

# Transmission Expansion Advisory Committee AEP Supplemental Projects

Oct. 4, 2022

# Solutions

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

# AEP Transmission Zone M-3 Process Multiplier Remediation Projects

**Need Number:** AEP-2020-AEP001

**Process Stage:** Solutions Meeting 10/4/2022

**Previously Presented:** Needs Meetings 12/1/2020, 11/30/2021

**Supplemental Project Driver:** Operational Flexibility and Efficiency

**Specific Assumption Reference:**

AEP Guidelines for Transmission Owner Identified Needs (AEP Assumptions slide 8)

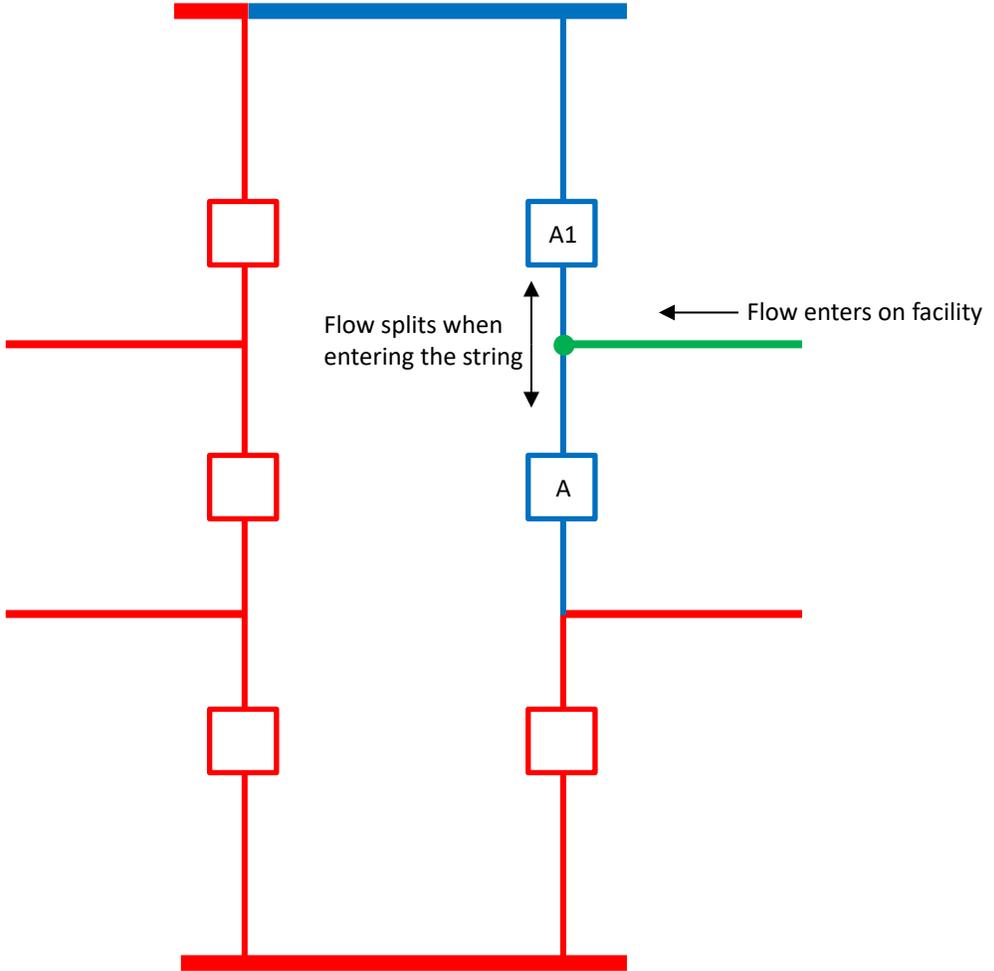
**Problem Statement:**

- AEP is proposing to implement a ratings methodology change whereby single element open ratings would be applied to all facilities as part of their overall rating. This is to avoid any compliance violations of FAC-008 and TOP standards in case a breaker is opened.
- AEP's historic practice was to apply a 2x multiplier to any facilities that connected in a configuration where flow could split between two paths in a station.
- This practice has been eliminated for any new facilities being constructed.
- AEP has maintained a list of facilities that continue to operate with a 2x multiplier on them pending future analysis and/or projects to address them
- For the 2025 RTEP analysis, AEP worked with PJM to apply single multiplier ratings to all facilities on the system
- There were four lines that were flagged in the 2025 analysis that show potential violations
  - ~~Muskingum-Waterford 345 kV line~~ Addressed through the 2021 RTEP Window 1. First read solution presented 10/5/2021.
    - Jefferson-Clifty Creek 345 kV line
    - East Lima 345/138 kV transformer
    - Olive-New Carlisle 138 kV line (flagged in market efficiency analysis)
    - **Marysville 765/345 kV Transformer #2 (flagged in market efficiency analysis)**
- AEP is proposing to address these needs in order to eliminate the exceptions and apply all single element open ratings in our future cases and in real time operations to comply with the request from PJM Operations and Planning

