Facilities Study Report

For

Physical Interconnection of

PJM Generation Interconnection Request

Project ID AG2-341

“Ridge Road 115 kV”

Introduction

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff, as well as the Application and Studies Agreement between the Project Developer and PJM Interconnection, LLC (PJM or Transmission Provider (TP)). The Transmission Owner (TO) is Virginia Electric and Power Company d/b/a Dominion Energy Virginia (Dominion).

This Facility Study was performed to satisfy the Phase 2 Facility Study requirement of the PJM Tariff. The Facility Study is intended to provide scope, cost and schedule estimates for the project as currently defined and approved for Phase 2 study. In the event project changes are made during DP2 that impact this report, updates will be provided as part of the Phase 3 report. Following execution of the project's final agreement, this report will not be updated to account for other changes made as part of the agreements modification clause and instead the scope change process will be followed.

A. Transmission Owner Facilities Study Summary

1. PROJECT DESCRIPTION

The Project Developer (PD) has proposed a Battery Storage Facility located in, Mecklenburg County, Virginia with a designated PJM Project ID of AG2-341. The installed facilities will have a total Maximum Facility Output (MFO) of 50 MW with 20 MW of this output being recognized by PJM as Capacity.

2. POINT OF INTERCONNECTION (POI)

AG2-341 will interconnect with the Dominion transmission system via the existing Ridge Road Substation.

The proposed generation interconnection is shown on the single line diagram in Attachment #1.

3. POINT OF CHANGE IN OWNERSHIP

The Point of Change in Ownership between the two Substations will be the 4-Hole pad on the disconnect switch on the first transmission line structure outside the Ridge Road Substation fence.

4. SCOPE OF PROJECT DEVELOPER INTERCONNECTION FACILITIES

Project Developer will design, build, own, operate and maintain the Project Developer Interconnection Facilities on Project Developer's side of the Point of Change in Ownership (PCO). This includes, but is not limited to:

- Circuit breakers and associated equipment located between the high side of the MPT(s) or GSU(s) and the Point of Change in Ownership
- Generator lead line from the Generating Facility to the Point of Change in Ownership
- Relay and protective equipment, telecommunications equipment, and Supervisory Control and Data Acquisition (SCADA) to comply with the TO's Applicable Technical Requirements and Standards

B. Transmission Owner Facilities Study Results

The following is a description of the planned Transmission Owner facilities for the physical interconnection of the proposed AG2-341 projects to Dominion transmission system. These facilities shall be designed according to all Dominion Technical Requirements and Standards in effect March 20th, 2026. Dominion Energy Virginia – Electric Transmission Facility Interconnection Requirements, Procedure Version 25.0, dated October 1, 2025, shall apply. Once built, Dominion will own, operate, and maintain these Facilities.

1. TRANSMISSION OWNER INTERCONNECTION FACILITIES:

The Transmission Owner Interconnection Facilities include the portion of the interconnection switching station which is associated solely with the single feed to the generating facilities collector station. The equipment associated with the Transmission Owner Interconnection Facilities includes the disconnect switch, conductors and connectors.

The proposed Transmission Owner Interconnection Facility scope is detailed in Attachment #3 and Attachment #4.

2. STAND ALONE NETWORK UPGRADES

No Stand Alone Network Upgrades have been identified in this Facility Study Report

3. NETWORK UPGRADES

Substation Expansion at Ridge Road 115kV:

Ridge Road Substation will be expanded to accommodate the new generation interconnection.

The proposed substation expansion scope is shown in Attachment #3.

Upgrades to neighboring facilities:

Kerr Dam Substation

The proposed neighboring facility scope is detailed in Attachment #5.

Bishop Substation

The proposed neighboring facility scope is detailed in Attachment #6.

Chase City Substation

The proposed neighboring facility scope is detailed in Attachment #7.

4. OTHER SCOPE OF WORK

Other scope includes the metering accuracy CCVT's, metering accuracy CT's, and associated metering equipment.

5. MILESTONE SCHEDULE FOR COMPLETION OF [TO] WORK

Facilities outlined in this report are estimated to take 36 months to construct, from the time the Generation Interconnection Agreement is fully executed. This schedule may be impacted by the timeline for procurement and installation of long lead items, the ability to obtain outages to construct and test the proposed facilities.

