Reliability Analysis Update
PJM West

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Sub Regional RTEP Committee – PJM West

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2026 RTEP
First Read
Baseline Reliability Projects

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AEP Transmission Zone: Baseline
Dublin - Britton 138 kV Rebuild

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability

Assumption Reference: 2026 RTEP Assumption

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion

Problem Statement:

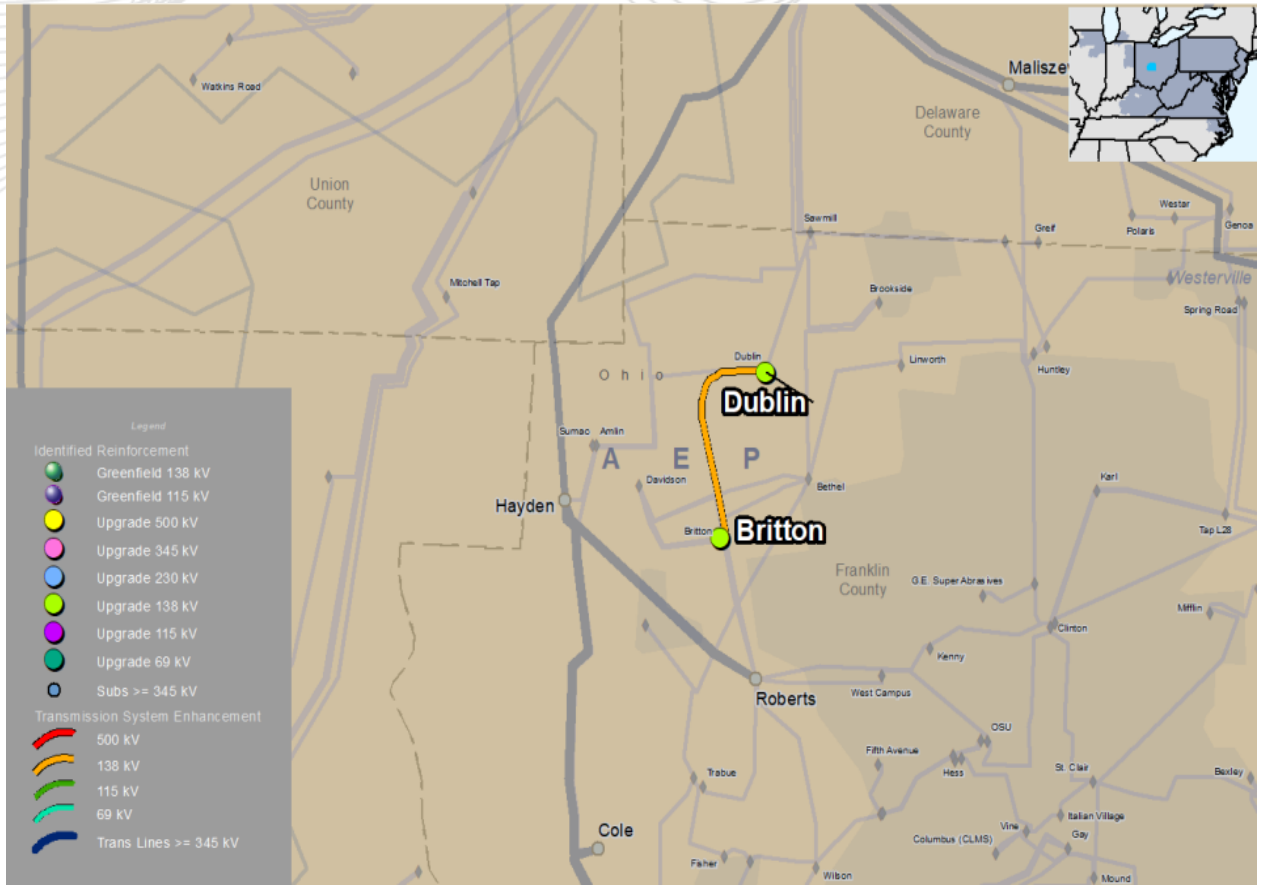
Flowgate IDs:

2026-W1-GD-W201, 2026-W1-GD-W203, 2026-W1-N1-WT1, 2026-W1-N1-WT2, 2026-W1-N11-WT18, 2026-W1-N11-WT19, 2026-W1-N11-WT20, 2026-W1-N11-WT24, 2026-W1-N11-WT37, 2026-W1-N11-WT45

In the 2031 RTEP winter base case, the Dublin - Britton UG 138 kV line is overloaded in the Generator Deliverability (GD) analysis and thermal analysis for N-1, N-1-1 and N-2 outages.

Proposed Solution :

- Rebuild the existing 2.65 miles Dublin - Britton 138kV underground line with 5000 MCM XLPE cable.
- Estimated Cost: $45.21 M



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AEP Transmission Zone: Baseline
Dublin - Britton 138 kV Rebuild

Ratings MVA (SN/SE/WN/WE):

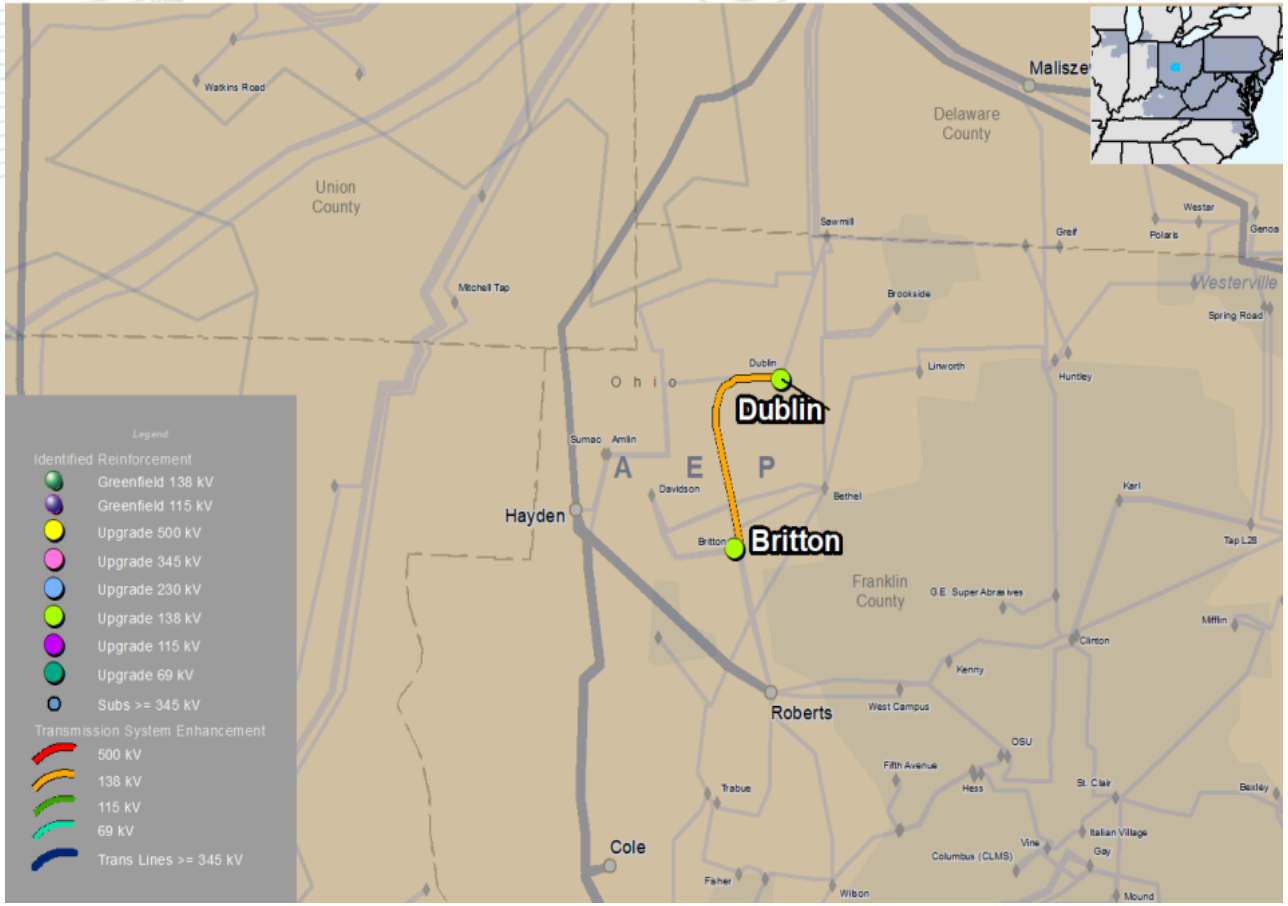
Dublin - Britton 138 kV Line	SN/SE/WN/WE (MVA)
Existing	269/356/269/360
Preliminary	296/413/375/464

Alternatives Considered:

- Retirement of this line is not an option as it serves as a major path of power for the Columbus region.
- Power flow controllers in the area cannot reroute enough power to eliminate the overload
- Overhead routes to utilize advanced conductor do not exist either.

Required In-Service: 12/01/2031

Projected In-Service: 12/01/2031



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AEP Transmission Zone: Baseline
Hyatt Bus Conductor Replacements

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability

Assumption Reference: 2026 RTEP Assumption

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion

Problem Statement:

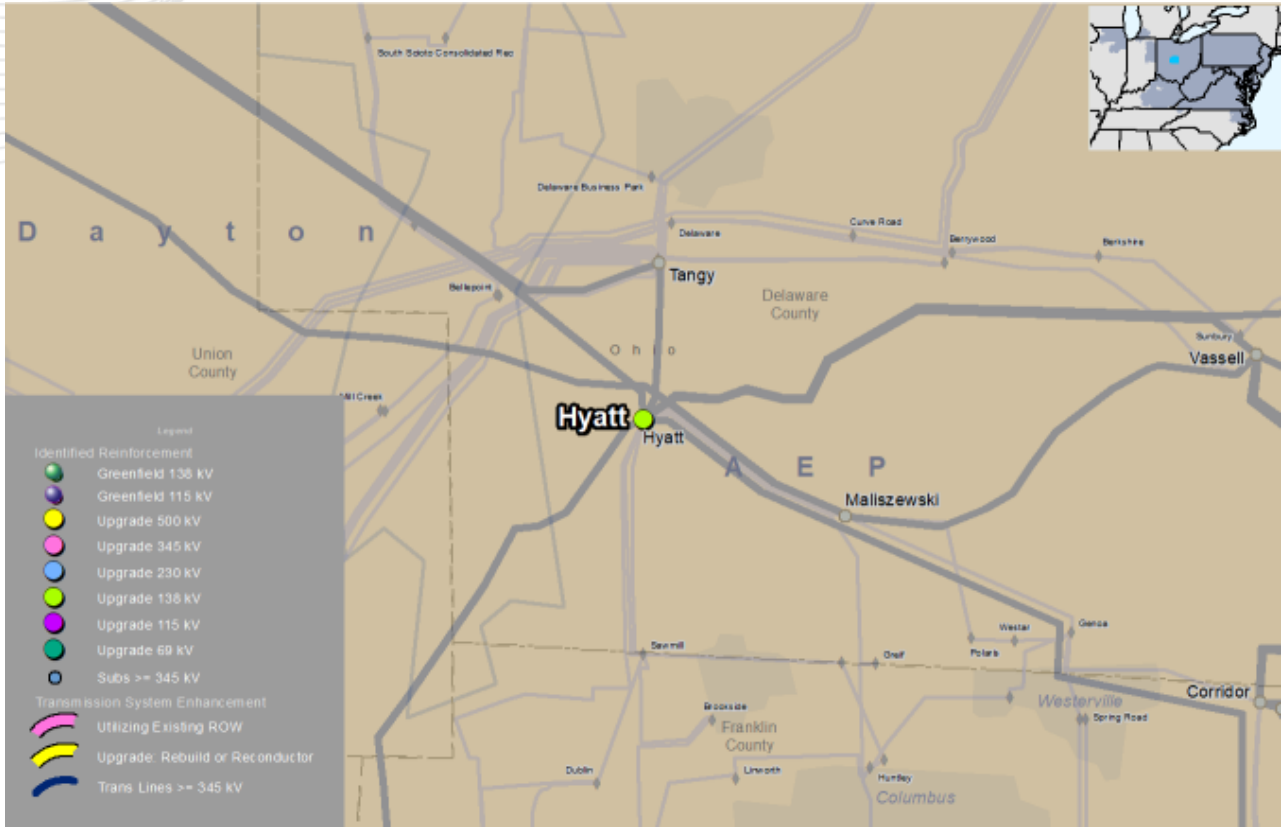
Flowgate IDs:

2026-W1-N11-WT11, 2026-W1-N11-WT12, 2026-W1-N11-WT13, 2026-W1-N11-WT15, 2026-W1-N11-WT17, 2026-W1-N11-WT22, 2026-W1-N11-WT23, 2026-W1-N11-WT25, 2026-W1-N11-WT26, 2026-W1-N11-WT29, 2026-W1-N11-WT32, 2026-W1-N11-WT33, 2026-W1-N11-WT34, 2026-W1-N11-WT36, 2026-W1-N11-WT40

In the 2031 RTEP winter base case, Hyatt - Delaware 138kV branch overloads for N-1-1 outages.

Proposed Solution:

- Replace the 636 KCM ACSR and 795 KCM AAC sub conductor at Hyatt 138kV substation with 2-2000 kCM ACC. 91-str.
- Estimated Cost: $0.185 M.



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AEP Transmission Zone: Baseline
Hyatt Bus Conductor Replacements

Ratings MVA (SN/SE/WN/WE):

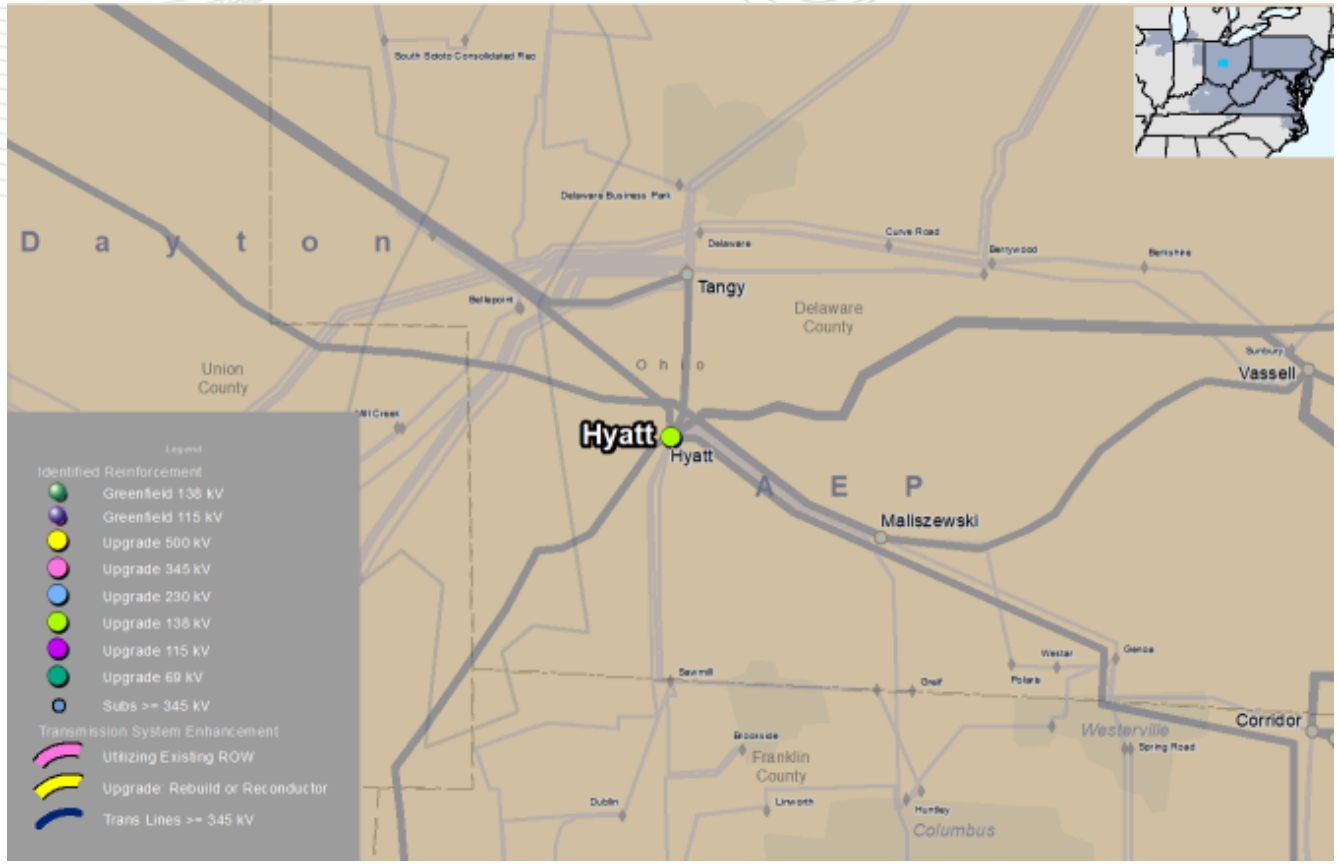
Hyatt - Delaware 138 kV Line	SN/SE/WN/WE (MVA)
Existing	196/247/248/286
Preliminary	383/449/485/503

Alternatives Considered:

No viable cost-effective solution was found due to the limited scope of work.

Required In-Service: 12/01/2031

Projected In-Service: 12/01/2031



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AEP Transmission Zone: Baseline
Bexley 138 kV Bus Conductor Replacements

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability

Assumption Reference: 2026 RTEP Assumption

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion

Problem Statement:

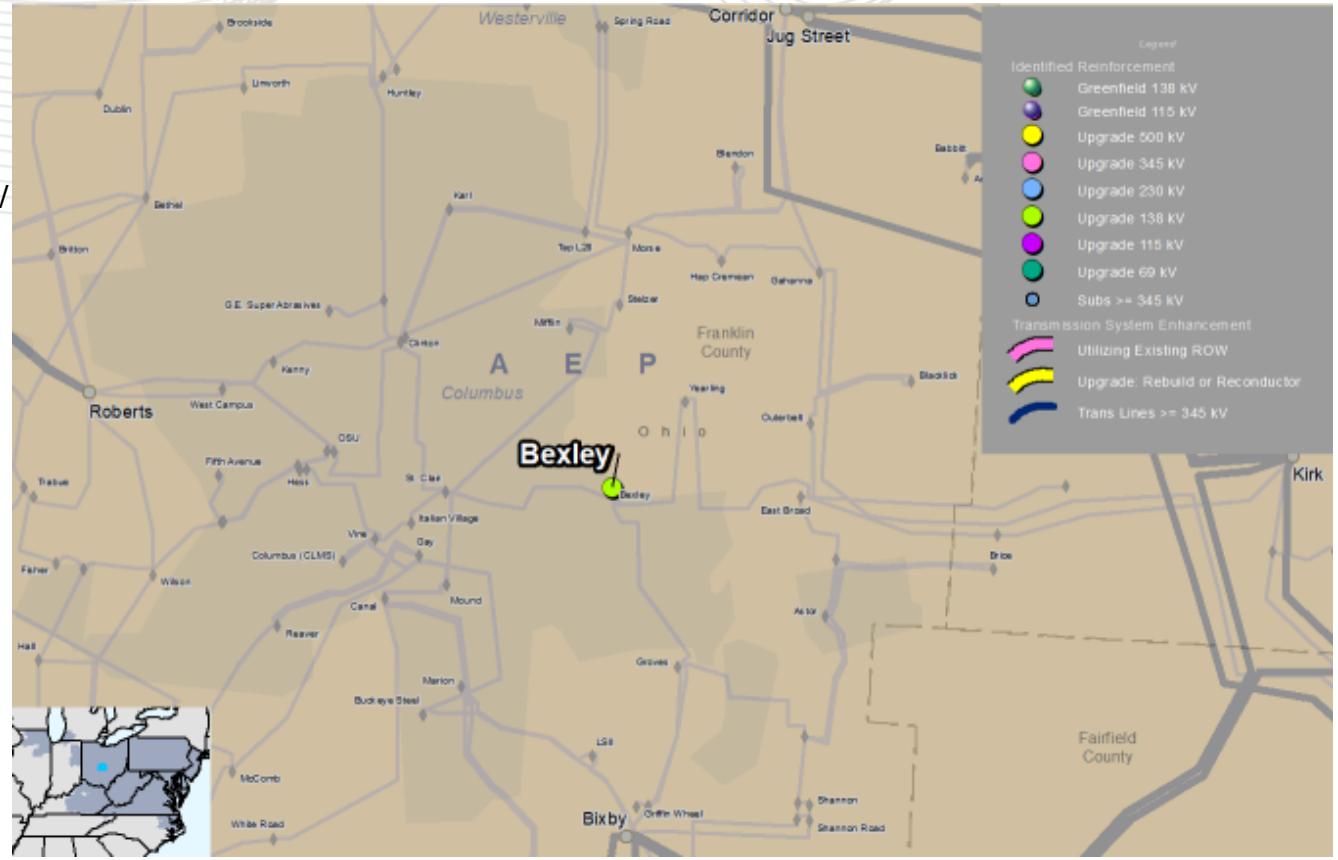
Flowgate IDs:

2026-W1-N11-ST205, 2026-W1-N11-ST206

In the 2031 RTEP summer base case, the Bexley - Yearling 138 kV branch overloads under N-1-1 outages.

Proposed Solution:

- Replace the 636 and 954 ACSR bus conductor at Bexley 138kV substation with 2-2000 kCM ACC. 91-str.
- Estimated Cost: $0.21 M.



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AEP Transmission Zone: Baseline
Bexley 138 kV Bus Conductor Replacements

Ratings MVA (SN/SE/WN/WE):

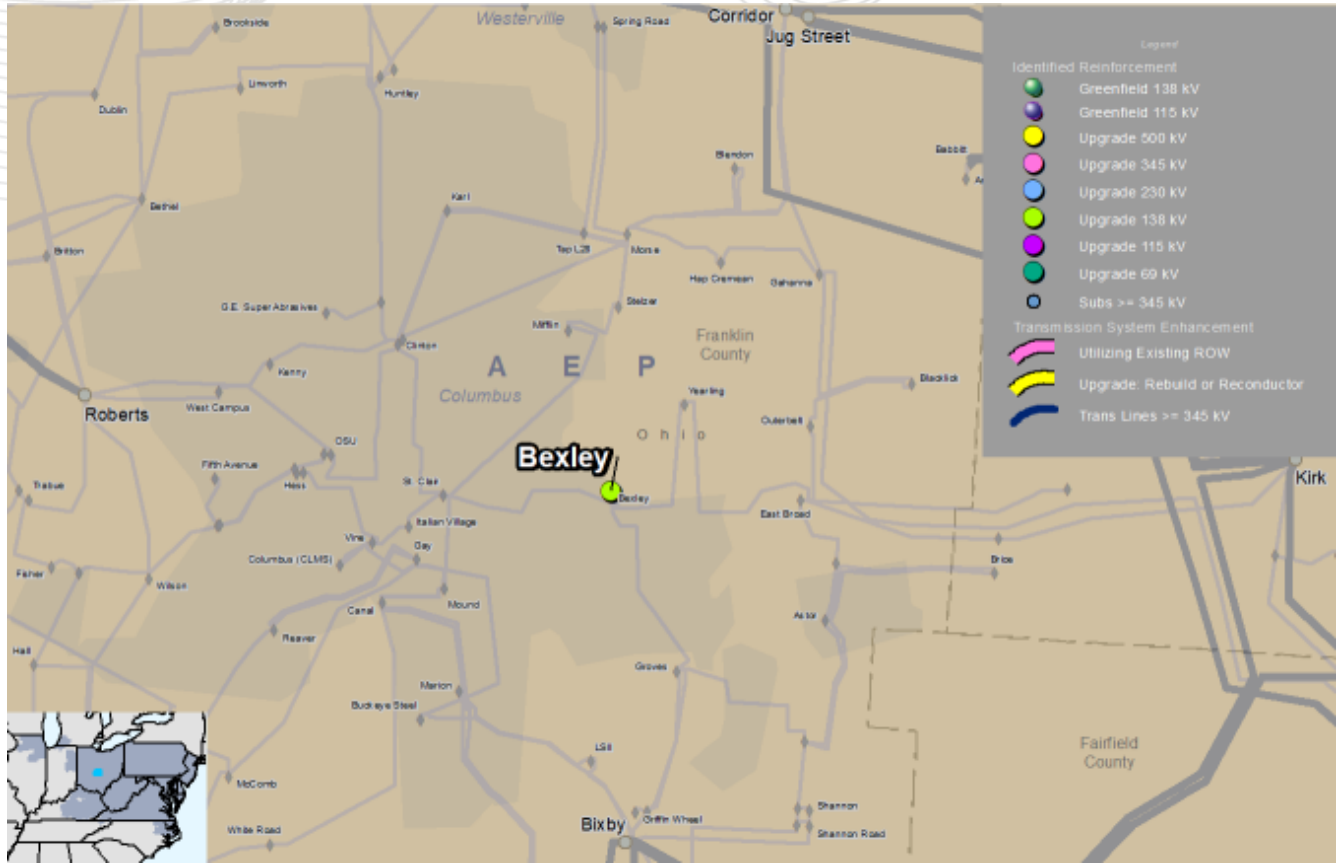
Bexley - Yearling 138 kV Line	SN/SE/WN/WE (MVA)
Existing	196/247/248/286
Preliminary	248/277/313/350

Alternatives Considered:

No viable cost-effective solution was found due to the limited scope of work

Required In-Service: 06/01/2031

Projected In-Service: 06/01/2031



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AEP Transmission Zone: Baseline
Athens Area Cap Bank

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability

Assumption Reference: 2026 RTEP Assumption

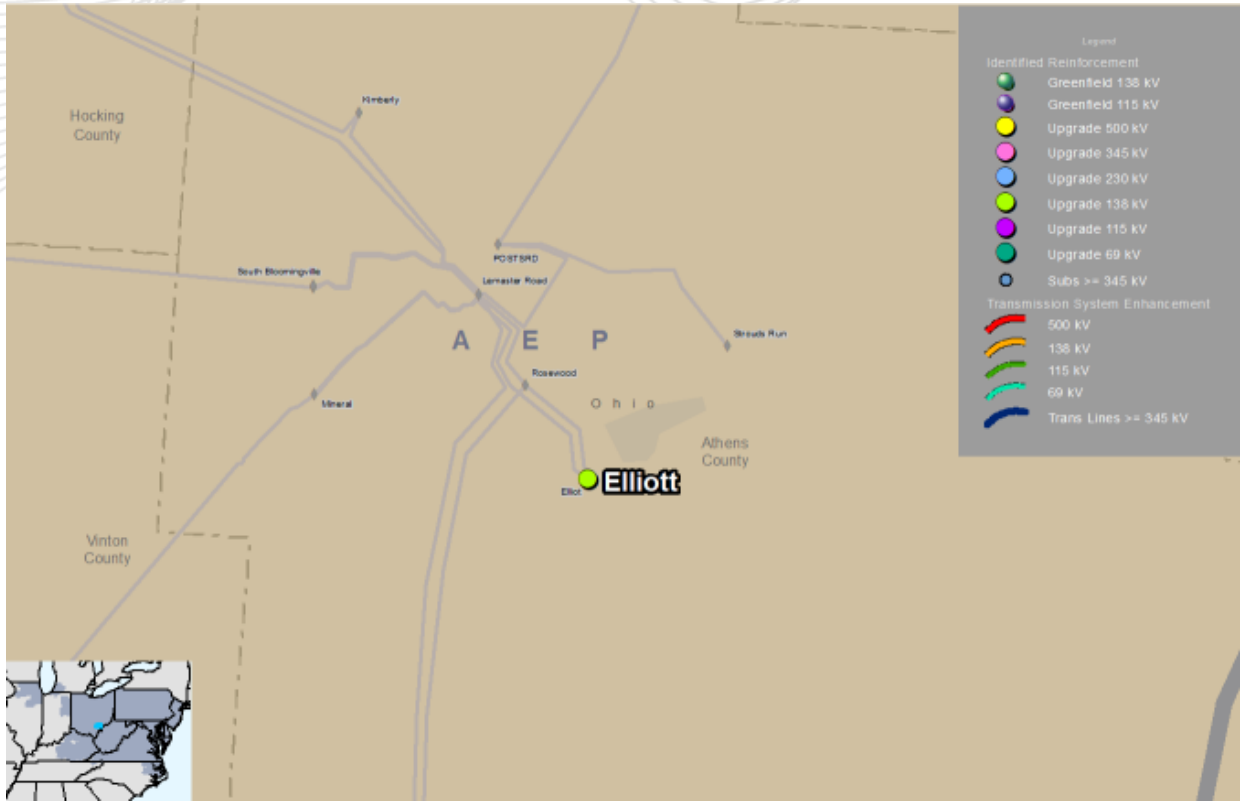
Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion.

