# N15 LaSalle 150 MW

# 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 - 150 MW Energy (30 MW Capacity) Injection

The system, as planned, was evaluated for compliance with reliability criteria. **The N15 LaSalle project was studied as 150 MW Energy (30 MW Capacity) Resource) interconnection.** The results are summarized below.

**Generator Deliverability**

No problems were identified (see * Note at the end of this section)

**Multiple Facility Contingency – Tower Line Outages**

1. The Mazon – Lasalle 138 kV circuit (#0108) is overloaded to **106%** of its emergency rating (182 MVA) for the Goodings Grove – East Frankfort (#11601) and Goodings Grove – East Frankfort (#11602) 345 kV tower line outage. The N15 project contributes approximately 20 MW to the contingency facility loading.

2. The Marseilles – Marseilles Tap 138 kV circuit (#1670) is overloaded to **104%** of its emergency rating (110 MVA) for the N15 – Lasalle – Mazon 138 kV tower line outage. The N15 contributes approximately 36 MW to the contingency facility loading. Also, the Marseilles 138/34.5 kV transformer is overloaded to **100.2%** of its emergency rating (114 MVA) for the N15 – Lasalle – Mazon 138 kV tower line outage. The N15 contributes approximately 36 MW to the contingency facility loading. This piece of equipment is owned by Illinois Power.

**Contribution to Previously Identified Overloads**

None

**New System Reinforcements**

1. Mazon – LaSalle 138kV upgrade may require 10 miles of conductor replacement with a larger conductor and 3.4 miles of rebuild (reconductor and replacement of wood poles with steel poles). Commonwealth Edison estimates reconductoring 138 kV at $500K / mile and rebuild at $2.0M / mile for a total cost estimate of **$11.8M**. Estimated time to complete construction is **12 to 18 months**.

2. IPCO Line 1670 (Marseilles to Marseilles tap) is contingency overloaded to 104% of its 110 MVA emergency rating or by 4.4 MVA (18 amps). An upgrade can involve anything from a simple re-tensioning to conductor replacement at an estimated cost of $500K/mile. Queue N15 contributes approximately 36 MW to this overload, therefore another solution for the developer is to reduce the project size by approximately 15% or so. However, it may be more prudent to wait until the Impact Study results are received because the withdrawal of other queued projects may alleviate the overload condition. The PJM Tariff allows for reduction of project size by 60% after the Feasibility Study and another 20% or 50 MW, whichever is greater, after the Impact Study.

3. The IPCO Marseilles 138kV - 34.5kV transformer contingency overload is only 0.2% or 0.23 MVA (about 1 amp at 138 kV). It is assumed that re-rating or additional cooling may be the worse case upgrade requirement. Queue N15 contingency loading contribution to the transformer is the same 36 MVA, therefore reducing the project size by about 1% would eliminate the need for this upgrade. Again, it may be best to wait until the Impact Study is completed.

   The Marseilles Tap – Marseilles line and 138kV-34.5kV transformer are both owned by IPCO (Illinois Power Company). IPCO or MISO has not been contacted about these Feasibility Study results at this time. If Queue N15 proceeds to an Impact Study, and the above mentioned facilities continue to be found contingency overloaded, a more in depth evaluation will be undertaken with the involvement of IPCO and MISO.

**Contribution to Previously Identified System Reinforcements**

None.

**Short Circuit**

A short circuit screening was performed. No requirements for circuit breaker replacement or upgrades were found.

*** Note**

- It should be noted that N15 can meet the Generator Deliverability (N-1 contingency) reliability criteria for the **30 MW Capacity** output without network upgrades, but may not meet the same criteria for its full energy output of 150 MW. As a result N15 may not be able to operate at its full 150 MW energy output due to congestion. Since PJM only requires network upgrades to achieve compliance with reliability criteria Queue N15 Feasibility Study will not identify an upgrade requirement for Generator Deliverability.

- With N15 and earlier generator interconnection project Queue L13_CE26 at full energy output, N15 will contribute to the (N-1) contingency overload of the Mazon – Lasalle 138 kV circuit for the outage of the Dresden transformer #83, for which condition, Queue L13_CE26 is the initial cause (if it is also delivering its full output of 175 MW) and N15 contributes to the overload. Queue N15 contributes approximately 16 MW to the Mazon – LaSalle 138 kV loading on Mazon – LaSalle 138 kV circuit for the outage of Dresden TR #83. Again, this may cause congestion but it is not a reliability violation which requires upgrade.