

Transmission Expansion Advisory Committee FirstEnergy Supplemental Projects

April 2, 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: ATSI-2024-006

Process Stage: Need Meeting 04/02/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

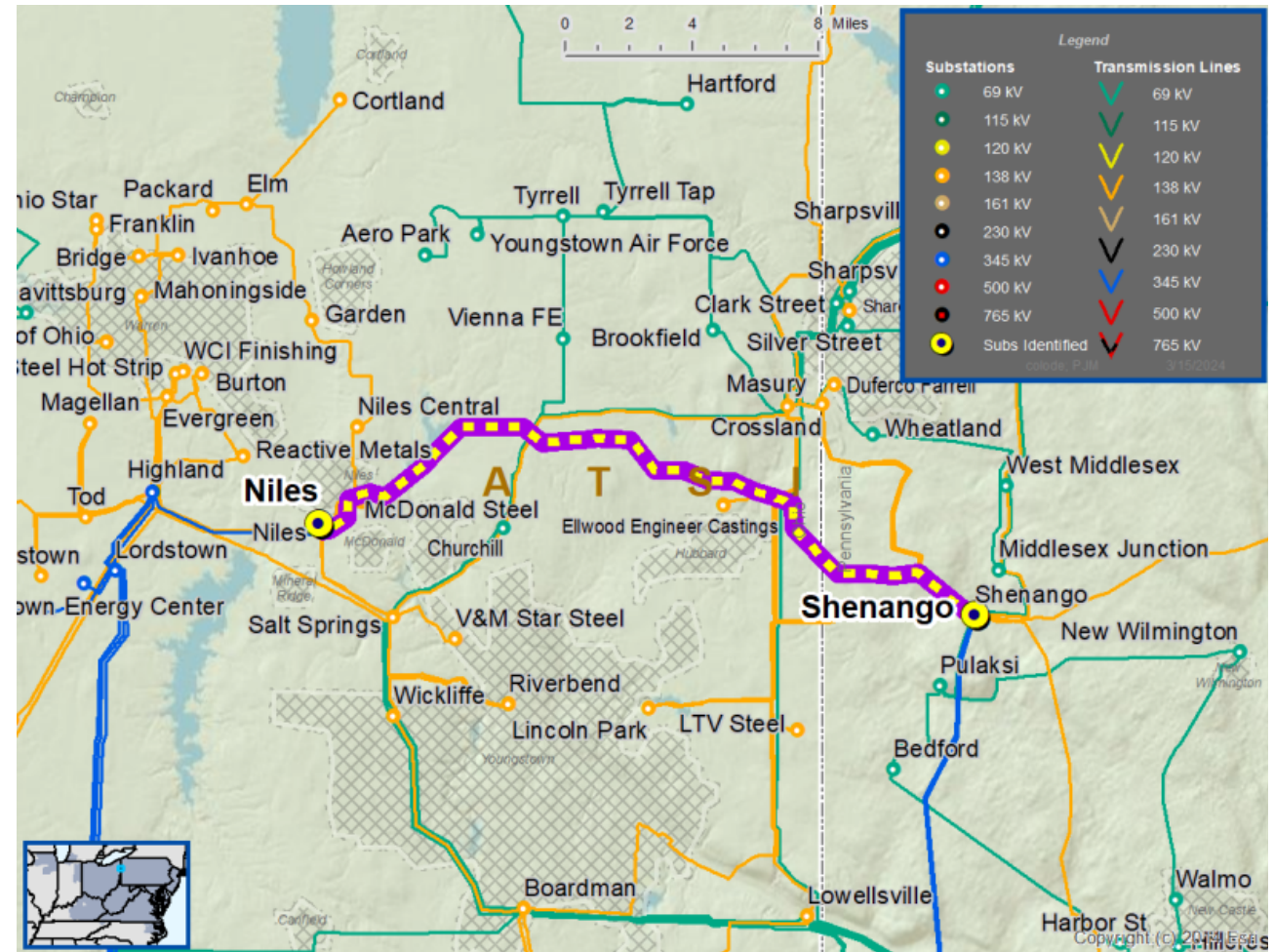
- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