Problem Statement:

Flowgate IDs:

2026-W1-AEP-VD12, 2026-W1-AEP-VD13, 2026-W1-AEP-VD14, 2026-W1-AEP-VD15, 2026-W1-AEP-VD16, 2026-W1-AEP-VD17, 2026-W1-AEP-VD18, 2026-W1-AEP-VD19, 2026-W1-AEP-VD20, 2026-W1-AEP-VD21, 2026-W1-AEP-VD22, 2026-W1-AEP-VD23, 2026-W1-AEP-VD24, 2026-W1-AEP-VD25, 2026-W1-AEP-VD266, 2026-W1-AEP-VD267, 2026-W1-AEP-VD268, 2026-W1-AEP-VD269, 2026-W1-AEP-VD340, 2026-W1-AEP-VD341, 2026-W1-AEP-VD342, 2026-W1-AEP-VD343, 2026-W1-AEP-VM1, 2026-W1-AEP-VM10, 2026-W1-AEP-VM11, 2026-W1-AEP-VM12, 2026-W1-AEP-VM13, 2026-W1-AEP-VM14, 2026-W1-AEP-VM141, 2026-W1-AEP-VM142, 2026-W1-AEP-VM143, 2026-W1-AEP-VM144, 2026-W1-AEP-VM15, 2026-W1-AEP-VM16, 2026-W1-AEP-VM17, 2026-W1-AEP-VM192, 2026-W1-AEP-VM193, 2026-W1-AEP-VM194, 2026-W1-AEP-VM2, 2026-W1-AEP-VM3, 2026-W1-AEP-VM4, 2026-W1-AEP-VM5, 2026-W1-AEP-VM6, 2026-W1-AEP-VM7, 2026-W1-AEP-VM8, 2026-W1-AEP-VM9



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AEP Transmission Zone: Baseline
Athens Area Cap Bank

In 2031 summer and winter base cases, AEP's 69 kV and 138 kV delivery points in the Athens area experienced voltage drop and voltage magnitude violations under N-2 outages.

Proposed Solution:

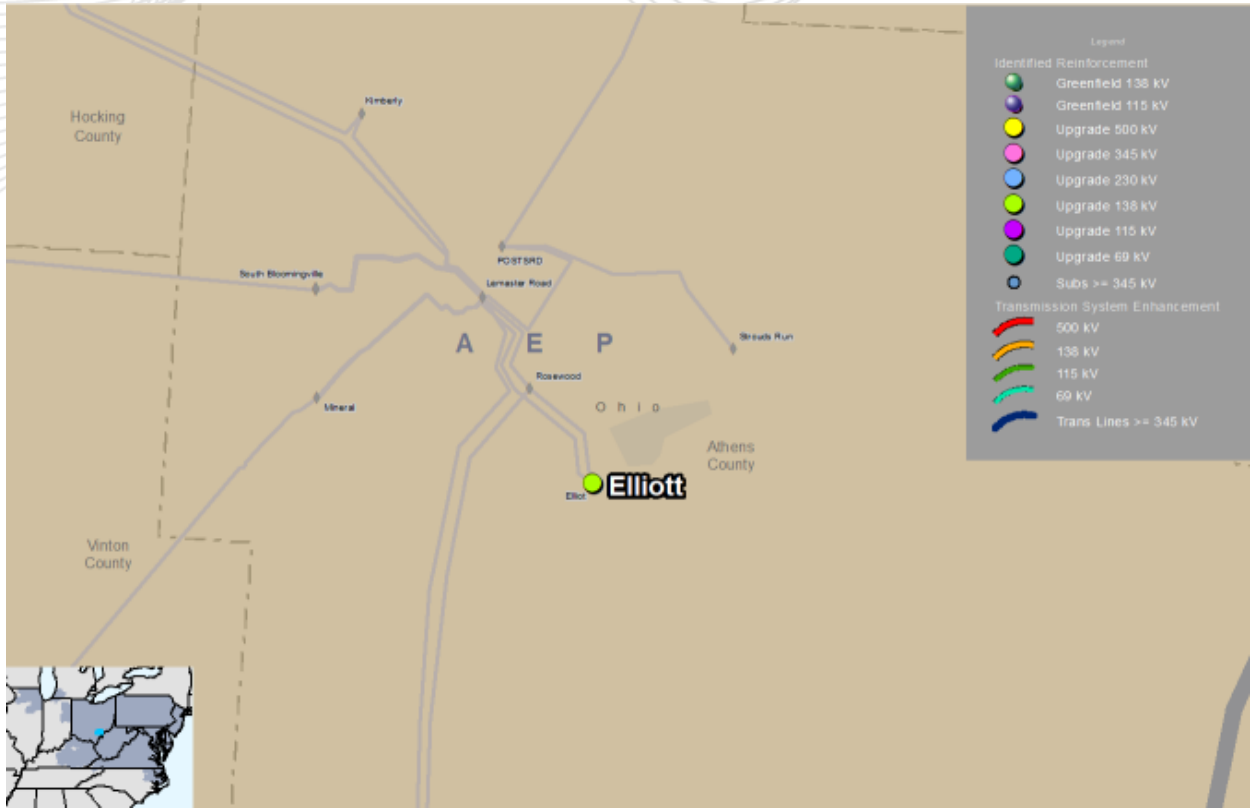
- Install (1) One 138 kV 34.6 MVAR capacitor bank with an associated 3000A 45 kA circuit switcher with a closing resistor at Elliott 138 kV substation
- Estimated Cost: $2.203 M.

Alternatives Considered:

Considering the limited scope of the solution, no other transmission alternatives were viable. Adding additional capacitor banks to other stations in the area could lead to setting challenges and wouldn't provide additional benefit as Elliott 138kV does.

Required In-Service: 06/01/2031

Projected In-Service: 06/01/2031



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AEP Transmission Zone: Baseline
Strouds Run Transformer #2 Replacement

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability and TO 715 Criteria

Assumption Reference: 2026 RTEP Assumption

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion

Problem Statement:

Flowgate IDs:

2026-W1-AEP-T10, 2026-W1-AEP-T9, 2026-W1-N11-WT10, 2026-W1-N11-WT9

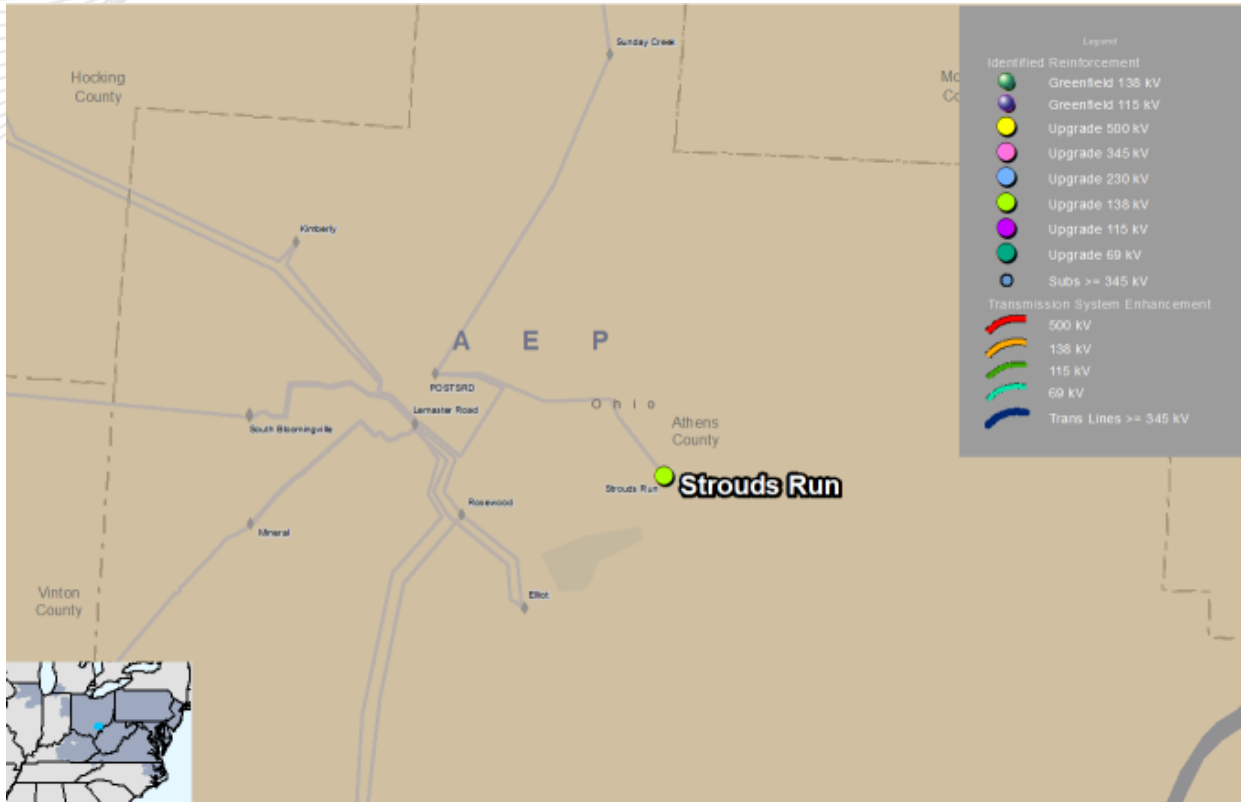
In 2031 RTEP winter base case, Strouds Run 138/69 kV XF#2 experienced overload under N-1-1 outages.

Proposed Solution:

- Replace 138/69 kV Transformer #2 at Strouds Run with a capacity of 130 MVA.
- Estimated Cost: $5.225 M.

Ratings MVA (SN/SE/WN/WE):

138/69 kV Strouds Run XF#2	SN/SE/WN/WE (MVA)
Existing	93/107/105/118
Preliminary	157/157/177/182



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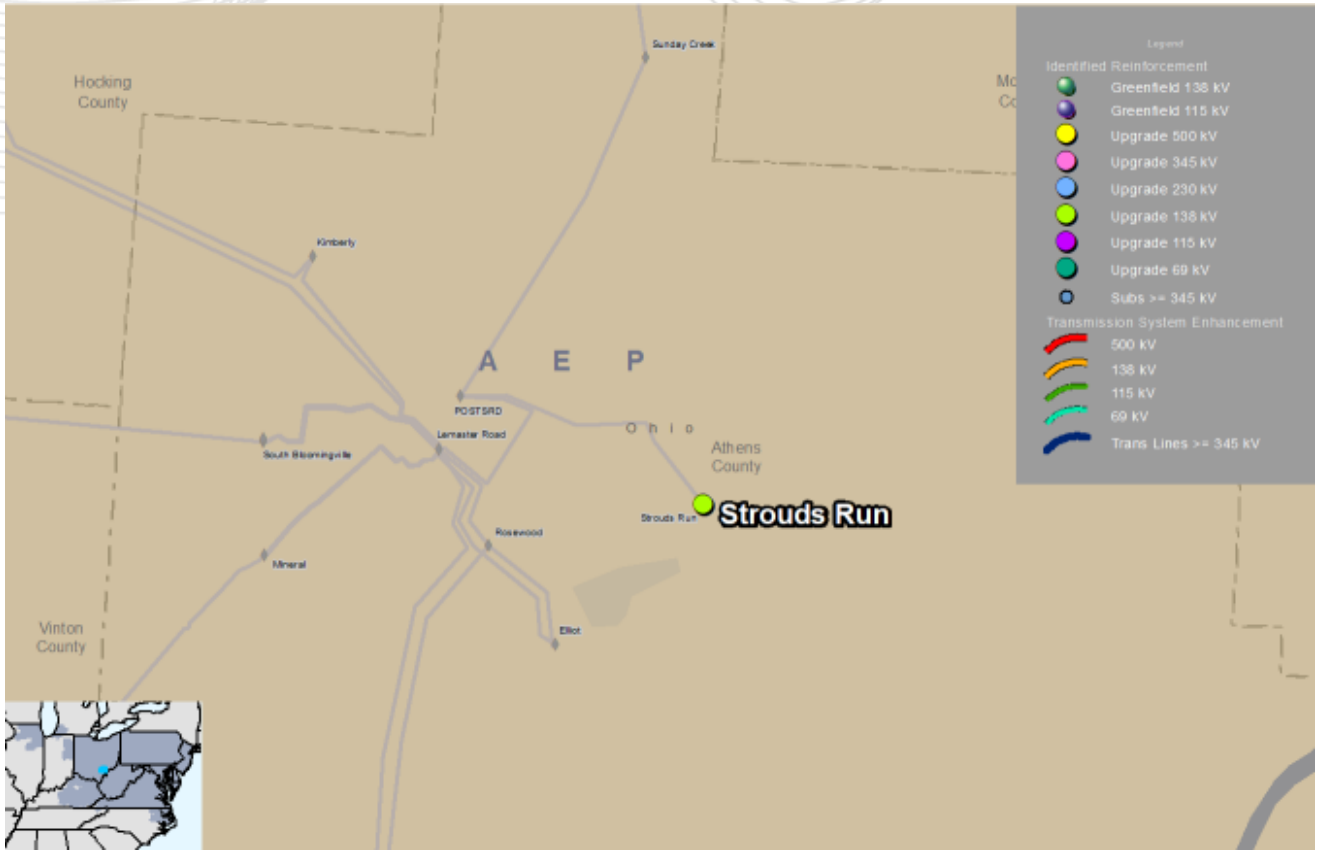
AEP Transmission Zone: Baseline
Strouds Run Transformer #2 Replacement

Alternatives Considered:

No other alternatives were identified due to the limited scope of the required upgrade

Required In-Service: 12/01/2031

Projected In-Service: 12/01/2031



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AEP Transmission Zone: Baseline
Mansfield Switch Conductor Replacements

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Below 200 kV exclusion

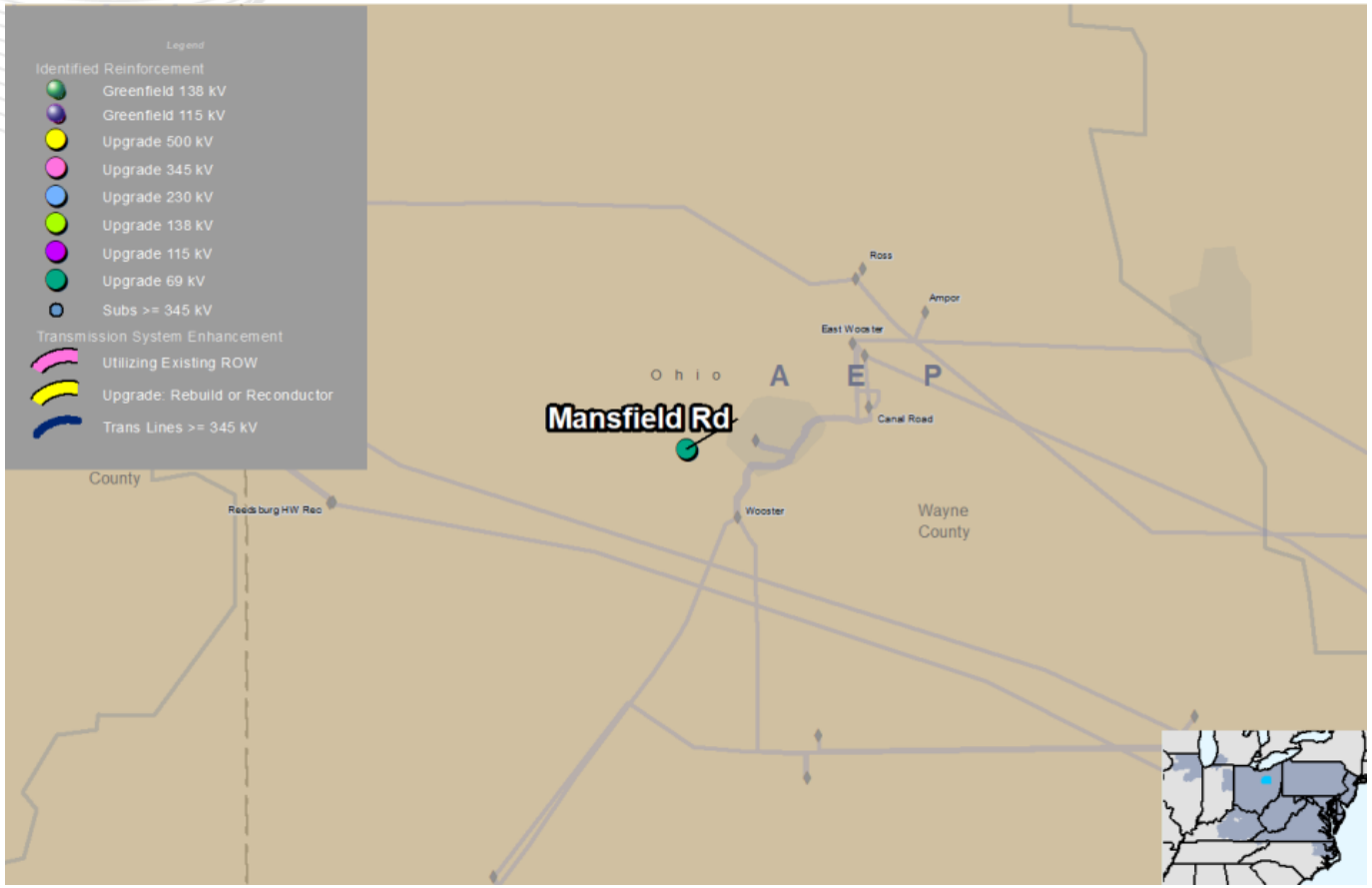
Problem Statement:

FG: 2026-W1-AEP-T21, 2026-W1-AEP-T22, 2026-W1-AEP-T23, 2026-W1-AEP-T24, 2026-W1-AEP-T25, 2026-W1-AEP-T26, 2026-W1-AEP-T27, 2026-W1-AEP-T28, 2026-W1-AEP-T29, 2026-W1-AEP-T30, 2026-W1-AEP-T31, 2026-W1-AEP-T32, 2026-W1-AEP-T33, 2026-W1-AEP-T34, 2026-W1-AEP-T35.

In the 2031 Summer case, thermal overloads are identified on the Mansfield Road Switch - West Wooster and Mansfield Road - Prairie Lane Switch 69 kV branches due to N-1-1 and N-2 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Mansfield Rd SW-Praire Lane SW 69kV	46/46/65/65
Mansfield Rd SW-West Wooster 69kV	46/46/65/65



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AEP Transmission Zone: Baseline
Mansfield Switch Conductor Replacements

Proposed Solution:

- Replace 69kV 3/0 COPPER 7 jumper conductors between Mansfield Road Switch and STR 51 with 1-795 ACSR 26/7 Drake.

Total Estimated Cost: $1.529 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Mansfield Rd SW-Praire Lane SW 69kV	46/46/65/65
Mansfield Rd SW-West Wooster 69kV	46/46/65/65

Required In-Service: 06/01/2031

Projected IS Date: 06/01/2031



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AEP Transmission Zone: Baseline
East Newark - North Newark 69kV Rebuild

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions.

Model Used for Analysis: 2031 base cases.

Proposal Window Exclusion: Below 200 kV exclusion.

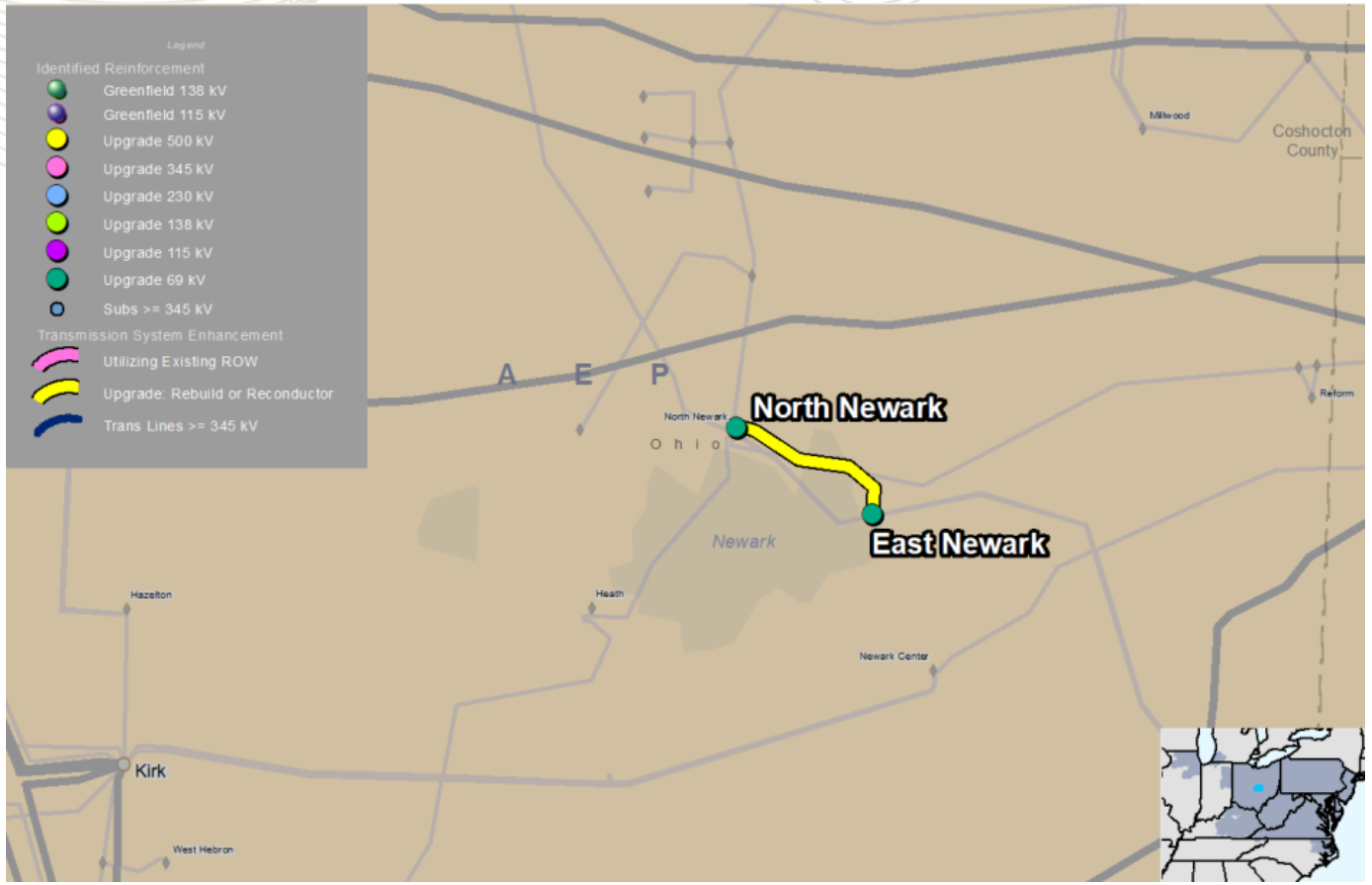
Problem Statement:

FG: 2026-W1-AEP-T36, 2026-W1-AEP-T37.

In the 2031 Summer case, thermal overloads are identified on the 69kV line section between East Newark - North Newark circuit due to N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
East Newark - North Newark 69kV	35/35/48/48



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AEP Transmission Zone: Baseline
East Newark - North Newark 69kV Rebuild

Proposed Solution:

- Rebuild the ~3.75 mi 69kV line between North Newark - East Newark substation ultimately replacing the 1/0 Cu conductor with 556 ACSR DOVE on the line and increasing the capacity of the line.

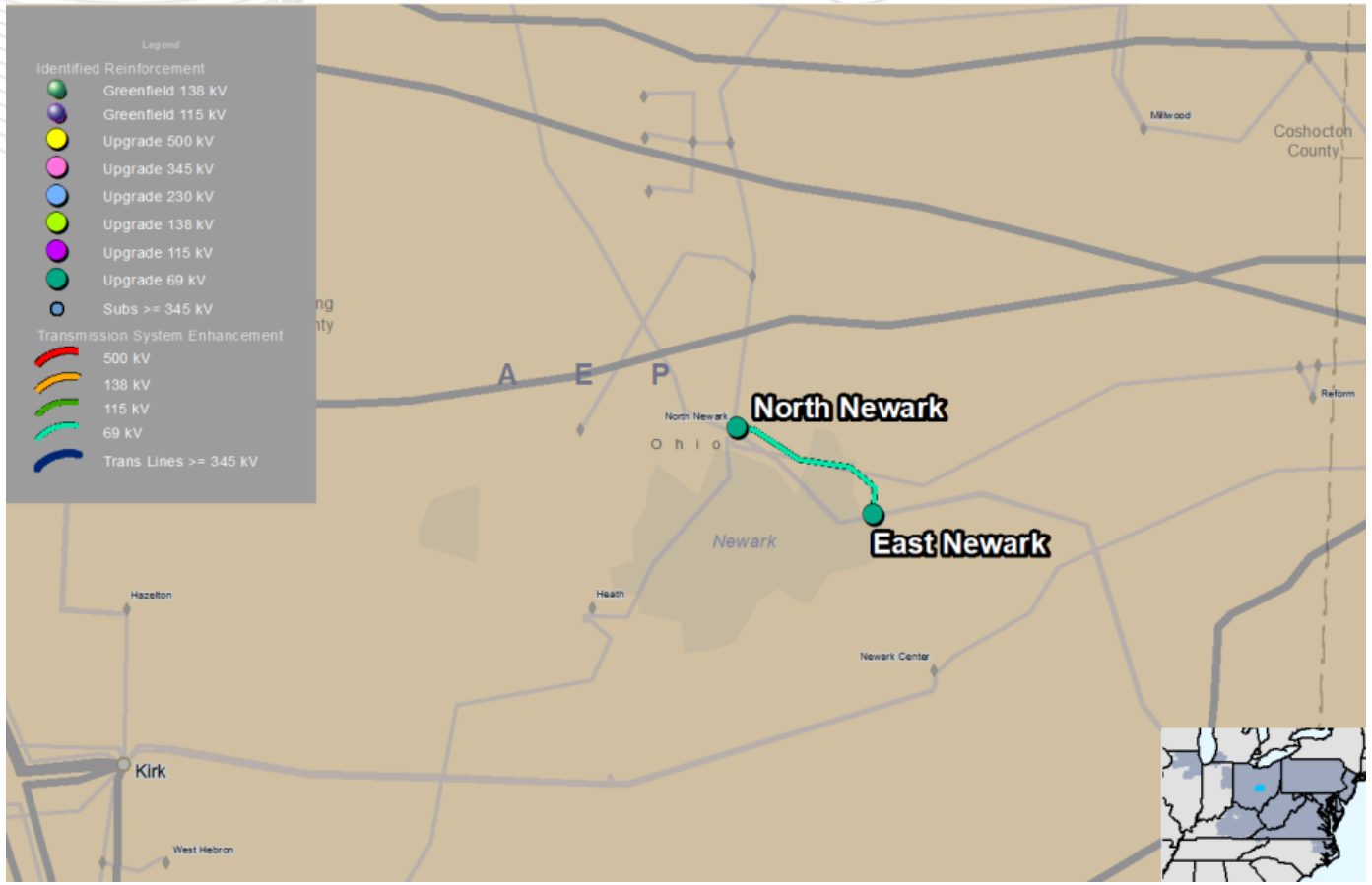
Total Estimated Cost: $29.547 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
East Newark - North Newark 69kV	102/142/129/160

Required In-Service: 06/01/2031

Projected IS Date: 04/01/2031



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AEP Transmission Zone: Baseline
Beatty 138/69kV XF

