Sub Regional RTEP Committee
PJM West

November 20, 2020

First Review

Baseline Reliability Projects

APS Transmission Zone: Baseline
Cherry Run – Morgan 138 kV

Process Stage: First Review

Criteria: Winter Generator Deliverability

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: GD-W197, GD-W198

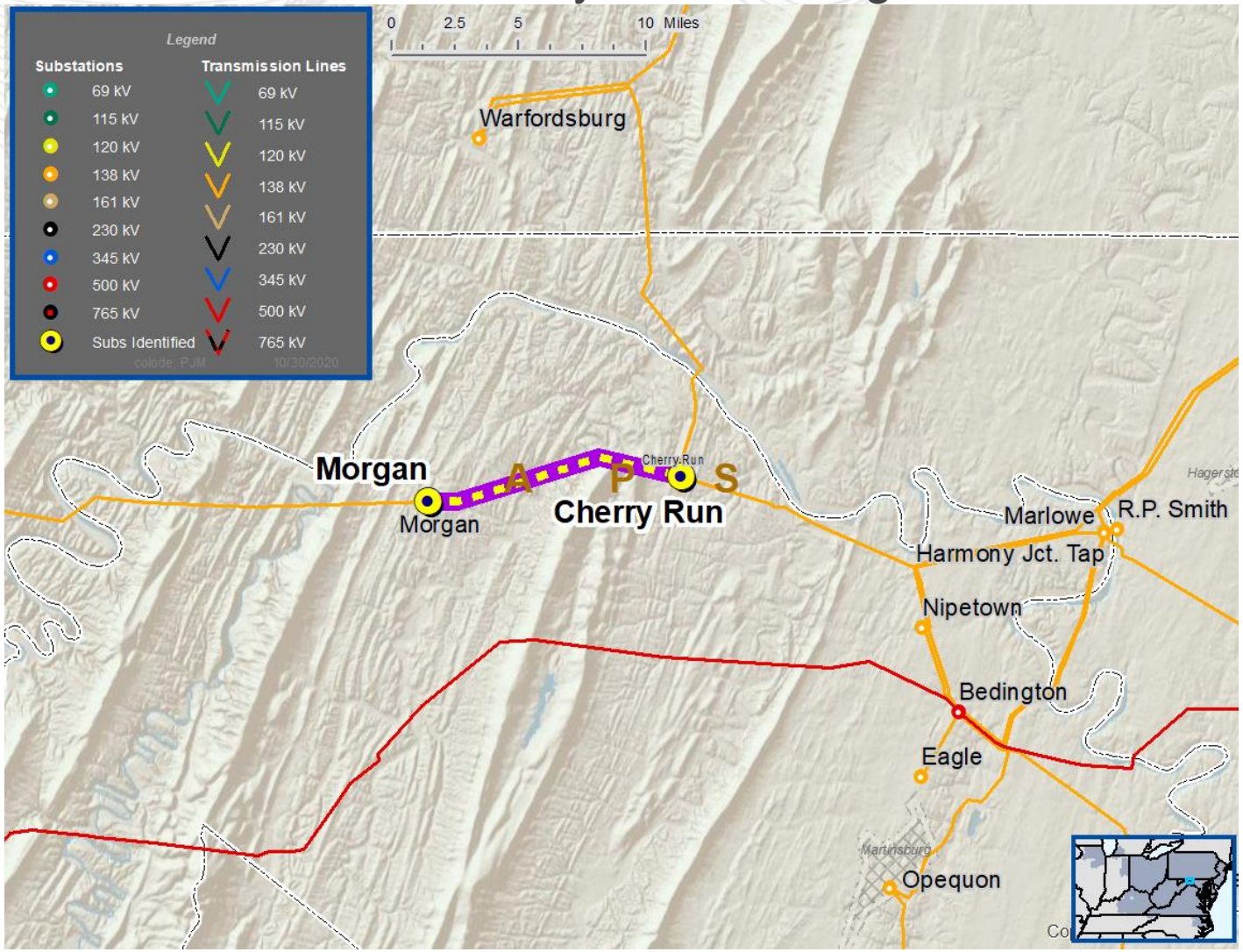
In the 2020 RTEP 2025 Winter Generator Deliverability analysis a stuck breaker of the BDL3 or BDL4 500 kV breakers at Bedington substation results in a thermal violation on the Cherry Run - Morgan 138 kV line at 103.4%.

Proposed Solution: Upgrade Cherry Run and Morgan terminals to make the Transmission Line the limiting component. Morgan: Wave Trap; Cherry Run: Substation conductor, relays, CT

Estimated Cost: $0.23M

Alternatives: N/A

Required In-Service: 12/1/2025



APS Transmission Zone: Baseline
Hardy 138 kV Capacitor

Process Stage: First Review

Criteria: N-1 and N-1-1 Summer Voltage Magnitude/Drop; TO Criteria: Voltage Magnitude/Drop

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

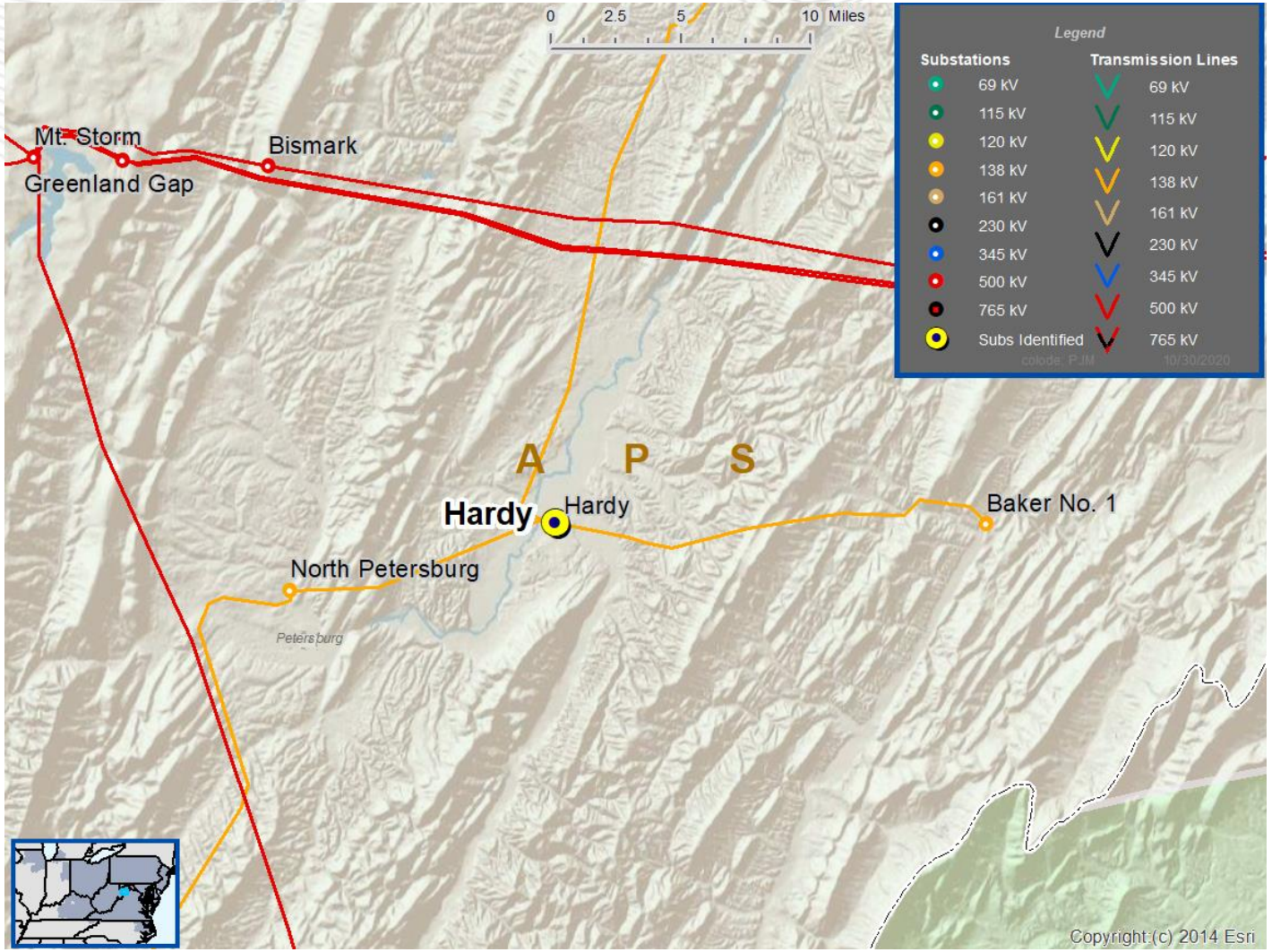
Flowgates:

N1-SVM1, N1-SVM2, N1-SVM3, N1-SVM4, N1-SVM5, N1-SVM6, N1-SVM7, N1-SVM8,

N1-SVD1, N1-SVD2, N1-SVD3, N1-SVD4, N1-SVD5, N1-SVD6, N1-SVD7, N1-SVD8, N1-SVD9, N1-SVD10, N1-SVD11, N1-SVD12,

N2-SVM16, N2-SVM17, N2-SVM18, N2-SVM19, N2-SVM20, N2-SVM21, N2-SVM22, N2-SVM23, N2-SVM24, N2-SVM25, N2-SVM26, N2-SVM27, N2-SVM28, N2-SVM29, N2-SVM39, N2-SVM40, N2-SVM41, N2-SVM42, N2-SVM43, N2-SVM44, N2-SVM45, N2-SVM46, N2-SVM47, N2-SVM48, N2-SVM49, N2-SVM50, N2-SVM51, N2-SVD2, N2-SVD3,

APS-VM1, APS-VM2, APS-VM3, APS-VM4, APS-VM5, APS-VM6, APS-VM7, APS-VM12, APS-VM13, APS-VM14, APS-VM15, APS-VM16, APS-VM17, APS-VM18, APS-VM19, APS-VM20, APS-VM21, APS-VM22, APS-VM23, APS-VM24, APS-VM34, APS-VM35, APS-VM36, APS-VM37, APS-VM38, APS-VM39, APS-VM40, APS-VM41, APS-VM42, APS-VM43, APS-VM44, APS-VM45, APS-VM46, APS-VM47, APS-VM48, APS-VM49, APS-VM55, APS-VM56, APS-VM57, APS-VM58, APS-VM59, APS-VM60, APS-VM61, APS-VM62, APS-VM78, APS-VM79, APS-VM80, APS-VM81, APS-VM82, APS-VM83, APS-VM84, APS-VM85, APS-VM86, APS-VM87, APS-VM88, APS-VM89, APS-VM90, APS-VM104, APS-VM105, APS-VM108, APS-VM124, APS-VM125, APS-VM126, APS-VM127, APS-VM128, APS-VM129, APS-VM130, APS-VD4, APS-VD9, APS-VD10, APS-VD11, APS-VD12, APS-VD13, APS-VD14, APS-VD15, APS-VD21, APS-VD22, APS-VD23, APS-VD24, APS-VD31, APS-VD32, APS-VD33



APS Transmission Zone: Baseline Hardy 138 kV Capacitor

Problem Statement Con't:

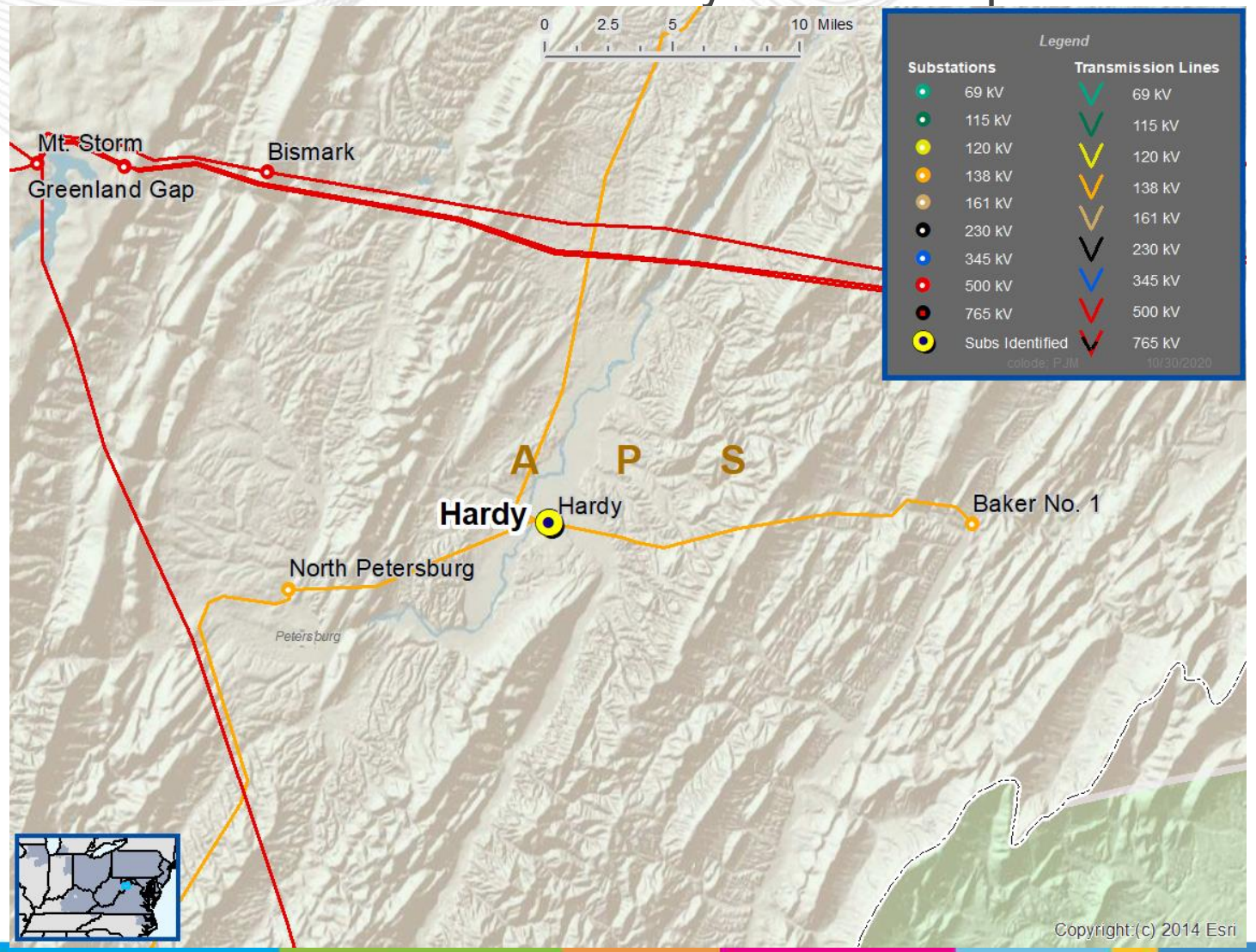
In the 2020 RTEP 2025 Summer Basecase analysis a bus contingency at Junction 138 kV substation results in a low voltage violation at multiple substations. (Baker 138 kV substation at 88% pu.)

