

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

JCPL Transmission Zone

Withdraw Needs

Need Number: JCPL-2024-009

Process Stage: Withdraw Need – SRRTEP-MA – 08/13/2026

Previously Presented: Need Meeting – SRRTEP-MA – 02/15/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability/performance

Upgrade Relay Schemes

- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades

Problem Statement:

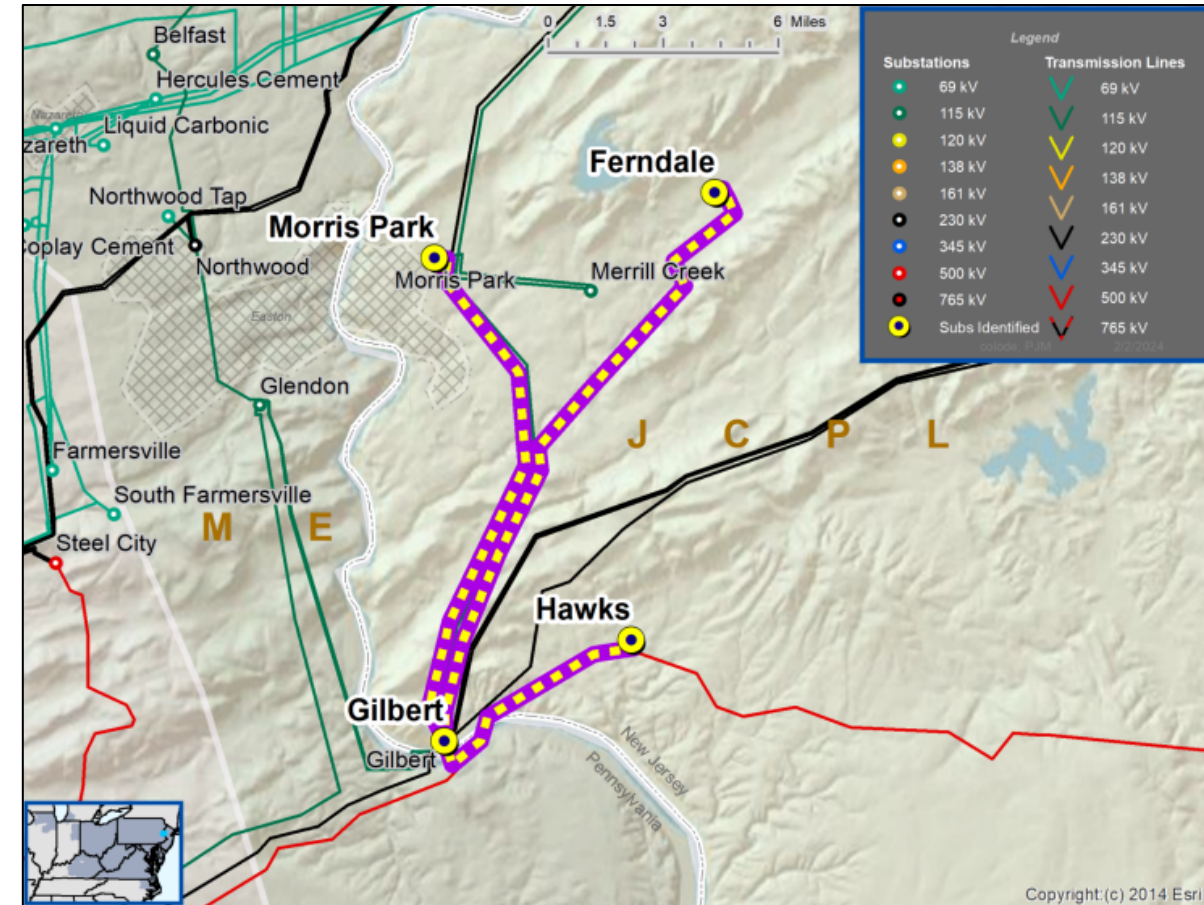
There is a lack of automatic restoration of 34.5 kV lines following tripping events without the intervention of Transmission Operators.

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cases, the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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.

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JCPL Transmission Zone M-3 Process Automatic Restoration Projects, NJ

Need Number: JCPL-2024-009
Process Stage: Withdraw Need – SRRTEP-MA – 08/13/2026
Problem Statement: *(Cont’d from previous slide)*
Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating (SN / SE / WN / WE)	Existing Conductor Rating (SN / SE / WN / WE)
JCPL-2024-009	Gilbert – 34.5 kV C29 Line	26 / 33 / 37 / 41	37 / 38 / 42 / 42
	Gilbert – Morris Park 34.5 kV A27 Line	37 / 38 / 42 / 42	44 / 53 / 50 / 63
	Gilbert – Hawks 34.5 kV V750 Line	26 / 32 / 30 / 38	27 / 32 / 30 / 38

Need Number: JCPL-2024-050

Process Stage: Withdraw Need – SRRTEP-MA – 08/13/2026

Previously Presented: Need Meeting – SRRTEP-MA – 12/12/2024

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

System Performance Projects Global Factors

- System reliability/performance
- Substation/line equipment limits

Upgrade Relay Schemes

- Obsolete and difficult to repair communication equipment (DTT, Blocking, etc.)
- Communication technology upgrades

