

FirstEnergy – JCPL – 2026
Submission of Supplemental Projects for
Inclusion in the Local Plan

Need Number: JCPL-2024-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting 09/09/2025
Need Meeting 01/09/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption References:

System Performance Projects Global Factors

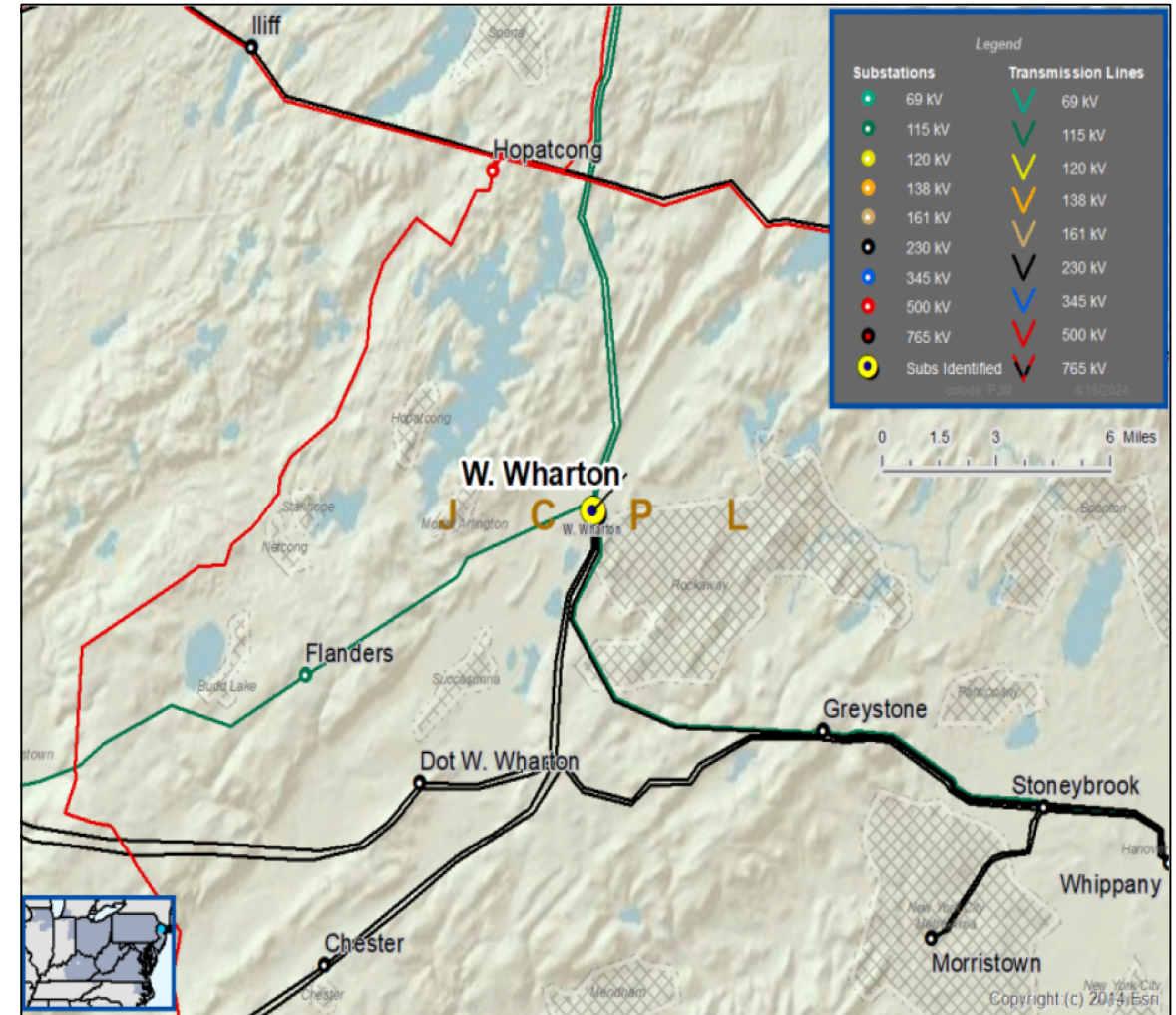
- System reliability and performance
- Reliability of Non-Bulk Electric System (Non-BES) Facilities

Add/Replace Transformers

Past System Reliability/Performance

Problem Statement:

- The 230-34.5 kV No. 1 Transformer at West Wharton Substation is approximately 45 years old and is reaching end of life.
- Dielectric strength of the transformer is measuring below acceptable IEEE limits.
 - Low measured dielectric strength reduces breakdown voltage and greatly increases risk of failure from arcing.
- Existing transformer ratings:
 - 156 / 164 / 197 / 198 MVA (SN/SLTE/WN/WLTE)



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

Need Number: JCPL-2024-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

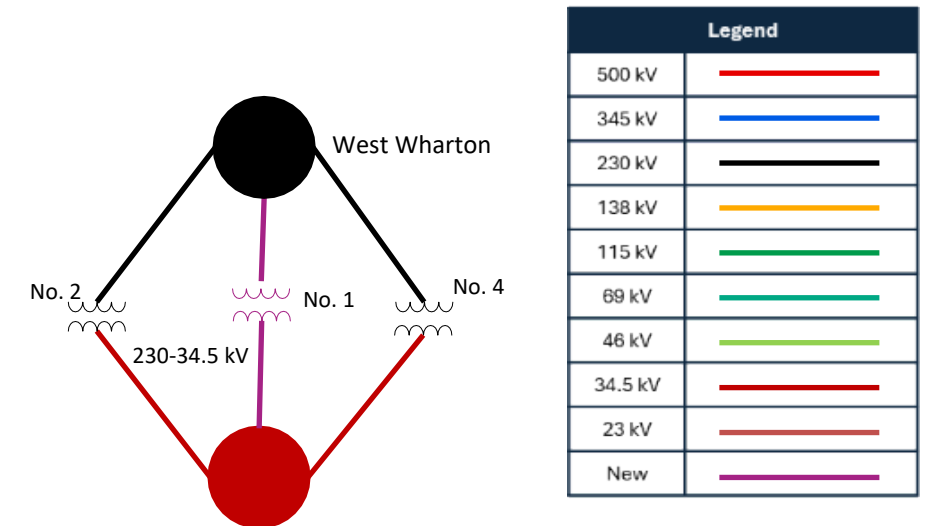
At West Wharton Substation:

- Replace No. 1 230-34.5kV Transformer with a new 230-34.5 kV 168 MVA unit
- Replace one 230 kV circuit switcher with a new 230 kV circuit breaker
- Replace two 34.5 kV circuit breakers and associated disconnect switches

West Wharton No. 1 230-34.5 kV Transformer Ratings:

- Before Proposed Solution: 156 / 164 / 197 / 198 MVA (SN/SLTE/WN/WLTE)
- After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/SLTE/WN/WLTE)

Estimated Project Cost: \$12.00 M
Projected In-Service: 11/9/2029
Supplemental Project ID: s3748.1



Need Number: JCPL-2024-024

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting 09/09/2025
Need Meeting 04/30/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

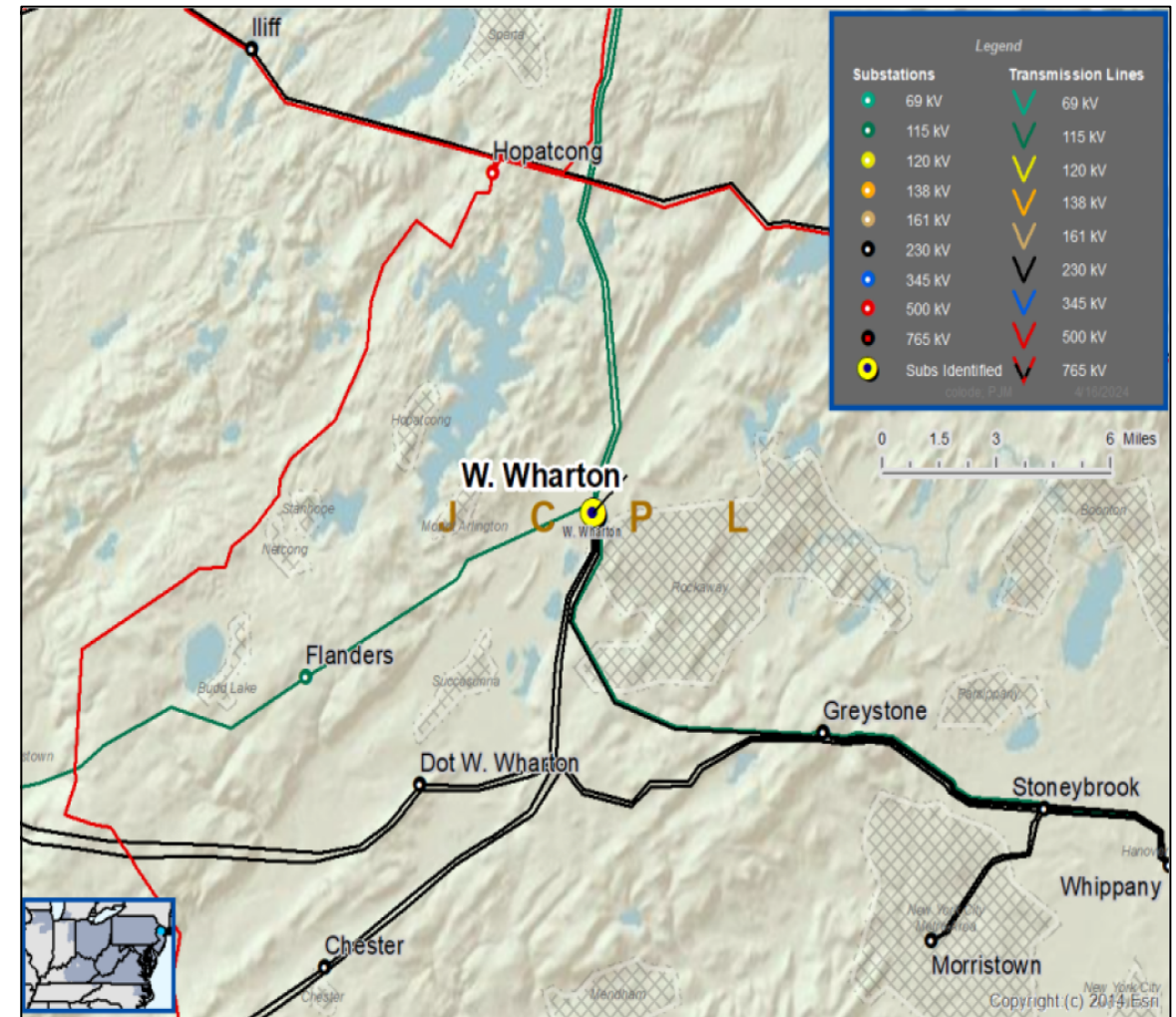
- System reliability and performance
- Substation/line equipment limits

Add/Replace Transformers

Past System Reliability/Performance

Problem Statement:

- The West Wharton No. 2 230-34.5 kV Transformer is approximately 52 years old and is approaching end of life.
- The transformer is experiencing issues with bushing failures.
- The transformer has increased levels of water, carbon monoxide, oxygen and nitrogen in the transformer oil.
- The transformer is limited by terminal equipment.
- Existing Transformer Ratings:
 - 155 / 163 / 197 / 198 MVA (SN/SLTE/WN/WLTE)



JCPL Transmission Zone M-3 Process West Wharton No. 2 230-34.5 kV Transformer

Need Number: JCPL-2024-024

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

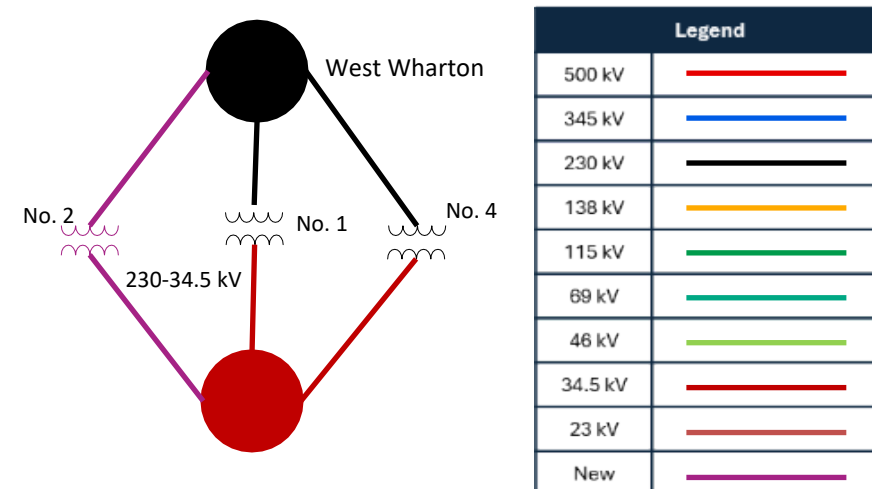
At West Wharton Substation:

- Replace No. 2 230-34.5kV Transformer with a new 230-34.5 kV 168 MVA unit
- Replace one 230 kV circuit switcher with a new 230 kV circuit breaker
- Replace two 34.5 kV circuit breakers and associated disconnect switches

West Wharton No. 2 230-34.5 kV Transformer Ratings:

- Before Proposed Solution: 155 / 163 / 197 / 198 MVA (SN/SLTE/WN/WLTE)
- After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/SLTE/WN/WLTE)

Estimated Project Cost: \$12.00 M
Projected In-Service: 12/22/2028
Supplemental Project ID: s3749.1



JCPL Transmission Zone M-3 Process

Raritan River - Werner 34.5 kV U99 Line Customer Connection

Need Number: JCPL-2024-033

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 02/13/2025
Need Meeting - SRRTEP-MA - 05/16/2024

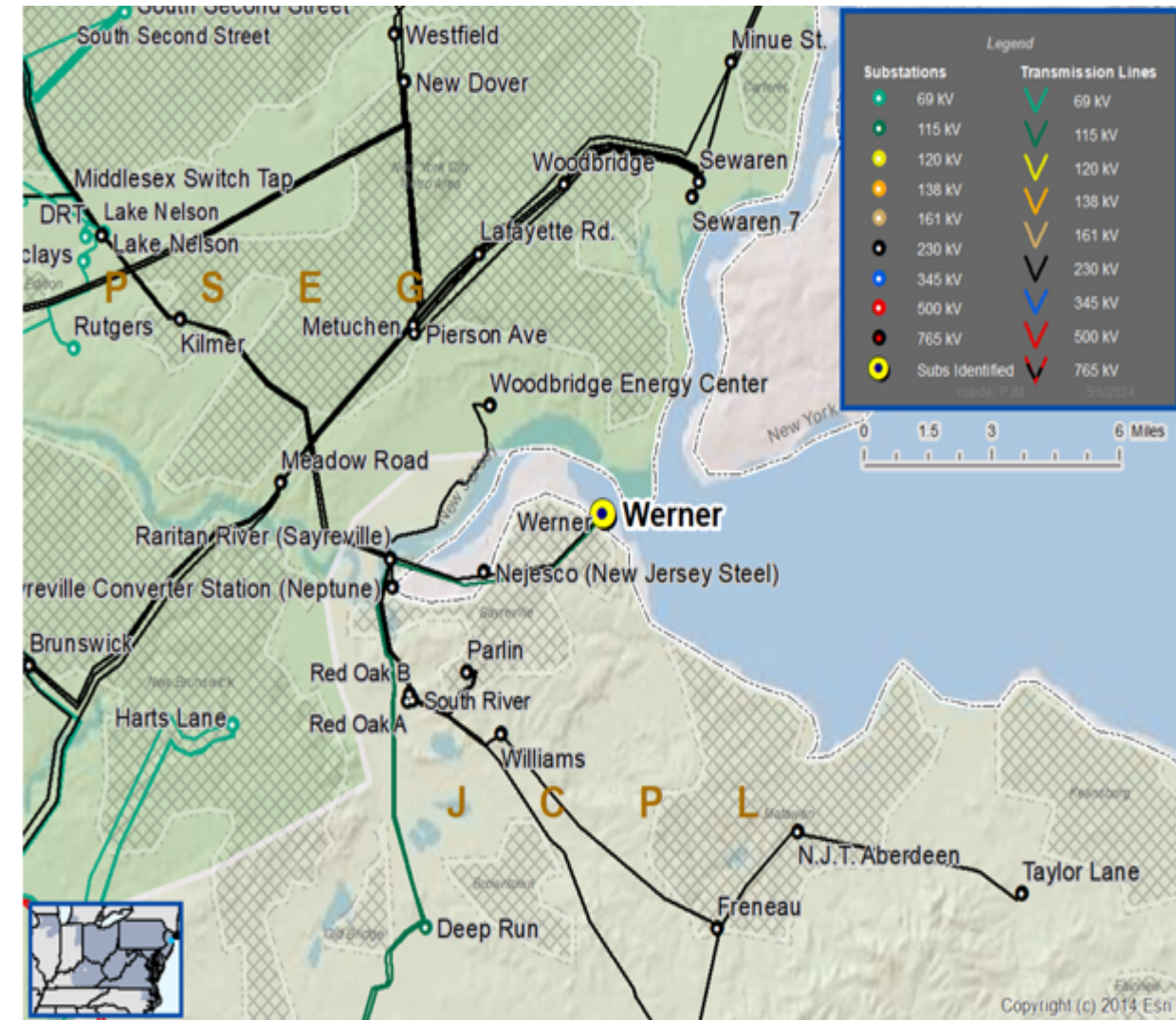
Project Driver:
Customer Service

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 3 MVA near Werner Substation.



JCPL Transmission Zone M-3 Process

Raritan River - Werner 34.5 kV U99 Line Customer Connection

Need number(s): JCPL-2024-033
Process Stage: Submission of Supplemental Projects for Inclusion in the
 Local Plan

Selected Solution:

Raritan River - Werner 34.5 kV U99 Line Customer Connection:

- Tap the Raritan River - Werner 34.5 kV U99 Line
- Extend tap line ~200 ft to customer
- Add SCADA controlled switches
- Modify relay settings at Raritan River Substation and Werner Substation.

