Reliability Analysis Update
PJM West

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Sub Regional RTEP Committee – PJM West

October 17, 2025

2025 RTEP
First Read
Baseline Reliability Projects

APS Transmission Zone: Baseline
Bedington – Eagle 138 kV

Process Stage: First Read

Criteria: N-1-1

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2025 RTEP Winter base case

Proposal Window Exclusion: Substation Equipment Exclusion

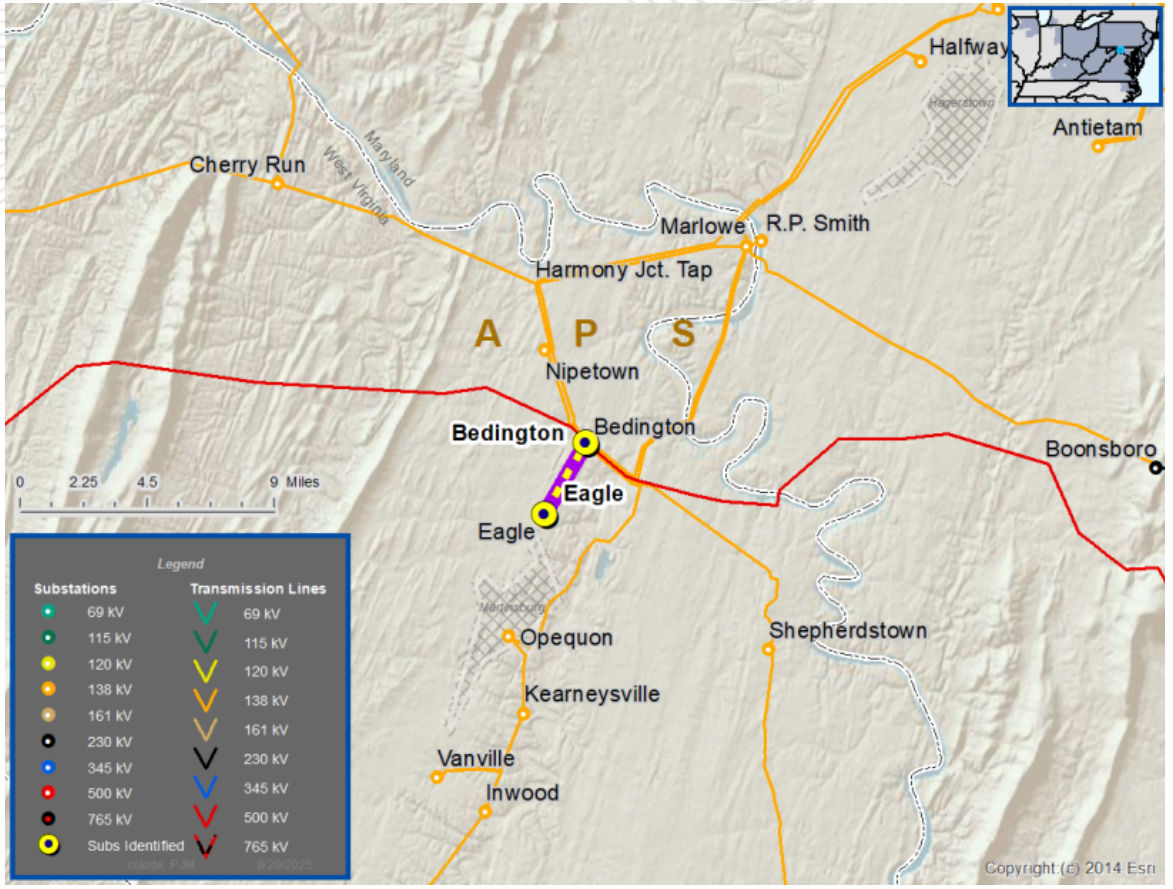
Problem Statement:

2025-W1-N11-WT55 & 2025-W1-N11-WT56

In the 2030 RTEP Winter case, the Bedington to Eagle 138 kV line is overloaded for N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Bedington – Eagle 138 kV	148/148/148/148



APS Transmission Zone: Baseline Bedington – Eagle 138 kV

Proposed Solution:
At Bedington:

- Install foundation, conduit, and grounding for new equipment.
- Install (3) 138 kV surge arresters.
- Replace (1) existing 138 kV CVT with (3) 138 kV CVT's
- Replace (1 Lot) of limiting conductor.
- Install (1 Lot) of cables and grounding
- Replace (1) existing 138 kV Eagle line terminal relay panel and breaker failure, with (1) standard line relaying panel consisting of (1) SEL-421, (1) SEL-411L, and (1) SEL-451

Total Estimated Cost: $1.96M

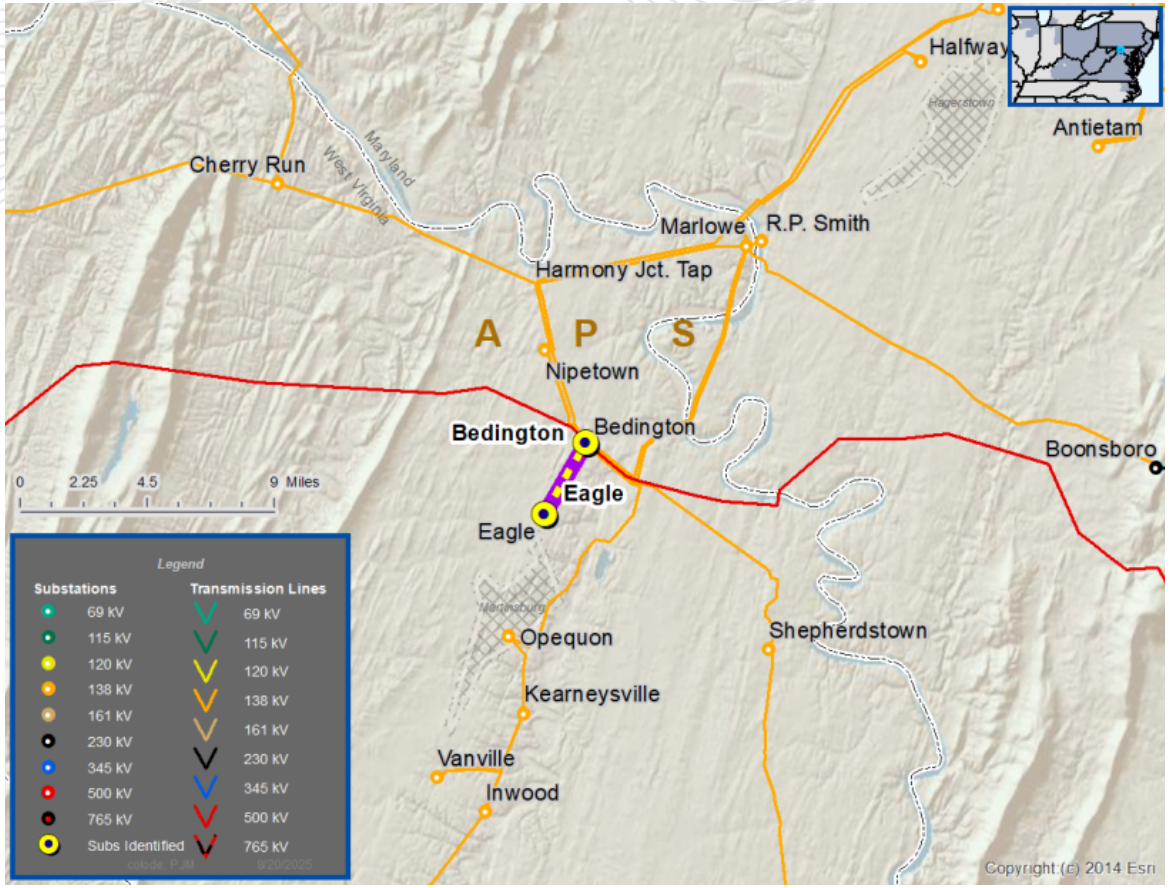
Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Bedington – Eagle 138 kV	308/376/349/445

Alternatives: N/A

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



APS Transmission Zone: Baseline
Meadow Brook-West Winchester 138 kV

Process Stage: First Read

Criteria: Base Case Analysis, N-1-1, Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2025 RTEP Summer and Winter base case

Proposal Window Exclusion: Substation Equipment Exclusion

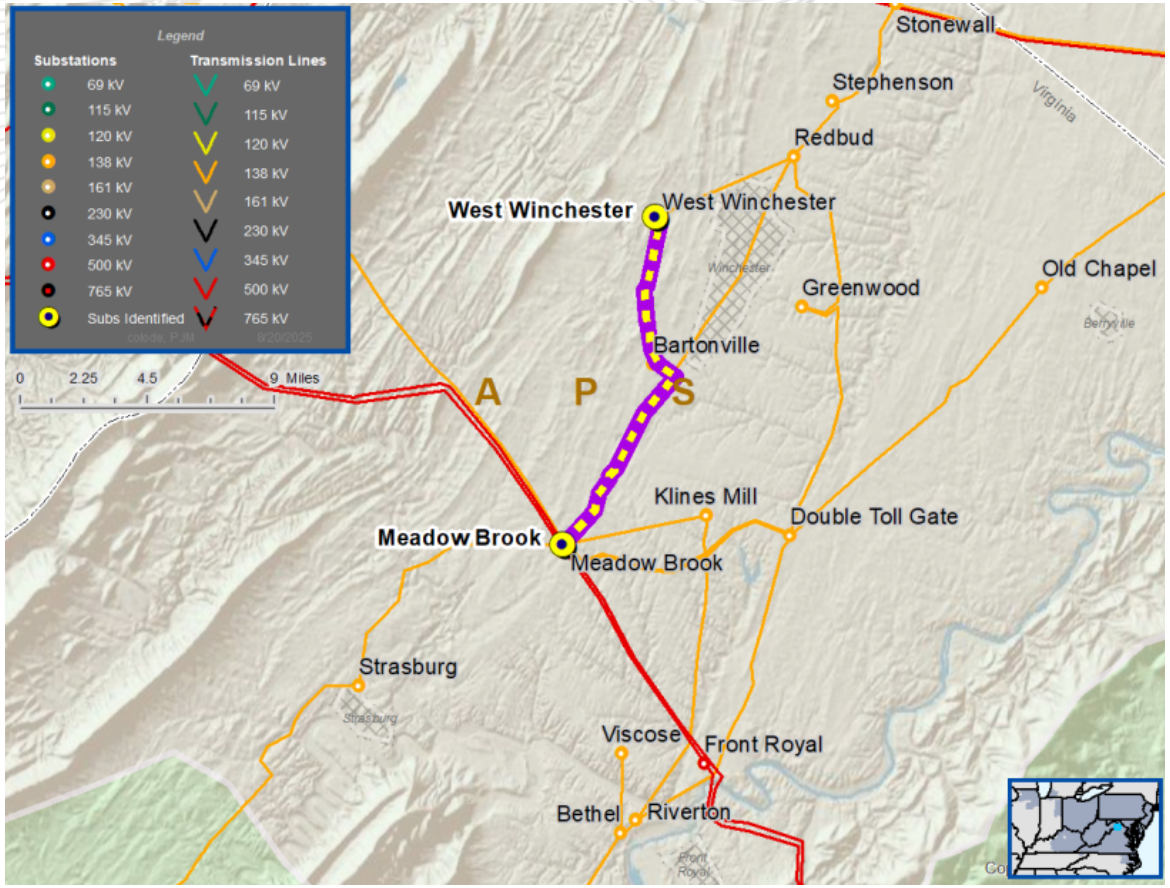
Problem Statement:

2025-W1-N11-ST9, 2025-W1-N11-ST15, 2025-W1-GD-W204, 2025-W1-IPD-W26, 2025-W1-IPD-W29, 2025-W1-IPD-W30, 2025-W1-IPD-W33, 2025-W1-GD-W50, 2025-W1-GD-W203, 2025-W1-GD-W346, 2025-W1-N1-WT19, 2025-W1-N1-WT20, 2025-W1-N1-WT21 & 2025-W1-N1-WT22

In the 2030 RTEP Summer and Winter case, the Meadow Brook - West Winchester 138 kV line is overloaded for N-1, N-2 and N-1-1 outages

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Meadow Brook-West Winchester 138 kV	292/314/325/343



APS Transmission Zone: Baseline
Meadow Brook-West Winchester 138 kV

Proposed Solution:
At Meadow Brook:

- Install conduit and grounding for new equipment.
- Install (1) lot of cables and grounding for new equipment.
- Replace (1) 138 kV wave trap on the West Winchester line terminal

Total Estimated Cost: $0.35M

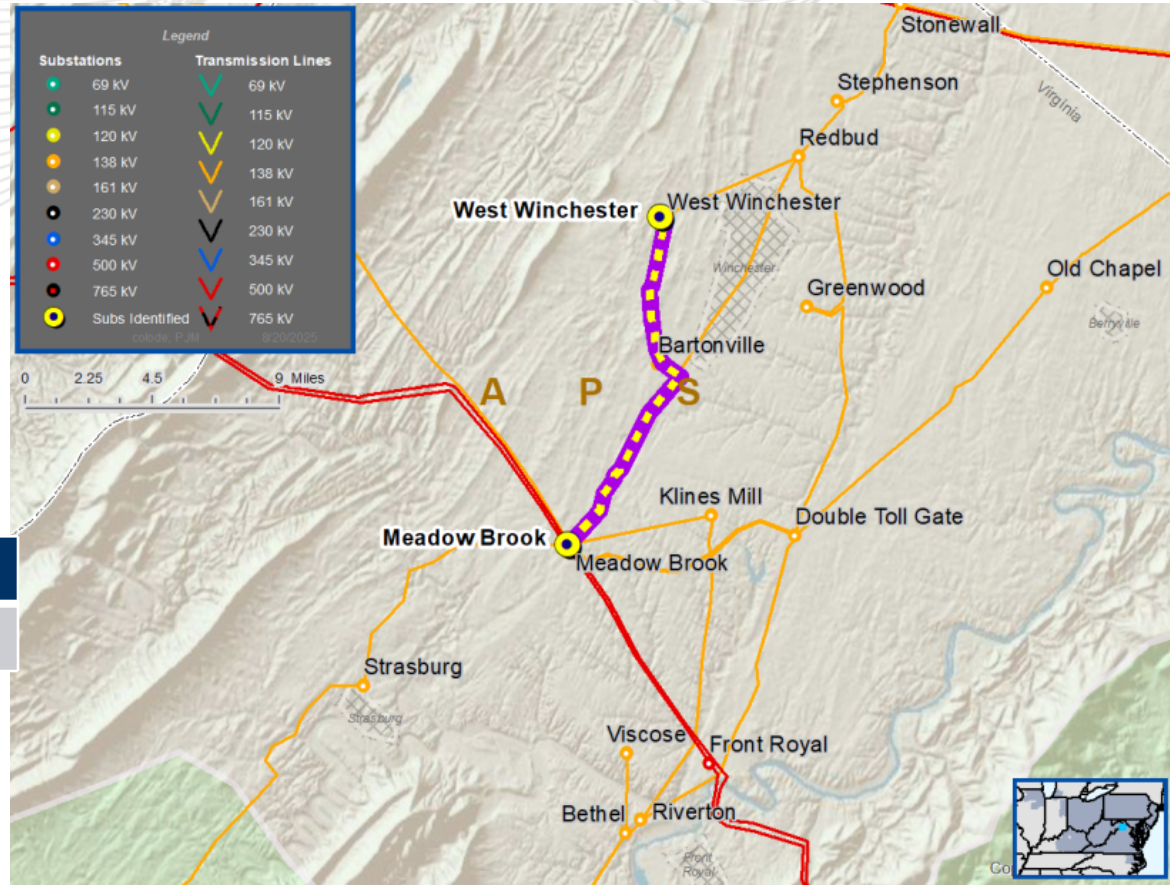
Alternatives: N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Meadow Brook-West Winchester 138 kV	308/376/349/445

Required In-Service: 6/1/2030

Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline Lakeview-Ottawa 138 kV Line

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2025 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV Exclusion

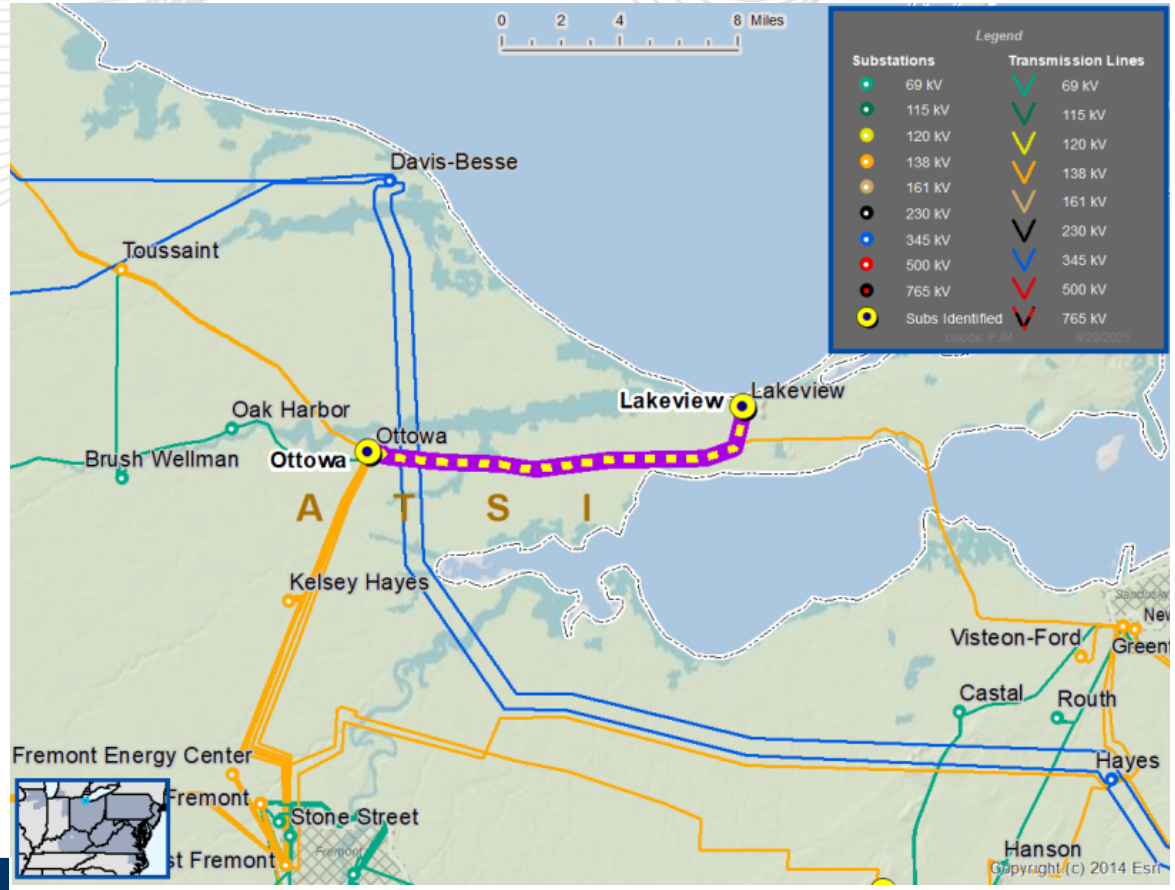
Problem Statement:

2025-W1-GD-S477

In the 2030 RTEP summer case, the Lakeview - Ottawa 138 kV Line is overloaded for a N-2 outage.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Lakeview-Ottawa 138 kV Line	448/516/448/543



ATSI Transmission Zone: Baseline Lakeview-Ottawa 138 kV Line

Proposed Solution:
Reconductor 1 span of transmission line outside Ottawa Substation
Reconductor 1 span of transmission line outside Lakeview Substation
Replace Limiting Terminal Equipment at Lakeview Substation:

- (2) Thermal Relays
- (2) 138 kV Disconnect Switches
- Limiting Substation Conductor

Total Estimated Cost: $1.41M

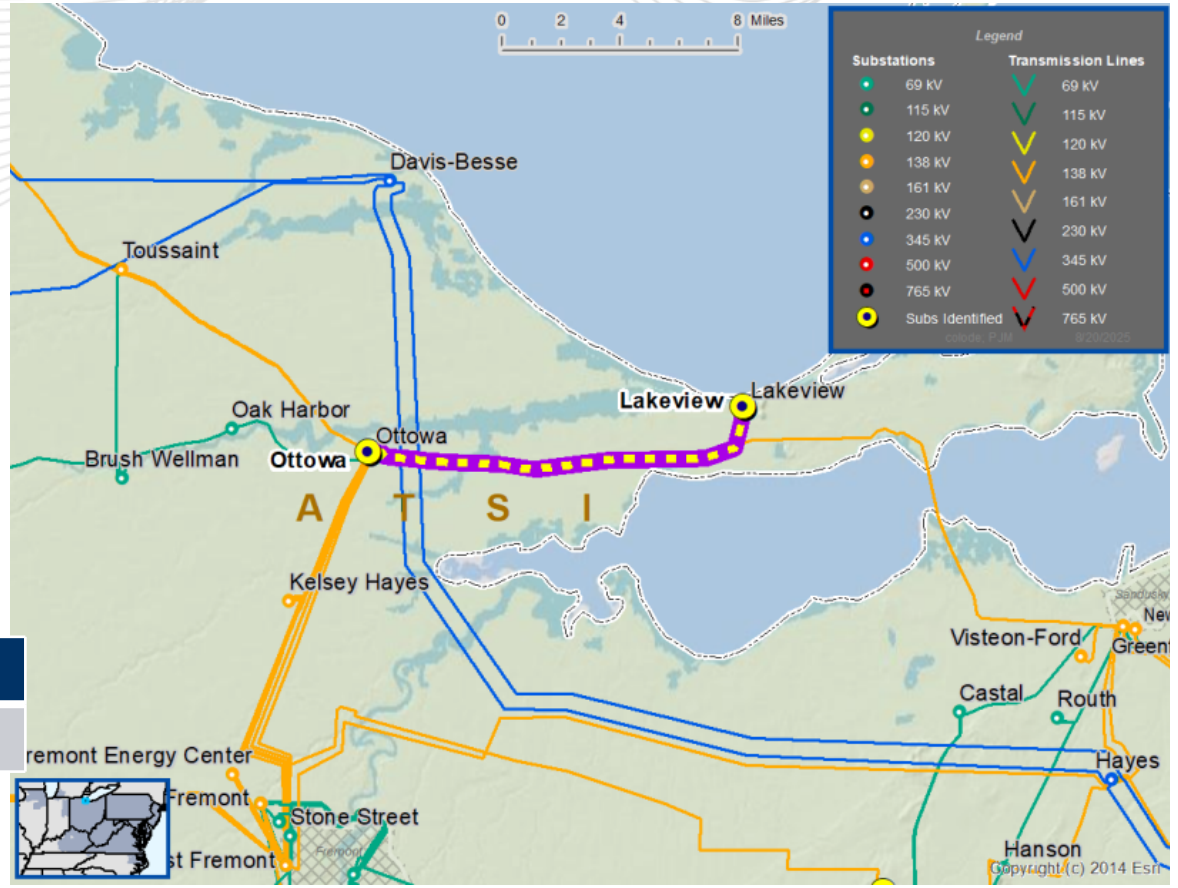
Alternatives: N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Lakeview-Ottawa 138 kV Line	469/544/501/607

Required In-Service: 6/1/2030

Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline Abbe-Johnson No.1 69 kV Line

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2025 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV Exclusion

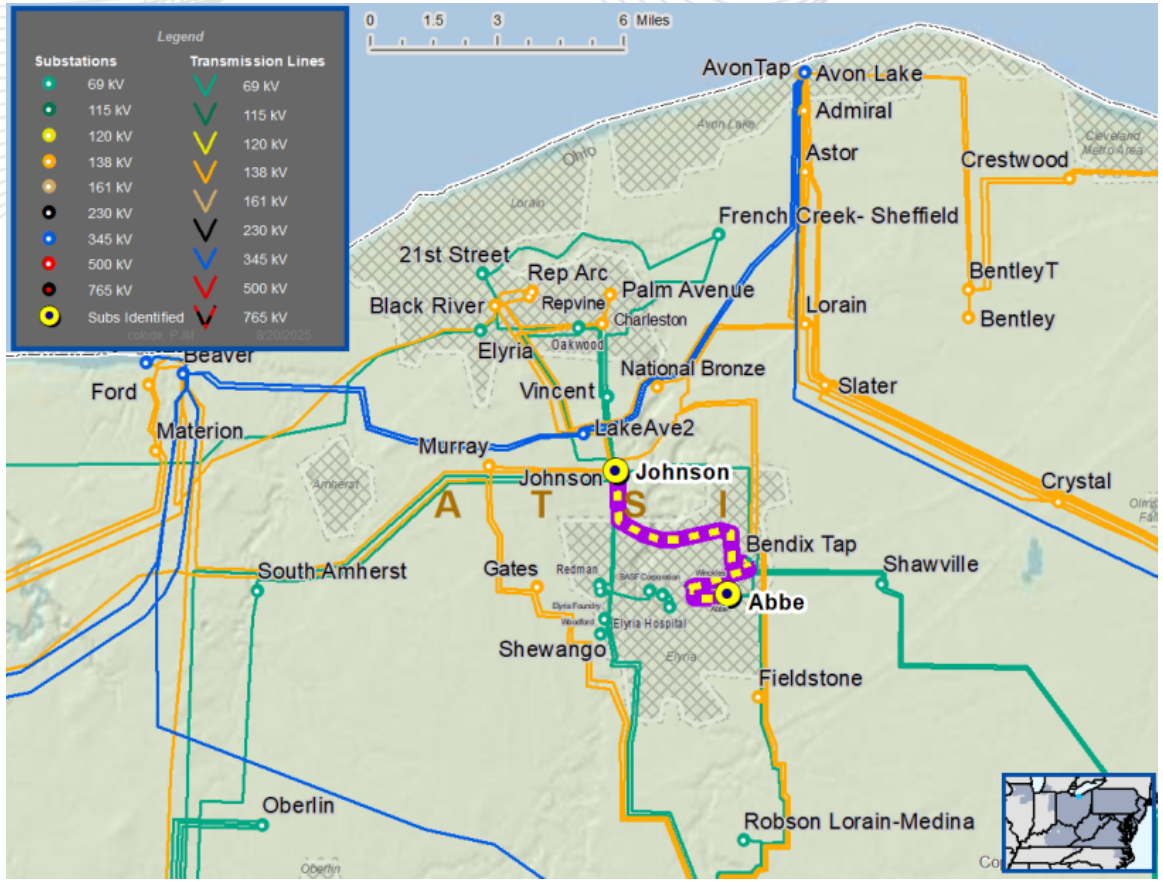
Problem Statement:

2025-W1-ATSI-T2

In the 2030 RTEP Summer case, the Abbe - Johnson No.1 69 kV Line is overloaded for N-1 outage

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Johnson – Elyria Water P.C.	80/96/90/108



ATSI Transmission Zone: Baseline
Abbe-Johnson No.1 69 kV Line

Proposed Solution:

Abbe-Johnson No.1 69 kV Line (Johnson - Elyria Water P.C.):

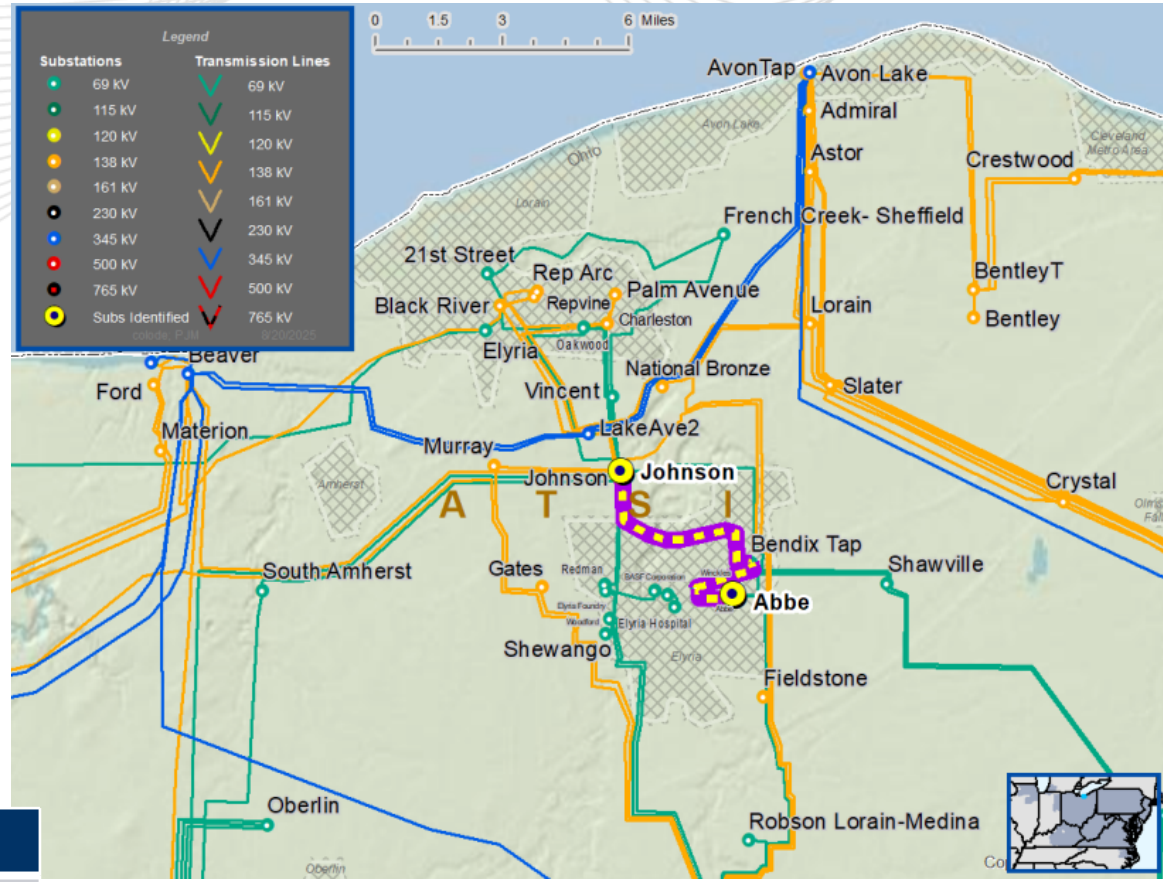
- Reconductor one span of transmission line between Johnson Substation and Elyria Water P.C.
- Replace (1) 69 kV Disconnect Switch
- Upgrade (1) Thermal Relay
- Modify Elyria Loop Tap configuration
- Install (1) 69 kV Disconnect Switch

Abbe-Johnson No.1 69 kV Line (Elyria Water P.C.-Spring Valley):

- Replace (1) 69 kV Disconnect Switch

Abbe-Johnson No.1 69 kV Line (Spring Valley-Lorain College)

- Replace (2) 69 kV disconnect switches



Total Estimated Cost: $3.22M

Alternatives: N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Johnson – Elyria Water P.C.	100/121/113/143

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030

ATSI Transmission Zone: Baseline Bellevue-Groton 69 kV Line

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2025 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV Exclusion

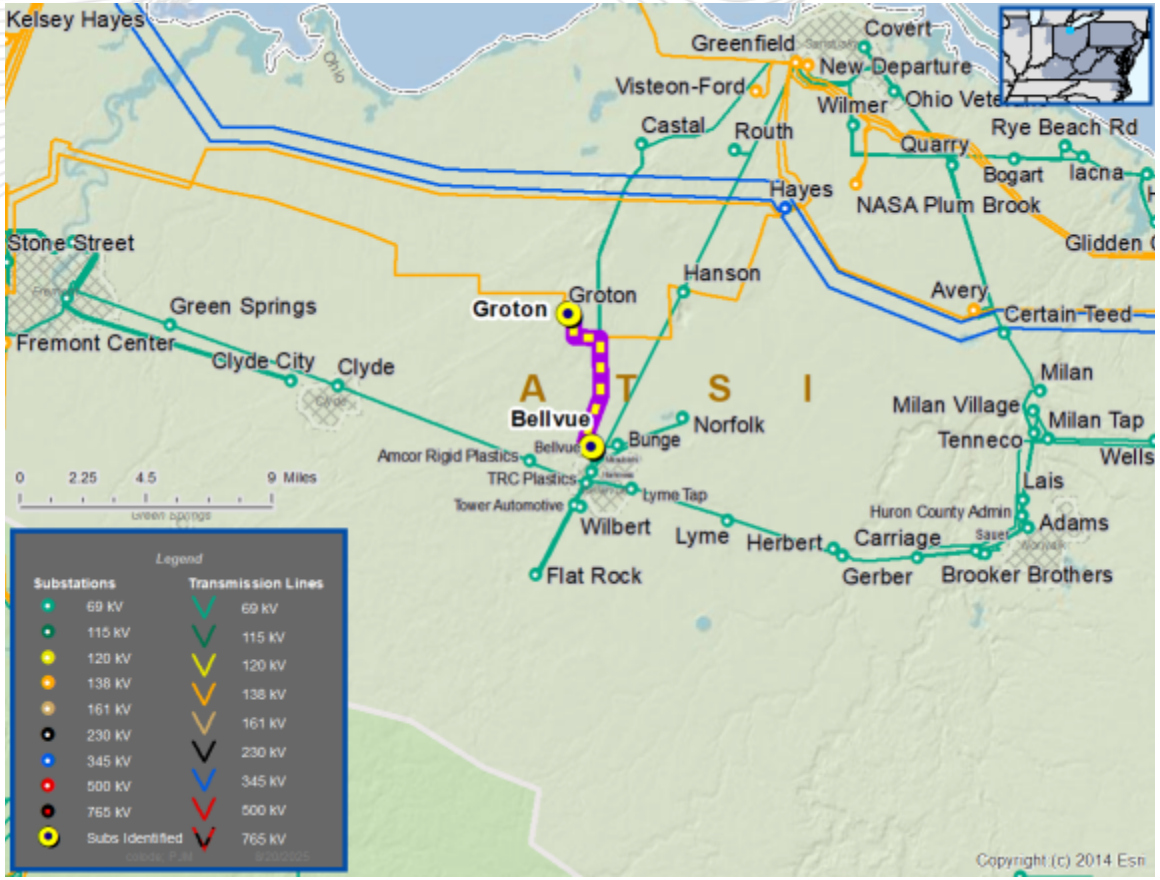
Problem Statement:

2025-W1-ATSI-T1

In the 2030 RTEP Summer case, the Bellevue-Groton 69 kV Line is overloaded for a N-1 outage.

Existing Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Bellevue-Groton 69 kV Line	70/72/80/80



ATSI Transmission Zone: Baseline
Bellevue-Groton 69 kV Line

Proposed Solution:

Bellevue-Groton 69 kV Line:

- Rebuild 4 miles of the Bellevue - Groton 69 kV Line

Bellevue Substation:

- Replace (3) 69 kV disconnect switches
- Revise relay settings
- Replace limiting substation conductor

Groton Substation:

- Revise relay settings

Total Estimated Cost: $10.1M

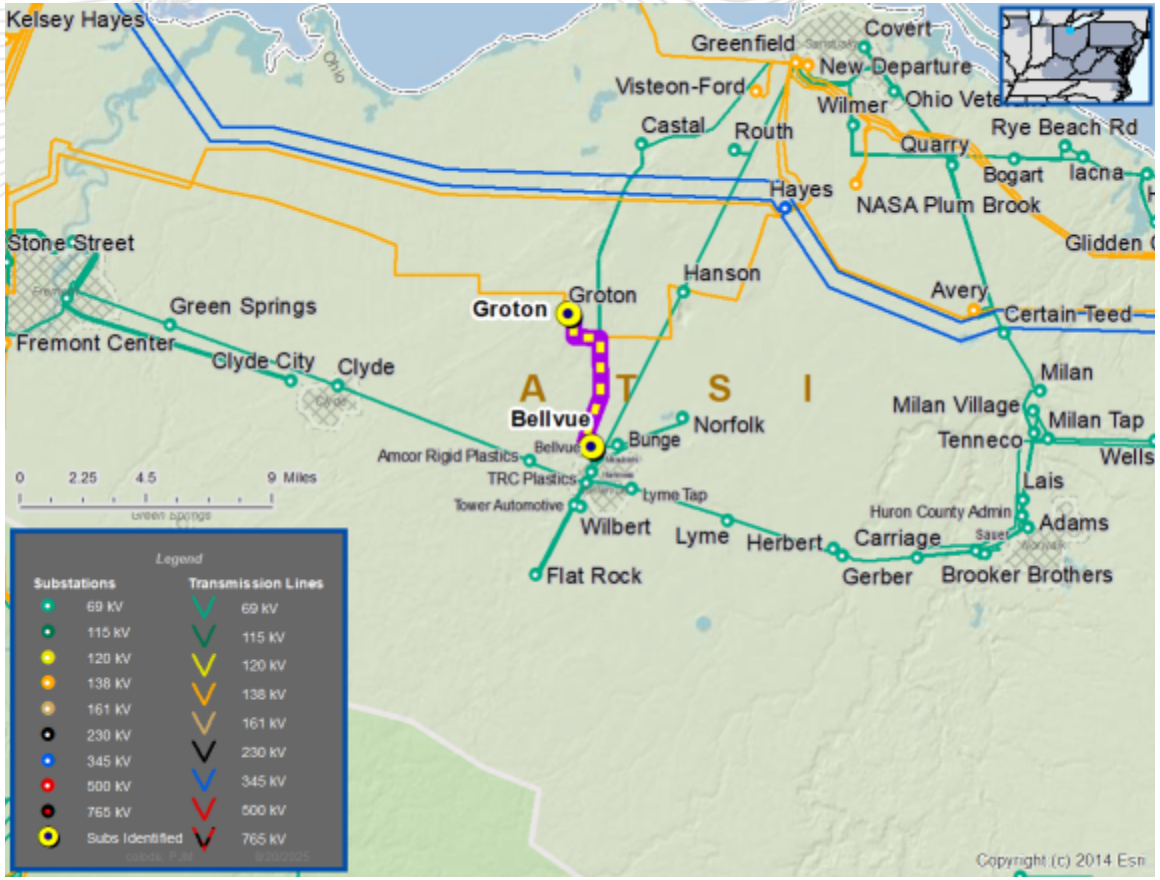
Alternatives: N/A

Preliminary Facility Rating:

Branch	SN/SE/WN/WE(MVA)
Bellevue-Groton 69 kV Line	111/134/125/159

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



DEOK Transmission Zone: Baseline McGuffey-Locust 69 kV Line Rebuild

Process Stage: First Read

Criteria: TO 715 Criteria Violation

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP summer base case

Proposal Window Exclusion: Below 200 kV Exclusion

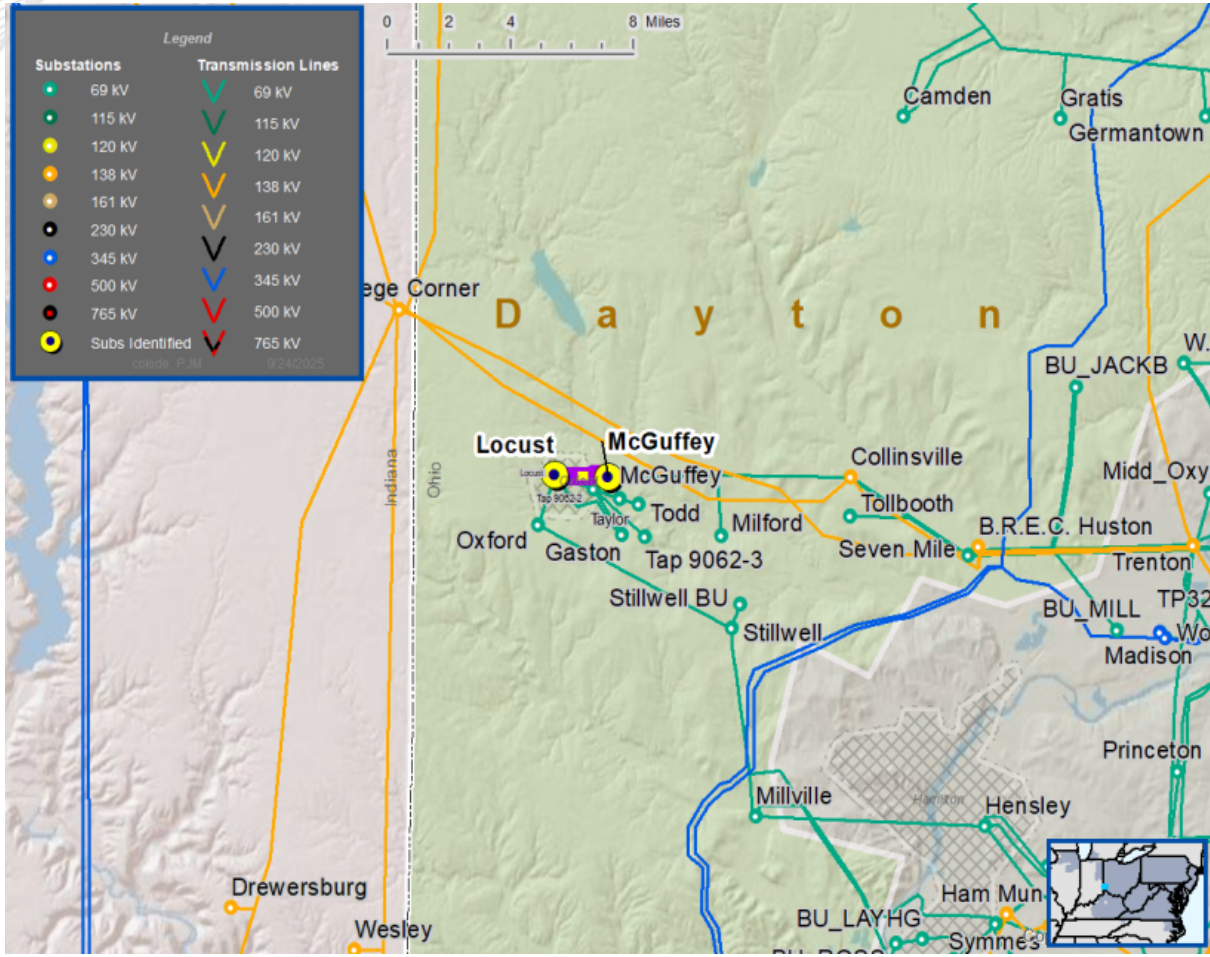
Problem Statement:

FG: 2025-W1-DEOK-T1, 2025-W1-DEOK-T2, 2025-W1-DEOK-T3, 2025-W1-DEOK-T4

In the 2030 RTEP summer case, 69 kV line McGuffey to Locust is overloaded for N-1 outage.

Existing Facility Rating:

Branch 69 kV	SN/SE/WN/WE (MVA)
McGuffey - Locust	54/54/69/69



DEOK Transmission Zone: Baseline McGuffey-Locust 69 kV Line Rebuild

Proposed Solution:

Rebuild the McGuffey to Locust 69 kV line (~1.35 miles) with 954ACSR Rail Conductor and OPGW.

The (54) wood poles will be replaced with light duty, steel poles. The rebuild will take place in the existing right-of-way and the distribution underbuilds will also be restored. Conductor drops going into McGuffey and Locust substations will be replaced with 954 AAC conductor.

Estimated Cost: $5.316 M

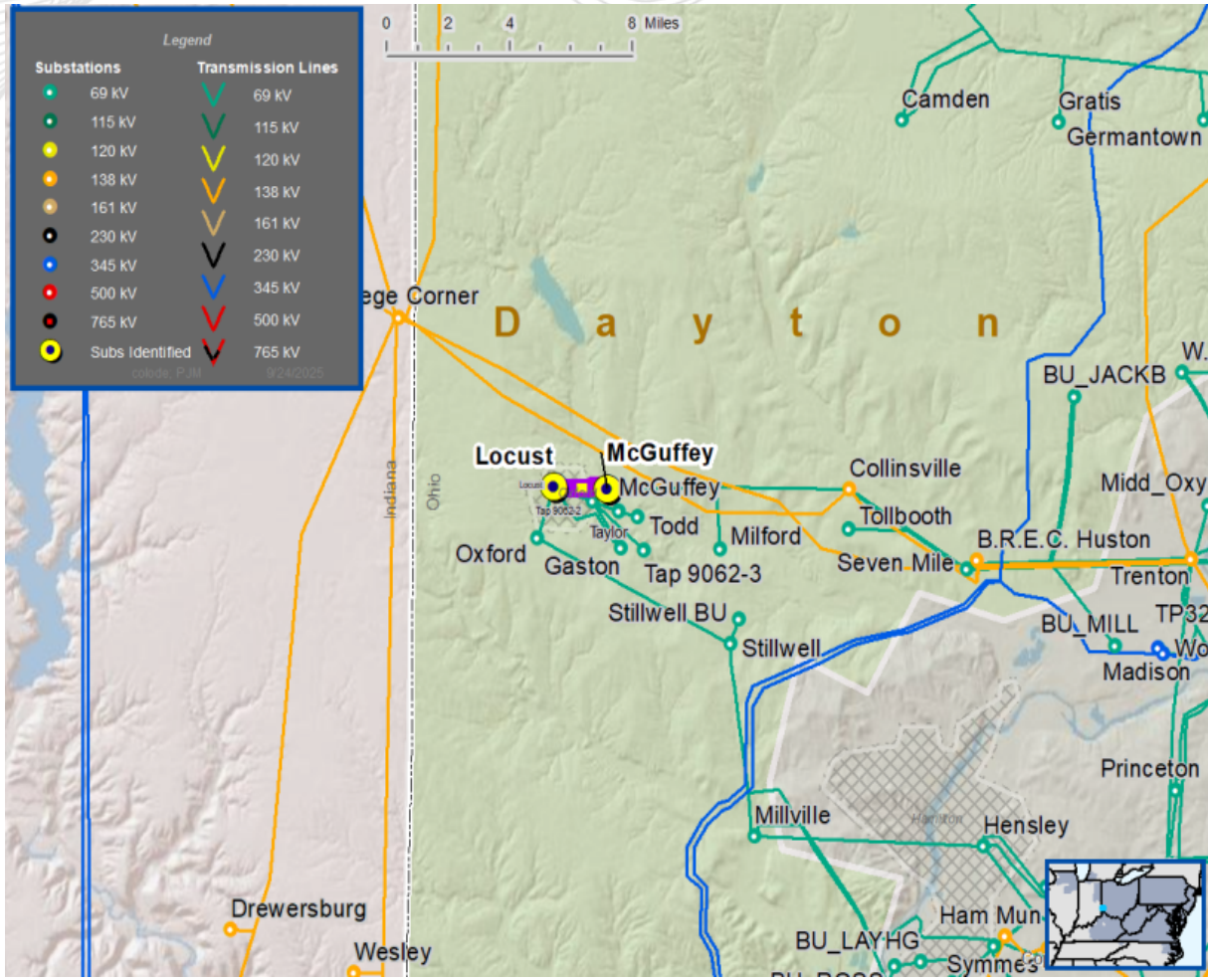
Preliminary Facility Rating:

Branch 69 kV	SN/SE/WN/WE (MVA)
McGuffey - Locust	102/102/127/127

Alternatives: N/A

Required In-Service Date: 06/01/2030

Projected In-Service Date: 05/29/2029



ComEd Transmission Zone: Baseline State Line 345/138 kV Transformer

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 winter base case

Proposal Window Exclusion: Below 200 kV Exclusion

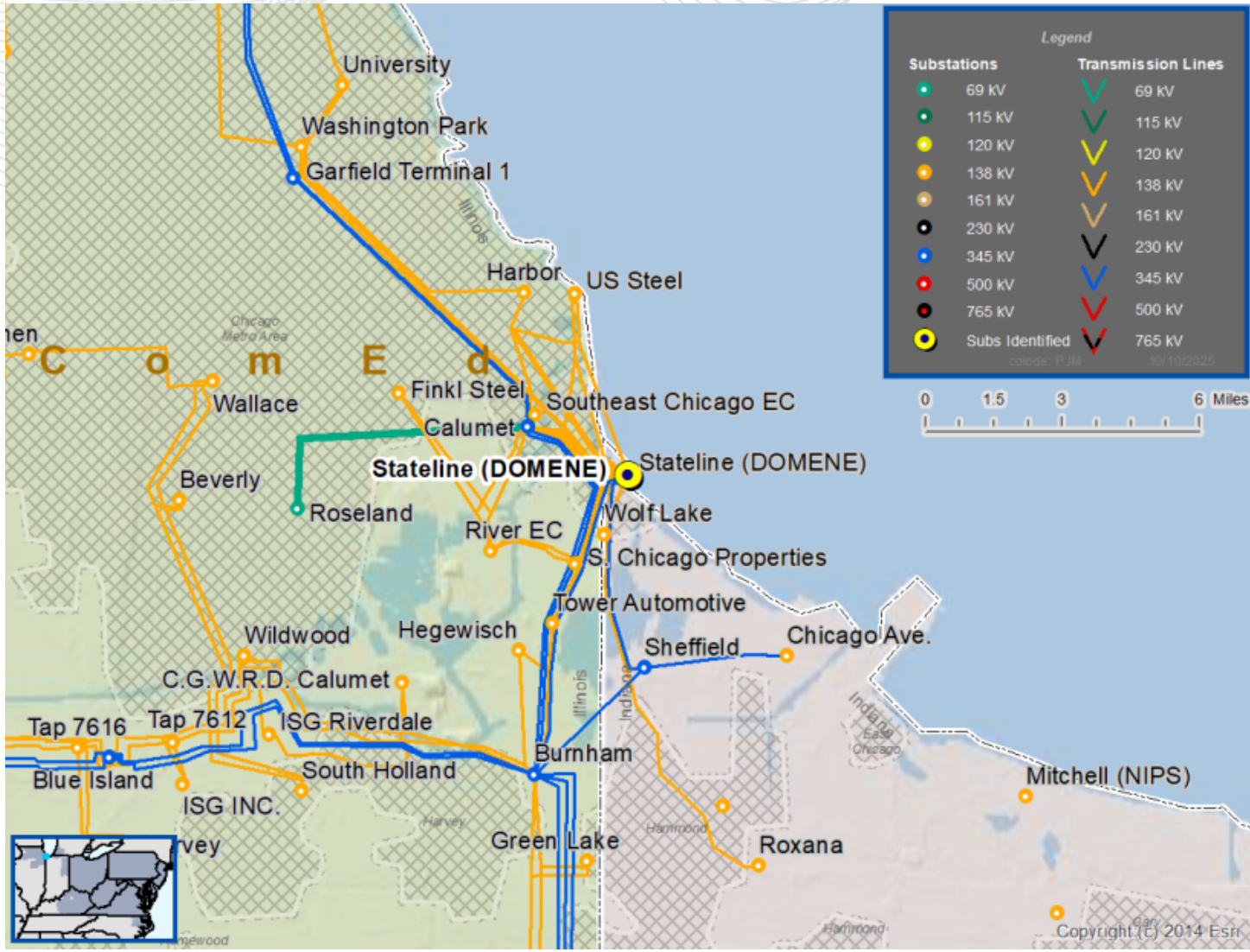
Problem Statement:

FG: 2025-W1-GD-W231, 2025-W1-GD-W215

In the 2030 winter case, the Stateline 345/138 kV transformer TR 82 is overloaded for N-2 outages.