Description	Start month	Finish month
Detailed Design	1	10
Permitting/Procurement	2	26
Construction	18	36

6. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

Assumptions can be found in Attachments #3-7

7. REVENUE METERING REQUIREMENTS

All revenue metering needed for this interconnection project must meet the metering requirements stated in Appendix 2, section 8 of the AG2-341 GIA, and in PJM Manuals M01 and M14D. The details of applicable revenue metering requirements are given in the Dominion Energy Virginia – Electric Transmission Facility Interconnection Requirements (FIR) Rev 25.0 posted on PJM website.

The revenue metering will be installed on the Dominion side of the Point of Change in Ownership will be installed, owned and maintained by Dominion.

8. LAND REQUIREMENTS FOR INTERCONNECTION SUBSTATION

Land requirements for the Interconnection Substation needed for this interconnection project must meet the requirements in Dominion's Facility Interconnection Requirements and NERC Compliance Procedure FAC-001 posted on PJM's website.

Dominion would be responsible for the following expectations in the area of Real Estate.

- The land required for Dominion's substation and project specific areas around must be deeded over title-in-fee.
- Any additional land needed for Storm Water Management, Landscaping, and Wetlands/Wetlands Mitigation.
- Dominion Real Estate and Counsel will provide standard real estate checklist word document. Process needs to start at least 6 months prior to closing date.
- Required subdivision plat and associated documentation to be reviewed prior to subdividing parcel with the county.
- Suitable Access Road from Substation to a Virginia/North Carolina State Maintained Roadway.
- Dominion will require access road, transmission line and utilities easement to the Substation.
- Any other Land/Permitting requirements required by the Substation.

The Project Developer is responsible for the following expectations in the area Real Estate.

- Land and/or Permitting associated with the Generation Facility and the Generation Line to the Point of Change in Ownership (PCO) structure.

9. APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS

These facilities shall be designed according to all Dominion Applicable Technical Requirements and Standards in effect March 20th, 2026. Dominion Energy Virginia – Electric Transmission Facility Interconnection Requirements, Procedure Version 25.0, dated October 1, 2025, shall apply.

10. ENVIRONMENTAL AND PERMITING

Dominion would be responsible for the following expectations in the area of Environmental and Permitting.

- Assessment of environmental impacts related to the Interconnection Facility and/or Network Upgrades including:

  Environmental Impact Study requirements

  Environmental Permitting

- Dominion will require a stormwater easement for substation specific stormwater design BMP's to allow access to and use of the facilities.

  A maintenance agreement should be in place in perpetuity 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 Substation