Estimated Project Cost: \$0.7 M
Projected In-Service: 03/31/2025
Supplemental Project ID: s3756.1



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

Raritan River - Werner 34.5 kV U99 Line Customer Connection

Need Number: JCPL-2024-035

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 02/13/2025
Need Meeting - SRRTEP-MA - 05/16/2024

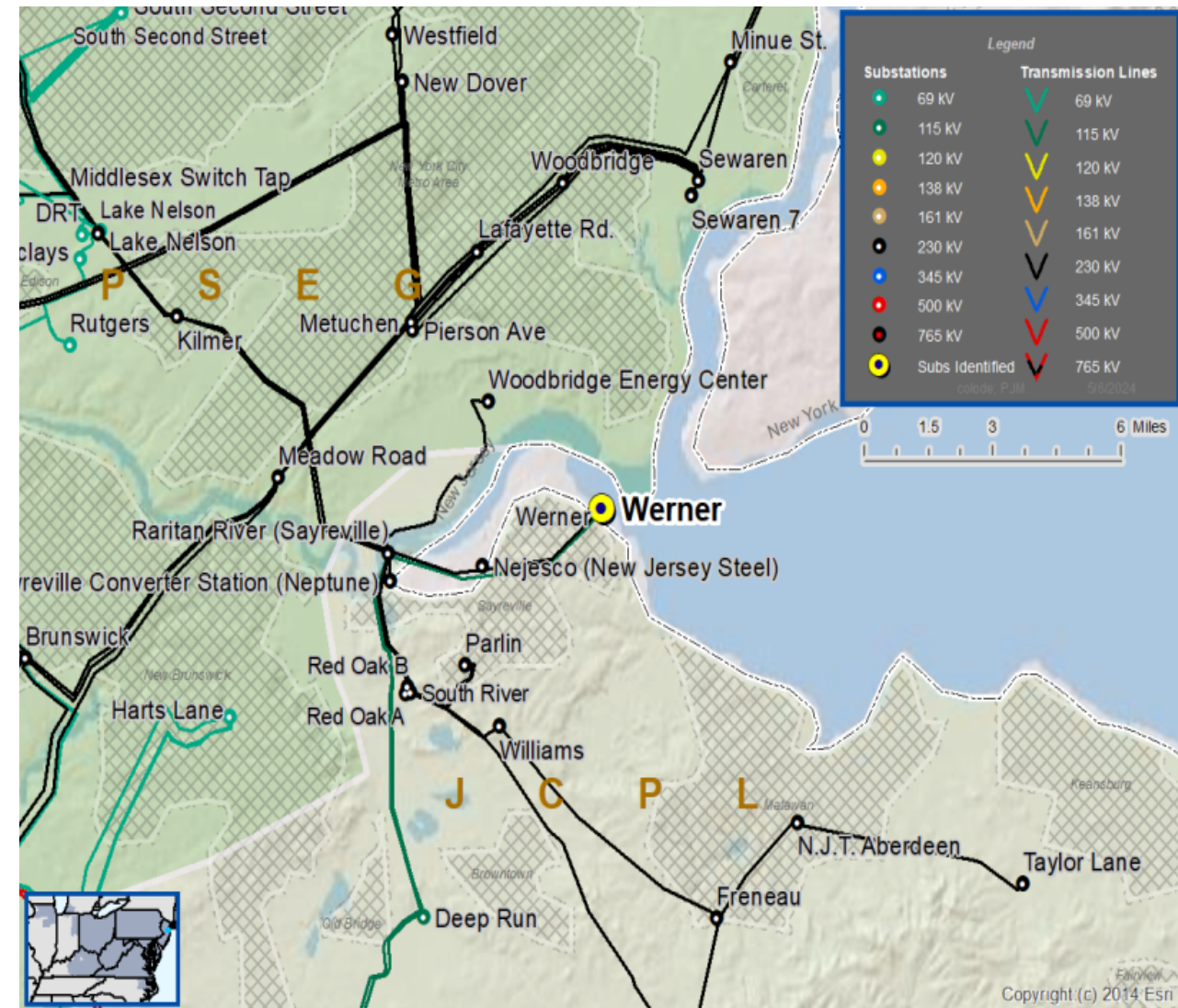
Project Driver:
Customer Service

Specific Assumption Reference:

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 1.5 MVA near Werner Substation.
Requested in-service date is 01/01/2025



JCPL Transmission Zone M-3 Process

Raritan River - Werner 34.5 kV U99 Line Customer Connection

Need number(s): JCPL-2024-035
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

Raritan River - Werner 34.5 kV U99 Line Customer Connection:

- Tap the Raritan River - Werner 34.5 kV U99 Line
- Extend tap line ~200 ft to customer
- Add SCADA controlled switches
- Modify relay settings at Raritan River Substation and Werner Substation.

Estimated Project Cost: \$0.5 M
Projected In-Service: 03/31/2025
Supplemental Project ID: s3757.1



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

Oceanview – Bradley Beach 34.5 kV D130 Line Customer Connection

Need Number: JCPL-2024-046

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 03/13/2025
Need Meeting - SRRTEP-MA - 11/14/2024

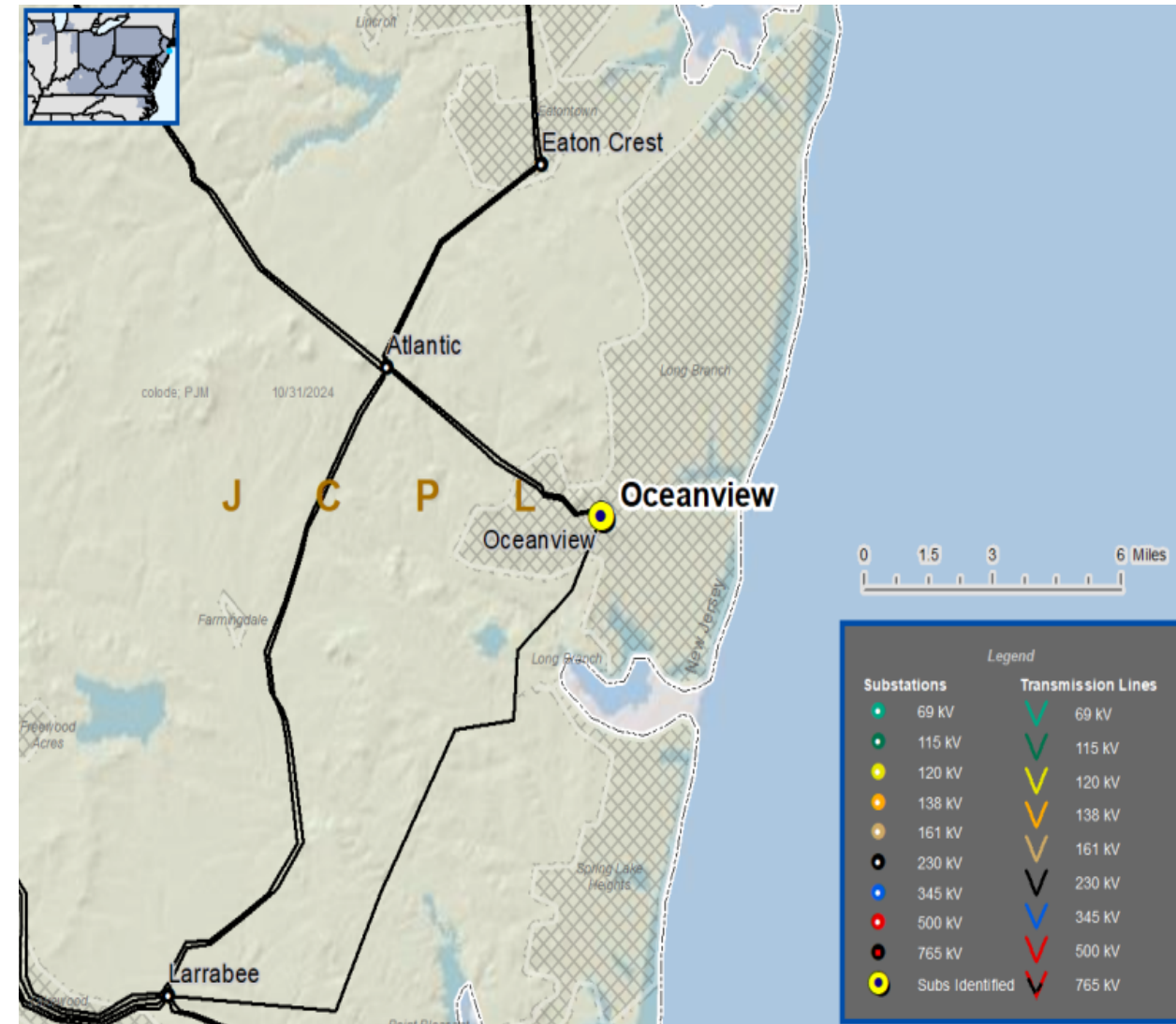
Project Driver:
Customer Service

Specific Assumption Reference:

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 8.5 MVA near the Oceanview – Bradley Beach 34.5 kV D130 Line. The request is approximately 1 mile from Oceanview Substation.



JCPL Transmission Zone M-3 Process

Oceanview – Bradley Beach 34.5 kV D130 Line Customer Connection

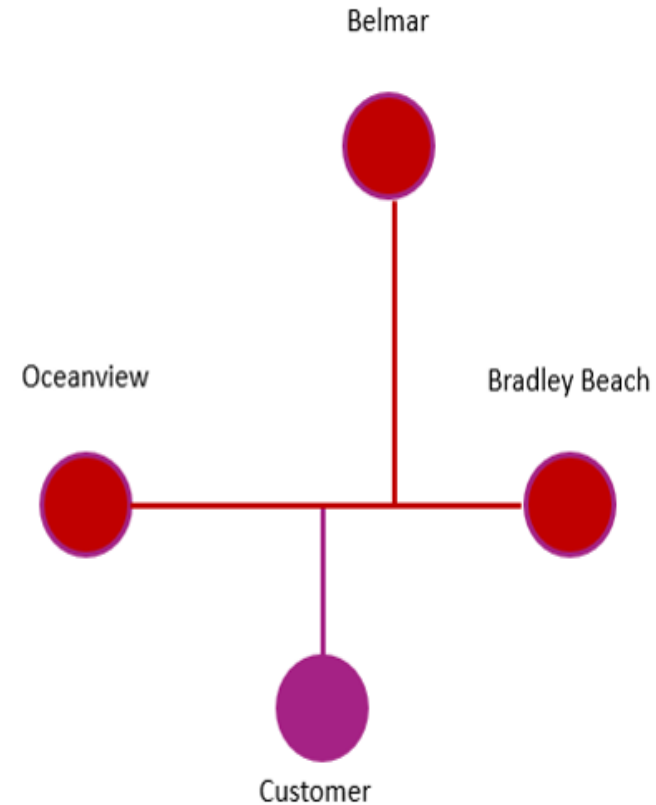
Need number(s): JCPL-2024-046
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

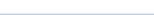
Selected Solution:

Belmar - Bradley Beach - Oceanview 34.5 kV D130 Line Customer Connection:

- Tap the Belmar - Bradley Beach - Oceanview 34.5 kV D130 Line
- Extend tap line 0.1 miles to customer
- Add SCADA controlled switches
- Modify relay settings at Belmar, Bradley Beach, and Oceanview substations.

Estimated Project Cost: \$1.87 M
Projected In-Service: 07/01/2026
Supplemental Project ID: s3758.1



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

Old Bridge - Raritan River 34.5 kV Q69 Line Customer Connection

Need Number: JCPL-2025-001

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 04/10/2025
Need Meeting - SRRTEP-MA - 03/13/2025

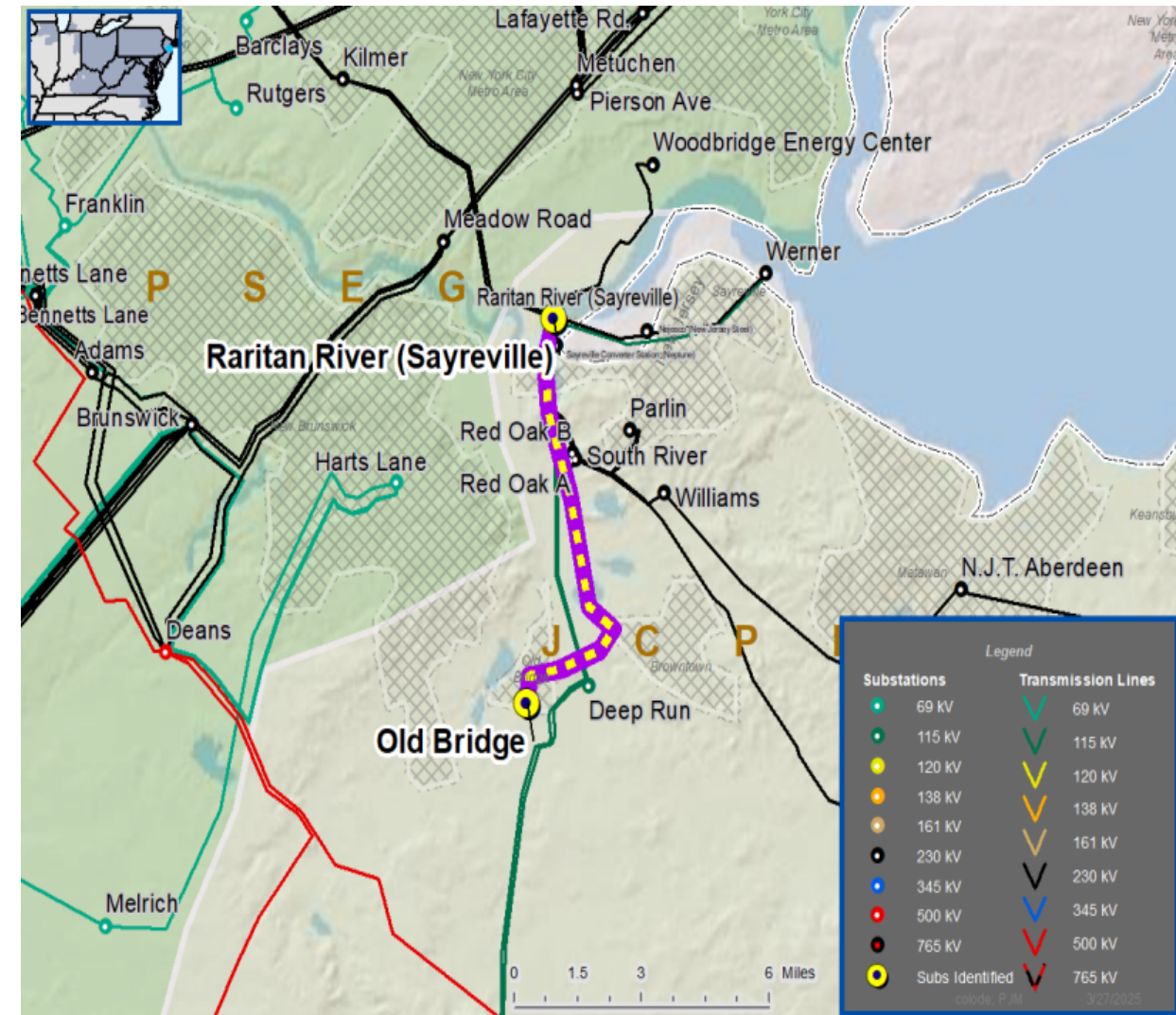
Project Driver:
Customer Service

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.



JCPL Transmission Zone M-3 Process

Old Bridge - Raritan River 34.5 kV Q69 Line Customer Connection

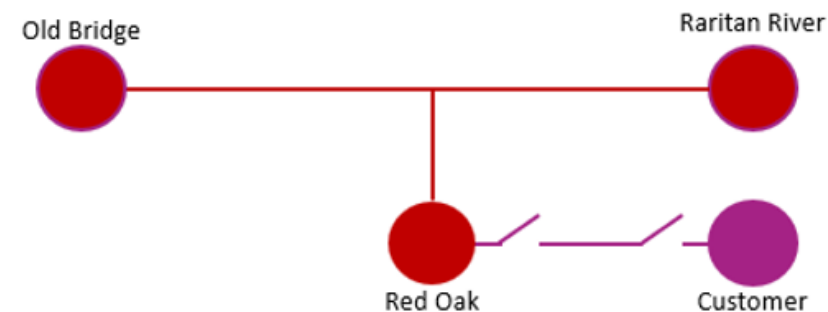
Need number(s): JCPL-2025-001
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

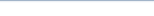
Selected Solution:

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 Project Cost: \$0.1 M
Projected In-Service: 05/31/2025
Supplemental Project ID: s3759.1



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

Briant Park – Traynor 34.5 kV I35 Line Customer Connection

Need Number: JCPL-2025-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 06/12/2025
Need Meeting - SRRTEP-MA - 03/13/2025

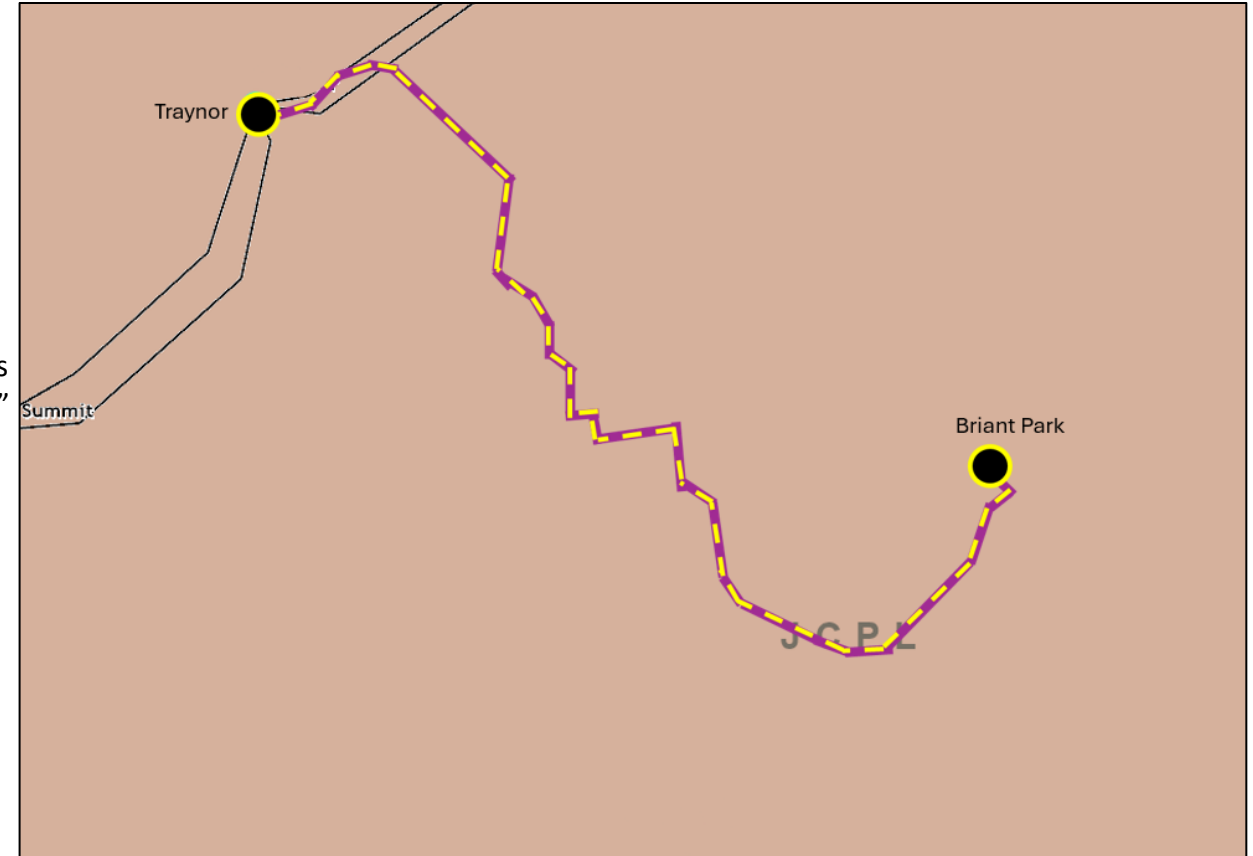
Project Driver:
Customer Service

Specific Assumption Reference:

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 5 MVA near Morris Court Substation on the Briant Park - Traynor 34.5 kV I35 Line.