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base cases

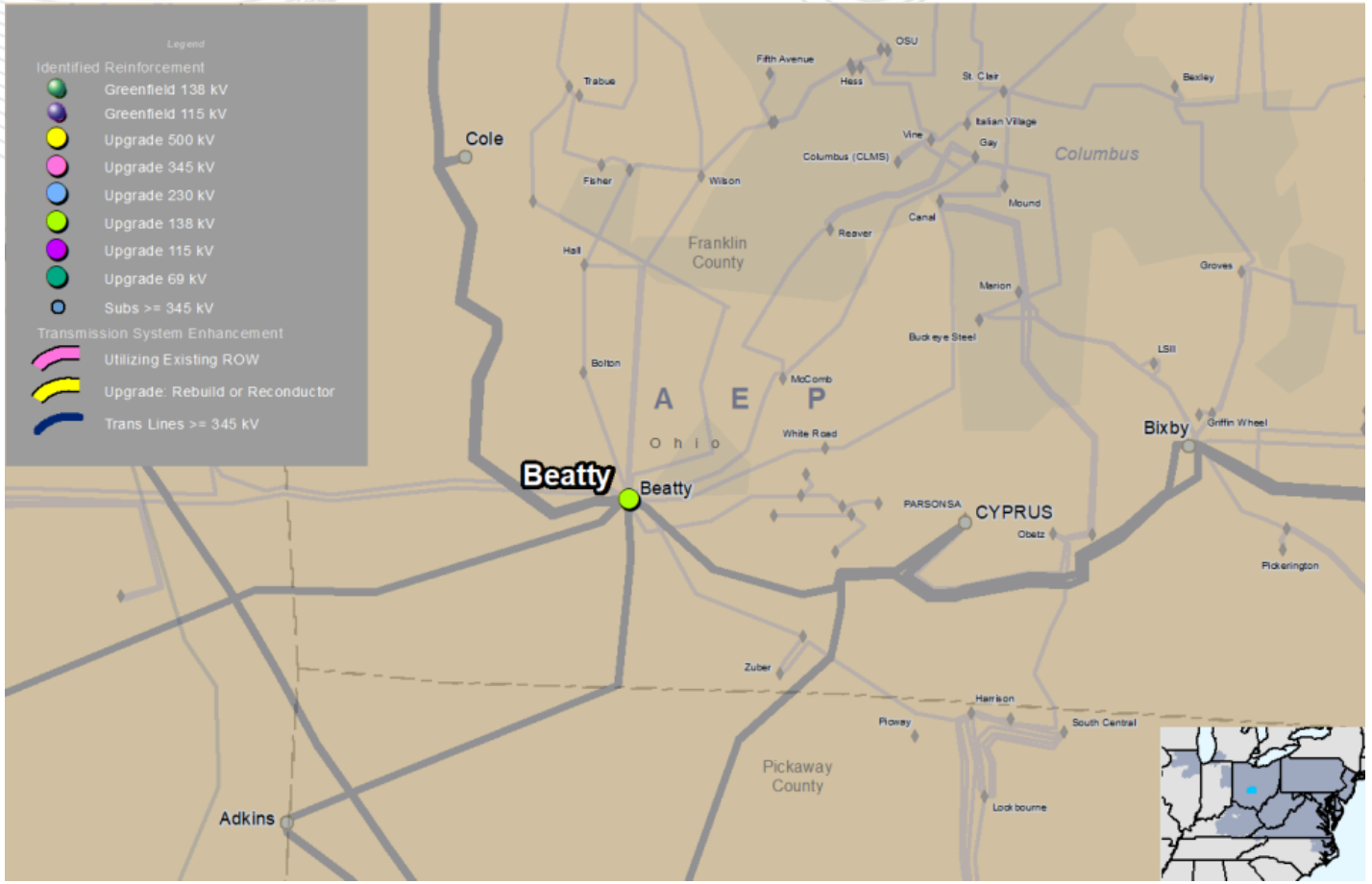
Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2026-W1-AEP-VM18, 2026-W1-AEP-VM19, 2026-W1-AEP-VM20, 2026-W1-AEP-VM21, 2026-W1-AEP-VM28, 2026-W1-AEP-VM29, 2026-W1-AEP-VM30, 2026-W1-AEP-VM31, 2026-W1-AEP-VM32, 2026-W1-AEP-VM33, 2026-W1-AEP-VM34, 2026-W1-AEP-VM35, 2026-W1-AEP-VM36, 2026-W1-AEP-VM37, 2026-W1-AEP-VM44, 2026-W1-AEP-VM45, 2026-W1-AEP-VM46, 2026-W1-AEP-VM47, 2026-W1-AEP-VM48, 2026-W1-AEP-VM49, 2026-W1-AEP-VM50, 2026-W1-AEP-VM51,

2026-W1-AEP-VD31, 2026-W1-AEP-VD32, 2026-W1-AEP-VD33, 2026-W1-AEP-VD34, 2026-W1-AEP-VD35, 2026-W1-AEP-VD36, 2026-W1-AEP-VD89, 2026-W1-AEP-VD89, 2026-W1-AEP-VD90, 2026-W1-AEP-VD91, 2026-W1-AEP-VD92, 2026-W1-AEP-VD93, 2026-W1-AEP-VD94, 2026-W1-AEP-VD95, 2026-W1-AEP-VD96, 2026-W1-AEP-VD97, 2026-W1-AEP-VD98, 2026-W1-AEP-VD99, 2026-W1-AEP-VD100, 2026-W1-AEP-VD101, 2026-W1-AEP-VD109, 2026-W1-AEP-VD110, 2026-W1-AEP-VD111, 2026-W1-AEP-VD112, 2026-W1-AEP-VD113, 2026-W1-AEP-VD114, 2026-W1-AEP-VD115, 2026-W1-AEP-VD116, 2026-W1-AEP-VD117.

In the 2031 Summer and Winter cases, multiple voltage violations are identified at 69kV stations between Beatty and Harrison stations due to N-1-1 and N-2 outages.



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AEP Transmission Zone: Baseline Beatty 138/69kV XF

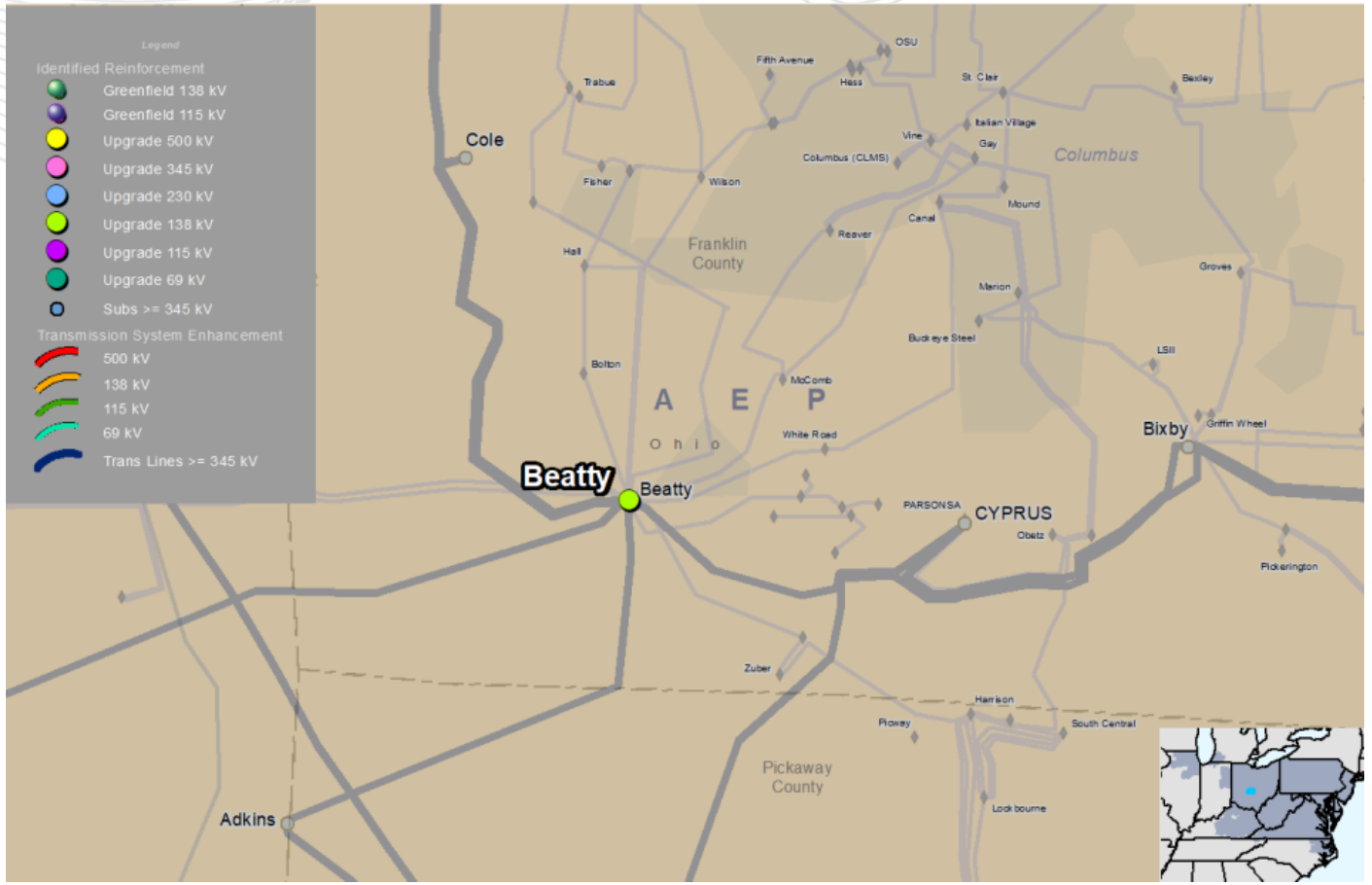
Proposed Solution:

- Install a second 138/69kV 90 MVA transformer. Install one 3000A 63kA 138kV circuit breaker and one 3000A 40kA 69kV circuit breaker.

Total Estimated Cost: $10.166 M

Required In-Service: 06/01/2031

Projected IS Date: 06/01/2031



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AEP Transmission Zone: Baseline Franklin Furnace - Grays Branch 69kV

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base case

Proposal Window Exclusion: Below 200 kV exclusion

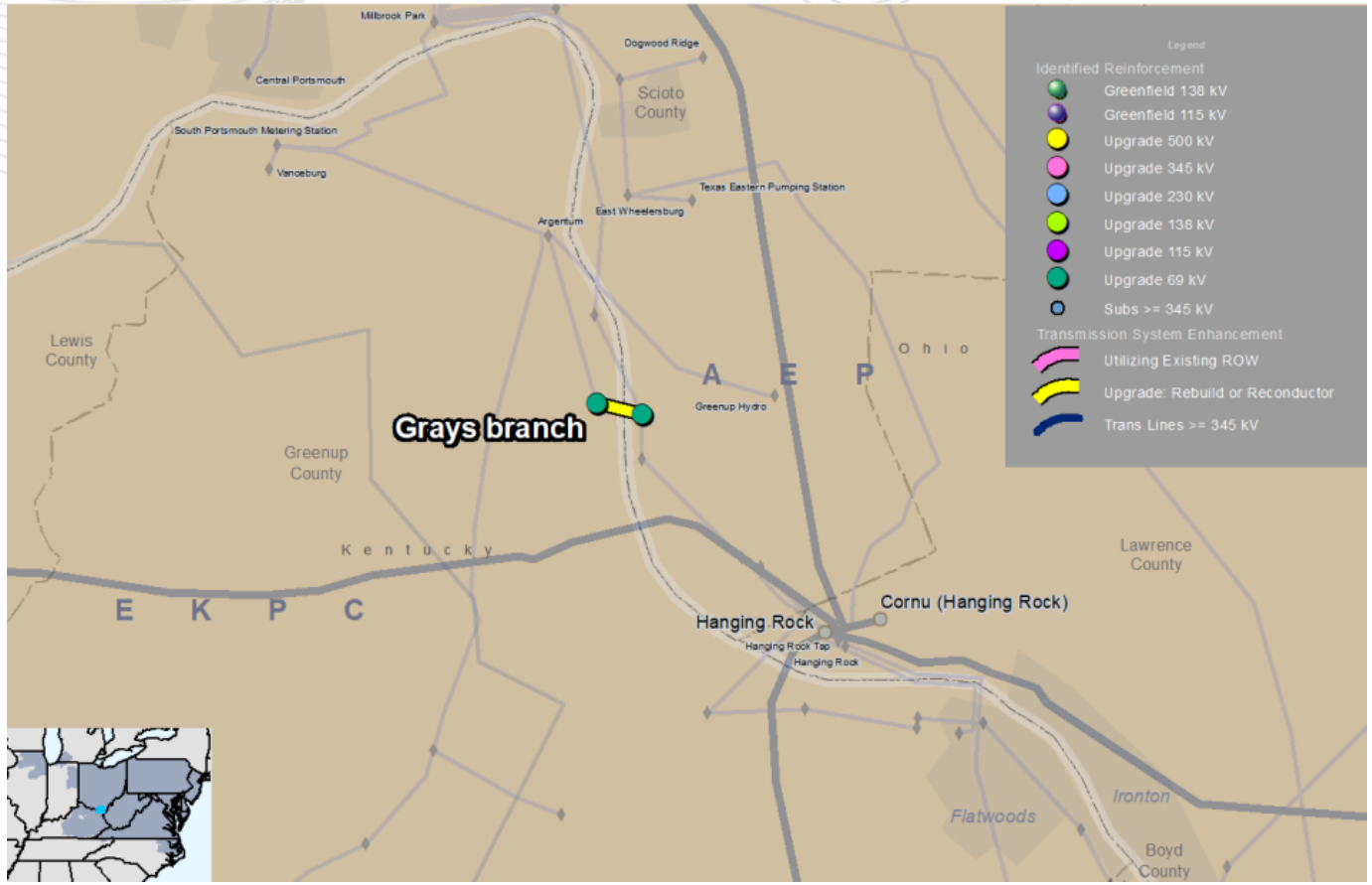
Problem Statement:

FG: 2026-W1-AEP-T1, 2026-W1-AEP-T2, 2026-W1-AEP-T3, 2026-W1-AEP-T4, 2026-W1-AEP-T5, 2026-W1-AEP-T6, 2026-W1-AEP-T7, 2026-W1-AEP-T8.

In the 2031 Winter case, thermal overloads are identified on the Franklin Furnace - Grays Branch 69kV due to N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Franklin Furnace - Grays Branch 69kV	44/44/56/56



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AEP Transmission Zone: Baseline Franklin Furnace - Grays Branch 69kV

Proposed Solution:

- Rebuild the Franklin Furnace - Grays Branch (~1.13-miles) 69kV.

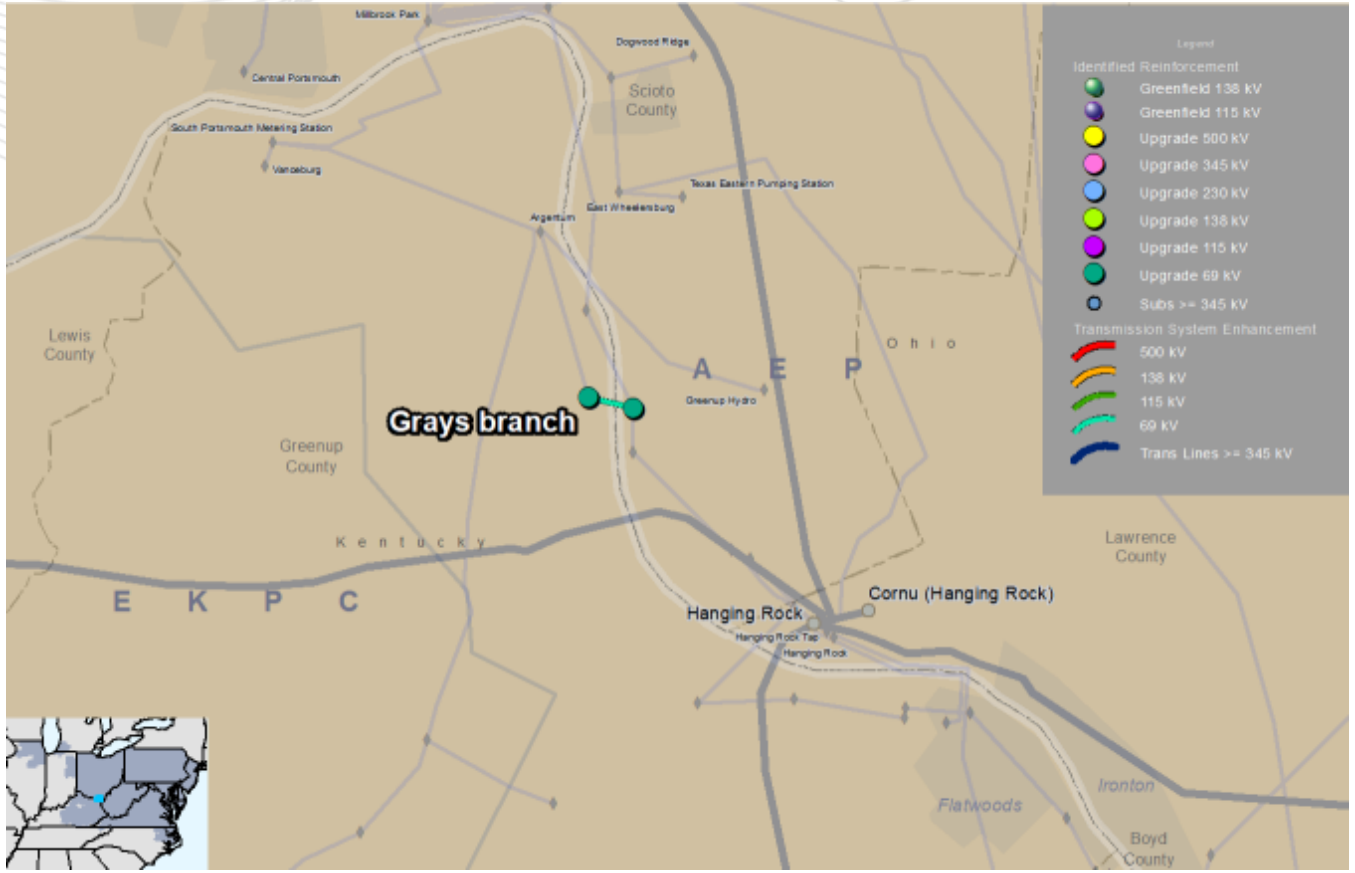
Total Estimated Cost: $10.645 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Franklin Furnace - Grays Branch 69kV	123/163/156/186

Required In-Service: 12/01/2031

Projected IS Date: 12/01/2031



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AEP Transmission Zone: Baseline Bockoven-Marathon 69kV Line Rebuild

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2026-W1-AEP-T39, 2026-W1-AEP-T40, 2026-W1-AEP-T41.

In the 2031 Summer case, thermal overloads are identified on the Bockoven Switch - Marathon 69 kV line due to N-2 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Bockoven SW-Marathon 69kV Line	73/73/91/91



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AEP Transmission Zone: Baseline Bockoven-Marathon 69kV Line Rebuild

Proposed Solution:

- Rebuild ~3.74 miles of the Bockoven Switch - Marathon 69kV line from Marathon to structure 24.

Total Estimated Cost: $21.761 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Bockoven SW-Marathon 69kV Line	102/142/129/160

Required In-Service: 06/01/2031

Projected IS Date: 06/01/2031



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AEP Transmission Zone: Baseline Bentonville Cap Bank

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

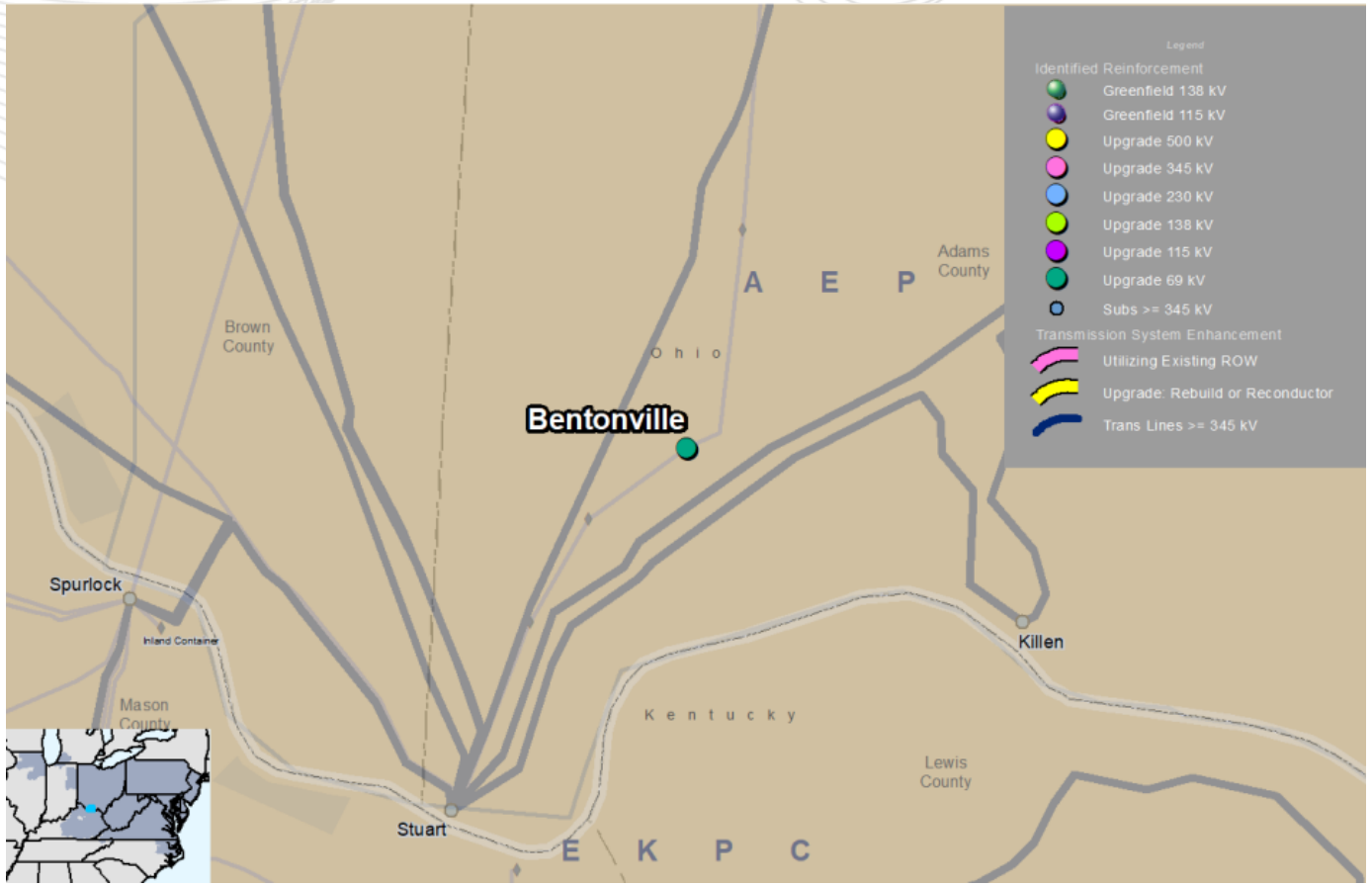
Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2026-W1-AEP-VD264, 2026-W1-AEP-VD265.

In the 2031 Winter case, voltage violations are identified at Raven 69 kV station due to N-1-1 outages.



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AEP Transmission Zone: Baseline Bentonville Cap Bank

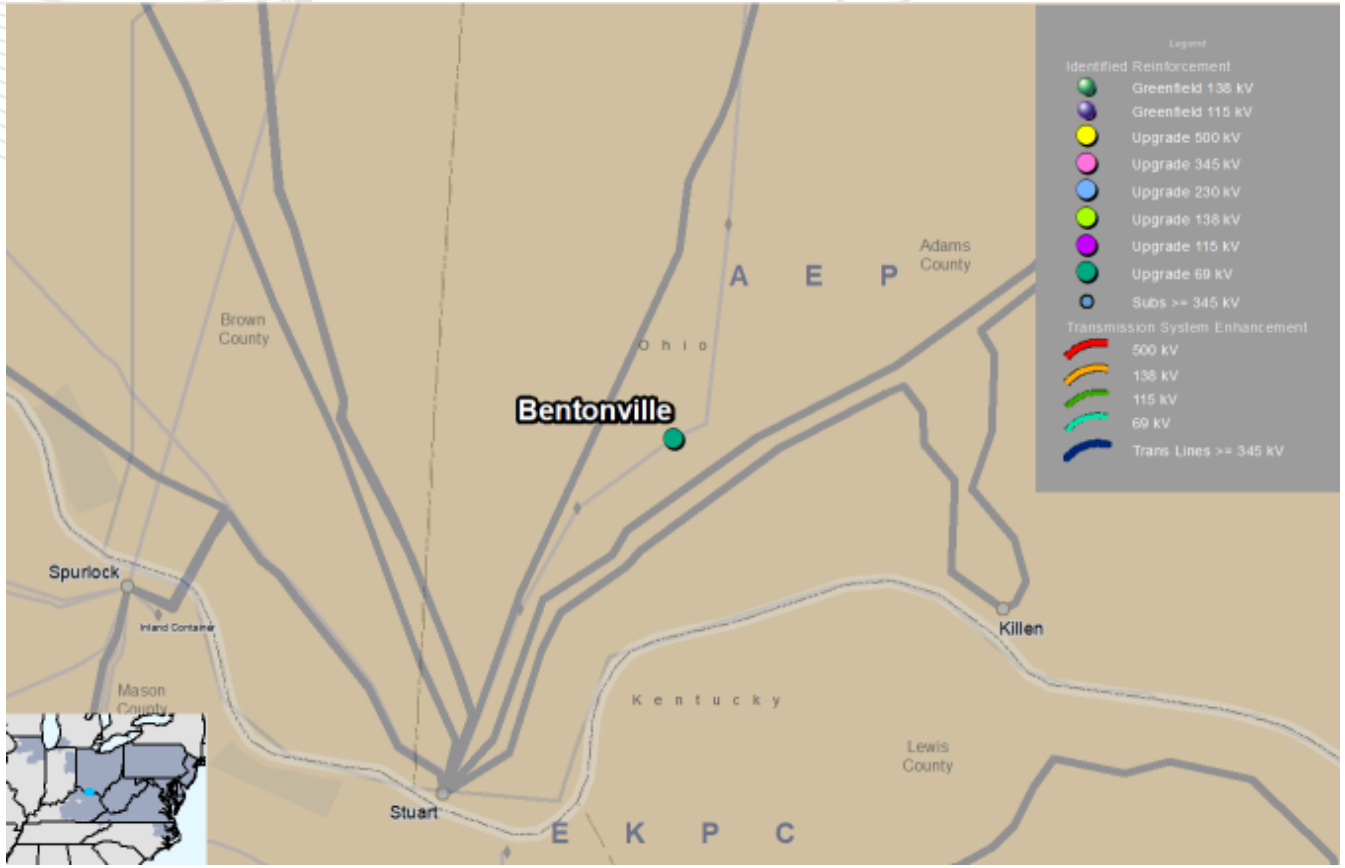
Proposed Solution:

- Install (1) 69 kV 7.7 MVAR capacitor bank with an associated 600A 25 kA circuit switcher with a closing resistor at Bentonville 69 kV.

