Facilities Study Report

For

Physical Interconnection of

PJM Generation Interconnection Request

Project ID AE2-156

Yadkin 115 kV

December 2024

Introduction

This Facilities Study has been prepared in accordance with the PJM Open Access Transmission Tariff Part VII, and, if applicable, 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 (VEPCO or Dominion).

A. Transmission Owner Facilities Study Summary

1. PROJECT DESCRIPTION

The Project Developer (PD) has proposed a Storage Generating Facility located in City of Chesapeake, VA with a designated PJM Project ID of AE2-156. The installed facilities will have a total Maximum Facility Output (MFO) of 100 MW with 100 MW of this output being recognized by PJM as Capacity.

2. POINT OF INTERCONNECTION (POI)

AE2-156 is a new service request project that will interconnect with the Dominion transmission system via a direct connection into Yadkin 115 kV substation by adding (1) additional breaker.

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 will be the 115kV disconnect switch 4-hole pad on the transmission line structure outside the AE2-156 station 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 AE2-156 project to the Dominion transmission system. These facilities shall be designed according to Dominion Applicable Technical Requirements and Standards. Once built, Dominion will own, operate, and maintain these Facilities.

1. TRANSMISSION OWNER INTERCONNECTION FACILITIES:

The Transmission Owner Interconnection Facilities will include, but not be limited to, the following:

Structure 1XXX/1, will be a 115 kV backbone structure and foundation located outside the fence of the Interconnection Substation, to terminate the Project Developer's generator lead line.

The substation bus will connect directly to the proposed structure in this scope, resulting in no Dominion owned transmission conductor being required.

Purchase and install substation material – Transmission Owner Interconnection Facilities:

1. Three (3), 115kV, metering accuracy CCVT
2. Three (3), 115kV, 500:5 metering accuracy CT
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:

1. One (1), 1340 – 24" dual SEL-411L CD/Fiber line panel
2. One (1), 1425 – 24" dual SEL-735 transmission and generator interconnect metering panel
3. One (1), 4524 – revenue metering CT make-up box
4. One (1), 4506 – 3-phase CCVT potential make-up box with metering (P4)
5. One (1), 1323 – 24" SEL-487E/735 PMU and PQ monitoring panel

Permanent Facilities to be Installed - Transmission Owner Interconnection Facilities:

1. Install one (1) 115 kV single circuit steel backbone on foundations as follows:
    a. Structure 1XXX/1.
    b. This includes the installation of a 2000A switch on the structure.

2. STAND ALONE NETWORK UPGRADES

Dominion's Technical Requirements for Generation Interconnect Substation (EP_REF_2200-23-00) prevents this project from having the option to build for the Stand Alone Network Upgrades.

3. NETWORK UPGRADES

The Network Upgrades will include, but not be limited to, the following:

Expanding existing TO substation:

Yadkin 115 kV substation will be expanded/upgraded to interconnect project AE2-156 with the Dominion transmission system by adding one new breaker.

The objective of this project is to add one new line position and one new 115kV breaker installed at Yadkin Substation to support the new battery energy storage system (BESS) built by Project Developer. All substation permitting, site preparation and grading activity will be performed by the Dominion.

Substation design and relay protection are based on Dominion's Facility Interconnection Requirements, NERC Compliance Procedure FAC-001 (version 23), that is posted on PJM's website. This standard meets or exceeds the PJM Transmission and Substation Design Subcommittee Technical Requirements and the PJM Protection Standards (PJM Manual 7).

The scope of work includes the following:

Purchase and install substation material – Network Upgrade:

1. Approximately 36,699 sq ft site preparation and grading as required for the expansion of Yadkin Station (by Dominion).
2. Level 1 high security fence expansion
    a. Approximately 665 linear feet of 20 ft tall design level 1 high security fence
    b. Anti-dig barrier footing between the perimeter fence foundations
    c. Foundations for the fence posts, super posts, etc
    d. Ground tails, and miscellaneous grounding materials for fence posts, panel to panel connections, and security and communication boxes as per the current engineering standards
3. One (1), 115kV, 3000A, 40kAIC, SF-6 circuit breaker
4. Two (2), 115kV, 2000A, 3-phase center break gang operated switch
5. Three (3), 90kV, 74kV MCOV surge arrester
6. Station Stone as required
7. Station 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, and grounding materials as per engineering standards

Purchase and install relay material – Network Upgrade:

1. One (1), 1510 – 24" dual SEL-351-7 transmission breaker with reclosing panel
2. One (1), 4510 – SEL-2411 breaker annunciator
3. One (1), 4526_A – circuit breaker fiber optic make-up box
4. One (1), 5618 – SEL-2411 I/O Module
5. One (1), 1603 – 24" SEL-451 islanding control scheme panel
6. One (1), 5202 – 26" APP 601 digital fault recorder

Upgrades to neighboring facilities:

Chesapeake Substation

Project AE2-156 provides for drawing work, islanding relay addition, relay resets, and field support necessary for Chesapeake Substation.