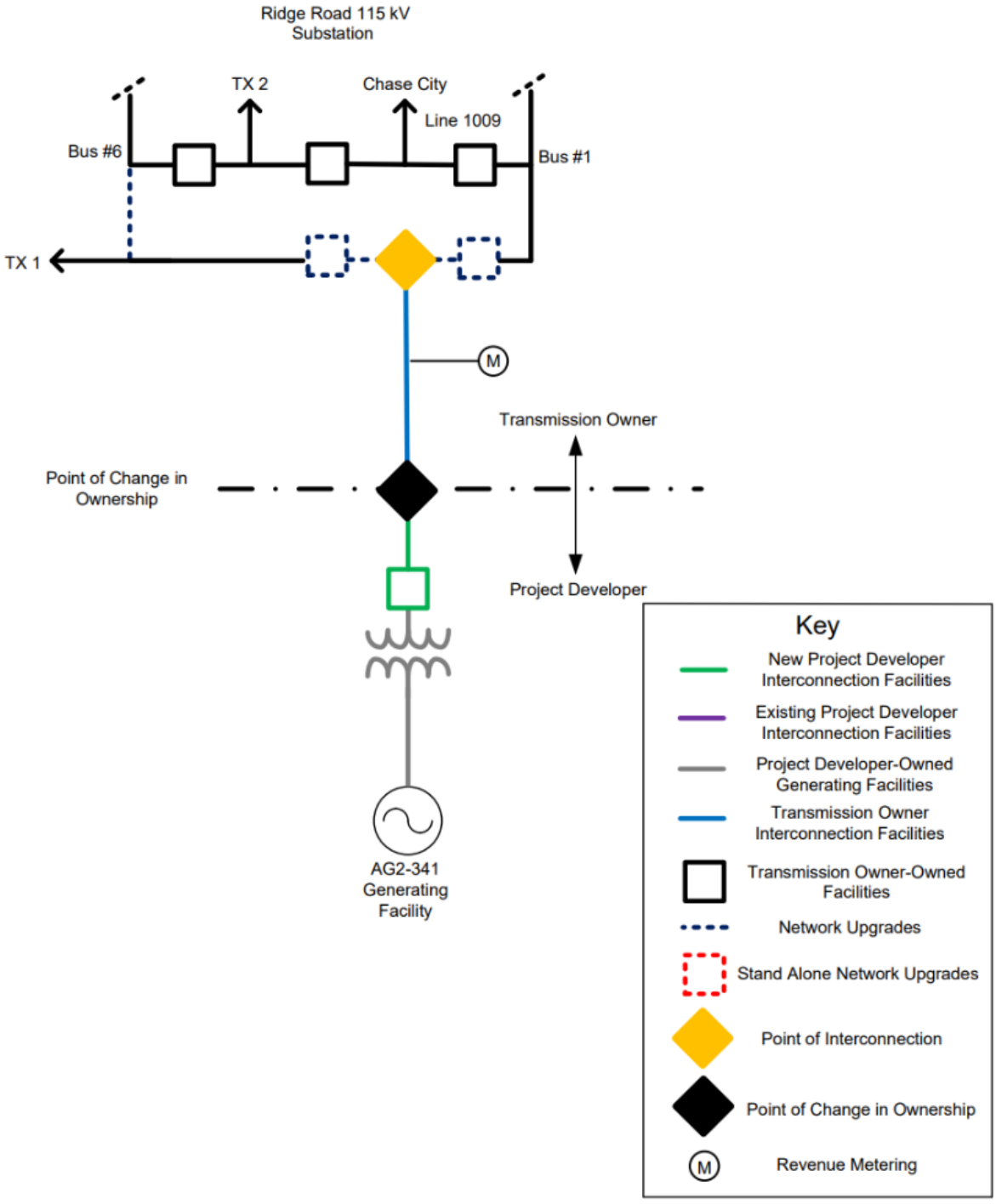
The Project Developer is responsible for the following expectations in the area Environmental and Permitting.

- Environmental and/or Permitting associated with the Generation Facility and the Generation Line to the Point of Change in Ownership (PCO) structure.