Existing Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Stateline 345/138 kV TR82	308/361/361/415 308/361/361/415



ComEd Transmission Zone: Baseline State Line 345/138 kV Transformer

Proposed Solution:

Install a new 345/138 kV transformer TR 84, and associated equipment at State Line substation. Install two 345 kV circuit breakers, one 138 kV circuited breaker and associated equipment, also replace the 138 kV BT 732 circuit breaker at State Line substation.

Estimated Cost: $20.81 M

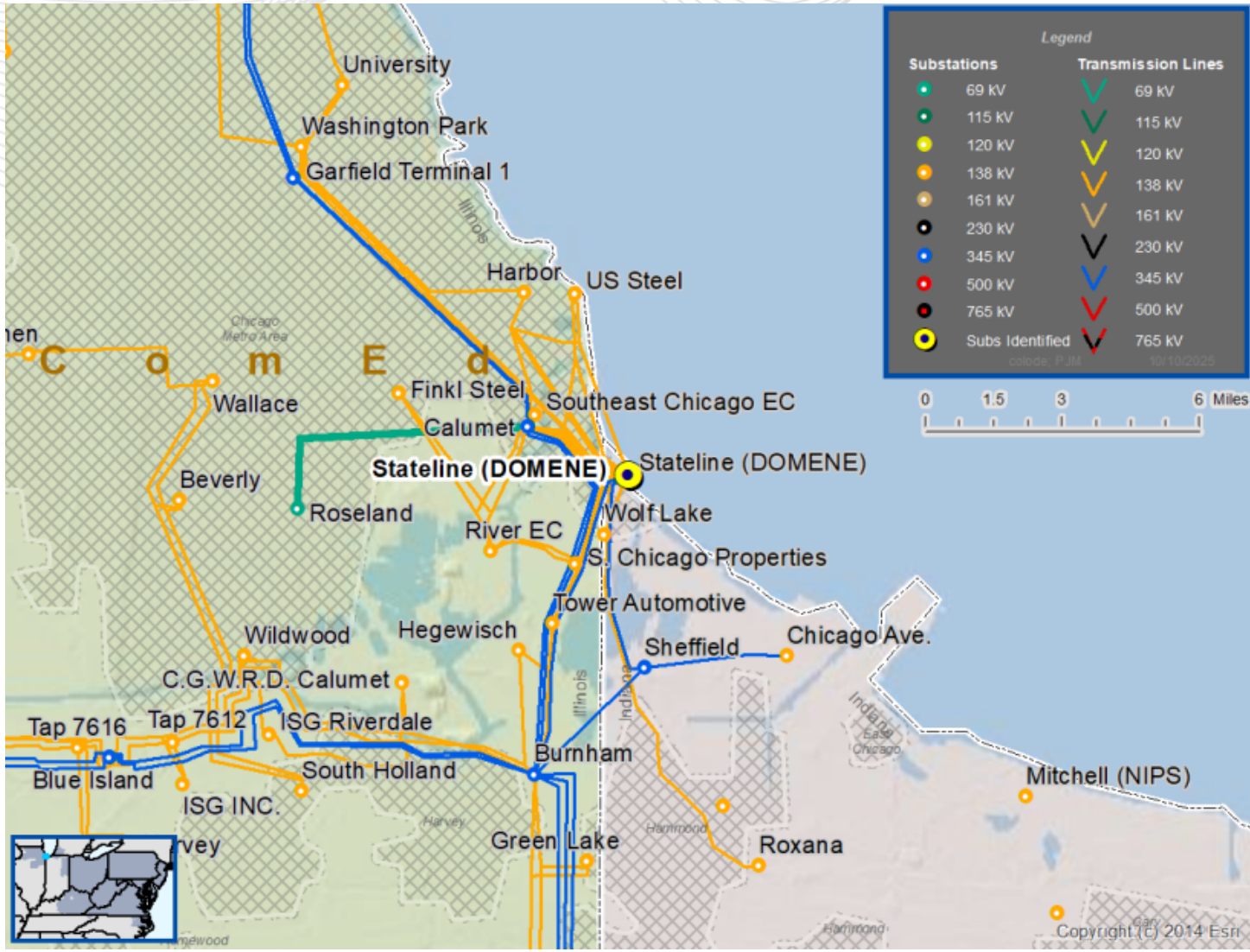
Preliminary Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Stateline 345/138 kV TR84	420/480/520/530 420/480/520/530

Alternatives: N/A

Required In-Service Date: 12/1/2030

Projected In-Service Date: 12/1/2030



ComEd Transmission Zone: Baseline Cherry Valley 345/138 kV Transformer

Process Stage: First Read

Criteria: FERC Form 715

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 summer 90/10 case

Proposal Window Exclusion: Below 200 kV Exclusion

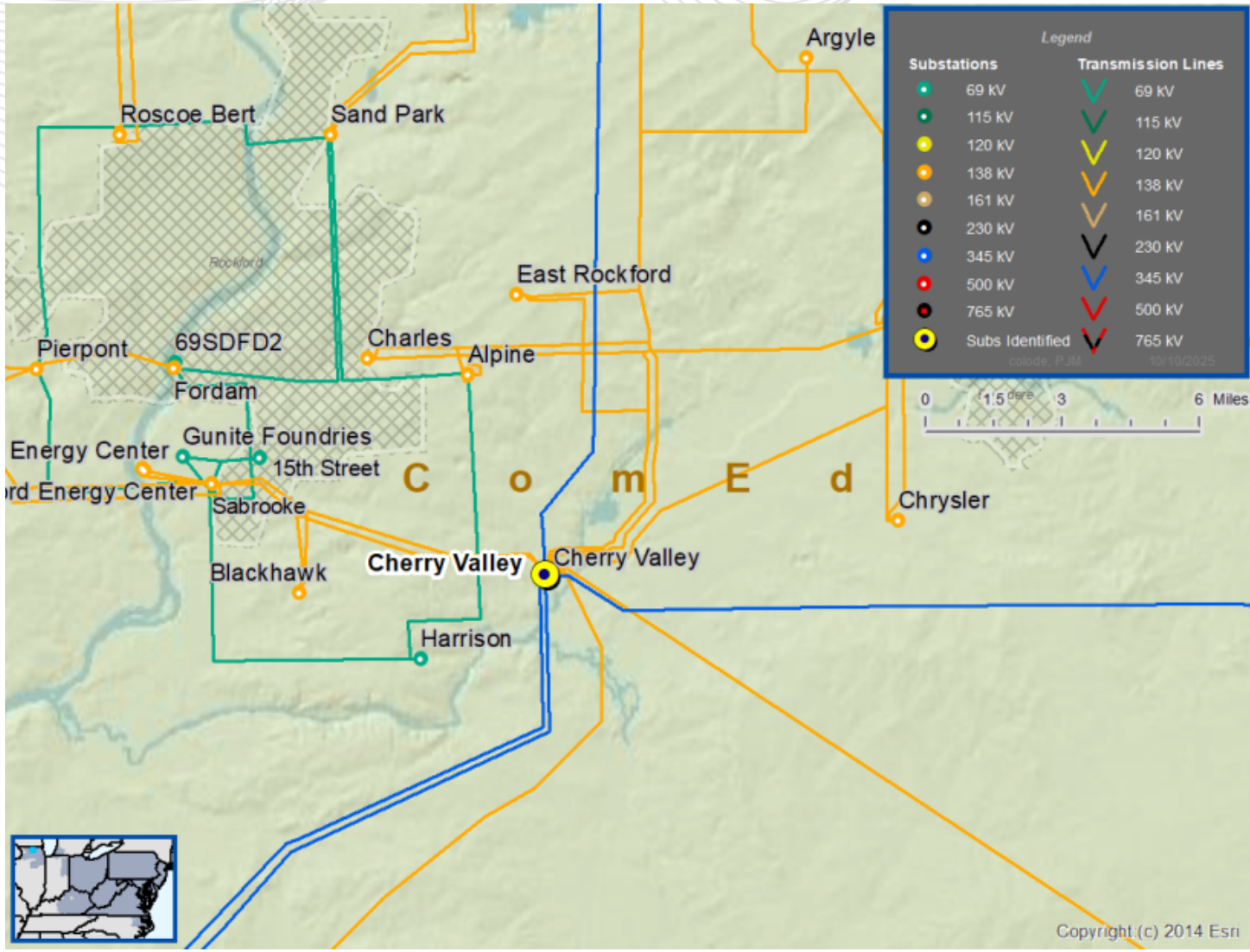
Problem Statement:

FG: 2025-W1-ComEd-T2

In the 2030 summer 90/10 case, the Cherry Valley 345/138 kV transformer TR 82 is overloaded for a N-1 outage.

Existing Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Cherry Valley 345/138 kV TR82	400/465/520/530 400/465/520/530



ComEd Transmission Zone: Baseline Cherry Valley 345/138 kV Transformer

Proposed Solution:

Remove the 34 kV tertiary cap bank on the Cherry Valley 345/138 kV transformer TR 82 and install a 138 kV bus 3 cap bank and associated equipment at Cherry Valley substation.

Estimated Cost: $7.74 M

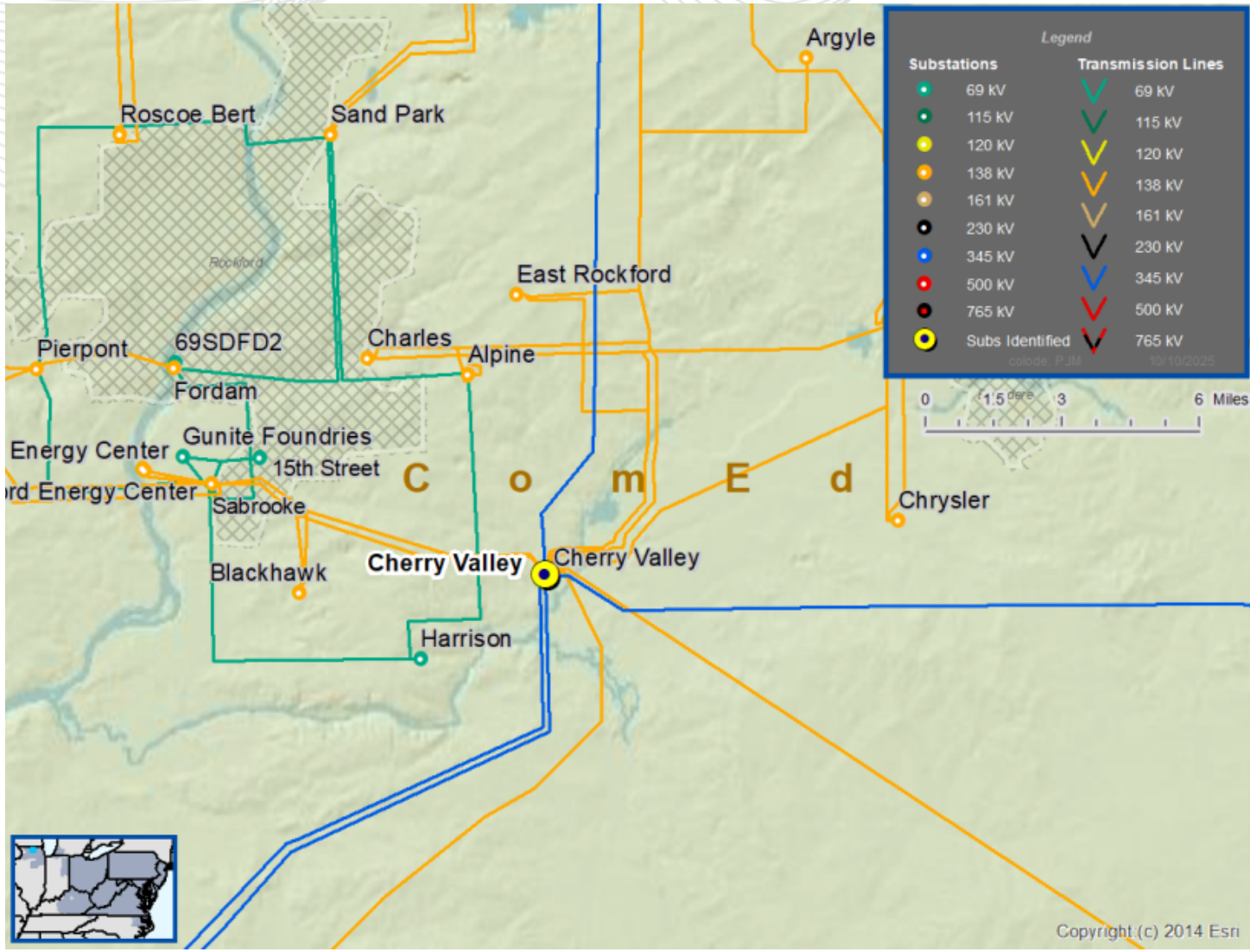
Preliminary Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Cherry Valley 345/138 kV TR82	420/480/520/530 420/480/520/530

Alternatives: N/A

Required In-Service Date: 6/1/2030

Projected In-Service Date: 6/1/2030



ComEd Transmission Zone: Baseline Elk Grove 345/138 kV Transformer

Process Stage: First Read

Criteria: FERC Form 715

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 summer 90/10 case

Proposal Window Exclusion: Below 200 kV Exclusion

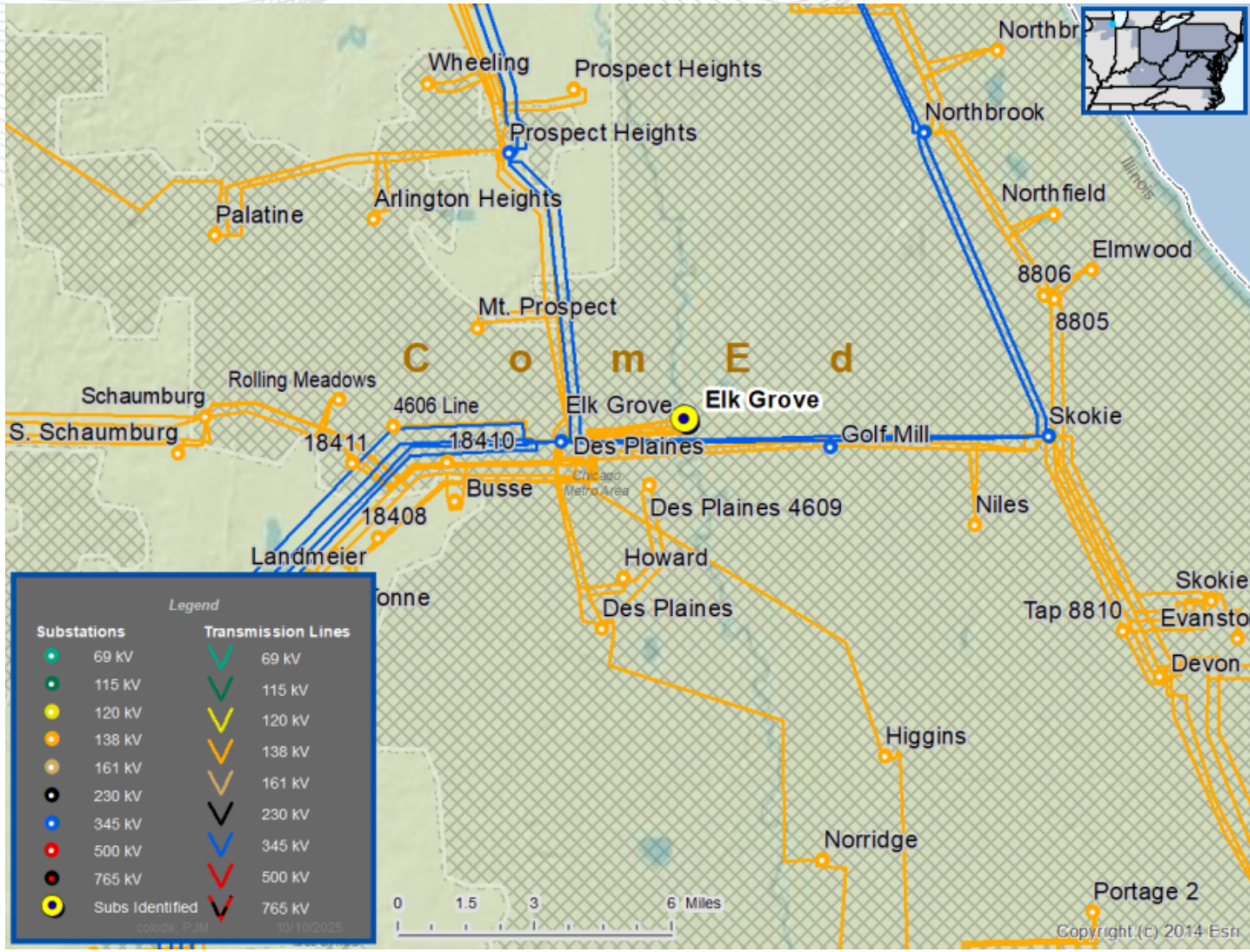
Problem Statement:

FG: 2025-W1-ComEd-T1

In the 2030 summer 90/10 case, the Elk Grove 345/138 kV transformer TR 82 is overloaded for a N-1 outage.

Existing Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Elk Grove 345/138 kV TR82	420/480/520/530 420/480/520/530



ComEd Transmission Zone: Baseline Elk Grove 345/138 kV Transformer

Proposed Solution:

Install a 345/138 kV transformer TR 83 and associated equipment at Elk Grove substation, including three 138 kV and one 345 kV circuited breakers.

Estimated Cost: $28.96 M

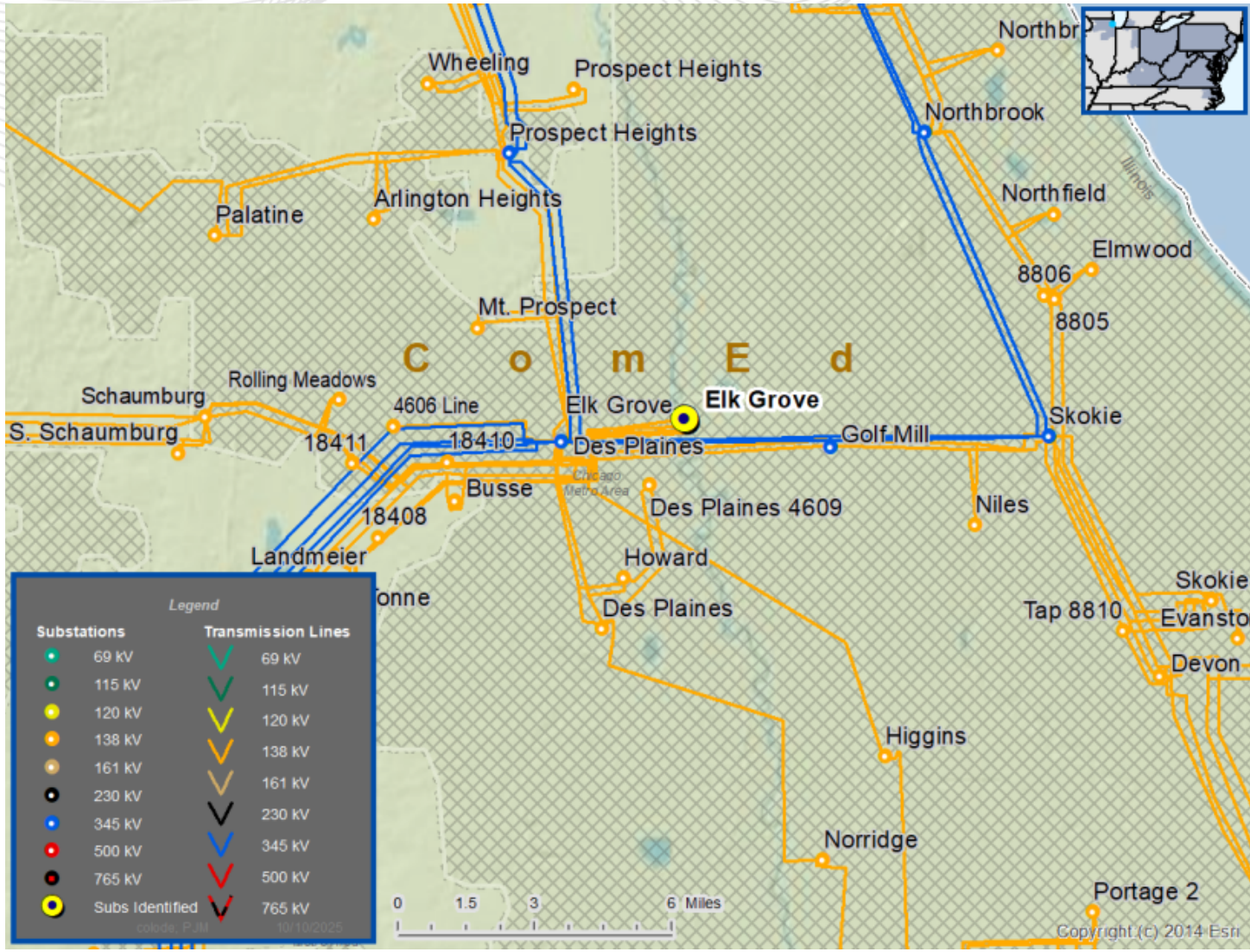
Preliminary Facility Rating:

Branch	SN/SLTE/SSTE/SLD WN/WLTE/WSTE/WLD (MVA)
Cherry Valley 345/138 kV TR83	420/480/520/530 420/480/520/530

Alternatives: N/A

Required In-Service Date: 6/1/2030

Projected In-Service Date: 6/1/2030



AEP Transmission Zone: Baseline Adjust Mullens 138 kV Cap Bank

Process Stage: First Read

Criteria: Base Case Analysis

Assumption Reference: 2025 RTEP assumptions

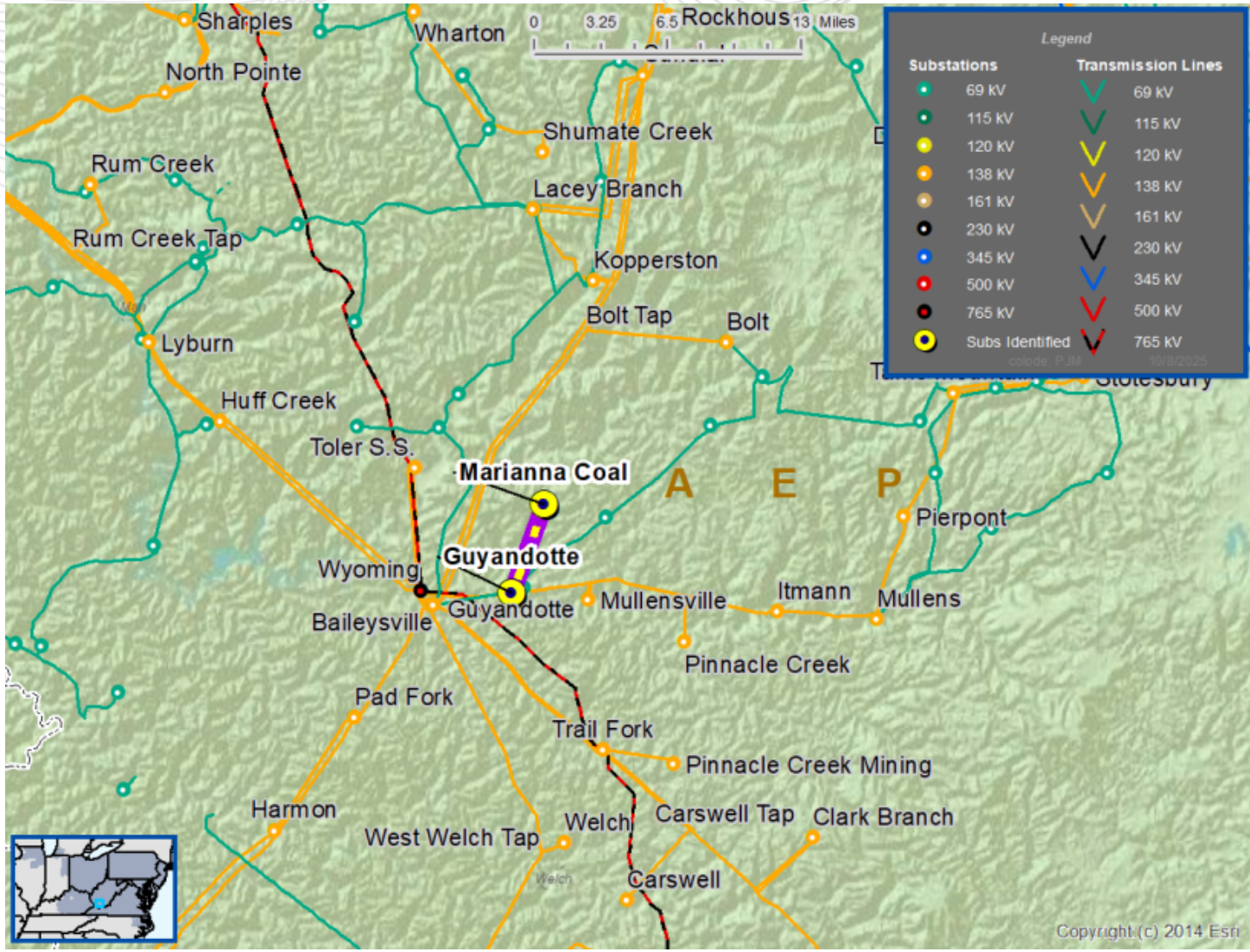
Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-N1-WVD8, 2025-W1-N1-WVD9.

In the 2030 winter case, voltage drop violations are identified at Guyandotte and Marianna Coal 138 kV buses for a N-1 outage.



AEP Transmission Zone: Baseline Adjust Mullens 138 kV Cap Bank

Proposed Solution:
Adjust Mullens 138 kV Cap Bank Vhi setting to 1.04 p.u.. Adjust protection settings as needed at the station.

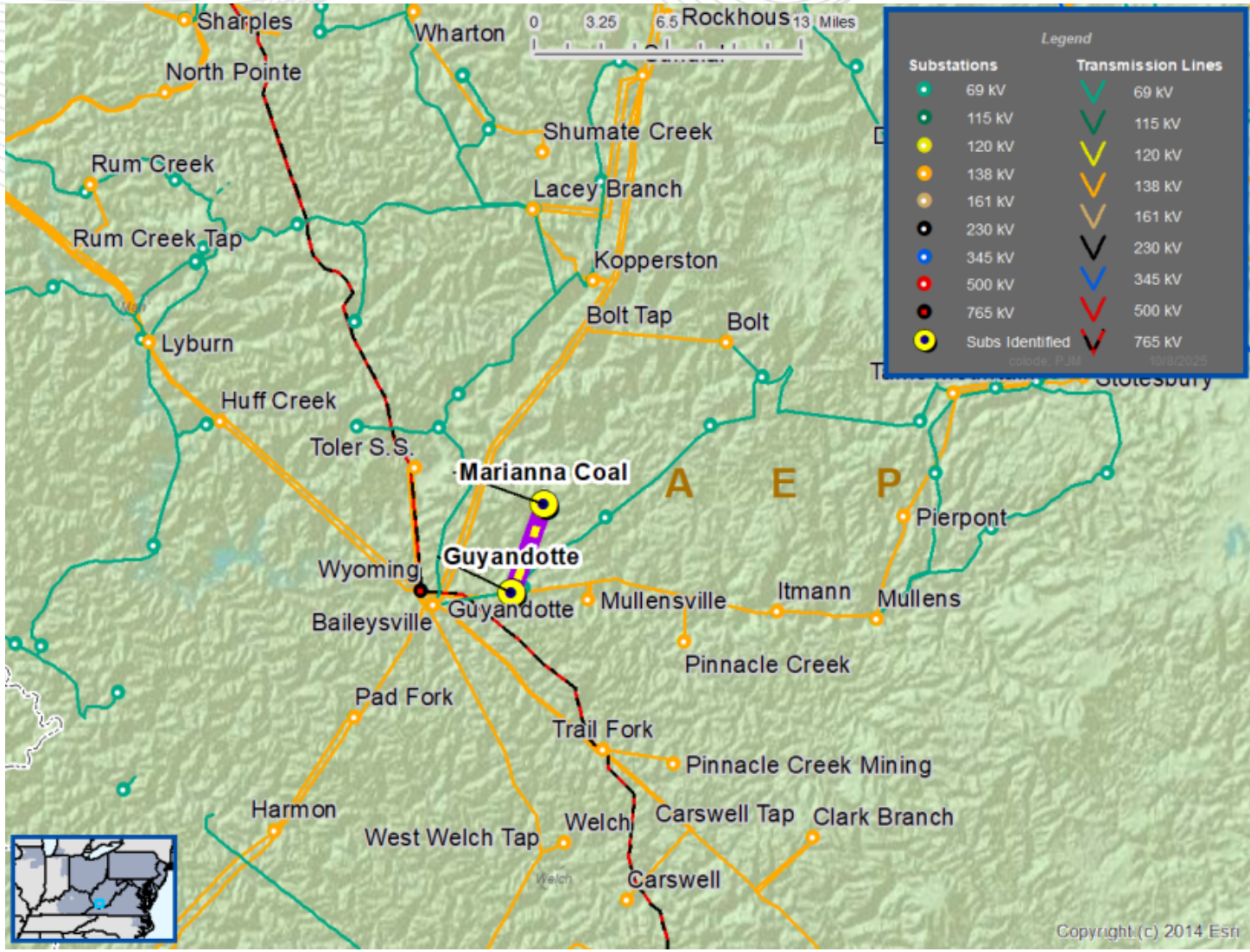
Total Estimated Cost: $0.1M

Alternatives:

Considering the limited scope of the upgrade, no other transmission alternates were viable. Additional cap banks in the area could lead to protection coordination concerns, so adding a capacitor bank was not considered a good solution.

Required In-Service: 12/1/2030

Projected IS Date: 12/1/2030



AEP Transmission Zone: Baseline

Jarrett 138/46 kV Transformer & Hartland 46 kV Cap Adjustment

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

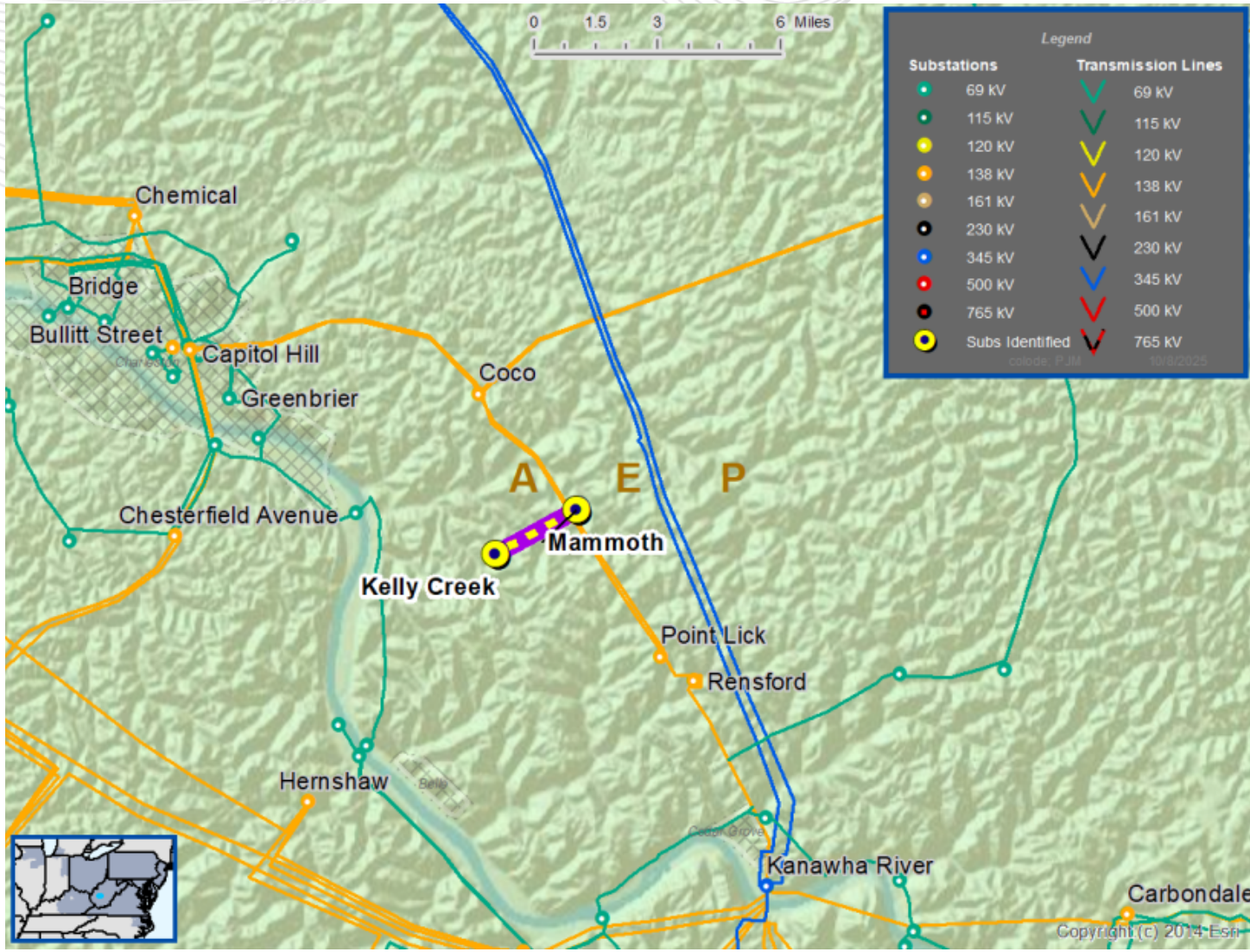
Model Used for Analysis: 2030 RTEP Light Load base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD159, 2025-W1-AEP-VD160, 2025-W1-AEP-VD164, 2025-W1-AEP-VD165.

In the 2030 Light Load case, voltage drop violations are identified in the FERC Form 715 analysis at 46 kV Kelly Creek and Mammoth stations due to an N-1-1 outage.



AEP Transmission Zone: Baseline
Jarrett 138/46 kV Transformer & Hartland 46 kV Cap Adjustment

Proposed Solution:

- Adjust existing Jarrett 138/46 kV transformer tap to 1:1 to boost voltages on the sub-transmission network. Estimated Cost: 0.10M
- Adjust the existing Hartland 46 kV cap bank Vhi setting to 1.04. Estimated Cost: 0.10M

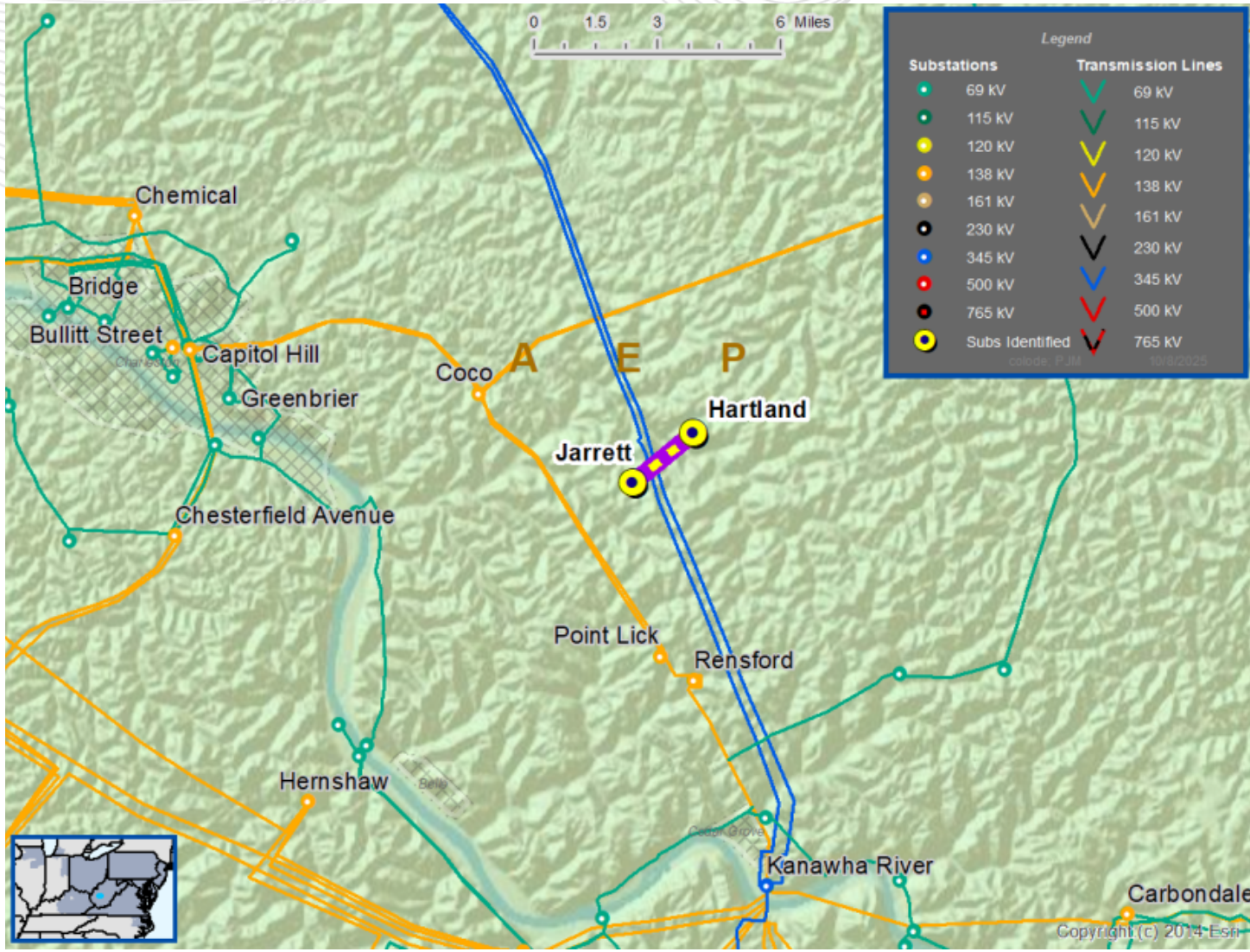
Total Estimated Cost: $0.2M

Alternatives:

Considering the limited scope of the solution, no other transmission alternates were viable. Adding capacitor banks in the area could lead to protection setting challenges and would not provide additional benefit.

Required In-Service: 4/15/2030

Projected IS Date: 4/15/2030



AEP Transmission Zone: Baseline Reduce Baileysville 46 kV Cap Bank

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

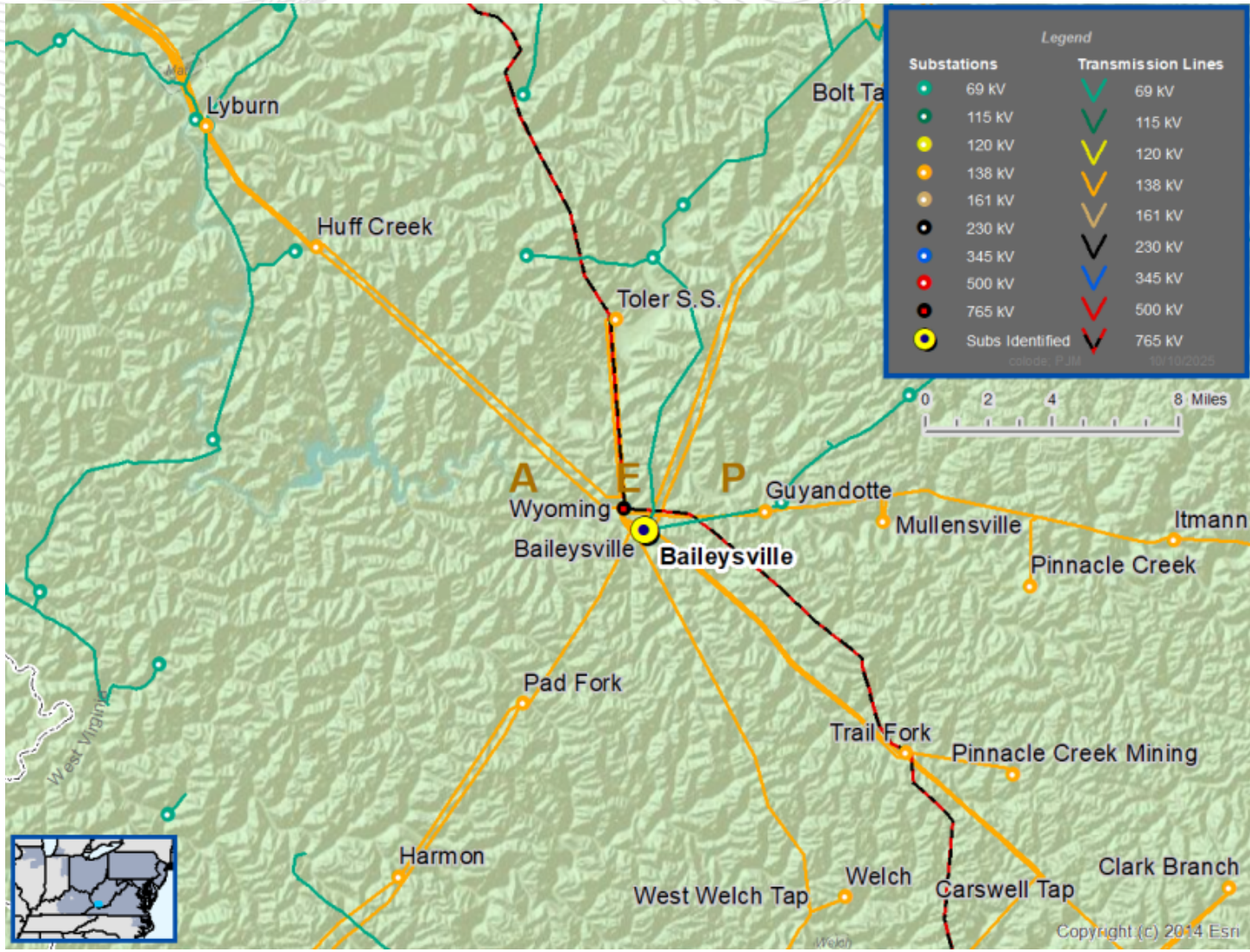
Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD37.

In the 2030 winter case voltage drop violations are identified in the FERC Form 715 analysis at Marsh Fork 46 kV due to a N-1-1 outage.



AEP Transmission Zone: Baseline Reduce Baileysville 46 kV Cap Bank

Proposed Solution:

- Remove cans on existing Baileysville 46 kV Cap Bank to reduce it to 7.2 MVAR.

