

Subregional RTEP Committee – Western FirstEnergy Supplemental Projects

July 22, 2022

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-2022-005

Process Stage: Need Meeting 07/22/2022

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

Global Factors

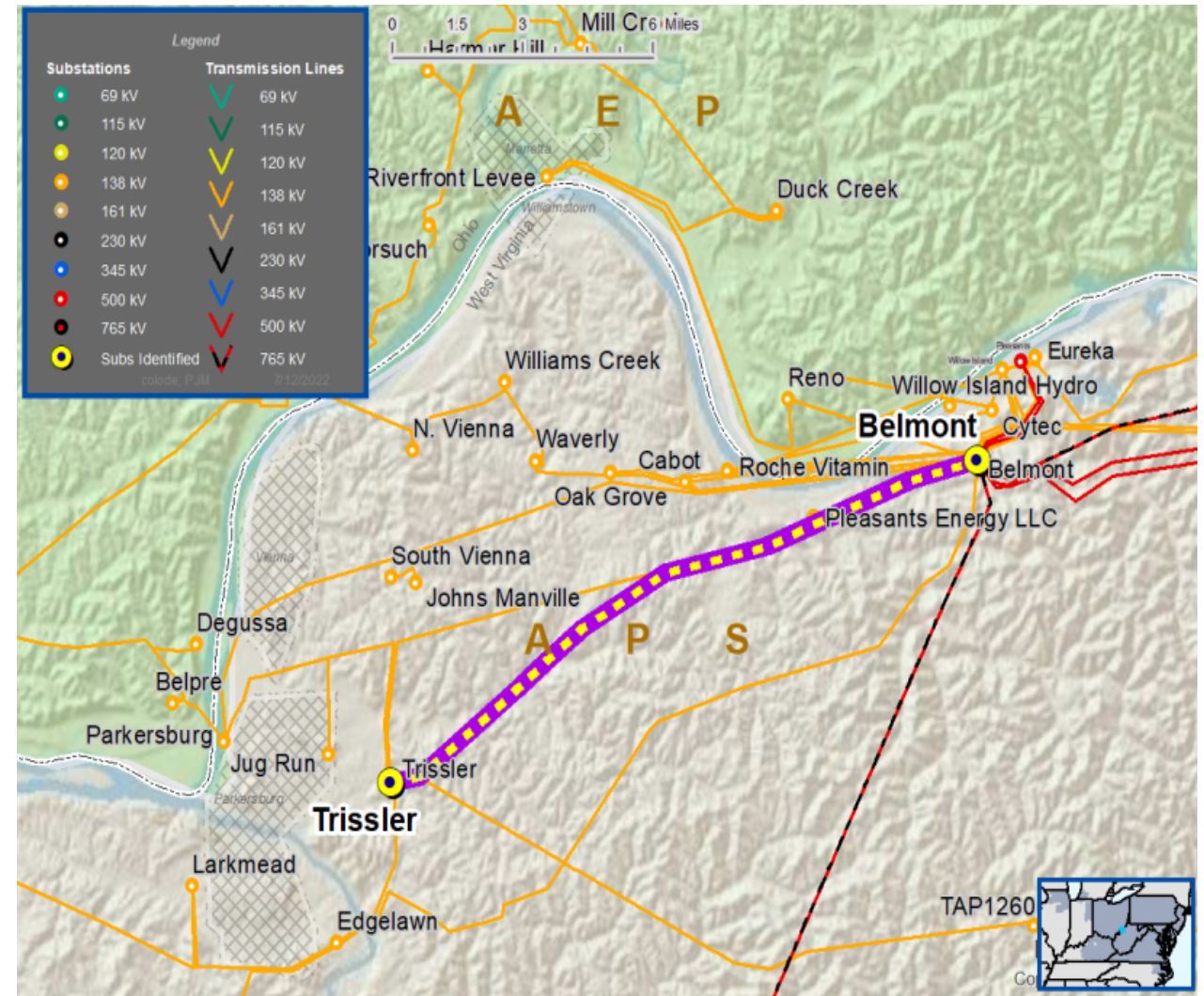
- System reliability and performance
- Substation and line equipment limits
- Upgrade Relay Schemes
 - Relay schemes that have a history of misoperation
 - Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
 - Communication technology upgrades
 - Bus protection schemes