Proposed Solution: Install 138 kV, 36 MVAR capacitor and a 5 uF reactor protected by a 138 kV capacitor switcher. Install a breaker on the 138 kV Junction terminal. Install a 138 kV 3.5 uF reactor on the existing Hardy 138 kV capacitor.

Estimated Cost: $2.85M

Alternatives: N/A

Required In-Service: 6/1/2025



APS Transmission Zone: Baseline Stonewall 138 kV Capacitor

Process Stage: First Review

Criteria: N-1-1 Summer Voltage Magnitude; TO Criteria: Voltage Magnitude/Drop

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

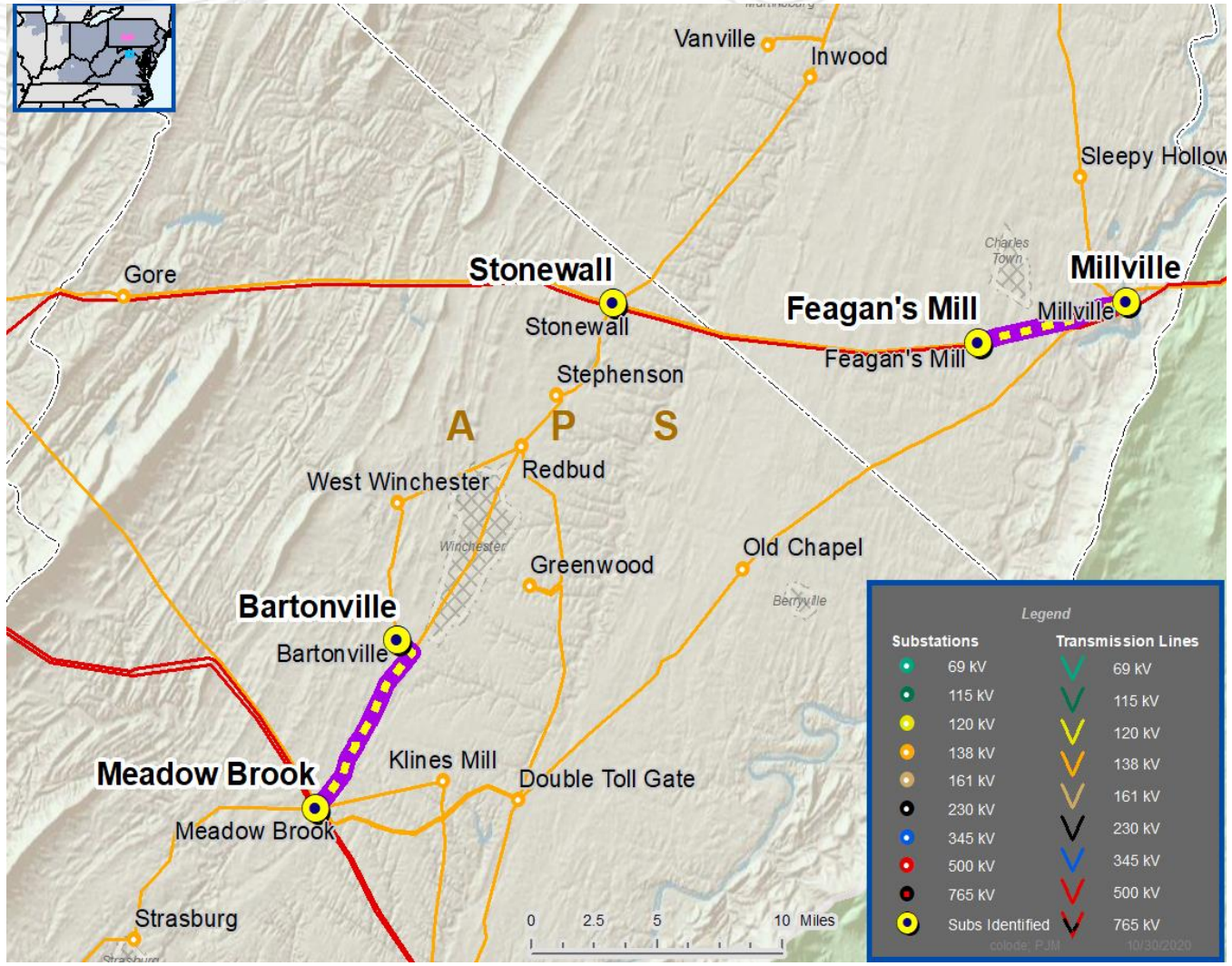
Flowgates:

N2-SVM1, N2-SVM2, N2-SVM3, N2-SVM4, N2-SVM5, N2-SVM6, N2-SVM7, N2-SVM8, N2-SVM9, N2-SVM10, N2-SVM11, N2-SVM12, N2-SVM13, N2-SVM14, N2-SVM15, N2-SVM30, N2-SVM31, N2-SVM32, N2-SVM33, N2-SVM34, N2-SVM35, N2-SVM36, N2-SVM37, N2-SVM38, N2-SVD1,

N2-WVM1, N2-WVM2, N2-WVM3, N2-WVM4, N2-WVM5, N2-WVM6, N2-WVM7, N2-WVM8, N2-WVM9, N2-WVM10, N2-WVM11, N2-WVM12, N2-WVM13, N2-WVM14,

APS-VM8, APS-VM9, APS-VM10, APS-VM11, APS-VM25, APS-VM26, APS-VM27, APS-VM28, APS-VM29, APS-VM30, APS-VM31, APS-VM32, APS-VM33, APS-VM50, APS-VM51, APS-VM52, APS-VM53, APS-VM54, APS-VM63, APS-VM64, APS-VM65, APS-VM66, APS-VM67, APS-VM68, APS-VM69, APS-VM70, APS-VM71, APS-VM72, APS-VM73, APS-VM74, APS-VM75, APS-VM76, APS-VM77, APS-VM91, APS-VM92, APS-VM93, APS-VM94, APS-VM95, APS-VM96, APS-VM97, APS-VM98, APS-VM99, APS-VM100, APS-VM101, APS-VM102, APS-VM103, APS-VM106, APS-VM107, APS-VM109, APS-VM110, APS-VM111, APS-VM112, APS-VM113, APS-VM114, APS-VM115, APS-VM116, APS-VM117, APS-VM118, APS-VM119, APS-VM120, APS-VM121, APS-VM122, APS-VM123, APS-VM131, APS-VM132, APS-VM133, APS-VM134, APS-VM135, APS-VM136, APS-VM137, APS-VM138, APS-VM139,

APS-VD1, APS-VD2, APS-VD3, APS-VD5, APS-VD6, APS-VD7, APS-VD8, APS-VD16, APS-VD17, APS-VD18, APS-VD19, APS-VD20, APS-VD25, APS-VD26, APS-VD27, APS-VD28, APS-VD29, APS-VD30, APS-VD34, APS-VD35, APS-VD36, APS-VD37, APS-VD38, APS-VD39, APS-VD40, APS-VD41, APS-VD42, APS-VD43, APS-VD44



APS Transmission Zone: Baseline Stonewall 138 kV Capacitor

Problem Statement Con't:

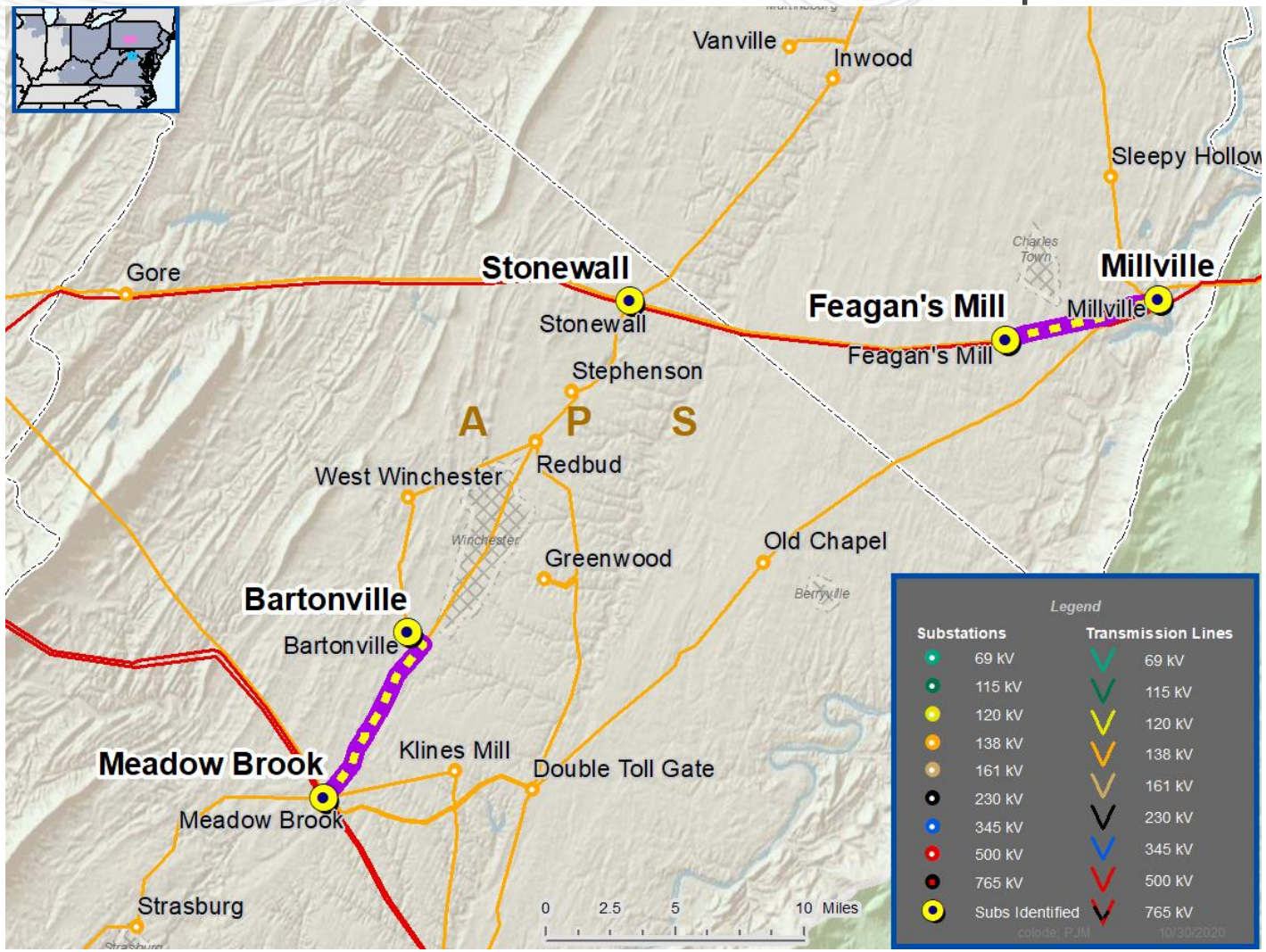
In the 2020 RTEP 2025 Summer Basecase analysis an N-1-1 contingency on the Bartonville - Meadowbrook and Feagans Mill - Millville 138 kV lines results in a low voltage violation at multiple substations (Stonewall 138 kV substation at 89% pu.).

Proposed Solution: Reconfigure Stonewall 138 kV substation from its current configuration to a six-breaker breaker-and-a-half layout and add two 36 MVAR capacitors with capacitor switchers.

Estimated Cost: $13.3M

Alternatives: N/A

Required In-Service: 6/1/2025



APS Transmission Zone: Baseline
Enon 138 kV Substation

Process Stage: First Review

Criteria: TO Voltage Magnitude Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Problem Statement:

FG: APS-VM3, APS-VM4

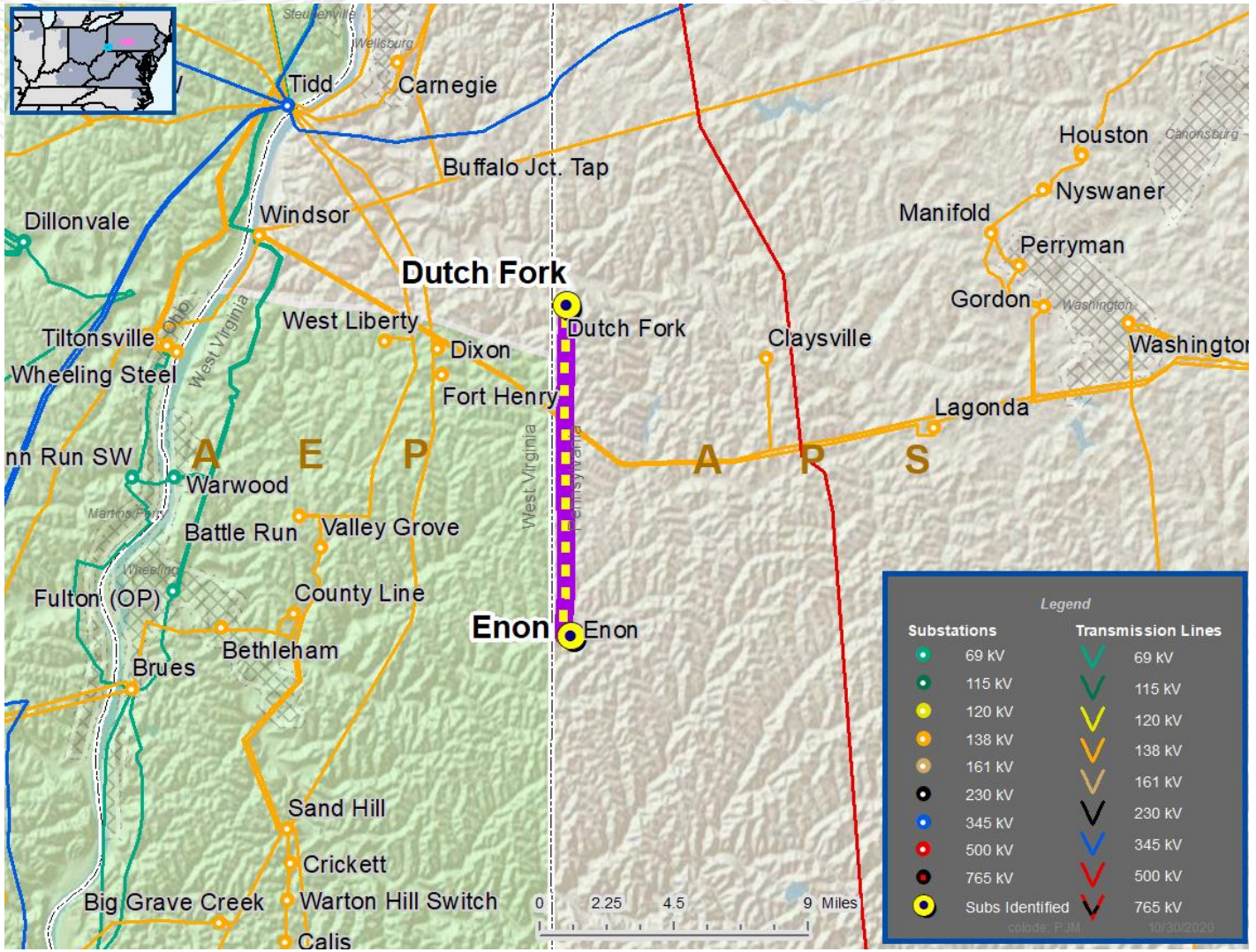
In the 2020 RTEP 2025 summer N-1 analysis, the loss of the Dutch Fork 138 kV capacitor or the Enon 138 kV capacitor the voltage must be adjustable back to the N-0 values (0.95 p.u.) post contingency.

