Transmission Expansion Advisory Committee: AEP Supplemental Projects

October 3, 2023

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: Supplemental
Apple Grove, WV

Need Number: AEP-2022-AP014

Process Stage: Solutions Meeting 10/3/2023

Previously Presented: Needs Meeting 2/18/2022

Supplemental Project Driver: Customer Service

Specific Assumption References: AEP Connection Requirements for the AEP Transmission System (AEP Assumptions Slide 12)

Problem Statement:

A new industrial customer has requested service near Apple Grove, WV by the end of ~~2024~~ 2025.

Projected load: 450 MW

AEP Transmission Zone: Supplemental
Apple Grove, WV

Need Number: AEP-2022-AP014

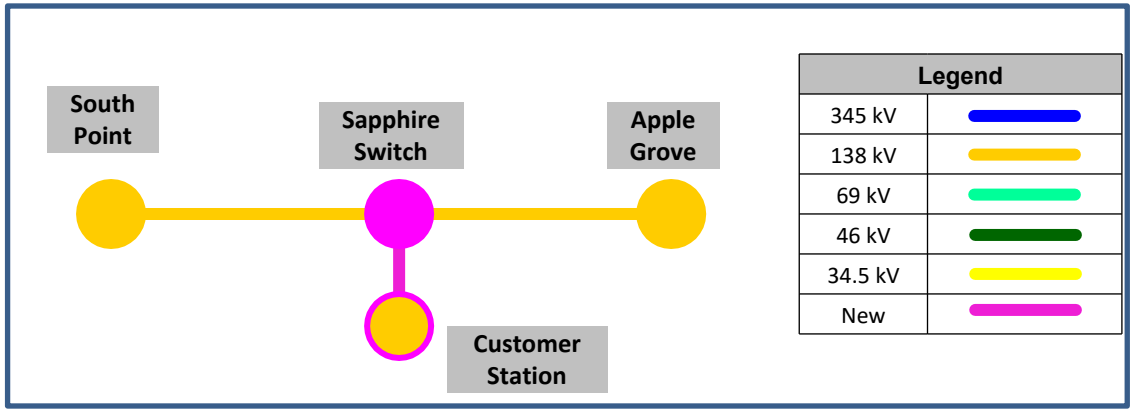
Process Stage: Solutions Meeting 10/3/2023

