Transmission Expansion Advisory Committee
FirstEnergy Supplemental Projects

JCPL Transmission Zone

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
Traynor No. 13 230-34.5kV Transformer, NJ

Need Number: JCPL-2024-017

Process Stage: Solution Meeting – TEAC – 07/07/2026

Previously Presented: Need Meeting – TEAC – 04/30/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

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

Problem Statement:

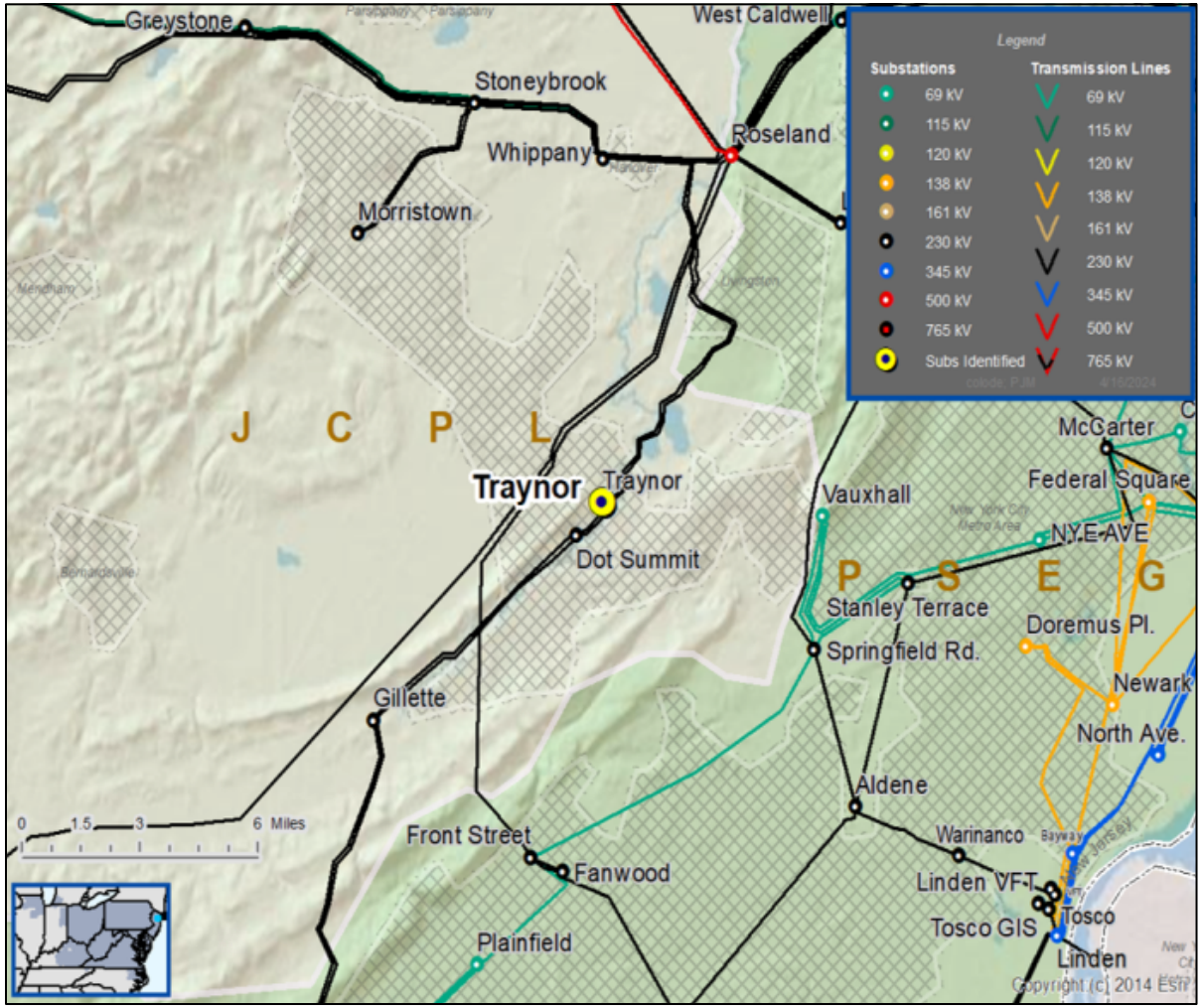
The Traynor No. 13 230-34.5 kV Transformer is approximately 51 years old and is approaching end of life.

