

***PJM Generator Interconnection Request  
Queue X1-021  
Deptford (Deptford Solar) 13kV  
Feasibility/Impact Report***

**July 2011  
#655872**

## **Preface**

The intent of the feasibility study is to determine a plan, with ballpark cost and construction time estimates, to connect the subject generation to the PJM network at a location specified by the Interconnection Customer. The Interconnection Customer may request the interconnection of generation as a capacity resource or as an energy-only resource. As a requirement for interconnection, the Interconnection Customer may be responsible for the cost of constructing: (1) Direct Connections, which are new facilities and/or facilities upgrades needed to connect the generator to the PJM network, and (2) Network Upgrades, which are facility additions, or upgrades to existing facilities, that are needed to maintain the reliability of the PJM system.

In some instances a generator interconnection may not be responsible for 100% of the identified network upgrade cost because other transmission network uses, e.g. another generation interconnection, 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.

# **X1-021 Deptford (Deptford Solar) 13kV** **Feasibility/Impact Study**

## **General**

Pennoni Associates, Inc. has proposed a 5.0 MW solar project at 1845 Delsea Drive, Deptford, New Jersey 08096. The project in-service date is December 1, 2011. The name for the project is “Deptford Solar” The project will consist of 19054 Yingli 235 watt panels with 10 500kW inverters.

The project will be connected to the Deptford 8004 13kV circuit. There are no other solar projects connected to that circuit or on that the transformer at Deptford station. The project ties to the transmission system at Deptford 230kV.

## **Direct Connection**

The following is an estimate (including risk and contingencies) for the interconnection of 5.0 MW of solar generation to Deptford Solar project in Deptford, New Jersey. As previously specified, the interconnection will consist of a 13-kV Single line from Deptford 8004. The total interconnection cost of **\$319,172** is based on the most efficient possible route to the existing 13-kV infrastructure and is detailed as follows:

<u>Project Item</u>	<u>13-kV Single Line DPF8004</u>	
<b>Inside Plant</b>		
Line Position/Feeder Row	-	
Relay Protection	-	
Manholes/Conduit	-	
Other/Misc.	-	
Sub Total	\$0	
<b>Outside Plant</b>		
Overhead Line	\$219,672	
Underground Line	-	
Manholes/Conduit	-	
Other/Misc.	-	
Sub Total	\$219,672	
<b>Metering/Monitoring</b>		
Revenue Metering/Telemetering/SCADA	\$69,500	
Feeder Metering	\$30,000	(Note 1)
Other/Misc.	-	
Sub Total	\$99,500	
<b>Total Cost</b>	<b>\$319,172</b>	
<b>Acceptable Generation Level</b>		<b>Up to 5.0 MW</b>

This cost is exclusive of work required to be performed by the developer as specified in PSE&G's Information & Requirements for Electric Service Handbook. This work includes, but may not be limited to, the following

- Developer will adhere to specifications detailed in the PSE&G Information and Requirements for electric service handbook
- Developer is responsible for all trenching and the installation of conduits and manholes as normally required and specified by PSE&G
- Developer must obtain all permits and easements required to install the interconnection facilities
- Developer must provide access for the installation, maintenance and operation of all service equipment

It is anticipated that material procurement and construction will require 5-6 months from the date of project approval and authorization.

### Project Schedule

July 25, 2011

WMPA and IA (with PSE&G) are fully executed and authorization is received to proceed with construction  
Long lead time construction material is placed on order

August 7, 2011

Developer submits preliminary site plan, 13-kV switchgear one-line diagram and equipment specifications for approval

August 15, 2011

PSE&G provides comments on project lay-out and design

September 1, 2011

Developer submits final site plan, 13-kV switchgear one-line diagram and equipment specifications for approval

September 15, 2011

PSE&G commences line construction

October 1, 2011

PSE&G provides final comments and approval of 13-kV switchgear lay-out and design  
Developer begins construction based on approved design

