PJM Generator Interconnection Request Queue #M07
PEI Power II, LLC; Generation Increase (Former A31)
(Peckville-Archbald 43.7 MW IPP)
Feasibility/Impact Study Report

November 2004
DMS# 290330

Archbald (M07) Feasibility/Impact Study

General

PEI Power II, LLC (PEI) has submitted a proposal to increase its generation output by 6.3 MW on Generator #2 (former queue position A31). The projected output would be 50.0 MW with this latest capacity increase. The increase is possible because of upgrades to the existing GE LM6000 turbine. Generator #1 is rated 25 MVA, but operates at 18.0 MW. Both turbines are installed at Archbald IPP, in Lackawanna County, Pennsylvania. The facility upgrades that provide the additional generation capability were completed in March 2004.

The intent of the feasibility/impact study is to determine system reinforcements and associated magnitude cost and construction time estimates required to facilitate the addition of the new generation to the PJM system. The reinforcements include the direct connection of the generator to the system and any network upgrades necessary to maintain the reliability of the PJM system.

Direct Connection

The direct connection facilities currently existing at Archbald IPP and the surrounding 69 kV system are of sufficient capability to permit an additional 6.3 MW of generation, resulting in 50.0 MW of generation from Generator #2. Generator #1 output remains unchanged at 18.0 MW.

Transmission Portion: No system reinforcement required.

Substation Portion: No system reinforcement required.

Scope of PPL Electric Utilities Corp. Work

- **Direct Connection Work – Transmission:** No system reinforcement required.
  - Cost Estimate: $0

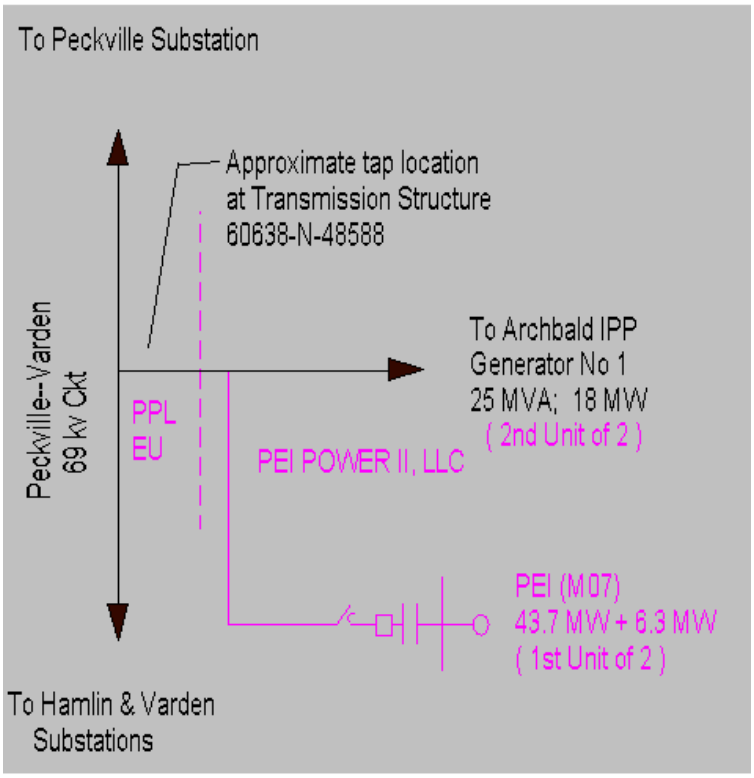
The estimated transmission costs, including applicable PA sales tax, are: $0

- **Direct Connection Work – Substation:** No system reinforcement required.
  - Cost Estimate: $0

The estimated substation costs, including applicable PA sales tax, are $0

The total cost for the direct connection of this IPP, including PA sales tax, is estimated to be $0.

Figure #1



Regulation Requirements of the Generation Project

The facility uses synchronous generators to produce electrical power. In order to eliminate significant voltage deviation, the Archbald IPP facility will need to operate at a unity power factor and not slightly leading (generator absorbing VARs). Based on 50.0 MW maximum output, PPL EU has determined that the 69 kV voltage at the intertie transformer will change less than 1% when the Archbald generation output ranges between zero and 50 MW at unity power factor.

At this time, no MW/MVAR schedule will be issued for this IPP because of its close electrical proximity to the Peckville regulated bus. In the past, Archbald IPP had been asked to operate at or near unity power factor over all MW output levels. This manner of operation will be sufficient for the 6.3 MW increase in output. If needed in the future, PPL EU will prepare a schedule for the 69 kV point-of-interconnection. The power factor calculation will be based on data provided by the IPP for its power transformer MVA rating, impedance, and X/R ratio.

Network Impacts

The PEI Power II, LLC project M07 was studied as 50.0 MW injection at the Peckville 230/69 kV substation. Project M07 was evaluated for compliance with reliability criteria for winter and summer peak conditions in 2008. Potential network impacts were as follows:

Generator Deliverability

Not required.