Proposed Solution: At Enon Substation install a second 138 kV, 28.8 MVAR nameplate, capacitor and the associated 138 kV capacitor switcher.

Estimated Cost: $1.8M

Alternatives: N/A

Required In-Service: 6/1/2025



EKPC Transmission Zone: Baseline
Clay Village-Clay Village T metering CT upgrade

Process Stage: First Review

Criteria: EKPC 715 Criteria

Assumption Reference: EKPC Assumptions Presentation Slide 3-7

Model Used for Analysis: EKPC's internal models representing 2021/22 winter peak conditions that were used for EKPC's annual system screening analysis in 2019. Includes LGE/KU EW Brown Unit 3 off with replacement generation imported from north of EKPC system.

Problem Statement: FG: EKPC-T1, GD-W14

The Clay Village- Clay Village T 69 KV line section is overloaded for the loss of the Ghent - Owen County Tap 138kV line.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
2CLAY VILLAG – 2CLAY VILG T 69kV	47/47/47/47

Proposed Solution: Upgrade the Metering CT associated with the Clay Village-Clay Village T 69 KV line section to increase the line ratings.

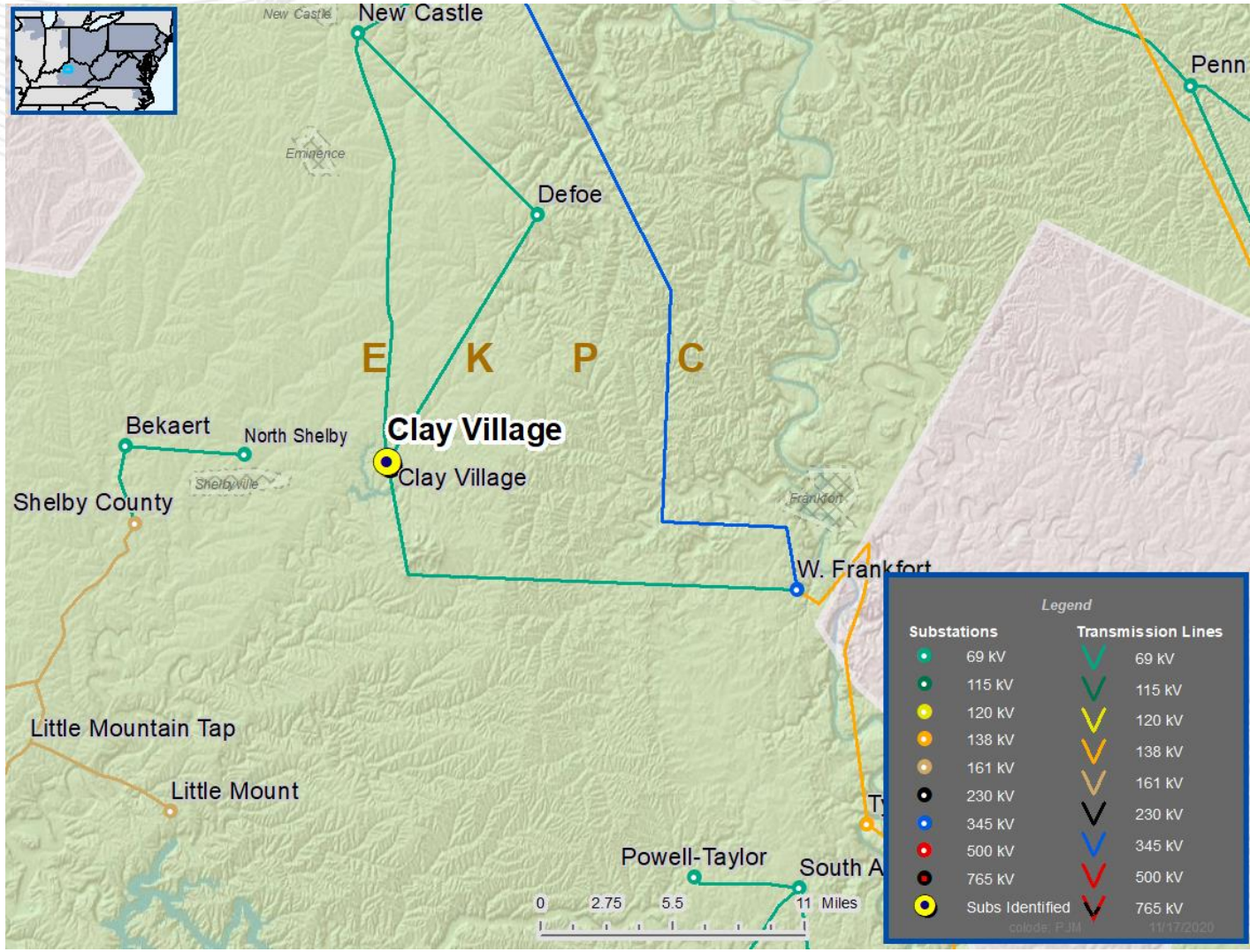
Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
2CLAY VILLAG – 2CLAY VILG T 69kV	49/54/70/73

Estimated Cost: $0.025M

Alternatives: N/A

Required In-Service: 12/1/2021



EKPC Transmission Zone: Baseline Norwood-Shopville 69 KV rebuild

Process Stage: First Review

Criteria: EKPC 715 Criteria

Assumption Reference: EKPC Assumptions Presentation Slide 3-7

Model Used for Analysis: EKPC's internal models representing 2021/22 winter peak conditions that were used for EKPC's annual system screening analysis in 2019. Includes Cooper Units 1 and 2 off with replacement generation imported from south of EKPC system.

Problem Statement: FG: EKPC-VM1

Low voltage at the Brodhead distribution substation of 0.89 PU for the loss of the Brodhead – Three Link 69kV line .

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
2NORWOOD T – 2SHOPVILLE 69kV	49/54/70/73

Proposed Solution: Rebuild the 4/0 ACSR Norwood-Shopville 69 KV line section using 556 ACSR/TW **Estimated Cost:** $3.788M

Preliminary Facility Rating:

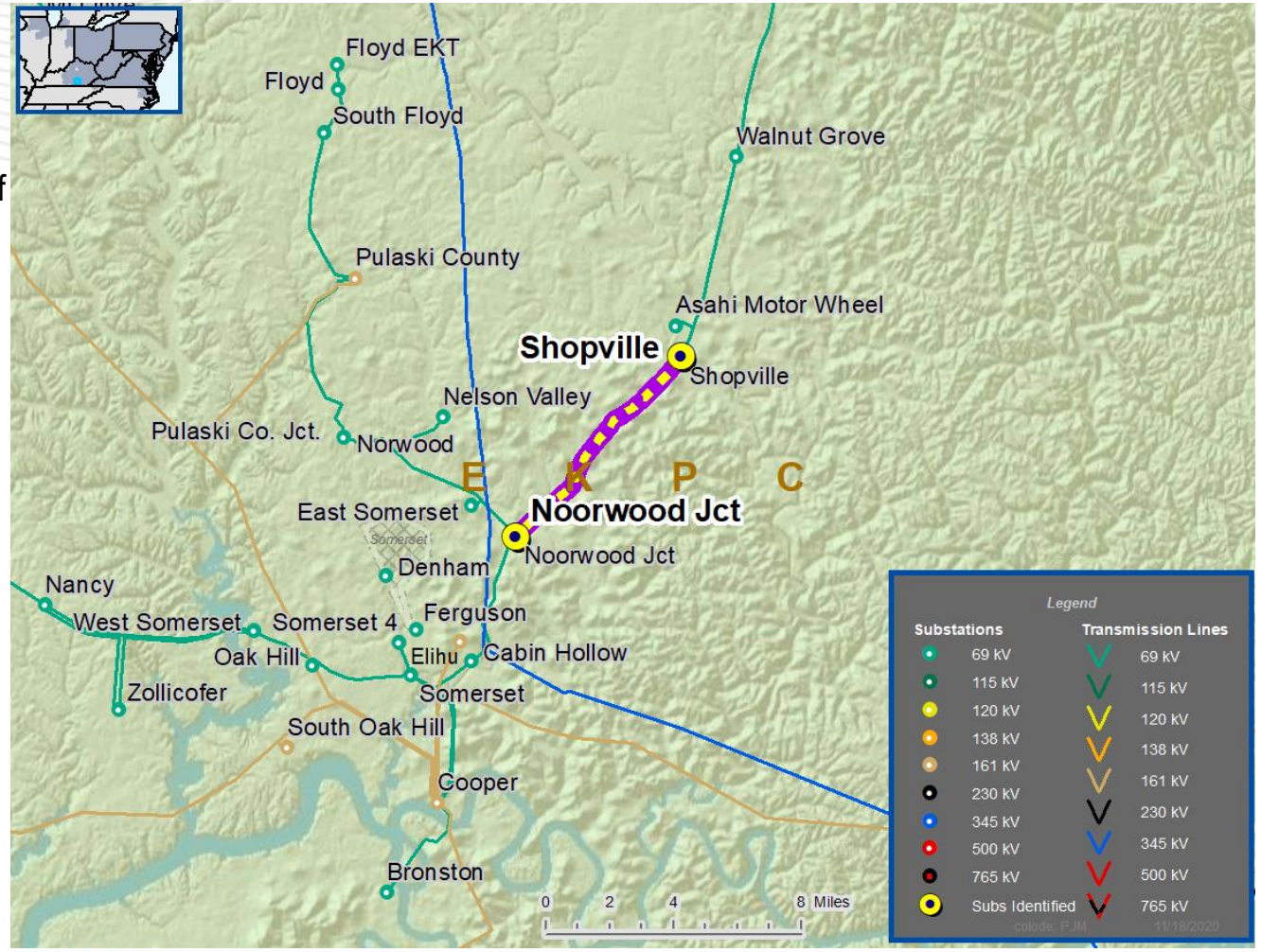
Branch	SN/SE/WN/WE (MVA)
2NORWOOD T – 2SHOPVILLE 69kV	77/90/95/100

Ancillary Benefits: Replacement of Aging Infrastructure, Norwood-Shopville line was constructed in 1959 (61 years old).

Alternatives:

Build new 7.2 mile 69kV transmission line from Floyd to Woodstock substations; Add two new breakers and disconnects at Walnut Grove. **Estimated Cost:** $6.34M

Required In-Service: 12/1/2021



Recommended Solution

Baseline Reliability Projects

DLC Transmission Zone: Baseline Arsenal – Riazzi 138 kV line

Process Stage: Recommended Solution

Criteria: FERC 715 (TO Criteria)

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2020 RTEP 2025 Cases

Proposal Window Exclusion: Below 200KV

Problem Statement:

FGs: DLCO-T1, DLCO-T2

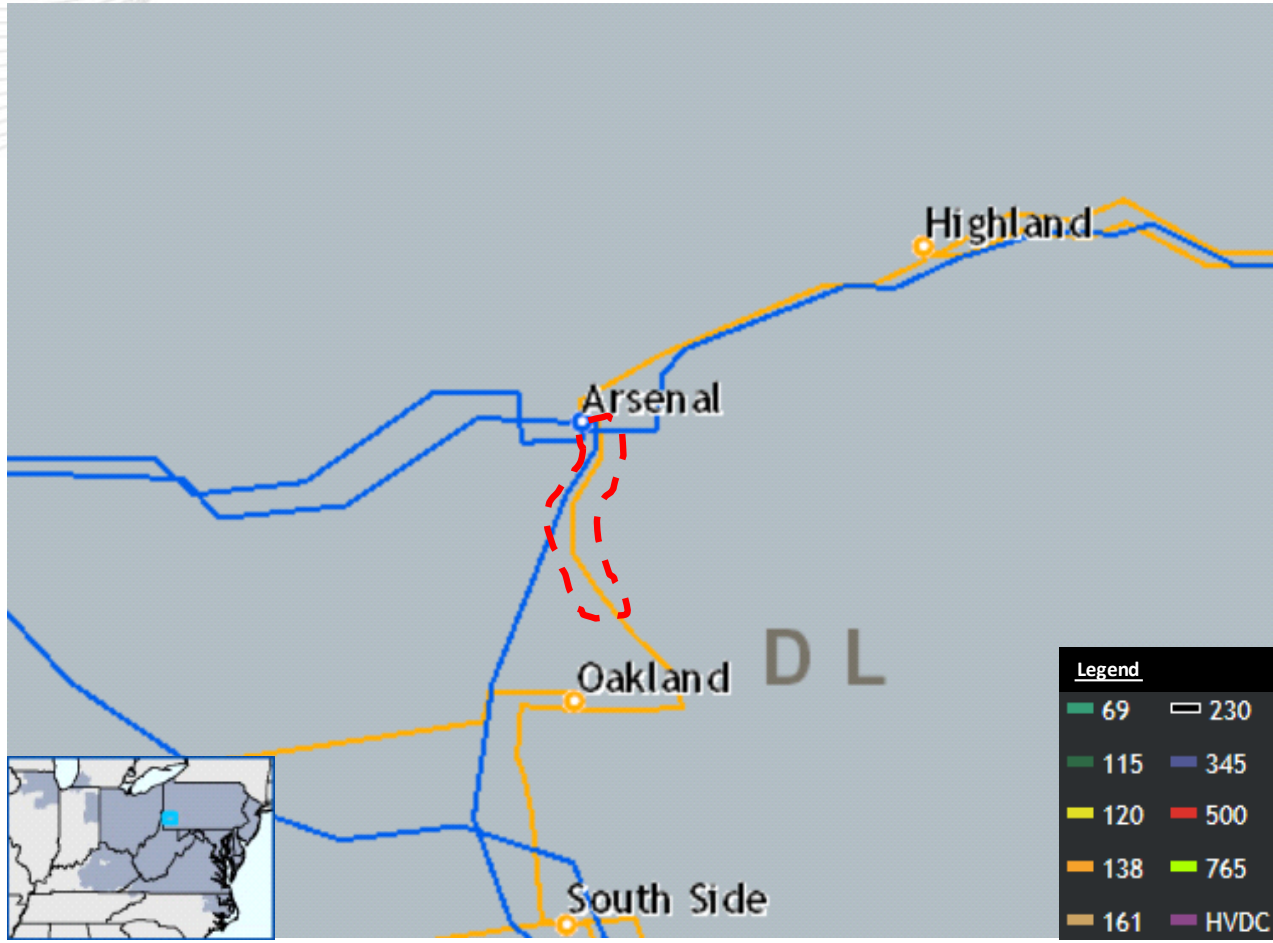
The Arsenal - Riazzi (Z-101) 138 kV line exceeds its normal rating as a result of an N-2 failure of underground cables (Z-47 and Z-48) in a common trench. This violates DLC's FERC 715 criteria in regard to managing system conditions during an N-2 underground cable common trench failure.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Arsenal –Riazzi 138kV	185/247/185/247