Total Estimated Cost: $2.541 M

Required In-Service: 12/01/2031

Projected IS Date: 06/01/2031



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DEOK Transmission Zone: Baseline
Hensley - Millville 69 kV Partial Rebuild

Process Stage: First Read

Criteria: TO 715 Criteria

Assumption Reference: 2026 RTEP Assumption

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Reliability Violations on Transmission Facilities Below 200 kV exclusion

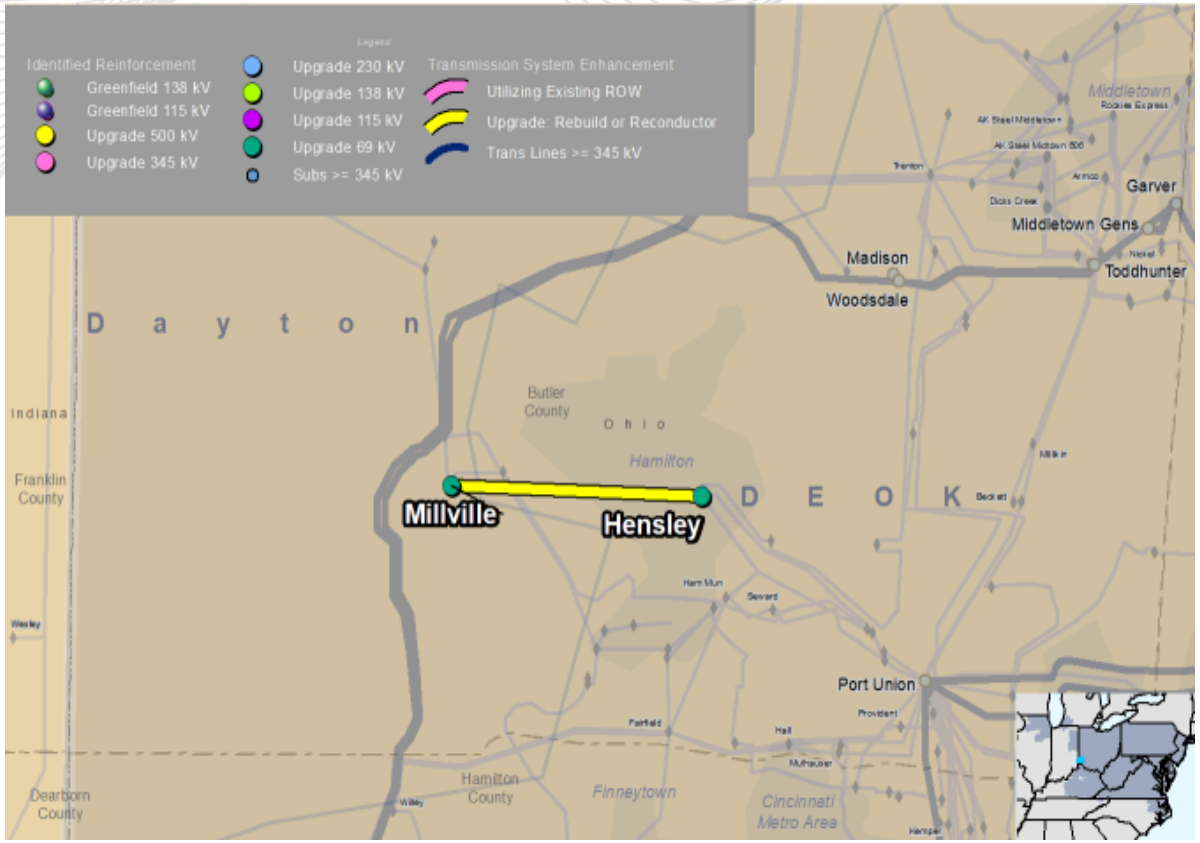
Problem Statement:

Flowgate IDs: 2026-W1-DEOK-T1

In the 2031 RTEP Summer Case, Hensley - Millville 69 kV circuit is overloaded for an N-1 outage.

Proposed Solution:

- Rebuild ~5.90 miles of the Hensley - Millville 69 kV circuit (6.4 miles) with 954 ACSR Rail Conductor.
- Approximately 0.93 miles of the 5.90-mile rebuild will require new easements. Any facilities under build (Duke Energy Ohio Distribution Under Build, City of Hamilton Transmission/Distribution Under Build) that shares a common structure with the Hensley - Millville 69 kV circuit will be transferred to the new structures.
- Replace (2) 600A switches at Millville Substation with (2) 1200A switches
- Replace the 500kcmil copper bus conductor and conductor drops at Millville with 954kcmil bus conductor.
- Estimated Cost: $19.421 M.



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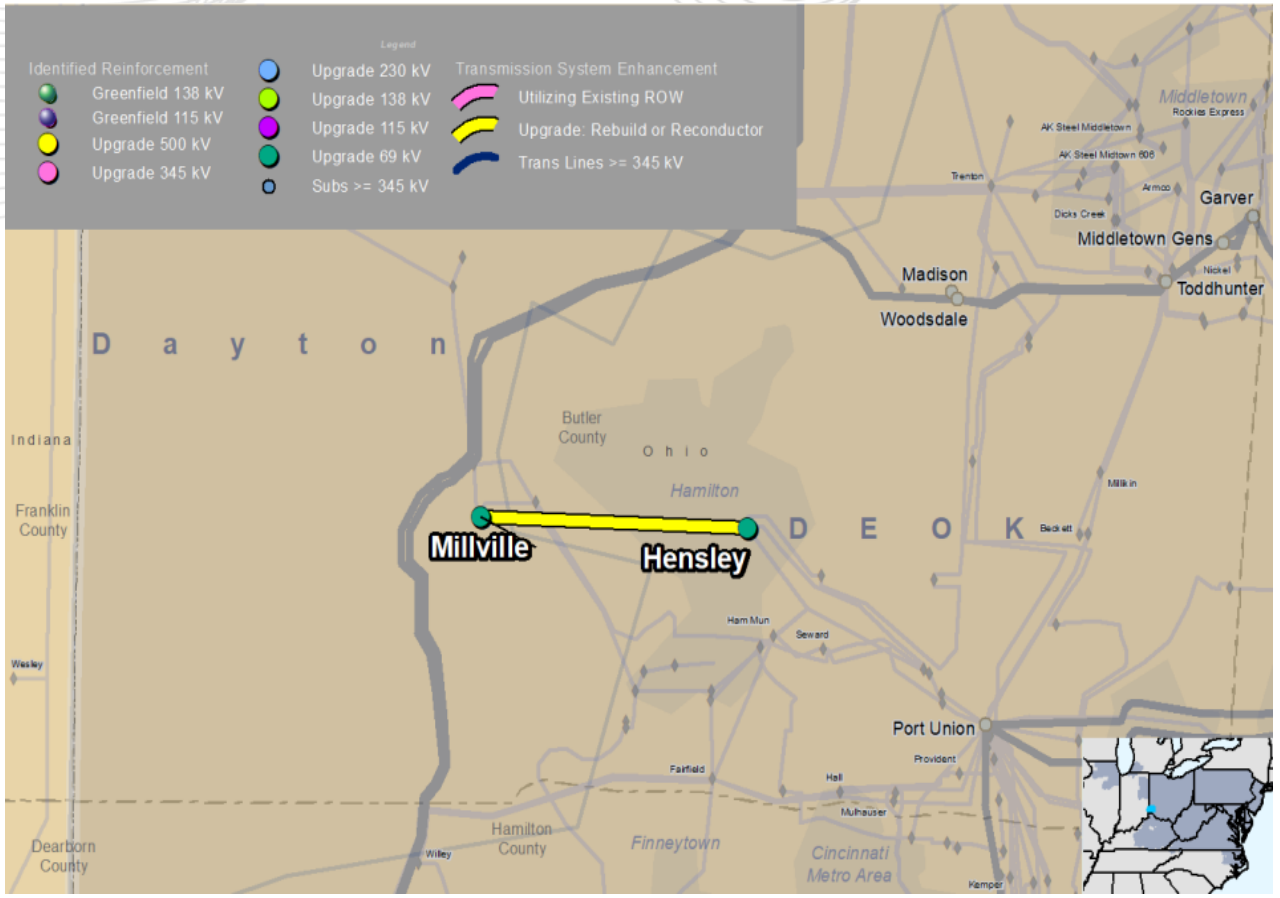
DEOK Transmission Zone: Baseline
Hensley - Millville 69kV Partial Rebuild

Ratings MVA (SN/SE/WN/WE):

Hensey - Millville 69 kV Line	SN/SE/WN/WE (MVA)
Existing	44/44/60/60
Preliminary	146/146/186/186

Alternatives Considered:
N/A

Required In-Service: 06/01/2031
Projected In-Service: 11/22/2030



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AMPT Transmission Zone: Baseline
Tipp City Line Rebuild

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Below 200 kV exclusion

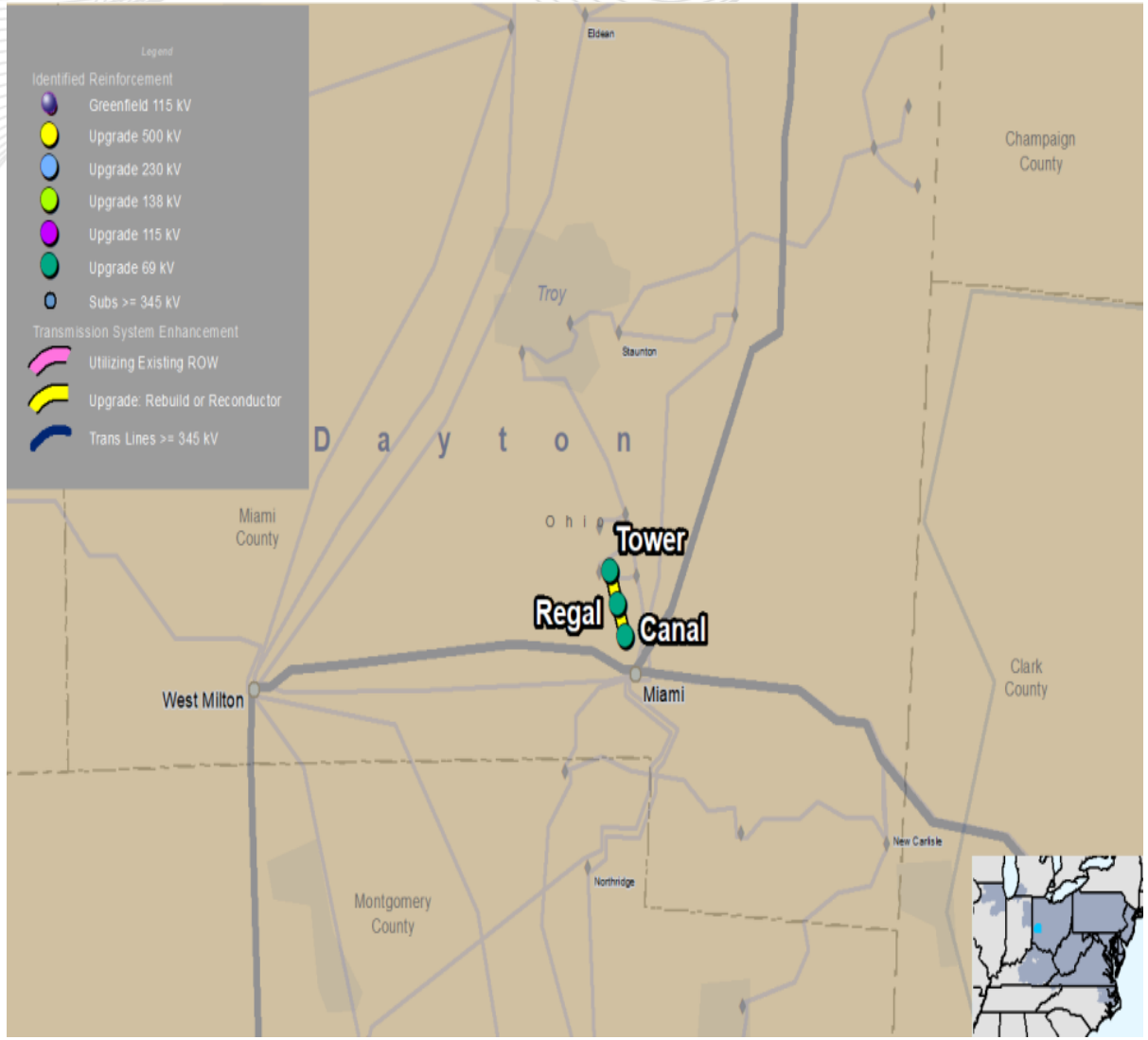
Problem Statement:

Flowgate IDs: 2026-W1-AMPT-T1, 2026-W1-AMPT-T10, 2026-W1-AMPT-T11, 2026-W1-AMPT-T12, 2026-W1-AMPT-T13, 2026-W1-AMPT-T14, 2026-W1-AMPT-T2, 2026-W1-AMPT-T3, 2026-W1-AMPT-T4, 2026-W1-AMPT-T5, 2026-W1-AMPT-T6, 2026-W1-AMPT-T7, 2026-W1-AMPT-T8, 2026-W1-AMPT-T9

In the 2031 Summer case, AMPT has identified that the Tipp City Canal-Miami, Canal-Regal, and Regal-Tower 69 kV lines are overloaded for N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Canal-Regal 69 kV	67/90/77/101
Regal-Tower 69 kV	67/90/77/101
Canal-Miami 69 kV Line	70/70/70/70



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AMPT Transmission Zone: Baseline
Tipp City Line Rebuild

Proposed Solution:

Canal-Regal 69 kV

- Rebuild the existing 1.1-mile long Canal-Regal 69 kV line to 795 ACSR Drake conductor.

Regal-Tower 69 kV

- Rebuild the existing 1.7-mile long Regal-Tower 69 kV line to 795 ACSR Drake conductor.

Canal 69 kV

- Upgrade the existing bus conductors and breaker disconnect leads/jumpers at Canal.

Regal 69 kV

- Demolish existing Regal 69 kV station and rebuild to a two (2) breaker 69 kV straight bus configuration with a high-side 69 kV circuit switcher for the distribution transformer and a 69 kV cap bank and cap switcher.

Total Estimated Cost: $17.855 M

Alternatives Considered:

Build a new 6 mile 69 kV tie-line from Miami (AES) station to the new AMPT Kessler station. This alternative was not chosen due to new ROW acquisition being required and higher overall project cost.

Preliminary Facility Rating:

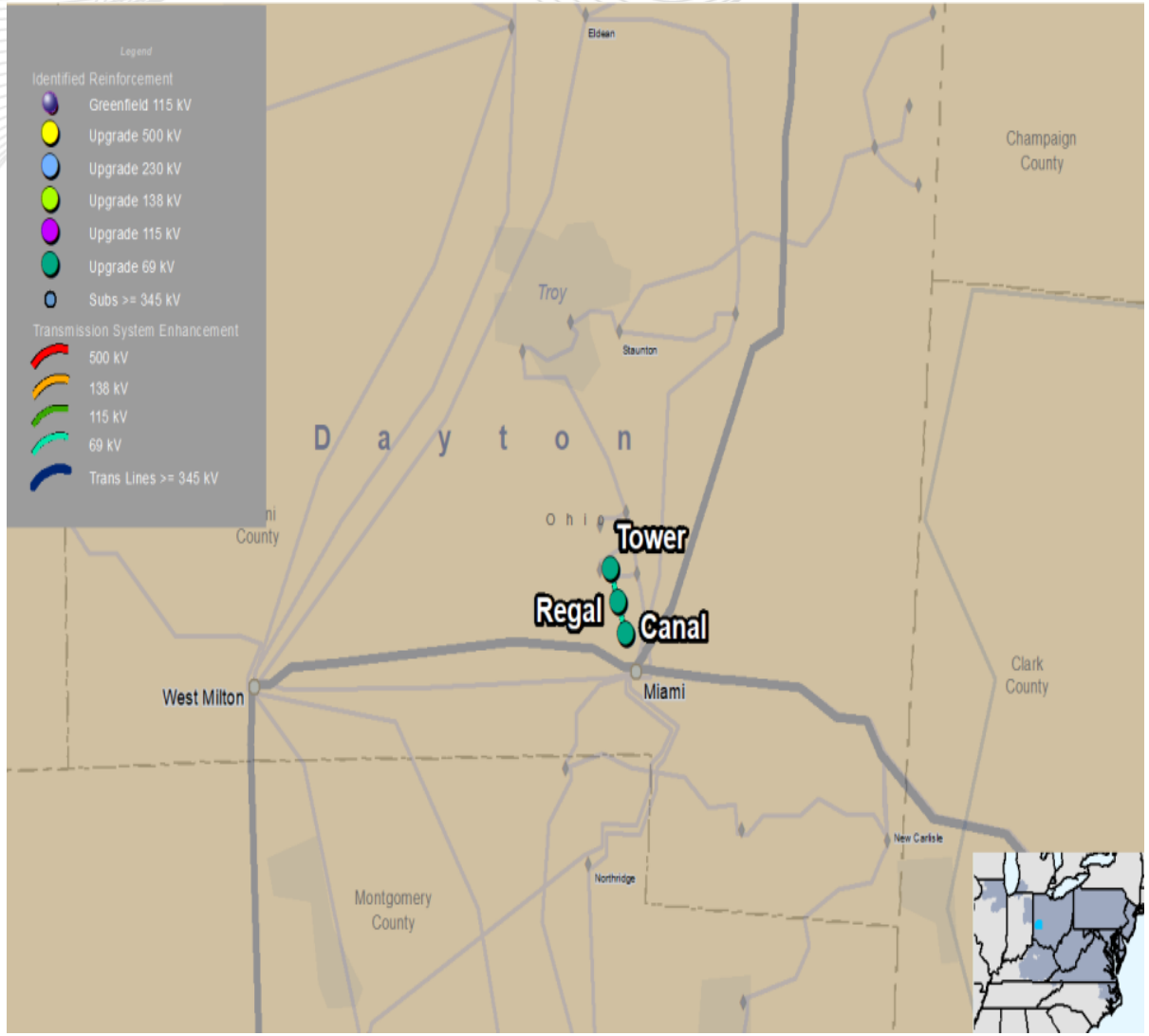
Branch	SN/SE/WN/WE(MVA)
Canal-Regal 69 kV	127/161/145/180
Regal-Tower 69 kV	127/161/145/180
Canal-Miami 69 kV Line	149/166/176/192

Ancillary Benefits:

The reconductoring of the AMPT Tipp City 69 kV lines will provide benefits to the AES system, as well as AMPT.

Required In-Service: 06/01/2031

Projected In-Service: 05/30/2031



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APS Transmission Zone: Baseline
Bethlen Substation - Install 138 kV Capacitor

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2026 RTEP assumptions.

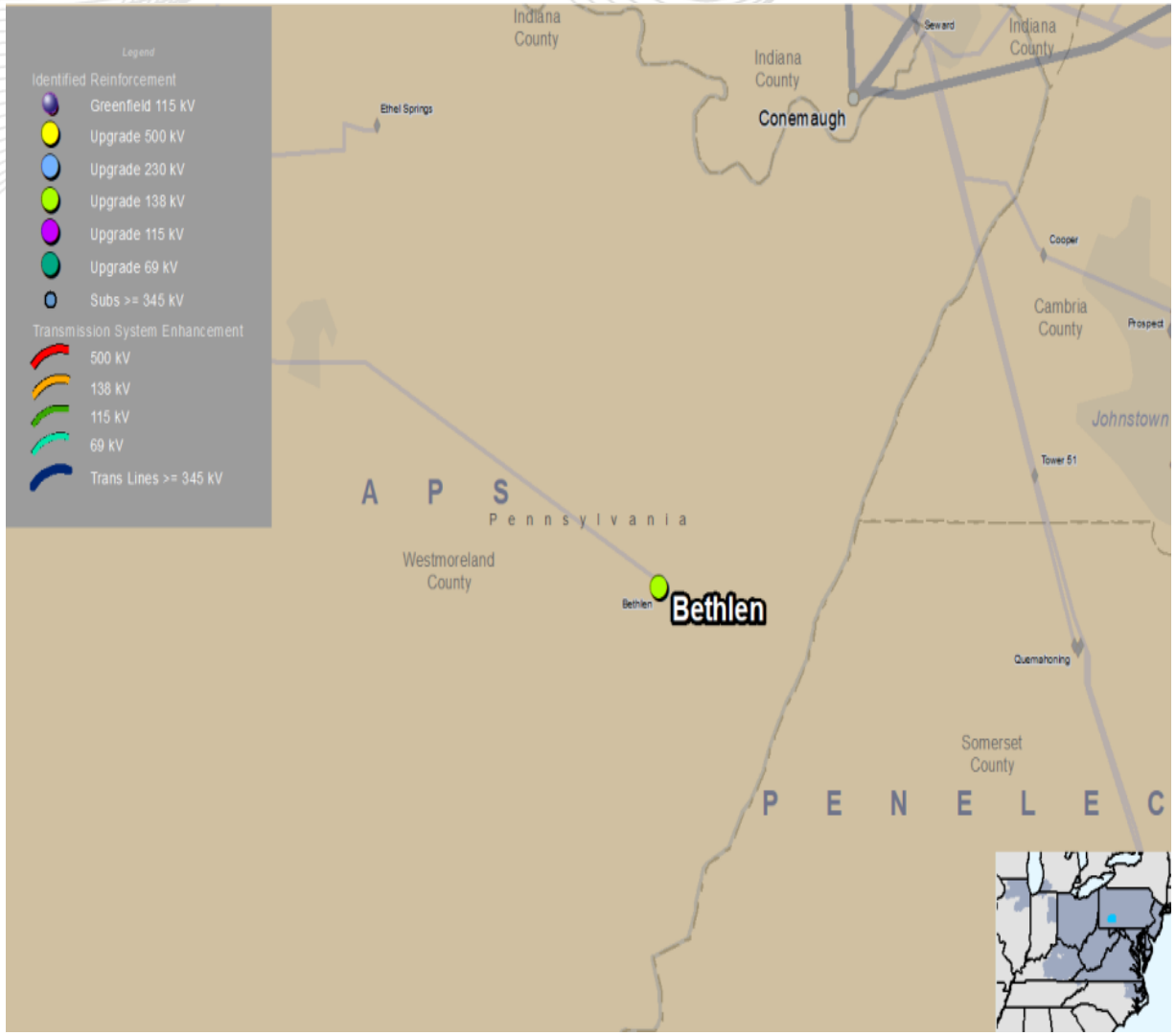
Model Used for Analysis: 2031 base cases.

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

2026-W1-APS-VM1, 2026-W1-APS-VM2, 2026-W1-N11-WVM1, 2026-W1-N11-WVM2

In the 2031 RTEP Winter case, voltage drop violations are identified at Loyalhanna bus 138kV for N-1-1 outages.



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APS Transmission Zone: Baseline
Bethlen Substation - Install 138 kV Capacitor

Proposed Solution:

Bethlen Substation Capacitor

- Install (1) 138 kV, 30 Mvar rated capacitor, and a 138 kV breaker

Total Estimated Cost: $4.079 M

Alternatives Considered:

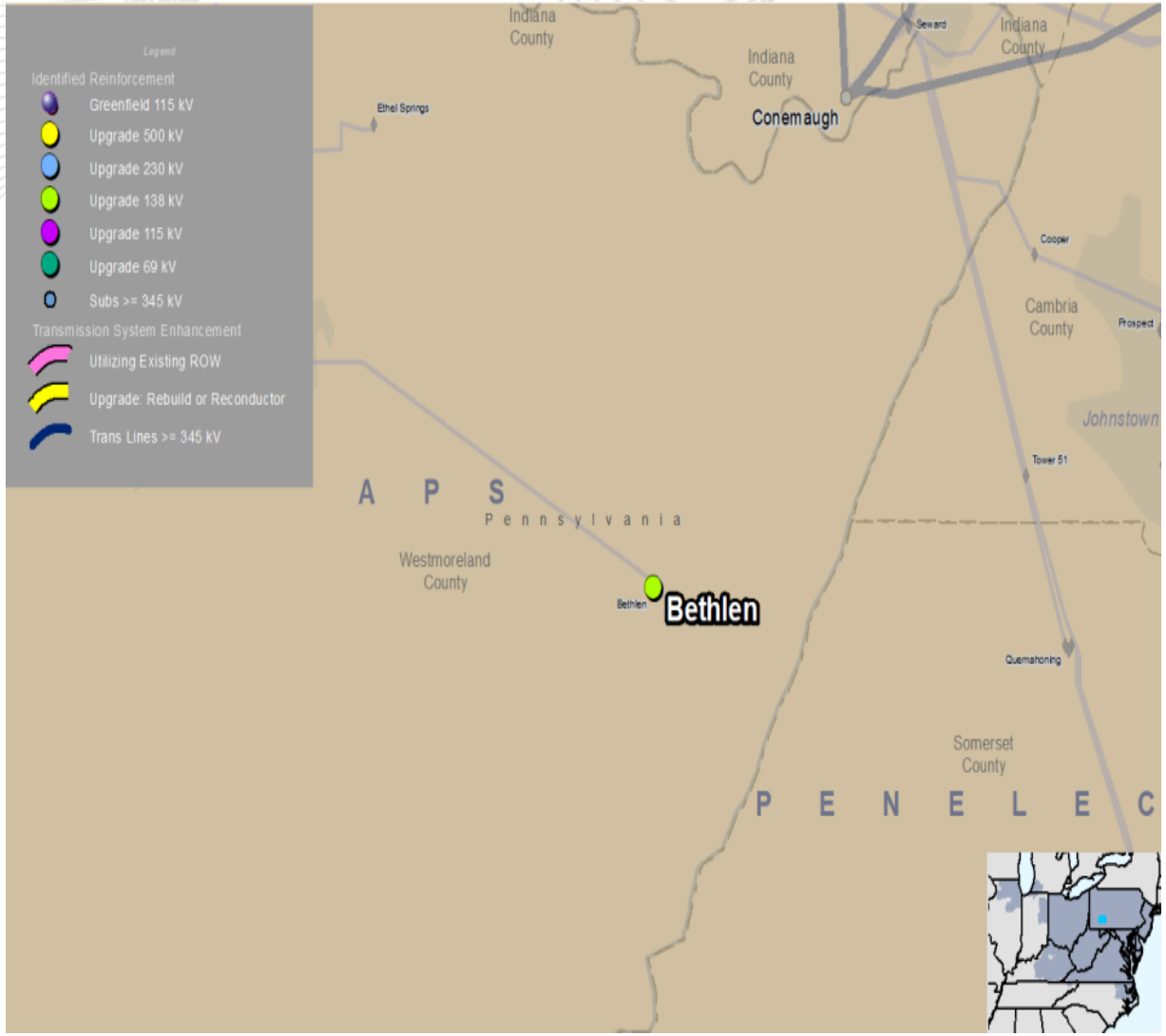
Install 138 kV capacitor at Ethel Springs Substation

Ancillary Benefits:

Provide reactive voltage support under normal (N-0) and N-1 contingencies.

Required In-Service: 12/01/2031

Projected In-Service: 06/01/2031



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ATSI Transmission Zone: Baseline
West Fremont - Fremont 138 kV Line Rebuild

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base case.

Proposal Window Exclusion: Below 200 kV exclusion

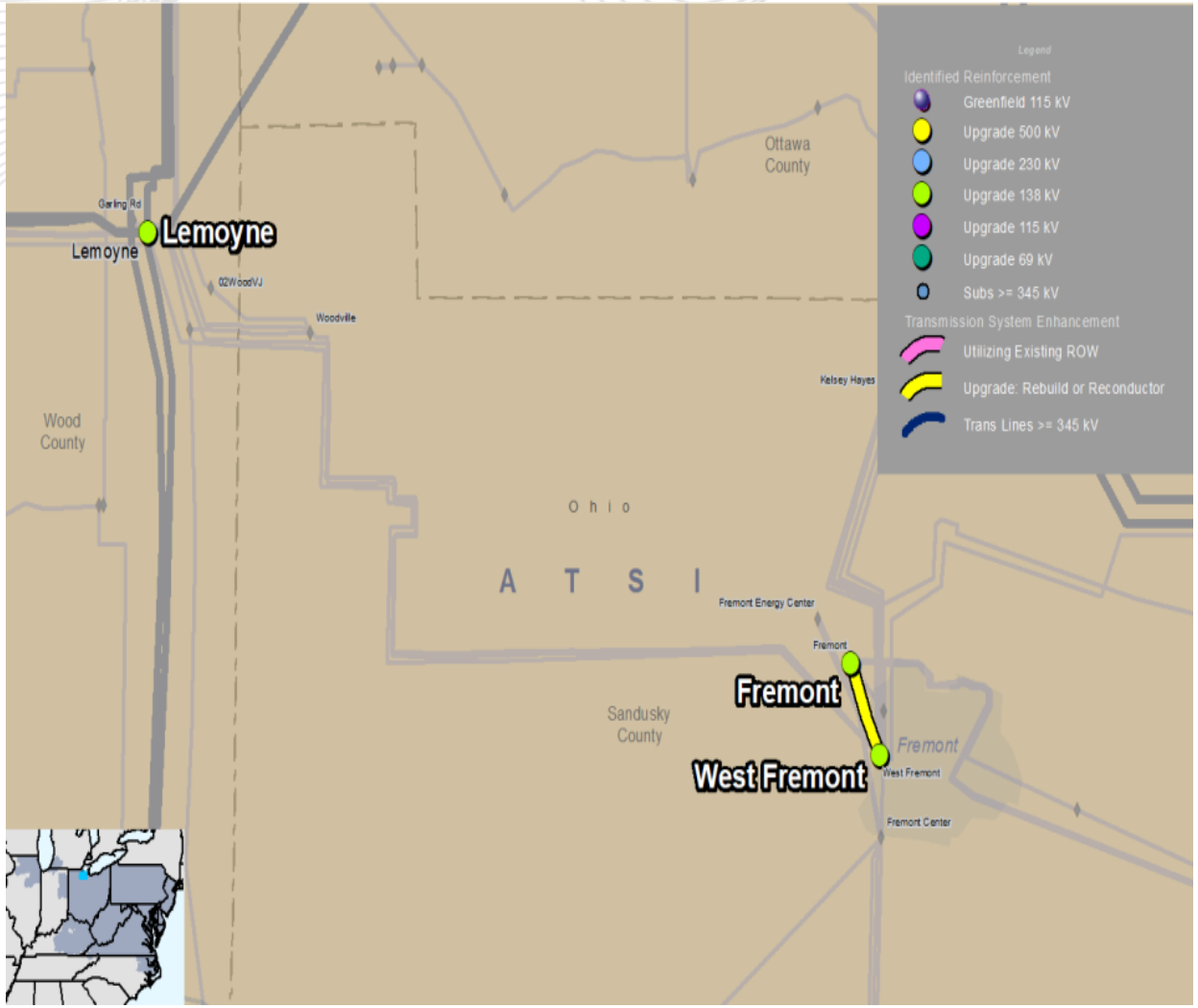
Problem Statement:

2026-W1-GD-W116, 2026-W1-GD-W204

In the 2031 RTEP Winter case, the West Fremont - Fremont 138 kV line is overloaded for a N-2 outage.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
West Fremont - Fremont 138 kV - FE Portion	312/380/353/450
West Fremont - Fremont 138 kV - AEP Portion	296/398/375/452



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ATSI Transmission Zone: Baseline
West Fremont - Fremont 138 kV Line Rebuild

Proposed Solution:

At West Fremont Substation:

- Replace limiting substation conductor.
- Revise relay settings.

