

#N38 West Newton-Lynn 138 kV
Generation Interconnection

This analysis was completed to assess the reliability impact for a new generator interconnecting to the PJM system as a capacity resource.

Network Impacts

The #N38 project was studied as a total injection of 120 MW (24 MW of capacity) into a tap of the W. Newton -- Lynn 138 kV circuit for impacts on the transmission system. Project #N38 was evaluated for compliance with reliability criteria for summer peak conditions in 2008. Potential network impacts were as follows:

The impact of the proposed generating facility on the AEP underlying voltage system was assessed for adherence with applicable reliability criteria. AEP planning criteria require that the transmission system meet Single Contingency performance criteria in accordance with the AEP FERC Form 715. Therefore, this criterion was used to assess the impact of the proposed facility on the AEP underlying voltage system. The N38 project was studied under summer 2006 conditions as a 120 MW gross capability project consistent with the interconnection application. The results are summarized below.

Normal System

- No problems identified.

Single Contingency (2006 Summer Conditions)

1. Following the loss of the South Kenton – Kenton 69 kV circuit #1, the South Kenton 138/69 kV 30 MVA Transformer #1 is projected to experience loadings up to 117% of its capability.
2. Following the loss of the East Lima – N38 Direct Connect Facility 138 kV circuit or the loss of the East Lima – Lafayette 69 kV line, the South Kenton 138/69 kV 30 MVA Transformer #2 (2-15 MVA banks in parallel) is projected to experience loadings up to 102% of its capability.
3. Following the loss of the South Kenton – Kenton 69 kV circuit #1, the South Kenton – Kenton 69 kV circuit #2 is projected to experience loadings up to 115% of its capability.

This report indicates upgrades that may be required due to single contingency conditions based upon the full energy output capability of the generation project. The basis for including these overloaded facility and corresponding upgrades is that the facilities are not in the list of facilities that the Transmission Owner has requested PJM to monitor in real time operations. As such, and under existing PJM rules, any out-of-merit dispatch required to relieve potential overloads for non-monitored facilities is paid for by the requesting Transmission Owner.

If the upgrades described are not completed, it would appear to shift the cost burden for overloads on facilities not monitored by PJM from the generating project to the Transmission Owner. PJM is presently reviewing the existing rules to determine if any changes are warranted.

Short Circuit Analysis

- No problems identified.

New System Reinforcement Costs (in 2005 dollars)

To maintain appropriate levels of reliability and mitigate the Single Contingency problems resulting from the additional generation identified in this study, the following system improvements are required. These improvements are shown in Exhibit 3.

1. Replace the existing South Kenton 138/69 kV 30 MVA Transformer #1 and two 138/69 kV 15 MVA transformers (30 MVA Transformer #2) with two 138/69 kV 50 MVA autotransformers. This includes all associated protection equipment, foundations, station service, etc. as required.

Estimated Cost* = \$2,500,000

Estimated Removal Cost* = \$50,000

Total Estimated Cost* = \$2,550,000

2. Reconductor approximately 2.8 miles of the South Kenton – Kenton #2 69 kV circuit with 556.5 kcmil ACSR conductor. Requires replacement of approximately 20 circuit structures.

Estimated Cost* = \$525,000

Estimated Removal Cost* = \$75,000

Total Estimated Cost* = \$600,000

Total Estimated System Reinforcement Cost* = \$3,150,000

*The estimates are preliminary in nature, as they were determined without the benefit of detailed engineering studies. Final estimates will require an on-site review and coordination with the Interconnection Customer to determine final construction requirements. It will take approximately nine months after obtaining the authorization to construct the facilities as outlined above.

Contribution to Previously Identified System Reinforcements

None