PJM Facilities Study Report

For

Network Upgrade N9111

Transition Cycle #1

June 2025

Introduction

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff and PJM Manuals. The Transmission Owner (TO) is Virginia Electric and Power Company (VEPCO or Dominion).

A. Project Description

The System Impact Study for PJM Interconnection Transition Cycle #1 has identified the need for PJM Network Upgrade N9111. The scope of this Network Upgrade includes the following:

- Upgrade 3.3 Miles of 230kV transmission line 2092 from Winfall to South Hertford

B. Transmission Owner Facilities Study Results

1. Detailed Scope of work for Network Upgrade N9111:

The following is a detailed description of Transmission Owner Upgrades for Network Upgrade N9111. These facilities shall be designed according to the Transmission Owner's Applicable Technical Requirements and Standards. Once built the Transmission Owner will own, operate, and maintain these facilities.

See Preliminary Scoping Summaries located in the Appendices, Attachment #1, #2 and #3.

2. MILESTONE SCHEDULE FOR COMPLETION OF DOMINION WORK

Facilities outlined in this report are estimated to take 42 months to construct, from the time of full execution of the Generation Interconnection Agreement and completion of a construction kickoff call. This schedule may be impacted by the timeline for procurement and installation of long lead items and the ability to obtain outages to construct and test the proposed facilities.

Description	Start month	Finish month
Engineering	1	30
Permitting/Procurement	3	38
Construction	36	42

Due to outage congestion, Network Upgrades and/or internal Dominion projects have been identified as having possible outage conflicts with this network upgrade that may affect the estimated milestones listed above. Additional outage sequencing may be required that includes, but not limited to the following projects:

- Coordinate with other projects on line 2092

3. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

- The preliminary construction schedule is dependent on outage availability.
- See Attachment 1 and 2– Preliminary Scoping Summary – Substation for additional assumptions
- See Attachment 3 – Preliminary Scoping Summary – Transmission line for additional assumptions

4. LAND REQUIREMENTS

Dominion will be responsible for the following expectations in the area of Real Estate:

- Any additional land needed for Storm Water Management, Landscaping, and Wetlands/Wetlands Mitigation.
- Any other Land/Permitting requirements required by the Network Upgrade

5. ENVIRONMENTAL AND PERMITING

The Dominion will be responsible for the following expectations in the area of Environmental and Permitting:

- Assessment of environmental impacts related to the Network Upgrade including:
    - Environmental Impact Study requirements
    - Environmental Permitting
- A stormwater easement and/or specific stormwater design BMP's to allow access to and use of the facilities, including a maintenance agreement for said stormwater facilities.
- Conditional Use Permit for Substation
- Any additional land needed for Storm Water Management, Landscaping, and Wetlands/Wetlands Mitigation
- Any other Permitting requirements required by the Network Upgrade

C. APPENDICES

Attachment #1: Preliminary Scoping Summary – Substation Winfall

Attachment #2: Preliminary Scoping Summary – Substation South Hertford

Attachment #3: Preliminary Scoping Summary – Transmission

Attachment #1

Project Number: N9111 – Winfall Substation

Project Description: Replace Line Lead for Line 2092

SUBSTATION SCOPE OF WORK

Date: 07/01/2025

Revision Number: 0

Project Summary

Network upgrade N9111 provides for the uprate of line 2092 at Winfall Substation in Perquimans County, North Carolina.

Assumptions & Clarifications:

1. *The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.*

Purchase & Install Substation Material:

1. Conductors, connectors, and grounding materials as per engineering standards

Purchase and install relay material – Network Upgrade:

1. One (1), 1340 – 24” dual SEL-411L DCB/PLC line panel

Remove relay material – Network Upgrade:

1. Remove Panel No. 19

Attachment #2

Project Number: N9111 – South Hertford Substation

Project Description: Replace Line Lead for Line 2092

SUBSTATION SCOPE OF WORK

Date: 07/01/2025

Revision Number: 0

Project Summary

Network upgrade N9111 provides for the uprate of line 2092 at South Hertford Substation in Perquimans County, North Carolina.

Assumptions & Clarifications:

1. *The scope of work depicted on the drawings assumes that there is no overlap with other designs and construction activities, except if mentioned in this Project Summary.*

Purchase & Install Substation Material:

1. Conductors, connectors, and grounding materials as per engineering standards

Attachment #3

230 kV LINE #2092

Winfall – South Hertford Substation

PROJECT N9111

PRELIMINARY SCOPING SUMMARY

This project serves to reconductor 230 kV line 2092 from Winfall to South Hertford Substation for approximately 3.30 miles, which is located in Perquimans County, NC. See **Figure 1** for the project location. Line 2092 is located within a railroad easement and has a 10' right of way for spotting structures. Since the proposed work is using existing structures and is not proposing any major changes, this project requires no additional land. The project will not install new structures, and the Certification of Public Convenience and Necessity (CPCN) filing is not expected.

