

Subregional RTEP Committee - Mid-Atlantic FirstEnergy Supplemental Projects

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 Numbers: JCPL-2023-013, -014, -016-021, -024, -026, -028-030, -040, -041

Process State: Need Meeting 10/19/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

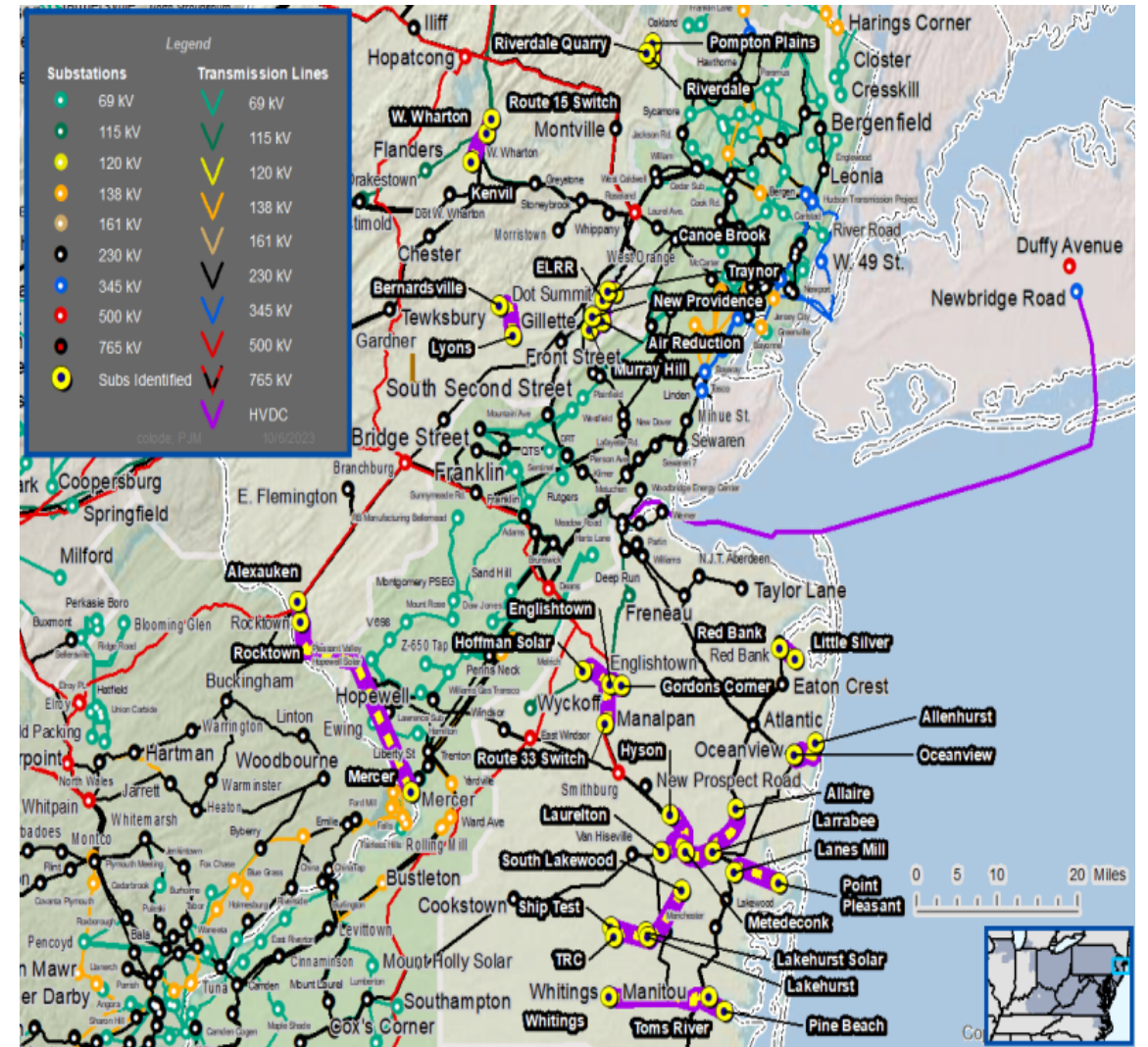
System Performance Projects Global Factors

- 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cases, the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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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JCPL Transmission Zone M-3 Process Automatic Restoration Projects

