PJM Generator Interconnection Request
Queue X1-054
Burlington (Mansfield Solar) 26kV
Feasibility/Impact Report

October 2011
#656135

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.

X1-054 Burlington (Mansfield Solar) 26kV Feasibility/Impact Study

General

Rager Energy Consulting, LLC has proposed a 10.0 MW solar project at 1870 Jackson-Jobstown Road, Columbus, Burlington County, New Jersey 08022. The project in-service date is May 13, 2012.

Due to the withdrawal of the W2-087 project, the interconnection of the X1-054 project will now be to the P-120 26kV circuit instead of the Y-129 circuit. This will result in reduced interconnection costs.

Direct Connection

The following is an estimate (including risk and contingencies) for the interconnection of 10.0 MW of solar generation to Mansfield Solar project in Mansfield, New Jersey. As previously specified, the interconnection will consist of a 26-kV single line from the P-120 26kV circuit. The total interconnection cost of **$5,316,052** is based on the most efficient possible route to the existing 26-kV infrastructure and is detailed as follows:

Project Item		Original Option A 26-Kv Single Line Y-129	Revised Option A 26-Kv Single Line P-120	Difference
Inside Plant				
Line Position/Feeder Row		-	-	
Relay Protection		-	-	
Manholes/Conduit		-	-	
Other/Misc.		-	-	
	Sub Total	$0	$0	$0
Outside Plant				
Overhead Line		$7,370,418	$5,230,052	$2,140,367
Underground Line		-	-	
Manholes/Conduit		-	-	
Other/Misc.		-	-	
	Sub Total	$7,370,418	$5,230,052	$2,140,367
Metering/Monitoring				
Revenue Metering/Telemetering/SCADA		$86,000	$86,000	$0
Feeder Metering				
Other/Misc.		-	-	
	Sub Total	$86,000	$86,000	$0
Total Cost		**$7,456,418**	**$5,316,052**	$2,140,367
Acceptable Generation Level		**Up to 10.0 MW**	**Up to 10.0 MW**	

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

August 15, 2012

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

September 1, 2012

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

September 15, 2012

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

October 1, 2012

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

October 15, 2012

PSE&G commences line construction

November 1, 2012

PSE&G provides final comments and approval of 13-kV switchgear lay-out and design