The existing line consists mainly of weathering steel monopole structures built in 2011. The existing single (1) 1192.5 ACSR (45/7) conductor will be replaced with twin bundled (2) 768.2 ACSS/TW (20/7) "Maumee" conductor.

Design Considerations:

EXISTING FACILITIES TO BE REMOVED:

1. Remove approximately 3.30 miles of single (1) 1192.5 ACSR (45/7) conductor from existing structure 2092/2 to existing structure 2092/52B.

EXISTING FACILITIES TO BE MODIFIED:

1. Replace three (3) conductor crossing strain assemblies [Reference Drawing 32.338] on the following two (2) structures:
    a. Structures 2092/2 and 2092/52B

2. Replace three (3) conductor strain assemblies [Reference Drawing 32.630], three (3) conductor crossing strain assemblies [Reference Drawing 32.338], two (2) training insulator assemblies [Reference Drawing 32.645] and three (3) jumper loop assemblies [Reference Drawing 39.227] on the following one (1) structure:
    a. Structure 2092/6.

3. Replace six (6) conductor crossing strain assemblies [Reference Drawing 32.338], one (1) training insulator assemblies [Reference Drawing 32.645] and three (3) jumper loop assemblies [Reference Drawing 39.227] on the following three (3) structures:
    a. Structures 2092/3-5.

4. Replace six (6) conductor strain assemblies [Reference Drawing 32.630] and three (3) jumper loop assemblies [Reference Drawing 39.227] on the following one (1) structure:

a. Structure 2092/42

5. Replace three (3) conductor strain assemblies [Reference Drawing 32.630], three (3) conductor crossing strain assemblies [Reference Drawing 32.338], three (3) training insulator assemblies [Reference Drawing 32.645] and three (3) jumper loop assemblies [Reference Drawing 39.227] on the following one (1) structure:
    a. Structure 2092/52A.

6. Replace three (3) conductor braced post insulator assemblies [Reference Drawing 32.710] on the following forty-five (45) structures:
    a. Structures 2092/7 – 2092/41 and 2092/43 – 2092/52.

PERMANENT FACILITIES TO BE INSTALLED:

1. Install approximately 3.30 miles of 3-phase twin bundled (2) 768.2 ACSS/TW (20/7) “Maumee” conductor from existing structure 2092/2 to existing structure 2092/52B.

CONCEPTUAL SCOPE NOTES:

1. No PLS-CADD modeling was done for this project. Instead, a design span was used to determine the difference in sags between the existing and proposed conductors at max sag conditions. The resulting change in max sags is approximately -0.21’. This change in sags is expected to be feasible to reconductor the line.
    a. Design Span Length = 400 feet
    b. Existing Design Tension = 14,100 lbs NESC Heavy
    c. Proposed Design Tension = 7,000 lbs NESC Heavy

2. It is assumed for detailed engineering that a LiDAR survey will be required.

3. An existing right of way width of 10’ is likely a pole line easement since there is an adjacent railroad paralleling the line. Since no additional structures are being installed for the project, no additional right of way will need to be acquired for this project. The existing right of way will need to be confirmed and analyzed in detailed engineering.

4. It is assumed that an outage for Line 2092 will be acquired for the work specified in this scope, and no temporary line configurations will be necessary for this project.

5. A wetland delineation has not been completed as part of this conceptual package.

6. Due to no structures being replaced, wire reel lengths are not accounted for in this design. The longest section from deadend to deadend is approximately 2.17 miles. Tension splices may be required, and it is to be determined in detailed engineering.

7. Line 2092 falls within an avian protected area including structures 2092/9 – 16, 37, 38, 52A, and 52B.

8. Line 2092 crosses Perquimans River between structures 2092/19 and 2092/20.

9. It is assumed that there will be no fiber/shield wire installations on this project since it is a reconductor. In detailed engineering, this project will need to discuss this design approach with the telecommunications group.

