

Subregional RTEP Committee – Mid-Atlantic FirstEnergy Supplemental Projects

November 14, 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

JCPL Transmission Zone M-3 Process Oceanview – Bradley Beach 34.5 kV D130 Line Customer Connection

Need Number: JCPL-2024-046

Process Stage: Need Meeting – 11/14/2024

Project Driver:

Customer Service

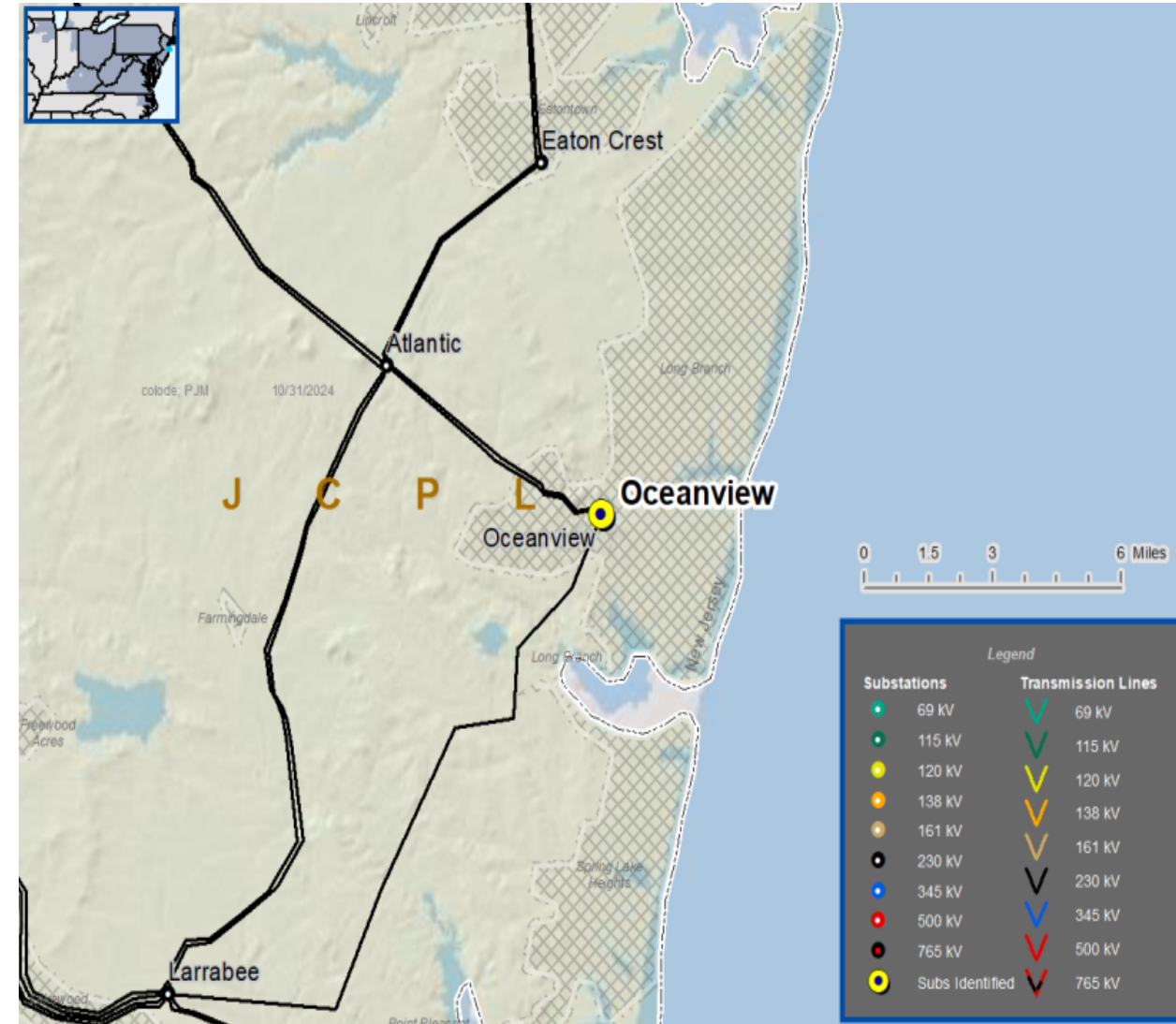
Specific Assumption Reference:

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 retail customer requested 34.5 kV service for load of approximately 8.5 MVA near the Oceanview – Bradley Beach 34.5 kV D130 Line. The request is approximately 1 mile from Oceanview Substation.