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 properly together during a fault
- The identified protection equipment cannot be effectively repaired for reasons such as lack of replacement parts and available expertise in the outdated technology.
- Newer equipment provides better monitoring, enhances capability of system event analysis, and performs more reliably
- Transmission line ratings are limited by terminal equipment

Belmont – Trissler 648 138kV Line (substation conductor)

- Existing line rating: 292 / 314 MVA (SN / SE)
- Existing Transmission conductor rating: 308 / 376 MVA (SN / SE)



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-2022-002

Process Stage: Solution Meeting 07/22/2022

Previously Presented: Need Meeting 05/19/2022

Project Driver:

*Equipment Material Condition, Performance and Risk
Operational Flexibility and Efficiency*

Specific Assumption Reference:

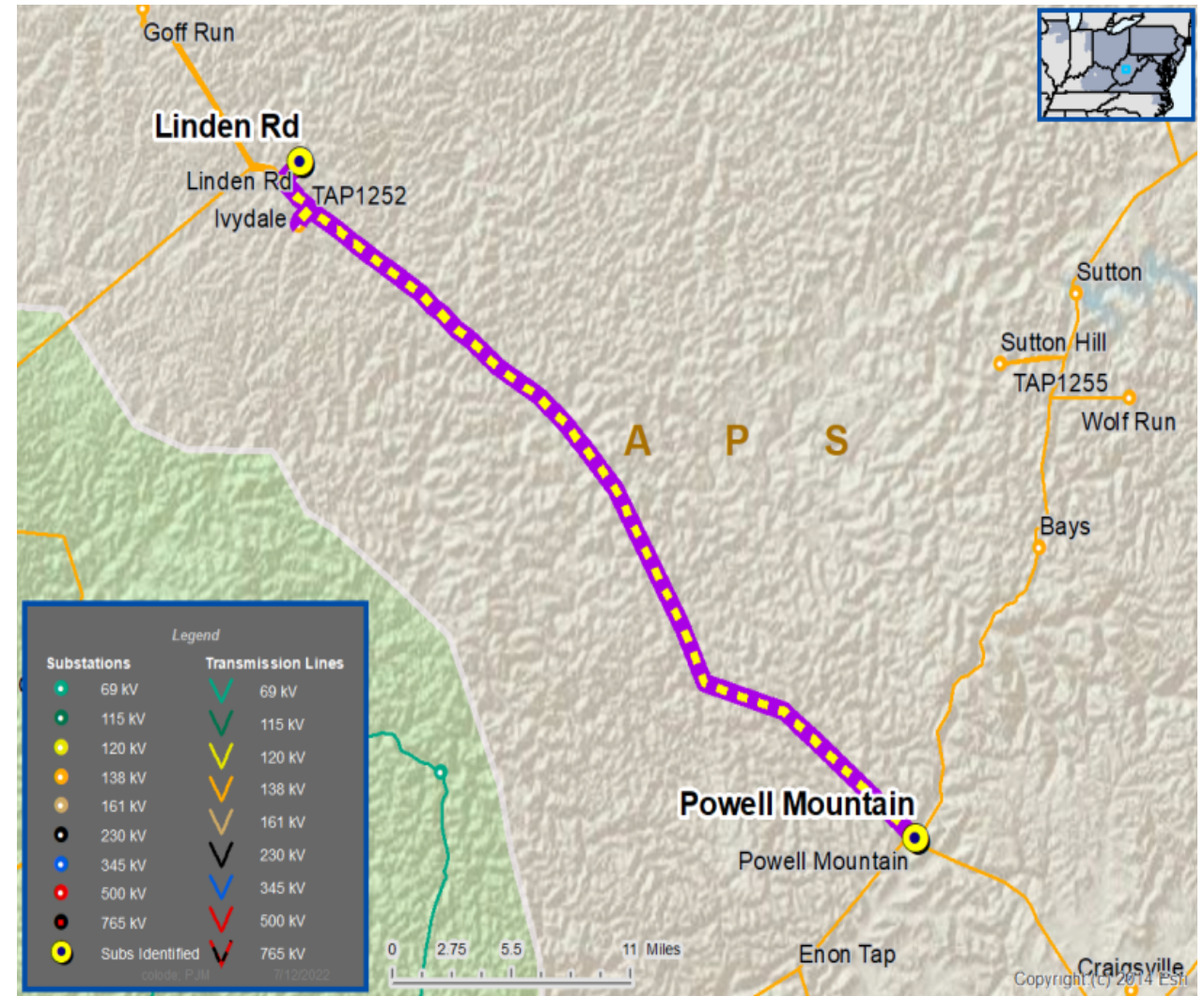
System reliability and performance.
System Condition Projects