Multiple Facility Contingency – Tower Line Outages (MAAC Criteria IIC)

No identified problems.

Short Circuit

No identified problems.

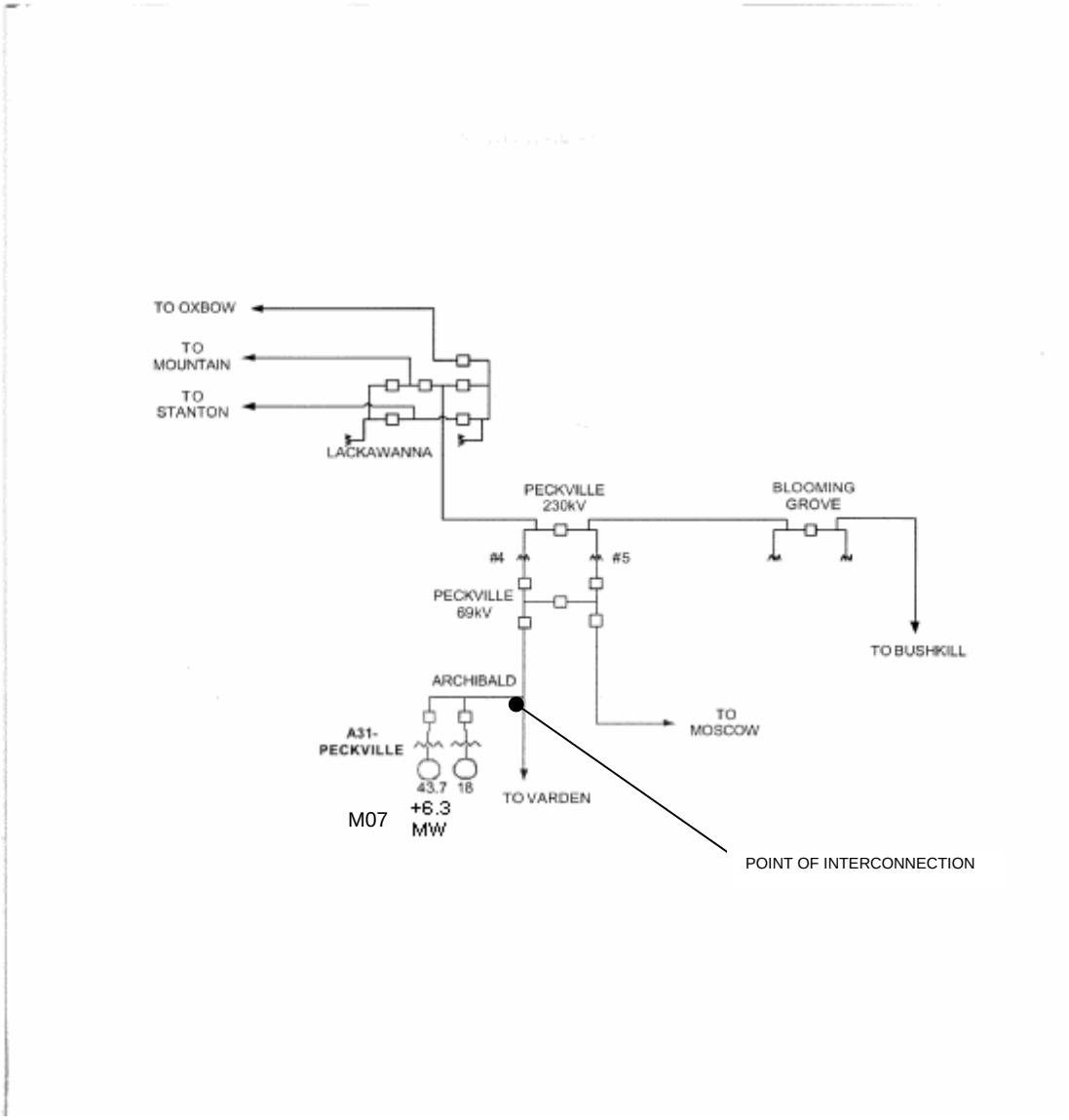
New System Reinforcements

No network upgrades are required for the interconnection of 50.0 MW of generation at the Archbald generating plant site to the Peckville-Varden 69 kV line.

Contribution to Previously Identified System Reinforcements

None.

Figure #2


TO OXBOW
TO MOUNTAIN
TO STANTON
LACKAWANNA
PECKVILLE 230kV
BLOOMING GROVE
#4
#5
PECKVILLE 69kV
TO BUSHKILL
ARCHIBALD
TO MOSCOW
A31-PECKVILLE
43.7
18
TO VARDEN
M07
+6.3 MW
POINT OF INTERCONNECTION