Submission of PPL Supplemental Projects for Inclusion in the 2023 Local Plan

PPL Transmission Zone: Supplemental

Need Number: PPL-2021-0006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Need Slide Presented: 12/20/2021

Solution Slide Presented: 5/10/2022

Supplemental Project Driver: Equipment Material Condition, Performance and Risk; Operational Flexibility and Efficiency

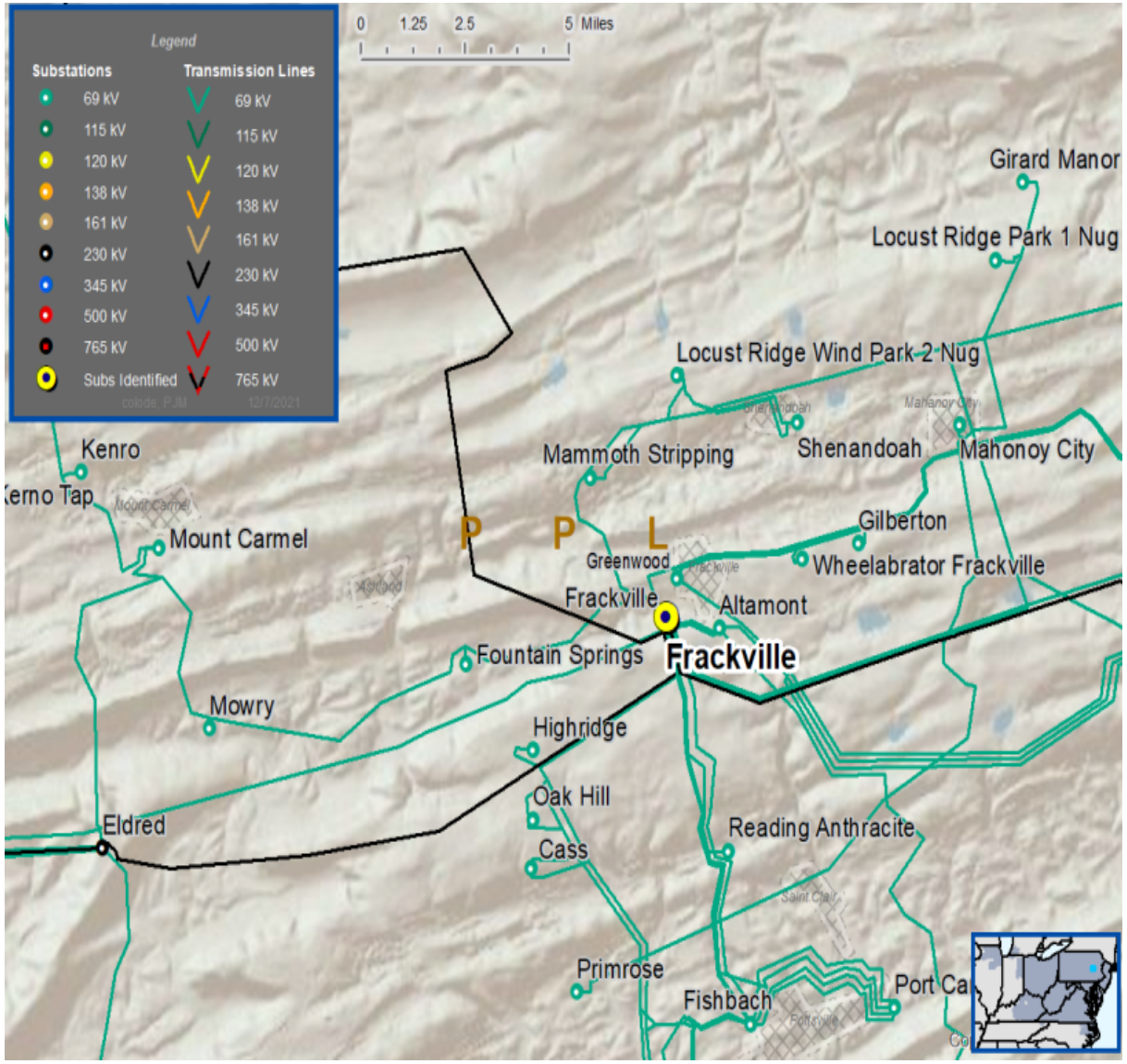
Problem Statement:

The equipment at Frackville 230/69kV Substation is reaching end of life. The current configuration of the Frackville Substation limits the ability to maintain, operate, and replace equipment. Following are the risks under certain operating conditions:

- Approximately 500 MW load/110,000 customers are at power outage risk
- 14,000 stranded customers
- Thermal overload (128% of emergency rating) on a 230-69 kV transformer

Specific Assumption References:

[PPL 2021 Annual Assumptions]



PPL Transmission Zone: Supplemental

Need Number: PPL-2021-0006

Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Selected Solution: Build a new breaker and half 230/69kV substation next to the existing Frackville substation to address aging infrastructure and lack of operational flexibility.

Alternatives Considered:

- Replace equipment in place at existing substation: Infeasible due to operational limitations for taking outages at Frackville. This alternative does not address the operational issues due to the non-standard configuration.

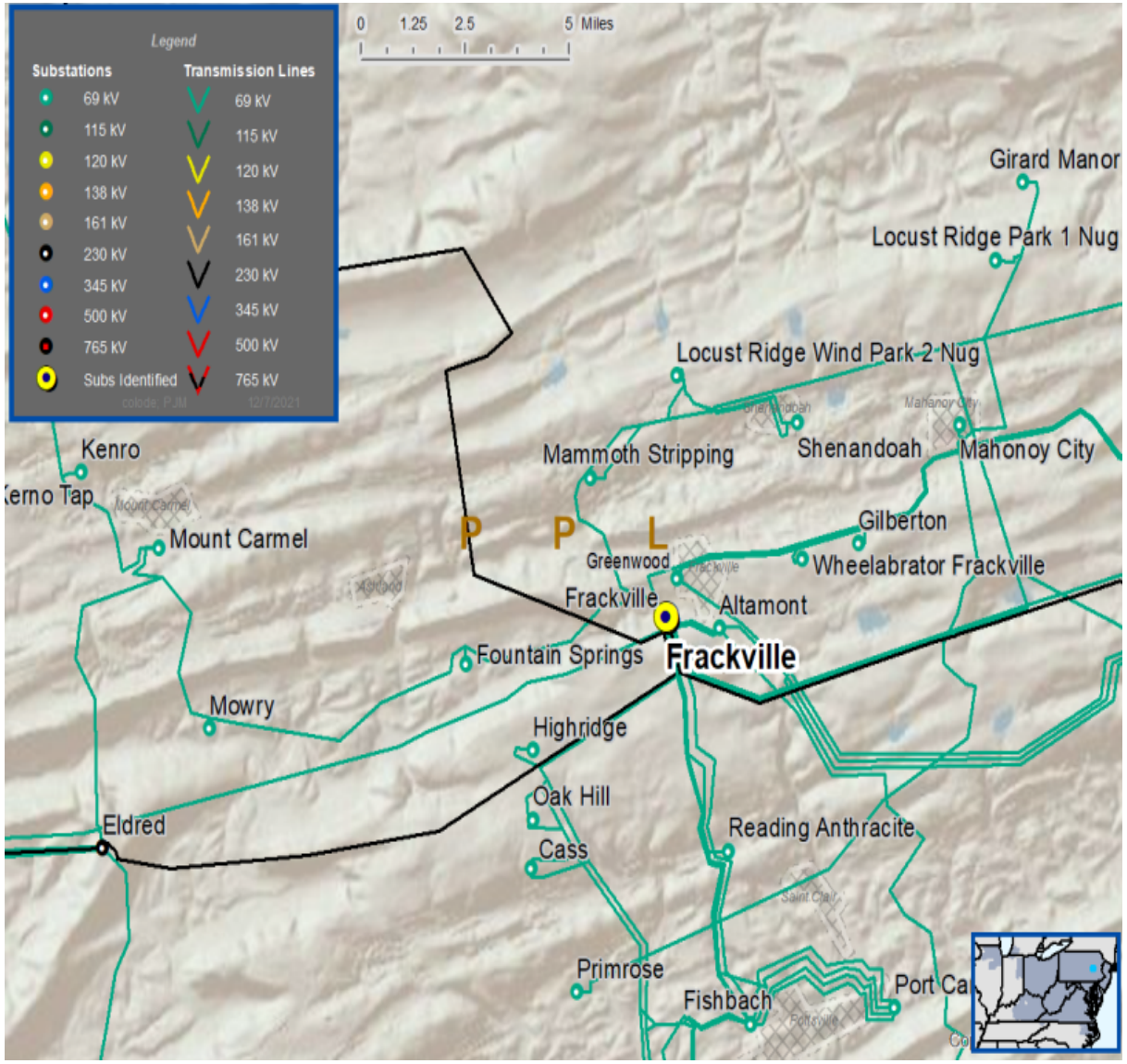
Estimated Project Cost: $60M

Project IS Date: 12/31/2025

Project Status: Conceptual

Supplemental Project ID: S2753

Model: 2026



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Need Slide Presented: 7/21/2022