At Fremont Substation:

- Replace limiting substation equipment.
- Revise relay settings.

West Fremont-Fremont 138 kV Line Rebuild:

- Rebuild approximately 0.9 miles of the West Fremont-Fremont 138 kV Line FE portion
- Rebuild approximately 0.2 miles of the West Fremont-Fremont 138 kV Line AEP portion.

West Fremont-Lemoyne 138 kV Line Section Reconductor (b4091.5)

- Reconductor 0.8 miles of shared structures with West Fremont-Fremont.

Total Estimated Cost: $10.136 M

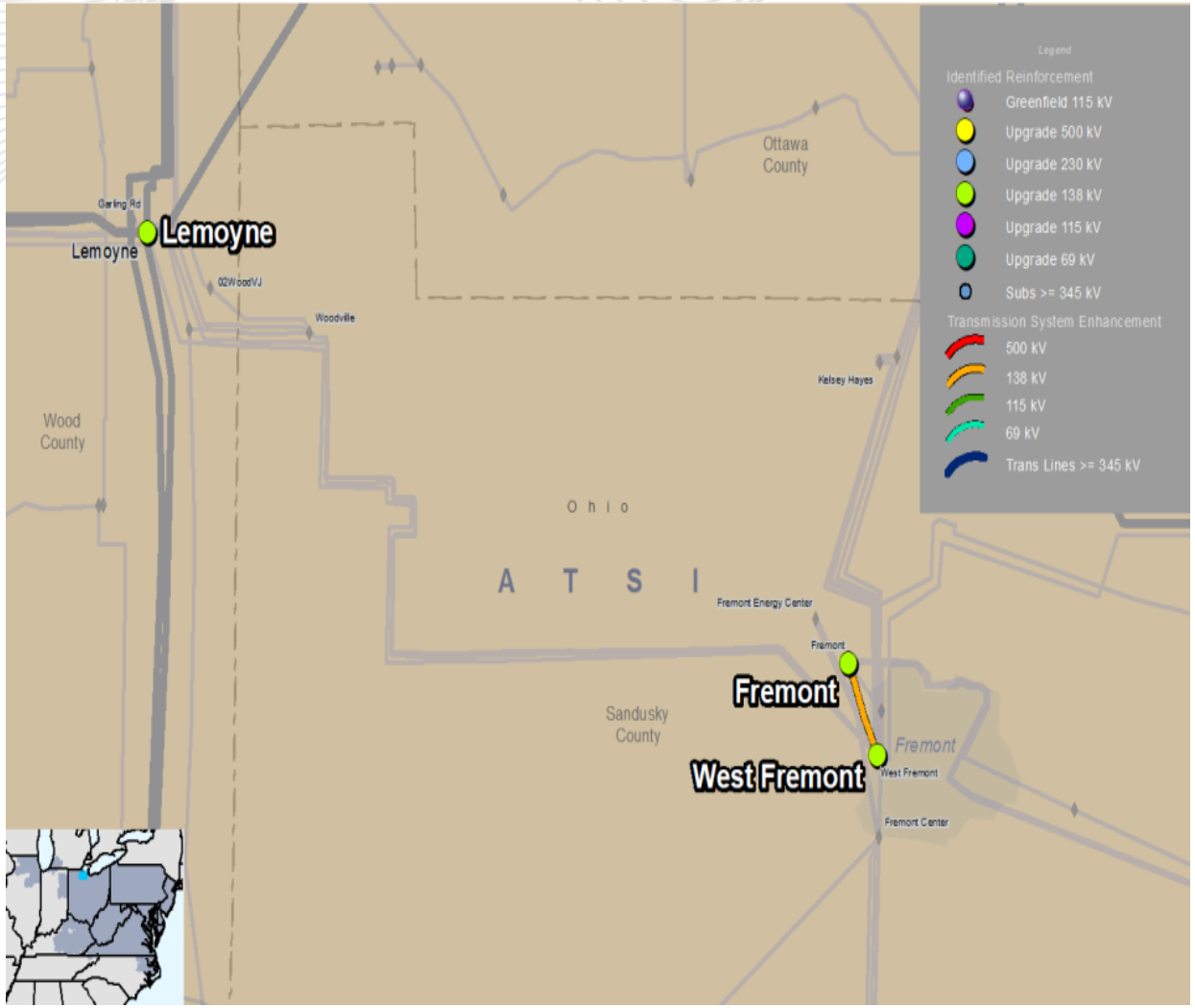
Alternatives: N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
West Fremont - Fremont 138 kV - FE Portion	448/516/448/543
West Fremont - Fremont 138 kV - AEP Portion	557/557/587/587

Required In-Service: 12/01/2031

Projected In-Service: 12/01/2031



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ATSI Transmission Zone: Baseline
East Akron - Hayes Lemmerz 138 kV Line Section Rebuild

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability.

Assumption Reference: 2026 RTEP assumptions.

Model Used for Analysis: 2031 base cases.

Proposal Window Exclusion: Below 200 kV exclusion

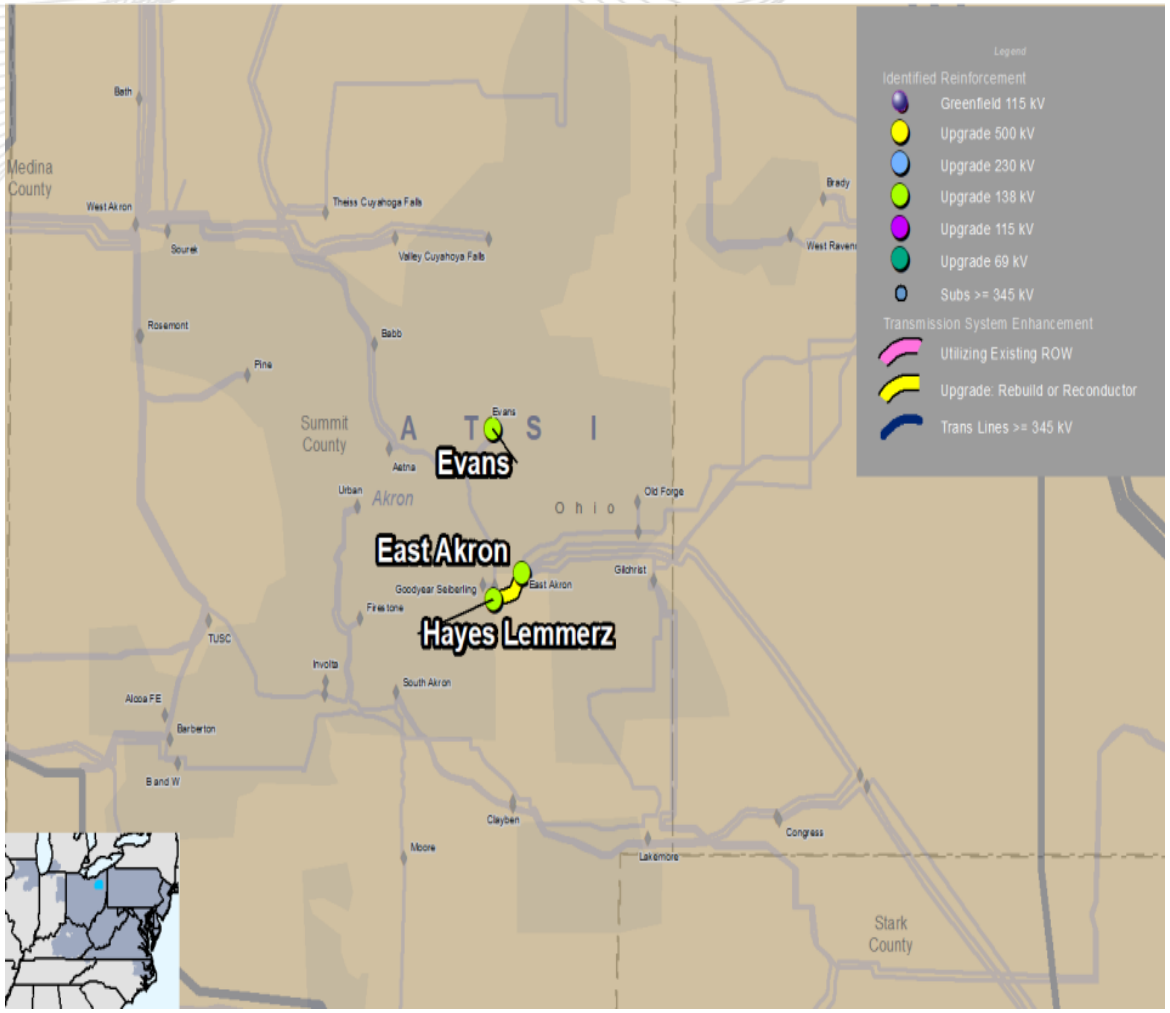
Problem Statement:

Flowgate IDs: 2026-W1-N11-ST160, 2026-W1-N11-ST161, 2026-W1-N11-ST181, 2026-W1-N11-ST182, 2026-W1-N11-ST187, 2026-W1-N11-ST204

In the 2031 RTEP Summer case, the East Akron - Hayes Lemmerz 138 kV line is overloaded for N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
East Akron-Hayes Lemmerz 138 kV	233/282/263/333



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ATSI Transmission Zone: Baseline
East Akron - Hayes Lemmerz 138 kV Line Section Rebuild

Proposed Solution:

East Akron Substation

- Replace transmission line conductor
- Replace disconnect switch
- Revise relay settings

Evans Substation

- Revise relay settings

East Akron-Hayes Lemmerz 138 kV Line Section - Distribution Underbuild

- East Akron - Hayes Lemmerz 138 kV Line Section Structures #6784 - 6787 support distribution in the underbuild position.
- Distribution circuit will be transferred to the new structures.

East Akron-Hayes Lemmerz 138 kV Line Section

- Rebuild the East Akron - Hayes Lemmerz 138 kV Line Section.

Total Estimated Cost: $8.906 M

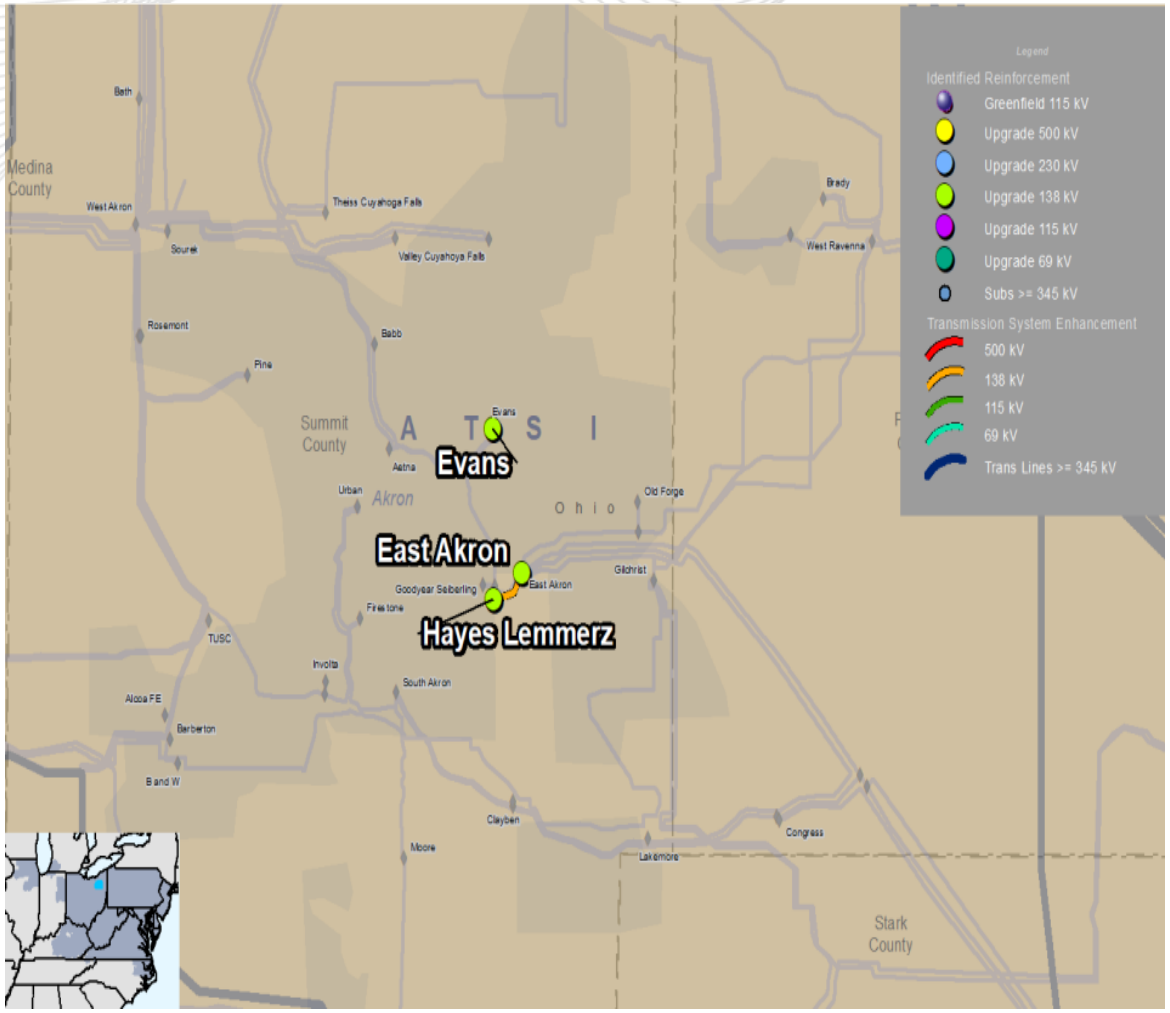
Alternatives : N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
East Akron-Hayes Lemmerz 138 kV	448/516/448/543

Required In-Service: 06/01/2031

Projected In-Service: 06/01/2031



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EKPC Transmission Zone: Baseline
Boone-Longbranch 138 kV MOT Increase

Process Stage: First Read

Criteria: Baseline Load Growth Deliverability & Reliability

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 base cases

Proposal Window Exclusion: Below 200 kV exclusion

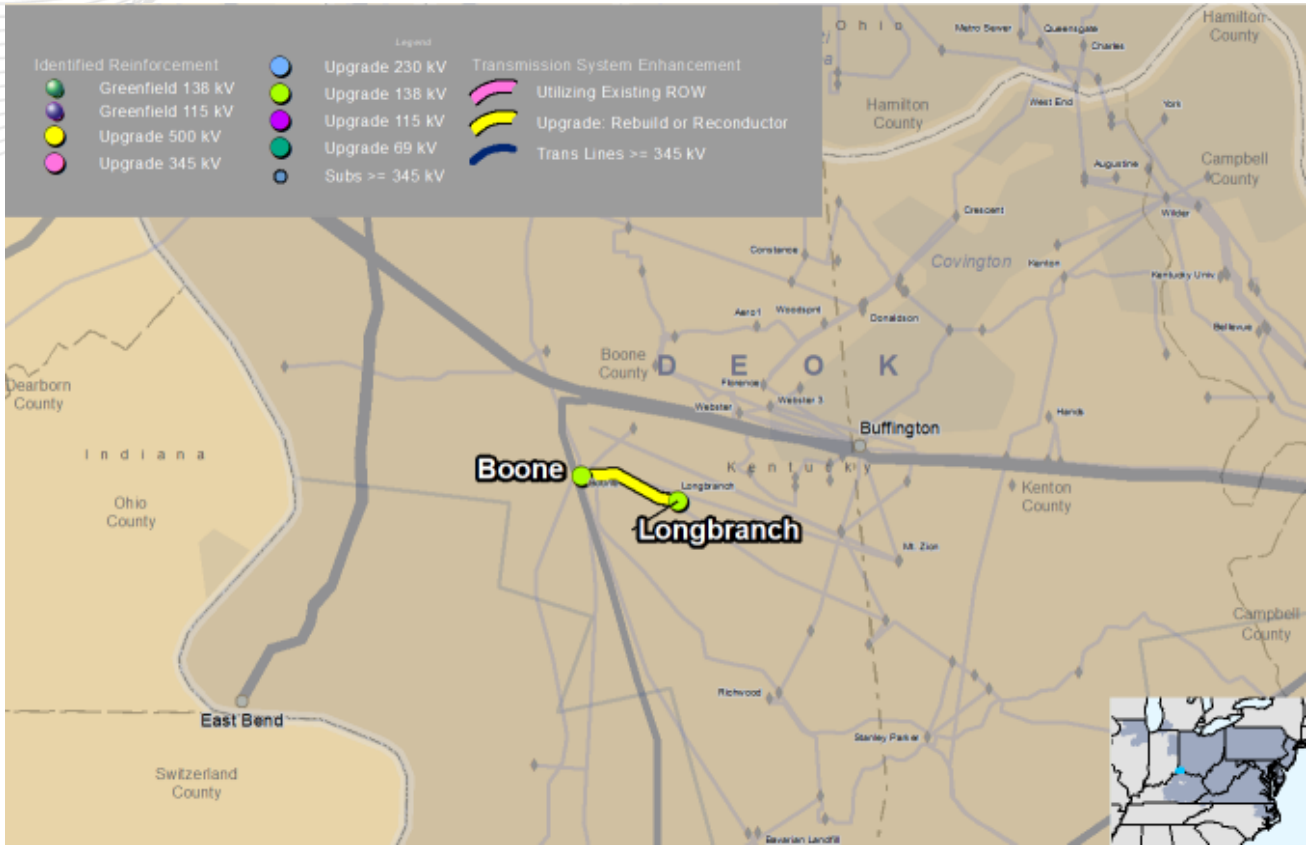
Problem Statement:

Flowgate IDs: 2026-W1-IPD-S57, 2026-W1-IPD-S68, 2026-W1-GD-S635

In the 2026 RTEP 2031 summer case, the Boone-Longbranch 138 kV line is overloaded for a N-2 outage.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Boone – Longbranch 138 kV	211/230/345/355



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EKPC Transmission Zone: Baseline
Boone-Long Branch 138 kV MOT Increase

Proposed Solution:

MOT Increase

Increase the maximum operating temperature of the Boone-Longbranch 138 kV line from 181 degrees Fahrenheit to 212 degrees Fahrenheit.

Total Estimated Cost: $0.175 M

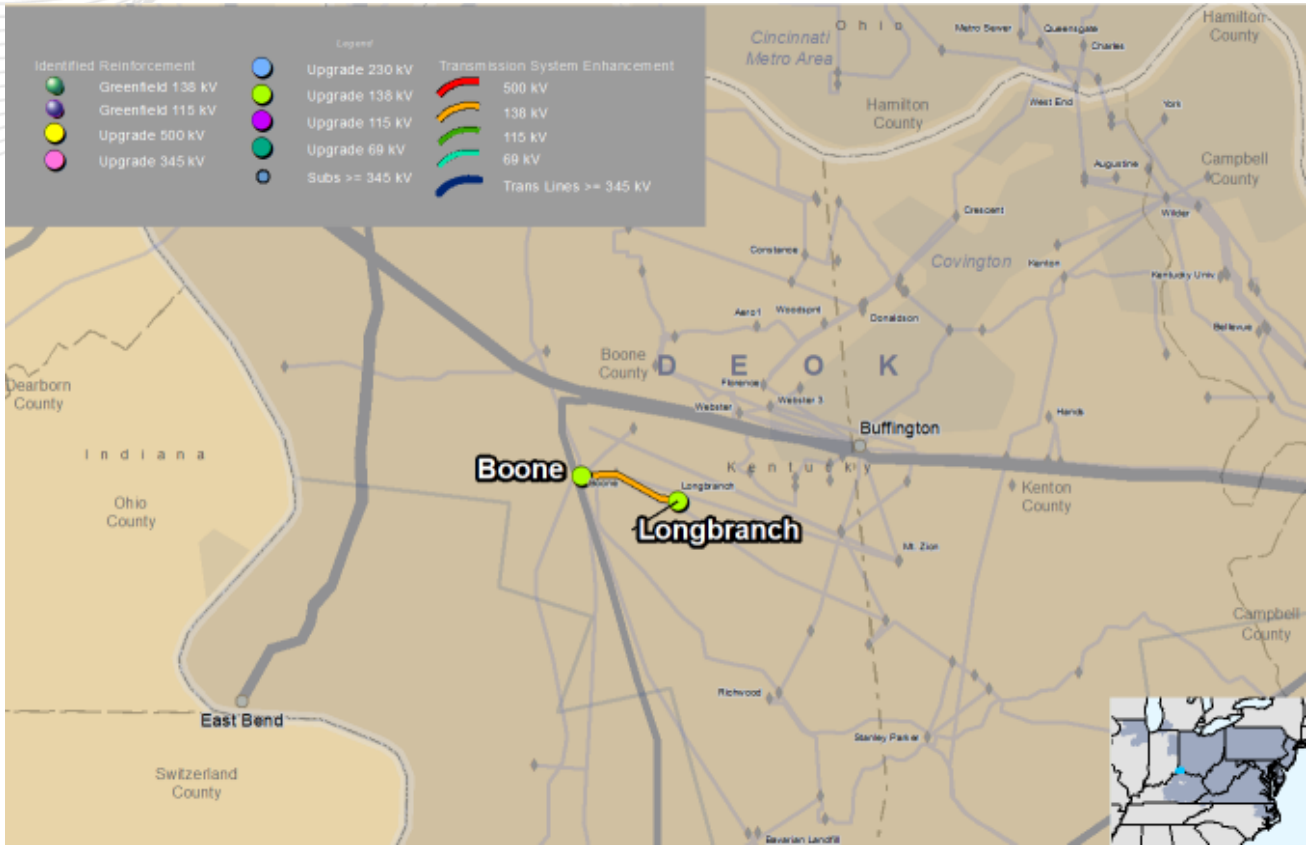
Alternatives : N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Boone-Longbranch 138 kV	254/284/368/386

Required In-Service: 06/01/2031

Projected In-Service: 05/31/2031



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First Read (Short Circuit Projects)

Baseline Reliability Projects

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AEP Transmission Zone: Baseline
West Canton 69 kV Breaker "P" Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

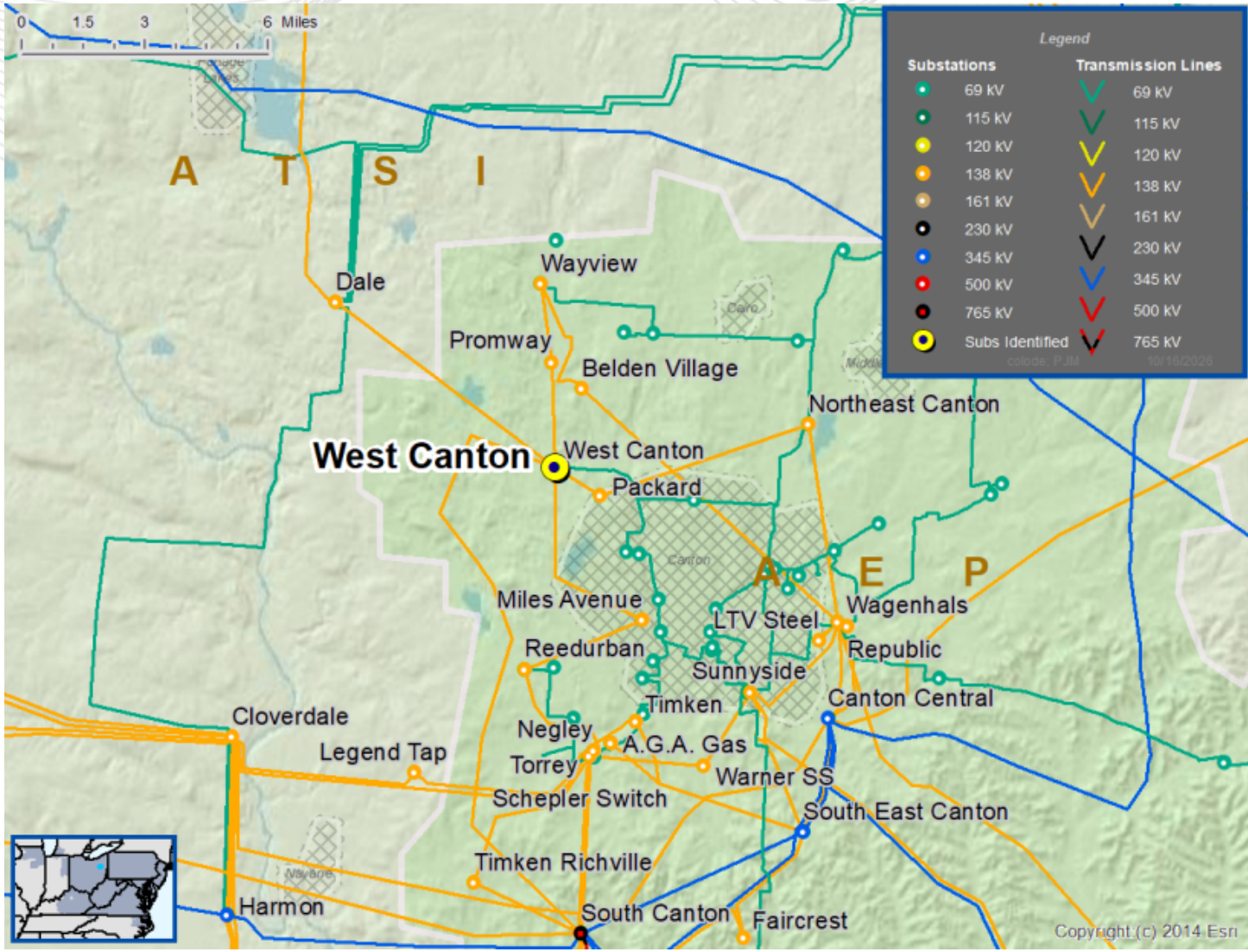
Problem Statement:

2026-W1-AEP-SC15

In the 2031 RTEP Short Circuit base case, the West Canton 69 kV breaker "P" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
West Canton–69 kV breaker "P"	19.9



AEP Transmission Zone: Baseline
West Canton 69 kV Breaker “P” Replacement

Proposed Solution:

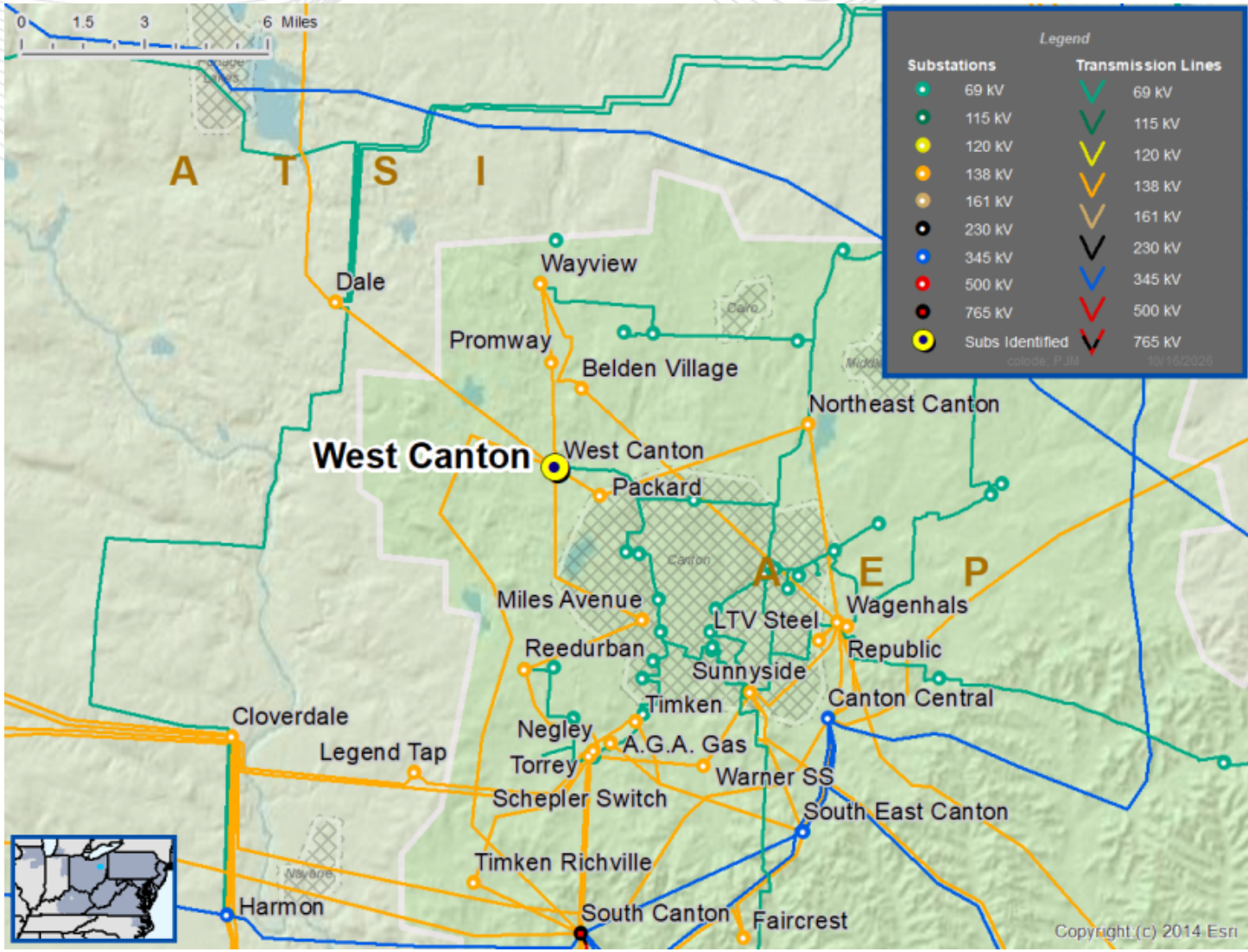
Replace the overdutied West Canton 69 kV circuit breakers “P" with a 40 kVA circuit breaker.