October 15, 2011

Switchgear inspection and approval by PSE&G

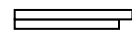
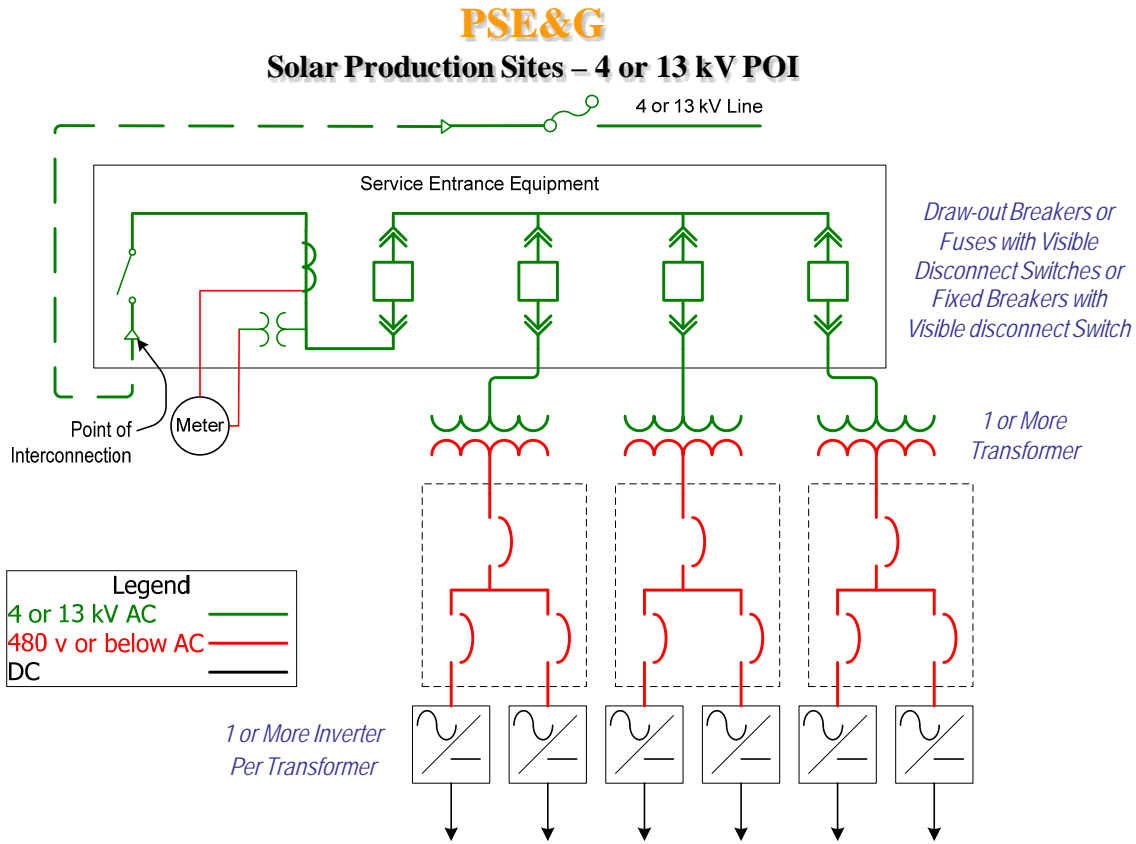
December 1, 2011

Completion of interconnection work and service cut-in

Notes:

- 1) Customer will abide by PSE&G Information and Requirements for electric service hand book
- 2) Customer is responsible to provide trench, conduit and manholes were applicable
- 3) Customer is responsible to provide access and easements
- 4) Customer is responsible to provide permits and associated costs.
- 5) Electric service route was based on most efficient route
- 6) Material procurement will be six months from project approval/authorization

**Figure #1**



**Network Impacts**

Queue project X1-021 was studied as a(n) 5.0 MW (1.9 MW of which was Capacity) injection into PSEG's system at the Deptford 1 13.0 kV substation. Project X1-021 was evaluated for compliance with reliability criteria for summer peak conditions in 2015.

**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, Line with Failed Breaker and Bus Fault contingencies for the full energy output)*

No problems identified.

**Short Circuit**

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

No problems identified

**Stability**

Not required because the project is less than 30 MW.

**System Reinforcements**

None

**Energy Portion of Interconnection Request**

*(PJM also studied the delivery of the energy portion of the surrounding generation. Any potential problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Transmission Interconnection request.*

*Note: Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed which analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.)*

No problems identified.