Purchase and install relay material:

1. One (1), UPLC II transfer trip TX/RX set

4. OTHER SCOPE OF WORK

The Project Developer will supply and own metering equipment that will provide instantaneous net MW and MVar per unit values in accordance with PJM Manuals M-01 and M-14D, and Sections 8.1 through 8.5 of Appendix 2 to the GIA.

5. MILESTONE SCHEDULE FOR COMPLETION OF TO WORK

Facilities outlined in this report are estimated to take 37 months to construct, from the time the Generator 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	8
Permitting	3	29
Construction	27	37

6. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

General Assumptions:

1. The estimated procurement lead time for breakers is based on current Dominion pre-ordered breaker production slots. These production slots will be assigned after the agreement is executed.
2. The preliminary construction schedule is dependent on outage availability.
3. The Point of Change of Ownership will be located outside of Yadkin Substation.

Conceptual Design Notes:

1. Currently, the scope and estimate assume Dominion standard spread footer foundations. 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.
2. It is anticipated that the station expansion will remain on existing Dominion Energy owned property. All permitting, site preparation and grading activity will be performed by Dominion Energy.
3. Engineered 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.
4. Survey cost were determined based on substation proposed location, fiber installation, and

impacts on existing line.

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 AE2-156 GIA, and in PJM Manuals M01 and M14D. The details of applicable revenue metering requirements are given in section 4.1.6 Metering and Telecommunications of Dominion's Facility Interconnection Connection Requirement NERC Standard FAC-001 posted on PJM website.

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

a. Hourly compensated MWh received from the Generating Facility to the TO;
b. Hourly compensated MVARh received from the Generating Facility to the TO;
c. Hourly compensated MWh delivered from the TO to the Generating Facility; and
d. Hourly compensated MVARh delivered from the TO to the Generating Facility.

The Project Developer will access revenue meter via wireless transceivers or fiber cabling to meter with RS-485 or Ethernet communication port for dial-up reads. Project Developer must provide revenue and real time data to PJM from Project Developer Market Operations Center per "PJM Telemetry Data Exchange Summary" document available at PJM.com.

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, NERC Compliance Procedure FAC-001 (version 23), that is posted on PJM's website.

The Project Developer 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.