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
Arsenal –Riazzi 138kV	208/268/208/268 under normal conditions 215/273/215/273upon loss of the Z-47 (Carson - Oakland) and Z-48 (Oakland - Forbes) 138kV circuits 217/274/217/274 upon loss of the 302 (Brunot Island - Carson) and 307 (Carson - Arsenal) 345kV circuits



DLC Transmission Zone: Baseline Arsenal – Riazzi 138 kV line

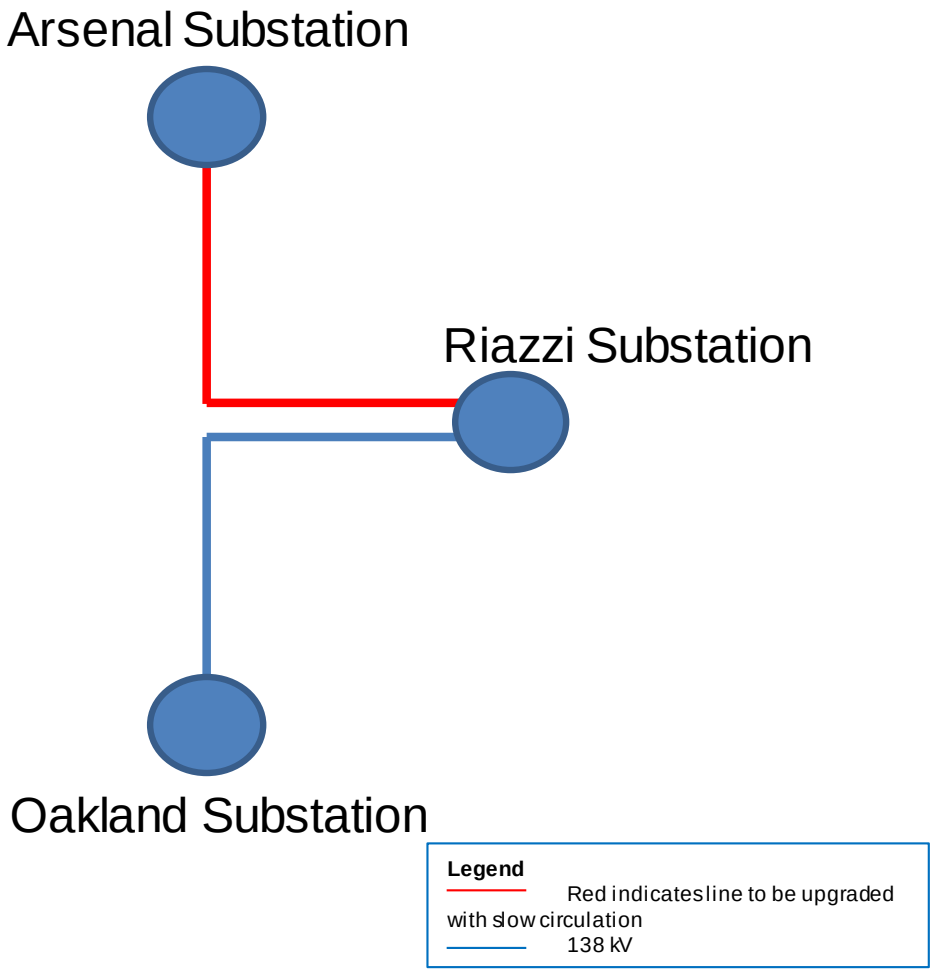
Recommended Solution:
Implement slow circulation on existing underground 138 kV high pressure fluid filled (HPFF) cable between Arsenal and Riazzi Substations (**B3265**)

Estimated Cost: $2.4M

Required In-Service: 6/1/2025

Projected IS-Service: 6/1/2025

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline Bass 34.5kV Riser Replacement

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Substation equipment exclusion

Problem Statement:

FGs: AEP - T136, AEP-T137

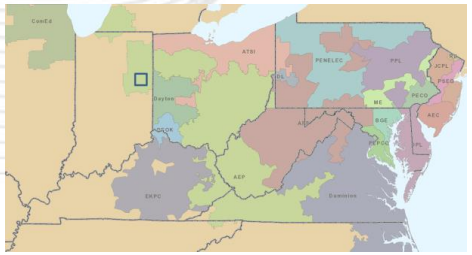
The Bass – Spy Run1 34.5kV line is overloaded for the N-1-1 contingency pair of the loss of the Robison Park – Purdue 138kV line and the loss of the Illinois Road – Industrial Park – McKinley 3 and Summit - Industrial Park - Spy Run1 138kV line, Industrial park 138/69/34.5kV transformer, and Industrial Park – Kroemer 69kV line.

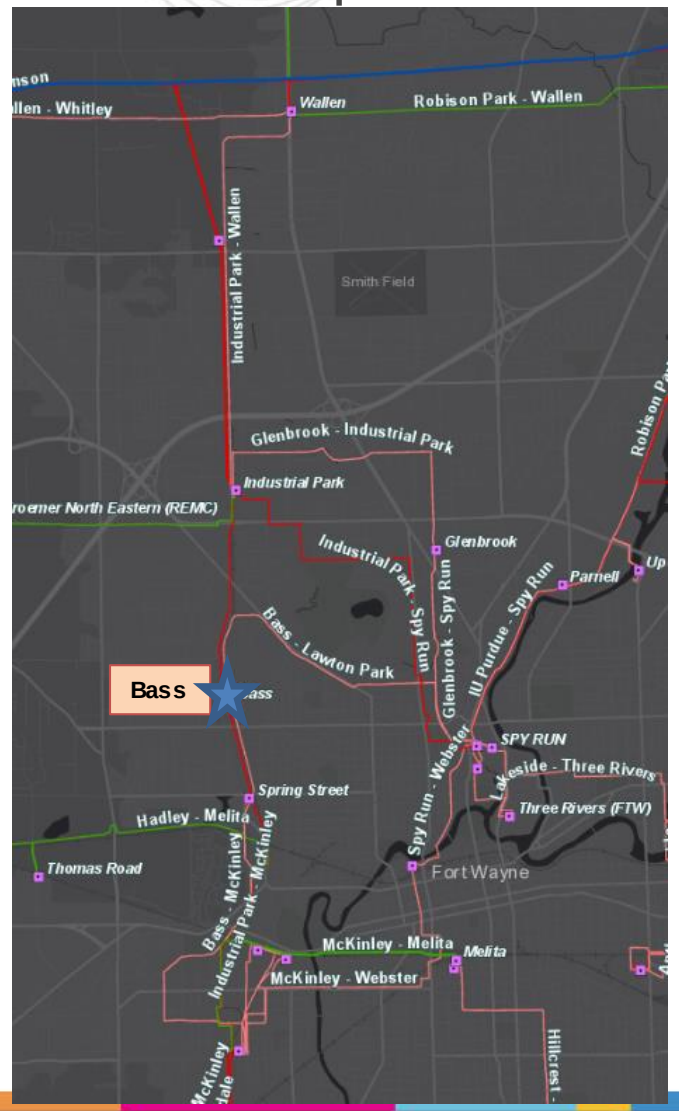
Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05BASS – 05SYP RUN1	26/26/28/28

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05BASS – 05SYP RUN1	46/46/58/58





AEP Transmission Zone: Baseline
Bass 34.5kV Riser Replacement

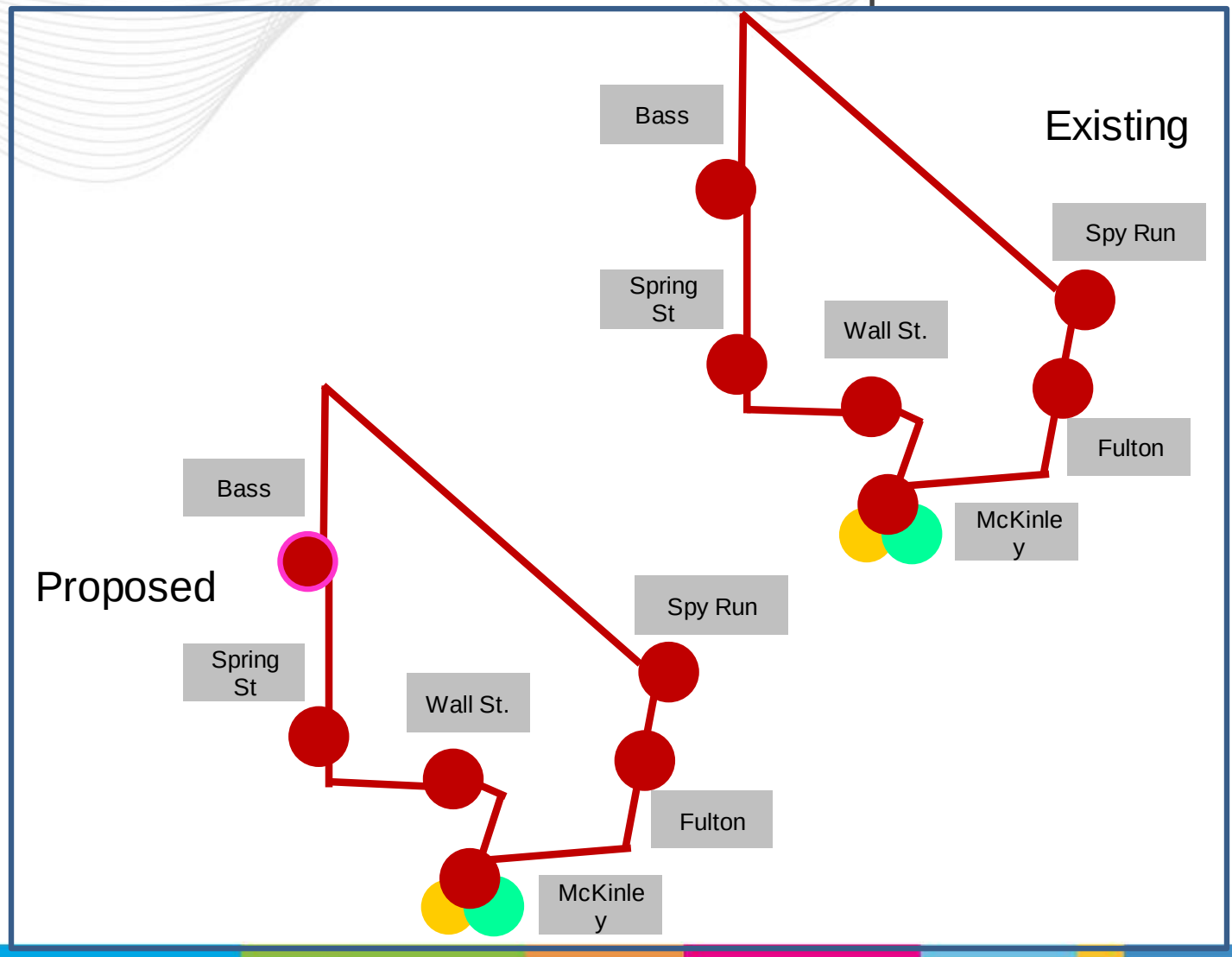
Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

Recommended Solution: Replace Risers at Bass 34.5kV Station (**B3243**)
Estimated Cost: $0.1M

Required In-Service: 6/1/2025

Projected IS-Service: 5/16/2022

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline
Rob Park - Harlan 69kV Rebuild

