence	Robinson Plant - Upgrade Switch	Jul-26	$ 2,293,822	$ -	$ -
218	System Intelligence	Robinson Plant-Darlington - Remote Operated Switch	Oct-23	$ 657,956	$ -	$ -
219	System Intelligence	Robinson Plant-Florence 115kV - Remote Operated Switch	Nov-23	$ 2,103,456	$ -	$ -
220	System Intelligence	Robinson SEP 230kV - Condition Based Monitoring	Mar-24	$ 866,640	$ -	$ -
221	System Intelligence	Rockingham 230kV - Relay Upgrade	Mar-25	$ 3,713,085	$ -	$ -
222	System Intelligence	Sanford Garden St 230kV - Install Animal Fence	Jul-24	$ 884,046	$ -	$ -
223	System Intelligence	Selma 230kV - Condition Based Monitoring	Dec-24	$ 846,747	$ -	$ -
224	System Intelligence	Shearon Harris Plant - Upgrade Switch	Jul-24	$ 2,251,993	$ -	$ -
225	System Intelligence	Shearon Harris Plant - Upgrade Switch	Jul-25	$ 1,136,640	$ -	$ -
226	System Intelligence	Sutton - Wallace 230kV - Remote Operated Switch	May-24	$ 922,865	$ -	$ -
227	System Intelligence	Sutton-Castle Hayne 230kV Line - Remote Operated Switch	Feb-24	$ 1,194,282	$ -	$ -
228	System Intelligence	Wallace 230kV - Condition Based Monitoring	Dec-24	$ 873,322	$ -	$ -
229	System Intelligence	Walters HEP - Condition Based Monitoring	Apr-24	$ 848,182	$ -	$ -
230	System Intelligence	Walters-Canton BL 115kV - Remote Operated Switch	Mar-24	$ 1,813,979	$ -	$ -
231	System Intelligence	Weatherspoon 2 - Condition Based Monitoring	Apr-24	$ 829,687	$ -	$ -
232	System Intelligence	West End 230kV - Relay Upgrade	Aug-24	$ 2,817,269	$ -	$ -
233	System Intelligence	Camden 230kV - Relay Upgrade	Jul-24	$ 1,081,805	$ -	$ -
234	System Intelligence	Kingstree 230kV - Condition Based Monitoring	Apr-24	$ 862,277	$ -	$ -
235	System Intelligence	Robinson Plant-Darlington - Remote Operated Switch	Oct-23	$ 143,282	$ -	$ -
236	System Intelligence	Shearon Harris Plant - Upgrade Switch	Jul-25	$ 568,320	$ -	$ -
237	T Line H&R	Arden 115kV - Construct New Tap Line	Feb-25	$ 3,768,902	$ -	$ -
238	T Line H&R	Aurora-Greenville 230kV - Upgrade Structures	Nov-25	$ 15,985,155	$ -	$ -
239	T Line H&R	Blewett Falls-Rockingham 115kV - Tower Cathodic Protection	Nov-23	$ 257,864	$ -	$ -
240	T Line H&R	Cape Fear-Method - Upgrade Structures	Sep-25	$ 23,769,037	$ -	$ -
241	T Line H&R	Chestnut Hills-Falls 115kV - Tower Cathodic Protection	Oct-23	$ 479,764	$ -	$ -
242	T Line H&R	Concord-Roxboro 115kV - Tower Cathodic Protection	Oct-24	$ 690,976	$ -	$ -
243	T Line H&R	Erwin-Fayetteville 115kV Line - Tower Cathodic Protection	Sep-26	$ 2,369,484	$ -	$ -
244	T Line H&R	Falls-Franklinton 115kV East - Tower Cathodic Protection	Nov-23	$ 1,163,001	$ -	$ -
245	T Line H&R	Falls-Method 115kV - Tower Cathodic Protection	Oct-23	$ 653,546	$ -	$ -
246	T Line H&R	Folkstone-Jacksonville City 115kV - Rebuild Line	Oct-23	$ 12,494,998	$ -	$ -
247	T Line H&R	Franklinton-Henderson 115kV West - Tower Cathodic Protection	Nov-23	$ 669,290	$ -	$ -
248	T Line H&R	Goldsboro-Wommack 115kV - Tower Cathodic Protection	Oct-25	$ 82,283	$ -	$ -
249	T Line H&R	Havelock-New Bern 115kV Line - Component Upgrade	Oct-24	$ 707,761	$ -	$ -
250	T Line H&R	Henderson-Roxboro 115kV - Tower Cathodic Protection	Oct-25	$ 110,590	$ -	$ -
251	T Line H&R	Henderson-Vepco Kerr Dam Plant 11 - Tower Cathodic Protection	Oct-24	$ 108,356	$ -	$ -
252	T Line H&R	Laurinburg-Libbey Owens Ford 115kV South - Tower Cathodic Protection	Oct-23	$ 218,750	$ -	$ -
253	T Line H&R	Lee Plant-Black Creek 115kV East - Tower Cathodic Protection	Nov-23	$ 395,006	$ -	$ -
254	T Line H&R	Mayo-Person 500kV - Replace Lattice Tower	Jun-25	$ 34,667,521	$ -	$ -
255	T Line H&R	Method Milburnie 115kV South - Tower Cathodic Protection	Oct-23	$ 1,017,953	$ -	$ -
256	T Line H&R	Raeford 230kV - Replace Overhead Ground Wire	Dec-25	$ 3,152,725	$ -	$ -