9. ENVIRONMENTAL AND PERMITING

The Project Developer 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

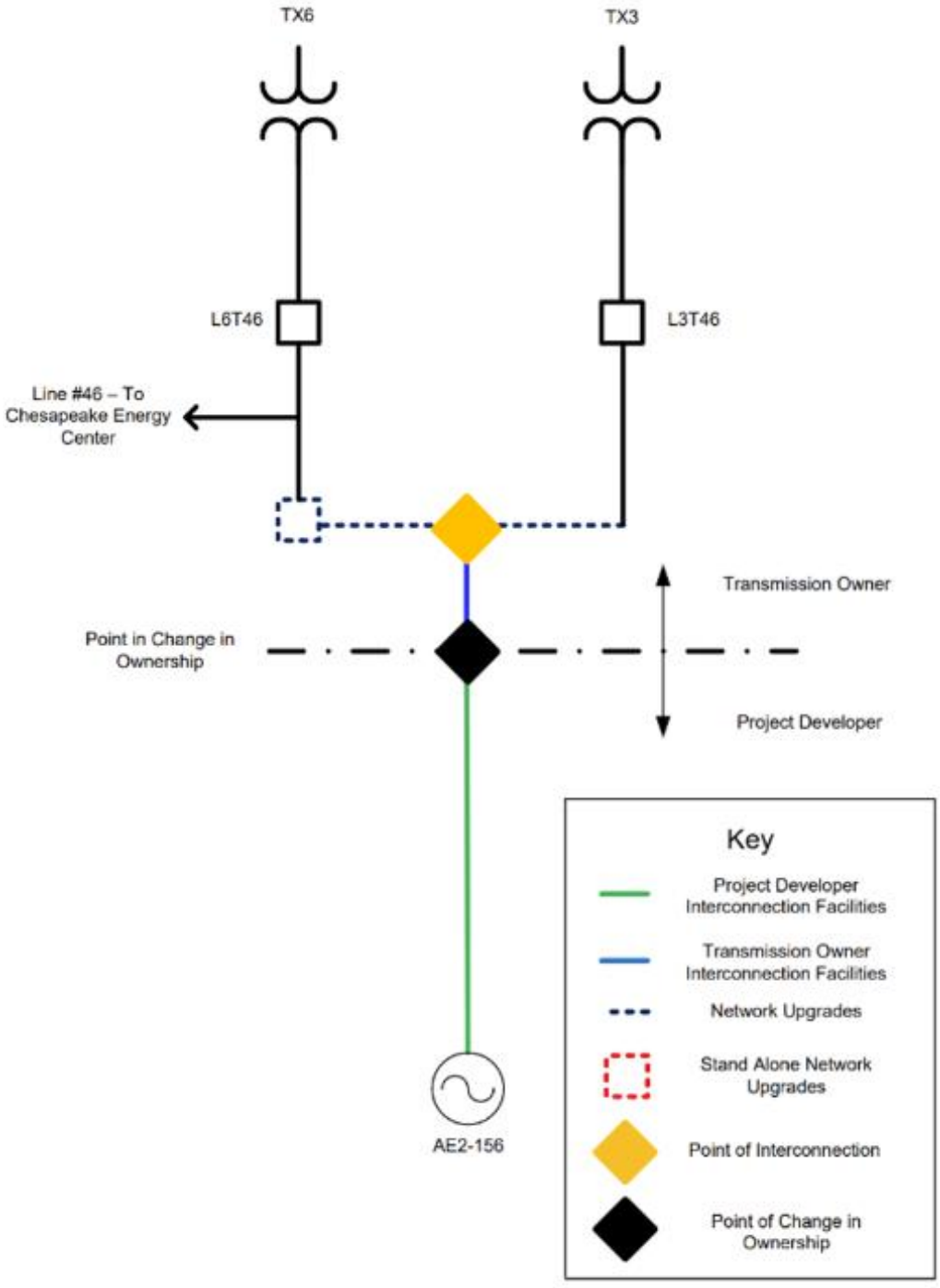
- Dominion will require a stormwater easement for substation specific stormwater design BMP's to allow access to and use of the facilities.

  A maintenance agreement should be in place in perpetuity for said stormwater facilities.

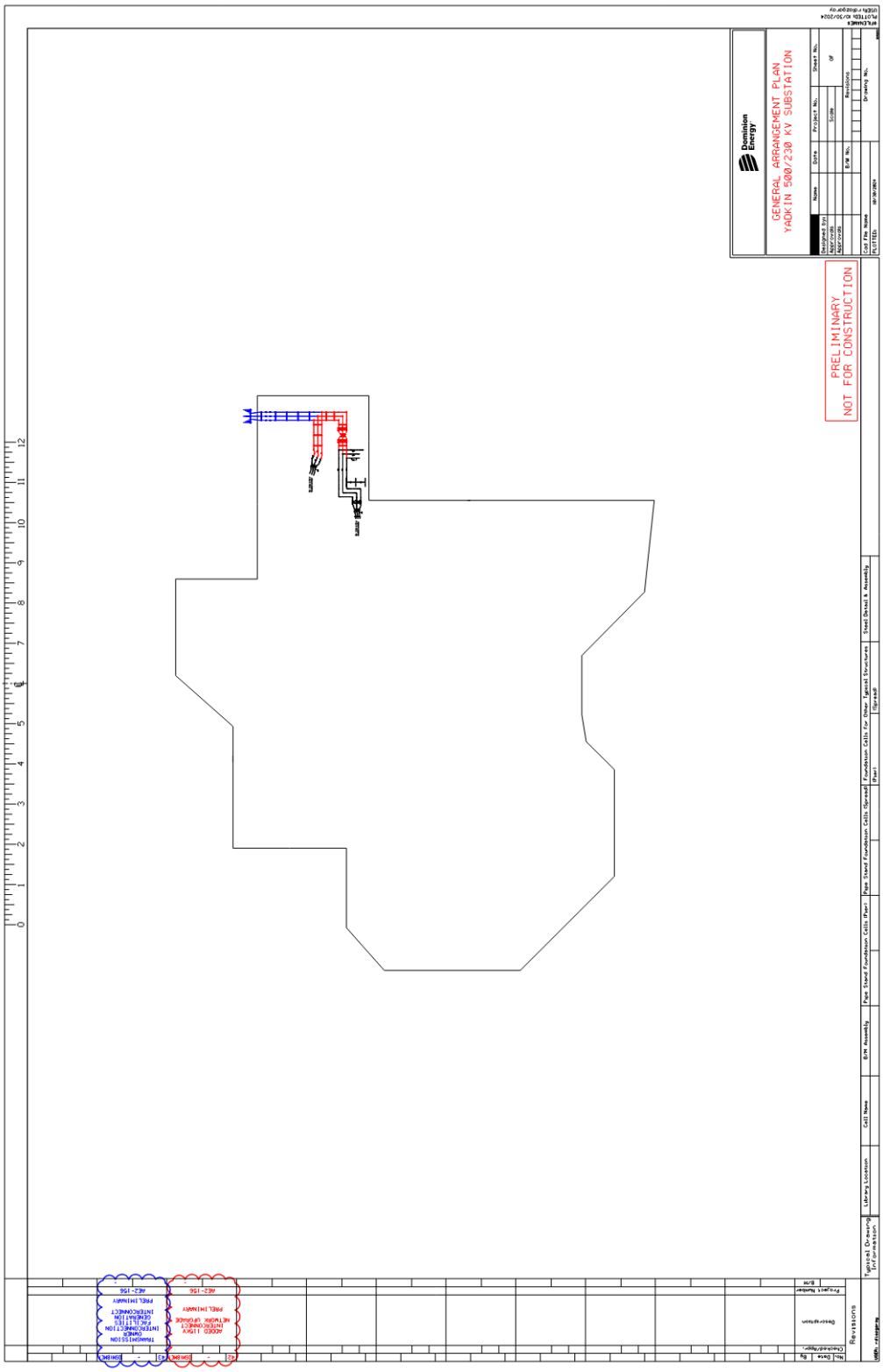
- Conditional Use Permit for Substation
- Any additional land needed for Storm Water Management, Landscaping, and Wetlands/Wetlands Mitigation
- Any other Permitting requirements required by the Substation

