

#R72 Indian River 18 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***

Queue R72 was studied as an 18 MW increase in capacity to the Indian River Unit #4. Queue R72 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

**Generator Deliverability**

*(Single or N-1 contingencies for the Capacity portion only of the interconnection)*

No problems were 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 were identified

**Short Circuit**

Not required because the increase in Capacity to Unit #4 does not change the generator or step-up transformer impedance.

**Stability Analysis**

Not required because of the size of the MW increase.

**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 Milford - Steele 230 kV line is overloaded to **261%** of its emergency rating (551 MVA) for the **tower** outage of Red Lion - Cedar Creek 230 kV line and Red Lion - Cartanza 230 kV line (Cont Id. DBL\_4NC). The R72 contributes approximately **12 MW** to this overload. This overload was first observed for project #R36.
2. The Red Lion – Cedar Creek 230 kV line is overloaded at **121%** of its emergency rating (679 MVA) for the **tower** outage of #1 & #2 Keeney - Steele 230 kV

circuits (Cont Id. DBL\_1NCB). The R72 contributes approximately **8 MW** to the overload. This overload was first observed for project #R38.

3. The Steele - Keeney ckt#2 230 kV line is overloaded to **109%** of its emergency rating (805 MVA) for the **tower** outage of Red Lion - Cedar Creek 230 kV line and Red Lion - Cartanza 230 kV line (Cont Id. DBL\_4NC). The R72 contributes approximately **9 MW** to this overload. This overload was first observed for project #R38.
4. Queue R72 contributes to the contingency overload of Indian River 230kV bus ties #1 and #2 from **106% to 108.5% (2169 Amps or 864 MVA)** for loss of one bus tie on the other. The bus ties are rated (summer emergency) for 2000Amps (**796 MVA**). Queue Q42 was the first project to cause the overload.

### **New System Reinforcements**

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

None required.

### **Contribution to Previously Identified System Reinforcements**

*(Overloads initially caused by prior Queue positions with additional contribution to overloading by this project. This project may have a % allocation cost responsibility which will be calculated and reported for the Impact Study)*

1. Milford – Steele 230 kV Overload - This overload requires line re-conductor and rebuild at an estimated cost of **\$12M**. It would take **18 to 24 months** assuming no major regulatory or environmental impacts.
2. Red Lion – Cedar Creek 230 kV Overload - This overload requires conductor re-tensioning to increase the temperature rating of the existing conductor at an estimated cost of **\$8.4M**. It would take **18 to 24 months** assuming no major regulatory or environmental impacts.
3. Steele - Keeney ckt#2 230 kV Overload – This overload requires the addition of a second conductor per phase (conductor bundling) to the Steele – Keeney ckt#2 at a cost of about **\$20M** and can be constructed in about **24 months**.
4. The estimated cost to upgrade Indian River 230 kV bus ties #1 and #2 is **\$414,000**. Estimated construction time is **12 months**.

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