- Line Condition Rebuild/Replacement
 - Transmission Line Switches

Problem Statement:

The Powell Mountain – Linden Road 138 kV line has two in-line switches that have limited availability of spare parts and vendor technical support. Age/condition of wood pole transmission line structures and associated switches lead to operational limitations.

- Switches A-1225 and A-1226
 - Transmission line rating is 164/206 MVA (SN/SE)



Need Number: APS-2022-002

Process Stage: Solution Meeting 07/22/2022

Proposed Solution:

- Replace existing switches A-1225 and A-1226 at the Ivydale tap on the Powell Mountain – Linden Road 138 kV line

Ratings Before:

- Powell Mt – Ivydale Tap 138 kV Line:
 - 164/206/228 MVA SN/SE/SLD
 - 216/229/245 MVA WN/WE/WLD
- Ivydale Tap – Linden Road 138 kV Line:
 - 164/206/237 MVA SN/SE/SLD
 - 216/248/271 MVA WN/WE/WLD

Ratings After:

- Powell Mt – Ivydale Tap 138 kV Line:
 - 169/209/228 MVA SN/SE/SLD
 - 217/229/245 MVA WN/WE/WLD
- Ivydale Tap – Linden Road 138 kV Line:
 - 169/213/245 MVA SN/SE/SLD
 - 217/280/303 MVA WN/WE/WLD

Alternatives Considered:

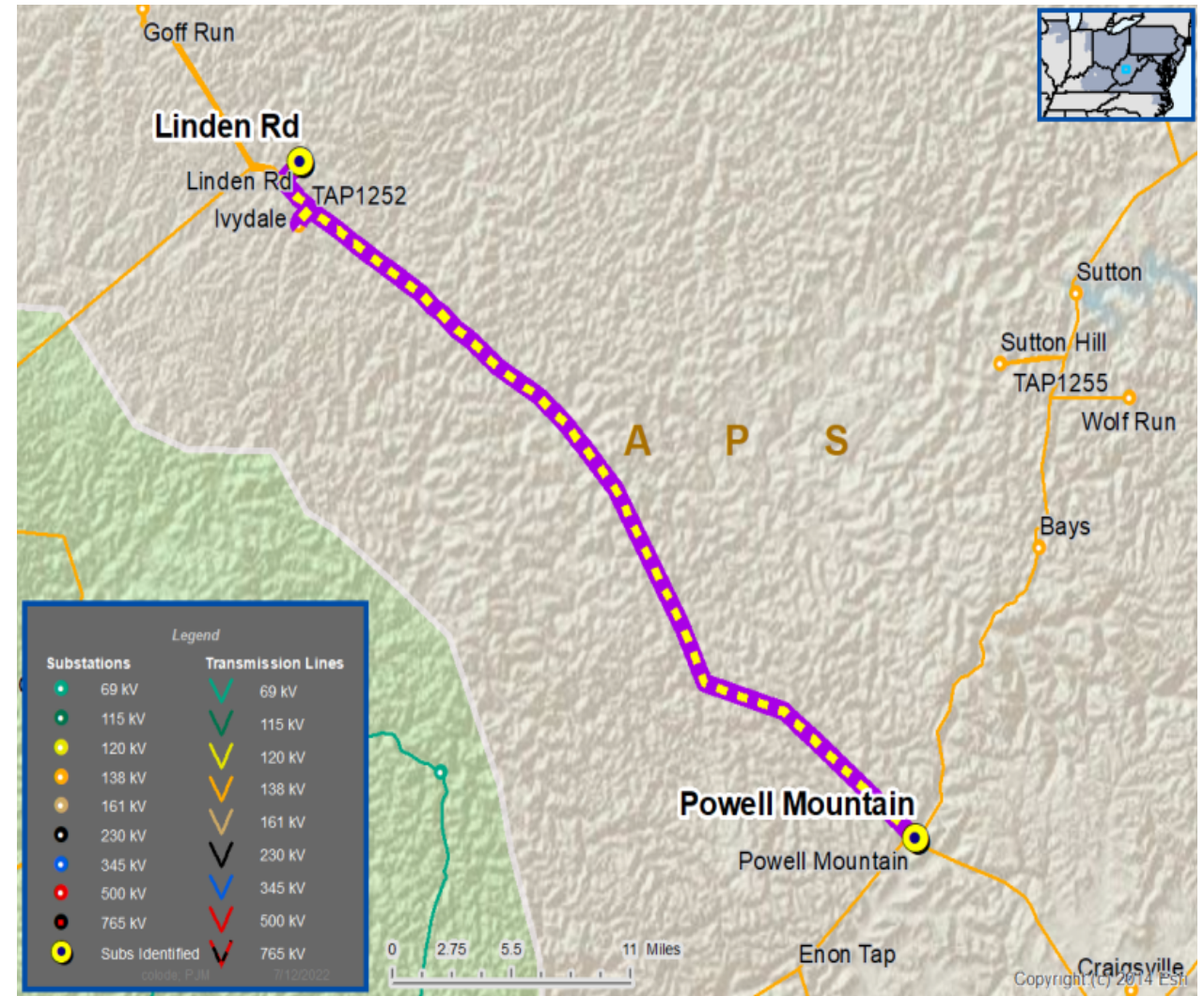
- Maintain existing condition

Estimated Project Cost: \$0.5M

Projected In-Service: 11/01/2022

Project Status: Engineering

Model: 2022 RTEP model for 2027 Summer (50/50)



Need Number: APS-2022-004

Process Stage: Solution Meeting 07/22/2022

Previously Presented: Need Meeting 05/19/2022

Project Driver:

Equipment Material Condition, Performance and Risk

Operational Flexibility and Efficiency

Specific Assumption Reference:

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures
- Age/condition of steel tower or steel pole transmission line structures