- The Niles – Shenango 345 kV Line was constructed approximately 47 years ago and is approaching end of life. It is approximately 19 miles long with 122 total structures of which 64 are wood pole structures.
- Per recent inspections, a 12-mile section of the line comprised of 64 wood pole structures is exhibiting deterioration resulting in increased maintenance costs. Inspection findings include rotten/cracked wood poles and crossarms, woodpecker damage, burnt and broken insulators, and worn static-wire attachments.
 - 37 structures require repairs due to deterioration of wood pole structures.
 - 23 structures require repairs to insulators and related hardware deterioration, indicating that the components are reaching end of life
- Since 2015, the line has had two unscheduled sustained outages relating to failure of line equipment.
- Existing Transmission Line Rating:
 - 1542 / 1878 / 1746 / 2143 MVA (SN/SE/WN/WE)



ATSI Transmission Zone M-3 Process Beaver Valley – Hanna 345 kV Line and Hanna – Mansfield 345 kV Line

Need Number: ATSI-2024-013

Process Stage: Need Meeting 04/02/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

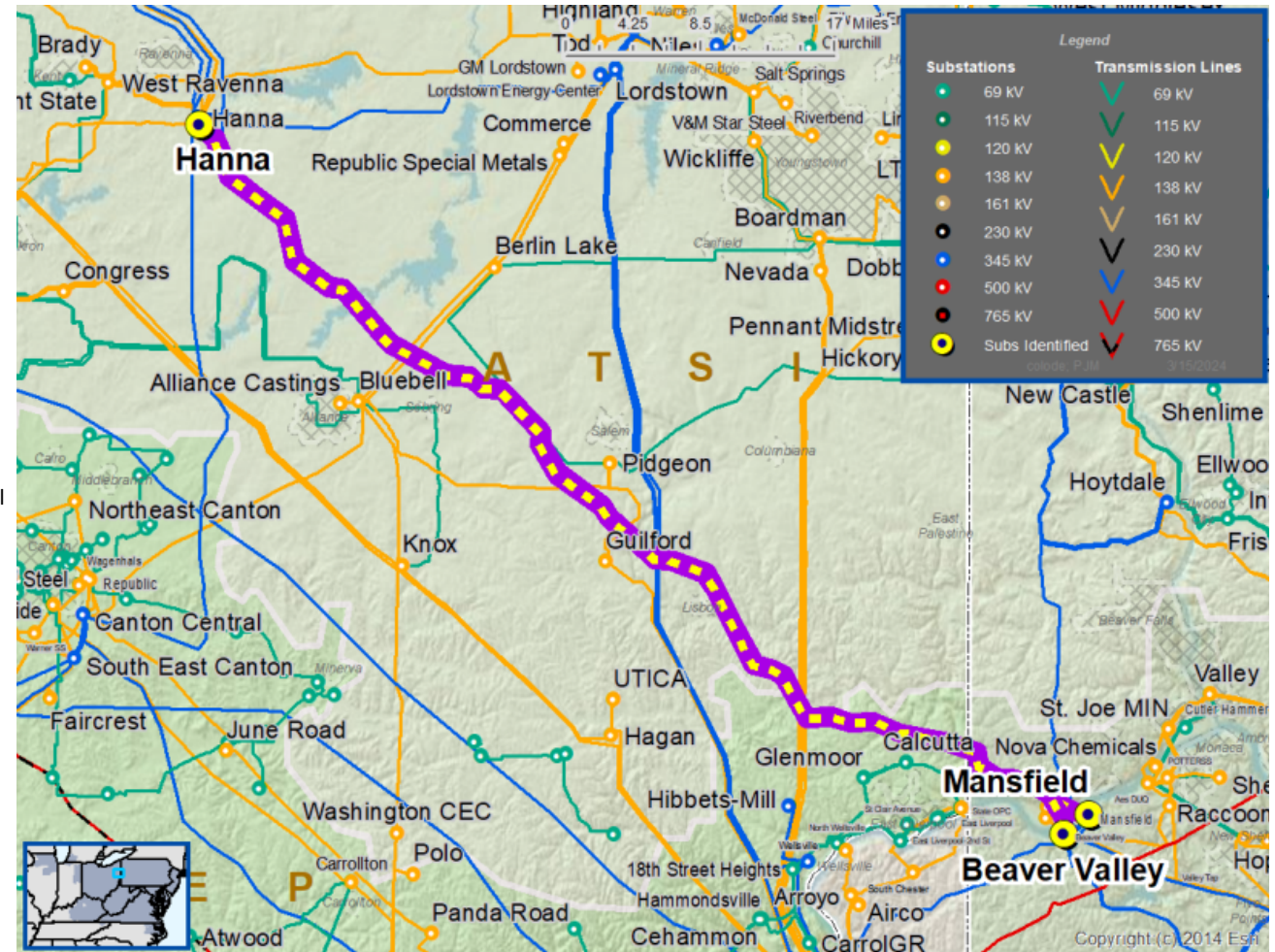
- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of steel transmission line structures