JCPL Transmission Zone M-3 Process

Briant Park – Traynor 34.5 kV I35 Line Customer Connection

Need Number: JCPL-2025-002

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

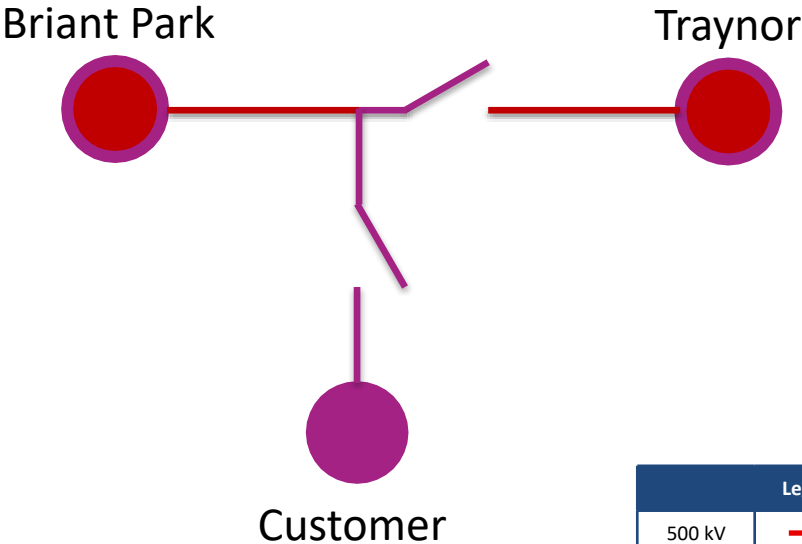
Selected Solution:

Tap the Briant Park – Traynor 34.5 kV I35 Line and extend approximately one span to customer. Add one SCADA controlled in-line switch toward Traynor Substation and one SCADA controlled switch on tap toward customer. Modify relay settings at Briant Park and Traynor substations.

Estimated Project Cost: \$0.5 M

Projected In-Service: 08/31/2025

Supplemental Project ID: s3760.1



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

Atlantic – Long Branch 34.5 kV P42 Line Customer Connection

Need Number: JCPL-2024-044

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA - 09/19/2024
Need Meeting - SRRTEP-MA - 08/15/2024

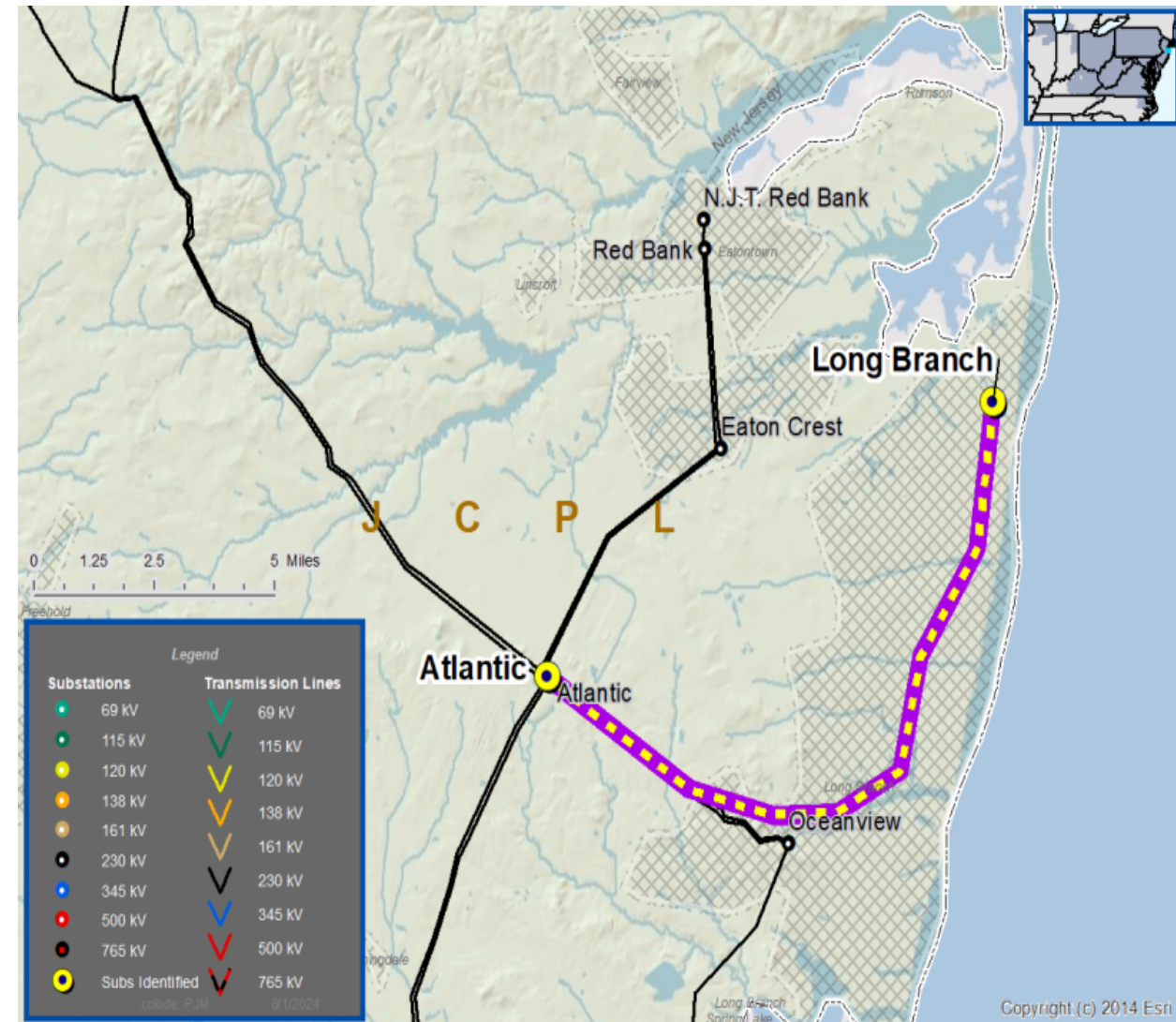
Project Driver:
Customer Service

Specific Assumption Reference:

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 20 MVA near the Atlantic – Long Branch 34.5 kV P42 Line. The request is approximately 3 miles from Long Branch Substation.



JCPL Transmission Zone M-3 Process

Atlantic – Long Branch 34.5 kV P42 Line Customer Connection

Need Number: JCPL-2024-044

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

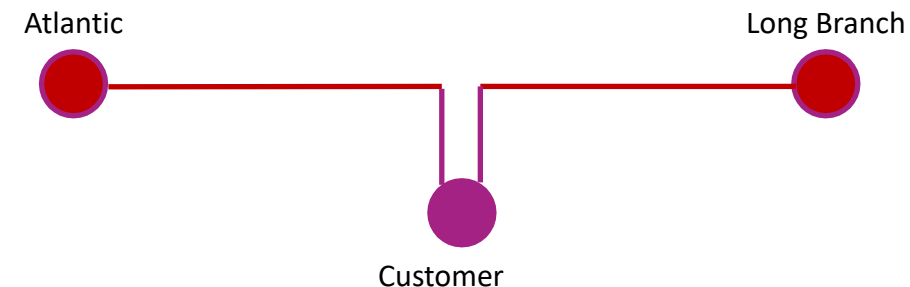
34.5 kV line loop and ring bus

- Construct a four breaker 34.5 kV ring bus.
- Loop the Atlantic – Long Branch 34.5 kV P42 Line into the new substation. The loop is approximately 0.1 miles in length.
- Modify relay settings at Atlantic Substation and Long Branch Substation.

Estimated Project Cost: \$8.1 M

Projected In-Service: 04/01/2027

Supplemental Project ID: s3782.1



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

Need Number: JCPL-2024-022

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - TEAC - 12/08/2025
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 limit
- Add/Replace Transformers
- Past System Reliability/Performance

Problem Statement:

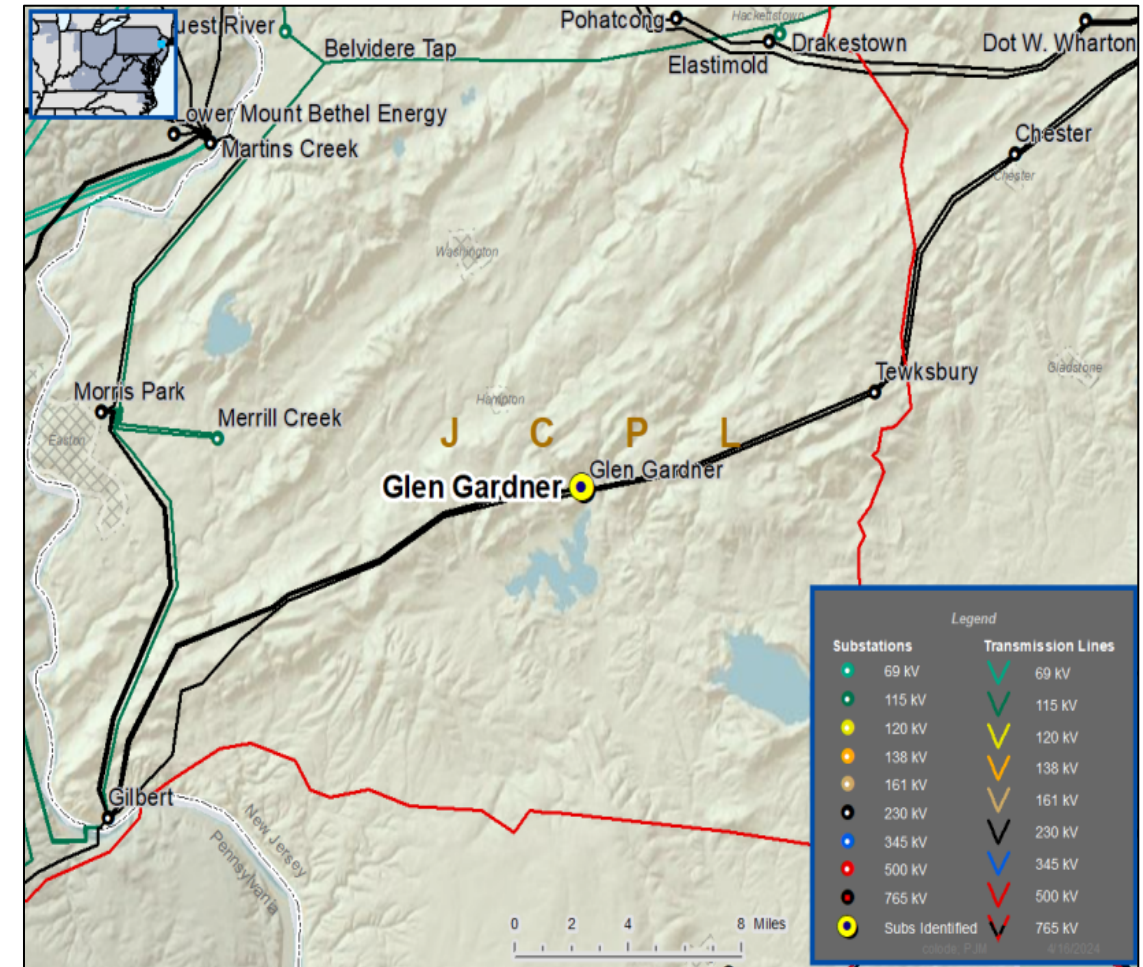
The Glen Gardner No. 1 230-34.5 kV Transformer is approximately 51 years old and is approaching end of life.

The transformer is experiencing issues with cooling capacity, heat exchangers, inoperable fans, bushing failures and oil drain valve failure.

The transformer is limited by terminal equipment.

Existing Transformer Ratings:

- 111 / 140 MVA (SN/SSTE)
- 141 / 155 MVA (WN/WSTE)



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

Need Number: JCPL-2024-022
Process Stage: Submission of Supplemental Projects for
 Inclusion in the Local Plan

Selected Solution:

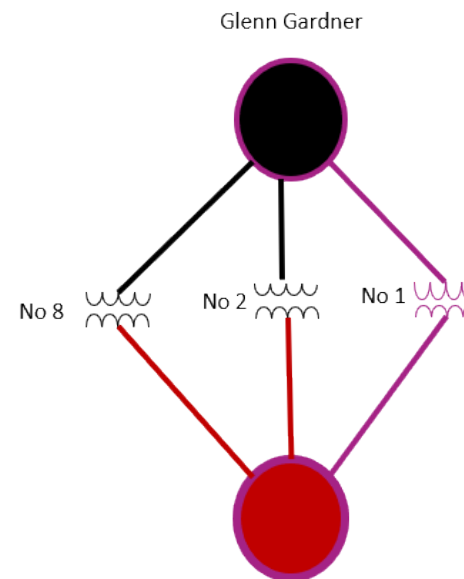
Replace the Glen Gardner No. 1 230-34.5 kV Transformer with a 168 MVA unit
 Replace one 230 kV circuit switcher with one 230 kV full-load break MOAB switch
 with SCADA control
 Replace one 34.5 kV circuit breaker
 Replace the limiting terminal equipment and relays.

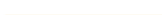
Ratings:

Glen Gardner No. 1 230-34.5 kV Transformer

- Before Proposed Solution: 93 / 116 / 118 / 129 MVA (SN/STE/WN/WTE)
- After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/STE/WN/WTE)

Estimated Project Cost: \$7.35 M
Projected In-Service: 11/17/2028
Supplemental Project ID: s3960.1



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

Need Number: JCPL-2024-031

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - TEAC - 12/08/2025
Need Meeting - TEAC - 06/04/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

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

Problem Statement:

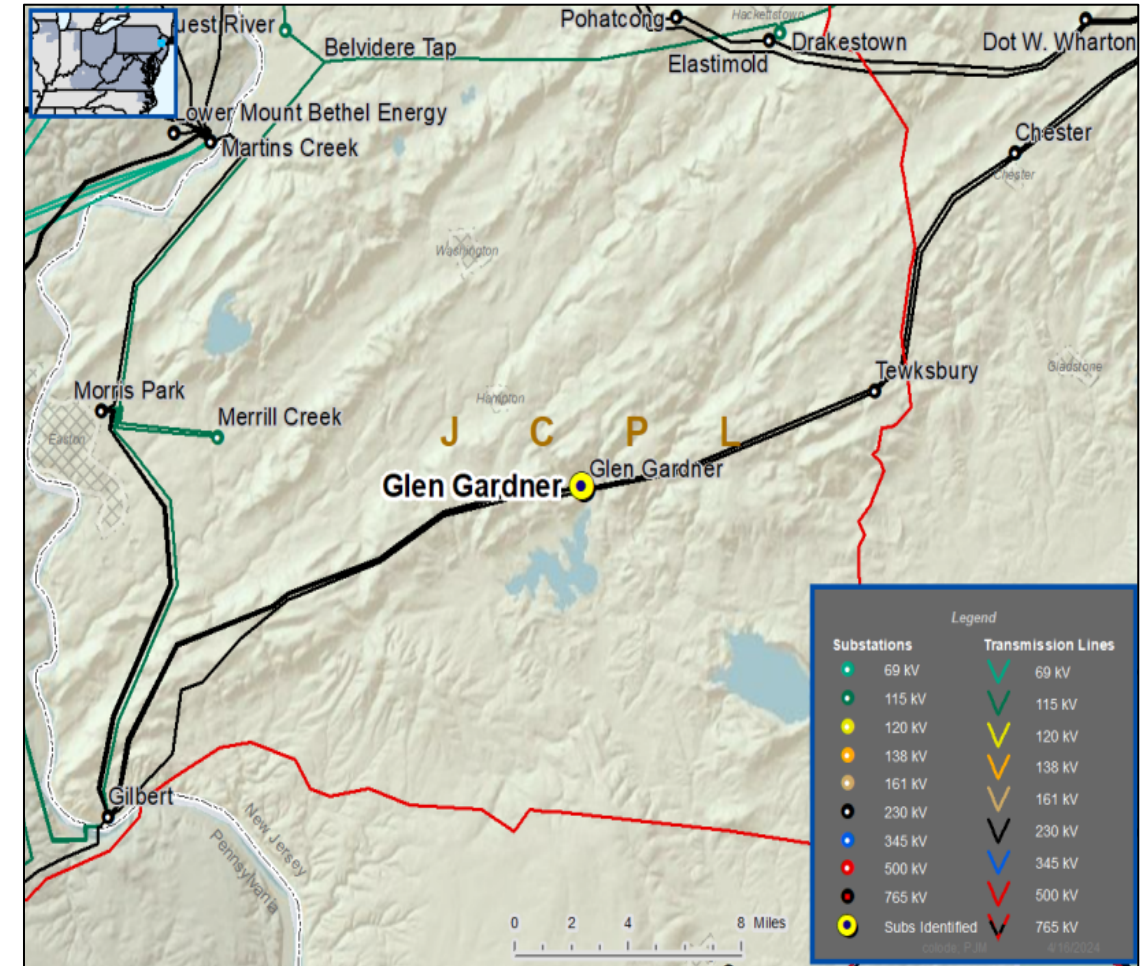
The Glen Gardner No. 8 230-34.5 kV Transformer is approximately 54 years old and is approaching end of life.

Most recent DGA results show elevated ethane gas levels above IEEE limits and dielectric strength is low.

The transformer has experienced issues with cooling components due to pump and fan failures.

