

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

JCPL Transmission Zone

Changes to the Existing Supplemental Projects

JCPL Transmission Zone – Scope Change

S3621.1 - Windsor – Wyckoff Street 34.5 kV M65 Line Customer Connection

s3621.1 is posted in 2024 local plan. Originally presented as need on 4/16/2024 and solution on 10/17/2024 at Mid-Atlantic Meetings.

Need Number: JCPL-2024-034

Project Driver:

Customer Service

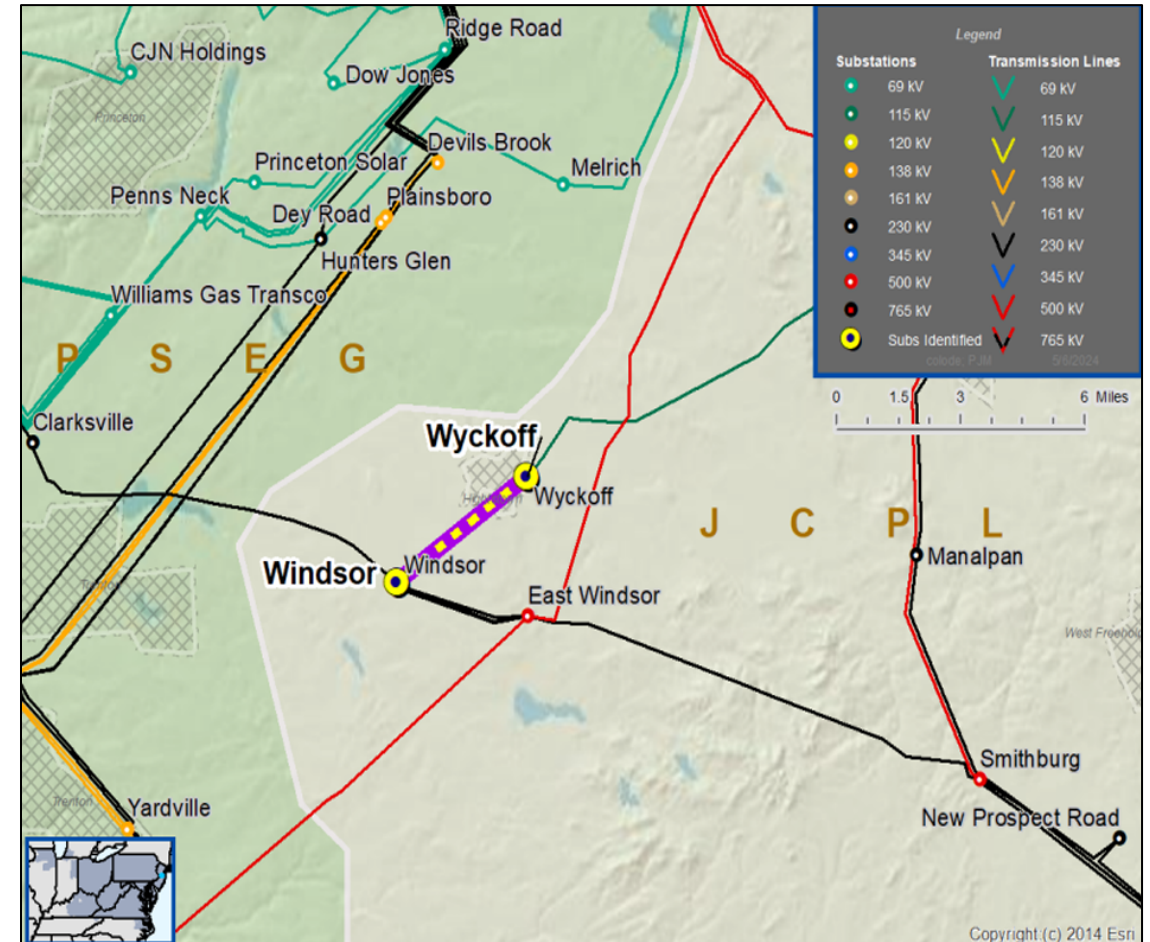
Specific Assumption References:

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 96 MVA near the Windsor – Wyckoff Street 34.5 kV M65 Line. The request is approximately two miles from Windsor Substation.

Requested in-service date is 03/04/2028



JCPL Transmission Zone – Scope Change

S3621.1 - Windsor – Wyckoff Street 34.5 kV M65 Line Customer Connection

s3621.1 is posted in 2024 local plan. Originally presented as need on 4/16/2024 and solution on 10/17/2024 at Mid-Atlantic Meetings.

Need Number: JCPL-2024-034

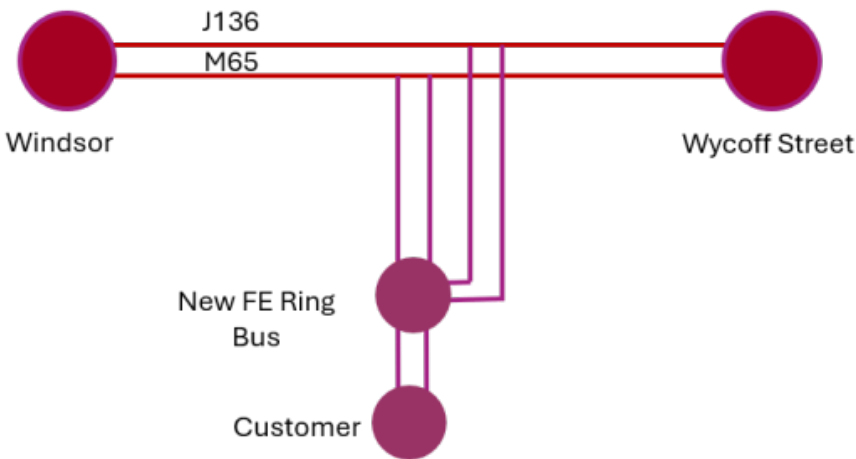
Original Solution:

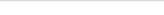
New 12-Breaker 34.5 kV Substation

- Build a new 12-breaker, breaker-and-a-half 34.5 kV substation
- Cut into the Windsor – Wyckoff Street M65 34.5 kV Line near structure #533 and construct approximately 1-2 spans of transmission line from the M65 line to the new FE substation.
- Cut into the Windsor – Wyckoff Street J136 34.5 kV Line near structure #53 and construct approximately two 1.2-mile transmission lines from the J136 line to the new FE substation.
- Install three new 34.5 kV breakers at Windsor Substation and build two 3.0-mile transmission lines from Windsor Substation to the new FE substation on shared structures.
- Build two spans of transmission line from the new substation to the POI with the Customer.
- Install two 34.5 kV revenue metering packages at customer substation
- Modify relay settings at Wyckoff Street, Windsor, Coke and McGraw Hill substations.

Revised Solution:

- Construct a new six-breaker 34.5 kV ring bus station.
- Cut into the Windsor – Wyckoff Street 34.5 kV M65 and J136 lines and loop in and out of new 34.5 kV ring bus station. Build two 34.5 kV feeds to the POI with the customer.
- Install two 34.5 kV revenue meters in customer facilities.
- Windsor – Wyckoff Street 34.5 kV J136 Line: 112 / 129 / 112 / 135 MVA (SN/SSTE/WN/WSTE)
- Windsor – Wyckoff Street 34.5 kV M65 Line: 112 / 129 / 112 / 135 MVA (SN/SSTE/WN/WSTE)



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



JCPL Transmission Zone – Scope Change
S3621.1 - Windsor – Wyckoff Street 34.5 kV M65 Line Customer Connection

s3621.1 is posted in 2024 local plan. Originally presented as need on 4/16/2024 and solution on 10/17/2024 at Mid-Atlantic Meetings.

Need Number: JCPL-2024-034

Alternatives Considered:

No other reasonable alternatives considered due to the customers proximity to the Windsor Substation and 34.5 kV network lines.

Estimated Project Cost: \$8.49 M
Projected In-Service: 02/10/2031
Project Status: Conceptual
Model: 2024 RTEP model for 2029 Summer (50/50)

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: JCPL-2026-024

Process Stage: Need Meeting – SRRTEP-MA – 09/17/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Problem Statement:

NJDOT has an upgrade project to the State Route 33 corridor beginning in 2028. Approximately 0.33 miles of the Jerseyville - Smithburg X752 34.5 kV Line structures and 0.28 miles of the double circuit Freneau - Jerseyville F32 34.5 kV Line and Englishtown - Jerseyville L12 34.5 kV Line structures will interfere with the proposed modifications upgrades.

As a result, the identified single circuit Jerseyville - Smithburg X752 34.5 kV Line structures and double circuit Freneau - Jerseyville F32 34.5 kV and Englishtown - Jerseyville L12 34.5 kV line structures will require relocation as to not interfere with the NJDOT Route 33 upgrades.

Existing Transmission Line Ratings:

Jerseyville - Smithburg X752 34.5 kV Line

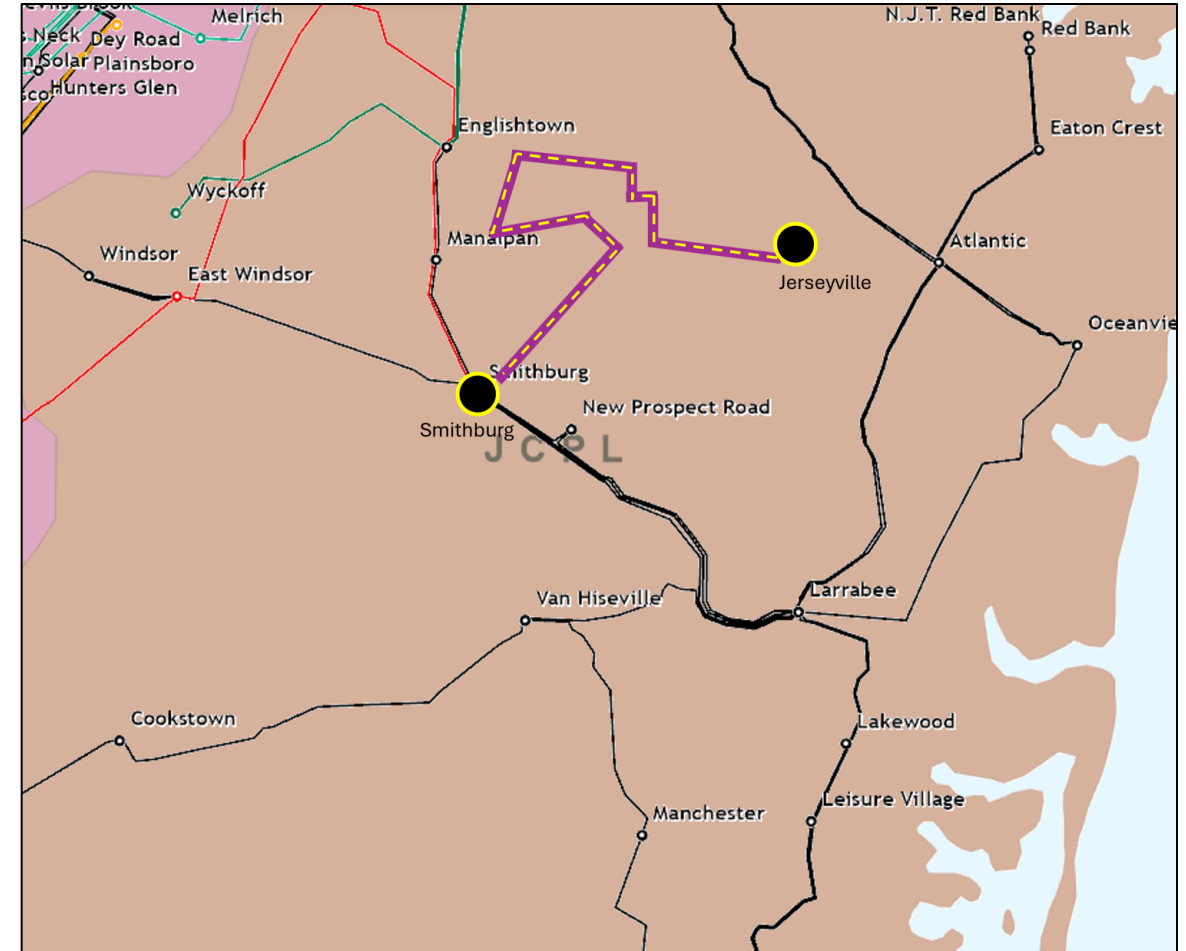
- 41 / 48 / 48 / 48 MVA (SN/SE/WN/WE)

Freneau - Jerseyville F32 34.5 kV Line

- 36 / 36 / 36 / 36 MVA (SN/SE/WN/WE)

Jerseyville - Nestle 34.5 kV L12 34.5 kV Line

- 45 / 54 / 50 / 55 MVA (SN/SE/WN/WE)



Need Number: JCPL-2026-044

Process Stage: Need Meeting – SRRTEP-MA – 09/17/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

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 U21, BTAB, R18, Z26, S123, Y25, BK3A, BK3B 34.5 kV breakers at Phillipsburg Substation are more than 30 years old and are approaching end of life. Replacement components are difficult to source.

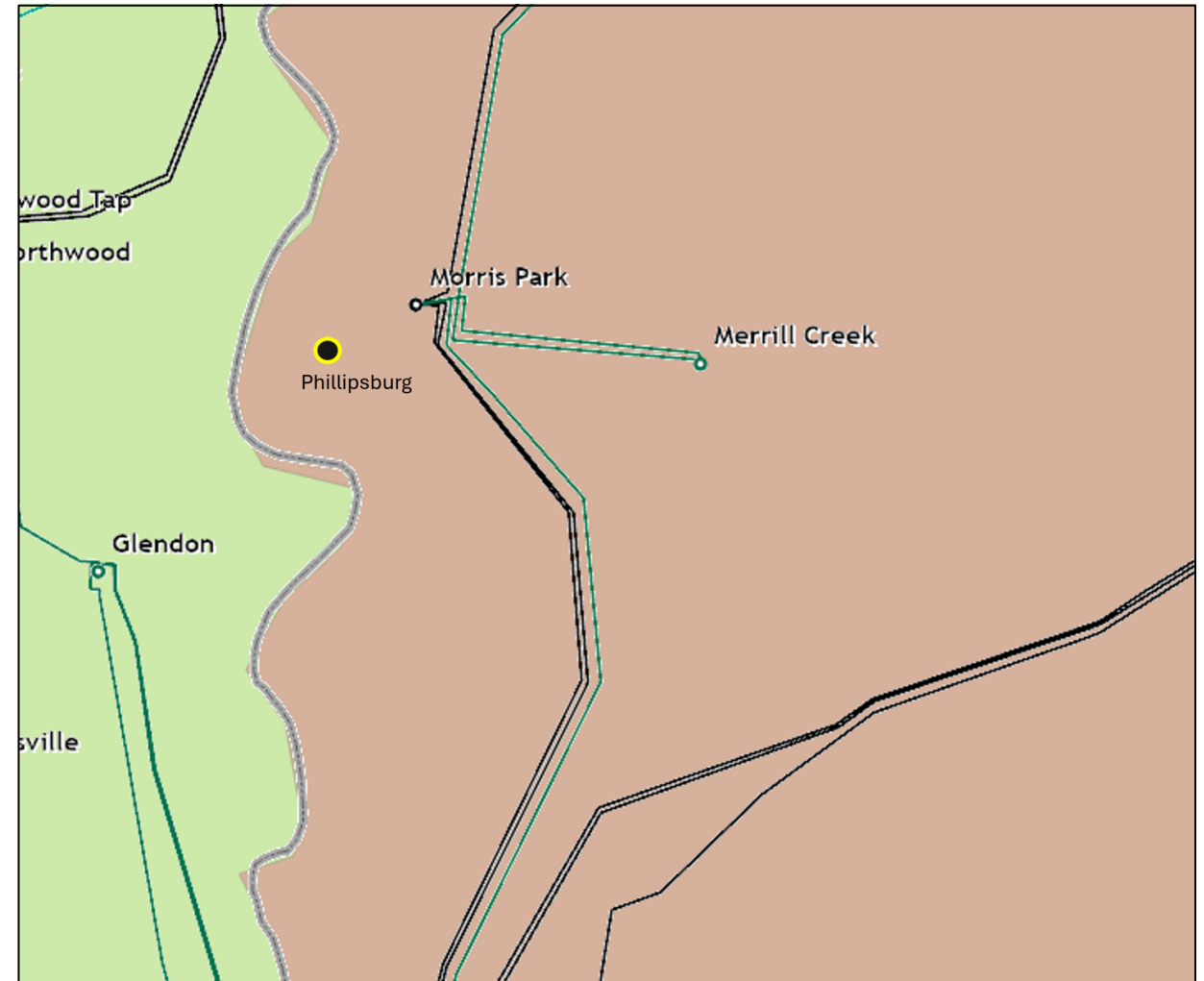
The lines are currently limited by terminal equipment.

Edge Road Battery T - Phillipsburg 34.5 kV Y25 Line Section:

- Existing Transmission Line Ratings: 37 / 38 / 38 / 38 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)

Morris Park - Phillipsburg 34.5 kV S123 Line Section:

- Existing Transmission Line Ratings: 40 / 50 / 50 / 57 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 45 / 54 / 50 / 63 MVA (SN/SE/WN/WE)



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JCPL Transmission Zone M-3 Process Phillipsburg Substation

Need Number: JCPL-2026-044

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

Phillipsburg - Warren Foundry 34.5 kV U21 Line Section:

- Existing Transmission Line Ratings: 17 / 17 / 17 / 17 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 27 / 28 / 31 / 31 MVA (SN/SE/WN/WE)

Warren Foundry R TP - Phillipsburg 34.5 kV R18 Line Section:

- Existing Transmission Line Ratings: 39 / 48 / 48 / 48 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Need Number: JCPL-2026-047

Process Stage: Need Meeting – SRRTEP-MA – 09/17/2026

Project Driver:

Infrastructure Resilience, Operational Flexibility and Efficiency

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance
- Eliminate simultaneous outages to multiple networked elements

Problem Statement:

Valley View Substation is configured as a straight bus/tap connection on the Murray Hill - Traynor 34.5 kV P16 Line.

Valley View Substation serves approximately 16 MW of load and 3,200 customers.

Valley View Substation will be out of service for the loss of the Murray Hill - Traynor 34.5 kV P16 Line.

Transmission line ratings are limited by the transmission line conductor.

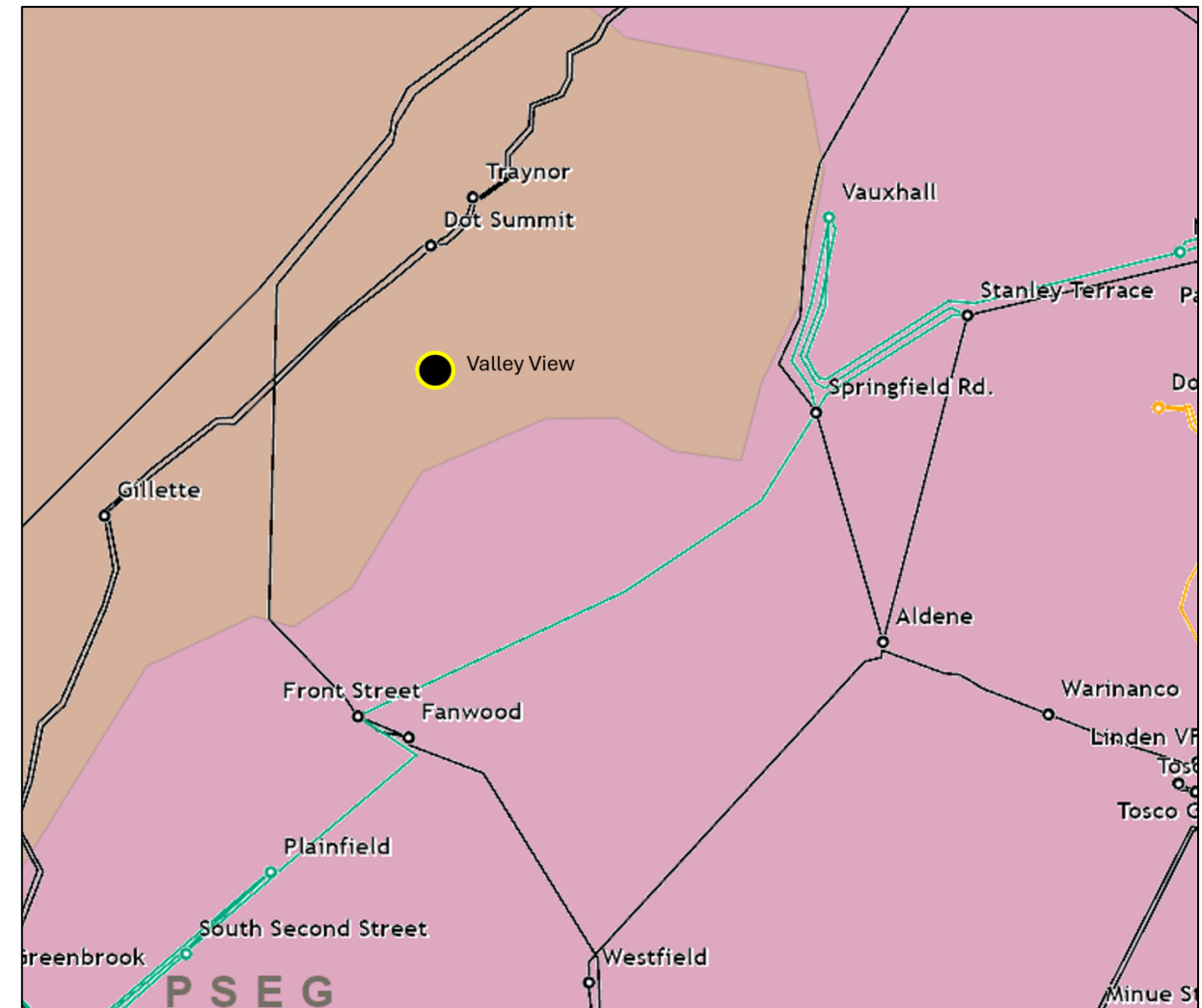
Existing Transmission Line Ratings:

Murray Hill - Valley View 34.5 kV P16 Line

- 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)

ELRR Summit Tap - Valley View 34.5 kV P16 Line

- 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)



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

Need Number: JCPL-2019-022

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 03/25/2019

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

Line Condition Rebuild/Replacement

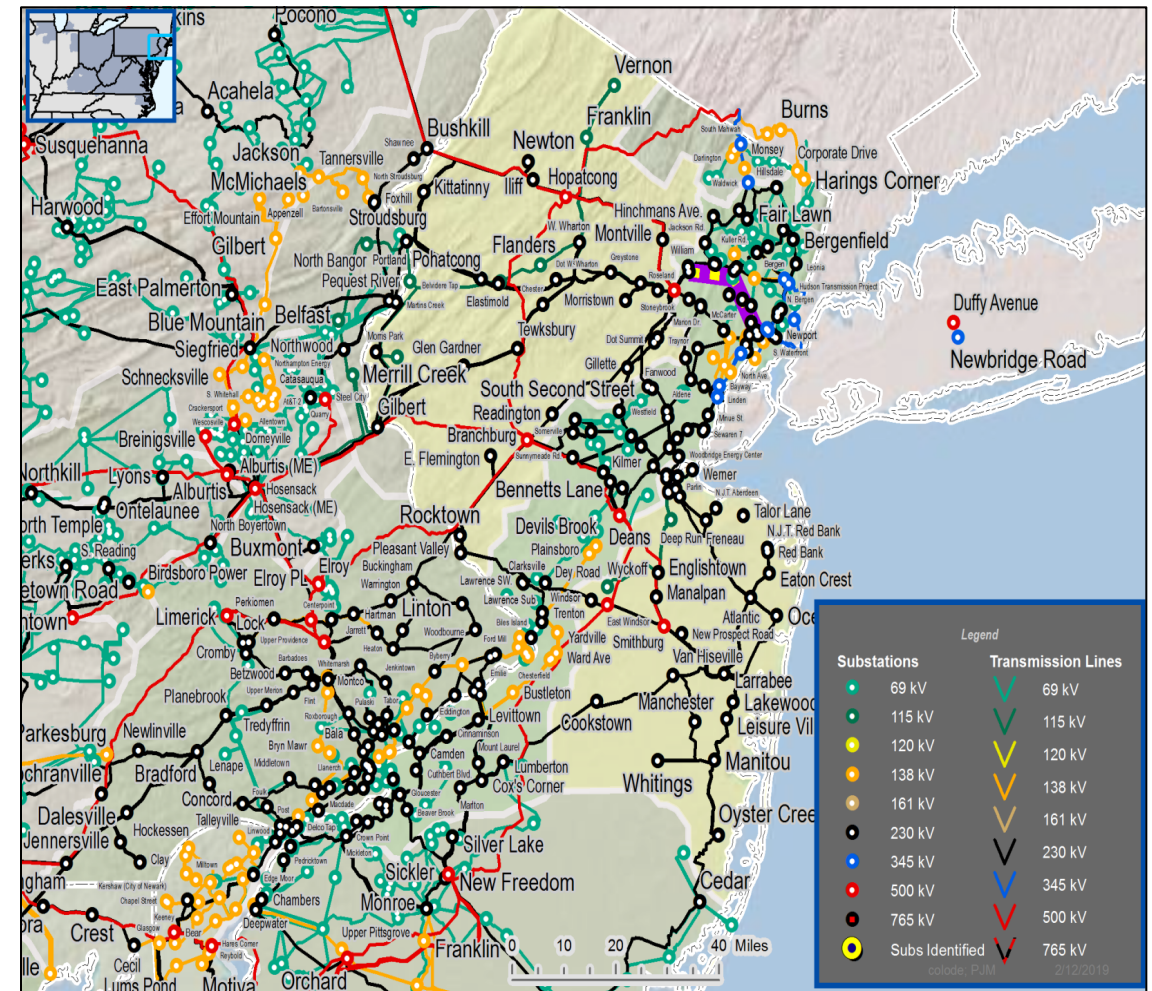
- Age/condition of wood pole transmission line structures
- Age/condition of steel tower or steel pole transmission line structures
- Age/condition of transmission line conductors

System Performance Projects

- Substation/line equipment limits

Problem Statement:

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



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JCPL Transmission Zone M-3 Process Bernardsville - Merck X726 34.5 kV Line Rebuild

Need Number: JCPL-2019-022

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

Transmission line ratings are limited by terminal equipment

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
022	Bernardsville – Long Lines 34.5 kV Line	44 / 47	44 / 53	Line Relaying, Substation Conductor	5.3	260 / 416 (63% Failure Rate)	Age, bad/cut/missing grounds, woodpecker holes, etc.
	Long Lines – Greater Crossroads 34.5 kV Line	44 / 53	44 / 53	-	3.2		
	Greater Crossroads – Merck 34.5 kV Line	44 / 53	44 / 53	-	6.2		

JCPL Transmission Zone M-3 Process Bernardsville - Merck X726 34.5 kV Line Rebuild

Need Number: JCPL-2019-022

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Rebuild the 14.6 miles above ground portion of the Bernardsville - Merck X726 34.5 kV Line using a new conductor and upgrade associated substation relays.
- At Bernardsville Substation, replace the X726 34.5 kV breaker, replace one 34.5 kV breaker disconnect switch, replace three 34.5 kV surge arresters and replace substation conductor.
- At Merck Substation, replace two 34.5 kV breakers (X1 and X2), replace three 34.5 kV disconnect switches and add three 34.5 kV surge arresters.
- At Greater Cross Road Substation, replace two 34.5 kV disconnect switches. Re-conductor the 4.3 miles section of Bernardsville - Peapack E785 34.5 kV Line to Long Lines SW.

Ratings:

Bernardsville - Long Lines SW E785 34.5 kV Line:

- Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
- After Proposed Solution: 42 / 50 / 52 / 57 MVA (SN/SE/WN/WE)

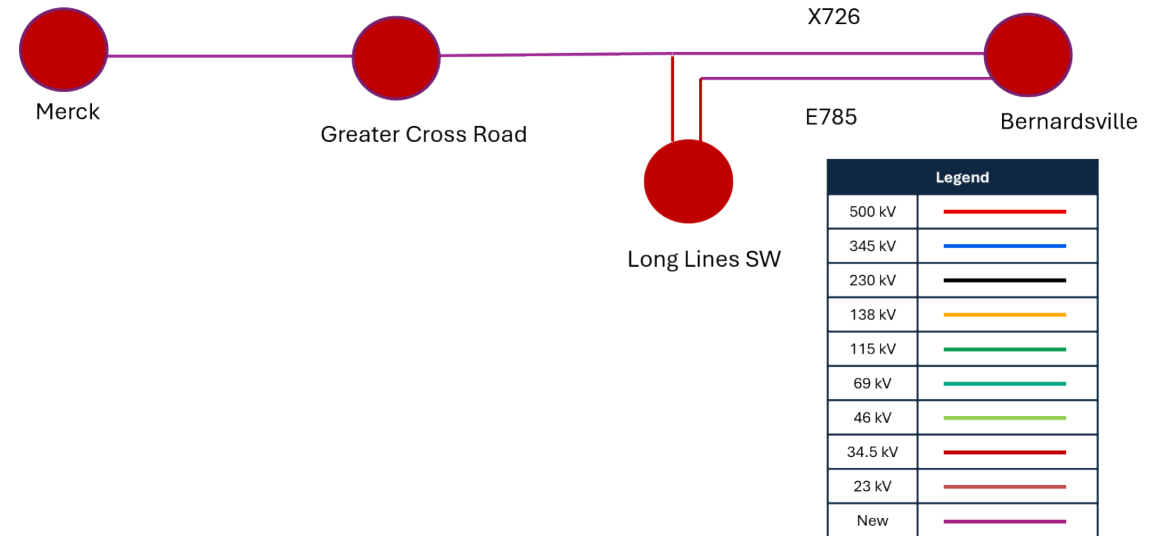
Bernardsville - Long Lines SW X726 34.5 kV Line:

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Greater Cross Road - Long Lines SW X726 34.5 kV Line:

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

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JCPL Transmission Zone M-3 Process Bernardsville - Merck X726 34.5 kV Line Rebuild

Need Number: JCPL-2019-022

Ratings: *(Cont'd from previous slide)*

Greater Cross Road - Merck X726 34.5 kV Line:

- Before Proposed Solution: 44 / 53 / 60 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Long Lines SW - Long Lines X726 34.5 kV Line:

- Before Proposed Solution: 38 / 46 / 38 / 46 MVA (SN/SE/WN/WE)
- After Proposed Solution: 38 / 46 / 38 / 46 MVA (SN/SE/WN/WE)

Alternatives Considered:

Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$63.95 M

Projected In-Service: 12/29/2028

Project Status: Conceptual

Model: 2025 RTEP model for 2030 Summer (50/50)

Need Number: JCPL-2024-039

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 05/16/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

