# PJM Facilities Study Report

# For

# Network Upgrade N6605

# 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 N6605. The scope of this Network Upgrade includes the following:

- Upgrade 0.99 Miles of 230kV transmission line 271 from Structure 271/65 (174/66) to Landstown Sub

## B. Transmission Owner Facilities Study Results

### 1. Detailed Scope of work for Network Upgrade N6605:

The following is a detailed description of Transmission Owner Upgrades for Network Upgrade N6605. 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 Summary located in the Appendices, Attachment #1 and #2

### 2. MILESTONE SCHEDULE FOR COMPLETION OF DOMINION WORK

Facilities outlined in this report are estimated to take 43 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 | 43 |

### 3. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

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

Attachment #2: Preliminary Scoping Summary – Transmission

Attachment #1

Project Number: N6605 – Landstown Substation

Project Description: Replace Line Lead for Line 271

***SUBSTATION SCOPE OF WORK***

Date: 06/20/2025

Revision Number: 0

## Project Summary

Network upgrade N6605 provides for the uprate of line 271 at Landstown Substation in Virginia Beach, Virginia.

*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 and install substation material – Network Upgrade:**

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. 7

Attachment #2

230 kV LINE #271

Structure 271/65 (I74/66) – Landstown Sub

PROJECT N6605

## PRELIMINARY SCOPING SUMMARY

This project serves to rebuild 230 kV line 271 from existing structure 271/65 (I74/66) to Landstown Sub for approximately 0.99 miles, which is located in Virginia Beach County, VA. See **Figure 1** for the project location. The proposed work requires no additional land and will all be completed within the existing right of way. The project will install a total of five (5) new structures and a Certificate of Public Convenience and Necessity (CPCN) filing will be needed for this project.

The existing line consists of double circuit weathering steel towers built in 1975. The proposed structures to be installed are engineered steel double circuit monopole structures. The existing twin bundled (2) 721 ACAR (18/19) conductor will be replaced with twin bundled (2) 768.2 ACSS/TW/HS "Maumee" conductor. The existing two (2) 3#6 Alumoweld shield wires will be replaced with two (2) DNO-11410 OPGW wires.

From existing structure 271/65 (I74/66) to existing structure I74/72 (2118/1B), the existing double circuit towers support the Idle Line 74 conductor. This conductor will be removed as part of this project, but no conductor will be re-installed for this segment of the Idle Line.

**Design Considerations:**

**EXISTING FACILITIES TO BE REMOVED:**

1. Remove one (1) existing 230 kV double circuit weathering steel deadend towers as follows:
    a. Structure 271/69 (I74/70)

2. Remove three (3) existing 230 kV double circuit weathering steel suspension towers as follows:
    a. Structures 271/66 (I74/67) to 271/68 (I74/69)

3. Remove one (1) existing 230 kV double circuit weathering steel double deadend monopole structure as follows:
    a. Structure 271/47 (I74/71)

4. Remove approximately 0.99 miles of twin bundled (2) 721 ACAR (18/19) conductor from existing structure 271/65 (I74/66) to existing backbone structure 271/71.

5. Remove approximately 0.86 miles of two (2) 3#6 Alumoweld shield wires from existing structure 271/65 (I74/66) to existing structure 271/70 (I74/71).

6. Remove approximately 0.13 miles of one (1) 3#6 Alumoweld shield wire from existing structure 271/70 (I74/71) to existing backbone structure 271/71.

7. Remove one (1) set of 3-phase bundled (2) conductor risers on the following structure:
    a. Structure 271/70 (I74/71)

8. Remove approximately 1.00 miles of adjacent Idle Line 74 of bundled (2) 721 ACAR conductor from ahead side of existing structure 271/65 (I74/66) to the back side of existing structure I74/72 (2118/1B).

**EXISTING FACILITIES TO BE MODIFIED:**

1. Transfer the existing one (1) 3#6 Alumoweld shield wire for Idle Line 74 from back side of existing structure I74/72 (2118/1B) to the ahead side of proposed structure 271/70 (I74/71).