Existing Transformer Ratings:

- 108 / 136 MVA (SN/SSTE)
- 137 / 152 MVA (WN/WSTE)



JCPL Transmission Zone M-3 Process Glen Gardner No. 8 230-34.5 kV Transformer

Need Number: JCPL-2024-031
Process Stage: Submission of Supplemental Projects for
 Inclusion in the Local Plan

Selected Solution:

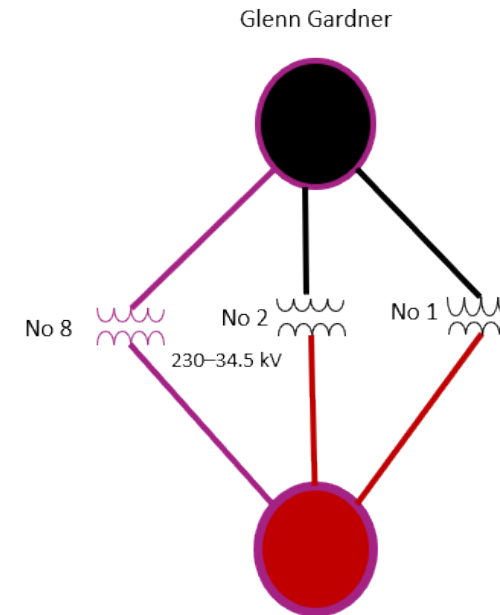
Replace the Glen Gardner No. 8 230-34.5 kV Transformer with a 168 MVA unit
 Replace 230 kV MOAB switch with one full load break MOAB switch with SCADA control
 Replace the limiting terminal equipment and relays

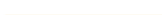
Ratings:

Glen Gardner No. 8 230-34.5 kV Transformer

- Before Proposed Solution: 108 / 136 / 137 / 152 MVA (SN/STE/WN/WTE)
- After Proposed Solution: 168 / 176 / 202 / 218 MVA (SN/STE/WN/WTE)

Estimated Project Cost: \$7.35 M
Projected In-Service: 06/07/2028
Supplemental Project ID: s3961.1



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

Need Number: JCPL-2025-005

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - TEAC - 12/08/2025
Need Meeting - TEAC - 11/04/2024

Project Driver:

Operational Flexibility and Efficiency

Specific Assumption Reference:

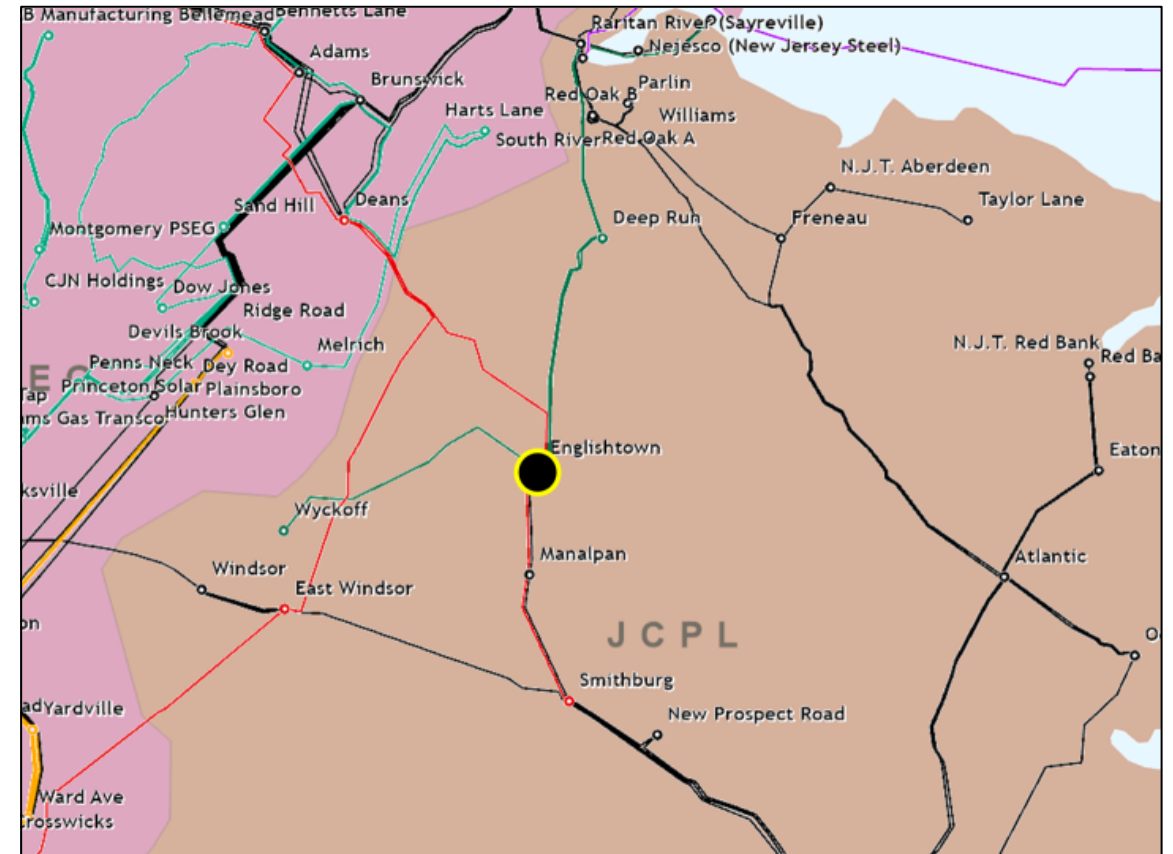
- System Performance Global Factors
 - System reliability and performance
 - Substation/line equipment limits

Problem Statement:

FirstEnergy has identified operational constraints when a single breaker is out of service for maintenance at Englishtown on the Englishtown No. 6 230-34.5 kV Transformer.

The Englishtown No. 6 230-34.5 kV Transformer is limited by terminal equipment:

- Normal Ratings: 144 / 151 / 144 / 187 MVA (SN/SE/WN/WE)
- Single Breaker Outage #1: 72 / 94 / 72 / 94 MVA (SN/SE/WN/WE)
- Single Breaker Outage #2: 125 / 150 / 156 / 176 MVA (SN/SE/WN/WE)





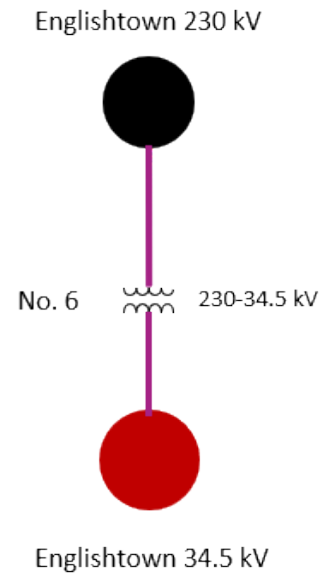
Need Number: JCPL-2025-005
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:
Replace limiting substation equipment of transformer leads to exceed the Englishtown No. 6 Transformer ratings.

- Ratings:**
Englishtown No. 6 230-34.5 kV Transformer
- Before Proposed Solution:
 - Single Breaker Outage #1: 72 / 94 / 72 / 94 MVA (SN/SSTE/WN/WSTE)
 - Single Breaker Outage #2: 125 / 150 / 156 / 176 MVA (SN/SSTE/WN/WSTE)
 - After Proposed Solution: 151 / 151 / 194 / 194 MVA (SN/SSTE/WN/WSTE)

Estimated Project Cost: \$2.06 M
Projected In-Service: 12/17/2026
Supplemental Project ID: s3962.1

JCPL Transmission Zone M-3 Process Englishtown No. 6 230-34.5 kV Transformer



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

JCPL Transmission Zone M-3 Process

Martinsville - Readington 34.5 kV X778 Line – Customer Connection

Need Number: JCPL-2025-010

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

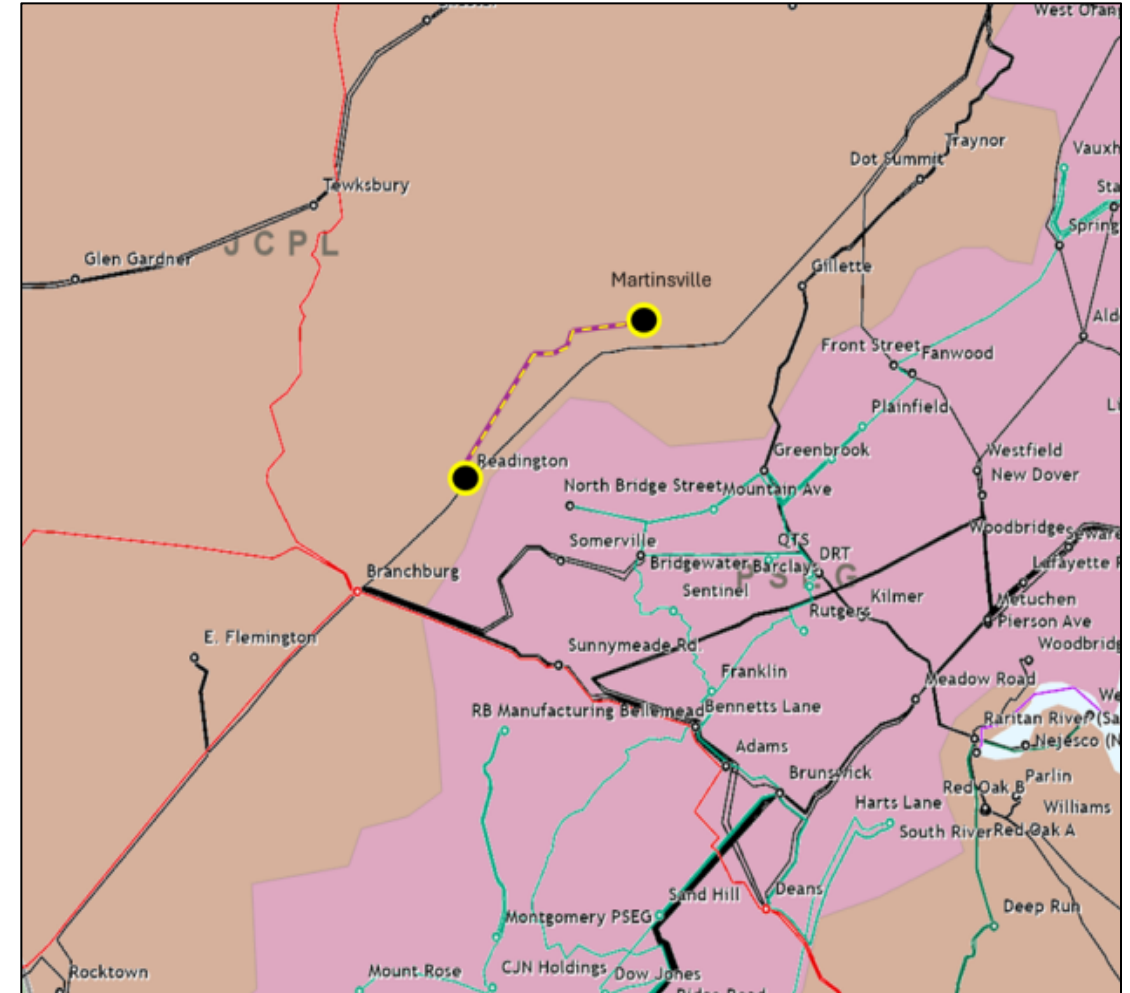
Previously Presented: Solution Meeting – SRRTEP-MA - 12/11/2025
Need Meeting – SRRTEP-MA - 11/13/2025

Project Driver:
Customer Service

Specific Assumption Reference:
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 10 MW near the Martinsville - Readington 34.5 kV X778 Line. The request is approximately 0.5 miles from Martinsville Substation.

Requested in-service date is 1/25/2027.



JCPL Transmission Zone M-3 Process

Martinsville - Readington 34.5 kV X778 Line – Customer Connection

Need Number: JCPL-2025-010

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

Construct approximately 0.01 miles 34.5 kV extension line from the Martinsville - Readington 34.5 kV X778 Line to the customer substation.

Install three switches equipped with SCADA control.

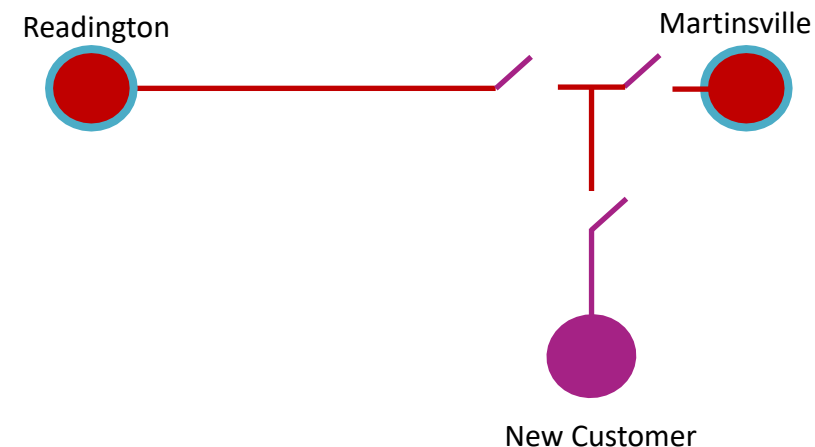
Adjust relay settings at Martinsville and Readington substations.

Install revenue metering.

Estimated Project Cost: \$1.08 M

Projected In-Service: 06/01/2027

Supplemental Project ID: s3963.1



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



JCPL Transmission Zone M-3 Process Morris Court 34.5 kV Substation – Customer Connection

Need Number: JCPL-2025-011
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan
Previously Presented: Solution Meeting – SRRTEP-MA - 01/15/2026
Need Meeting – SRRTEP-MA - 12/11/2025

Project Driver:
Customer Service

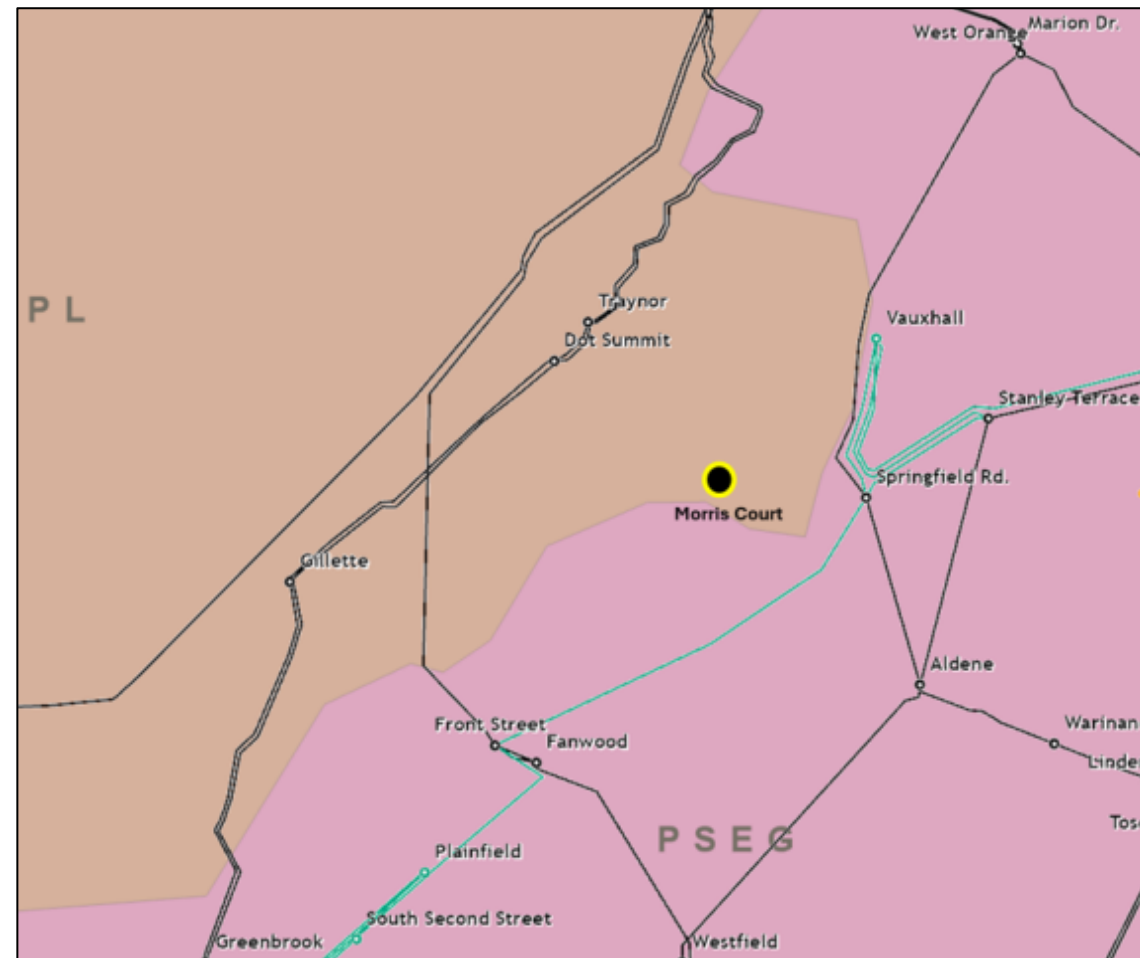
Specific Assumption Reference:

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 customer requested 34.5 kV service for load of approximately 10 MW at Morris Court Substation.

Requested in-service date is 9/14/2026.





JCPL Transmission Zone M-3 Process

Morris Court 34.5 kV Substation – Customer Connection

Need Number: JCPL-2025-011

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

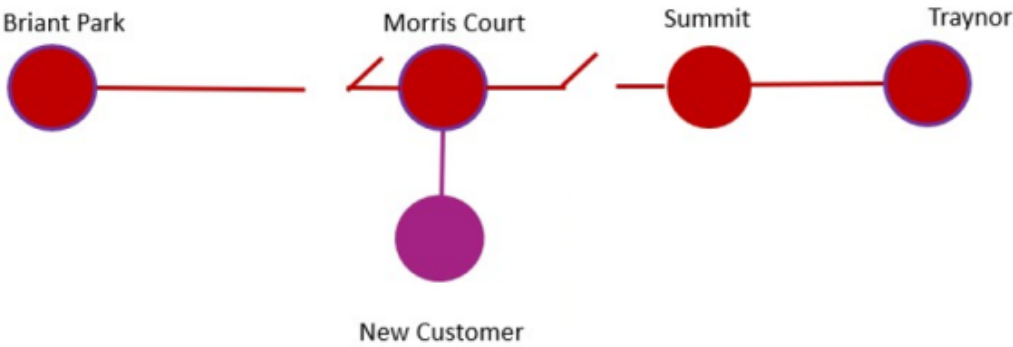
Selected Solution:

- Provide connection for a second transformer at Morris Court Substation
- Upgrade remote terminal end relay settings at Briant Park and Traynor substations
- Install wholesale revenue metering

Estimated Project Cost: \$110,000

Projected In-Service: 09/14/2026

Supplemental Project ID: s3964.1



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

Project Driver:
Equipment Material Condition, Performance and Risk

- System Performance Global Factors
 - System reliability/performance
 - Substation/Line equipment limits
- Line Condition Rebuild/Replacement
 - Age/condition wood pole transmission line structures

The EH Werner – Freneau – Keyport 34.5 kV E31 Line was constructed approximately 92 years ago and is approaching end of life. It is approximately 13 miles long with 424 wood pole transmission line structures.