Need #	Transmission Line	Existing Line Rating (SN/SE/WN/WE)	Existing Conductor Rating (SN/SE/WN/WE)
JCPL-2023-013*	Manitou – Toms River Tap V126 34.5 kV	66/72/72/72	70/85/79/100
	Manitou - Pine Beach Tap X50 34.5 kV	55/63/63/63	55/67/63/79
JCPL-2023-014*	Bernardsville – ELRR Tap C757 34.5 kV	44/53/50/57	44/53/50/63
	Bernardsville - Lyons B730 34.5 kV	44/47/47/47	44/53/50/63
JCPL-2023-016*	Allenhurst - Oceanview H216 34.5 kV	44/48/48/48	55/67/63/79
JCPL-2023-017*	Air Reduction – Murray Hill D108 34.5 kV	44/53/50/61	44/53/50/63
JCPL-2023-018*	Rocktown Road - Mercer Tap N716 34.5 kV	39/48/45/48	39/48/45/56
	Alexauken Tap - Rocktown Road Y727 34.5 kV	38/38/38/38	40/48/45/57
JCPL-2023-019*	Air Reduction Tap – New Providence D108 34.5 kV	35/46/48/48	41/50/48/60
JCPL-2023-020*	West Wharton - Route 15 Switch Point T254 34.5 kV	55/67/63/72	55/67/63/79
	West Wharton - Kenvil Tap Z728 34.5 kV	55/67/63/77	55/67/63/79
JCPL-2023-021*	Lanes Mill Tap - Point Pleasant T146 34.5 kV	41/48/48/48	44/53/50/63
	Brielle - Point Pleasant B106 34.5 kV	39/48/40/48	39/48/40/50
JCPL-2023-024*	Englishtown - Hoffman Solar Tap H34 34.5 kV	70/72/72/72	70/85/79/100
	Englishtown - Route 33 Switch Point I87 34.5 kV	41/50/48/56	41/50/48/60
	Englishtown - Gordons Corner A209 34.5 kV	44/53/50/61	44/53/50/63

*Previously presented at 9/14/2023 SRRETP Mid-Atlantic Need Meeting



JCPL Transmission Zone M-3 Process Automatic Restoration Projects

Need #	Transmission Line	Existing Line Rating (SN/SE/WN/WE)	Existing Conductor Rating (SN/SE/WN/WE)
JCPL-2023-026*	Lakehurst - Ship Test E109 34.5 kV	25/25/25/25	44/53/50/63
	Lakehurst - Lakehurst Solar Tap N140 34.5 kV	18/18/19/19	18/18/20/20
	Lakehurst - South Lakewood W777 34.5 kV	41/50/48/57	41/50/48/60
	Lakehurst - TRC O Tap O41 34.5 kV	41/50/48/51	41/50/48/60
JCPL-2023-028*	Pompton Plains Tap – Riverdale M117 34.5 kV	41/48/48/48	41/50/48/60
	Riverdale Quarry Tap - Riverdale I9 34.5 kV	44/53/50/57	44/53/50/63
JCPL-2023-029*	Traynor - Canoe Brook T72 34.5 kV	41/48/48/48	41/50/48/60
	Traynor - ELRR Summit Q Tap Q17 34.5 kV	42/48/48/48	44/53/50/63
	Canoe Brook Tap - Traynor C81 34.5 kV	44/53/50/53	44/53/50/63
JCPL-2023-030*	Larrabee - Laurelton Tap Q43 34.5 kV	55/67/63/72	55/67/63/79
	Hyson - Larrabee K219 34.5 kV	66/76/76/76	70/85/79/100
	Larrabee - Metedeconk Tap E213 34.5 kV	41/50/48/53	41/50/48/60
	Larrabee - Allaire Tap B106 34.5 kV	41/50/48/52	41/50/48/60
JCPL-2023-040	Red Bank - Little Silver Z78 34.5 kV	55/67/63/72	55/67/63/79
JCPL-2023-041	Manitou - Whitings L138 34.5 kV	41/50/48/56	41/50/48/60

*Previously presented at 9/14/2023 SRRTEP Mid-Atlantic Need Meeting

Need Number: JCPL-2023-038

Process Stage: Need Meeting 10/19/2023

Project Driver:

Performance and Risk, Operational Flexibility and Efficiency

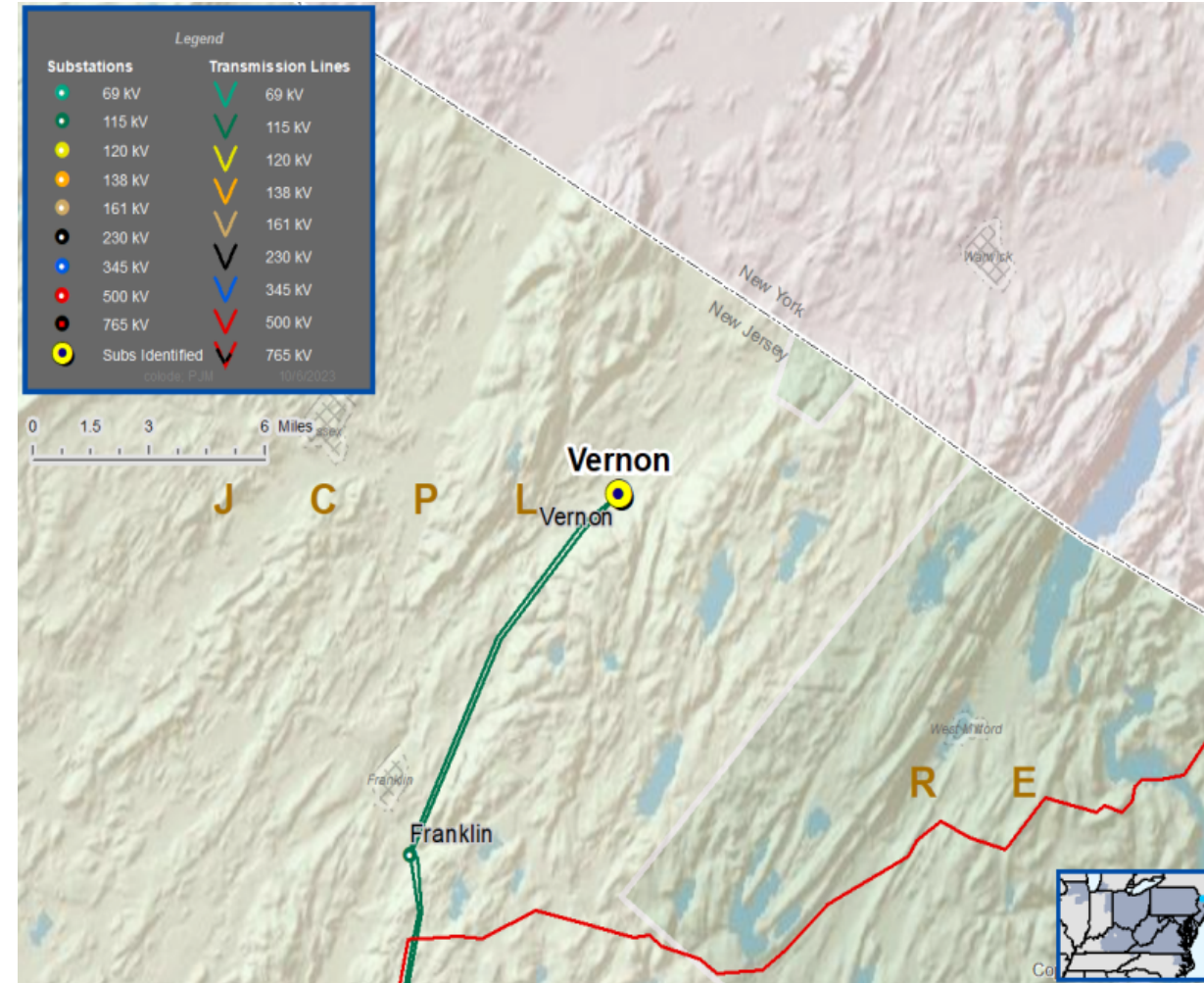
Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability and performance
- Reliability of Non-Bulk Electric System (Non-BES) Facilities
- Substation/line equipment limits

Problem Statement:

- The 115 – 34.5 kV No. 1 Transformer at Vernon Substation is approximately 50 years old and is approaching end of life. Most recent DGA results showed elevated methane and ethane gas levels compared with IEEE Standards.
- Existing Transformer Ratings:
 - 65 / 77 MVA (SN / SE)



Need Number: JCPL-2023-039

Process Stage: Need Meeting 10/19/2023

Project Driver:

Performance and Risk, Operational Flexibility and Efficiency

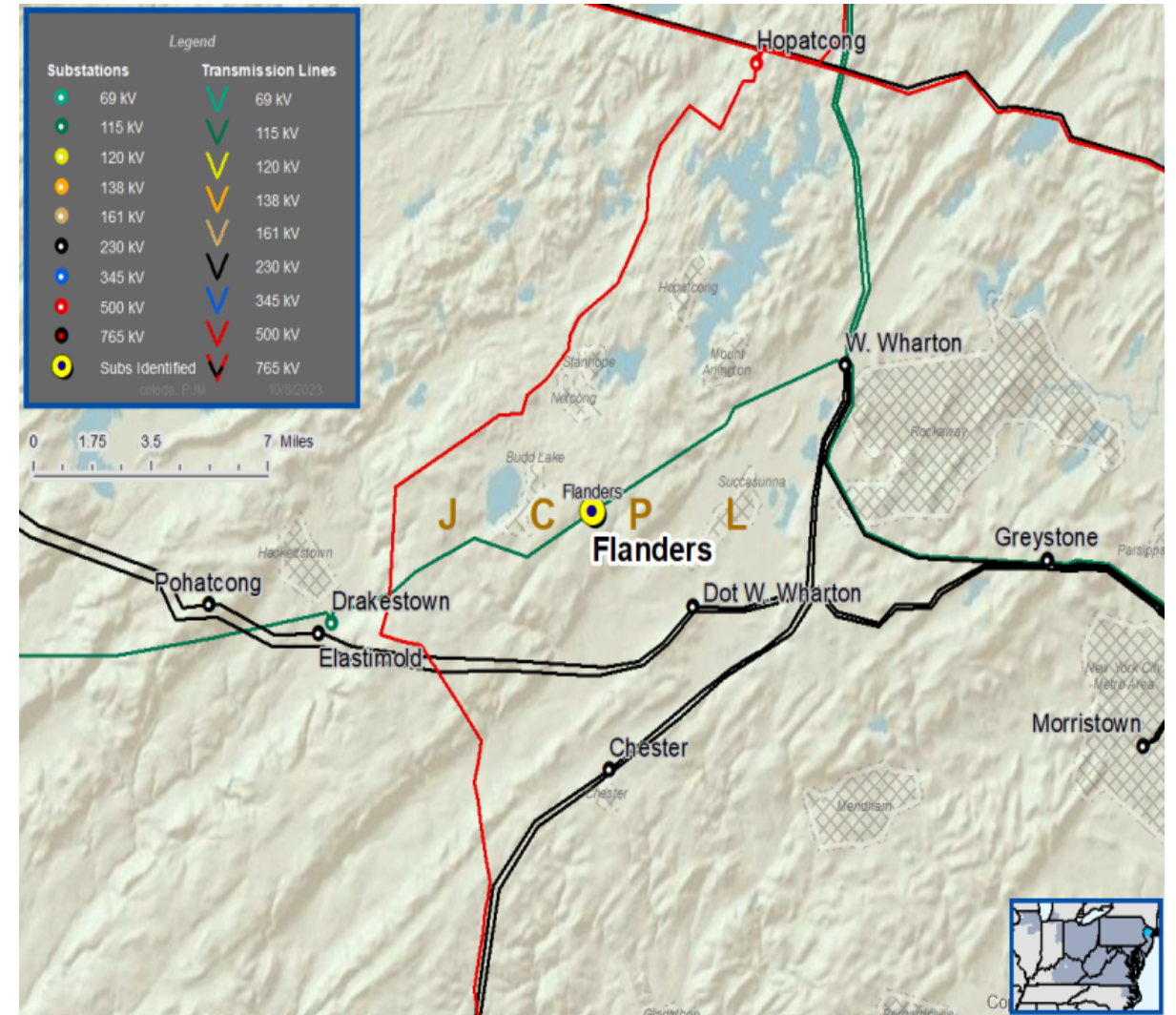
Specific Assumption Reference:

System Performance Projects Global Factors

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

Problem Statement:

- The 115 – 34.5 kV No. 1 Transformer at Flanders Substation is approximately 50 years old and is approaching end of life. Recent analysis shows combustible hot metal gasses have developed.
- Existing Transformer Ratings:
 - 76 / 80 MVA (SN / SE)



Need Number: JCPL-2023-042

Process Stage: Need Meeting 10/19/2023

Project Driver:

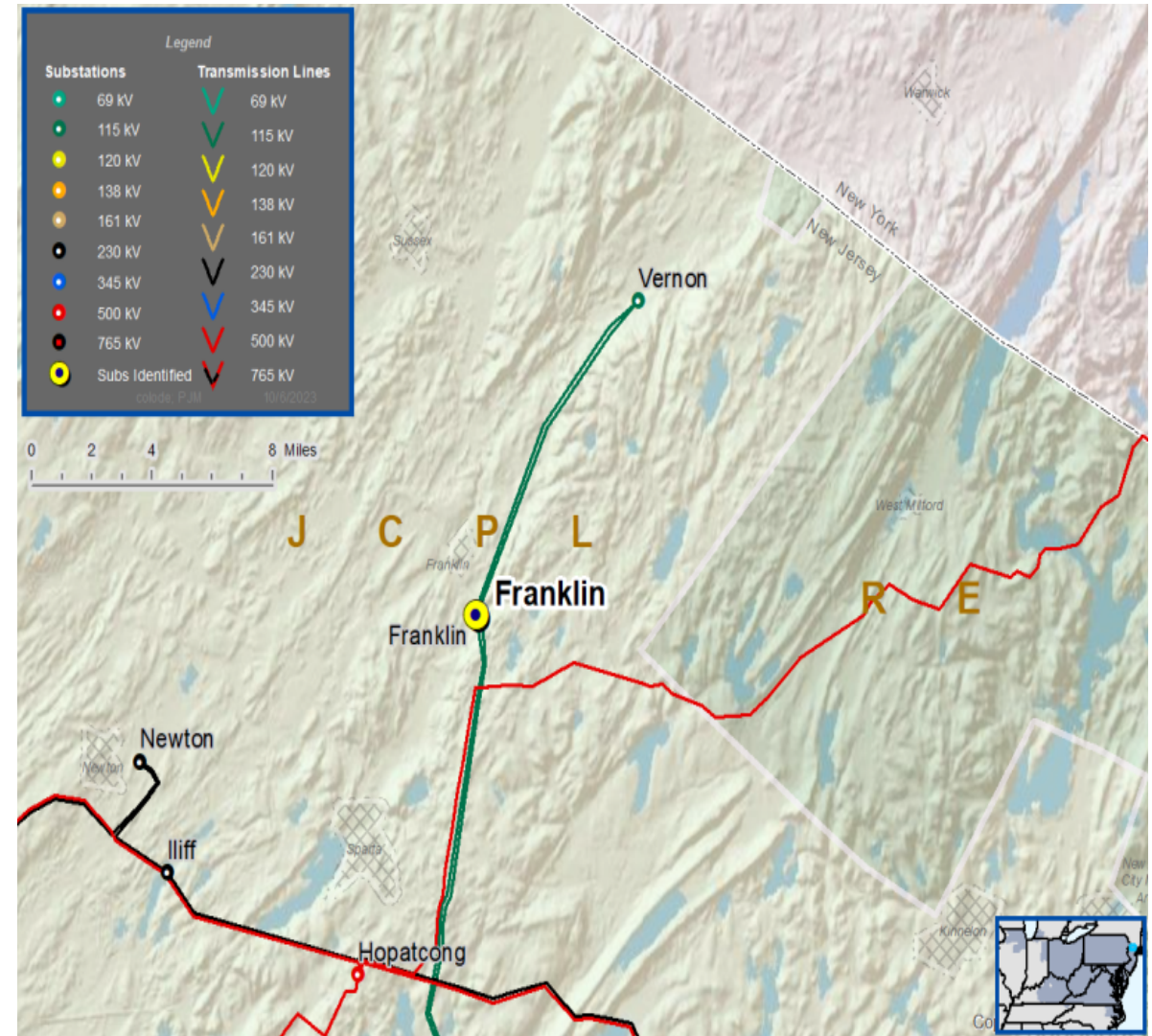
Performance and Risk, Operational Flexibility and Efficiency

Specific Assumption Reference:

- Load at risk in planning and operational scenarios
- Add/Expand Bus Configuration

Problem Statement:

- Franklin Substation is configured as a straight bus with two 115 kV sources. Each 115 kV source is a tap connection on the Vernon – West Wharton 115 kV lines
 - Franklin Substation serves approximately 67 MW of load and 4,464 customers.
 - Both existing Vernon – West Wharton 115 kV lines are 16.7 miles long. A fault anywhere on either line will cause an outage at Vernon and Franklin substations.



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-2023-003

Process Stage: Solution Meeting - 10/19/2023

Previously Presented: Need Meeting – 06/15/2023

Supplemental Project Driver(s):

Customer Service

Specific Assumption Reference(s):