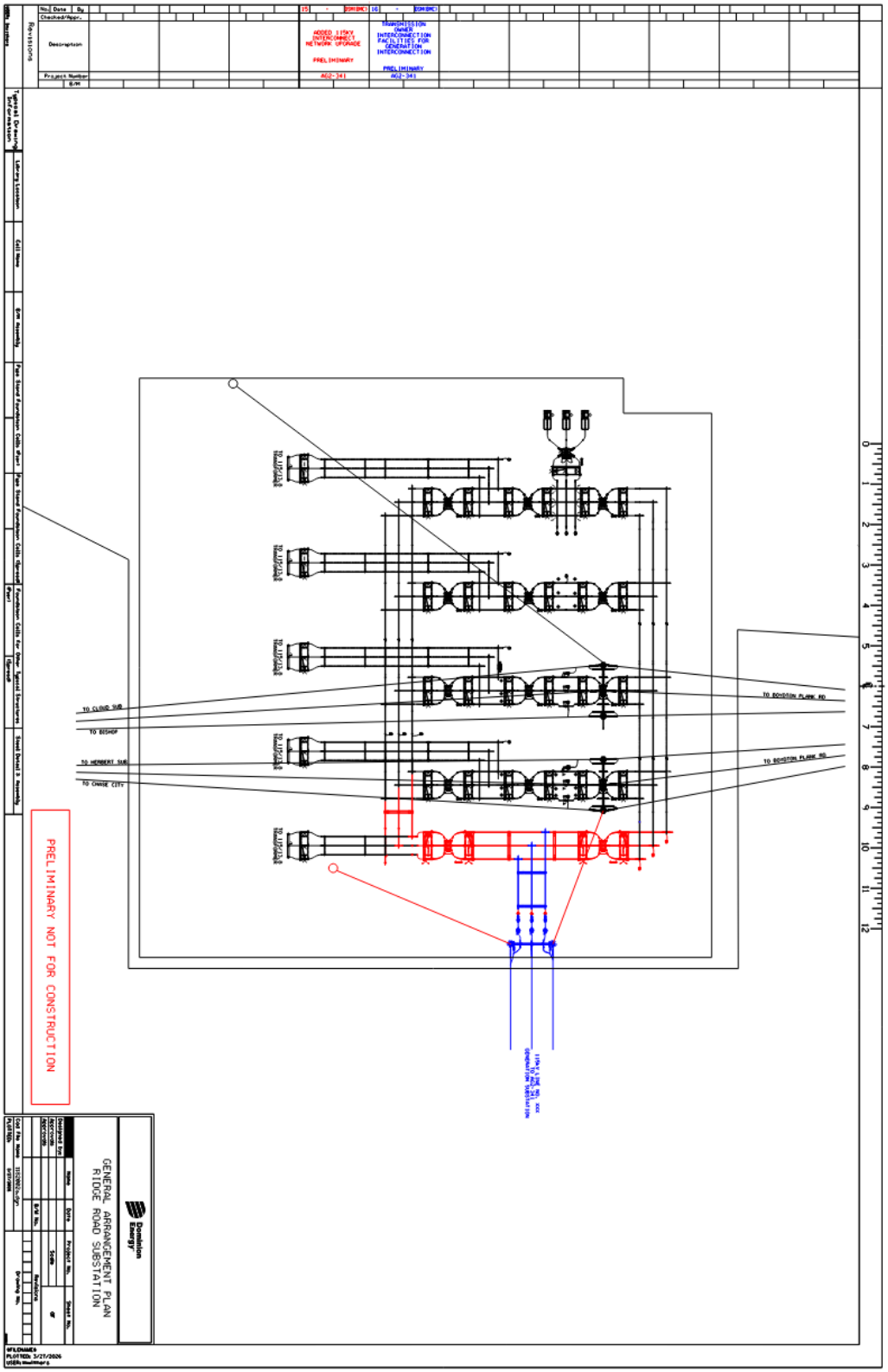
C. APPENDICES

Attachment #1:	Single line Diagram for the Physical Interconnection
Attachment #2:	Substation General Arrangement
Attachment #3:	Network Upgrade & Transmission Owner Interconnection Facility Scope - Substation
Attachment #4:	Transmission Owner Interconnection Facility Scope - Transmission
Attachment #5:	Network Upgrade – Kerr Dam Substation
Attachment #6:	Network Upgrade – Bishop Substation
Attachment #7:	Network Upgrade – Chase City Substation

Attachment #1: Single line Diagram for the Physical Interconnection



Attachment #2: Substation General Arrangement



Attachment #3: Network Upgrade & Transmission Owner Interconnection Facility

Scope - Substation

Project Summary

Project number AG2-341 provides for the initial construction of a new 115kV generation interconnect line into the existing Ridge Road Substation in Mecklenburg County, Virginia.

The objective of this project is to add one new line position and two new 115kV breakers installed at Ridge Road Substation to support the new battery storage facility built by Project Developer.

The Generating Facilities will be located adjacent to Ridge Road Substation. The Point of Change in Ownership between the two Substations will be the 4-Hole pad on the disconnect switch on the first transmission line structure outside the Ridge Road Substation fence. The Project Developer will bring its conductor to the demarcation point.

Transmission line engineering is to provide a new number for the new line between Ridge Road Substation and the 115kV battery storage facility interconnect.

Assumption:

The substation battery and charger will need to be verified during detailed design.

Currently, the scope and estimate assume dominion standard spread footer foundation. Once the soil information is available and it is prudent to change the design to “helical pile foundations” the Dominion team should be informed to adjust the project estimate at the earliest possible opportunity.