Recent inspection findings include:

- 362 structures are reaching end of life.
- 299 structures failed inspection due to sound, woodpecker damage, top rot, decay, cracking, and/or delamination of cross-arms.
- 104 structures failed the sound test requiring repair or replacement due to deterioration.

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Need Number: JCPL-2024-012

Problem Statement: (Cont'd from previous page)

Replacement components are difficult to source in quantity leading to non-standard repairs.
Since 2019, the line has had 17 unscheduled sustained outages.

Need #	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
JCPL-2024-012	EH Werner – Feltus St 34.5 kV E31 Line	44 / 53 / 50 / 62	44 / 53 / 50 / 62
JCPL-2024-012	Feltus St – Laurence Harbor 34.5 kV E31 Line	35 / 44 / 35 / 44	35 / 44 / 35 / 44
JCPL-2024-012	Laurence Harbor – Freneau East Tap 34.5 kV E31 Line	35 / 44 / 35 / 44	35 / 44 / 35 / 44
JCPL-2024-012	Freneau East Tap – Clark Street 34.5 kV E31 Line	55 / 67 / 63 / 79	55 / 67 / 63 / 79
JCPL-2024-012	Clark Street – Keyport 34.5 kV E31 Line	44 / 53 / 50 / 63	44 / 53 / 50 / 63
JCPL-2024-012	Freneau East Tap – Freneau 34.5 kV E31 Line	53 / 62 / 63 / 71	53 / 62 / 63 / 71



JCPL Transmission Zone M-3 Process EH Werner- Freneau- Keyport 34.5 kV E31 Line

Need Number: JCPL-2024-012
Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Selected Solution:

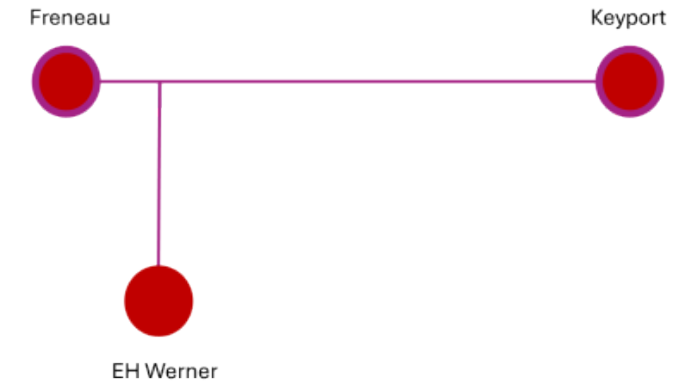
Rebuild the EH Werner- Freneau- Keyport 34.5 kV E31 Line (6.9 miles total) with new conductor.

Replace limiting sub conductor at Freneau and Keyport substations.

Ratings:

Transmission Line	Before Proposed Solution MVA (SN / SE / WN / WE)	After Proposed Solution MVA (SN / SE / WN / WE)
Clark Street – Keyport 34.5 kV E31 Line	44 / 53 / 50 / 63	55 / 67 / 63 / 79
Clark St - Clark St Tap E31 34.5 kV Line	55 / 67 / 63 / 79	55 / 67 / 63 / 79
Clark St Tap - Freneau E31 34.5 kV Line	53 / 62 / 63 / 71	55 / 67 / 63 / 79
Clark St Tap - Laurence E31 34.5 kV Line	35 / 44 / 35 / 44	55 / 67 / 63 / 79
Feltus St - Laurence E31 34.5 kV Line	35 / 44 / 35 / 44	55 / 67 / 63 / 79
Feltus St - Werner E31 34.5 kV Line	44 / 53 / 50 / 62	55 / 67 / 63 / 79

Estimated Project Cost: \$22.50 M
Projected In-Service: 05/11/2029
Supplemental Project ID: s3965.1



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

Need Number: JCPL-2023-056

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA – 05/14/2026
Need Meeting - SRRTEP-MA – 11/16/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Line Condition Rebuild/Replacement
 - Age/condition of wood pole transmission line structures
 - Age/condition of transmission line conductors
- System Performance Projects
 - Substation/line equipment limits

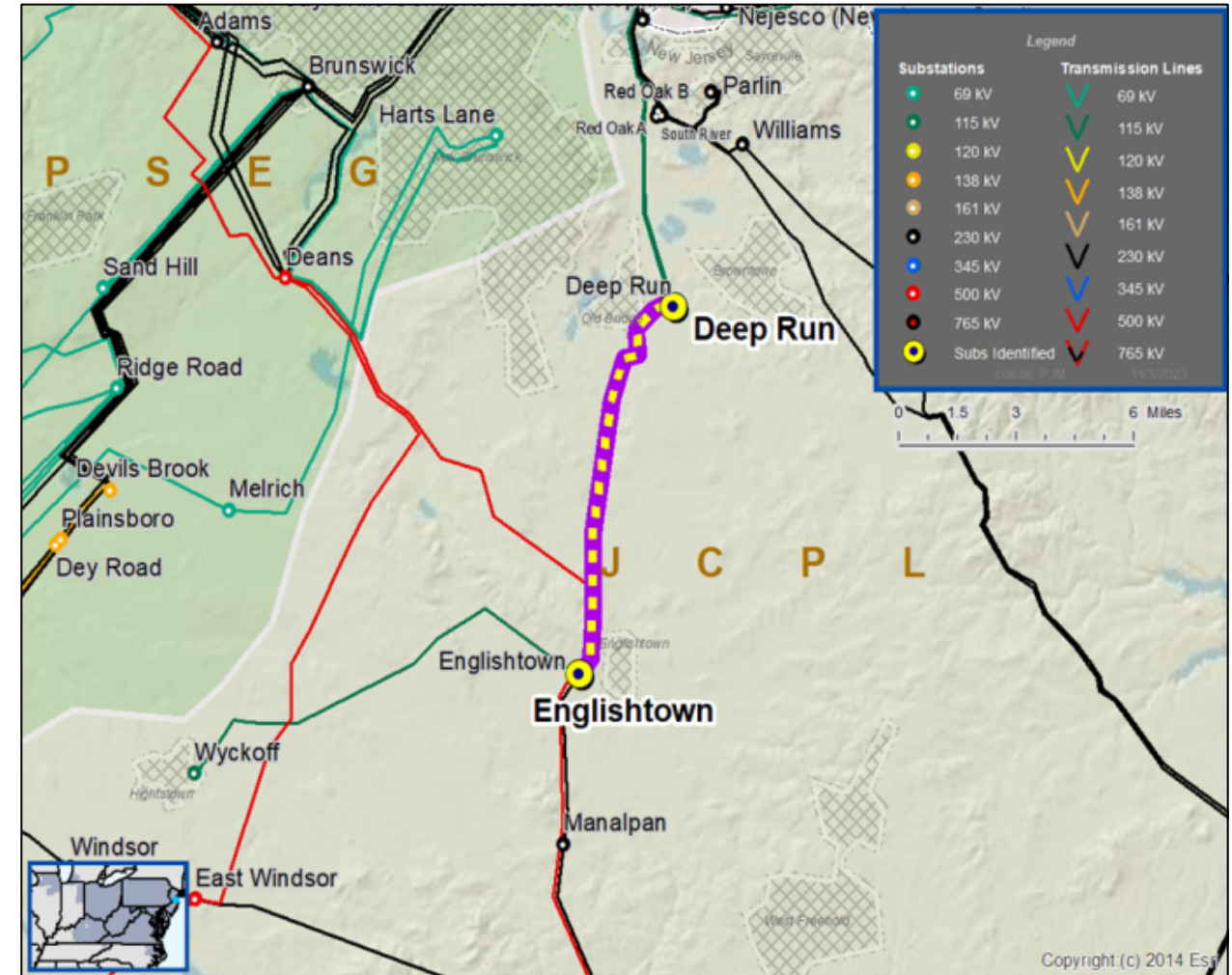
Problem Statement:

Both Deep Run – Englishtown 115 kV DRE1 and DRE2 lines have structures with an average age of 55+ years. Upon visual inspection, 88-91% fail inspection due to rot/decay and woodpecker damage.

Line sections are exhibiting deterioration and increasing maintenance needs.

DRE2 Transmission line ratings are limited by terminal equipment.

- Existing Circuit Rating (SN / SE): 166 / 210
- Existing Conductor Rating (SN / SE): 232 / 282
- Length of Line (miles): 7.6
- Identified Structures (end of life / total): 71/80 (88% Failure Rate)



JCPL Transmission Zone M-3 Process Deep Run – Englishtown 115 kV DRE2 Line

Need number: JCPL-2023-056

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Selected Solution:

Deep Run - Englishtown 115 kV DRE2 Line Rebuild

Rebuild the Englishtown - Deep Run 115 kV DRE2 Line using new conductor. At Englishtown Substation, replace relays and substation conductor. At Deep Run Substation, replace relays and substation conductor.

Ratings:

Deep Run - Englishtown 115 kV DRE2 Line

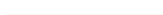
- Before Proposed Solution: 176 / 223 / 227 / 286 MVA (SN/SE/WN/WE)
- After Proposed Solution: 373 / 430 / 374 / 452 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$36.34M

Projected In-Service: 05/18/2029

Supplemental Project ID: s3966.1



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

Need Number: JCPL-2023-066

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA – 05/14/2026
Need Meeting - SRRTEP-MA – 11/16/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

- Line Condition Rebuild/Replacement
 - Age/condition of wood pole transmission line structures
 - Age/condition of transmission line conductors
- System Performance Projects
 - Substation/line equipment limits

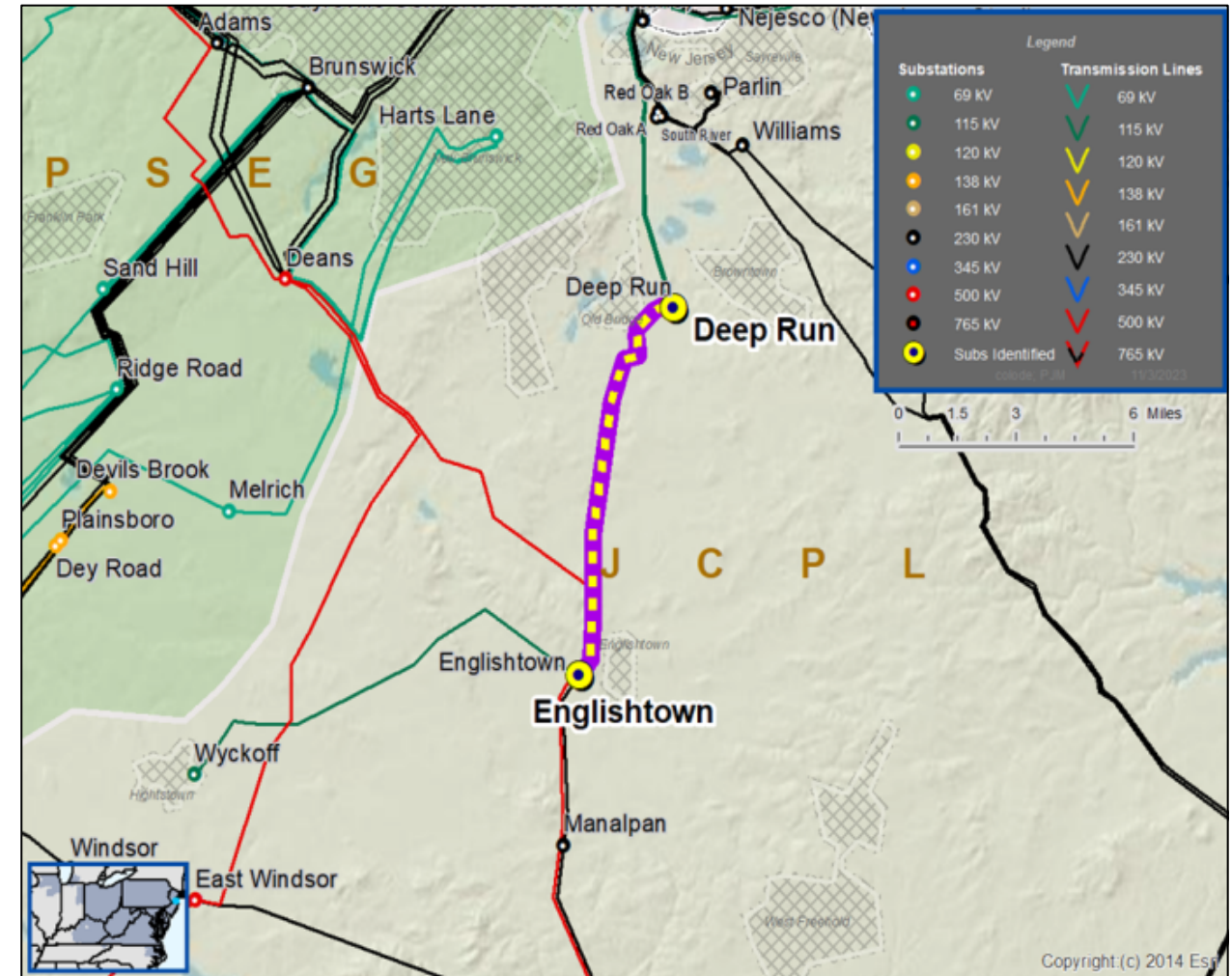
Problem Statement:

Both Deep Run – Englishtown 115 kV DRE1 and DRE2 lines have structures with an average age of 55+ years. Upon visual inspection, 88-91% fail inspection due to rot/decay and woodpecker damage.

Line sections are exhibiting deterioration and increasing maintenance needs.

DRE1 Transmission line ratings are limited by terminal equipment.

- Existing Circuit Rating (SN / SE): 176 / 223
- Existing Conductor Rating (SN / SE): 232 / 282
- Length of Line (miles): 7.6
- Identified Structures (end of life / total): 73/80 (91% Failure Rate)



JCPL Transmission Zone M-3 Process Deep Run – Englishtown 115 kV DRE1 Line

Need number: JCPL-2023-066

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Selected Solution:

Deep Run - Englishtown 115 kV DRE1 Line Rebuild

Rebuild the Englishtown - Deep Run 115 kV DRE1 Line using new conductor. At Englishtown Substation, replace relays and substation conductor. At Deep Run Substation, replace relays and substation conductor.

Ratings:

Deep Run - Englishtown 115 kV DRE1 Line

- Before Proposed Solution: 176 / 223 / 227 / 279 MVA (SN/SE/WN/WE)
- After Proposed Solution: 373 / 430 / 374 / 452 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$38.88M

Projected In-Service: 05/19/2028

Supplemental Project ID: s3967.1



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

Need Number: JCPL-2019-025

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - SRRTEP-MA – 06/16/2026
Need Meeting - SRRTEP-MA – 03/25/2019

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption Reference:

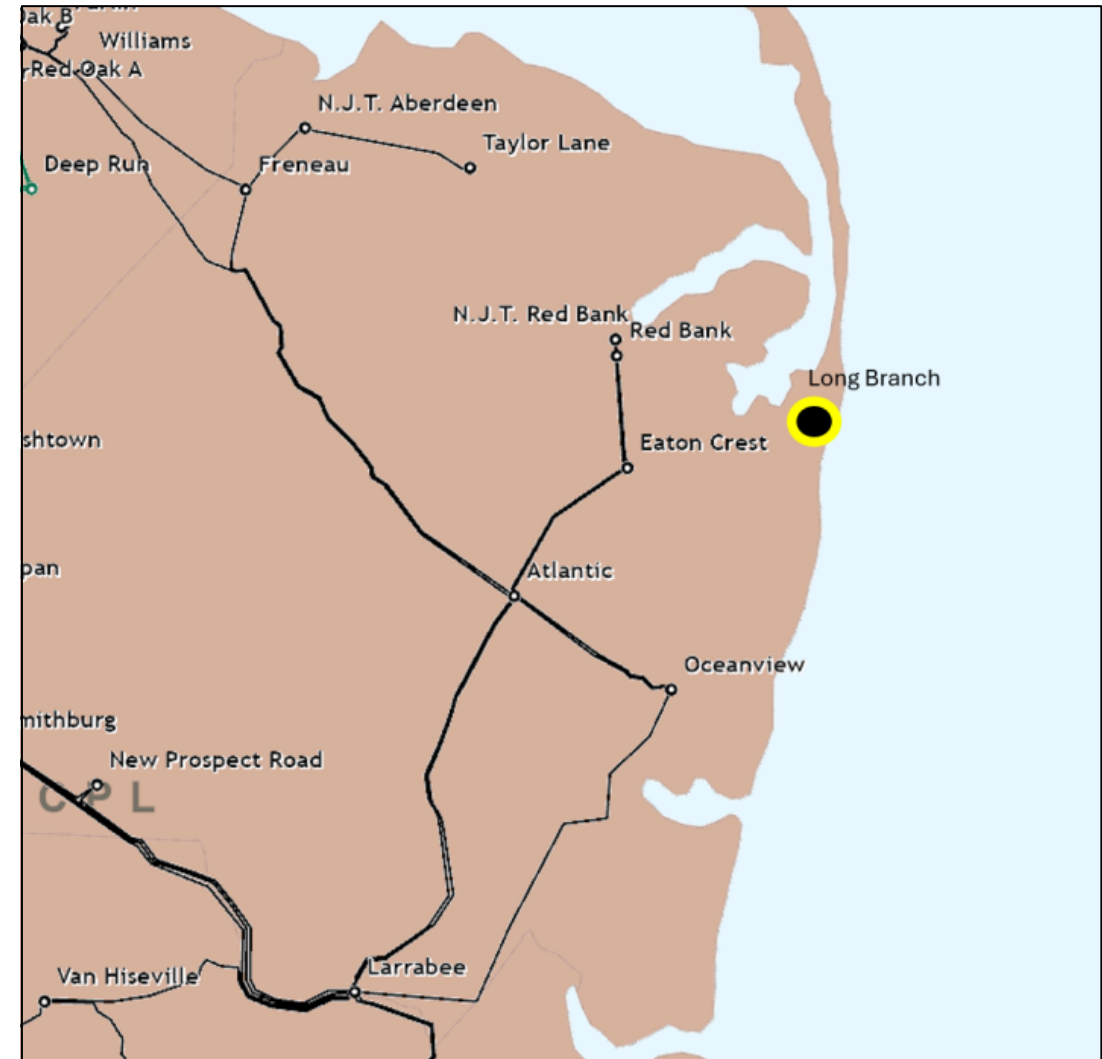
- Line Condition Rebuild/Replacement
 - Age/condition of wood pole transmission line structures
 - Age/condition of steel tower or steel pole transmission line structures
 - Age/condition of transmission line conductors
- System Performance Projects
 - Substation/line equipment limits

Problem Statement:

Line sections are exhibiting deterioration, increasing maintenance needs.
Transmission line is approaching end of life.