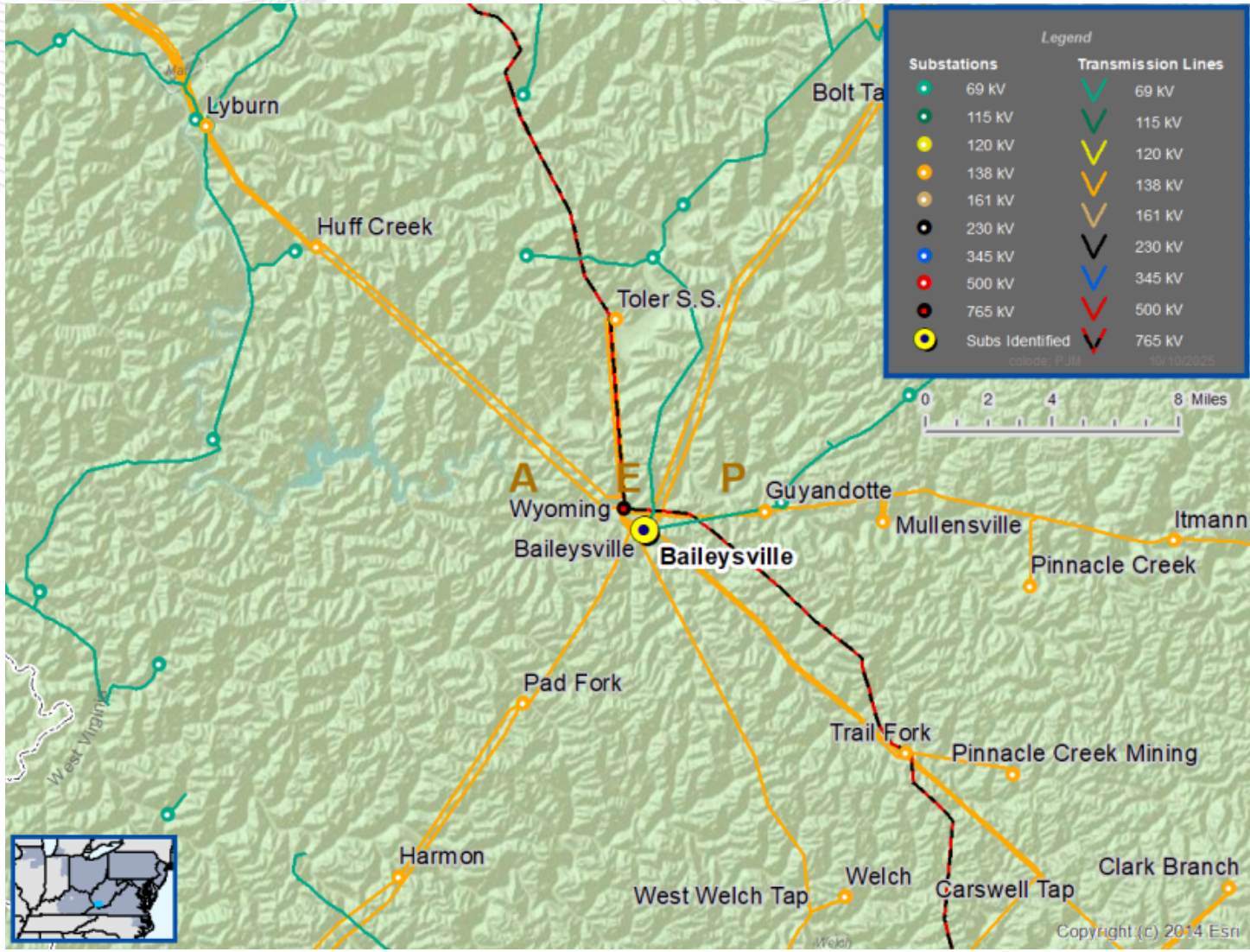
Total Estimated Cost: $0.1M

Alternatives:

Considering the limited scope of the solution, no other transmission alternates were viable. Adding additional cap banks in the area could lead to protection setting issues; further, Operations has indicated that reducing the cap bank size helps coordination efforts in the area considering the weak system.

Required In-Service: 12/1/2030

Projected IS Date: 12/1/2030



AEP Transmission Zone: Baseline Replace Johns Creek 69kV Capacitor Bank

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

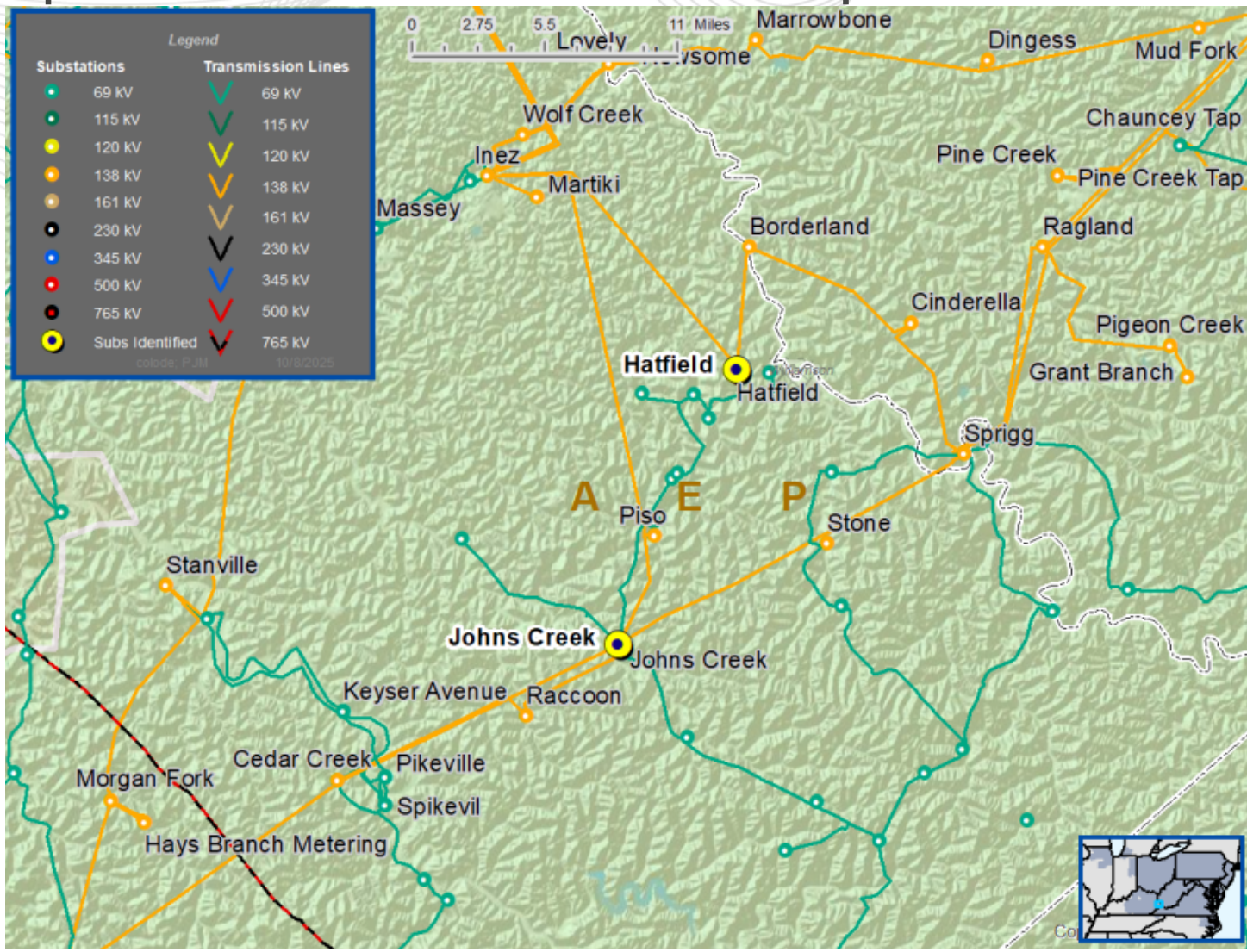
Model Used for Analysis: 2030 RTEP Winter and Light load base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD142, 2025-W1-AEP-VD143, 2025-W1-AEP-VD144, 2025-W1-AEP-VD145, 2025-W1-AEP-VD146, 2025-W1-AEP-VD147, 2025-W1-AEP-VD148, 2025-W1-AEP-VD149, 2025-W1-AEP-VD150, 2025-W1-AEP-VD151, 2025-W1-AEP-VD152, 2025-W1-AEP-VD153, 2025-W1-AEP-VD154, 2025-W1-AEP-VD155, 2025-W1-AEP-VD156, 2025-W1-AEP-VD157, 2025-W1-AEP-VD158, 2025-W1-AEP-VD161, 2025-W1-AEP-VD162, 2025-W1-AEP-VD163, 2025-W1-AEP-VD166, 2025-W1-AEP-VD167, 2025-W1-AEP-VD168, 2025-W1-AEP-VD169, 2025-W1-AEP-VD170, 2025-W1-AEP-VD171, 2025-W1-AEP-VD172, 2025-W1-AEP-VD38, 2025-W1-AEP-VD39, 2025-W1-AEP-VD40, 2025-W1-AEP-VD41, 2025-W1-AEP-VD61, 2025-W1-AEP-VD62.

During the 2030 Light load and Winter cases, voltage drop below 0.92 PU is identified with the Johns Creek 138/69kV transformer and the line between Gund metering delivery point and Hatfield station due to N-1-1 outages.



AEP Transmission Zone: Baseline
Replace Johns Creek 69kV Capacitor Bank

Proposed Solution:

- Replace the existing 9.6 MVar 69kV capacitor bank at Johns Creek station with a 17.2 MVar capacitor bank. Circuit switcher "AA" will also be replaced.

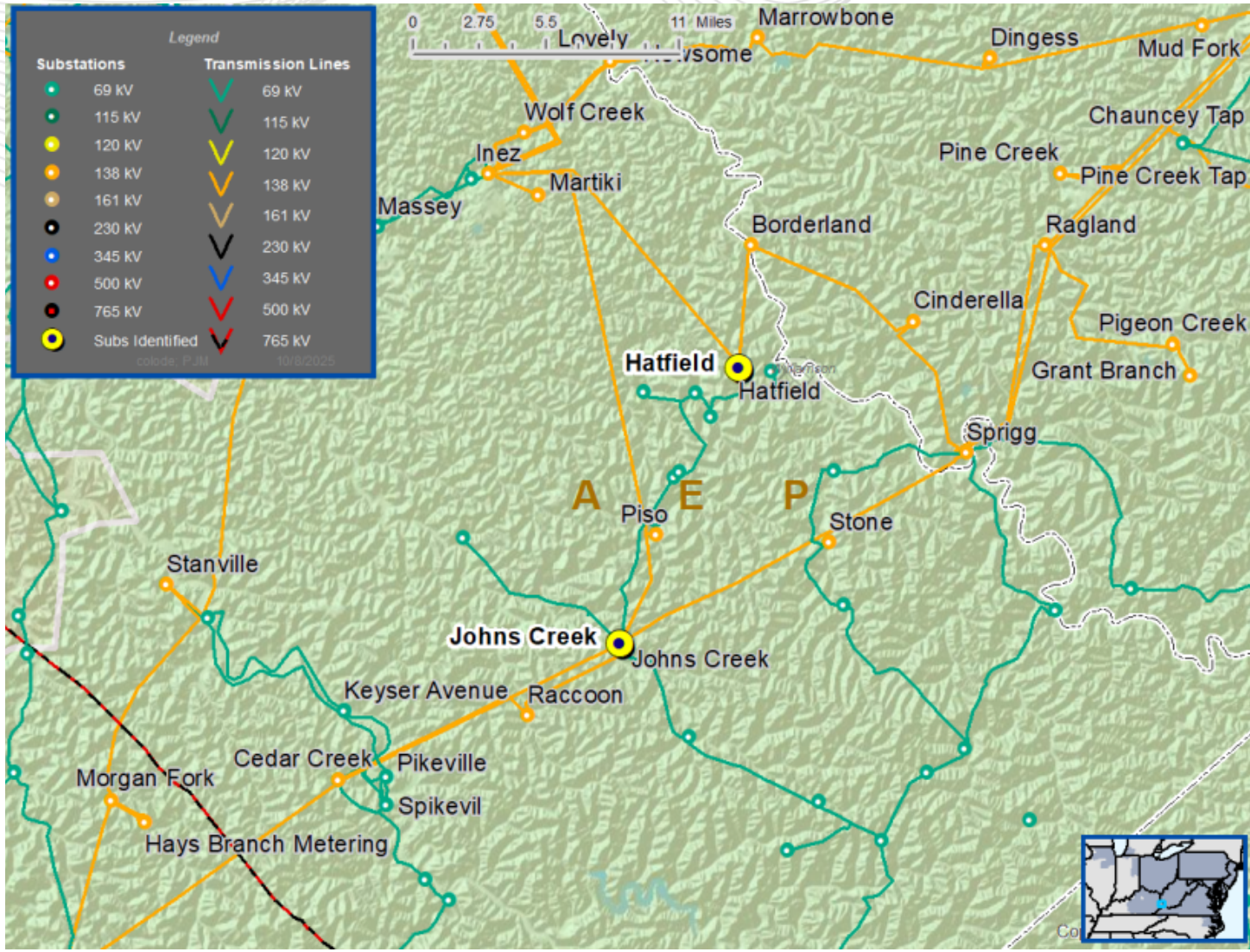
Total Estimated Cost: $1.477 M

Alternatives:

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 protection setting challenges and would not provide additional benefit. Space is available at Johns Creek to upgrade the existing cap bank to eliminate the violations.

Required In-Service: 4/15/2030

Projected IS Date: 4/15/2030



AEP Transmission Zone: Baseline
Huff Creek and Chauncey 138 kV Transformer Tap Settings

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

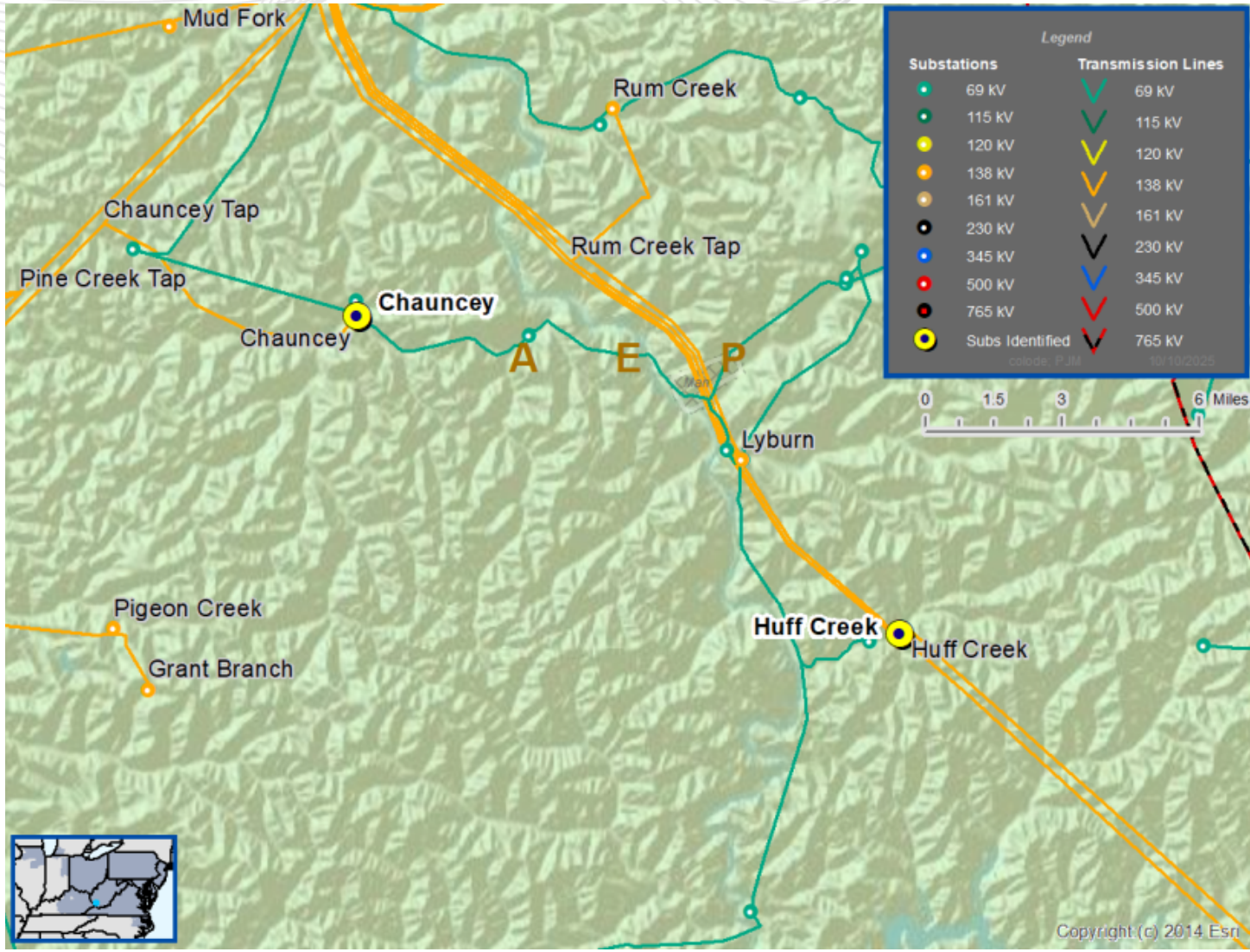
Model Used for Analysis: 2030 RTEP Light load base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD140, 2025-W1-AEP-VD141.

In the light load 2030 case, voltage drop violations are identified in the FERC 715 study at Chauncey and WVA Coal 46 kV buses due to N-1-1 outages.



AEP Transmission Zone: Baseline
Huff Creek and Chauncey 138 kV Transformer Tap Settings

Proposed Solution:

- Change XF tap settings at Chauncey station to boost the sub-transmission voltage. Estimated Cost: 0.10M
- Change the XF tap settings at Huff Creek station to boost the sub-transmission voltage. Estimated Cost: 0.10M

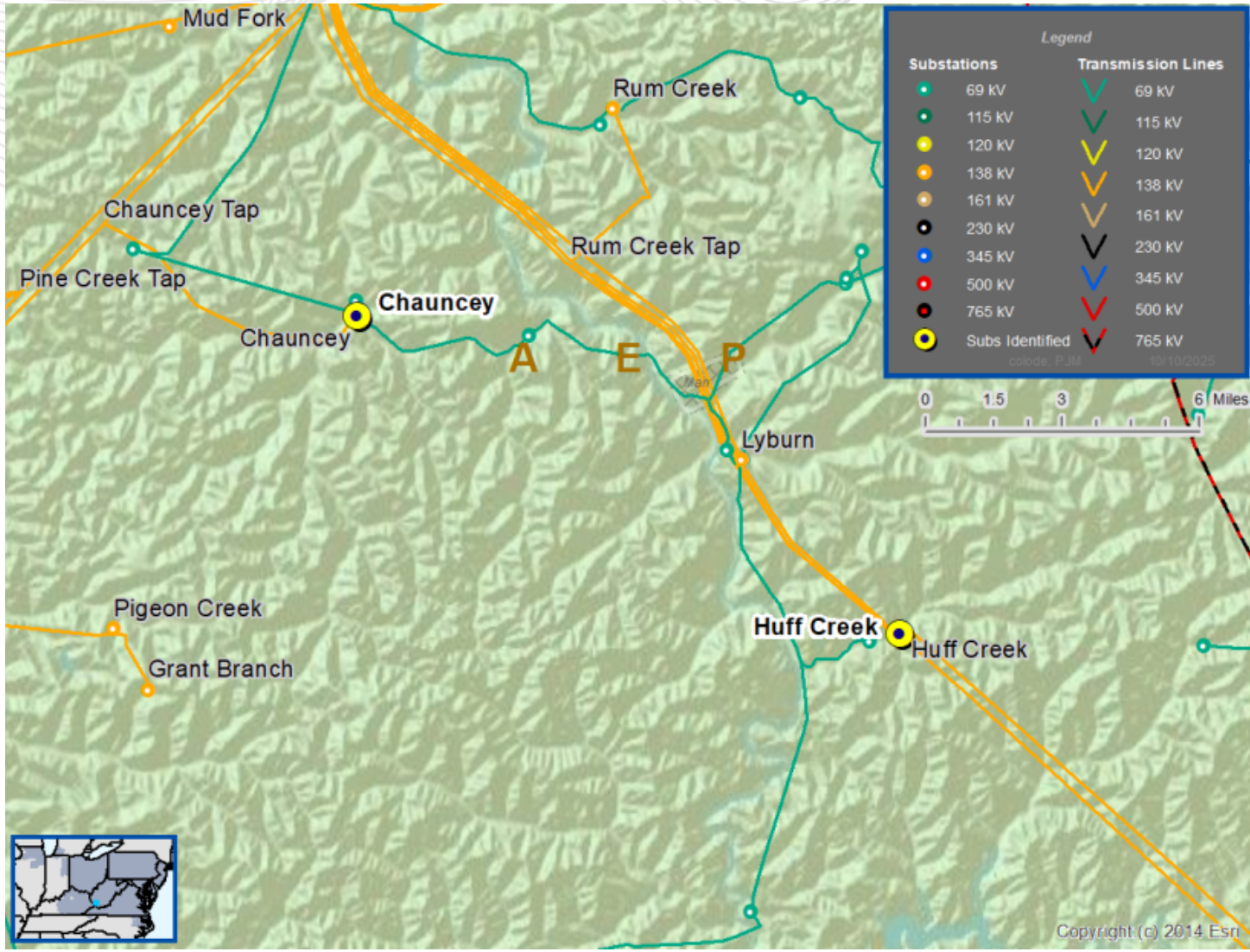
Total Estimated Cost: $0.2 M

Alternatives:

Considering the limited scope of the solution, no other transmission alternatives were viable. Additional cap banks in the area could lead to protection setting issues and hunting of cap banks under certain outage scenarios.

Required In-Service: 04/15/2030

Projected IS Date: 4/15/2030



AEP Transmission Zone: Baseline Tazewell 138 kV Transformer Setting Adjustment

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

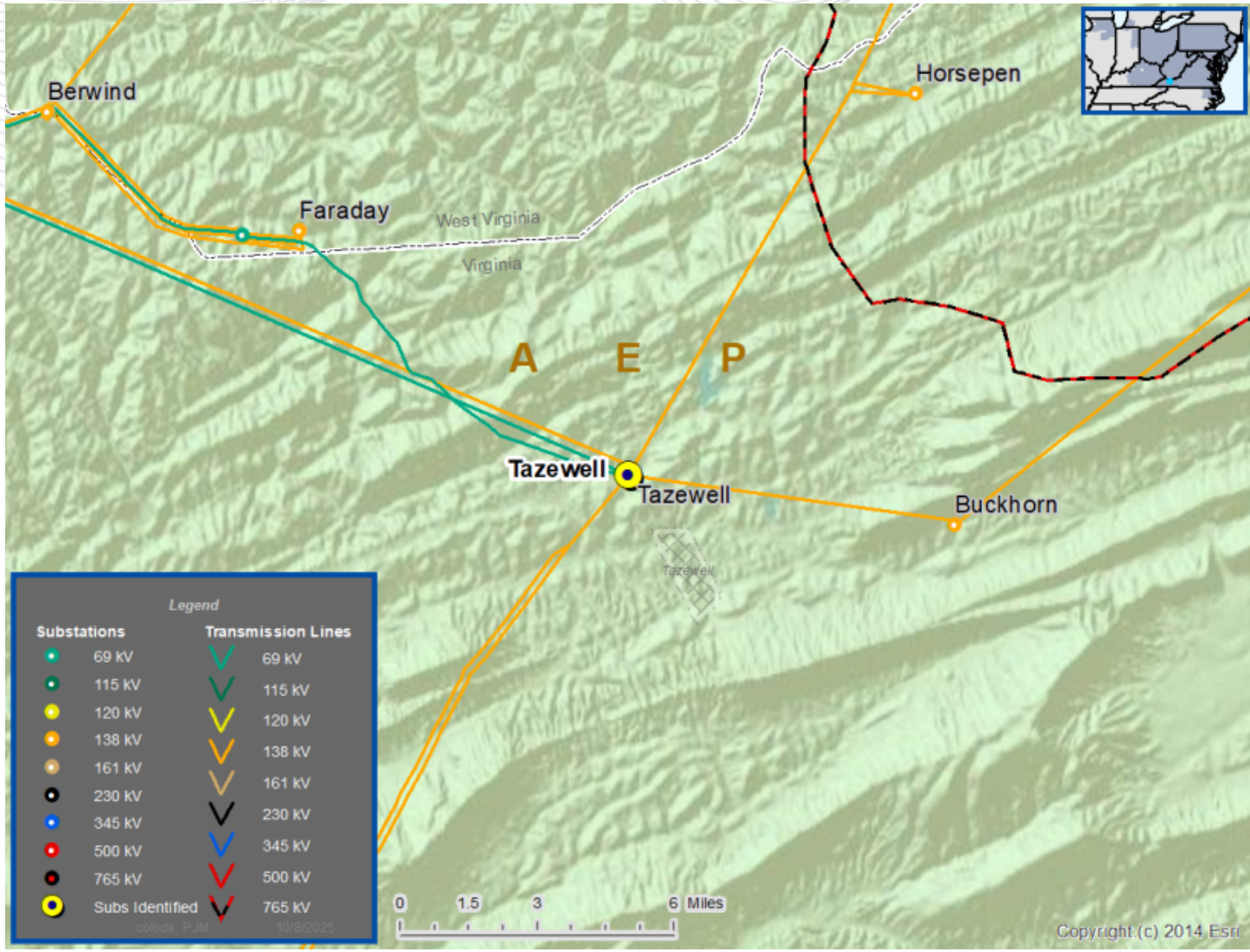
Model Used for Analysis: 2030 RTEP Winter and Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VM10, 2025-W1-AEP-VM103, 2025-W1-AEP-VM11, 2025-W1-AEP-VM12, 2025-W1-AEP-VM13, 2025-W1-AEP-VM14, 2025-W1-AEP-VM15, 2025-W1-AEP-VM16, 2025-W1-AEP-VM17, 2025-W1-AEP-VM18, 2025-W1-AEP-VM19, 2025-W1-AEP-VM20, 2025-W1-AEP-VM21, 2025-W1-AEP-VM22, 2025-W1-AEP-VM23, 2025-W1-AEP-VM24, 2025-W1-AEP-VM25, 2025-W1-AEP-VM26, 2025-W1-AEP-VM27, 2025-W1-AEP-VM28, 2025-W1-AEP-VM29, 2025-W1-AEP-VM30, 2025-W1-AEP-VM7, 2025-W1-AEP-VM8, 2025-W1-AEP-VM9.

In the winter and summer 2030 case, Tazewell and McDowell 34.5 kV buses had a high voltage magnitude violation in FERC 715 study due to N-1 outages.



AEP Transmission Zone: Baseline Tazewell 138 kV Transformer Setting Adjustment

Proposed Solution:

- Adjust existing Tazewell 138/34.5 kV transformer tap to 1:1 to help mitigate voltages on the 34.5 kV bus.

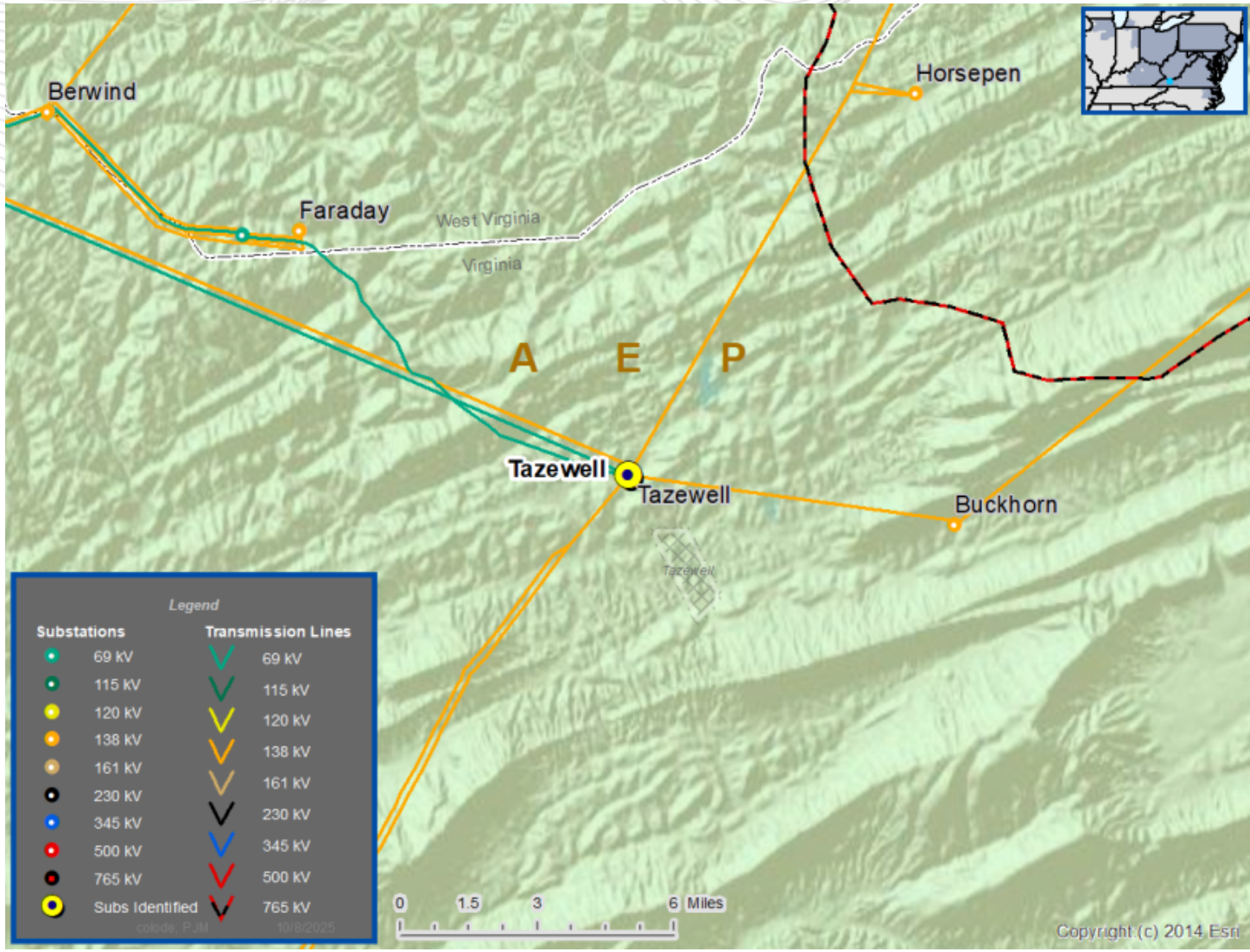
Total Estimated Cost: $0.1 M

Alternatives:

A new transformer could be installed to help eliminate outage concerns but at a much higher cost and therefore was not considered.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline Falcon 69 kV Capacitor Bank Installation

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

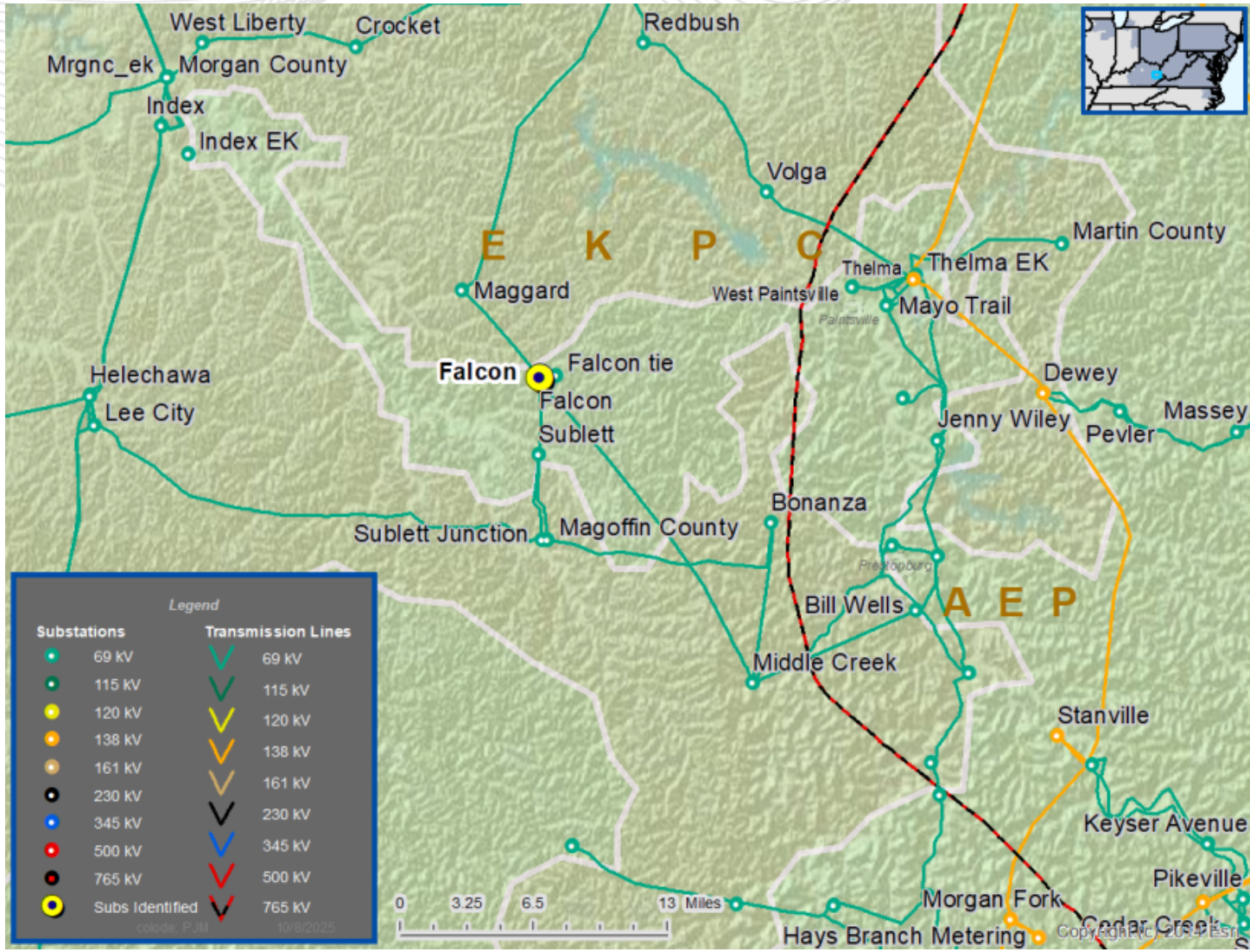
Model Used for Analysis: 2030 RTEP Summer, Light load and Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD10, 2025-W1-AEP-VD100, 2025-W1-AEP-VD101, 2025-W1-AEP-VD102, 2025-W1-AEP-VD103, 2025-W1-AEP-VD104, 2025-W1-AEP-VD105, 2025-W1-AEP-VD11, 2025-W1-AEP-VD12, 2025-W1-AEP-VD127, 2025-W1-AEP-VD128, 2025-W1-AEP-VD13, 2025-W1-AEP-VD14, 2025-W1-AEP-VD15, 2025-W1-AEP-VD16, 2025-W1-AEP-VD17, 2025-W1-AEP-VD18, 2025-W1-AEP-VD19, 2025-W1-AEP-VD20, 2025-W1-AEP-VD21, 2025-W1-AEP-VD22, 2025-W1-AEP-VD5, 2025-W1-AEP-VD6, 2025-W1-AEP-VD7, 2025-W1-AEP-VD8, 2025-W1-AEP-VD81, 2025-W1-AEP-VD82, 2025-W1-AEP-VD83, 2025-W1-AEP-VD84, 2025-W1-AEP-VD85, 2025-W1-AEP-VD86, 2025-W1-AEP-VD87, 2025-W1-AEP-VD88, 2025-W1-AEP-VD89, 2025-W1-AEP-VD9, 2025-W1-AEP-VD90, 2025-W1-AEP-VD91, 2025-W1-AEP-VD92, 2025-W1-AEP-VD93, 2025-W1-AEP-VD94, 2025-W1-AEP-VD95, 2025-W1-AEP-VD96, 2025-W1-AEP-VD97, 2025-W1-AEP-VD98, 2025-W1-AEP-VD99, 2025-W1-AEP-VM1, 2025-W1-AEP-VM101, 2025-W1-AEP-VM102, 2025-W1-AEP-VM2, 2025-W1-AEP-VM3, 2025-W1-AEP-VM4, 2025-W1-AEP-VM5, 2025-W1-AEP-VM6.

In the 2030 Summer case, Light load and Winter cases, 69 kV Falcon and Middle Creek stations voltage drop violations are identified in FERC 715 study due to N-1 and N-1-1 contingencies.



AEP Transmission Zone: Baseline Falcon 69 kV Capacitor Bank Installation

Proposed Solution:

- Install a 69kV circuit switcher and a 11.5 MVar capacitor bank at the 69kV bus at Falcon station. Falcon station will need to be expanded to fit the capacitor bank.

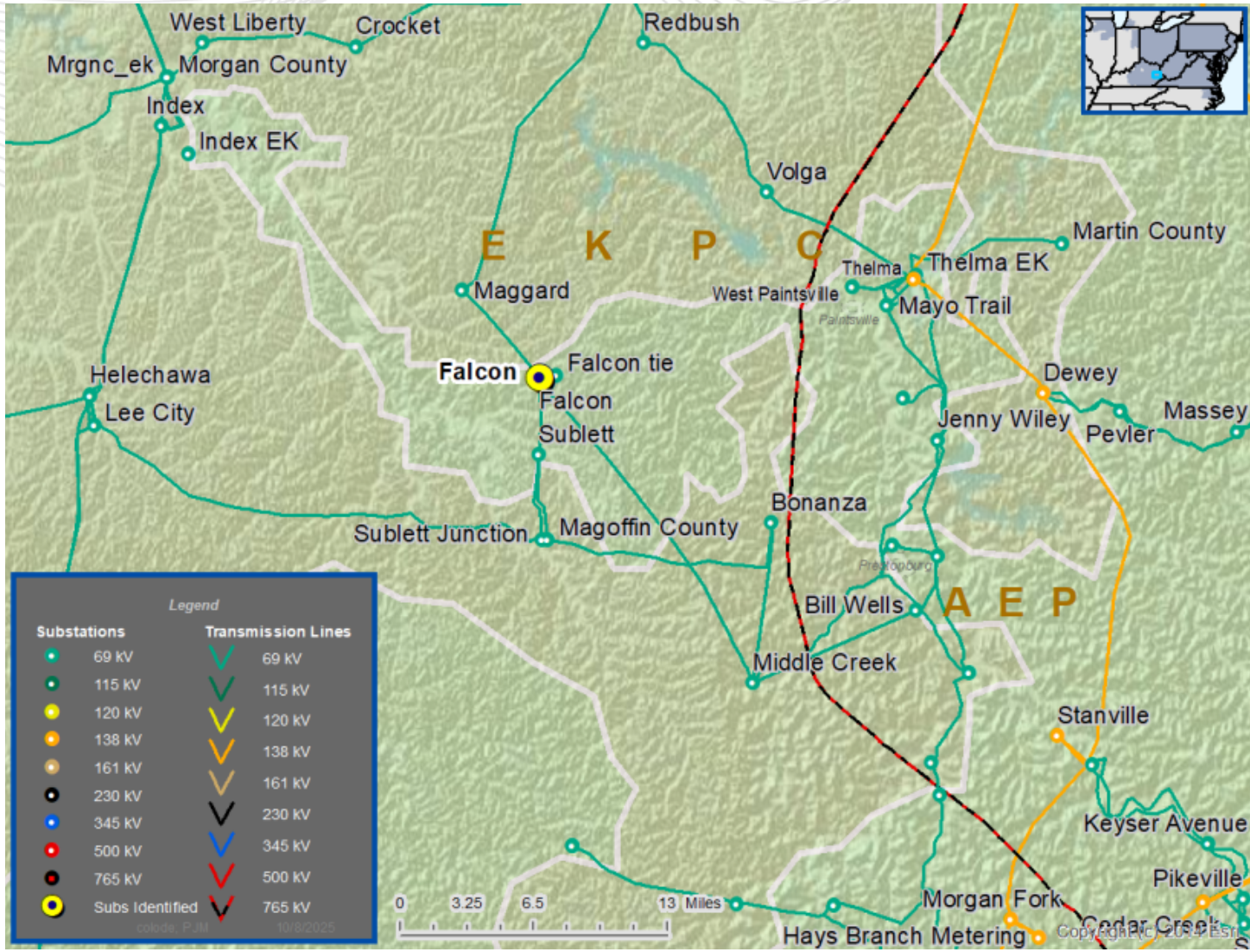
Total Estimated Cost: $3.35 M

Alternatives:

Considering the limited scope of the proposed solution, no other viable transmission alternates were identified.

Required In-Service: 04/15/2030

Projected IS Date: 04/15/2030



AEP Transmission Zone: Baseline
Joshua Falls 138 kV Circuit Breaker Replacements

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

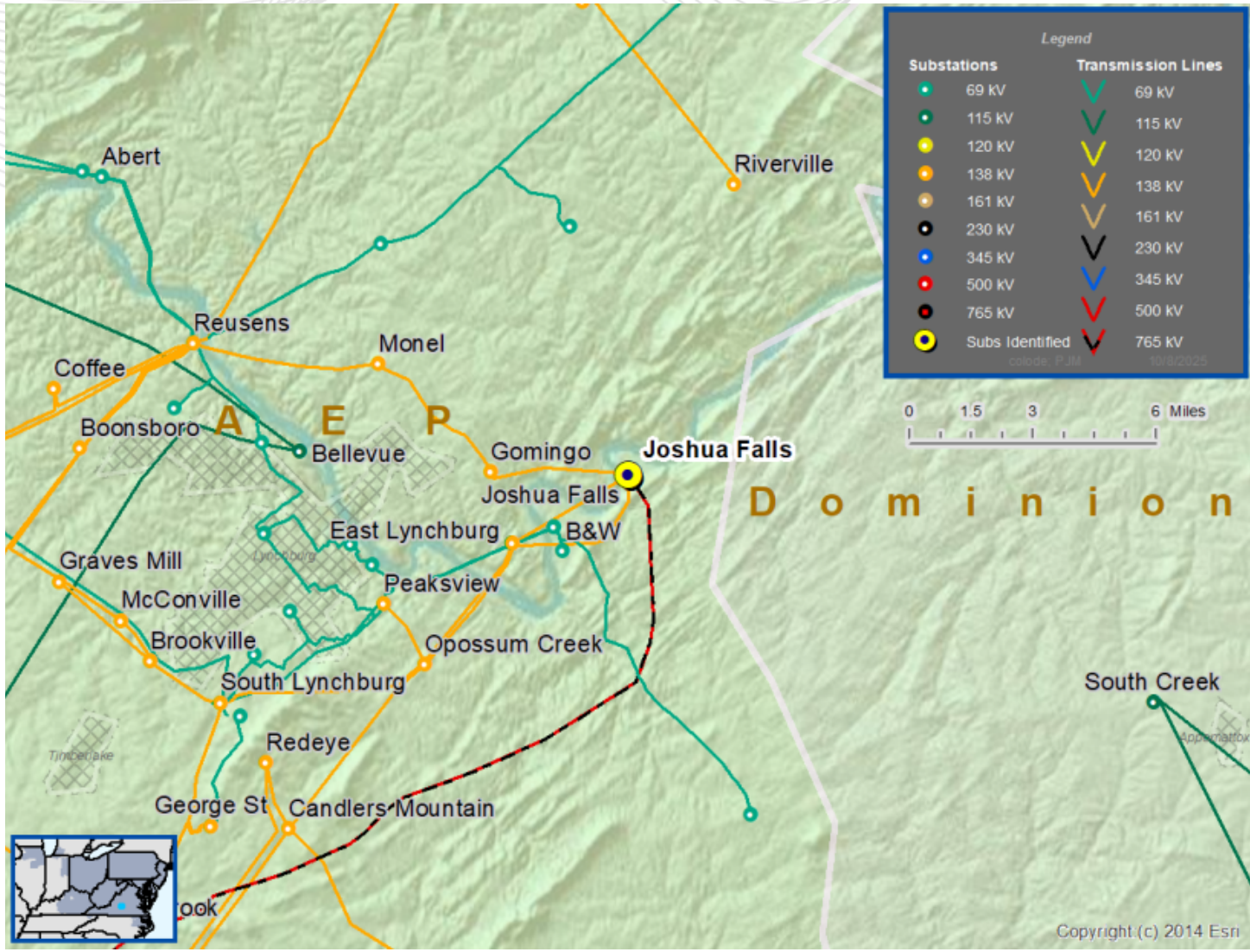
Model Used for Analysis: 2030 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-GD-S202.

In the 2030 Summer case, the Joshua Falls 765/138 kV transformer low-side circuit breakers overload is identified in generation deliverability study under N-1 outages.



AEP Transmission Zone: Baseline
Joshua Falls 138 kV Circuit Breaker Replacements

Proposed Solution:

- Replace 138 kV, 3000 A circuit breakers H and H1 with 4000 A circuit breakers.