Purchase and install substation material – Network Upgrade:

1. Two (2), 115kV, 3000A, 40kAIC, SF-6 circuit breaker
2. Four (4), 115kV, 2000A, 3-phase center break gang operated switch
3. Four (4), 115KV, bus accuracy CCVT’s
4. Three (3), 90kV, 74kV MCOV surge arrester
5. One (1), shield wire pole and two spans of shield wire (by Transmission)
6. Substation stone as required
7. Substation lighting as required
8. Steel structures as required including switch stands, bus supports, and CCVT supports.
9. Foundations as required including equipment and bus support stands
10. Conductors, connectors, conduits, control cables, cable trough, and grounding materials as per engineering standards

Remove substation material – Network Upgrade:

1. Conductors, connectors, conduits, control cables, cable trough, and grounding materials as per engineering standards

Purchase and install relay material – Network Upgrade:

1. Two (2), 1510 – 24” dual SEL-351-7 transmission breaker with reclosing panel
2. Two (2), 4510 – SEL-2411 breaker annunciator

3. Two (2), 4526_A – circuit breaker fiber optic make-up box
4. One (1), 1603 – 24" SEL-451 islanding control scheme panel
5. Two (2), 4506 – 3-phase CCVT potential make-up box

The Transmission Owner Interconnection Facilities include the portion of the interconnecting switching Substation which is associated solely with the single feed to the generating facilities collector Substation. The equipment associated with the Transmission Owner Interconnection Facilities include the disconnect switch, conductors and connectors.

Other Scope includes metering accuracy CCVT's, metering accuracy CT's, and associated metering equipment.

Purchase and install substation material – Transmission Owner Interconnection Facilities Upgrade:

1. One (1), 115kV, 2000A, 3-phase center break gang operated switch (by Transmission)
2. One (1), 115kV, heavy duty steel backbone (by Transmission)
3. Conductor, connectors, conduits, control cables, foundations, steel structures and grounding material as per engineering standards

Purchase and install relay material – Transmission Owner Interconnection Facilities Upgrade:

1. One (1), 1340 – 24" dual SEL-411L CD/Fiber line panel
2. One (1), 1323 – 24" SEL-487E/735 PMU and PQ monitoring panel

Purchase and install metering material – Other:

1. Three (3), 115kV, metering accuracy CCVT
2. Three (3), 115kV, 500:5 metering accuracy CT
3. One (1), 1425 – 24" dual SEL-735 transmission and generator interconnect metering panel
4. One (1), 4524 – revenue metering CT make-up box
5. One (1), 4506 – 3-phase CCVT potential make-up box with metering (P4)

Preliminary Scoping Summary

This project serves to construct a new 115 kV developer generation tie-in line from existing Ridge Road Substation to a point of change in ownership (PCO) structure, which is located in Mecklenburg County, VA. The new 115 kV circuit will hereby be referred to as line 1XXX. The point of change in ownership (PCO) structure will be proposed structure 1XXX/2, which is to be installed outside existing Ridge Road substation on Dominion owned property. The PCO structure is the demarcation point between Dominion Energy and the developer. See Figure 1 for the project location.

This scope only includes the installation for the transmission ownership interconnection facilities (TOIF) for the gen-tie line. There is not a "Network Upgrade" (NW) transmission scope associated with this project.

The proposed structures to be installed are two (2) single circuit steel backbones and one (1) steel static pole. The new conductor and shield wire to be used will be single (1) 768.2 ACSS/TW (20/7) "Maumee" and two (2) DNO-11410 OPGW. 7#7 Alumoweld will be utilized for shielding within Ridge Road Substation.

Length of Route	**0.02 miles**
Location of the subject line (County/State)	**Mecklenburg County, VA**
Total Number of Permanent Structures	**3**
CPCN/SCC Required?	**No**
New ROW Required?	**Yes**

New ROW Required:

ROW Length	**ROW Width**
0.02 Miles	120 ft.

This project will utilize current Dominion 115 kV standards. The conceptual estimate includes cost for the following:

Transmission Owner Build - Permanent Facilities to be Installed

Structures: See attached spreadsheet for heights and loading information. All structures will be galvanized steel.