Recent testing has shown the transformer has developed hot metal gases.

In recent years, there have been oil leaks, oil pump failures and radiator fan failures requiring repairs.

The transformer is limited by terminal equipment.

- Existing Transformer Ratings:
  - 164 / 187 MVA (SN/SSTE)
  - 209 / 228 MVA (WN/WSTE)



JCPL Transmission Zone M-3 Process
Traynor No. 13 230-34.5kV Transformer, NJ

Need number: JCPL-2024-017

Process Stage: Solution Meeting – TEAC – 07/07/2026

Proposed Solution:

At Traynor Substation: Replace the Traynor No. 13 230-34.5 kV Transformer.

Replace 230 kV circuit switcher on No. 13 transformer with a SCADA controlled full load-break MOAB Switch.

Replace two 34.5 kV circuit breakers on No. 13 transformer.

Replace transformer disconnect switches and substation conductor.

Remove LB16 Load breaker switch and install one 230 kV circuit breaker on the Traynor - Whippany No. 2 230 kV Z1040 Line terminal.

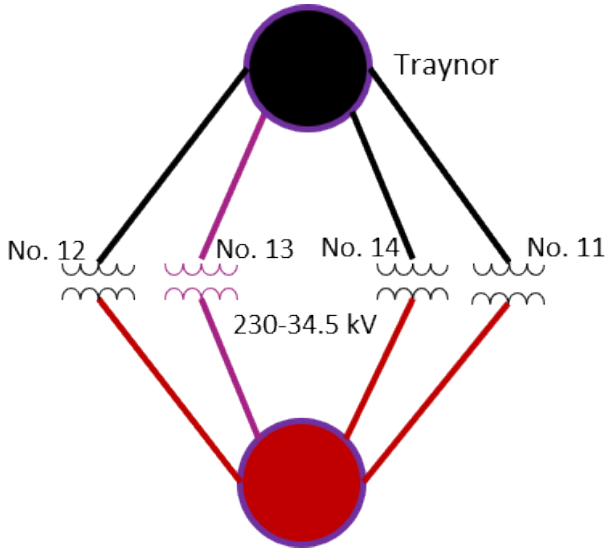
Ratings:

- Traynor No. 13 230-34.5 kV Transformer:
  - Before Proposed Solution: 82 / 103 / 108 / 124 MVA (SN/STLE/WN/WLTE)
  - After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/STLE/WN/WLTE)

Alternatives Considered:

Maintain existing condition with elevated risk of failure due to equipment deterioration.

Estimated Project Cost:	$16.73M
Projected In-Service:	05/24/2030
Project Status:	Conceptual
Model:	2024 RTEP model for 2029 Summer (50/50)



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
Traynor No. 14 230-34.5kV Transformer, NJ

Need Number: JCPL-2024-018

Process Stage: Solution Meeting – TEAC – 07/07/2026

Previously Presented: Need Meeting – TEAC – 04/30/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

