Transmission Expansion Advisory Committee – PPL Supplemental Projects

November 6, 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

PPL Transmission Zone: Supplemental
New Buffalo, PA

Need Number: PPL-2024-0017

Process Stage: Need Meeting TEAC - 11/06/2024

Project Driver: Customer Service

Specific Assumption References:

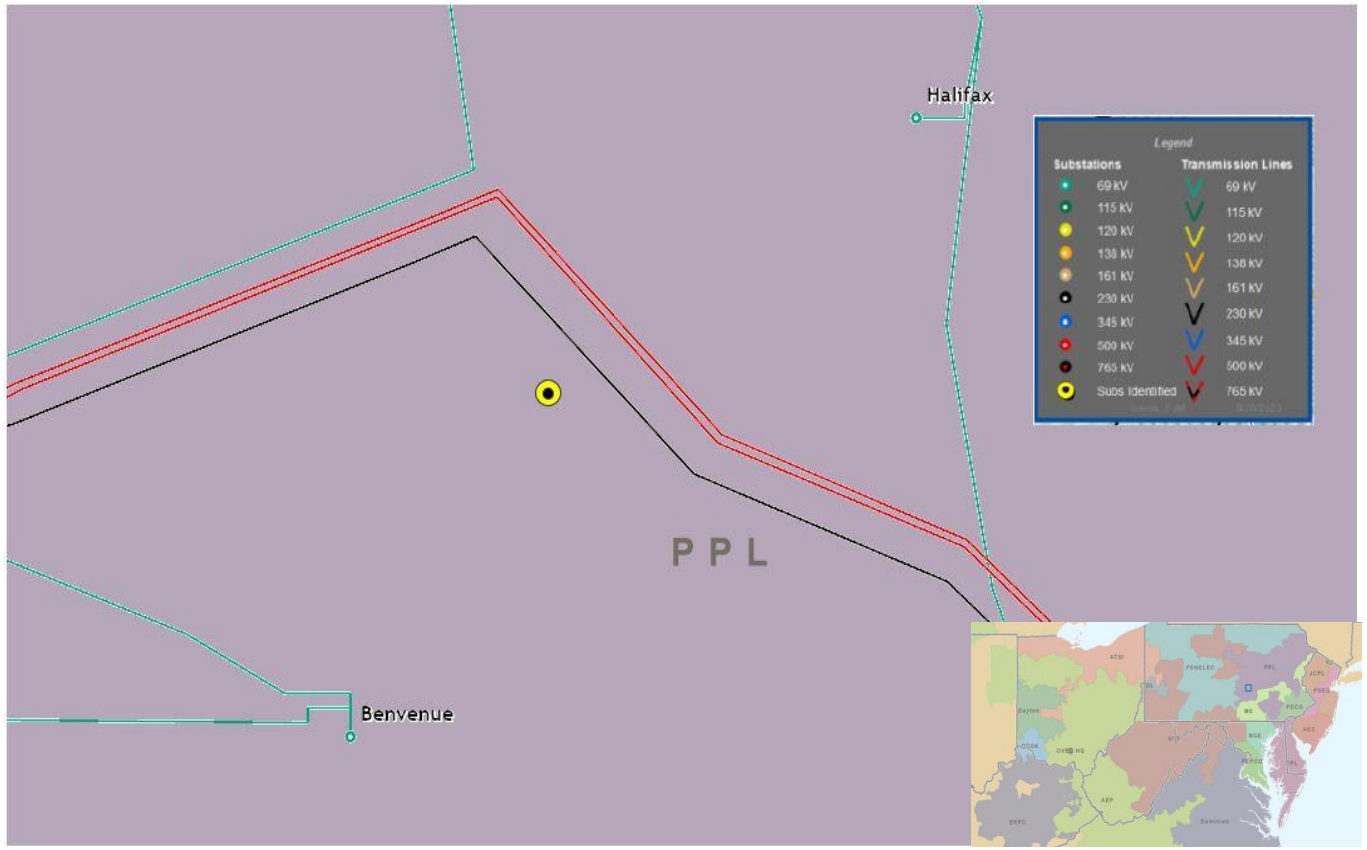
PPL 2024 Annual Assumptions

Problem Statement:

A customer has submitted a request to have their facility served from a 138kV source in New Buffalo, PA. The total facility load is approximately 1,000 MW (2031). The requested in service date is 05/2027.

Initial In-Service 2027 Load: 200MW

Projected 2028 Load: 400 MW



Specific Assumption References:

PPL 2024 Annual Assumptions

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

PPL Transmission Zone: Supplemental Lancaster, PA

Need Number: PPL-2024-0010

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 09/10/2024

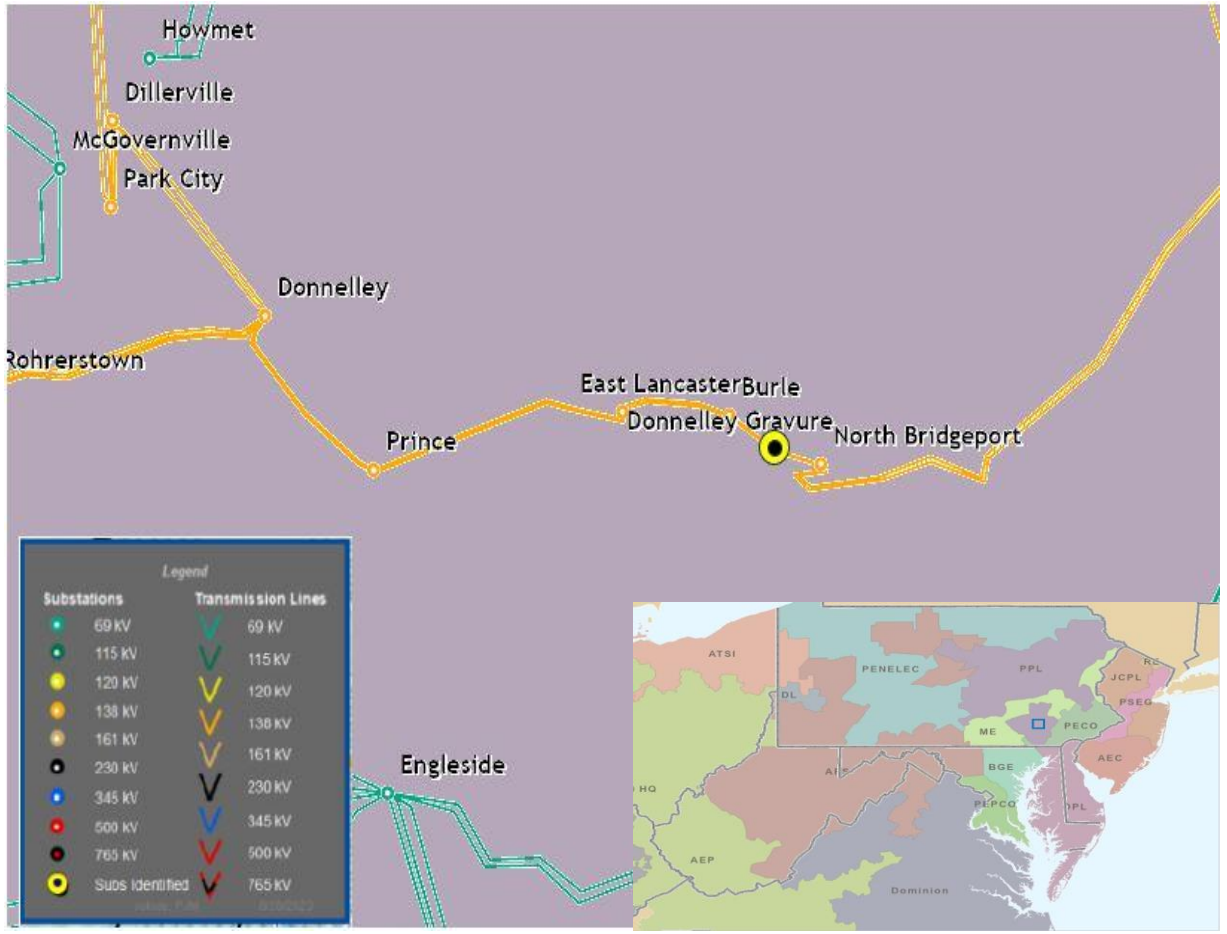
Project Driver: Customer Service

Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

An existing 138kV customer in Lancaster, PA has submitted a request to increase their facility load. The total facility load will be approximately 350 MW (2028).



