Queue #O29 Normandy 138kV

Generation Interconnection

Network Impacts

The #O29 project was studied as a total injection of 225 MW (45 MW of Capacity) into a tap of the Kewanee to Nelson/Dixon 138 kV circuit (#15508), while it is also directly connected to the #O09 generation interconnection request. Project #O29 was evaluated for compliance with reliability criteria for summer peak conditions in 2009. Potential network impacts were as follows:

Generator Deliverability

No problems were identified

Multiple Facility Contingency

1. The Nelson to Rock Falls 138 kV line (#15509) loads to from 39% to 108% of its load-dump rating (212 MVA) for the Nelson to Dixon Blue and Nelson to Dixon/#O29 Red 138 kV tower line outage (#15507 & #15508). The #O29 project contributes approximately 146 MW to cause this condition.
2. The Waterman to West DeKalb Tap 138kV line (#11323) loads from 95% to 99% of its load-dump rating (259 MVA) for the Byron to Cherry Valley 345kV tower line outage (#0621 & #0622). The #O29 project contributes approximately 11 MW to cause this condition.

Contribution to Previously Identified Overloads

1. The Rock Falls to #O09 138 kV line (#13311) loads from 55% to 124% of its load-dump rating (212 MVA) for the Nelson to Dixon Blue and Nelson to Dixon/#O29 Red 138 kV tower line outage (#15507 & #15508). The #O29 project contributes approximately 146 MW to this overloaded facility. A thermal violation on line #13311 was originally identified for the #O09 project for the Kewanee to #O09 and the Nelson to Dixon/Kewanee Red 138kV tower line outage (#7411 & #15508).
2. There is a potential overload on the Byron to Wempletown 345 kV circuit (#0624), for which project #O29 contributes 24 MW to the loading on the facility. PJM and ComEd are continuing to review the cause of and solution to the overload. The Impact Study for this project will define the cost allocation, if any, for this generation project. Rough estimates to eliminate the overload are around $20 million. Order of magnitude estimate of #O29 cost allocation responsibility for this potential overload is 50%.
3. It contributes 20 MW to the thermal violation of the Kammer 765/500 kV transformer in AP, which was originally caused by the #N42 project. The necessary reinforcements and associated cost estimates are being studied by AP and will be available at the Impact Study phase for this project.

New System Reinforcements

Cost Estimate:

TSS74 Kewanee		Material	Labor	Total
1	Replace 138kV circuit breaker	$ 379,200	$ 252,800	$ 632,000

TSS113 Waterman		Material	Labor	Total
1	Review and upgrade substation equipment for Line 11323 as necessary to meet or exceed the thermal capability. Review includes line and CB disconnects, leads, CT's, metering, relays, etc.	$ 300,000	$ 200,000	$ 500,000

TSS133 Rock Falls		Material	Labor	Total
1	Review and upgrade substation equipment for Line 15509 as necessary to meet or exceed the thermal capability. Review includes line and CB disconnects, leads, CT's, metering, relays, etc.	$ 300,000	$ 200,000	$ 500,000

Note: "Cost Estimate Notes" above apply to New System Reinforcement costs.

System Reinforcement Schedule

Estimated timeframe to complete engineering, procurement, and construction for the system reinforcements is approximately 18-24 months, and can be done concurrently with the Direct Connection schedule.

Contribution to Previously Identified System Reinforcements

To be determined

Short Circuit

The O29 project caused one circuit breaker on Line 7411 at TSS 74 Kewanee to become overdutied at 100.9% of the circuit breaker rating.

Potential Issues

Impact on the MISO member transmission Systems is not included in this analysis, but will be in the Impact Study, which possibly may reveal upgrades needed in the MISO system not identified in this Feasibility Study.