New AmerenIL Lima to Princeton 138 kV line

Central Technical Study Task Force (CTSTF)

November 22, 2024

Purpose and Key Takeaways

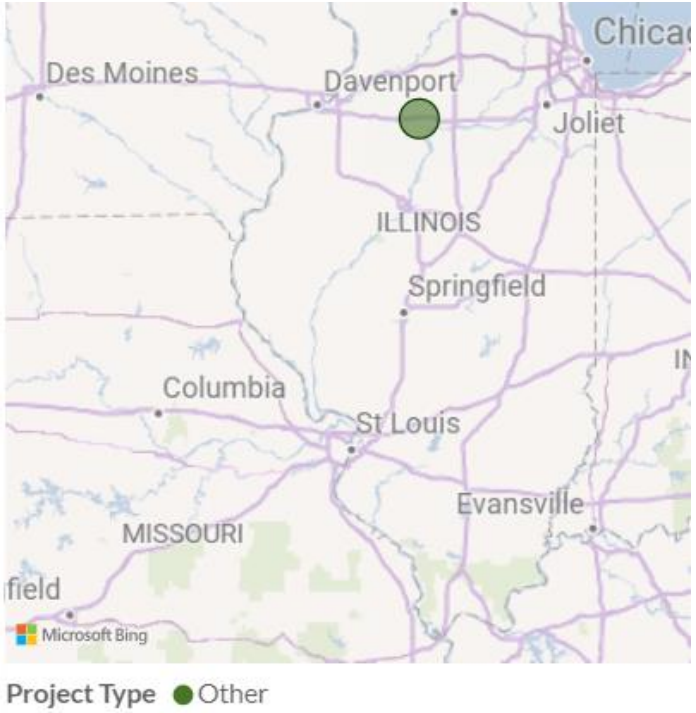
Purpose: Review the results of AmerenIL's EPR for new Lima substation with 138 kV line to Princeton 138 kV substation (P50190)

Key Takeaways:

- Rebuild Princeton 138 kV substation to ring bus configuration, New Lima 138 kV ring bus substation at Peru, Illinois, and New 138 kV line from Lima to Princeton
- No reliability issues were identified nor any new TPL violations discovered from the implementation of the EPR
- MISO will report this EPR as a part of MTEP25 cycle

New AmerenIL Lima (Peru) to Princeton 138 kV line (P50190)

- Rebuild the existing Princeton substation as a 4-position 138 kV substation in a ring bus configuration with two additional positions available for future expansion.
- Construct a new Lima 4-position 138 kV substation in a ring bus configuration with two additional positions available for future expansion.
- Bring the Hickok-North LaSalle-1659 138 kV line in-and-out and provide an interconnection point for The City of Peru, Illinois.
- Ameren is to construct a new 23-mile 138 kV Transmission line from Ameren's Princeton substation to the new Lima 138 kV substation.
- Six (6) modeling/topology changes are required to complete updates to our MTEP24 models for this project. As a result, a no-harm steady state analysis is required.



Urgency for the Expedited Project Request

- Ameren Illinois expected ISD (Lima Substation: 10/1/2027 and Completed: 6/1/2029) requires 2 years for Engineering, Procurement, and Legislature approval prior to normal MTEP25 timeline.

Models and Results for the Reliability Analysis

MISO performed a complete TPL-001-5.1 analysis along with a select few buses chosen for P3 and P6…

- MTEP24 year 2029 SPK for (P1, P2, P3, P4, P6, P7)
  - *MISO utilized a no-harm reliability analysis*

Results of Reliability Analysis

- No new reliability issues, thermal or voltage, were observed.

EPR Process Completion Status

EPR Process Step	Estimated Date	Completion Status
Received EPR Request from AmerenMO	Oct 25	☑
Public Notification to Stakeholders	Nov 8	☑
Perform MISO Reliability Analysis	Nov 18	☑
Present EPR Results at TSTF	Nov 22	☐
Present to PAC for Approval	Jan 22	☐

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Questions

MTEP24 reliability analysis scope is consistent with previous cycle to ensure compliance with NERC standards

Steady State Analysis	Transient Stability Analysis	Voltage Stability Analysis	Transfer Capability Assessment	Nuclear Plant Assessment	Generator Deliverability Analysis
Contingency analysis for both planning and extreme events	Disturbance analysis for both planning and extreme events	Identify voltage stability limits under a set of transfer scenarios	Evaluate transfer capability of the system under various transfer scenarios	Monitor and identify potential NPIR violations	Determine deliverability of existing network resources
Near and Long term horizons (year 2, 5, 10)	Near and Long term horizons (year 5, 10*)	Near term horizon (year 5)	Near term horizon (year 5)	Near and Long term horizons (year 2, 5,10)	Near and Long term horizons (year 5, 10)
TPL-001-5.1 FAC-014 PRC-023	TPL-001-4 FAC-014 PRC-023	FAC-014 PRC-023	FAC-013 FAC-014 PRC-023	NUC-001 PRC-023	

NERC TPL-001-5 establishes contingencies and acceptable mitigation requirements

TPL Category	Description	Acceptable Mitigation		
		BES Level	Physical Upgrade Required?	Load Shed or Redispatch Allowed?
P0	System intact	EHV, HV	Yes	No
P1	Single contingency (Fault of a shunt device- fixed, switched or SVC/STATCOM is new)	EHV, HV	Yes	No
P2	Single event which may result in multiple element outage. Open line w/o fault, bus section fault, internal breaker fault	EHV HV	Yes No	No Yes
P3	Loss of generator unit followed by system adjustments + P1. No load shed is allowed	EHV, HV	Yes	Yes
P4	Fault + stuck breaker events	EHV HV	Yes No	No Yes
P5	Fault + relay failure to operate (new)	EHV HV	Yes No	No Yes
P6	Two overlapping singles (not generator)	EHV, HV	No	Yes
P7	Common tower outages; loss of bipolar DC	EHV, HV	No	Yes