

Facilities Study Report
For
Physical Interconnection of
PJM Generation Interconnection Request
Project ID AH1-734

“South Bend 500 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 Keystone Appalachian Transmission Company (KATCo), a FirstEnergy company.

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 has proposed an uprate to an existing Natural Gas Generating Facility located in Indiana County, Pennsylvania. The AH1-734 project is a 270.3 MW (268.6 MW Capacity) uprate to the previous project (Z1-055/Z1-056/AD1-099/AD2-113), for a total Maximum Facility Output (MFO) of 1058.4 MW with 399.2 MW of this output recognized by PJM as Capacity.

2. POINT OF INTERCONNECTION (POI)

The Generating Facility will interconnect with the KATCo transmission system at the existing South Bend Substation as an uprate to Z1-055/Z1-056/AD1-099/AD2-113.

3. POINT OF CHANGE IN OWNERSHIP (PCO)

The Point of Change in Ownership (PCO) will remain the same as Z1-055/Z1-056/AD1-099/AD2-113, located at the last Project Developer-owned structure outside the existing South Bend substation fence line

4. SCOPE OF PROJECT DEVELOPER 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). These facilities may have been constructed as part of Z1-055/Z1-056/AD1-099/AD2-113. This includes, but is not limited to:

- Circuit breakers and associated equipment located between the high side of the GSU 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, and Supervisory Control and Data Acquisition (SCADA) and telecommunications equipment to comply with the TO's Applicable Technical Requirements and Standards.

B. Transmission Owner Facilities Study Results

The following is a description of Transmission Owner facilities for physical interconnection of the proposed Z1-055/Z1-056/AD1-099/AD2-113 project to KATCo transmission system. These facilities shall be designed according to FirstEnergy Applicable Technical Requirements and Standards. Once built, KATCo will own, operate, and maintain these Facilities.

1. TRANSMISSION OWNER INTERCONNECTION FACILITIES (TOIF)

1.1 Generator Substation

Energize and integrate generator interconnection facilities to the transmission system.

- Relay and Controls Scope of Work
 - Integrate interconnection facilities protection and controls to the transmission system.
- Ancillary Scope of Work
 - Project Management
 - Provide project management, coordination, administration, scheduling, material management and project development if required.
 - Revenue Metering
 - Provide support for updates to existing revenue metering.
 - Testing and Commissioning
 - Testing and commissioning services as required.

2. STAND ALONE NETWORK UPGRADES

None

3. NETWORK UPGRADES

3.1 South Bend 500 kV Substation

Install one (1) 500kV disconnect switch. Review and revise relay settings

- Below Grade Scope of Work:
 - Install (1) lot of conduit, wiring and below grade equipment necessary for wiring of new disconnect switch
- Above Grade Scope of Work:

- Install (1) 500kV, 2000A motor operated vertical break switch
- Relay & Control Scope of Work
 - Review and revise relay settings
- Scope of Work Assumptions:
 - Existing relays shall be used
 - Assume line disconnect switches can be mounted on the existing lattice A-Frame structure.
 - Will require structural engineering to review lattice structure to determine if enough structural capacity is available to support new vertical switch.
- Ancillary Scope of Work
 - Project Management
 - Provide project management, coordination, administration, scheduling, material management and project development if required.
 - Information Technology
 - SCADA work required at South Bend substation to support disconnect switches installation.
 - Testing and Commissioning
 - Testing and Commissioning services as required for revised relay settings.

3.2 Yukon Substation

Review and update relay settings

- Below Grade Scope of Work:
 - None
- Above Grade Scope of Work:
 - None
- Relay & Control Scope of Work
 - Review and update relay settings
- Scope of Work Assumptions:
 - Existing relays shall be used
- Ancillary Scope of Work
 - Project Management
 - Provide project management, coordination, administration, scheduling, material management and project development if required.
 - Information Technology
 - None

- Testing and Commissioning
 - Testing and commissioning services as required for revised relay settings.

3.3 Keystone Substation

Review and update relay settings

- Below Grade Scope of Work:
 - None
- Above Grade Scope of Work:
 - None
- Relay & Control Scope of Work
 - Review and update relay settings
- Scope of Work Assumptions:
 - Existing relays shall be used
- Ancillary Scope of Work
 - Project Management
 - Provide project management, coordination, administration, scheduling, material management and project development if required.
 - Information Technology
 - None
 - Testing and Commissioning
 - Testing and commissioning services as required for revised relay settings.