Structure Type	Dwg Number	Str. Qty.
115 kV SC Steel Backbone Structure	11.955	1
115 kV SC Steel Backbone Structure with Switch Attachment – Include one (1) 2000 Amp horizontal switch	11.955	1
Steel Static Pole	9.008	1

Wire:

1. Mileage listed is per circuit.
2. Conductors include dampers. Fiber includes dampers and splices.
    - Estimate includes approximately four (4) fiber splices

Length (Miles)	Circuit	# If Bundled-Wire Type "Name"	Start-End
0.02	1	Single (1) 768.2 ACSS/TW (20/7) "Maumee" Conductor	Proposed BB 1XXX/1 - Proposed BB 1XXX/2
0.02	2	DNO-11410 OPGW	Proposed BB 1XXX/1 - Proposed BB 1XXX/2
0.02	1	7#7 Alumoweld Shield Wire	Existing BB 1009/54 (1026/100) – Proposed BB 1XXX/1
0.03	1	7#7 Alumoweld Shield Wire	Proposed Static Pole 1XXX/1A –

			Proposed BB 1XXX/1

Transmission Owner Build - Existing Facilities to be Transferred or Modified

1. Install one (1) new shield wire deadend assembly [Reference Drawing 42.011] on existing structure 1009/54 (1026/100).
2. Install one (1) new shield wire safety catch [Reference Drawing 44.222] on existing structure 1009/54 (1026/100).

Scope Notes/Assumptions

1. Due to allocated amount of time, no PLS-CADD modeling was done for this project, which results in higher level scopes. Projects in the Transition Cycle 2 – Phase 2 will need to go through full conceptual engineering design prior to reaching detailed engineering.
2. This project requires acquisition of a laydown yard.
3. The generalized structure height for this project is 70 ft for the backbone structures and 75 ft for the static pole.
4. Project area code required loading include: NESC Heavy, 95 mph wind, ¾" Ice & 30 mph wind.
5. For detailed engineering, a LiDAR survey is required, including a ROW file.
6. Crossing insulators will be used whenever crossing over substation fence.
7. An additional 120 ft of right of way will be acquired for this project based on 115kV Dominion right of way preferences.
8. The PCO structure 1XXX/2 is located outside the existing Ridge Road Substation and will be installed on Dominion owned property. This structure will be the demarcation point between the developer and Dominion Energy.
9. The transmission team has identified no encroachments within the project area based off

the .kmz and DEV MapViewer.

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

11. A substation general arrangement was provided by the conceptual substation engineering team. See **Figure 2** for the general arrangement used for this project.

12. The assumed reel lengths for this project are 12,000 feet.

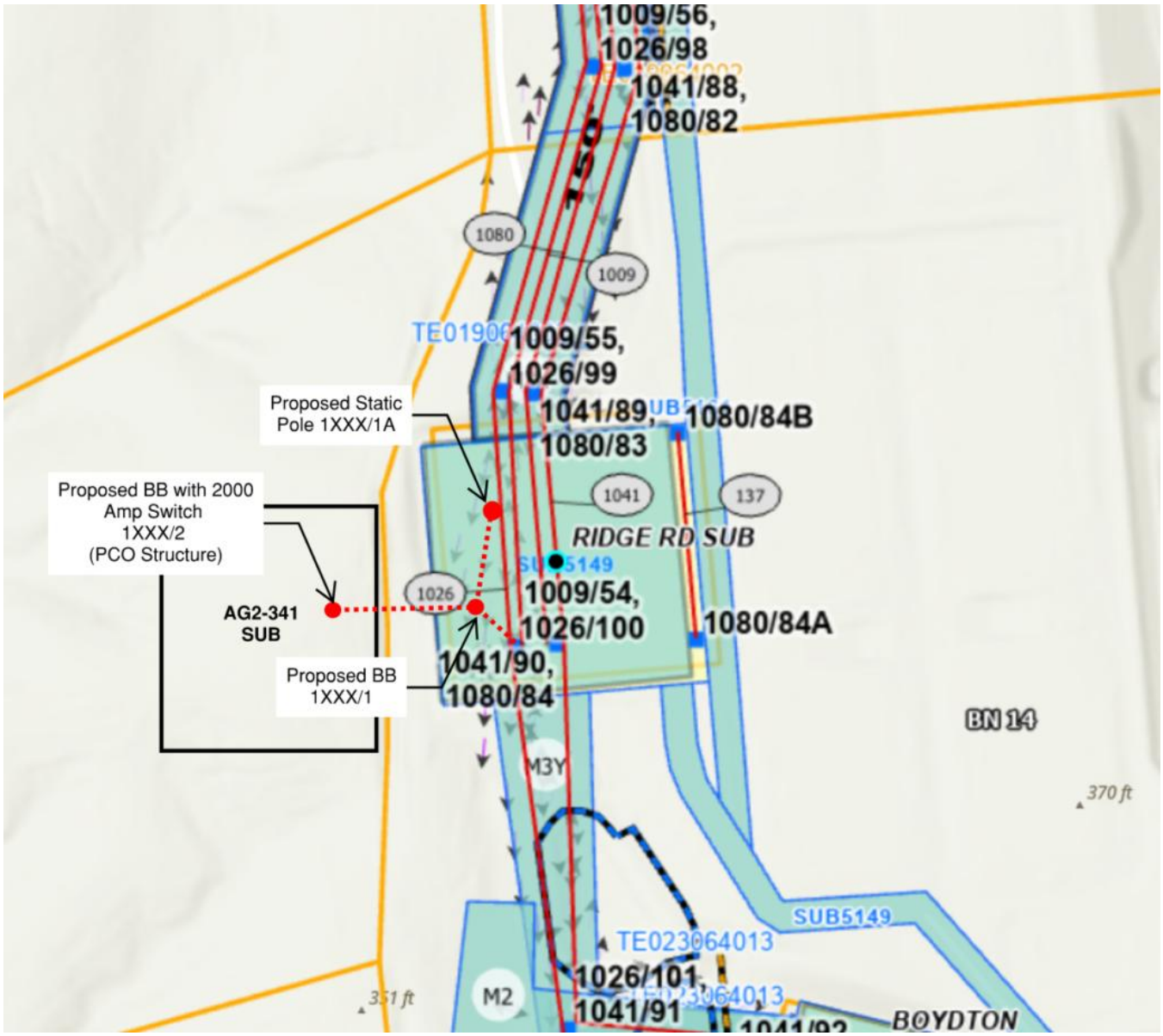
13. Cross slopes are not accounted for in this conceptual design. Structures designed assuming a 1.5' foundation reveal at the center of the structure.