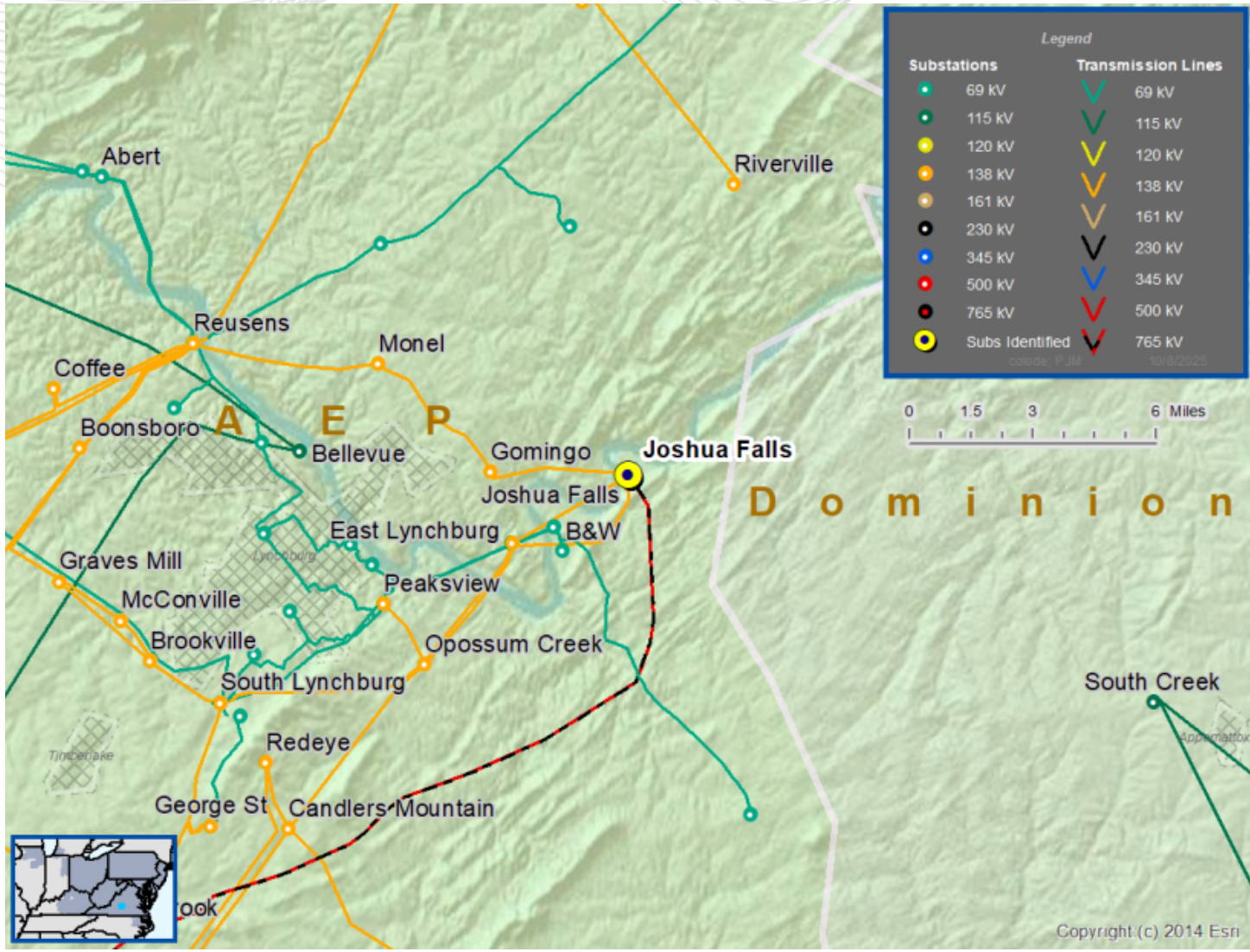
Total Estimated Cost: $1.514M

Alternatives:

Install a second 765/138 kV transformer at Joshua Falls. Estimated cost: $120M.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline Roberts-Wilson 138kV line “in & out” of Milepost 138kV

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

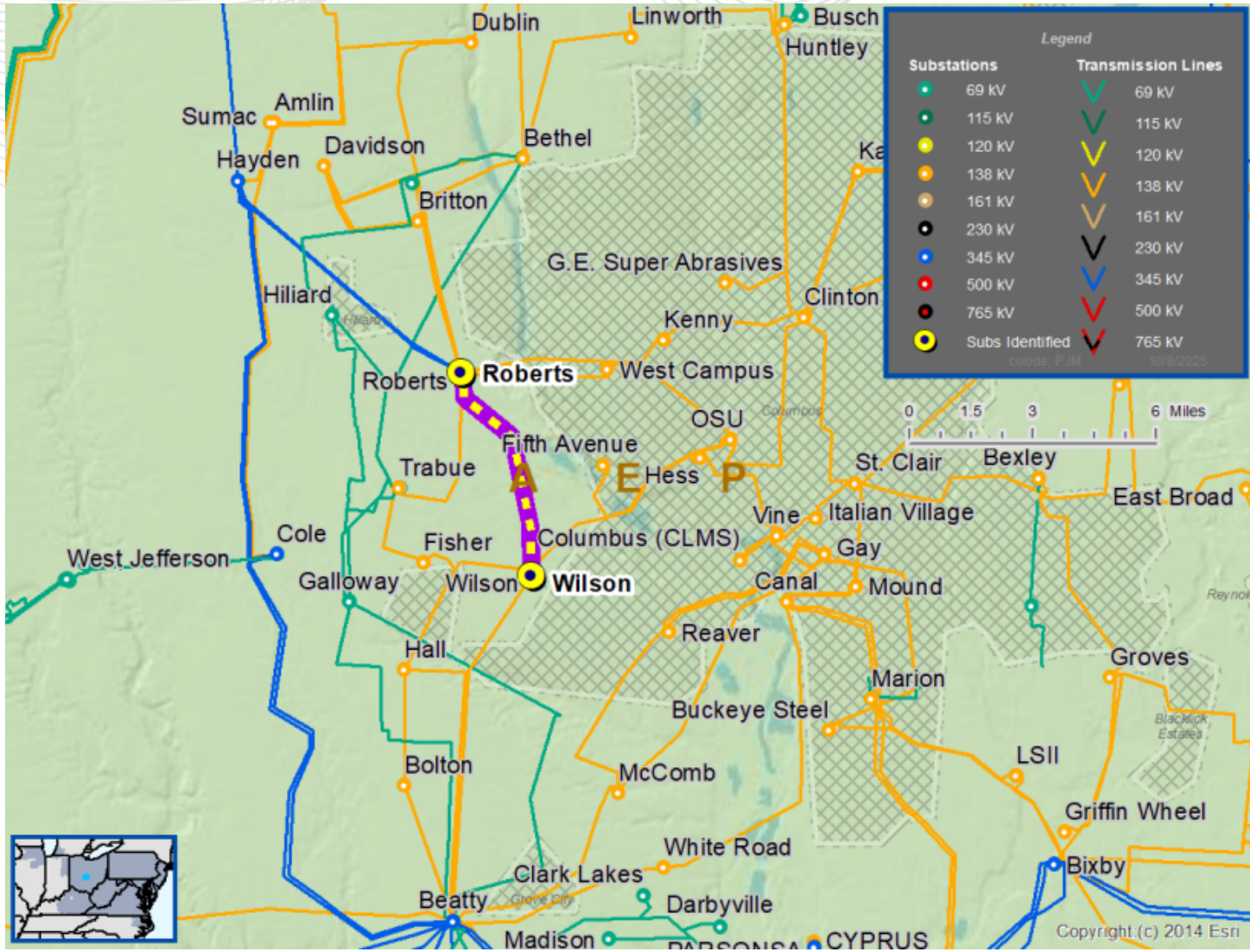
Model Used for Analysis: 2030 RTEP Summer and Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-VD107, 2025-W1-AEP-VD108, 2025-W1-AEP-VD113, 2025-W1-AEP-VD114, 2025-W1-AEP-VD115, 2025-W1-AEP-VD116, 2025-W1-AEP-VD117, 2025-W1-AEP-VD118, 2025-W1-AEP-VD119, 2025-W1-AEP-VD120, 2025-W1-AEP-VD121, 2025-W1-AEP-VD122, 2025-W1-AEP-VD123, 2025-W1-AEP-VD124, 2025-W1-AEP-VD125, 2025-W1-AEP-VD126, 2025-W1-AEP-VD57, 2025-W1-AEP-VD58, 2025-W1-AEP-VD59, 2025-W1-AEP-VD60, 2025-W1-AEP-VM100, 2025-W1-AEP-VM108, 2025-W1-AEP-VM109, 2025-W1-AEP-VM110, 2025-W1-AEP-VM111, 2025-W1-AEP-VM85, 2025-W1-AEP-VM86, 2025-W1-AEP-VM87, 2025-W1-AEP-VM88, 2025-W1-AEP-VM89, 2025-W1-AEP-VM90, 2025-W1-AEP-VM91, 2025-W1-AEP-VM92, 2025-W1-AEP-VM93, 2025-W1-AEP-VM94, 2025-W1-AEP-VM97, 2025-W1-AEP-VM98, 2025-W1-AEP-VM99.

In 2030 Summer and Winter case, Low voltage magnitude and voltage drop violations are identified on Blair 69kV, Trabue 69kV, Trabue 138kV, Milepost 138kV, Hall 138kV, Fisher 138kV, and Bolton 138kV in FERC 715 study due to N-1-1 contingencies.



AEP Transmission Zone: Baseline Roberts-Wilson 138kV line “in & out” of Milepost 138kV

Proposed Solution:

- Build ~0.8 mile 138kV double circuit extension from Roberts - Wilson 138kV line into the Milepost 138kV substation. Estimated Cost: 8.33M
- Install additional 2-138kV circuit breakers at Milepost substation to allow for the Robert - Wilson 138kV line to come into the milepost substation. DICM will need an expansion for additional relaying panels. Estimated Cost: 3.84M.

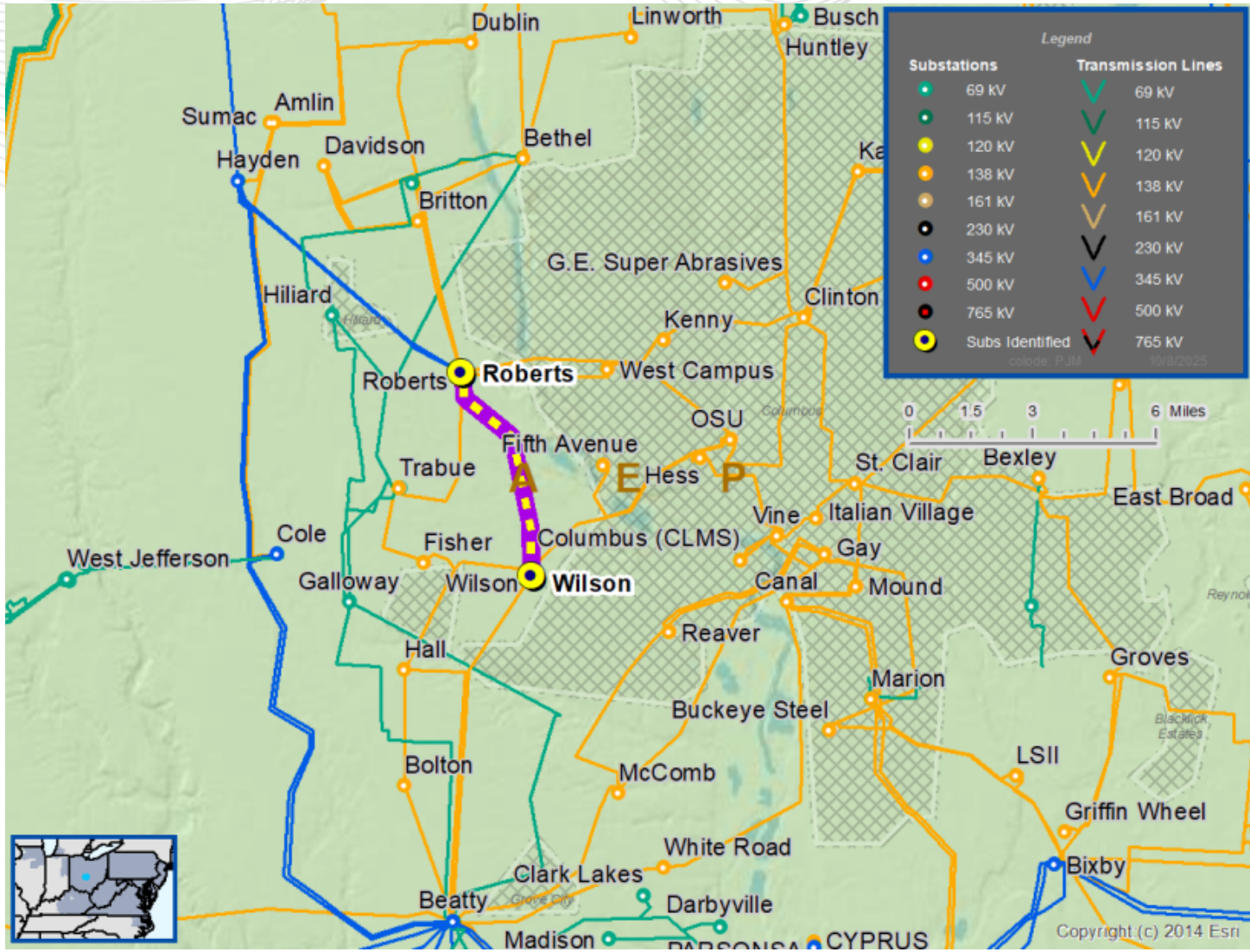
Total Estimated Cost: $12.17 M

Alternatives:

Install a second 765/138 kV transformer at Joshua Falls. Estimated cost: $120M.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline Upgrade Station Conductor at Galloway 69kV

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

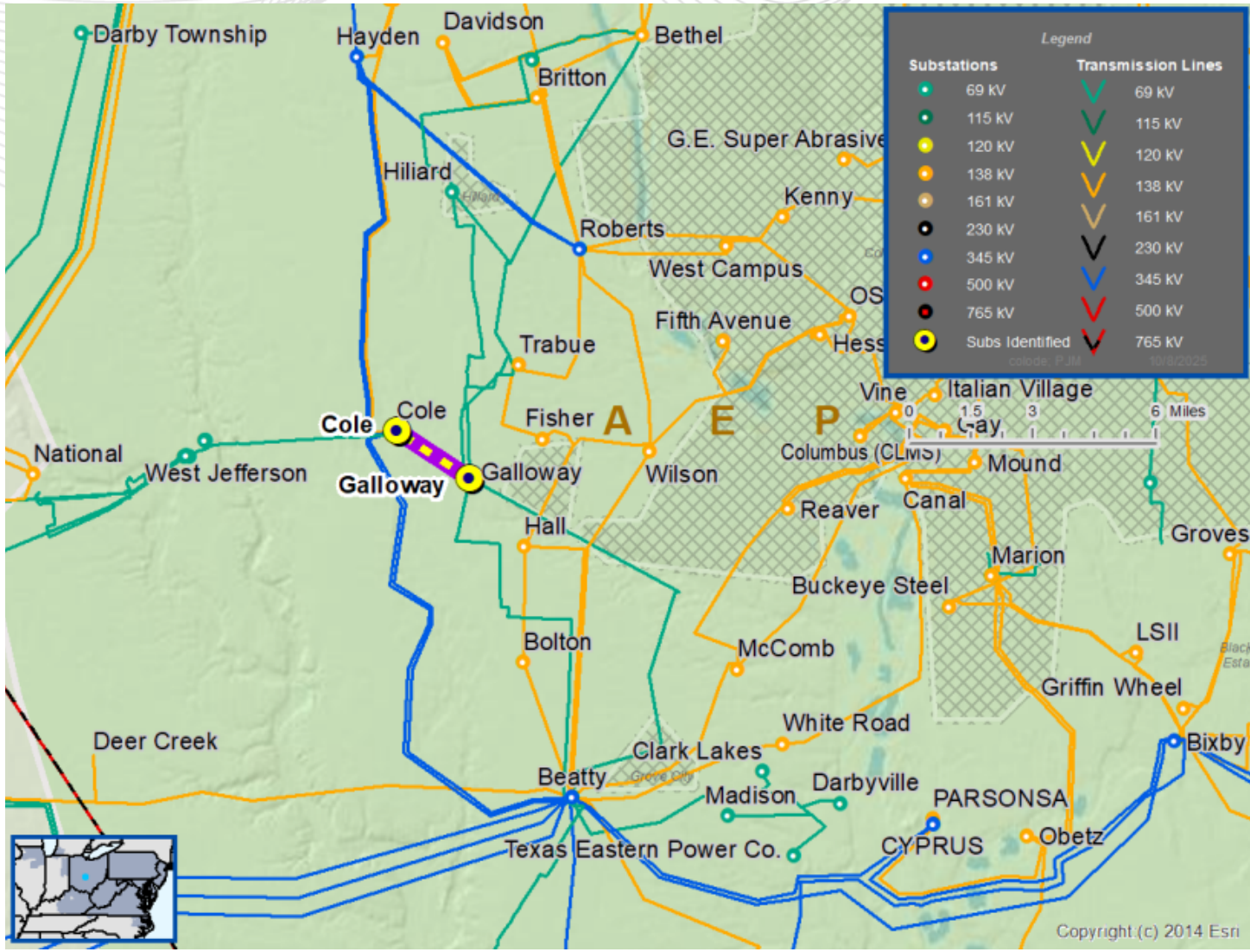
Problem Statement:

FG: 2025-W1-AEP-T25, 2025-W1-AEP-T26.

In 2030 Summer case, Cole - Galloway 69kV line section overloads are identified in FERC 715 study due to N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Cole - Galloway (69 kV)	65/82/82/95



AEP Transmission Zone: Baseline Upgrade Station Conductor at Galloway 69kV

Proposed Solution:

- Upgrade 336.4 ACSR 26/7 station conductor at Galloway 69kV. Estimated Cost: 0.18M.

Total Estimated Cost: $0.18 M

Preliminary Facility Rating:

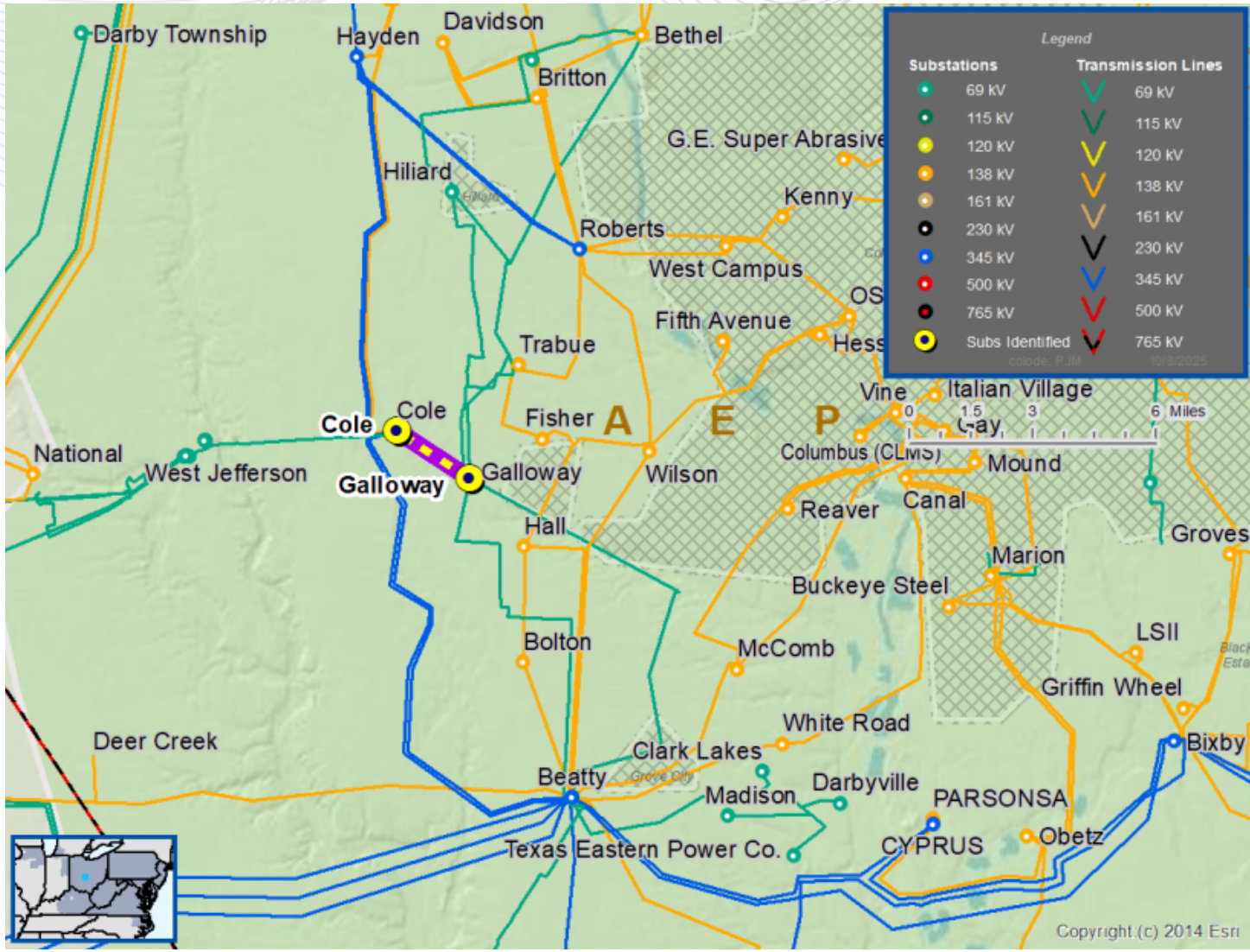
Branch	SN/SE/WN/WE (MVA)
Cole - Galloway (69 kV)	148/207/187/232

Alternatives:

Considering the limited scope required to alleviate the issue, no other viable cost-effective alternative found.

Required In-Service: 06/2030

Projected IS Date: 06/2030



AEP Transmission Zone: Baseline Haviland 138 kV Transformer #4 Replacement

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

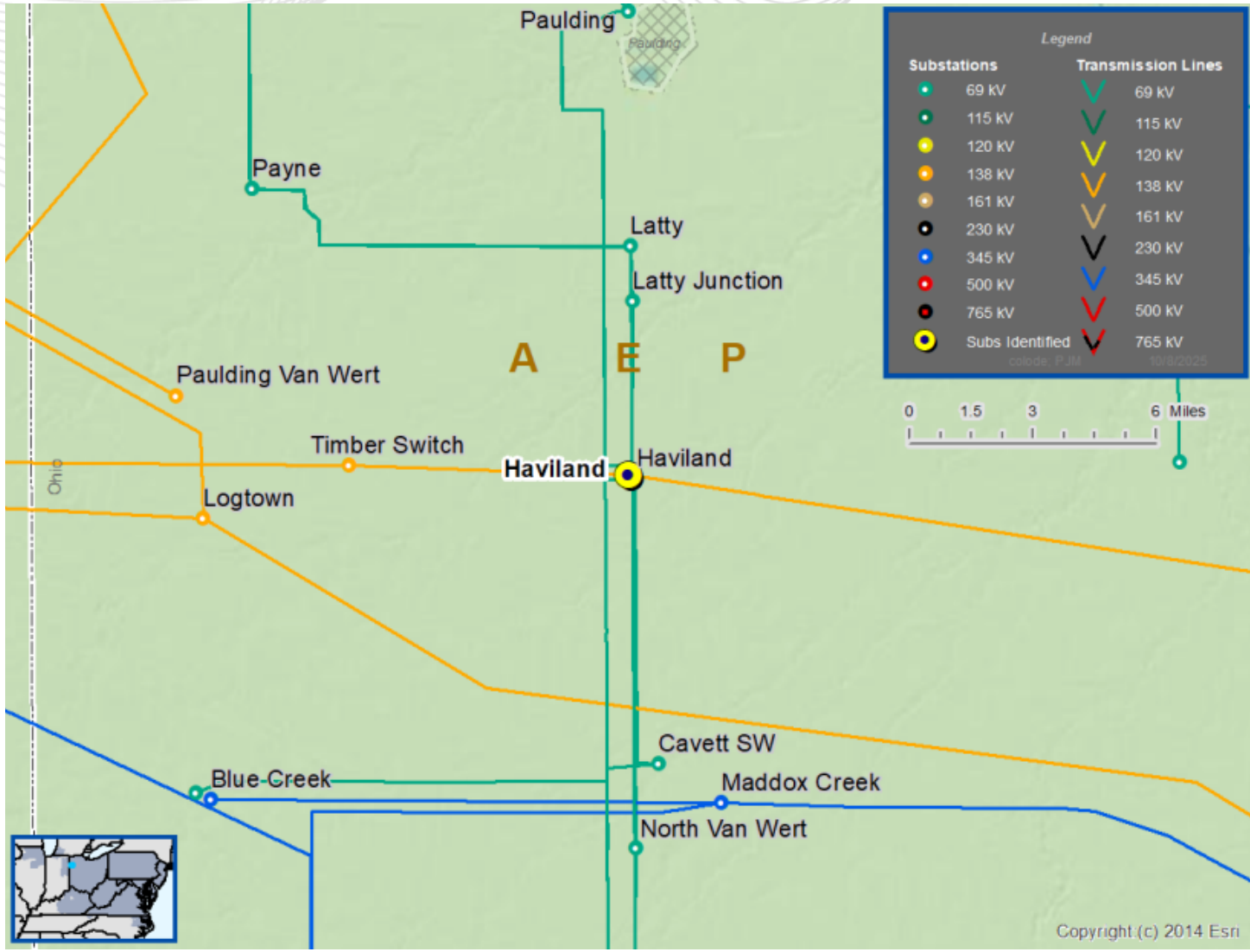
Problem Statement:

FG: 2025-W1-AEP-T34, 2025-W1-AEP-T35.

In the 2030 Winter case, Haviland 138/69/13 kV Transformer #4 overloads are identified in FERC 715 study due to N-1 contingencies.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Haviland XF#4 (138/69/13 kV)	82/90/107/113, 82/90/107/113, N/A



AEP Transmission Zone: Baseline
Haviland 138 kV Transformer #4 Replacement

Proposed Solution:

- At Haviland substation, replace TR#4 with 138/69/12kV 130MVA bank, along with associated equipment such as the Switch (600A), Sub cond 795 AAC 37 Str., and Sub cond 300 MCM CU bus equipment.

Total Estimated Cost: $5.87M

Preliminary Facility Rating:

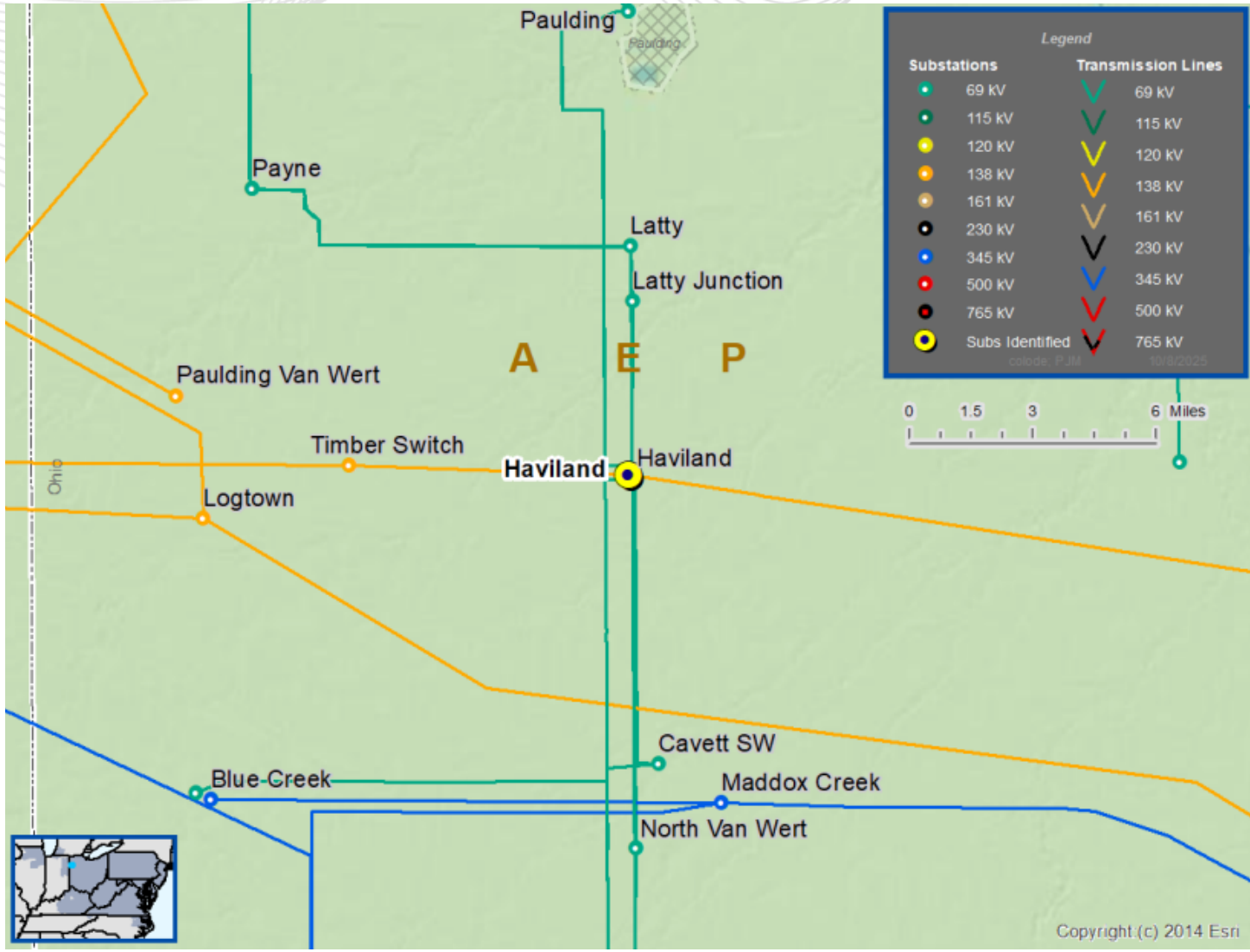
Branch	SN/SE/WN/WE (MVA)
Haviland XF#4 (138/69/13 kV)	147/164/166/183, 147/164/166/183, N/A

Alternatives:

Considering the limited scope of the upgrade, no viable cost-effective solution found.

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline
Elliot - Ohio University 69kV Sag Mitigation

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

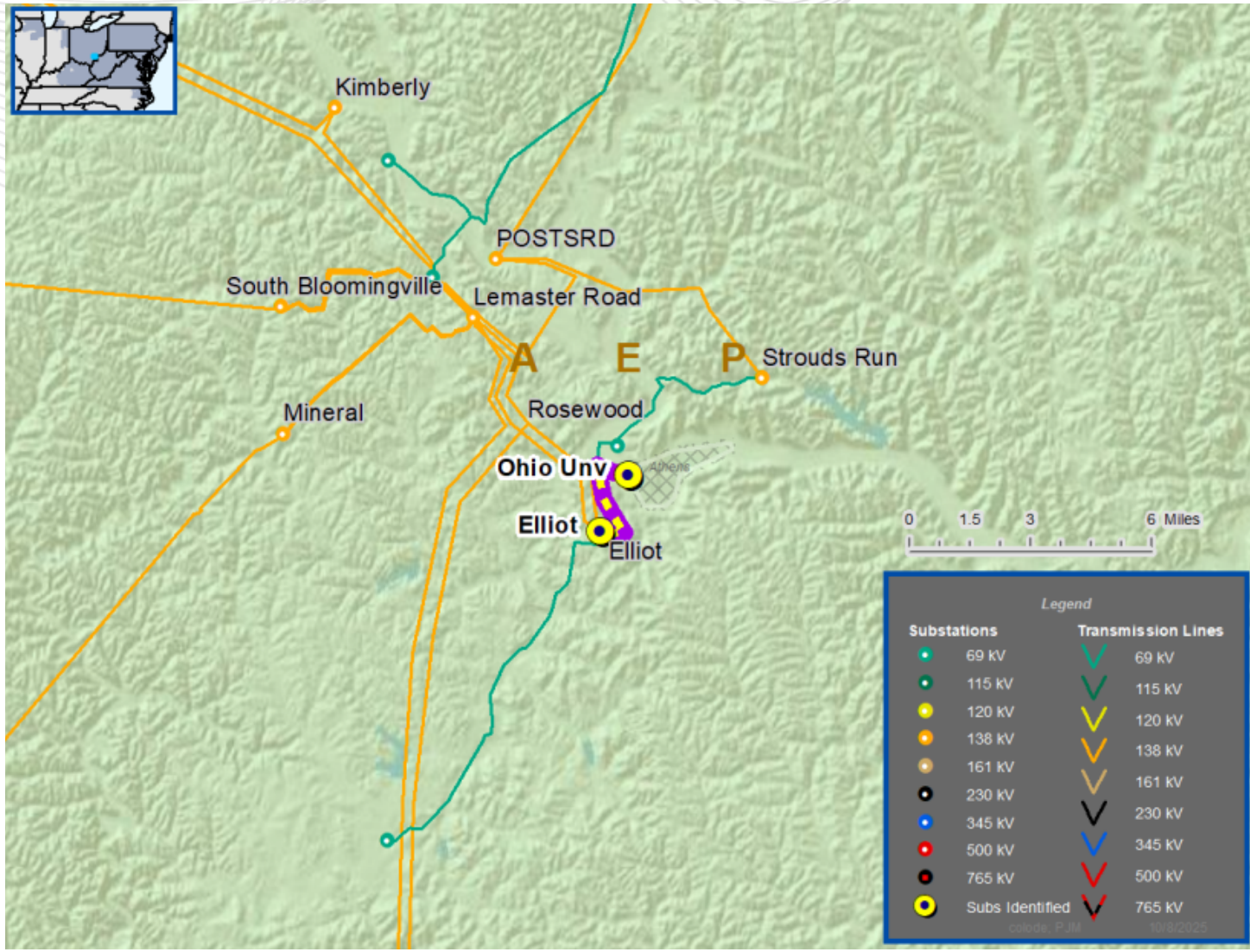
Problem Statement:

FG: 2025-W1-AEP-T27, 2025-W1-AEP-T28, 2025-W1-AEP-T29, 2025-W1-AEP-T30, 2025-W1-AEP-T31.

In the 2030 Summer RTEP case, The Elliott - Ohio University 69kV circuit is overloaded in FERC 715 study under several N-1-1 contingency scenarios.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Elliot - Ohio University (138 kV)	102/102/129/129



AEP Transmission Zone: Baseline
Elliot - Ohio University 69kV Sag Mitigation

Proposed Solution:

- Perform sag study mitigations on ~1.4 miles of line from str. 8 to str 21 to bring conductor to full 142 MVA SE rating.

Total Estimated Cost: $0.36M

Preliminary Facility Rating:

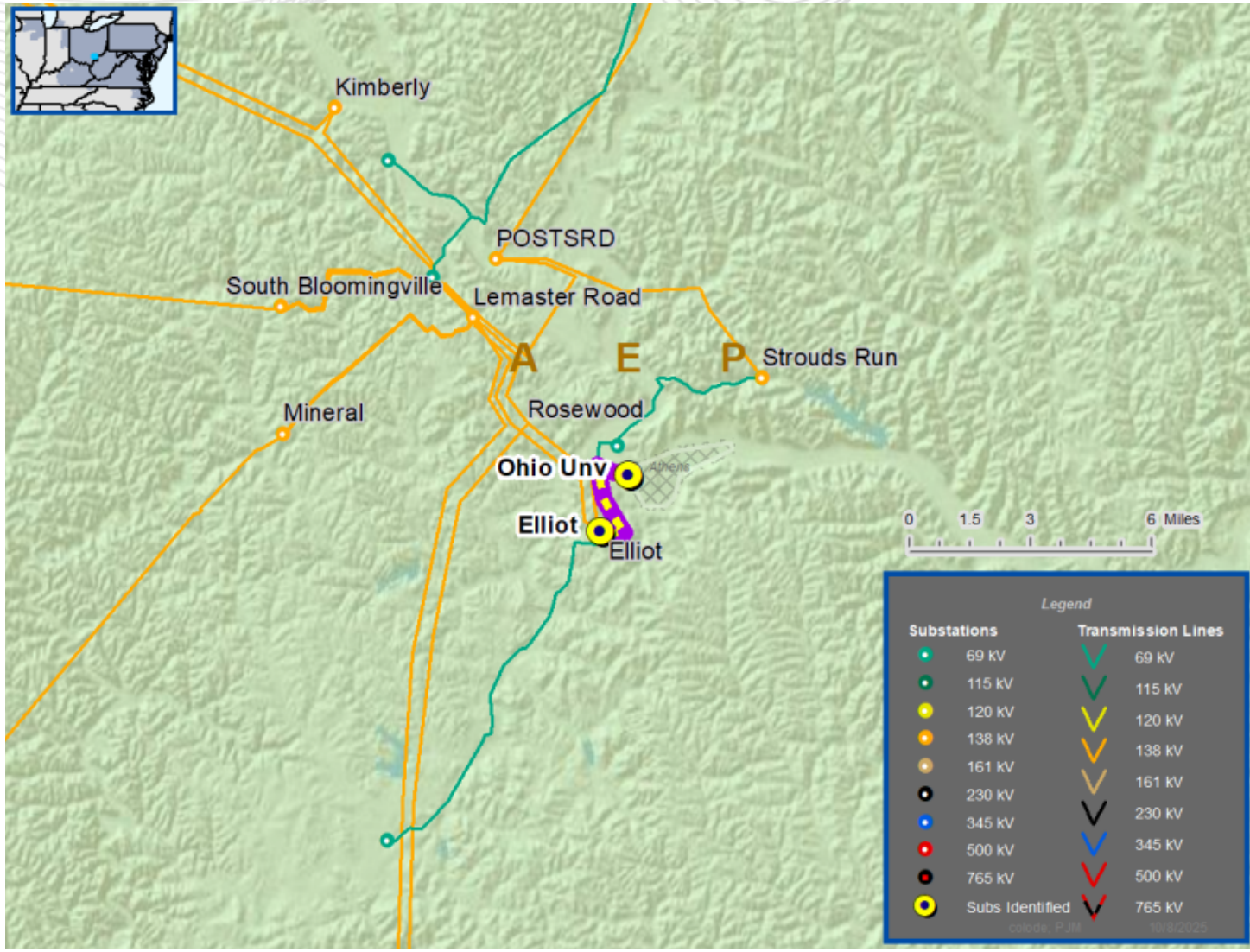
Branch	SN/SE/WN/WE (MVA)
Elliot - Ohio University (138 kV)	102/142/129/160

Alternatives:

Rebuild the line section with larger conductor. Estimated cost: $5M.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline Lick - Ironman 69kV Reconductor

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Summer and Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

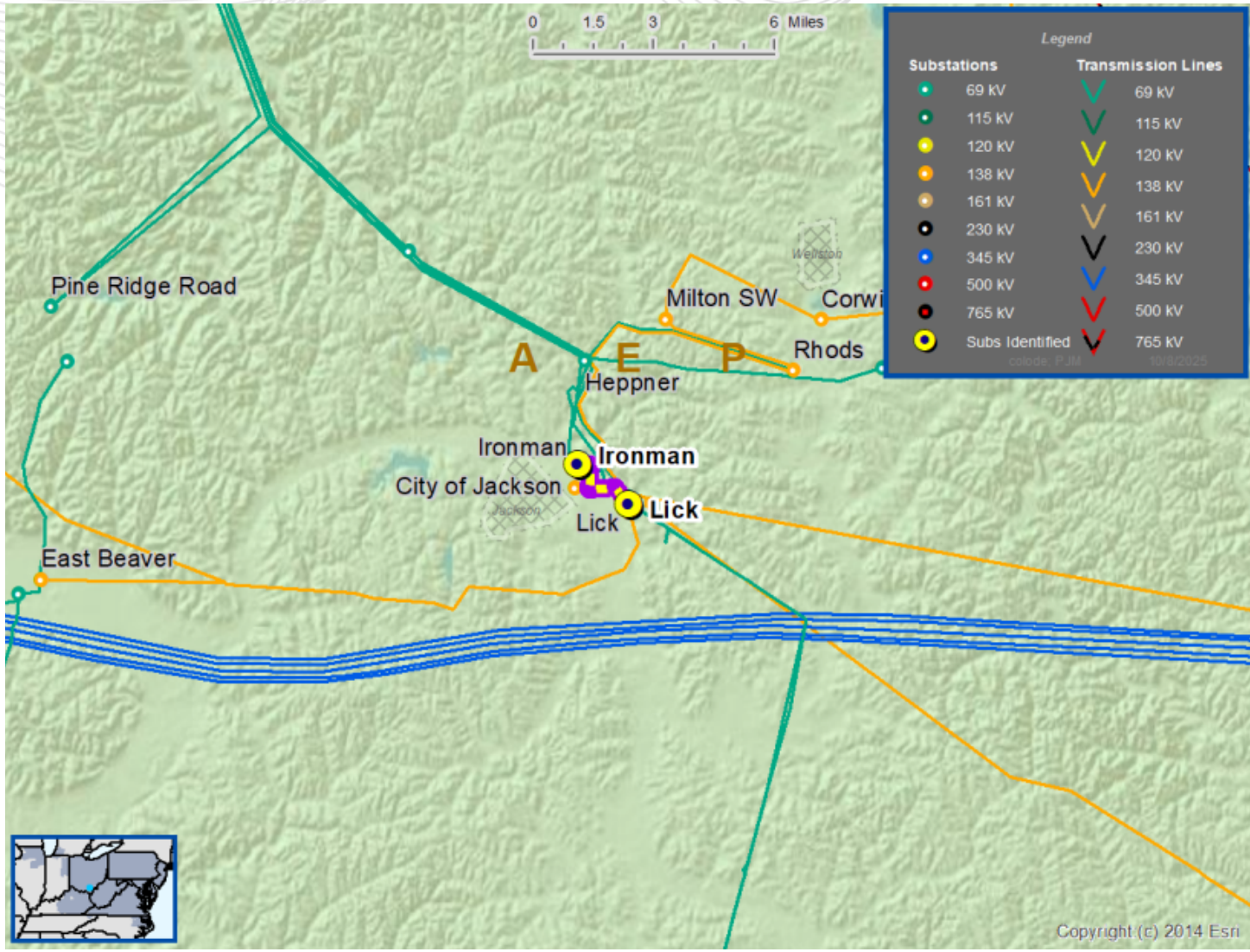
Problem Statement:

FG: 2025-W1-AEP-T36, 2025-W1-AEP-T37, 2025-W1-AEP-T38, 2025-W1-AEP-T39, 2025-W1-AEP-T40.

In the 2030 Summer and Winter RTEP cases, the Lick-Ironman 69kV line is overloaded in FERC 715 study under several N-1, N-1-1 contingency scenarios.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Lick - Ironman 138 kV	75/110/94/121



AEP Transmission Zone: Baseline Lick - Ironman 69kV Reconductor

Proposed Solution:

- The line section overloading is roughly ~0.8 miles consisting of 336 ACSR 30/7 Oriole from structure 44 to Lick station. Reconductor limiting line conductor on the Lick-Ironman 69kV circuit to match the rest of the line.

Total Estimated Cost: $1.099M

Preliminary Facility Rating:

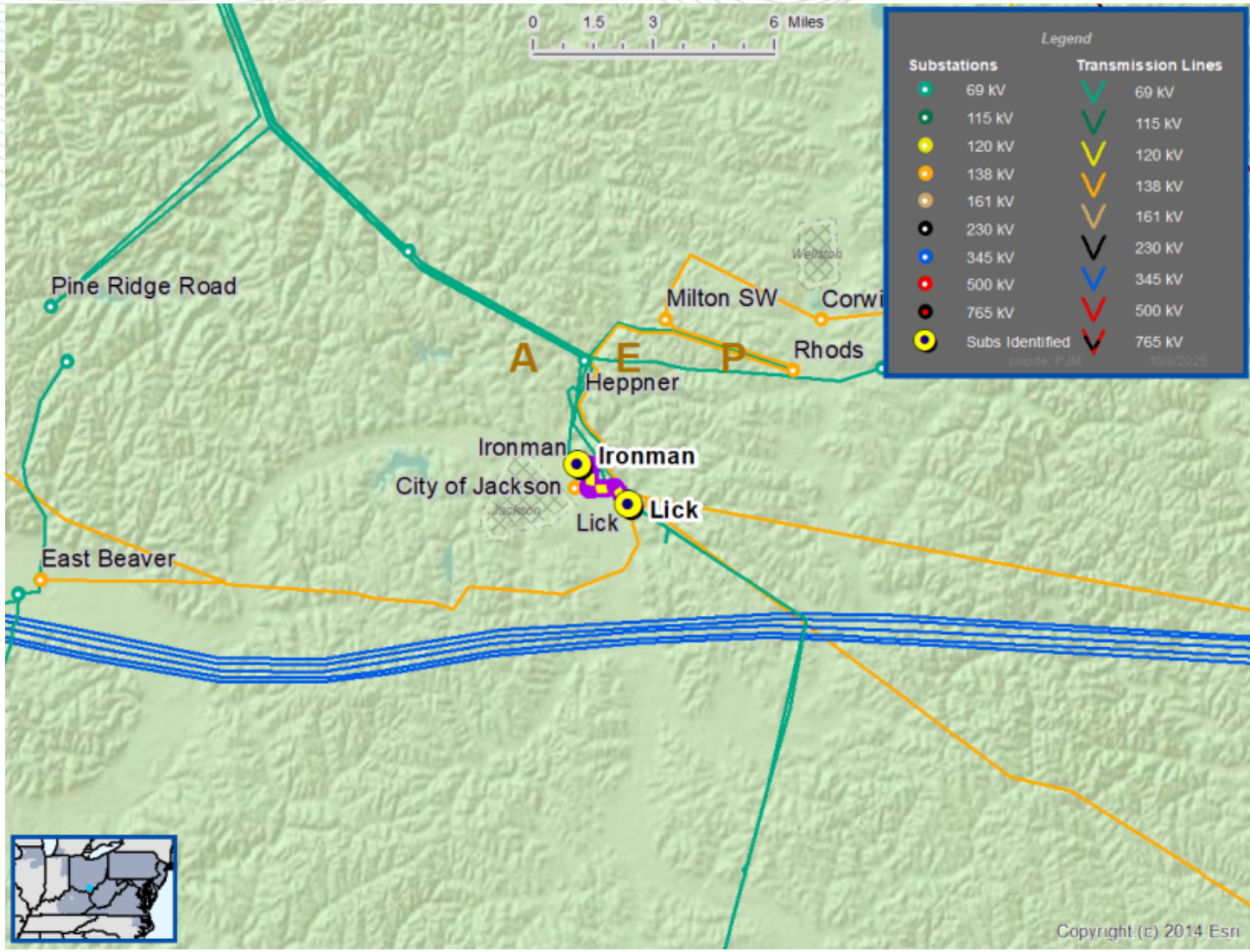
Branch	SN/SE/WN/WE (MVA)
Lick - Ironman 138 kV	148/207/187/232

Alternatives:

Considering the limited scope of the upgrade required to fix the violation, no viable cost-effective alternative was found.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline South Side Lima Station 34.5 kV Upgrades

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

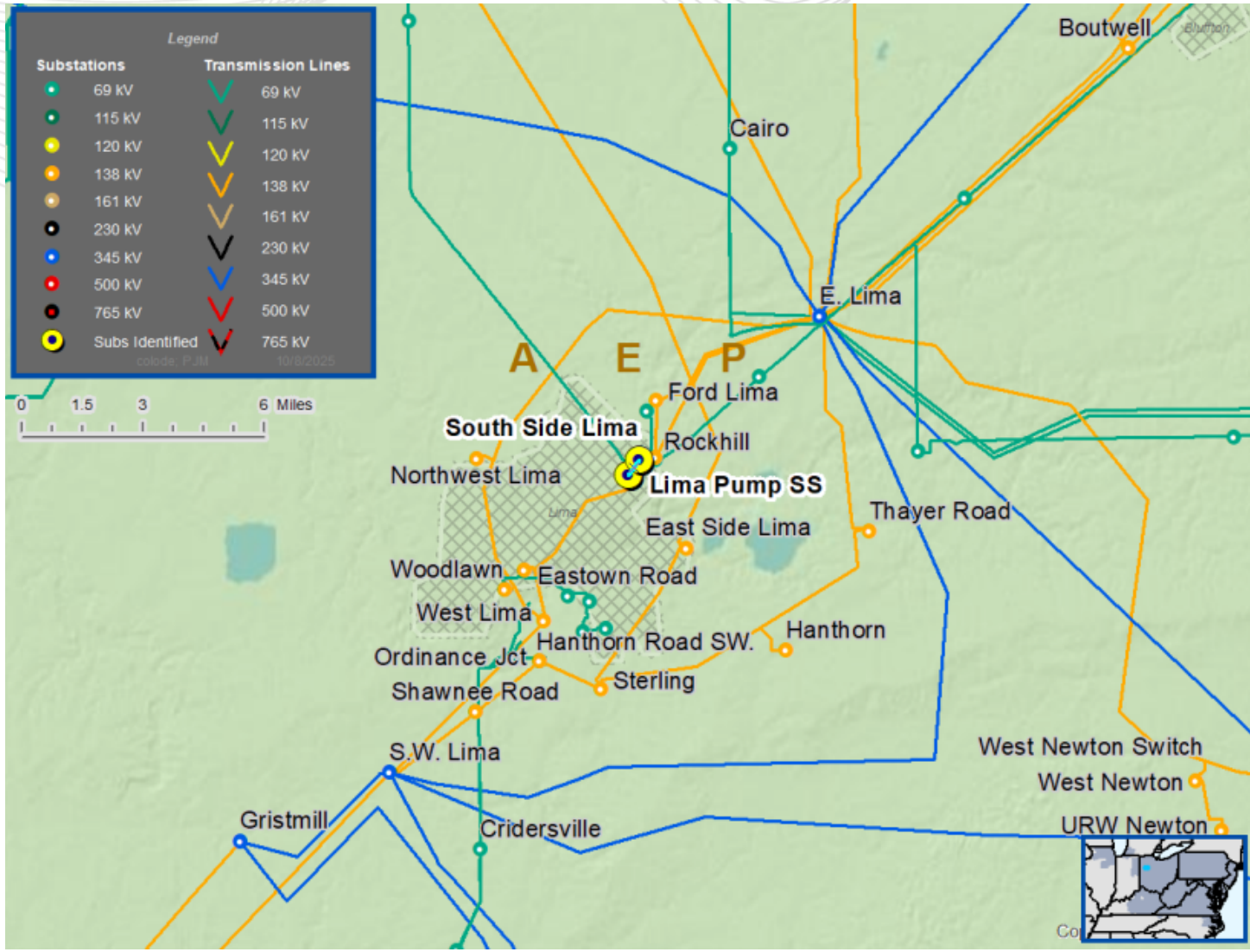
Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-T44.