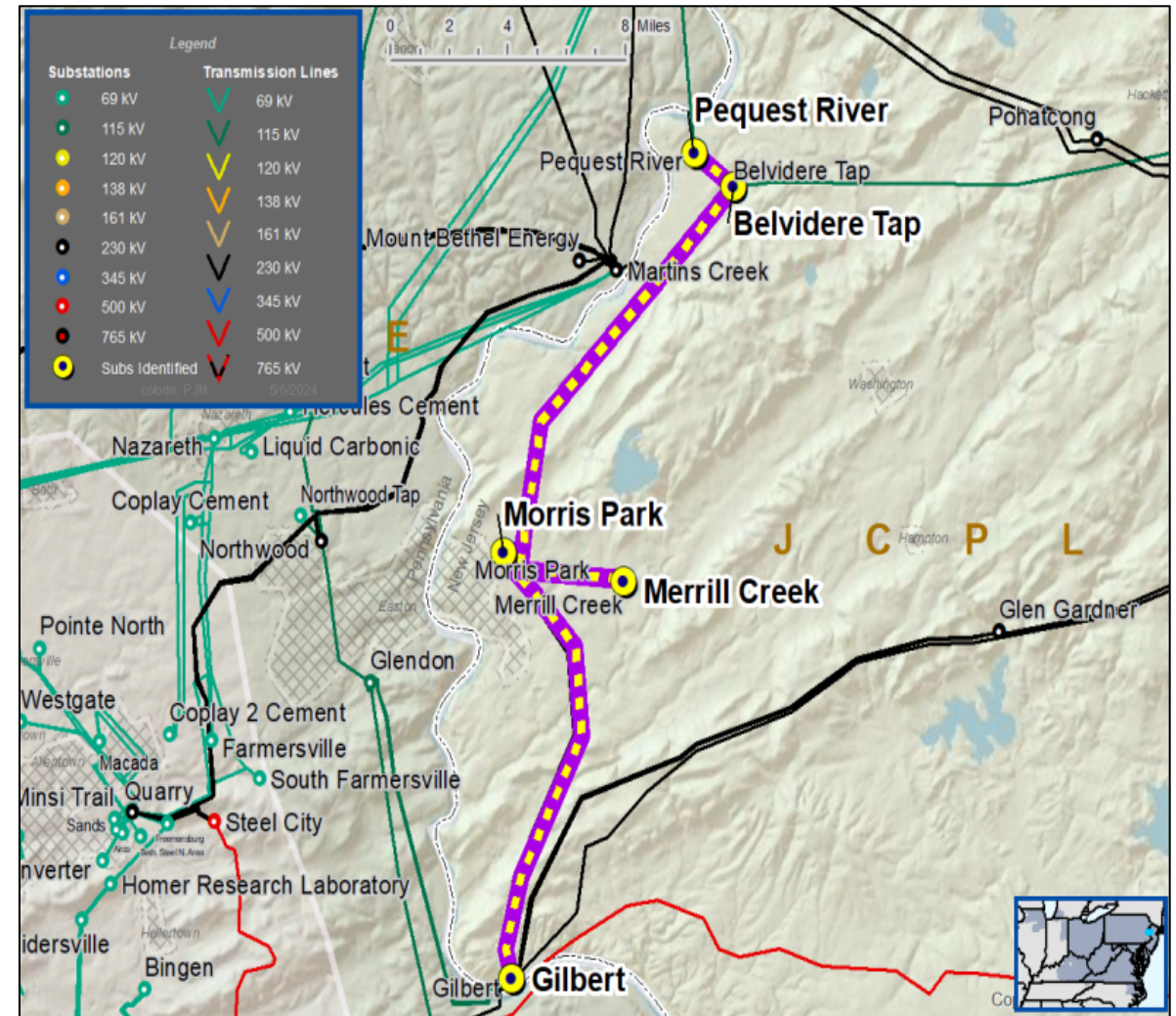
The Gilbert – Pequest River 115 kV Line was constructed approximately 72 years ago and is approaching end of life. It is 23.63 miles long with 221 (197 wood pole, 22 steel pole & 2 lattice tower) transmission line structures.

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

- 64 structures require repairs due to deterioration.
- 80 structures require repairs to insulators and related hardware, indicating that components are reaching end of life.
- 88 structures failed inspection due to sound, woodpecker damage, top rot, decay, cracking, and/or delamination of cross-arms.

Since 2022, the line has had 3 unscheduled sustained outages.

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Need Number: JCPL-2024-039

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

Need #	Transmission Line / Substation Locations	Existing Line Rating (MVA SN / SE / WN / WE)	Existing Conductor Rating (MVA SN / SE / WN / WE)
JCPL-2024-039	Gilbert – Morris Park Tap 115 kV Line	118 / 152 / 168 / 189	184 / 223 / 208 / 264
	Morris Park Tap – Merrill Creek Tap 115 kV Line	184 / 223 / 208 / 264	184 / 223 / 208 / 264
	Merrill Creek Tap – Belvedere Tap 115 kV Line	184 / 223 / 208 / 264	184 / 223 / 208 / 264
	Belvedere Tap – Pequest River 115 kV Line	184 / 223 / 208 / 264	184 / 223 / 208 / 264

JCPL Transmission Zone M-3 Process Gilbert - Pequest River 115 kV Line Rebuild

Need Number: JCPL-2024-039

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Rebuild Gilbert - Pequest River 115 kV Line using new conductor (23.6 miles) and upgrade associated substation relays.
- At Gilbert Substation: Replace substation conductor.
- At Morris Park Substation: Replace CCVT.

Note: This project assumes the removal of Morris Park 115 kV Tap under project s3611.1 is completed.

Ratings:

Belvedere Tap - Merrill Creek Tap 115 kV Section Line:

- Before Proposed Solution: 184 / 223 / 208 / 264 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Belvedere Tap - Pequest River 115 kV Section Line:

- Before Proposed Solution: 184 / 223 / 208 / 264 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Gilbert - Morris Park Tap 115 kV Section Line:

- Before Proposed Solution: 118 / 152 / 168 / 189 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)

Merrill Creek Tap - Morris Park Tap 115 kV Section Line:

- Before Proposed Solution: 184 / 223 / 208 / 264 MVA (SN/SE/WN/WE)
- After Proposed Solution: 232 / 282 / 263 / 334 MVA (SN/SE/WN/WE)





JCPL Transmission Zone M-3 Process Gilbert - Pequest River 115 kV Line Rebuild

Need Number: JCPL-2024-039

Alternatives Considered:

Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$81.55 M

Projected In-Service: 06/29/2029

Project Status: Conceptual

Model: 2024 RTEP model for 2029 Summer (50/50)

Need Number: JCPL-2024-041

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 07/18/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability and performance

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.

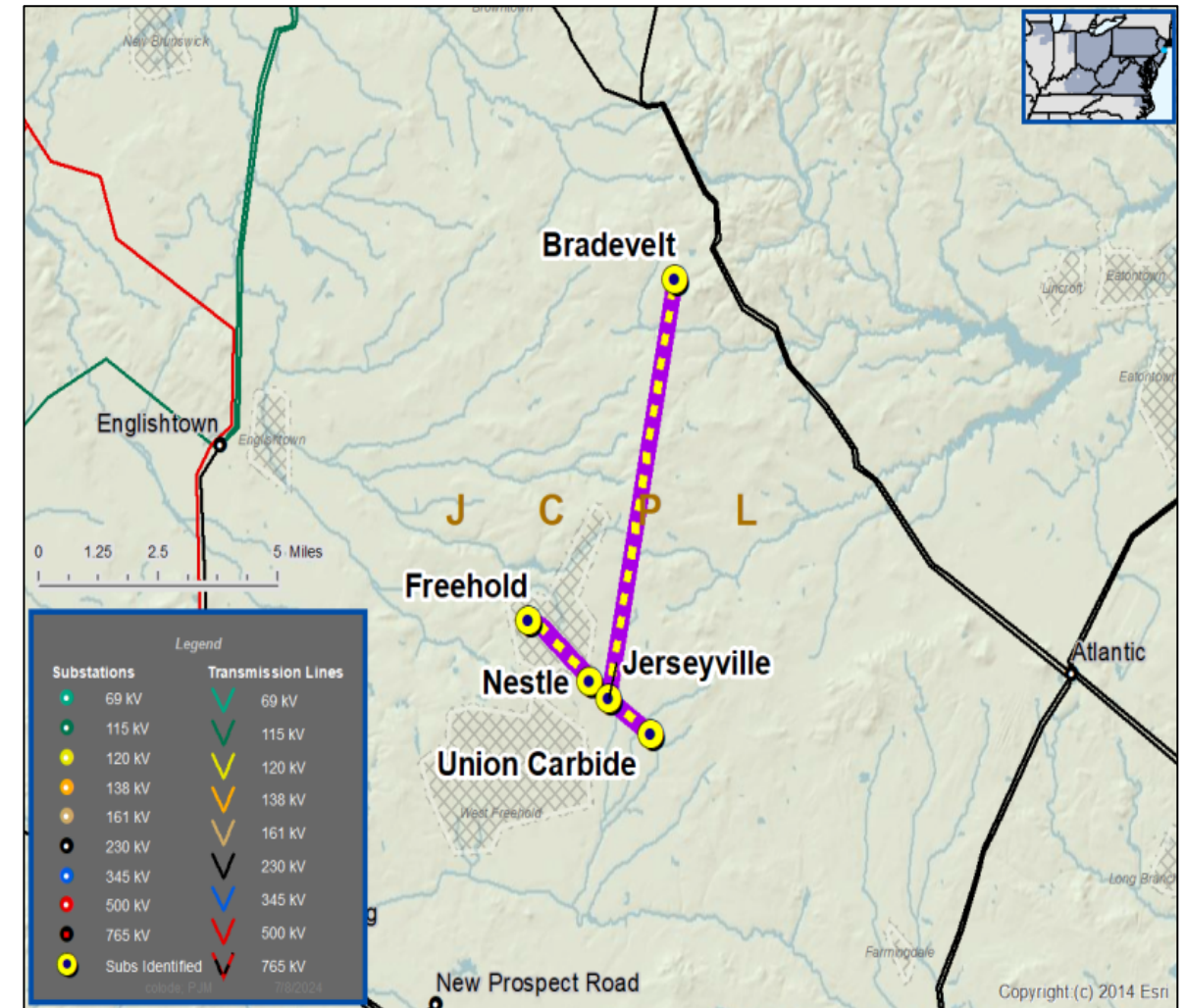
Manual restoration increases the risk of system constraints on adjacent facilities, especially for critical lines as identified by Transmission Operations.

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.

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Need Number: JCPL-2024-041
 Problem Statement: *(Cont'd from previous page)*

Need #	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE)
JCPL-2024-041	Jerseyville – Freehold Jerseyville Tap 34.5 kV X752 Line	41 / 48 / 48 / 48	41 / 50 / 48 / 60
	Jerseyville – Nestle 34.5 kV L12 Line	45 / 54 / 50 / 55	45 / 54 / 50 / 63
	Jerseyville – Bradevelt 34.5 kV F32 Line	36 / 36 / 36 / 36	37 / 38 / 42 / 42
	Jerseyville – Union Carbide 34.5 kV N66 Line	44 / 53 / 50 / 60	44 / 53 / 50 / 63



JCPL Transmission Zone M-3 Process Jerseyville Auto Reclosing Upgrades

Need Number: JCPL-2024-041

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Upgrade line protection on each of the four-line terminals out of Jerseyville Station.

