

**R52 – Mechanicsburg – Darby 69 kV**  
**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 #R52 project proposes a total of 300 MW (60 MW of Capacity) to be installed in the Dayton System as follows: 200 MW (40 MWC) into a tap of the Mechanicsburg-Givens 138 kV line and 100 MW (20 MWC) into the Kings Creek 69 kV substation. Project #R52 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

**Generator Deliverability**

No problems were identified

**Multiple Facility Contingency**

1. The Kings Creek - Logan 69 kV line is loaded from 85% to 109% of its emergency rating (72 MVA) for the **tower** outage of Sidney - Shelby 138 kV line and Shelby- E. Sidney-Quincy-Logan 138 kV line and Logan 138/69 kV transformer. This project contributes approximately 27 MW to cause the thermal violation.

**Contribution to Previously Identified Overloads**

No problems were identified

**New System Reinforcements**

The Kings Creek – Logan 69 kV circuit is to be upgraded with a new breaker/CT to eliminate the thermal overload.

**Contribution to Previously Identified System Reinforcements**

To be determined at the System Impact Study

**Short Circuit**

Four breakers at the Urbana 69 kV substation were overdutied.

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:

2. Contribution of 37 MW further congests the 765/500 kV Kammer transformer from 130% to 133% of its emergency rating (2094 MVA) for the outage of the Harrison-Belmont 500 kV line. The monitored facility was first congested by project P37.
3. Contribution of 5 MW further congests the Belmont - Harrison 500 kV line within from 123% to 125% of its emergency rating (2285 MVA) for the outage of the 502 Junction-Kammer 500 kV line. The monitored facility was first congested by project Q75.
4. Contribution of 34 MW further congests the Cabot - Keystone 500 kV line from 122% to 125% of its emergency rating (2598 MVA) for the outage of the Keystone-South Bend kV line. The monitored facility was first congested by project Q75.
5. Contribution of 28 MW further congests the South Bend - Keystone 500 kV line from 116% to 118% of its emergency rating (3013 MVA) for the outage of the Keystone-Cabot 500 kV line. The monitored facility was first congested by project Q75.
6. Contribution of 31 MW further congests the Harrison - Prunty Town 500 kV line from 112% to 114% of its emergency rating (3502 MVA) for the outage of the 500 kV three-terminal line 502 J.-Kammer-Harrison-G30\_W51. The monitored facility was first congested by project Q75.
7. Contribution of 10 MW causes congestion on the Woodstock-Marysville 69 kV for the loss of the 138/69 kV Darby transformer. Pre-and-post-R52 loadings on the monitored element are 99% and 119%, respectively.
8. Contribution of 47 MW causes congestion on the Kings Creek-Logan 69 kV for the loss of the 345/138 kV Shelby transformer. Pre-and-post-R52 loadings on the monitored element are 90% and 138%, respectively.