257	T Line H&R	Robinson Plant-Camden Junction 11 - Tower Cathodic Protection	Oct-25	$ 3,040,846	$ -	$ -
258	T Line H&R	Robinson Plant-Rockingham 115kV - Tower Cathodic Protection	Oct-24	$ 108,356	$ -	$ -
259	T Line H&R	Targeted Wood Pole Upgrades	Jan-24	$ 708,333	$ -	$ 35,417
260	T Line H&R	Targeted Wood Pole Upgrades	Feb-24	$ 708,333	$ -	$ 35,417
261	T Line H&R	Targeted Wood Pole Upgrades	Mar-24	$ 708,333	$ -	$ 35,417
262	T Line H&R	Targeted Wood Pole Upgrades	Apr-24	$ 708,333	$ -	$ 35,417
263	T Line H&R	Targeted Wood Pole Upgrades	May-24	$ 708,333	$ -	$ 35,417
264	T Line H&R	Targeted Wood Pole Upgrades	Jun-24	$ 708,333	$ -	$ 35,417
265	T Line H&R	Targeted Wood Pole Upgrades	Jul-24	$ 708,333	$ -	$ 35,417
266	T Line H&R	Targeted Wood Pole Upgrades	Aug-24	$ 708,333	$ -	$ 35,417
267	T Line H&R	Targeted Wood Pole Upgrades	Sep-24	$ 708,333	$ -	$ 35,417
268	T Line H&R	Targeted Wood Pole Upgrades	Oct-24	$ 708,333	$ -	$ 35,417
269	T Line H&R	Targeted Wood Pole Upgrades	Nov-24	$ 708,333	$ -	$ 35,417
270	T Line H&R	Targeted Wood Pole Upgrades	Dec-24	$ 708,333	$ -	$ 35,417
271	T Line H&R	Targeted Wood Pole Upgrades	Jan-25	$ 708,333	$ -	$ 35,417
272	T Line H&R	Targeted Wood Pole Upgrades	Feb-25	$ 708,333	$ -	$ 35,417
273	T Line H&R	Targeted Wood Pole Upgrades	Mar-25	$ 708,333	$ -	$ 35,417
274	T Line H&R	Targeted Wood Pole Upgrades	Apr-25	$ 708,333	$ -	$ 35,417
275	T Line H&R	Targeted Wood Pole Upgrades	May-25	$ 708,333	$ -	$ 35,417
276	T Line H&R	Targeted Wood Pole Upgrades	Jun-25	$ 708,333	$ -	$ 35,417
277	T Line H&R	Targeted Wood Pole Upgrades	Jul-25	$ 708,333	$ -	$ 35,417
278	T Line H&R	Targeted Wood Pole Upgrades	Aug-25	$ 708,333	$ -	$ 35,417
279	T Line H&R	Targeted Wood Pole Upgrades	Sep-25	$ 708,333	$ -	$ 35,417
280	T Line H&R	Targeted Wood Pole Upgrades	Oct-25	$ 708,333	$ -	$ 35,417
281	T Line H&R	Targeted Wood Pole Upgrades	Nov-25	$ 708,333	$ -	$ 35,417
282	T Line H&R	Targeted Wood Pole Upgrades	Dec-25	$ 708,333	$ -	$ 35,417
283	T Line H&R	Tillery Plant-Alcoa Badin 115kV - Tower Cathodic Protection	Sep-26	$ 1,503,850	$ -	$ -
284	T Line H&R	Tillery Plant-Biscoe 230kV Sub 11 - Tower Cathodic Protection	Oct-24	$ 1,703,624	$ -	$ -
285	T Line H&R	Wake-VP Heritage 500kV Line - Install Animal Mitigation	Oct-23	$ 3,456,587	$ -	$ -
286	T Line H&R	Weathrespoon-Raeford - Replace Overhead Ground Wire	Oct-23	$ 13,492,164	$ -	$ -
287	T Line H&R	Laurinburg-Raeford 230kV - Tower Cathodic Protection	Oct-23	$ 1,286,010	$ -	$ -
288	Transformers	Aberdeen 115kV - Replace Transformer	Dec-25	$ 6,928,643	$ -	$ -
289	Transformers	Asheboro South 115kv - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
290	Transformers	Bahama 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
291	Transformers	Baldwin 115kv - Replace 3-Phase Regulator	Dec-23	$ 824,431	$ -	$ -
292	Transformers	Baldwin 115kV - Replace Transformer	May-26	$ 3,528,429	$ -	$ -
293	Transformers	Beaverdam 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
294	Transformers	Bethune 115kV - Replace 3-Phase Regulator	May-25	$ 718,107	$ -	$ -
295	Transformers	Biscoe 115kV - Replace 3-Phase Regulator	Jun-25	$ 792,911	$ -	$ -
296	Transformers	Black Mountain 115kV - Replace Transformer	Feb-25	$ 4,339,045	$ -	$ -
297	Transformers	Buies Creek 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
298	Transformers	Bynum 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
299	Transformers	Camp Lejeune #1 230kV - Replace Transformer	Nov-23	$ 4,332,263	$ -	$ -

300	Transformers	Caraleigh 230kV - Replace Transformer	Aug-26	$ 3,814,777	$ -	$ -
301	Transformers	Cary Regency Park 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