4. Other Scope of Work

4.1 Provide support for updates to the existing revenue metering, owned by the Transmission Owner.

5. MILESTONE SCHEDULE FOR COMPLETION OF KATCO WORK

Facilities outlined in this report are estimated to take 35 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
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Preliminary Engineering	1	2
Detailed Engineering	5	29
Siting, Permitting & Real Estate	3	29
Equipment Delivery	31	31
Construction	32	34
Testing and Commissioning	34	35

6. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

6.1 Scope Assumptions:

- Additional costs will be incurred by the Project Developer, if final alignment of the 500 kV generator lead line causes encroachments, changes, or modifications to any existing or relocated TO facilities.
- Project Developer is responsible for making all arrangements for electric distribution service (if required) for its generation station. No costs or schedule are included herein.

6.2 Cost Estimate Assumptions:

- The cost estimates provided for this project were developed as of February 6, 2026, based upon current market conditions. Hence, they are subject to significant changes in the event that project implementation is delayed. Notwithstanding the cost estimates from this report being used in the Generator Interconnection Agreement for the related project, KATCo reserves the right to re-evaluate and provide a more accurate cost estimate during the implementation phase of the project. In accordance with section 217 of the Open Access Transmission Tariff, the Project Developer will be responsible for 100 percent of the actual costs of the facilities required to accommodate its Interconnection Request.
- KATCo reserves the right to charge the Project Developer operation and maintenance expenses to maintain the Project Developer attachment facilities, including metering facilities, owned by KATCo. These costs will be specified in the Generator Interconnection Agreement.

6.3 Schedule Assumptions:

- This schedule assumes that all issues covered by the “Environmental, Real Estate and Permitting Issues” section of this document are resolved. Construction cannot begin until after all applicable permits and/or easements have been obtained.
- KATCo’s ability to support this schedule also depends on the feasibility of taking the required outages to support construction. Outages that are determined to negatively impact system reliability or cause congestion may be delayed or denied, at any time, even if they are submitted on time based on the Outage Submittal Rules in section 4.2.1 of PJM Manual 03. This includes, but is not limited to, outages requested between the months of June and September, as well as January and March, which typically get denied due to summer and winter peak conditions. Therefore, the construction schedule will be adjusted as needed to accommodate any outage restrictions that have been identified by KATCo or the Transmission Provider.

7. REVENUE METERING REQUIREMENTS

Existing revenue metering equipment is owned, operated, and maintained by the Transmission Owner.

Transmission Owner's Revenue Metering Requirements may be found in the FirstEnergy Corporation Requirements for Transmission Connected Facilities document which can be found on the PJM website at:

<https://pjm.com/planning/design-engineering/to-tech-standards/private-firstenergy>

These requirements are in addition to any metering required by PJM.

Transmission Owner will obtain real-time, site-specific, generation data from PJM, via the required communication link from Project Developer to PJM. Transmission Owner will work with PJM and Project Developer to ensure the generation data provided to PJM meets Transmission Owner's requirements.