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: AEP – T404

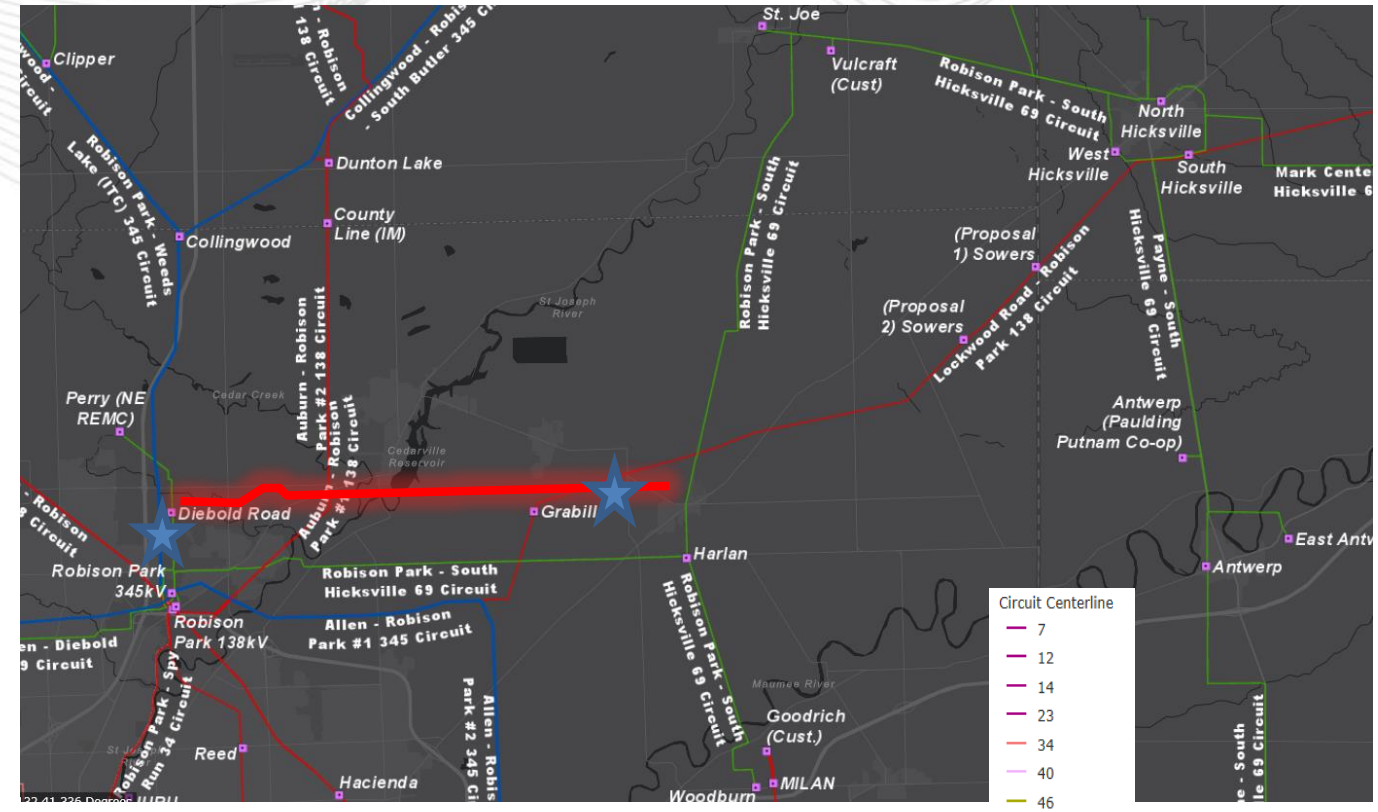
The Harlan - Robinson Park 69kV line is overloaded the N-1-1 contingency pair of the loss of Sowers - South Hicksville - Lockwood 138kV line with South Hicksville 138/69kV transformer and the loss of the Auburn – Joist – Butler 69kV line

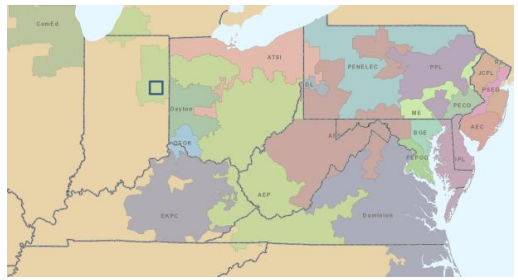
Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05HARLAN - 05ROBISONP	50/50/63/63

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05HARLAN - 05ROBISONP	79/90/100/109





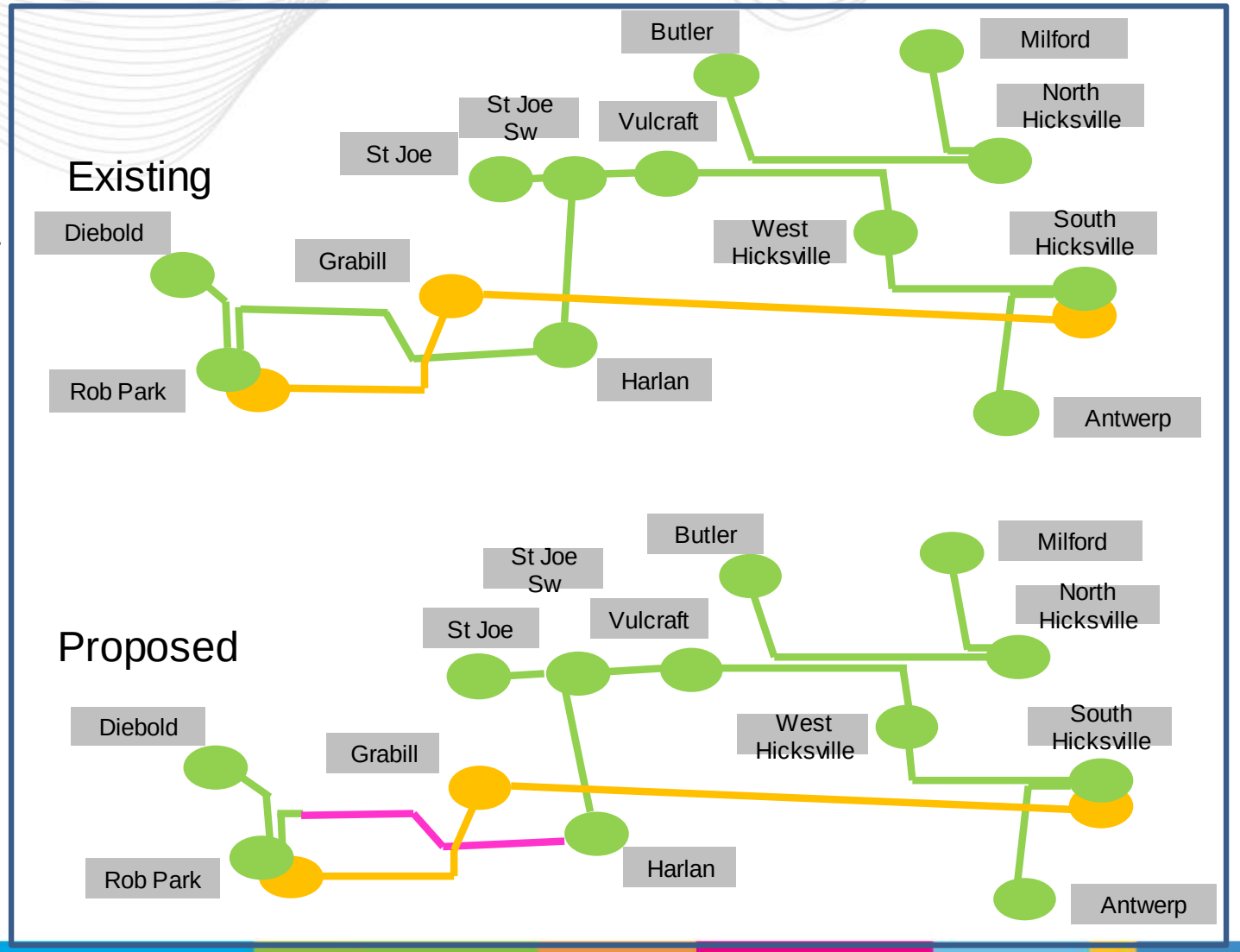
AEP Transmission Zone: Baseline
Rob Park - Harlan 69kV Rebuild

Recommended Solution: Rebuild approximately 9 miles of the Rob Park - Harlan 69kV line. (**B3244**)
Estimated Cost: $20.9M
Ancillary Benefits: Line also identified as supplemental need AEP-2019-IM014 (Needs meeting 4/23/2019, solution meeting 9/11/2020)

Required In-Service: 6/1/2025

Projected IS-Service: 6/2/2023

Previously Presented: 10/16/2020



Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

AEP Transmission Zone: Baseline Sand Hill 138 kV Riser Upgrades

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: AEP-T295

The Sand Hill – Cricket138kV line can not be dispatched below normal rating after the loss of Sand Hill – Warton Hill #1 138kV line in N-1-1 test.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05SAND H – 05CRICKET SS 138kV	219/255/277/303

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05SAND H – 05CRICKET SS 138kV	257/341/325/404

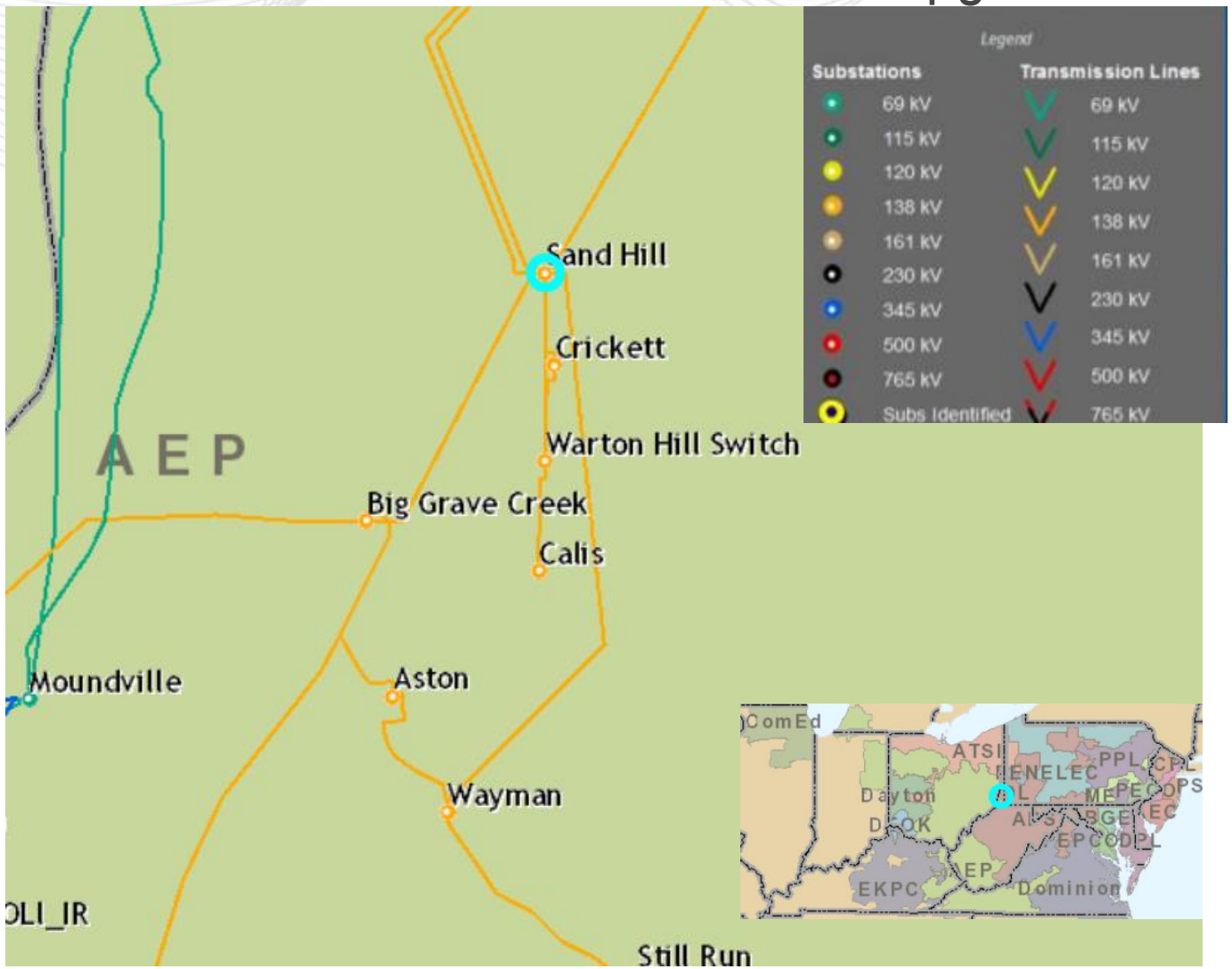
Recommended Solution: Upgrade 795 AAC risers at Sand Hill station towards Cricket Switch with 1272 AAC (**B3255**)

Estimated Cost: $0.04M

Required In-Service: 6/1/2025

Projected IS-Service: 9/1/2024

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline Tidd Riser Upgrades

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Substation Equipment

Problem Statement:

FGs: AEP-T296, AEP-T297

One of the Tidd – Wheeling Steel 138kV lines #1 and #2 can not be dispatched below normal rating after the loss of the other line in N-1-1 test.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05TIDD – 05WHELGS 138kV	187/205/247/258

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05TIDD – 05WHELGS 138kV	205/205/258/258

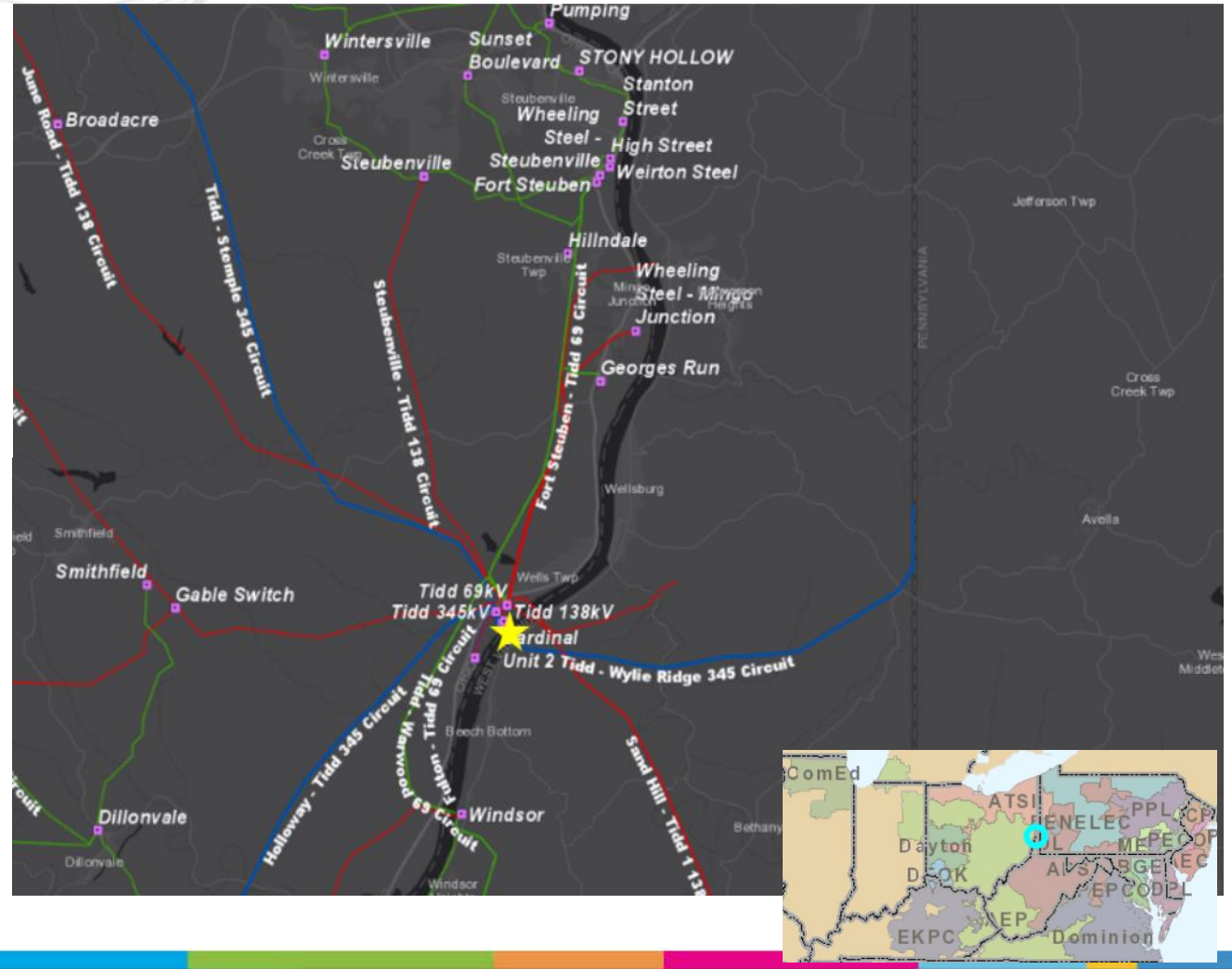
Recommended Solution: Upgrade 500 MCM Cu risers at Tidd station towards Wheeling Steel; replace with 1272 AAC conductor. (**B3256**)

Estimated Cost: $0.07M

Required In-Service: 6/1/2025

Projected IS-Service: 9/1/2021

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline
Twin Branch Hydro

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Substation Equipment

Problem Statement:

FGs: AEP-T453, AEP-T458, AEP-T459, AEP-T452, AEP-T460, AEP-T447, AEP-T442, AEP-T443, AEP-T444, AEP-T446, AEP-T445

Twin Branch 1 – Twin Branch 2 34.5kV line is overloaded for multiple N-1 contingencies and N-1-1 contingency pairs.