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Lancaster, PA

Need number(s): PPL-2024-0010

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Pitney 138kV Switchyard: Construct a new five bay BAAH 138kV switchyard near the customer's facility.. Estimated Cost: $34 M

South Akron - Prince #1 & #2 138kV lines: Bifurcate the South Akron - Prince #1 & #2 138kV and terminate at the new Pitney 138kV switchyard. Extend the 138kV lines approximately 0.2 miles into the new Pitney 138kV switchyard.. Estimated Cost: $3 M

138kV Customer Tap Lines: Extend three 138kV circuits for approximately 0.1 miles from the Pitney 138kV switchyard to the customer's facility.. Estimated Cost: $3.5 M

Lampeter 230-138kV Substation: Install a new 230-138kV Substation. Install a two bay 230kV BAAH yard, two 230-138kV 330MVA transformers, and a two bay BAAH 138kV yard.. Estimated Cost: $47.3 M

Millwood - South Akron 230kV Line: Bifurcate the Millwood - South Akron 230kV line and terminate at the new Lampeter 230-138kV Substation.. Estimated Cost: $4 M

Lampeter - Pitney #1 & #2 138kV Lines: Rebuild 3.1 miles the Strasburg #1 #2 69kV taps to double circuit 138kV operation from outside Lampeter to Strasburg substation. Extend two 138 kV circuits from the Lampeter 138kV yard and tie into the rebuilt Strasburg 138kV lines. Rebuild 3.3 miles of the Engleside – Greenland #1 & #2 69kV line to double circuit 138kV operation from Strasburg Tap to the Greenland sub. Extend a new double circuit 138kV line for ~1.5 miles from the Engleside – Greenland #1 & #2 138kV lines to Pitney 138kV switchyard. Remove a 3.6 mile section of the Engleside – Greenland #1 & #2 69kV line that will no longer be utilized.. Estimated Cost: $26 M

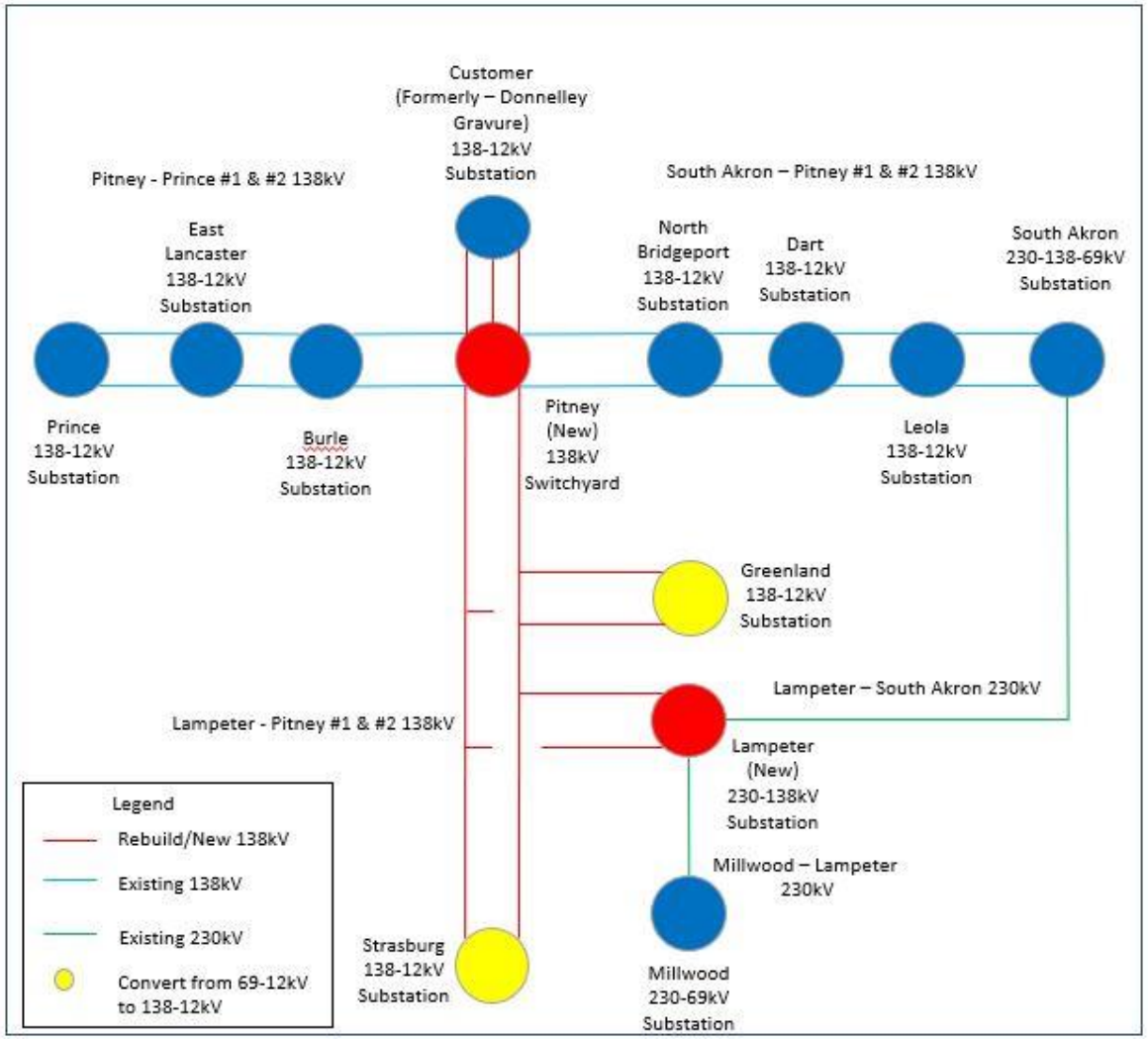
Transmission Cost Estimate: $117.8 M

Alternatives Considered:

No feasible alternatives

Projected In-Service: 06/01/2028

Project Status: Conceptual



Specific Assumption References:

[PPL 2024 Annual Assumptions]

