PJM Generator Interconnection
W1-040 LaSalle 350MW
Feasibility Study

December 2011

DMS #678281

Confidential

General

Queue W1-040 is an Exelon Generation Company, LLC (Interconnection Customer) 350 MW uprate to the LaSalle Nuclear Station Units 1 and 2, 2601 N 21st Road, Marseilles, IL. As a result of the V1-024 and W1-040 requests, the Capacity Interconnection Rights for Unit 1 will increase from 1143.6 MW to 1318.6 MW (Maximum Facility Output of Unit 1: 1363 MW). As a result of the V1-025 and W1-040 requests, the Capacity Interconnection Rights for Unit 2 will increase from 1145.5 MW to 1320.5 MW (new Maximum Facility Output of Unit 2 will be 1366 MW). Queue W1-040 proposed an in-service date of April 10, 2016.

Direct Connection Requirements

LaSalle Units 1 and 2 are existing generating units and no changes to the attachment facilities are expected for the Transmission Owner Attachment Facilities.

Interconnection Customer Scope of Direct Connection Work

Queue W1-040 Interconnection Customer is responsible for all work on the W1-040 side of the POI (Point of Interconnection).

ComEd Scope of Direct Connection work

No ComEd Direct Connection work is required.

Network Impacts

Queue W1-040 was studied as an injection of 350 MW into the Station 1 LaSalle 345kV substation. Project W1-040 was evaluated for compliance with reliability criteria for summer peak conditions in 2015. . Potential network impacts were as follows:

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

1. The LaSalle-PLANO; B 345 kV line 0101 (from bus 892050 to bus 270846 ckt 1) loads from 99.06% to 107.02% (**DC power flow**) of its rating (1341 MVA) for the single line contingency ('345-L0102__R-S'). This project contributes approximately 106.64 MW to the thermal violation.

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CONTINGENCY '345-L0102__R-S'                                    / CONTINGENCY # 355
  TRIP BRANCH FROM BUS 270803 TO BUS 270847 CKT 1              / LASCO; R 345 PLANO; R 345
  END
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Multiple Facility Contingency
(Double Circuit Tower Line contingencies only with full energy output. Stuck Breaker and Bus Fault contingencies will be applied during the Impact Study)

No violations identified.

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. The PLANO; B-ELECT; B 345 kV line (from bus 270846 to bus 270730 ckt 1) loads from 114.75% to 117.49% (**DC power flow**) of its rating (1341 MVA) for the single line contingency ('345-L16703_R-S'). This project contributes approximately 36.79 MW to the thermal violation.

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CONTINGENCY '345-L16703_R-S'                                    / CONTINGENCY # 515
  TRIP BRANCH FROM BUS 270847 TO BUS 270731 CKT 1              / PLANO; R 345 ELECT;4R 345
  END
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2. The PLANO; R-ELECT;4R 345 kV line (from bus 270847 to bus 270731 ckt 1) loads from 126.56% to 129.48% (**DC power flow**) of its rating (1341 MVA) for the single line contingency ('345-L16704_B-S'). This project contributes approximately 39.14 MW to the thermal violation.

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CONTINGENCY '345-L16704_B-S'                                    / CONTINGENCY # 591
  TRIP BRANCH FROM BUS 270846 TO BUS 270730 CKT 1              / PLANO; B 345 ELECT; B 345
  TRIP BRANCH FROM BUS 272250 TO BUS 272278 CKT 2              / PLANO; B 138 PLANO;1I 138
  TRIP BRANCH FROM BUS 270846 TO BUS 272278 TO BUS 275354 CKT 1  / PLANO; B 345 PLANO;1I 138
PLANO;1C 34.5
  END
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New System Reinforcements

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

The overload on the portion of 345kV line 0101 from the interconnection point of the #W1-040 project to the 345kV blue bus at TSS 167 Plano can be relieved by upgrading 3-345 kV circuit breakers to achieve a higher rating. The estimated cost for this upgrade is $6,000,000.

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.)

Prior projects in the PJM Queue demonstrated the need to construct new 765 kV lines from Collins Station 23 to the AEP system. This project may have a cost allocation for the following previously identified system reinforcements:

- Expansion of the 765 kV bus at Station 23 Collins to accommodate the additional circuits
- Construction of a new 765 kV circuit from Station 23 Collins east to Meadowlake substation in AEP
- Construction of a new 765 kV circuit from Station 23 Collins east to Sullivan substation in AEP
- Construction of a new 765/345 kV autotransformer at Station 23 Collins
- Relocation of existing 765kV line 2315
- Construction of a new 345 kV red/blue bus tie circuit breaker at TSS 935 Kendall County Energy Center
- Construction of two new 345 kV lines between Station 6 Byron and TSS144 Wayne

Additional studies will be performed during the System Impact and Facilities Studies to determine the optimum plan to address these issues. Studies will also be performed regarding cost allocation among the various projects.

Short Circuit
(Report over-dutied breakers.)

Will be performed for the Impact Study.

Stability Analysis

To be determined in the System Impact Study.. This request represents a significant increase in power output of these large units. It is likely that there will be additional system reinforcements required as a result of the stability analysis.

Power Factor and Reactive Requirements

Will be performed for the Impact Study.

Energy Portion of Interconnection Request
PJM also studied the delivery of the energy portion of the surrounding generation. Any potential 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 Transmission Interconnection request.
Note: *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 analyzes all overload conditions associated with the overloaded element(s) identified. As a result of the aggregate energy resources in the area, the following violations were identified.*

No violations identified.

Potential Issues

Impacts on the MISO member transmission systems are not included in this analysis, but they will be included in the Impact Study, which may reveal upgrades needed in the MISO system not identified in this Feasibility Study.