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

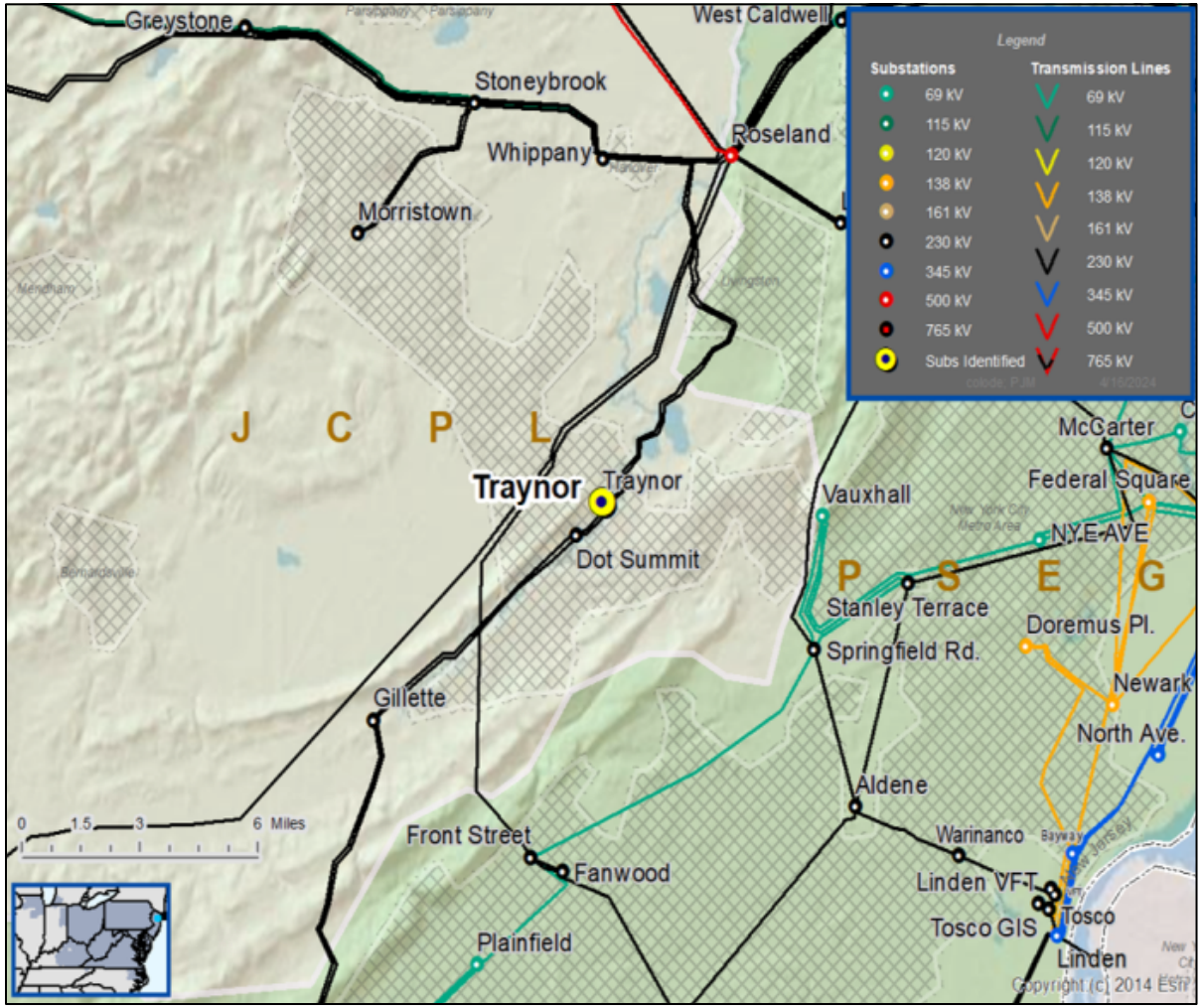
Problem Statement:

The Traynor No. 14 230-34.5 kV Transformer is approximately 51 years old and is approaching end of life.

Recent testing has shown the transformer has developed hot metal gasses.

In recent years, there have been oil leaks, oil pump failures and radiator fan failures requiring repairs.

- Existing Transformer Ratings:
  - 166 / 187 MVA (SN/SSTE)
  - 209 / 229 MVA (WN/WSTE)



JCPL Transmission Zone M-3 Process
Traynor No. 14 230-34.5kV Transformer, NJ

Need number: JCPL-2024-018

Process Stage: Solution Meeting – TEAC – 07/07/2026

Proposed Solution:

At Traynor Substation: Replace the Traynor No. 14 230-34.5 kV Transformer.

Replace 230 kV circuit switcher on No. 14 transformer with a SCADA controlled full load-break MOAB Switch.

Replace two 34.5 kV circuit breakers on No. 14 transformer.

Replace transformer disconnect switches and substation conductor.