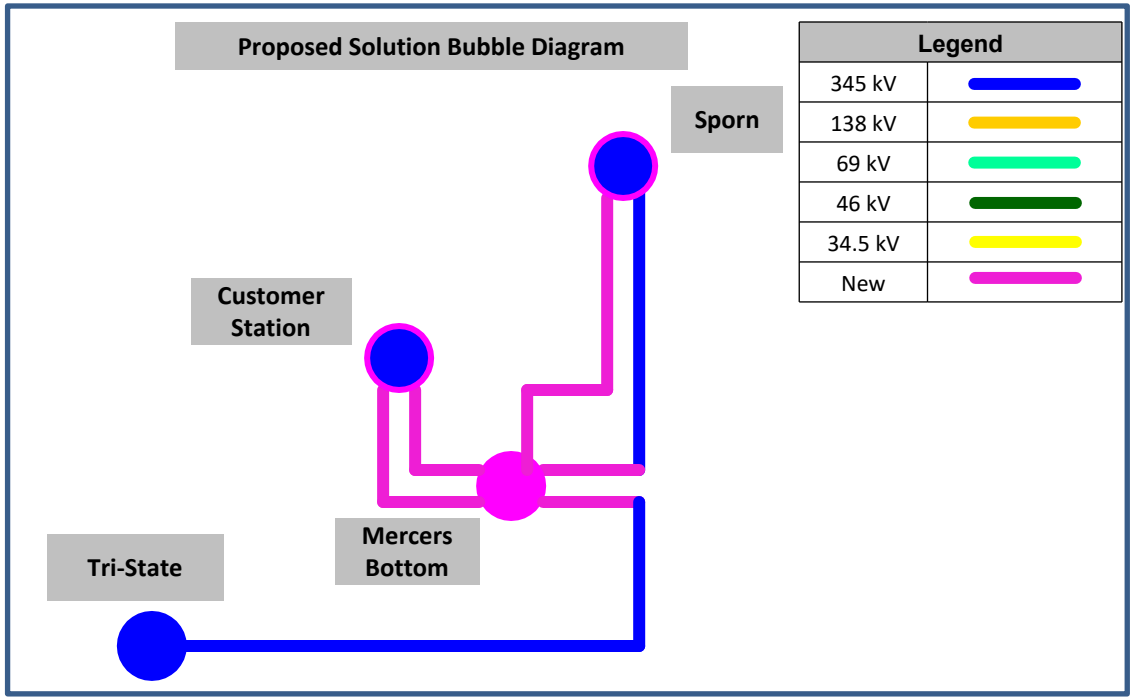
Proposed Solution

Phase 1:

- Cut in/out of the existing Sporn – Tri-State 345 kV line and construct two single circuit 345 kV line extensions to a new 345 kV Station (Mercers Bottom) **Estimated Trans. Cost: $19.7M**
- Construct a new 345 kV Station (Mercers Bottom) with 8 - 5000 A, 63 kA circuit breakers **Estimated Trans. Cost: $30.8M**
- Remote end station work required at Sporn 345 kV **Estimated Trans. Cost: $0.8M**
- Construct two single circuit 345 kV feeds, approximately 0.75 miles each from Mercers Bottom 345 kV Station to the customer's 345 kV Station. **Estimated Trans. Cost: $12.4M**
- Cut into the existing Apple Grove – South Point 138 kV line and install a new 3-way Phase over Phase switch. Install a single circuit 0.1 mi 138 kV extension to the customer station. Install 138 kV metering at the new switch. **Estimated Trans. Cost: $7.1M**

Phase 1 Estimated Transmission Cost: $70.8M





AEP Transmission Zone: Supplemental
Apple Grove, WV

Need Number: AEP-2022-AP014

Process Stage: Solutions Meeting 10/3/2023

Proposed Solution

Phase 2:

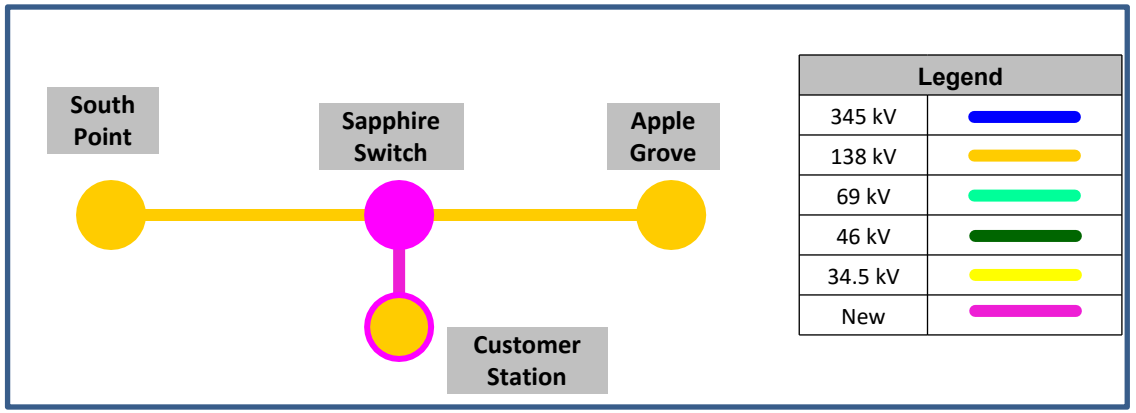
- In order to meet the required short circuit strength needs of the customer under N-1 scenarios, construct a new 345 kV line from Sporn 345 kV Station to Mercers Bottom 345 kV Station, approximately 26 miles. **Estimated Trans. Cost: $143.0M**
- Install a new 345 kV circuit breaker at Sporn to accommodate the new 345 kV line. **Estimated Trans. Cost: $2.0M**

