

Transmission Expansion Advisory Committee FirstEnergy Supplemental Projects

January 7th, 2025

Change to the Existing Projects

s3261.1: Originally presented in 12/5/2023 and 02/06/2024 TEAC meetings.
Changes are marked in **red**

Project Driver:

System Performance and Operational Flexibility

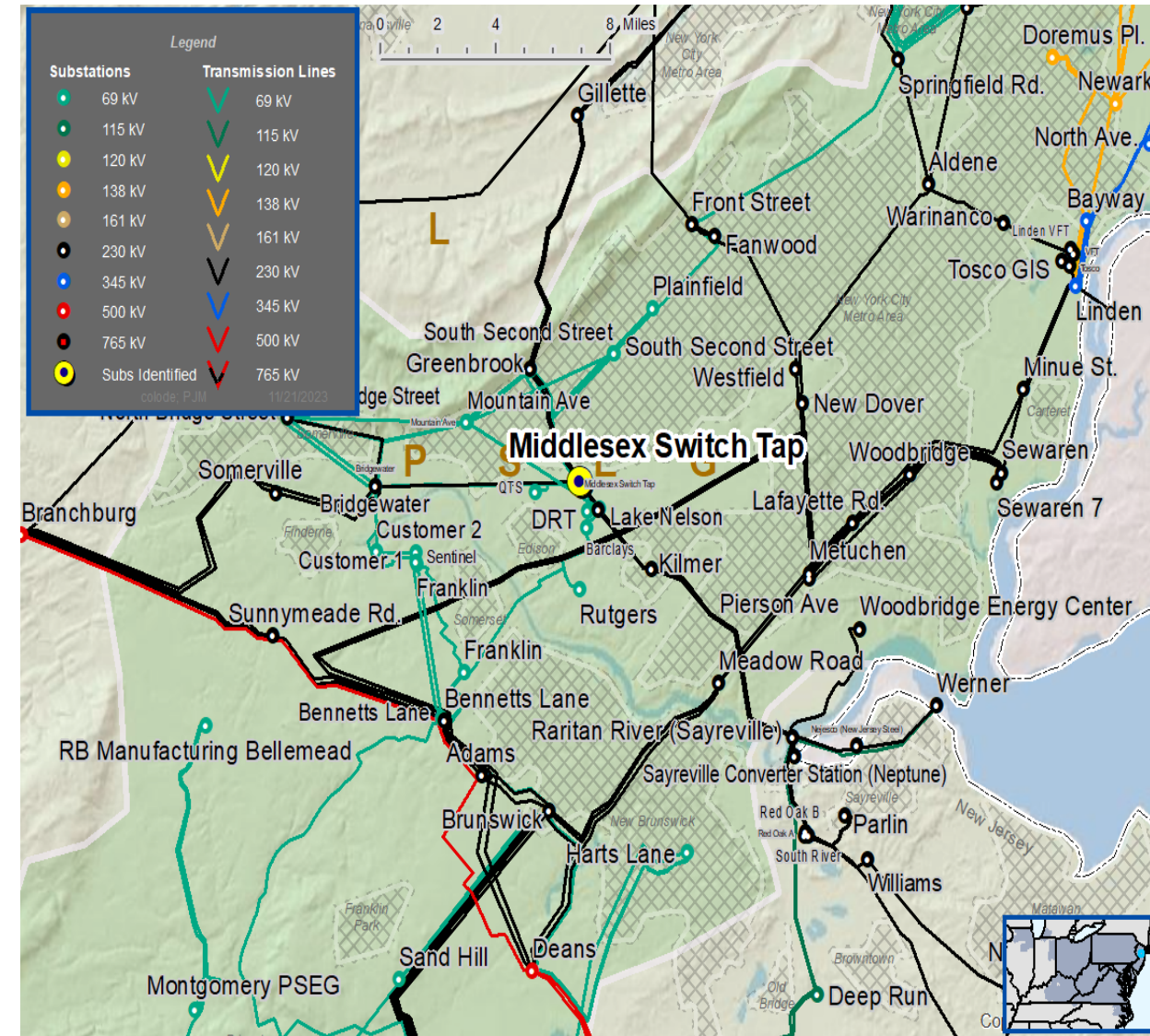
Specific Assumption Reference:

- System reliability and performance
- Add/Expand Bus Configuration
- Loss of substation bus adversely impacts transmission system performance
- Eliminate simultaneous outages to multiple networked elements
- Capability to perform substation maintenance

Problem Statement:

- The current configuration of the I1023 Line is a three-terminal line with terminals at Lake Nelson (PSEG), Bridgewater (PSEG), and Gillette substations.
- The Middlesex Switching Station serves as the connection point to the rest of the I1023 Line for the Bridgewater section. The I1023 Line is one of only a few lines that interconnect the Jersey North and Jersey Central regions.
- Over the past five years, the Gillette-Lake Nelson-Bridgewater I1023 230 kV Line experienced two unscheduled outages

JCPL Transmission Zone M-3 Process Middlesex 230 kV Switching Station



JCPL Transmission Zone M-3 Process Middlesex 230 kV Switching Station

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Proposed Solution:

FirstEnergy Scope (s3261.1)

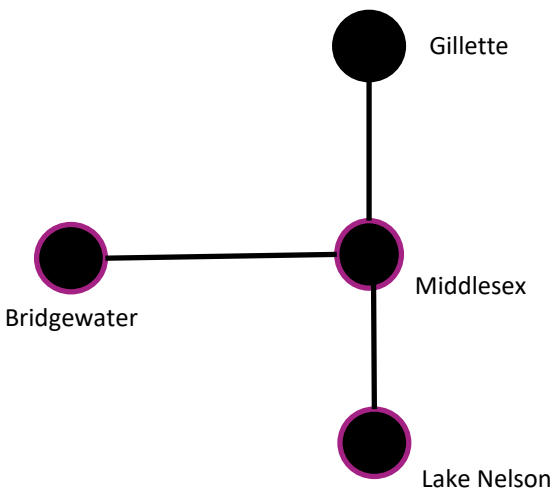
- Convert the existing Middlesex 230 kV Switching Station to a three (3) breaker ring bus.
- Upgrade limiting switches and TL drops at the Middlesex 230 kV Switching Station.











Estimated Project Cost: \$8.85M

PSE&G Scope (supplemental number to be assigned)

- At Bridgewater Switch and Lake Nelson Sub:
 - Replace primary and backup I-1023 line relays with new relays.
 - Remove all existing Power-Line Communication (PLC) equipment and line traps in switchyard and the PLC equipment in the control house.
- Between Bridgewater Switch and Middlesex (FE):
 - Install new 96-strand OPGW (approximately 6.18 miles) from Bridgewater to Middlesex (FE).
- Between Lake Nelson Sub and Middlesex (FE):
 - Install new ADSS from Middlesex (FE) to intercept and splice into the existing 230kV GBLN circuit ADSS fiber cable.

Estimated Project Cost: \$9.04M



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 Middlesex 230 kV Switching Station

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Proposed Solution (continued):

Transmission Line Ratings:

- Bridgewater(PSEG) - Middlesex 230 kV Line:
 - Before Proposed Solution: 709/ 819 / 797 / 819 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 732 / 887 / 823 / 980 MVA (SN/SE/WN/WE)
- Lake Nelson(PSEG) – Middlesex 230 kV Line:
 - Before Proposed Solution: 709/ 819 / 797 / 819 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 709 / 869 / 805 / 1031 MVA (SN/SE/WN/WE)
- Gillette – Middlesex 230 kV line section:
 - Before Proposed Solution: 709/ 819 / 797/ 819 MVA (SN/SE/WN/WE)
 - After Proposed Solution: 709 / 869 / 805/ 1031 MVA (SN/SE/WN/WE)

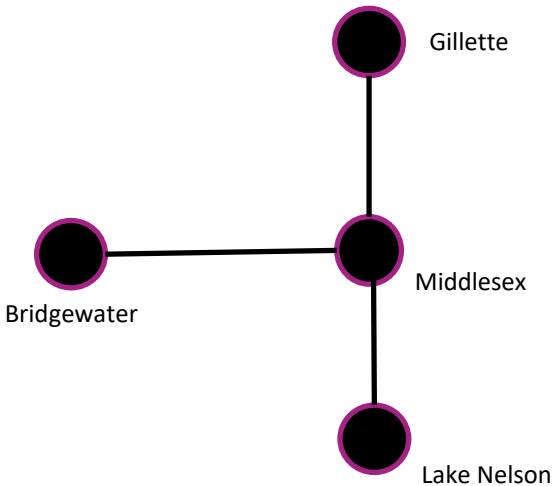
Alternatives Considered:

- Maintain existing configuration with simultaneous outages to multiple networked elements under contingency scenarios.

Estimated Project Cost: \$8.85M FirstEnergy, \$9.04M PSE&G

Projected In-Service: 12/31/2027

Supplemental Project ID: s3261.1 (FirstEnergy), TBD (PSE&G)



Legend	
500 kV	
345 kV	
230 kV	
138 kV	
115 kV	
69 kV	
46 kV	
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

12/27/2023 - V1 – Original version posted to pjm.com