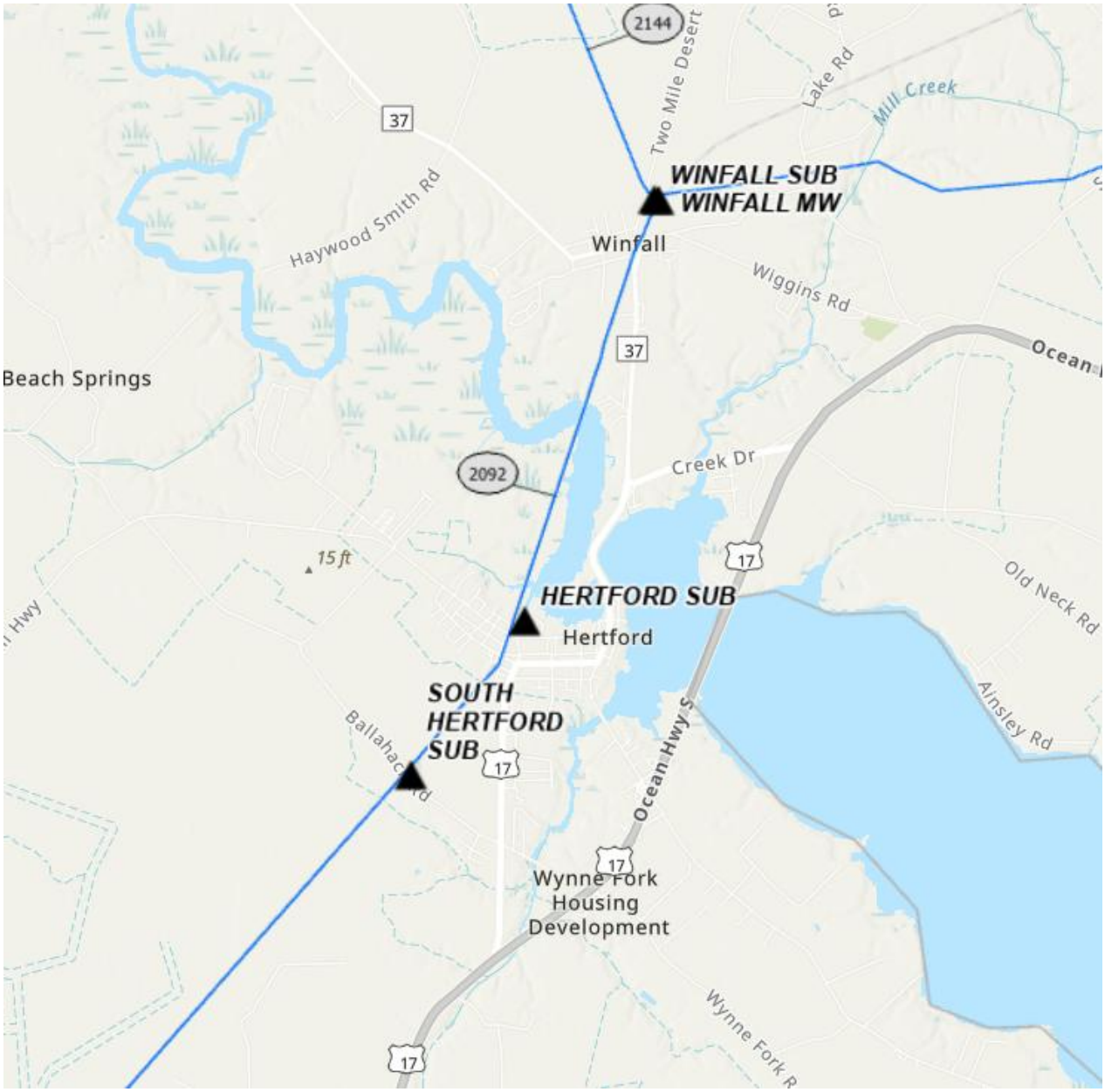
10. This project assumes that project N9111 occurs prior to the other network upgrades included in Transition Cycle 1, Phase 3. The following projects may impact the project scope if this assumption is incorrect:
    a. N9646 – Uprate Line 2092 from South Hertford to West Albemarle DP.
    b. N9377 – Uprate Line 2092 between Pembroke Creek and West Albermarle DP.

CONCEPTUAL ESTIMATE NOTES:

1. The conceptual estimate assumes that a laydown yard is required for this project.

2. Due to the time allotted to create an estimate, stakeholders were not consulted for their respective costs. Stakeholder costs were derived as follows:
    a. DEES, Permitting, Right of Way Management (Encroachment), Forestry, Rehab and Access costs were based on an average cost per mile based on 16 comparable projects. However, most of these projects have structure installations which may result in these stakeholder costs being estimated high.
    b. Siting and Permitting costs were derived using the permitting spreadsheet but not verified by the permitting team.
    c. Real estate acquisition costs were assumed to be $0 due to no additional land needed to be acquired.
    d. Surveying costs were based on the typical cost to acquire approximately ten (10) miles of survey. These costs were provided by the surveying team as part of TC#1 Phase 3 process.
    e. Communications (Marketing Manager) costs are assumed to be Tier 1 - $50K based off similar linear lengths and locations to projects N9211, N9145 and N9136.
    f. Telecommunications costs are assumed to be $0 due to no fiber being installed for this project.

Figure 1 – Project Location



Required Material Summary

Item	Qty
12,000-Ft Conductor Reels	10