Requested in-service date is 07/03/2026



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-2024-025

Process Stage: Solution Meeting – 11/14/2024

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 and performance
- Substation/line equipment limits

Add/Replace Transformers

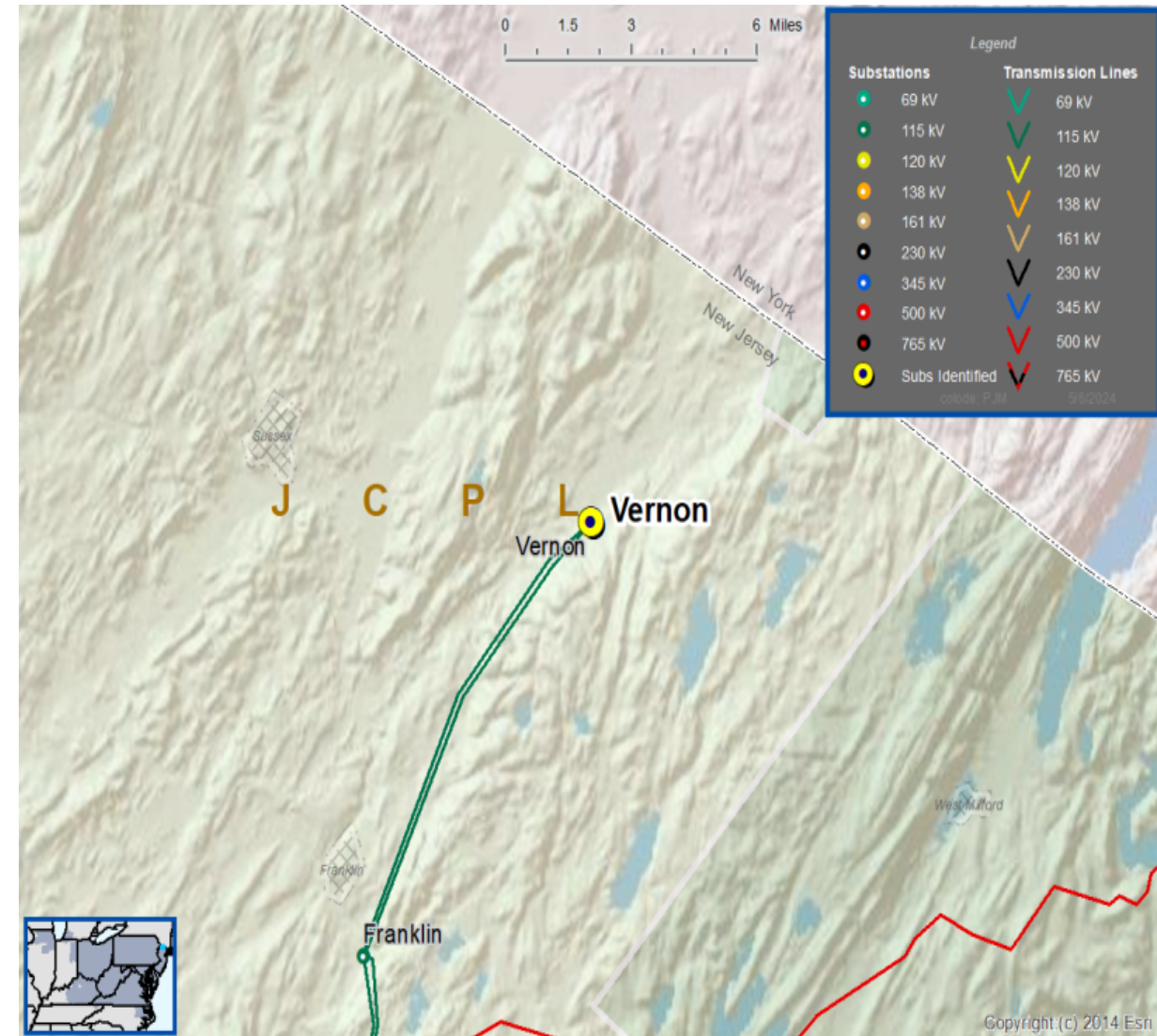
Past System Reliability/Performance

Problem Statement:

- The Vernon No. 4 115-34.5 kV Transformer is approximately 50 years old and is approaching end of life.
- The transformer has elevated ethane dissolved combustile gas in the transformer oil as compared to IEEE standards.
- The transformer relaying is obsolete.
- The transformer circuit is limited by terminal equipment.

