Generation Interconnection Feasibility Study Report
For
Queue Position X2-019
Silver Lake

May 2012

The Interconnection Customer (IC), has proposed a 225 MWE (180 MWC) natural gas fired simple cycle gas turbine generating facility. The project is to be located adjacent to Commonwealth Edison's TSS 138 Silver Lake Substation. The project was evaluated for compliance with reliability criteria for summer peak conditions in 2015. The IC had requested a proposed in-service date, as stated in Attachment N, of May 2015.

The Interconnection customer has requested two Points of Interconnection (POI) be studied.

Attachment Facilities for Primary POI

The proposed interconnection of X2-019 into the existing TSS 138 Silver Lake 138kV bus is shown in Figure #1.

ComEd Scope of Direct Connection work

The costs reflected in this report assumes ComEd will be responsible for design and construction for the within the existing TSS 138 Silver Lake substation. This includes:

One new breaker bay position at TSS 138 Silver Lake substation consisting of a 138 kV Circuit Breaker, Dead End Structure, Motor Operated Disconnect Switch, foundations, wiring, conduit, CCVT and relaying. Also included is the cost of revenue quality metering at the Point of Interconnection. This metering shall be capable to provide bi-directional revenue metering (KWH, KVARH) and real time data (KW, KVAR, Voltage) for the generating resource both to PJM (See PJM Manuals M-01 and M-14D, and PJM Tariff Section 58.1 through 58.5) and ComEd (See ComEd Applicable Technical Requirements and Standards available on the PJM website ("TO Standards") – "Exelon Energy Delivery Interconnection Guidelines (Generators Greater than 20 MW)").

Interconnection Customer shall have the right to install, own, operate, test and maintain the necessary Metering Equipment. If the Interconnection Customer does not exercise this option, the Interconnected Transmission Owner shall have the option to install, own,

operate, test and maintain all necessary Metering Equipment at the Point of Interconnection

ComEd has estimated this to cost approximately $1,750,000. ComEd estimates to build the Interconnection Substation in approximately 18-24 months from execution of the Interconnection Service Agreement and Interconnection Construction Service Agreement.

Interconnection Customer Scope of Direct Connection Work

The Interconnection Customer is responsible for constructing all of the facilities on the Interconnection Customer side of the point of interconnection outside of the substation. It will be the Interconnection Customer's responsibility to obtain any required right-of-way between the Interconnection Substation and existing ComEd substation.

Interconnection Customer is responsible for all work on the X2-019 side of the POI (Point of Interconnection).