2. Install three (3) conductor crossing strain assemblies [Reference Drawing 32.338], three (3) conductor jumper loop assemblies [Reference Drawing 39.227], and two (2) OPGW strain assemblies [Reference Drawing 96.060] on the ahead side of the following one (1) structure:
    a. Structure 271/65

3. Install six (6) conductor crossing strain assemblies [Reference Drawing 32.338], three (3) conductor jumper loop assemblies [Reference Drawing 39.227], one (1) shield wire strain assembly [Reference Drawing 43.010], and two (2) OPGW strain assemblies [Reference Drawing 96.060] on the following one (1) structure:
    a. Structure 271/70A

4. Install three (3) conductor crossing strain assemblies [Reference Drawing 32.338], one (1) shield wire strain assembly [Reference Drawing 43.010], and one (1) OPGW strain assembly [Reference Drawing 96.060] on the following one (1) structure:
    a. Structure 271/71

**PERMANENT FACILITIES TO BE INSTALLED:**

1. Install two (2) 230 kV engineered steel double circuit double deadend monopole structures [Reference Drawing 12.614] on foundation as follows:
    a. Structure 271/69 (I74/66) and 271/70 (I74/71)
    b. See **Figure 2** for a visual of the proposed structure design.

2. Install three (3) 230 kV engineered steel double circuit suspension monopole structures [Reference Drawing 12.610] on foundations as follows:
    a. Structures 271/66 (I74/67) to 271/68 (I74/69)
    b. See **Figure 3** for a visual of the proposed structure design.

3. Install approximately 0.99 miles of 3-phase twin bundled (2) 768.2 ACSS/TW/HS “Maumee” conductor from the ahead span of existing structure 271/65 (I74/66) to existing backbone structure 271/71.

4. Install approximately 0.86 miles of two (2) DNO-11410 OPGW from the ahead side of existing structure 271/65 (I74/66) to the back side of proposed structure 271/70 (I74/71).
    a. This includes the installation of three (3) splices as follows:
        i. One (1) fiber splice on existing structure 271/65 (I74/66). The existing structure 271/65 (I74/66) has one existing fiber splice that project N6605 will utilize.
        ii. Two (2) fiber splices on proposed structure 271/70 (I74/71)

5. Install approximately 0.13 miles of one (1) DNO-11410 OPGW from the ahead side of proposed structure 271/70 (I74/71) to existing backbone structure 271/71.
    a. This includes the installation of one (1) splice as follows:
        i. One (1) fiber splice on existing backbone structure 271/71.

6. Install approximately 0.05 miles of one (1) 7#7 Alumoweld shield wire from the ahead side of existing structure 271/70A to existing backbone structure 271/71.

7. Install one (1) set of 3-phase bundled (2) 768.2 ACSS/TW/HS “Maumee” risers on the following structure:
    a. Structure 271/70 (I74/71)

**CONCEPTUAL SCOPE NOTES:**

1. The existing line consists of double circuit weathering steel towers built in 1975. These structures are considered insufficient for the proposed conductor, resulting in the need for the line to be rebuilt. No PLS-CADD modeling was done for this project. Structures were replaced like for like and estimated using typical transmission right of way characteristics.
2. Structures are designed based off the following NESC 2017 code parameters: NESC Heavy, 90 mph wind, ¾” Ice & 30 mph wind regardless of project location.
3. It is assumed for detailed engineering that a LiDAR survey will be required.
4. Existing structure 271/69 (I74/70) supports a cellular antenna. It is assumed that the existing antennas will be transferred to new engineered steel structure.
5. Any potential height restrictions were not accounted for in this design.
6. An existing right of way width of 120’ from existing structure 271/65 (I74/66) to Landstown Sub is assumed based on MapViewer. No additional land needs to be acquired for this project.
7. A wetland delineation has not been completed as part of this conceptual package.
8. Wire reel lengths were not accounted for this line design. The assumed pull pad locations to avoid tension splices will be determined during detailed design.
9. It is assumed when removing Idle Line 74 from existing structure 271/65 (I74/66) to existing structure I74/72 (2118/1B).that no conductor needs to be re-strung. The towers will be replaced like for like with double circuit monopole structures. One side will remain vacant with arm dampers to not limit the corridor in the future. If it's preferred to utilize H-frames to utilize in detailed engineering, additional ROW may need to be acquired.