Remove LB30 Load breaker switch and install one 230 kV circuit breaker on the Traynor - Whippany No. 1 230 kV Y1039 Line terminal.

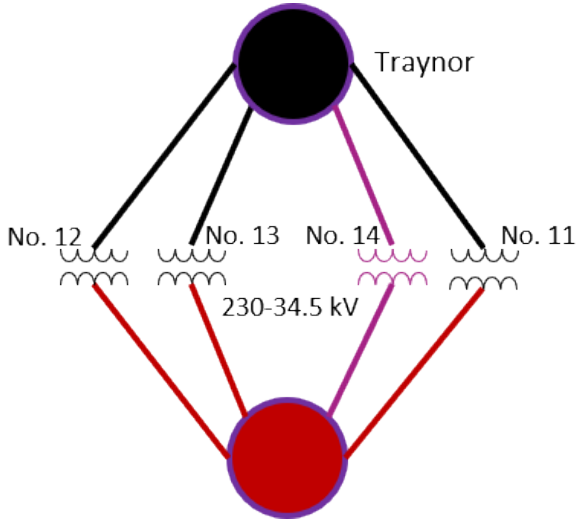
Ratings:

- Traynor No. 14 230-34.5 kV Transformer:
  - Before Proposed Solution: 137 / 168 / 171 / 201 MVA (SN/STLE/WN/WLTE)
  - After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/STLE/WN/WLTE)

Alternatives Considered:

Maintain existing condition with elevated risk of failure due to equipment deterioration.

Estimated Project Cost:	$12.35M
Projected In-Service:	12/20/2030
Project Status:	Conceptual
Model:	2024 RTEP model for 2029 Summer (50/50)



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
Lakewood, NJ

Need Number: JCPL-2026-026

Process Stage: Solution Meeting - TEAC - 07/07/2026

Previously Presented: Need Meeting – TEAC - 06/02/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability and performance
- Substation/line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

System Conversion Methodology

- Low voltage conditions
- Lines being operated with normally open points
- Condition-based rebuilds

