

Transmission Expansion Advisory Committee FirstEnergy Supplemental Projects

March 4th, 2025

Solution

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

JCPL Transmission Zone M-3 Process Whippany No. 12 230/115 kV Transformer

Need Number: JCPL-2024-019

Process Stage: Solution Meeting TEAC - 03/04/2025

Previously Presented: Need Meeting 04/30/2024

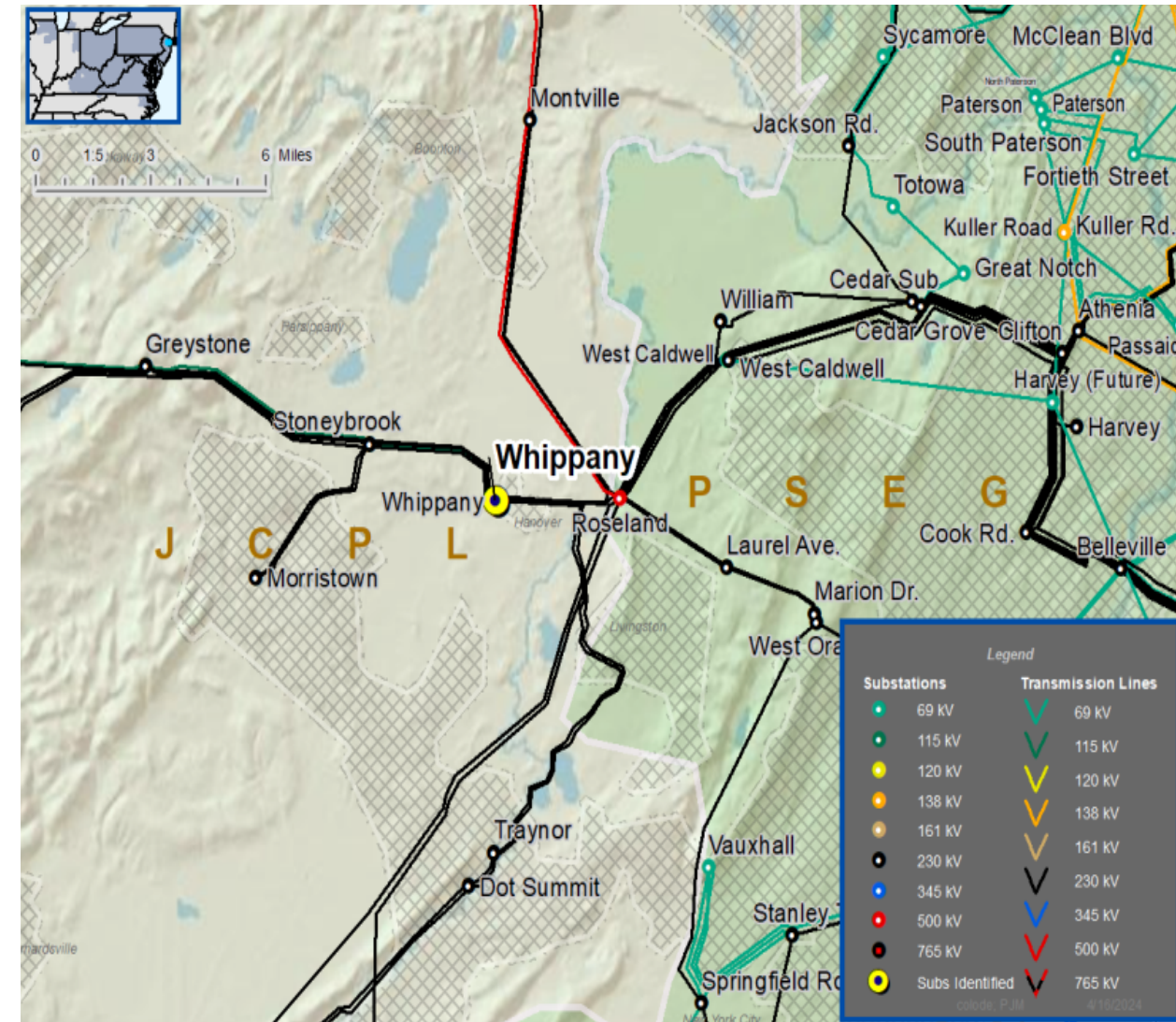
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance - Substation/line equipment limits
Add/Replace Transformers Past System Reliability/Performance