In the 2030 Winter RTEP case, the 34.5kV sub transmission line section between South Side Lima and Lima Pump SS is overloaded in FERC 715 study due to N-1 outages.



AEP Transmission Zone: Baseline South Side Lima Station 34.5 kV Upgrades

Proposed Solution:

- Replace station terminal equipment: South Side Lima 34.5 kV replace 4/0 AAC, 7-Str. Replace 34.5KV CB-L jumpers and 34.5KV Sterling line riser.

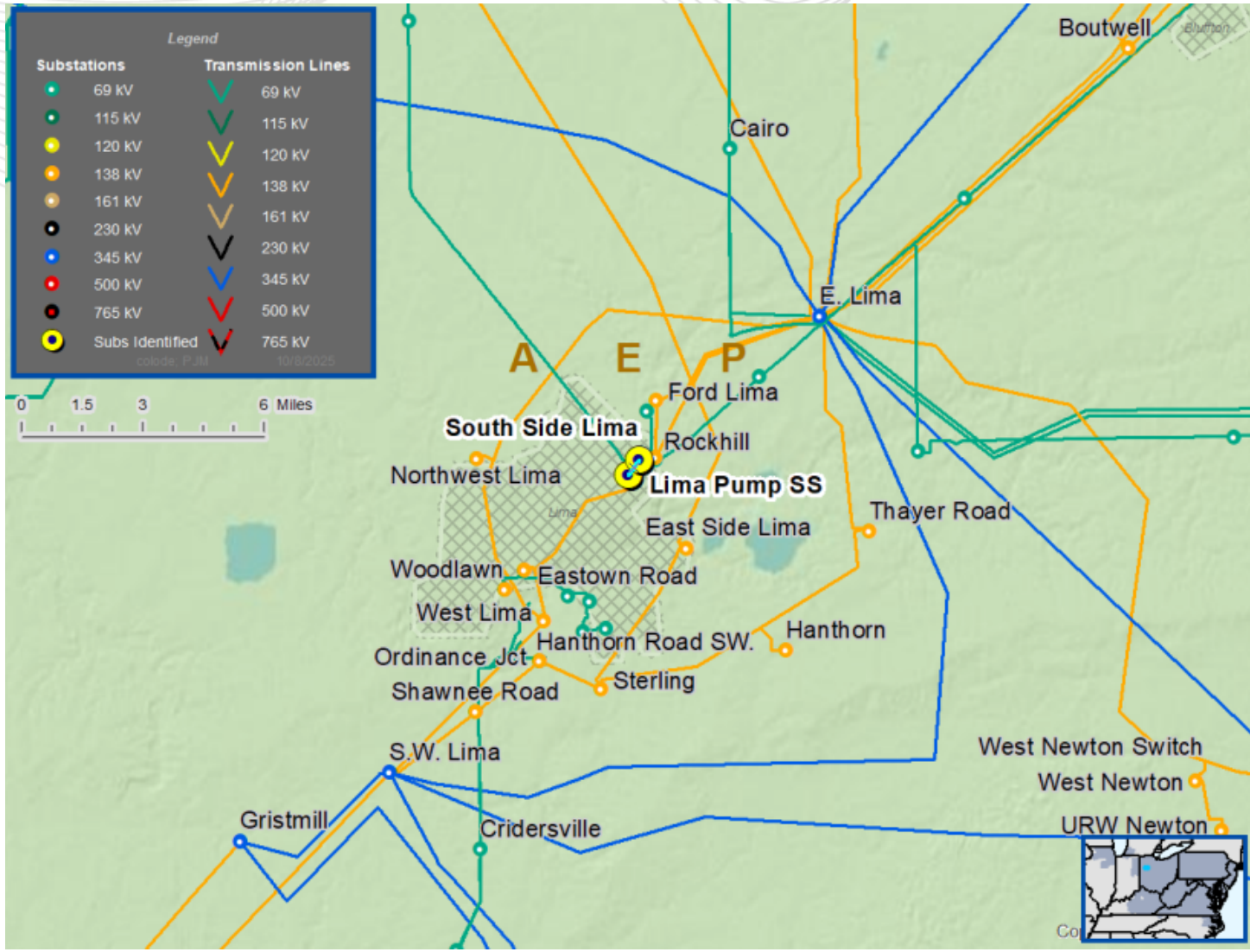
Total Estimated Cost: $0.08M

Alternatives:

Considering the limited station scope of the upgrade to address the violation, no cost-effective alternative found.

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline
North Newark Transformer #1 138/69 kV Replacement

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

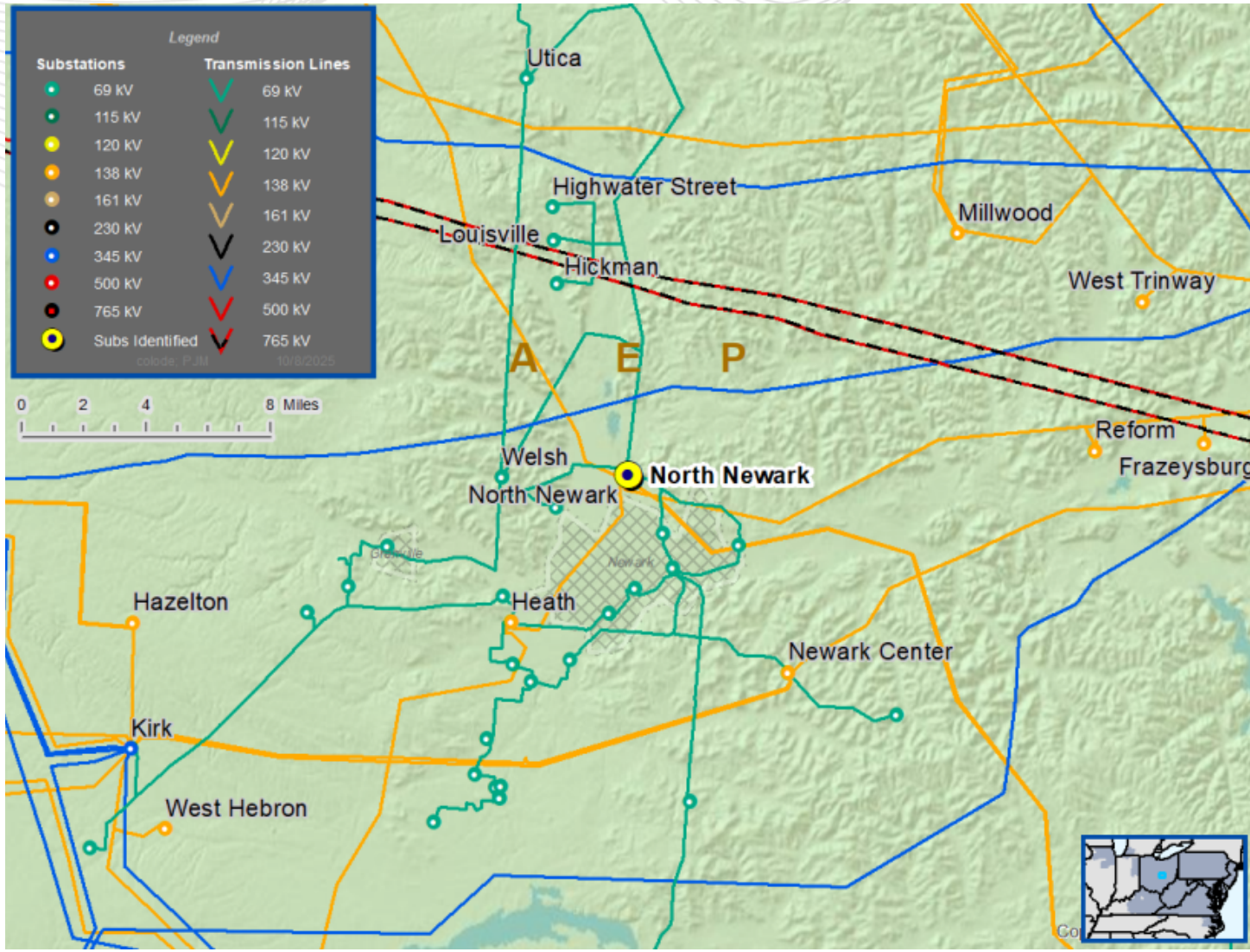
Problem Statement:

FG: 2025-W1-AEP-T10, 2025-W1-AEP-T11, 2025-W1-AEP-T7, 2025-W1-AEP-T8, 2025-W1-AEP-T9.

In the 2030 Winter RTEP case, the 40 MVA 138/69/4 kV TR#1 at North Newark overloads are identified in FERC 715 study under N-1-1 contingency scenarios.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
North Newark TR#1 138/69 138/69/4 kV	49/53/49/53, 49/53/49/53, 49/53/49/53



AEP Transmission Zone: Baseline
North Newark Transformer #1 138/69 kV Replacement

Proposed Solution:

- Replace North Newark TR#1 with a 90 MVA bank. DICM expansion will be required.
- Replace Motor Operators on High side switch “Z”.
- Install (2) 138kV disconnects on existing 138kV lattice box bay.
- Install (2) 69kV disconnects on existing 69kV H-frame structure.

Total Estimated Cost: $6.33 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
North Newark TR#1 138/69/4 kV	106/113/119/126, 68/86/86/90, N/A

Alternatives:

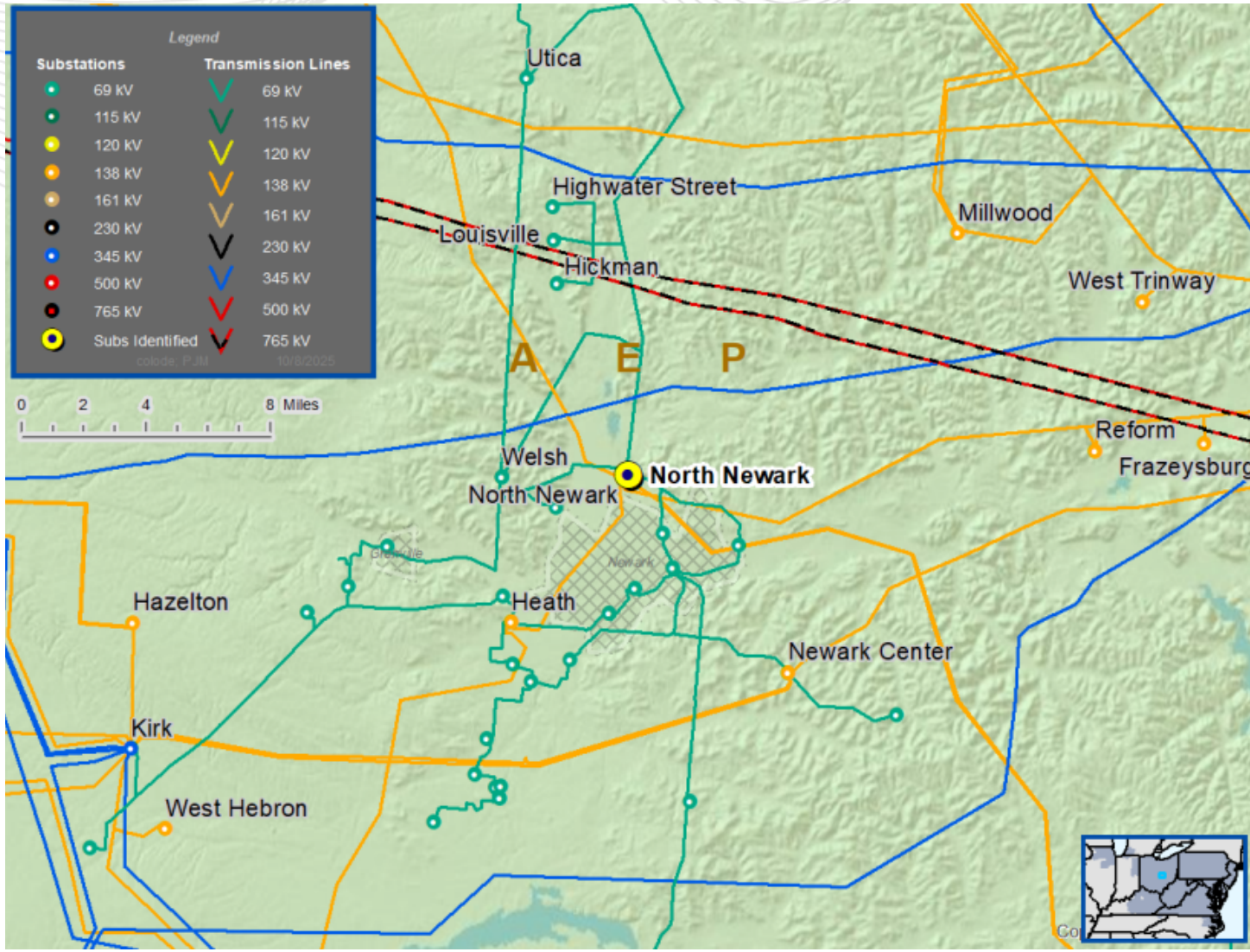
Considering the limited station scope required to address the issue, no other viable transmission alternates were identified.

Ancillary Benefits:

Replaces an older transformer from 1951 that's deteriorated, leaking, in poor physical condition and has elevated arcing gases in the main tank

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline
Findlay Center 138 kV Transformer Replacement

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

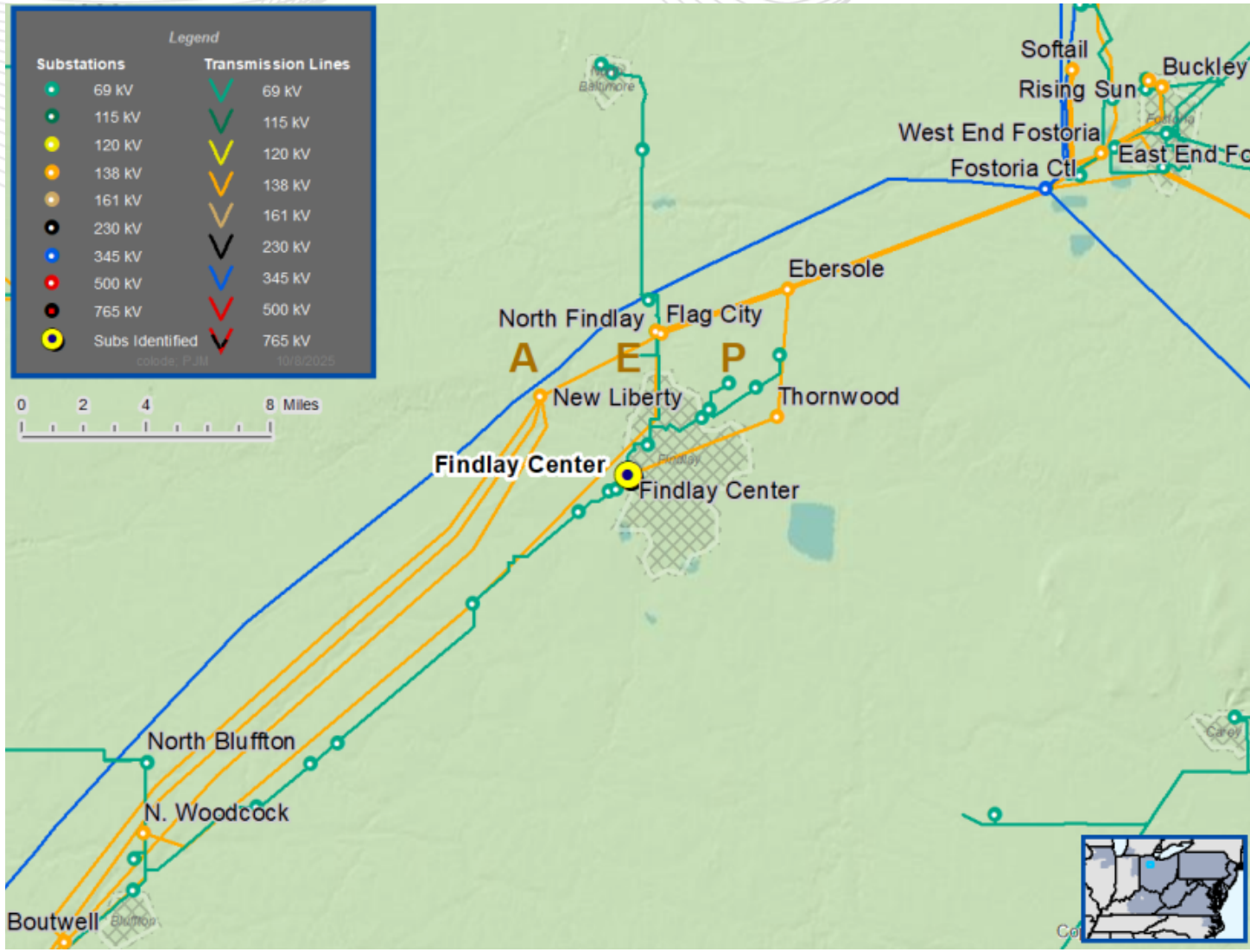
Problem Statement:

FG: 2025-W1-AEP-T32, 2025-W1-AEP-T33.

In 2030 RTEP Summer case, Findlay Center 45 MVA 138/69/34.5 kV TR#1 34.5 kV side overloads are identified in FERC 715 study under N-1-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Findlay Center XF#1 (138/69/34.5 kV)	71/71/71/71, N/A, 45/45/45/45



AEP Transmission Zone: Baseline
Findlay Center 138 kV Transformer Replacement

Proposed Solution:

- Replace Findlay Center Transformer #1 with a 138/69/34.5 90 MVA Unit.
- Replace the TR1 LS Disconnect Switch

Total Estimated Cost: $3.936 M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Findlay Center XF#1 (138/69/34.5 kV)	90/90/90/90, N/A, 60/60/60/60

Alternatives:

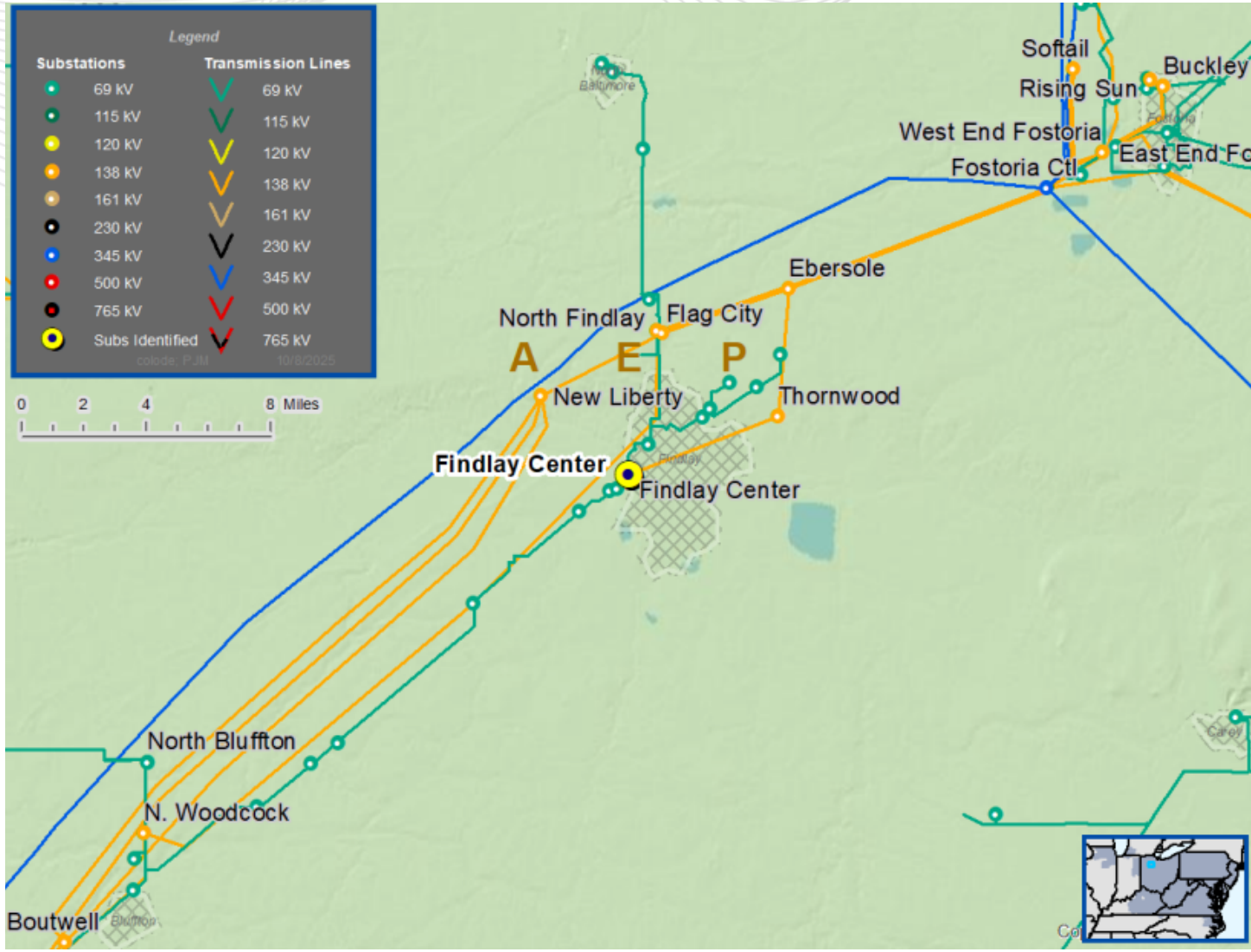
Add sectionalizing circuit breakers at North Woodcock station to eliminate the contingency. Estimated cost: $1.7M.

Ancillary Benefits:

Findlay Center TRF1 was manufactured in 1962. This proposal will replace an aging asset nearing end of life with a new one. Any other identified supplemental needs at the station will be taken through the M-3 process.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline Kenton - South Kenton 69kV line rebuild

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Summer base case

Proposal Window Exclusion: Below 200 kV exclusion

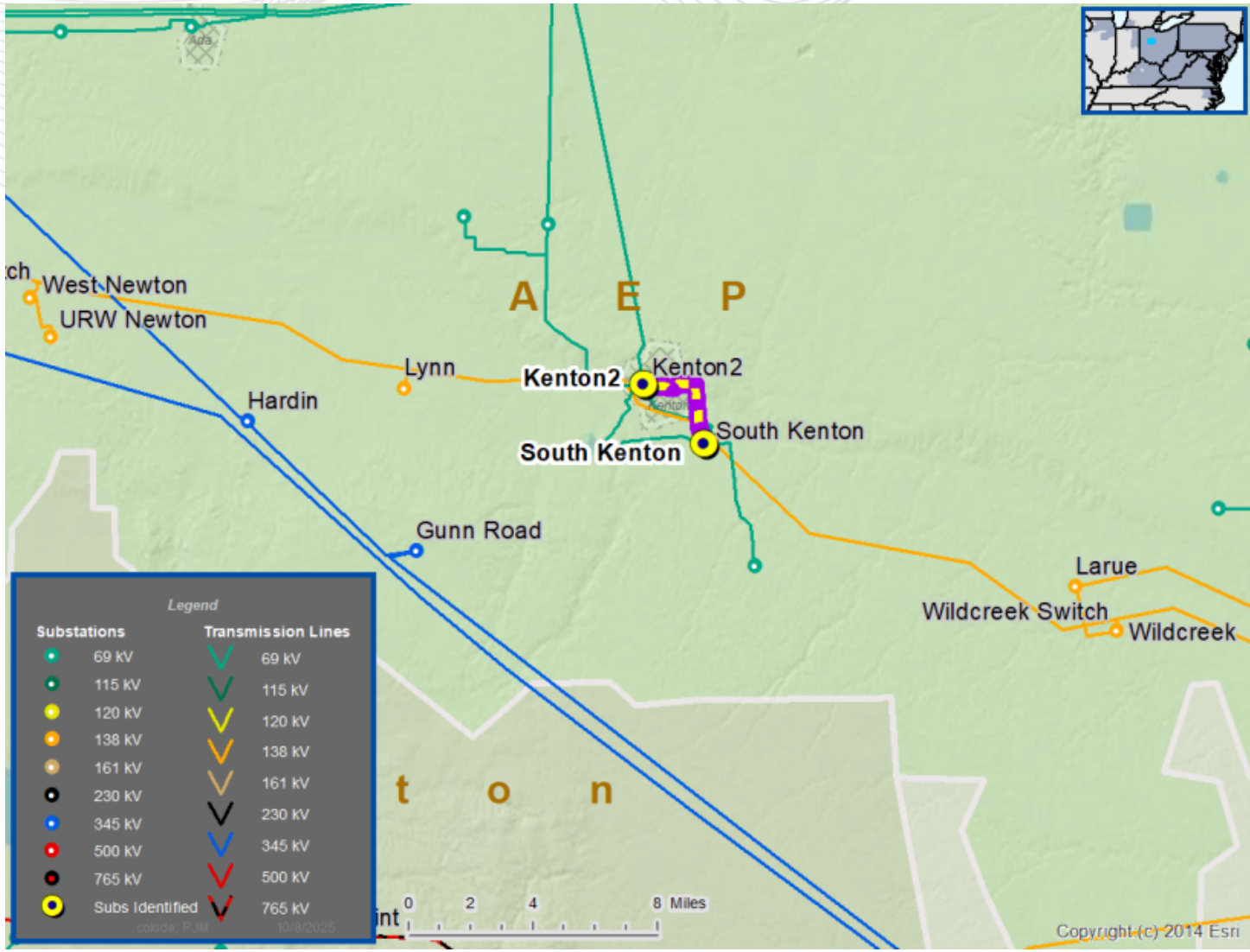
Problem Statement:

FG: 2025-W1-AEP-T49.

In the 2030 RTEP Summer case, South Kenton - Kenton 69kV line section overloads are identified in FERC 715 study due to N-1 contingency.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
South Kenton - Kenton2 (69 kV)	35/35/48/48



AEP Transmission Zone: Baseline Kenton - South Kenton 69kV line rebuild

Proposed Solution:

- Rebuild Line: ~2.87 miles Kenton - South Kenton 69kV.

Total Estimated Cost: 13.19M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
South Kenton - Kenton2 (69 kV)	102/142/129/160

Alternatives:

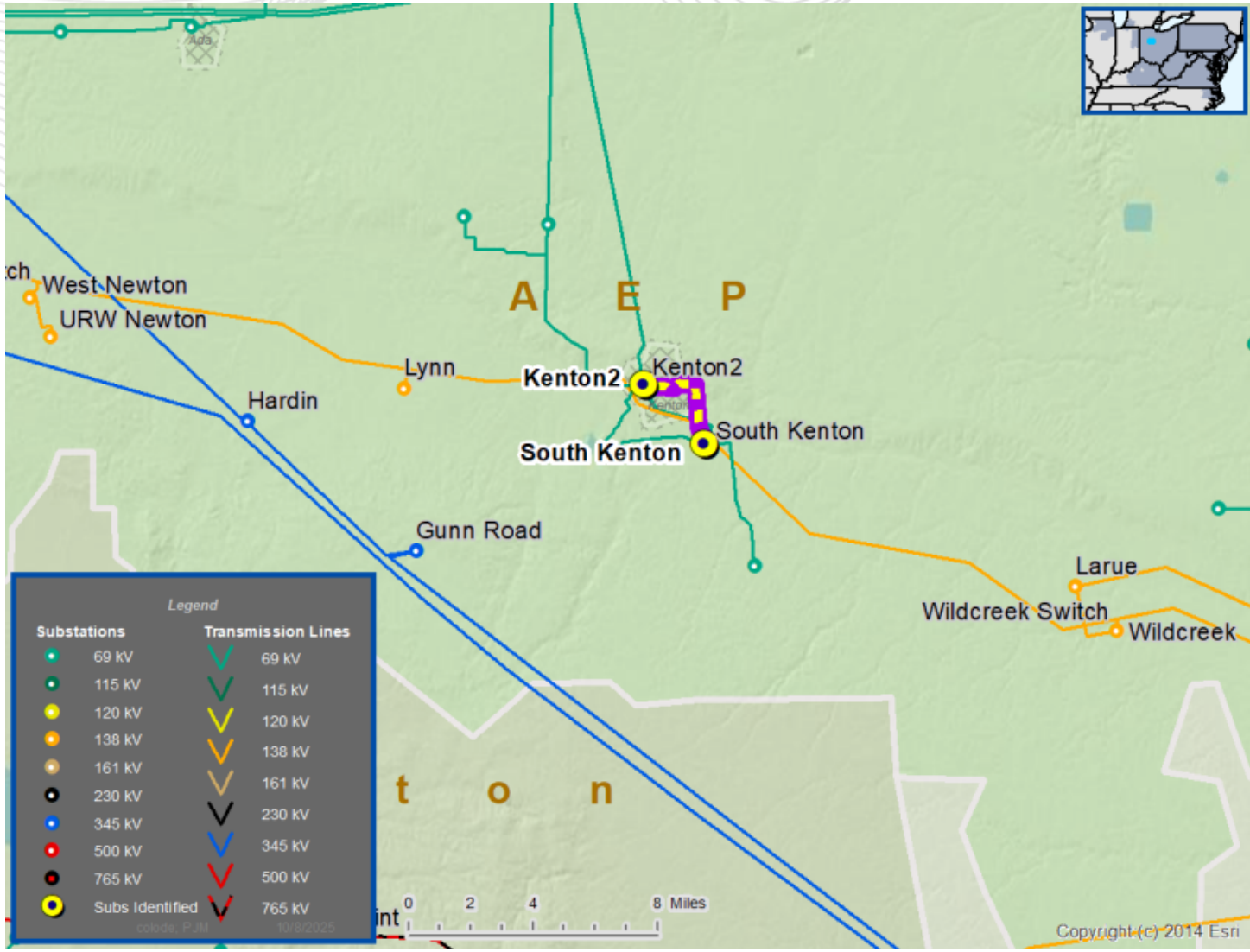
Reconfigure South Kenton station into a full breaker and a half configuration to prevent the generation from getting isolated into the 69 kV lines. Considering the condition of the existing line, this option was eliminated. Estimated cost: $15M.

Ancillary Benefits:

The Kenton-South Kenton 69kV circuit is made up of different vintage structures ranging from late 1940's, 1950's, 1960's and 1990's. The majority of the conductor is from the 1950's and consists of Copper conductor sections and 1/0 ACSR Raven sections. In the last 6 years, the subject circuit has been impacted by 3 permanent outages that have resulted in approximately 1.7M customer minutes of interruption. This line would likely be a supplemental need candidate within the next five to ten years.

Required In-Service: 06/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline 138 kV Haviland Station Bus Upgrades

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Substation Equipment Exclusion

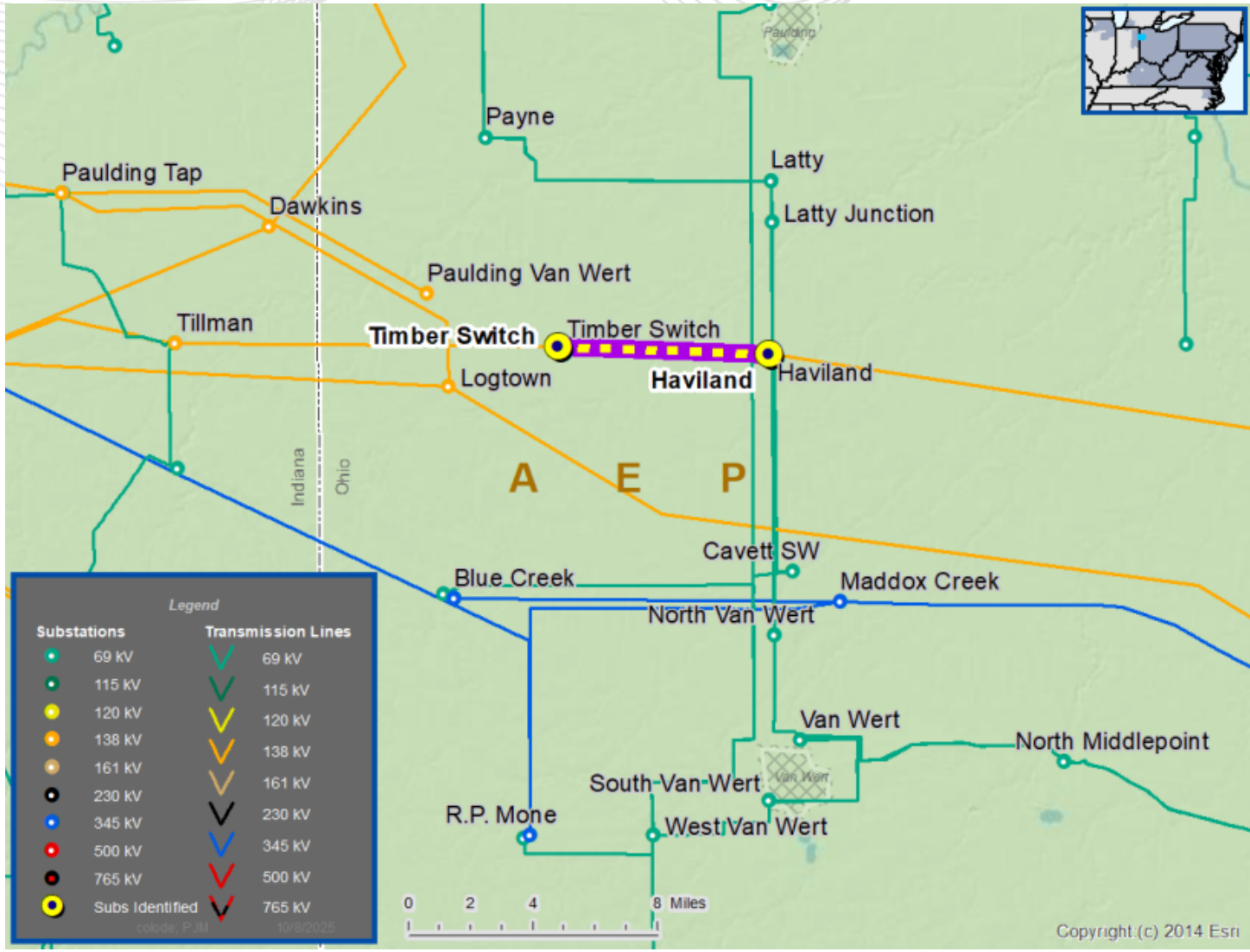
Problem Statement:

FG: 2025-W1-GD-W170, 2025-W1-GD-W195, 2025-W1-GD-W196, 2025-W1-GD-W201, 2025-W1-GD-W202, 2025-W1-GD-W216, 2025-W1-GD-W226, 2025-W1-GD-W228, 2025-W1-GD-W41, 2025-W1-GD-W51, 2025-W1-GD-W53, 2025-W1-GD-W66.

In 2030 RTEP Winter case, Haviland Bus #2 - Timber SW 138kV branch and Haviland Bus #2 - Haviland Bus #1 138 kV bus tie branch are overloaded in generator deliverability study due to N-1 contingencies.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Haviland - TImber SW (138 kV)	187/240/247/285
Haviland Bus1 - Haviland Bus #2 (138 kV)	187/240/247/285



AEP Transmission Zone: Baseline 138 kV Haviland Station Bus Upgrades

Proposed Solution:

- At Haviland, Reconductor Bus#1 Sub cond 500 MCM CU 37 Str towards Haviland Bus#2 and Reconductor Haviland Bus#2 500 KCM CU, 37-Str. & 795 KCM AAC, 37-Str. towards Timber SW 138kV.

Total Estimated Cost: 1.468 M

Preliminary Facility Rating:

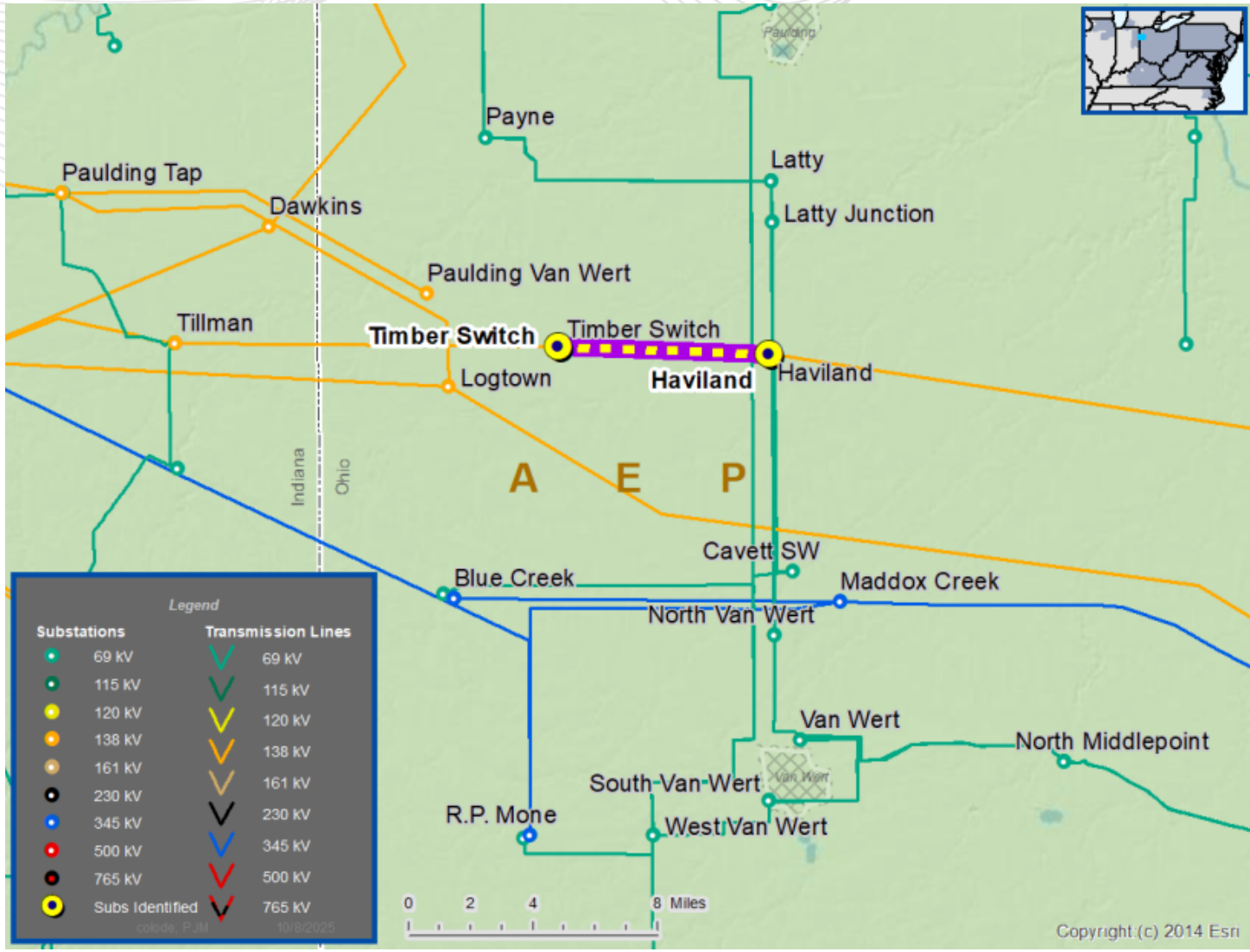
Branch	SN/SE/WN/WE (MVA)
Haviland - TImber SW (138 kV)	322/435/407/489
Haviland Bus1 - Haviland Bus #2 (138 kV)	335/392/424/466

Alternatives:

Reactors could be installed to reduce the flow through the branches, but it could have unintended load flow consequences. Considering the limited scope of the required upgrades, reactors were eliminated from consideration.

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



AEP Transmission Zone: Baseline East Lima - Haviland 138kV Sag Study

Process Stage: First Read

Criteria: Generator Deliverability

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Winter and Light Load base case

Proposal Window Exclusion: Substation Equipment Exclusion

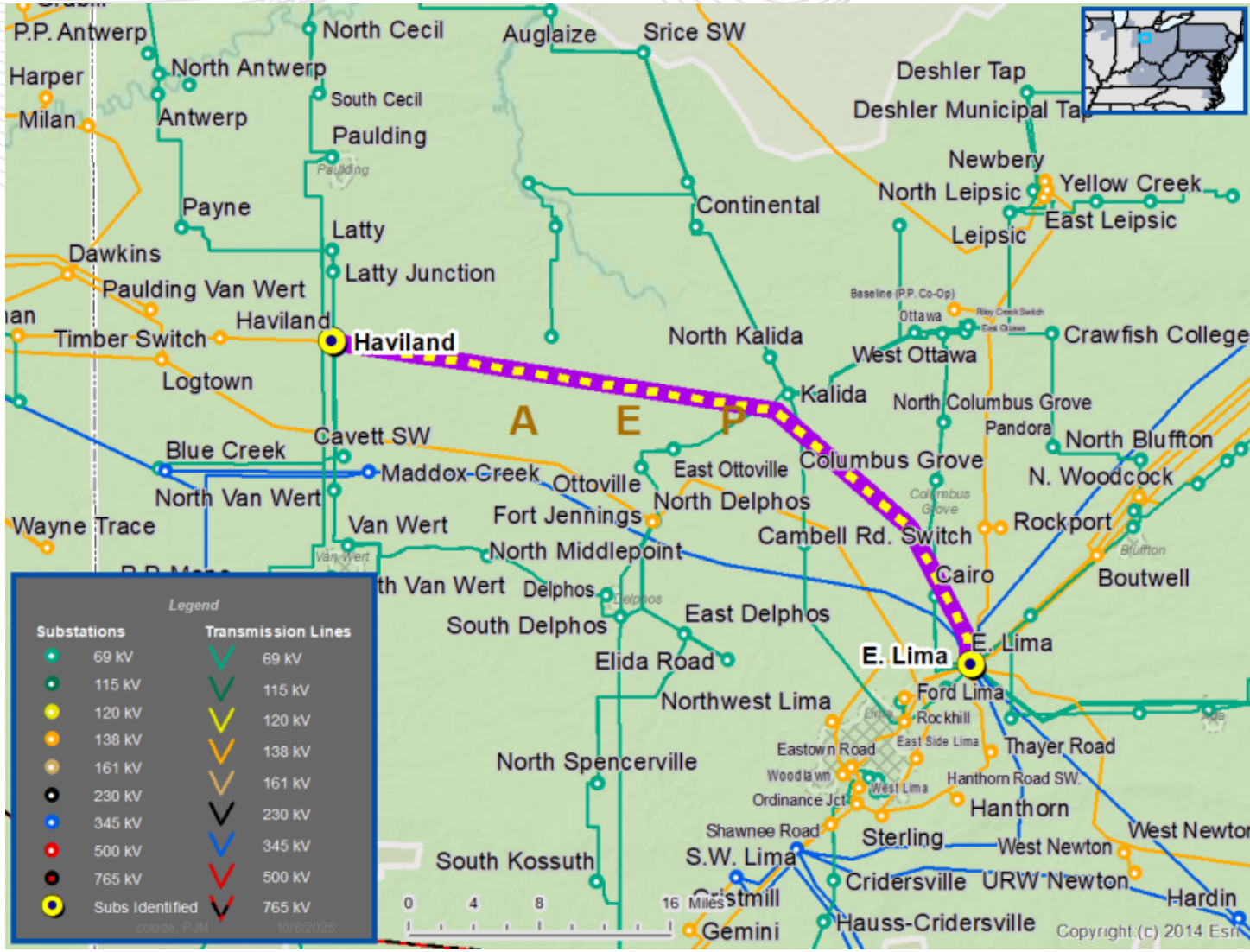
Problem Statement:

FG: 2025-W1-GD-LL127, 2025-W1-GD-W233.

In the Light Load and Winter 2030 case, the East Lima - Haviland 138kV circuit overloads are identified in generator deliverability study due to N-1 outages.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
E. Lima - Haviland (138 kV)	205/205/258/258



AEP Transmission Zone: Baseline East Lima - Haviland 138kV Sag Study

Proposed Solution:

- Perform sag study and implement mitigations on 5.55 miles of the East Lima-Haviland 138kV circuit from East Lima to structure 28.

Total Estimated Cost: 6.80M

Preliminary Facility Rating:

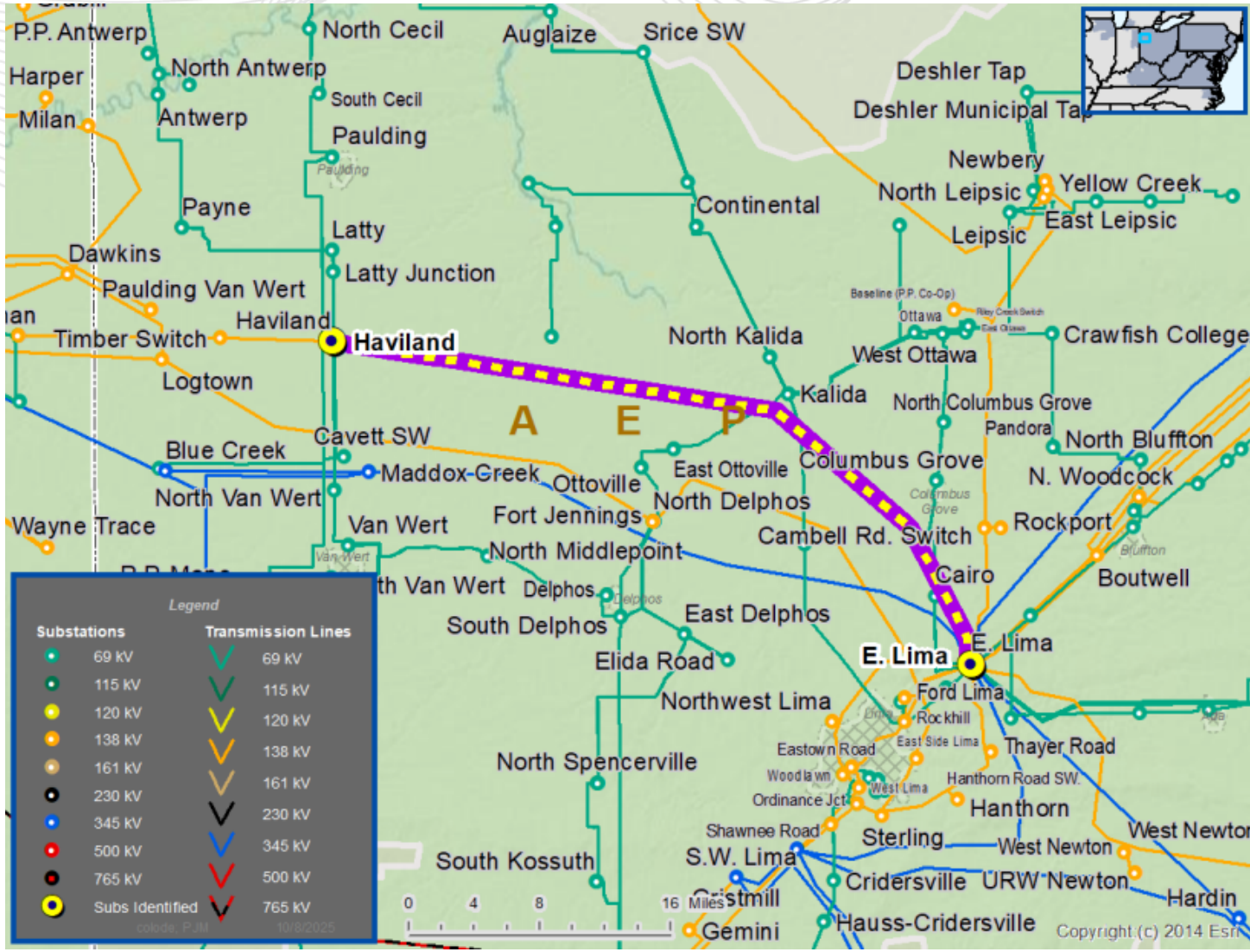
Branch	SN/SE/WN/WE (MVA)
E. Lima - Haviland (138 kV)	205/284/258/320

Alternatives:

Rebuild the East Lima - Haviland 138kV line. Estimated cost: $20M.