Estimated Cost: $0.995M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
West Canton 69 kV circuit breaker with “P"	40

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



AEP Transmission Zone: Baseline
Fremont Center 69 kV Breakers “F, G, H, J, K” Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

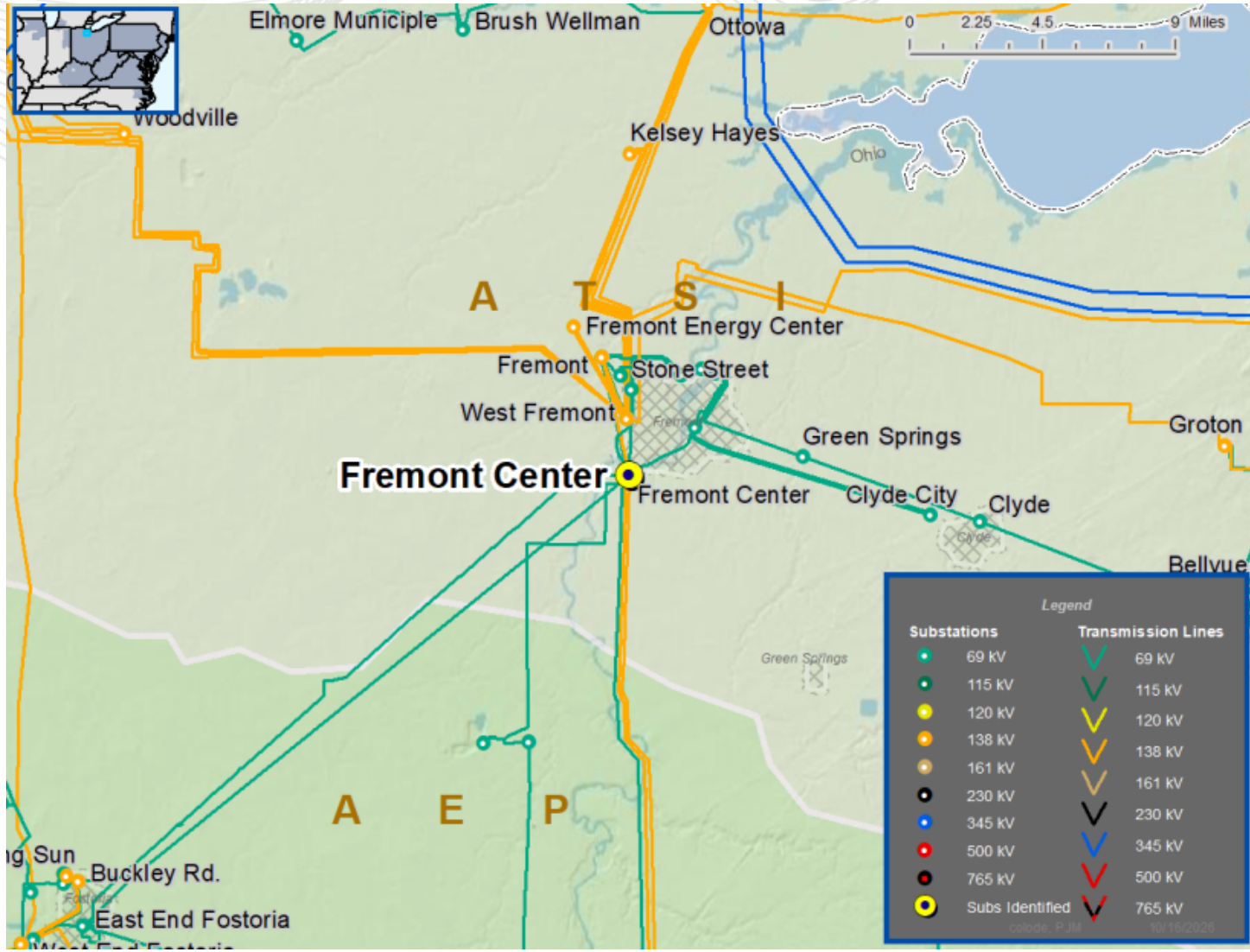
Problem Statement:

2026-W1-AEP-SC-1, SC-2, SC-3, SC-4, SC-5

In the 2031 RTEP Short Circuit base case, the 5 Fremont Center 69 kV breakers “F, G, H, J, K” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Fremont Center–69 kV breakers “F, G, H, J, K”	19.9



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AEP Transmission Zone: Baseline
Fremont Center 69 kV Breakers “F, G, H, J, K” Replacement

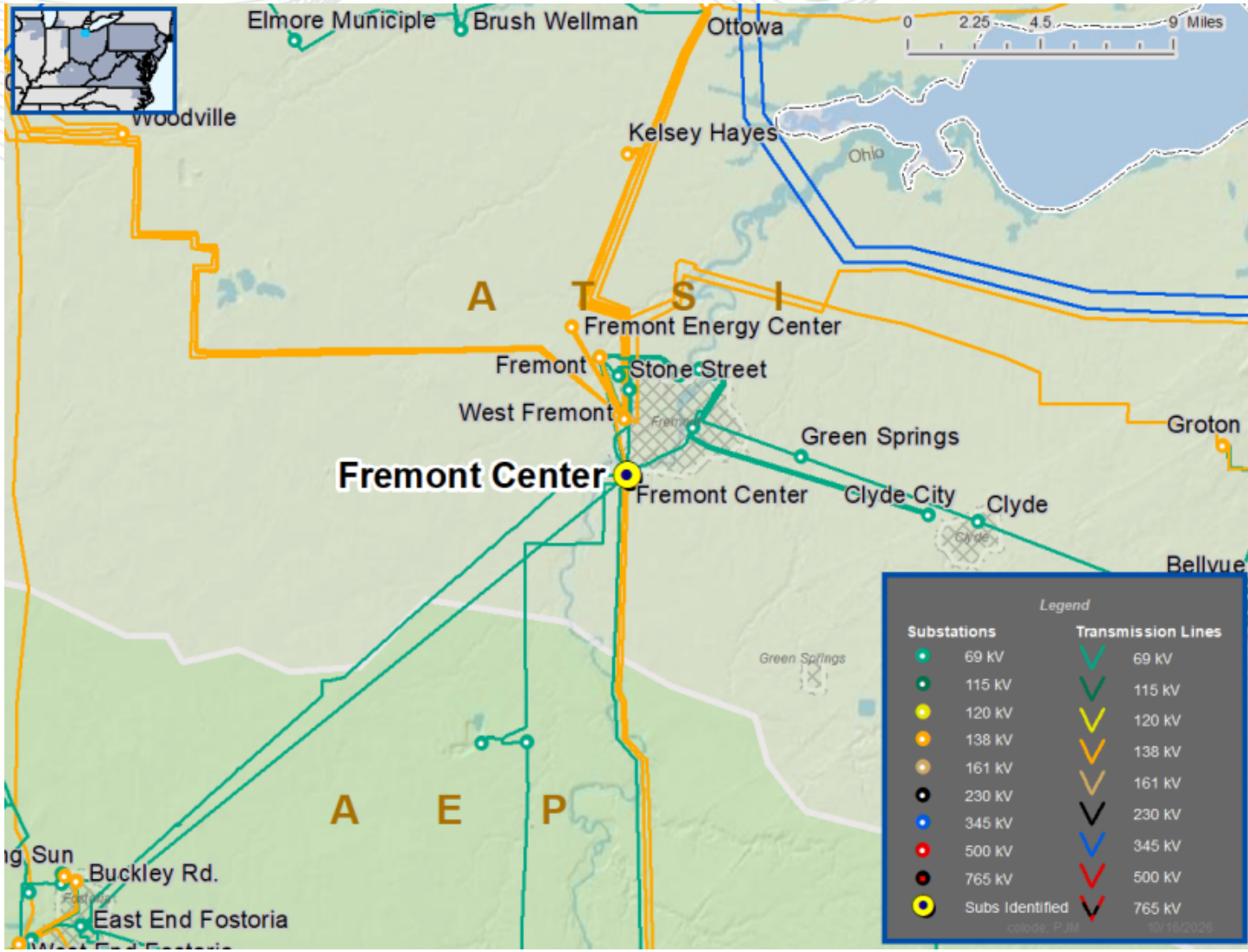
Proposed Solution:
Replace the 5 overdutied Fremont Center 69 kV circuit breaker “F, G, H, J, K" with 40 kVA circuit breakers.

Estimated Cost: $2.598M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Fremont Center 69 kV circuit breakers “F, G, H, J, K”	40

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Rockhill 34.5 kV Breakers “G, I, J, L, M, N, U, V, W” Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

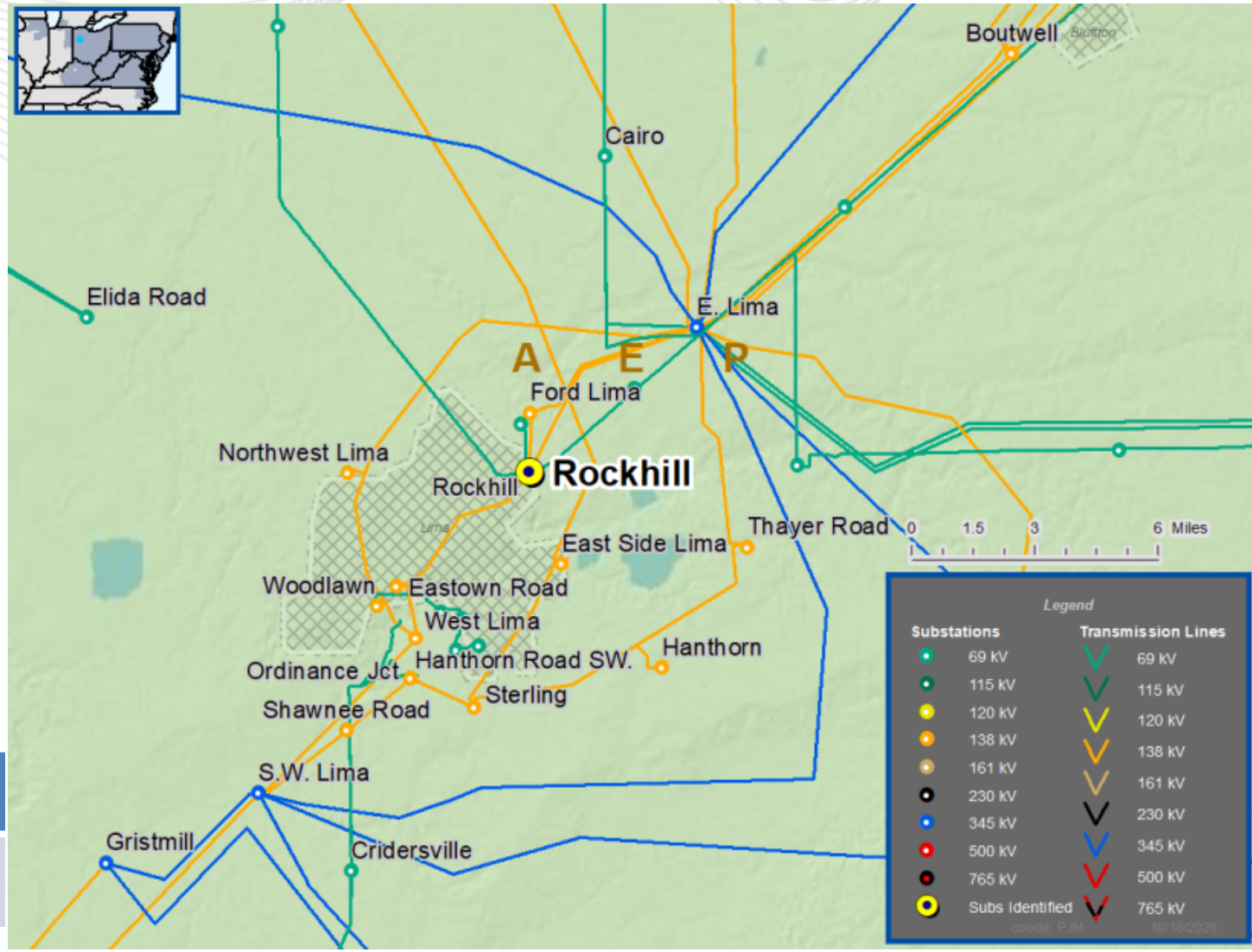
Problem Statement:

2026-W1-AEP-SC-6, SC-7, SC-8, SC-9, SC-10, SC-11, SC-12, SC-13, SC-14

In the 2031 RTEP Short Circuit base case, the 9 Rockhill 34.5 kV breakers “G,I,J,L,M,N,U,V,W” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Rockhill–34.5 kV breakers “G,I,J,L,M,N,U,V,W”	25



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AEP Transmission Zone: Baseline
Rockhill 34.5 kV Breakers “G, I, J, L, M, N, U, V, W” Replacement

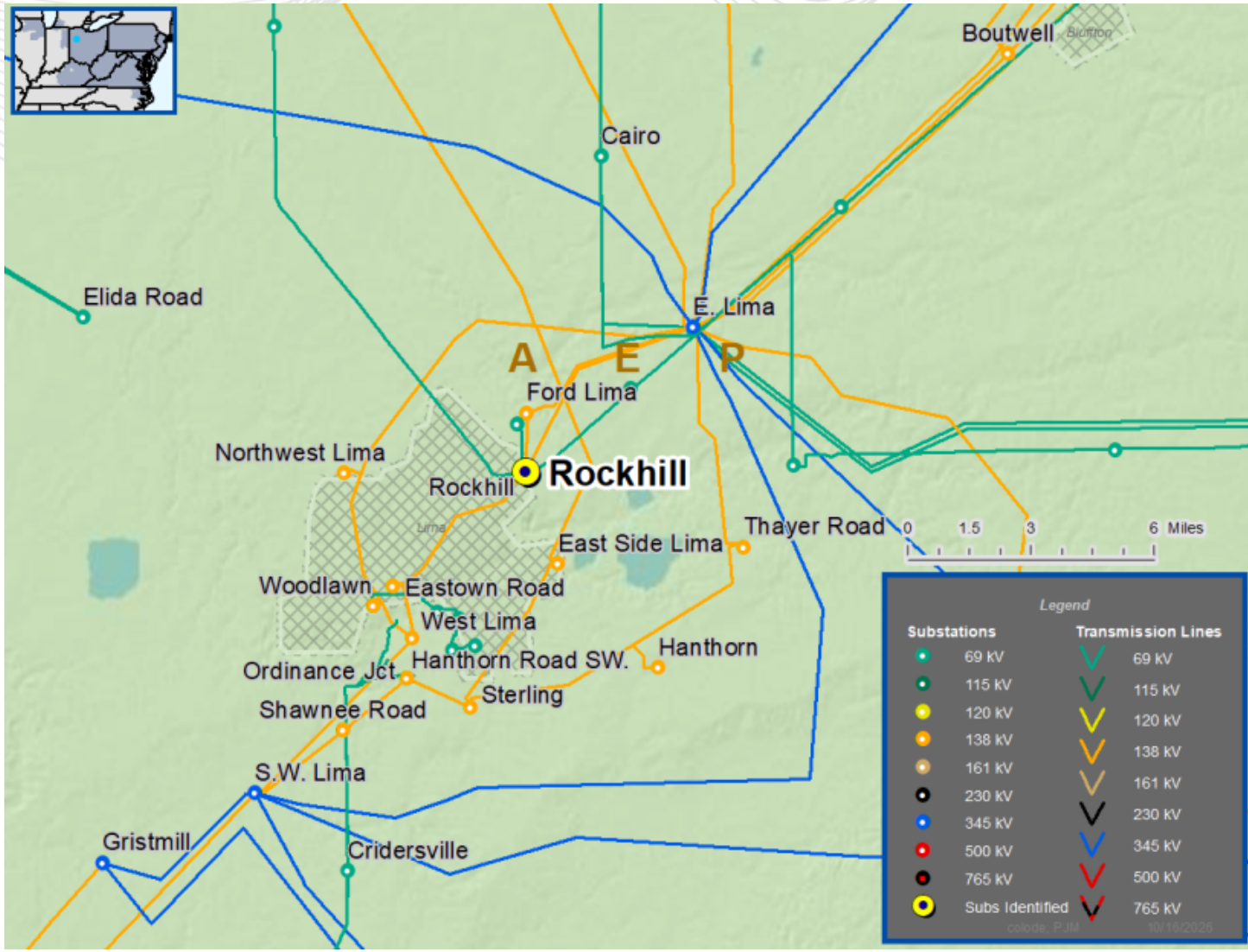
Proposed Solution:
Replace the 9 overdutied Rockhill 34.5 kV circuit breakers “G, I, J, L, M, N, U, V, W" with 40 kVA circuit breakers.

Estimated Cost: $7.96M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Rockhill 34.5 kV circuit breakers “G,I,J,L,M,N,U,V,W”	40

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Tidd 138 kV Breaker “CS-EE” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

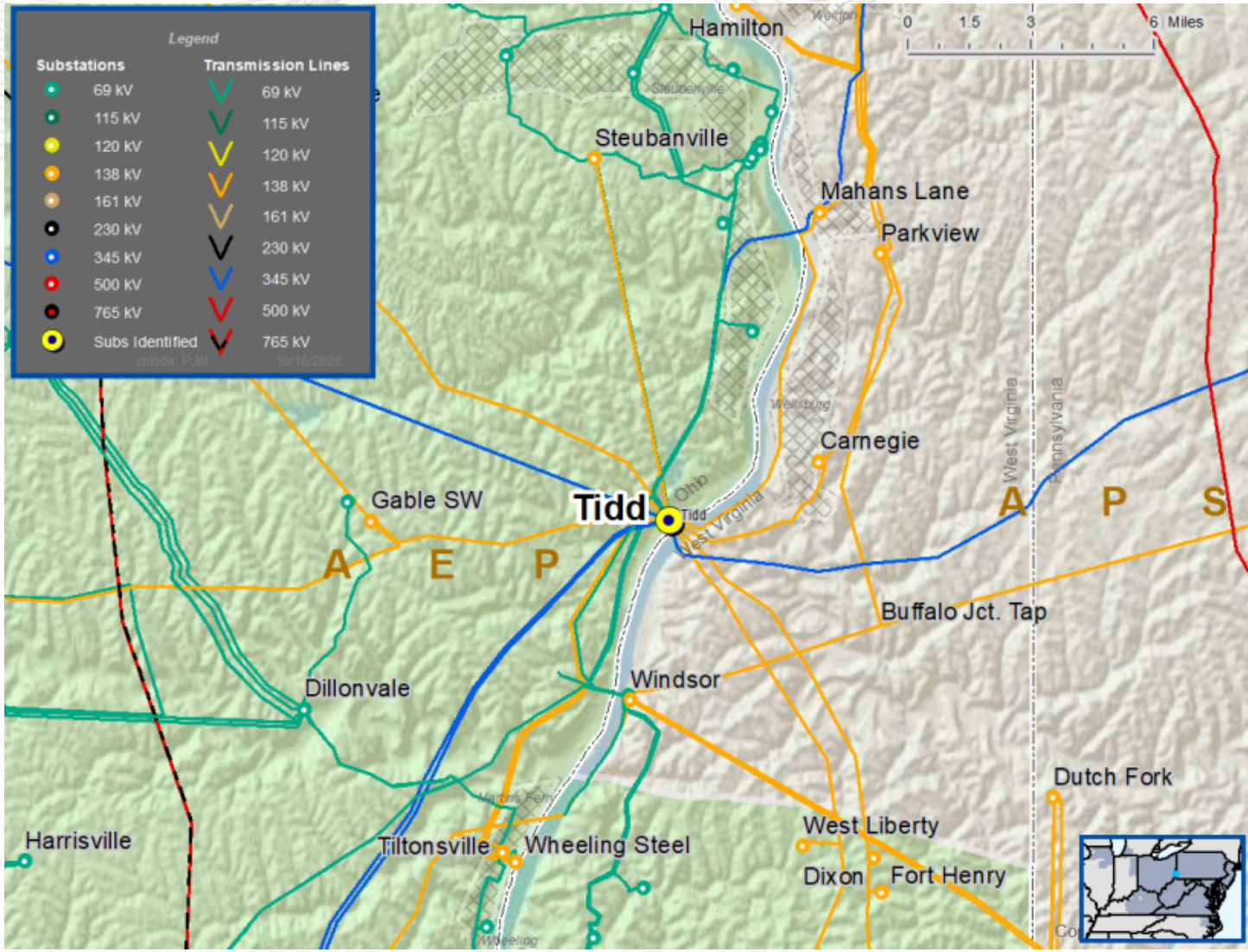
Problem Statement:

2026-W1-SC-16

In the 2031 RTEP Short Circuit base case, the Tidd 138 kV breaker “CS-EE” is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Tidd 138 kV breaker “CS-EE”	31.5



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AEP Transmission Zone: Baseline
Tidd 138 kV Breaker "CS-EE" Replacement

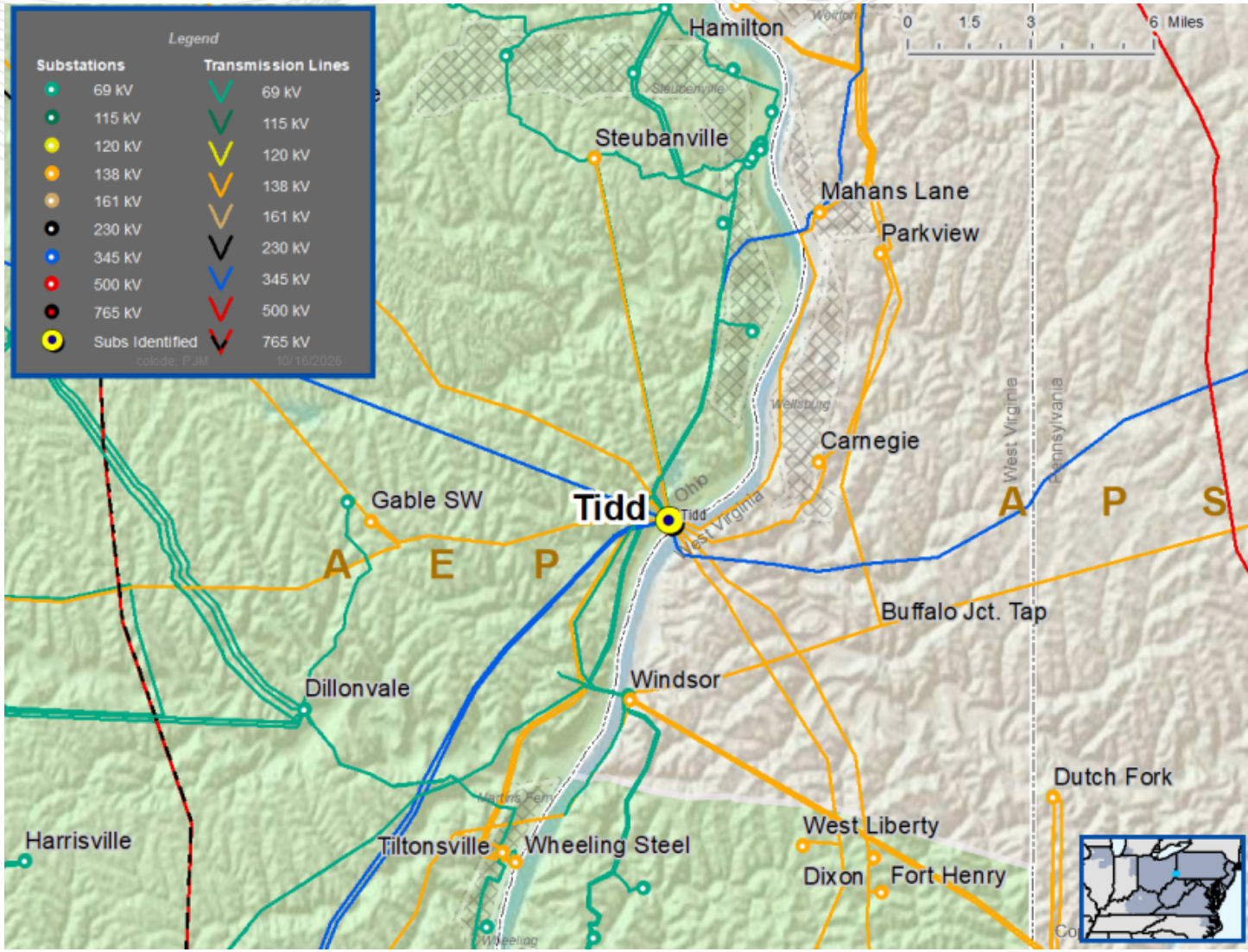
Proposed Solution:
Replace the overdutied Tidd 138 kV circuit breaker "CS-EE" with a 63 kA circuit breaker.

