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 -750 MW Injection

Network impacts for the injection of 750 MW into a Limerick - Cromby 230kV circuit was evaluated for 2004 summer peak conditions.

Injection of 750 MW into a Limerick - Cromby 230kV circuit was evaluated for system normal conditions, single contingency outage conditions, and some multiple contingencies. **The analyses assumes that earlier projects, in the PJM Generator Interconnection queues, are already connected.** In addition, a limited breaker short circuit duty screening was also performed. Generator deliverability analysis, stability analysis, and the determination of cost allocation for network upgrade requirements are not performed within the scope of the feasibility study.

Based on the power flow analysis performed the following network impacts were identified:

Normal System

- Normal overload on the Conastone - Peach Bottom 500 kV circuit. The circuit is also overloaded for various single contingencies. This violation requires an upgrade of the Conastone - Peach Bottom 500 kV circuit (approx. 16.5 mi.) at an estimated cost of **$28,000,000**. This estimate is based on the cost to add a second 500 kV circuit and is dependent on the ability to obtain the necessary right-of-way. If it is determined that this circuit must be upgraded in the impact study, other alternatives will be investigated.

Single Contingency (MAAC Criteria IIA)

- Contingency overload on the TMI 500/230 kV transformer due to the outage of the Conastone - Peach Bottom 500 kV circuit. This violation requires the addition of a second TMI 500/230 kV transformer at an estimated cost of **$6,400,000**.

- Contingency overload on the Conastone 500/230 kV transformer due to the outage of the Conastone - Brighton 500 kV circuit. This violation requires the addition of a third Conastone 500/230 kV transformer at an estimated cost of **$20,000,000.**

- Contingency overload on the Nottingham - Graceton 230 kV circuit due to the outage of the Conastone-Peach Bottom 500 kV circuit. This violation requires rebuilding the Nottingham - Graceton 230 kV circuit at an estimated cost of **$30,000,000.**

- Contingency overload on the Limerick 500/230 kV transformers due to the outage of the Cromby - Barbadoes 230 kV circuit and contingency overload on the Barbadoes - Plymouth Meeting 230 kV circuit for the loss of the Limerick 500/230 kV transformers. These violations require the addition of a third Limerick 500/230 kV transformer at an estimated cost of **$11,200,000.**

- Contingency overload on the Buxmont - Whitpain 230 kV circuit due to the outage of the Conastone - Peach Bottom 500 kV circuit. This violation requires reconductoring the Buxmont Whitpain 230 kV circuit at an estimated cost of **$3,000,000.**

- Contingency overload on the Buckingham - Pleasant Valley 230 kV circuit due to the outage involving the Elroy - Whitpain 500 kV circuit. This problem requires rebuilding the Buckingham - Pleasant Valley line at an estimated cost of **$14,500,000.**

Double Circuit Tower Circuit Outages (MAAC Criteria IIC)

- No identified problems

Short Circuit Analysis

Six circuit breakers at the Limerick 230 kV substation may have to be replaced at an estimated cost of **$1,500,000.**