

***PJM Generator Interconnection
#K4 Camden 5MW
Feasibility / Impact Study***

January 2004
DMS#209241

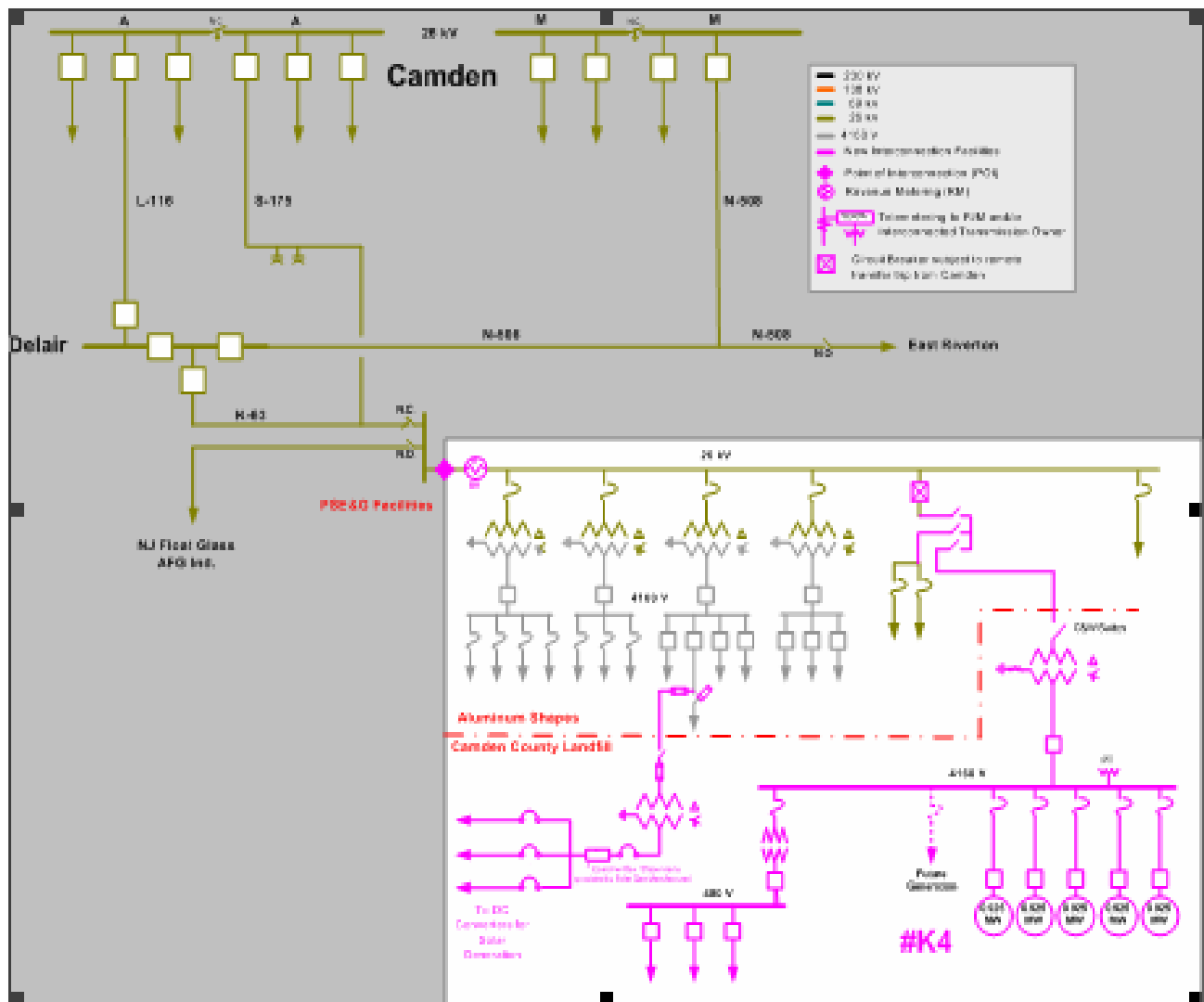
General

Queue #K4 is a PPL EnergyPlus Energy Resource interconnection request for 5 MW. The Interconnection Customer plans to connect 5.1 MW of aggregate generation consisting of five landfill gas fueled 0.925 MW engine-generators and five 100 KW solar panel generators. The net output to the system will not exceed 5.1 MW. The Generation Facility is located at Pennsauken Landfill / Aluminum Shapes, 9000 River Road, Delair, New Jersey.

Commercial operation for Phase I (potential of 3MW to the system) is scheduled for July/August 2004. Phase II (potential for an additional 2MW to the system) is scheduled for January 2005.

