#P11 - Kewanee 138kV

Generation Interconnection

Network Impacts

The #P11 project was studied as a 200 MW (40 MW of Capacity) injection at the Kewanee 138 kV substation. Project #P11 was evaluated for compliance with PJM reliability criteria for summer peak conditions in 2010. Potential network impacts were as follows:

Generator Deliverability

No problems were identified.

Multiple Facility Contingency

No problems were identified.

Contribution to Previously Identified Overloads

1. There is a potential overload on the Byron to Wempletown 345 kV line 0624, for which project #P11 contributes 10 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.
2. Contribution of 18 MW to further overload the Kammer 765/500 kV transformer from 123% to 124% of its emergency rating (1434 MVA) for the Beverly – Tidd -W. Bellair and Kammer - W. Bellair 345 kV tower outage. This violation was first identified for the N42 project. APS is currently studying the associated network reinforcements to mitigate this condition. The replacement cost for the Kammer 765/500 kV transformer is estimated to be in the $18,000,000 range and P11 may share an allocation cost for this upgrade. This allocation cost to be determined during the P11 Impact Study. The necessary reinforcements and associated cost estimates will be available at the Impact Study phase for this project.
3. The O23-Dresden 345 kV line 1202 loads from 117% to 118% of its load-dump rating (1320 MVA) for the tower outage of 345 kV lines 16101 and 97503. The #P11 contributes approximately 15 MW to further overload this monitored facility, previously caused by the #O27. The rough estimated costs to mitigate the violations on L1202 are approximately $926,000, of which P11 will share an allocation cost. This allocation cost to be determined during the System Impact Study.

Short Circuit

The following breakers were either overdutied or had their overduties increase as a result of project #P11:

1. The duty of the line 6101 breaker at TSS 74 Kewanee to go from 96.1% to 107.9% of the circuit breaker rating. (See “New System Reinforcements” below for cost estimate to mitigate this violation.)
2. The duty of the line 7411 breaker increases from 100.9% to 113.5% of the circuit breaker rating. This breaker was initially overdutied by project #O29. The rough cost estimate for a circuit breaker replacement for L7411 is approximately $650,000, of which P11 will share an allocation cost. This allocation cost to be determined during the System Impact Study.

3. The duty of the line 7408 breaker increases from 99.6% to 110.0% of the circuit breaker rating. This breaker was initially overdutied by project #O35. The line number was changed from 15508 to 7408 for project #O29. The rough cost estimate for a circuit breaker replacement for L7408 is approximately $650,000, of which P11 will share an allocation cost. This allocation cost to be determined during the System Impact Study.
4. The duty of the line 7423 breaker increases from 99.1% to 109.5% of the circuit breaker rating. This breaker was initially overdutied by project #O35. The rough cost estimate for a circuit breaker replacement for L7423 is approximately $650,000, of which P11 will share an allocation cost. This allocation cost to be determined during the System Impact Study.

The short-circuit study for #P11 considers the overdutied breakers upgraded for projects ahead of #P11 in the PJM queue. If projects ahead of #P11 drop out, the short-circuit analysis will be repeated and #P10 may ultimately be responsible for additional breaker upgrades.

New System Reinforcements

Replace circuit breaker on L6101 at TSS 74 Kewanee substation.

Cost Estimate:

Qty/Responsibility	Item Description	Material	Labor	Total
1	138kV breakers with structures, buss work and disconnec at TSS 74 L6101	$ 300,000	$ 265,000	$ 565,000
1	CB LBB and reclose relays	$ 51,000	$ 39,000	$ 90,000
				$ -
Material Subtotal		**$ 351,000**		
Labor Subtotal			**$ 304,000**	
Grand Total				**$ 655,000**

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