

**PJM Generator Interconnection
W1-077 Shackelfords 34.5 kV
6 MW Capacity
Feasibility Study Report**

*July 2010
DMS #603863v1*

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 (TP). The Interconnected Transmission Owner (ITO) is Virginia Electric and Power Company.

Preface

The intent of this 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 IC. As a requirement for interconnection, IC 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 and the underlying system. All facilities required for interconnection of a generation interconnection project must be designed to meet ITO technical specifications.

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. IC is responsible for its right of way, real estate, and construction permit issues.

General

Queue W1-077 is an IC 6 MW Capacity resource interconnection consisting of a 6 MW increase to an existing land fill gas facility. W1-077 generation will be located near Shacklefords, North Carolina. Output from the generation will be connected to the 34.5 kV line wheeled through REC to Shacklefords substation.

Potential PJM Network Impacts

Queue project W1-077 was studied as a 6 Capacity injection into ITO system at the Shacklefords substation. Project W1-077 was evaluated for compliance with reliability criteria for summer peak conditions in 2014. Potential network impacts were as follows:

Generator Deliverability

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

No problems 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 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)

None.

Short Circuit

No problems identified.

System Stability Analysis

Dynamic studies, if required, are part of the System Impact Study.

Dominion Requirements

Dominion provided cost estimates for two options¹:

1. increase generation by 4 MW: reconductor costs are estimated at \$372,955 to reconductor #1/0. Reconductoring with #1/0 will limit maximum energy injections to 14 MW;

or

2. increase generation by 6 MW: Reconductor costs are estimated at \$552,942. Entire route changed to 246.9AL (or 477AL as equivalent cost substitute).

For both options, it is assumed as we discussed that the existing transfer trip and other protective equipment facilities installed initially are adequate (after required verification evaluation) for the increased capacity.

IC elected option 1. The duration of the re-conductoring is estimated to be 3 months.

¹ Dominion identified in an inspection of the co-operative and Dominion interface that it appears that the co-operative would need to reconductor several spans. Because the co-operative is not a FERC jurisdictional entity, IC needs to engage the co-operative separately from the PJM process.