



Facilities Study Report
For
Physical Interconnection of
PJM Generation Interconnection Request
Project ID AF2-078
White County, Indiana

"Reynolds - Olive #1 345 kV"

November 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, L.L.C. (PJM or Transmission Provider (TP)). The Transmission Owner (TO) is AEP Indiana Michigan Transmission Company Inc. to be abbreviated in the remainder of this report as IMTCo. IMTCo is an affiliate of American Electric Power Service Corporation (AEP). All references to AEP include IMTCo unless otherwise specified.

A. Transmission Owner Facilities Study Summary

1. PROJECT DESCRIPTION

The Project Developer (PD) has proposed a Solar/Storage Generating Facility located in White County, Indiana with a designated PJM Project ID of AF2-078. The installed facilities for AF2-078 will have a total Maximum Facility Output (MFO) of 200 MW with 120 MW being recognized as PJM Capacity. The AF2-078 project will connect to the American Electric (AEP) Reynolds - Olive #1 345 kV Station sharing the Point of Change in Ownership (PCO) with the AF1-207 project.

2. POINTS OF INTERCONNECTION AND CHANGE IN OWNERSHIP

The Point of Interconnection (POI) is the point where the risers connect the generation lead circuit to the Reynolds - Olive #1 345 kV Station line termination point. The Point of Change in Ownership (PCO) will be located at the first structure in the generation lead circuit outside of the AF1-207 345 kV Switching Station fence. IMTCo will own the span from the AF1-207 345 kV Switching Station to the AEP constructed and owned dead end PCO structure, including the jumpers. The Project Developer will own the other span connecting to the PCO structure, along with the remainder of the 345 kV generation lead circuit and associated structures back to the AF2-078 generation collector substation.

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

3. AMENDMENTS TO THE IMPACT STUDY DATA OR IMPACT STUDY RESULTS

No amendments to the impact study data or impact study results are required by AEP.

4. PROJECT DEVELOPER SCHEDULE

The Project Developer's requested in-service date for the generation facility is September 1, 2026.

This report does not imply a Transmission Owner commitment to this date.

5. SCOPE OF PROJECT DEVELOPER INTERCONNECTION FACILITIES

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

- One (1) Main Power Transformer (MPT)

- One (1) circuit breaker and associated equipment located between the high side of the MPT(s) and the Point of Change in Ownership
- Generation lead circuit conductors from the Generating Facility to the Point of Change in Ownership (shared with AF1-207)
- Relay and protective equipment and Telecommunications Equipment including Supervisory Control and Data Acquisition (SCADA) to comply with the TO's Applicable Technical Requirements and Standards
- **Installation of the submetering equipment described below in section B.3.**
- **Instrument transformers required to provide revenue quality metering and settlement between the AF2-078 project and any previous/originating projects interconnecting behind the same Point of Change in Ownership, if required by AEP or desired by the Project Developer.**
- **Additional communications cable connections required between the below-proposed ethernet switch (to be installed at the AF2-078 project collector station) and the primary router (either installed or to be installed at the originating project collector station) for metering data transport, if required by AEP or desired by the Project Developer.**

B. Transmission Owner Facilities Study Results

The following is a description of the Transmission Owner facilities required for physical interconnection of the proposed AF2-078 project to the AEP transmission system. These facilities shall be designed according to AEP Applicable Technical Requirements and Standards. Once built, AEP will own, operate, and maintain these Facilities.

1. INTERCONNECTION SUBSTATION (REYNOLDS - OLIVE #1 345 KV)

- IMTCo will review and revise (as necessary) the protective relay settings at the AF1-207 345 kV Switching Station to account for the additional generation.

2. TRANSMISSION LINE TIE-IN

No Transmission Line Tie-In work will be required for this project.

3. TRANSMISSION OWNER INTERCONNECTION FACILITIES:

- IMTCo will procure one (1) metering panel with three (3) primary meters and two (2) ethernet switches to be installed in the AF1-207/AF2-078 Project Developer's collector stations.
- IMTCo will procure one (1) connected grid router (CGR) to be installed in the Project Developer's originating project collector station.