PPL Transmission Zone: Supplemental Lancaster, PA

Need Number: PPL-2024-0011

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

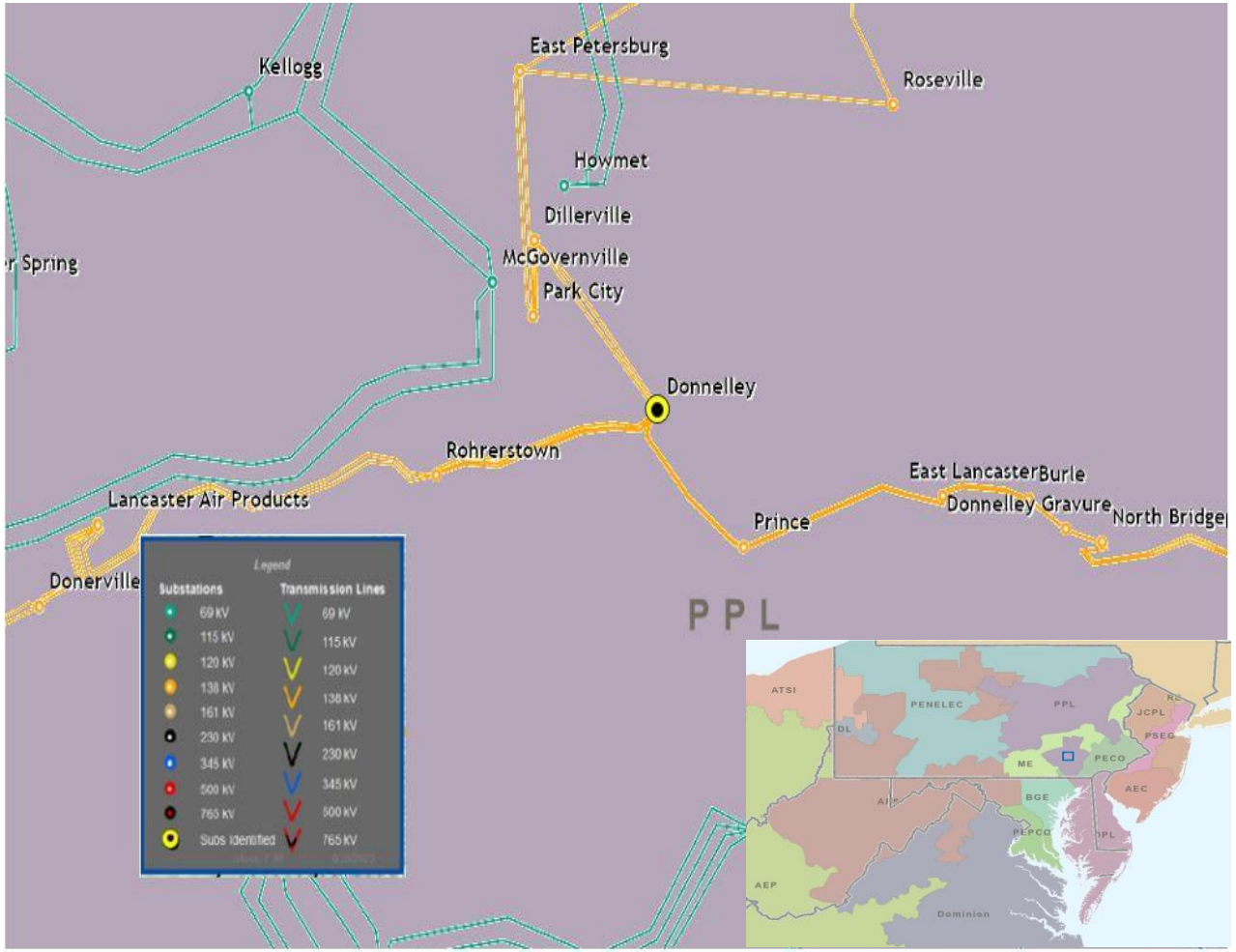
Project Driver: Customer Service

Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

An existing 138kV customer in Lancaster, PA has submitted a request to increase their facility load. The total facility load will be approximately 350 MW (2029).



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental Lancaster, PA

Need number(s): PPL-2024-0011

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

North Lancaster 138kV Switchyard: Construct a new five bay BAAH 138kV switchyard near the customer's facility.. Estimated Cost: $34 M

West Hempfield - Prince #1 & #2 138kV lines: Bifurcate the West Hempfield- Prince #1 & #2 138kV and terminate at the new North Lancaster 138kV switchyard. Extend the 138kV lines approximately 0.2 miles into the new North Lancaster 138kV switchyard.. Estimated Cost: $3 M

South Akron - Dillerville #1 & #2 138kV Lines: Bifurcate the South Akron - Dillerville #1 & #2 138kV and terminate at the new North Lancaster 138kV switchyard. Extend the 138kV lines approximately 0.2 miles into the new North Lancaster 138kV switchyard.. Estimated Cost: $3 M

138kV Customer Tap Lines: Extend three 138kV circuits for approximately 0.1 miles from the North Lancaster 138kV switchyard to the customer's facility.. Estimated Cost: $3.5 M

West Hempfield - Prince (NLAN) #1 & #2 138kV Rebuild: Rebuild 8.1 miles the West Hempfield – Prince (NLAN) #1 &#2 138kV lines from West Hempfield to new North Lancaster Switchyard.. Estimated Cost: $24 M

Transmission Cost Estimate: $67.5 M

Alternatives Considered:

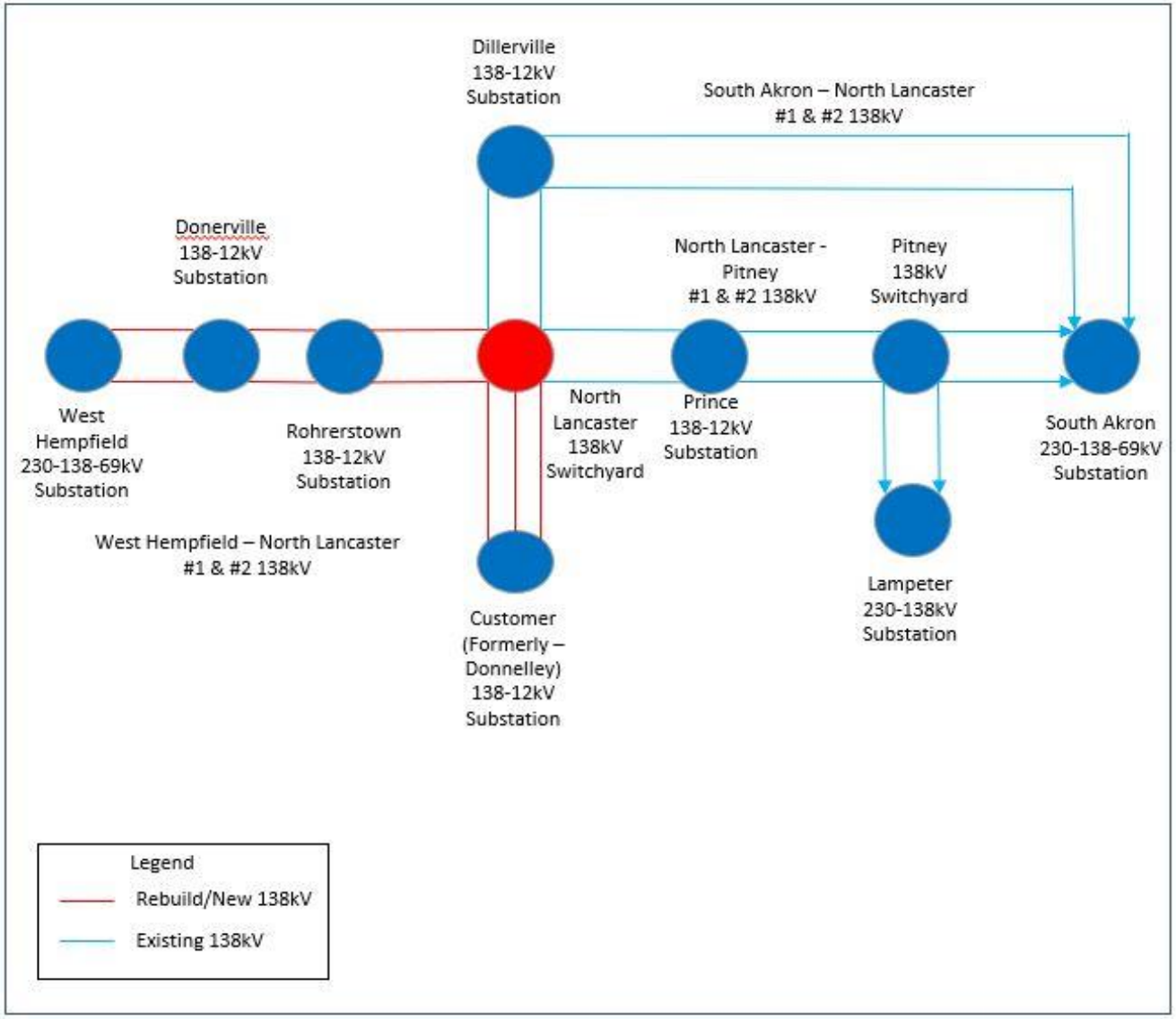
No feasible alternatives

Projected In-Service: 06/01/2028

Project Status: Conceptual

Specific Assumption References:

[PPL 2024 Annual Assumptions]