Existing Transformer Ratings:

- 59 / 59 MVA (SN/SSTE)
- 59 / 59 MVA (WN/WSTE)



Need Number: JCPL-2024-025

Process Stage: Solution Meeting – 11/14/2024

Proposed Solution:

- Replace the No. 4 115-34.5 kV Transformer at Vernon Substation
- Replace the 115 kV circuit switcher with a circuit breaker
- Replace the 34.5 kV circuit breaker
- Upgrade transformer relaying

Transformer Ratings:

- Vernon No. 4 115-34.5 kV Transformer:
 - Before Proposed Solution: 59 / 59 / 59 / 59 MVA (SN/SSTE/WN/WSTE)
 - After Proposed Solution (anticipated): 125 / 162 / 150 / 194 MVA (SN/SSTE/WN/WSTE)

Alternatives Considered:

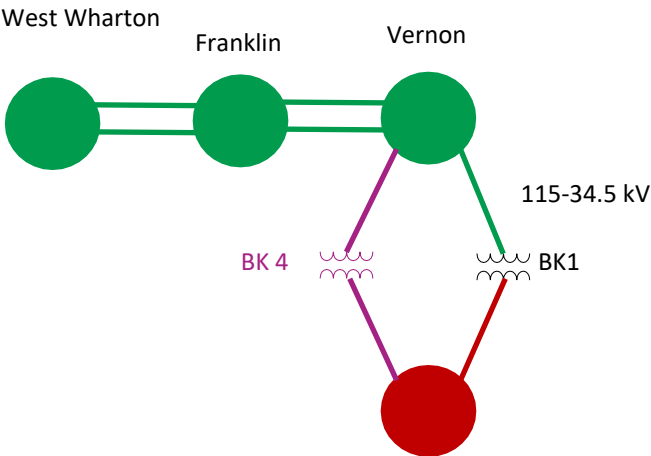
- Maintain transformer in existing condition with elevated risk of failure.