Ratings:

Jerseyville - Freehold Jerseyville Tap 34.5 kV X752 Line

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

Jerseyville - Nestle 34.5 kV L12 Line

- Before Proposed Solution: 45 / 54 / 50 / 55 MVA (SN/SE/WN/WE)
- After Proposed Solution: 45 / 54 / 50 / 63 MVA (SN/SE/WN/WE)

Jerseyville - Bradevelt 34.5 kV F32 Line

- Before Proposed Solution: 36 / 36 / 36 / 36 MVA (SN/SE/WN/WE)
- After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)

Jerseyville - Union Carbide 34.5 kV N66 Line

- Before Proposed Solution: 44 / 53 / 50 / 60 MVA (SN/SE/WN/WE)
- After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Alternatives Considered:

Maintain existing condition and sustained interruptions to customers.

Estimated Project Cost: \$3.68 M

Projected In-Service: 03/15/2028

Project Status: Conceptual

Model: 2024 RTEP model for 2029 Summer (50/50)

No Topology Change

Need Number: JCPL-2026-003

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 02/12/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

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 LF, FN, NX, and XL 34.5 kV breakers at Jerseyville Substation are over 68 years old and approaching end of life. Replacement components are difficult to source leading to non-standard repairs.

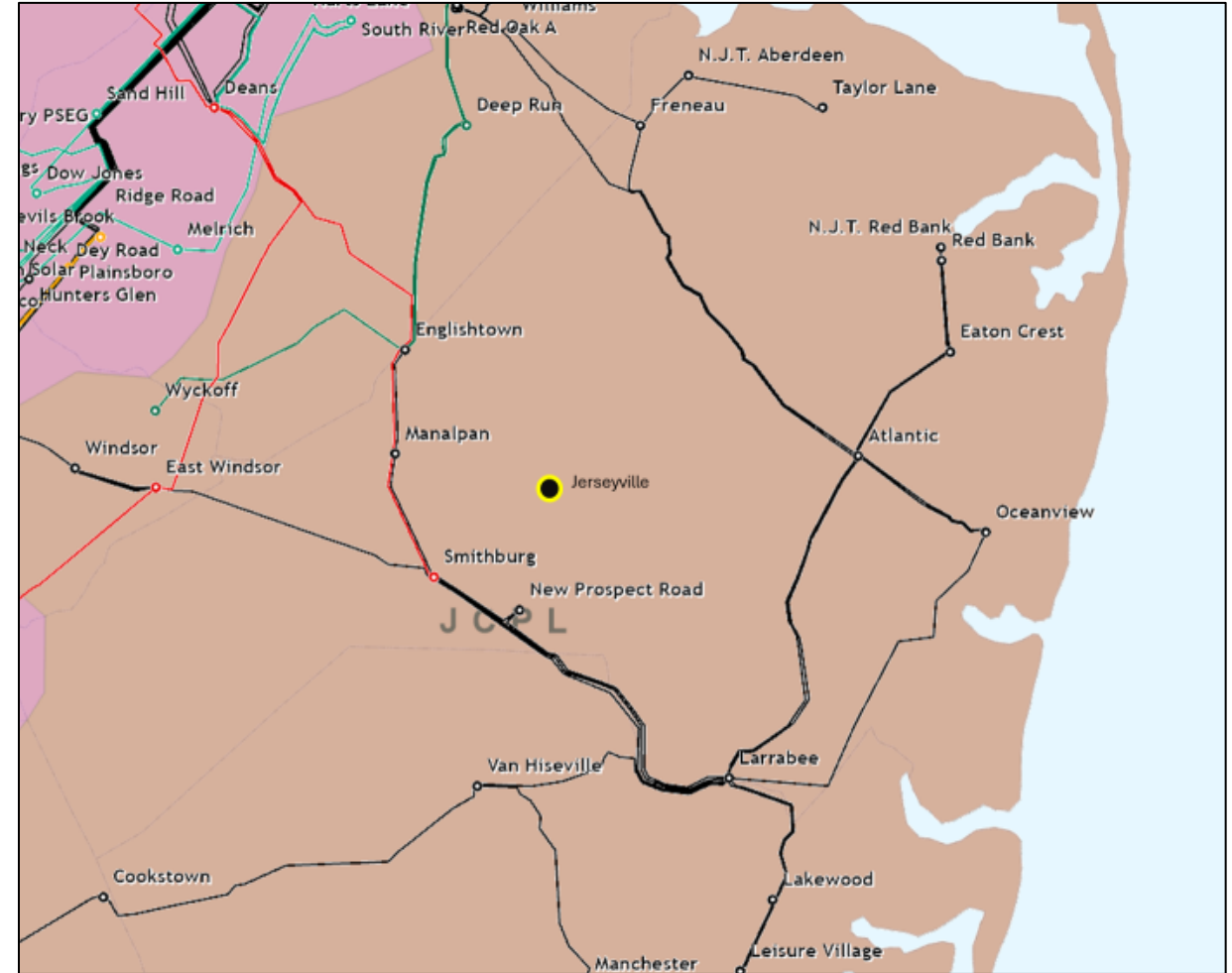
Lines are currently limited by terminal equipment.

Bradevelt - Jerseyville F32 34.5 kV Line:

- Existing Transmission Line Ratings: 36 / 36 / 36 / 36 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)

Jerseyville - Smithburg X752 34.5 kV Line:

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





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

Need Number: JCPL-2026-003

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Replace four 34.5 kV breakers LF, FN, NX, and XL at Jerseyville 34.5 kV Substation and replace all the bus and line side associated disconnect switches of breakers, line and bus PT's and limiting relays.

Ratings:

Jerseyville - Union Carbide N66 34.5 kV Line

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Freehold Jerseyville Tap - Jerseyville X752 34.5 kV Line

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

Jerseyville - Nestle L12 34.5 kV Line

- Before Proposed Solution: 45 / 54 / 50 / 55 MVA (SN/SE/WN/WE)
- After Proposed Solution: 45 / 54 / 50 / 63 MVA (SN/SE/WN/WE)

Bradevelt Tap- Jerseyville F32 34.5 kV Line

- Before Proposed Solution: 36 / 36 / 36 / 36 MVA (SN/SE/WN/WE)
- After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)

Alternatives Considered:

Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$2.69 M

Projected In-Service: 09/07/2028

Project Status: Conceptual

Model: 2025 RTEP model for 2030 Summer (50/50)

No Topology Change

Need Number: JCPL-2026-006

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 03/18/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

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 Lakehurst 34.5 kV oil circuit breakers N223, O41, W777, BK2A, BK2B, E109, N140 are over 50 years old and are approaching end of life.

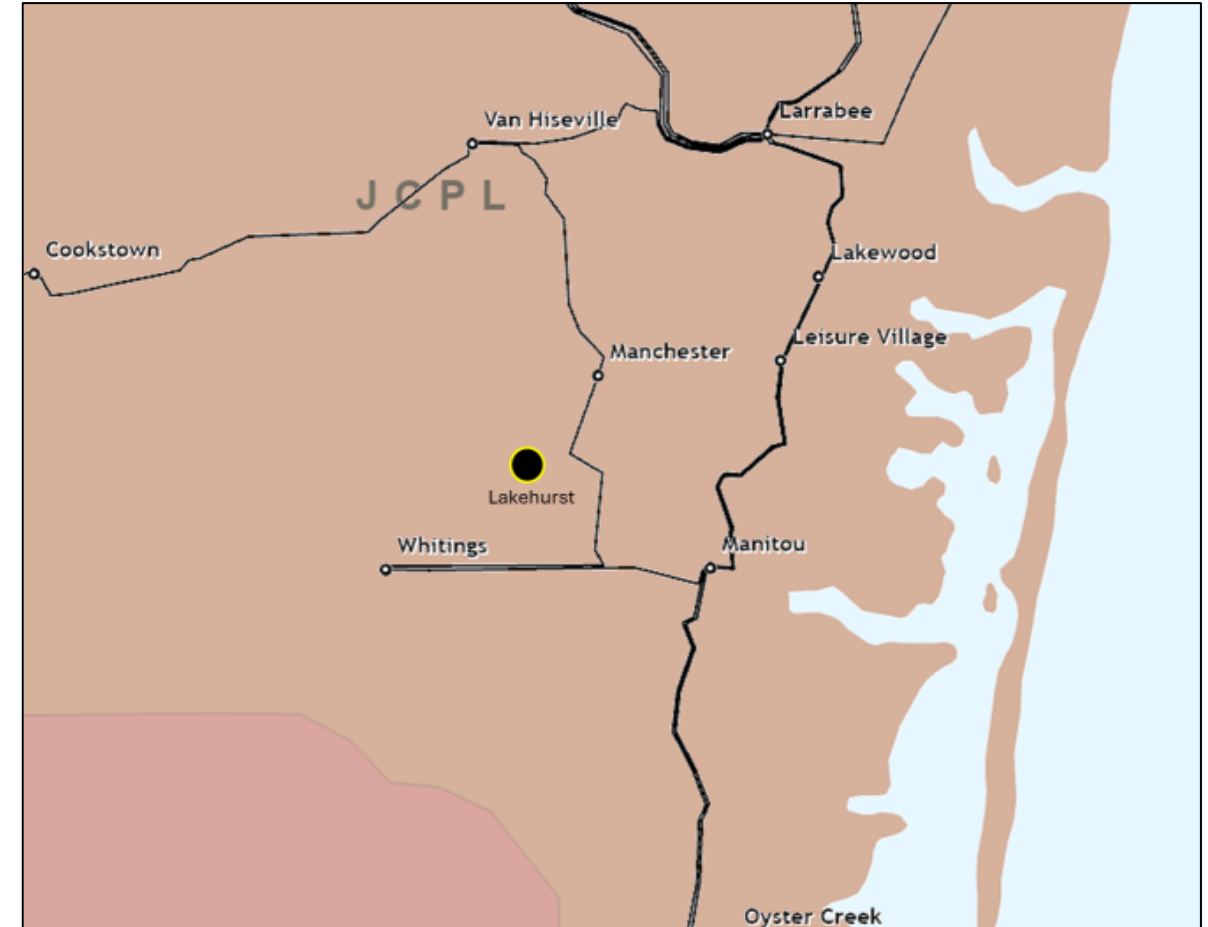
Replacement components are difficult to source leading to non-standard repairs.

Breakers this age require frequent maintenance to keep them in service

The line/transformer is currently limited by terminal equipment.