Estimated Cost: $1.426M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Tidd 138 kV breaker "CS-EE"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Kirk 138 kV Breaker "CS-AA" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

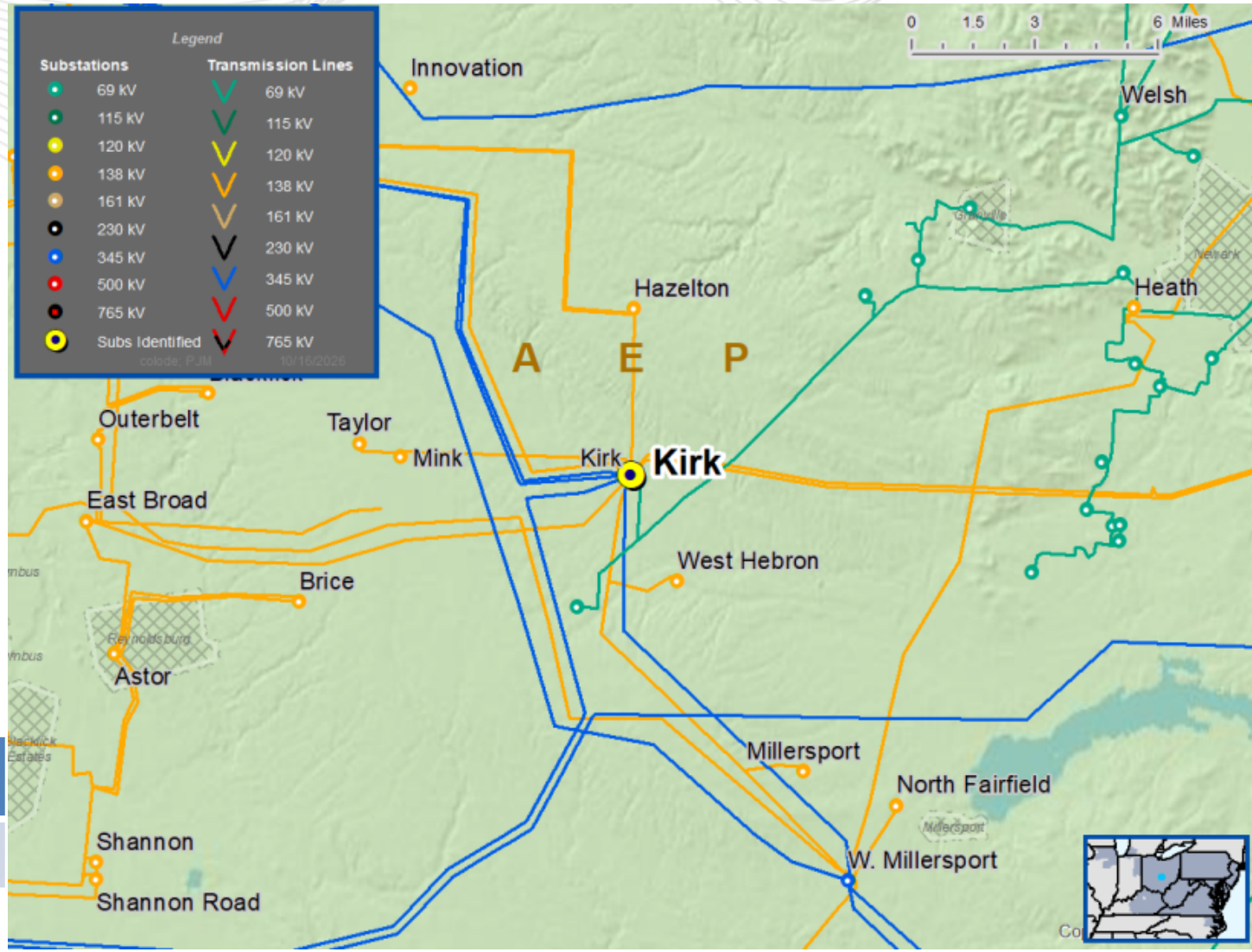
Problem Statement:

2026-W1-SC-7

In the 2031 RTEP Short Circuit base case, the Kirk 138 kV breaker "CS-AA" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Kirk–138 kV breaker CS-AA"	40



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AEP Transmission Zone: Baseline
Kirk 138 kV Breaker “CS-AA” Replacement

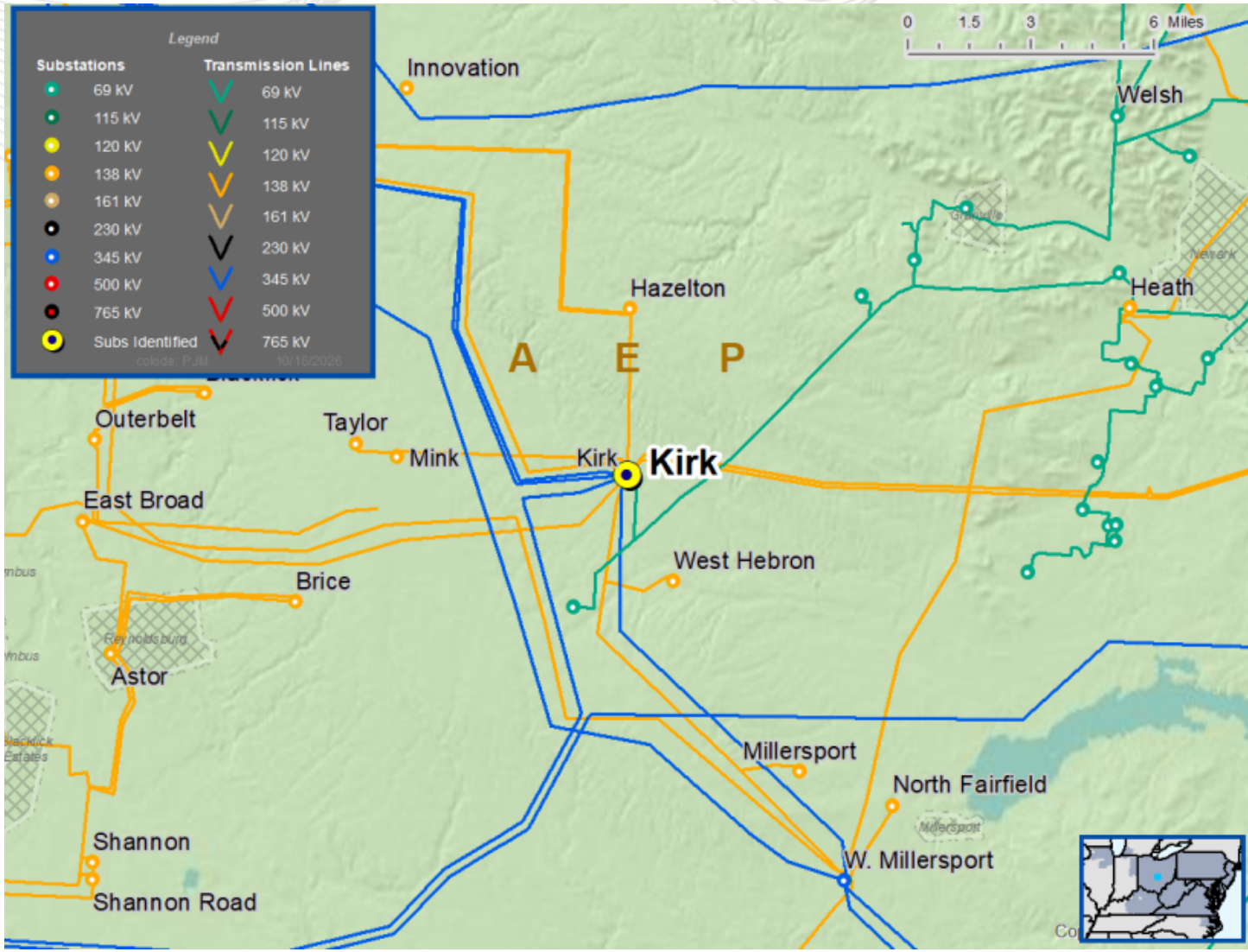
Proposed Solution:
Replace the overdutied Kirk 138 kV circuit breaker “CS-AA" with a 63 kVA circuit breaker.

Estimated Cost: $1.103M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Kirk 138 kV circuit breakers “CS-AA"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Saint Clair 138 kV Breaker "FF" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

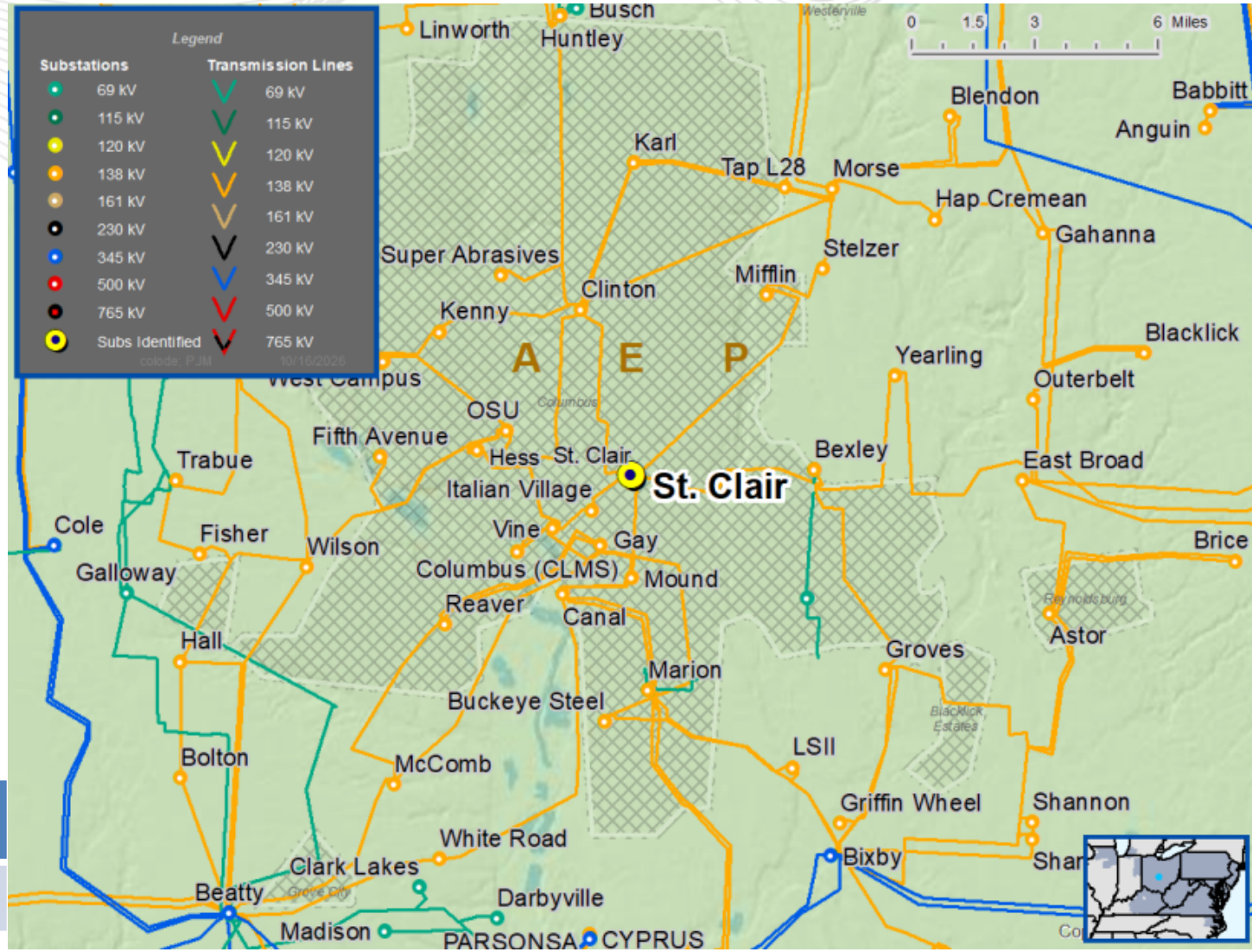
Problem Statement:

2026-W1-SC-15

In the 2031 RTEP Short Circuit base case, the Saint Clair 138 kV breaker "FF" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Saint Clair 138 kV breaker "FF"	40



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AEP Transmission Zone: Baseline
Saint Clair 138 kV Breaker "FF" Replacement

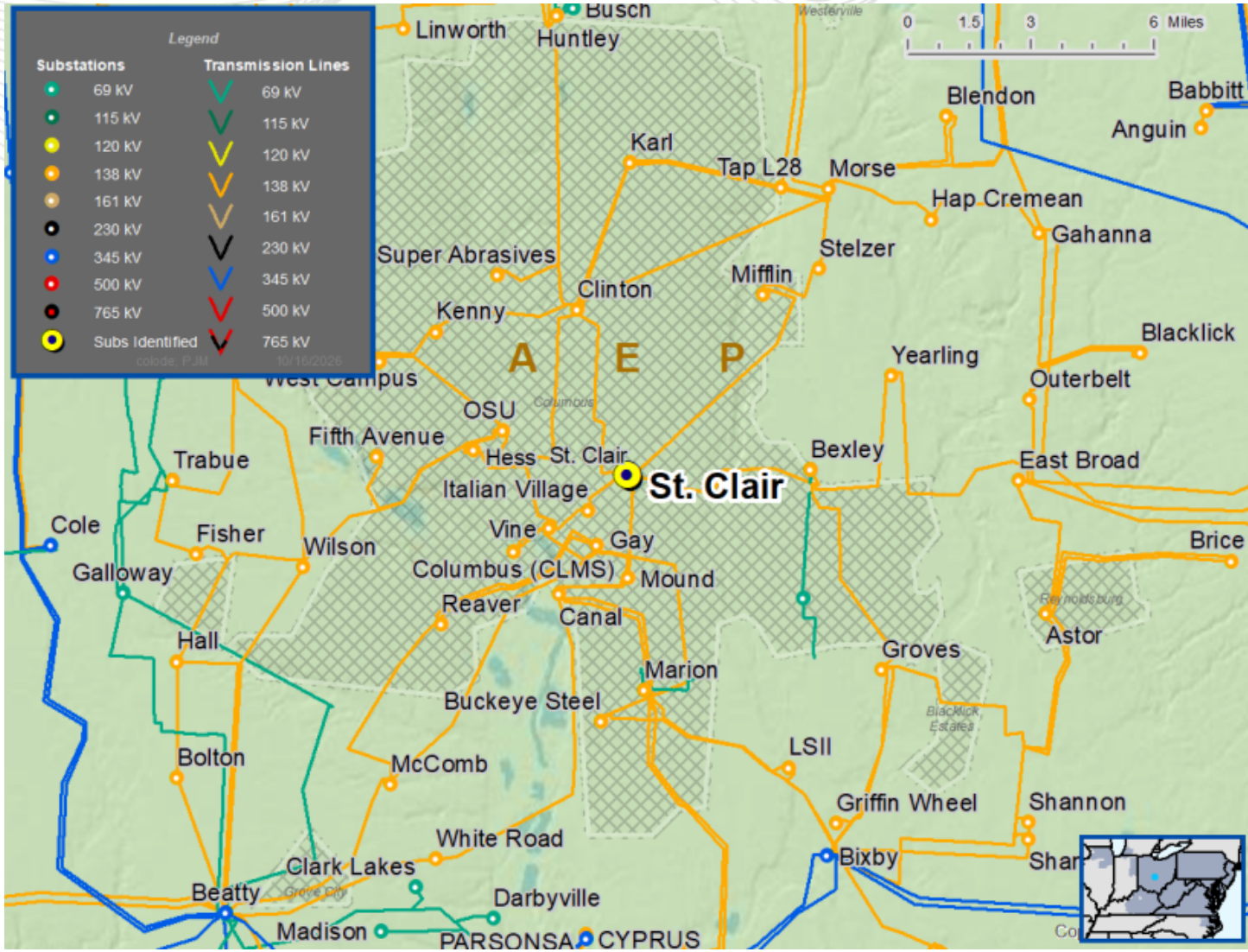
Proposed Solution:
Replace the overdutied Saint Clair 138 kV circuit breaker "FF" with a 63 kA circuit breaker.

Estimated Cost: $1.512M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Saint Clair 138 kV breaker "FF"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Don Marquis 138 kV Breakers “Q1, Q2” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

Problem Statement:

2026-W1-SC-8, SC-9

In the 2031 RTEP Short Circuit base case, the Don Marquis 138 kV breakers “Q1, Q2” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Don Marquis 138 kV breaker “Q1, Q2”	31.5



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AEP Transmission Zone: Baseline
Don Marquis 138 kV Breakers “Q1, Q2” Replacement

Proposed Solution:
Replace the overdutied Don Marquis 138 kV circuit breakers “Q1, Q2" with 63 kA circuit breakers.

Estimated Cost: $1.801M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Don Marquis 138 kV breakers “Q1, Q2”	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Gay Street 138 kV Breakers “101, 102, 103, 104, 105” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

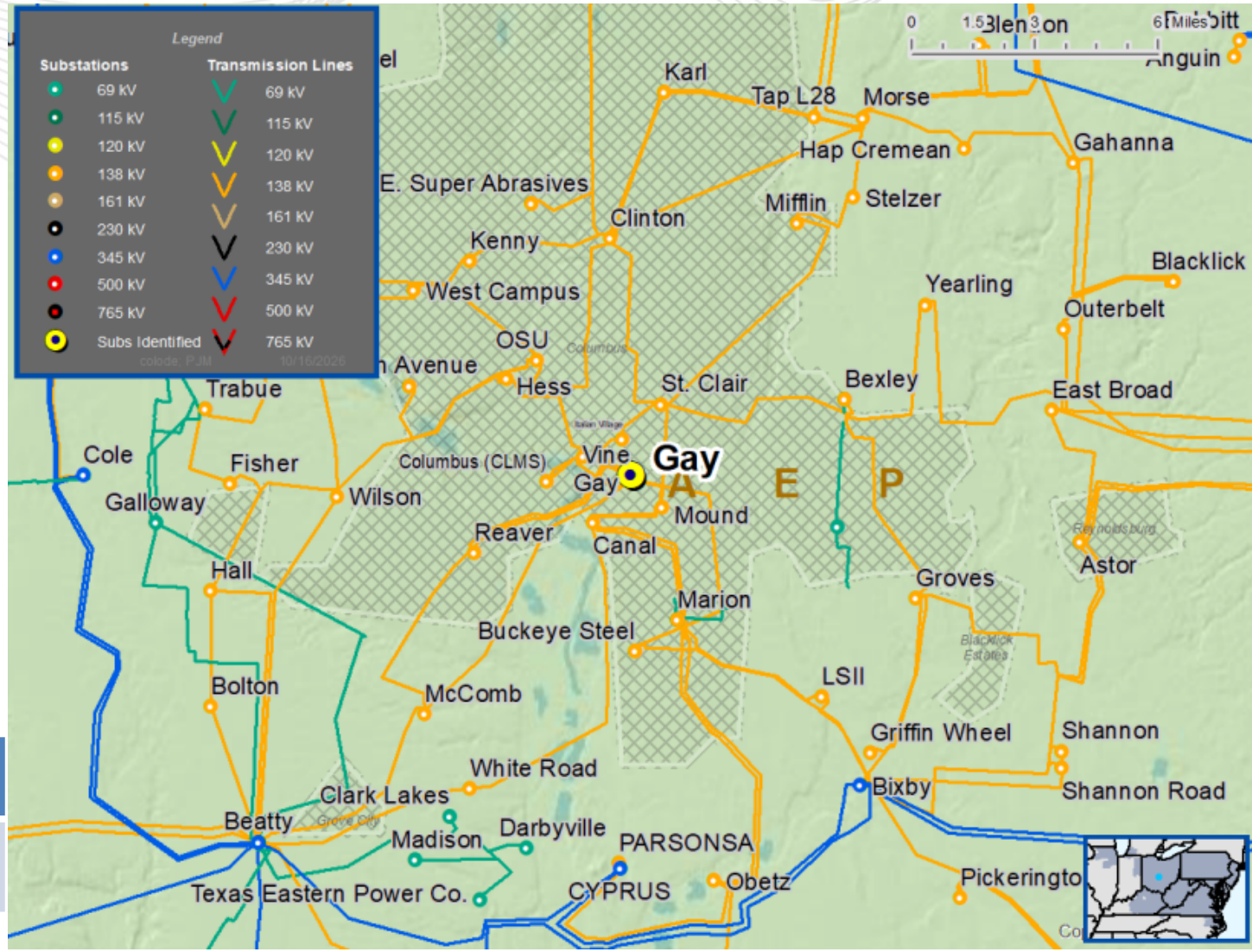
Problem Statement:

2026-W1-SC-2, SC-3, SC-4, SC-5, SC-6

In the 2031 RTEP Short Circuit base case, the 5 Gay Street 138 kV breakers “101, 102, 103, 104, 105” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Gay Street–138 kV breakers “101, 102, 103, 104, 105”	40



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AEP Transmission Zone: Baseline
Gay Street 138 kV Breakers “101, 102, 103, 104, 105” Replacement

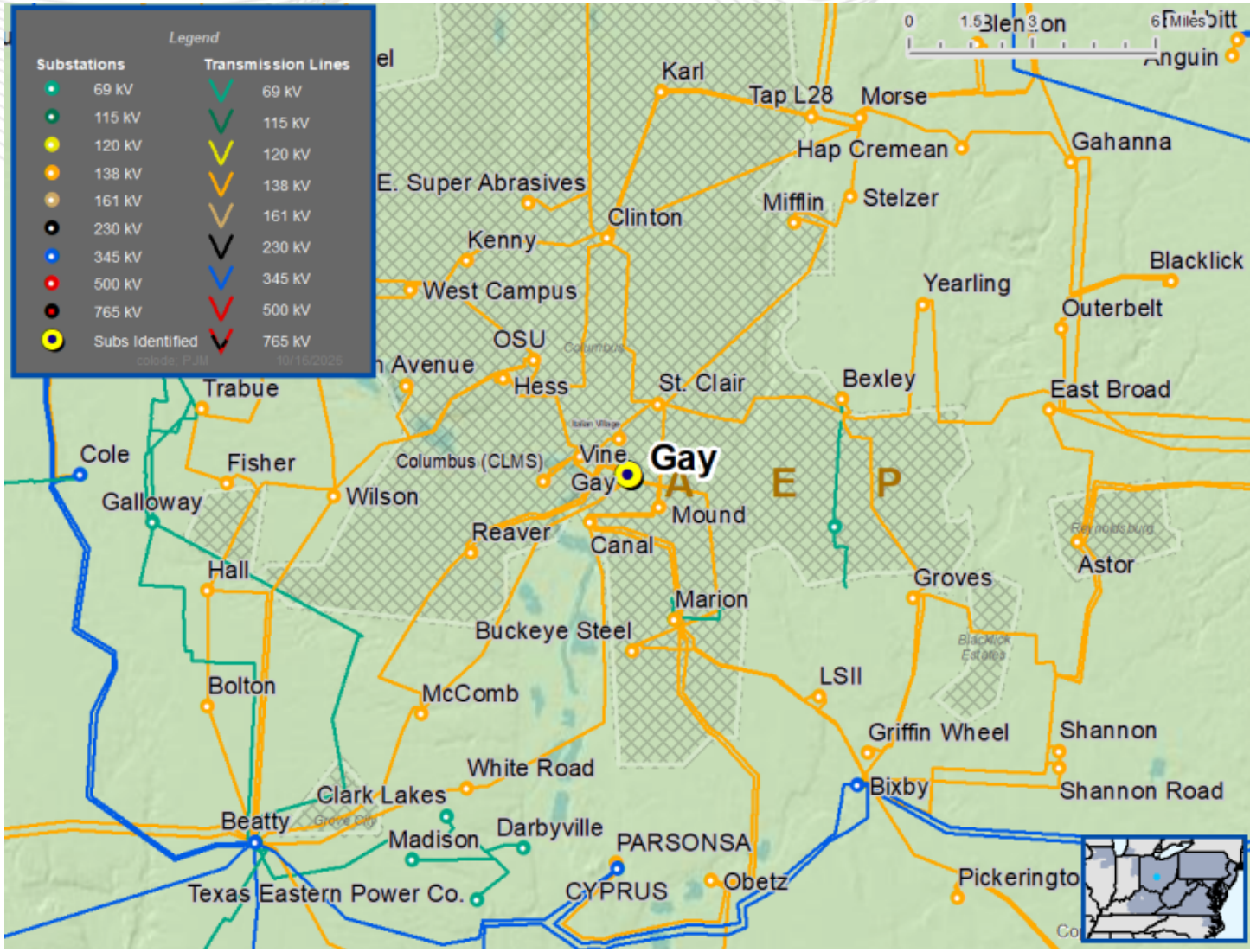
Proposed Solution:
Replace the 5 overdutied Gay Street 138 kV circuit breakers “101, 102, 103, 104, 105" with 63 kA circuit breakers.

Estimated Cost: $6.32M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Gay Street 138 kV circuit breakers “101, 102, 103, 104, 105"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Sporn 138 kV Breaker "CS-HH" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

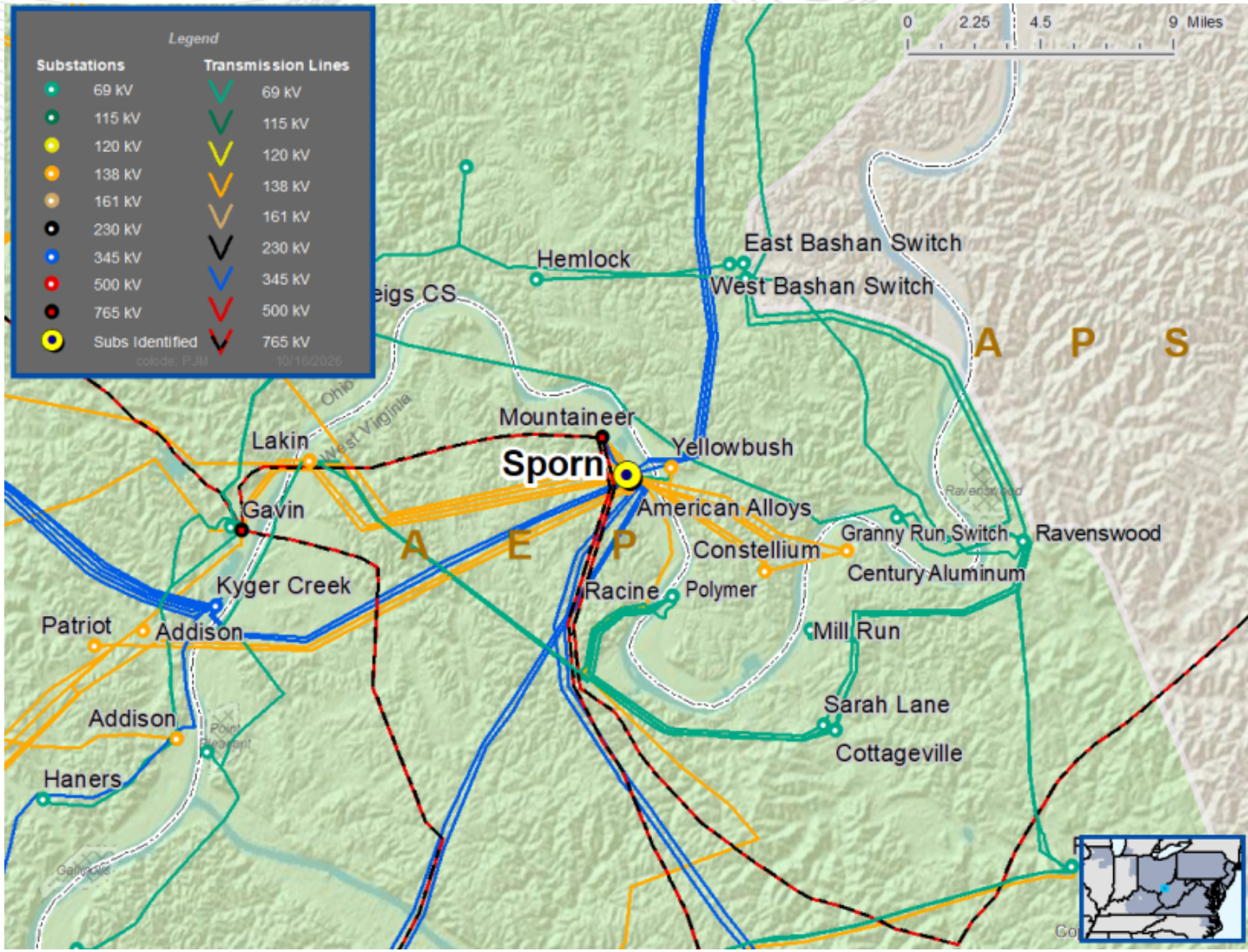
Problem Statement:

2026-W1-SC-14

In the 2031 RTEP Short Circuit base case, the Sporn 138 kV breaker "CS-HH" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Sporn–138 kV breaker "CS-HH"	40



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AEP Transmission Zone: Baseline
Sporn 138 kV Breaker "CS-HH" Replacement

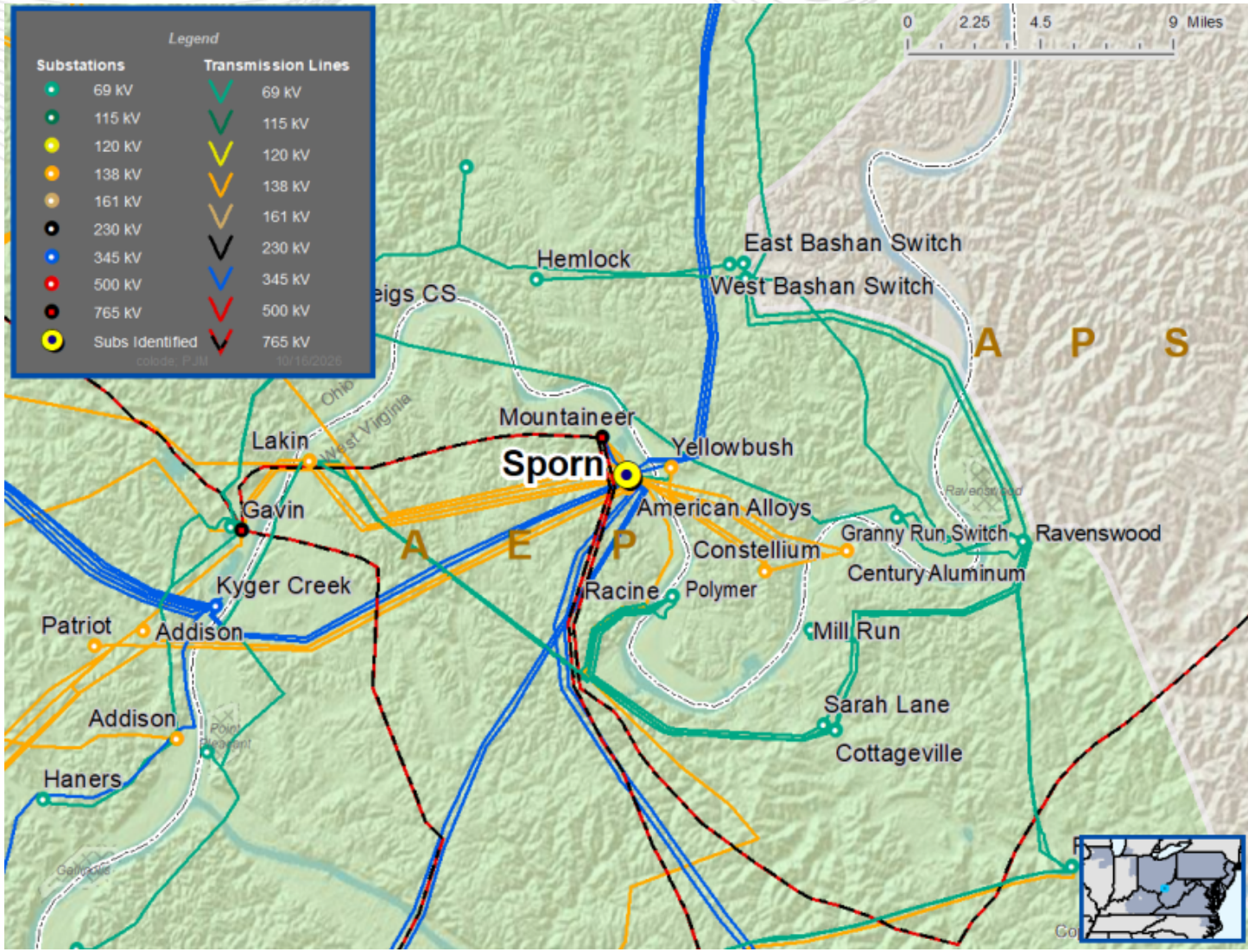
Proposed Solution:
Replace the overdutied Sporn 138 kV circuit breaker "CS-HH" with an 80 kA circuit breaker.

