PJM Generator Interconnection
T78 Aronlds Corner 34.5-kV
Feasibility Study

January 2008
DMS 465117

Confidential

Preface

The intent of the 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. All facilities required for interconnection of a generation interconnection project must be designed to meet the technical specifications for the appropriate transmission owner.

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 feasibility study, but the actual allocation will be deferred until the impact study is performed.

The Feasibility Study estimates do not include the feasibility, cost, or time required to obtain property rights and permits for construction of the required facilities. The project developer is responsible for the right of way, real estate, and construction permit issues. For properties currently owned by Transmission Owners, the costs may be included in the study.

Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, §110.1, as well as the Feasibility Study Agreement between Interconnection Customer(IC) and PJM Interconnection, LLC (PJM).

General

Queue Project T78 is a 9.9 MW interconnection request proposed onto Dominion Virginia Power's, the Interconnected Transmission Owner (ITO), 34.5 kV Distribution System. The requested site will interconnect at ITO's existing 34.5 kV Arnolds Corner Substation. The requested in-service date for the interconnection is October 1, 2008.

Network Impacts

The Queue T78 project was studied as a 10 MW increase in capacity to the existing Arnolds Corner 34.5 kV substation in the Dominion region. The project was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

Generator Deliverability

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

No Problems were identified.

Multiple Facility Contingency

(Double Circuit Tower Line contingencies only for the full energy output. Stuck breaker and bus fault contingencies will be performed for the 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

(Upgrades required to mitigate reliability criteria violations, i.e. "Network Impacts", initially caused by the addition of this project generation)

None.

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 Impact Study)

None.

Short Circuit

Not Required.

Dominion Facility Connection Requirements

Local Upgrades

Modifications to Existing Facilities:
The modifications required to the ITO's distribution system to accommodate 8.5 MW of generation capacity injected into the ITO's existing 3-phase 34.5 kV circuit from Arnolds Corner Substation will include the replacement of two existing hydraulic three-phase reclosers, 340R169 and 340R140 with two three-phase electronic reclosers with transfer trip capability. The estimated cost for the required upgrades is $100,000.

New Facilities:
The new facilities required to provide the interconnection will include:

1. Installation of an electronic recloser (340 RTBD) with transfer trip capability.
2. Installation of transfer trip capability on two existing three phase electronic reclosers.
3. Installation of transfer trip capability on the circuit breaker in Arnolds Corner Substation.
4. Installation of transfer trip capability on the transformer in Arnolds Corner Substation.
5. Installation of approximately 100 feet of a 3-phase overhead line segment.
6. Installation of approximately 2,100 feet of a 3-phase underground line segment with terminal poles for transition from overhead to underground at each end.
7. Installation of overhead line tension disconnects.
8. Installation of pole mounted bi-directional metering.

The estimated cost for the installation of new facilities to provide the interconnection is $325,000.

In addition to the ITO facilities indicated above, to provide a transfer trip circuit protection scheme, the IC will be responsible for providing and maintaining communication lines between the IC's main generator breaker and each of the ITO's five (5) up line reclosers, and between the IC's main generator breaker and the ITO's Arnold's Corner Substation. The IC will also be responsible for providing and maintaining telephone lines to the ITO's metering equipment at the Point of Interconnection. The IC provided 34.5 kV 3-phase circuit will interconnect overhead at the Point of Interconnection which will be the load side terminals of the ITO provided pole mounted bi-directional meter. It will be the IC's responsibility to obtain any required right-of-way between the ITO's existing facilities and the Point of Interconnection.

The estimated time for engineering, material acquisition and construction of this interconnection is approximately 8 months. This project will require a Railroad Crossing Permit to allow for the installation of conductors under the railroad tracks. This permitting process can take up to 6 months and has potential to delay the interconnection project. Detailed engineering, costs, material lead times and construction time requirements will be determined as part of the System Impact Study.