**Model:** PJM 2020 RTEP Series Cases

## AEP Transmission Zone M-3 Process Multiplier Remediation Projects

- Once the flow enters the string, the flow is assumed to split 50/50 between the connected string elements
- AEP’s historic practice was to apply a 2x multiplier for all elements in this portion of the branch definition (blue outline)
- When either breaker A1 or A is opened, the flow is forced through only one portion of the string
- By changing the methodology, the ratings application will become consistent across all elements and branches
- Because these are considered as part of a ratings methodology change, the future analysis was used to flag facilities where overloads may occur because of this change
- AEP will propose supplemental projects to address the facilities of concern and will continue to apply the 2x multiplier exception until a project to replace the equipment driving the future overload is in service.



# AEP Transmission Zone M-3 Process Clifty Creek Circuit Breakers Replacement

**Need Number:** AEP-2020-AEP001

**Process Stage:** Solutions Meeting 10/4/2022

**Proposed Solution:**

Clifty Creek 345 kV: Replace 345 kV circuit breakers “R” and “S” with 5000 A, 63 kA circuit breakers.

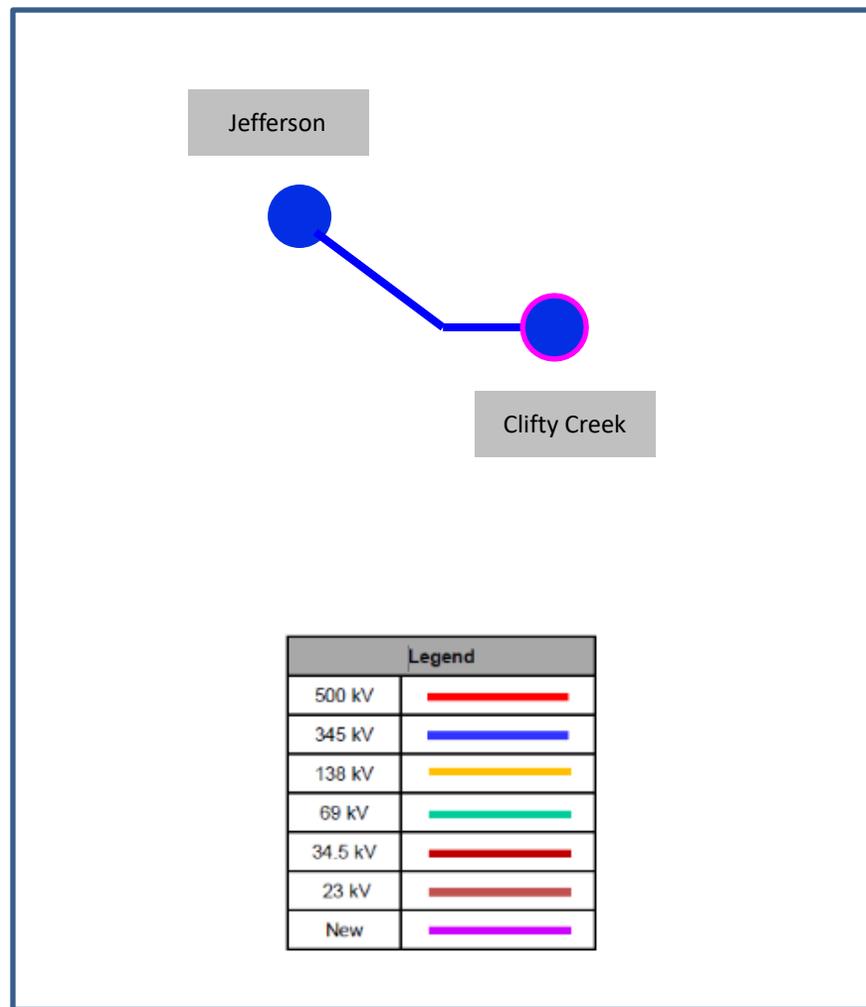
**Total Estimated Transmission Cost: \$2.51M**

**Alternatives Considered:**

Considering all the work required to raise the ratings of the line are completely contained within the station, there are no other cost effective alternatives.

