Generation Interconnection
Feasibility Study Report

For

PJM Generation Interconnection Request Queue Position AB2-154

Kendall

August 2016

Network Impacts

The Queue Project AB2-154 was evaluated as a 65.0 MW (Capacity 65.0 MW) uprate to the Y3-088, Y3-089, Y3-090 and Y3-091 projects at the Kendall substation in the ComEd area. Project AB2-154 was evaluated for compliance with applicable reliability planning criteria (PJM, NERC, NERC Regional Reliability Councils, and Transmission Owners). Project AB2-154 was studied with a commercial probability of 53%. Potential network impacts were as follows:

Summer Peak Analysis - 2020

Generator Deliverability

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

None

Multiple Facility Contingency

(Double Circuit Tower Line, Fault with a Stuck Breaker, and Bus Fault contingencies for the full energy output)

None

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. (CE - CE) The KENDALL ;BU-LOCKPORT ; B 345 kV line (from bus 274702 to bus 270810 ckt 1) loads from 131.61% to 133.72% (**DC power flow**) of its emergency rating (1479 MVA) for the single line contingency outage of '345-L10806_R-S'. This project contributes approximately 31.16 MW to the thermal violation.

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CONTINGENCY '345-L10806_R-S'
 TRIP BRANCH FROM BUS 274703 TO BUS 270811 CKT 1              / KENDA;RU 345 LOCKP; R 345
 END
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2. (CE - CE) The KENDALL ;BU-LOCKPORT ; B 345 kV line (from bus 274702 to bus 270810 ckt 1) loads from 103.08% to 104.76% (**DC power flow**) of its normal rating (1201 MVA) for non-contingency condition. This project contributes approximately 20.13 MW to the thermal violation.

3. (CE - CE) The KENDALL ;RU-LOCKPORT ; R 345 kV line (from bus 274703 to bus 270811 ckt 1) loads from 117.75% to 119.63% (**DC power flow**) of its emergency rating (1656 MVA) for the single line contingency outage of '345-L10805_B-S'. This project contributes approximately 31.23 MW to the thermal violation.

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CONTINGENCY '345-L10805_B-S'
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TRIP BRANCH FROM BUS 270810 TO BUS 274702 CKT 1 / LOCKP; B 345 KENDA;BU 345
END

Steady-State Voltage Requirements
(Results of the steady-state voltage studies should be inserted here)

To be determined

Short Circuit
(Summary of impacted circuit breakers)

Not required

Affected System Analysis & Mitigation

MISO Impacts:

MISO Impacts to be determined during later study phases (as applicable).

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.
Only the most severely overloaded conditions are listed. There is no guarantee of full delivery of energy for this project by fixing only the conditions listed in this section. With a Transmission Interconnection Request, a subsequent analysis will be performed, which will study all overload conditions associated with the overloaded element(s) identified.

Not Applicable

Light Load Analysis - 2020

Light Load Studies to be conducted during later study phases (as required by PJM Manual 14B).

System Reinforcements

Short Circuit
(Summary form of Cost allocation for breakers will be inserted here if any)

Not required

Stability and Reactive Power Requirement
(Results of the dynamic studies should be inserted here)

To be determined

Summer Peak Load Flow Analysis Reinforcements

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

None

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)
(Summary form of Cost allocation for transmission lines and transformers will be inserted here if any)

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Reinforcement: ComEd 345kV L10806 SSTE rating is 1568 MVA. Post contingency flow exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line as well as upgrade the station conductor at both stations- Kendall and Lockport. The new rating limit once this upgrade is complete will be 2293/2293/2293/2436 MVA, SN/SE/SSTE/SLD.
Cost: $18.2M
Time: 24-30 months.

2. (CE - CE) The KENDALL ;BU-LOCKPORT ; B 345 kV line (from bus 274702 to bus 270810 ckt 1) loads from 103.08% to 104.76% (**DC power flow**) of its normal rating (1201 MVA) for non-contingency condition. This project contributes approximately 20.13 MW to the thermal violation.

Reinforcement: ComEd 345kV L10805 SN rating is 1201 MVA. Post contingency flow exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line as well as upgrade the station conductor at Lockport. The new rating limit once this upgrade is complete will be 2293/2293/2436 MVA, SN/SE/SLD.
Cost: $17.2M
Time: 24-30 months.

3. (CE - CE) The KENDALL ;RU-LOCKPORT ; R 345 kV line (from bus 274703 to bus 270811 ckt 1) loads from 117.75% to 119.63% (**DC power flow**) of its emergency rating (1656 MVA) for the single line contingency outage of '345-L10805_B-S'. This project contributes approximately 31.23 MW to the thermal violation.

Reinforcement: ComEd 345kV L10805 SSTE rating is 1568 MVA. Post contingency flow exceeds the rating therefore an upgrade is required. The upgrade will be to re-conductor the line as well as upgrade the station conductor at both stations- Kendall and Lockport. The new rating limit once this upgrade is complete will be 2293/2293/2293/2436 MVA, SN/SE/SSTE/SLD.
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