4. UPGRADE TO NEIGHBORING STATIONS

No Upgrades will be required at Neighboring AEP Stations.

5. INSTALLATION OF FIBER CABLE CIRCUITS

No new fiber circuits to facilitate communication with existing AEP equipment will be required for this interconnection.

6. COST ESTIMATE OF AEP FACILITIES FOR PHYSICAL INTERCONNECTION

The following tables summarize the total estimated costs according to FERC criteria. The estimated costs are in 2024 dollars. **This cost excludes Federal Income Tax Gross Up charges on Contributions in Aid of Construction (CIAC).** This tax may or may not be charged based on whether this project meets the eligibility requirements of IRS Notice 88-129. If at a future date it is determined that the Federal Income Tax Gross Up charges are required, the Transmission Owner shall be reimbursed by the Project Developer for such taxes. The estimated reimbursement amount is noted in the table below.

6.1 COST ESTIMATE FOR TRANSMISSION OWNER-BUILD OPTION

Work Description	Type of Upgrade	Direct		Indirect		Total	Tax
		Labor	Material	Labor	Material		
Transmission Owner Interconnection Facilities	TOIF	\$155,073	\$73,413	\$31,632	\$16,377	\$276,495	\$0
New Interconnection Substation	Stand Alone Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Expansion of existing substation	Network Upgrade n8846.0	\$36,901	\$7,080	\$14,081	\$2,702	\$60,764	\$0
Interconnection Substation tie-in	Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Remote relay at Station X	Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Remote relay at Station Y	Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Fiber Installation in Existing ROW	Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Fiber Installation in New ROW	Stand Alone Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Final Tie in for Fiber installation in New ROW	Network Upgrade	\$0	\$0	\$0	\$0	\$0	\$0
Total Project Costs		\$191,974	\$80,493	\$45,713	\$19,079	\$337,259	\$0

7. MILESTONE SCHEDULES FOR COMPLETION OF AEP WORK

7.1 STANDARD OPTION:

<u>Activity</u>	<u>Number of Days (See Notes)</u>
Project Engagement*	1
Engineering Start	45
Material Ordering	N/A
Construction (Grading & Below Grade)	N/A
Construction (Above Grade)	N/A
Outage Requests Made By	N/A
Outage (Structure Foundations)	N/A
Outage (Cut-in & Testing)	N/A
Ready For Back Feed (ITO In-Service Date)	105

***Day 1 will be determined at the PJM construction project kick off meeting.**

The above schedule is based on typical AEP labor timelines. The facilities outlined in this report, as constructed by AEP, are estimated to take 3 months to complete. Given this timeline, the agreement backfeed date for the AF2-078 project, and a typical period for agreement processing, AEP can support a backfeed date of May 6, 2027, subject to change during the tariff defined Final Agreement Negotiation Phase.

8. ASSUMPTIONS IN DEVELOPING SCOPE/COST/SCHEDULE

Note - Any materials purchased, or design decisions made by the Project Developer (relative to any facilities to be owned by AEP) prior to coordination with and approval by the executing AEP team (pursuant to an Engineering and Procurement or Generation Interconnection Agreement) are at the developer's risk and may not meet the specifications required for interconnection with the AEP transmission system.