PPL Transmission Zone: Supplemental Hazleton, PA

Need Number: PPL-2024-0012

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

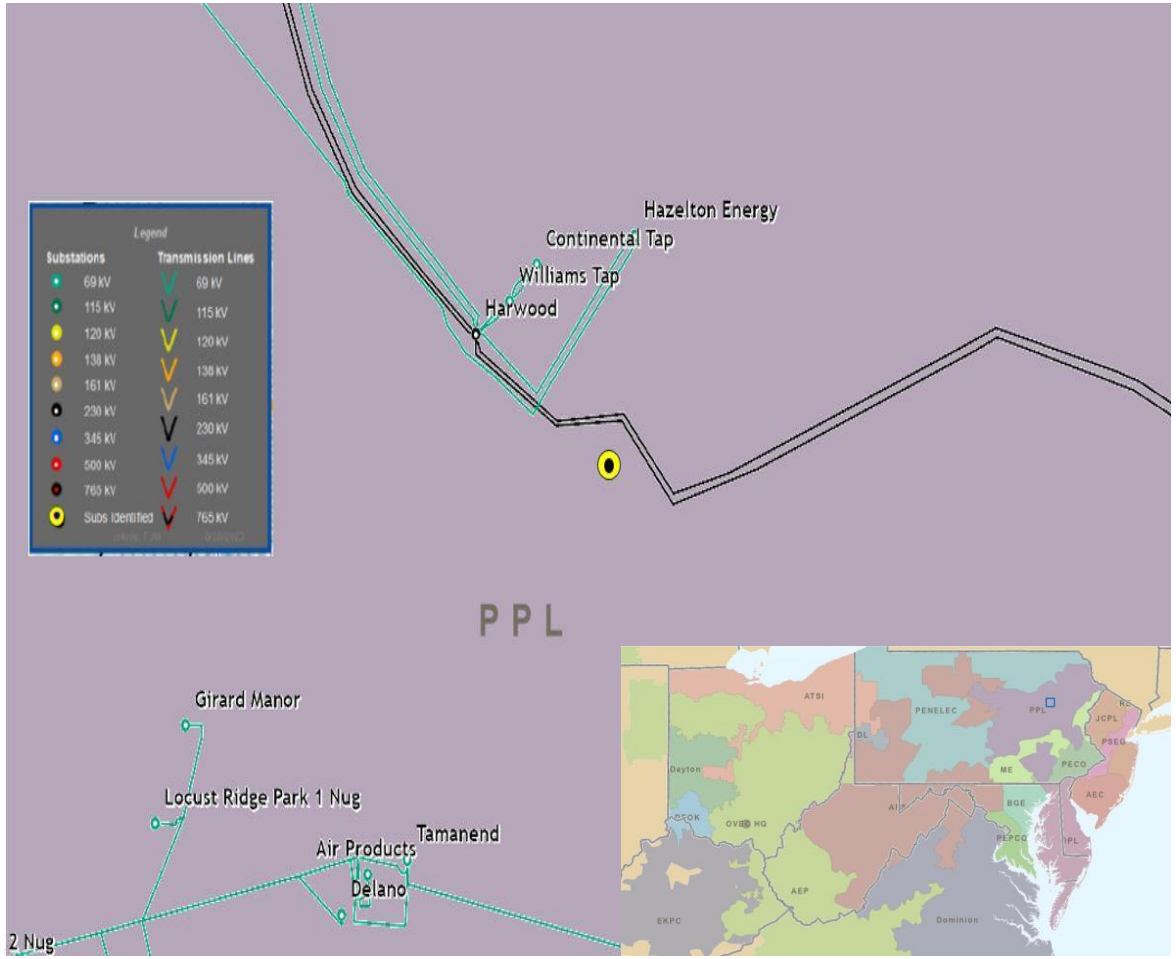
Project Driver: Customer Service

Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

A customer has submitted a request to have their facility served from a 230kV source in Hazleton, PA. The total facility load is approximately 1,000 MW (2030). The requested in service date is 05/2027. Projected 2027 load: 250MW Projected 2028 load: 500MW Projected 2030 load: 1000MW



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental Hazleton, PA

Need number(s): PPL-2024-0012

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Harwood - Tresckow #1 & #2 230kV Lines: Bifurcate the Harwood - Tresckow #1 & #2 230kV lines and terminate at the new Slykerville 230kV switchyard. Extend lines approximately .2 miles into the new Slykerville 230kV switchyard.. Estimated Cost: $4 M

Slykerville 230kV Switchyard: Install a four bay BAAH 230kV switchyard with a 125MVAR Capacitor bank.. Estimated Cost: $45 M

Slykerville Customer Taps 230kV: Install three 230kV lead lines for approximately 0.1 miles from Slykerville 230kV switchyard to the customer facility.. Estimated Cost: $4 M

Susquehanna - Harwood Reactors: Install 15 ohm series reactors on the Susquehanna - Harwood #1 and #2 230kV line at Susquehanna 230kV switchyard. Estimated Cost: $8 M

Susquehanna T10 - Susquehanna #1 & #2 230kV lines: Reconductor the 2.7 miles of the Susquehanna T10 - Susquehanna #1 & #2 230kV lines. Replace 3 MODS at Susquehanna. Estimated Cost: $8.1 M

Harwood 230kV Yard: Replace four MODs on each of the Harwood - Slykerville #1 & #2 230kV lines (eight total) at Harwood 230kV yard. Estimated Cost: $4.2 M

Transmission Cost Estimate: $73.3 M

Alternatives Considered:

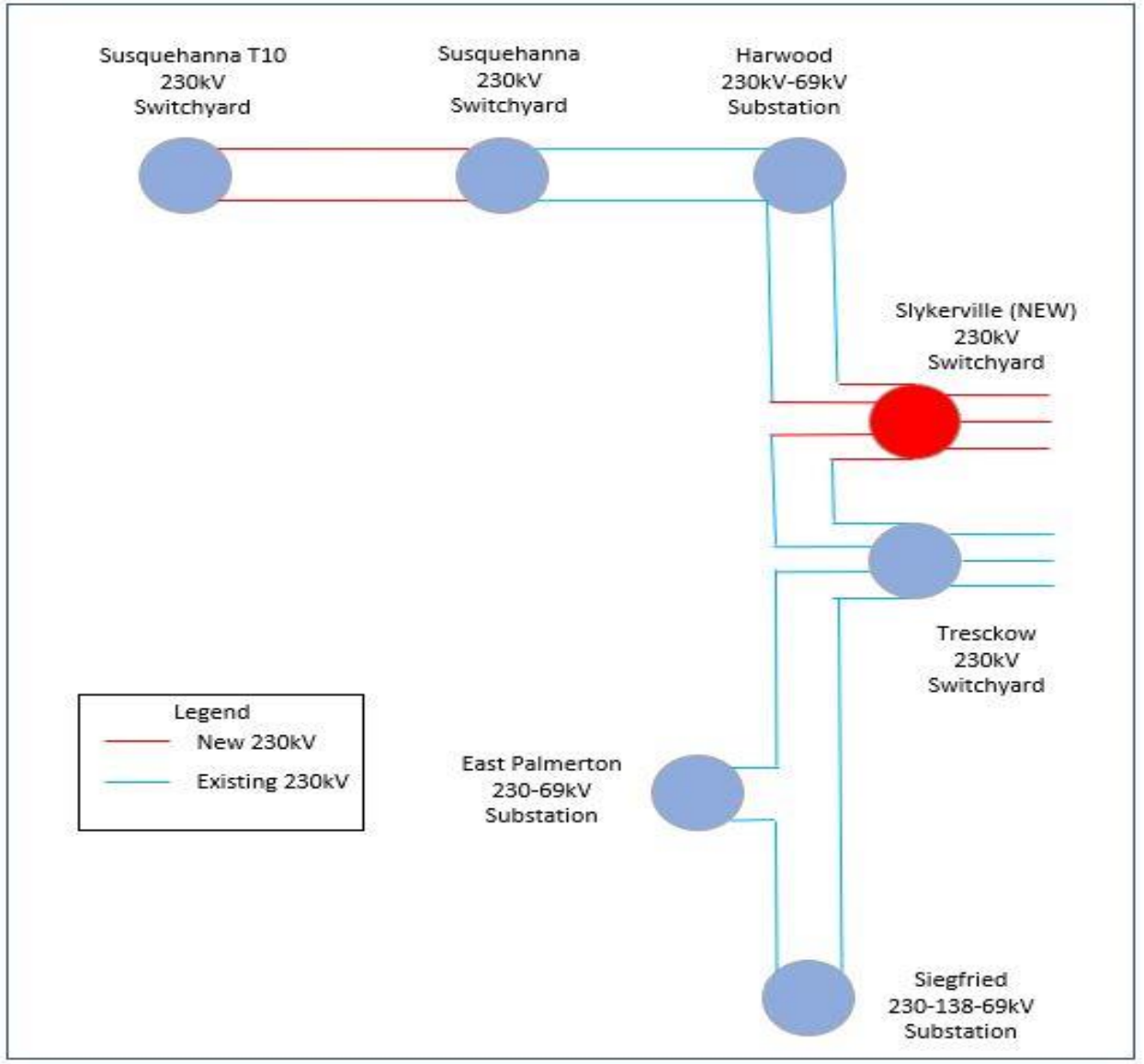
No feasible alternatives

Projected In-Service: 05/30/2028

Project Status: Conceptual

Specific Assumption References:

[PPL 2024 Annual Assumptions]



