

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

July 18, 2024

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-2024-041

Process State: Need Meeting – 07/18/2024

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cases, the protection equipment cannot be repaired due to a lack of replacement parts and available expertise in the outdated technology.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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Geographic Map:
Include all facilities mentioned on slide, small locator map
and a legend.



JCPL Transmission Zones M-3 Process Automatic Restoration Projects

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

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-2024-030

Process Stage: Solution Meeting – 07/18/2024

Previously Presented: Need Meeting – 05/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

- System reliability/performance
- Substation/line equipment limits

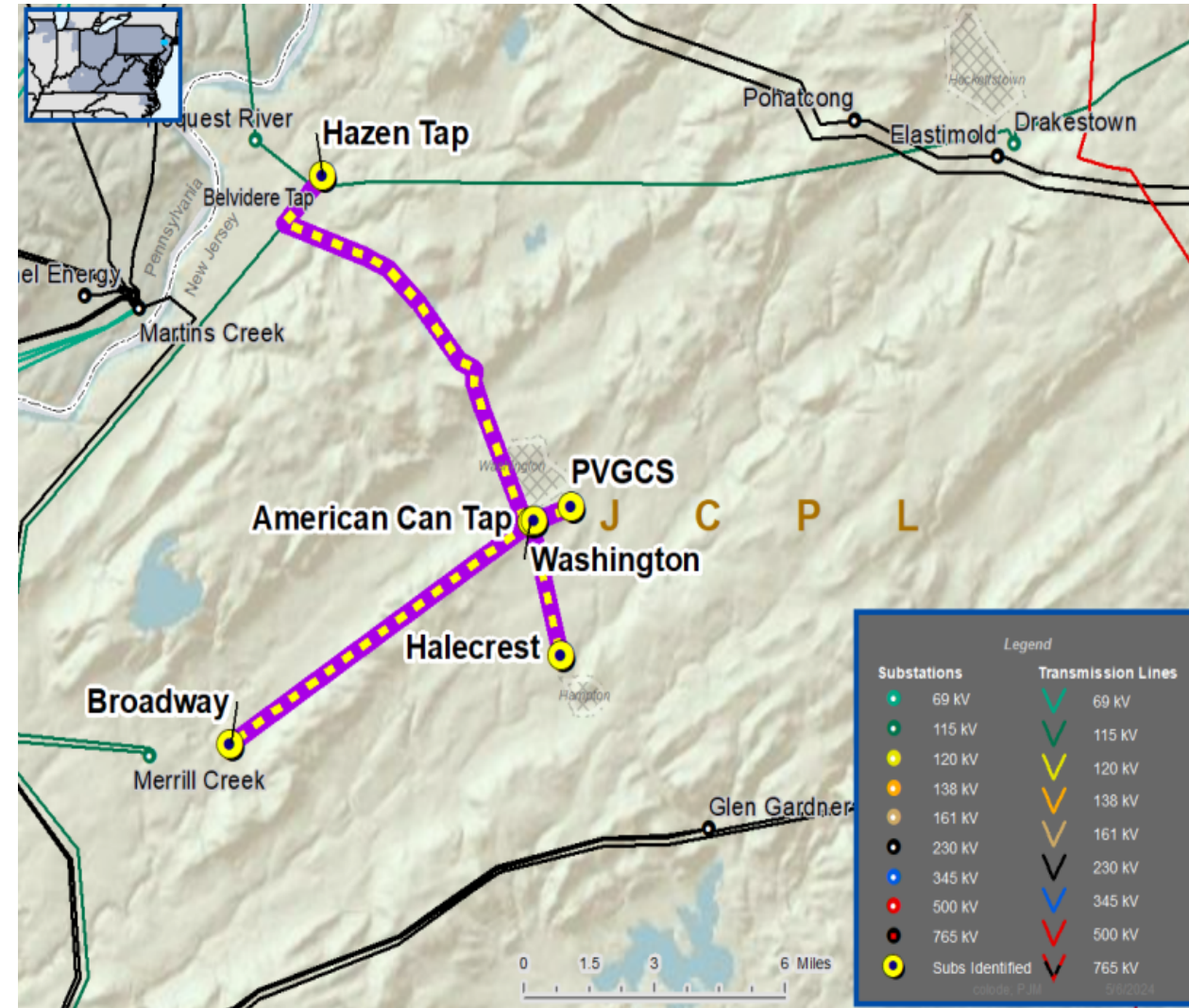
Substation Condition Rebuild/Replacement

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

Problem Statement:

- The existing Washington 34.5 kV breakers C705, P718, Q719, W23A, W23B, U723A and U723B are between 57-73 years old and are approaching end of life.
- Replacement components are difficult to source in quantity leading to non-standard repairs.
- The circuit breakers require frequent maintenance to preserve the integrity of the oil and replacement of parts on pneumatic systems.
- The line protection relaying is obsolete.
- The lines are currently limited by terminal equipment.

