

Transmission Expansion Advisory Committee

FirstEnergy Supplemental Projects

JCPL Transmission Zone

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-2026-040

Process Stage: Need Meeting – TEAC – 08/04/2026

Project Driver:

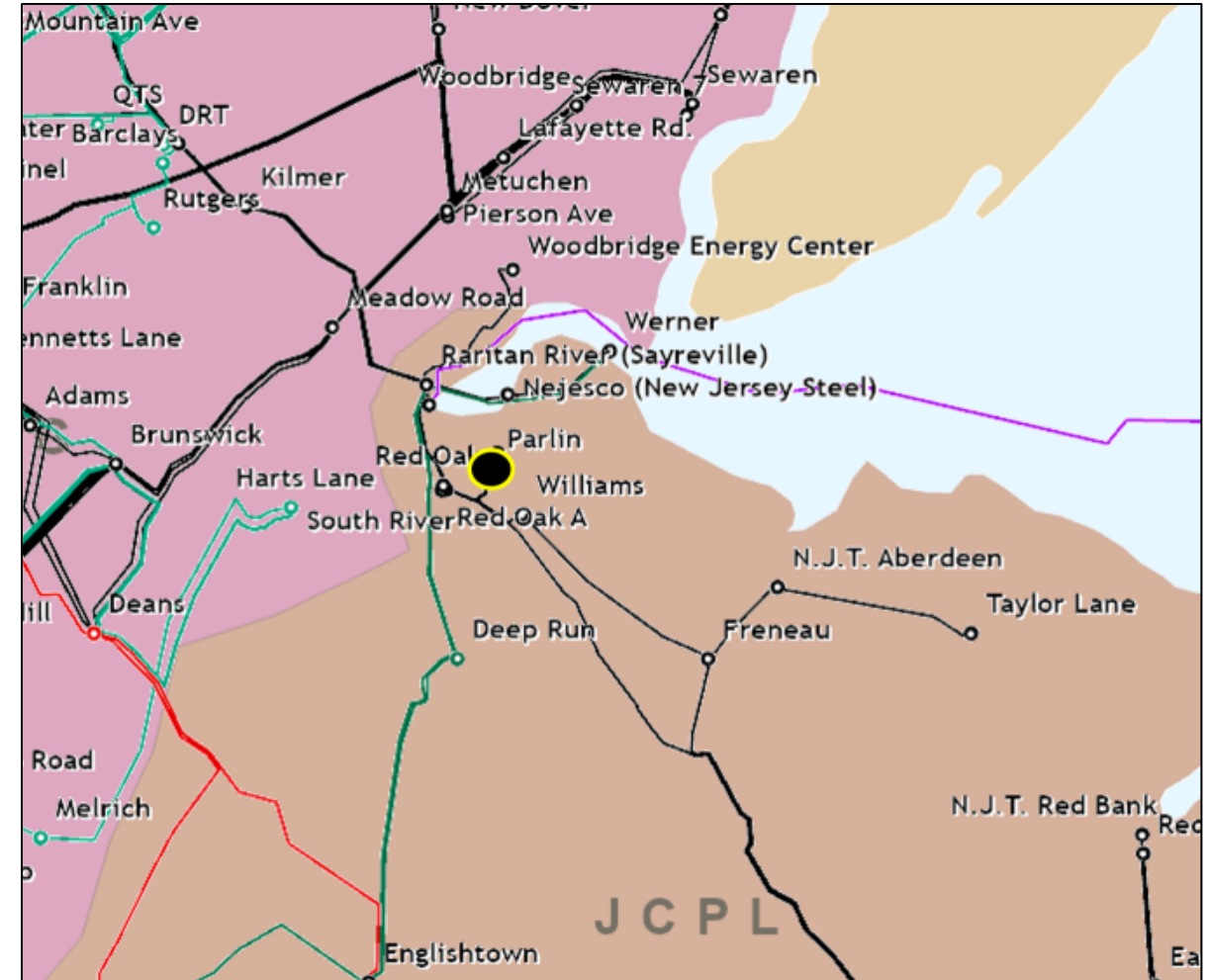
Operational Flexibility and Efficiency

Specific Assumption References:

- System Performance Projects Global Factors
 - System reliability and performance
 - Load and Generation at risk in planning and operational scenarios
- Add/Expand Bus Configuration
 - Eliminate simultaneous outages to multiple networked elements

Problem Statement:

At the Parlin 230 kV Switching Station, there is no operational means to disconnect between FirstEnergy's 230 kV B bus and the Customer's 230 kV service. Isolation is accomplished by taking a 230 kV bus outage and removing sections of the 230 kV bus. In addition, the #1 generating facility and the Customer service transformer are both served from a common point on the 230 kV bus with no breaker protection between them. A fault on either the GSU transformer or the service transformer would cause an outage to the adjacent Customer facility.



Need Number: JCPL-2026-045

Process Stage: Need Meeting – TEAC – 08/04/2026

Project Driver:

Equipment Condition/Performance/Risk

Specific Assumption References:

- 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:

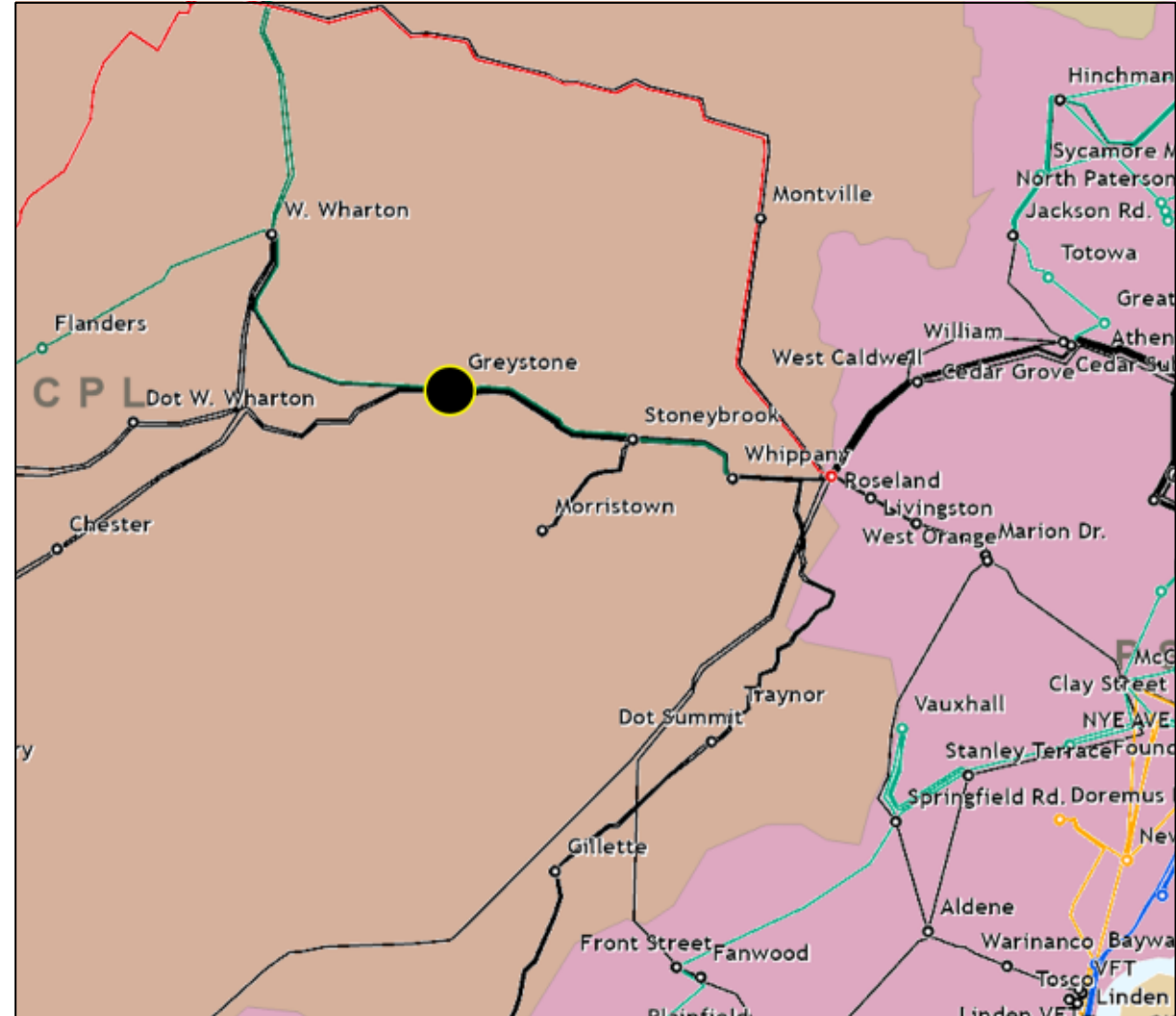
The existing Greystone 34.5 kV breakers B756, B37, B39, BK1B, L38, M741A, M741B, BK2A, and G70 are 29 years old and are approaching end of life.