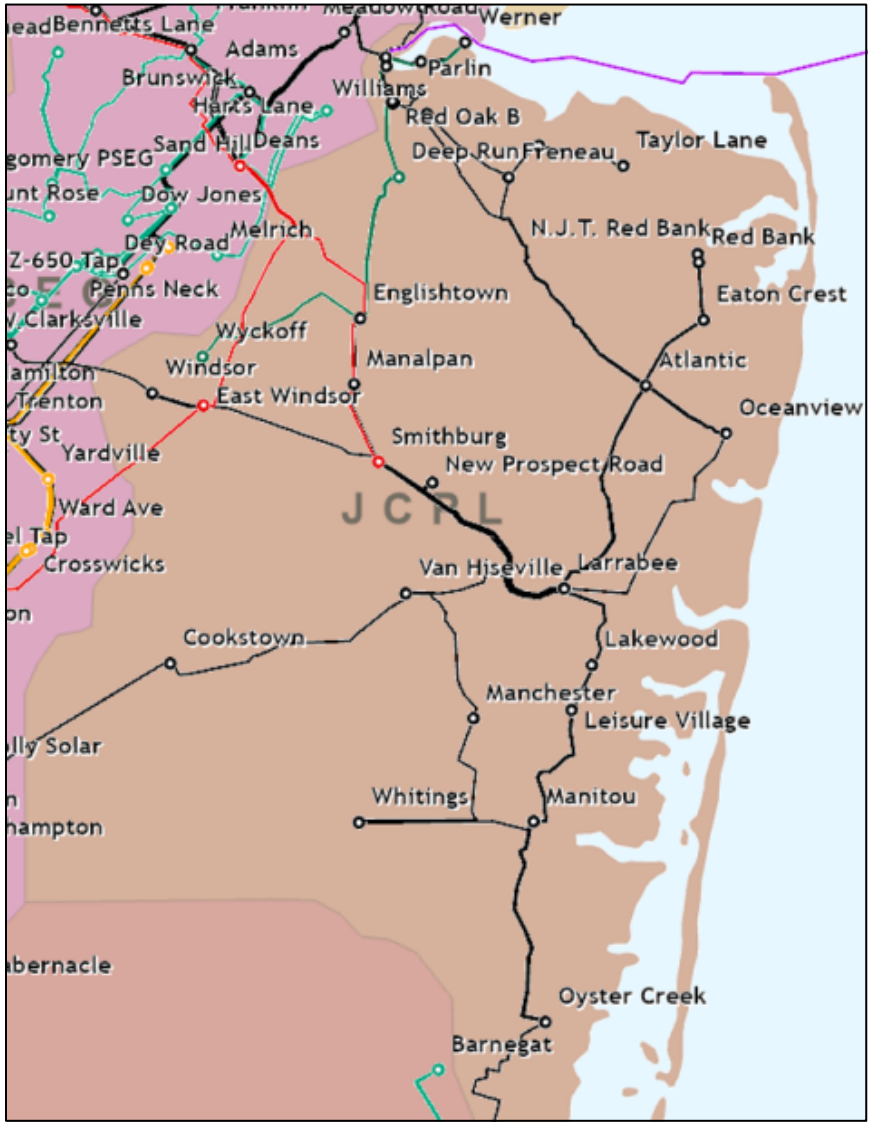
Build New Transmission Line

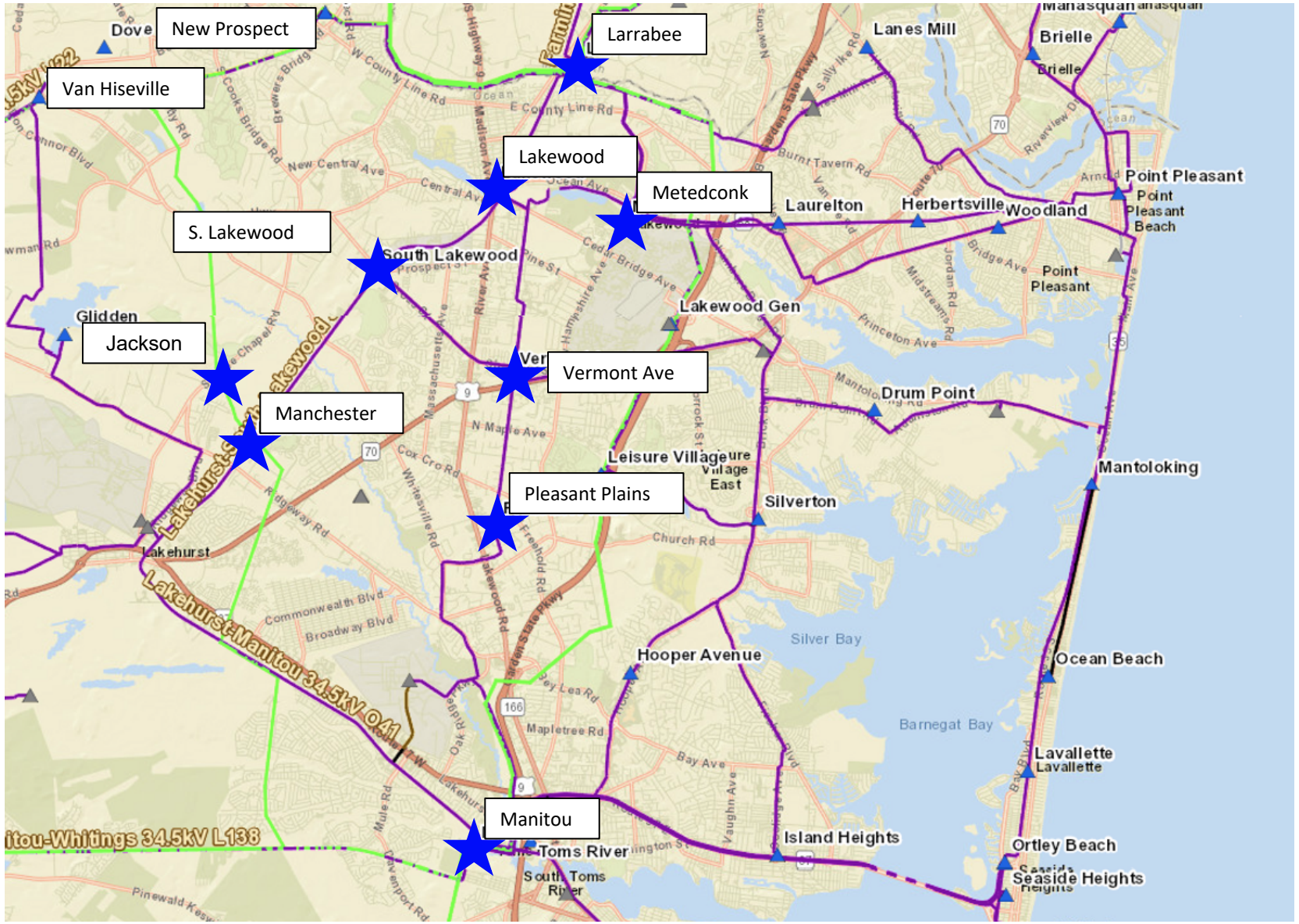
- Contingency constrained facilities
- Elevated loading on adjacent circuits