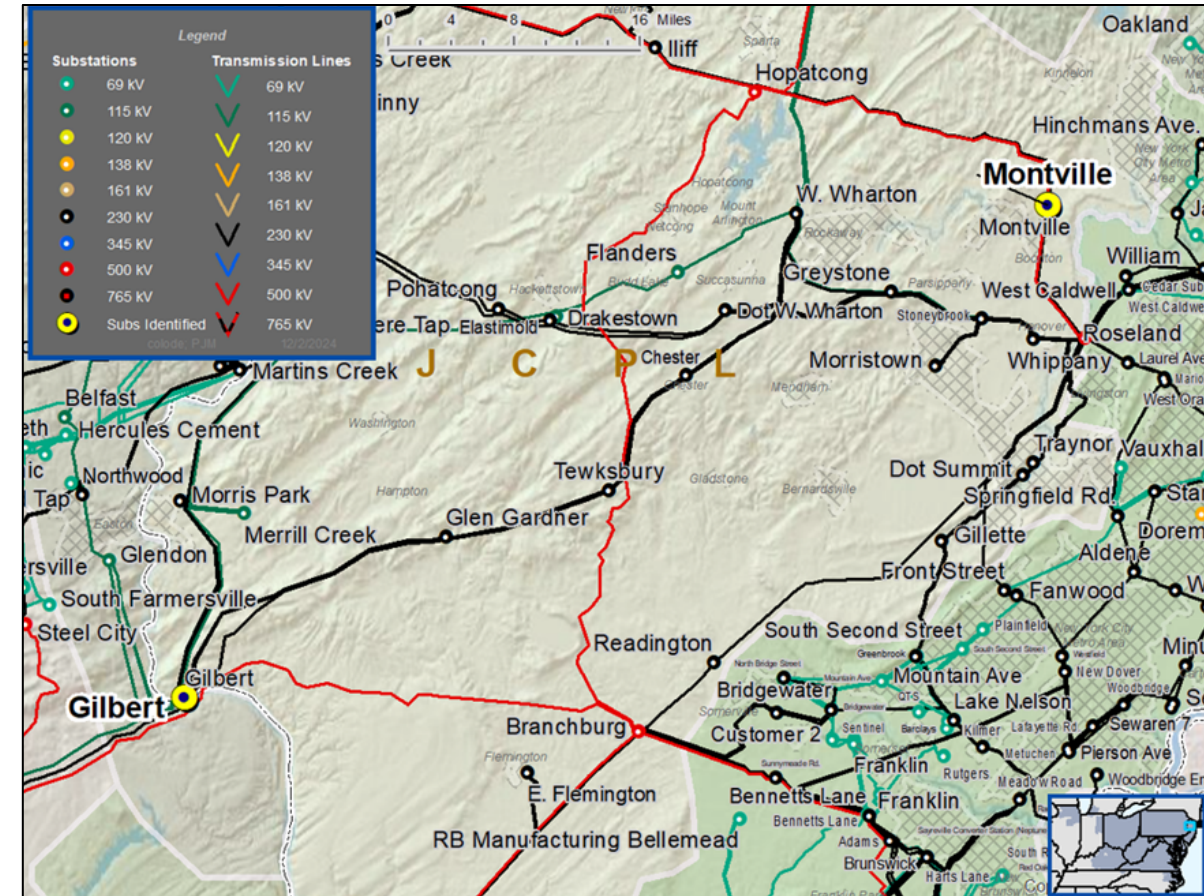
Problem Statement:

There is a lack of automatic restoration of 34.5 kV lines following tripping events without the intervention of Transmission Operators.

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

Obsolete electromechanical relay schemes. In many cases, the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.

Proper operation of the protection scheme requires all the separate components perform adequately during a fault.



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JCPL Transmission Zone M-3 Process Automatic Restoration Projects, NJ

Need Number: JCPL-2024-050
Process Stage: Withdraw Need – SRRTEP-MA – 08/13/2026
Problem Statement: *(Cont’d from previous slide)*
Transmission line ratings are limited by terminal equipment.

Need Number	Transmission Line / Substation Locations	Existing Line Rating MVA (SN / SE / WN / WE)	Existing Conductor Rating MVA (SN / SE / WN / WE)
JCPL-2024-050	Gilbert – Ferndale 34.5 kV B28 Line	12 / 12 / 12 / 12	14 / 14 / 15 / 15