Estimated Project Cost: \$7M

Projected In-Service: 8/31/2029

Project Status: Engineering

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	

JCPL Transmission Zone M-3 Process Deep Run No. 2 115-34.5 kV Transformer

Need Number: JCPL-2024-026

Process Stage: Solution Meeting – 11/14/2024

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 and performance

Add/Replace Transformers

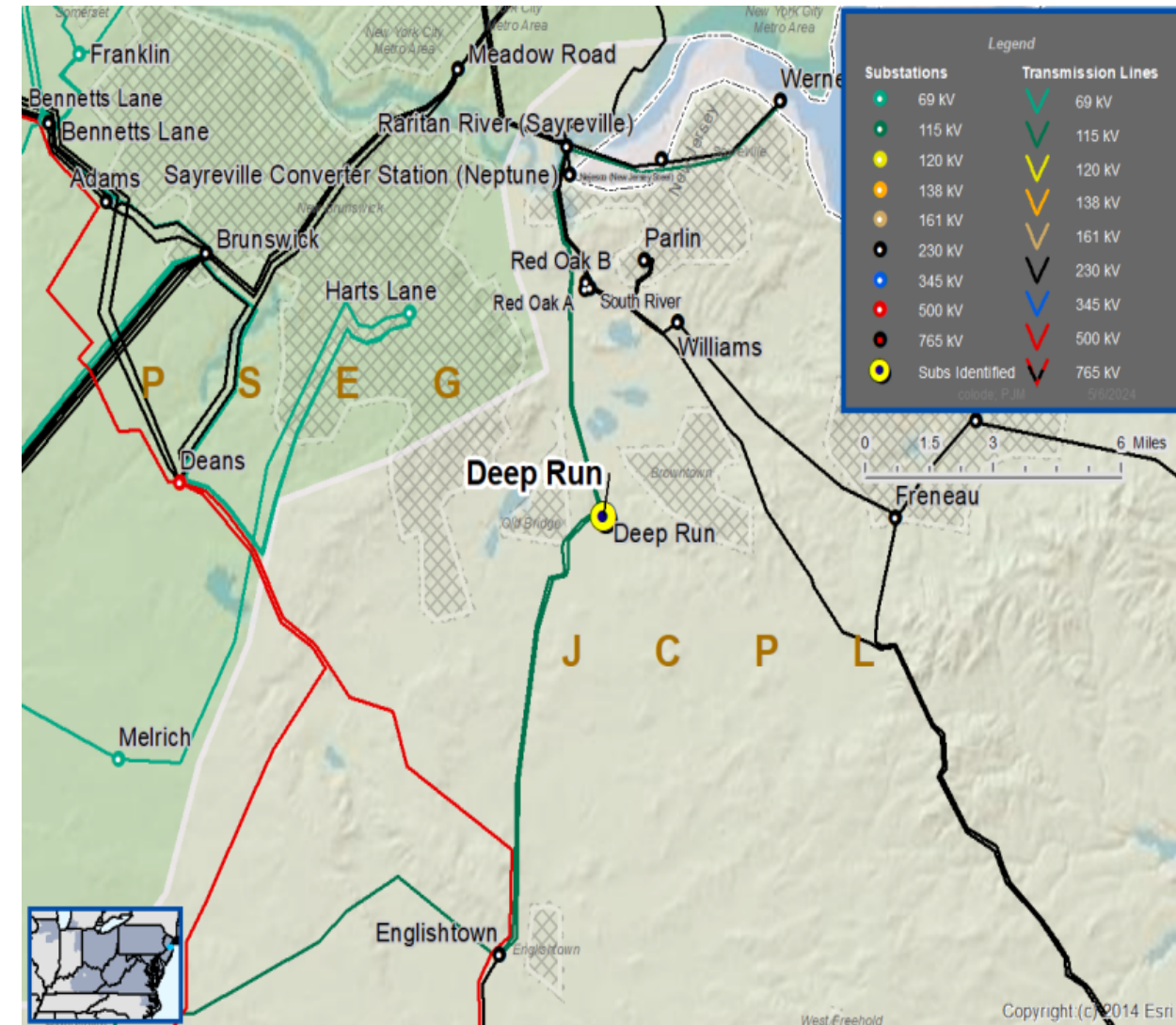
Past System Reliability/Performance

Problem Statement:

- The Deep Run No. 2 115-34.5 kV Transformer is approximately 49 years old and is approaching end of life.
- The transformer has elevated ethane dissolved combustible gas in the transformer oil as compared to IEEE standards.
- In recent years, there have been pump and fan failures requiring repairs.
- The transformer relaying is obsolete.

Existing Transformer Ratings:

- 128 / 157 MVA (SN/SSTE)
- 163 / 165 MVA (WN/WSTE)



Need Number: JCPL-2024-026

Process Stage: Solution Meeting – 11/14/2024

Proposed Solution:

- Replace the No. 2 115-34.5 kV Transformer at Deep Run Substation.
- Replace 115 kV circuit switcher with circuit breaker
- Upgrade transformer relaying

Transformer Ratings:

- Deep Run No. 2 115-34.5 kV Transformer:
 - Before Proposed Solution: 128 / 157 / 163 / 165 MVA (SN/SSTE/WN/WSTE)
 - After Proposed Solution: 160 / 164 / 202 / 205 MVA (SN/SSTE/WN/WSTE)

Alternatives Considered:

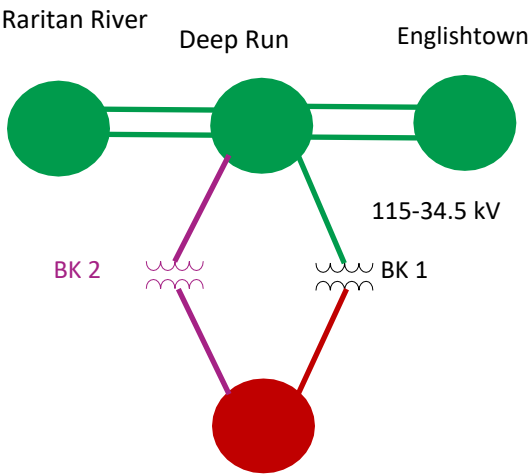
- Maintain transformer in existing condition with elevated risk of failure.