PPL Transmission Zone: Supplemental Alburtis, PA

Need Number: PPL-2024-0013

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

Project Driver: Equipment Condition/Performance/Risk

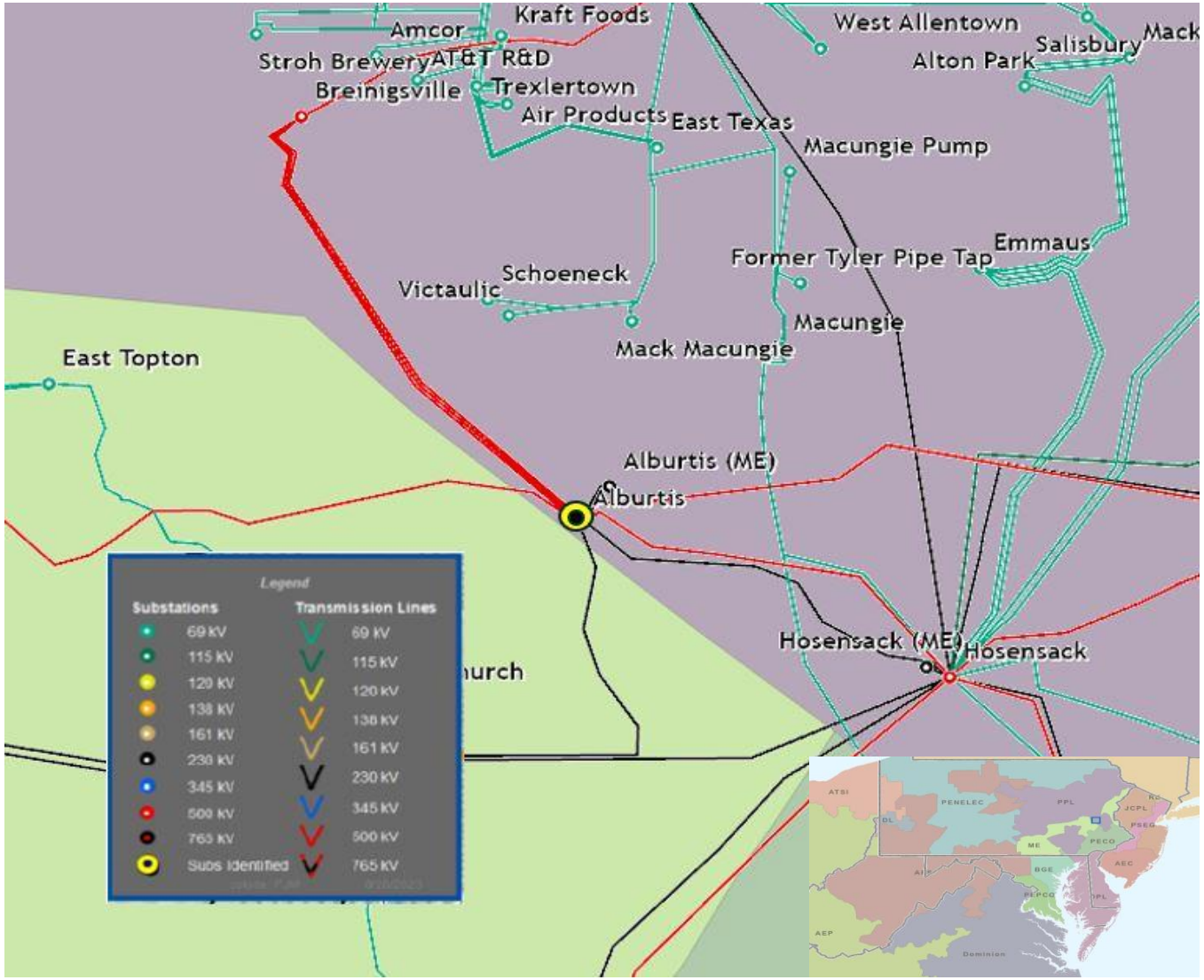
Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

The Alburtis substation 500/230kV Transformer 1 is about 54 years old and reaching the end of its useful service life. It has experienced significant maintenance over its operation, including:

- Replacing failed fans, and flow gauges
- Replacing pressure relief devices
- Replacing C-Phase winding temp gauge
- Investigate and repair C-Phase Bank 1 pumps
- Replacing a failed pump contactor



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Alburtis, PA

Need number(s): PPL-2024-0013

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Alburtis T1 500-230kV Replacement: Install new 250MVA 500/230kV transformers as an in-kind replacement for each of the three units of the current 500/230kV Alburtis Transformer 1 (750MVA Total).

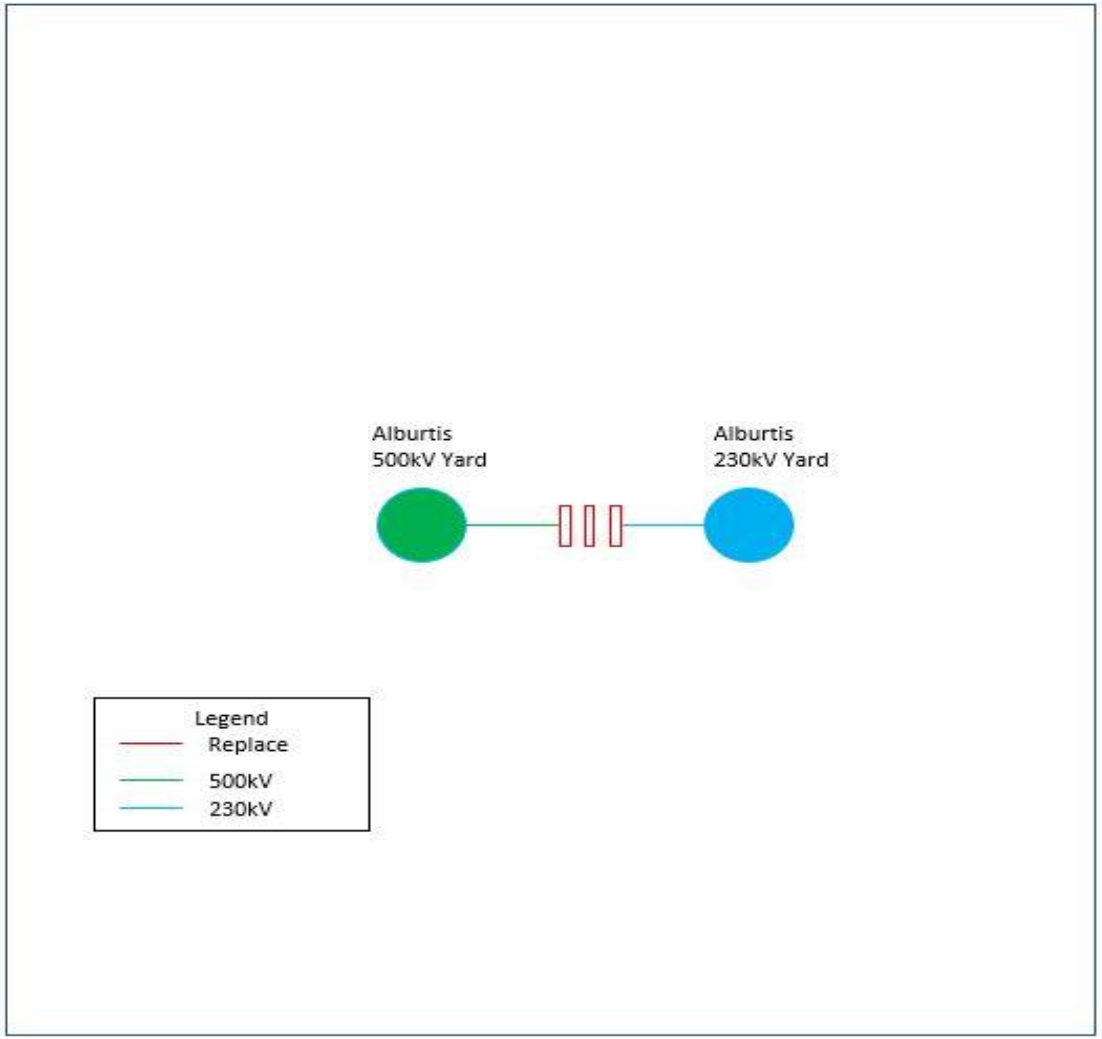
Transmission Cost Estimate: $19.9 M

Alternatives Considered:

No Feasible Alternative.