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-2026-041

Process Stage: Need Meeting – SRRTEP-MA – 08/13/2026

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

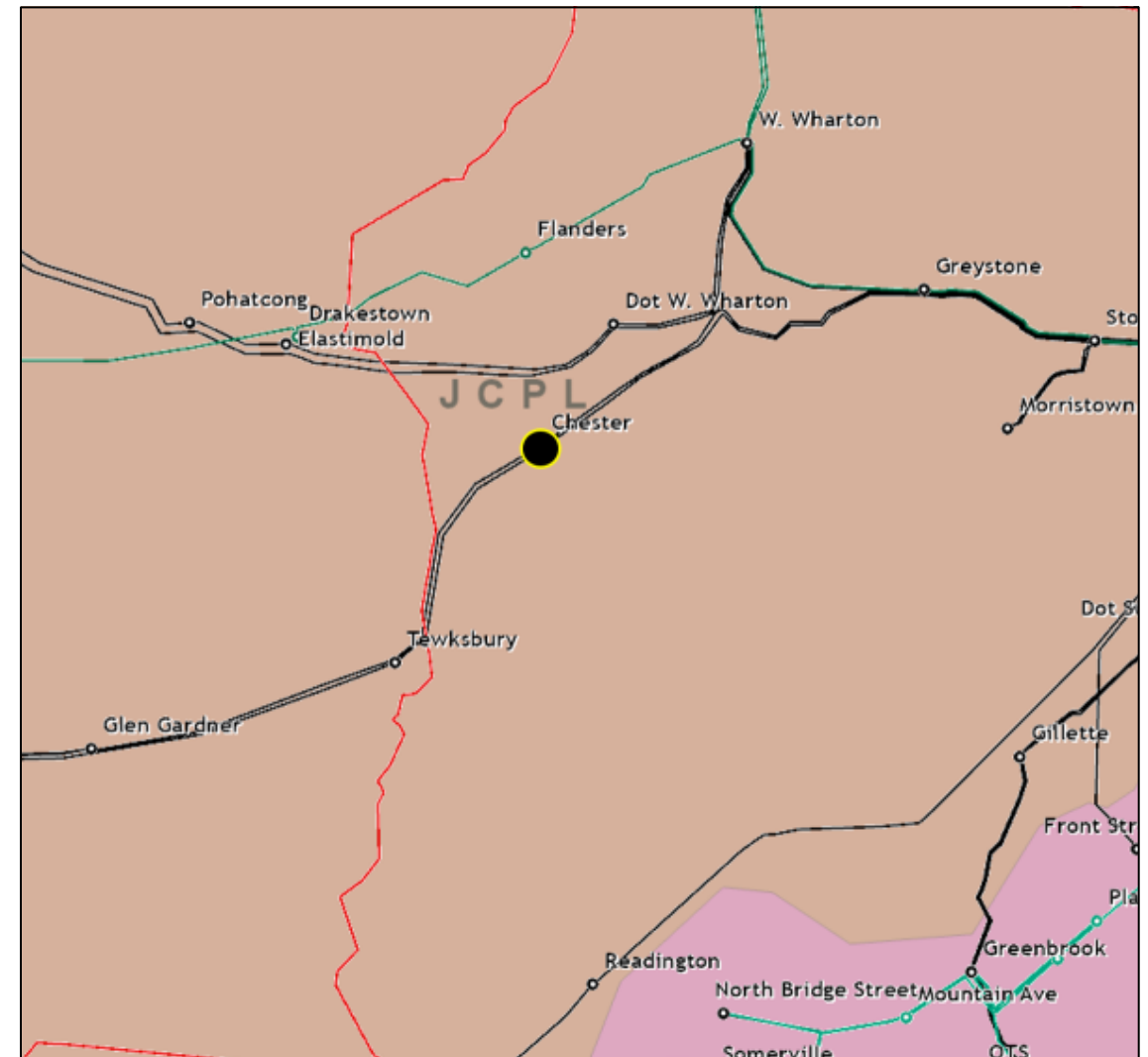
Problem Statement:

The existing Chester 34.5 kV breaker D732 is 38 years old and is approaching end of life. Replacement components are difficult to source.

The line is currently limited by terminal equipment.

Beneficial TP - Chester 34.5 kV D732 Line Section

- Existing Transmission Line Ratings: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 83 / 108 / 119 / 134 MVA (SN/SE/WN/WE)



Need Number: JCPL-2026-043

Process Stage: Need Meeting – SRRTEP-MA – 08/13/2026

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 U125, G85, Q69A, Q69B, T46A, T46B, P68 34.5 kV breakers at Old Bridge Substation are all over 60 years old and approaching end of life. Replacement components are difficult to source.