Problem Statement:

- The double circuit section of the Beaver Valley – Hanna 345 kV Line and Hanna – Mansfield 345 kV Line were constructed approximately 45 years ago. The double circuit line section is approximately 60 miles long with 314 steel transmission line structures.
- Recent inspections have indicated that a seven-mile section of the double circuit line comprised of 32 steel structures has weathering steel lattice structures that are exhibiting severe deterioration. Inspection findings revealed heavy corrosion/thinning at the concrete/leg interface, advanced pack-out, and deep pitting.
 - 32 structures require repairs due to deterioration.
 - 14 structures require repairs to insulators and related hardware due to deterioration, indicating that the components are approaching end of life.
 - 2 structures require repairs to static wire hardware due to overheating.
- Since 2015, the Beaver Valley – Hanna 345 kV Line has had one unscheduled sustained outage.
- Since 2015, the Hanna – Mansfield 345 kV Line has had two unscheduled sustained outage.
- Existing Beaver Valley – Hanna 345 kV Line Rating:
 - 1486 / 1739 / 1723 / 1739 MVA (SN/SE/WN/WE)
- Existing Hanna – Mansfield 345 kV Line Rating:
 - 1415 / 1745 / 1637 / 2116 MVA (SN/SE/WN/WE)



Need Numbers: ATSI-2024-019

Process Stage: Need Meeting 04/02/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Global Factors