Estimated Cost: $1.38M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Sporn 138 kV circuit breaker "CS-HH"	80

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Sporn 138 kV Breaker “CS-EE, CS-FF” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

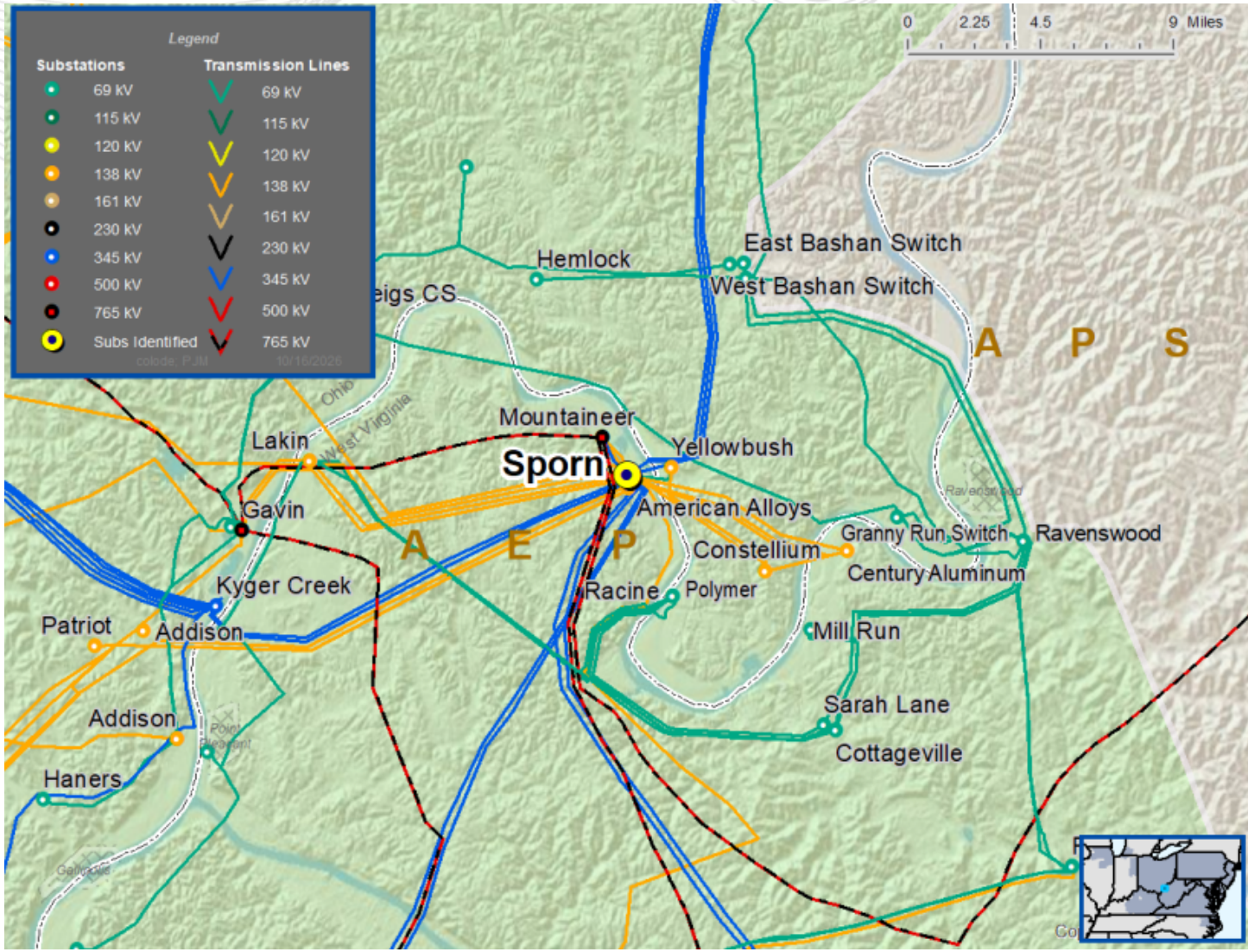
Problem Statement:

2026-W1-SC-12, SC-13

In the 2031 RTEP Short Circuit base case, the Sporn 138 kV breakers “CS-EE, CS-FF” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Sporn–138 kV breaker “CS-EE, CS-FF”	31.5



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AEP Transmission Zone: Baseline
Sporn 138 kV Breaker “CS-EE, CS-FF” Replacement

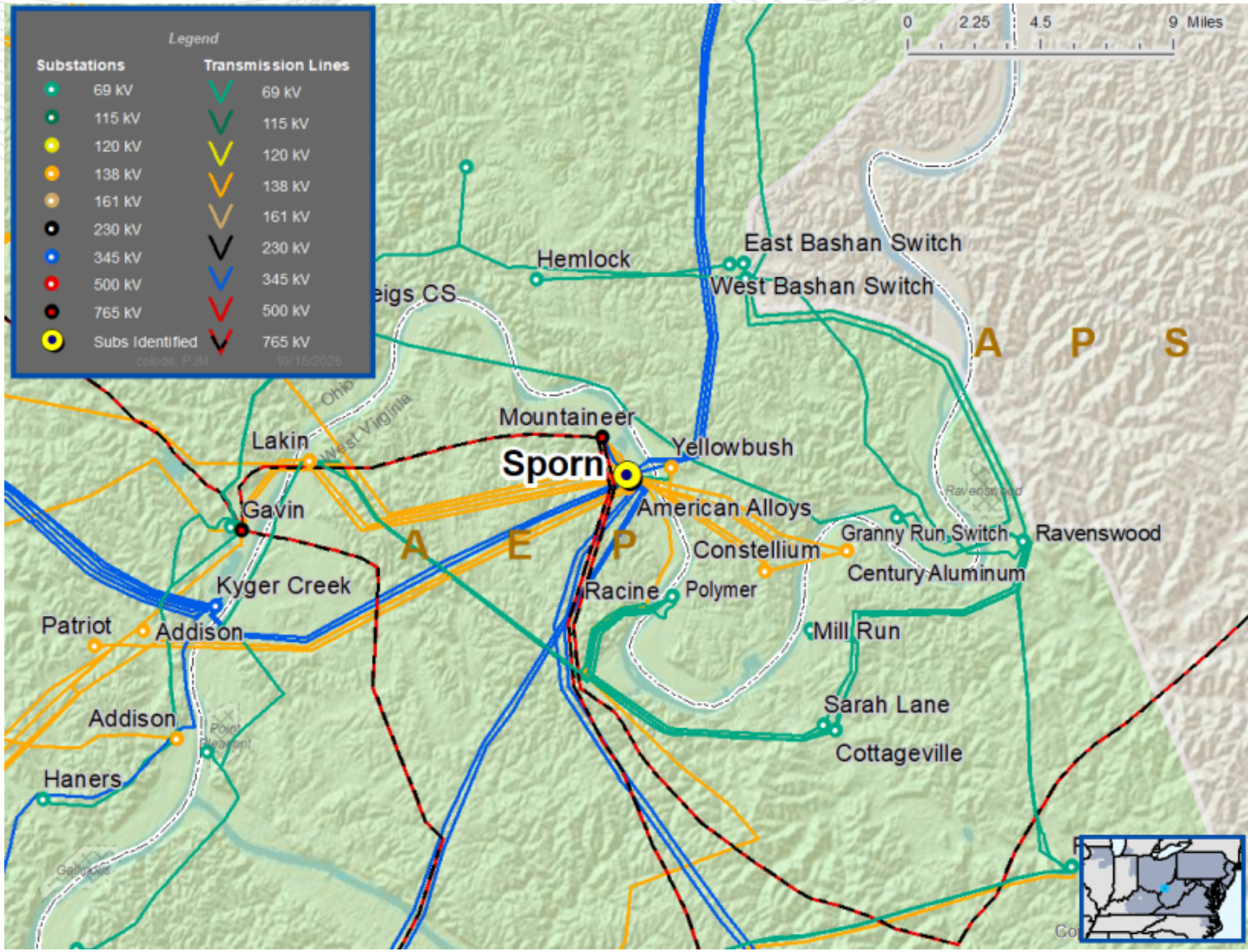
Proposed Solution:
Replace the overdutied Sporn 138 kV circuit breaker “CS-EE, CS-FF” with 63 kA circuit breakers.

Estimated Cost: $2.78M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Sporn 138 kV circuit breakers “CS-EE, CS-FF"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Robison Park 138 kV Breaker "AA" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

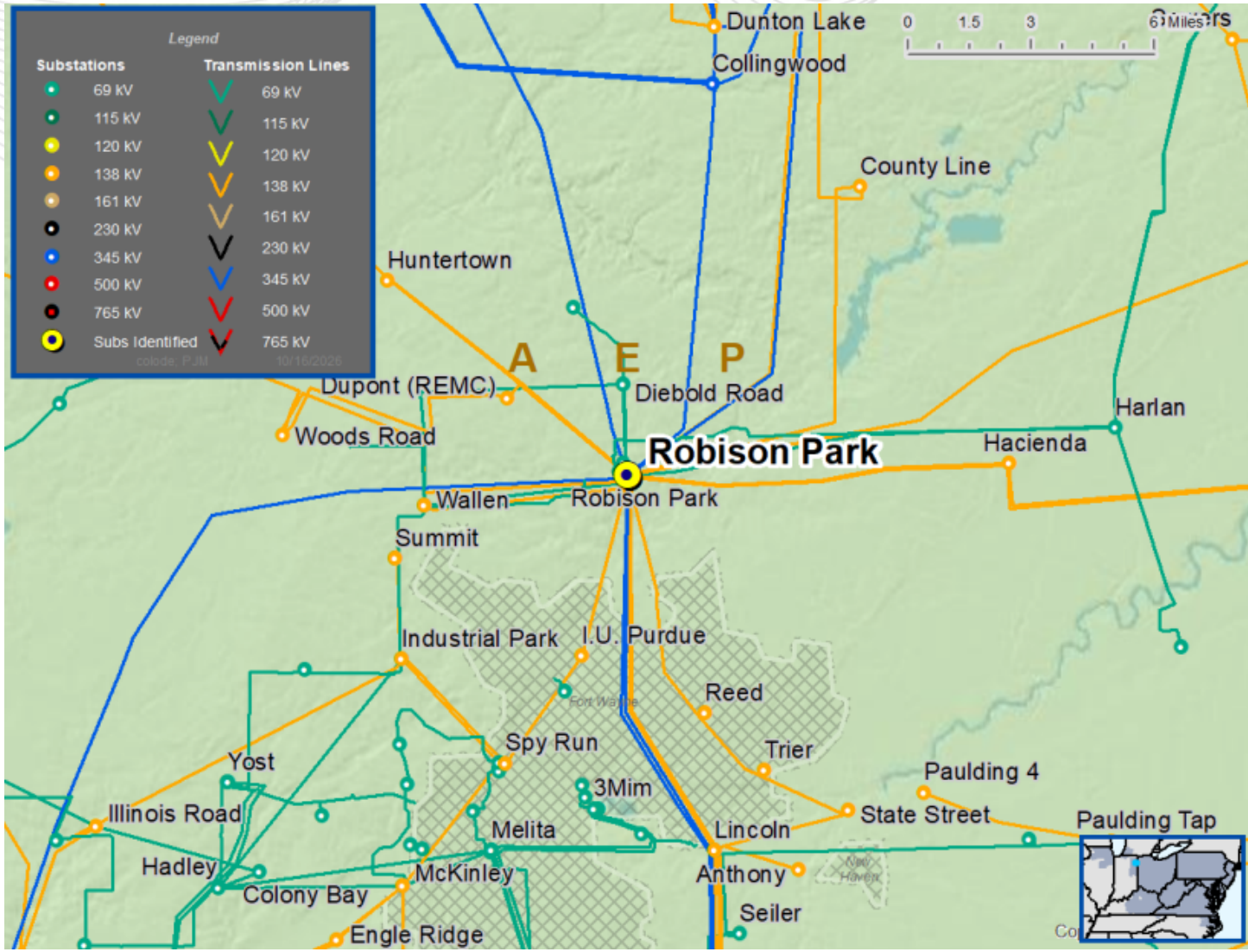
Problem Statement:

2026-W1-SC-11

In the 2031 RTEP Short Circuit base case, the Robison Park 138 kV breaker "AA" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Robison Park–138 kV breaker "AA"	40



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AEP Transmission Zone: Baseline
Robison Park 138 kV Breaker "AA" Replacement

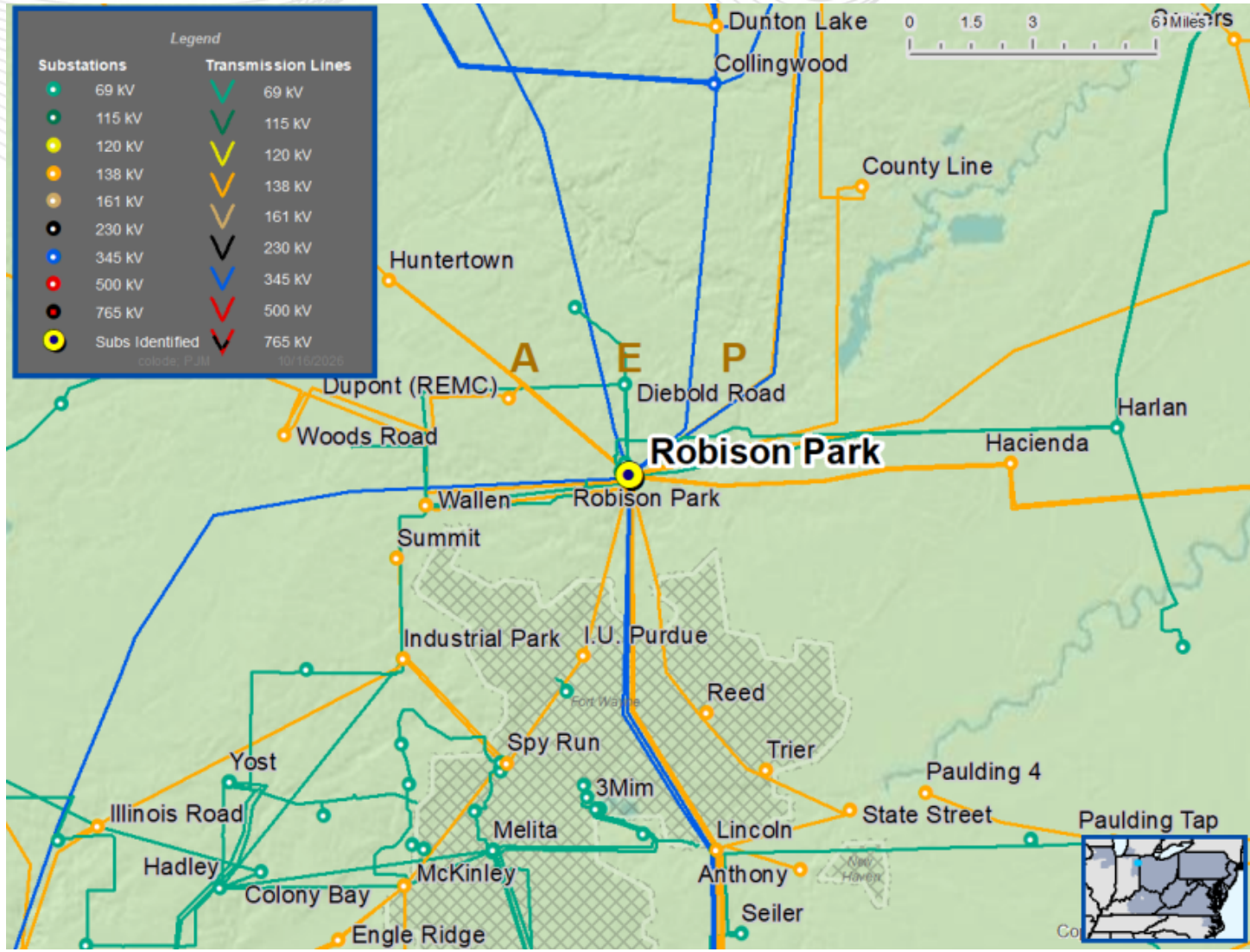
Proposed Solution:
Replace the overdutied Robison Park 138 kV circuit breaker "AA" with a 63 kA circuit breaker.

Estimated Cost: $1.481M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Robison Park 138 kV circuit breaker "AA"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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AEP Transmission Zone: Baseline
Vine Street 138 kV Breakers “105, 108” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2026 RTEP assumptions

Model Used for Analysis: 2031 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

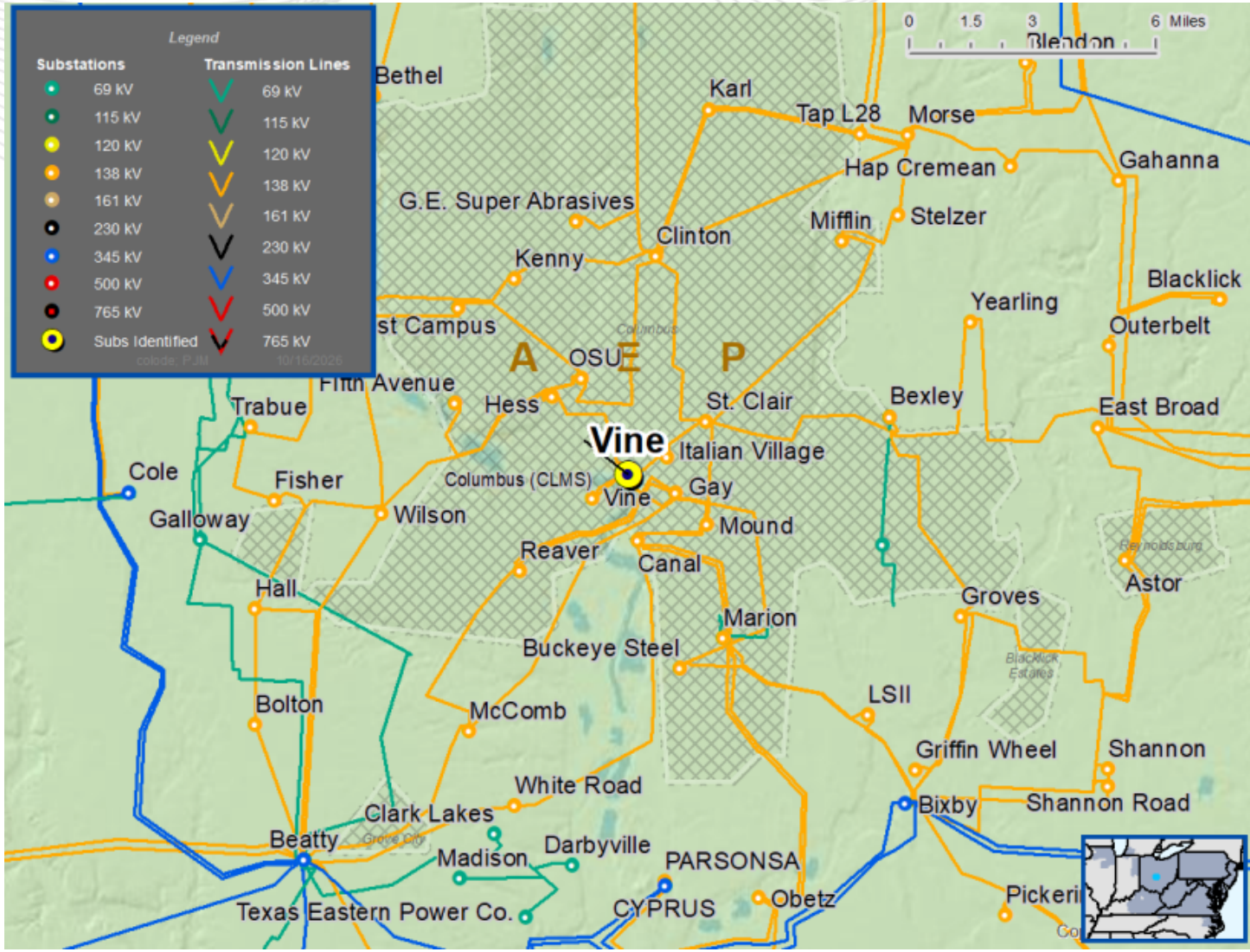
Problem Statement:

2026-W1-SC-17, SC-18

In the 2031 RTEP Short Circuit base case, the Vine Street 138 kV breakers “105, 108” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Vine Street–138 kV breakers “105, 108”	40



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AEP Transmission Zone: Baseline
Vine Street 138 kV Breakers “105, 108” Replacement

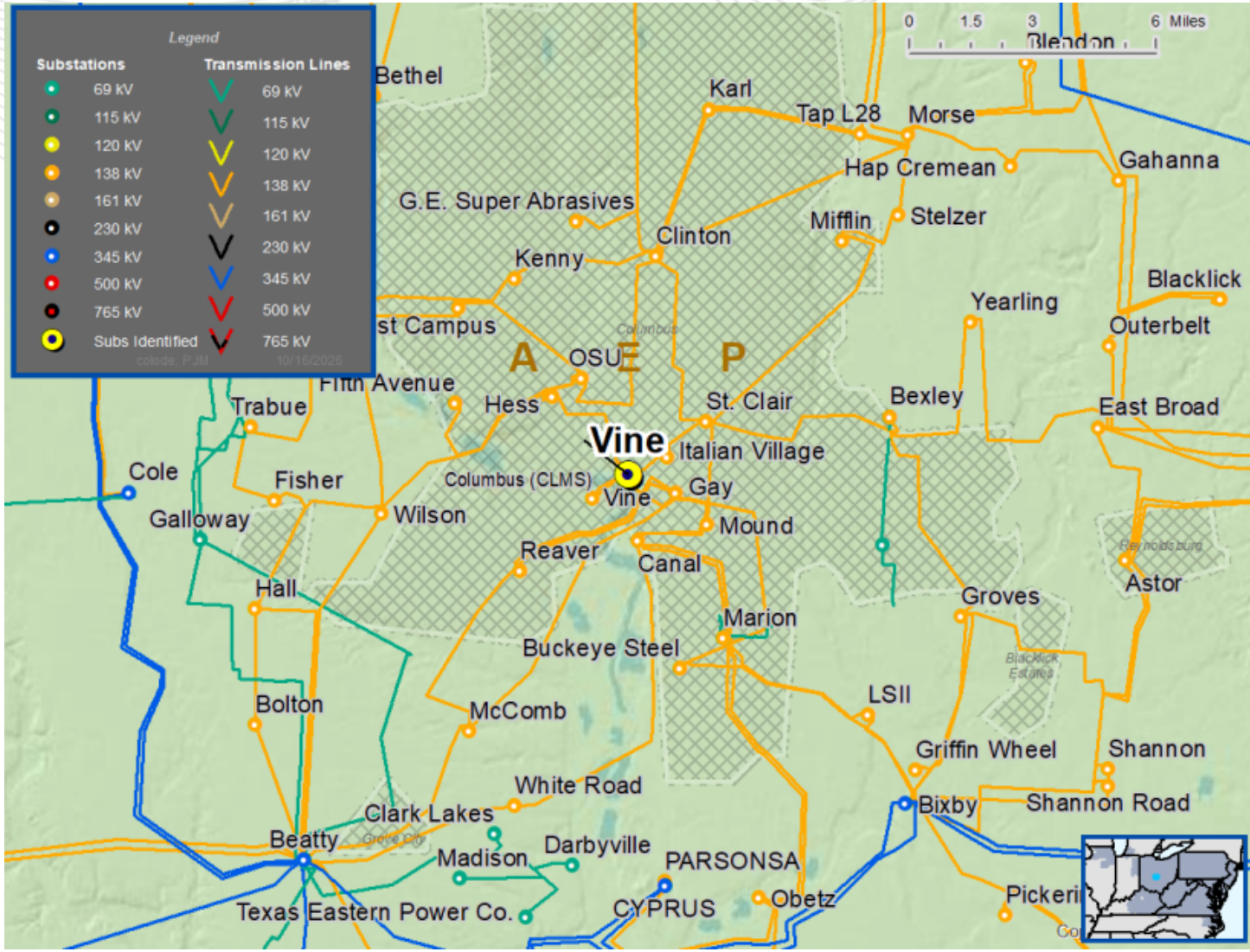
Proposed Solution:
Replace the overdutied Vine Street138 kV circuit breakers “105, 108” with 63 kA circuit breakers.

Estimated Cost: $1.266M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Vine Street 138 kV circuit breakers “105, 108"	63

Required IS Date: 6/1/2031
Projected IS Date: 6/1/2031



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1	November 10, 2026	• Original slides posted

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