Projected In-Service: 12/31/2026

Project Status: Conceptual



Specific Assumption References:
PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Wescosville, PA

Need Number: PPL-2024-0014

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

Project Driver: Equipment Condition/Performance/Risk

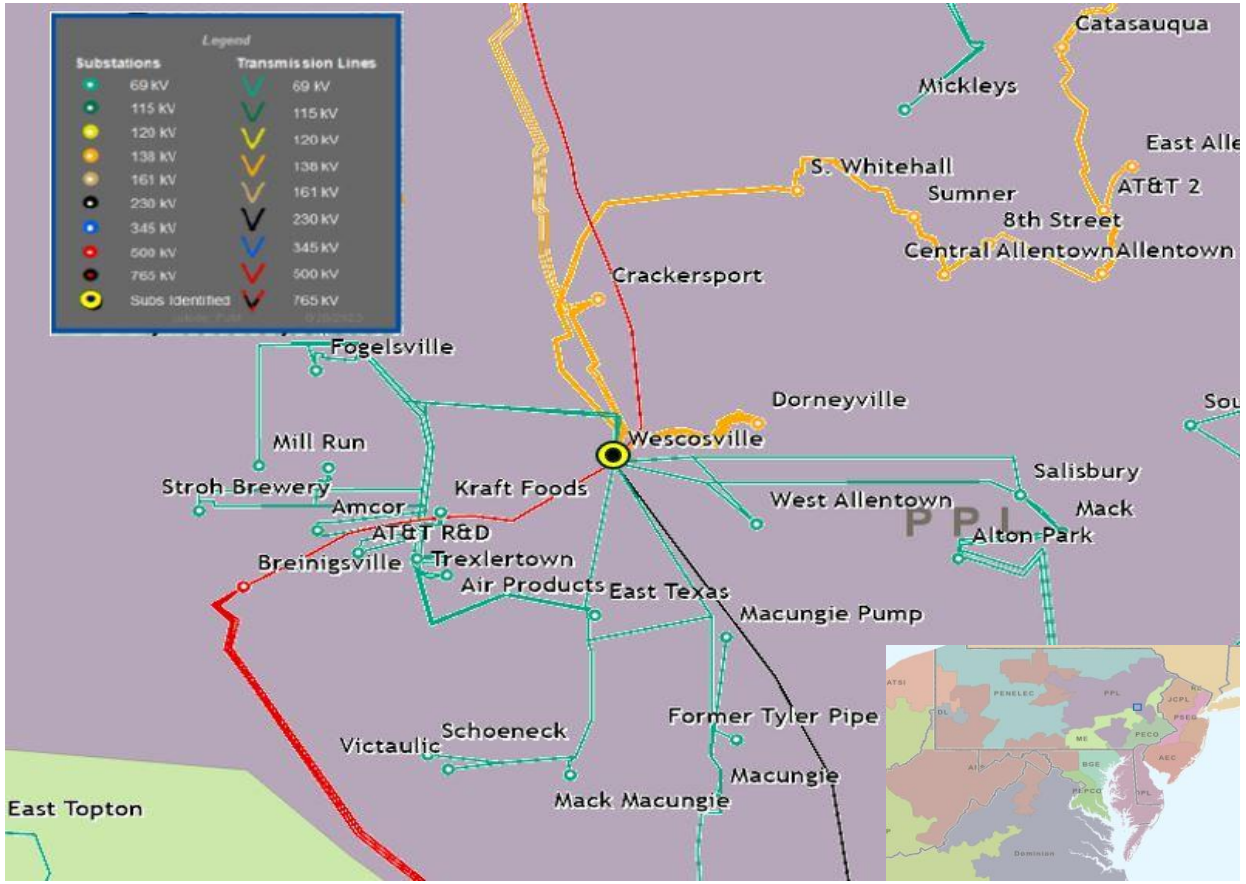
Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

The Wescosville substation 500/138kV Transformer 3 is about 45 years old and reaching the end of its useful service life. It has experienced significant maintenance over its operation, including:

- Replacing fans and fan motors
- Investigating TCUL trouble reports
- Repairing a hotspot on the C-Phase
- Investigating and repairing the LTC lowering operation
- Repairing a leaking high-side bushing



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Wescosville, PA

Need number(s): PPL-2024-0014

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Wescosville 500-138kV T3 Replacement: Install a new 340MVA, 500-138kV transformer as an in-kind replacement of the existing 500-138kV Wescosville Transformer 3.

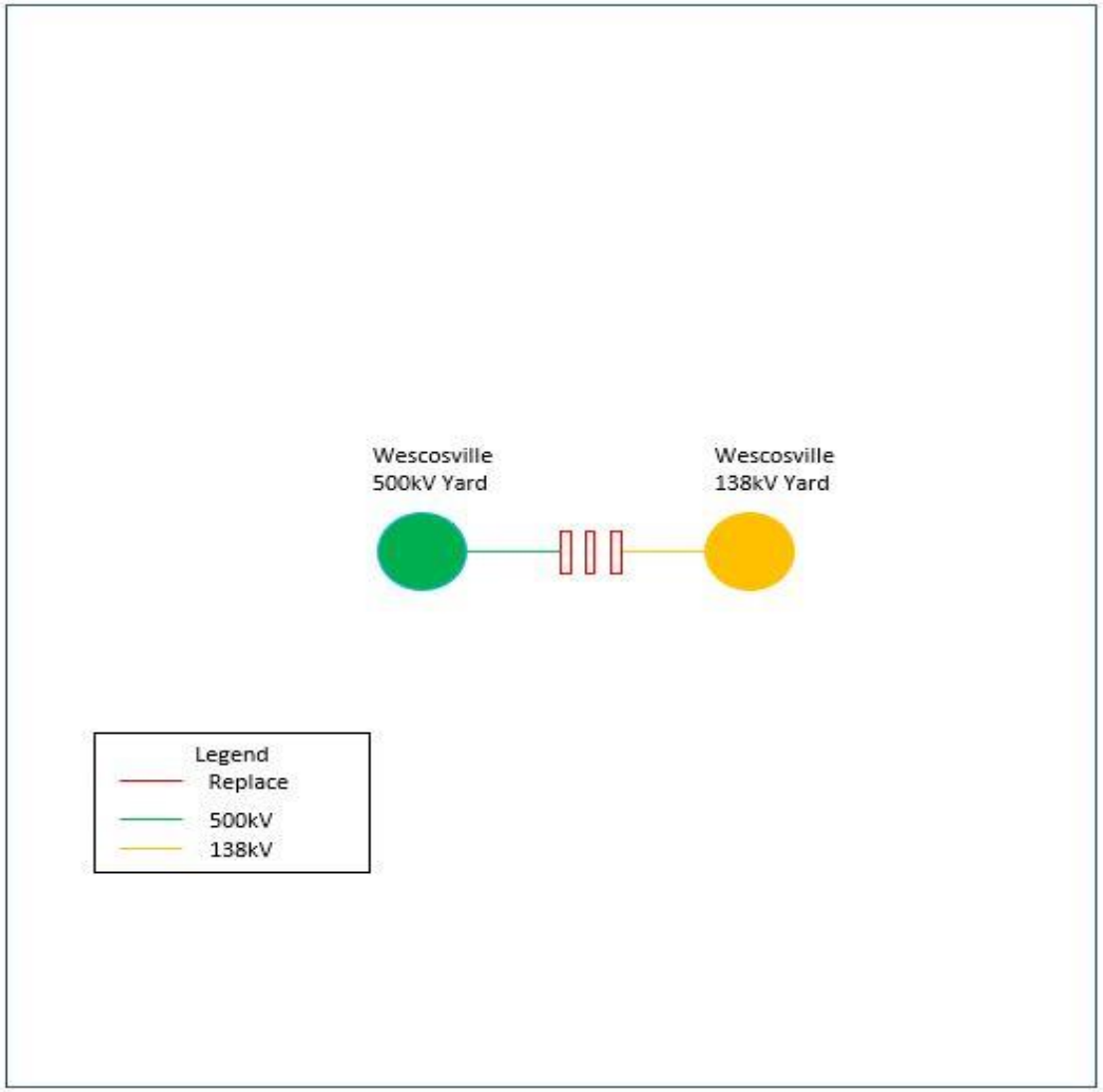
Transmission Cost Estimate: $15.5 M

Alternatives Considered:

No Feasible Alternative.