Solution Slide Presented: 09/15/2022

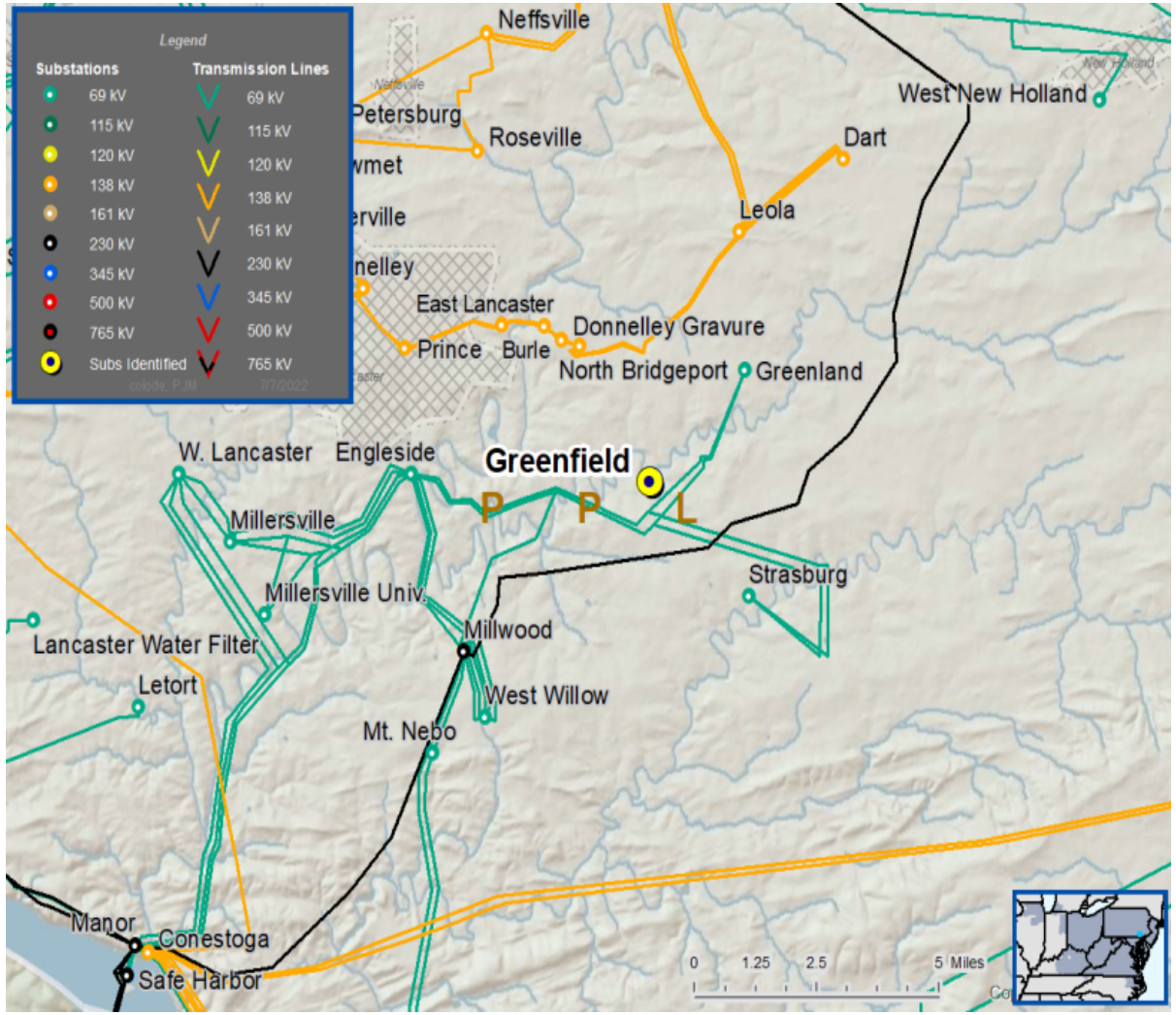
Supplemental Project Driver: Customer Service

Problem Statement:

- A new customer has submitted a request to have their facility served from a 69kV transmission line in East Lampeter Township, PA. The load is approximately 14 MVA.

Specific Assumption References:

[PPL 2022 Annual Assumptions]



Need Number: PPL-2022-0005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Selected Solution:

Extend a new single 69kV tap from the existing Engleside - Greenland #1 69kV line to interconnect a new customer's 69-12.47kV substation. Build 0.15 miles of new 69kV single circuit line using 556 ACSR conductor.

Alternatives Considered:

1. No feasible alternatives

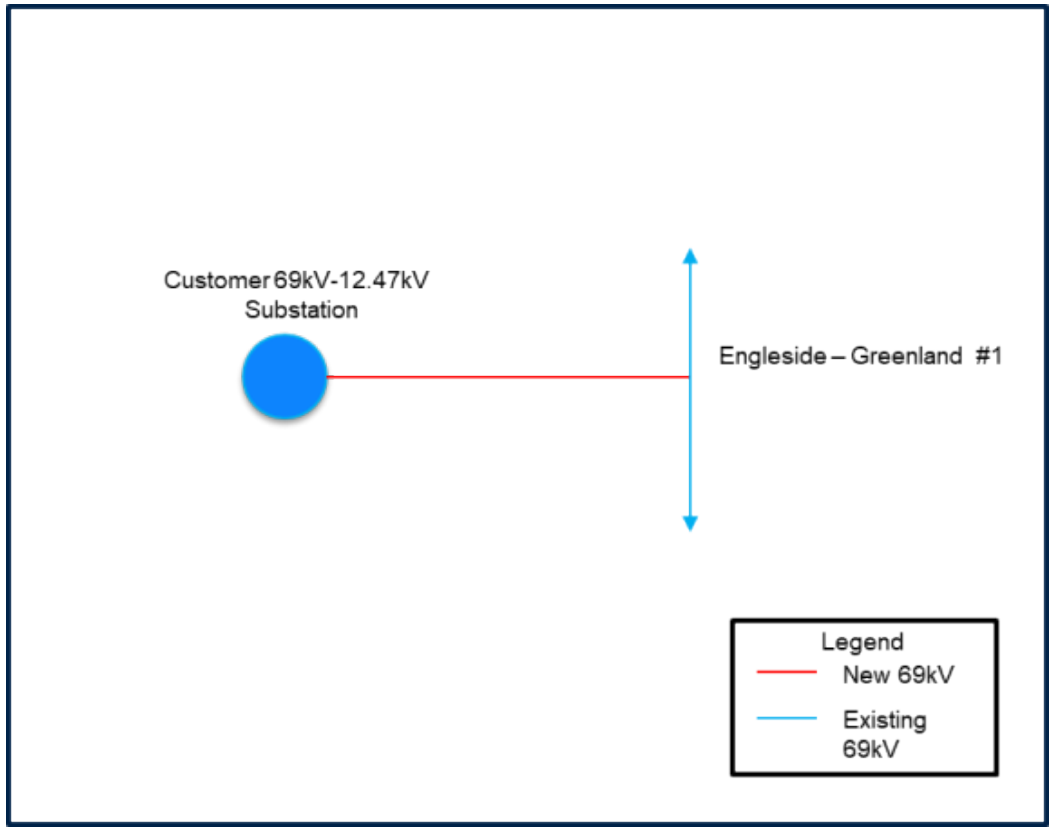
Estimated Project Cost: $1.0M

Projected In-Service: 12/31/2023

Supplemental Project ID: S2837

Project Status: Conceptual

Model: 2023



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Need Slide Presented: 10/13/2022

Solution Slide Presented: 11/17/2022

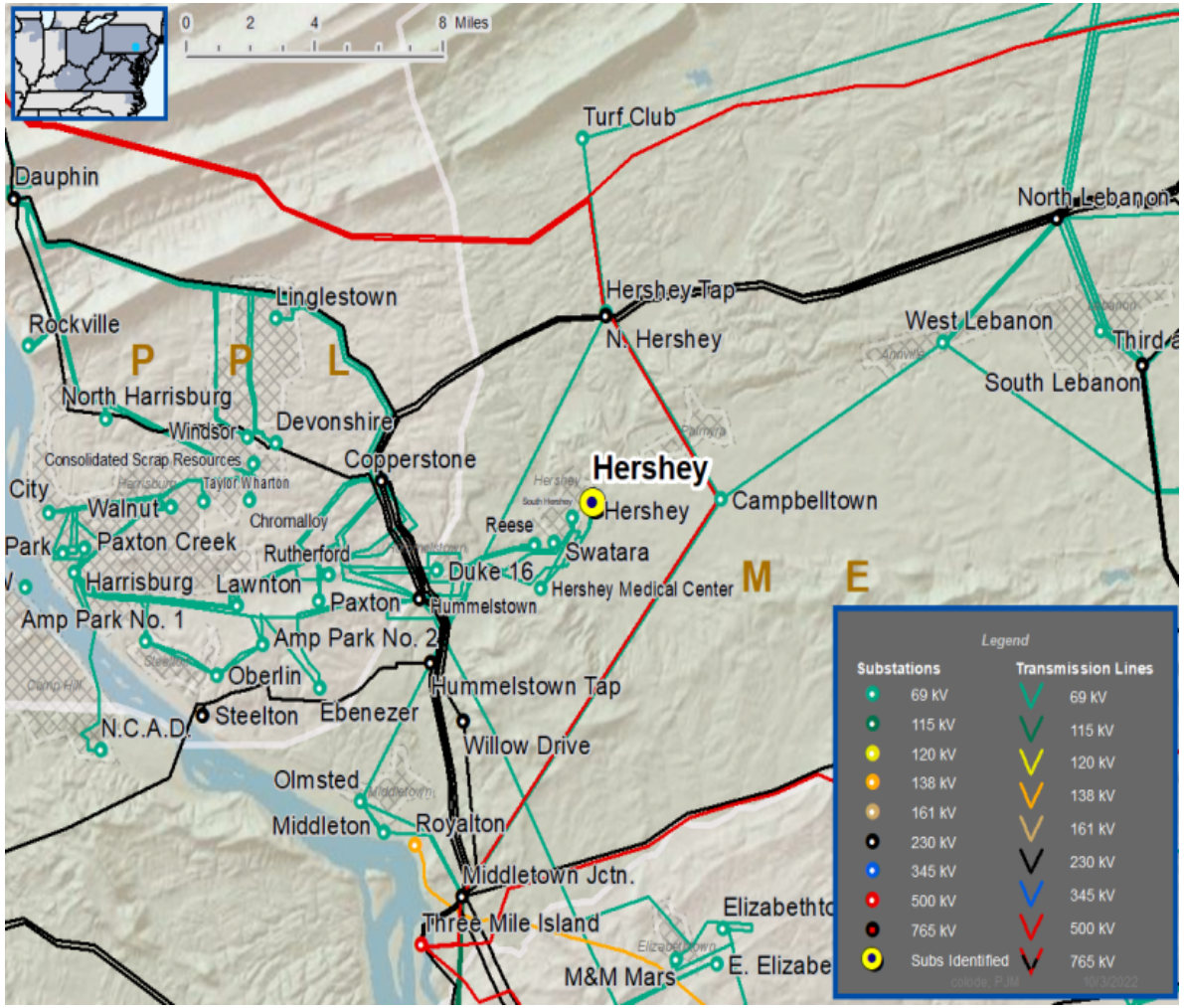
Supplemental Project Driver: Customer Service

Problem Statement:

- A customer has submitted a request to have their facility served from two 69kV transmission lines in Hershey, PA. The load is approximately 20 MVA.