Direct Connection

Queue #K4 will be interconnection plan is shown on the online diagram below.



Interconnection Customer's Tentative Construction Schedule

Phase Ia (July/August 2004)

Construct PPL EnergyPlus 26kV connection to Aluminum Shapes. Add one 26kV CB at Aluminum Shapes, one 26kV-4160V (Delta-Wye Grounded) transformer, one 4160V transformer secondary CB, and install 4160V and 480V switchgear. Install three (3) 925KW landfill gas engine generators connected to the PPL EnergyPlus 4160V switchgear.

Phase Ib (July/August 2004)

Construct PPL EnergyPlus 5kV connection to Aluminum Shapes. Add one 5kV-208V transformer and disconnect switch. Install 500 kW of inverters and solar panel generators connected to the PPL EnergyPlus 208V transformer.

Phase IIa (January 2005)

Install two (2) 925KW landfill gas engine generators connected to the PPL EnergyPlus 4160V switchgear.

Point of Interconnection

The point of interconnection shall be the PSE&G 26kV tap to the Aluminum Shapes existing substation.

Remote Transfer Trip

Remote Transfer Trip equipment will automatically disconnect the generator from the Aluminum Shapes substation and the PSE&G system whenever the Camden Switching Station S-175 circuit breaker is open. Additionally, PSE&G reserves the right to disconnect the generator at certain times for the purpose of performing routine line or substation maintenance.

Direct Connection Interconnection Facilities requirements:

1. Install new transfer trip and tone equipment at Camden Switching Station to coordinate with the new 26kV circuit breaker installation at the Camden County Landfill/Aluminum Shapes Substation
2. Perform relay testing and operational testing on the Camden County Landfill/Aluminum Shapes new 26kV circuit breaker.
3. Purchase and install a new bi-directional revenue meter.
4. Purchase Data Acquisition Unit and terminate all cables from the required monitoring devices and perform operational testing. Add new points in existing monitoring system located in Lawrenceville Distribution Headquarters.

Material

- RFL Transfer Trip Equipment
- Relay Panel
- Misc. Equipment/Materials/Tags
- Bi-directional Revenue Meter
- Data Acquisition Unit Telemetry Equipment

Direct Connection - PSE&G Facilities Requirements (constructed by PSE&G at Interconnection Customer's cost)

1. Transfer Trip equipment – Camden Sub	\$ 85,400
2. Relay Testing – customer gen. facilities	\$ 8,000
3. Revenue Metering	\$ 2,200
4. Data Acquisition Unit	\$ 6,000
5. Project Management	<u>\$ 10,400</u>

TOTAL ESTIMATE **\$112,000**

The Queue #K4 commercial date of July/August 2004 can be met provided that “notice to proceed” is given by February 1, 2003. “Notice to proceed” will be issued following Customer execution of the Interconnection Service Agreement (ISA) and Construction Service Agreement (CSA). Estimated time for construction of PSE&G facilities requirements is approximately 6 months from “notice to proceed”.

Interconnection Customer Interconnection Facilities Requirements (constructed by Interconnection Customer)

1. Meet PSE&G “Applicable Technical Requirements and Standards” included in the Interconnection Service Agreement among PPL EnergyPlus, PSEG, and PJM.
2. Procure, Design, Engineer and install RFL transfer trip equipment at the customer's facility. PSE&G will provide the ordering information, drawings will be provided by RFL. PSE&G will perform operational testing prior to generator startup.
3. Install Data Acquisition Unit cabinet, pull cables from monitoring devices into the unit, and terminate at station equipment. PSE&G will terminate all cables inside the cabinet.
4. Licensing and Environmental issues, if any, will be the responsibility of the Interconnection Customer and is not included in this scope of work.

Interconnection Customer Telecommunication Requirements

The project will be required to order each of the following telecommunication circuits:

Remote Trip Equipment

The project will be required to order one (1) dedicated full duplex, four-wire data circuits, 4800 baud w/C-2 conditioning for the remote trip circuits. The circuit will be from Camden Switching Station to the Project. Please request Verizon to mark the circuits “DO NOT TEST”.

Southern Division Service Dispatcher Telemetry Equipment

The project will provide one voice grade dial-up telephone circuit for the Data Acquisition Unit. This circuit will provide monitoring of the 26kV interconnection to Distribution Systems, Division Headquarters, Lawrenceville, New Jersey.

Project Control Room

PSE&G may require one voice grade circuit that can be an extension off the Project's main switchboard. This phone line shall be for the exclusive use of coordinating generator operations with PSE&G Electric System Operations and Distribution Operations.

