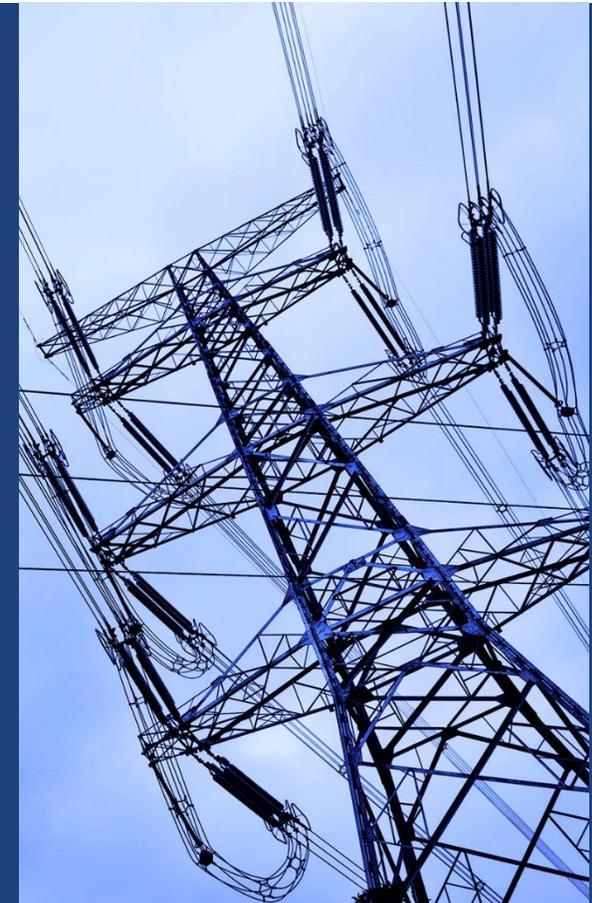


Subregional RTEP Committee – Western

FirstEnergy Supplemental Projects



Submission of Supplemental Projects for Inclusion in the Local Plan

APS Transmission Zone M-3 Process

Pursley – Franklin 138 kV Line – Provide 138 kV Service

Need Number: APS-2019-001

Process State: Selected Solutions 6/12/2019

Previously Presented:

Need Meeting 1/11/2019

Solution Meeting 2/20/2019

Project Driver:

Customer Service

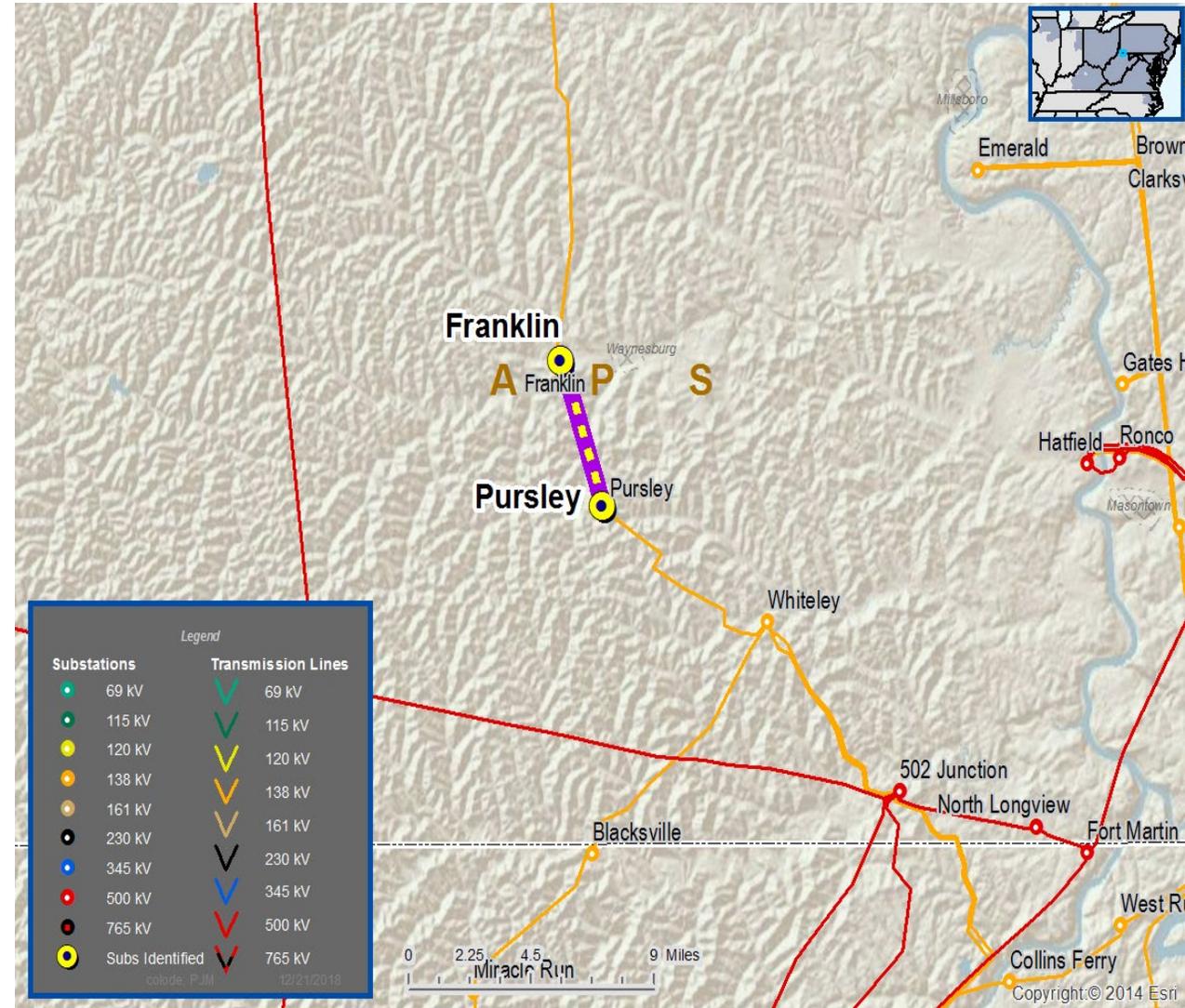
Specific Assumption Reference:

New customer connection request will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

Problem Statement:

New Customer Connection – A customer requested 138 kV service; anticipated load is 15 MW; location is near the Pursley – Franklin 138 kV line.

Requested in-service date is June 2020.



APS Transmission Zone M-3 Process

Pursley – Franklin 138 kV Line – Provide 138 kV Service

Need Number: APS-2019-001

Process State: Submission of Supplemental Project for inclusion in the Local Plan 6/12/2019

Selected Solution:

Provide 138 kV Service

- Tap the existing Pursley – Franklin 138 kV line
- Install one 138 kV line switch (Franklin side)
- Install 138 kV switch on line to customer
- Construct single span of 138 kV line to customer substation

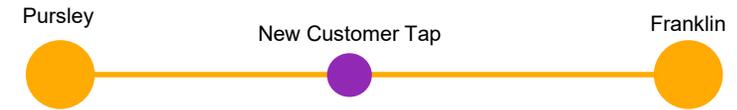
Estimated Cost: \$0.14M

Projected In-Service: 6/1/2020

Supplemental Project ID: s1826

Project Status: Conceptual

Model: 2018 Series 2023 Summer RTEP 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

Fawn – Lawson Jct 138 kV Line – Provide 138 kV Service

Need Number: APS-2019-002

Process State: Selected Solutions 6/12/2019

Previously Presented:

Need Meeting 1/11/2019

Solution Meeting 2/20/2019

Project Driver:

Customer Service

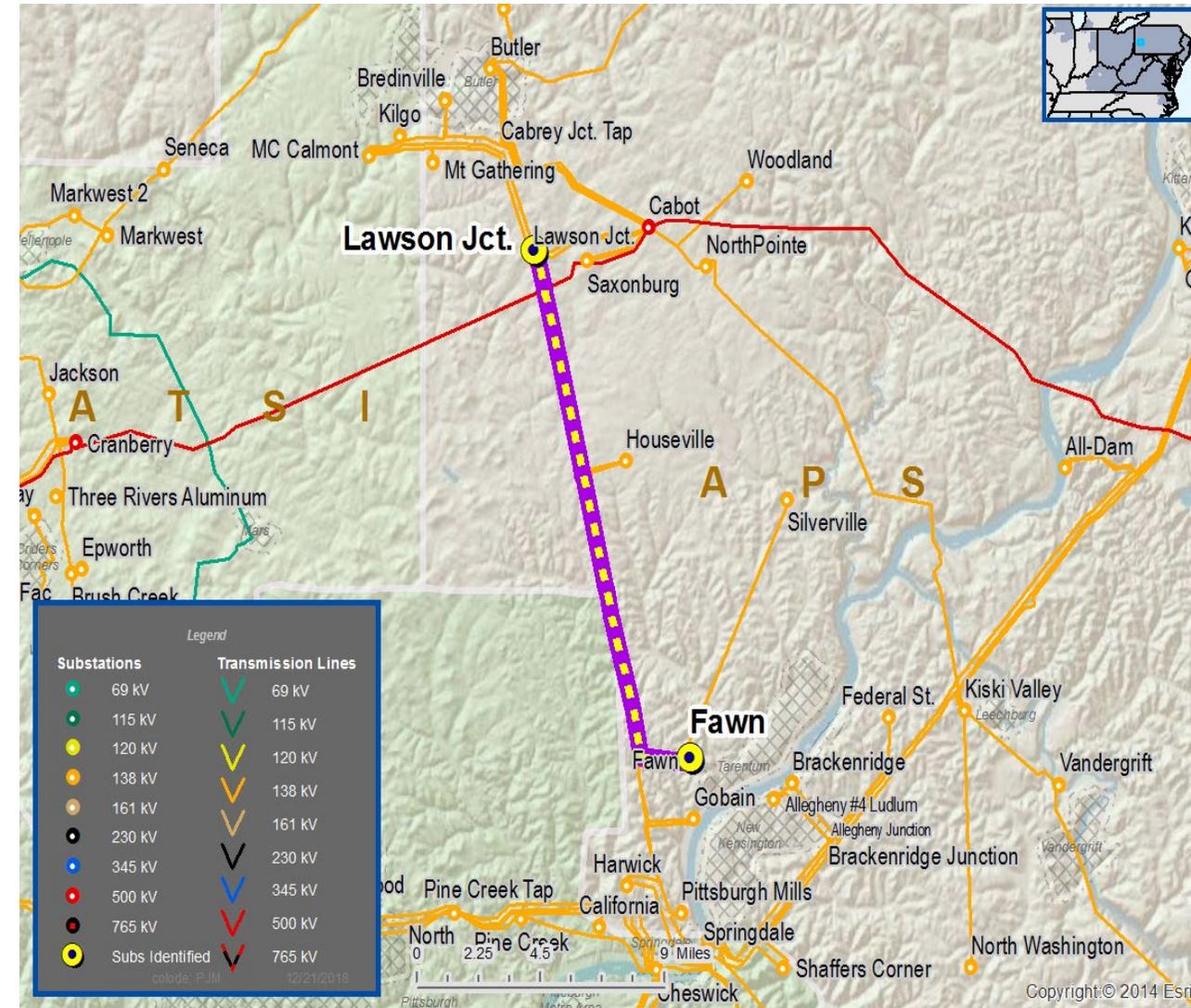
Specific Assumption Reference:

New customer connection request will be evaluated per FirstEnergy's "Requirements for Transmission Connected Facilities" document and "Transmission Planning Criteria" document.

Problem Statement:

New Customer Connection – A customer requested 138 kV service, anticipated load is 20 MW, location is near the Fawn – Lawson Jct 138 kV line.