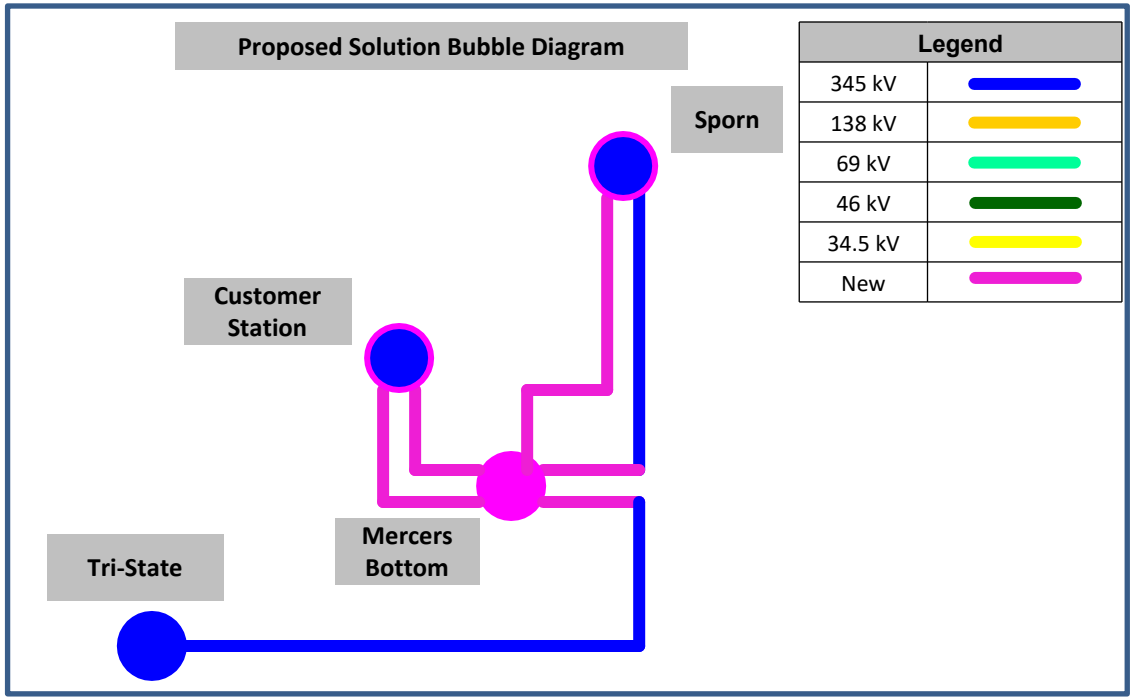
Phase 2 Estimated Cost: $145M

Total Estimated Transmission Cost: $215.8M

Projected In-Service: Phase 1 – 12/15/2025, Phase 2 – 12/15/2029

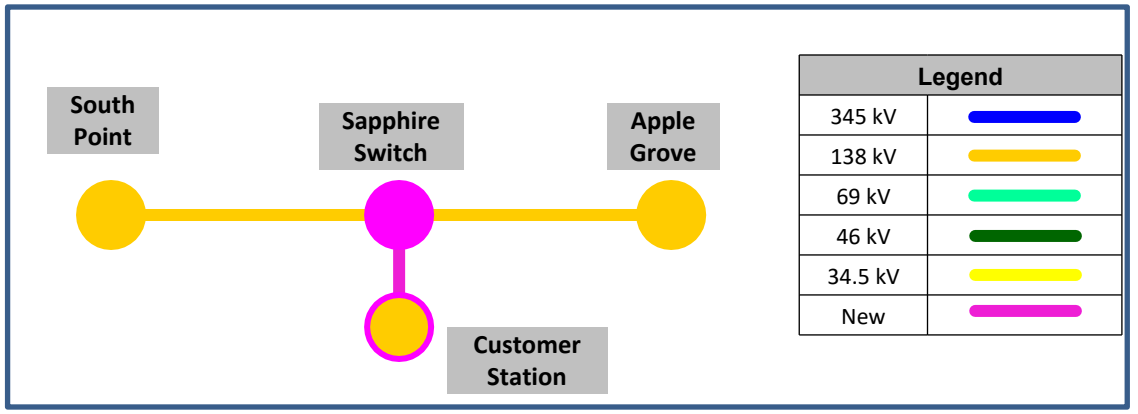
Project Status: Scoping

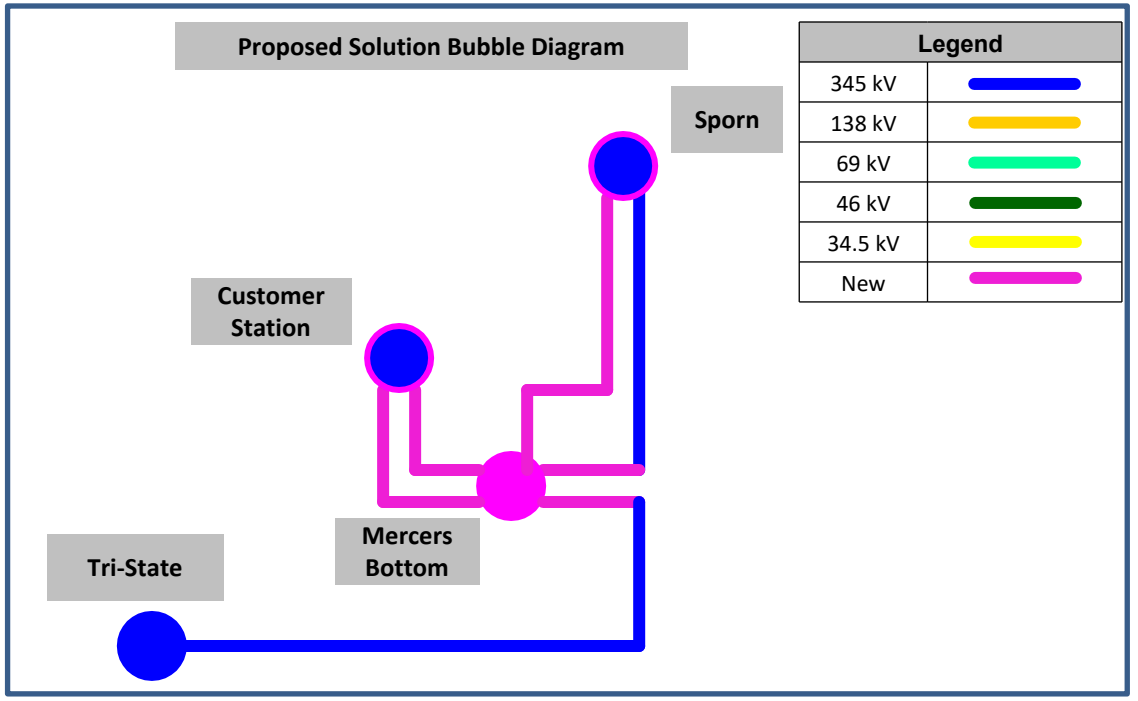




Alternate:

- Phase 1 work would remain the same **Estimated Trans. Cost: $70.8M**
- Phase 2 Alternate:
  - Cut in/out of the existing Culloden – Gavin 765 kV line and construct two single circuit 765 kV lines approximately 2 miles into a new 765/345 kV station at North Buffalo Site. **Estimated Cost: $37.0M**
  - Construct a new 345 kV line approximately 12 mi from North Buffalo to Mercers Bottom. **Estimated Cost: $67.0M**
  - Construct a new 765/345 kV station **Estimated Cost: $121.3M**
    - Install three 765 kV breakers in a double bus/double breaker configuration.
    - Install one 765/345 kV 1500 MVA transformer (3 – 500 MVA phases and switchable spare).
    - Install one 345 kV circuit breaker, layout the 345 kV station for future expansion.
    - Install one 3-100 MVAR 765 kV shunt reactors on the Gavin line coming into North Buffalo Station
- **Total Estimated Alternate Cost: $283.7M**





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

9/22/2023– V1 – Original version posted to pjm.com