Estimated Project Cost: \$8M

Projected In-Service: 12/31/2027

Project Status: Conceptual

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 Number: JCPL-2024-027

Process Stage: Solution Meeting – 11/14/2024

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 and performance

Add/Replace Transformers

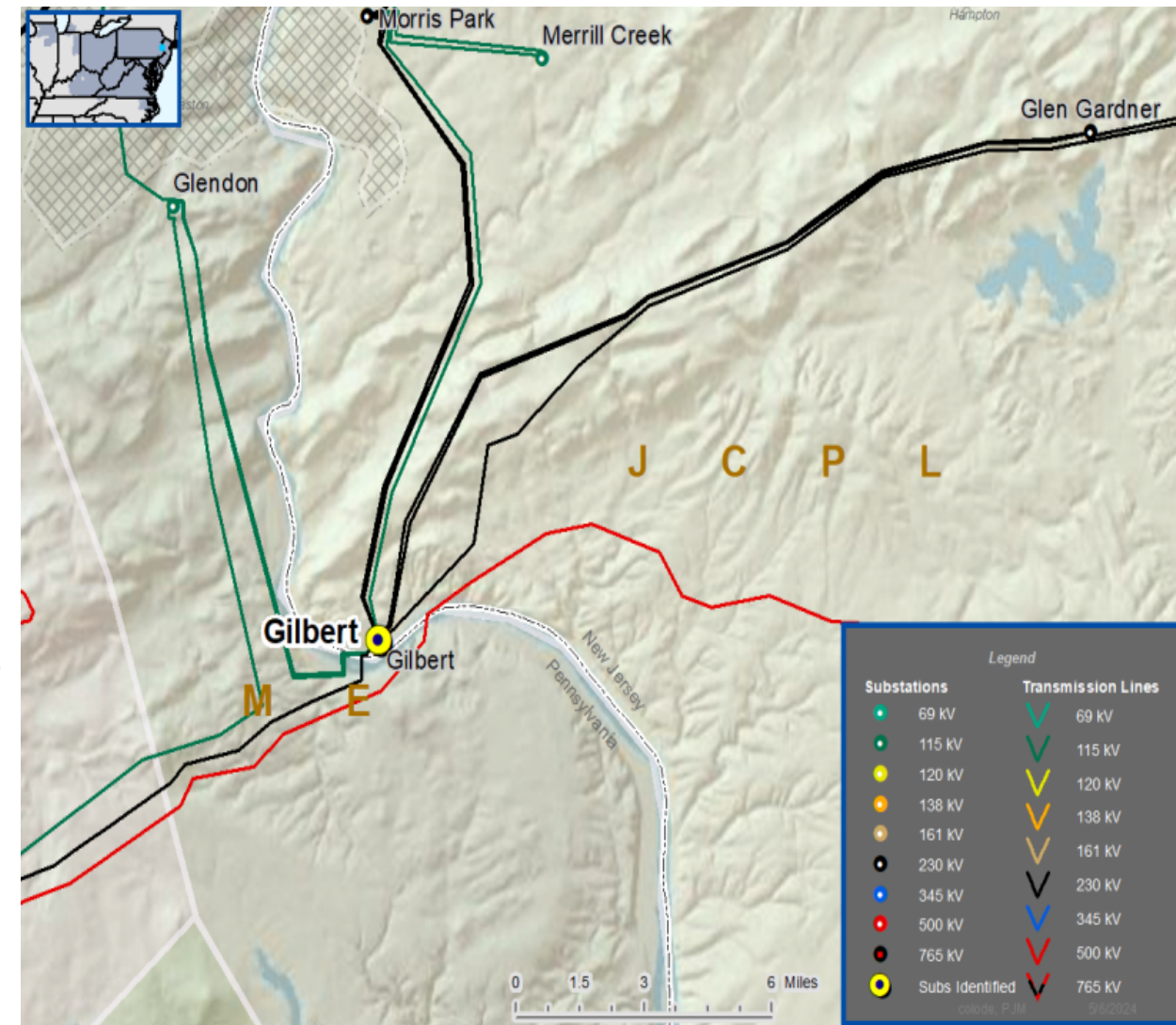
Past System Reliability/Performance

Problem Statement:

- The Gilbert No. 2 and No. 3 115-34.5-13.2 kV Transformers are 75 years old and approaching end of life.
- Gilbert No. 2 Transformer has elevated ethane dissolved combustible gas in the transformer oil as compared to IEEE standards.
- Gilbert No. 3 Transformer has high oxygen content and slightly low dielectric strength associated with the transformer oil.
- Both transformers are leaking nitrogen and have obsolete relaying.