8.1 SCOPE ASSUMPTIONS:

- Protection and Control (P&C) coordination with the Project Developer will be needed throughout the project. The Project Developer will be required to install an AEP-compatible line relaying protection panel at the collector substation using AEP standards to ensure relay coordination and adequate line protection. The AEP design team will ensure that the firmware at the collector station terminal matches the approved firmware at the AEP terminal. Failure to accept the cost of a matching line relay protection panel may change scoping.
- Scopes provided are based on a table-top process without the benefit of the results of site-specific engineering studies (e.g., soil borings, environmental survey, ground grid, etc.), unless otherwise provided by the Project Developer.
- The Project Developer will have their construction and required checkout complete prior to the energization of the AF2-078 project and the AF1-207 project and any required testing outages.
- **The additional submetering scope is intended to provide reliable data for settlement between the AF2-078 project and any originating projects and may not be necessary should the Project Developer decide to forego the installation. If in the future the AF2-078 project or originating project changes in such a way that requires settlement between the two entities, submetering will be required and may cause additional outages and expenses at that time.**
- **The additional submetering scope provided assumes that a single submeter will be sufficient to provide settlement data for an individually queued project.**
- **Additional submeters may be required depending on the Project Developer's final collector configuration.**

8.2 SCHEDULE ASSUMPTIONS:

- All transmission outages are subject to PJM and AEP Operations outage scheduling requirements.
- Significant scope of work changes will impact the schedule.
- The above schedule reflects only the work required to interconnect the AF2-078 project. The schedules regarding network upgrades associated with this project, if any, are detailed in the documentation related to the specific network upgrade.
- Slippage by the Project Developer in executing the Generation Interconnection Agreement (GIA) does not equate to a "day for day" slippage in the scheduled back feed and in service dates. Depending on the time of year, planned outages, neighboring projects and maintenance of the grid, outage availability has the potential to shift by weeks or months depending on conditions at the time of the fully executed agreement.

8.3 ESTIMATE ASSUMPTIONS:

- Estimates provided are based on a table-top process without the benefit of the results of site-specific engineering studies (e.g., soil borings, environmental survey, ground grid, etc.), unless otherwise provided by the Project Developer.

9. METERING REQUIREMENTS

All metering needed for this interconnection project must meet the metering requirements stated in Appendix 2, section 8 of the AF2-078 GIA, and in PJM Manuals M01 and M14D. The details of applicable metering requirements are provided in the "Connection Requirements for the AEP Transmission System" (Rev. 5, dated December 31, 2032) document, found at: <https://www.aep.com/requiredpostings/AEPTransmissionStudies>

The primary and backup metering for the combined AF2-078/AF1-207 project will be installed on the Transmission Owner side of the Point of Change in Ownership and will be owned and maintained by the Transmission Owner.

Any additional generation proposed behind an originating project's PCO that differs in either fuel type or corporate entity from the originating project will require the installation of additional submetering for both the originating project and the AF2-078 project for the purpose of settlement. Submetering will require additional space within the originating project's facilities. The meters, routers, Ethernet to fiber converters, and telecom switch will be procured and owned by AEP. The revenue quality instrument transformers, fiber-optic cable connecting the submeters, and any other additional hardware for the required submetering will be procured, installed, owned, and maintained by the Project Developer.

10. LAND REQUIREMENTS FOR INTERCONNECTION SUBSTATION

Land requirements for the Interconnection Substation needed for this interconnection project must meet the requirements set forth in "Standards and Expectations for Siting, Real Estate, Right-of-Way, and Environmental Permitting for Transmission Interconnection Projects," Version 3 dated October 31, 2022 at <https://www.aep.com/requiredpostings/AEPTransmissionStudies> posted on AEP website.