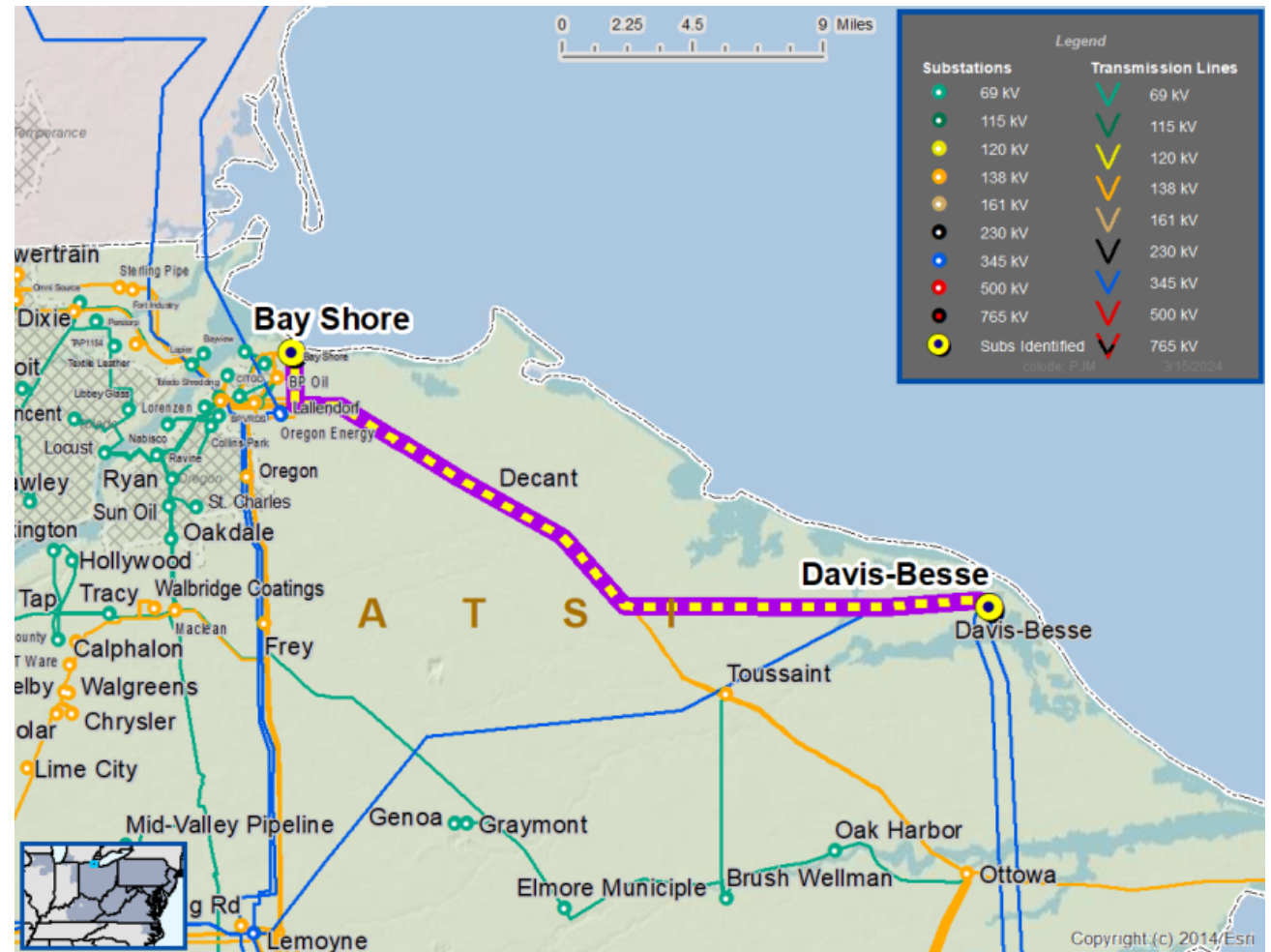
- Past system reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

- The Bayshore – Davis Besse 345 kV Line was constructed approximately 54 years ago. It is approximately 21 miles long with a total of 110 structures with 17 wooden H-frame structures.
- Recent inspections have indicated that a four-mile section of the line comprised of 17 wood pole H-frame structures is exhibiting deterioration. Inspection findings include cracked wood poles, rotten braces, corona damage and broken down grounds.
 - 14 structures require repair due to deterioration.
 - 4 structures are phase-raised.
- The line has not had any unscheduled sustained outages over the last five years.
- Existing Transmission Line Rating:
 - 1411 / 1683 / 1723 / 1925 MVA (SN/SE/WN/WE)



Need Number: ATSI-2024-027

Process Stage: Need Meeting 04/02/2024

Project Driver:

Equipment Material Condition, Performance and Risk

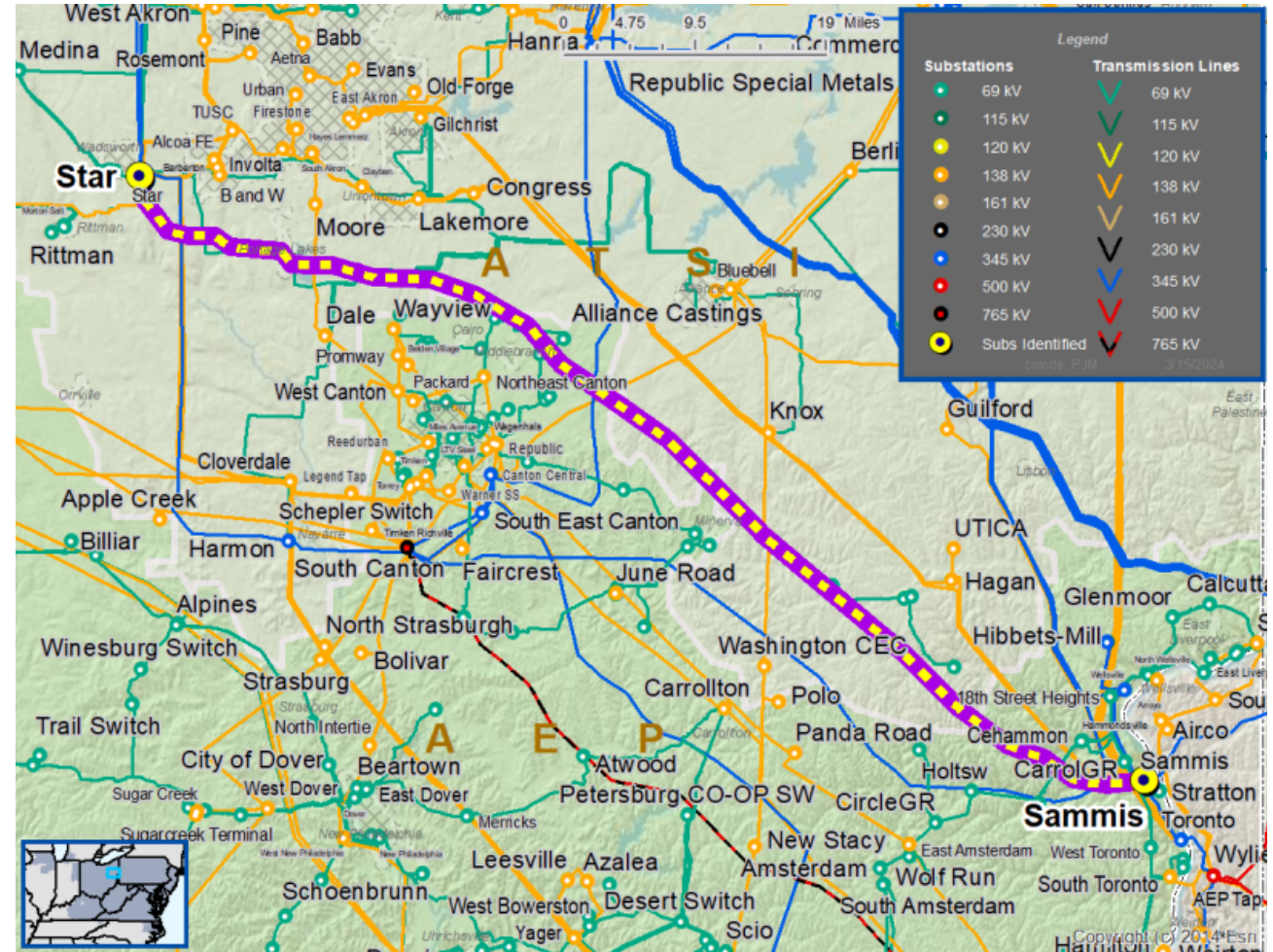
Specific Assumption Reference:

System Performance Global Factors

- Past system reliability/performance
- Line Condition Rebuild/Replacement
 - System characteristics including structural capacity needs
 - Current design criteria, applicable codes and industry best practices

Problem Statement:

- The Sammis – Star 345 kV Line was constructed approximately 64 years ago. It is approximately 69 miles long and consists of 375 steel lattice towers and 22 wood pole H-frame structures.
- Suspension towers are susceptible to cascading failures.
 - A tornado-induced tower failure destroyed 13 towers due to cascading.
- Current modeling techniques indicate the steel towers do not have the structural strength to withstand NESC required load cases, nor the additional wind and ice load cases required by FirstEnergy.
- Existing Transmission Line Ratings:
 - 1382 / 1712 / 1637 / 2116 MVA (SN/SE/WN/WE)



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

03/21/2024– V1 – Original version posted to pjm.com