Transmission line ratings are limited by terminal equipment.

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Need Number: JCPL-2019-025

Problem Statement: *(Cont'd from previous slide)*

JCPL-2019-	Transmission Line / Substation Locations	Existing Circuit Rating (SN / SE)	Existing Conductor Rating (SN / SE)	Limiting Terminal Equipment	Length of Line (miles)	Identified Structures (end of life / total)	Failure reasons
025	Highlands – Sandy Hook 34.5 kV Line	37 / 38	37 / 38	-	1.1	182 / 257 (71% Failure Rate)	Age, bad/cut/missing grounds, rot/decay, woodpecker holes, etc.
	Sandy Hook Switch Point – Sandy Hook 34.5 kV Line	26 / 33	37 / 38	Substation Conductor	0.1		
	Sandy Hook Switch Point – Sea Bright Switch Point 34.5 kV Line	37 / 38	37 / 38	-	2.4		
	Sea Bright Switch Point – Monmouth Beach 34.5 kV Line	35 / 38	35 / 38	-	2.0		
	Monmouth Beach – Long Branch 34.5 kV Line	34 / 38	34 / 38	-	2.2		

JCPL Transmission Zone M-3 Process Highlands-Long Branch 34.5 kV K89 Line Rebuild

Need number: JCPL-2019-025

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

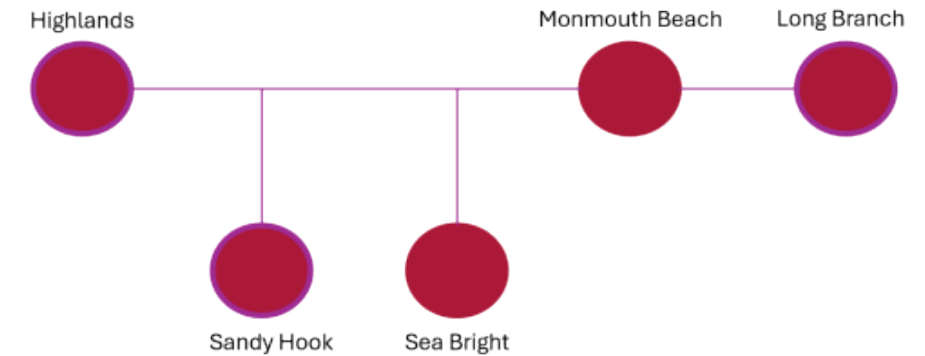
Selected Solution:

Highlands-Long Branch 34.5 kV K89 Line Rebuild

- Rebuild 7.8 miles of the Highlands - Long Branch 34.5 kV K89 Line with new conductor. Rebuild the taps to the existing customers at Sandy Hook and Sea Bright substations.
- At Highlands Substation: Replace one disconnect switch and upgrade substation conductor.
- At Long Branch Substation: Replace one disconnect switch and upgrade substation conductor.
- At Sandy Hook Substation: Replace one disconnect switch.

Ratings:

Transmission Line	Before Proposed Solution MVA (SN / SE / WN / WE)	After Proposed Solution MVA (SN / SE / WN / WE)
Highlands - Sandy Hook SW 34.5 kV Line	37 / 38 / 42 / 42	55 / 67 / 63 / 79
Sandy Hook SW - Sandy Hook 34.5 kV Line	26 / 33 / 37 / 41	55 / 67 / 63 / 79
Sandy Hook SW - Sea Bright SW 34.5 kV Line	37 / 38 / 42 / 42	55 / 67 / 63 / 79
Sea Bright SW - Monmouth Beach 34.5 kV Line	35 / 38 / 35 / 42	55 / 67 / 63 / 79
Monmouth Beach - Long Branch 34.5kV Line	34 / 38 / 34 / 42	55 / 67 / 63 / 79
Sea Bright SW - Sea Bright 34.5 kV Line	37 / 38 / 42 / 42	55 / 67 / 63 / 79



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 Highlands-Long Branch 34.5 kV K89 Line Rebuild

Need number: JCPL-2019-025

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Estimated Project Cost: \$28.27M

Projected In-Service: 03/11/2030

Supplemental Project ID: s3968.1

JCPL Transmission Zone M-3 Process Allenhurst 34.5 kV Substation Breaker Replacements

Need Number: JCPL-2025-008

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 06/16/2026
Need Meeting – SRRTEP-MA – 12/11/2025

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption Reference:

- System Performance Global Factors
 - System reliability/performance
 - Substation/Line equipment limits
- Substation Condition Rebuild/Replacement
 - Age/condition of substation equipment
 - Circuit breakers and other fault interrupting devices

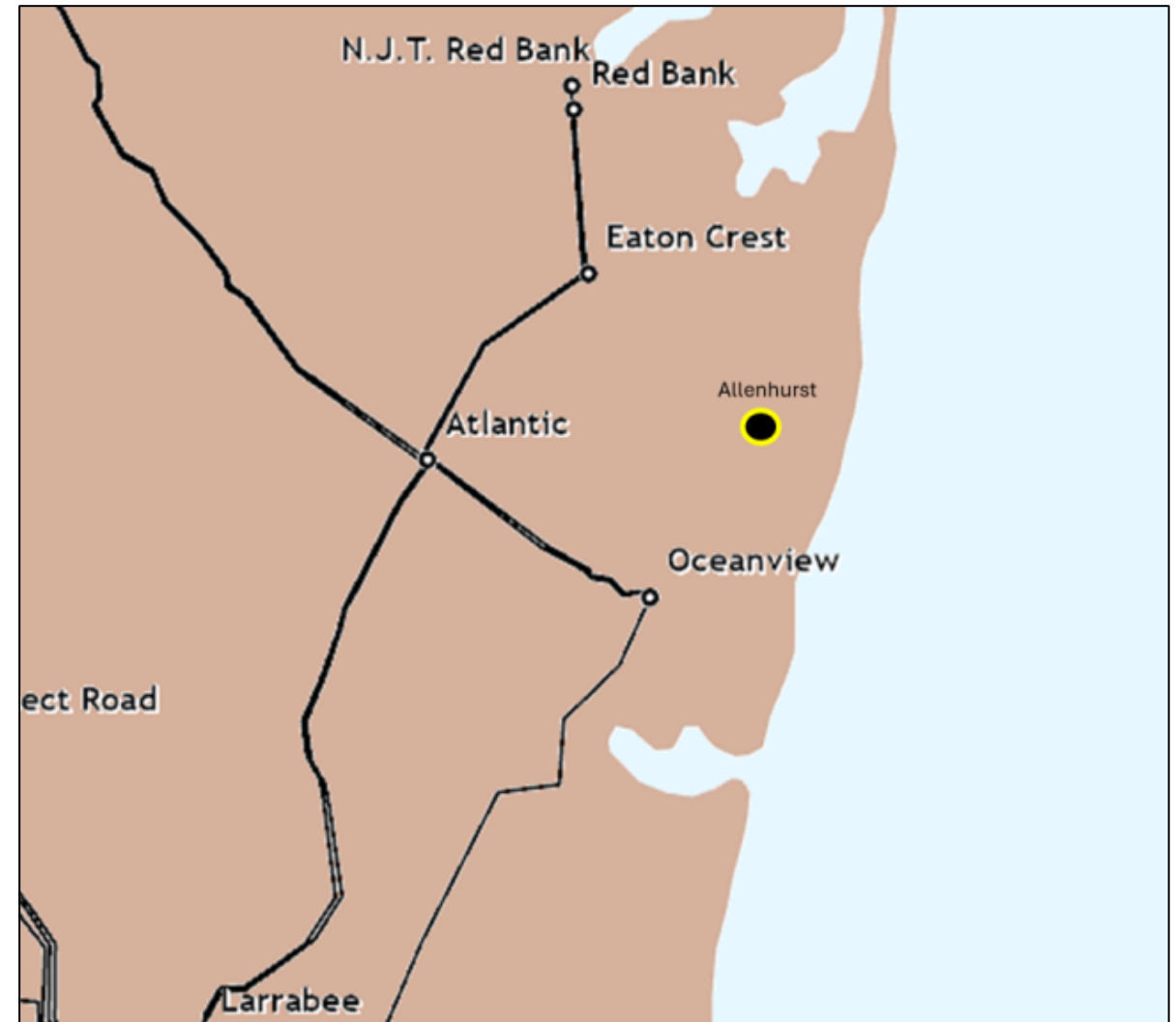
Problem Statement:

The existing Allenhurst Substation 34.5 kV oil circuit breakers H216 and V-74, associated disconnect switches and protective relaying are over 50 years old and are approaching end of life. Replacement components are difficult to source leading to non-standard repairs.

The Allenhurst - Oceanview 34.5 kV H216 Line is currently limited by the terminal equipment.

Allenhurst - Oceanview 34.5 kV H216 Line

- Existing Transmission Line Ratings: 44 / 48 / 48 / 48 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)



JCPL Transmission Zone M-3 Process Allenhurst 34.5 kV Substation Breaker Replacements

Need number: JCPL-2025-008

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

At Allenhurst Substation, replace 34.5 kV circuit breakers H216 and V-74 and associated disconnect switches, substation conductor, and relaying.

Ratings:

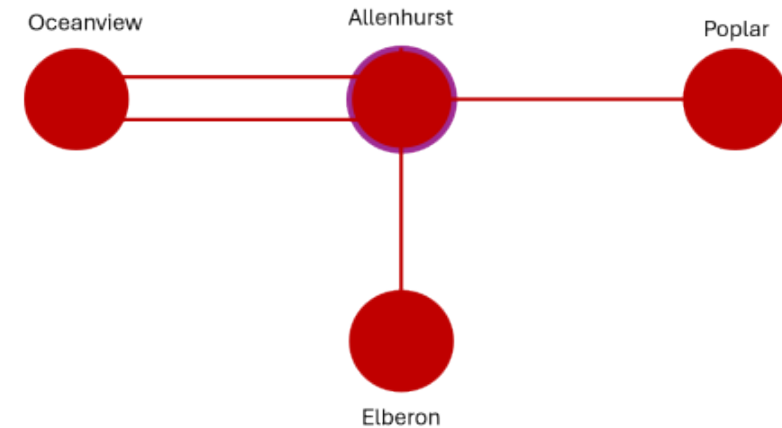
Allenhurst - Oceanview H216 34.5 kV Line

- Before Proposed Solution: 44 / 48 / 48 / 48 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$3.31M

Projected In-Service: 12/31/2028

Supplemental Project ID: s3969.1



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

Need Number: JCPL-2024-011

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA - 07/17/2026
Need Meeting – SRRTEP-MA - 03/14/2024

Project Driver:

Equipment Condition/Performance/Risk

Operational Flexibility and Efficiency

Specific Assumption Reference:

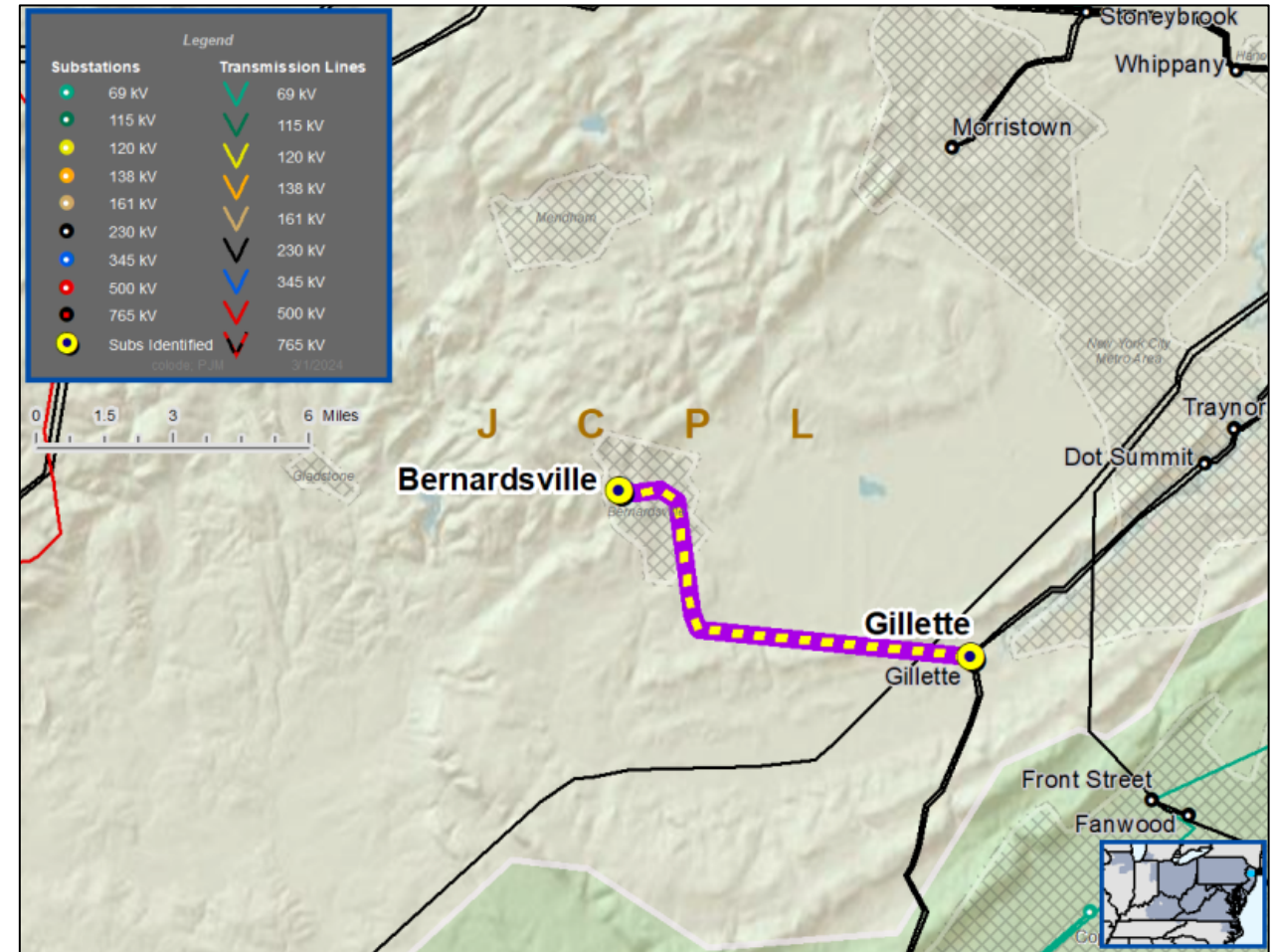
- System Performance Global Factors
 - System reliability/performance
 - Reliability of Non-Bulk Electric System (Non-BES) Facilities
- Past System Reliability/Performance

Problem Statement:

An N-1-1 contingency results in the Stirling – Lyons 34.5 kV B730 Line section loading to 120% of its summer emergency rating (38 MVA).

The transmission line is currently limited by transmission line conductor.

- Stirling – Lyons B730 34.5 kV Line Ratings:
 - 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)



JCPL Transmission Zone M-3 Process Bernardsville - Gillette 34.5 kV B730 Line

Need number: JCPL-2024-011
Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- Rebuild approximately 5.0 miles of Gillette - Stirling - Lyons 34.5 kV B730 Line with new conductor.
- Rebuild approximately 1.7 miles Gillette - Martinsville 34.5 kV I737 Line from Structure #39 to #16 that are shared with Gillette - Stirling 34.5 kV B370 Line with new conductor.
- Replace in-line switch LB21-I737 on Gillette - Martinsville 34.5 kV I737 Line with 34.5 kV load break SCADA switch.
- At Gillette Substation: Upgrade relay settings.
- At Stirling Substation: Replace disconnect switches.

