Generation Interconnection Feasibility Study Report

PJM Generation Interconnection Request Queue Position #U1-068 York 115kV 10 MW

September 2008

Preface

The intent of the Generation Interconnection Feasibility Study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation interconnection project to the PJM network at a location specified by the Interconnection Customer. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

The proposed interconnection facilities must be designed in accordance with the FirstEnergy "Requirements for Transmission Connected Facilities" document. Procedures for gaining access to these standards can be found at the link below.

http://www.pjm.com/planning/trans-standard.html

In some instances an Interconnection Customer may not be responsible for 100% of the identified Network Upgrade cost because other transmission network uses, e.g. another generation interconnection or merchant transmission upgrade, may also contribute to the need for the same network reinforcement. The possibility of sharing the reinforcement costs with other projects may be identified in the Generation Interconnection Feasibility Study, but the actual allocation will be deferred until the System Impact Study is performed.

The Generation Interconnection Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities unless noted in the report. The project developer is responsible for acquiring any necessary right of way and real estate, as well as applying for and obtaining any and all permits unless prior agreement by interested parties allows for other arrangements. For properties currently owned by Transmission Owners, some permitting and real estate costs may be included in the study.

Cost and Timing Estimates

The estimates in this report do not include tax gross-up.

While the information in this transmittal is reasonable for the scope of work defined, it should, however, be noted that the cost figures and time estimates are conceptual in nature at this stage, as an engineering team has not been assigned to the project. Any change to the scope of work will require that the estimates be revisited. The costs are a best estimate, but the developer will be charged for actual costs. Any under-runs or over-runs will be reconciled at the conclusion of the project.

General

The Queue Position# U1-068 project was studied as a 10MW capacity injection into the existing Caterpillar Tractor substation. Project U1-068 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. A simplified one line diagram of the existing facility is shown in Figure #1. The new proposed configuration, assuming the Interconnection Customer confirms the ability to complete this re-configuration as discussed in the Direct Connection facilities section of this report, is shown in figure #2.

Metering

The Interconnection Customer will be required to install and maintain metering and telemetry equipment to provide revenue metering and real-time telemetry data to PJM and the Transmission Owner. The PJM requirements for this equipment are listed in Appendix 2, section 8 of Attachment O to the PJM Tariff, as well as PJM Manuals 01 and 14D. The PJM and Transmission Owner requirements for Metering Equipment will be discussed in more detail in subsequent studies.

Design Requirements

The generation owner is responsible for specifying appropriate equipment and facilities such that the parallel generation is compatible with the FirstEnergy Transmission System. The generation owner is also responsible for meeting any applicable federal, state, and local codes. It is also the developer's responsibility to obtain any needed right-of-way between the plant site and FirstEnergy's facilities.

FirstEnergy will complete detailed relay coordination studies to identify off-site relay setting changes required due to this generation interconnection during the Facilities Study phase of this project. This may result in additional individual relay replacements being required. These relay replacements will be done at the cost of the developer.

Reactive Power

All increases in the capacity or energy output of any generation facility interconnected with the Transmission System, other than wind-powered and other non-synchronous generating facilities, shall be designed with the ability to maintain a composite power delivery at continuous rated power output at a power factor for all incremental MW of capacity or energy output, of at least 1.0 (unity) to 0.90 lagging. The existing generation must be able to maintain the previously specified power requirements.

Cost and Timing Estimates

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Direct Connection Facilities

Connection to the existing substation will require upgrade of the existing facility.

FirstEnergy has reviewed the current agreements associated with the existing facility, and has determined that the existing 115 kV substation configuration will not be compliant with current FirstEnergy requirements as listed in the FirstEnergy "Requirements for Transmission Connected Facilities" standard, with the proposed project implemented. Therefore the existing substation would require expansion to a ring bus configuration.

The proposed change to the Interconnection Facilities must be designed in accordance with the FirstEnergy "Requirements for Transmission Connected Facilities" document. Procedures for gaining access to these standards can be found at the link below.

http://www.pjm.com/planning/trans-standard.html

Below are conceptual estimates for the engineering/construction associated with Direct Connection requirements based upon similar projects that have been designed and/or constructed.