Specific Assumption References:

[PPL 2022 Annual Assumptions]



Need Number: PPL-2022-0008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 3/17/2023

Selected Solution:

Extend a new double circuit 69kV tap from the existing Hummelstown – Copperstone #1 & #2 69kV lines to interconnect a new customer's 69-13.8kV substation. Build 0.1 miles of new 69kV double circuit line using 556 ACSR conductor.

Alternatives Considered:

1. No feasible alternatives

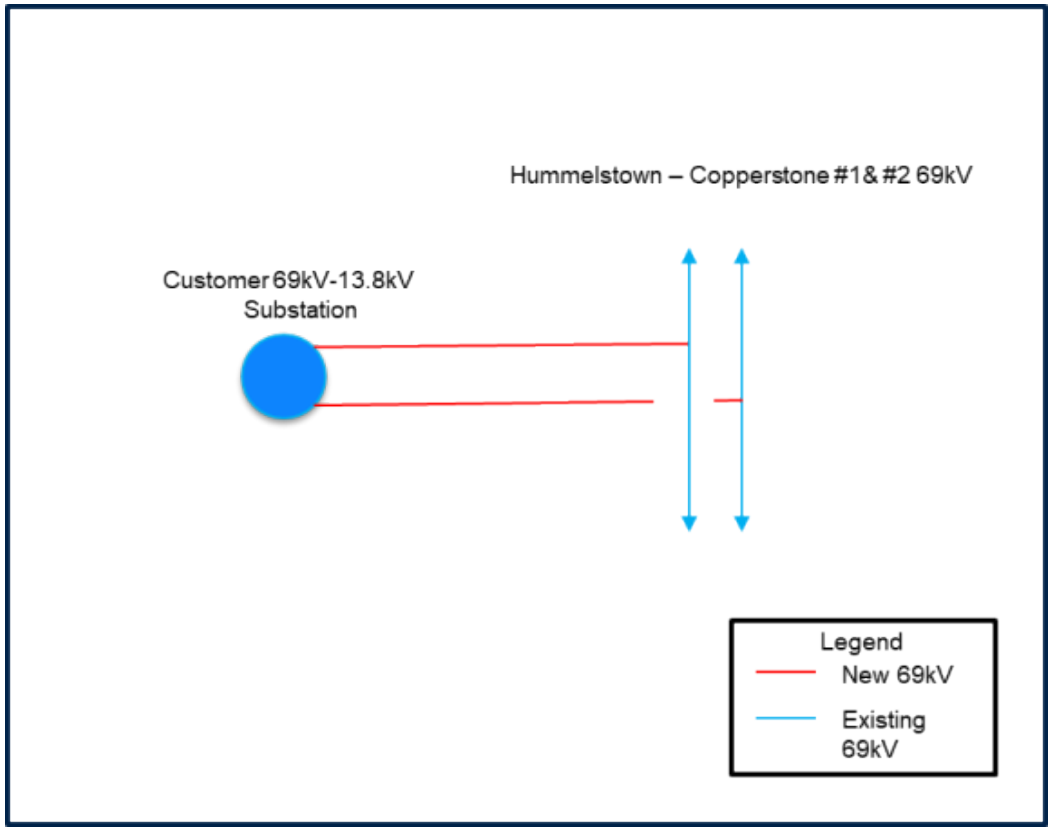
Estimated Project Cost: $1.5M

Projected In-Service: 12/31/2023

Supplemental Project ID: S2842

Project Status: Conceptual

Model: 2023



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

Need Slide Presented: 3/17/2022

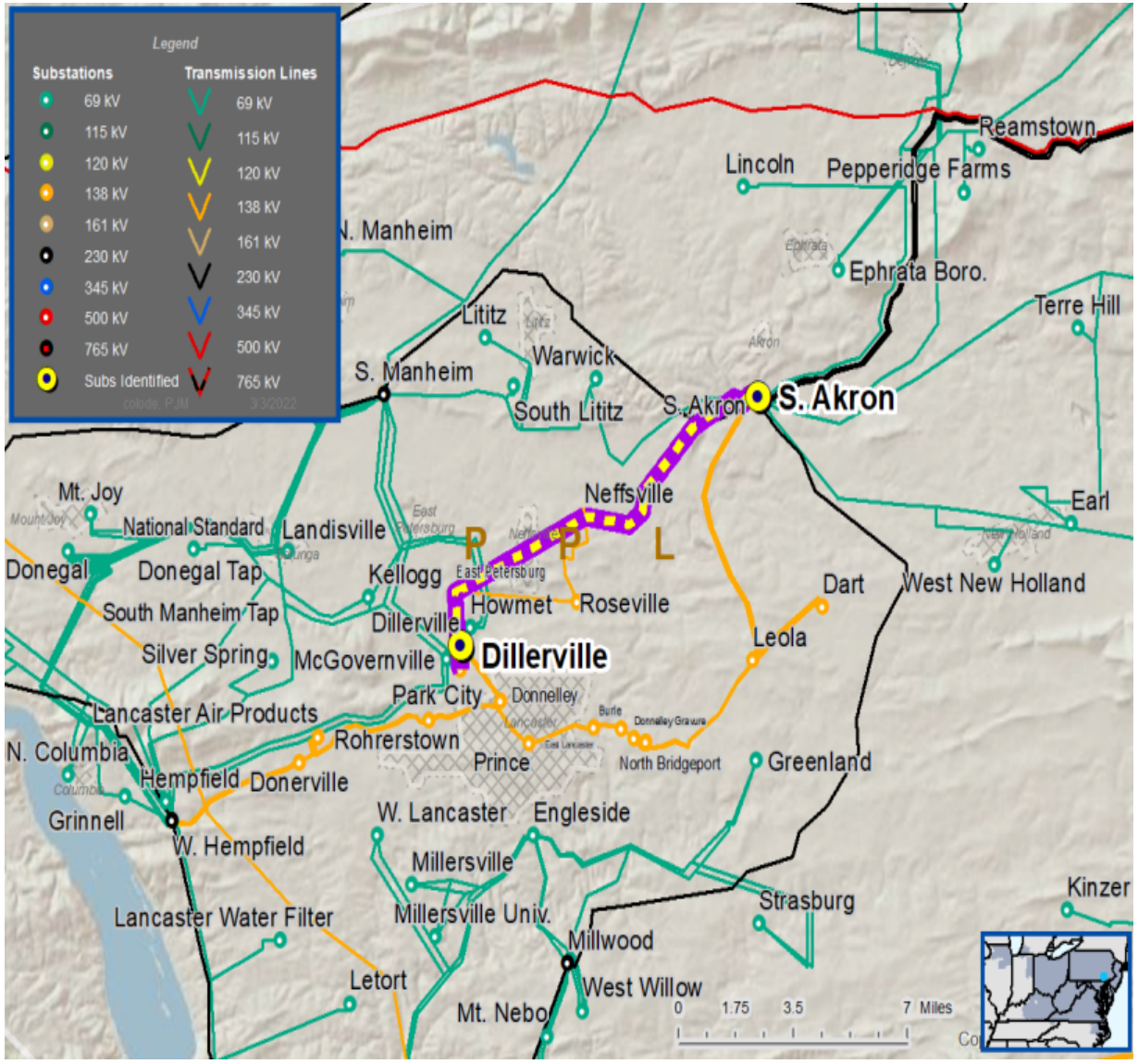
Solution Slide Presented: 3/16/2023

Supplemental Project Driver: Equipment Material Condition, Performance and Risk;

Problem Statement:

The South Akron-Dillerville 1&2 138kV lines are a reliability risk due to frequent operations and poor asset health. The lines have experienced a combined 17 operations since 2014. The lines are in poor condition with the majority of the original assets installed in 1948. This is a 12.5 mile line, installed with 556.5 kcmil ACSR conductor and a mix of steel monopoles and lattice towers.

Specific Assumption References:
[PPL 2022 Annual Assumptions]



Need Number: PPL-2022-0001

Proposed Solution:

Rebuild 12.5 miles of the South Akron – Dillerville #1 & #2 138kV lines with steel poles and 556 ACSR conductor

Alternatives Considered:

1. No feasible alternatives

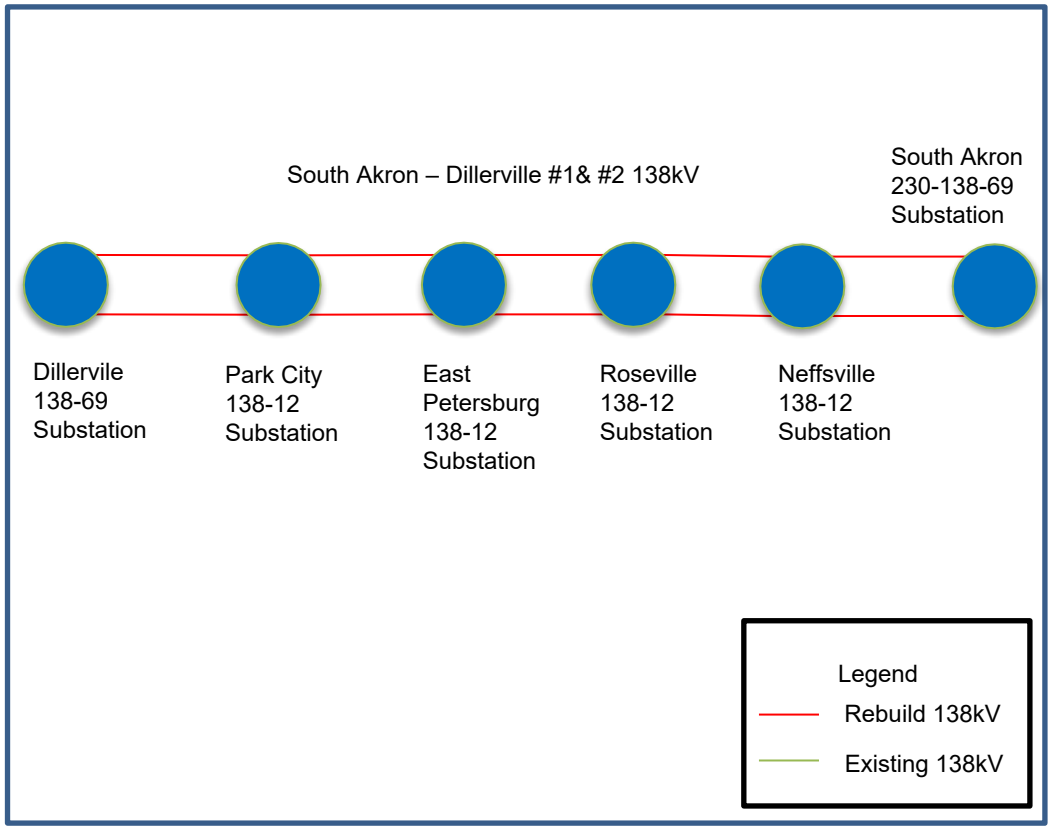
Estimated Project Cost: $31.5M

Projected In-Service: 4/30/2025

Project Status: Conceptual

Model: 2025

Supplemental Number: s2894



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

Need Slide Presented: 3/17/2022

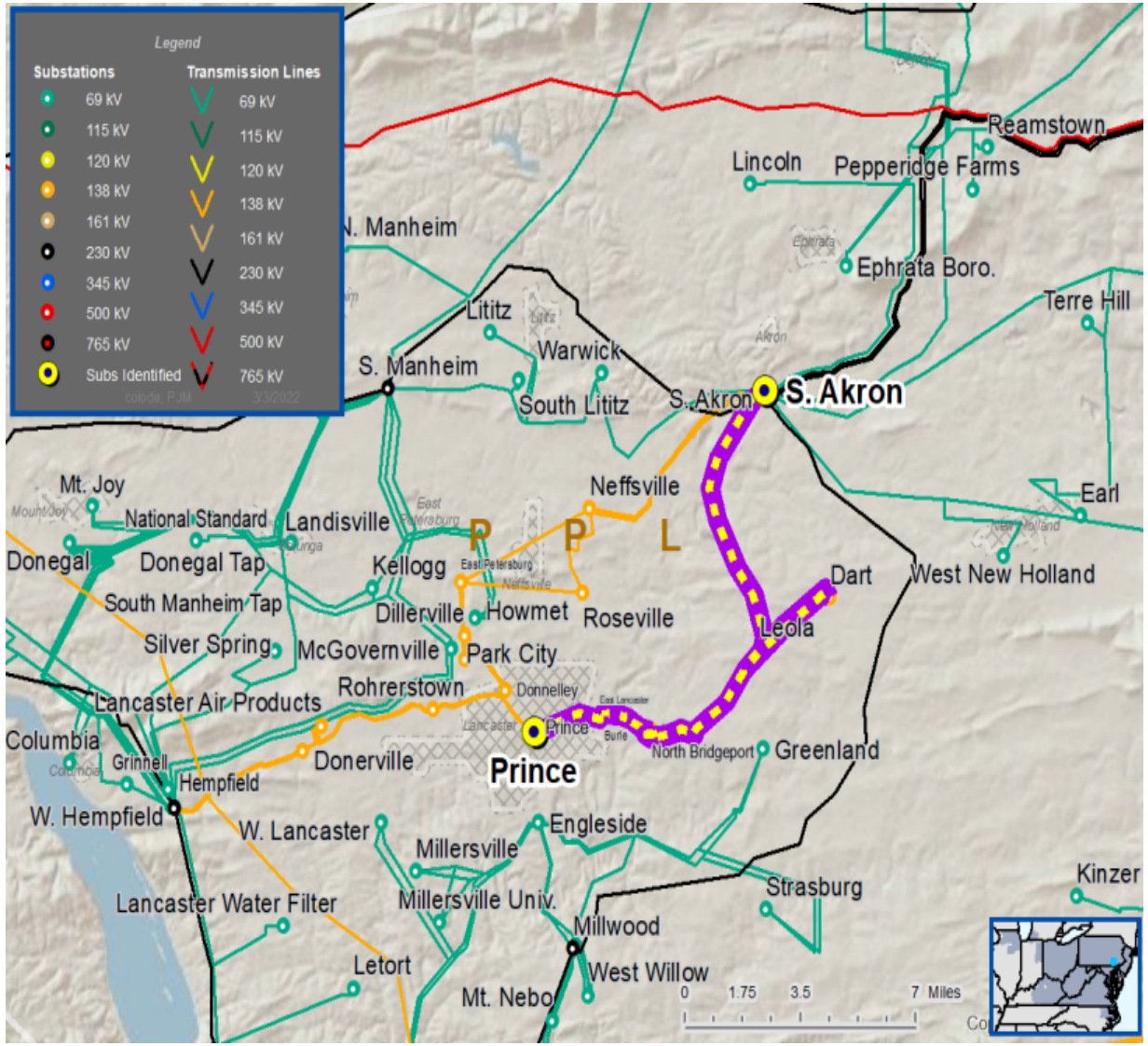
Solution Slide Presented: 3/16/2023

Supplemental Project Driver: Equipment Material Condition, Performance and Risk;

Problem Statement:

The South Akron-Prince 1&2 138kV lines are a reliability risk due to frequent operations and poor asset health. The lines have experienced a combined 16 operations since 2014. The lines are in poor condition with the majority of the original assets installed in 1950. This is an 11-mile line, installed with 556.5 and 795 kcmil ACSR and a mix of steel monopoles and lattice towers.

Specific Assumption References:
[PPL 2022 Annual Assumptions]



Need Number: PPL-2022-0002

Proposed Solution:

Rebuild 11 miles of the South Akron – Prince #1 & #2 138kV lines with steel poles and 556 ACSR conductor

Alternatives Considered:

1. No feasible alternatives

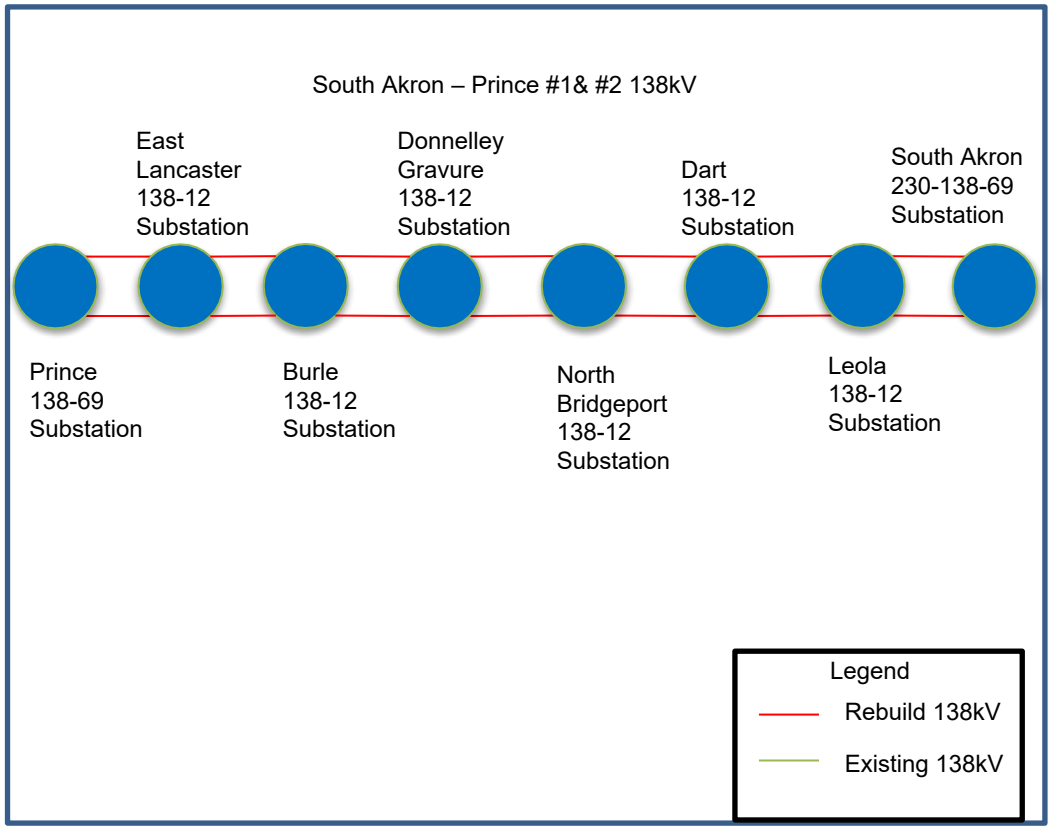
Estimated Project Cost: $36M

Projected In-Service: 12/30/2025

Project Status: Conceptual

Model: 2026

Supplemental Number: s2895



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

Need Slide Presented: 07/21/2022

Solution Slide Presented: 3/16/2023

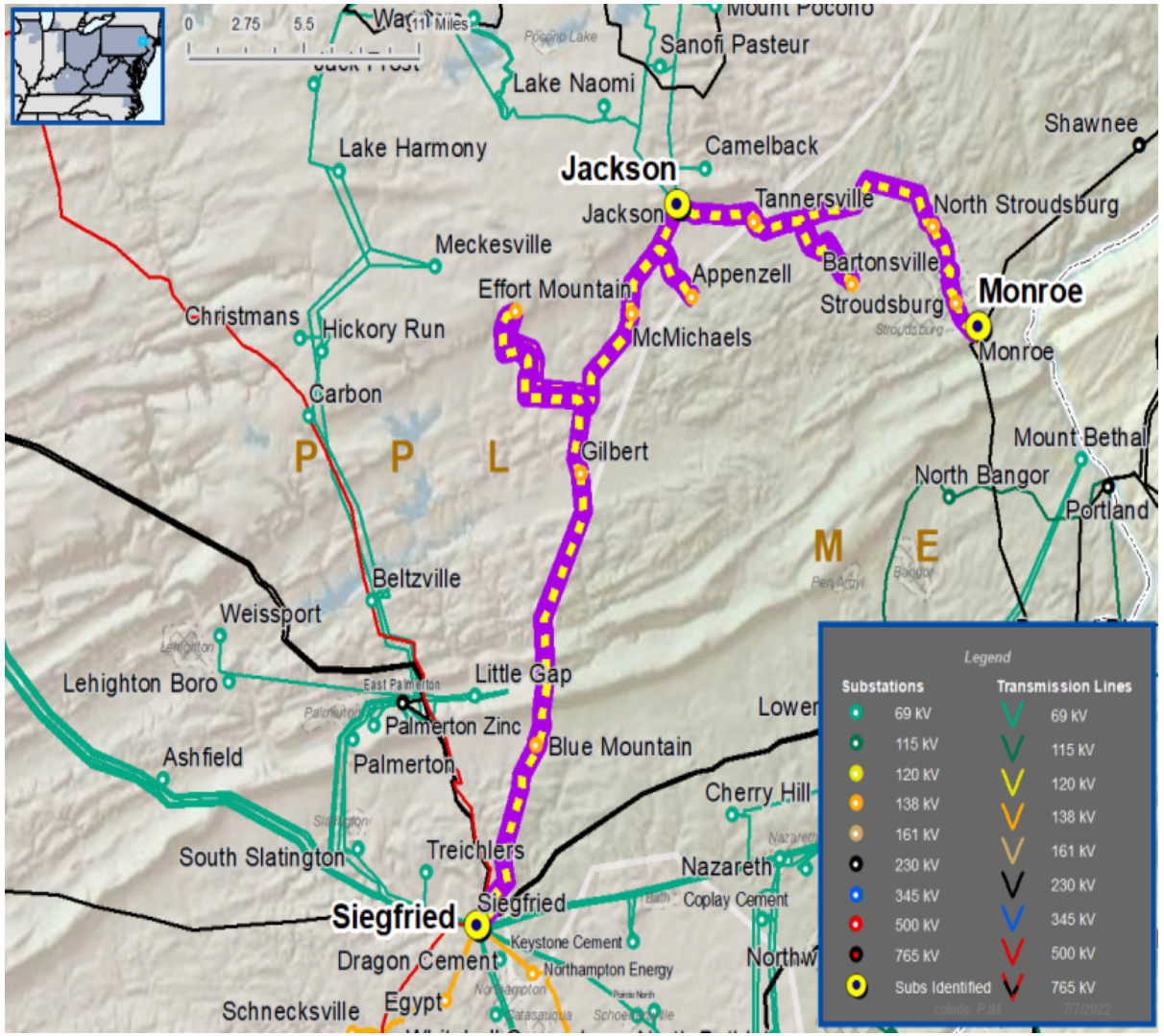
Supplemental Project Driver: Operational Flexibility and Efficiency

Problem Statement:

PPL EU has experienced poor performance on the 138kV network lines in PPL's Northeast Region. Outage performance since 2013:

Line Name	Momentary	Permanent
MONR-JKSN 1	11	
MONR-JKSN 2	6	
SIEG-JKSN 1	13	2
SIEG-JKSN 2	16	1

Specific Assumption References:
PPL 2022 Annual Assumptions



Need Number: PPL-2022-0007

Proposed Solution:

Install in-line breakers on the Monroe – Jackson #1 & #2 138kV lines at the existing North Stroudsburg substation. Install in-line breakers on the Siegfried – Jackson #1 & #2 138kV lines at the existing Gilbert substation.

Alternatives Considered:

1. No feasible alternatives

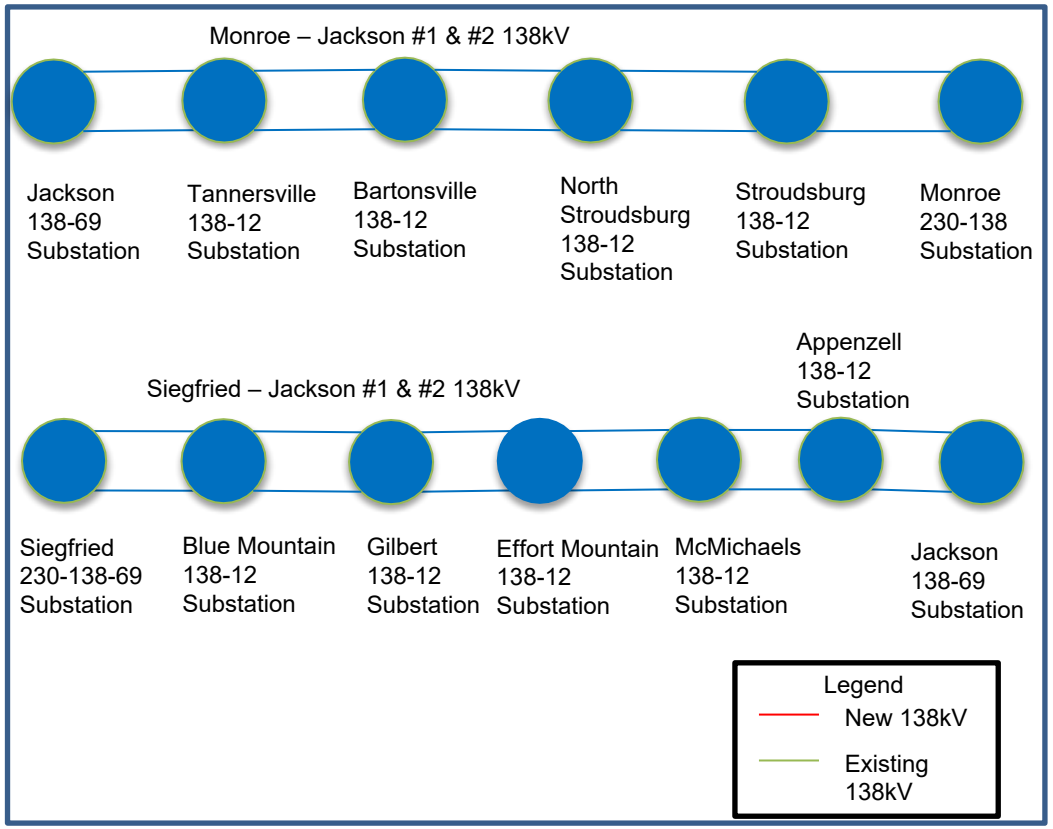
Estimated Project Cost: $8M

Projected In-Service: 12/31/2024

Project Status: Conceptual

Model: 2024

Supplemental Number: s2896



PPL Transmission Zone: Supplemental

Need Number: PPL-2023-0002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

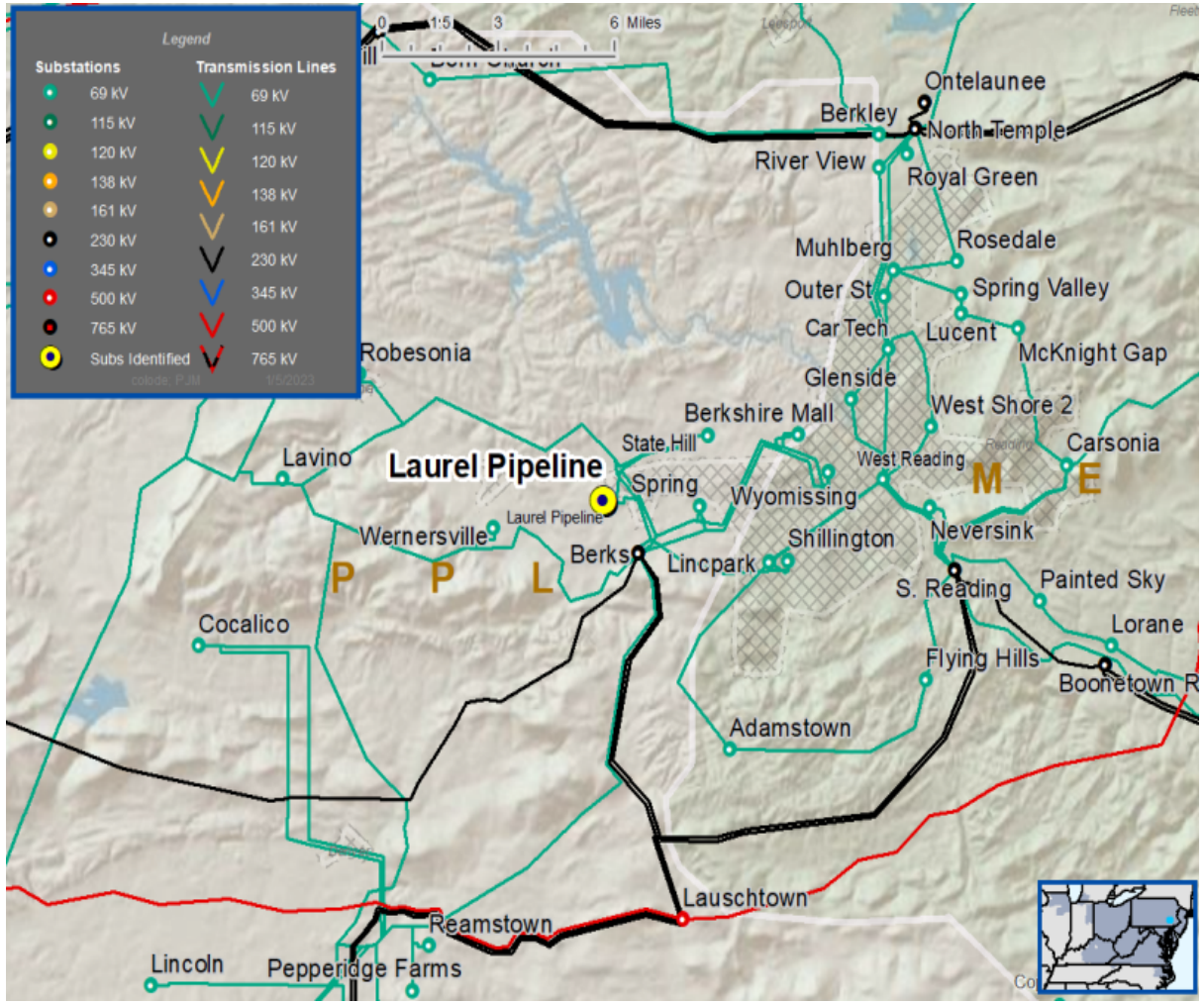
Need Slide Presented: 01/17/2023

Solution Slide Presented: 3/16/2023

Supplemental Project Driver: Equipment Material Condition, Performance and Risk;

Problem Statement:

The Laurel Pumping 69kV Tap is a reliability risk due to poor asset health. The line is in poor condition with the original assets installed in 1959. This 0.66 mile line was installed with #62 Anaconda Composite Cu conductor. The structures are mostly wood poles with several steel poles interspersed.