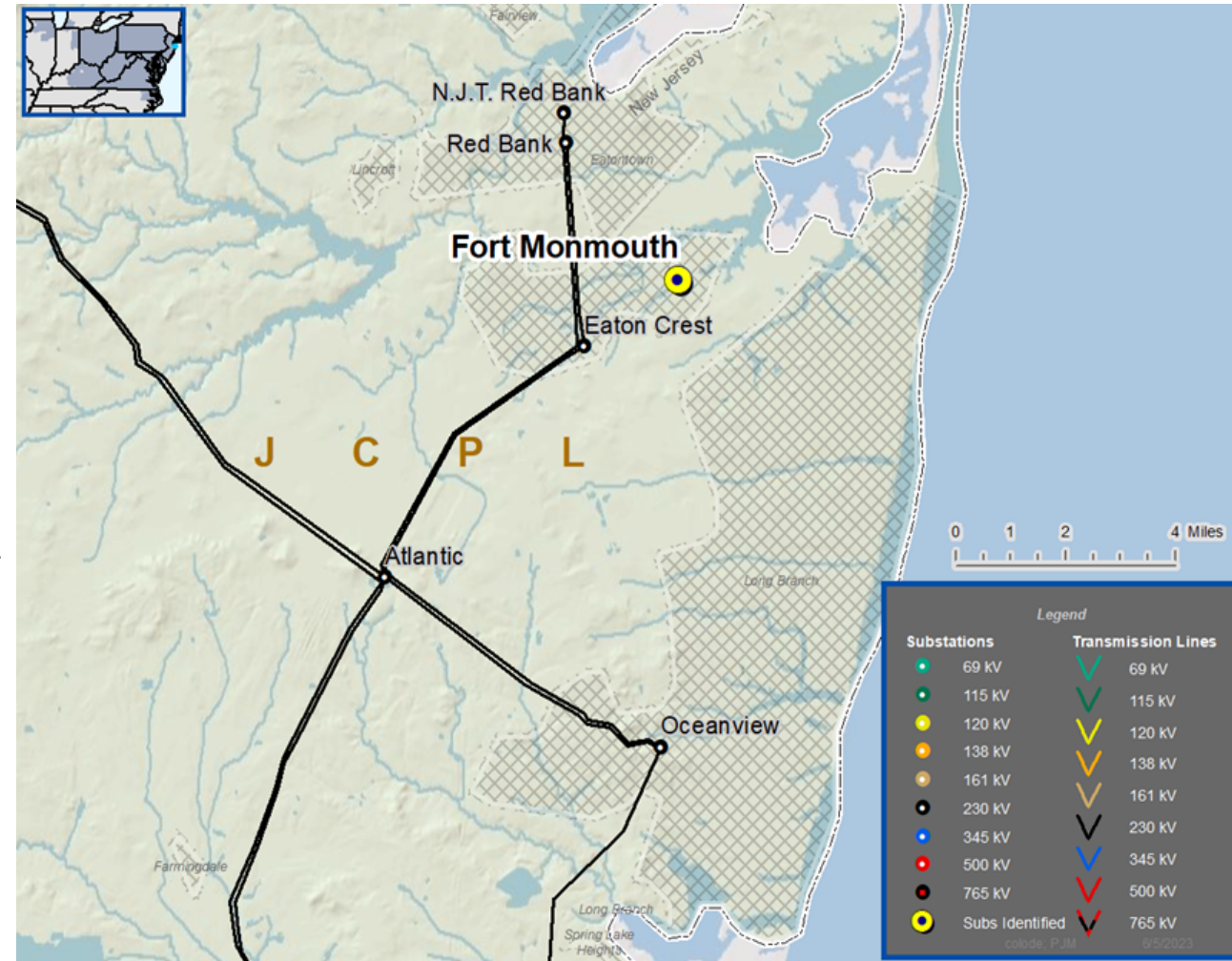
New Customer connection requests will be evaluated per FirstEnergy’s “Requirements for Transmission Connected Facilities” document and “Transmission Planning Criteria” document.

Problem Statement:

New Customer Connection – A customer requested 34.5 kV service for load of approximately 17 MVA of capacity; location is near the Fort Monmouth Substation.

Requested in-service date:

12/31/2023



Need Number: JCPL-2023-003

Process Stage: Solution Meeting - 10/19/2023

Proposed Solution:

34.5 kV Line Tap

- Install two main line and one tap line SCADA controlled switches
- Construct one span of 34.5 kV line between tap point and customer substation
- Review/modify relay settings on the Eaton Crest – Woodbine (R226) 34.5 kV line

Alternatives Considered:

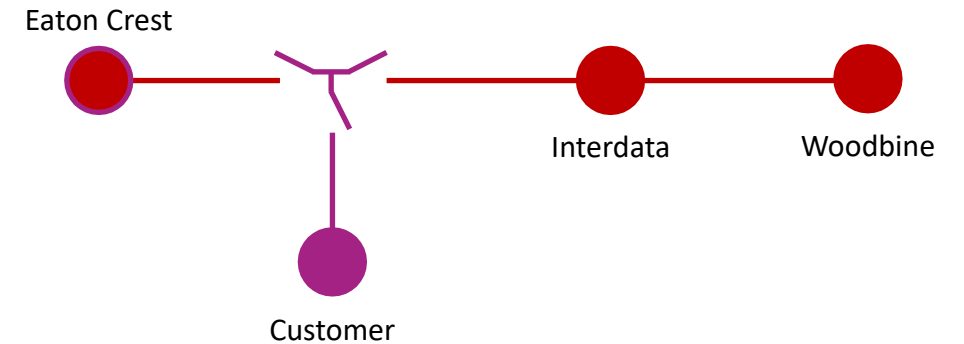
- Tapping the Atlantic – Long Branch (P42) 34.5 kV line. Not selected due to location of customer substation.