14. The collector station is approximately 0.02 miles west of existing Ridge Road Substation.

Estimate Notes/Assumptions

1. This scope and estimate for project AG2-341 refers to the "Transmission Owner Interconnection Facilities" (TOIF). This includes the engineering, project management, and construction costs for the transmission assets associated with the new gen-tie line. There is not "Network Upgrade" (NW) transmission scope associated with this project.
    a. One estimate has been provided for this scope.
        i. Transmission Owner Interconnection Facilities (TOIF)
2. Foundation costs were based off the project's location and structure type in the regional soil profile map. The regional soil profile map used for this project is Piedmont.
3. Survey cost was determined based on substation proposed location, fiber installation, and impacts on existing line.
4. It should be determined in detailed engineering if 115 kV over-insulated conductor assemblies are required for this project. For this estimate, over-insulated conductor assemblies were utilized.
5. Transition Cycle 2 - Phase 2 estimates utilize Dominion 2025 labor and material adjustment rates.

Figure 1 – Project Location



Attachment #5: Network Upgrade – Kerr Dam Substation

Project Summary

Project AG2-341 provides for drawing work, islanding panel addition, relay resets, and field support necessary to construct the new 115kV interconnect line into the existing Ridge Road Station. This project is the Remote End Network Upgrade for the AG2-341 Generator Interconnect.

Purchase and install relay material:

1. One (1), 1603 – 24” SEL-451 islanding control scheme panel

Attachment #6: Network Upgrade – Bishop Substation

Project Summary

Project AG2-341 provides for drawing work, islanding panel addition, relay resets, and field support necessary to construct the new 115kV interconnect line into the existing Ridge Road Station. This project is the Remote End Network Upgrade for the AG2-341 Generator Interconnect project.

Purchase and install relay material:

One (1), 1603 – 24” SEL-451 islanding control scheme panel

Attachment #7: Network Upgrade – Chase City Substation

Project Summary

Project AG2-341 provides for drawing work, islanding panel addition, relay resets, and field support necessary to construct the new 115kV interconnect line into the existing Ridge Road Station. This project is the Remote End Network Upgrade for the AG2-341 Generator Interconnect.

Purchase and install relay material - Network Upgrade:

1. One (1), 1603 – 24” SEL-451 islanding control scheme panel