

Subregional RTEP Committee - Western FirstEnergy Supplemental Projects

November 15, 2024

Needs

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

Need Number: APS-2024-073

Process Stage: Need Meeting – 11/15/2024

Project Driver:

Other – Plant Separation

Specific Assumption Reference:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Equipment/Technology/Design Upgrades

- FirstEnergy owned equipment located in non-FirstEnergy affiliated facilities

Problem Statement:

Mitchell Plant was previously owned by FirstEnergy. With the sale of the plant, FirstEnergy must separate assets owned by FirstEnergy from assets owned by the new plant owners.

The Charleroi – Mitchell – Yukon (Shepler Hill Jct) 138 kV Line needs to be rerouted off the Mitchell Plant roof.



Need Number: APS-2024-088

Process Stage: Need Meeting – 11/15/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

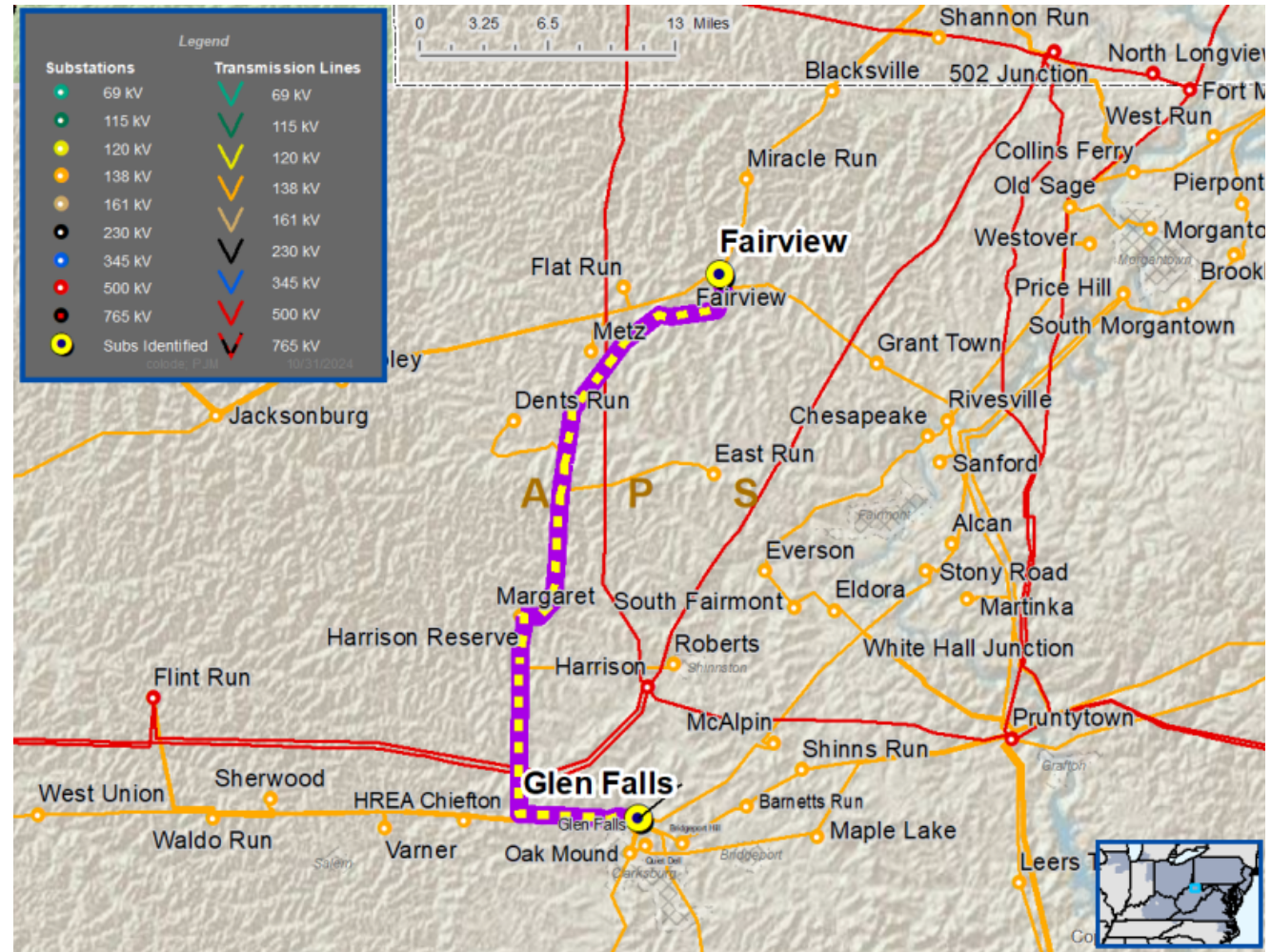
Line Condition Rebuild/Replacement

- Age/condition of wood transmission line structures

Problem Statement:

- The Glenn Falls – Fairview 138 kV Line was constructed approximately 60 years ago. It is approximately 40 miles long with 37 miles of wood pole structures and three miles of steel transmission line structures.
- Per recent inspection, the line is exhibiting deterioration. Inspection findings include:
 - 136 wood pole structures failed due to woodpecker damage, rot and cracking.
 - Maintenance required on steel structures with no major defects reported.
- Over the last five years, the line has experienced 11 unplanned sustained outages primarily due to failed line equipment.

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APS Transmission Zone M-3 Process
Glen Falls – Fairview 138 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-088	Glen Falls – Harrison Reserve Tap 138 kV Line	221 / 268 / 250 / 317	221 / 268 / 250 / 317
	Harrison Reserve Tap – Margaret No. 95 Tap 138 kV Line	221 / 268 / 250 / 317	221 / 268 / 250 / 317
	Margaret No. 95 – East Run Tap 138 kV Line	221 / 268 / 250 / 317	221 / 268 / 250 / 317
	East Run Tap – Dents Run Tap 138 kV Line	221 / 268 / 250 / 317	221 / 268 / 250 / 317
	Dents Run Tap – Fairview 138 kV Line	175 / 228 / 250 / 283	221 / 268 / 250 / 317

Need Number: APS-2024-092

Process Stage: Need Meeting – 11/15/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

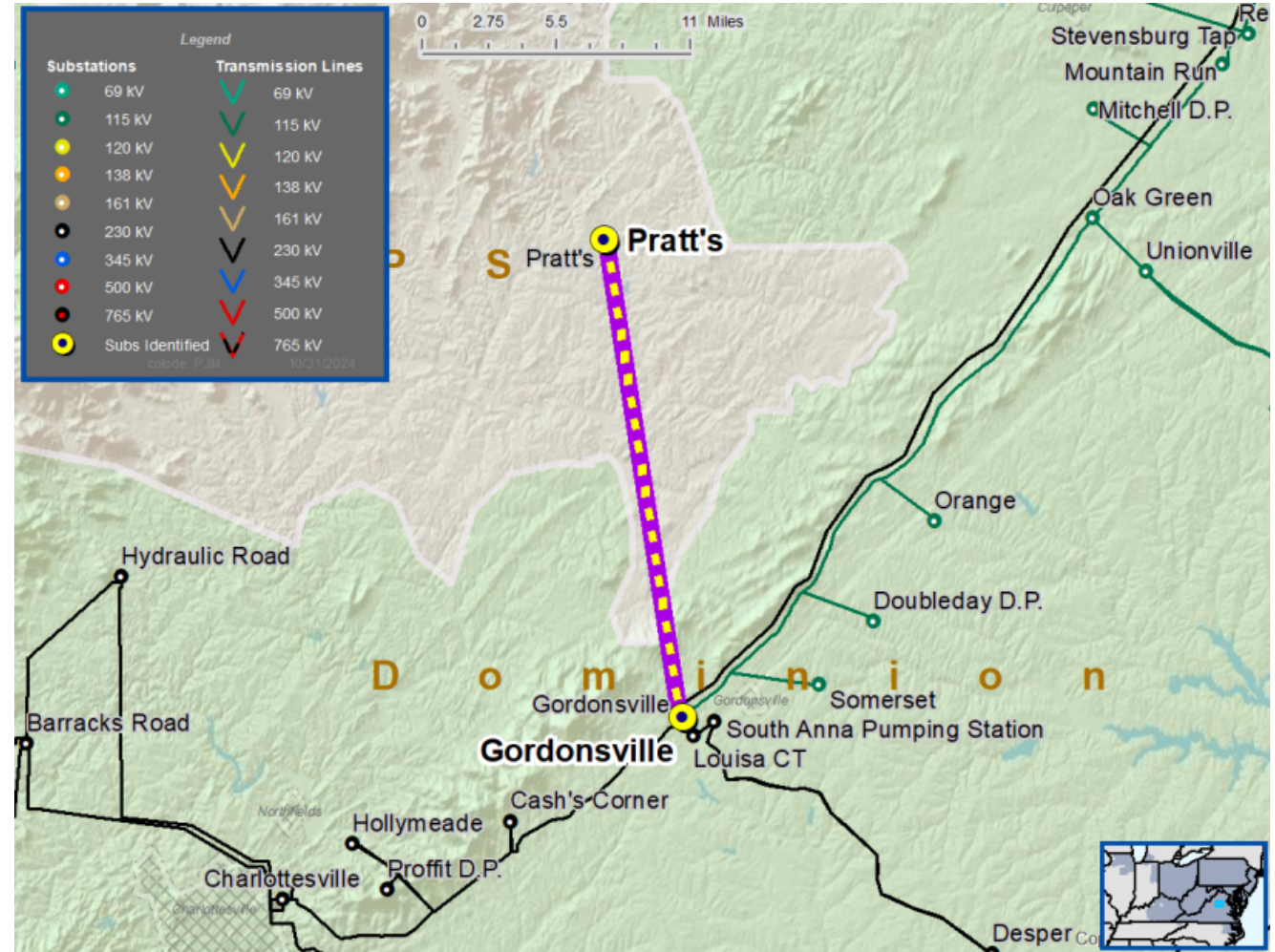
- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood transmission line structures