Required In-Service: 04/15/2030

Projected IS Date: 04/15/2030



AEP Transmission Zone: Baseline Catawba Add a 138/69 kV Transformer

Process Stage: First Read

Criteria: FERC 715 Criteria

Assumption Reference: 2025 RTEP assumptions

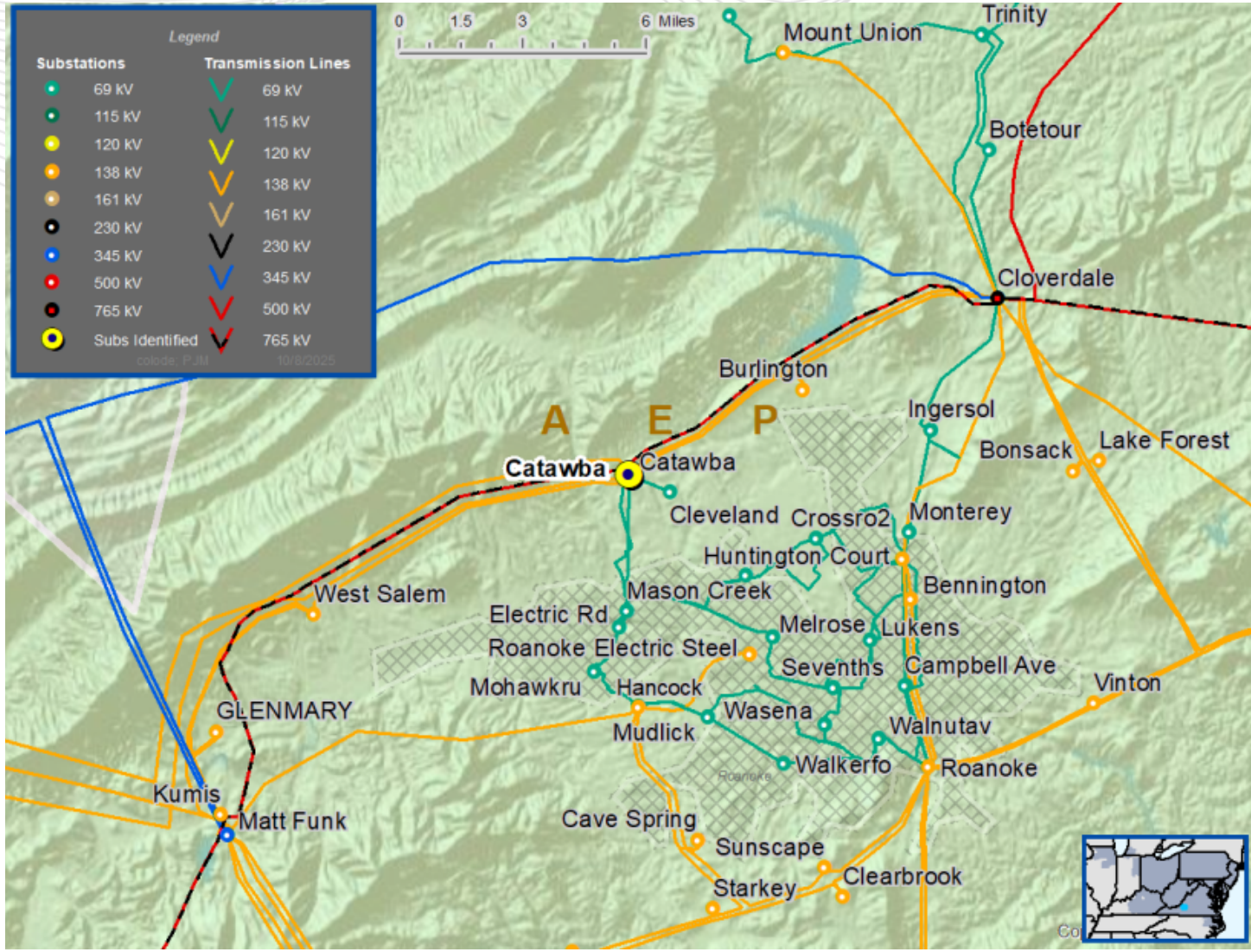
Model Used for Analysis: 2030 RTEP Winter base case

Proposal Window Exclusion: Below 200 kV exclusion

Problem Statement:

FG: 2025-W1-AEP-T20, 2025-W1-AEP-T21, 2025-W1-AEP-T22, 2025-W1-AEP-T23, 2025-W1-AEP-T24.

In the 2030 RTEP Winter case, the 138/69/34.5 kV transformer 1 at Catawba station is overloaded in FERC 715 study under N-1-1 contingency.



AEP Transmission Zone: Baseline Catawba Add a 138/69 kV Transformer

Proposed Solution:

- Install a new 138/69 kV transformer at Catawba station with a high side Circuit Switcher and a low side Circuit Breaker.

Total Estimated Cost: 7.77M

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Catawba TR 3 (138/69 kV)	90/90/90/90

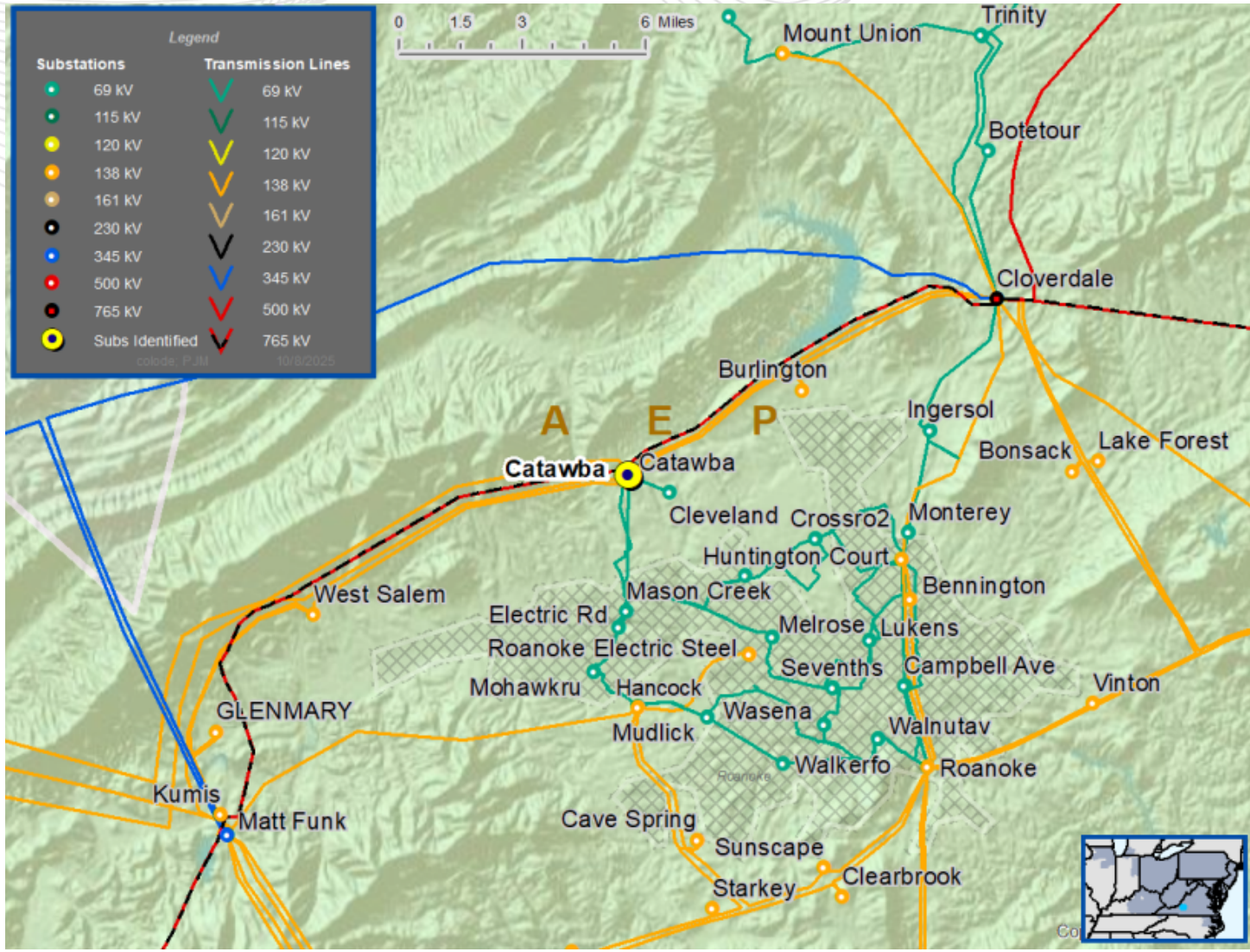
Alternatives:

Installing a new 138/69 kV transformer at Hancock Station would also provide an additional source to the 69 kV system during the associated N-1-1 contingency scenario. However, tapping the Cloverdale-Glenmary 138 kV circuit provides additional reliability and capacity benefits by adding a new 138 kV source at Catawba. In addition, the Cloverdale-Glenmary 138 kV circuit already physically connects to Catawba today, just not electrically. Hancock Station is space constrained and even though the transformer installation cost is expected to be similar, site work is expected to be more costly. Estimated cost: $10M

Consideration was also given to replacing the existing bank with a bigger transformer at Catawba; however, introducing a new transformer/source unloads the other area 138/69 kV transformers which help support the 69 kV network under N-1-1 contingencies. Estimated cost: $6M

Required In-Service: 12/01/2030

Projected IS Date: 06/01/2030



First Read (Short Circuit Projects)

AEP Transmission Zone: Baseline
Bethel Road 138 kV Breakers “A, D, E, F, AA, XT1, XT2” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

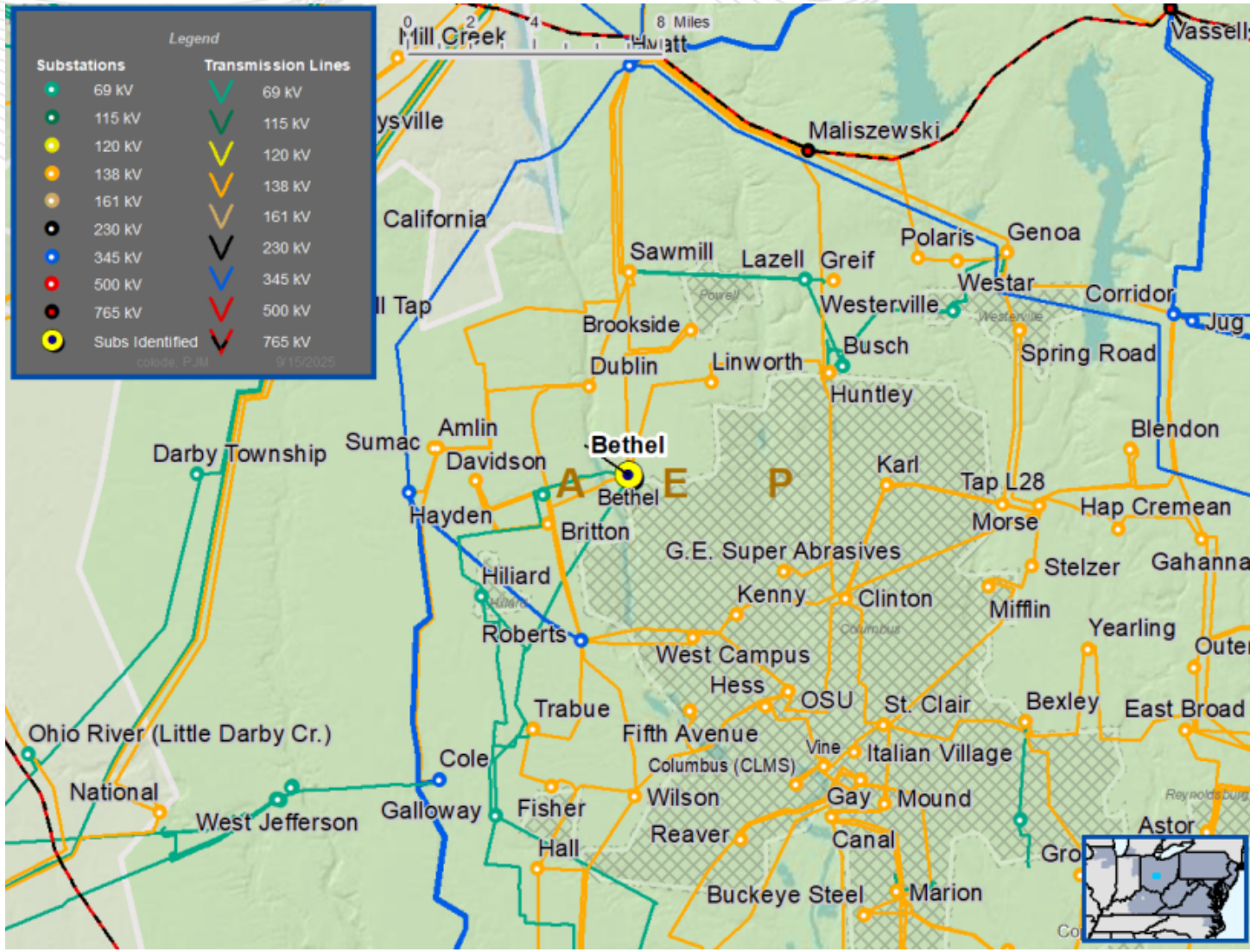
Problem Statement:

2025-W1-SC-1, SC-2, SC-3, SC-4, SC-5, SC-6, SC-7

In the 2030 RTEP Short Circuit base case, the 7 Bethel Road 138 kV breakers “A, D, E, F, AA, XT1, XT2 ” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Bethel Road –138 kV breakers “A, D, E, F, AA, XT1, XT2”	40



AEP Transmission Zone: Baseline
Bethel Road 138 kV Breakers "A, D, E, F, AA, XT1, XT2" Replacement

Proposed Solution:

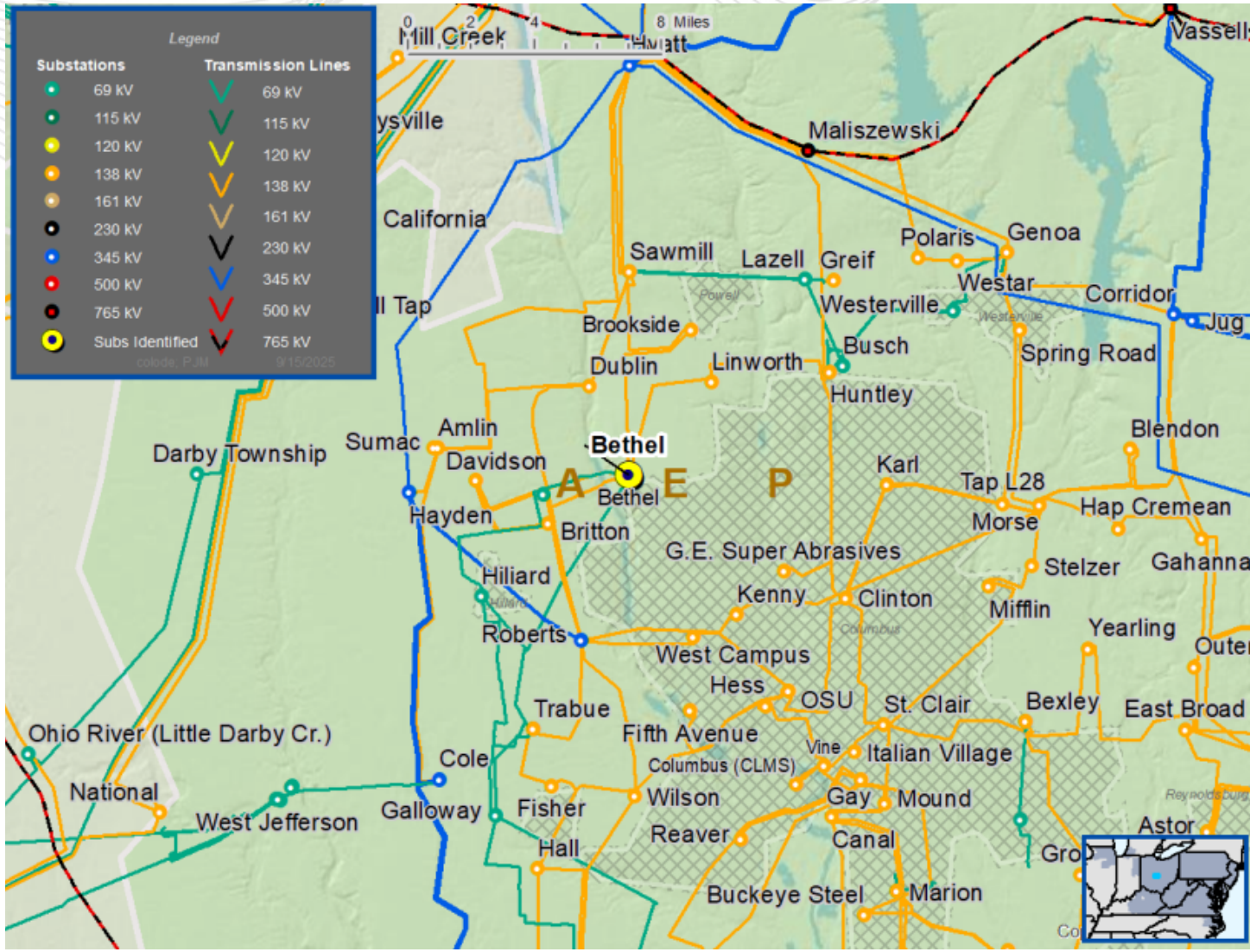
Replace the 7 overdutied Bethel Road 138 kV circuit breakers "A, D, E, F, AA, XT1, XT2 " with 63 kVA circuit breakers.

Estimated Cost: $3.564M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Bethel Road 138 kV circuit breakers with "A, D, E, F, AA, XT1, XT2"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
Hess Street 138 kV Breakers “4, XT1, XT2, XT3, XT4” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

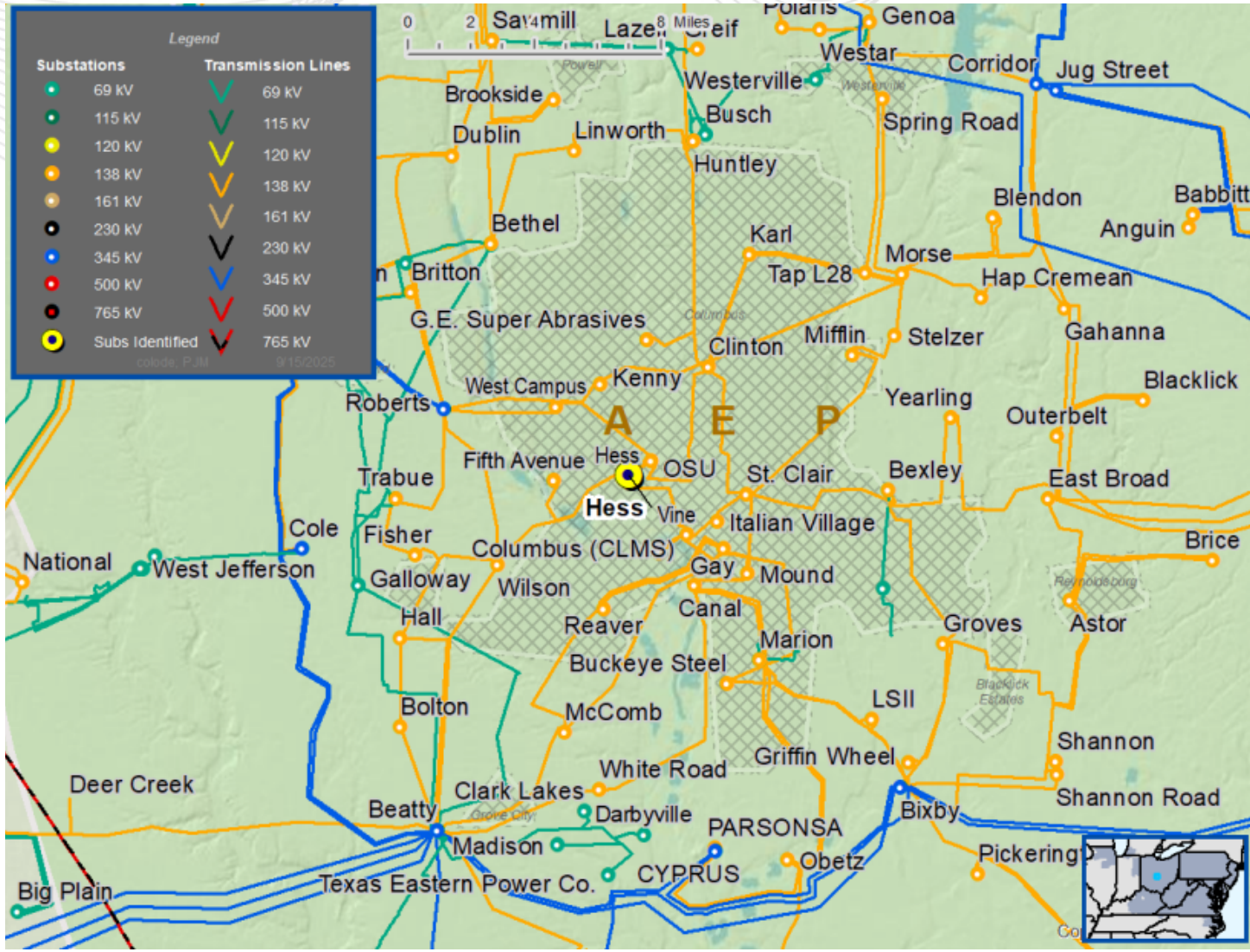
Problem Statement:

2025-W1-SC-8, SC-9, SC-10, SC-11, SC-12

In the 2030 RTEP Short Circuit base case, the 5 Hess Street 138 kV breakers “4, XT1, XT2, XT3, XT4” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Hess Street–138 kV breakers “4, XT1, XT2, XT3, XT4”	40



AEP Transmission Zone: Baseline
Hess Street 138 kV Breakers “4, XT1, XT2, XT3, XT4” Replacement

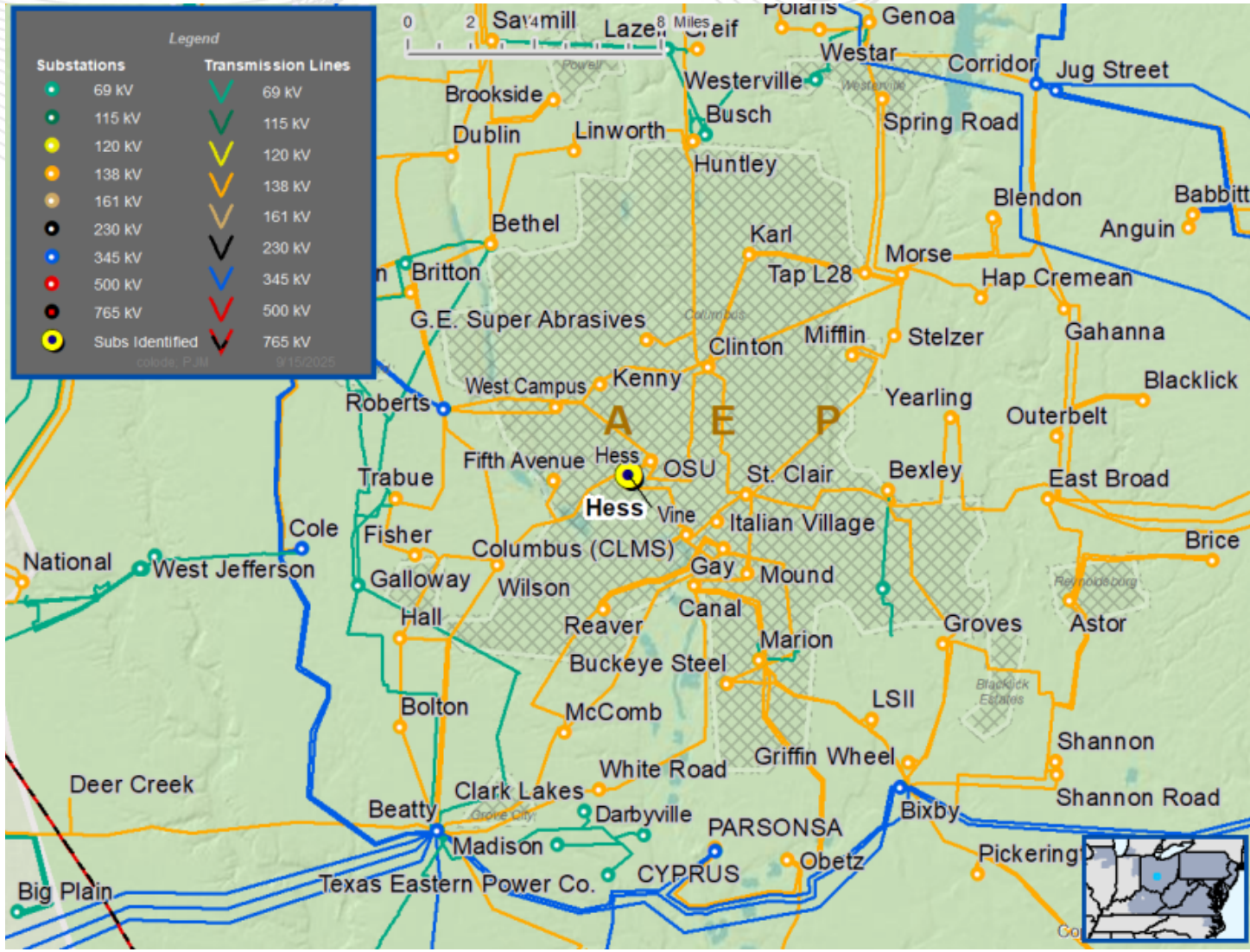
Proposed Solution:
Replace the 5 overdutied Hess Street 138 kV circuit breaker "4, XT1, XT2, XT3, XT4" with 63 kVA circuit breakers.

Estimated Cost: $4.603M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Hess Street 138 kV circuit breakers “4, XT1, XT2, XT3, XT4”	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
New Carlisle 138 kV Breaker "XT3" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

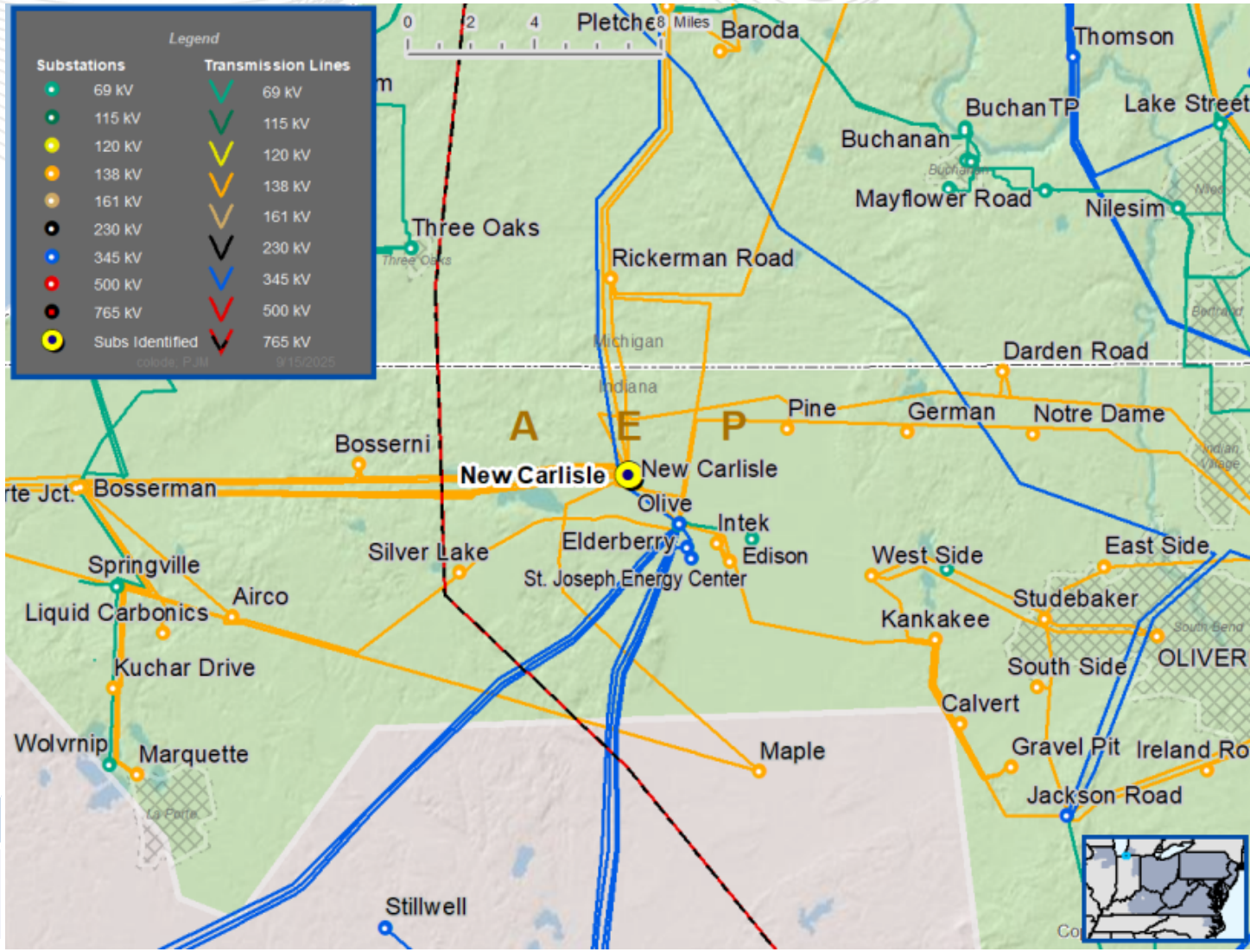
Problem Statement:

2025-W1-SC-13

In the 2030 RTEP Short Circuit base case, the New Carlisle 138 kV breaker "XT3" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
New Carlisle 138 kV breaker "XT3"	40



AEP Transmission Zone: Baseline
New Carlisle 138 kV Breaker “XT3” Replacement

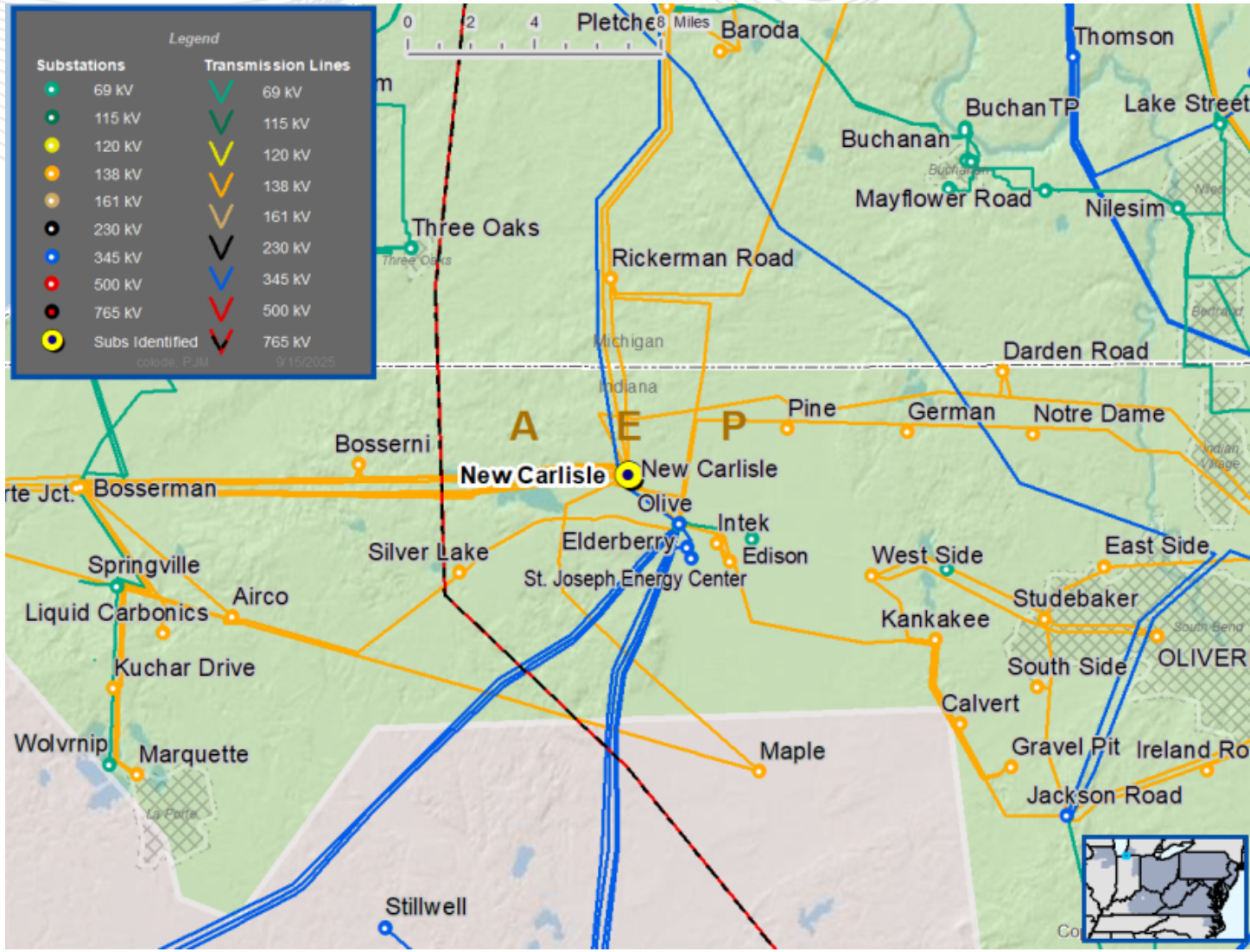
Proposed Solution:
Replace the overdutied New Carlisle 138 kV circuit breaker “XT3" with a 63 kA circuit breaker.

Estimated Cost: $1.025M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
New Carlisle 138 kV breaker “XT3”	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
New Proctorville 138 kV Breaker “XT3” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

Problem Statement:

2025-W1-SC-14

In the 2030 RTEP Short Circuit base case, the New Proctorville 138 kV breaker “XT3” is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
New Proctorville 138 kV breaker “XT3”	40

AEP Transmission Zone: Baseline
New Proctorville 138 kV Breaker “XT3” Replacement

Proposed Solution:
Replace the overdutied New Proctorville 138 kV circuit breaker “XT3" with a 63 kA circuit breaker.

Estimated Cost: $0.94M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
New Proctorville 138 kV breaker “XT3”	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030

AEP Transmission Zone: Baseline
OSU 138 kV Breakers “102, 103, XT4” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

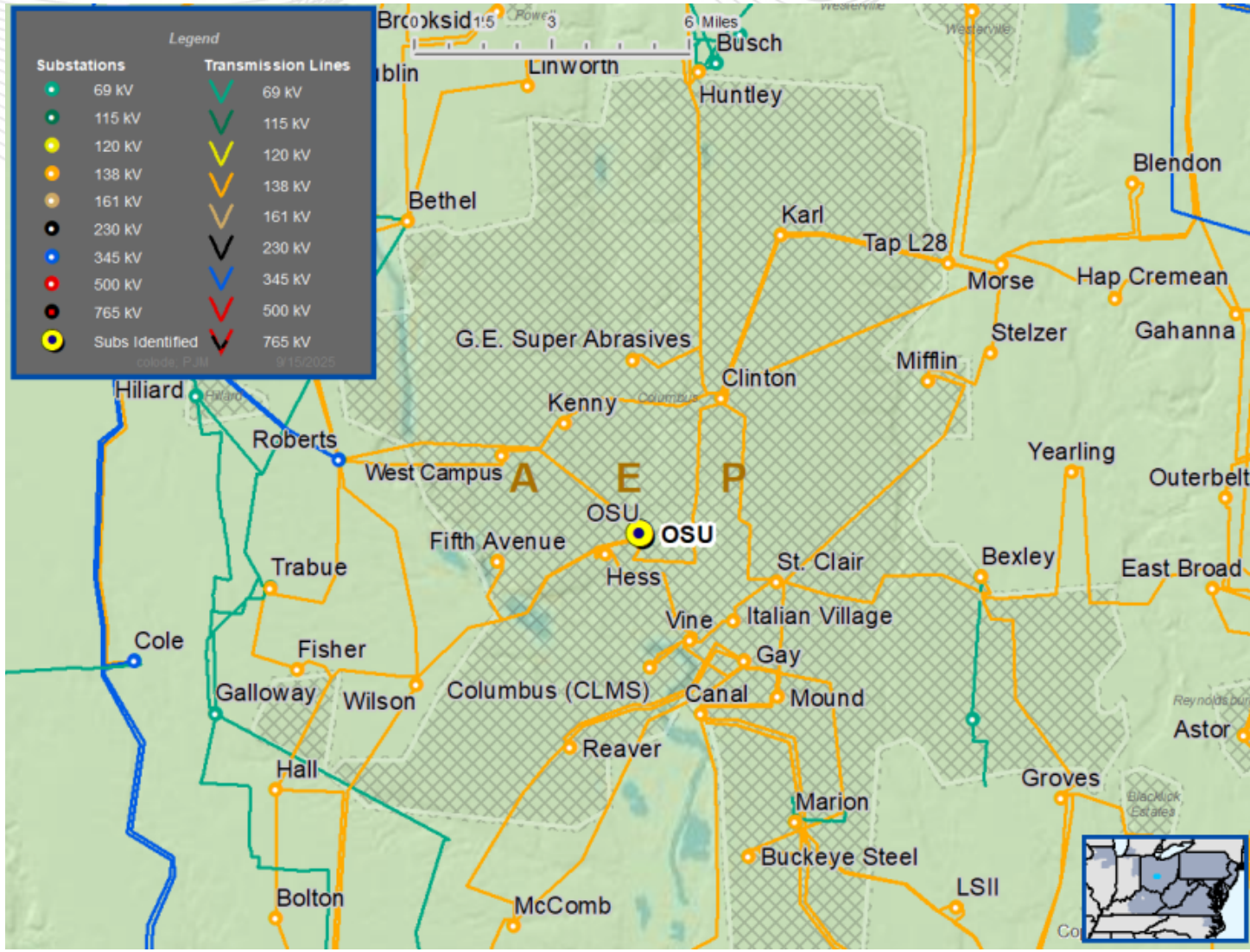
Problem Statement:

2025-W1-SC-15, SC-16, SC-17

In the 2030 RTEP Short Circuit base case, the 3 OSU 138 kV breakers “102, 103, XT4” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
OSU–138 kV breakers “102, 103, XT4”	40



AEP Transmission Zone: Baseline
OSU 138 kV Breakers “102, 103, XT4” Replacement

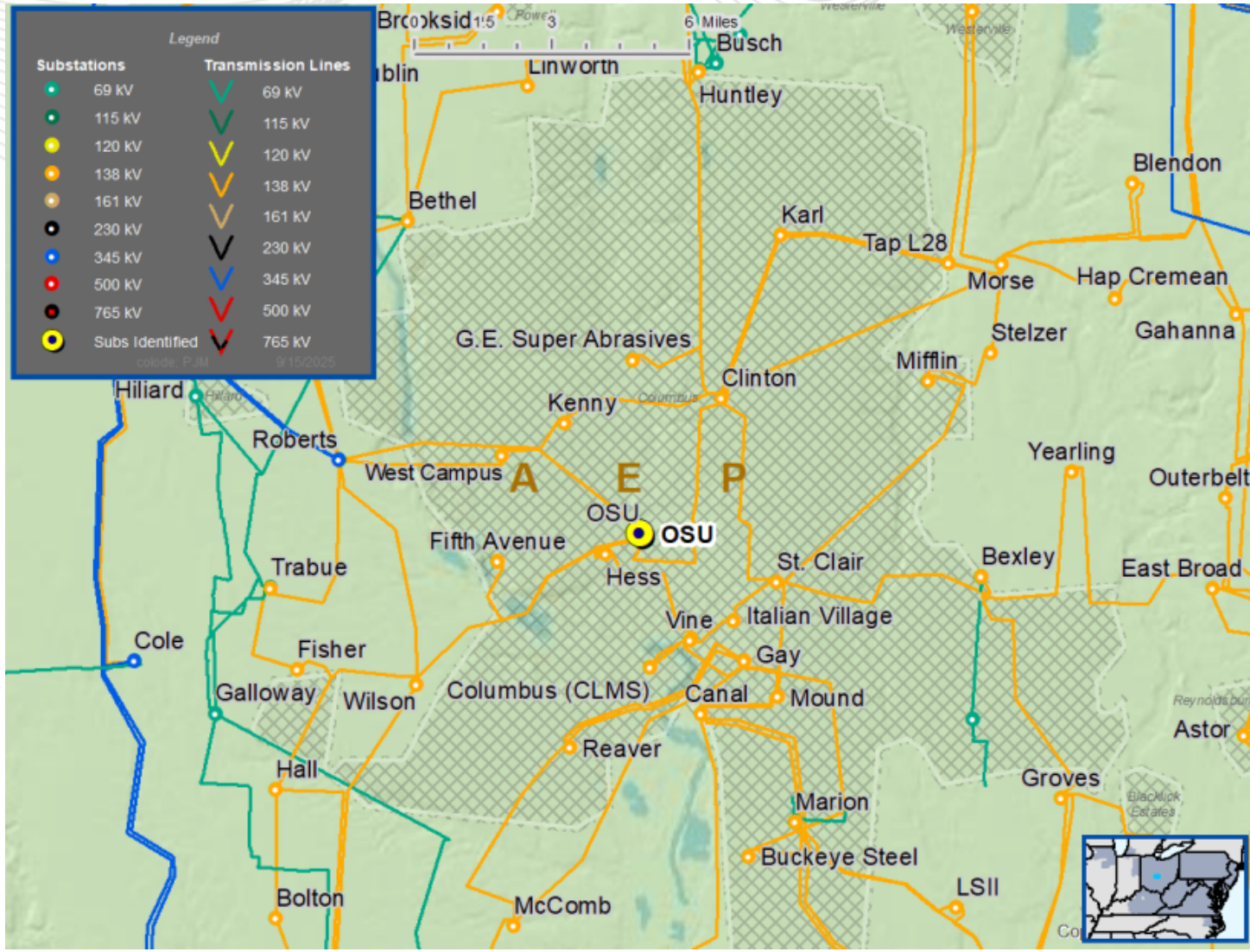
Proposed Solution:
Replace the 3 overdutied OSU 138 kV circuit breakers “102, 103, XT4" with 63 kVA circuit breakers.