Ratings:

Gillette - Stirling Tap 34.5 kV B730 Line Section

- Before Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

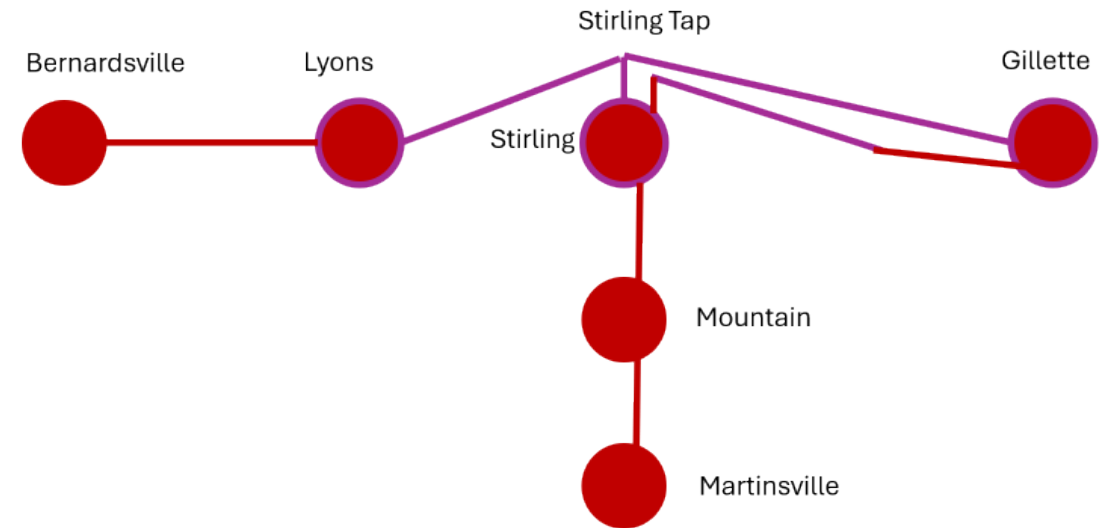
Stirling Tap - Lyons 34.5 kV B730 Line Section

- Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Stirling Tap - Stirling 34.5 kV B730 Line Section

- Before Proposed Solution: 39 / 48 / 51 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

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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 Bernardsville - Gillette 34.5 kV B730 Line

Need number: JCPL-2024-011

Selected Solution:

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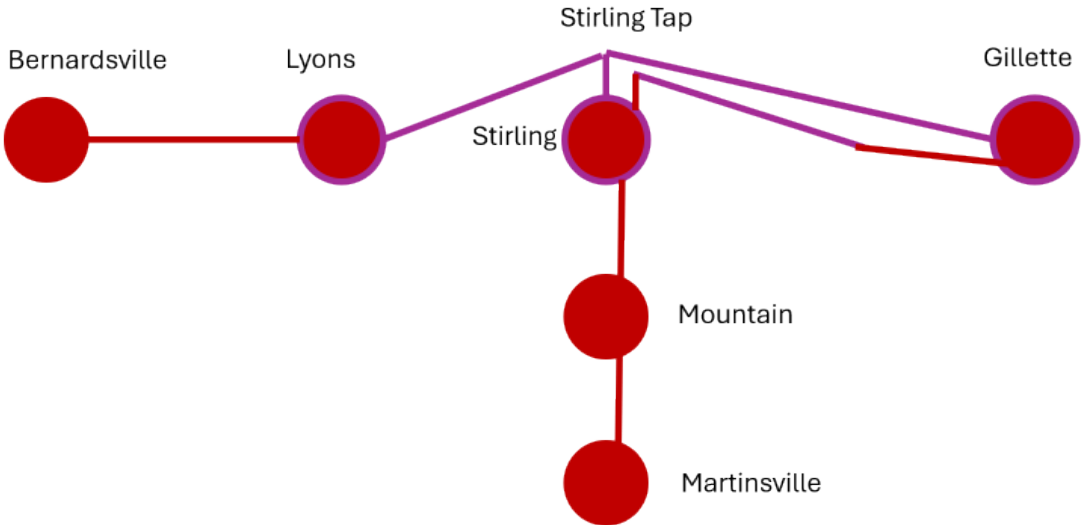
Gillette - Stirling Tap 34.5 kV I737 Line Section

- Before Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$20.51M

Projected In-Service: 06/30/2028

Supplemental Project ID: s3970.1



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

Need Number: JCPL-2024-038

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 07/17/2026
Need Meeting – SRRTEP-MA – 05/16/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption Reference:

- System Performance Global Factors
 - System reliability/performance
- Line Condition Rebuild/Replacement
 - Age/condition of wood pole transmission line structures

Problem Statement:

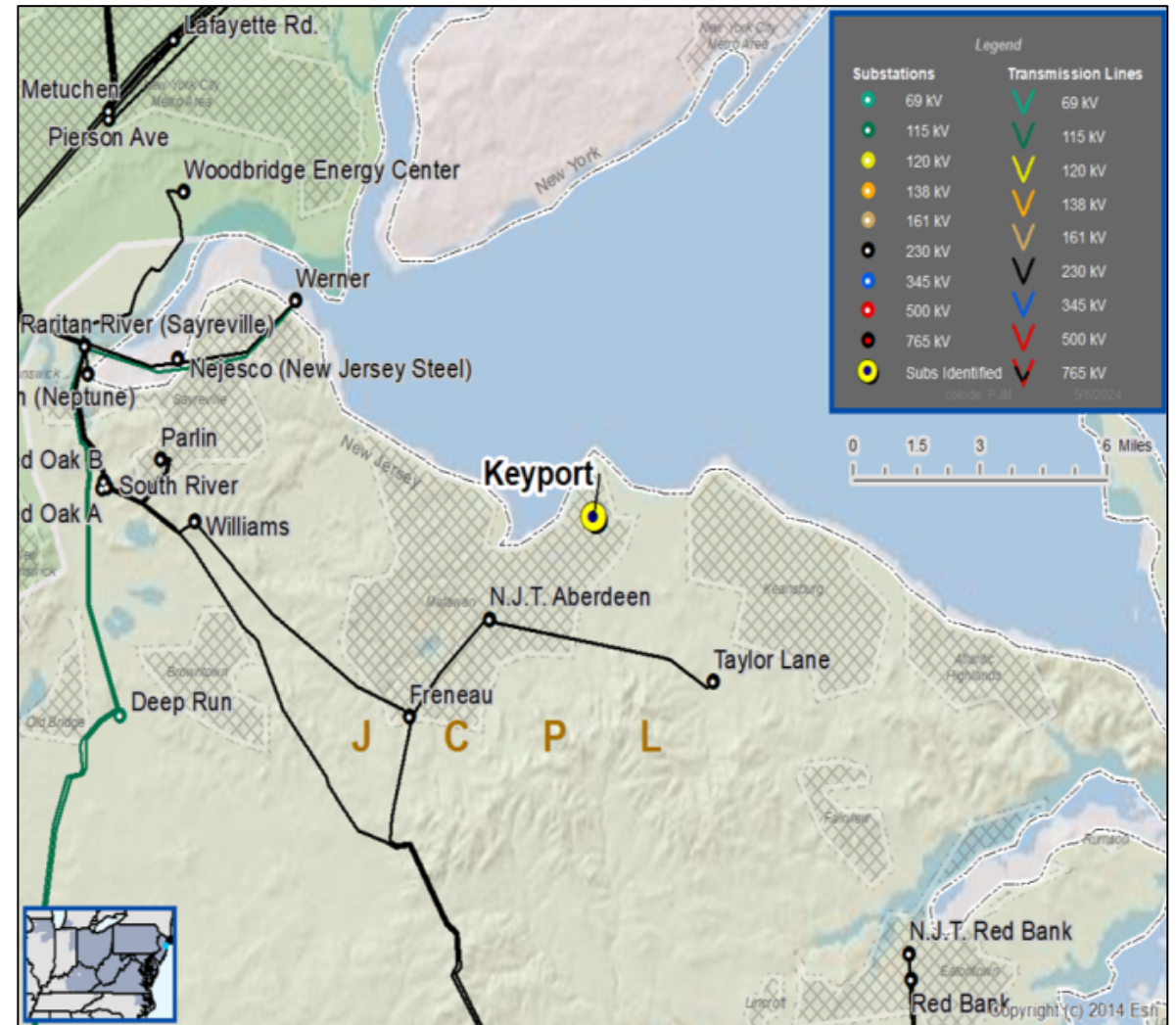
The Keyport–EH Werner 34.5 kV V48 Line was constructed approximately 74 years ago and is approaching end of life. It is approximately 9 miles long with 273 wood pole transmission line structures.

Recent inspections show the line is exhibiting deterioration resulting in increased maintenance costs. Inspection findings include:

- 107 structures require replacement or repair due to deterioration.
- 52 structures failed inspection due to sound, woodpecker damage, top rot, decay, cracking, and/or delamination of cross-arms.

Since 2019, the line has had 19 unscheduled sustained outages.

- Existing Transmission Line Ratings: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)



JCPL Transmission Zone M-3 Process

EH Werner - Keyport 34.5 kV V48 Line Rebuild

Need number: JCPL-2024-038

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

- Rebuild approximately 7.6 miles of the EH Werner - Keyport 34.5 kV V48 Line using new conductor and upgrade relays at EH Werner and Keyport substations.
- A portion of the line between Str. 168 to Str. 206 (1.3-miles) will not be rebuilt as it will be rebuilt per b3130.6.
- Replace substation conductor at Clifford Solar Substation.

Transmission Line Ratings:

Keyport - Clifford Solar 34.5 kV Line

- Before Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

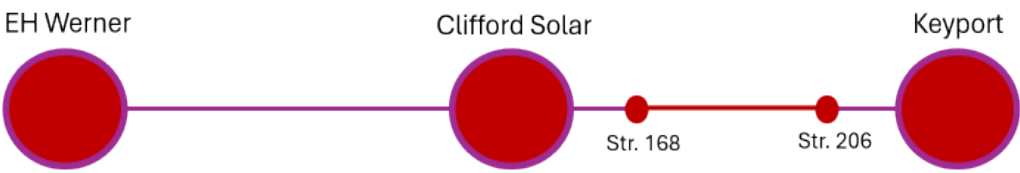
Clifford Solar - EH Werner 34.5 kV Line

- Before Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Estimated Project Cost: \$42.10M

Projected In-Service: 04/05/2030

Supplemental Project ID: s3971.1



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

Need Number: JCPL-2025-012

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – SRRTEP-MA – 07/17/2026
Need Meeting – SRRTEP-MA – 12/11/2025

Project Driver:

Equipment Condition/Performance/Risk

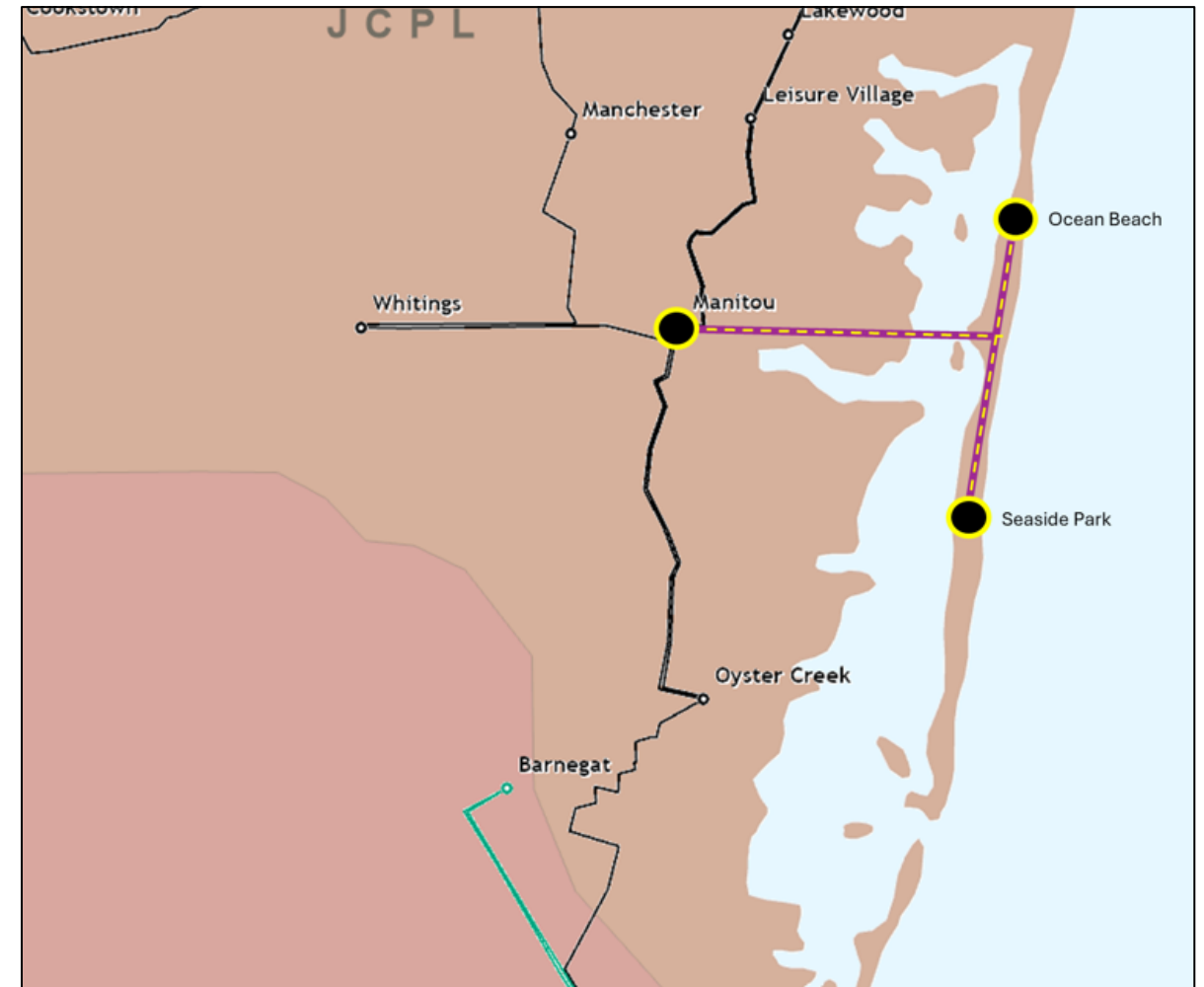
Specific Assumption Reference:

- System Performance Global Factors
 - System reliability/performance

Problem Statement:

The Manitou - Ocean Beach - Seaside Park 34.5 kV D212 Line and Manitou - Ortley Beach 34.5 kV V126 Line both utilize under-bridge cables in duct for a one-mile section in Ocean County. The lines are susceptible to outages caused by incidents occurring on the bridge such as car accidents and fire and are difficult to maintain.

Over the past five years, there have been 22 unscheduled outages on the D212 34.5 kV line and 28 unscheduled outages on the V126 34.5 kV line.



Need number: JCPL-2025-012

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

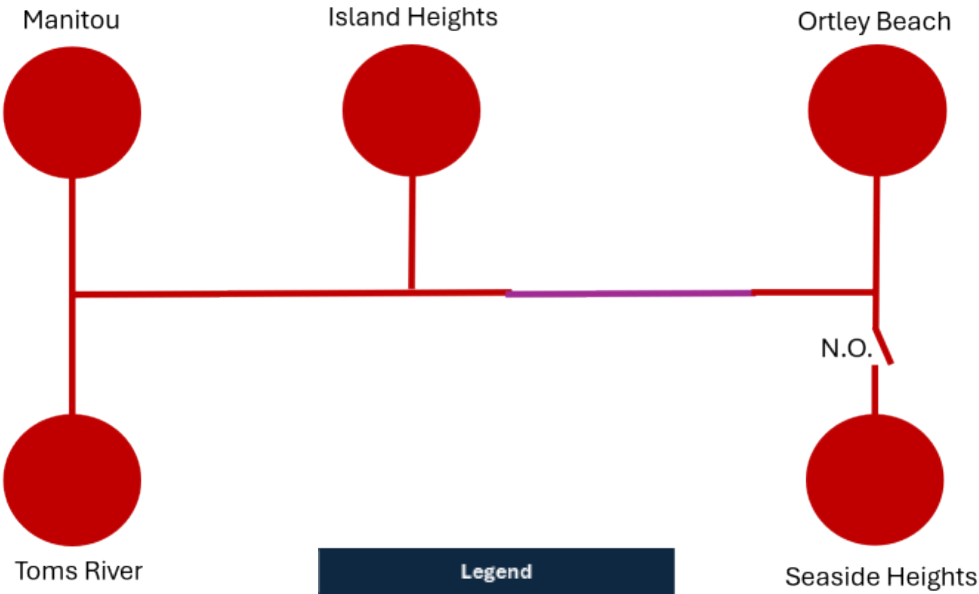
Replace the under-bridge cables on the Manitou-Ocean Beach-Seaside Park 34.5 kV D212 Line and Manitou-Ortley Beach 34.5 kV V126 Line with new submarine cables (1-mile). Utilize submarine EPR cable with health monitoring capability as the new transmission line conductor.

- Transmission Line Ratings:**
- Island Heights Tap-Ortley Beach 34.5 kV Line
- Before Proposed Solution: 35 / 44 / 35 / 44 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- Toms River Tap-Seaside Park 1 Tap 34.5 kV 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)

Estimated Project Cost: \$10.00M

Projected In-Service: 04/23/2029

Supplemental Project ID: s3972.1



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

Need Number: JCPL-2024-001

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting - TEAC - 10/08/2025
Need Meeting - TEAC - 01/09/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Operational Flexibility and Efficiency

Infrastructure Resilience

Specific Assumption Reference:

- System reliability and performance
- Load at risk in planning and operational scenarios
- Add/Expand Bus Configuration
 - Loss of substation bus adversely impacts transmission system performance
 - Eliminate simultaneous outages to multiple networked elements under N-1 analysis

Problem Statement:

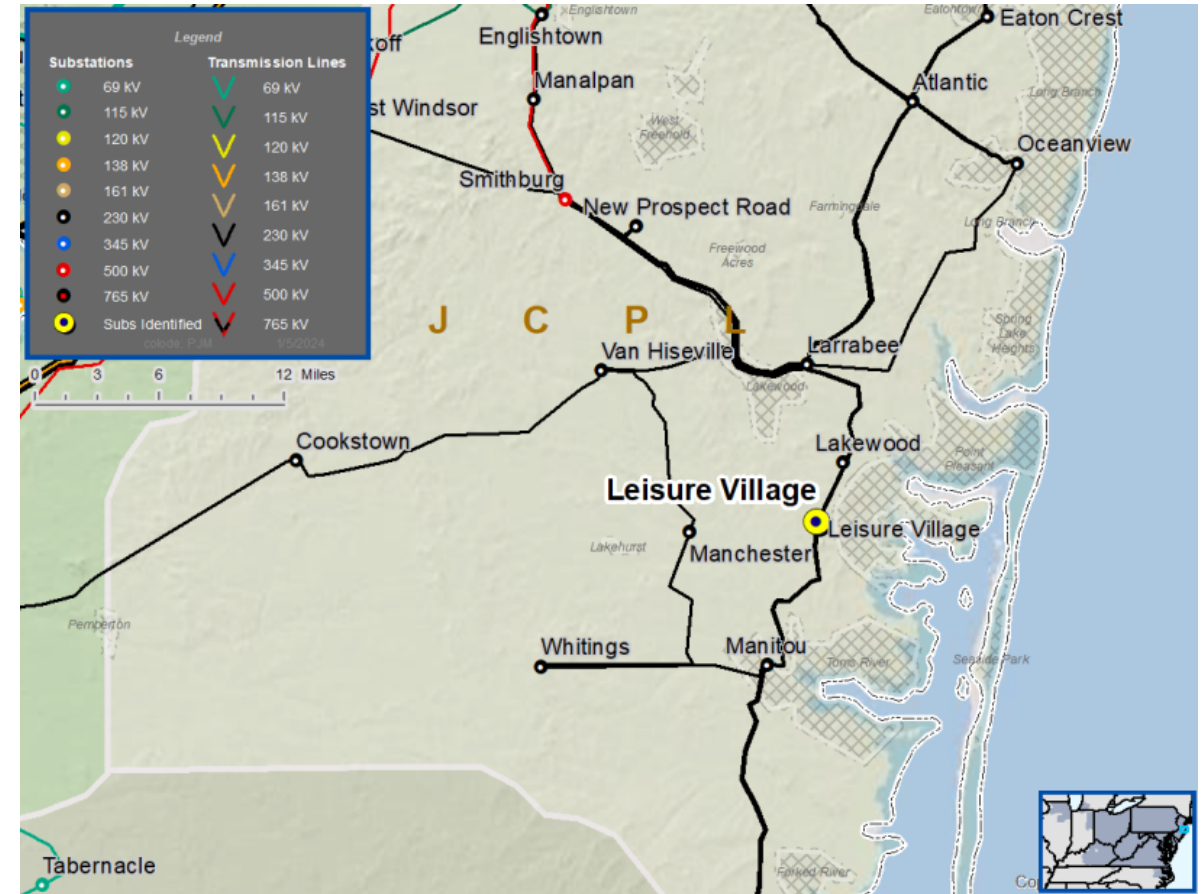
The existing Leisure Village Substation is a 230-34.5-12.47 kV substation and has four 230 kV lines, two 230-34.5 kV transformers, and two 230-12.47 kV distribution transformers.