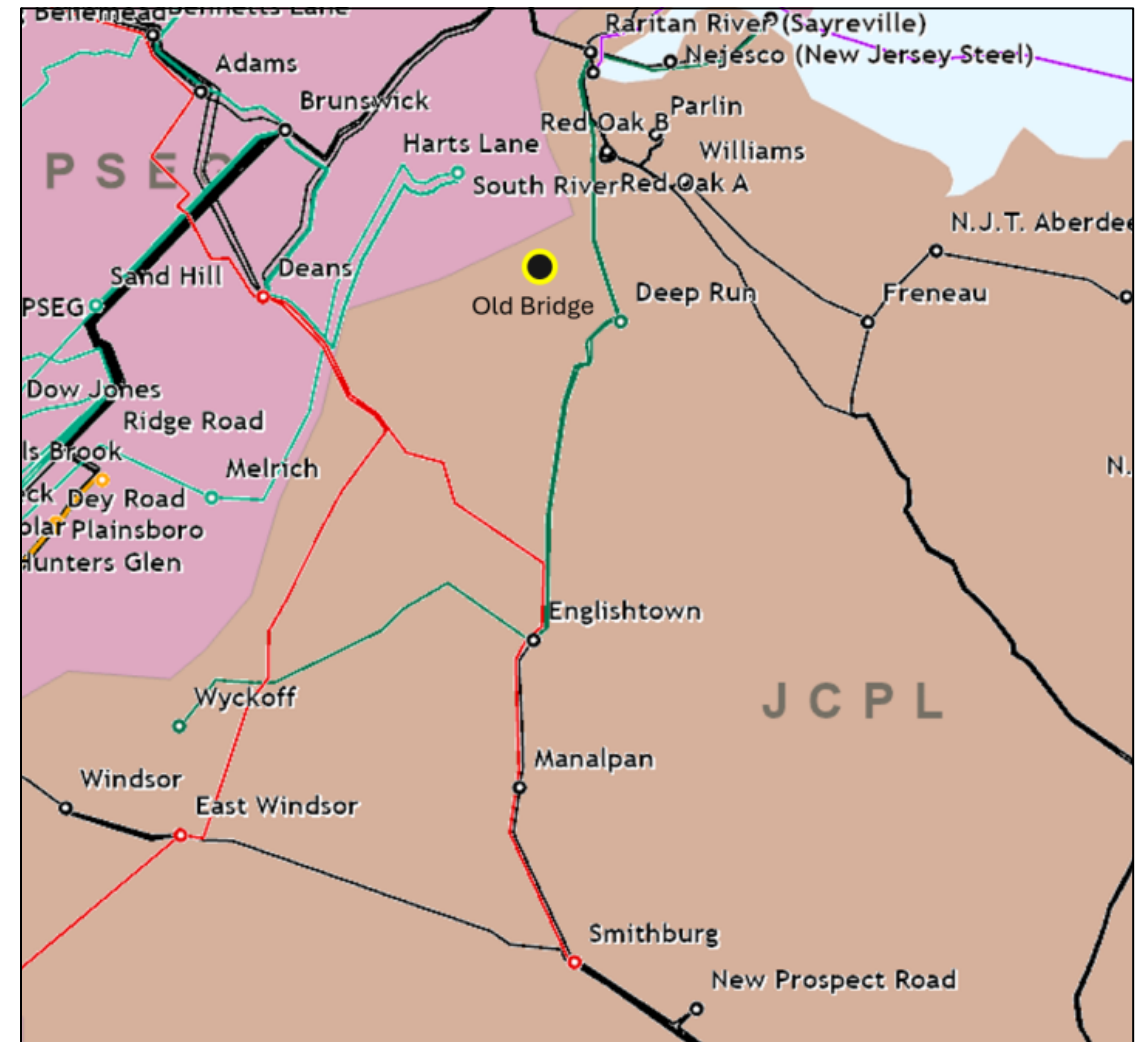
The lines are currently limited by terminal equipment

Old Bridge - Runyon Switch Point T46 34.5 kV Line:

- Existing Transmission Line Ratings: 44 / 53 / 50 / 60 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Anheuser Busch - Old Bridge P68 34.5 kV Line:

- Existing Transmission Line Ratings: 41 / 50 / 50 / 57 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)



Need Number: JCPL-2026-046

Process Stage: Need Meeting 08/13/2026

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 I9, J10, P120, M117A, N118B, T150A, T150B, and L116 34.5 kV breakers at Riverdale Substation are at least 35 years old and are approaching end of life. Replacement components are difficult to source.

The lines are currently limited by terminal equipment.