Existing Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05TWIN BRCH1 – 05TWIN BRCH 2 34.5kV	37/37/47/47

Preliminary Facility Rating:

Branch	SN/SE/WN/WE (MVA)
05TWIN BRCH1 – 05TWIN BRCH 2 34.5kV	52/62/69/75

Recommended Solution: replace two spans of 336.4 26/7 ACSR on Twin Branch-AM General #2 Circuit. (**B3257**)

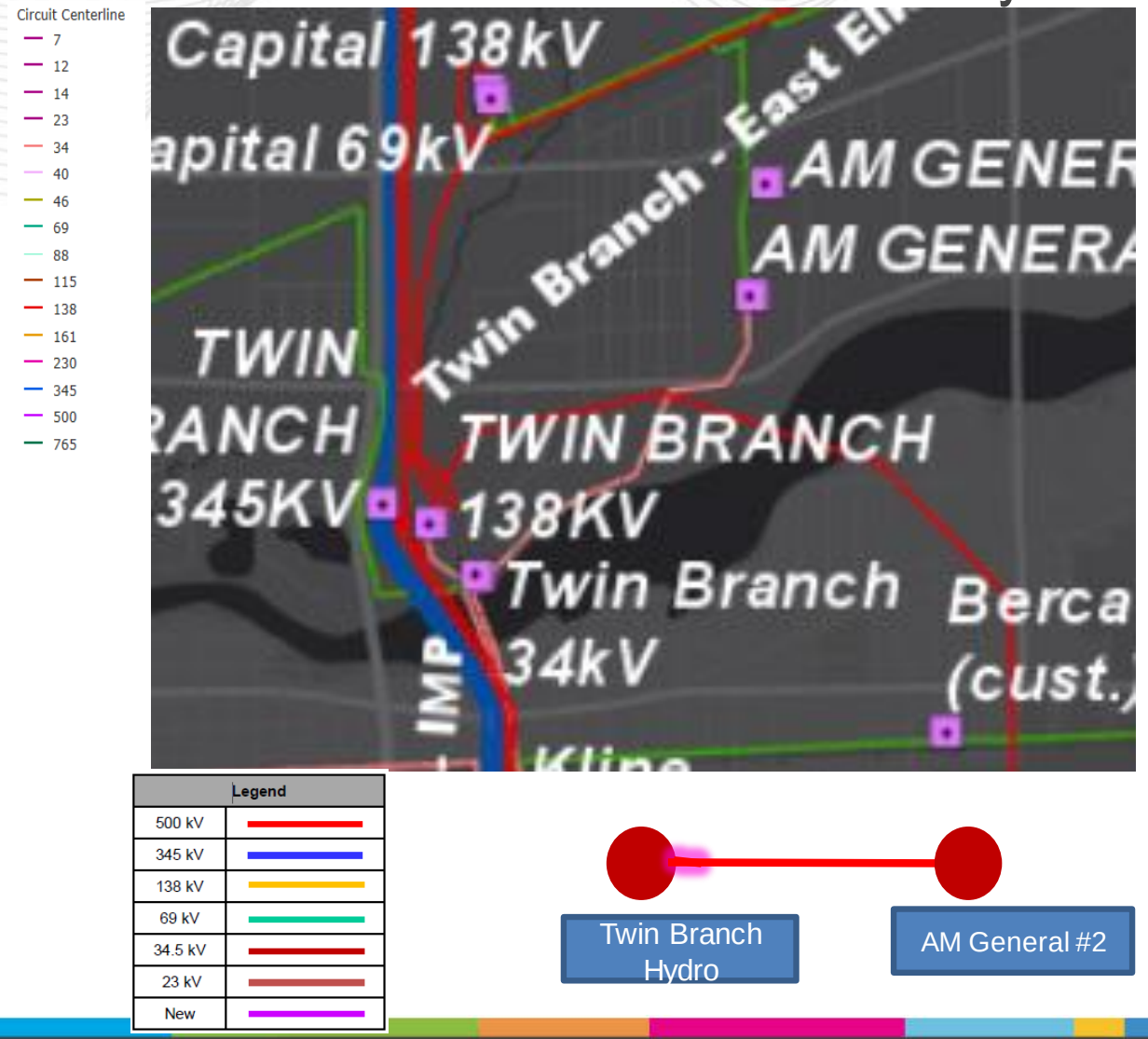
Estimated Cost: $0.14M

Ancillary Benefits: First two spans of AEP-2020-IM020 (Presented 8/14/2020), Structures relocated for station work AEP-2019-IM044 (presented 11/22/2019)

Required In-Service: 6/1/2025

Projected IS-Service: 3/17/2024

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline Albion CB Addition

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

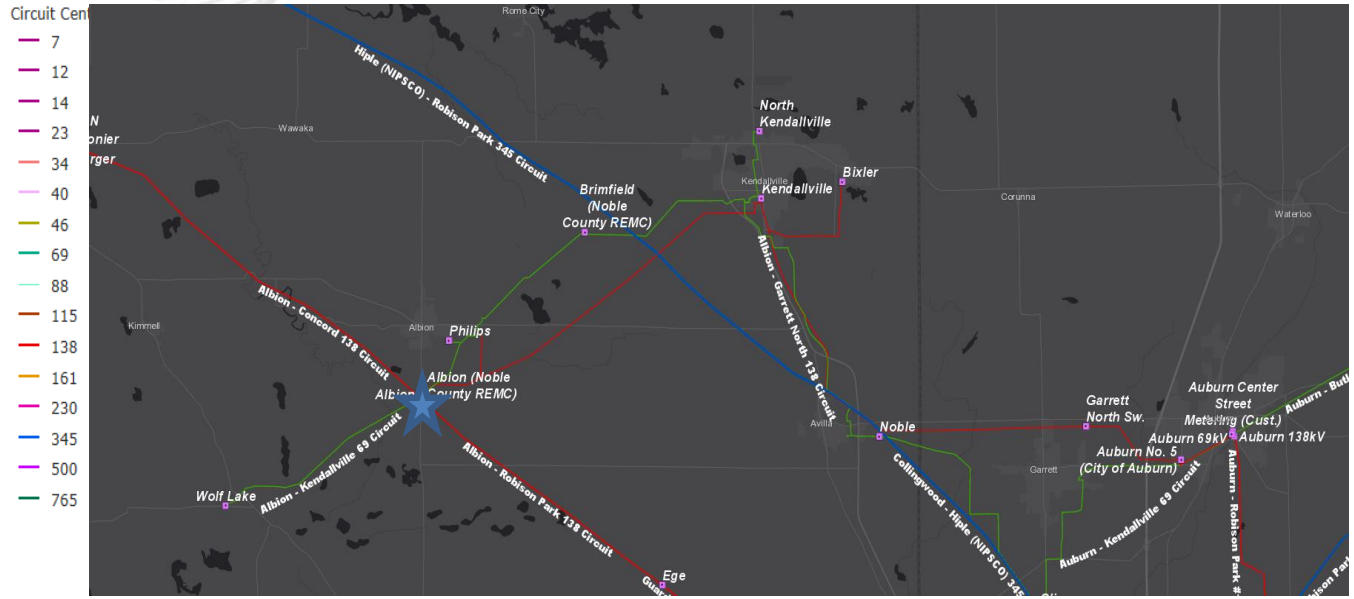
Problem Statement:

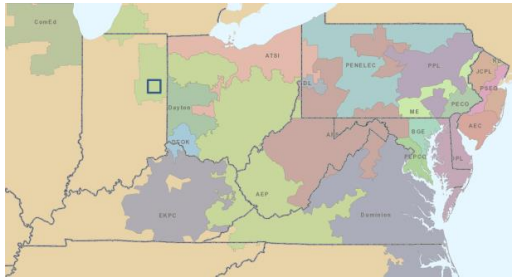
FGs: AEP-VD102 through AEP-VD113, AEP-VM133 through AEP-VM136

The voltage drop violation at Wolf Lake, Albion, Philips, Brimfield, North Kendallville, Kendallville 69kV buses for multiple N-1-1 contingency pairs.

Existing Facility Rating: N/A

Preliminary Facility Rating: 40KA





AEP Transmission Zone: Baseline Albion CB Addition

Process Stage: Recommended Solution

Recommended Solution: Install a low side 69KV CB at Albion 138/69kV transformer 1 to eliminate the critical contingency (**B3248**)

Estimated Cost: $0.4M

Required In-Service: 6/1/2025

Projected IS-Service: 6/1/2025

Previously Presented: 10/16/2020

Legend	
500 kV	
345 kV	
138 kV	
69 kV	
34.5 kV	
23 kV	
New	

AEP Transmission Zone: Baseline
Millbrook Park 138 kV Breaker Installation

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FGs: AEP-VM1 through AEP-VM56, AEP-VM658 through AEP-VM661, AEP-VM666 through AEP-VM669, AEP-VM801, AEP-VM802, AEP-VM818, AEP-VM820, AEP-VD2 through AEP-VD26, AEP-VD900, AEP-VD901, AEP-VD908

The voltage magnitude and voltage drop violations at Mill Street, Sugar Hill, Friendship, Central Portsmouth, Cornerstone Station, Ruhlman, Rosemount, Sciotoville, Millbrook Park, Oertels Corners, Siloam, South Shore 69kV buses and South Lucasville 138kV bus for multiple N-1-1 contingency pairs.

Existing Facility Rating: N/A

Preliminary Facility Rating: 40KA

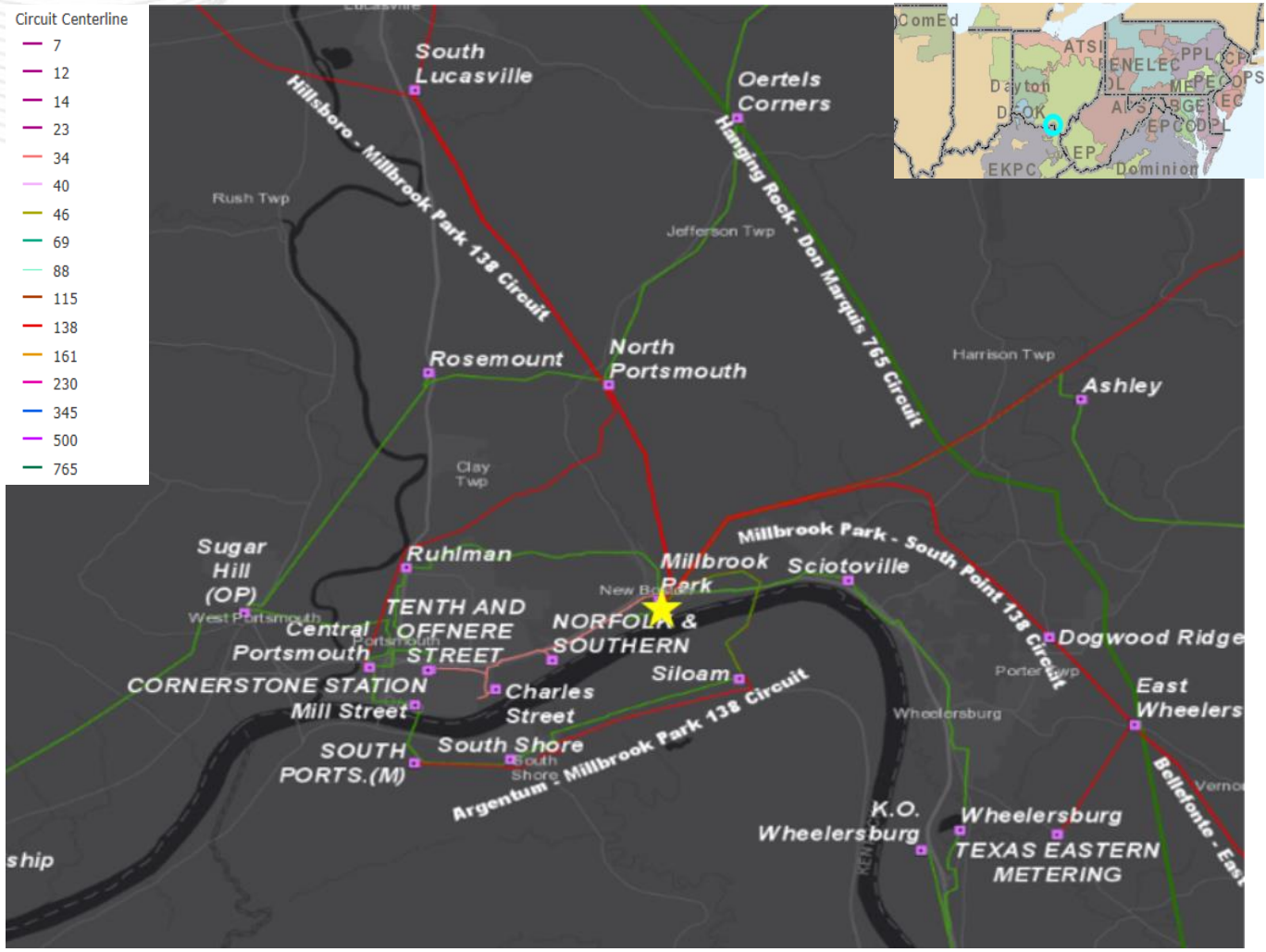
Recommended Solution: Install a 3000A 40 kA 138 kV breaker on high side of 138/69 kV transformer #5 at Millbrook Park station. The transformer and associated bus protection will be upgraded accordingly. (**B3253**)

Estimated Cost: $0.63M

Required In-Service: 6/1/2025

Projected IS-Service: 9/1/2024

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline Wagenhals 138 kV Breaker Installation

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FGs: AEP-T390, AEP-T391, AEP-VD1135, AEP-VD1136, AEP-VD1137

The Easton – North Canton 69kV line is overload and voltage drop violations at Belden Village, Wayview 69KV buses for N-1-1 contingency pair of the loss of West Canton -Promway – Wayview 138kV line and the loss of Wagnenhals 138/69/23kV transformer and the Canton Center –Wagenhals-June Road 138kV line, LTV Steel – Wagenhals- North East Canton 138KV line and West Louisville – Georgetown 69kV line.

