#T130 Robison Park-East Lima 345kV

Generation Interconnection

This analysis was completed to assess the reliability impact for the increase in generation interconnecting to the PJM system as a capacity resource.

Local AEP Impacts

The interconnection for this facility has been requested on the East Lima-Convoy-Robison Park 345 kV circuit. There is a currently existing ~510 MW fossil-fuel generating facility connected to this circuit at the Convoy substation. There are also two other interconnection requests currently outstanding on this circuit; PJM Queue #R60 (R60), a 350 MW wind generation facility, and PJM Queue #S72 (S72), a 300 MW wind generation facility. These facilities have a direct impact on the interconnection of T130 and must be carefully considered. The existing 510 MW fossil fuel facility was assumed to be fully dispatched. The three wind facilities, R60, S72, and T130, were studied for both their Capacity Credit output (20% of full output) and full output. Various scenarios involving these facilities were considered as deemed necessary. Further information on the Criteria, Methodology, and Assumptions used for this analysis can be found in Appendix A.

Network Impacts

(Capacity Credit Output Analysis (R60, S72, and T130 @ 20% of Capacity)
The Queue Project #T130 was studied as a 300MW(Capacity=60MW) injection at the Convoy 345 kV substation in the AEP area. Project #T130 was evaluated for compliance with reliability criteria for summer peak conditions in 2012. Potential network impacts were as follows:

Generator Deliverability

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

None

Multiple Facility Contingency

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

None

Short Circuit

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

No problems 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)

None

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)

None

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.

As a result of the aggregate energy resources in the area, the following violations were identified:

This analysis showed that the addition of S72 to R60 causes issues on the system. This section will address the results of two analyses. The first analysis was the addition of S72 to R60 and the second was the addition of T130 to both S72 and R60.

Normal System (2011 Summer Conditions)

Generator Status			Contingency	Monitored Element	MVA Rating	Loading
R60	S72	T130				
100%	0%	0%	None	R60 345 – Robison Park 345 Ckt 1	878 (SN)	75.1%
100%	100%	0%	None	R60 345 – Robison Park 345 Ckt 1	878 (SN)	96.5%
100%	100%	100%	None	R60 345 – Robison Park 345 Ckt 1	878 (SN)	110.3%

Single Contingency (2011 Summer Conditions)

Generator Status			Contingency	Monitored Element	MVA Rating	Loading
R60	S72	T130				
100%	0%	0%	East Lima 345 – Convoy 345 Ckt 1	R60 345 – Robison Park 345 Ckt 1	878 (SN)	98.0%

100%	0%	0%	Robison Park 345 – R60 345 Ckt 1	Convoy 345 – East Lima 345 Ckt 1	878 (SN)	97.0%
100%	100%	0%	East Lima 345 – Convoy 345 Ckt 1	R60 345 – Robison Park 345 Ckt 1	878 (SN)	133.3%
100%	100%	0%	Robison Park 345 – R60 345 Ckt 1	Convoy 345 – East Lima 345 Ckt 1	878 (SN)	138.1%
100%	100%	100%	East Lima 345 – Convoy 345 Ckt 1	R60 345 – Robison Park 345 Ckt 1	878 (SN)	171.9%
100%	100%	100%		S72 345 – R60 345 Ckt 1	897 (SN)	126.8%
100%	100%	100%	Robison Park 345 – R60 345 Ckt 1	T130 345 – East Lima 345 Ckt 1	897 (SN)	191.6%
100%	100%	100%		Convoy 345 – T130 345 Ckt 1	878 (SN)	154.2%

Multiple Contingency (2011 Summer Conditions)

- The Multiple Contingency situations which showed overloads directly involve the outage of the single branches listed above. Therefore, the overloads can be attributed to the single contingencies rather than the Multiple Contingencies.

Short Circuit Analysis

- No concerns

Stability Analysis

- Stability studies were not performed as part of this Feasibility Study and are not normally performed as part of a Feasibility Study effort. The stability assessments are part of the System Impact Study. Based upon the results of this future System Impact Study, the extent of system upgrades could change and the associated costs could be significantly different.

Network Upgrades

Expand the existing Allen 345 kV Bus to a 5 position ring with a possible future breaker and a half configuration.

Estimated Cost:* ***$4,800,000***

- Loop the R60 to S72/Convoy 345 kV circuit into this substation.

Estimated Cost:* ***$500,000***

Total Local/Network Upgrade Cost*: **$5,300,000**

MISO Impacts

Any impacts on the MISO transmission system will be identified in the Impact Study.
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