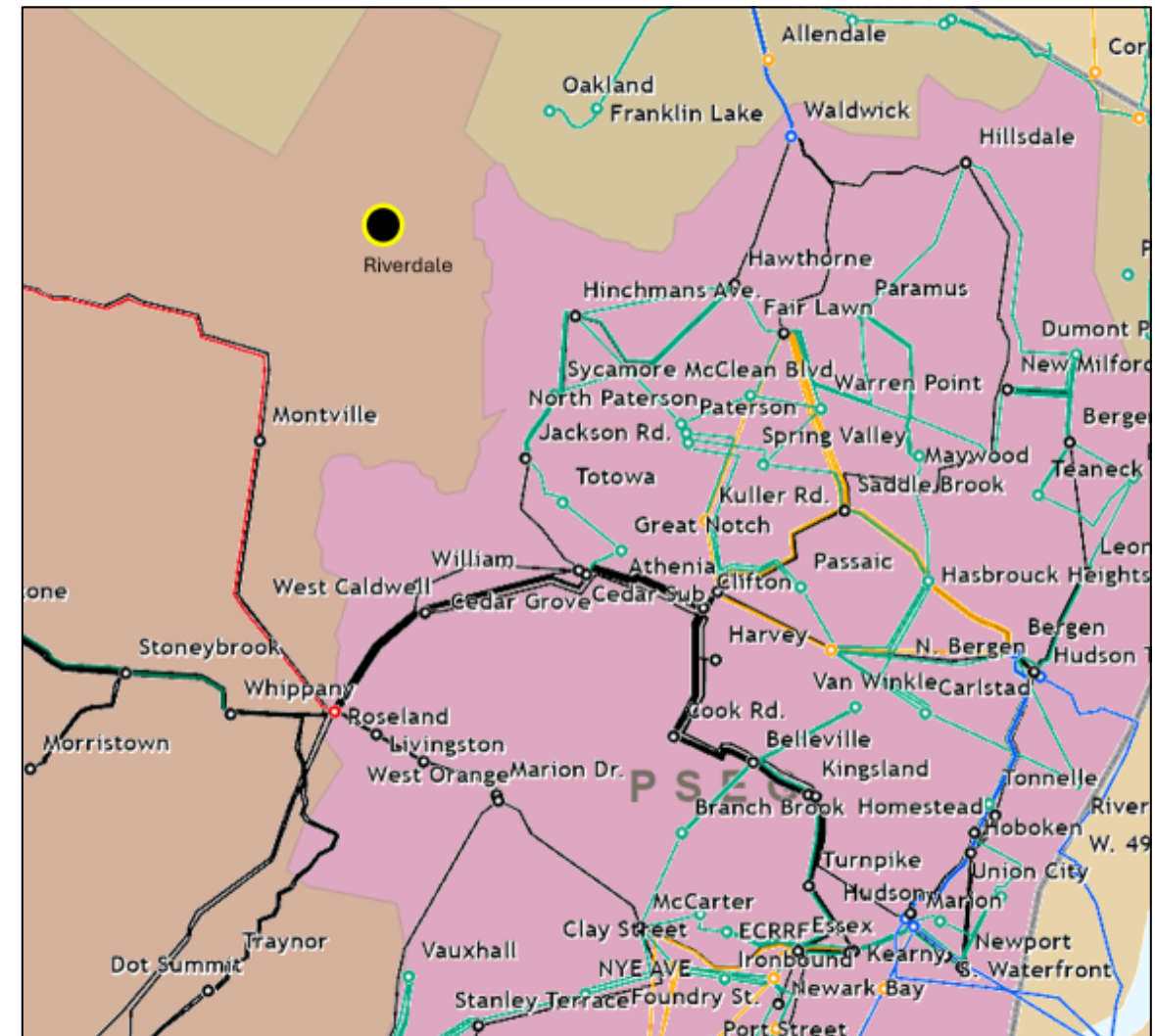
Riverdale - Riverdale QRY TP - 34.5 kV (I9) Line Section:

- Existing Transmission Line Ratings: 44 / 53 / 50 / 57 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Jacksonville TAP - Riverdale 34.5 kV (L116) Line Section:

- Existing Transmission Line Ratings: 44 / 53 / 45 / 58 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

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Need Number: JCPL-2026-046

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

Passaic Stone J TAP - Riverdale 34.5 kV (J10) Line Section:

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

Hackensach WTR P TP - Riverdale 34.5 kV (P120) Line Section:

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

Riverdale - Riverdale X 34.5 kV (N118) Line Section:

- Existing Transmission Line Ratings: 41 / 52 / 50 / 57 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 41 / 52 / 54 / 62 MVA (SN/SE/WN/WE)

Pompton Plains M T - Riverdale 34.5 kV (M117) Line Section:

- 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)

Montville - Riverdale 34.5 kV (T150) Line Section:

- Existing Transmission Line Ratings: 37 / 45 / 42 / 53 MVA (SN/SE/WN/WE)
- Existing Conductor Ratings: 37 / 45 / 42 / 53 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

JCPL Transmission Zone M-3 Process Gilbert-Rocktown Road 34.5kV J712 Line Rebuild, NJ