Estimated Cost: $2.9M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
OSU 138 kV circuit breakers “102, 103, XT4”	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
Roberts 138 kV Breakers “CB-H014F2 and CB-H014F5” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

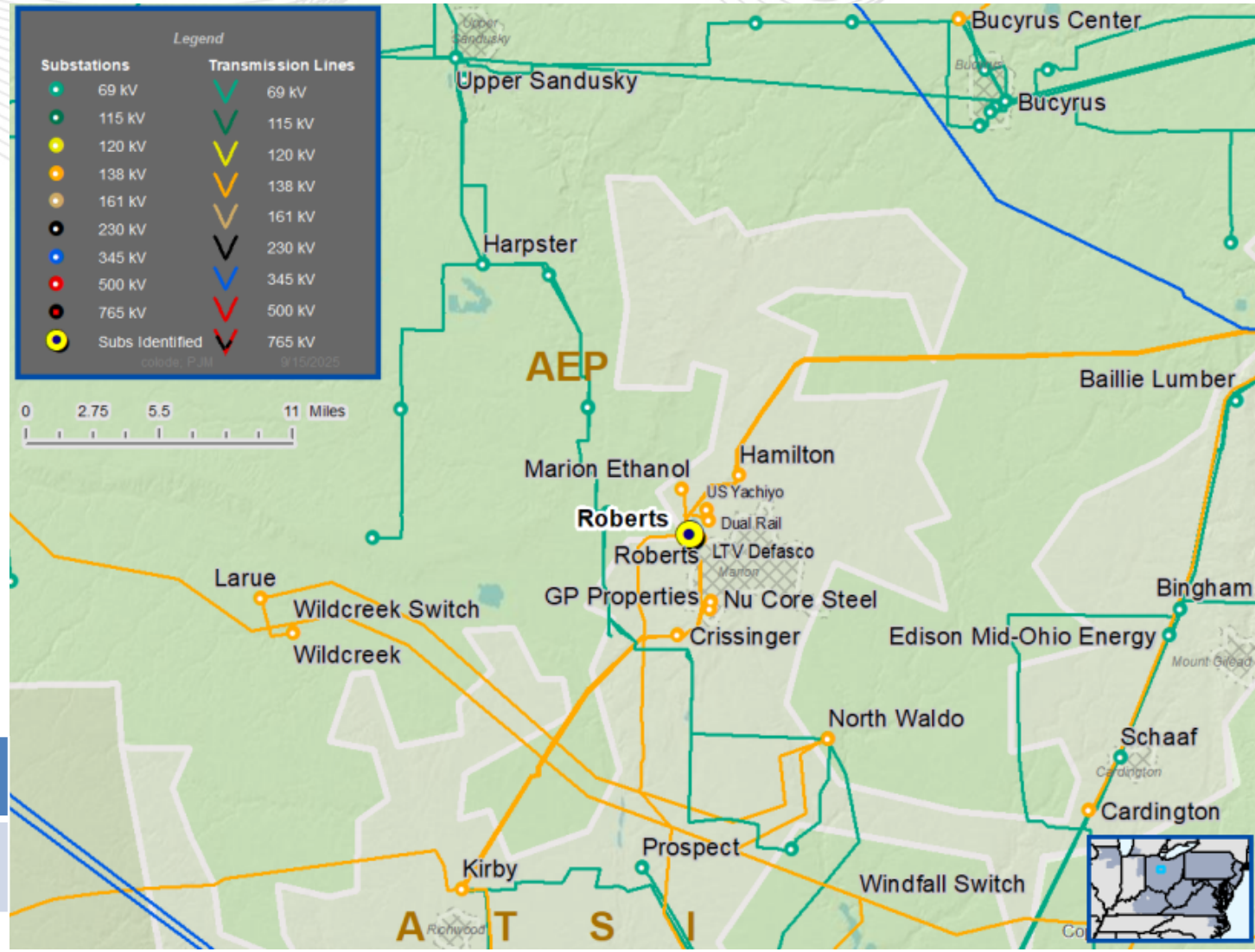
Problem Statement:

2025-W1-SC-18, SC-19

In the 2030 RTEP Short Circuit base case, the 2 Roberts 138 kV breakers “CB-H014F2 and CB-H014F5” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Roberts–138 kV breakers “CB-H014F2 and CB-H014F5”	45



AEP Transmission Zone: Baseline
Roberts 138 kV Breakers “CB-H014F2 and CB-H014F5” Replacement

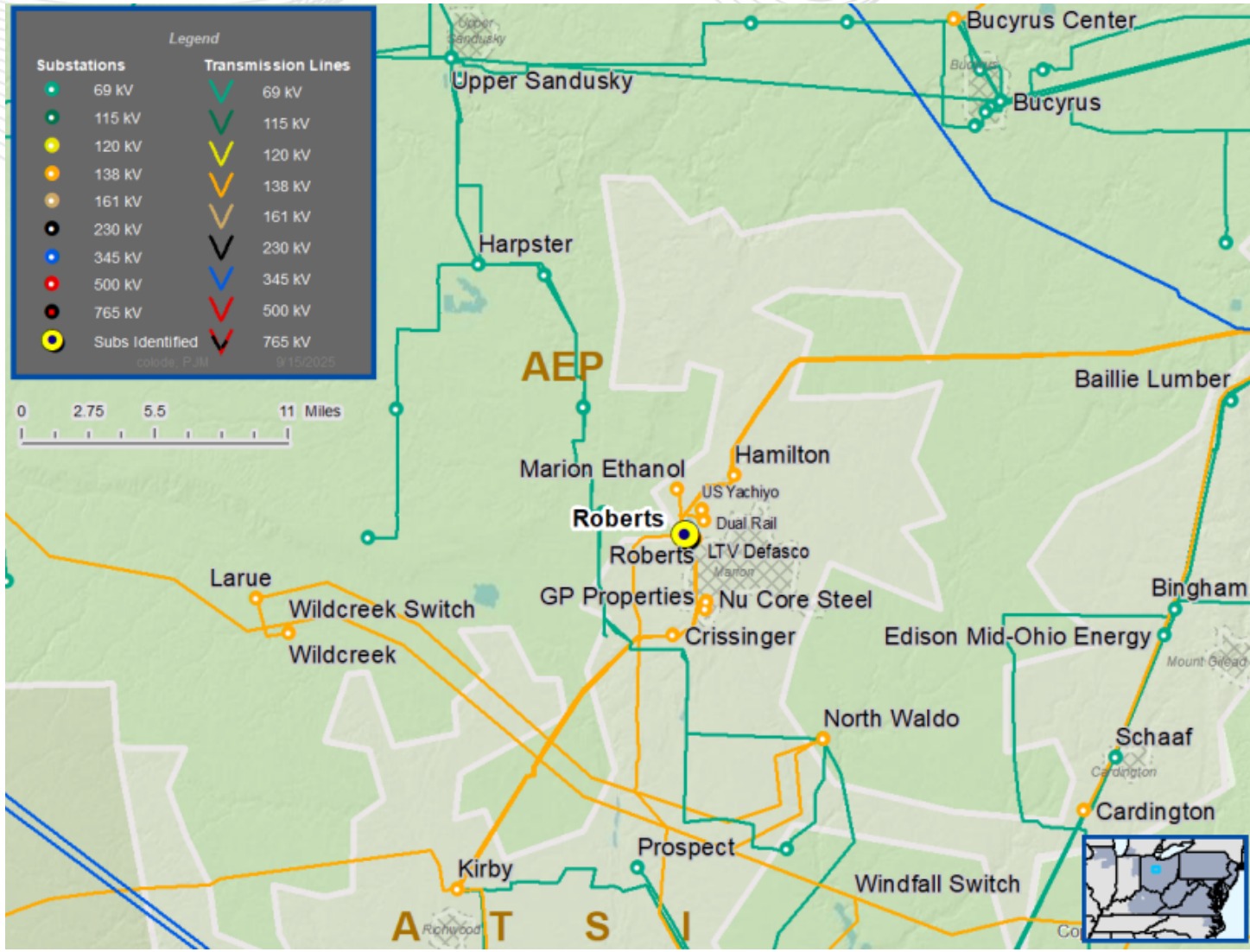
Proposed Solution:
Replace the 2 overdutied Roberts 138 kV circuit breakers “CB-H014F2 and CB-H014F5" with 63 kVA circuit breakers.

Estimated Cost: $0.85M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Roberts 138 kV circuit breakers “CB-H014F2 and CB-H014F5"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
Tidd 138 kV Breaker "DD" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

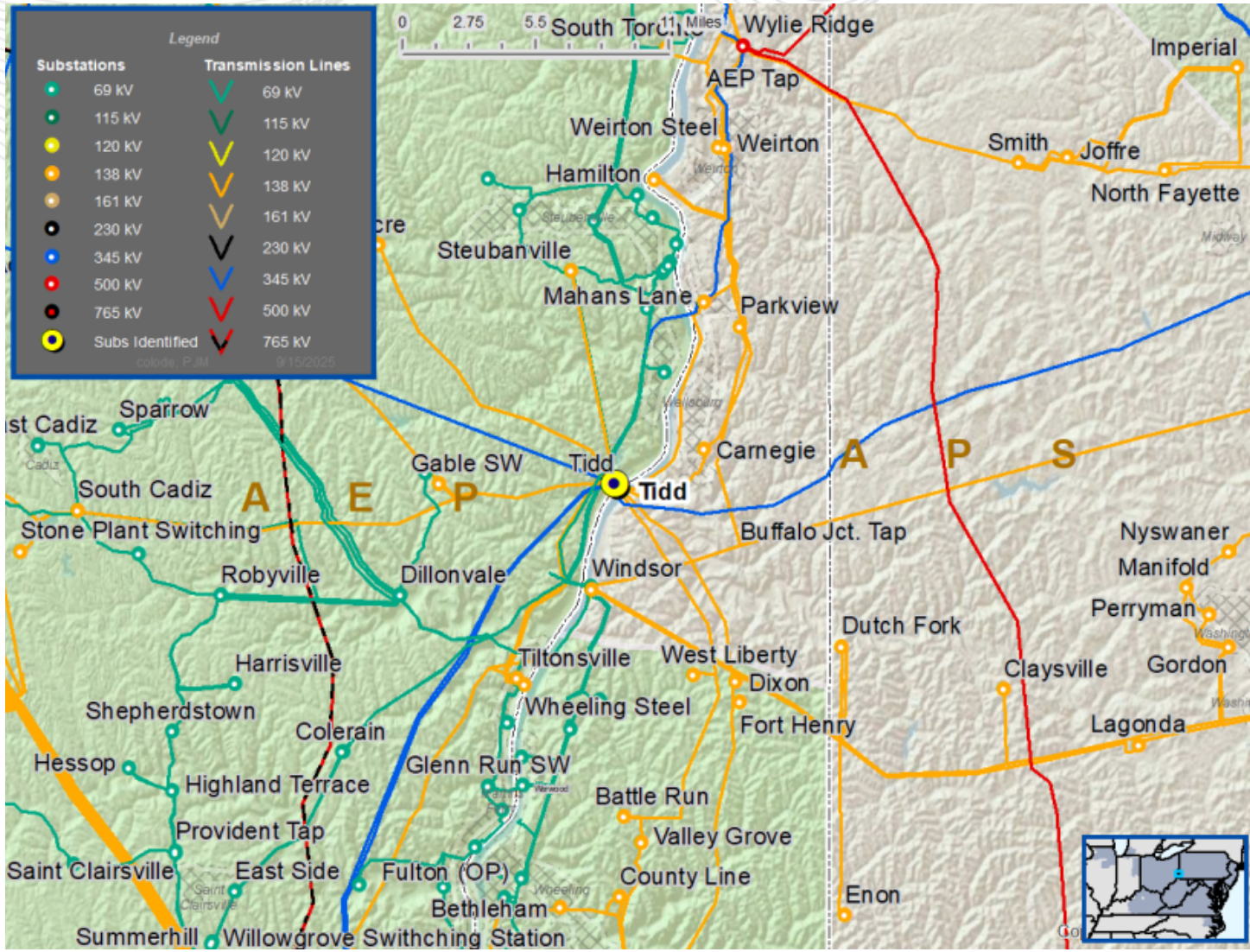
Problem Statement:

2025-W1-SC-20

In the 2030 RTEP Short Circuit base case, the Tidd 138 kV breaker "DD" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Tidd 138 kV breaker "DD"	40



AEP Transmission Zone: Baseline
Tidd 138 kV Breaker "DD" Replacement

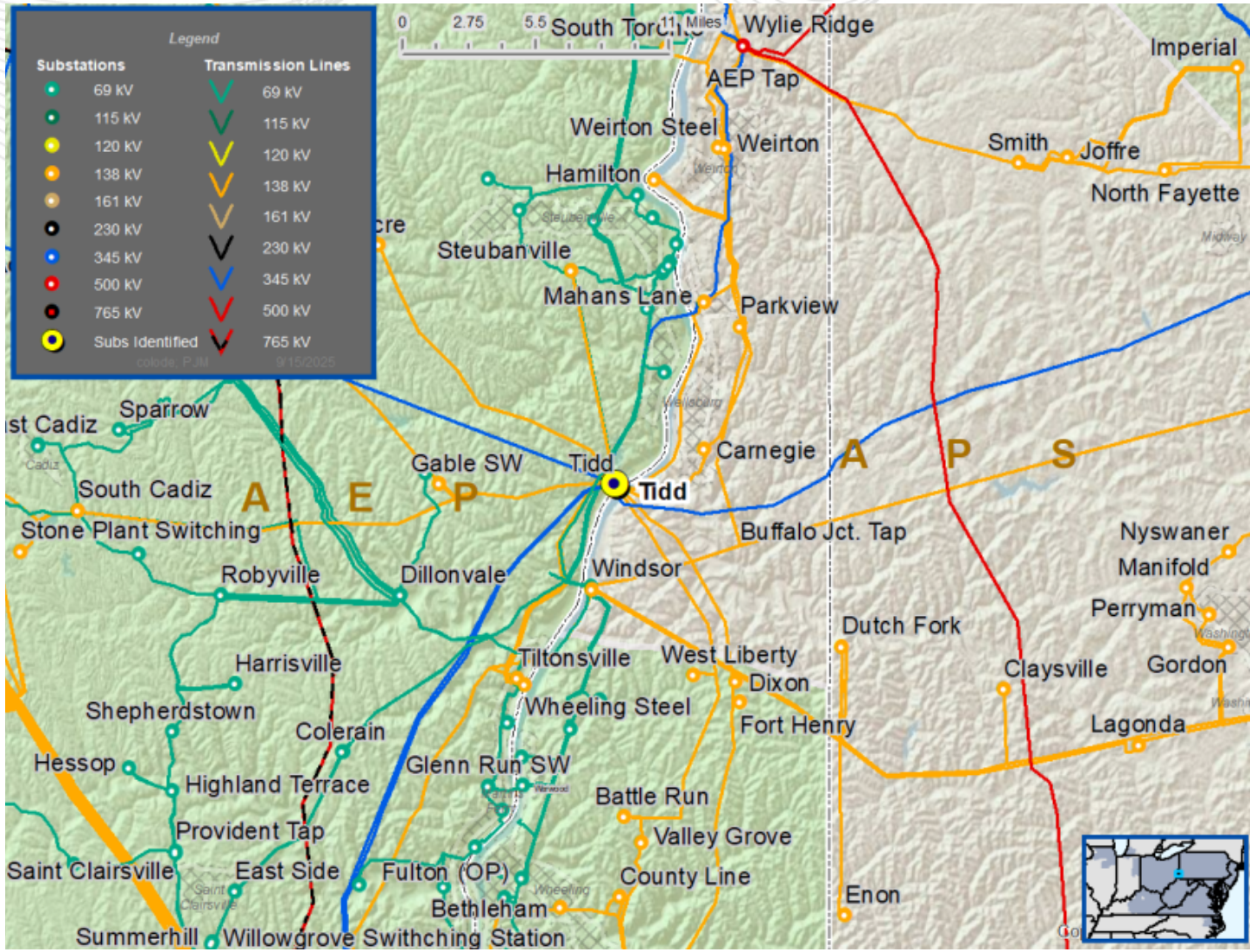
Proposed Solution:
Replace the overdutied Tidd 138 kV circuit breaker "DD" with a 63 kA circuit breaker.

Estimated Cost: $0.773M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Tidd 138 kV breaker "DD"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



APS Transmission Zone: Baseline
Ringgold 138 kV Breaker “138 BUS TIE” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

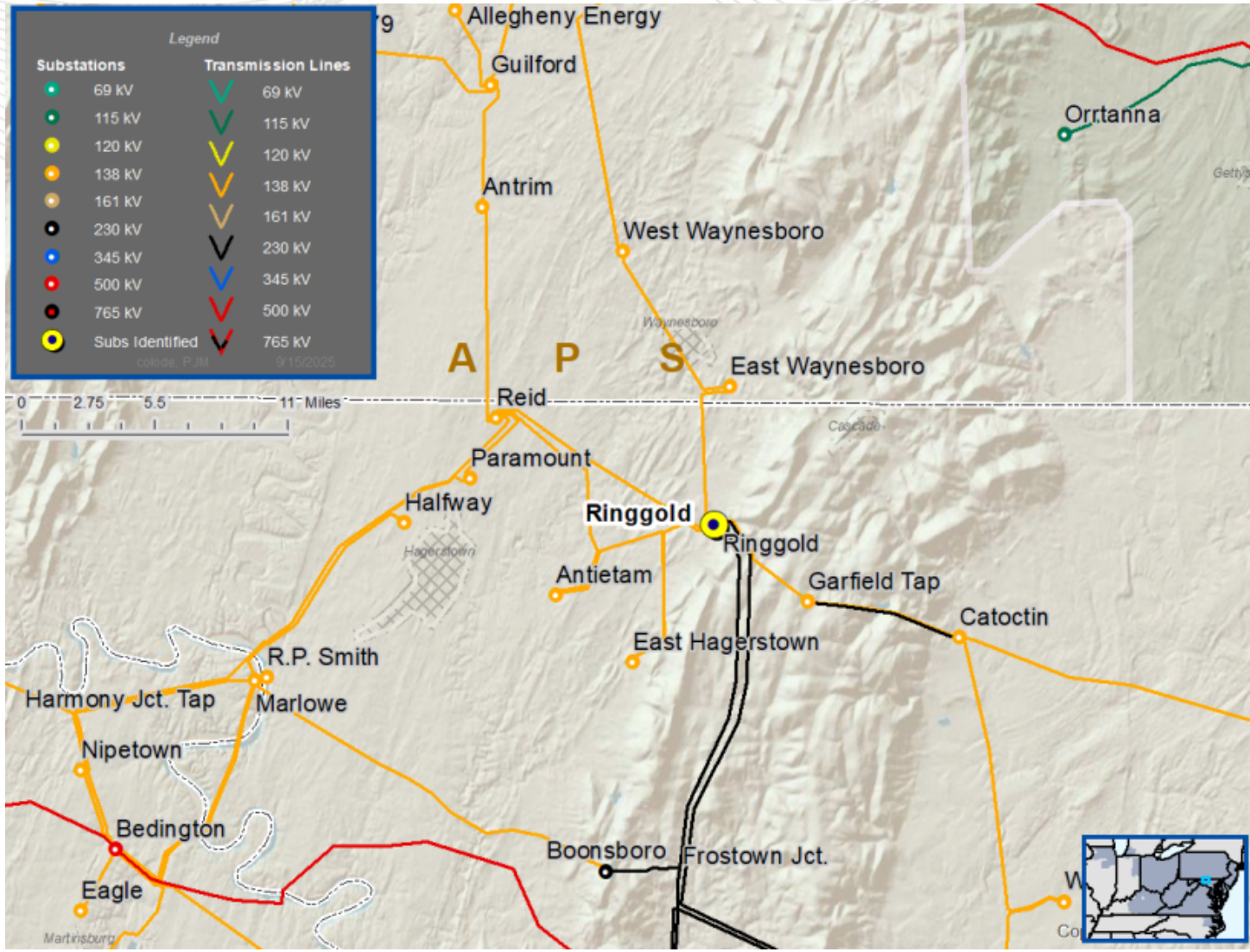
Problem Statement:

2025-W1-SC-77

In the 2030 RTEP Short Circuit base case, the Ringgold 138 kV breaker “138 BUS TIE” is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Ringgold 138 kV breaker “138 BUS TIE”	20.7



APS Transmission Zone: Baseline
Ringgold 138 kV Breaker “138 BUS TIE” Replacement

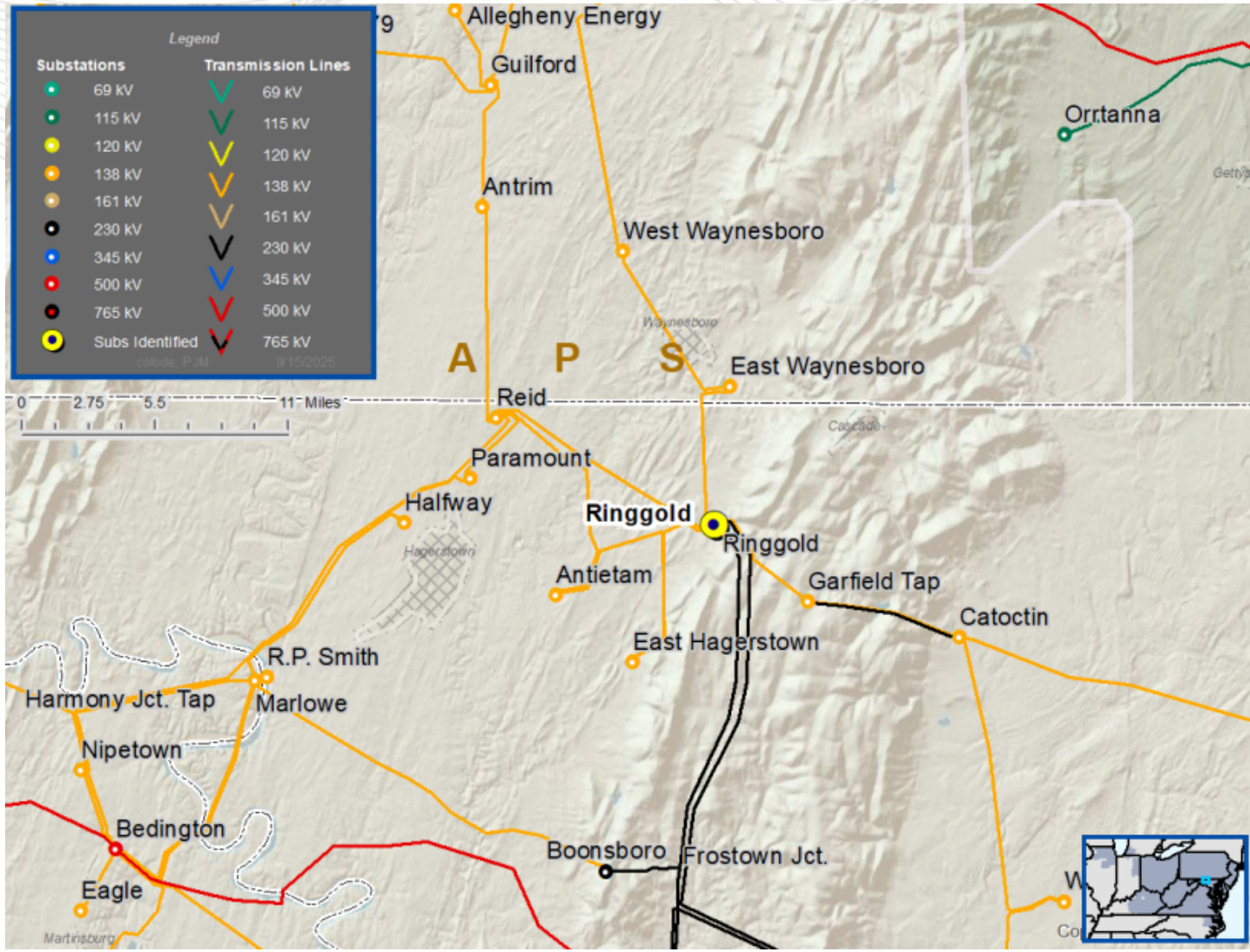
Proposed Solution:
Replace the overdutied Ringgold 138 kV circuit breaker “138 BUS TIE" with a 40 kA circuit breaker.

Estimated Cost: $0.957M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Ringgold 138 kV breaker “138 BUS TIE”	40

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



APS Transmission Zone: Baseline
Belmont 138 kV Breaker "B-8" Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

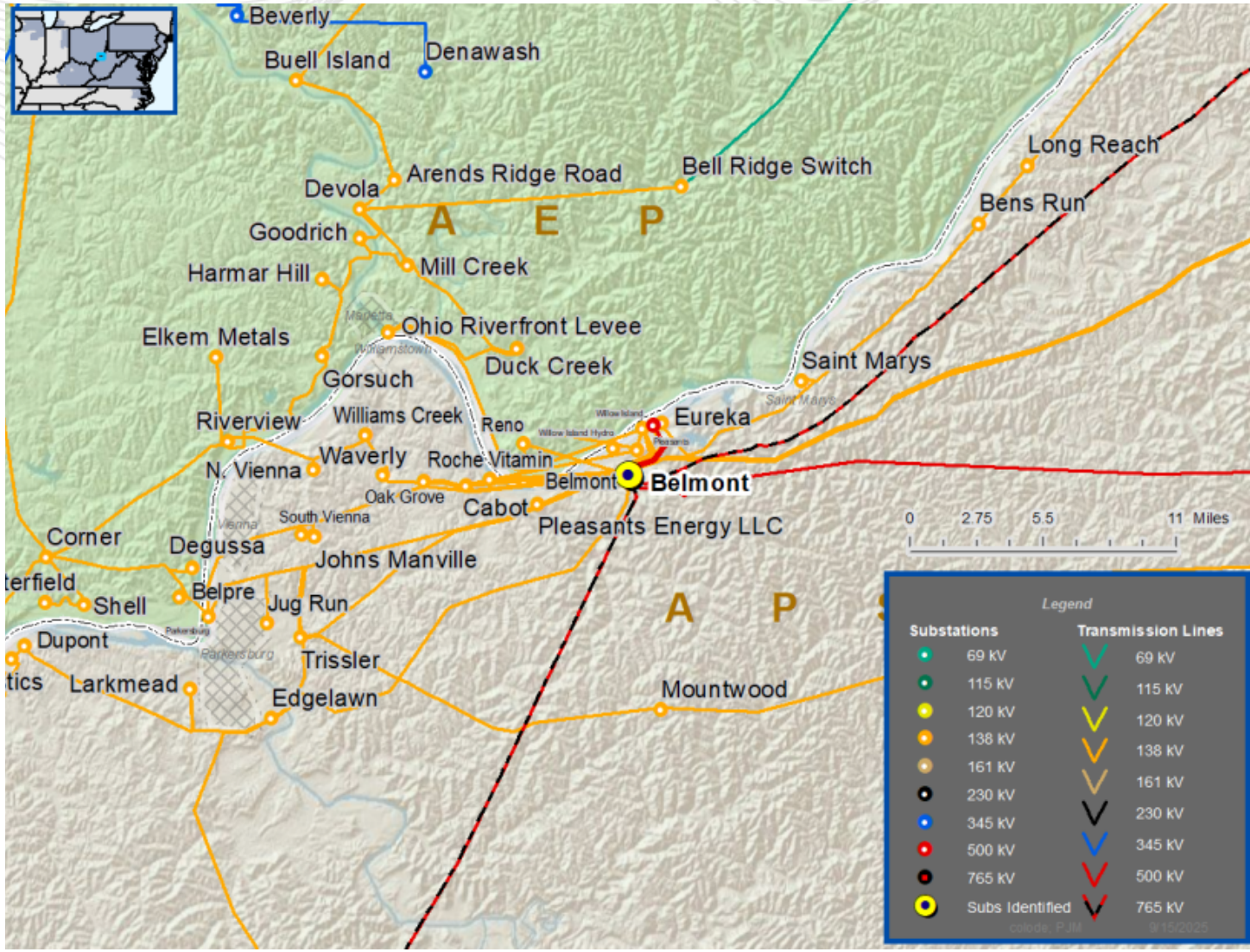
Problem Statement:

2025-W1-SC-78

In the 2030 RTEP Short Circuit base case, the Belmont 138 kV breaker "B-8" is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Belmont 138 kV breaker "B-8"	40



APS Transmission Zone: Baseline
Belmont 138 kV Breaker "B-8" Replacement

Proposed Solution: Proposal #2025_W1-216

1) Replace the overdutied Belmont 138 kV circuit breaker "B-8" with a 63 kA circuit breaker.

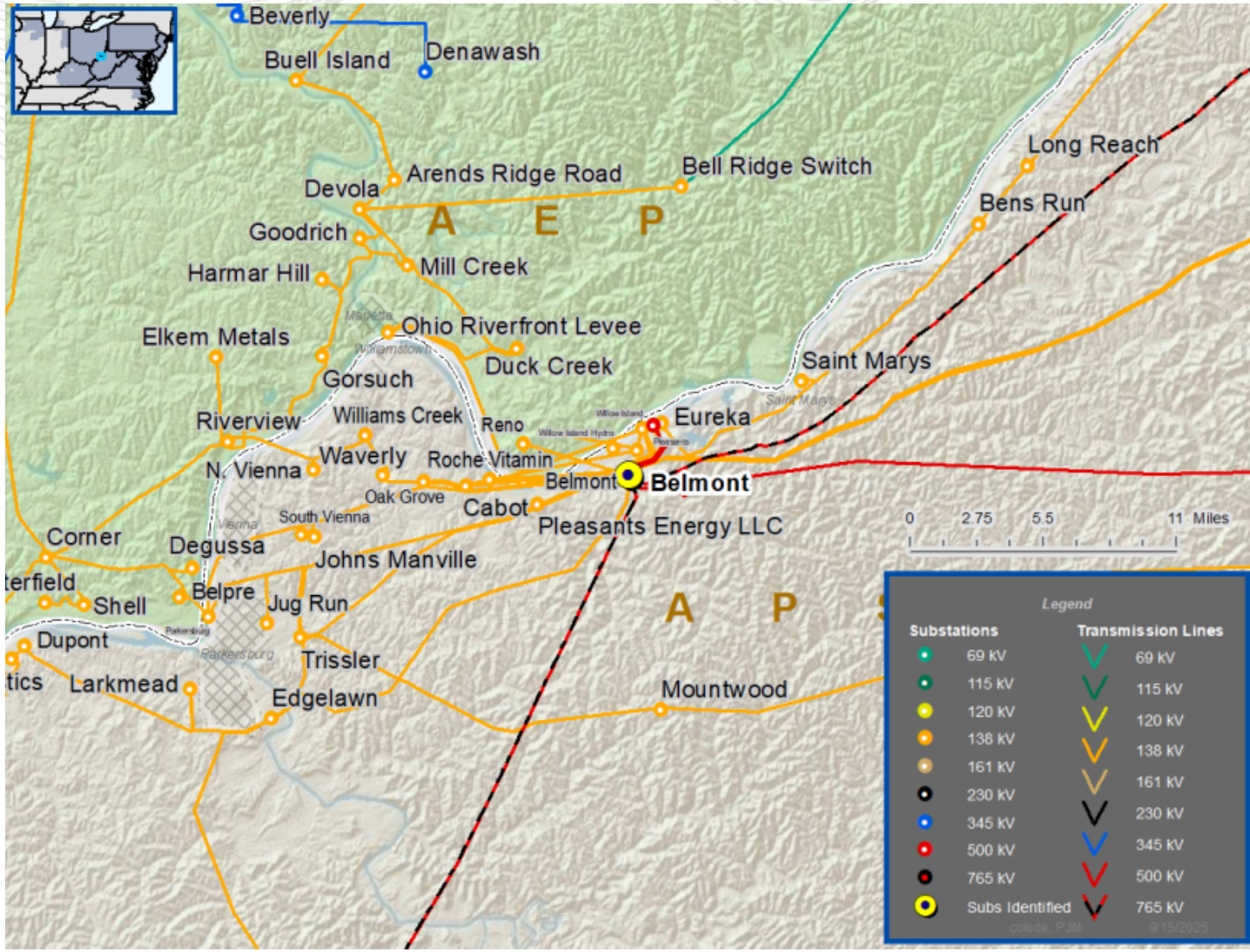
.

Estimated Cost: $0.957M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Belmont 138 kV breaker "B-8"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline
Avon 138 kV Breakers “4-B-107 and 4-B-84” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

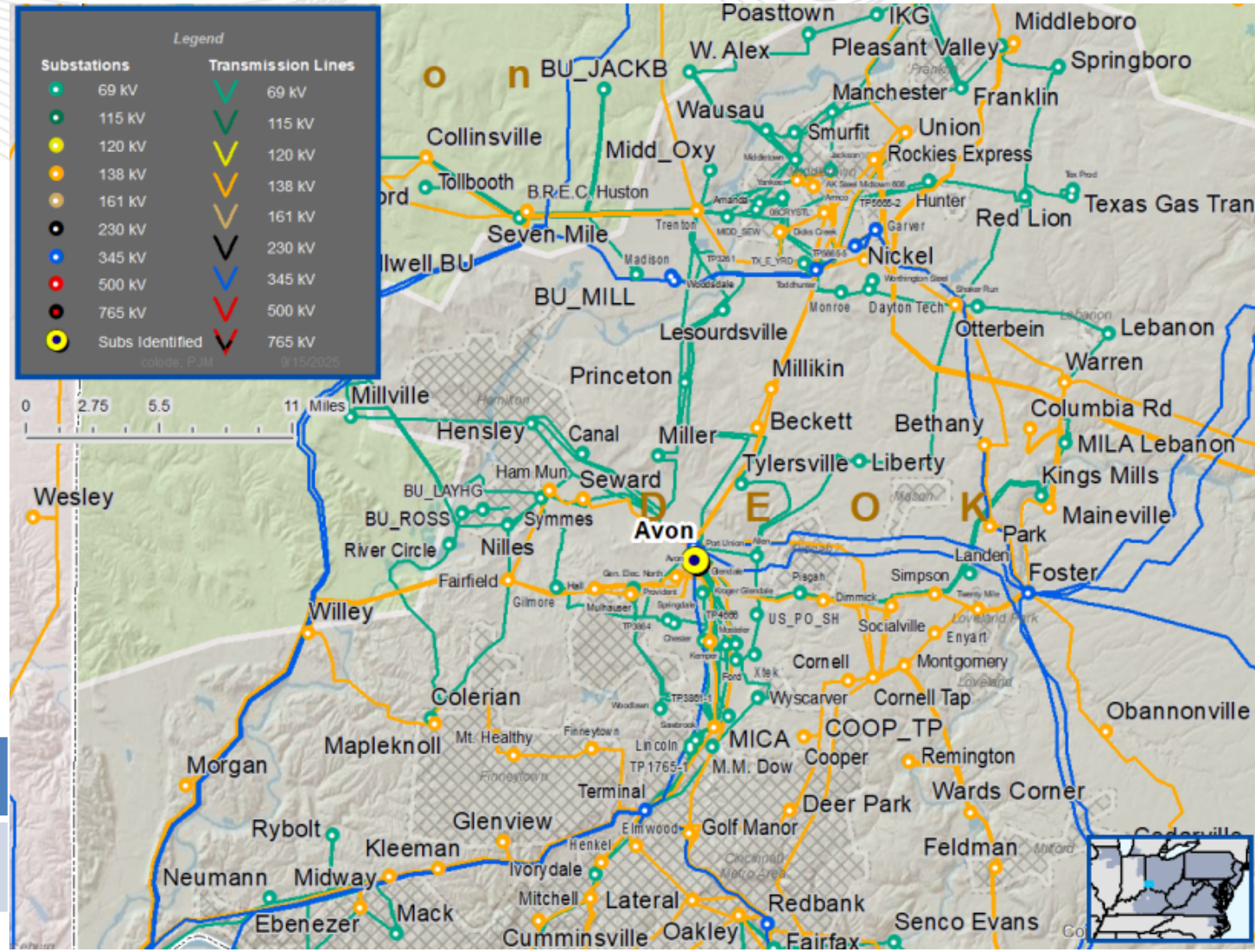
Problem Statement:

2025-W1-SC-79, SC-81

In the 2030 RTEP Short Circuit base case, the 2 Avon 138 kV breakers “4-B-107 and 4-B-84” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Avon–138 kV breakers “4-B-107 and 4-B-84”	40



ATSI Transmission Zone: Baseline
Avon 138 kV Breakers “4-B-107 and 4-B-84” Replacement

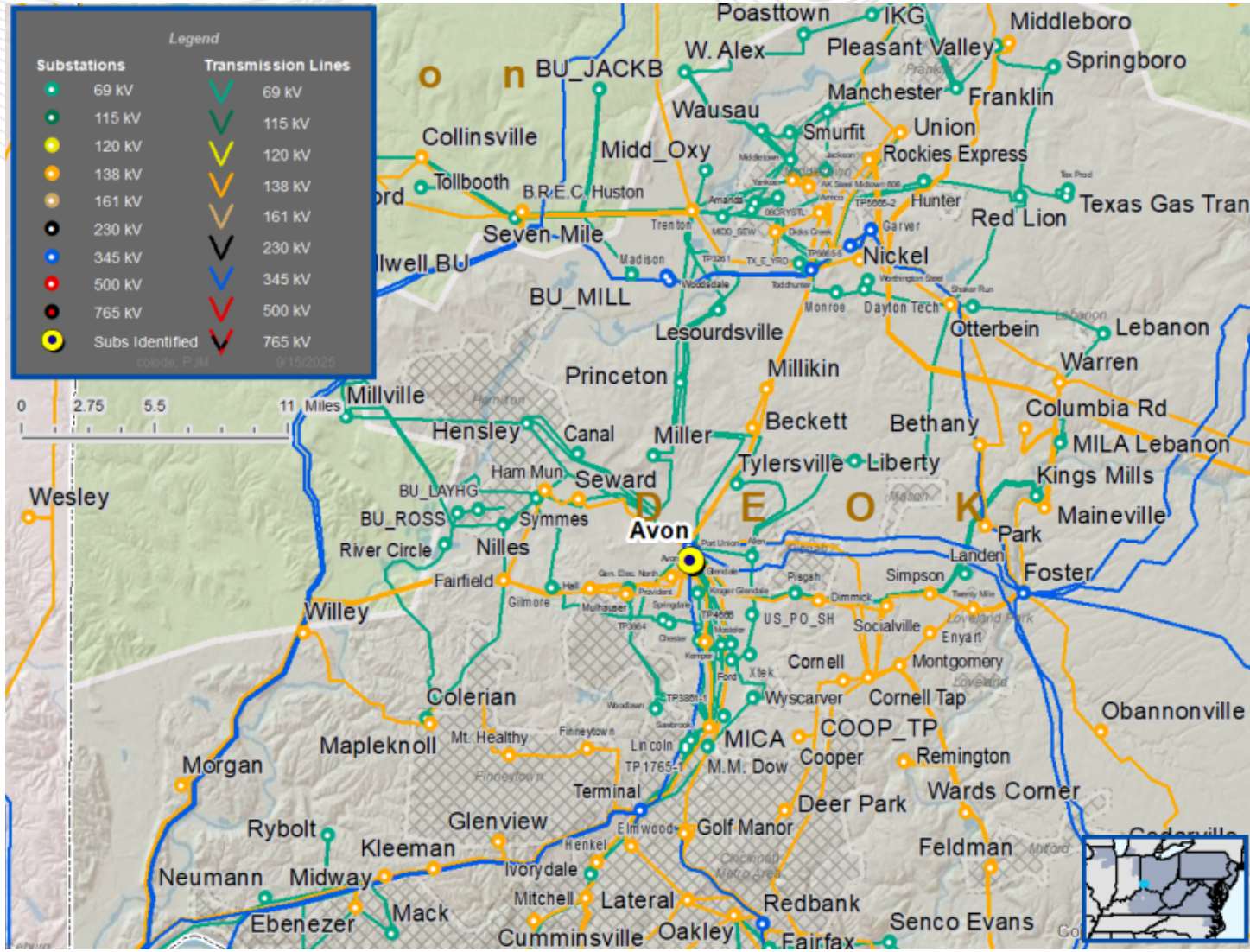
Proposed Solution:
Replace the 2 overdutied Avon 138 kV circuit breakers “4-B-107 and 4-B-84" with 63 kVA circuit breakers.

Estimated Cost: $1.92M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Avon 138 kV circuit breakers “4-B-107 and 4-B-84"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline
Eastlake 138 kV Breaker Replacements – 12 breakers

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

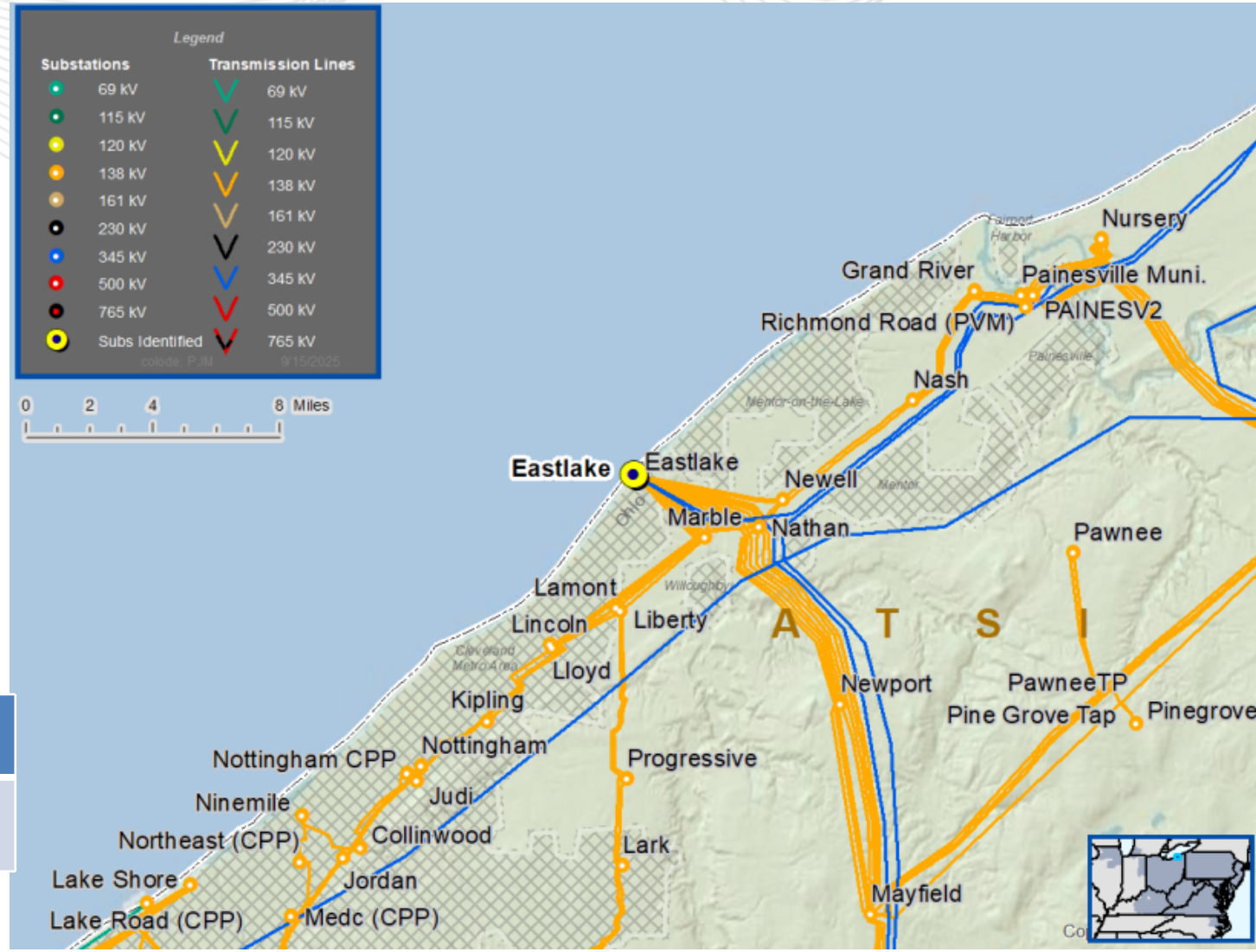
Problem Statement:

2025-W1-SC-79,-82,-83,-84,-85,-86,-87,-88,-89,-90,-91,-92

In the 2030 RTEP Short Circuit base case, the 12 Eastlake 138 kV breakers “46-B-18, -21, -24,-35, -36, -32, -33, -27,-45, -54, -97, (795)” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Eastlake–138 kV breakers “46-B-18, -21, -24,-35, -36, -32, -33, -27,-45, -54, -97, (795)”	56 and 63



ATSI Transmission Zone: Baseline
Eastlake 138 kV Breaker Replacements – 12 breakers

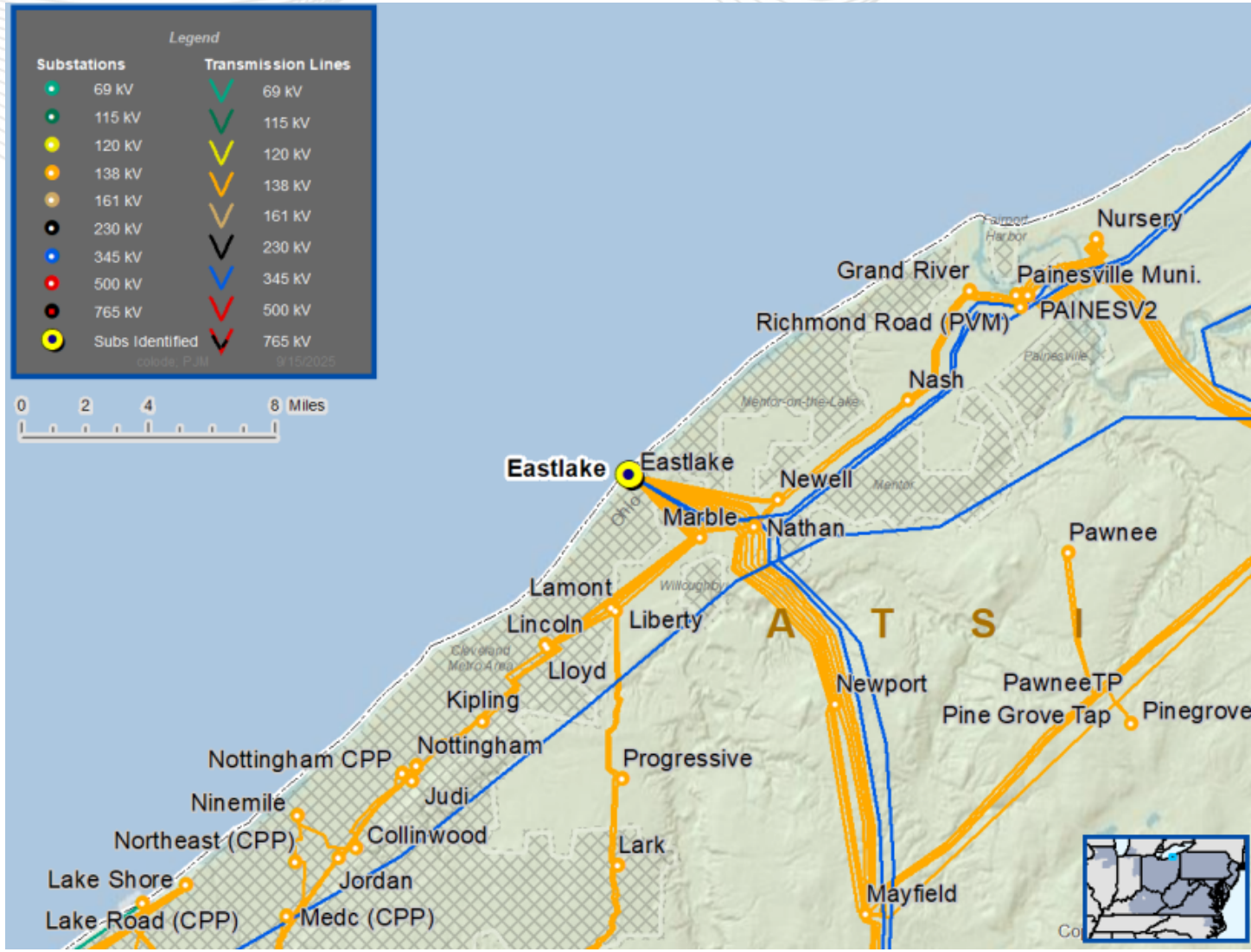
Proposed Solution:
Replace the 12 overdutied Eastlake 138 kV circuit breakers “46-B-18, -21, -24,-35, -36, -32, -33, -27,-45, -54, -97, (795)” with 80 kA circuit breakers.

