PJM Generator Interconnection
T163 Carter Fabrics 115-kV (50 MW)
Feasibility Study

April 2008
DMS #479335 (PJM.com version)

Introduction

This Feasibility Study has been prepared in accordance with the PJM Open Access Transmission Tariff, §36.2, as well as the Feasibility Study Agreement between Interconnection Customer (IC) and PJM Interconnection, LLC (PJM) (Transmission Provider).

Preface

The intent of the feasibility study is to determine a plan, with preliminary 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.

General

The Queue Project #T163 was studied as a 50 MW injection at the Carter Fabrics 115 kV substation in the Dominion area. Project #T163 was evaluated for compliance with reliability criteria for summer peak conditions in 2012.

Summary

Attachment Facilities:	$0.4M & 2yrs.
Direct Connection Network Upgrades:	$1.2M & 2yrs.
Non-Direct Connection Network Upgrades:	None
Total:	$1.6M & 2yrs.

Potential Network Impacts

Generator Deliverability

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

None.

Multiple Facility Contingency

(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)

None.

Short Circuit

(Summary form of Cost allocation for breakers will be inserted here if any)

None.

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)

None.

Stability and Reactive Power Requirement

(Results of the dynamic studies should be inserted here)

To be determined at the System Impact Study.

Dominion Analysis:

Dominion assessed the impact on the Dominion Transmission System that the proposed 50 MW injection of new generation capacity would have at the Carter Fabrics 115 kV Substation. The system was assessed using the Summer 2012 RTEP case provided to Dominion by PJM for this analysis. This analysis did include the impacts that higher order queue generators may have on the study results, specifically those generators located on the Dominion Transmission System which have a signed a PJM ISA or IISA and their associated network upgrades were also modeled. The following higher order queue projects were modeled in the PJM Summer 2012 case; P16, P27, Q69, Q71, R17, R63, S86-S96 and T10. When performing a generation analysis Dominion's main analysis will be load flow study results under single contingency (both normal and stressed system conditions) and import/export system conditions. Dominion Criteria consider a transmission facility overloaded if it exceeds 94% of its emergency rating under normal and stressed system conditions. For import /export studies

Dominion considers a transmission facility overloaded if it exceed 100% of its emergency rating. A full listing of Dominion's Planning Criteria and interconnection requirements can be found in the Company's Facility Connection Requirements which are publicly available at "http://www.dom.com/about/elec-transmission/pdf/Facility_Connection_Requirements.pdf"

As part of its generation impact analysis Dominion routinely evaluates the impact that a proposed new generation resource will have under maximum generation conditions and stressed system conditions. For the T163, these evaluations indicated no system deficiencies.

Non-Direct Connection Network Upgrades

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)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

None.

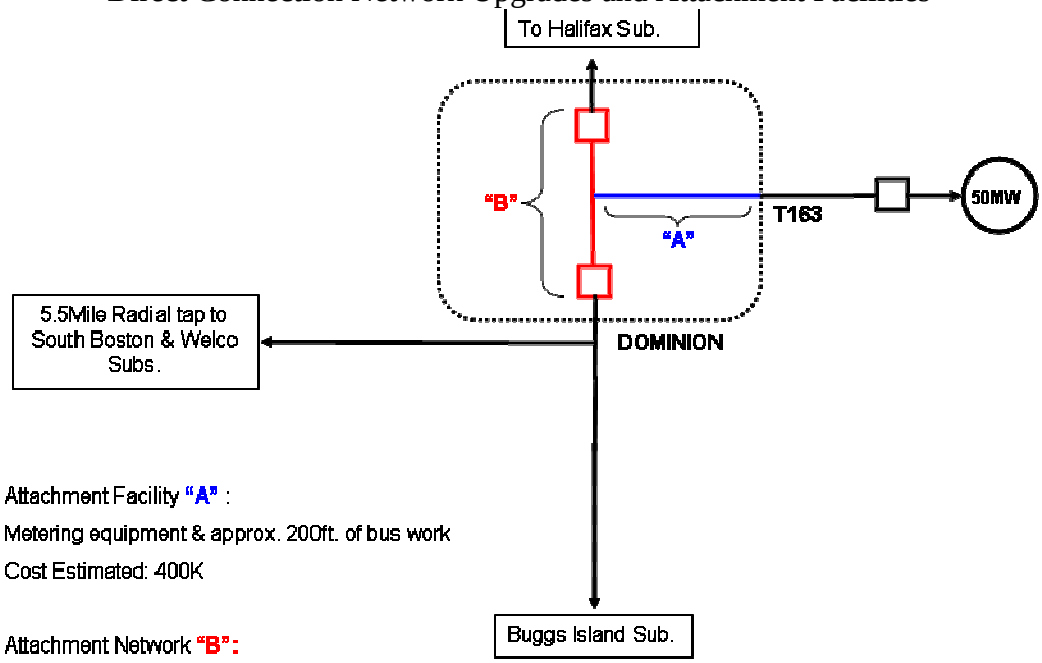
Direct Connection Network Upgrades

Dominion will install two breakers, and associated protection equipment, metering and control enclosure (see Figure 1). The cost estimate is $1.2 million and will take 18-24 months to engineer and complete.

Attachment Facilities

The estimated cost of Attachment Facilities, which also includes metering, protection equipment along with 200 feet of 115 kV bus work and associated equipment, is $400,000 dollars. The timing of this work will be coordinated with the Direct Connection Network Upgrades.

Figure 1
Direct Connection Network Upgrades and Attachment Facilities



Attachment Facility "A" :

Metering equipment & approx. 200ft. of bus work

Cost Estimated: 400K

Attachment Network "B":

Two (2) 115kV breakers, associated protection equipment and a control enclosure.

Cost Estimated: 1200K

Approximately 18 -24 months to engineer and construct.