#Q01 – Olive-Dequine 345kV 500 MW

Generation Interconnection

This analysis was completed to assess the reliability impact for a new generator interconnecting to the PJM system as a 500 MW energy resource and a 100MW capacity resource.

Network Impacts

The #Q01 project was studied as a 500 MW (100 MW of Capacity) injection at two distinct points of the AEP system. Option #1 studies the interconnection request at a tap of the Olive-Duquine 345 kV line, while option #2 considers the injection into the Duquine 345 kV substation. Project #Q01 was evaluated for compliance with reliability criteria for summer peak conditions in 2011. Potential network impacts were as follows:

1. Option #1: Tapping into the Olive-Duquine 345 kV circuit:

Generator Deliverability (This evaluation is done at the Capacity value)
No problems were identified

Multiple Facility Contingency (This evaluation is done at the Full plant output)
The 765/500 kV Kammer transformer loading increases from 99% to 102% of its emergency rating (2094 MVA) for the Beverly-Tidd and Kammer-W. Bellair-Tidd 345 kV tower line outage. The Q01 contributes 50 MW to cause this thermal violation.

Short Circuit
No problems identified.

Contribution to Previously Identified Overloads

No problems were identified

New System Reinforcements

The overload of the Kammer transformer can be alleviated by replacing the existing 1500 MVA transformer with three single phase units rated at 600 MVA each and a 600 MVA spare and replacing other substation equipment as required. (Upgrade # n0480) The estimated cost for the replacement is **$ 18,000,000.** The estimated lead time for replacement is 24 months.

Contribution to Previously Identified System Reinforcements

None

Potential Issues

Impacts on the MISO member transmission systems are not included in this feasibility analysis, but they will be included in the Impact Study, and may reveal upgrades are required in the MISO system.

Delivery of Energy Portion of interconnection Request

PJM also studied the delivery of the energy portion of this interconnection request in addition to evaluating for Capacity Interconnection Rights. 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:

No problems were identified

2. Option #2: Into the Duquine 345 kV substation:

Generator Deliverability (This evaluation is done at the Capacity value)

No problems were identified

Multiple Facility Contingency (This evaluation is done at the Full plant output)

The 765/500 kV Kammer transformer loading increases from 99% to 102% of its emergency rating (2094 MVA) for the Beverly-Tidd and Kammer-W. Bellair-Tidd 345 kV tower line outage. The Q01 contributes 50 MW to cause this thermal violation.

Short Circuit

No problems identified

Contribution to Previously Identified Overloads

No problems were identified

New System Reinforcements

The overload of the Kammer transformer can be alleviated by replacing the existing 1500 MVA transformer with three single phase units rated at 600 MVA each and a 600 MVA spare and replacing other substation equipment as required. (Upgrade # n0480) The estimated cost for the replacement is **$ 18,000,000.** The estimated lead time for replacement is 24 months.

Contribution to Previously Identified System Reinforcements

None

Potential Issues

Impacts on the MISO member transmission systems are not included in this feasibility analysis, but they will be included in the Impact Study, and may reveal upgrades are required in the MISO system.

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:

No problems were identified