



Reliability Analysis Update

Transmission Expansion Advisory
Committee

December 12, 2019

- The following definitions explain the basis for excluding flowgates and/or projects from the competitive planning process and designating projects to the incumbent Transmission Owner.
- Flowgates/projects excluded from competition will include the underlined language on the corresponding slide.
 - Immediate Need Exclusion: Due to the immediate need of the violation (3 years or less), the timing required for an RTEP proposal window is infeasible. As a result, the local Transmission Owner will be the Designated Entity. - Operating Agreement, Schedule 6 § 1.5.8(m)
 - Below 200kV Exclusion: Due to the lower voltage level of the identified violation(s), the driver(s) for this project are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(n)
 - Substation Equipment Exclusion: Due to identification of the limiting element(s) as substation equipment, the driver(s) for this project are excluded from the competitive proposal window process. As a result, the local Transmission Owner will be the Designated Entity - Operating Agreement, Schedule 6 § 1.5.8(p)

Second Review

Baseline Reliability Projects



ATSI Transmission Zone: Baseline Leroy Center – Pawnee Tap 138 kV

Process Stage: Second Review

Criteria: Summer GD, N-1, N-1-1 Thermal

Assumption Reference: 2024 RTEP assumption

Model Used for Analysis: 2024 RTEP summer case

Problem Statement: Leroy Center – Pawnee Tap 138 kV line is overloaded for N-1-1 the loss of the Juniper – Northfield 138 kV and Nash – Painesville 138 kV lines (N2-ST5, N2-ST6).

Existing Facility Rating:

Leroy Center – Pawnee 138 kV: 115/115 (SN/SE)

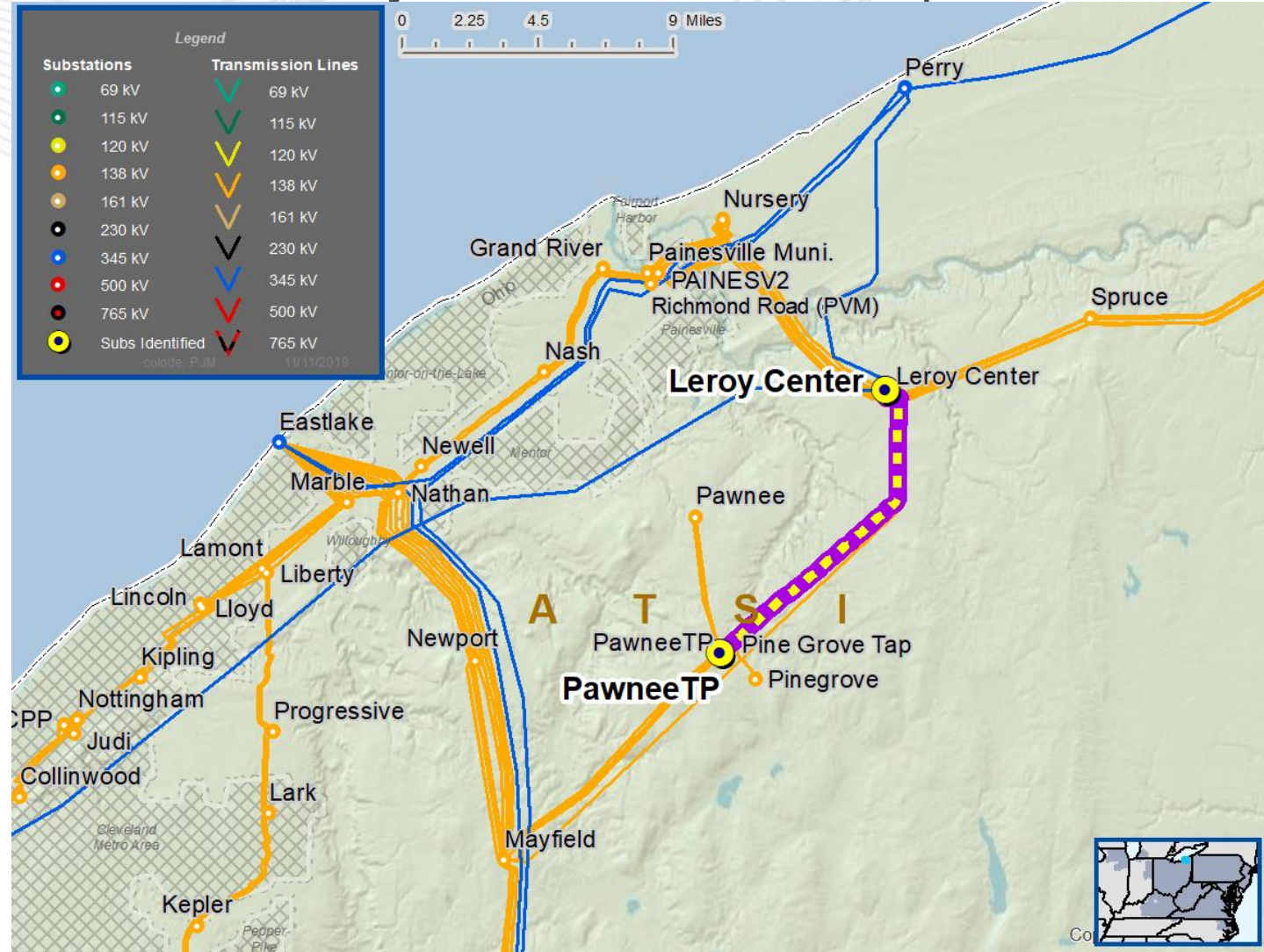
Proposed Solution (b3152):

