

## **#P14 – McGirr Road – Mendota 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 #P14 project was studied as an 80 MW (16 MW of Capacity) injection into a tap of the segment of line 16901 that connects TSS 979 Mendota Hills Wind Farm and TSS 139 Mendota. Project #P14 was evaluated for compliance with PJM reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

### **Generator Deliverability**

No problems were identified

### **Multiple Facility Contingency**

1. The TSS 984 Tower Road-TSS 186 Steward 138 kV line 18623 loads from 87% to 102% of its load-dump rating (279 MVA) for the tower outage of 345 kV line 15616 & 138 kV line 15627. The load dump rating is determined by a relay limit and #P14 contributes approximately 40 MW to cause the violation.
2. Contribution of 40 MW to further overload the loading on the TSS 984 Tower Road-TDC 375 West Dekalb 138 kV line 11323 from 105% to 118% of its load-dump rating (300 MVA) for the tower outage of 345 kV line 15616 & 138 kV line 15627.
3. Contribution of 45 MW to further overload the loading on the TSS 113 Waterman-TDC 375 West Dekalb 138 kV line 11323 from 110% to 127% of its load-dump rating (259 MVA) for the tower outage of 345 kV lines 15502 & 16703.
4. Contribution of 37 MW to further overload the loading on the Bus Tie 2-3 Circuit Breaker at TSS 113 Waterman from 109% to 124% of its load-dump rating (247 MVA) for the tower outage of 345 kV lines 15502 & 16703.

### **Contribution to Previously Identified Overloads**

None

### **New System Reinforcements**

1. Upgrade relaying and associated CT's as necessary to achieve a minimum rating of 1470A SN, 1860A SE (351/445 MVA at 138 kV) on 138 kV line 18623 (previously numbered 11323) from TSS 186 to TSS 984. If TSS 984 drops from the queue, this upgrade will need to be re-evaluated.
2. Replace existing conductor (approx. 5.1 miles) and series equipment as necessary to achieve a minimum rating of 1470A SN, 1860A SE (351/445 MVA at 138 kV) on line 11323 all the way from TSS 984 to the tap to TDC 375. If TSS 984 drops from the queue, this upgrade will need to be re-evaluated.
3. Replace existing conductor (approx. 3.8 miles) and series equipment as necessary to achieve a minimum rating of 1470A SN, 1860A SE (351/445 MVA at 138 kV) on line

11323 from the tap to TDC 375 all the way to TSS113. If TSS 984 drops from the queue, this upgrade will need to be re-evaluated.

4. Upgrade BT2-3 circuit breaker at TSS 113 Waterman and associated series equipment to achieve a minimum rating of 3000A continuous. If TSS 984 drops from the queue, this upgrade will need to be re-evaluated.

**New System Reinforcements Cost Estimates:**

Qty	Item Description	Material	Labor	Total
<b>Relay Upgrades TSS 186 and TSS 984</b>				
2	Upgrade Relaying & CT's at TSS 186 and TSS 984	\$ 225,000	\$ 290,000	\$ 515,000

Qty	Item Description	Material	Labor	Total
<b>Transmission Line Reconstruction</b>				
9 Miles	Replace transmission towers and conductors from TSS 984 to TSS 113	\$ 5,058,000	\$ 12,078,000	\$ 17,136,000

Qty	Item Description	Material	Labor	Total
<b>Circuit Breaker Upgrade at TSS 113</b>				
1	Upgrade Circuit Breaker BT2-3 and series equipment at TSS 113 Waterman	\$ 126,000	\$ 75,000	\$ 201,000

**Contribution to Previously Identified System Reinforcements**

To be determined at the System Impact Study

**Short Circuit**

There were no overdutied circuit breakers due to #P14 identified at this time.

**Potential Issues**

**Impacts on the MISO member transmission systems are not included in this analysis, but they will be included in the Impact Study, which may reveal upgrades needed in the MISO system not identified in this Feasibility Study.**

Generation at #P14 project will need to be taken off-line during certain maintenance outages.

**Delivery of Energy Portion of Interconnection Request**

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below are likely to result in operational restrictions to the project under study. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request.

As a result of the aggregate energy resources in the area, the following violations were identified:

The TSS 169 McGirr Road-H440 138 kV line 16914 loads from 89% to 110% of its normal rating (209 MVA). The #P14 contributes approximately 44 MW to cause this thermal violation.