Projected In-Service: 12/31/2026

Project Status: Conceptual



Specific Assumption References:
PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Lackawanna, PA

Need Number: PPL-2024-0015

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

Project Driver: Equipment Condition/Performance/Risk

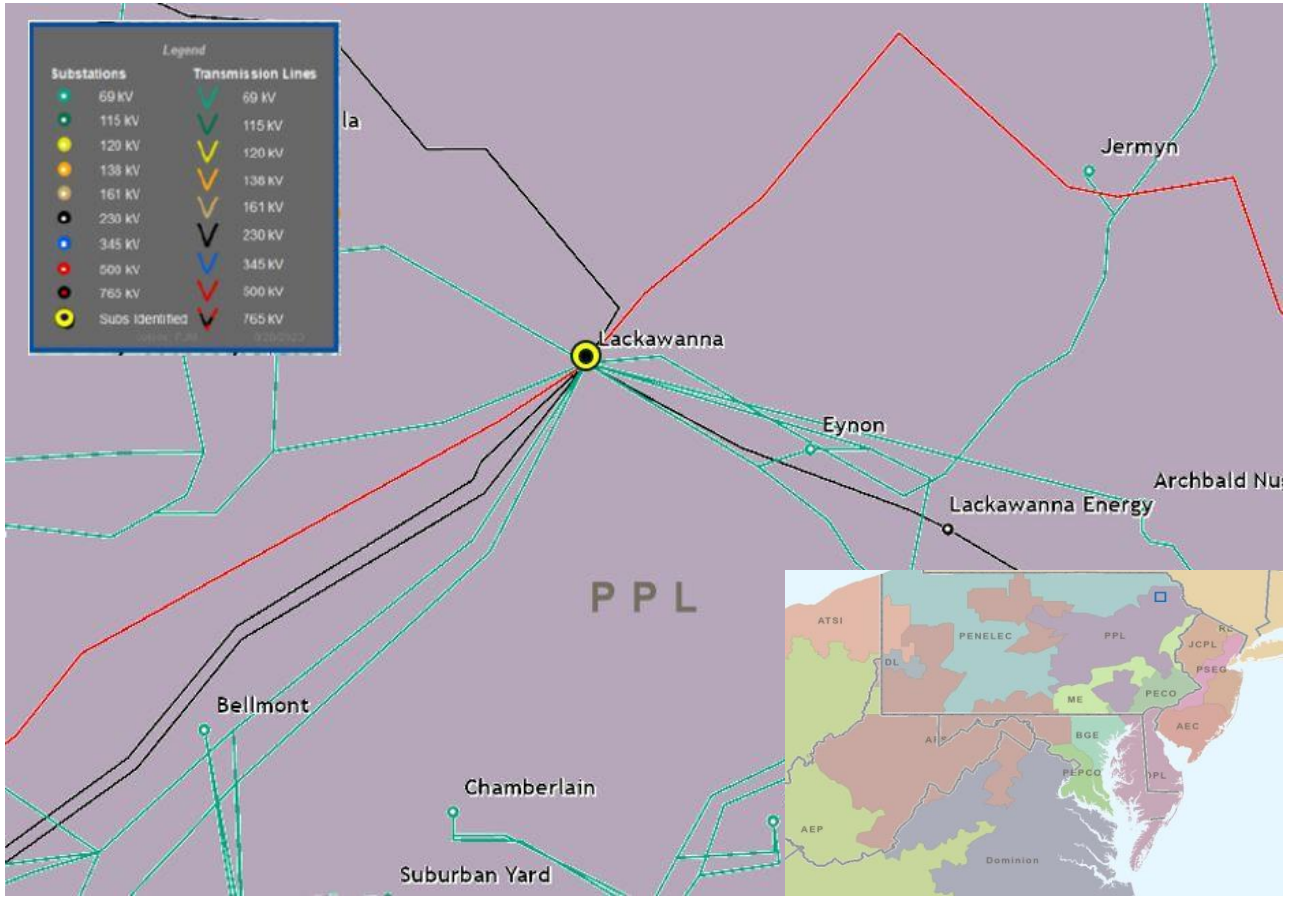
Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

The Lackawanna substation 230/69kV Transformer 2 is about 32 years old and is considered high risk due to its material condition and maintenance history. It has experienced significant maintenance over its operation, including:

- Corrective maintenance to investigate the cause of a trip
- Repairing oil leaks and refilling
- Repairing piping on the conservator
- Investigating and repairing leaking pressure release devices
- Investigating and replacing a failure of the tertiary cable



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
Lackawanna, PA

Need number(s): PPL-2024-0015

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Lackawanna 230-69kV Transformer 2 Replacement: Install a new 170MVA, 230-69kV transformer as an in-kind replacement of the existing 230-69kV Lackawanna Transformer 2.

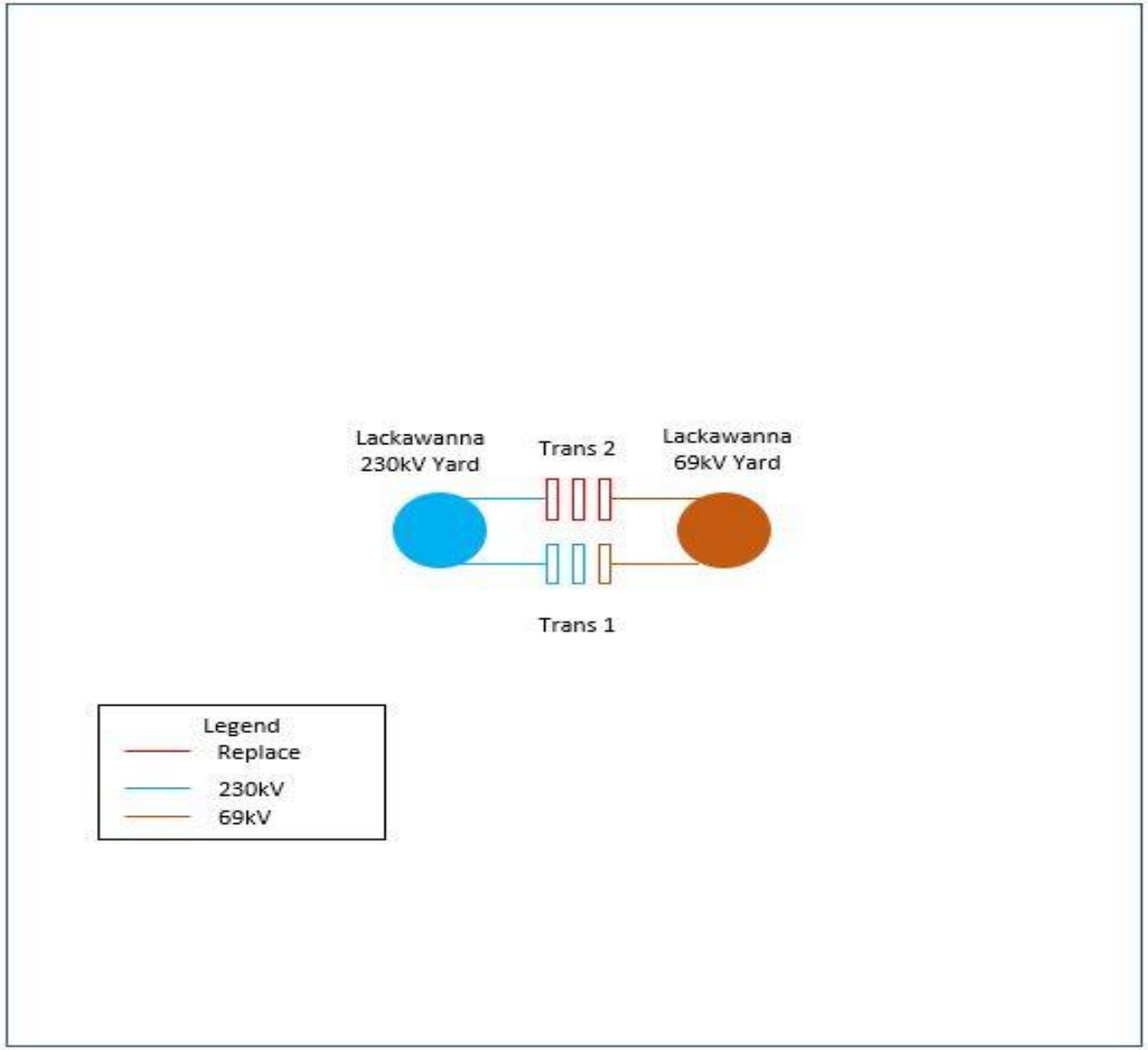
Transmission Cost Estimate: $6.3 M

Alternatives Considered:

No Feasible Alternative.