8. LAND REQUIREMENTS FOR INTERCONNECTION SUBSTATION

Not Applicable

9. APPLICABLE TECHNICAL REQUIREMENTS AND STANDARDS

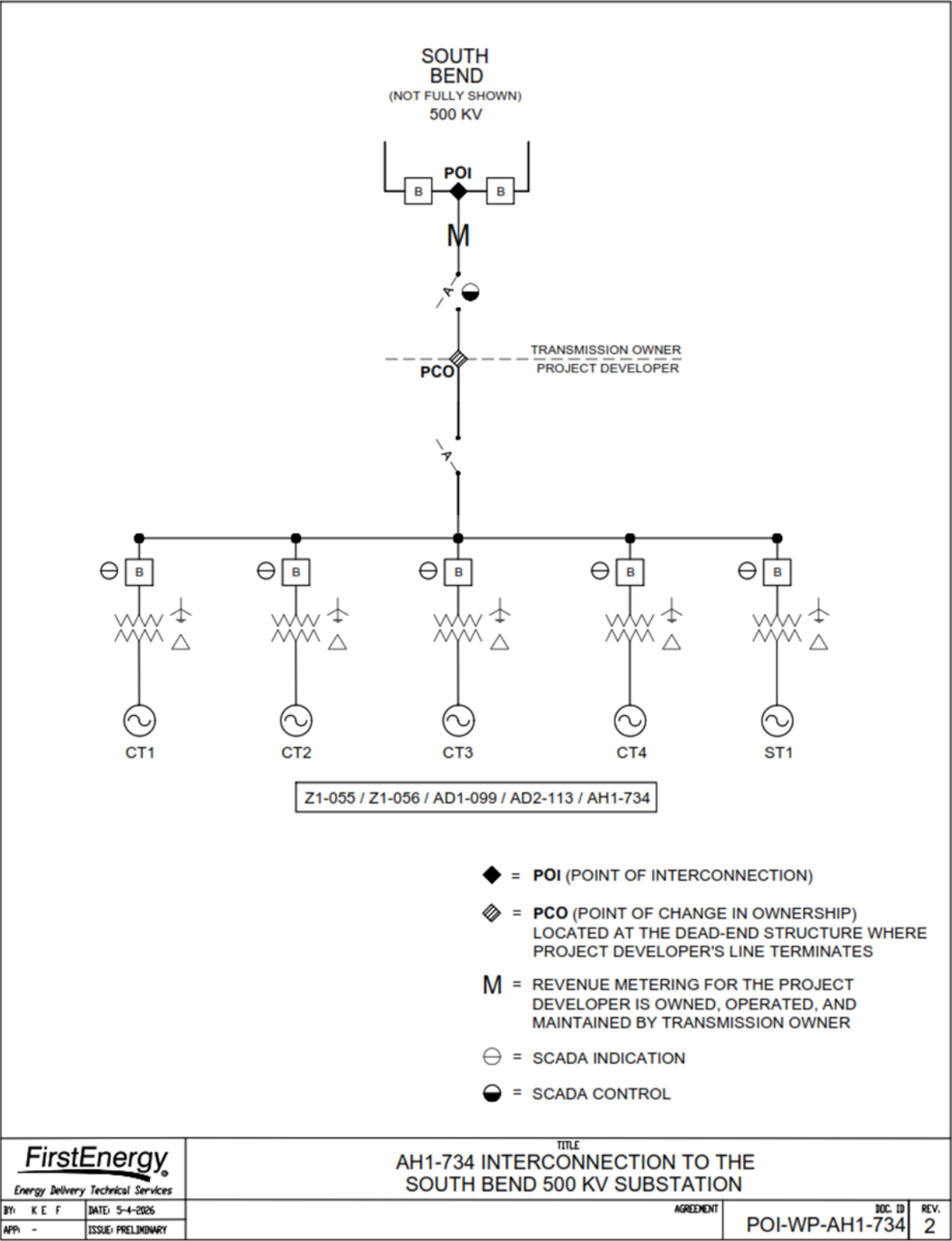
The [Requirements for Transmission Connected Facilities](#), Revision 7, dated December 27, 2026, shall apply.

10. ENVIRONMENTAL AND PERMITTING

Not Applicable

C. APPENDICES

ATTACHMENT #1: SINGLE LINE DIAGRAM FOR THE PHYSICAL INTERCONNECTION



ATTACHMENT #2: PROTECTION SCOPE

Generator Protection Requirements

FE Protection Requirements

To coordinate with proposed Generator substation, the relay settings at the following stations will need adjusted (note that in some cases due to limitations of the existing relays, relays may need to be replaced):

The interconnection of the new generator to the Bulk Electric System (BES) transmission network will initiate a review of existing protection schemes and may introduce new requirements to ensure compliance with the Protection and Control (PRC) standards established by the North American Electric Reliability Corporation (NERC). Additional protection system upgrades at the interconnecting station, and potentially at other affected stations, will be determined by FirstEnergy and the Regional Reliability Coordinator during subsequent stages of the project, prior to detailed design.

- South Bend
- Yukon
- Keystone

Short Circuit Data

The short circuit levels at the South Bend 500 kV bus are the following:

Short Circuit values at 500 kV

Three phase faults = 34.2 kA

Single line to ground fault = 32.5 kA

Transmission System Impedances at 500 kV, 100 MVA base

Positive sequence $Z1 = (0.00015 + j 0.00338)$ (per unit)

Zero sequence $Z0 = (0.00055 + j 0.00384)$ (per unit)

The fault currents provided are bolted, symmetrical values for present, normal transmission system conditions, not including the proposed AH1-734 uprate. Future increases in fault currents are possible, and it is the Project Developer's responsibility to upgrade their equipment and/or protective equipment coordination when necessary.