Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

April 10, 2025

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



JCPL Transmission Zone M-3 Process Metedeconk Substation, NJ

Need Number: JCPL-2025-003

Process Stage: Need Meeting 04/10/2025

Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

New Customer Connection - A wholesale customer requested 34.5 kV service for load of approximately 17 MW near Metedeconk Substation.

Requested in-service date is 11/30/2026.



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



JCPL Transmission Zone M-3 Process Raritan River (Sayreville), NJ

Need Number: JCPL-2024-029

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Previously Presented: Need Meeting 05/16/2024

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance Add/Replace Transformers Past System Reliability/Performance

Problem Statement:

- The Raritan River No. 4 115-34.5 kV Transformer is approximately 57 years old and is approaching end of life. - The transformer was rewound in 1992. - Ethane/ethylene combustible dissolved gas ratio and high furan count indicate the paper insulation has deteriorated. - The transformer has experienced numerous oil leaks requiring repair. - The transformer relaying is obsolete. - The transformer circuit is limited by terminal equipment. Existing Transformer Ratings: - 102 / 122 MVA (SN/SSTE) - 125 / 139 MVA (WN/WSTE)





Need number(s): JCPL-2024-029

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Proposed Solution:

Raritan River No. 4 115-34.5 kV Transformer: Replace No.4 115-34.5 kV Transformer at Raritan River Substation Replace 115 kV Circuit Switcher with 115 kV Circuit Breaker Replace 115 kV Disconnect Switches Replace 34.5 kV Disconnect Switches Replace limiting substation conductor and relaying. Estimated Cost: \$6.91 M

Transmission Cost Estimate: \$6.91 M

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 03/30/2029





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 Franklin No. 1 115-34.5 kV Transformer

Need Number: JCPL-2024-036

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Previously Presented: Need Meeting 05/16/2024

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 Franklin No. 1 115-34.5 kV Transformer is approximately 49 years old and is approaching end of life. - The transformer has elevated ethane dissolved combustible gas in the transformer oil as compared to IEEE standards. - The transformer relaying is obsolete. - The transformer circuit is limited by terminal equipment. Existing Transformer Ratings: - 65 / 72 MVA (SN/SSTE) - 72 / 72 MVA (WN/WSTE)





JCPL Transmission Zone M-3 Process Franklin No. 1 115-34.5 kV Transformer

Need number(s): JCPL-2024-036

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Proposed Solution:

Franklin No. 1 115-34.5 kV Transformer: Replace 115-34.5 kV Transformer No.1 at Franklin Substation Replace limiting substation conductor and relaying.. Estimated Cost: \$6 M

Transmission Cost Estimate: \$6 M

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 12/28/2029





JCPL Transmission Zone M-3 Process Pequest River No. 1 115-34.5 kV Transformer

Need Number: JCPL-2024-037

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Previously Presented: Need Meeting 05/16/2024

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance Add/Replace Transformers Past System Reliability/Performance

Problem Statement:

- The Pequest River No. 1 115-34.5 kV Transformer is approximately 70 years old and is approaching end of life. - The transformer is leaking nitrogen, has low dielectric strength and high moisture content. - The transformer relaying is obsolete. Existing Transformer Ratings: - 58 / 63 MVA (SN/SSTE) - 77 / 78 MVA (WN/WSTE)





JCPL Transmission Zone M-3 Process Pequest River No. 1 115-34.5 kV Transformer

Need number(s): JCPL-2024-037

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Proposed Solution:

Pequest River No. 1 115-34.5 kV Transformer: Replace No. 1 115-34.5 kV Transformer at Pequest River Substation Replace 34.5 kV Disconnect Switches Replace limiting substation conductor and relaying. Estimated Cost: \$6.9 M

Transmission Cost Estimate: \$6.9 M

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Projected In-Service: 01/30/2030



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



Need Number: JCPL-2024-052

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Previously Presented: Need Meeting 12/12/2024

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors - System reliability and performance -Substation/line equipment limits Upgrade Relay Schemes - Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.) - Communication technology upgrades

Problem Statement:

- There is a lack of automatic restoration of 34.5 kV lines following tripping events without the intervention of Transmission Operators. - Manual restoration increases the risk of system constraints on adjacent facilities, especially for critical lines as identified by Transmission Operations. - Obsolete electromechanical relay schemes. In many cases, the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology. - Proper operation of the protection scheme requires all the separate components perform adequately during a fault. - Transmission line ratings are limited by terminal equipment. Transmission Line / Substation Locations: Montville – Jacksonville Tap 34.5 kV L116 Line Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Line Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 72 Existing Conductor Rating MVA (SN / SE / WN / WE): 55 / 67 / 63 / 79

JCPL Transmission Zone M-3 Process Automatic Restoration Projects





JCPL Transmission Zone M-3 Process Montville, NJ

New

Need number(s): JCPL-2024-052

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Proposed Solution:

Montville Automatic Restoration Project: Montville - Riverdale 34.5 kV L116 Line - Upgrade line protection at Montville Substation Montville -Riverdale 34.5 KV M117 Line - Upgrade line protection at Montville Substation. Estimated Cost: \$0.15 M

Transmission Cost Estimate: \$0.15 M

Alternatives Considered:

Maintain line in existing condition with lack of automatic restoration.

Projected In-Service: 07/05/2026







Need Number: JCPL-2025-001

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Previously Presented: Need Meeting 03/13/2025

Project Driver: Customer Service

Specific Assumption References:

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

Problem Statement:

New Customer Connection - A retail customer requested 34.5 kV service for load of approximately 6 MVA near the Old Bridge - Raritan River 34.5 kV Q69 Line. The request is approximately 2 miles from Raritan River Substation. Old Bridge Substation, NJ/Raritan River (Sayreville), NJ







Old Bridge Substation, NJ/Raritan River (Sayreville), NJ

Need number(s): JCPL-2025-001

Process Stage: Solution Meeting SRRTEP-MA - 04/10/2025

Proposed Solution:

Old Bridge - Raritan River 34.5 kV Q69 Line Customer Connection: Tap the Old Bridge - Raritan River 34.5 kV Q69 Line on the Red Oak Tap line section Extend tap line 0.3 miles to customer POI Add SCADA controlled switches Modify relay settings at Old Bridge & Raritan River substations. Estimated Cost: \$0.1 M

Transmission Cost Estimate: \$0.1 M

Alternatives Considered:

Alternative 34.5 kV lines were considered to provide service; however the Q69 Line was selected due to its proximity to the customer.

Projected In-Service: 05/31/2025



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

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

Solutions

Submission of Supplemental Projects & Local Plan

Activity	Timing
TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
Stakeholder comments	10 days after Needs Meeting

Activity	Timing
TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
Stakeholder comments	10 days after Solutions Meeting

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

04/01/2024 – V1 – Original version posted to pjm.com 4/7/2025 – V2 – Corrected project name slide 12 4/9/2025 – V3 – Corrected Project name, slide 10