10. Project AD1033C plans to rebuild line 271 from Pocaty substation to structure 271/65 (I74/66). Project AD1033C is renumbering line 271 from Pocaty substation to Landstown substation. This scope assumes that project AD1033C will be completed before the start of project N6605.
11. Project N6605 assumes that Landstown substation can have one (1) fiber going into the station. In detailed engineering, this project will need to discuss this design approach with the telcommunications group.
12. There is one critical crossing between structure 271/69 (I74/70) to 271/70 (I74/71) over existing line 2085 and overhead distribution line.

**CONCEPTUAL ESTIMATE NOTES:**

1. Engineered steel pole costs were determined based off typical wind and weight spans, line angles, and average structure heights in the typical right of way associated with the structure type.

2. Steel pole foundation costs were based off the projects' location and structure type in the regional soil profile map. The regional soil profile map used for this project is Coastal Plains East.

3. The conceptual estimate assumes that a laydown yard is required for this project.
4. A cost of $150,000 will be used for each cellular antenna relocation.
5. Prior to detailed engineering, a full land rights review would be required. A desktop review was completed to estimate the project cost.

6. Access estimate cost inputs include the following assumptions:

    a. Tangent Structures are allotted 30 mats. Angle structures are allotted 60 mats. Pull Pads are allotted 90 mats for the 115kV and 230kV Wreck and Rebuild and New Lines.
    b. DDE structures assumed based off of wire reel lengths - based off of pull pad locations.
    c. Pull pad locations based on location of major road/water crossings and line mileage.
    d. Assuming that existing stone in Substations will be used for access per SOW and that access is existing or will be built by others before the start of construction. Assumes that the substations will be constructed with access roads built to and from Substations and work from inside the substations for Backbone installation.
    e. Assumes no delays due to permitting or real estate issues after work begins. Assume no schedule compressions from SOC/PJM.
    f. Access matting costs not accounted for forestry work in between large spans that were not matted through for access.
    g. Stream crossing based on estimates from aerial imagery.
    h. Assumes that all existing roads may be dressed with stone that can remain at the end of the project. Assumes existing two track roads in many locations will be impermeable. No costs for stone road removal are included.

i. Assumes between a 10-20% Markup for contingency on Emtek specialty matting dependent on size and scope of material to be used in each project that requires the specialty matting in swamp/wetlands. Markup applied in Success.