Need Number: JCPL-2019-023

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

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

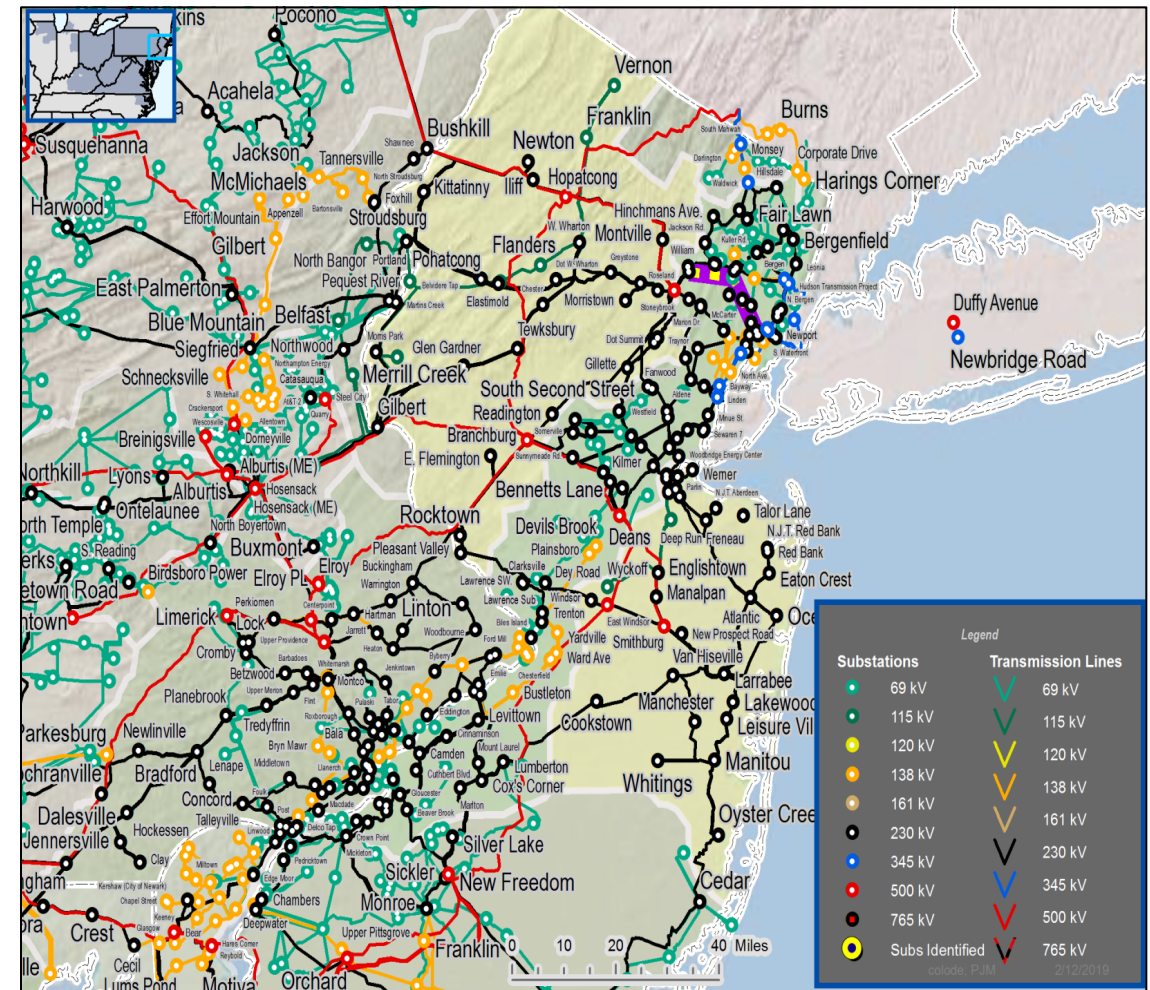
System Performance Projects

- 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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Need Number: JCPL-2019-023

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

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

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

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
023	Gilbert – Bridgeton 34.5 kV Line	37 / 45	37 / 45	-	3.9	275 / 346 (79% Failure Rate)	Age, bad/cut/missing grounds, woodpecker holes, etc.
	Bridgeton – Frenchtown 34.5 kV Line	37 / 45	37 / 45	-	2.3		
	Frenchtown – Frenchtown Solar 34.5 kV Line	39 / 48	39 / 48	-	4.6		
	Frenchtown Solar – Rosemont 34.5 kV Line	39 / 48	39 / 48	-	3.5		
	Rosemont – <u>Alexauken</u> 34.5 kV Line	39 / 48	39 / 48	-	4.5		
	<u>Alexauken</u> – <u>Rocktown</u> 34.5 kV Line	44 / 53	44 / 53	Line Relaying	2.0		

JCPL Transmission Zone M-3 Process Gilbert-Rocktown Road 34.5kV J712 Line Rebuild, NJ

Need Number: JCPL-2019-023

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

Proposed Solution:

- Rebuild Gilbert-Rocktown Road 34.5kV J712 Line using new conductor (~22 miles). Also rebuild 1.2-mile radial tap from Structure 250 to Gilboa Substation.
- At Gilbert Substation, replace one circuit breaker, three arresters and upgrade substation conductor.
- At Rocktown Road Substation, replace one circuit breaker, one disconnect switch, three arresters, and upgrade relays.
- At Bridgeton Substation, upgrade station conductor.

Ratings:

Bridgeton - Gilbert J721 34.5 kV Section Line:

- Before Proposed Solution: 37 / 45 / 43 / 54 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Bridgeton - Frenchtown Tap J721 34.5 kV Section Line:

- Before Proposed Solution: 37 / 45 / 43 / 54 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

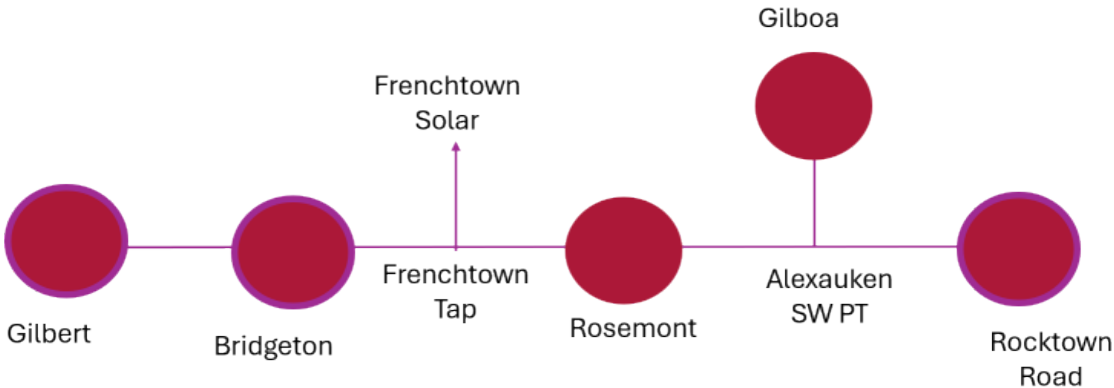
Frenchtown Solar - Frenchtown Tap J721 34.5 kV Section Line:

- Before Proposed Solution: 40 / 48 / 45 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Frenchtown Solar - Rosemont J721 34.5 kV Section Line:

- Before Proposed Solution: 40 / 48 / 45 / 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 Gilbert-Rocktown Road 34.5kV J712 Line Rebuild, NJ

Need Number: JCPL-2019-023

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

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

Alexauken SW PT - Rosemont J721 34.5 kV Section Line:

- Before Proposed Solution: 40 / 48 / 45 / 57 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Alexauken SW PT - Gilboa J721 34.5 kV Section Line:

- Before Proposed Solution: 14 / 14 / 15 / 15 MVA (SN/SE/WN/WE)
- After Proposed Solution: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)

Alexauken SW PT -Rocktown Road J721 34.5 kV Section 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)

Alternatives Considered:

Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$40.23 M

Projected In-Service: 12/30/203

Project Status: Conceptual

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

Need Number: JCPL-2026-022

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

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

Line Condition Rebuild/Replacement

- Age/condition of wood pole transmission line structures

Problem Statement:

The Branchville - Newton 34.5 kV F708 Line was constructed approximately 79 years ago and is approaching end of life. It is approximately seven miles long with 142 wood monopole transmission line structures.

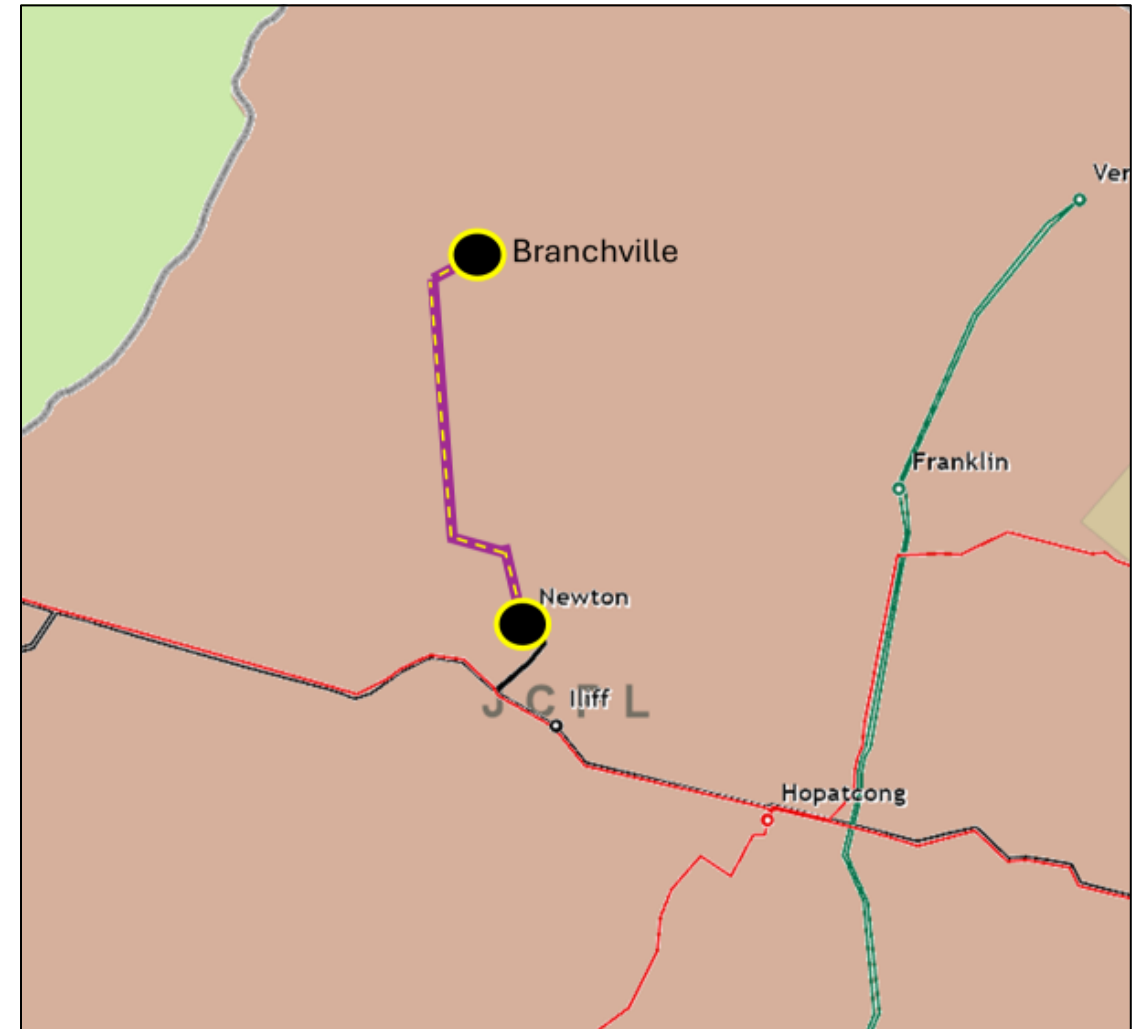
The Branchville - Newton 34.5 kV F708 Line has experienced real-time overloads during high-load conditions, particularly when local battery storage facilities charge. These overloads exceed normal and occasionally emergency ratings, requiring operational intervention. Transmission Operations has curtailed the generating unit(s) to alleviate the overload. The Branchville - Newton 34.5 kV F708 Line directly serves 5,500 customers and 10 MVA of load.