Network and Local System Impacts

The system, as planned, was evaluated for compliance with the PJM Regional Transmission Expansion Planning Process (RTEP) Transmission System reliability criteria. **The Camden Queue #K4 project was studied as an 5 MW maximum injection into the PSE&G system at the Aluminum Shapes 26kV bus.** The results are summarized below.

Normal System

No problems identified.

Single Contingency

No problems identified.

Second Contingency

No problems identified.

Stability (MAAC Criteria IV)

Not required because of generating unit size and electrical location.

CETO/CETL (MAAC Criteria III / VIIB)

No identified problems

Short Circuit Analysis

No problems identified.

Network Reinforcement Requirements

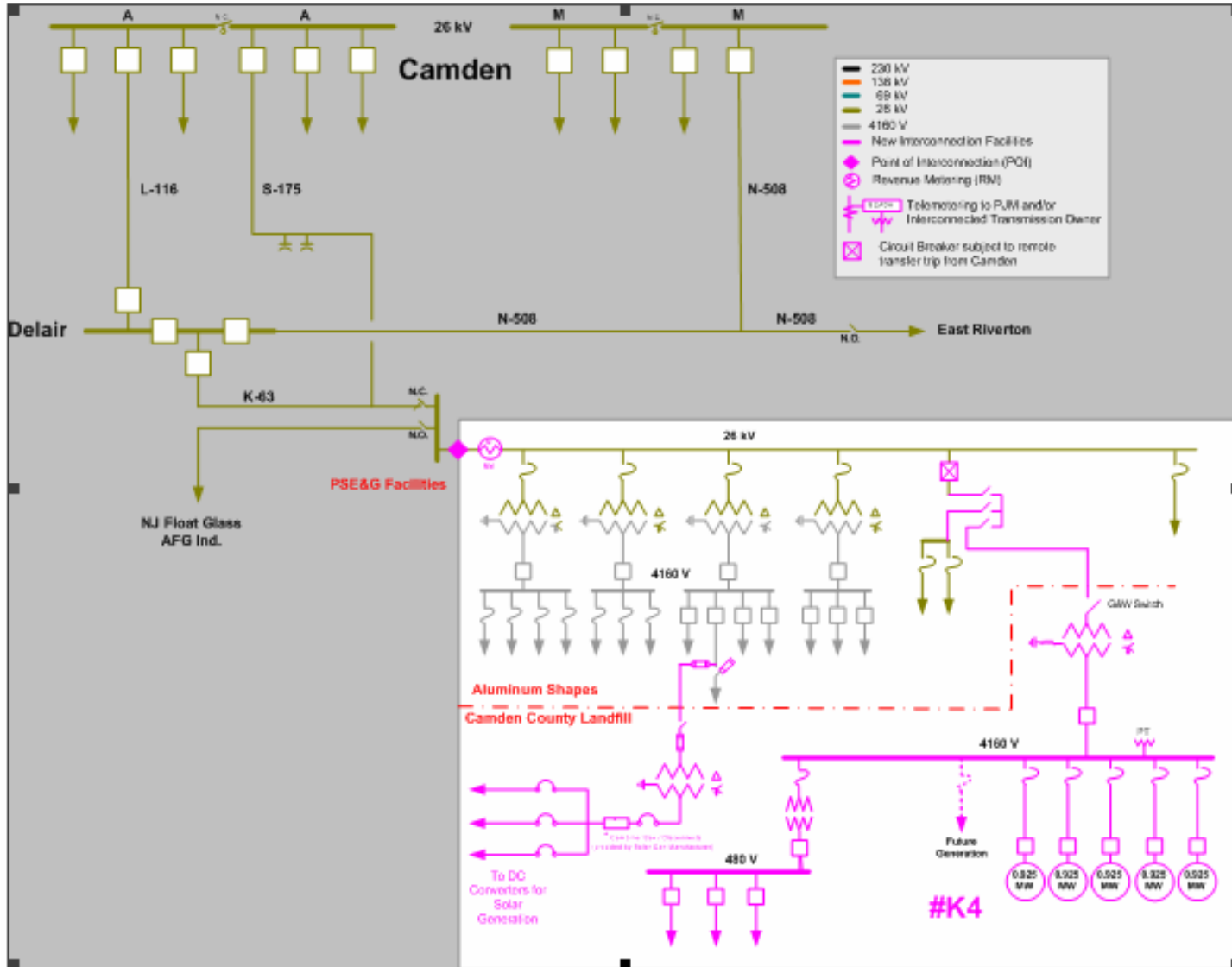
None.

Cost Allocation for Network Reinforcement Requirements

Not Applicable.

ATTACHMENTS

ATTACHMENT 2 – One line



ATTACHMENT 3 – Interconnection Customer's Single Line Diagrams for Generation Facilities