Problem Statement:

- The Whippany No. 12 230/115 kV Transformer is approximately 66 years old and is approaching end of life.
- The transformer is experiencing issues with oil leaks and nitrogen gas leaks.
- The transformer is limited by terminal equipment.
- Existing Transformer Ratings: -- 187 / 239 MVA (SN/SLTE) -- 239 / 239 MVA (WN/WLTE)



JCPL Transmission Zone M-3 Process Whippany No. 12 230/115 kV Transformer

Need number(s): JCPL-2024-019

Process Stage: Solution Meeting TEAC - 03/04/2025

Proposed Solution:

Whippany No. 12 230/115 kV Transformer: Replace No.12 230/115 kV Transformer at Whippany Substation Replace transformer relaying and limiting substation conductor. Estimated Cost: \$8.1 M

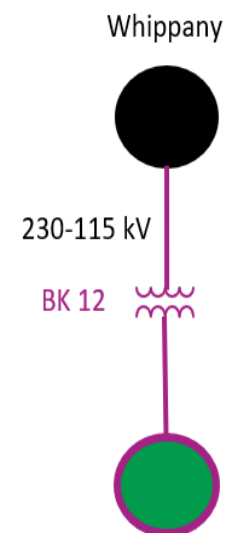
Transmission Cost Estimate: \$8.1 M











Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 03/07/2030

Project Status: Conceptual



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

JCPL Transmission Zone M-3 Process Chester No. 4 230-34.5 kV Transformer

Need Number: JCPL-2024-021