**Figure 1 – Project Location**

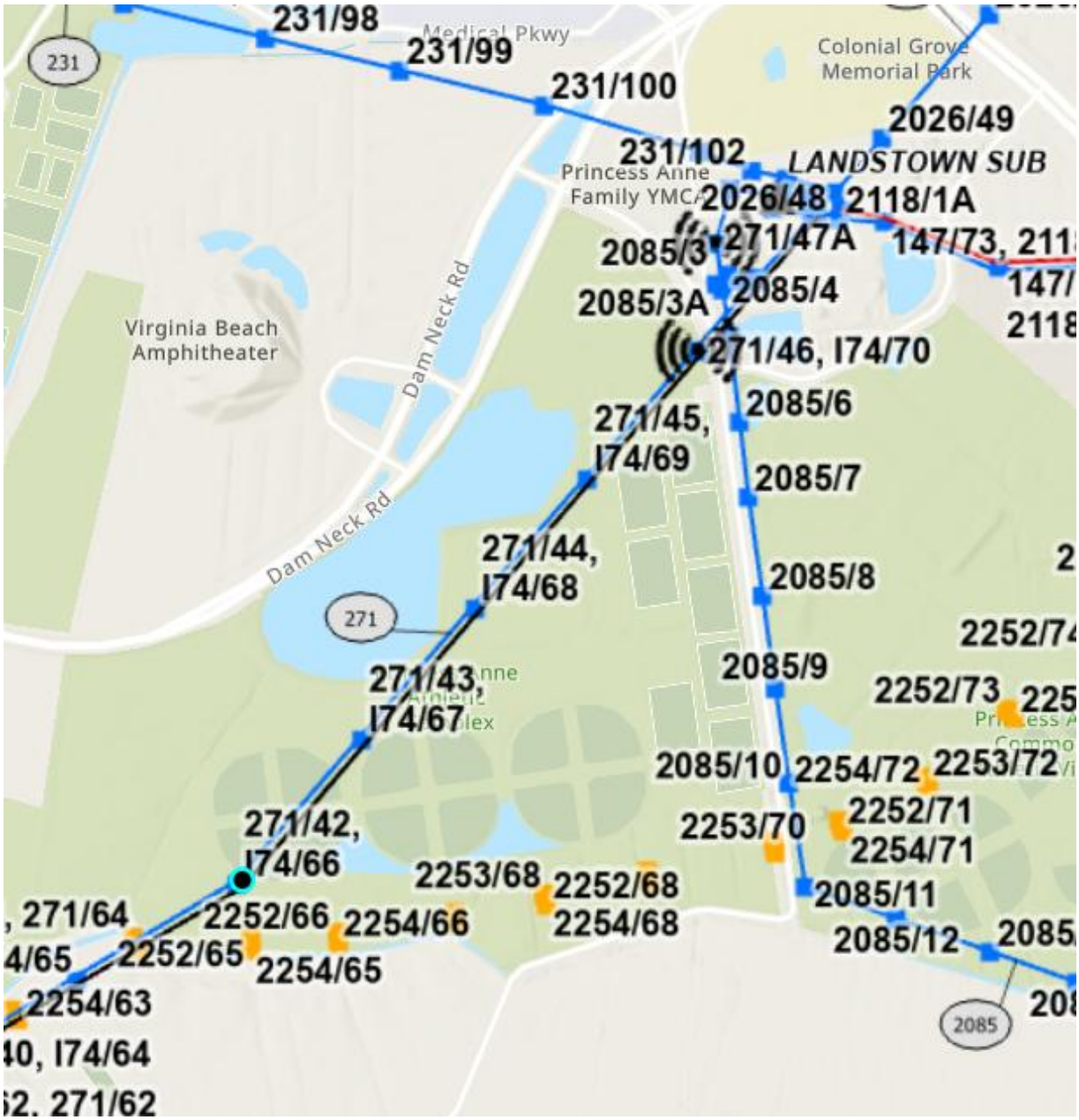


**Figure 2 – Proposed Double Circuit Double Deadend Structure Configuration**

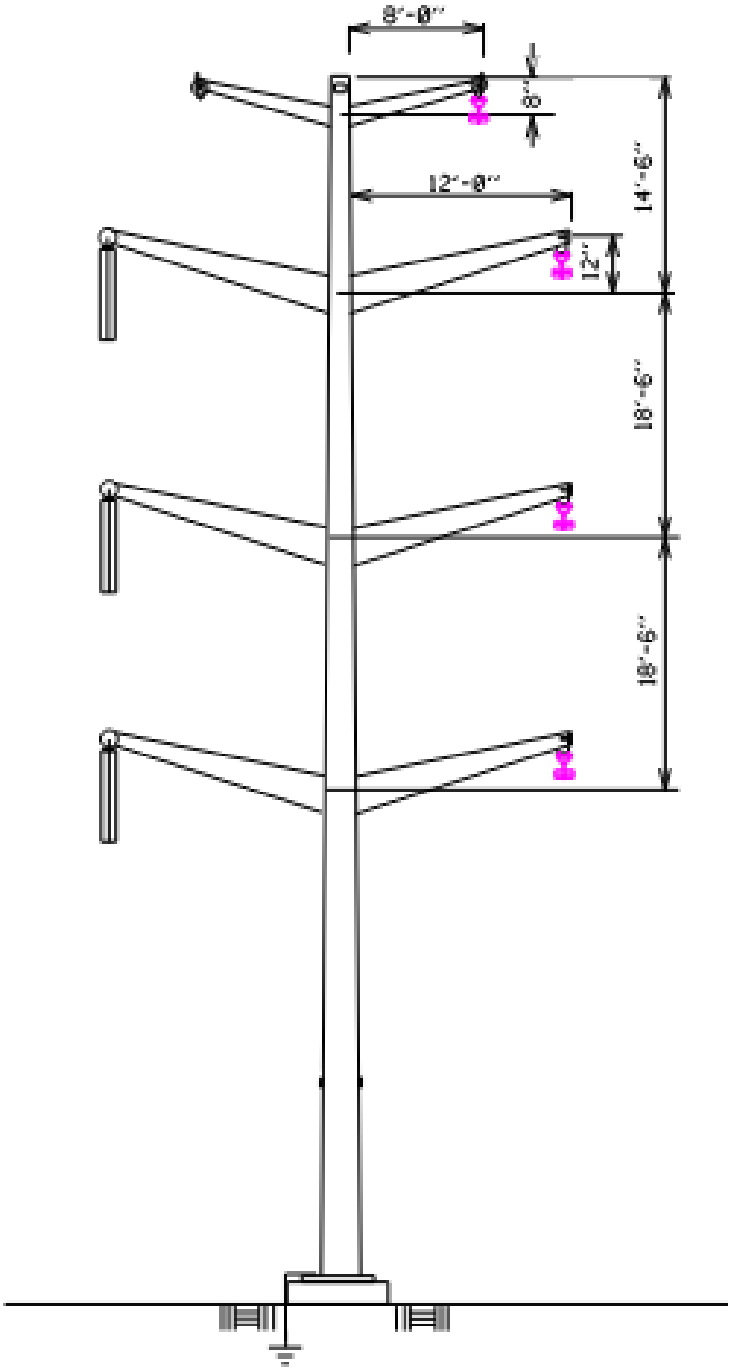
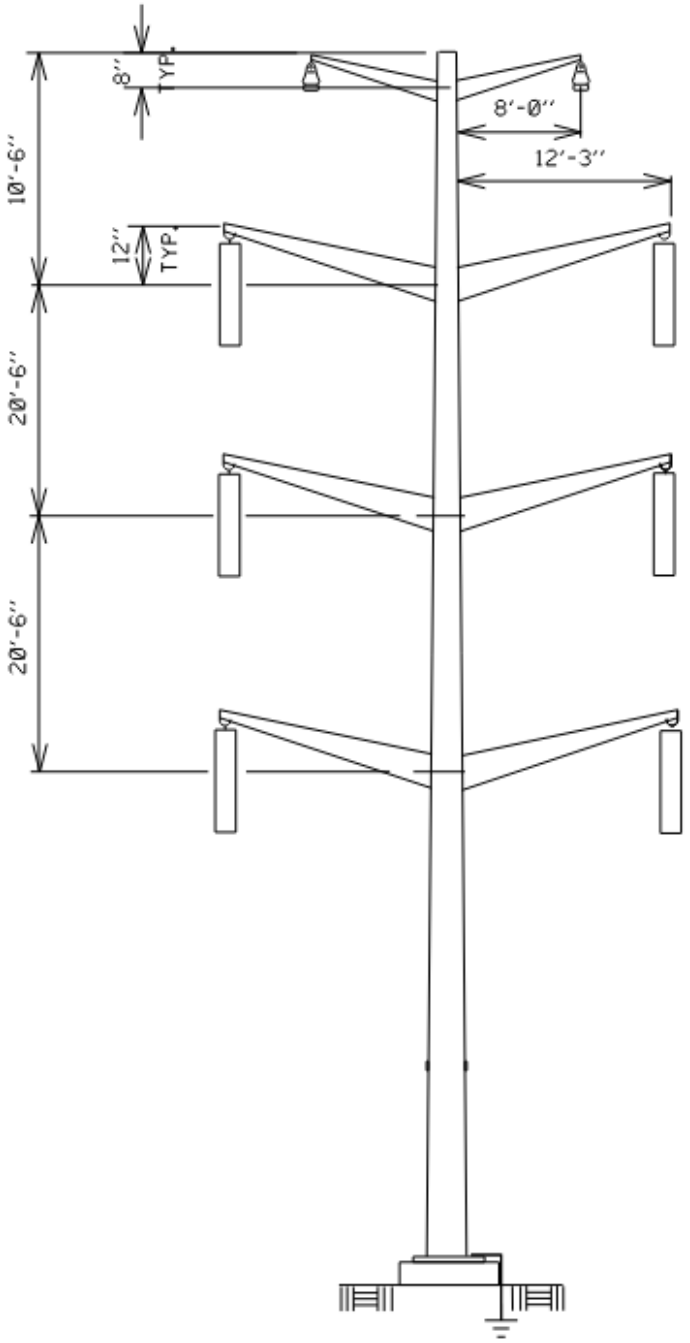


**Figure 3 – Proposed Double Circuit Suspension Structure Configuration**



**Required Material Summary**

| Item | Qty |
|---|---|
| 230 kV Engineered Steel Double Deadend Structures [12.614] | 2 |
| 230 kV Engineered Steel Suspension Structures [12.610] | 3 |
| 12,000-Ft DNO -11410 OPGW Reels | 2 |
| 12,000-Ft Conductor Reels | 4 |