

#T187 Reybold 13 kV 20 MW  
**Generator 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 T187 project was studied as a 20 MW (net energy and Capacity) injection into the Reybold 13.8 kV bus and as a 20 MW load (while charging the flywheel) at Reybold 13.8 kV bus. Project T187 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

**NETWORK IMPACTS**

**Local Transmission System Impacts**

*(Normal system conditions with all facilities in service, and contingency analysis per documented Reliability Criteria, generally FERC Form 715, for Transmission Owner's underlying system)*

No problems identified.

**Generator Deliverability**

*(Normal System with all facilities in-service and Single, or N-1, contingencies for the Capacity portion only of the interconnection)*

No problems identified.

**Multiple Facility Contingency**

*(Double Circuit Tower Line contingencies only for the full energy output. Stuck breaker and bus fault contingencies will be performed for the Impact Study)*

No problems identified.

**Short Circuit Analysis**

No problems identified.

**Steady-State Voltage and Reactive Power Requirements**

*(Evaluation of steady-state voltage and reactive requirements)*

Will be performed for the Impact Study.

### **Stability**

Not required for 20 MW machine.

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

*(This project contributes to the following contingency overloads, i.e. “Network Impacts”, identified for earlier generation or transmission interconnection projects in the PJM Queue)*

1. The Red Lion – Hares Corner 138kV line loads from **107.56% to 108.79%** of its emergency rating (336MVA) for the line fault with stuck breaker outage (DP17). This project contributes approximately **5.1MW** to the thermal violation.
2. The Red Lion – Hares Corner 138kV line loads from **104.99% to 106.39%** of its emergency rating (336MVA) for the line fault with stuck breaker outage (PJM17). This project contributes approximately **5.9MW** to the thermal violation.

## **NETWORK UPGRADE REQUIREMENTS**

### **New System Reinforcements**

*(Upgrades required to mitigate reliability criteria violations, i.e. “Network Impacts”, initially caused by the addition of this project generation)*

None identified.

**Contribution to Previously Identified System Reinforcements** *(This project contributes to the Network Impact causing the need for these Network Upgrades. This project will be allocated a cost to be determined during the Impact Study)*

1. The Red Lion – Hares Corner 138kV line overload can be alleviated by reconductoring 6 miles of the line to achieve a line rating of 390N/483E MVA. The estimated cost of the upgrade is **\$3.6M**. It will take approximately **12 – 18 months** to complete the work. **This upgrade also mitigates Network Impact number 2.**
2. See Upgrade 1 above. Upgrade 1 also satisfies impact 2.

## POTENTIAL ISSUES

### **Delivery of the Energy Portion of Interconnection Request**

PJM also studied the delivery of the energy portion of this interconnection request. Any problems identified below may result in operational restrictions to the project under study or other PJM generation. The developer can proceed with network upgrades to eliminate the operational restriction at their discretion by submitting a Merchant Transmission Interconnection request. **These are not required reliability upgrades.**

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

No problems identified.