Leisure Village Substation serves approximately 52 MW and 10,787 customers.

The existing Leisure Village Substation configuration removes multiple facilities from service including the 230 kV circuits and step-down transformers under different N-1 contingency scenarios due to overlapping protection zones. Overlapping protection zones create challenges when attempting to clear a fault and can lend more equipment to be out of service than necessary when a fault occurs.

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JCPL Transmission Zone M-3 Process Leisure Valley 230 kV Substation





JCPL Transmission Zone M-3 Process Leisure Valley 230 kV Substation

Need Number: JCPL-2024-001

Problem Statement: (Cont'd from previous page)

Multiple N-1-1 contingency results in approximately 52 MW of consequential load loss, loss of 230 kV sources to the station, and multiple 34.5 kV lines to be loaded >90% and >100% of their SE rating in the Leisure Village Substation area.

Since 2018, the following lines out of Leisure Village Substation had the following outages:

- Lakewood-Leisure Village D2030 230 kV Line experienced two outages: one momentary and one sustained.
- Lakewood-Leisure Village U2021 230 kV Line experienced three outages: one momentary and two sustained.
- Leisure Village – Manitou A2027 230 kV Line experienced two outages: one momentary and one sustained.
- Leisure Village – Manitou C2029 230 kV Line experienced three outages: three sustained.

Need Number: JCPL-2024-001

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected Solution:

At Leisure Village Substation:

- Rebuild the 230 kV station as a breaker and a half configuration utilizing nine new 230 kV breakers.
- Install a third 230-34.5 kV transformer with two new 34.5 kV breakers on the low side.
- Install high side breakers on the two 230-13.2 kV transformers.

At Manitou Substation:

- Replace switches, line trap and line relaying.

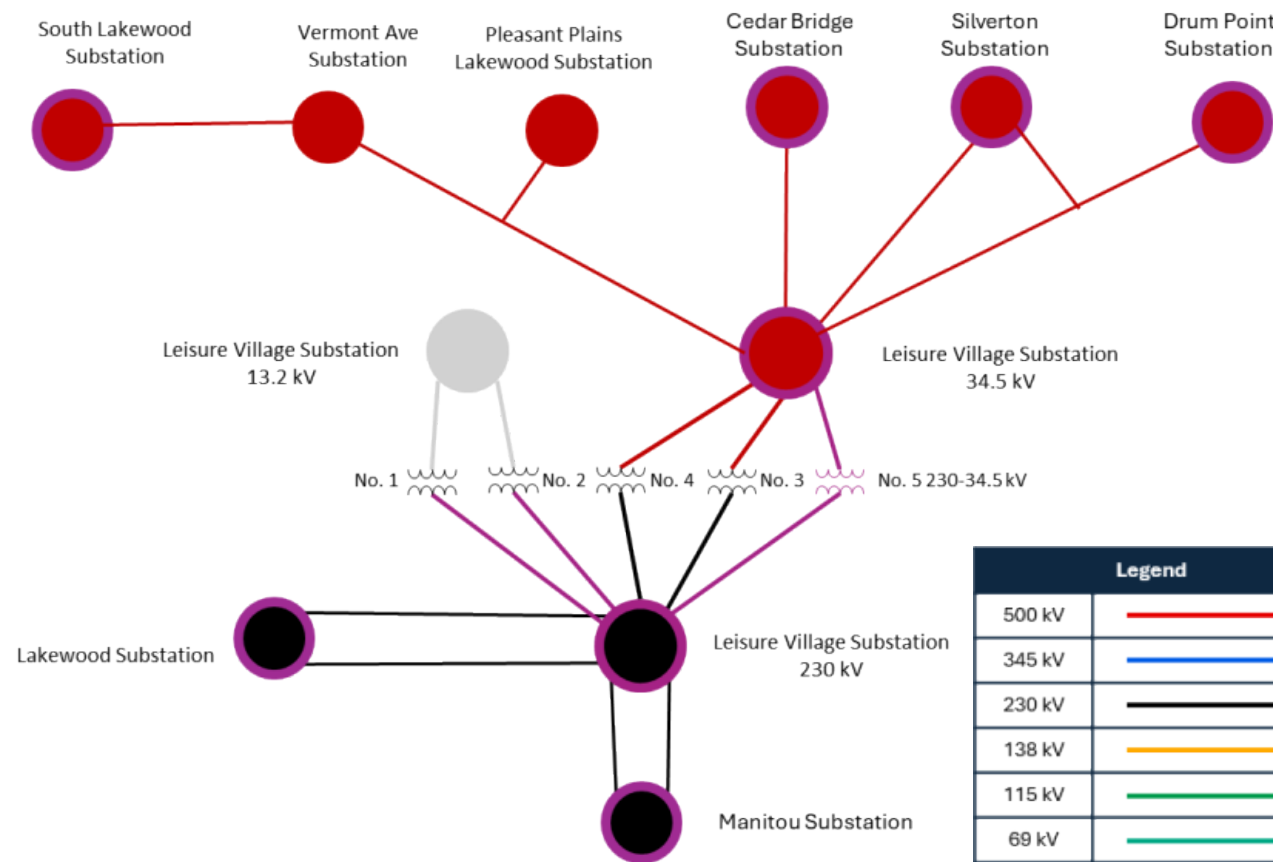
At Lakewood Substation:

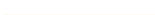
- Replace circuit breakers, switches, surge arresters, line traps and relaying.

Adjust line relaying at South Lakewood, Silverton, Drum Point, Cedar Bridge substations.

Continued on next page...

JCPL Transmission Zone M-3 Process Leisure Valley 230 kV Substation



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



JCPL Transmission Zone M-3 Process Leisure Valley 230 kV Substation

Need Number: JCPL-2024-001
Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan
Ratings:

Facility	Ratings Before Proposed Solution (SN/SE/WN/WE)	Ratings After Proposed Solution (SN/SE/WN/WE)
Lakewood-Leisure Village D2030 230 kV Line	678 / 813 / 833 / 929 MVA	709 / 869 / 805 / 1031 MVA
Lakewood-Leisure Village U2021 230 kV Line	709 / 869 / 805 / 1031 MVA	709 / 869 / 805 / 1031 MVA
Leisure Village – Manitou A2027 230 kV Line	678 / 813 / 833 / 929 MVA	709 / 869 / 805 / 1031 MVA
Leisure Village – Manitou C2029 230 kV Line	709 / 869 / 805 / 1031 MVA	709 / 869 / 805 / 1031 MVA
Leisure Village No. 5 230-34.5 kV Transformer	N/A	150 / 195 / 188 / 234 MVA
Leisure Village No. 3 230-34.5 kV Transformer	144 / 157 / 163 / 198 MVA	157 / 157 / 198 / 200 MVA
Leisure Village No. 4 230-34.5 kV Transformer	144 / 155 / 163 / 193 MVA	152 / 155 / 191 / 194 MVA

Estimated Project Cost: \$50.23 M
Projected In-Service: 06/01/2029
Supplemental Project ID: s4012.1

Need Number: JCPL-2024-017

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – TEAC – 07/07/2026
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:

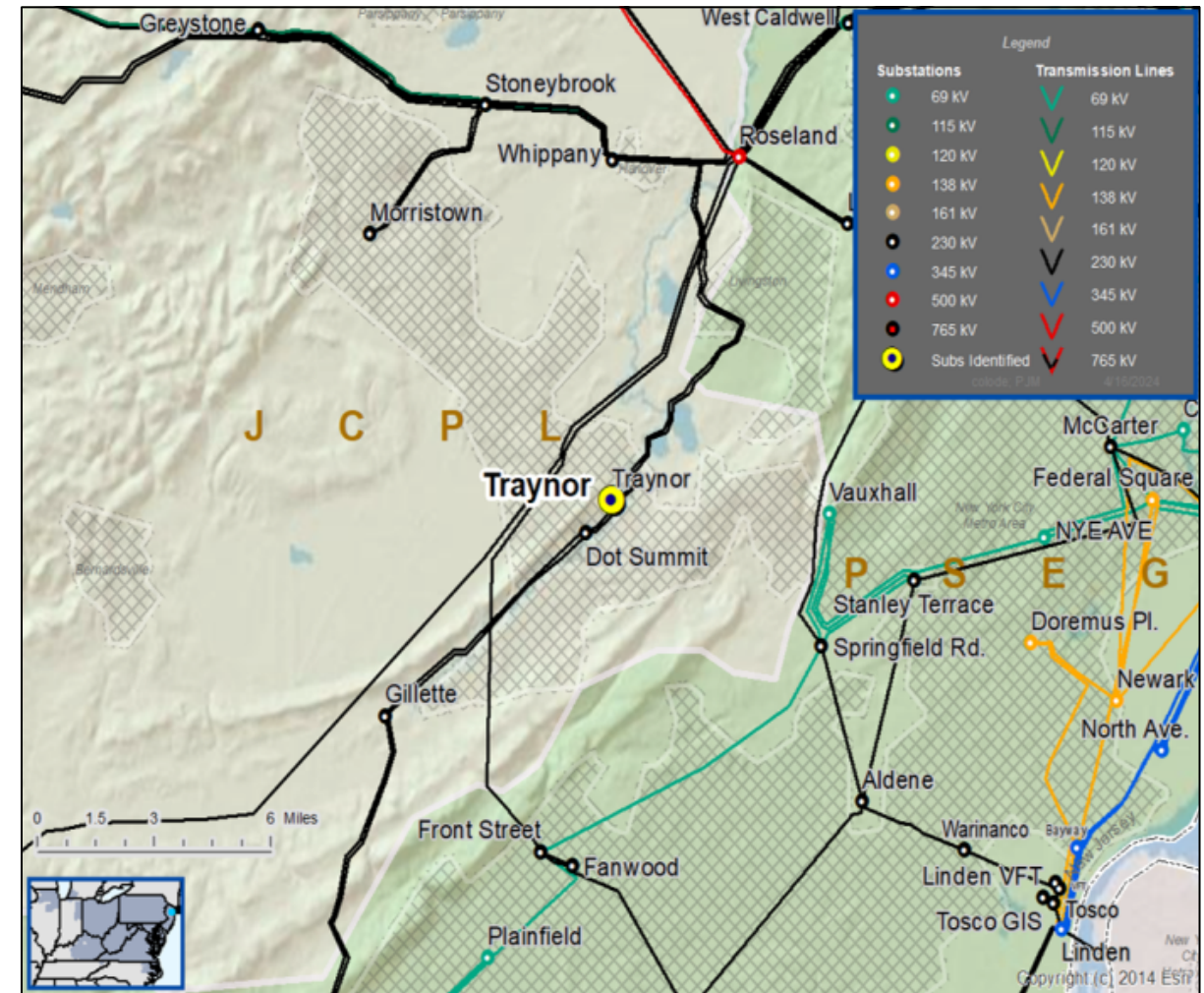
The Traynor No. 13 230-34.5 kV Transformer is approximately 51 years old and is approaching end of life.

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

Need number: JCPL-2024-017

Process Stage: Submission of Supplemental Projects for
Inclusion in the Local Plan

Selected 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.

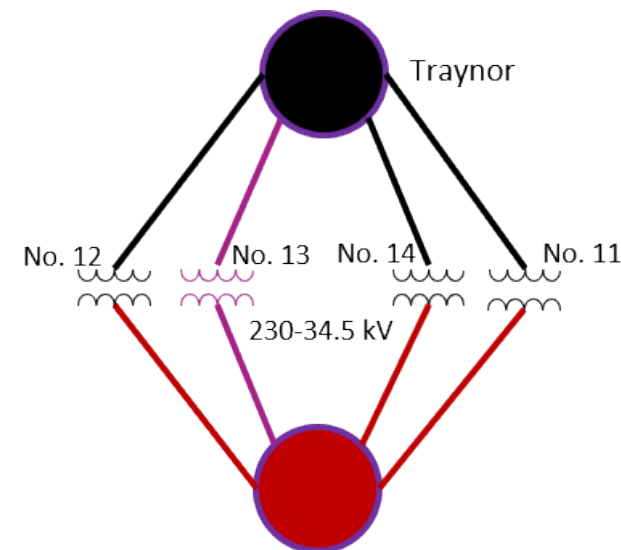
Ratings:

- 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)

Estimated Project Cost: \$16.73M

Projected In-Service: 05/24/2030

Supplemental Project ID: s4013.1



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

Need Number: JCPL-2024-018

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Previously Presented: Solution Meeting – TEAC – 07/07/2026
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

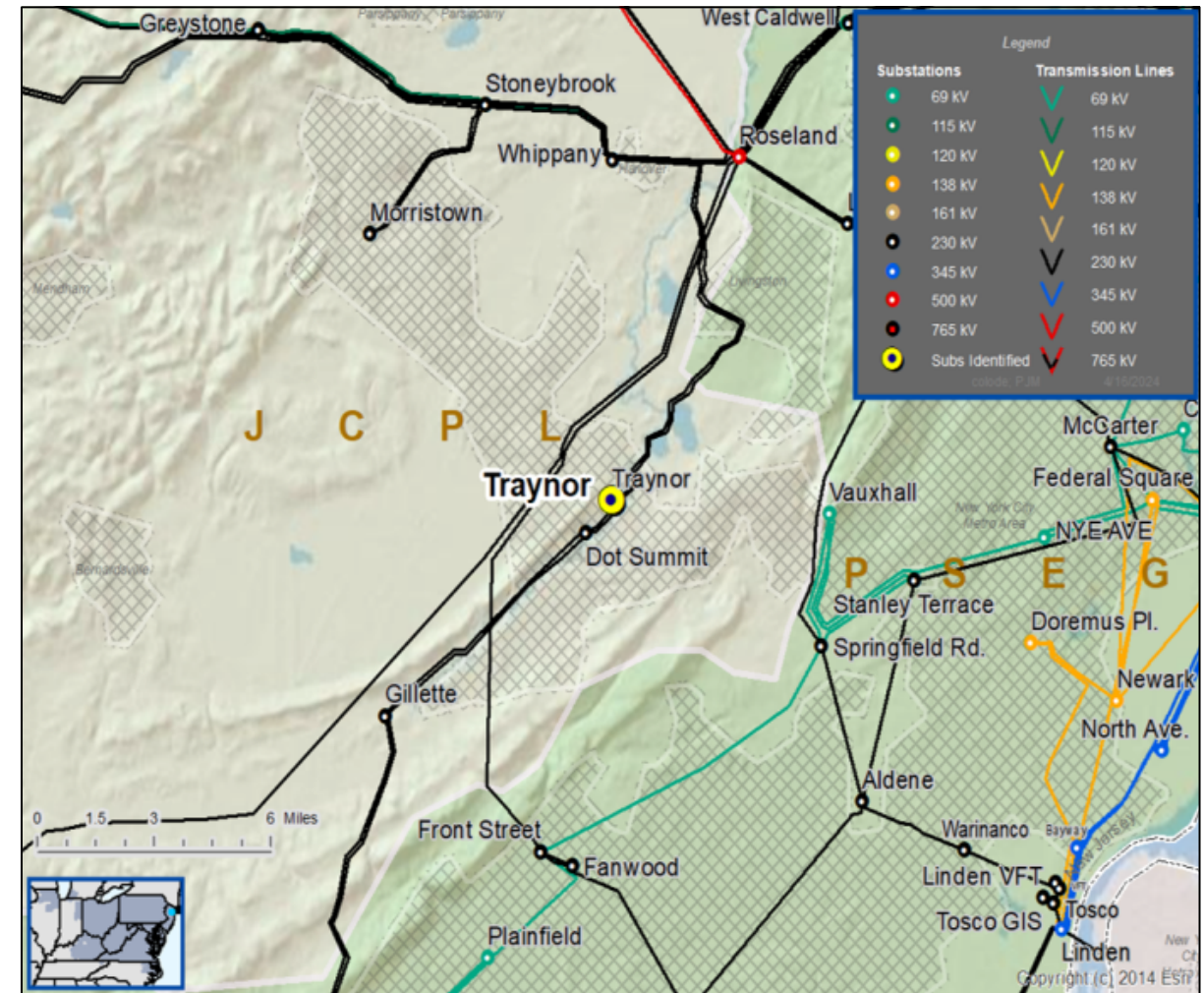
Problem Statement:

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

Need number: JCPL-2024-018

Process Stage: Submission of Supplemental Projects for Inclusion in the Local Plan

Selected 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.

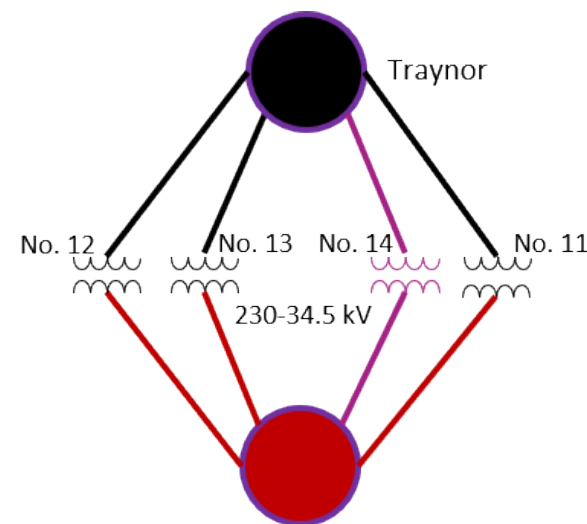
Ratings:

- 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)

Estimated Project Cost: \$12.35M

Projected In-Service: 12/20/2030

Supplemental Project ID: s4014.1



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

Revision History

01/05/2026 – V1	03/13/2026 – V2	10/01/2026 – V3	
s3748	s3756	s3960	s3971
s3749	s3757	s3961	s3972
	s3758	s3962	s4012
	s3759	s3963	s4013
	s3760	s3964	s4014
	s3782	s3965	
		s3966	
		s3967	
		s3968	
		s3969	
		s3970	