Existing Transmission Line Ratings:

- Lakehurst - Ship Test 34.5 kV E109 Line - 25 / 25 / 25 / 25 MVA (SN/SE/WN/WE)
- Lakehurst - Navy 34.5 kV E109 Line - 18 / 18 / 19 / 19 MVA (SN/SE/WN/WE)





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

Need Number: JCPL-2026-006

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Replace seven 34.5 kV breakers N223, O41, W777, BK2A, BK2B, E109, N140 and associated switches at Lakehurst Substation along with Cap 1 circuit switcher. Replace line arrestors for E109 and N140 34.5 kV lines.

Ratings:

Glidden Tap - Lakehurst N223 34.5 kV 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)

Lakehurst - TRC Tap O41 34.5 kV Line

- Before Proposed Solution: 41 / 50 / 48 / 51 MVA (SN/SE/WN/WE)
- After Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)

Lakehurst - South Lakewood W777 34.5 kV Line

- Before Proposed Solution: 41 / 50 / 48 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SE/WN/WE)

Lakehurst - Ship Test E109 34.5 kV Line

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Lakehurst - Lakehurst Solar Tap N140 34.5 kV Line

- Before Proposed Solution: 18 / 18 / 19 / 19 MVA (SN/SE/WN/WE)
- After Proposed Solution: 18 / 18 / 20 / 20 MVA (SN/SE/WN/WE)

Alternatives Considered:

Maintain existing conditions with elevated risk of mis-operations.

Estimated Project Cost: \$4.23 M

Projected In-Service: 03/15/2029

Project Status: Conceptual

Model: 2025 RTEP model for 2030 Summer (50/50)

No Topology Change

JCPL Transmission Zone M-3 Process Manitou - Ocean Beach - Seaside Park D212 34.5 kV Line Rebuild

Need Number: JCPL-2026-009

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 05/14/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Line Condition Rebuild/Replacement

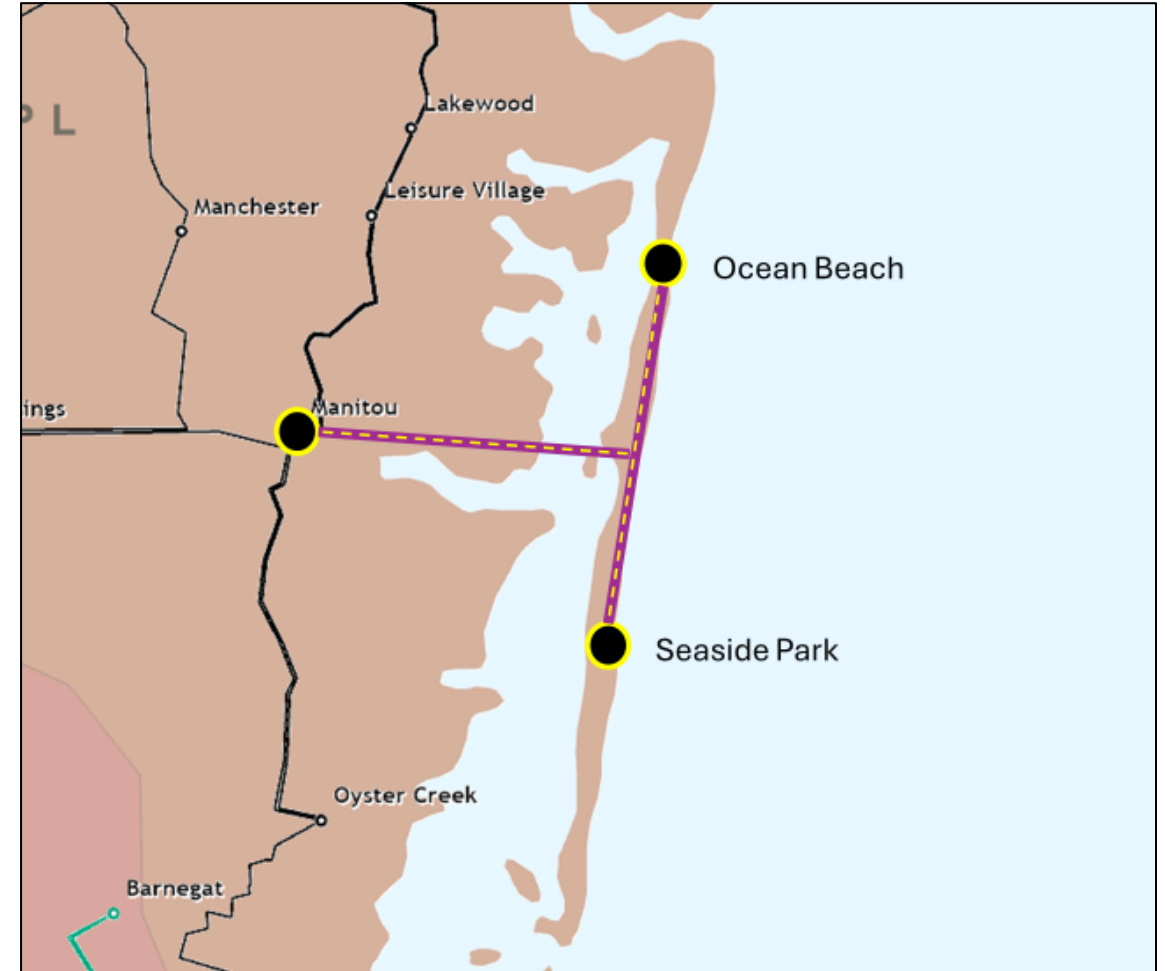
- Age/condition of wood pole transmission line structures

Problem Statement:

The Manitou- Ortley Beach- Seaside Park 34.5 kV D212 line was constructed approximately 76 years ago and is approaching end of life. It is approximately 17.7 miles long with 493 wood pole transmission line structures.

Per recent inspections, the line is exhibiting deterioration. Approximately 203 structures require repairs due to deterioration. This includes wood pole decay, damaged grounding system, and wood pole cracking indicating that components are approaching end of life.

In the last five years, the line has had 26 unscheduled, sustained outages.



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Need Number: JCPL-2026-009

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

Facility	Existing Overall Facility Ratings (SN/SE/WN/WE)	Existing Line Conductor Ratings (SN/SE/WN/WE)
Manitou - Toms River Tap 34.5 kV Line	55 / 67 / 63 / 79	55 / 67 / 63 / 79
Toms River - Toms River Tap 34.5 kV Line		
Seaside Park Tap 1 - Toms River 34.5 kV Line		
Seaside Park - Seaside Park Tap 1 34.5 kV Line		
Seaside Heights - Seaside Park Tap 1 34.5 kV Line		
Seaside Park Tap 2 - Seaside Park 34.5 kV Line	40 / 51 / 40 / 51	
Seaside Heights - Seaside Park Tap 2 34.5 kV Line	55 / 67 / 63 / 79	
Seaside Park Tap 2- Ortley Beach Tap 34.5 kV Line		
Ortley Beach Tap- Ortley Beach 34.5 kV Line	35 / 44 / 35 / 44	
Lavallette- Ortley Beach Tap 34.5 kV Line	55 / 67 / 63 / 79	
Lavallette- Ortley Beach 34.5 kV Line	35 / 44 / 35 / 44	

JCPL Transmission Zone M-3 Process Manitou - Ocean Beach - Seaside Park D212 34.5 kV Line Rebuild

Need Number: JCPL-2026-009

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Rebuild the Manitou-Ocean Beach-Seaside Park D212 34.5 kV Line utilizing a new conductor.

Ratings:

Manitou - Toms River 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)

Seaside Heights Tap - Toms River 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)

Seaside Heights Tap - Seaside Heights 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)

Seaside Heights Tap - Seaside Park 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)

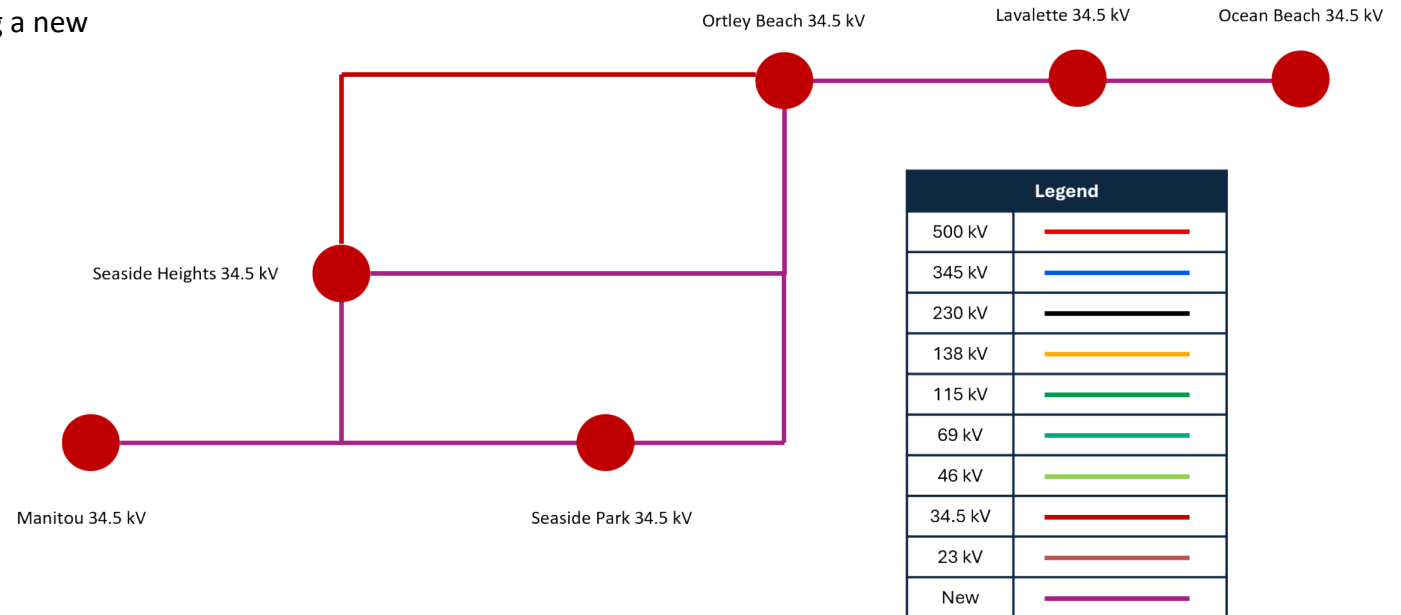
Seaside Park 1 - Seaside Park 2 34.5 kV Line

- Before Proposed Solution: 40 / 51 / 40 / 51 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Seaside Heights - Seaside Park 2 34.5 kV Line

- Before Proposed Solution: 40 / 51 / 40 / 51 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