Estimated Cost: $11.48M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Eastlake 138 kV circuit breakers “46-B-18, 46-B-21, 46-B-24, 46-B-35, 46-B-36, 46-B-32, 46-B-33, 46-B-27, 46-B-45, 46-B-54, 46-B-97, 46-B(795)”	80

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline
Hoytdale 138 kV Breakers “84-B-14, -18, and -22” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

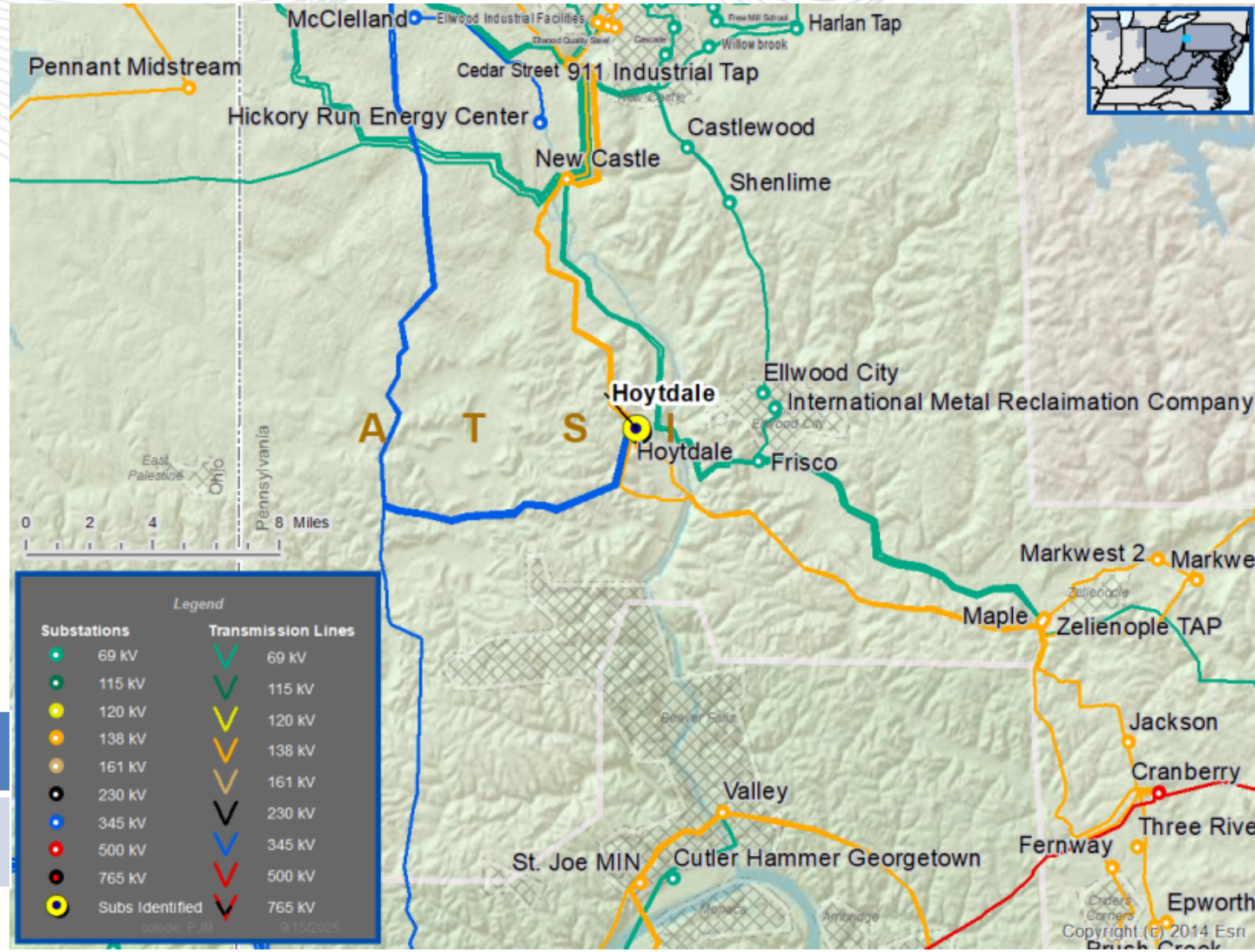
Problem Statement:

2025-W1-SC-94, SC-95, SC-96

In the 2030 RTEP Short Circuit base case, the 3 Hoytdale 138 kV breakers “84-B-14, -18, and -22” are identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Hoytdale–138 kV breakers “84-B-14, 84-B-18, and 84-B-22”	40



ATSI Transmission Zone: Baseline
Hoytdale 138 kV Breakers “84-B-14, -18, and -22” Replacement

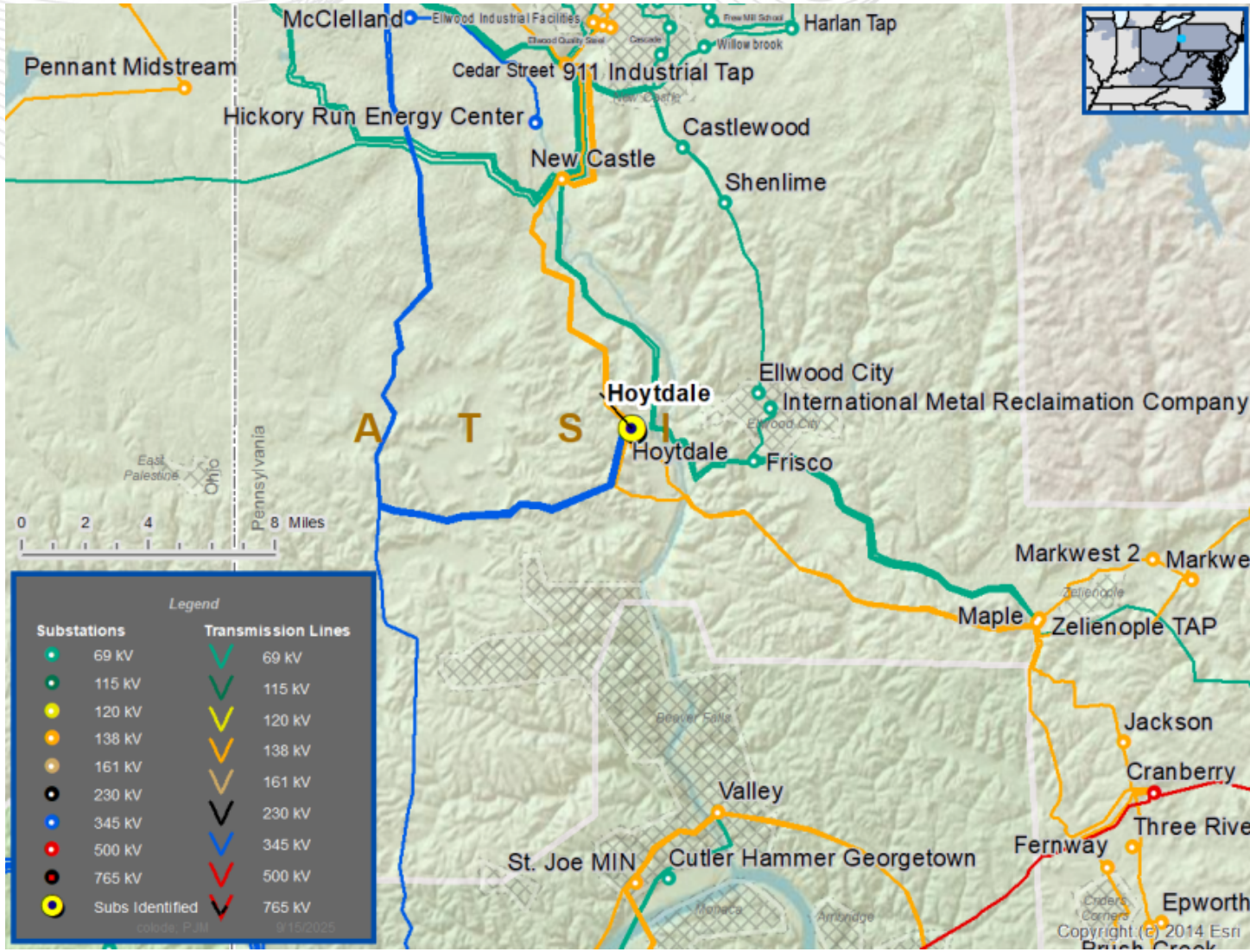
Proposed Solution:
Replace the 3 overdutied Hoytdale 138 kV circuit breakers “84-B-14, -18, and -22” with 63 kA circuit breakers.

Estimated Cost: $2.87M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Hoytdale 138 kV circuit breakers “84-B-14, 84-B-18, and 84-B-22"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline
Johnson 69 kV Breaker “451-B-163” Replacement

Process Stage: First Read

Criteria: Short Circuit

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

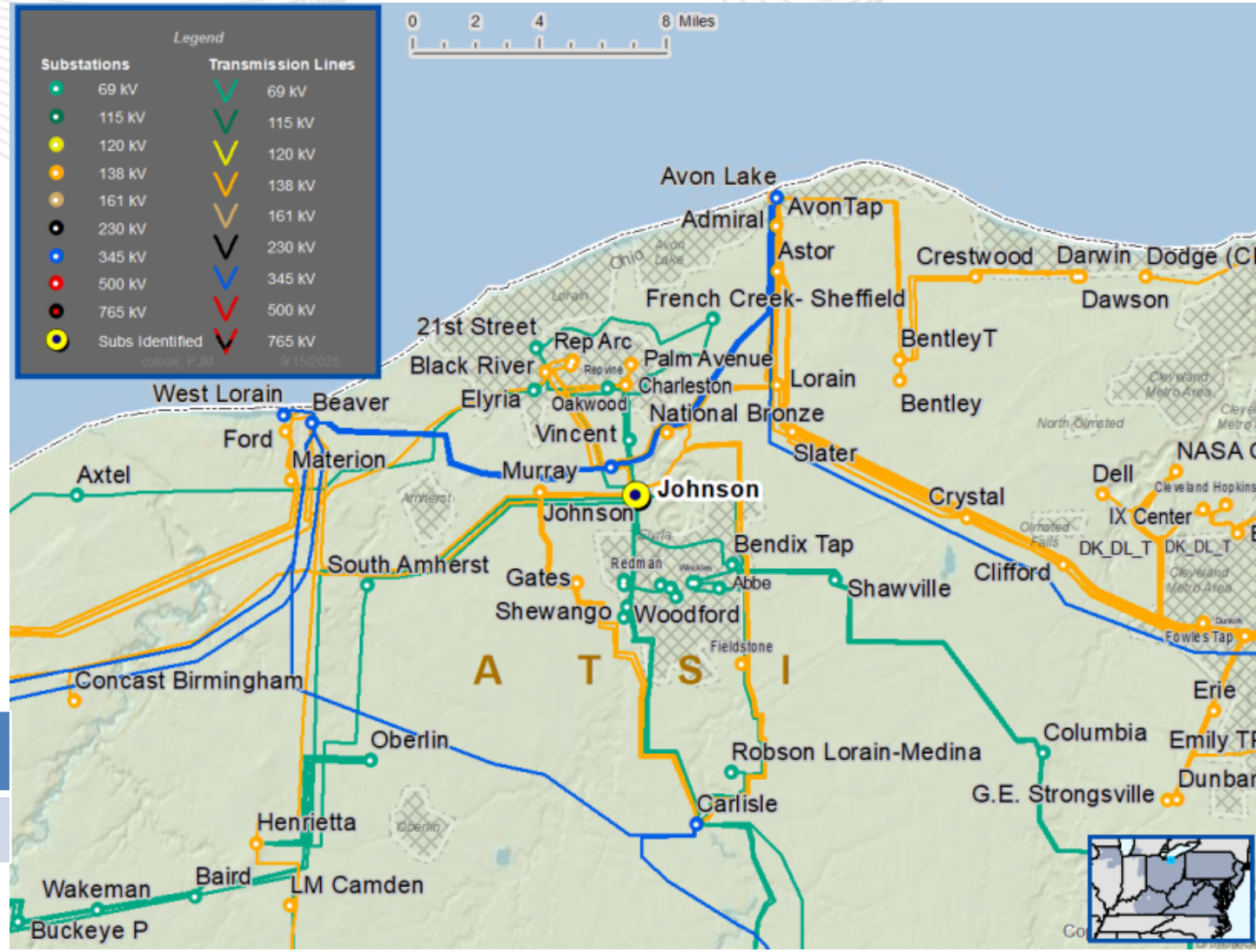
Problem Statement:

2025-W1-SC-97

In the 2030 RTEP Short Circuit base case, the Johnson 69 kV breaker “451-B-163” is identified as overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Johnson–69 kV breakers “451-B-163”	31.5



ATSI Transmission Zone: Baseline
Johnson 69 kV Breaker “451-B-163” Replacement

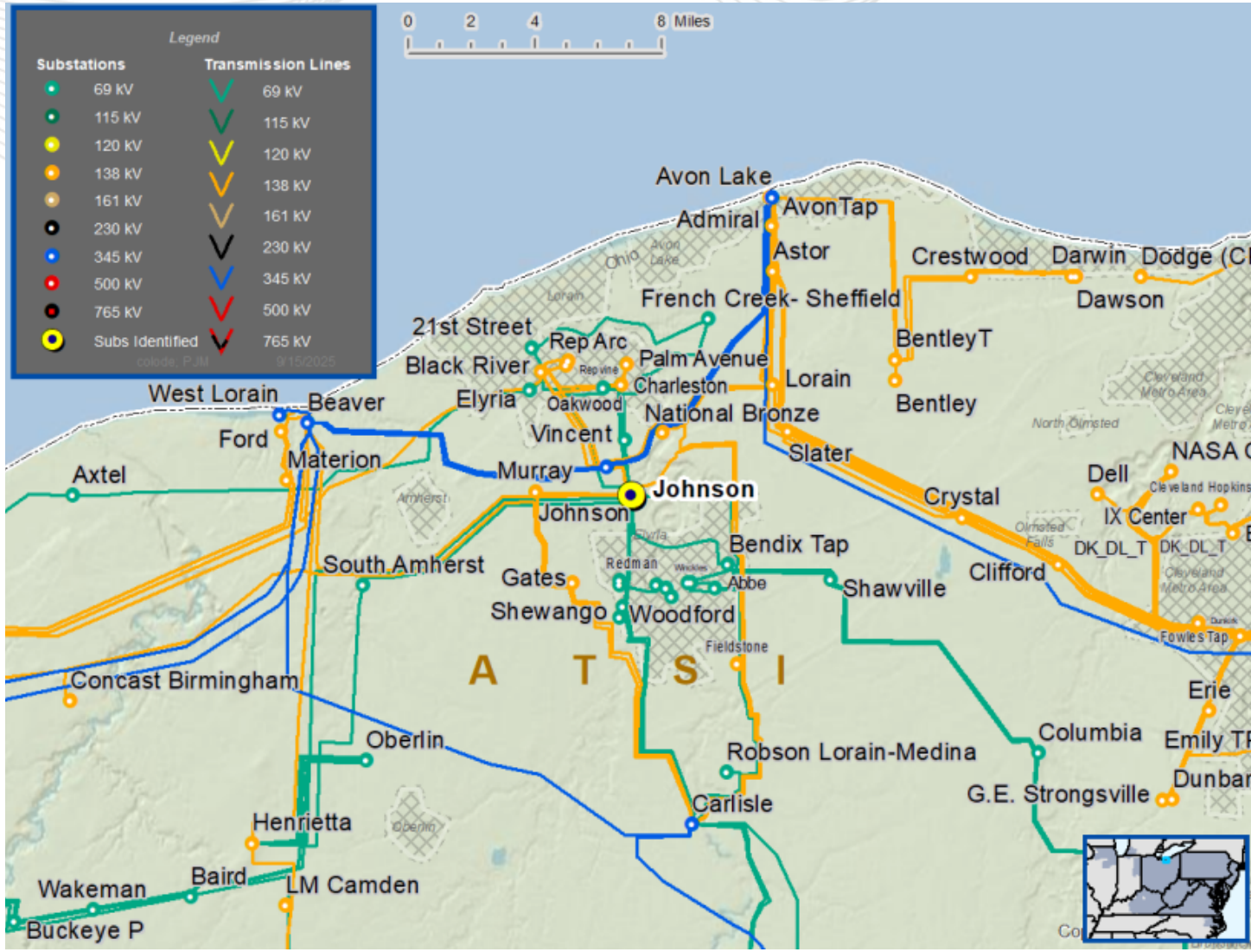
Proposed Solution:
Replace the overdutied Johnson 69 kV circuit breakers “451-B-163” with a 63 kA circuit breaker.

Estimated Cost: $0.957M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
Johnson 69 kV circuit breaker “451-B-163"	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline Cambridge 34.5 kV F CB Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

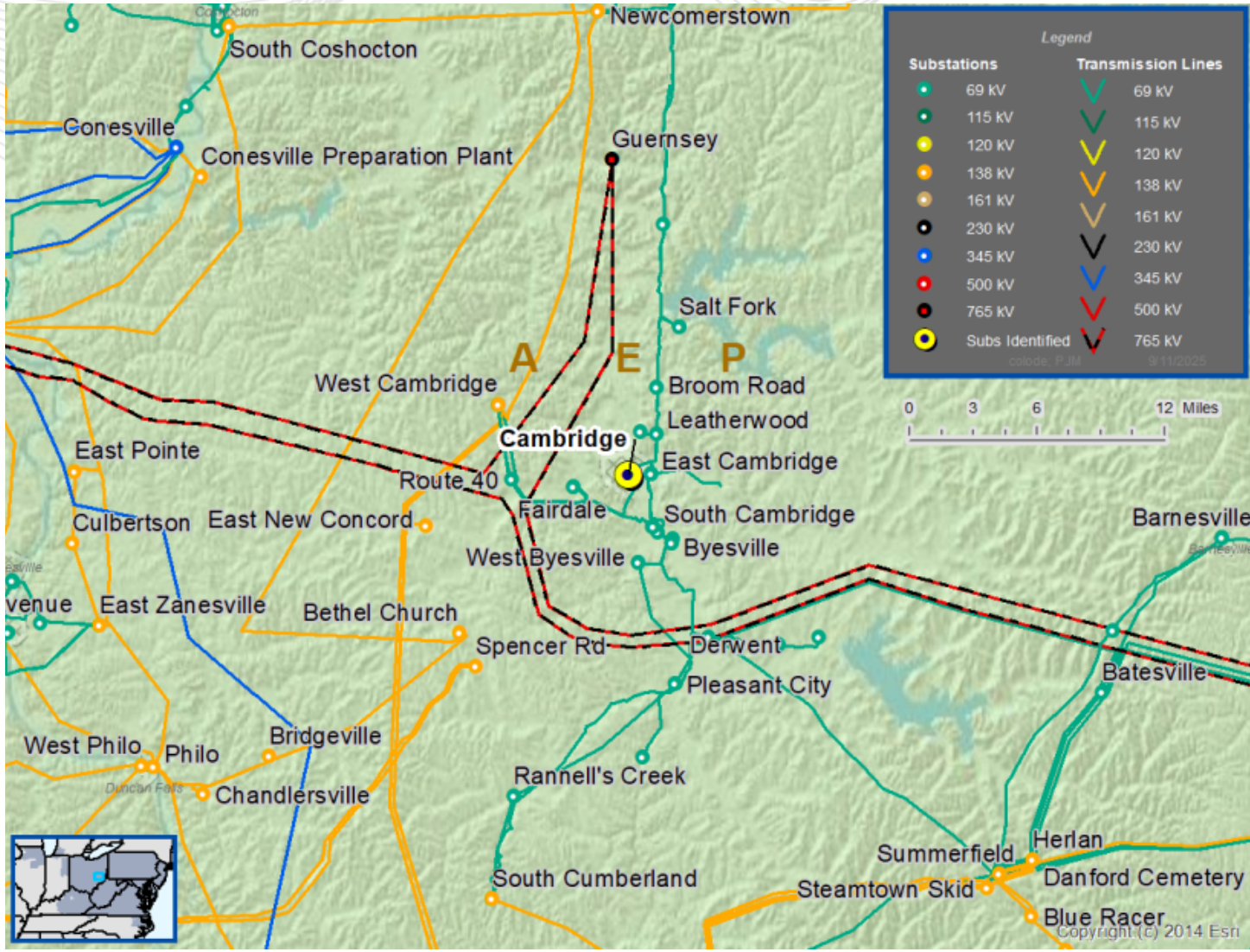
Problem Statement:

2025-W1-AEP-SC3

In the 5-year 2030 RTEP Short Circuit base case, the Cambridge 34.5 kV breaker F is identified under FERC Form 715 as being overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
34.5 kV breaker F	8.4



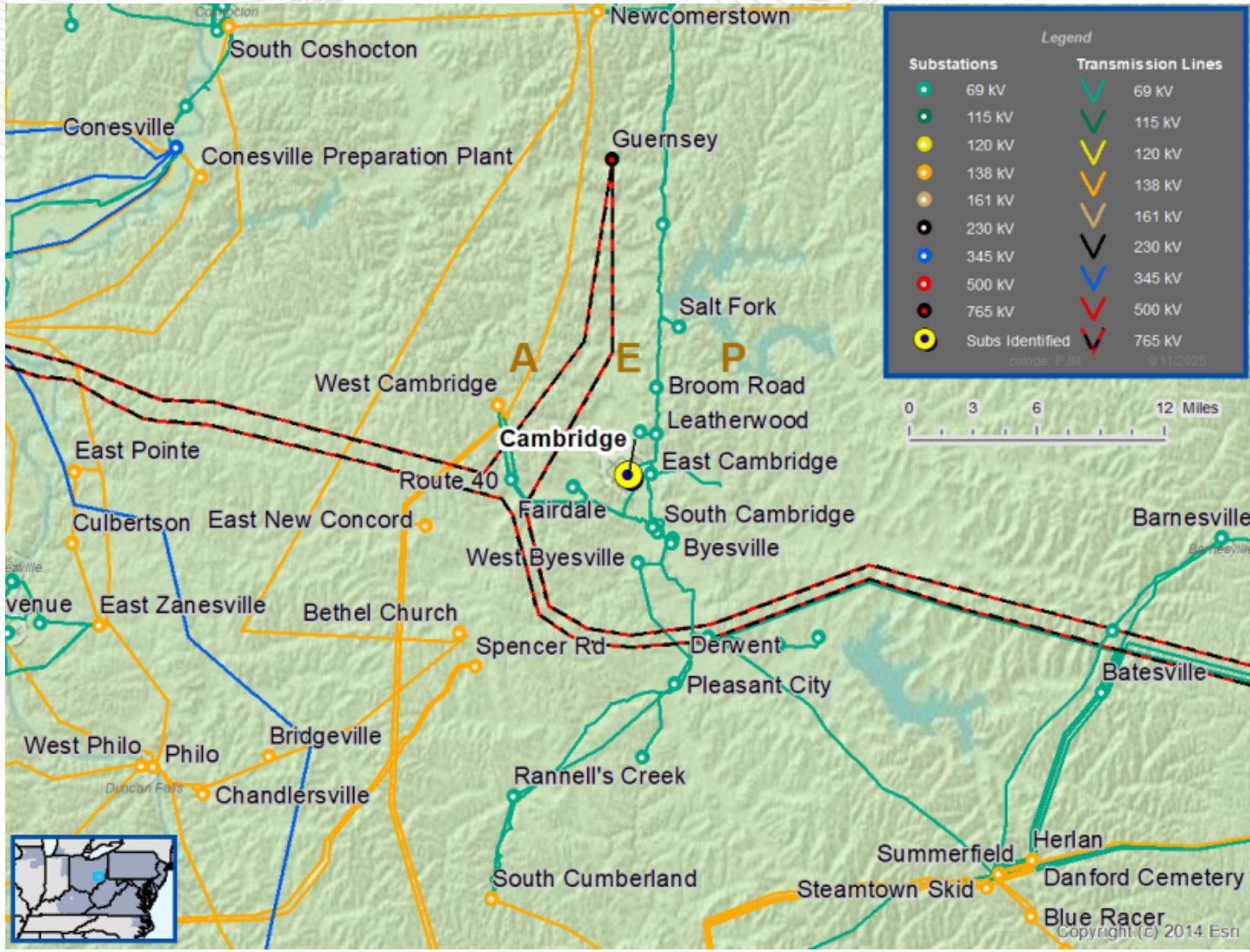
AEP Transmission Zone: Baseline Cambridge 34.5 kV F CB Replacement

Proposed Solution:
Replace overdutied Cambridge 34.5 kV circuit breaker F with an interrupting rating of 40 kA.
Estimated Cost: $0.8M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
34.5 kV breaker F	40

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline
Thomas Road 69 kV XT1 CB Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

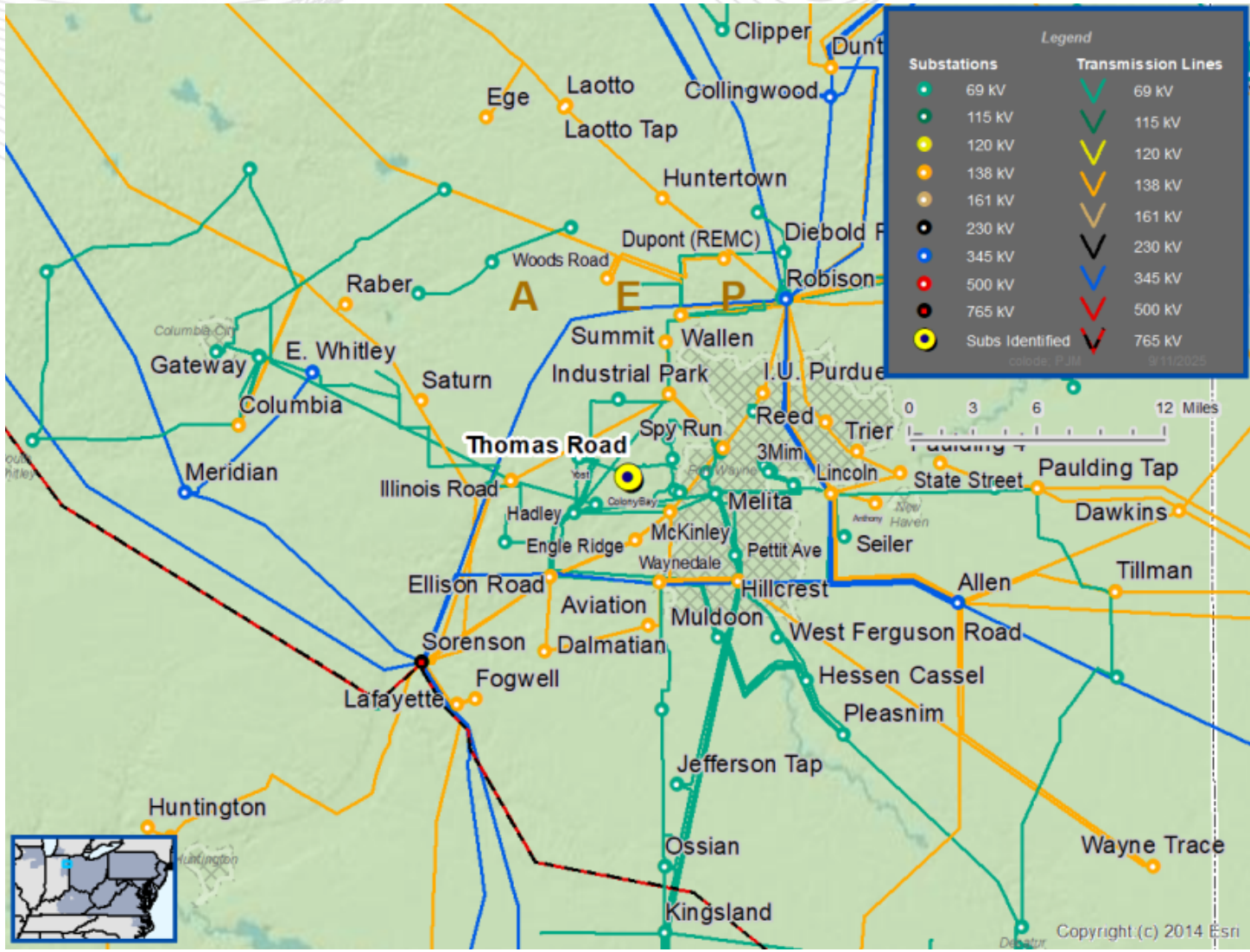
Problem Statement:

2025-W1-AEP-SC2

In the 5-year 2030 RTEP Short Circuit base case, the Thomas Road breaker XT1 is identified under FERC Form 715 as being overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69 kV breaker XT1	25



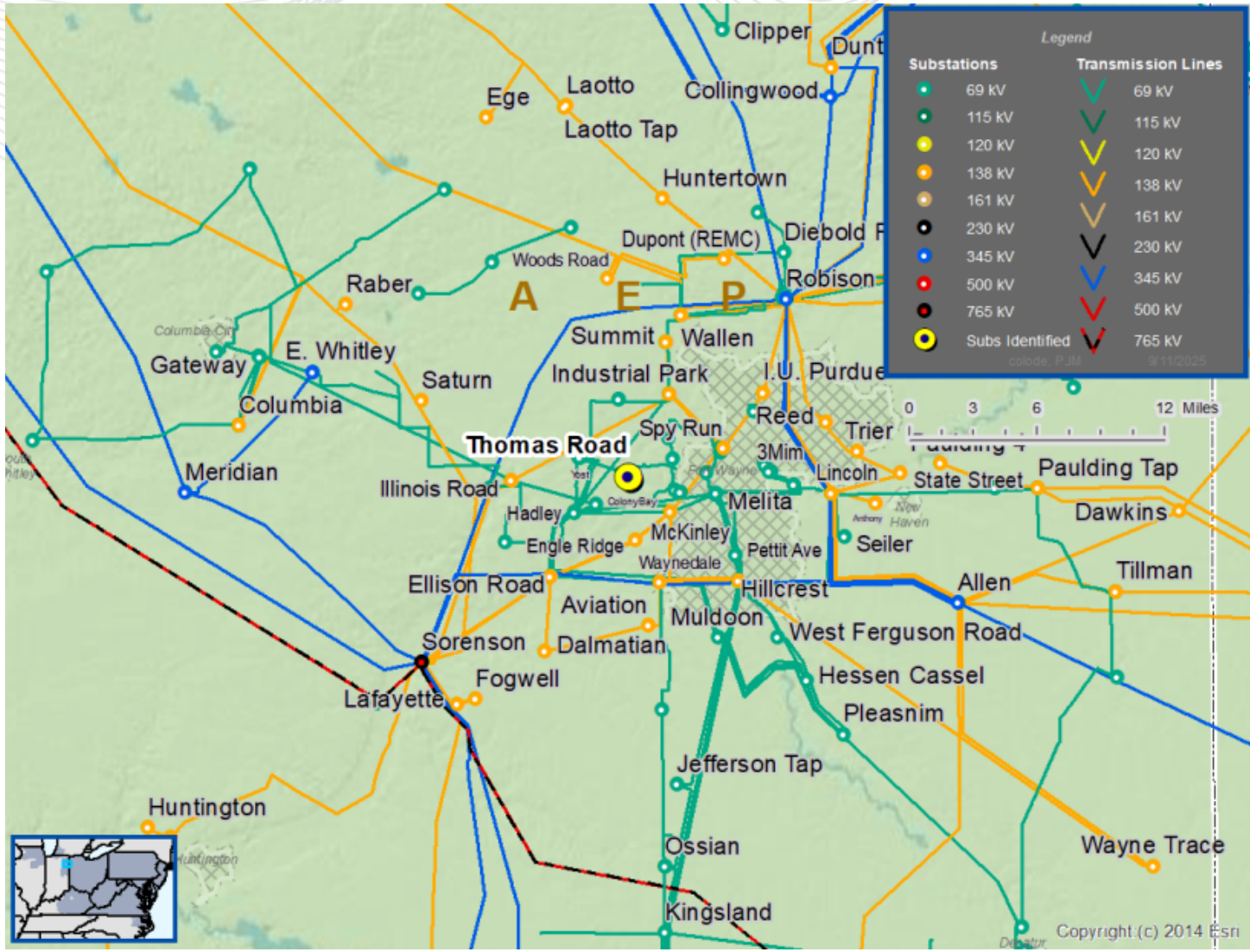
AEP Transmission Zone: Baseline
Thomas Road 69 kV XT1 CB Replacement

Proposed Solution:
Replace overdutied Thomas Road 69 kV circuit breaker XT1 with an interrupting rating of 40 kA.
Estimated Cost: $0.72M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69 kV breaker XT1	40

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



AEP Transmission Zone: Baseline Hazard 69 kV R CB Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

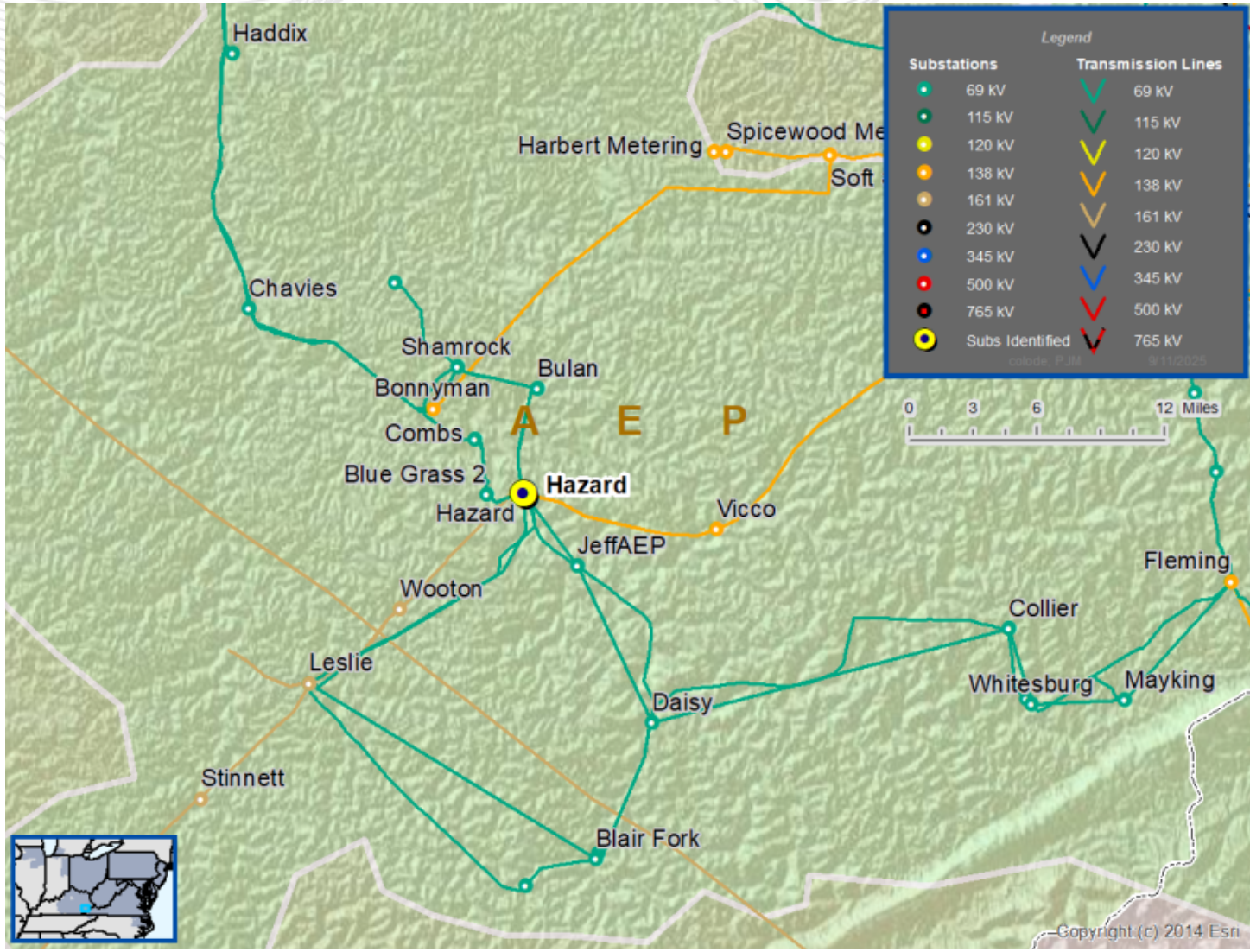
Problem Statement:

2025-W1-AEP-SC1

In the 5-year 2030 RTEP Short Circuit base case, the Hazard 69 kV breaker R is identified under FERC Form 715 as being overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69 kV breaker R	11.3



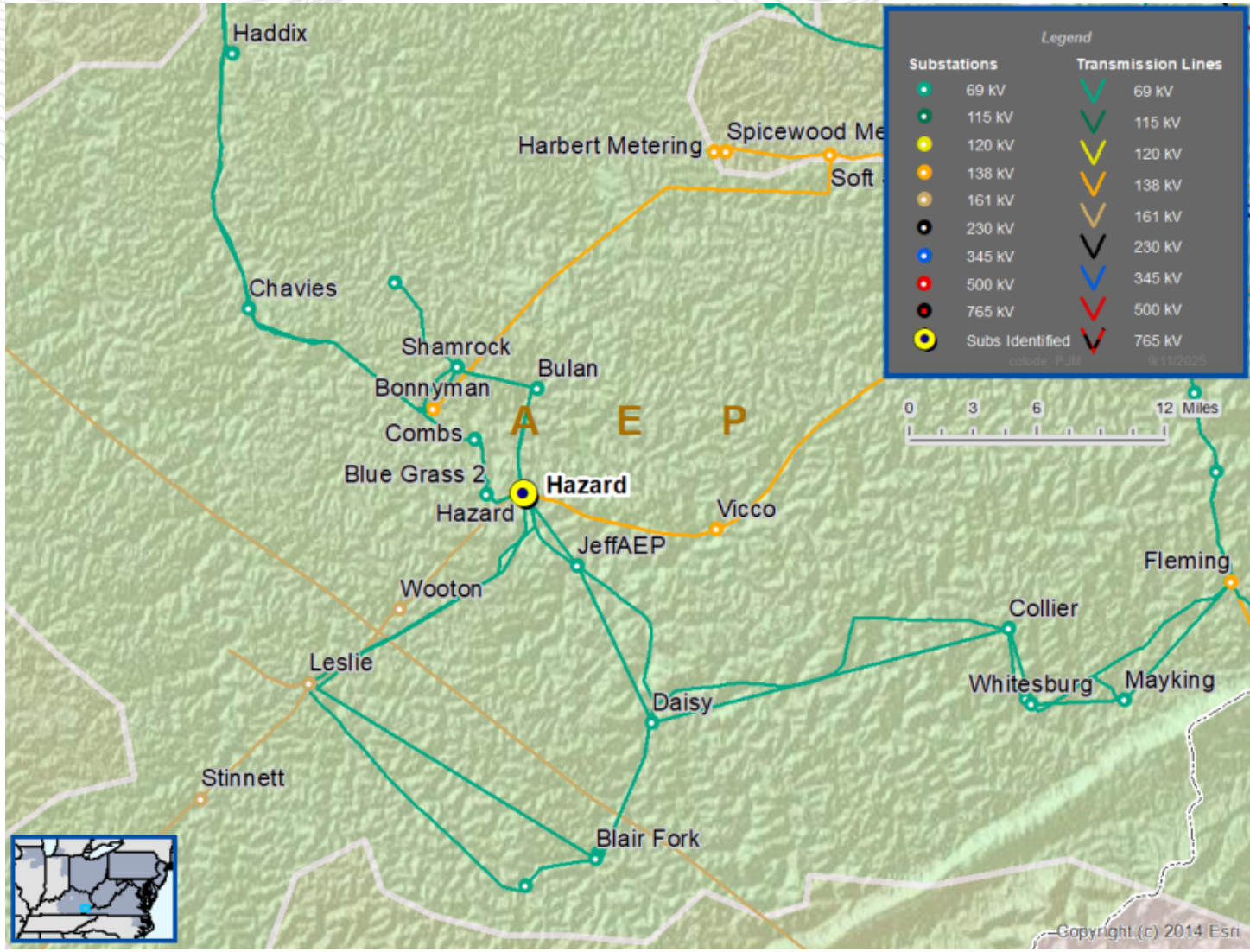
AEP Transmission Zone: Baseline Hazard 69 kV R CB Replacement

Proposed Solution:
Replace overdutied Hazard 69 kV circuit breaker R with an interrupting rating of 40 kA.
Estimated Cost: $0.85M

Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69 kV breaker R	40

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



ATSI Transmission Zone: Baseline
Greenfield 69 kV B-24, B-272, B-274 CB Replacement

Process Stage: First Read

Criteria: Short Circuit (FERC 715 Criteria)

Assumption Reference: 2025 RTEP assumptions

Model Used for Analysis: 2030 RTEP Short Circuit base case

Proposal Window Exclusion: Below 200 kV

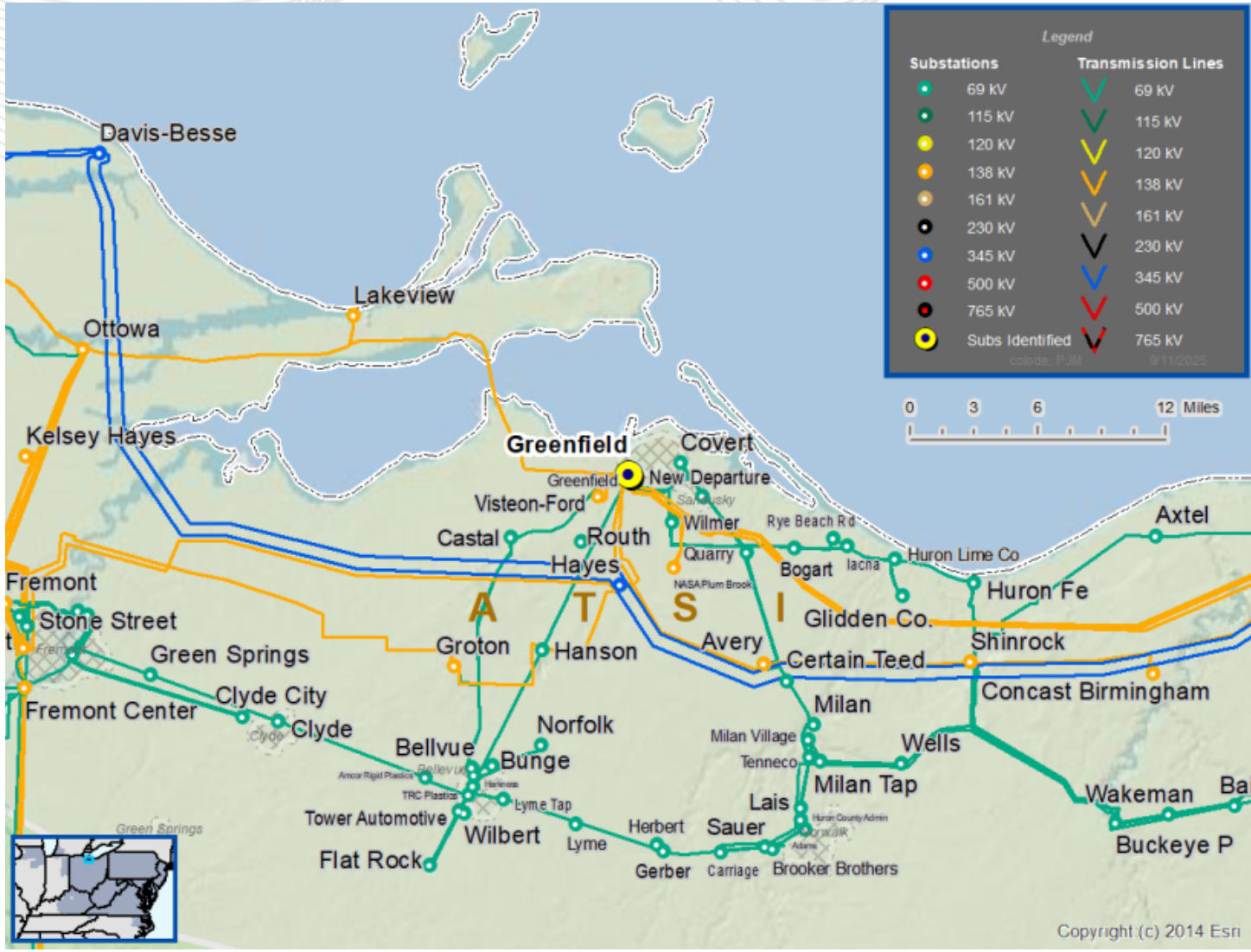
Problem Statement:

2025-W1-ATSI-SC1, -SC2, -SC3

In the 5-year 2030 RTEP Short Circuit base case, the Greenfield 69 kV breakers B-24, B-272, B-274 are identified under FERC Form 715 as being overdutied.

Existing Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69V breaker 501-B-24	26.7
69V breaker 501-B-272	28.4
69V breaker 501-B-244	28.4

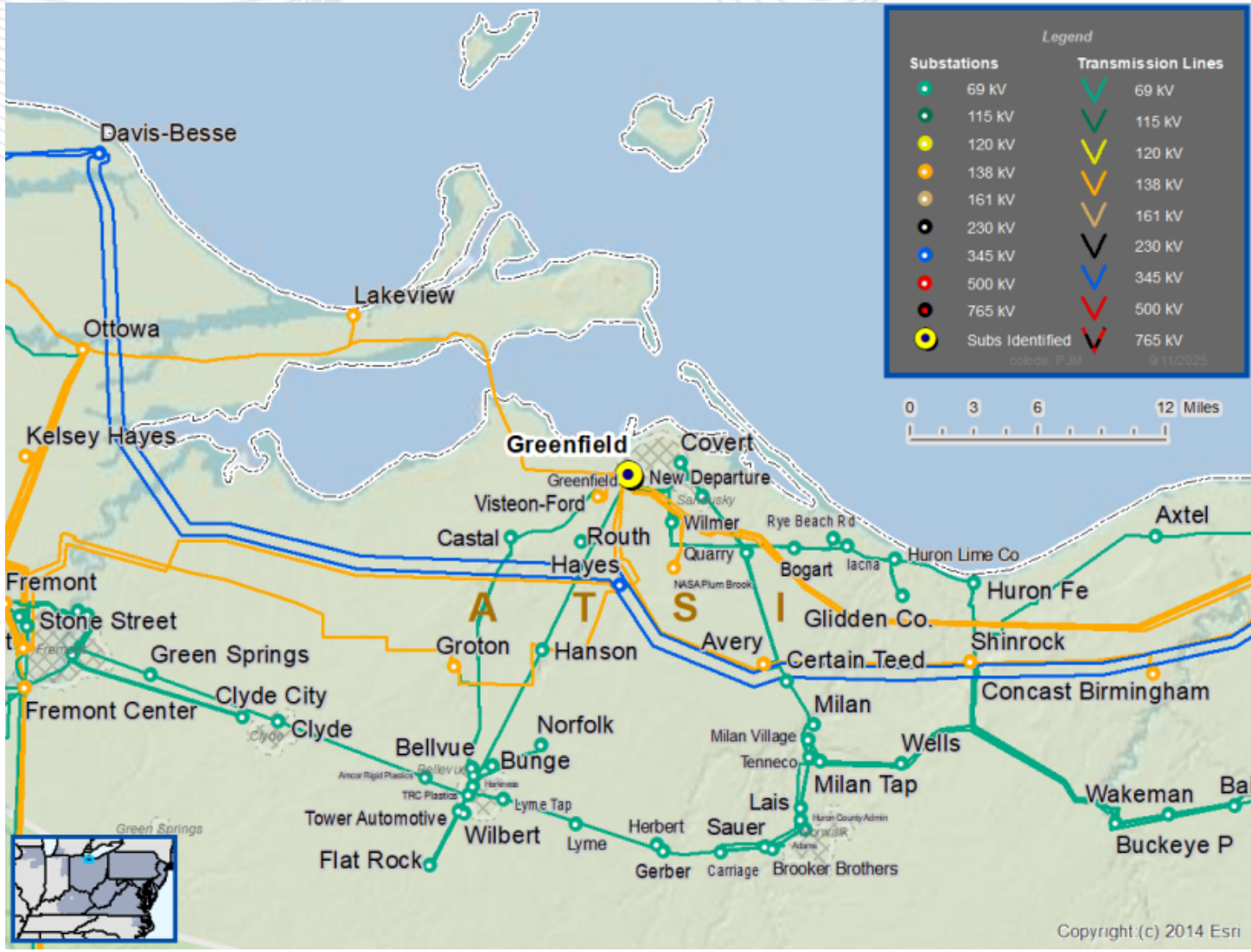


ATSI Transmission Zone: Baseline
Greenfield 69 kV B-24, B-272, B-274 CB Replacement

Proposed Solution:
Replace overdutied Greenfield 69 kV circuit breakers B-24, B-272, B-274 with an interrupting rating of 63 kA.
Estimated Cost: $1.53M
Preliminary Facility Rating:

Circuit Breaker	Interrupting Rating (kA)
69 kV breaker 501-B-24	63
69 kV breaker 501-B-272	63
69 kV breaker 501-B-274	63

Required IS Date: 6/1/2030
Projected IS Date: 6/1/2030



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Revision History

Version No.	Date	Description
1	October 14, 2025	• Original slides posted
2	October 17, 2025	• Changed “First Review” to “First Read” for APS/ATSI projects

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