The existing Greystone 230 kV circuit switchers: CS12 and CS21 are 30 years old and are approaching end of life.

Replacement components are difficult to source.

The lines are currently limited by terminal equipment.

Cont'd on next slide...



Need Number: JCPL-2026-045

Process Stage: Need Meeting – TEAC – 08/04/2026

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

Existing Line Ratings:

- Greystone - Foll Hill G709 34.5 kV Line Section: 45 / 57 / 45 / 58 MVA (SN/SE/WN/WE)
- Greystone - Chilcott L38 34.5 kV Line Section: 52 / 62 / 63 / 71 MVA (SN/SE/WN/WE)
- Greystone - Denville B756 34.5 kV Line Section: 42 / 50 / 50 / 57 MVA (SN/SE/WN/WE)
- Greystone - Denville A755 34.5 kV Line Section: 44 / 53 / 50 / 54 MVA (SN/SE/WN/WE)
- Greystone - West Denville Y753 34.5 kV Line Section: 41 / 49 / 51 / 56 MVA (SN/SE/WN/WE)

Existing Conductor Ratings:

- Greystone - Foll Hill G709 34.5 kV Line: 45 / 58 / 58 / 58 MVA (SN/SE/WN/WE)
- Greystone - Chilcott L38 34.5 kV Line: 55 / 67 / 63 / 79 MVA (SN/SE/WN/WE)
- Greystone - Denville B756 34.5 kV Line: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- Greystone - Denville A755 34.5 kV Line: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)
- Greystone - West Denville Y753 34.5 kV Line: 44 / 53 / 50 / 63 MVA (SN/SE/WN/WE)

Changes to the Existing Supplemental Projects

JCPL Transmission Zone Scope Change s3274.1 - East Flemington 230-34.5 kV No. 3 Transformer, NJ

s3274.1 is posted in the 2024 local plan. Originally presented as need on 10/31/2023 and solution 1/9/2024 TEAC meetings.

Project Driver:

Equipment Material Condition, 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
- Add/Replace Transformers
- Past System Reliability/Performance