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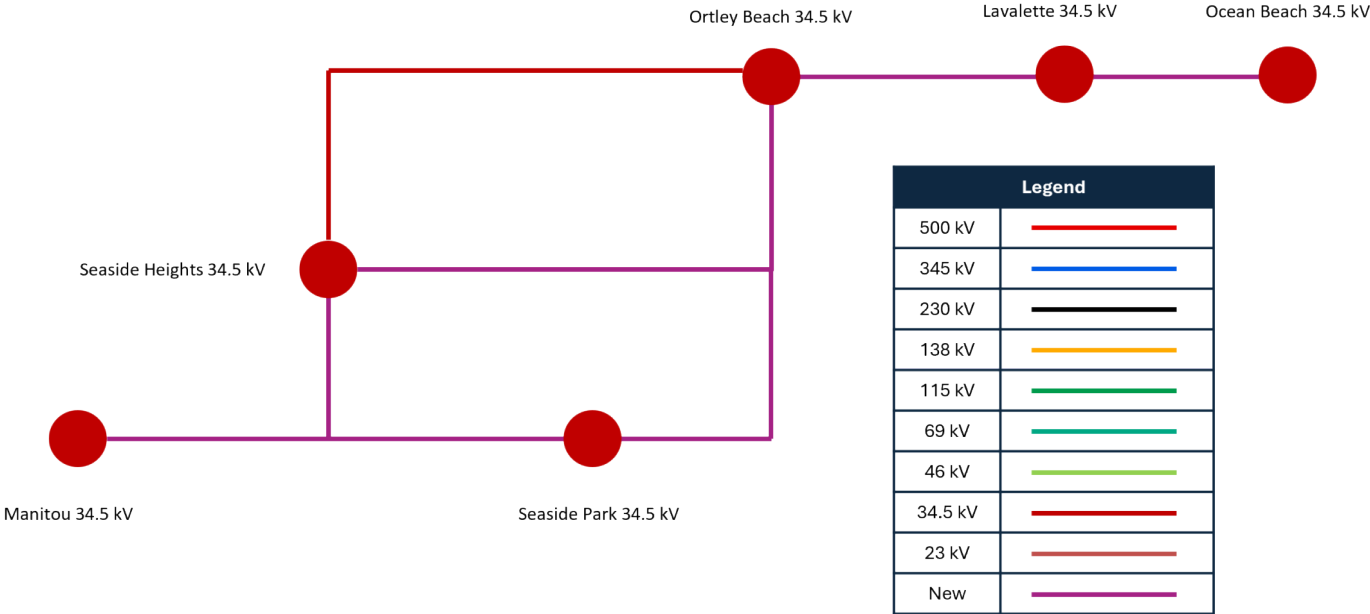
JCPL Transmission Zone M-3 Process Manitou - Ocean Beach - Seaside Park D212 34.5 kV Line Rebuild

Need Number: JCPL-2026-009
Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026
Ratings: *(Cont'd from previous page)*

- Ortley Beach Tap - Seaside Heights 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)
- Lavallette - Ortley Beach 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)
- Ortley Beach - Ortley Beach Tap 34.5 kV Line
- Before Proposed Solution: 35 / 44 / 35 / 44 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- Lavallette - Ocean Beach 34.5 kV Line
- Before Proposed Solution: 35 / 44 / 35 / 44 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Alternatives Considered:
Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$36.86 M
Projected In-Service: 02/11/2029
Project Status: Conceptual
Model: 2025 RTEP model for 2030 Summer (50/50)



Need Number: JCPL-2026-011

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 05/14/2026

Project Driver:

Customer Service

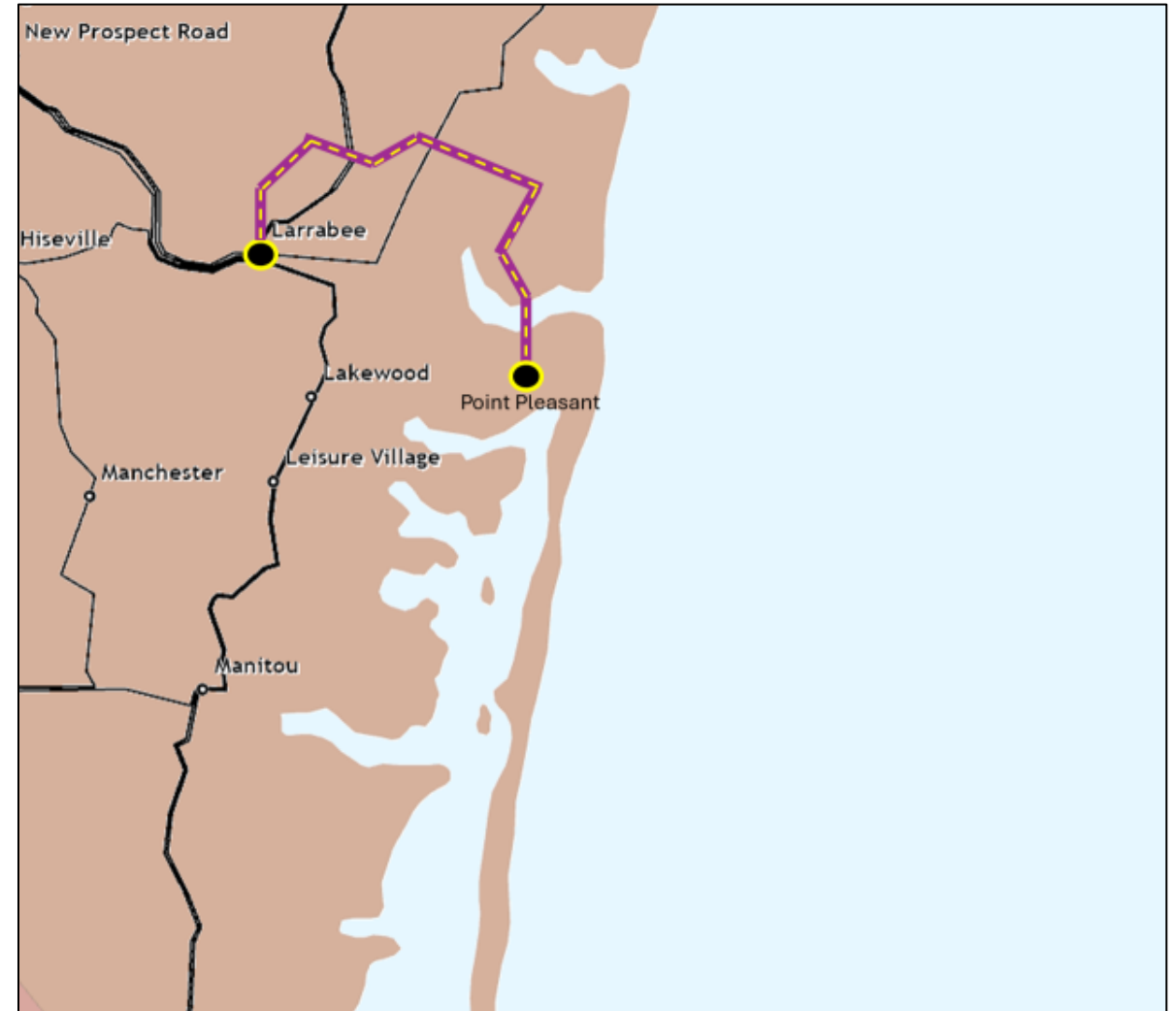
Specific Assumption References:

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 customer requested 34.5 kV service for load of approximately 11 MW near the Larrabee - Point Pleasant B106 34.5 kV Line. The request is approximately eight miles from Larrabee Substation.

Requested in-service date is 12/13/2030.



JCPL Transmission Zone M-3 Process Larrabee - Point Pleasant B106 34.5 kV Line - Customer Connection

Need Number: JCPL-2026-011

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Install three 34.5 kV SCADA controlled switches on the Larrabee - Point Pleasant B106 34.5 kV Line and build 2.6 miles of 34.5 kV line to the POI with the Customer.

Ratings:

Larrabee - Point Pleasant B106 34.5 kV Line:

- Before Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SSTE/WN/WSTE)
- After Proposed Solution: 41 / 50 / 48 / 60 MVA (SN/SSTE/WN/WSTE)

Alternatives Considered:

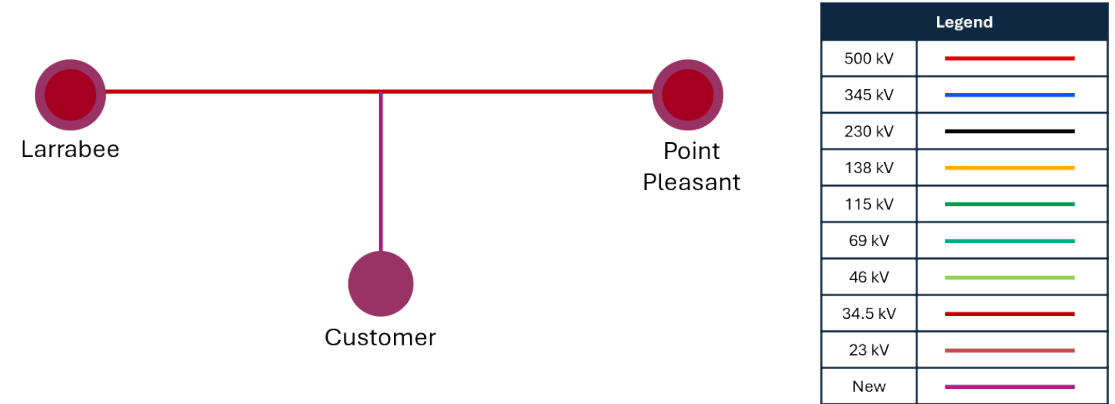
No reasonable alternatives due to the customer's proximity to the Larrabee - Point Pleasant B106 34.5 kV Line.