Existing Facility Rating: N/A

Preliminary Facility Rating: 63KA

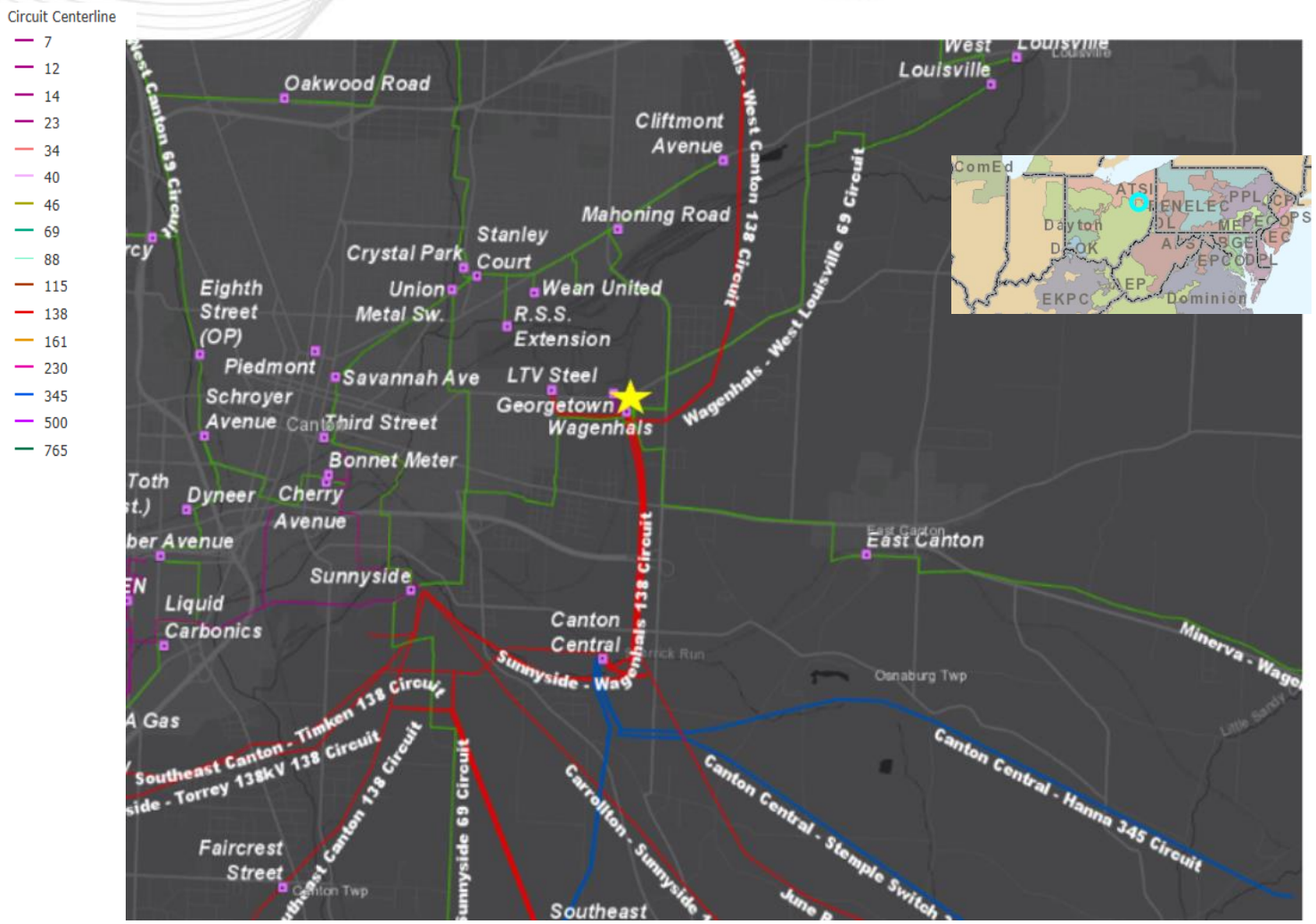
Recommended Solution: Install a 3000A 63 kA 138 kV breaker on high side of 138/69 kV transformer #2 at Wagenhals station. The transformer and associated bus protection will be upgraded accordingly (**B3258**)

Estimated Cost: $1.10M

Required In-Service: 6/1/2025

Projected IS-Service: 9/1/2024

Previously Presented: 10/16/2020



AEP Transmission Zone: Baseline
West Millersburg 138kV Breaker Installation

Process Stage: Recommended Solution

Criteria: AEP 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FGs: AEP-VD975, AEP-VD976, AEP-VD977, AEP-VD978, AEP-VD979, AEP-VD980, AEP-VD981, AEP-VD982, AEP-VD458, AEP-VD459

The voltage drop violations at BILLIAR, North Fredericksburg, Shreve, Big Prairie, PAINTVSS, Drake Valley, and LOUDNVL 69kV buses for the fault South Millersburg - West Millersburg – Wooster – East Wooster 138kV line with stuck breaker at Wooster 138kV bus.

Existing Facility Rating: N/A

Preliminary Facility Rating: 40KA

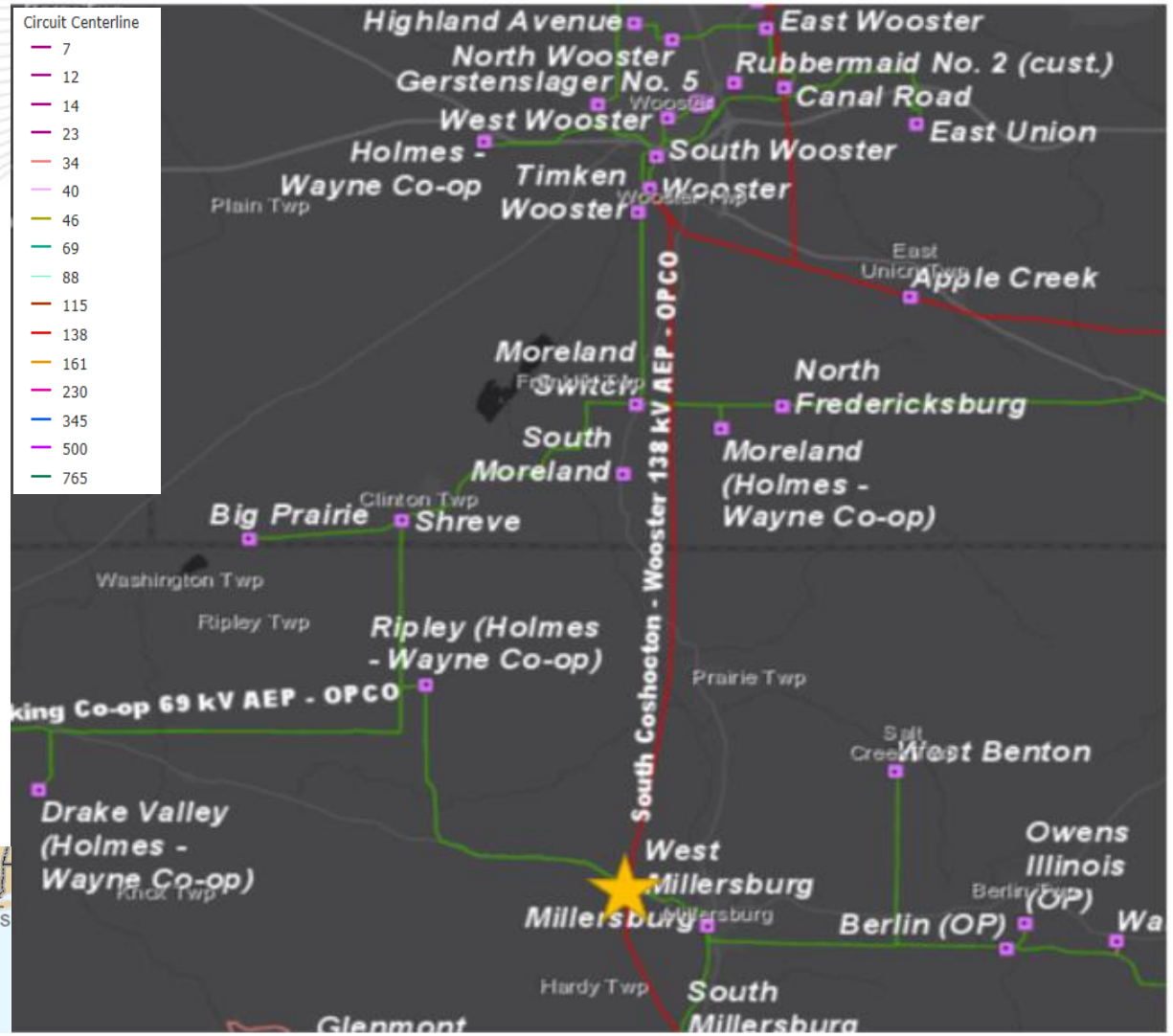
Recommended Solution: At West Millersburg station, replace the 138kV MOAB on the West Millersburg - Wooster 138kV line with a 3000A 40kA breaker (**B3259**)

Estimated Cost: $0.68M

Required In-Service: 6/1/2025

Projected IS-Service: 9/1/2024

Previously Presented: 10/16/2020



ATSI Transmission Zone: Baseline Pine 138 kV Reactor

Process Stage: Recommended Solution

Criteria: ATSI 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: ATSI-LLVM12, ATSI-LLVM13, ATSI-LLVM14, ATSI-LLVM15, ATSI-LLVM16, ATSI-LLVM17, ATSI-LLVM18, ATSI-LLVM19, ATSI-LLVM20, ATSI-LLVM21, ATSI-LLWM22, ATSI-LLVM107, ATSI-LLVM108, ATSI-LLVM109, ATSI-LLVM110, ATSI-LLVM111, ATSI-LLVM112, ATSI-LLVM113, ATSI-LLVM114, ATSI-LLVM115, ATSI-LLVM116

High Voltages, based on ATSI TO Criteria, observed for voltage magnitude analysis of the Light load case in the area of Pine 138 kV

Proposed Solution: Extend both the east and west 138 kV buses

Install one (1) 138 kV breaker and associated disconnect switches

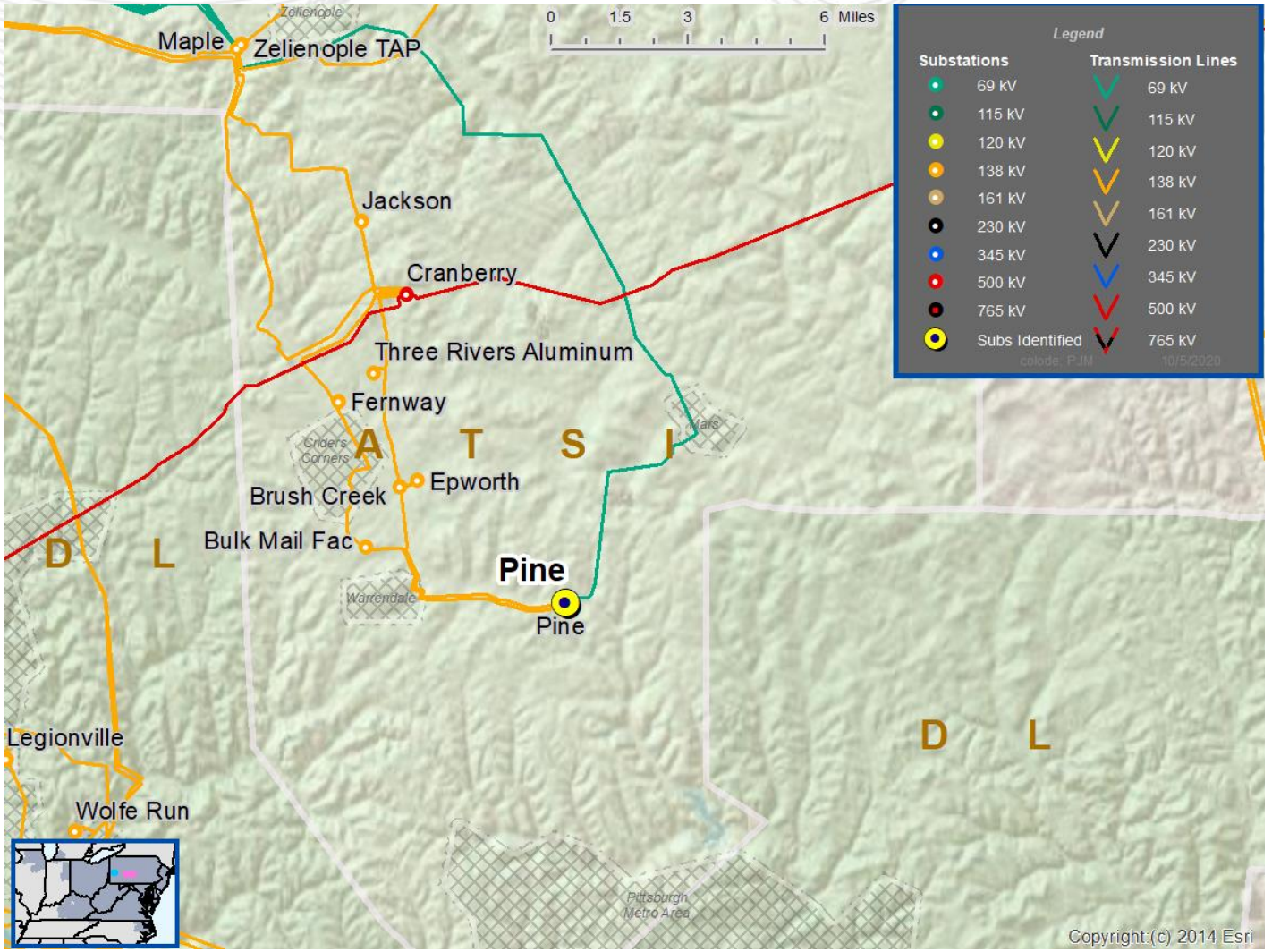
Install one 100 MVAR reactor **(B3234)**

Estimated Cost: $3.8M

Alternatives: None

Required In-Service: 6/1/2025

Previously Presented: 10/16/2020



ATSI Transmission Zone: Baseline Tangy 138 kV Reactor

Process Stage: Recommended Solution

Criteria: ATSI 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: ATSI-LLVM38

High Voltage, based on ATSI TO Criteria, observed for voltage magnitude analysis of the Light load case at Tangy 138 kV for the loss of the Gavin – Flatlick 765 kV line.