Since 2020, the line has had 11 unscheduled sustained outages.

The line is currently limited by terminal equipment.

Existing Transmission Line Ratings:

- 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)



JCPL Transmission Zone M-3 Process

Branchville- Newton F708 Line 34.5 kV Rebuild, NJ

Need Number: JCPL-2026-022

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

Proposed Solution:

- Rebuild 7 miles of Branchville - Newton 34.5 kV F708 Line with a new conductor.
- At Branchville Substation: replace one 34.5 kV disconnect switch and upgrade relay settings.
- At Newton Substation: replace substation conductors and relays.
- Re-conductor the 1.2 miles section of the Newton - North Newton 34.5 kV L766 Line using a new conductor. This section is double circuited with the F708 Line. Transfer wire on Branchville – Holiday Lake 34.5 kV A781 Line to the new switch structure.

Ratings:

Newton - North Newton F Tap 34.5 kV F708 Section Line:

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)

Branchville - North Newton F Tap 34.5 kV F708 Section Line:

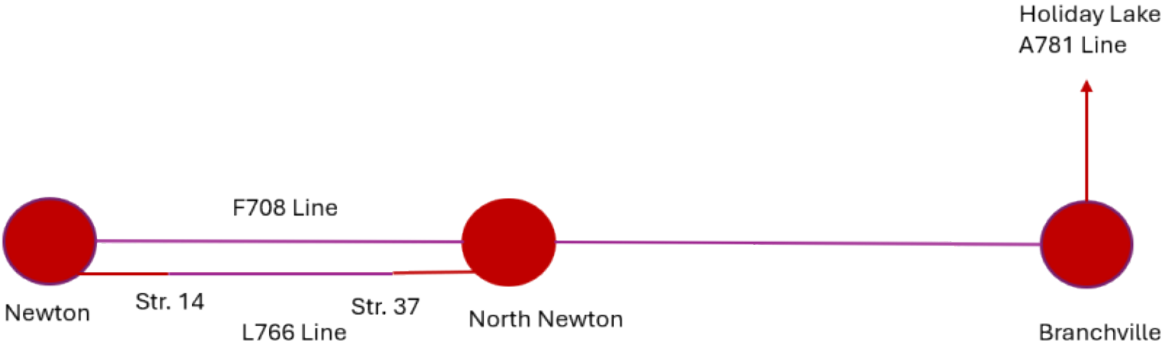
- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)

North Newton - North Newton F Tap 34.5 kV F708 Section Line:

- Before Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- After Proposed Solution: 70 / 85 / 79 / 100 MVA (SN/SE/WN/WE)

Newton - North Newton 34.5 kV L766 Section Line:

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



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 Branchville- Newton F708 Line 34.5 kV Rebuild, NJ

Need Number: JCPL-2026-022

Process Stage: Solution Meeting – SRRTEP-MA – 08/13/2026

Alternatives Considered:

Maintain existing condition with elevated risk of failure.

Estimated Project Cost: \$29.28 M

Projected In-Service: 09/07/2029

Project Status: Conceptual

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

Appendix

High level M-3 Meeting Schedule

Assumptions	Activity	Timing
	Posting of TO Assumptions Meeting information	20 days before Assumptions Meeting
	Stakeholder comments	10 days after Assumptions Meeting
Needs	Activity	Timing
	TOs and Stakeholders Post Needs Meeting slides	10 days before Needs Meeting
	Stakeholder comments	10 days after Needs Meeting
Solutions	Activity	Timing
	TOs and Stakeholders Post Solutions Meeting slides	10 days before Solutions Meeting
	Stakeholder comments	10 days after Solutions Meeting
Submission of Supplemental Projects & Local Plan	Activity	Timing
	Do No Harm (DNH) analysis for selected solution	Prior to posting selected solution
	Post selected solution(s)	Following completion of DNH analysis
	Stakeholder comments	10 days prior to Local Plan Submission for integration into RTEP
	Local Plan submitted to PJM for integration into RTEP	Following review and consideration of comments received after posting of selected solutions

Revision History

08/03/2026 – V1 – Original version posted to pjm.com