#U3-021– Silver Lake – Cherry Valley 345kV
Generation Interconnection

Network Impacts

The queue U3-021 project was studied as a 100MW capacity injection into ComEd's system. The point of interconnection was modeled as a line tap of the Cherry Valley – Silver Lake 345kV red circuit. Project U3-021 was evaluated for compliance with reliability criteria for summer peak conditions in 2013. Potential network impacts were as follows:

Generator Deliverability

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

No problems were identified.

Multiple Facility Contingency

(Double Circuit Tower Line contingencies were studied for the full energy output. The contingencies of Line with Failed Breaker and Bus Fault will be performed for the Impact Study.)

No problems were identified.

Short Circuit

(Summary of impacted circuit breakers)

To be determined in the System Impact Study.

Contribution to Previously Identified Overloads

(U3-021 contributes to the following contingency overloads, i.e. "Network Impacts", identified for earlier generation or transmission interconnection projects in the PJM Queue)

Table 1 - Contribution to Previously Identified Overloads

Item	Project	Contribution MW	Overloaded Element	Overload %		Rating		Contingency
				From	To	Type	MVA	
1a	U3-021	42.6	Lee County to Nelson 345kV line 15501	115.8%	117.9%	Applicable Load Dump Rating	2024	Tower outage of Silver Lake to Cherry Valley 345kV line 15616 and Glidden to Cherry Valley 138kV line 15627 ('345-L15616__-R_+_138-L15627_R-R_U3-021B')
1b	U3-021	12	Marengo Red Tap to Pleasant Valley portion of Belvidere-Marengo-Pleasant Valley Red 138kV line 12204	128.3%	131.4%	Applicable Load Dump Rating	388	Tower outage of Silver Lake to Cherry Valley 345kV line 15616 and Glidden to Cherry Valley 138kV line 15627 ('345-L15616__-R_+_138-L15627_R-R_U3-021B')
1c	U3-021	10.4	Belvidere to Marengo Tap Blue portion of Belvidere-Marengo-Woodstock 138kV line 12205	115.4%	117.6%	Applicable Load Dump Rating	473	Tower outage of Silver Lake to Cherry Valley 345kV line 15616 and Glidden to Cherry Valley 138kV line 15627 ('345-L15616__-R_+_138-L15627_R-R_U3-021B')

Steady-State Voltage Requirements
(Summary of the VAR requirements based upon the results of the steady-state voltage studies)

To be determined in the System Impact Study.

Stability and Reactive Power Requirement for Low Voltage Ride Through
(Summary of the VAR requirements based upon the results of the dynamic studies)

To be determined in the System Impact Study.

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

No new system requirements were identified.

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)

1. In Item 1a from the Contribution to Previously Identified Overloads section, the overload of Lee County to Nelson 345kV line 15501 is caused by the tower outage of Silver Lake to Cherry Valley 345kV line 15616 and Glidden to Cherry Valley 138kV line 15627. This overload was first caused by queue project T32. This overload can be relieved by installing a new 31 mile 345kV Cherry Valley to Pleasant Valley line. One 345kV breaker at Cherry Valley substation and a three breaker 345kV ring bus at Pleasant Valley will be required to terminate the proposed line. The cost of this upgrade is estimated to be **$126,000,000**. Project U3-021 will have a cost allocation to this upgrade. Cost allocations for this reinforcement will be assigned in the System Impact Study.

2. In Item 1b from the Contribution to Previously Identified Overloads section, the overload of Marengo Red Tap to Pleasant Valley portion of Belvidere-Marengo-Pleasant Valley Red 138kV line 12204 is caused by the tower outage of Silver Lake to Cherry Valley 345kV line 15616 and Glidden to Cherry Valley 138kV line 15627. This overload was first caused by queue project R96. This overload can be relieved by upgrading 10.7 miles of 138kV line 12204 overhead conductor. The cost of this upgrade is estimated to be **$15,500,000**. Project U3-021 will have a cost allocation to this upgrade. Cost allocations for this reinforcement will be assigned in the System Impact Study.

   The new 345kV line from Cherry Valley to Pleasant Valley described in #1 (Item 1a) of this section may alleviate the need for this reinforcement. This will be reviewed during the System Impact Study phase.

3. In Item 1c from the Contribution to Previously Identified Overloads section, the overload of Belvidere to Marengo Tap Blue portion of Belvidere-Marengo-Woodstock 138kV line 12205 is caused by the tower outage of Silver Lake to Cherry Valley 345kV line 15616

and Glidden to Cherry Valley 138kV line 15627. This overload can be relieved by upgrading the TSS 122 Belvidere station conductor. The cost of this upgrade is estimated to be **$500,000**. Project U3-021 will have a cost allocation to this upgrade. Cost allocations for this reinforcement will be assigned in the System Impact Study.

Potential Issues

In the previous queue, multiple projects were studied with more than one option. The U queue was studied with the primary Point of Interconnection (POI) from the prior queue. U queue primary POI selections were studied with only other U queue primary POI selections and the prior queue constraints listed above. U queue secondary POI selections were studied with only other U queue secondary POI selections and the prior queue constraints listed above. Depending on which POI selection the prior queue projects choose, results may significantly change between the Feasibility and Impact Studies.

Since the results of this analysis have been completed, prior projects may have been withdrawn from the queue. This may change which projects are responsible for certain upgrades. These changes will be reflected in the System Impact Study report.

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.

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.

Note: Only the most severely overloaded conditions are listed below. 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 shall study all overload conditions associated with the overloaded element(s) identified.

As a result of the aggregate energy resources in the area, no violations were identified.