Substation Performance Projects Global Factors

- Substation/line equipment limits

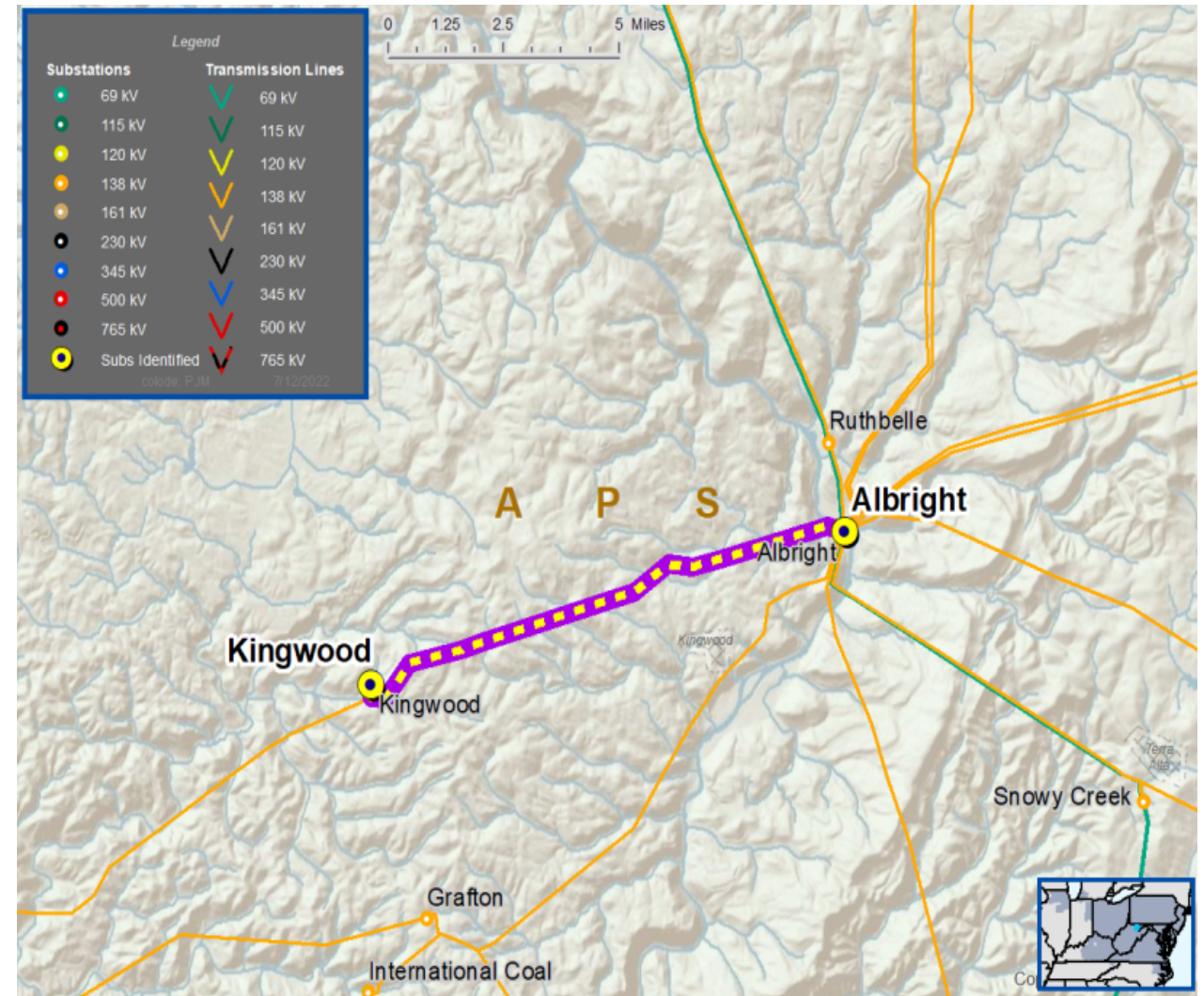
Problem Statement:

Albright – Kingwood 138 kV line is exhibiting deterioration.

- The transmission line was constructed in 1953.
- Total line distance is approximately 4.0 miles.
- 25 out of 30 structures failed inspection (83% failure rate)
- Failure reasons include woodpecker damage, cracking, and decay

Transmission line ratings are limited by terminal equipment (Substation Conductor , Wave trap).

- Existing line rating: 176/209 MVA (SN/SE)
- Existing conductor rating: 221/268 MVA (SN/SE)



Need Number: APS-2022-004

Process Stage: Solution Meeting 07/22/2022

Proposed Solution:

- Replace 138 kV structures between Albright and Kingwood substations
- At Albright substation:
 - Replace line trap, line relaying, substation conductor, and install line surge arrestors.