**Projected In-Service:** 5/2024

**Project Status:** Scoping



# AEP Transmission Zone M-3 Process East Lima Bus Conductor Replacement

**Need Number:** AEP-2020-AEP001

**Process Stage:** Solutions Meeting 10/4/2022

**Proposed Solution:**

East Lima 138kV: Replace 1000MCM, 1590 AAC bus and riser conductors on the 'B' string and Bus 2 with 2-2000 MCM AAC.

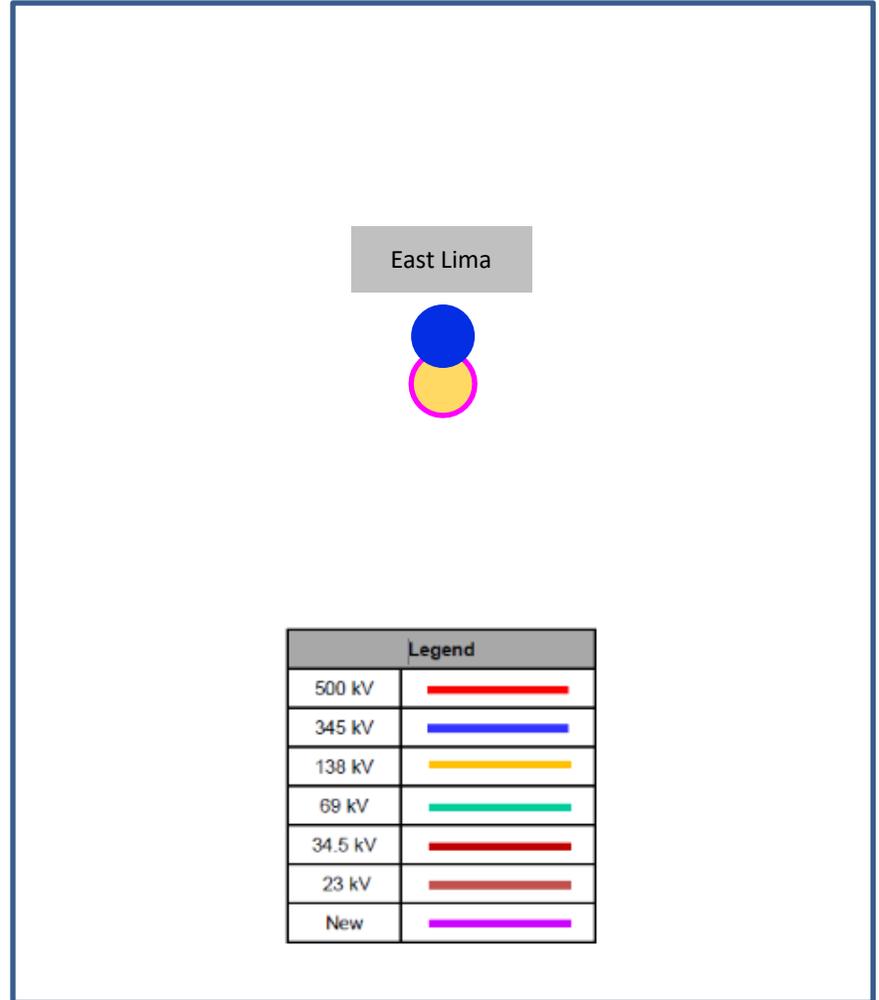
**Total Estimated Transmission Cost: \$0.3M**

**Alternatives Considered:**

Considering all the work required to raise the ratings of the line are completely contained within the station, there are no other cost effective alternatives.

