



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 - 450 MW Injection

Network impacts for the injection of 450 MW into two Morgantown - Talbert/Oak Grove 230 kV circuits were evaluated for 2004 summer peak conditions. Several generation scenarios were studied in an attempt to bracket expected system conditions for 2004.

Note: This evaluation assumes that 450 MW (Generator Interconnection Request # A58) is already connected to the other two Morgantown - Talbert/Oak Grove 230 kV circuits.

Based on the power flow analysis performed, the two Oak Grove - Burtonsville circuits and two "new Generation Substation" - Talbert 230 kV circuits exceeded their emergency rating by 11% and 13 % respectively for DCTL (Double-Circuit Transmission Line) contingency outages, and must be upgraded to two conductors per phase to obtain sufficient thermal capability. The estimated cost to upgrade to a two-conductor bundle on these circuits is \$52 million. The estimated time to perform this work is 3 to 4 years.

A summary of results is as follows:

- Contributes to increased normal loading of the two Oak Grove - Burtonsville 230 kV circuits. The flow on these circuits increased substantially but remained below their normal rating.
- Contributes substantially to single contingency loading on one Oak Grove - Burtonsville 230 kV circuit for the outage of the other Oak Grove - Burtonsville 230 kV circuit. The flow increased to 730 MVA versus the circuit's rating of 730 MVA, leaving no margin for unforeseen conditions.
- Contributes substantially to contingency overloads on the remaining Oak Grove - Burtonsville 230 kV circuit for the outage of one DCTL (Double-Circuit Transmission Line) between Oak Grove and Burtonsville substations. The flow increased to 810 MVA Versus the circuit's emergency rating of 730 MVA, exceeding the rating by approximately 11%.
- Contributes substantially to contingency overloads on the "new Generator Substation" - Talbert -Burches Hill/Oak Grove 230 kV circuit for the outage of one DCTL (Double-Circuit Transmission Line) between "new Generator Substation" and Talbert substations. The flow on the "new Generator Substation" - Talbert portion of the circuit increased to 785 MVA Versus the circuit's emergency rating of 692 MVA, exceeding the rating by

approximately 13%.

A Short Circuit analysis was performed to evaluate the increase of circuit breaker fault duties due to the addition of this generator. The fault duty for Chalk Point generating station and Oak Grove substation breakers was found to be close to their limits. The fault duty at Chalk Point is approximately 61,000 amperes which is slightly below the 63,000 ampere short circuit interrupting rating of the Chalk Point circuit breakers. The fault duty at Oak Grove substation is approximately 49,000 amperes versus a 50,000 ampere short circuit interrupting rating of the Oak Grove circuit breakers. Although higher than present levels, the duty remained below the present circuit breaker interrupting capabilities and, as such, no circuit breaker replacements are required.