Problem Statement:

- The Gordonsville – Pratts 115 kV Line was constructed approximately 40 years ago. It is approximately 18 miles long with 136 wood pole transmission line structures.
- Per recent inspection, the line is exhibiting deterioration. Inspection findings include:
 - 78 wood pole structures failed due to woodpecker damage and rot.
- Over the last five years, the line has experienced two unplanned sustained outages primarily due to failed line equipment.
- Existing Transmission Line Ratings:
 - 145 / 184 / 181 / 213 MVA (SN/SE/WN/WE)
- Existing Transmission Line Conductor Ratings:
 - 257 / 313 / 291 / 371 MVA (SN/SE/WN/WE)



Need Number: APS-2024-093

Process Stage: Need Meeting – 11/15/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

- System reliability/performance

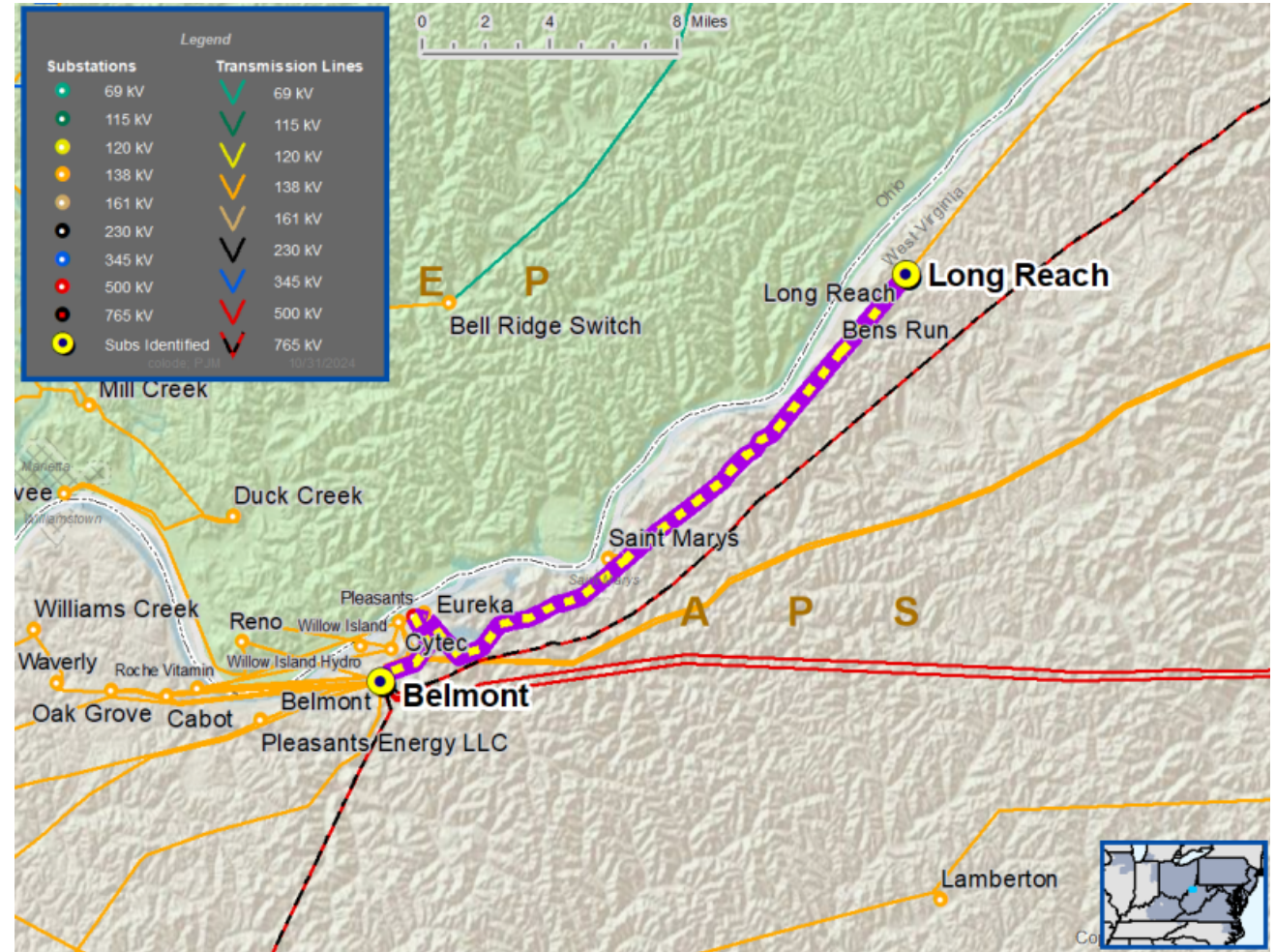
Line Condition Rebuild/Replacement

- Age/condition of wood transmission line structures

Problem Statement:

- The Belmont – Long Reach 138 kV Line was constructed approximately 47 years ago and is approaching end of life. It is approximately 17 miles long with 15 miles of wood pole structures and two miles of steel transmission line structures.
- Per recent inspection, the line is exhibiting deterioration. Inspection findings include:
 - 86 wood pole structures failed due to woodpecker damage and rot.
 - Maintenance required on steel structures with no major defects reported.
- Over the last five years, the line has experienced five unplanned sustained outages.