Projected In-Service: 12/31/2026

Project Status: Conceptual



Specific Assumption References:
PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
New Buffalo, PA

Need Number: PPL-2024-0016

Process Stage: Solution Meeting TEAC - 11/06/2024

Previously Presented: Need Meeting TEAC - 10/08/2024

Project Driver: Equipment Condition/Performance/Risk

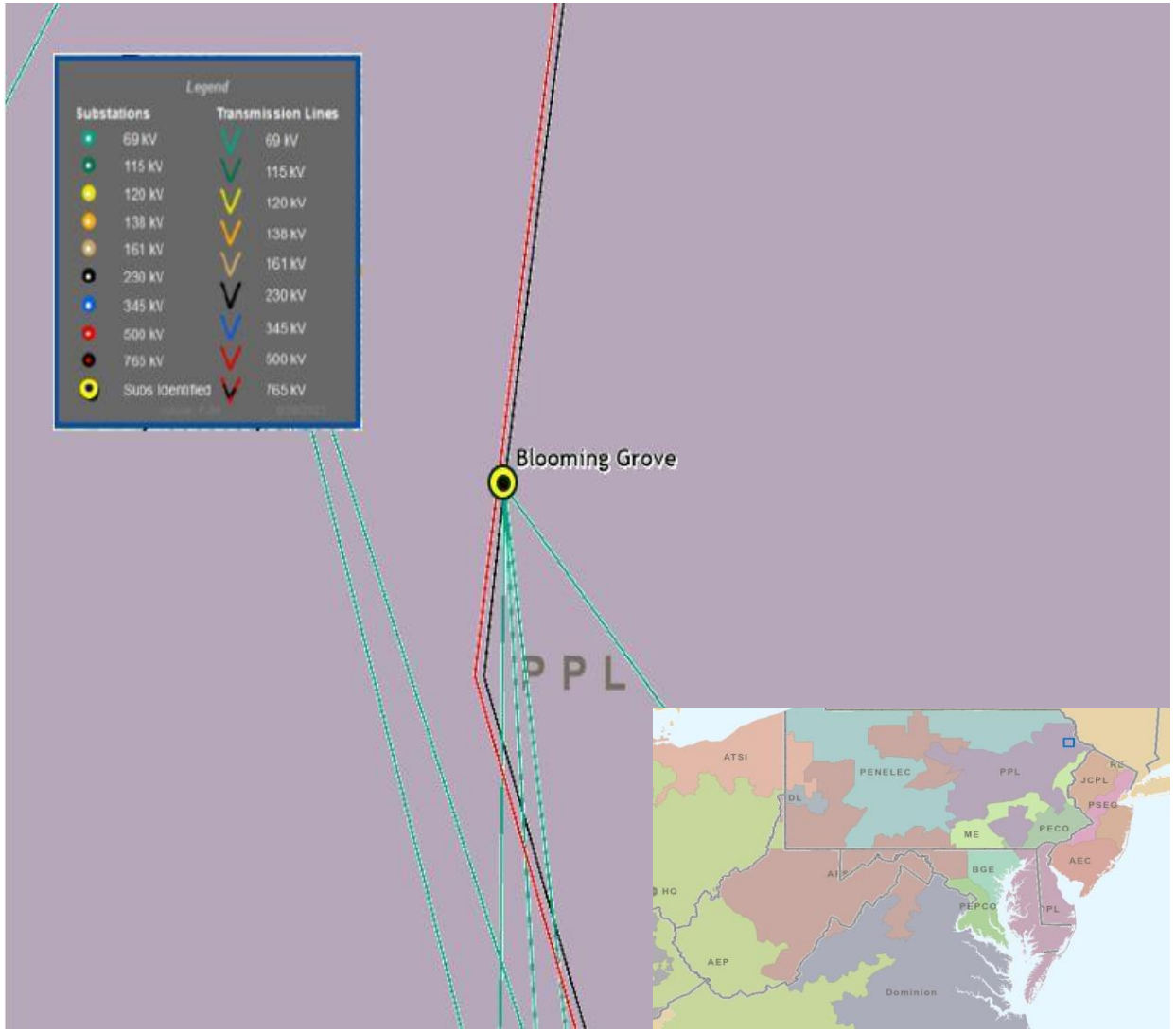
Specific Assumption References:

PPL 2024 Annual Assumptions

Problem Statement:

The Blooming Grove substation 230/69kV Transformer 1 is about 42 years old and is considered one of the lowest health units in the transformer fleet. It has experienced significant maintenance over its operation, including:

- Replacing a failed winding temperature gauge
- Replacing diverter switches in the LTC
- Inspecting oil level gauges, connections, and cables for water intrusion
- Repairing/replacing the compressor and motor



Specific Assumption References:

PPL 2024 Annual Assumptions

PPL Transmission Zone: Supplemental
New Buffalo, PA

Need number(s): PPL-2024-0016

Process Stage: Solution Meeting TEAC - 11/06/2024

Proposed Solution:

Blooming Grove substation 230-69kV Transformer 1: Install a new 170MVA, 230-69kV transformer as an in-kind replacement of the existing 230-69kV Blooming Grove Transformer 1.

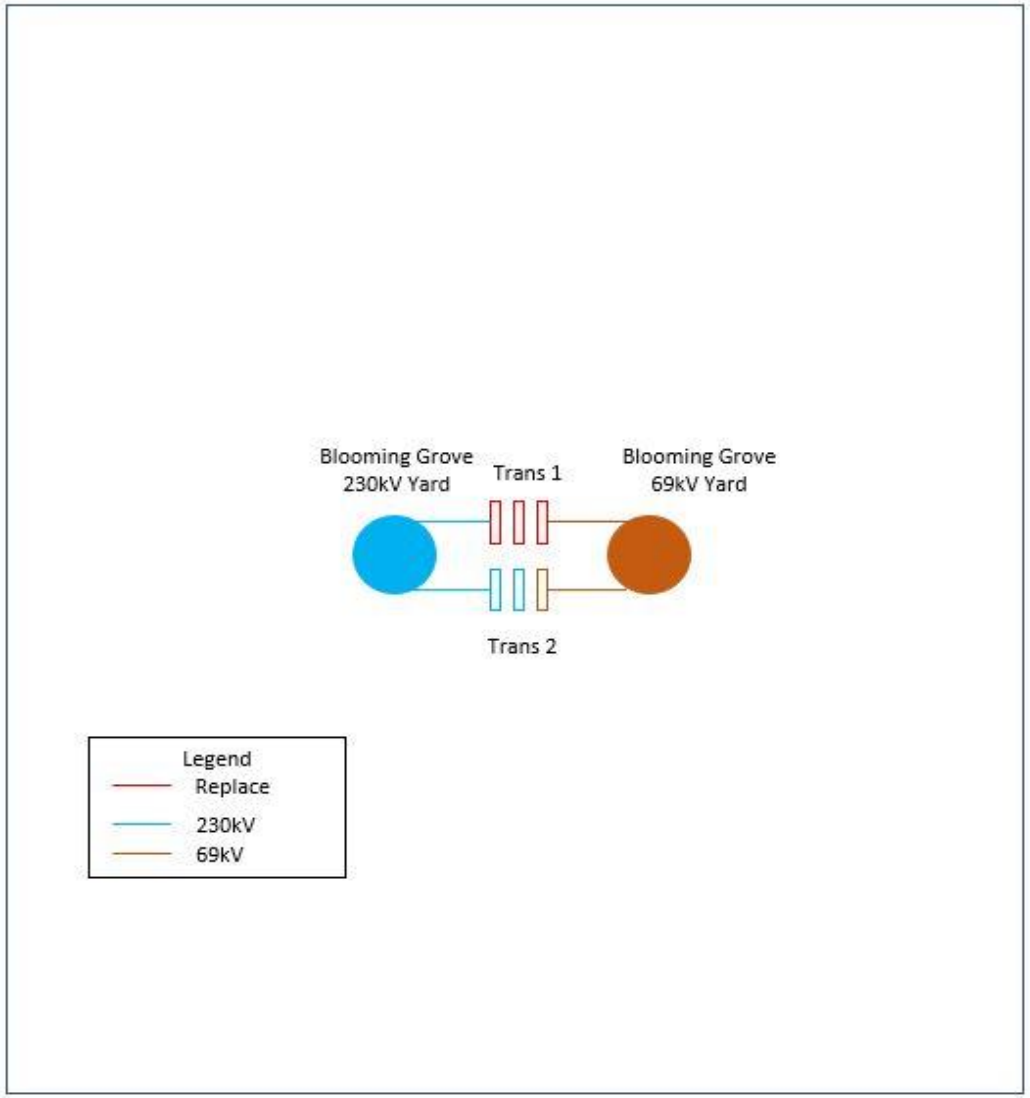
Transmission Cost Estimate: $6.3 M

Alternatives Considered:

No Feasible Alternative.

Projected In-Service: 12/31/2027

Project Status: Conceptual



Specific Assumption References:
[PPL 2024 Annual Assumptions]

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

10/28/2024 - V1 – Original version posted to pjm.com