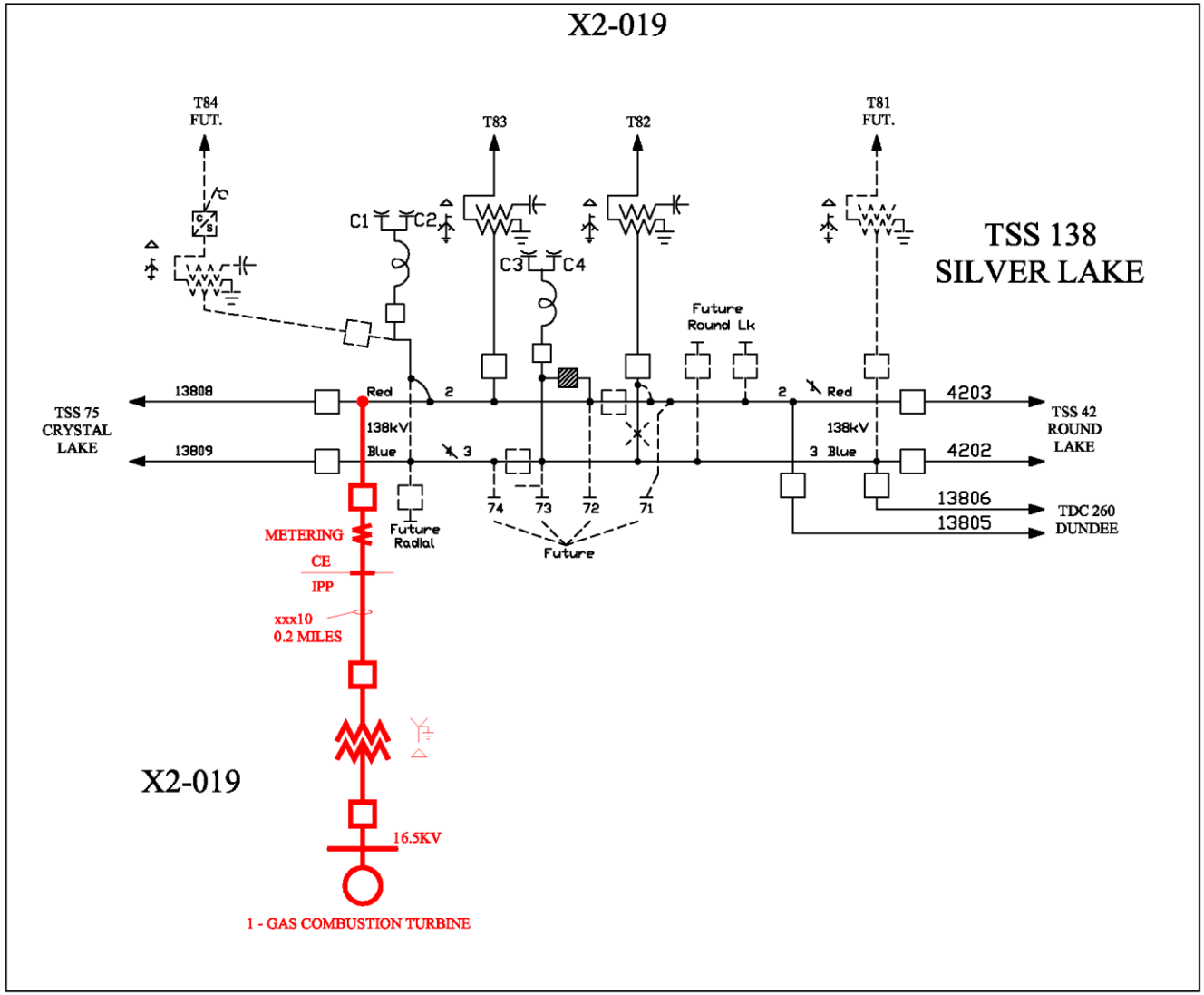

Figure 1

Network Impacts for Primary POI

The Queue Project X2-019 was studied as a(n) 225.0MW(Capacity180.0MW) injection into ComEd's system on the 138kV (red) bus at TSS 138 Silver Lake. Project X2-019 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)

No violations identified.

Multiple Facility Contingency
(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)

No violations identified.

Short Circuit

To be determined in the System Impact Study

Steady-State Voltage Requirements

To be determined in the System Impact Study

Stability and Reactive Power Requirement

To be determined in the System Impact Study

New System Reinforcements

None required

Contribution to Previously Identified System Reinforcements

None required

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*.

None identified.

Attachment Facilities for Alternate POI

The proposed alternate POI for X2-019 is into the existing TSS 138 Silver Lake 345kV bus.

ComEd Scope of Direct Connection work

The costs reflected in this report assumes ComEd will be responsible for design and construction for the within the existing TSS 138 Silver Lake substation. This includes:

Expanding the TSS 138 Silver Lake 345kV ring bus with the addition of a 345 kV Circuit Breaker, Dead End Structure, Motor Operated Disconnect Switch, foundations, wiring, conduit, CCVT and relaying. Also included is the cost of revenue quality metering at the Point of Interconnection. This metering shall be capable to provide bi-directional revenue metering (KWH, KVARH) and real time data (KW, KVAR, Voltage) for the generating resource both to PJM (See PJM Manuals M-01 and M-14D, and PJM Tariff Section 58.1 through 58.5) and ComEd (See ComEd Applicable Technical Requirements and Standards available on the PJM website ("TO Standards") – "Exelon Energy Delivery Interconnection Guidelines (Generators Greater than 20 MW)").

Interconnection Customer shall have the right to install, own, operate, test and maintain the necessary Metering Equipment. If the Interconnection Customer does not exercise this option, the Interconnected Transmission Owner shall have the option to install, own, operate, test and maintain all necessary Metering Equipment at the Point of Interconnection

ComEd has estimated this to cost approximately $3,500,000. ComEd estimates to build the Interconnection Substation in approximately 18-24 months from execution of the Interconnection Service Agreement and Interconnection Construction Service Agreement.

Interconnection Customer Scope of Direct Connection Work

The Interconnection Customer is responsible for constructing all of the facilities on the Interconnection Customer side of the point of interconnection outside of the substation. It will be the Interconnection Customer's responsibility to obtain any required right-of-way between the Interconnection Substation and existing ComEd substation.

Interconnection Customer is responsible for all work on the X2-019 side of the POI (Point of Interconnection).

Network Impacts for Alternate POI

The Queue Project X2-019 was studied as a(n) 225.0MW(Capacity180.0MW) injection into ComEd's system on the 345kV bus at TSS 138 Silver Lake. Project X2-019 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)

No violations identified.

Multiple Facility Contingency
(Double Circuit Tower Line, Line with Failed Breaker and Bus Fault contingencies for the full energy output)

No violations identified.

Short Circuit

To be determined in the System Impact Study

Steady-State Voltage Requirements

To be determined in the System Impact Study

Stability and Reactive Power Requirement

To be determined in the System Impact Study

New System Reinforcements

None required

Contribution to Previously Identified System Reinforcements

None required

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.

None identified.

Common Potential Issues (either POI)

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.