Developer begins construction based on approved design

December15, 2012

Switchgear inspection and approval by PSE&G

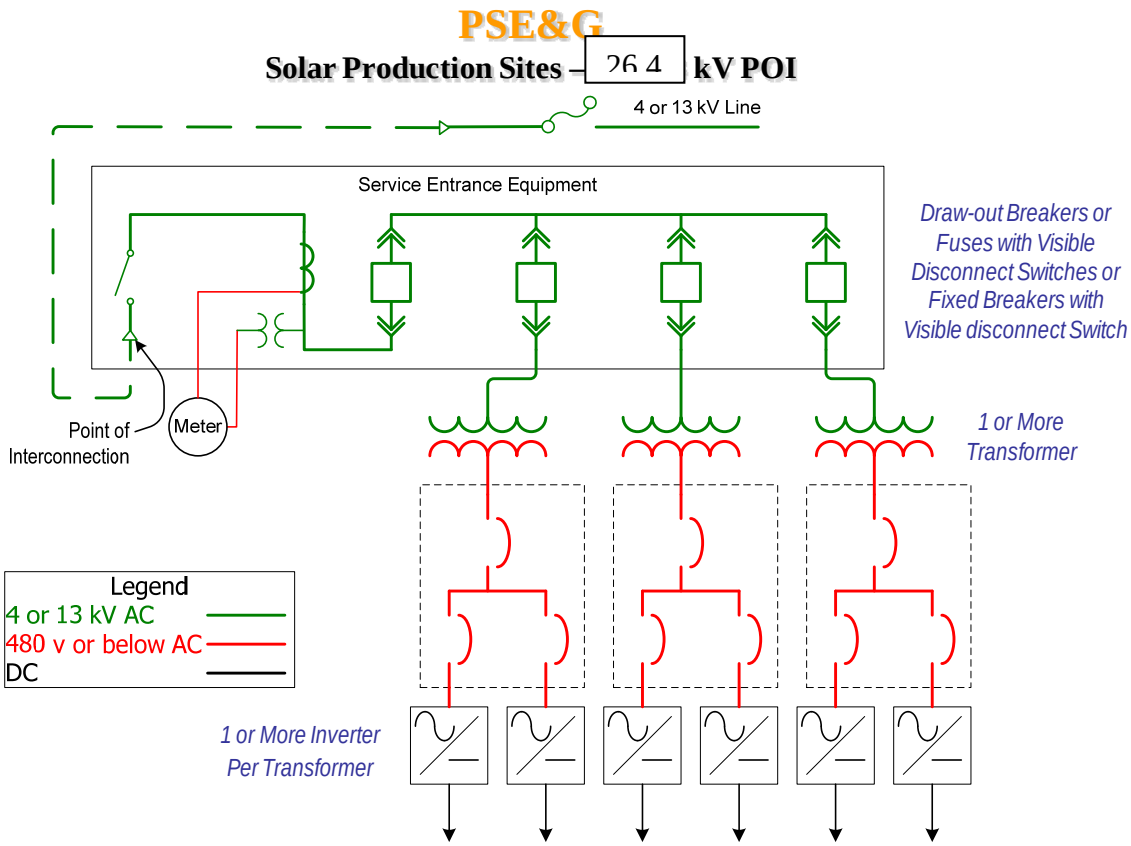
December 31, 2012

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 X1-054 was studied as a(n) 10.0 MW (3.8 MW of which was Capacity) injection into PSEG's system at the Burlington 26.0 kV substation. Project X1-054 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.

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General

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The project will be connected to the Y-129 circuit from Burlington station///.

Direct Connection

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The work involves the reconstruction and replacement of 278 utility poles and 7 miles of wire and will require until December 31, 2012 to complete.

Project Item		Option A 26-Kv Single Line Y-129
Inside Plant		
Line Position/Feeder Row		-
Relay Protection		-
Manholes/Conduit		-
Other/Misc.		-
	Sub Total	$0
Outside Plant		
Overhead Line		$7,370,418
Underground Line		-
Manholes/Conduit		-
Other/Misc.		-
	Sub Total	$7,370,418
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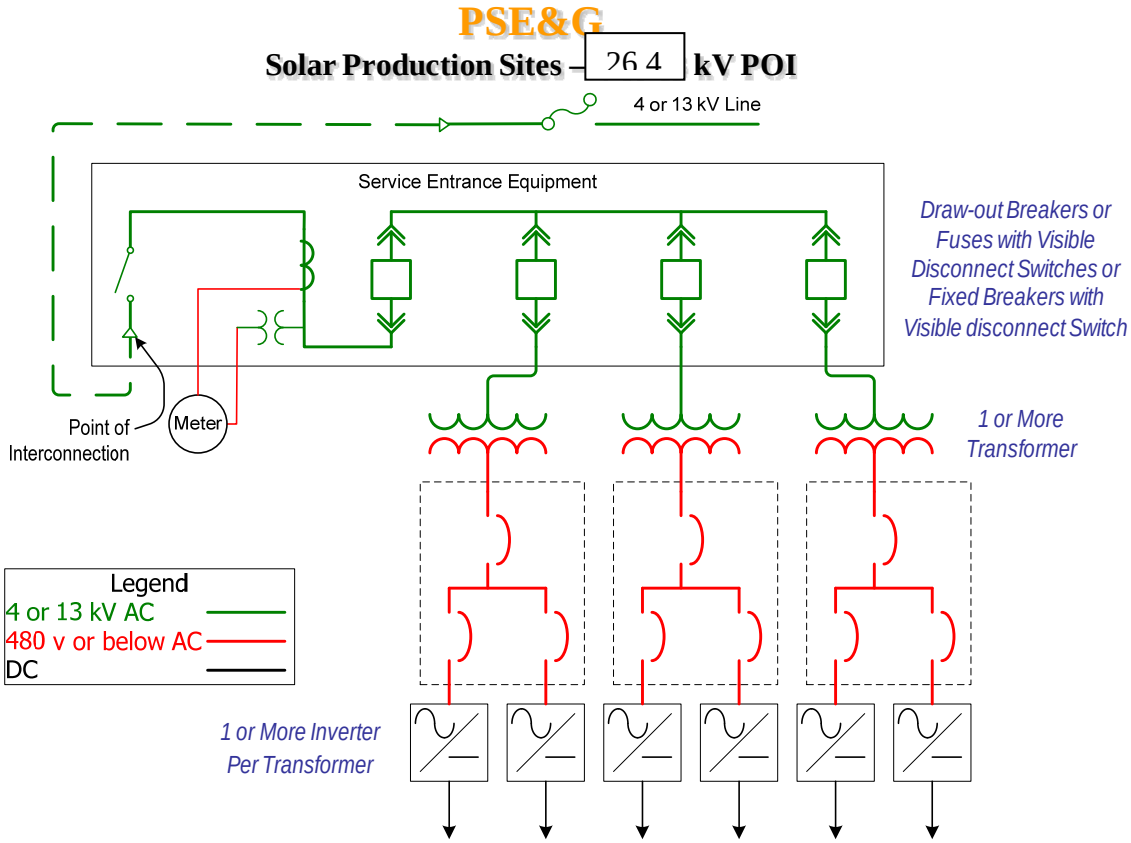

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