Requested in-service date is July 2020.



APS Transmission Zone M-3 Process

Fawn – Lawson Jct 138 kV Line – Provide 138 kV Service

Need Number: APS-2019-002

Process State: Submission of Supplemental Project for inclusion in the Local Plan 6/12/2019

Selected Solution:

Provide 138 kV Service

- Tap the existing Fawn – Lawson Jct 138 kV line
- Install two 138 kV line switches
- Install 138 kV switch on line to customer
- Construct ~1.5 miles of 138 kV line to customer substation

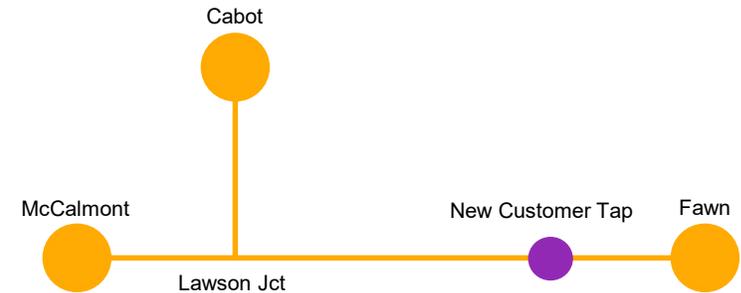
Estimated Cost: \$0.14M

Projected In-Service: 6/30/2020

Supplemental Project ID: s1827

Project Status: Conceptual

Model: 2018 Series 2023 Summer RTEP 50/50



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

Need Number: APS-2019-003 to 004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 12/06/2019

Previously Presented:

Need Meeting 03/25/2019

Solution Meeting 07/24/2019

Project Driver:

Equipment Material Condition, Performance and Risk

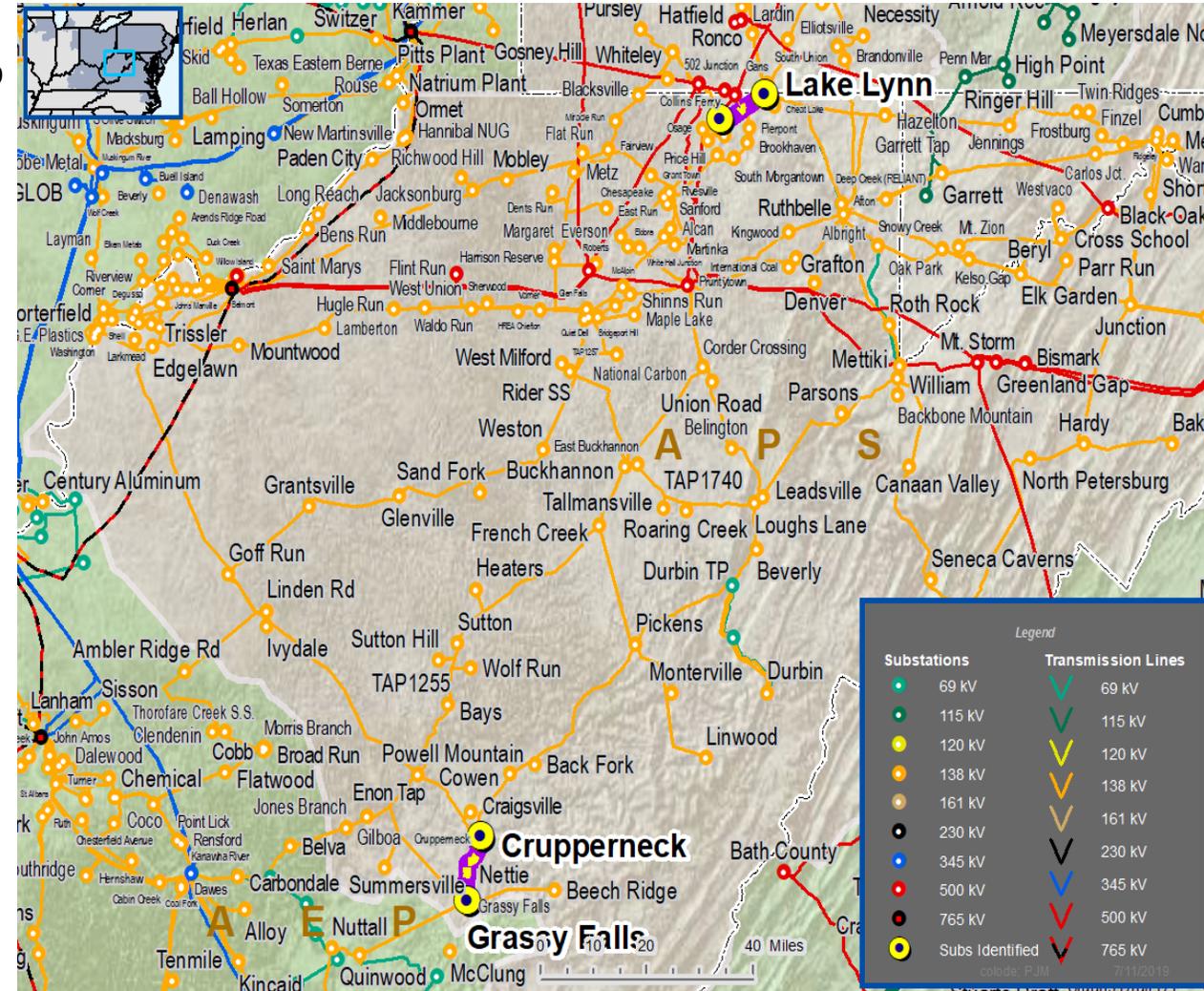
Operational Flexibility and Efficiency

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
 - Substation/line equipment limits
- Upgrade Relay Schemes
- Relay schemes that have a history of misoperation
 - Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
 - Communication technology upgrades
 - Bus protection schemes

Continued on next slide...





APS Transmission Zone M-3 Process Multiple Misoperation Relay Projects

Need Number: APS-2019-003 to 004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 12/09/2019

Problem Statement:

- FirstEnergy has identified protection schemes using a certain vintage of relays and communication equipment that have a history of misoperation.
- Proper operation of the protection scheme requires all the separate components perform adequately during a fault.
- In many cases the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.
- Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating (SN / SE)	Existing Conductor Rating (SN / SE)	Limiting Terminal Equipment
APS-2019-003	Crupperneck – Grassy Falls 138 kV Line	160 / 192 293 / 306	160 / 192 308 / 376	Line Relaying
APS-2019-004	Collins Ferry – Lake Lynn 138 kV Line	329 / 406 324 / 395	353 / 406 324 / 395	Substation Conductor



APS Transmission Zone M-3 Process Multiple Misoperation Relay Projects

Need Number: APS-2019-003 to 004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 12/06/2019

Selected Solution:

Need Number	Transmission Line / Substation Locations	Supplemental Project ID	New MVA Line Rating (SN / SE)	Proposed Solution	Estimated Costs (\$ M)	Target ISD
APS-2019-003	Crupperneck – Grassy Falls 138 kV Line	s2065	160 / 192 308 / 376	<ul style="list-style-type: none"> Grassy Falls 138 kV Substation: Replace line relaying, breaker and wave trap. Crupperneck 138 kV Substation: Replace line relaying. 	\$0.7M	12/31/2019
APS-2019-004	Collins Ferry – Lake Lynn 138 kV Line	s2066	353 / 406 324 / 395	<ul style="list-style-type: none"> Collins Ferry 138 kV Substation: Replace line relaying and substation conductor. Lake Lynn 138 kV Substation: Replace line relaying. 	\$0.2M	12/31/2019

Model: 2018 Series 2023 Summer RTEP 50/50

Revision History

6/20/2019 – Original posting of s1826 & s1827

7/26/2019 – Reposted s1826 & s1827 with maps

12/9/2019 – Updated to include s2065 & s2066