Ratings Before:

- Albright – Kingwood 138 kV Line:
 - 176/209/228 MVA SN/SE/SLD
 - 217/229/245 MVA WN/WE/WLD

Ratings After:

- Albright – Kingwood 138 kV Line:
 - 221/268/302 MVA SN/SE/SLD
 - 250/317/342 MVA WN/WE/WLD

Alternatives Considered:

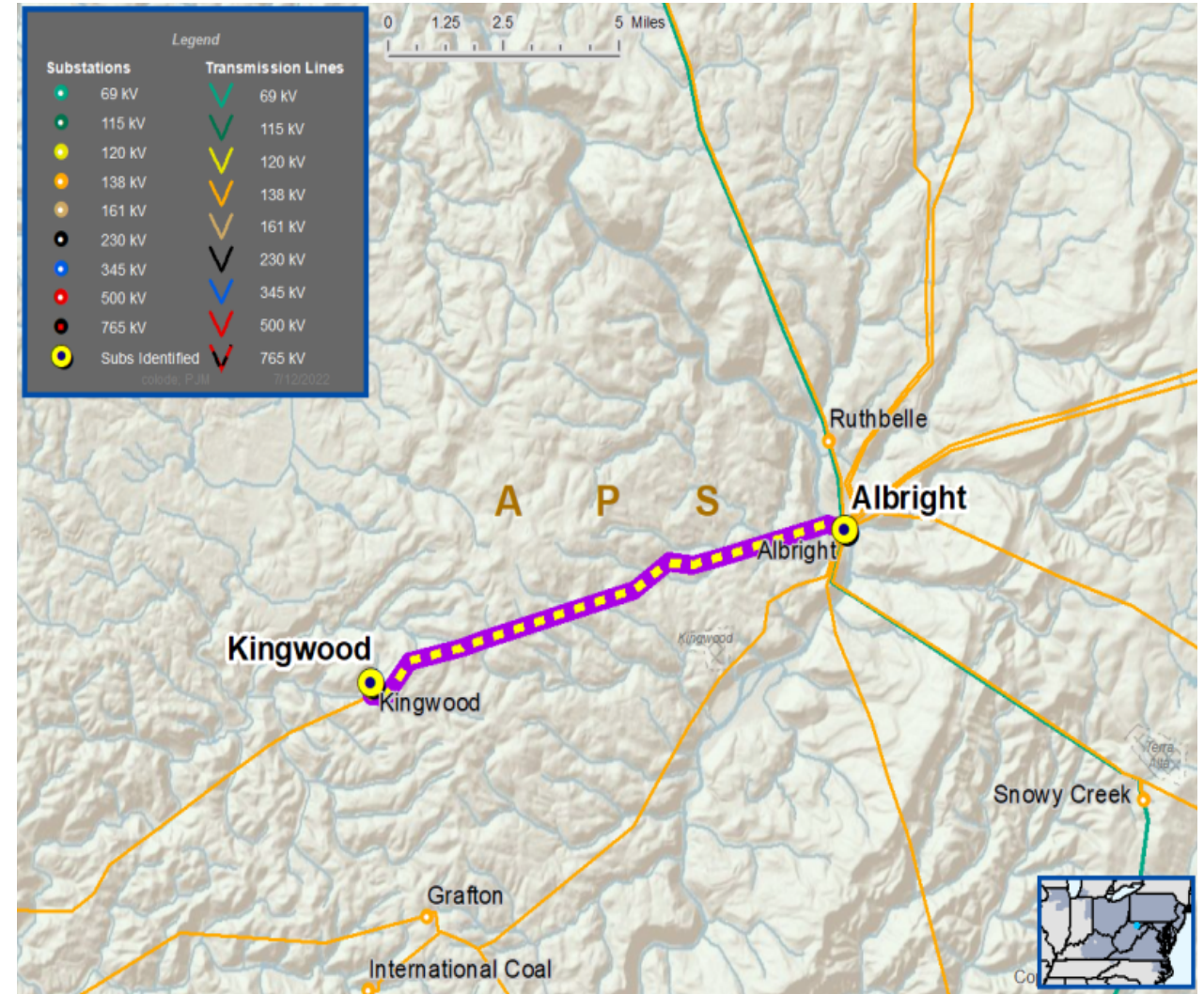
- Maintain existing condition

Estimated Project Cost: \$8.0M

Projected In-Service: 12/31/2023

Project Status: Conceptual

Model: 2022 RTEP model for 2027 Summer (50/50)



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

7/12/2022 – V1 – Original version posted to pjm.com