Process Stage: Solution Meeting TEAC - 03/04/2025

Previously Presented: Need Meeting 04/30/2024

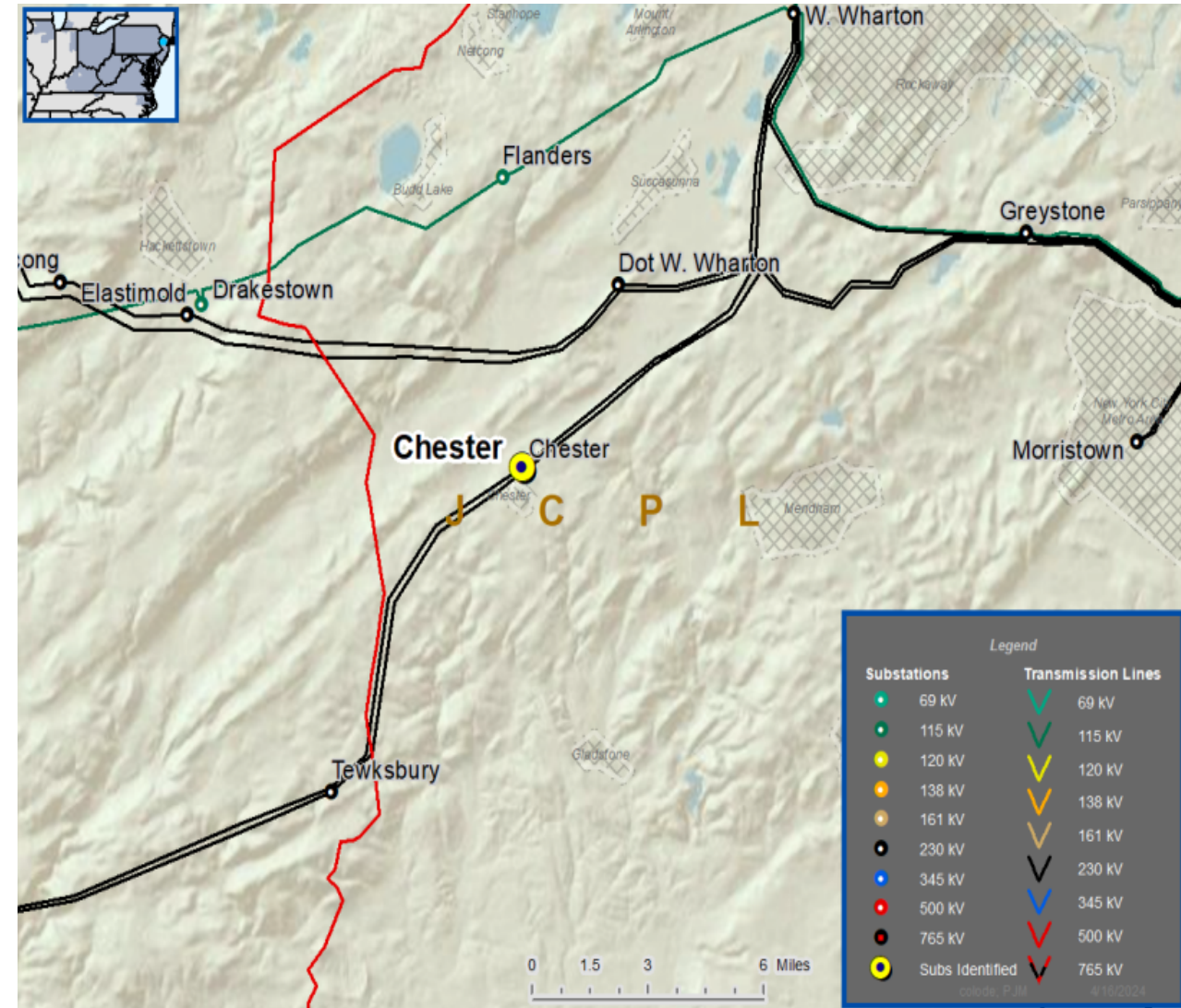
Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance - Substation/line equipment limits
Add/Replace Transformers Past System Reliability/Performance

Problem Statement:

- The Chester No. 4 230-34.5 kV Transformer is approximately 46 years old and is approaching end of life.
- The transformer has elevated ethane gas in the transformer oil.
- The transformer is limited by terminal equipment.
- Existing Transformer Ratings: -- 75 / 90 MVA (SN/SSTE) -- 94 / 100 MVA (WN/WSTE)



JCPL Transmission Zone M-3 Process Chester No. 4 230-34.5 kV Transformer

Need number(s): JCPL-2024-021

Process Stage: Solution Meeting TEAC - 03/04/2025

Proposed Solution:

Chester No. 4 230-34.5 kV Transformer: Replace No. 4 230-34.5 kV Transformer at Chester Substation Replace associated 230 kV Circuit Switcher Replace associated 34.5 kV Breaker Replace Limiting Terminal Components - SCCIR, RT, CT, OC, DS.
Estimated Cost: \$7.3 M

