



# Generation Interconnections

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

## Network Impacts - 600 MW into the Brunner to West Hempfield 230 kV line.

### Network Impacts

All load flow studies were performed under the assumption that the Yorkanna-Otter Creek 230kv line and Otter Creek 230 kV substation are in-service. The B31 project cannot be granted capacity certification without Yorkanna-Otter Creek in service,

Network analysis was initially performed by injecting 600MW for the proposed B31 project into the existing Brunner Island-West Hempfield 230 kV circuit. The results are listed below.

### Normal System

- No identified problems.

### Multiple Facility Contingency (MAAC Criteria IIC)

- No identified problems.

### Generator Deliverability

- West Hempfield - B31 230 kV is overloaded at 109% of emergency rating for L/O Brunner - South Manheim 230 kV.

### Short Circuit Analysis

- Eleven circuit breakers at Brunner Island 230 kV substation and two circuit breakers at Manor 230 kV substation are overdutied when the new system configuration, as described in system Reinforcements below, is evaluated.

### System Reinforcements

The generator deliverability violation described above can be resolved by construction of a second Brunner Island-West Hempfield 230kV circuit with a new Marietta substation constructed to accept the new generation. . This new line would not be double circuited with the existing 230kv line. The

requirements are detailed below.

- Construction of approximately 6 miles of new 230 kV transmission line from Brunner Island to Marietta.  
Construction of approx. 8 miles of 230 kV transmission line from Marietta to West Hempfield 230 kV substation.  
Associated substation work to terminate the new line at West Hempfield and Brunner Island substations.

Total cost for these network enhancements is estimated at \$33 million and is expected to require 4-6 years for construction, since it is expected to require property condemnations to obtain right-of-way for the new line.

The short circuit criteria violations described above can be alleviated by the replacement of thirteen 230 kV breakers. The cost for replacement is estimated at \$3.9 million. Circuit breaker replacement is estimated to take 2-3 years.

Total network reinforcement costs for this project are estimated to be \$36.9 million and overall construction is estimated at 4-6 years.