Problem Statement:

The JCP&L 34.5 kV transmission system is operating close to maximum capacity with increased challenges with operational switching and operationally normally open points. Small load increases (<5 MW) are exposing deficiencies in the capacity of the aging system by causing thermal and voltage violations.

The 34.5 kV transmission system consists of many lines originally constructed during the 1950s. Load growth will require additional infrastructure.





JCPL 34.5 kV Existing Facilities

Legend

230 kV
34.5 kV
Priority Area

Need Number: JCPL-2026-026

Problem Statement (continued):
Small load increases (<5 MW) are exposing deficiencies in the capacity of the 34.5 kV system in this area as thermal and voltage violations have been observed in load studies.

JCPL Transmission Zone M-3 Process
Lakewood, NJ

Need number: JCPL-2026-026

Process Stage: Solution Meeting – TEAC – 07/07/2026

Proposed Solution:

- Rebuild the 34.5 kV lines from Larrabee - Manitou and Jackson - Vermont Ave as double circuit 115 kV and 34.5 kV expanding existing ROW corridors with a total length of approximately 19.8 miles.
- Reconfigure the 34.5 kV yard at Pleasant Plains to a five-breaker ring bus and establish a new 115 kV ring bus with three 115 kV breakers installed.
- Reconfigure the 34.5 kV yard at Vermont Ave to a 11 breaker, breaker and a half configuration using the existing breakers from the 34.5 kV ring bus and establish a new 115 kV ring bus with four 115 kV breakers installed.
- Reconfigure the 34.5 kV yard at South Lakewood to a nine breaker, breaker and a half configuration and establish a new 115 kV ring bus with three 115 kV breakers installed.
- Lakewood 34.5 kV yard to be rebuilt as a new 115 kV four breaker ring bus.
- At Larrabee, establish a new 115 kV ring bus with one 115 kV breaker installed and expand the 230 kV yard with a new 230 kV string and two 230 kV breakers.
- Expand the 34.5 kV yard with a new 34.5 kV string and two 34.5 kV breakers at Metedeconk.
- Establish a new 230 kV substation named Jackson on the Cookstown- Manchester 230 kV B1042 Line. This substation will consist of a new three breaker 230 kV ring bus and a step down to a 115 kV ring bus with one 115 kV breaker installed.