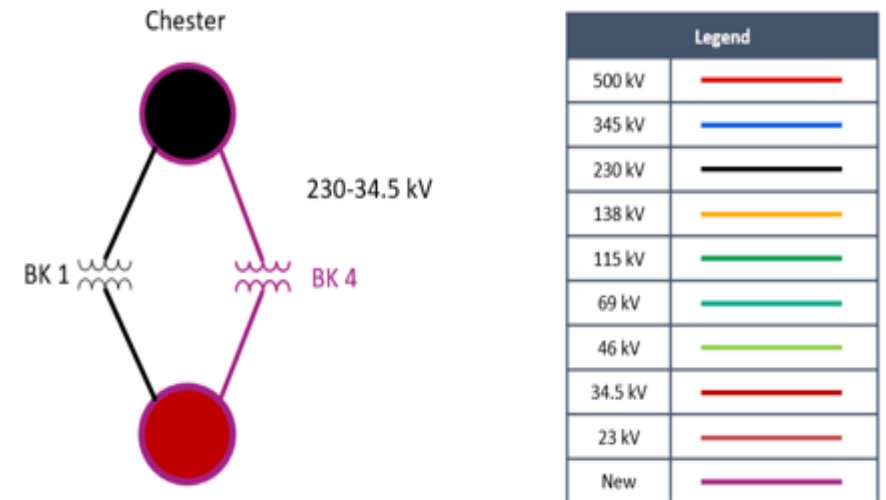
Transmission Cost Estimate: \$7.3 M

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 12/31/2029

Project Status: Conceptual



JCPL Transmission Zone M-3 Process Chester No. 1 230-34.5 kV Transformer

Need Number: JCPL-2024-003

Process Stage: Solution Meeting TEAC - 03/04/2025

Previously Presented: Need Meeting 02/06/2024

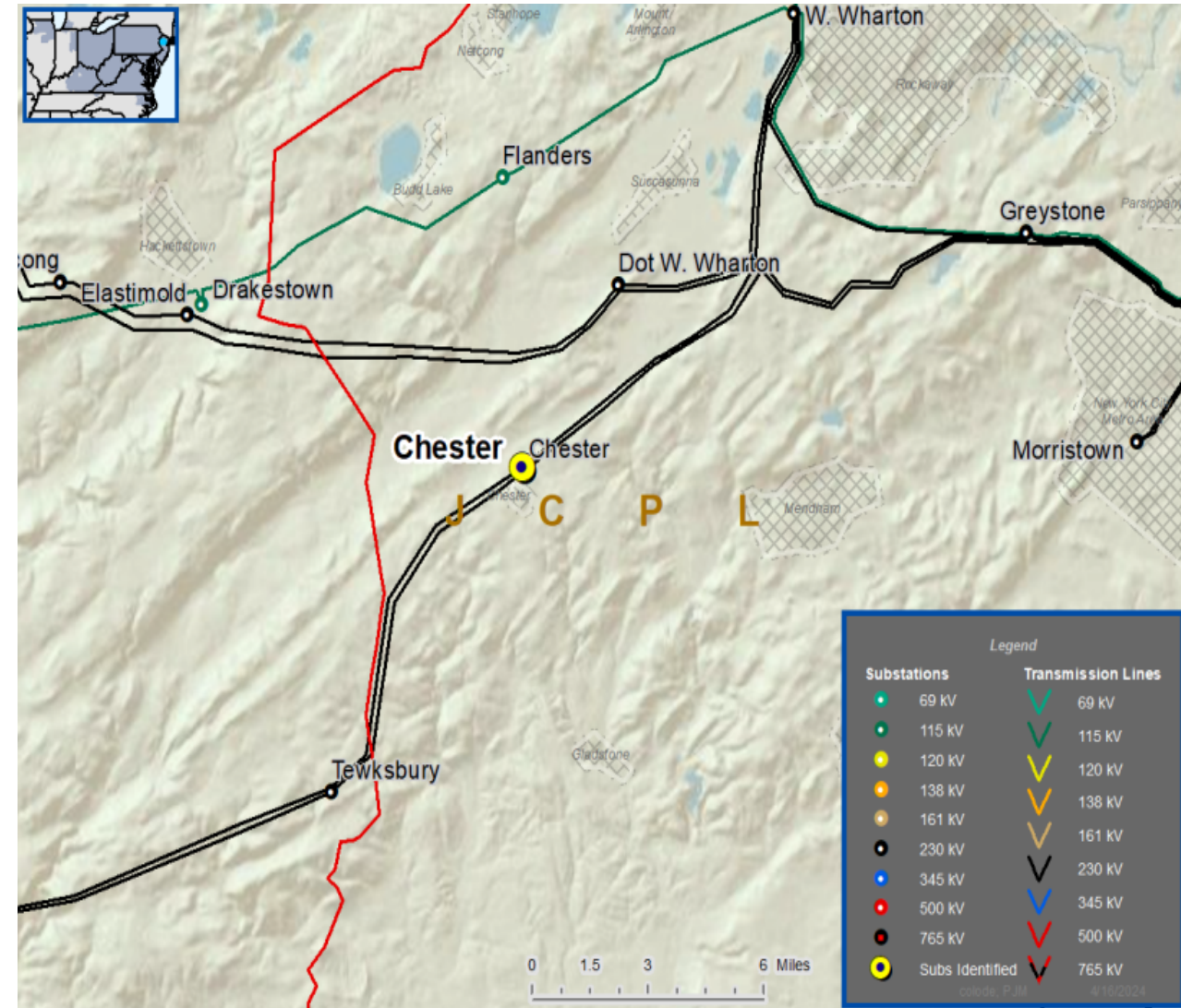
Project Driver: Equipment Condition/Performance/Risk, Operational Flexibility and Efficiency