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APS Transmission Zone M-3 Process Belmont – Long Reach 138 kV Line

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-093	Belmont – Eureka Tap 138 kV Line	308 / 376 / 349 / 445	308 / 376 / 349 / 445
	Eureka Tap – Pleasants Tap 138 kV Line	308 / 376 / 349 / 445	308 / 376 / 349 / 445
	Pleasants Tap – St Marys Tap 138 kV Line	134 / 138 / 157 / 157	134 / 138 / 157 / 157
	St Marys Tap – Bens Run Tap 138 kV Line	148 / 151 / 166 / 166	148 / 151 / 166 / 166
	Bens Run Tap – Long Reach 138 kV Line	148 / 151 / 166 / 166	148 / 151 / 166 / 166

Need Number: APS-2024-095
Process Stage: Need Meeting – 11/15/2024

Supplemental Project Driver(s):
Equipment Material Condition, Performance and Risk

Specific Assumption Reference(s)

System Performance Global Factors

- System reliability and performance
- Substation/line equipment limits

Substation Condition Rebuild/Replacement

- Age/condition of substation equipment
- Circuit breakers and other fault interrupting devices

Problem Statement:

- The existing control building at Oak Mound Substation is congested. There is not sufficient space for additional panel upgrades.
- The existing 138 kV breakers are approaching end of life:
 - Breaker 3 (bus tie) is approximately 38 years old.
 - Breaker 2 (Waldo Run No. 2) is approximately 42 years old.
 - Breaker 4 (Oak Mound) is approximately 55 years old.
- Replacement parts are difficult to source leading to non-standard repairs.
- Transmission lines are limited by terminal equipment.