302	Transformers	Castle Hayne 230kV - Replace Transformer	Nov-24	$ 3,976,207	$ -	$ -
303	Transformers	Cherry Point #1 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
304	Transformers	Chestnut Hills 115kV - Replace Transformer	Jun-25	$ 6,109,135	$ -	$ -
305	Transformers	Delco 230kV - Replace Transformer	Nov-25	$ 4,040,118	$ -	$ -
306	Transformers	Eagle Island 115kV - Replace Transformer	Dec-23	$ 3,454,881	$ -	$ -
307	Transformers	Elk Mountain 115kv - Replace 3-Phase Regulator	Jun-24	$ 773,551	$ -	$ -
308	Transformers	Elm City 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
309	Transformers	Emma 115KV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
310	Transformers	Erwin 115kV-South River EMC - Replace Transformer	Apr-26	$ 3,570,295	$ -	$ -
311	Transformers	Erwin 230kv - Replace 3-Phase Regulator	Jun-24	$ 773,551	$ -	$ -
312	Transformers	Erwin 230kV - Replace Transformer	Apr-26	$ 3,691,993	$ -	$ -
313	Transformers	Fairview 115kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
314	Transformers	Four Oaks 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
315	Transformers	Franklinton 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
316	Transformers	Garner Panther Branch 230kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
317	Transformers	Havelock 230kV - Replace Transformer	Jul-24	$ 3,106,994	$ -	$ -
318	Transformers	Henderson 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
319	Transformers	Horner Blvd 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
320	Transformers	Jacksonville Northwoods 115kV - Replace Transformer	Dec-24	$ 3,902,964	$ -	$ -
321	Transformers	Lakestone115kV - Replace Transformer	Aug-26	$ 3,603,689	$ -	$ -
322	Transformers	Laurinburg City 230kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
323	Transformers	Louisburg 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
324	Transformers	Moncure 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
325	Transformers	Mt Olive West 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
326	Transformers	Nashville 115kV - Replace Transformer	Mar-26	$ 6,012,455	$ -	$ -
327	Transformers	Neuse 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
328	Transformers	New Hill 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
329	Transformers	Raeford 230kV - Replace Transformer	Nov-23	$ 3,563,374	$ -	$ -
330	Transformers	Raleigh Northside 115kV - Replace Transformer	Apr-26	$ 2,373,084	$ -	$ -
331	Transformers	Ramseur 115kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
332	Transformers	Rockingham Aberdeen Road 230kV - Replace 3-Phase Regulator	Jun-24	$ 773,551	$ -	$ -
333	Transformers	Roxboro 115kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
334	Transformers	Roxboro 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
335	Transformers	Seagrove 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
336	Transformers	Seymour Johnson 115kV - Replace Transformer	Apr-26	$ 4,926,155	$ -	$ -
337	Transformers	St. Pauls 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
338	Transformers	Swannanoa 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
339	Transformers	Troy 115kV - Replace 3-Phase Regulator	Jun-25	$ 946,909	$ -	$ -
340	Transformers	Vander 115kV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
341	Transformers	Warrenton 115kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
342	Transformers	Weatherspoon Plant 230kV - Replace Transformer	Apr-26	$ 3,569,341	$ -	$ -
343	Transformers	Wilmington Ogden 230KV - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
344	Transformers	Yanceyville 230kV - Replace 3-Phase Regulator	Jun-25	$ 925,322	$ -	$ -
345	Transformers	Zebulon 115kV - Replace Transformer	Apr-25	$ 2,368,656	$ -	$ -