**Projected In-Service:** 2/2025

**Project Status:** Scoping



**Need Number:** AEP-2020-AEP001

**Process Stage:** Solution Meeting 10/4/2022

**Proposed Solution:**

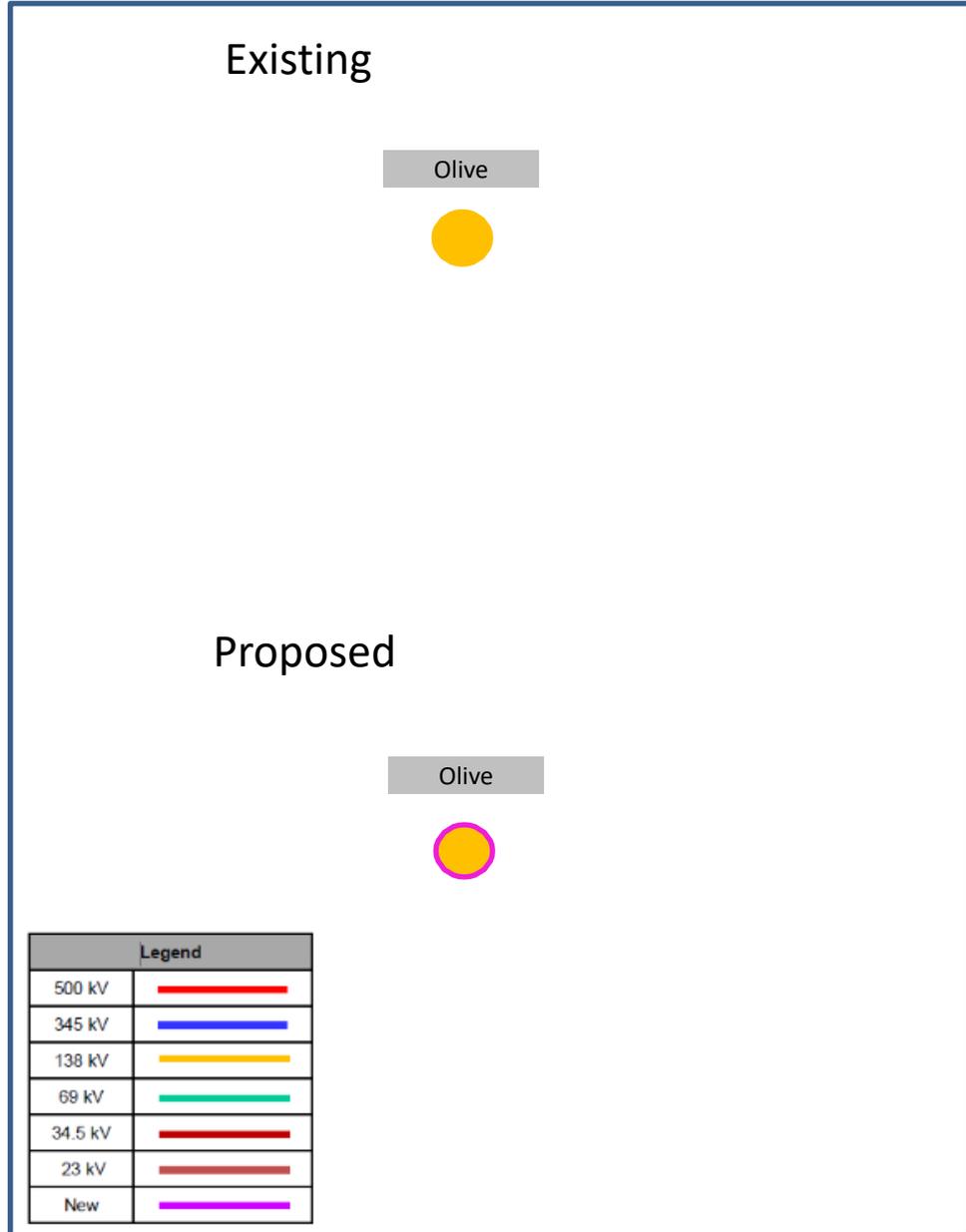
Replace the 1590 station conductor at Olive 138kV station on the Olive – New Carlisle 138kV line and increase the CT Thermal Limit above 606 MVA WE.

**Total Estimated Transmission Cost: \$0.1M**

**Alternatives Considered:**

Considering all the work required to raise the ratings of the line are completely contained within the station, there are no other cost effective alternatives.

**Projected In-Service: 12/31/2022**



# AEP Transmission Zone M-3 Process Marysville XFMR #2 Ratings

**Need Number:** AEP-2020-AEP001

**Process Stage:** Solutions Meeting 10/4/2022

**Proposed Solution:**

Marysville 345kV station: Replace (2) 345 kV 5000A 63kA circuit breakers and associated sub conductor and switches on the H string to eliminate the lower-rated equipment.