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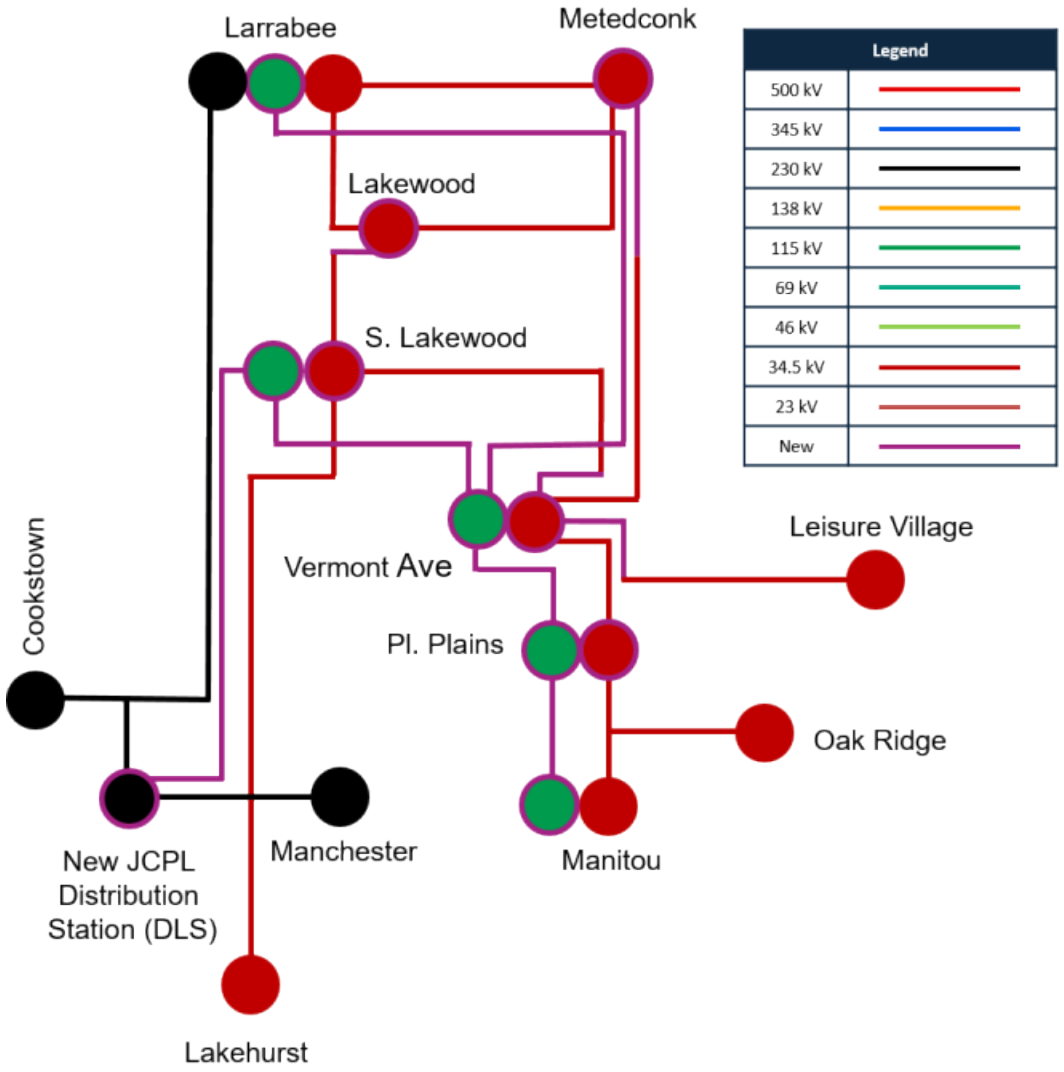

JCPL Transmission Zone M-3 Process
Lakewood, NJ

Need number: JCPL-2026-026

Process Stage: Solution Meeting – TEAC – 07/07/2026

Ratings:

Larrabee- Metedeconk Tap 34.5 kV E213 Line
- Before Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Metedeconk Tap – Metedeconk 34.5 kV E213 Line
- Before Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Larrabee- Metedeconk 34.5 kV E213 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)

Metedeconk Tap – Lakewood Tap 34.5 kV E213 Line
- Before Proposed Solution: 40 / 50 / 40 / 50 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Lakewood Tap- Vermont Ave 34.5 kV E213 Line
- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Metedeconk- Vermont Ave 34.5 kV E213 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 40 / 50 / 40 / 50 MVA (SN/SE/WN/WE)

Laurelton Tap- Larrabee 34.5 kV R44 Line
- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Laurelton Tap- Metedeconk 34.5 kV R44 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