346	Transformers	Andrews 115kv - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
347	Transformers	Camden Kendall 115kV - Replace Transformer	Jun-24	$ 3,310,591	$ -	$ -
348	Transformers	Cheraw Reid Park 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
349	Transformers	Dillon Maple 230kv - Replace 3-Phase Regulator	Jun-24	$ 945,784	$ -	$ -
350	Transformers	Elliott 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
351	Transformers	Florence Roche Carolina 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
352	Transformers	Hartsville Segars Mill 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
353	Transformers	Pageland 115kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
354	Transformers	Shaw Field 115kV - Replace 3-Phase Regulator	Jun-24	$ 773,551	$ -	$ -
355	Transformers	Sumter 230kV - Replace 3-Phase Regulator	Jun-26	$ 902,645	$ -	$ -
356	Vegetation Management	Canton-Pisgah Forest-Expand Right Of Way	Apr-25	$ 10,500,511	$ -	$ -
357	Vegetation Management	Hazard Tree Removal	Oct-23	$ 3,478,701	$ -	$ -
358	Vegetation Management	Hazard Tree Removal	Nov-23	$ 3,478,701	$ -	$ -
359	Vegetation Management	Hazard Tree Removal	Dec-23	$ 3,478,701	$ -	$ -
360	Vegetation Management	Hazard Tree Removal	Jan-24	$ 2,544,974	$ -	$ -
361	Vegetation Management	Hazard Tree Removal	Feb-24	$ 2,544,974	$ -	$ -
362	Vegetation Management	Hazard Tree Removal	Mar-24	$ 2,544,974	$ -	$ -
363	Vegetation Management	Hazard Tree Removal	Apr-24	$ 2,544,974	$ -	$ -
364	Vegetation Management	Hazard Tree Removal	May-24	$ 2,544,974	$ -	$ -
365	Vegetation Management	Hazard Tree Removal	Jun-24	$ 2,544,974	$ -	$ -
366	Vegetation Management	Hazard Tree Removal	Jul-24	$ 2,544,974	$ -	$ -
367	Vegetation Management	Hazard Tree Removal	Aug-24	$ 2,544,974	$ -	$ -
368	Vegetation Management	Hazard Tree Removal	Sep-24	$ 2,544,974	$ -	$ -
369	Vegetation Management	Hazard Tree Removal	Oct-24	$ 3,817,461	$ -	$ -
370	Vegetation Management	Hazard Tree Removal	Nov-24	$ 3,817,461	$ -	$ -
371	Vegetation Management	Hazard Tree Removal	Dec-24	$ 3,817,461	$ -	$ -
372	Vegetation Management	Hazard Tree Removal	Jan-25	$ 2,779,440	$ -	$ -
373	Vegetation Management	Hazard Tree Removal	Feb-25	$ 2,779,440	$ -	$ -
374	Vegetation Management	Hazard Tree Removal	Mar-25	$ 2,779,440	$ -	$ -
375	Vegetation Management	Hazard Tree Removal	Apr-25	$ 2,779,440	$ -	$ -
376	Vegetation Management	Hazard Tree Removal	May-25	$ 2,779,440	$ -	$ -
377	Vegetation Management	Hazard Tree Removal	Jun-25	$ 2,779,440	$ -	$ -
378	Vegetation Management	Hazard Tree Removal	Jul-25	$ 2,779,440	$ -	$ -
379	Vegetation Management	Hazard Tree Removal	Aug-25	$ 2,779,440	$ -	$ -
380	Vegetation Management	Hazard Tree Removal	Sep-25	$ 2,779,440	$ -	$ -
381	Vegetation Management	Hazard Tree Removal	Oct-25	$ 4,069,900	$ -	$ -
382	Vegetation Management	Hazard Tree Removal	Nov-25	$ 4,069,900	$ -	$ -
383	Vegetation Management	Hazard Tree Removal	Dec-25	$ 4,069,900	$ -	$ -
384	Vegetation Management	Hazard Tree Removal	Jan-26	$ 2,942,398	$ -	$ -
385	Vegetation Management	Hazard Tree Removal	Feb-26	$ 2,942,398	$ -	$ -
386	Vegetation Management	Hazard Tree Removal	Mar-26	$ 2,942,398	$ -	$ -
387	Vegetation Management	Hazard Tree Removal	Apr-26	$ 2,942,398	$ -	$ -
388	Vegetation Management	Hazard Tree Removal	May-26	$ 2,942,398	$ -	$ -
389	Vegetation Management	Hazard Tree Removal	Jun-26	$ 2,942,398	$ -	$ -
390	Vegetation Management	Hazard Tree Removal	Jul-26	$ 2,942,398	$ -	$ -
391	Vegetation Management	Hazard Tree Removal	Aug-26	$ 2,942,398	$ -	$ -
392	Vegetation Management	Hazard Tree Removal	Sep-26	$ 2,942,398	$ -	$ -
	TOTALS			**$ 1,458,283,572**	**$ -**	**$ 850,000**