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance - Reliability of Non-Bulk Electric System (Non-BES) Facilities Add/Replace Transformers Past System Reliability/Performance

Problem Statement:

- The 230-34.5 kV No. 1 Transformer at Chester Substation was manufactured approximately 60 years ago and is reaching end of life. -- Recent DGA revealed high moisture and high carbon monoxide levels indicating degradation of the paper insulation. - Existing transformer ratings: -- 99/124/125/137 MVA (SN/SSTE/WN/WSTE) - Chester Substation serves approximately 30 MW of load via two 230-34.5 kV transformers. An N-1-1 contingency loss of the Chester – West Wharton 230 kV H2034 Line and the Kittatinny – Pohatcong 230 kV L2012 Line result in the Chester 230-34.5 kV No. 1 Transformer loading greater than 90% of its summer emergency rating



Need number(s): JCPL-2024-003

Process Stage: Solution Meeting TEAC - 03/04/2025

Proposed Solution:

Chester No. 1 230-34.5 kV Transformer: Replace No. 1 230-34.5 kV Transformer at Chester Substation Replace associated 34.5 kV Breaker Replace Limiting Terminal Components - SCCIR, CT, DS.
Estimated Cost: \$7.3 M

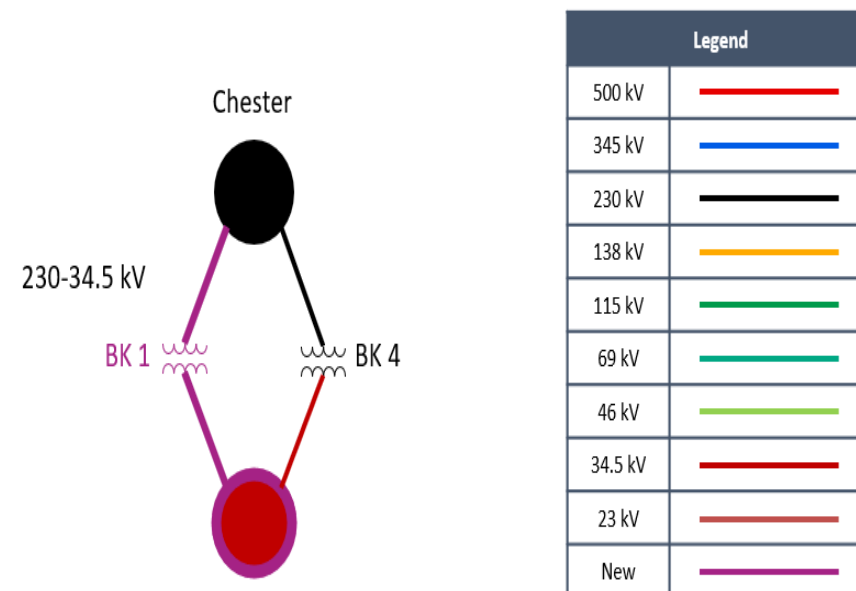
Transmission Cost Estimate: \$7.3 M

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 11/12/2027

Project Status: Conceptual



Questions?



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

2/20/2025 - V1 – Original version posted to pjm.com

2/24/2025 – V2 corrected titles on both needs

2/27/2025 – V3 – corrected missing slides