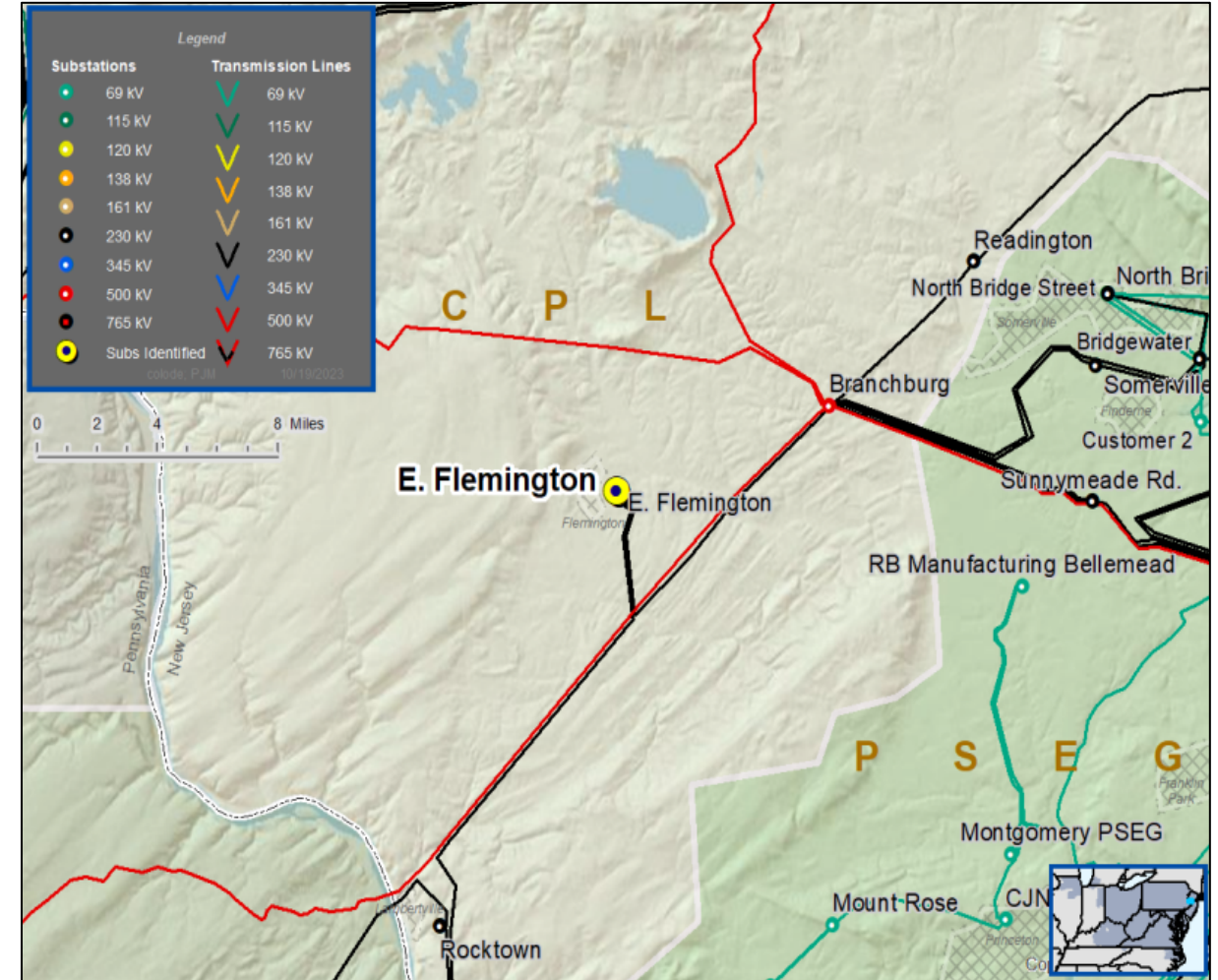
Problem Statement:

The 230-34.5 kV No. 3 Transformer at East Flemington is approximately 45 years old and is reaching end of life.

Recent dissolved gas analysis (DGA) showed elevated Ethane gas levels compared to IEEE standards.

Existing Transformer Ratings:

- 77 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)



JCPL Transmission Zone Scope Change s3274.1 - East Flemington 230-34.5 kV No. 3 Transformer, NJ

s3274.1 is posted in the 2024 local plan. Originally presented as need on 10/31/2023 and solution 1/9/2024 TEAC meetings.

Reason: A 230-34.5 kV 90 MVA unit transformer will be installed instead of a 125 MVA unit.

Need number: JCPL-2023-051

Original Solution:

Replace the 230-34.5 kV No. 3 Transformer at East Flemington Substation with a 125 MVA unit.