Existing Gilbert No. 2 and No. 3 115-34.5-13.2 kV Transformer Ratings:

- 77 / 100 MVA (SN/SSTE)
- 102 / 116 MVA (WN/WSTE)



JCPL Transmission Zone M-3 Process Gilbert No. 2 and No. 3 115-34.5-13.2 kV Transformers

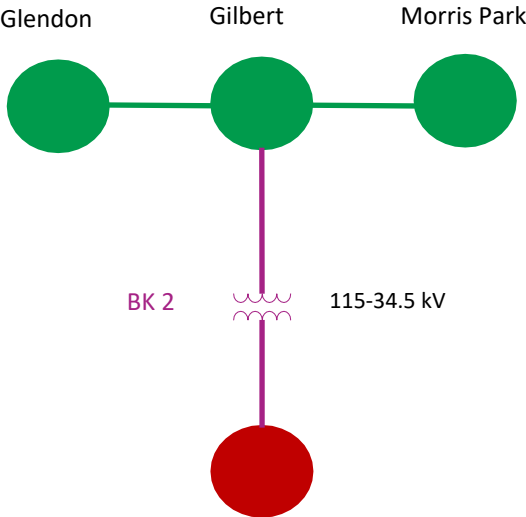
Need Number: JCPL-2024-027
Process Stage: Solution Meeting – 11/14/2024











- Proposed Solution:**
- Replace the No. 2 and No. 3 115-34.5-13.2 kV Transformers at Gilbert substation with one new unit
 - Upgrade transformer relaying

- Transformer Ratings:**
- Gilbert No. 2 115-34.5-13.2 kV Transformer:
 - Before Proposed Solution: 77 / 100 / 102 / 116 MVA (SN/SSTE/WN/WSTE)
 - After Proposed Solution: 125 / 162 / 150 / 194 MVA (SN/SSTE/WN/WSTE)

- Alternatives Considered:**
- Maintain transformer in existing condition with elevated risk of failure.

Estimated Project Cost: \$8M
Projected In-Service: 12/31/2028
Project Status: Conceptual
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 Number: JCPL-2024-028

Process Stage: Solution Meeting – 11/14/2024

Previously Presented: Need Meeting – 05/16/2024

Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

System Performance Projects Global Factors

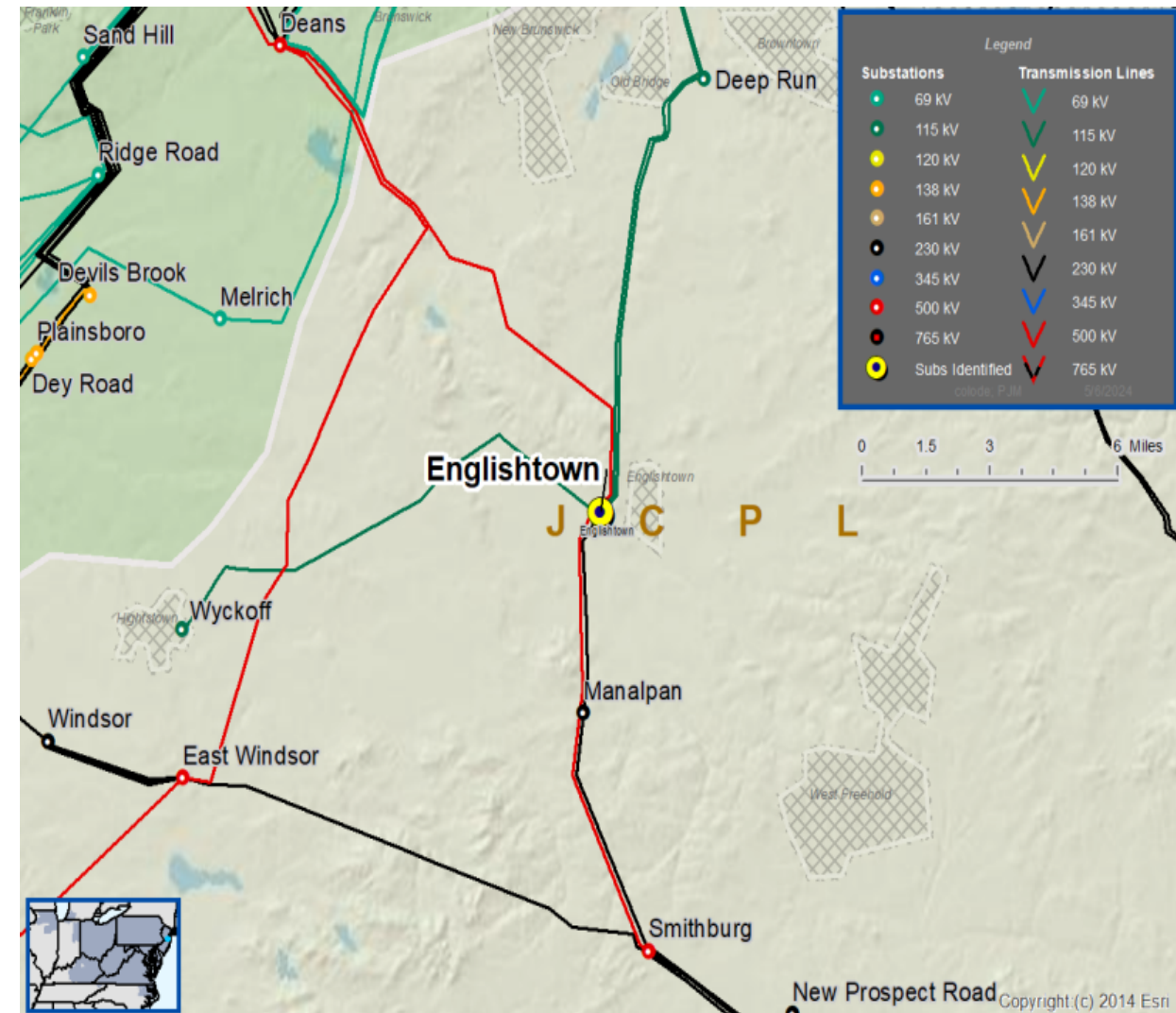
- System reliability and performance
- Add/Replace Transformers
- Past System Reliability/Performance