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APS Transmission Zone M-3 Process Oak Mound Control Building and Breakers

Geographic Map:
Include all facilities mentioned on slide, small locator map
and a legend.



APS Transmission Zone M-3 Process Oak Mound Control Building and Breakers

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2024-095	Oak Mound – Quiet Dell 138 kV Line*	292 / 306 / 306 / 306	308 / 376 / 349 / 445
	Oak Mound – Waldo Run No. 1 138 kV Line	278 / 339 / 315 / 401	278 / 339 / 315 / 401
	Oak Mound – Waldo Run No. 2 138 kV Line	278 / 339 / 315 / 401	278 / 339 / 315 / 401
	Oak Mound – Rider 138 kV Line	309 / 376 / 349 / 445	309 / 376 / 349 / 445
	Oak Mound – Glen Falls 138 kV Line	160 / 192 / 180 / 228	160 / 192 / 180 / 228

*Refer to APS-2024-089

Need Number: APS-2024-096

Process Stage: Need Meeting – 11/15/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

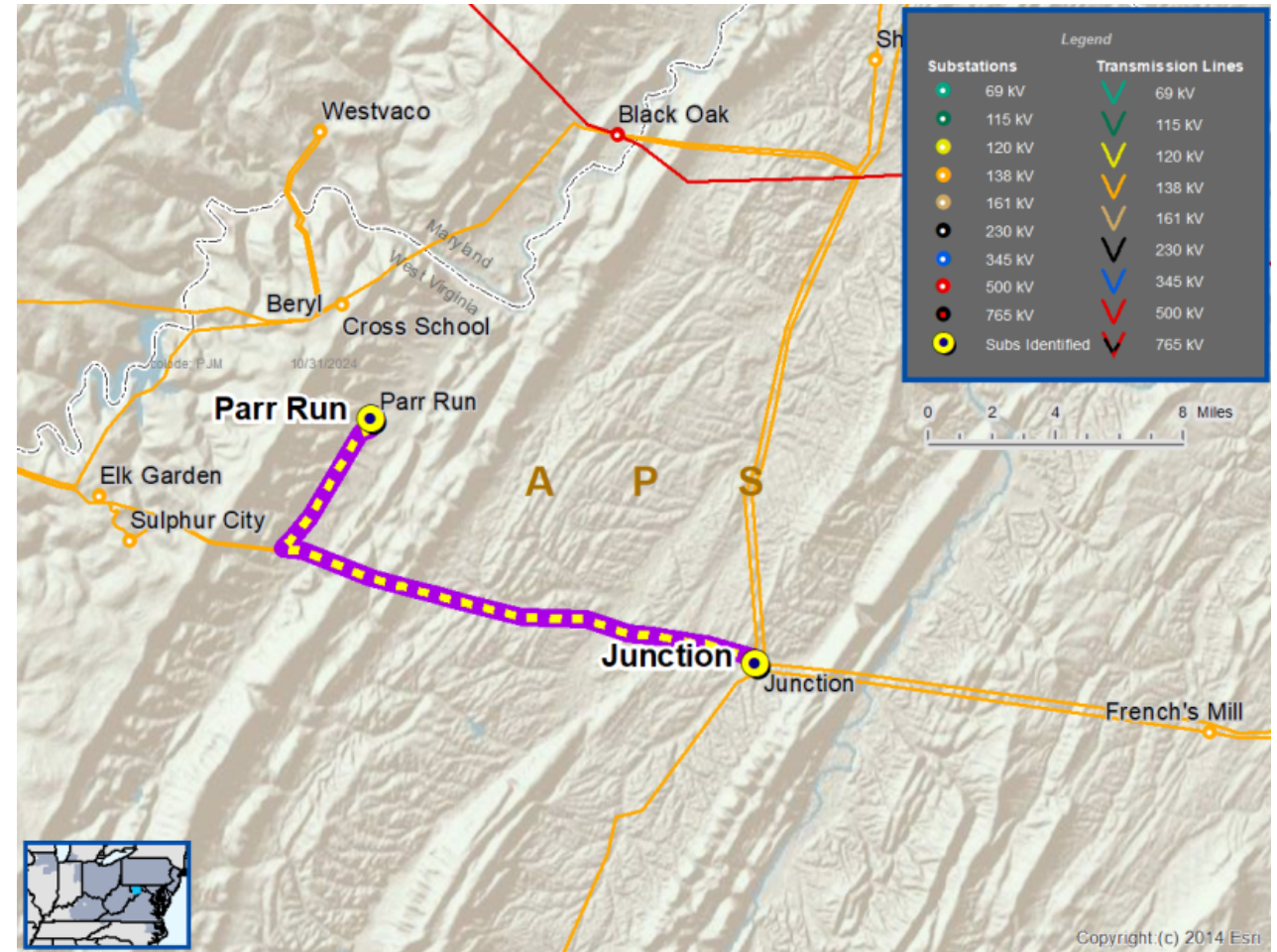
- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood transmission line structures