Estimated Project Cost: \$1.4M

Projected In-Service: 4/1/2024

Project Status: Construction

Model: 2023 RTEP model for 2028 Summer (50/50)



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

Need Numbers: JCPL-2023-012, -015, -022, -023, -025, -027, -031 thru -034

Process State: Solution Meeting 10/19/2023

Previously Presented: Need Meeting 09/14/2023

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

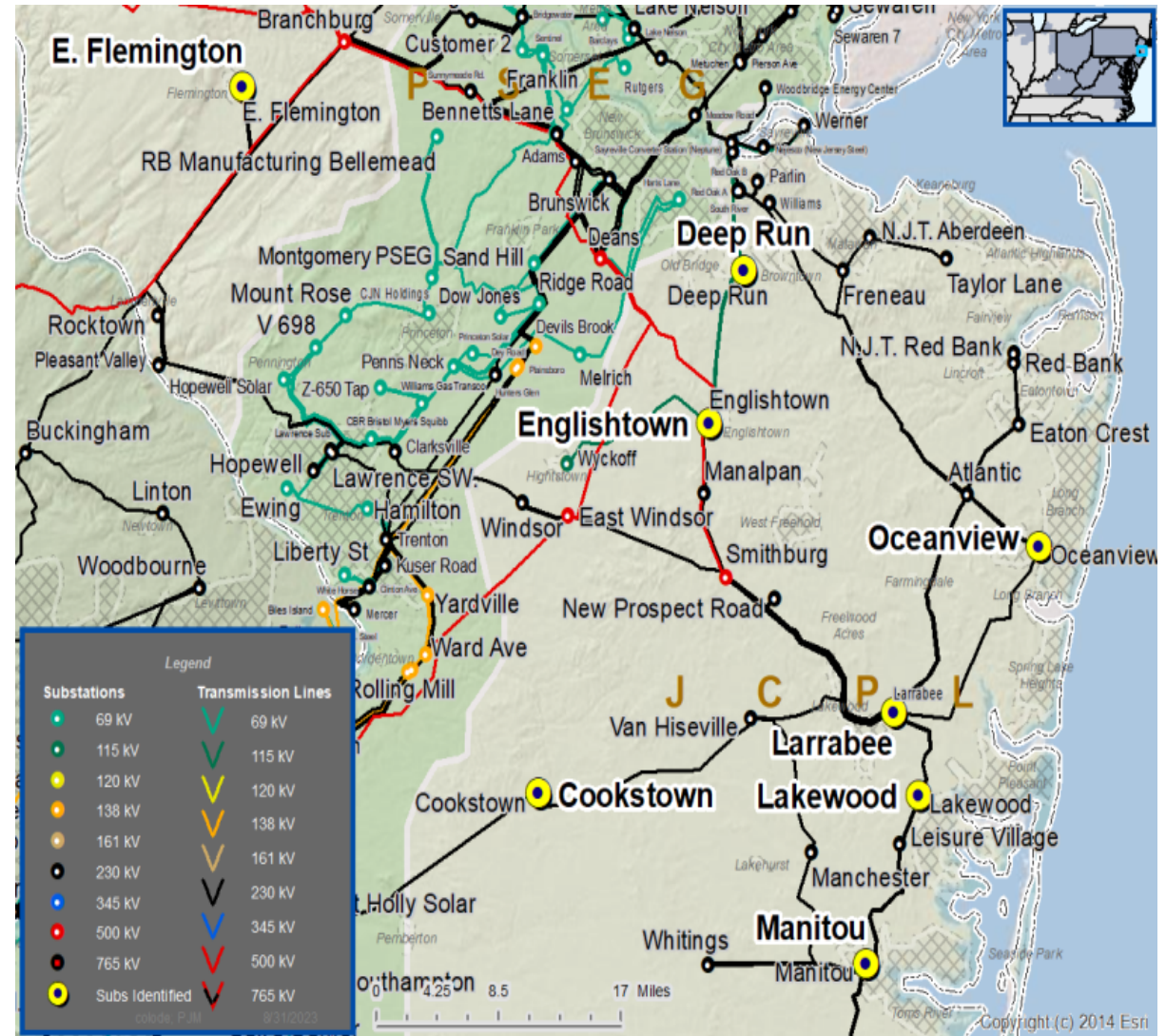
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Problem Statement:

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- 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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JCPL Transmission Zone M-3 Process Automatic Restoration Projects

Need #	Transmission Line	Existing Line Rating (SN/SE/WN/WE)	Existing Conductor Rating (SN/SE/WN/WE)
JCPL-2023-012	Long Branch - Monmouth Park F110 34.5 kV	44/48/48/48	44/53/50/63
JCPL-2023-015	Taylor Lane - Crawfords Corner Tap K37 34.5 kV	44/48/48/48	44/53/50/63
JCPL-2023-022	Asbury Park Tap - Bradley Beach U47 34.5 kV	55/66/63/76	55/67/63/79
JCPL-2023-023	East Flemington - Visqueen Tap H736 34.5 kV	40/48/40/48	40/50/40/50
JCPL-2023-025	Howell Farmingdale - Howell Solar Tap Q225 34.5 kV	55/67/63/72	55/67/63/79
	Farmingdale - Larrabee W49 34.5 kV	44/57/63/65	55/67/63/79
JCPL-2023-027	Cookstown - McGuire T98 34.5 kV	35/46/48/48	41/50/48/60