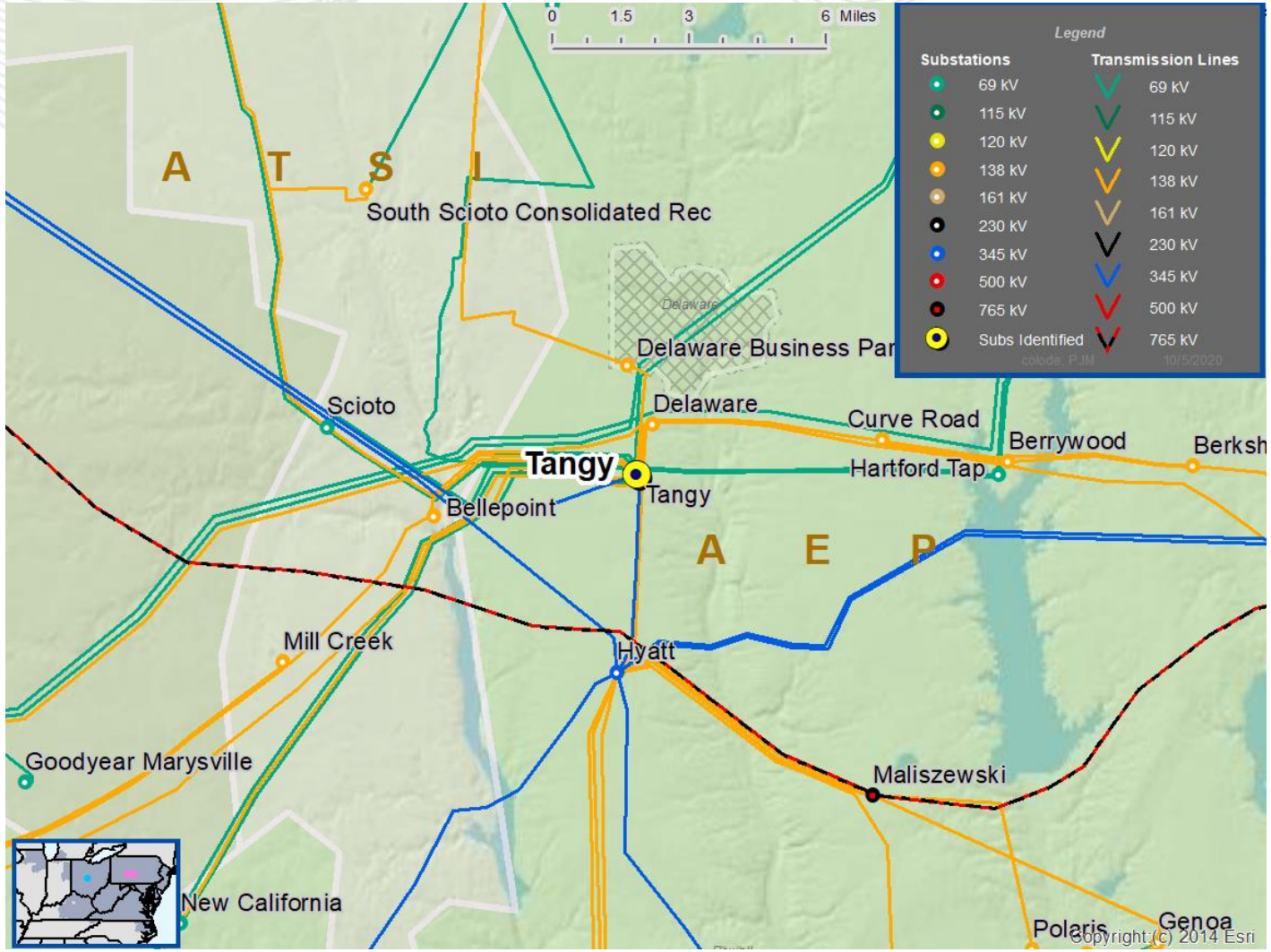
Proposed Solution: Extend 138 kV bus work to the west of Tangy Substation for the addition of the 100 MVAR reactor bay **(B3235)**

Estimated Cost: $3.7M

Alternatives: Larger reactor at Tangy

Required In-Service: 6/1/2025

Previously Presented: 10/16/2020



ATSI Transmission Zone: Baseline Broadview 138 kV Reactor

Process Stage: Recommended Solution

Criteria: ATSI 715 Criteria

Assumption Reference: 2025 RTEP assumption

Model Used for Analysis: 2025 RTEP cases

Proposal Window Exclusion: Below 200 kV

Problem Statement:

FG: ATSI-LLVM101, ATSI-LLVM102, ATSI-LLVM103, ATSI-LLVM104, ATSI-LLVM105, ATSI-LLVM106

High Voltage, based on ATSI TO Criteria, observed for voltage magnitude analysis of the Light load case around Broadview, Tech + and Morefiel138 kV busses for the loss of the Edgewood – Urbana 69 kV line.

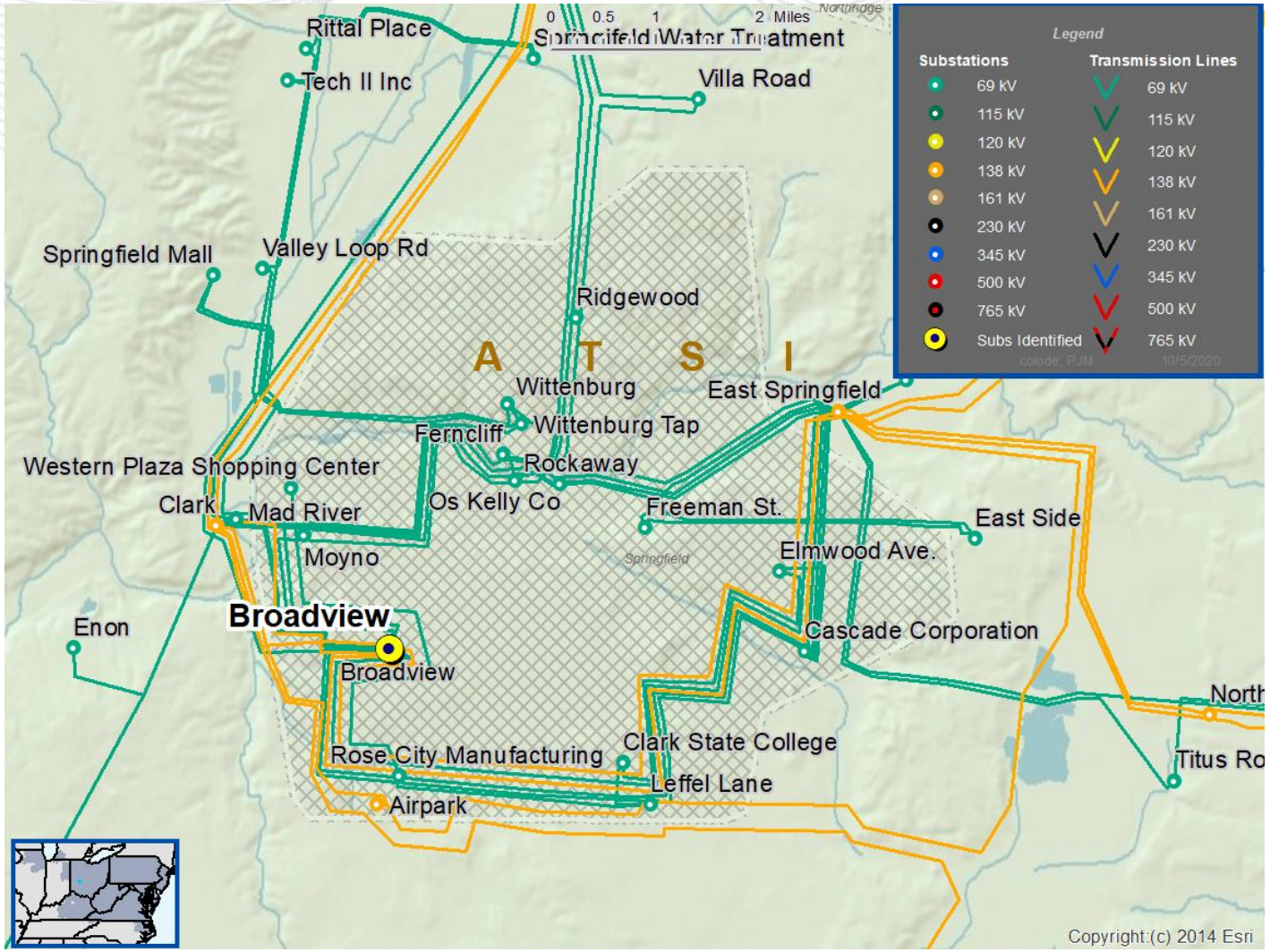
Proposed Solution: Extend the Broadview 138 kV Bus by adding two new breakers and associated equipment and install a 75 MVAR Reactor **(B3236)**

Estimated Cost: $4.5M

Alternatives: Larger reactor at Tangy

Required In-Service: 6/1/2025

Previously Presented: 10/16/2020



ATSI Transmission Zone: Baseline
East Akron 138kV Substation Breaker Upgrade

Process Stage: Recommended Solution

Criteria: Short Circuit: Overdutied Breaker

Assumption Reference: Davis Besse, Perry, Sammis reinstatement

Model Used for Analysis: 2024 RTEP

Proposal Window Exclusion: Station Equipment

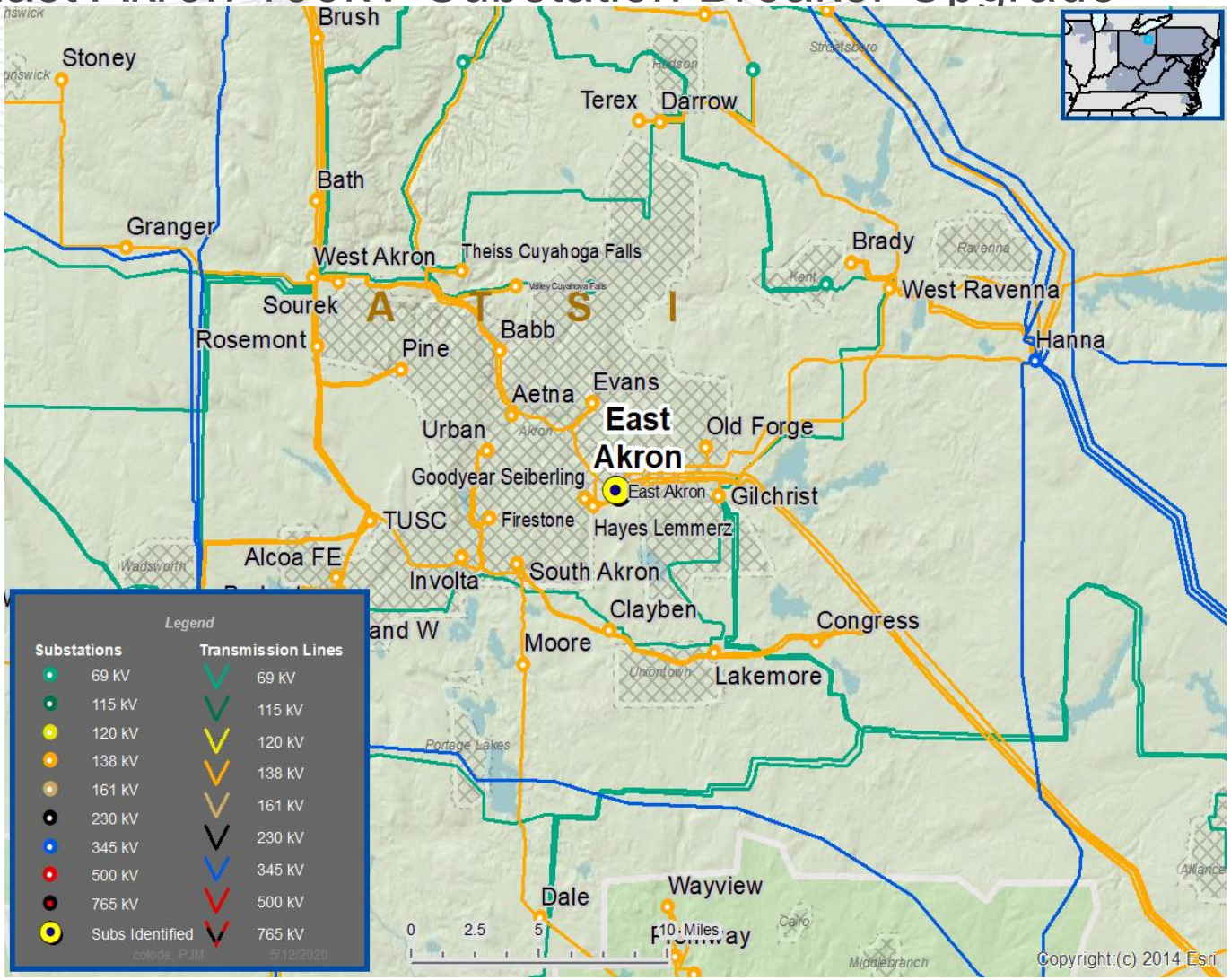
Problem Statement: The East Akron 138 kV breaker B-22 is overdutied due to the Davis Besse 1, Perry 1, Sammis 5-7 reinstatement

Existing Facility Rating: 20 kA

Proposed Solution: Replace the existing East Akron 138 kV breaker B-22 with 3000A continuous, 40 KA momentary current interrupting rating circuit breaker. **(B3277)**

Estimated Cost: $552.5K

Required In-Service: 6/1/2021
Projected In-Service: 6/1/2021
Previously Presented: 5/22/2020



Questions?

Revision History

- V1 – 11/16/2020 – Original slides posted
- V2 – 11/17/2020 – Add slides #9 and #10
- V3 – 11/18/2020 – Slide #10, Update the map
- V4 – 1/5/2020 – Slide #9, Added flowgate GD-W14
- V5 – 2/4/2021 – Slide #21, Added flowgate GD-W14 AEP-VM133 through AEP-VM136