Install a 34.5 kV breaker with SCADA control

Upgrade transformer relaying.

Original Ratings:

- East Flemington 230-34.5 kV No. 3 Transformer:
 - Before Proposed Solution: 77 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)
 - After Proposed Solution: 162 / 169 / 209 / 214 MVA (SN/SE/WN/WLTE)

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Revised Solution:

Replace the 230-34.5 kV No. 3 Transformer at East Flemington Substation with a 90 MVA unit.

Install a 34.5 kV breaker with SCADA control

Upgrade transformer relaying.

Ratings:

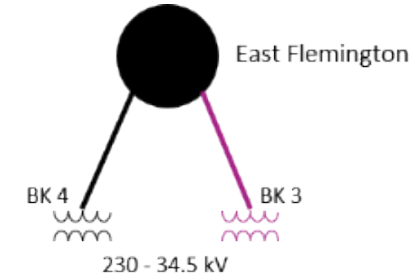
- East Flemington 230-34.5 kV No. 3 Transformer:
 - Before Proposed Solution: 77 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)
 - After Proposed Solution: 90 / 95 / 108 / 117 MVA (SN/SE/WN/WLTE)

Estimated Project Cost: \$13.95M

Projected In-Service: 09/29/2031

Project Status: Engineering

Model: 2025 RTEP model for 2020 Summer (50/50)



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 s3275.1 - East Flemington 230-34.5 kV No. 4 Transformer, NJ

s3275.1 is posted in the 2024 local plan. Originally presented as need on 10/31/2023 and solution 1/9/2024 TEAC meetings.

Project Driver:

Equipment Material Condition, 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
- Add/Replace Transformers
- Past System Reliability/Performance

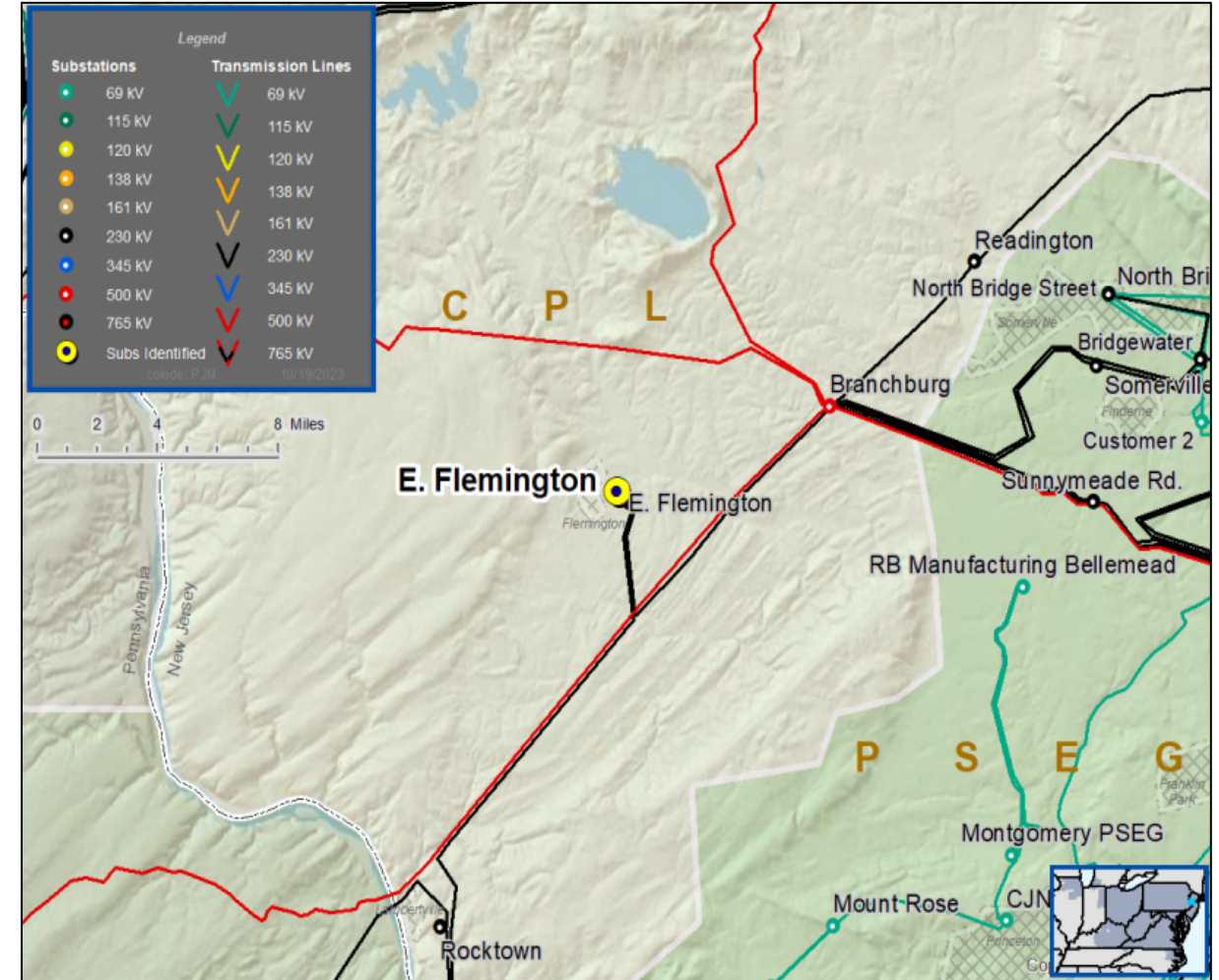
Problem Statement:

The 230-34.5 kV No. 4 Transformer at East Flemington is approximately 45 years old and is reaching end of life.

In recent months, the transformer exhibited oil leaks that needed repaired. Incidental oil leaks at end-of-life period increases risk of failure.

Existing Transformer Ratings:

- 76 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)



JCPL Transmission Zone Scope Change s3275.1 - East Flemington 230-34.5 kV No. 4 Transformer, NJ

s3275.1 is posted in the 2024 local plan. Originally presented as need on 10/31/2023 and solution 1/9/2024 TEAC meetings.

Reason: A 230-34.5 kV 90 MVA unit transformer will be installed instead of a 125 MVA unit.

Need number: JCPL-2023-052

Original Solution:

Replace the 230-34.5 kV No. 4 Transformer at East Flemington Substation with a 125 MVA unit.

Install a 34.5 kV breaker with SCADA control

Upgrade transformer relaying.

Original Ratings:

- East Flemington 230-34.5 kV No. 4 Transformer:
 - Before Proposed Solution: 76 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)
 - After Proposed Solution: 162 / 169 / 209 / 214 MVA (SN/SE/WN/WLTE)

Alternatives Considered:

Maintain transformer in existing condition with elevated risk of failure.

Revised Solution:

Replace the 230-34.5 kV No. 4 Transformer at East Flemington Substation with a 90 MVA unit.

Install a 34.5 kV breaker with SCADA control

Upgrade transformer relaying.

Ratings:

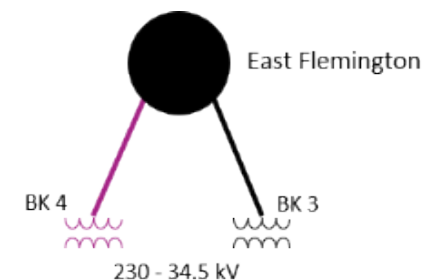
- East Flemington 230-34.5 kV No. 4 Transformer:
 - Before Proposed Solution: 76 / 81 / 97 / 99 MVA (SN/SLTE/WN/WLTE)
 - After Proposed Solution: 90 / 95 / 108 / 117 MVA (SN/SE/WN/WLTE)

Estimated Project Cost: \$13.95M

Projected In-Service: 12/29/2028

Project Status: Engineering

Model: 2025 RTEP model for 2020 Summer (50/50)



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

07/24/2026 – V1 – Original version posted to pjm.com