JCPL Transmission Zone M-3 Process Automatic Restoration Projects

Need #	Transmission Line	Existing Line Rating (SN/SE/WN/WE)	Existing Conductor Rating (SN/SE/WN/WE)
JCPL-2023-031	Smithburg - Central States Tap X752 34.5 kV	67/85/79/96	70/85/79/100
	Frhld Jrsyvl T Jerseyville X752 34.5 kV	41/48	41/50
JCPL-2023-032	Glen Gardner High Bridge SW R720 34.5kV	42/50	44/53
	High Bridge Switch Point - Lebanon R720 34.5 kV	39/47/45/47	39/48/45/56
	Lebanon - North Branch Tap J764 34.5 kV	42/52/50/59	44/53/50/63
	Azoplate J-T Readington J764 34.5 kV	42/50	44/53
JCPL-2023-033	Halecrest U Tap - Washington U723 34.5 kV	39/47/45/47	39/48/45/56
	Domin Lane Solar Tap - Washington Q719 34.5 kV	44/47/47/47	44/53/50/63
	Newsburg Q Tap Newsburgh Q719 34.5kV	46/58	55/67
	Cooke Color Tap Cooke Color Q719 34.5kV	26/33	44/53
	Pohantcong Mountain Newburgh Q 719 34.5 kV	42/50	44/53
JCPL-2023-034	Whitesville - Asbury Park Tap U47 34.5 kV	55/67/63/72	55/67/63/79
	Oceanview - Whitesville F132 34.5 kV	35/46/48/48	55/66/62/78
	Oceanview Whitesville Y103 34.5 kV	42/50	45/54



JCPL Transmission Zones M-3 Process Automatic Restoration Projects

Proposed Solution:

Need #	Transmission Line	New Line Rating (SN/SE/WN/WE)	Scope of Work	Estimated Cost (\$ M)	Target ISD
JCPL-2023-012	Long Branch - Monmouth Park F110 34.5 kV	44/53/50/63	<ul style="list-style-type: none"> At Long Branch Substation, replace relaying 	\$ 0.64 M	12/5/2024
JCPL-2023-015	Taylor Lane - Crawfords Corner Tap K37 34.5 kV	44/53/50/63	<ul style="list-style-type: none"> At Taylor Lane Substation, replace relaying 	\$ 0.64 M	11/16/2024
JCPL-2023-022	Asbury Park Tap - Bradley Beach U47 34.5 kV	55/67/63/79	<ul style="list-style-type: none"> At Bradley Beach Substation, replace relaying 	\$ 0.64 M	12/31/2025
JCPL-2023-023	East Flemington - Visqueen Tap H736 34.5 kV	40/50/40/50	<ul style="list-style-type: none"> At East Flemington Substation, replace relaying 	\$ 0.64 M	12/31/2025
JCPL-2023-025	Farmingdale - Howell Solar Tap Q225 34.5 kV	55/67/63/79	<ul style="list-style-type: none"> At Farmingdale Substation, replace relaying 	\$ 1.28 M	12/31/2025
	Farmingdale - Larrabee W49 34.5 kV	44/57/63/71			
JCPL-2023-027	Cookstown - McGuire T98 34.5 kV	35/46/48/56	<ul style="list-style-type: none"> At McGuire Substation, replace relaying 	\$ 0.64 M	12/31/2024
JCPL-2023-031	Smithburg - Central States Tap X752 34.5 kV	70/85/79/100	<ul style="list-style-type: none"> At Smithburg Substation, replace relaying 	\$ 0.64 M	12/31/2027



JCPL Transmission Zones M-3 Process Automatic Restoration Projects

Proposed Solution:

Need #	Transmission Line	New Line Rating (SN/SE/WN/WE)	Scope of Work	Estimated Cost (\$ M)	Target ISD
JCPL-2023-032	High Bridge Switch Point - Lebanon R720 34.5 kV	39/48/45/56	• At Lebanon Substation, replace relaying	\$ 1.28 M	5/31/2028
	Lebanon - North Branch Tap J764 34.5 kV	44/53/50/63			
JCPL-2023-033	Halecrest U Tap - Washington U723 34.5 kV	39/48/45/56	• At Washington Substation, replace relaying	\$ 1.28 M	6/1/2028
	Domin Lane Solar Tap - Washington Q719 34.5 kV	44/53/50/63			
JCPL-2023-034	Whitesville - Asbury Park Tap U47 34.5 kV	55/67/63/79	• At Whitesville Substation, replace relaying	\$ 1.92 M	6/1/2028
	Oceanview - Whitesville F132 34.5 kV	35/46/50/57			

Alternatives Considered: Maintain equipment in existing condition

Project Status: Engineering

Model: 2023 RTEP model for 2028 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

10/9/2023 – V1 – Original version posted to pjm.com

10/14/2023 – V2 – Removed project JCPL-2019-026 from solutions