Problem Statement:

- The Englishtown No. 1 115-34.5 kV Transformer is approximately 69 years old and is approaching end of life.
- Recent inspections show ethane combustible dissolved gas is elevated in the transformer oil as compared to IEEE standards.
- The transformer is leaking nitrogen and has obsolete relaying.

Existing Transformer Ratings:

- 62 / 82 MVA SN/SSTE
- 82 / 93 MVA WN/WSTE



JCPL Transmission Zone M-3 Process Englishtown No. 1 115-34.5 kV Transformer

Need Number: JCPL-2024-028

Process Stage: Solution Meeting – 11/14/2024

Proposed Solution:

- Replace the No. 1 115-34.5 kV Transformer at Englishtown Substation
- Replace 115 kV circuit switcher with circuit breaker
- Upgrade transformer relaying

Transformer Ratings:

- Englishtown No. 1 115-34.5 kV Transformer:
 - Before Proposed Solution: 62 / 82 / 82 / 93 MVA (SN/SSTE/WN/WSTE)
 - After Proposed Solution: 125 / 162 / 150 / 194 MVA (SN/SSTE/WN/WSTE)

Alternatives Considered:

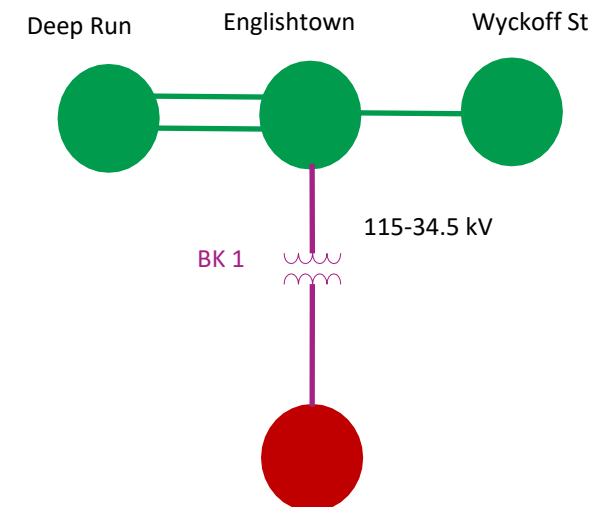
- Maintain transformer in existing condition with elevated risk of failure.











Estimated Project Cost: \$7M

Projected In-Service: 12/31/2027

Project Status: Conceptual

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	

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

11/04/2024 – V1 – Original version posted to pjm.com

11/14/2024 – V2 – Maps updated