Problem Statement:

- The Junction – Parr Run 138 kV Line was constructed approximately 47 years ago. It is approximately 17 miles long with 98 wood pole and 18 steel lattice transmission line structures.
- Per recent inspection, the line is exhibiting deterioration. Inspection findings include:
 - 136 maintenance conditions were identified due to woodpecker damage, rotten cross arms, cracked and deteriorating wood poles.
 - Maintenance required on steel structures with no major defects reported.
- Over the last five years, the line has not experienced any unscheduled, sustained outages.
- Existing Transmission Line Ratings:
 - 164 / 206 / 216 / 229 MVA (SN/SE/WN/WE)
- Existing Transmission Line Conductor Ratings:
 - 221 / 268 / 250 / 317 MVA (SN/SE/WN/WE)



Solutions

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

Need Number: APS-2023-022

Process Stage: Solution Meeting – 11/15/2024

Previously Presented: Need Meeting – 07/21/2023

Project Driver:

Operational Flexibility and Efficiency

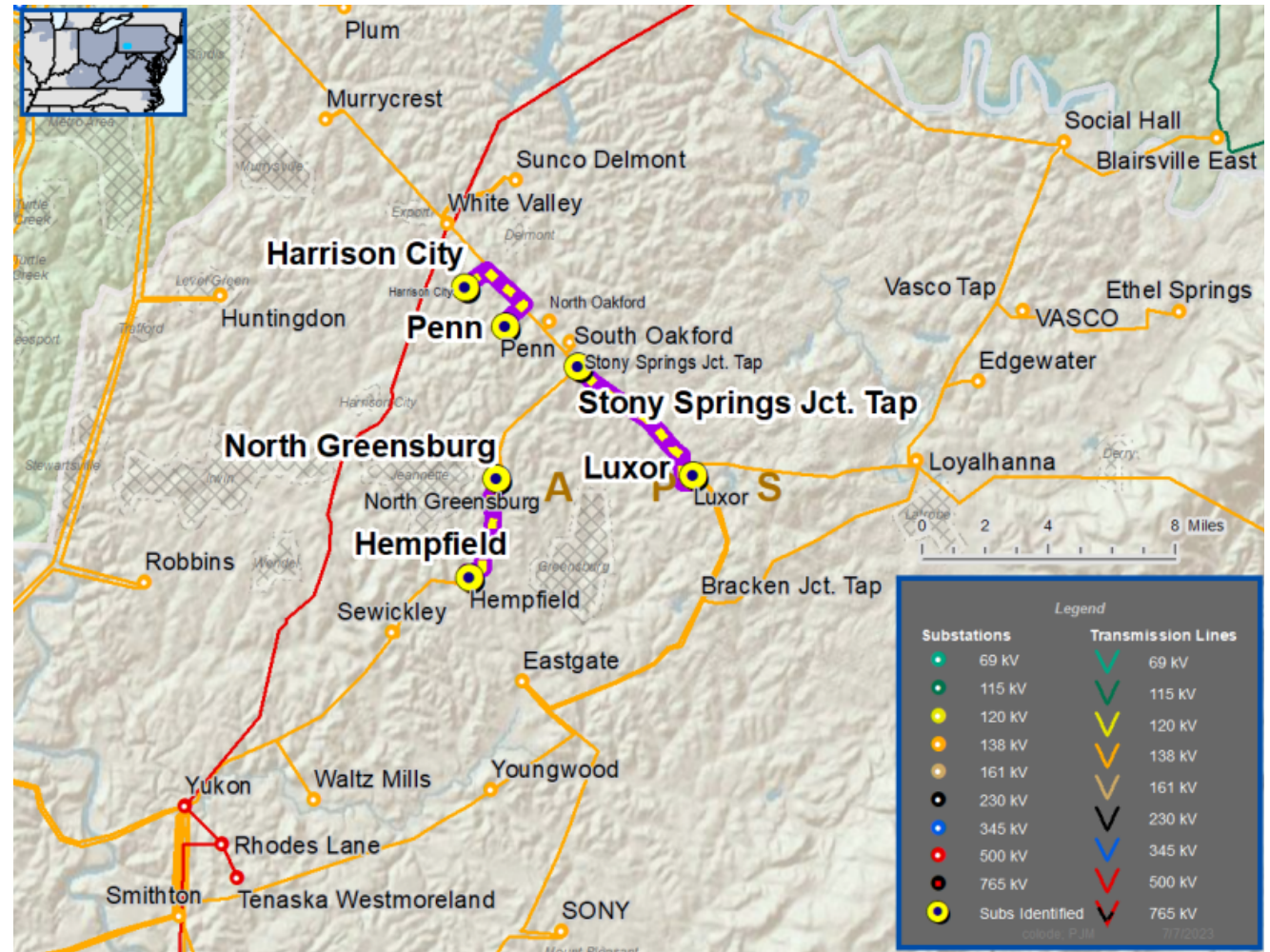
Specific Assumption Reference:

- System reliability and performance
- Load at risk in planning and operational scenarios
- Add/Expand Bus Configuration
- Upgrade Relay Schemes

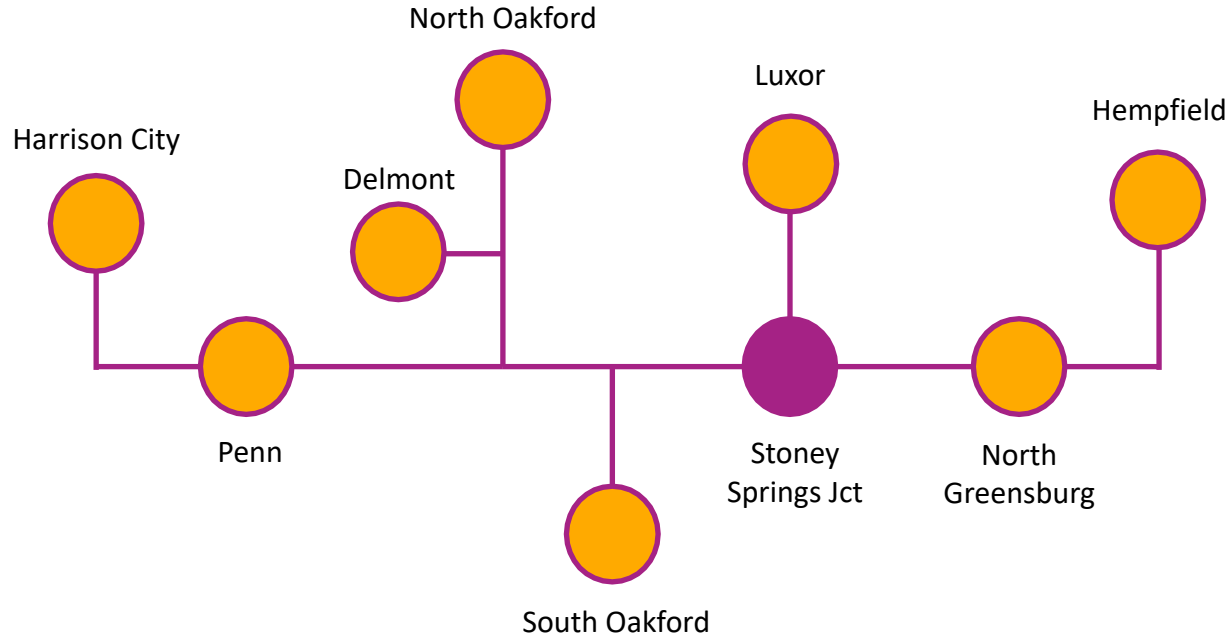
Problem Statement:

- The Stony Springs Junction (Harrison City - Hempfield – Luxor) 138 kV Line is a three terminal line that provides direct service to over 25,000 customers and provides a transmission network path.
- The multi-terminal line creates difficulties for protective relaying.
- The tap stations on the line lack switches and SCADA.
- Terminal stations are equipped with antiquated relaying schemes and equipment that limits the use of the full capacity of the transmission line conductor.
- There is ~25 MW of load served directly from the line. Additionally, the line has 25 miles of exposure.