Item	Description	Conceptual Cost Estimate
1	Expansion of the existing substation – This expansion and the estimate provided assumes the following: 1. The Interconnection Customer will acquire all land required for this expansion 2. The Interconnection Customer will be responsible for relocation of the driveway adjacent to the switchyard in order to allow the expansion 3. There appears to be a small building to the North of the existing substation which may be a gas supply, and that there may be existing pipeline below this building. If this is correct, then the Interconnection Customer will be responsible to move the pipeline and the building in order to provide space for the expansion of the switchyard. The Interconnection Customer must provide information as to the existence of the gas pipeline, and the feasibility of moving the pipeline. If the pipeline, and building cannot be moved, then a new three breaker ring bus would need to be constructed.	$1,050,000

Conceptual Estimate:	$1,050,000
Estimated Lead Time:	3.0 years from signed CSA

Notes:
Detailed Engineering & Construction Estimates TBD via Facility Study
The above estimates do not include 1) tax gross-up, 2) property costs and site development up to rough grade which is to be provided by the Interconnection Customer, 3) interconnection metering and generation SCADA to be provided by the developer, 4) engineering and field activities for design review and commissioning of the Interconnection Customers facilities

Potential network impacts were as follows:

Generator Deliverability
(Single or N-1 contingencies for the Capacity Resource portion only of the interconnection)

No problems were identified.

Multiple Facility Contingency
(Double Circuit Tower Line for the full energy output. Stuck breaker and bus fault contingencies will be performed for the System Impact Study)

No problems were identified.

Contribution to Previously Identified Overloads
(This project contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

No problems were identified.

New System Reinforcements

None required

Contribution to Previously Identified System Reinforcements
(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the System Impact Study)

None required

Short Circuit

No short circuit study was required.

Figure #1
(existing configuration)

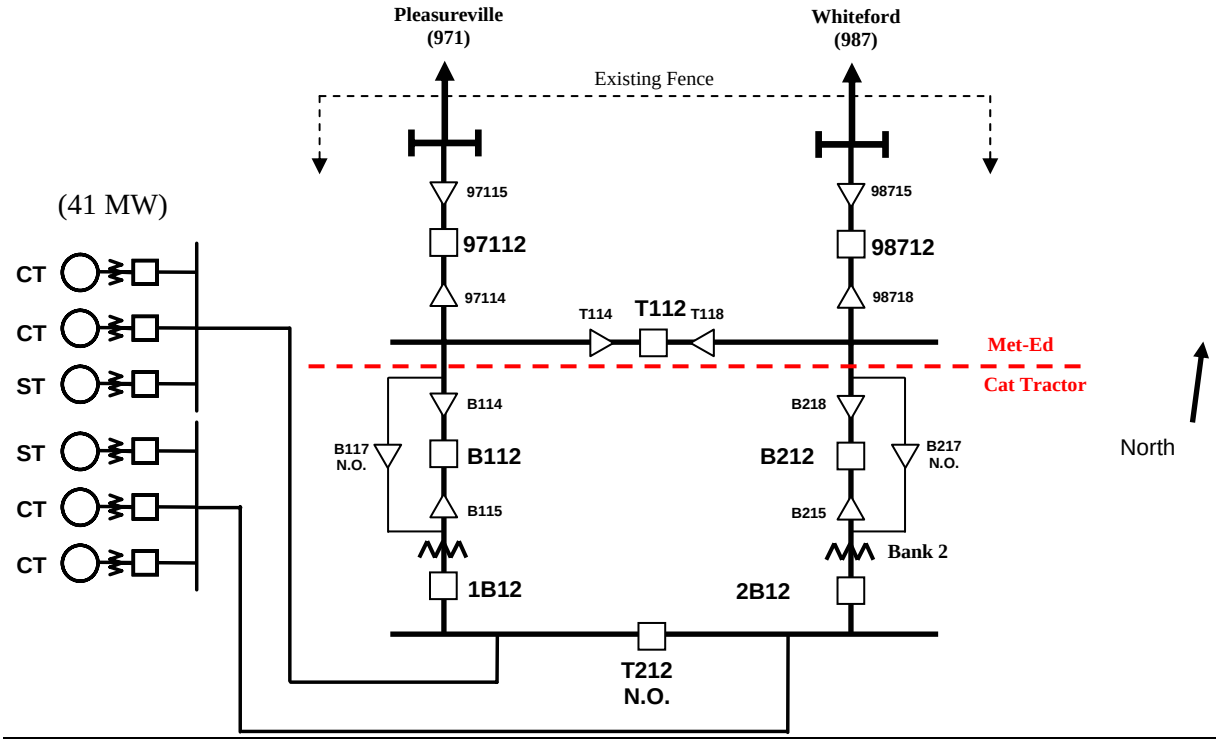

Figure #2
(proposed configuration)