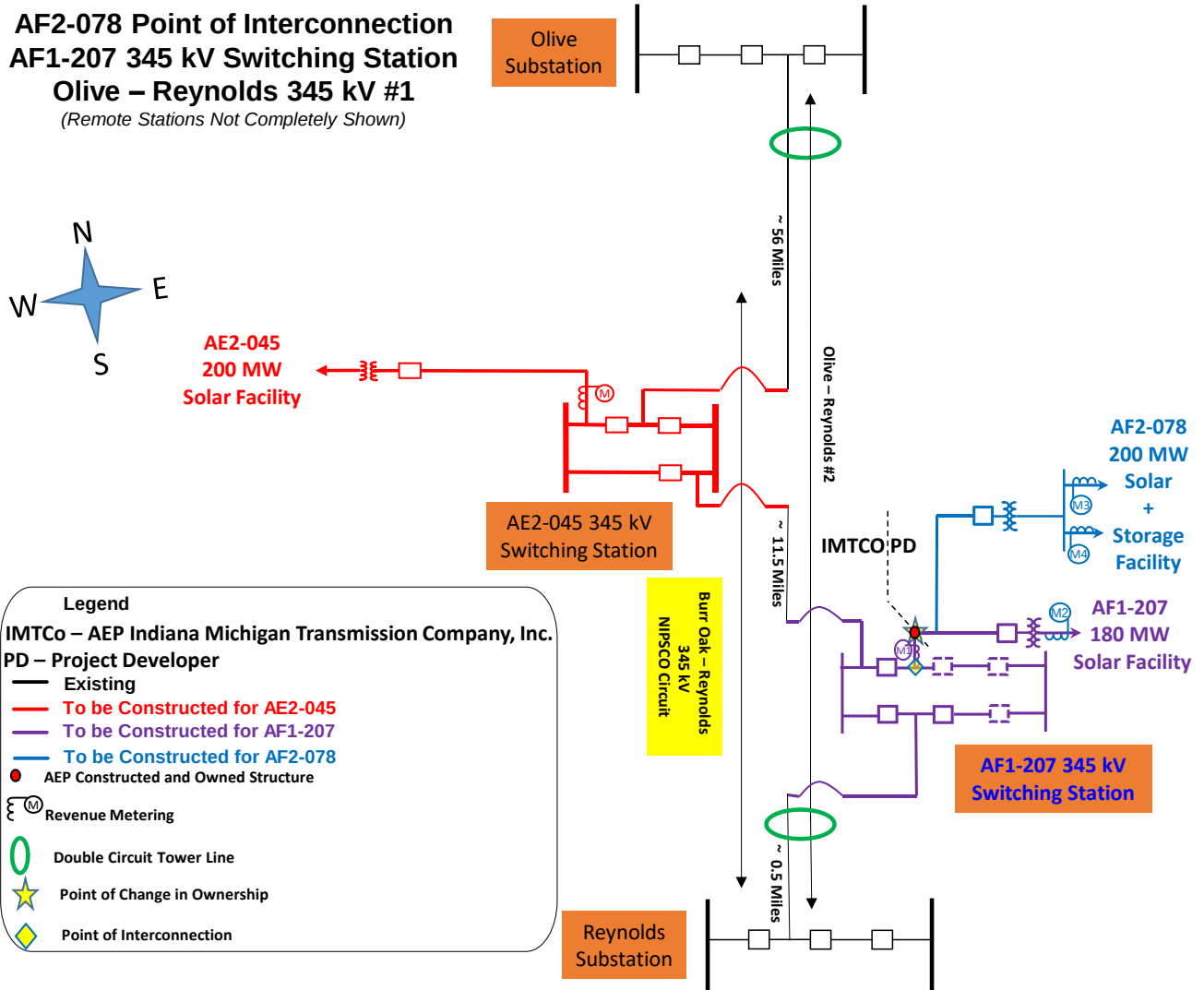
11. ENVIRONMENTAL AND PERMITTING

The Project Developer is expected to obtain, at its cost, all necessary permits and provisions for the facilities to be constructed for this interconnection. AEP requires that the standards provided in the "Standards and Expectations for Siting, Real Estate, Right-Of-Way, and Environmental Permitting for Transmission Interconnection Projects", Version 3 dated October 31, 2022 found at: <https://www.aep.com/requiredpostings/AEPTransmissionStudies> be adhered to for all facilities interconnecting with the AEP transmission system.

C APPENDICES

Attachment #1: Single line Diagram for the Physical Interconnection

AF2-078 Point of Interconnection
AF1-207 345 kV Switching Station
Olive – Reynolds 345 kV #1
(Remote Stations Not Completely Shown)



Attachment #2: POI Map