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Proposed Solution:



Alternatives Considered: Build double circuit from Stony Springs Jct to Luxor Substation.

Estimated Project Cost: \$13.6M

Projected In-Service: 6/22/2027

Status: Conceptual

Model: 2023 RTEP model for 2028 Summer (50/50)

Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
34.5 kV	
23 kV	
New	



APS Transmission Zone M-3 Process Stony Springs Junction Area

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
APS-2023-022	Harrison City – Penn 138 kV Line	242 / 297 / 310 / 351	308 / 376 / 349 / 445
	Penn – North Oakford Tap 138 kV Line	296 / 302 / 332 / 332	296 / 302 / 332 / 332
	North Oakford Tap – South Oakford Tap 138 kV Line	296 / 302 / 332 / 332	296 / 302 / 332 / 332
	North Oakford Tap – Delmont 138 kV Line	221 / 268 / 250 / 317	221 / 268 / 250 / 317
	South Oakford Tap – Stony Springs Junction 138 kV Line	296 / 302 / 332 / 322	296 / 302 / 332 / 322
	Stony Springs Junction – North Greensburg 138 kV Line	308 / 376 / 349 / 445	308 / 376 / 349 / 445
	North Greensburg – Hempfield 138 kV Line	294 / 350 / 349 / 401	308 / 376 / 349 / 445
	Stony Springs Junction – Luxor 138 kV Line	296 / 302 / 332 / 332	296 / 302 / 332 / 332

Proposed Solution:

Need #	Transmission Line / Substation Locations	New MVA Line Rating (SN / SE / WN / WE)	Scope of Work	Estimated Cost (\$M)	Target ISD
APS-2023-022	Harrison City – Penn 138 kV Line	308 / 376 / 349 / 445	<ul style="list-style-type: none"> ▪ At Harrison City Substation: Replace bus and line side breaker risers. ▪ At Penn Substation: Install one line breaker and one bus tie breaker. 	\$13.6	6/22/2027
	Penn – North Oakford Tap 138 kV Line	296 / 302 / 332 / 332	<ul style="list-style-type: none"> ▪ At North Oakford Tap: Install new disconnect switches equipped with auto-sectionalizing. 		
	North Oakford Tap – South Oakford Tap 138 kV Line	296 / 302 / 322 / 332	<ul style="list-style-type: none"> ▪ At South Oakford Tap: Install three switches with SCADA. 		
	North Oakford – Delmont 138 kV Line	221 / 268 / 250 / 317	<ul style="list-style-type: none"> ▪ At North Oakford Substation: Install full SCADA control on the existing switch. ▪ At Delmont Substation: Install full SCADA control on the existing switch. 		
	South Oakford Tap – Stony Springs Junction 138 kV Line	296 / 302 / 332 / 322	<ul style="list-style-type: none"> ▪ At Stony Springs Junction: Install a three-breaker ring bus and associated relaying. 		
	Stony Springs Junction – North Greensburg 138 kV Line	308 / 376 / 349 / 445	<ul style="list-style-type: none"> ▪ At North Greensburg Substation: Replace circuit breaker. 		
	North Greensburg – Hempfield 138 kV Line	308 / 376 / 349 / 445	<ul style="list-style-type: none"> ▪ At Hempfield: Replace line circuit breaker, disconnect switches and associated relaying. 		
	Stony Springs Junction – Luxor 138 kV Line	296 / 302 / 332 / 367	<ul style="list-style-type: none"> ▪ At Luxor Substation: Replace circuit breaker, substation conductor, breaker risers on both sides of breaker and relaying. 		

Appendix

High Level M-3 Meeting Schedule

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

Revision History

11/5/2024– V1 – Original version posted to pjm.com