Estimated Project Cost: \$8.49 M

Projected In-Service: 02/10/2031

Project Status: Conceptual

Model: 2024 RTEP model for 2029 Summer (50/50)



JCPL Transmission Zone M-3 Process Ocean Medical 34.5 kV Substation - Customer Connection

Need Number: JCPL-2026-023

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 06/16/2026

Project Driver:

Customer Service

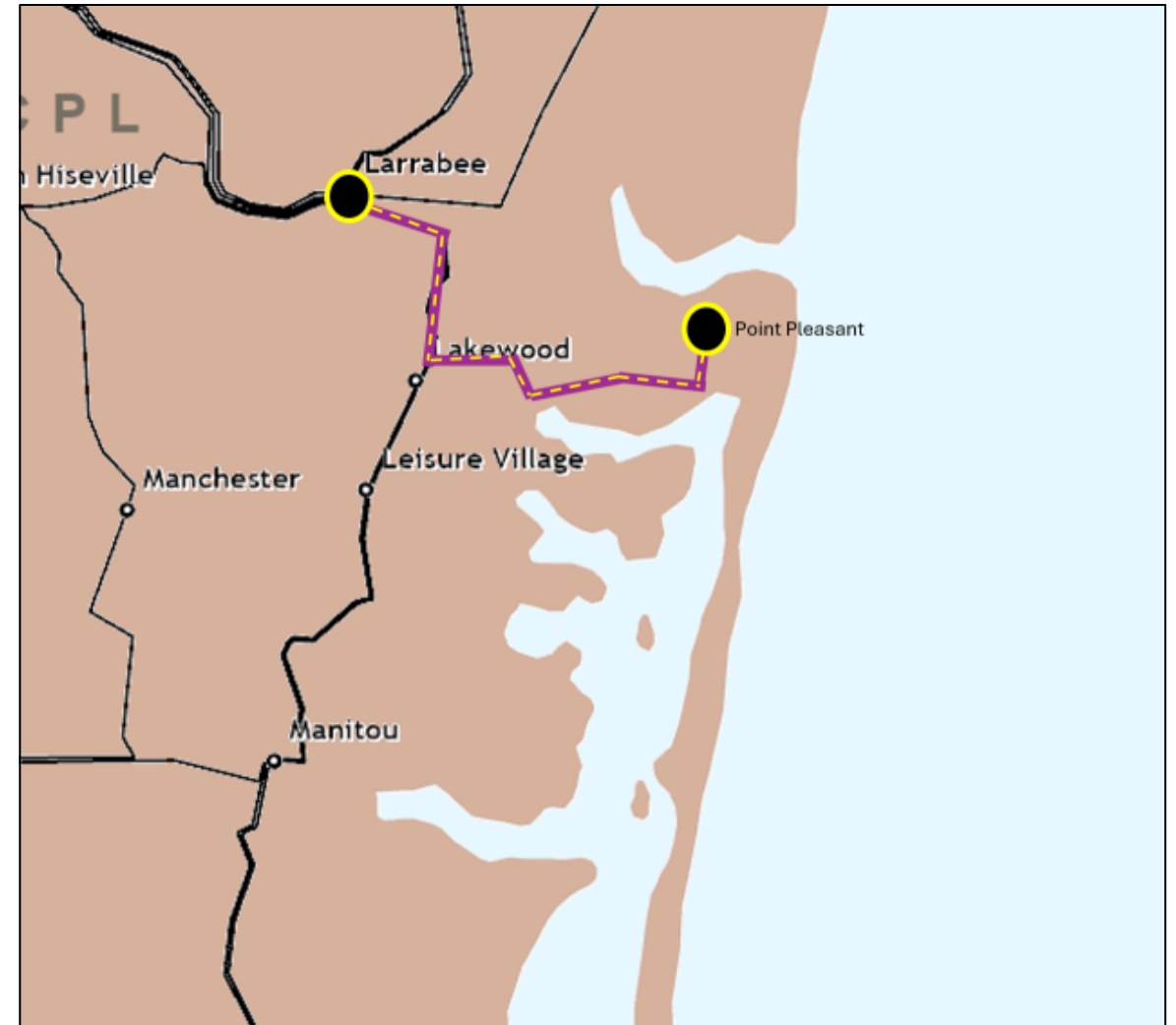
Specific Assumption References:

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

Problem Statement:

An existing customer requested a 34.5 kV net metering connection with solar of approximately 0.66 MW at the existing Ocean Medical 34.5 kV tap site on the Larrabee-Point Pleasant No. 2 34.5 kV R44 Line.

Requested in-service date is 12/31/2027.





JCPL Transmission Zone M-3 Process Ocean Medical 34.5 kV Substation - Customer Connection

Need Number: JCPL-2026-023

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- Customer is adding a new solar net metering facility at their existing 34.5 kV service.

Alternatives Considered:

The customer is expanding their existing facility to bring in new net metering generation. No alternatives were considered.

Estimated Project Cost: \$540,000
Projected In-Service: 08/12/2027
Project Status: Conceptual
Model: 2025 RTEP model for 2030 Summer (50/50)

No Topology Change

Need Number: JCPL-2026-038

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Previously Presented: Need Meeting – SRRTEP-MA – 07/17/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Global Factors

- System reliability/performance
- Substation/Line equipment limits

Substation Condition Rebuild/Replacement

- Age/condition of substation equipment
- Circuit breaker and other fault interrupting devices

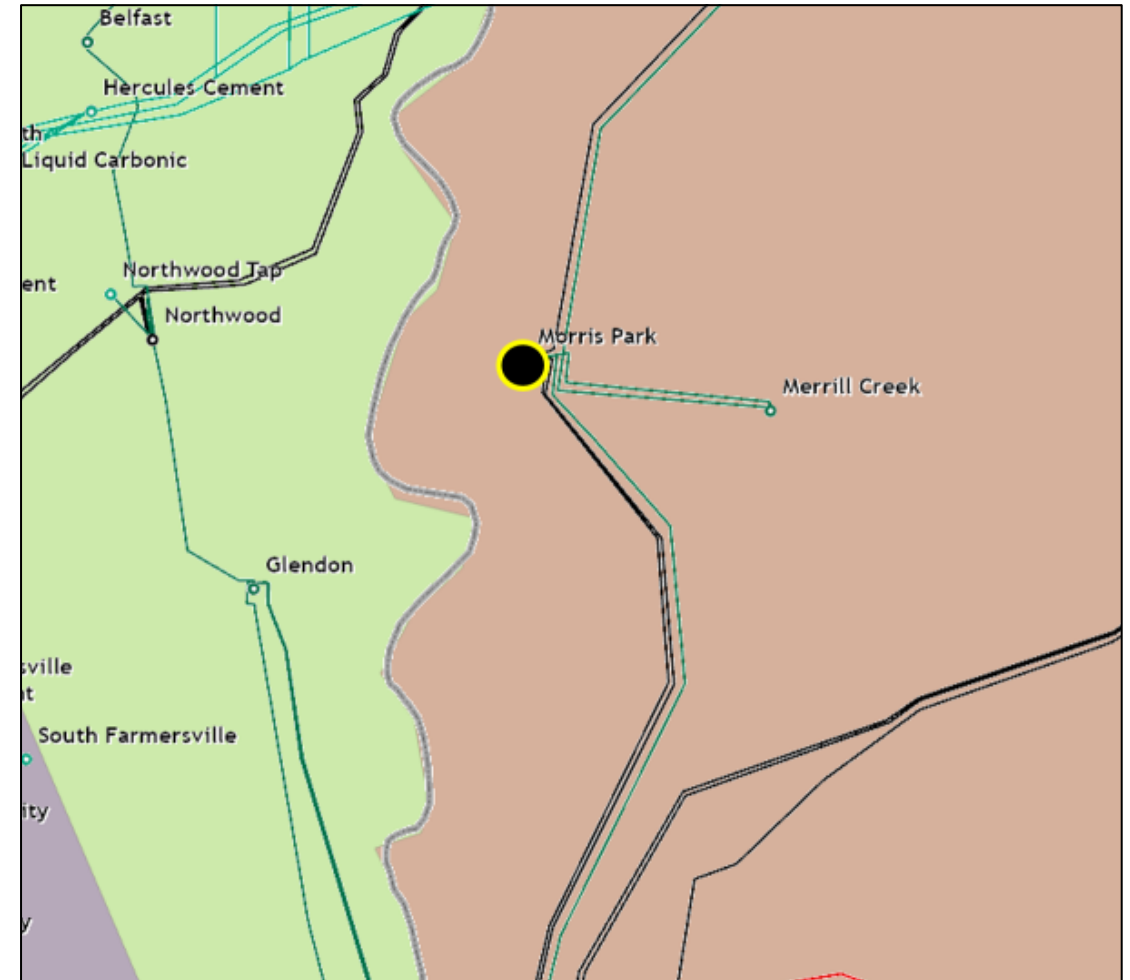
Problem Statement:

At Morris Park Substation the existing 34.5 kV breakers W23A, W23B, F6, S123, X24, T124, BK3B and BK3A are more than 56 years old and are approaching end of life.

Replacement components are difficult to source leading to non-standard repairs.

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



Need Number: JCPL-2026-038

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

Facility	Existing Overall Facility Ratings MVA (SN/SE/WN/WE)	Existing Line Conductor Ratings MVA (SN/SE/WN/WE)
Morris Park - Rand Blvd T 34.5 kV Z26 (T124) Line	37 / 38 / 42 / 42	
Warren Glen SWPT - Morris Park 34.5 kV X24 Line	37 / 38 / 42 / 42	
Philipsburg - Morris Park 34.5 kV S123 Line	40 / 50 / 50 / 57	45 / 54 / 50 / 63
Morris Park - Marble Hill 34.5 kV F6 Line	42 / 50 / 50 / 57	44 / 53 / 50 / 63
Morris Park - Captive Place Tap 34.5 kV W23 Line	44 / 53 / 50 / 63	

Need Number: JCPL-2026-038

Process Stage: Solution Meeting – SRRTEP-MA – 09/17/2026

Proposed Solution:

- At the Morris Park Substation, replace the W23A, W23B, F6, S123, X24, T124, BK3B, and BK3A 34.5 kV OCBs and associated disconnect switches, substation conductors, and relaying.

Ratings:

Marble Hill (Morris Park) 34.5 kV F6 Line:

- Before Proposed Solution: 42 / 50 / 50 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Morris Park - Phillipsburg 34.5 kV S123 Line:

- Before Proposed Solution: 40 / 50 / 50 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 40 / 50 / 50 / 59 MVA (SN/SE/WN/WE)

Alternatives Considered:

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

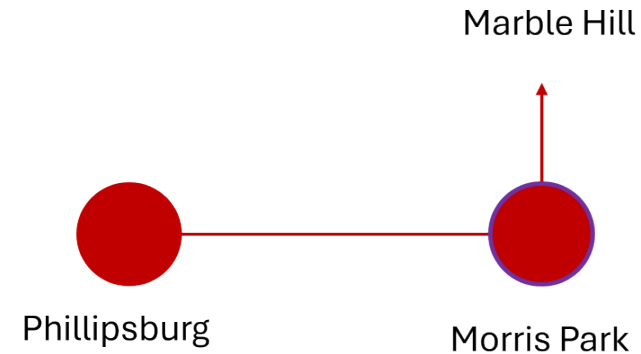
Estimated Project Cost: \$7.13 M

Projected In-Service: 12/21/2028

Project Status: Conceptual

Model: 2025 RTEP model for 2030 Summer (50/50)

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



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

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

09/08/2026 – V1 – Original version posted to pjm.com