



# 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 - 750MW Injection at Bergen

Potential network impacts for the injection of 750 MW at the Bergen 230 kV substation were evaluated for summer peak conditions in 2004. PJM was economically dispatched to determine the resulting generation pattern due to the additional 750 MW of generation.

Based upon this analysis, the 750 MW injection results in the following system upgrades that are required to maintain the reliability of the PJM system.

### A) Normal Conditions

- No system overloads. The Bergen-Leonia 230 kV circuit is at its normal rating.

### B) Single Contingency

- No system overloads.

### C) Tower Line Outages

- Contingency overloads occur on the Bergen-Leonia and the New Milford-Maywood 230 kV circuits for the loss of the Hudson-Belleville, Hudson Bergen 230 kV tower line.

### D) Short Circuit Analysis

- A short circuit screening analysis was done with the proposed Bergen unit in service. No breakers were identified as exceeding their interrupting capability.

The overload, described above, can be alleviated by developing a second Bergen-New Milford 230 kV circuit. This will be accomplished by constructing a new underground circuit from Leonia to New Milford, with a summer normal rating of 400 MVA and by converting the existing Bergen-Leonia 138 kV circuit to 230 kV operation. The new underground cable circuit from New Milford to Leonia is estimated to cost \$28.8 million and the conversion of the Bergen to Leonia circuit to 230 kV operation is estimated at \$3.2 million. With this network enhancement in place, the New Milford-Maywood overload can be alleviated by adjusting the Waldwick phase angle regulators.

At Bergen Substation the new line will be terminated in a position that was installed in

anticipation of a River Road circuit. At New Milford a 230 kV circuit breaker, 63kA interrupting capability, and underground line termination, 400 MVA summer normal rating, will be installed. At Leonia T1 and T3 transformers will have to be changed to accommodate the conversion to 230 kV operation. The substation requirements at the three locations are estimated to be \$4 million.

The construction of the above facilities would require a two year lead time.

Included is a system diagram showing the proposed changes.

[Diagram](#)