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JCPL Transmission Zone M-3 Process Washington 34.5 kV Circuit Breakers

Need #	Transmission Line / Substation Locations	Existing Line Rating (MVA SN / SE / WN / WE)	Existing Conductor Rating (MVA SN / SE / WN / WE)
JCPL-2024-030	Washington – Broadway 34.5 kV W23 Line	39 / 48 / 45 / 56	39 / 48 / 45 / 56
	Washington – Halecrest 34.5 kV U723 Line	39 / 47 / 45 / 47	39 / 48 / 45 / 56
	Washington – American Can Tap 34.5 kV P718 Line	37 / 38 / 42 / 42	37 / 38 / 42 / 42
	Washington – PVGCS Tap 34.5 kV Q719 Line	44 / 47 / 47 / 47	44 / 53 / 50 / 63
	Washington – Hazen Tap 34.5 kV C705 Line	39 / 48 / 45 / 56	39 / 48 / 45 / 56

Need Number: JCPL-2024-030

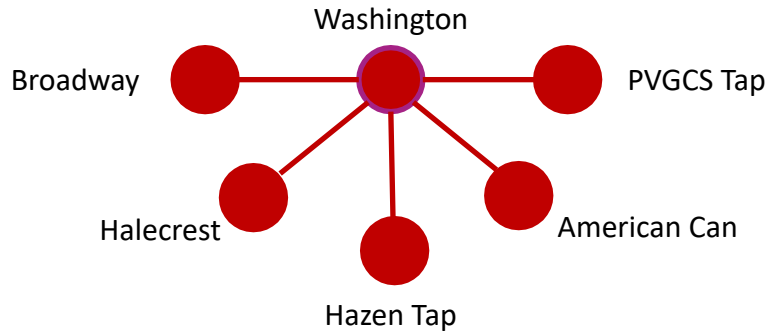
Process Stage: Solution Meeting – 07/18/2024

Proposed Solution:

- Replace Washington 34.5 kV C705, P718, Q719, W23A, W23B, U723A and U723B circuit breakers
- Replace bus and line disconnect switches
 - Install line disconnect switches for C705 and Q719 breakers

Transmission Line Ratings:

- Washington – Broadway 34.5 kV W23 Line
 - Before Proposed Solution: 39 / 48 / 45 / 56 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 39 / 48 / 45 / 56 MVA (SN/SE/WN/WE)
- Washington – Halecrest 34.5 kV U723 Line
 - Before Proposed Solution: 39 / 47 / 45 / 47 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 39 / 48 / 45 / 56 MVA (SN/SE/WN/WE)
- Washington – American Can Tap 34.5 kV P718 Line
 - Before Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 37 / 38 / 42 / 42 MVA (SN/SE/WN/WE)
- Washington – PVGCS Tap 34.5 kV Q719 Line
 - Before Proposed Solution: 44 / 47 / 47 / 47 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- Washington – Hazen Tap 34.5 kV C705 Line
 - Before Proposed Solution: 39 / 48 / 45 / 56 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 39 / 48 / 45 / 56 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	

Need Number: JCPL-2024-030

Process Stage: Solution Meeting – 07/18/2024

Alternatives Considered:

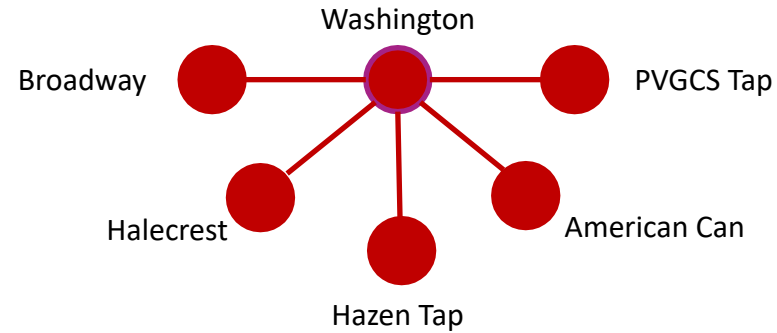
- Maintain circuit breakers in existing condition with risk of breaker failure.

Estimated Project Cost: \$5.4M

Projected In-Service: 08/27/2027

Project Status: Conceptual

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



Legend	
500 kV	
345 kV	
230 kV	
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115 kV	
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34.5 kV	
23 kV	
New	



Questions?

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

7/08/2024 – V1 – Original version posted to pjm.com