C. APPENDICES

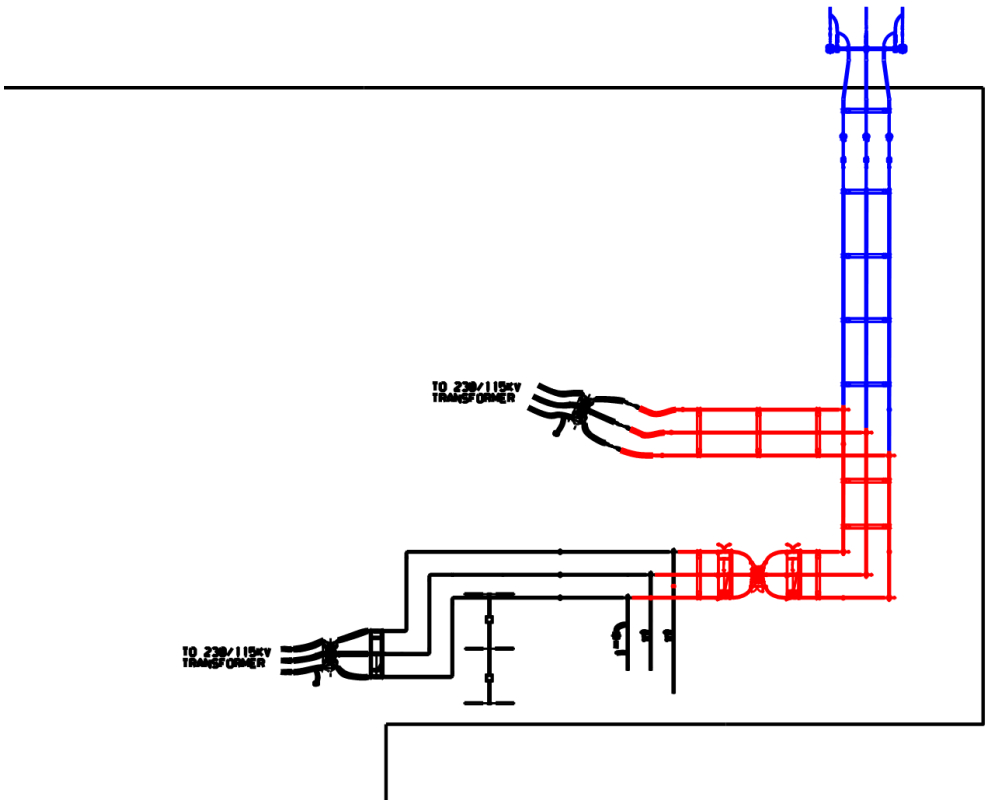
Attachment #1: Single line Diagram for the Physical Interconnection



Attachment #2: Substation General Arrangement**



***Full substation details have been omitted due to CEII.*


TO 230/115kV
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