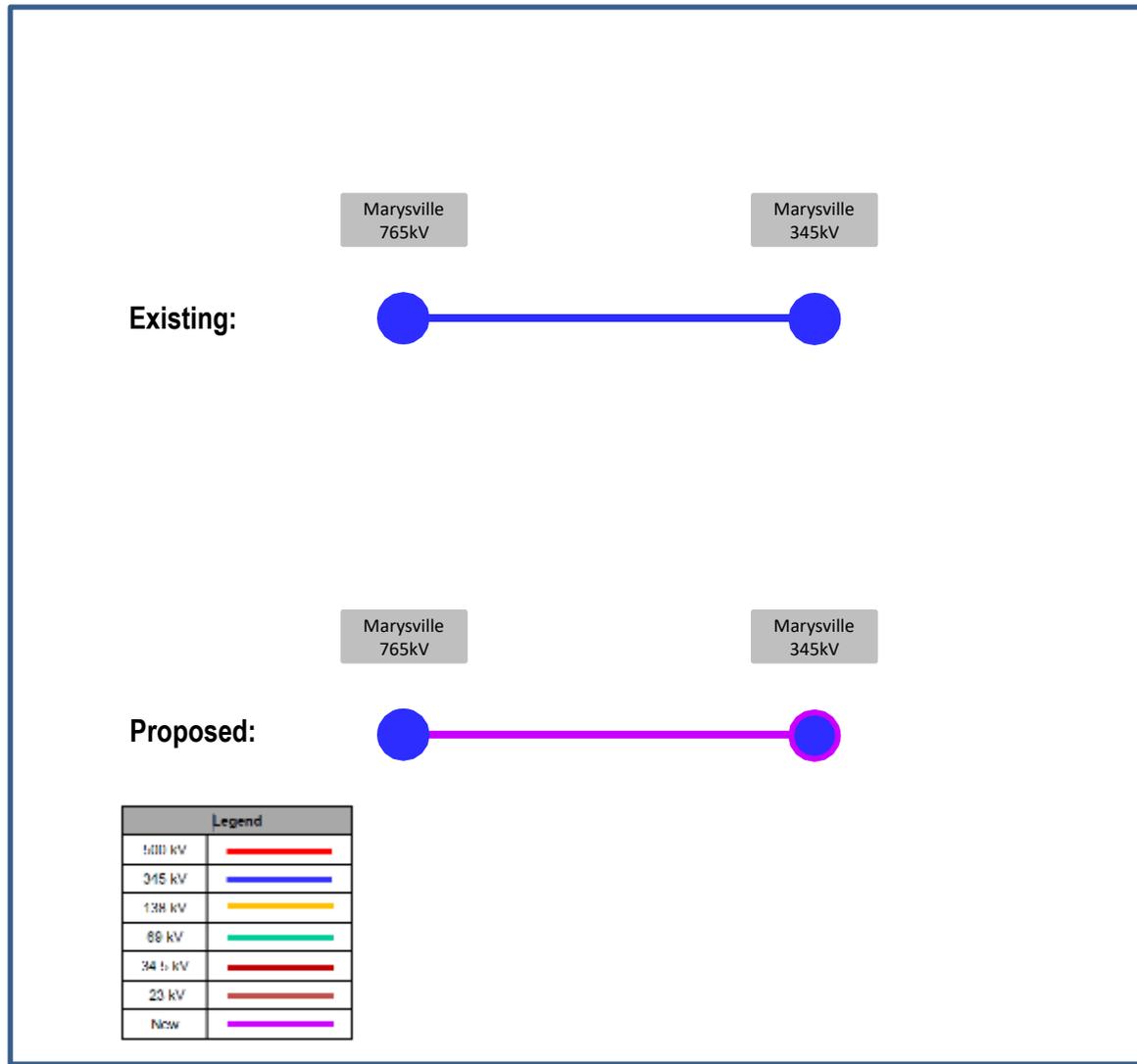
**Total Estimated Transmission Cost: \$3.01M**

**Alternatives Considered:**

Considering all the work required to raise the ratings of the line are completely contained within the station, there are no other cost effective alternatives.

**Projected In-Service:** 3/31/2023

**Project Status:** Scoping



# Appendix

# High Level M-3 Meeting Schedule

Assumptions	Activity	Timing
	Posting of TO Assumptions Meeting information	20 days before Assumptions Meeting
	Stakeholder comments	10 days after Assumptions Meeting
Needs	Activity	Timing
	TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
	Stakeholder comments	10 days after Needs Meeting
Solutions	Activity	Timing
	TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
	Stakeholder comments	10 days after Solutions Meeting
Submission of Supplemental Projects & Local Plan	Activity	Timing
	Do No Harm (DNH) analysis for selected solution	Prior to posting selected solution
	Post selected solution(s)	Following completion of DNH analysis
	Stakeholder comments	10 days prior to Local Plan Submission for integration into RTEP
	Local Plan submitted to PJM for integration into RTEP	Following review and consideration of comments received after posting of selected solutions

# Revision History

9/23/2022 – V1 – Original version posted to pjm.com