South Lakewood- Lakewood Tap 34.5 kV B54
- Before Proposed Solution: 65 / 77 / 79 / 88 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Lakewood Tap- Lakewood 34.5 kV B54 Line
- Before Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Lakewood Tap- Larrabee 34.5 kV B54 Line
- Before Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

South Lakewood- Larrabee 34.5 kV B54 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)

Leisure Village- Pleasant Plains Tap 34.5 kV F214 Line
- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Pleasant Plains Tap – Pleasant Plains 34.5 kV F214 Line
- Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

Pleasant Plains Tap – Vermont Ave 34.5 kV F214 Line
- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: N/A

South Lakewood – Vermont Ave 34.5 kV F214 Line
- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Leisure Village- Pleasant Plains 34.5 kV F214 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Pleasant Plains– Vermont Ave 34.5 kV F214 Line
- Before Proposed Solution: N/A
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

JCPL Transmission Zone M-3 Process
Lakewood, NJ

Need number: JCPL-2026-026

Process Stage: Solution Meeting – TEAC – 07/07/2026

Ratings:

Pleasant Plains– TRC Tap 34.5 kV C55 Line
Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
TRC Tap- Oak Ridge Solar 34.5 kV C55 Line
Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
Oak Ridge Solar- Manitou 34.5 kV C55 Line
Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
Lakehurst- South Lakewood 34.5 kV W777 Line
Before Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)
After Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)
Cookstown- Manchester 230 kV B1042 Line
Before Proposed Solution: 709 / 869 / 805 / 1031 MVA (SN/SE/WN/WE)
After Proposed Solution: N/A
Cookstown- Jackson 230 kV B1042 Line
Before Proposed Solution: N/A
After Proposed Solution: 709 / 869 / 805 / 1031 MVA (SN/SE/WN/WE)
Jackson- Manchester 230 kV B1042 Line
Before Proposed Solution: N/A
After Proposed Solution: 709 / 869 / 805 / 1031 MVA (SN/SE/WN/WE)
Manchester- Whitings 230 kV B1042 Line
Before Proposed Solution: 678 / 813 / 805 / 929 MVA (SN/SE/WN/WE)
After Proposed Solution: 678 / 813 / 805 / 929 MVA (SN/SE/WN/WE)

Larrabee- Lakewood 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Lakewood- Vermont Ave 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

South Lakewood- Vermont Ave 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

South Lakewood- Jackson 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Pleasant Plains- Vermont Ave 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Pleasant Plains- Manitou 115 kV Line
- Before Proposed Solution: N/A
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

JCPL Transmission Zone M-3 Process
Lakewood, NJ

Need number: JCPL-2026-026

Process Stage: Solution Meeting – TEAC – 07/07/2026

Ratings:

Jackson 230/115 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution:266 / 279 / 319 / 346 MVA (SN/SE/WN/WE)

Larrabee 230/115 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 266 / 279 / 319 / 346 MVA (SN/SE/WN/WE)

Manitou 230/115 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 266 / 279 / 319 / 346 MVA (SN/SE/WN/WE)

Lakewood 115-34.5 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 125 / 131 / 150 / 163 MVA (SN/SE/WN/WE)

Pleasant Plains 115-34.5 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 125 / 131 / 150 / 163 MVA (SN/SE/WN/WE)

South Lakewood 115-34.5 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 125 / 131 / 150 / 163 MVA (SN/SE/WN/WE)

Vermont Ave 115-34.5 kV Transformer
- Before Proposed Solution: N/A
- After Proposed Solution: 125 / 131 / 150 / 163 MVA (SN/SE/WN/WE)

Alternatives Considered:

Maintain existing configuration with risk to customer service under contingency scenarios.

Estimated Project Cost:	$292.4M (Parametric Current Year Costs)
Projected In-Service:	12/31/2032 (Parametric Schedule Estimate)
Project Status:	Conceptual
Model:	2024 RTEP model for 2029 Summer (50/50)

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

06/26/2026 – V1 – Original version posted to pjm.com
07/06/2026 – V2 – Corrected Title on Slide 8
07/07/2026 – V3 – Updated Solution JCPL-2026-026 and added slides