Reconductor the 8.4 mile section of the Leroy Center - Mayfield Q1 138 kV Line, from Leroy Center to Pawnee Tap, with 336.4 kcmil ACSR to achieve a rating of at least 160 MVA / 192 MVA (SN/SE). Depending on the structural analysis that is scheduled to be completed by the end of 2019, 336 ACSS may be used or a complete rebuild may be needed. Revise relay settings.

Estimated Cost: \$14.1M

Alternatives: N/A

Required In-Service: 6/1/2024



2019 RTEP Analysis Update

- PJM Transmission Planning
 - performed Maintenance Outage Analysis to satisfy **TPL-001-4 R1.1.2**.
 - extracted known outages of Generation and Transmission Facilities with a duration of at least six months or longer from eDART, and modeled them in PSS/E.
 - ran N-1-1 analysis where multiple facilities were taken out of service for maintenance as planned, and then another unplanned outage occurred.
 - studied Summer 2020, Summer 2024 and Winter 2024 cases.
- Per **IRO-017 R3 and R4** PJM Transmission Planning (acting as the Planning Coordinator/Transmission Planner) sought for PJM Operations (acting as the Reliability Coordinator) to provide feedback on the results.

- Summer 2020
 - 1 Thermal violation of 230 kV circuit
 - 1 High Voltage violation of 230 kV circuit
 - 3 Low Voltage Violations in 138 kV and 69 kV areas
 - 3 Voltage Drop violations in 138 kV and 69 kV areas
- Summer 2024 and Winter 2024 cases
 - No violations found
- PJM Operations
 - will utilize these study results in long-term and near-term outage analysis process starting with the 6-month out analysis.
 - will develop mitigation plans as needed to support the outages.

- Re-tool analysis for reinstatement of Davis Besse 1 (896MW), Perry 1 (1247MW), and Sammis 5- 7 (1491MW) complete.
- 31 previously approved baseline projects to be removed from RTEP
- 21 flowgates identified in proposal window – no longer violations due to reinstatement
- 2 new potential issues identified in retool analysis -
 - Natrium 138 kV line (AEP) → caused by suspended queue generation, No violation
 - Hayes 345/138 kV Transformer (ATSI) → Actual rating > model → No violation

- Continue stability studies
- Continue other studies (e.g. 15 year analysis, spare equipment, etc.)

Questions?



2020

- TEAC meetings are the following Tuesdays or Wednesday in 2020
- 1/7, 2/4, 3/10, 4/14, 5/12, 6/2, 7/7, 8/4, 9/1, 10/6, 11/4 (Wednesday), 12/1.

- V1 – 12/06/2019 – Original slides posted
- V2 – 12/09/2019 – Removed ATSI first read slides #4-7; Added slides #6 and #7: 2019 RTEP Maintenance Outage Analysis; added slide #8: 2024 Re-tool Study Update.