Specific Assumption References:

[PPL 2023 Annual Assumptions]

Need Number: PPL-2023-0002

Proposed Solution:

Rebuild the 0.66 miles of the Laurel Pumping 69kV Tap with steel poles and 556 ACSR conductor.

Alternatives Considered:

1. No feasible alternatives

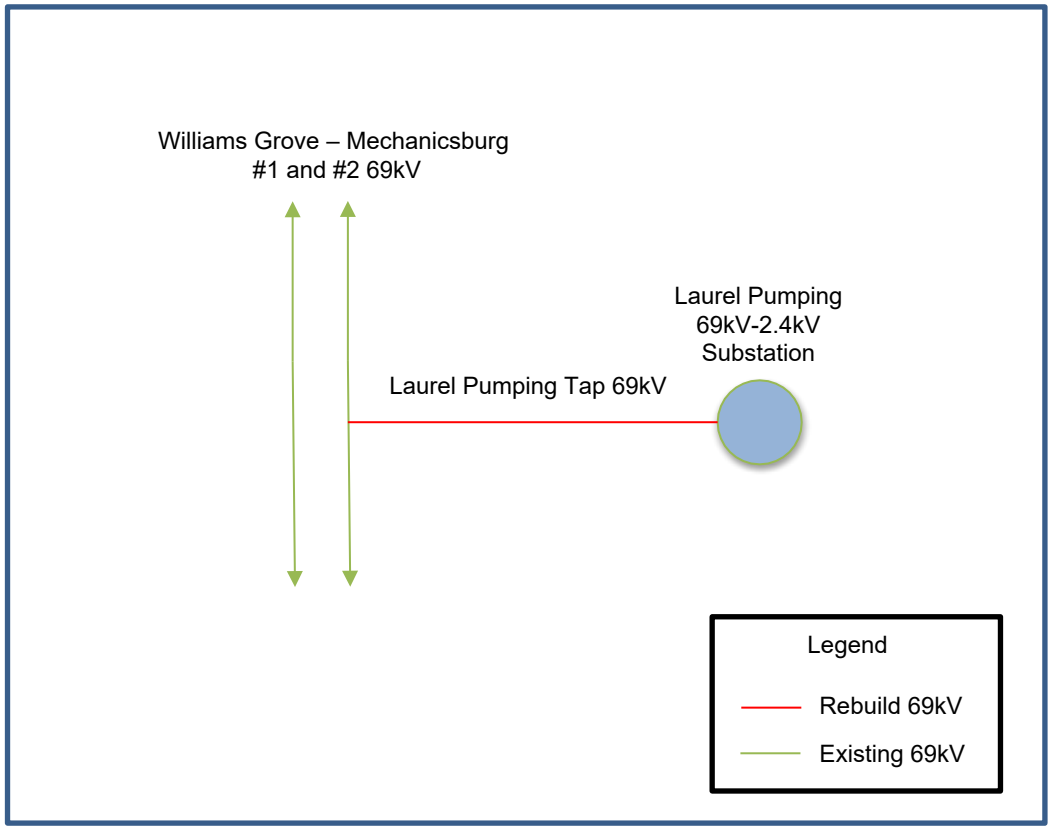
Estimated Project Cost: $1.1M

Projected In-Service: 12/31/2023

Project Status: Conceptual

Model: 2023

Supplemental Number: s2902



PPL Transmission Zone: Supplemental

Need Number: PPL-2023-0003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

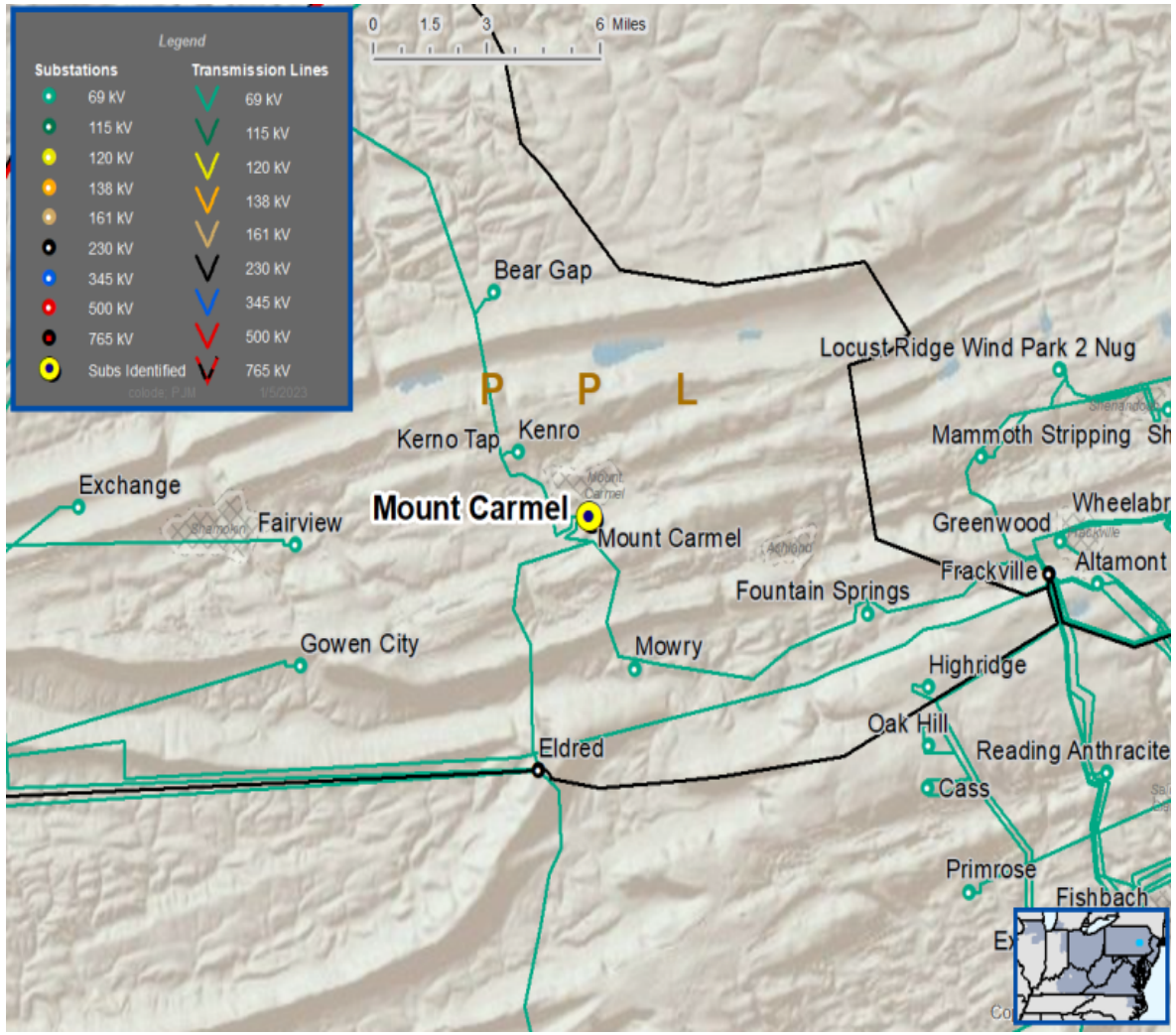
Need Slide Presented: 01/17/2023

Solution Slide Presented: 3/16/2023

Supplemental Project Driver: Customer Service

Problem Statement:

- A customer has submitted a request to have their facility served from a 69kV transmission line in Mt Carmel, PA. The load is approximately 4 MVA.



Specific Assumption References:
[PPL 2023 Annual Assumptions]

Need Number: PPL-2023-0003

Proposed Solution:

Extend a new single circuit 69kV tap from the existing Eldred – Cleveland 69kV line to interconnect a new customer owned 69-4.16kV substation. Build 0.1 miles of new 69kV single circuit line using 556 ACSR conductor.

Alternatives Considered:

1. No feasible alternatives

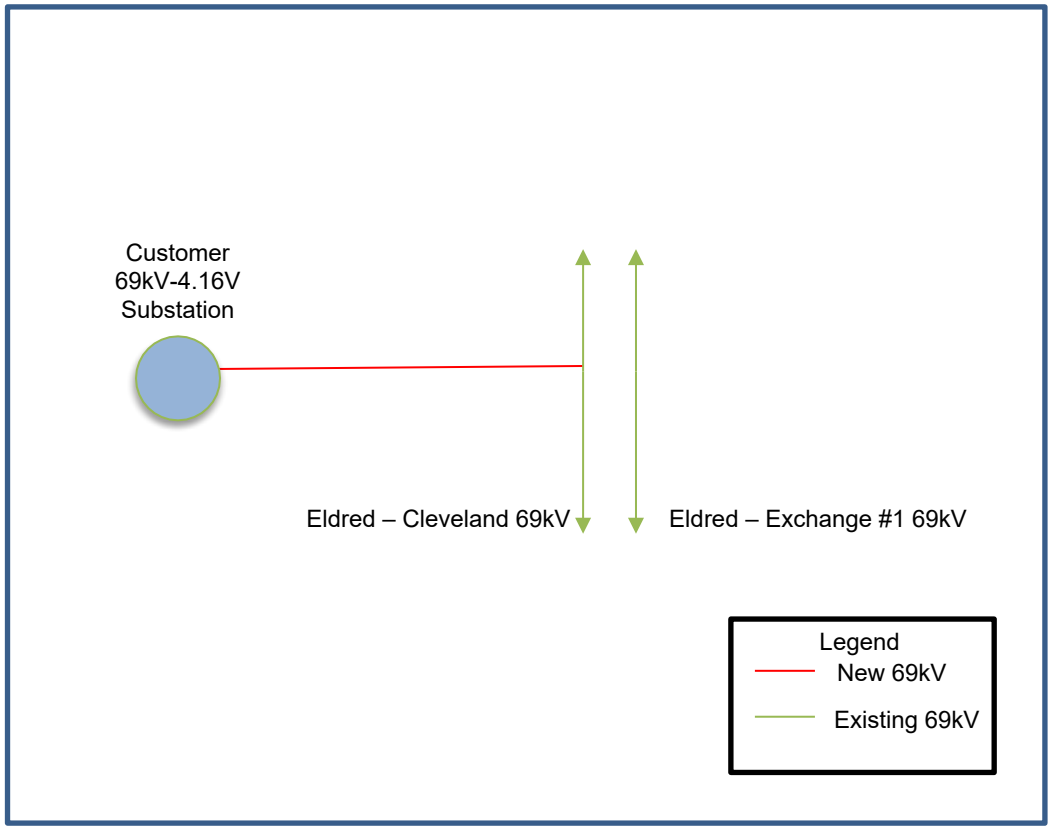
Estimated Project Cost: $0.6M

Projected In-Service: 6/30/2024

Project Status: Conceptual

Model: 2024

Supplemental Number: s2903



PPL Transmission Zone: Supplemental

Need Number: PPL-2022-0006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

Need Slide Presented: 07/21/2022

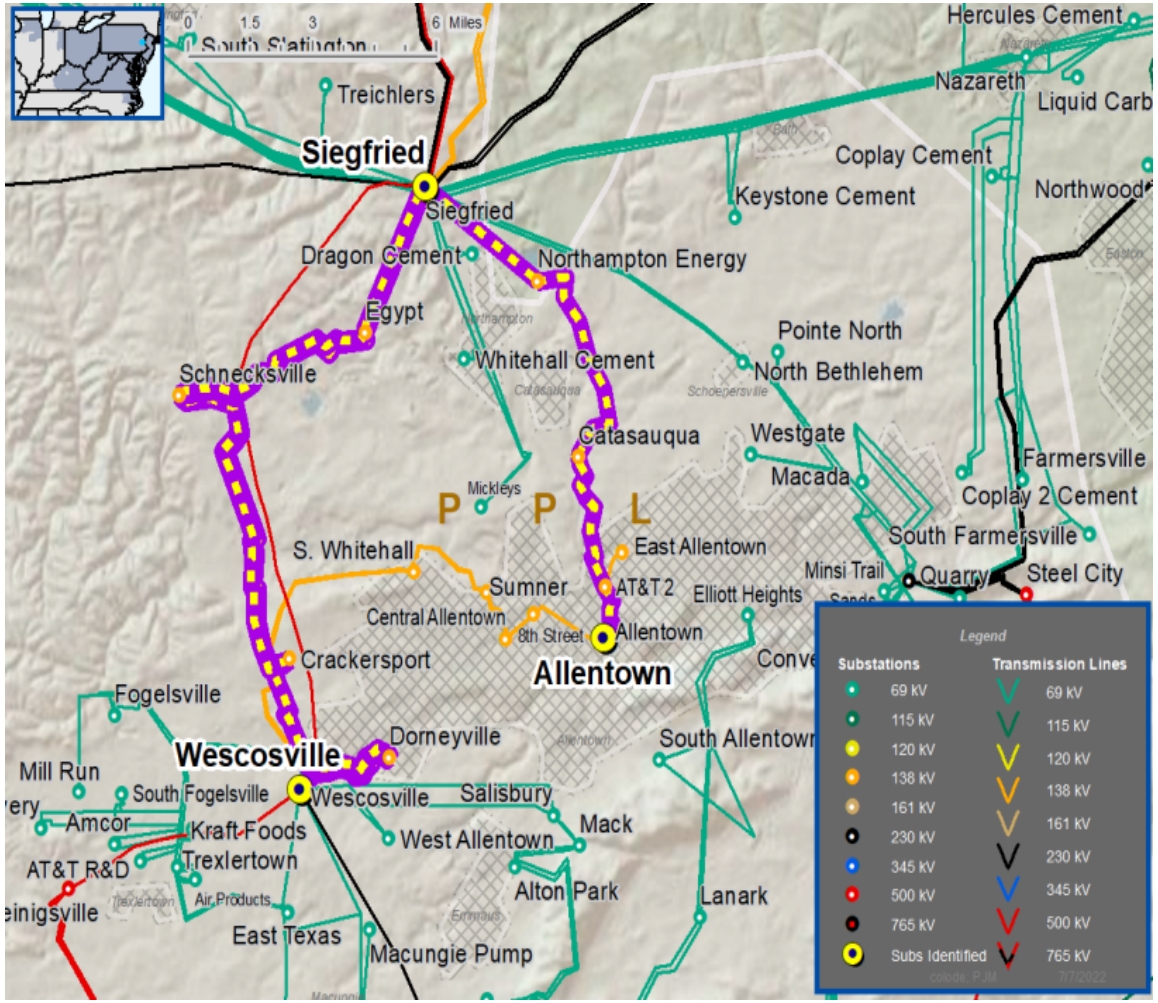
Solution Slide Presented: 1/17/2023

Supplemental Project Driver: Operational Flexibility and Efficiency

Problem Statement:

PPL EU has experienced poor performance on the 138kV network lines in PPL's Lehigh Region. Outage performance since 2013:

Line Name	Momentary	Permanent
SIEG-WESC 1	10	
SIEG-WESC 2	9	1
WESC-ALLE 1	3	1
WESC-ALLE 2	5	3



Specific Assumption References:

[PPL 2022 Annual Assumptions]

Need Number: PPL-2022-0006

Proposed Solution:

Install in-line breakers on the Wescosville – Allentown #1 & #2 138kV lines at the existing Sumner substation. Acquire new site and install in-line breaker yard on the Siegfried – Wescosville #1 & #2 138kV.

Alternatives Considered:

1. No feasible alternatives

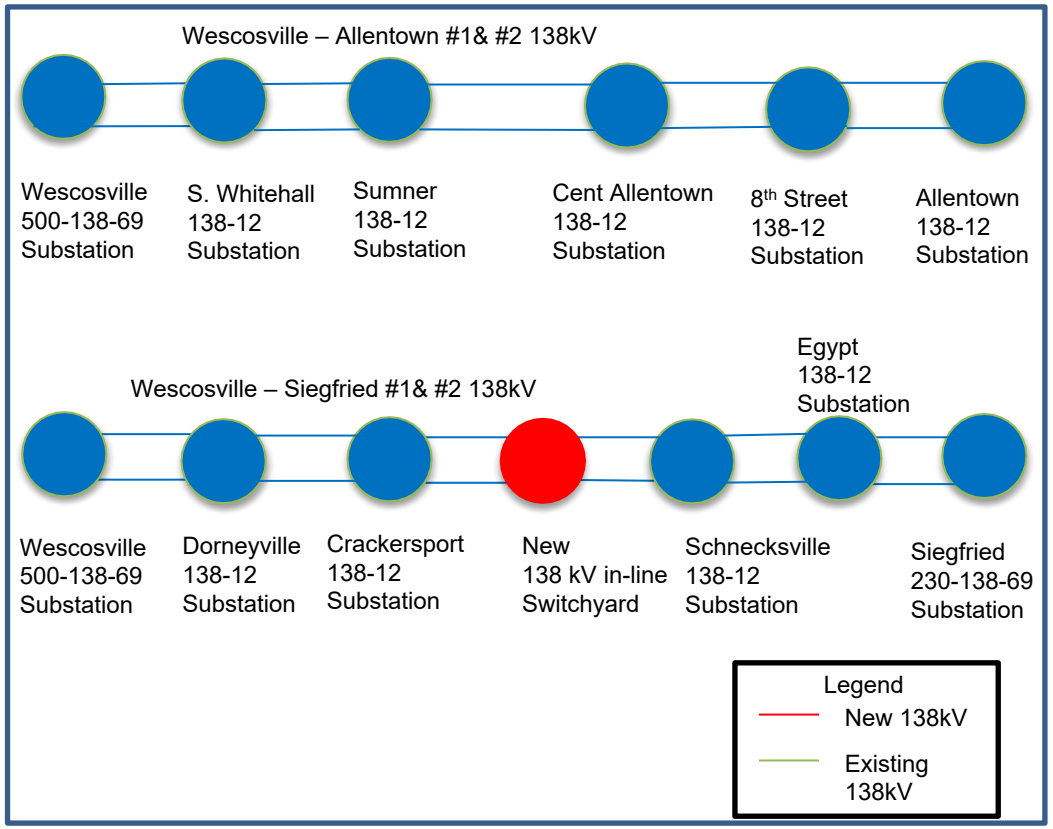
Estimated Project Cost: $8M

Projected In-Service: 12/31/2024

Project Status: Conceptual

Model: 2024

Supplemental Number: s2890.1 & s2890.2



Need Number: PPL-2022-0009

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/11/2023

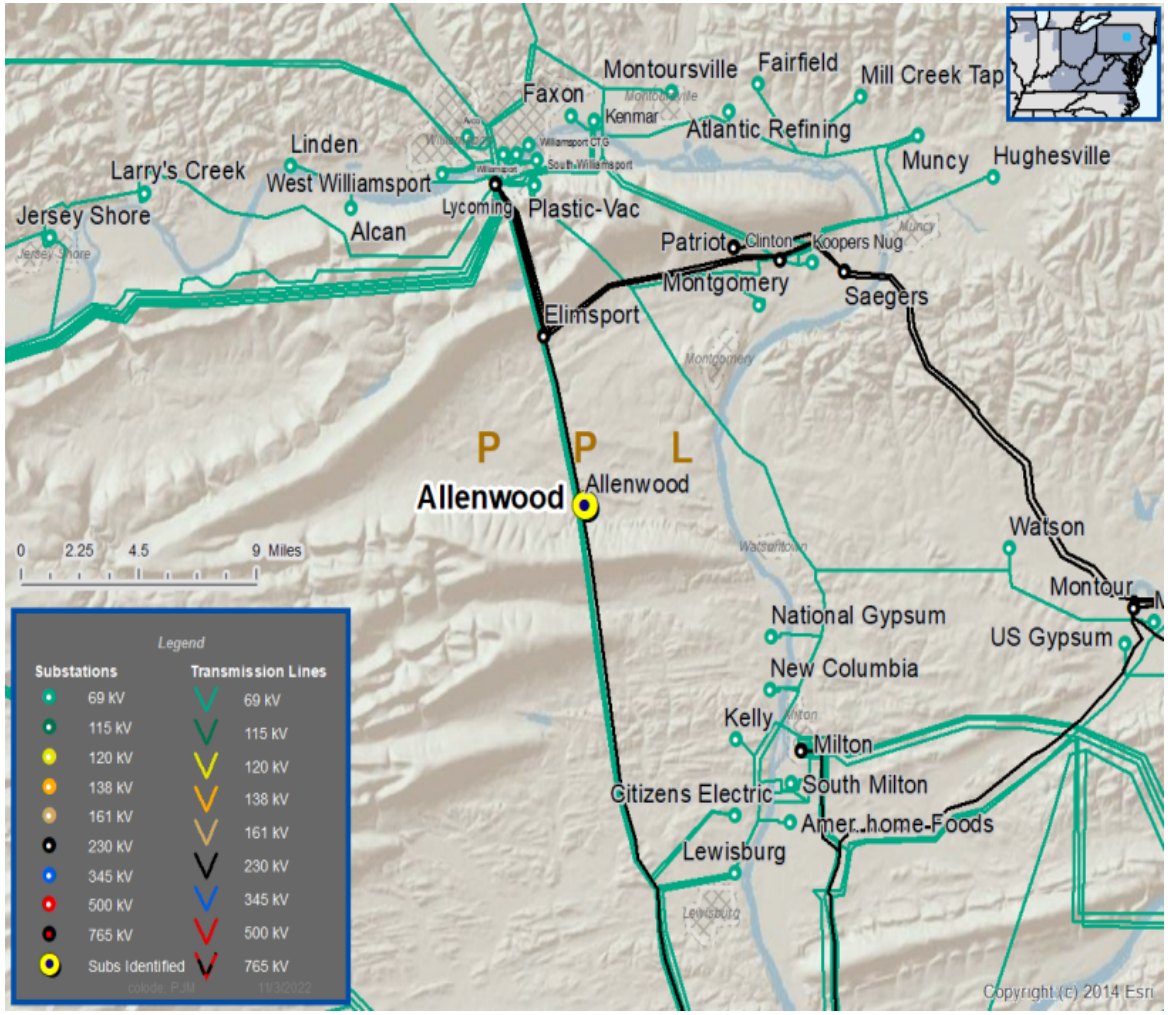
Need Slide Presented: 11/17/2022

Solution Slide Presented: 1/17/2023

Supplemental Project Driver: Customer Service

Problem Statement:

- PPL Distribution has submitted a request for double circuit 69kV service for a new 69-12kV substation near Allenwood, PA. There have been multiple requests for distribution service from new customers with a total expected load addition of 18-30 MWs. The distribution system in the area does not have sufficient capacity to serve the load.



Specific Assumption References:
[PPL 2022 Annual Assumptions]

Need Number: PPL-2022-0009

Proposed Solution:

Extend a new double circuit 69kV tap from the existing Clinton – Milton #1 & #2 69kV lines to interconnect a new Great Stream 69-12.47kV substation. Build 0.1 miles of new 69kV double circuit line using 556 ACSR conductor.

Alternatives Considered:

1. No feasible alternatives

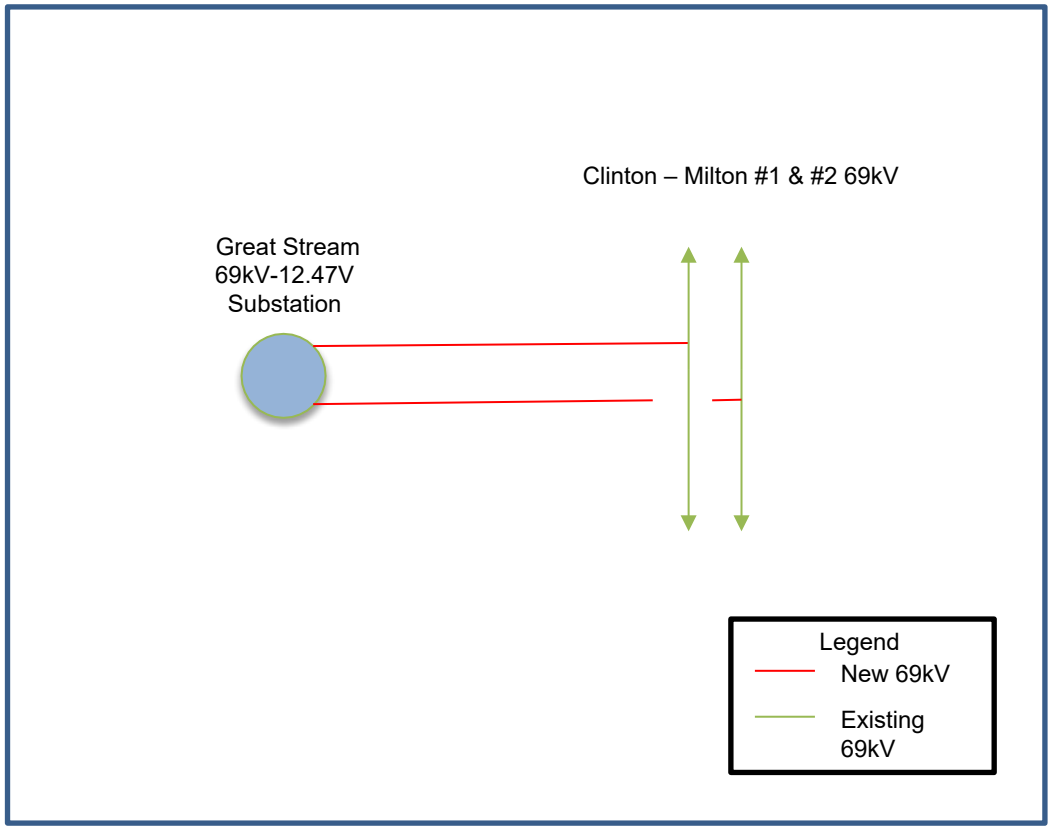
Estimated Project Cost: $1.5M

Projected In-Service: 5/1/2024

Project Status: Conceptual

Model: 2024

Supplemental Number: s2891



PPL Transmission Zone: Supplemental

Need Number: PPL-2021-0003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/25/2023

Need Slide Presented: 5/20/2021

Solution Slide Presented: 5/18/2023

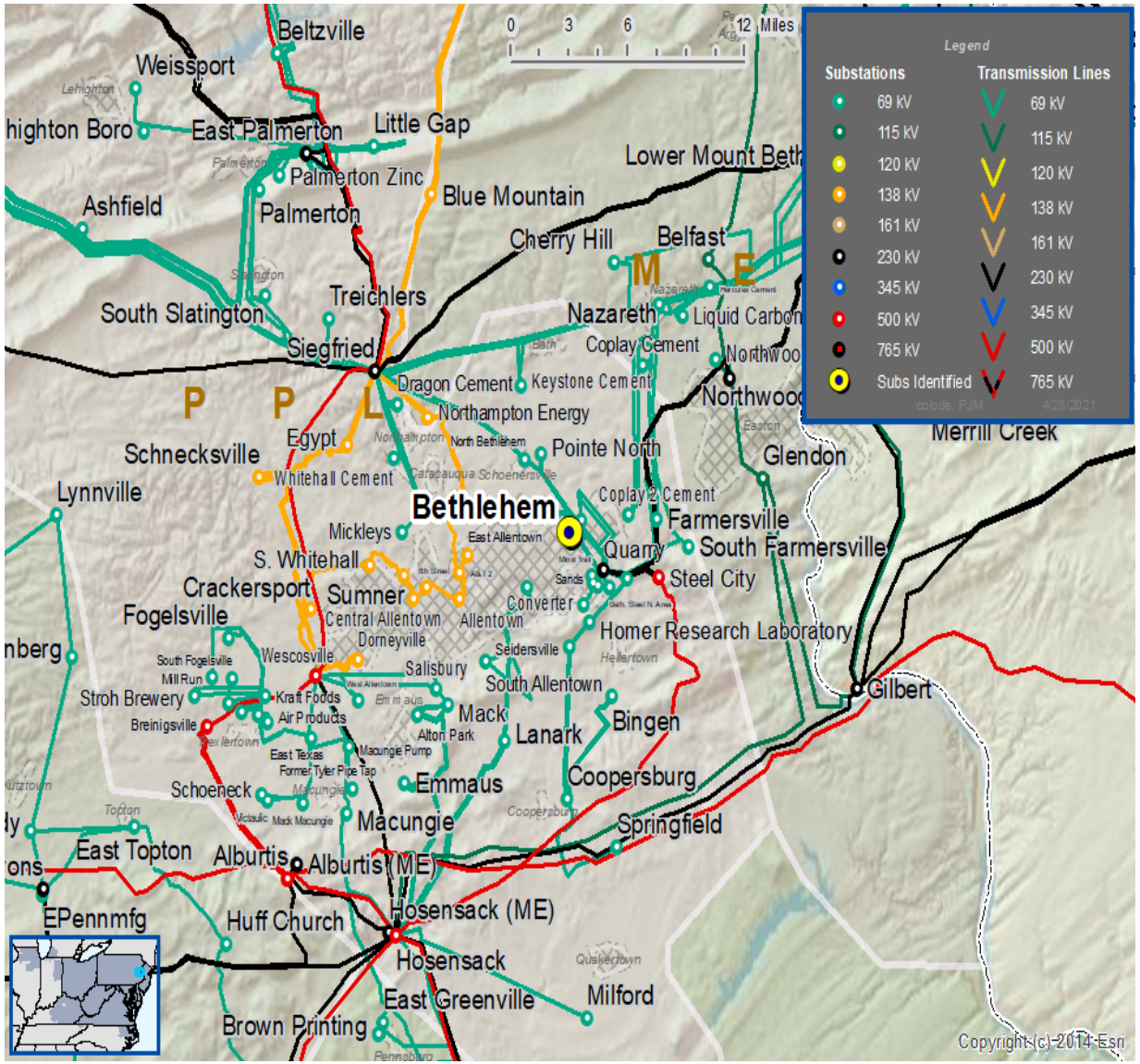
Supplemental Project Driver: Customer Service

Problem Statement:

PPL Distribution has requested a 69kV source to a new 69/12kV substation near Bethlehem PA due to load growth in the area.

Specific Assumption References:

[PPL 2021 Annual Assumptions]



PPL Transmission Zone: Supplemental

Need Number: PPL-2021-0003

Proposed Solution:

Extend a new double circuit 69kV tap from the existing Hosensack – Quarry #1 & #2 69kV lines to interconnect the new Saucon Park 69-12.47kV substation. Build 0.1 miles of new 69kV double circuit line using 556 ACSR conductor. Initial loading of ~24MVA.

Alternatives Considered:

1. No feasible alternatives

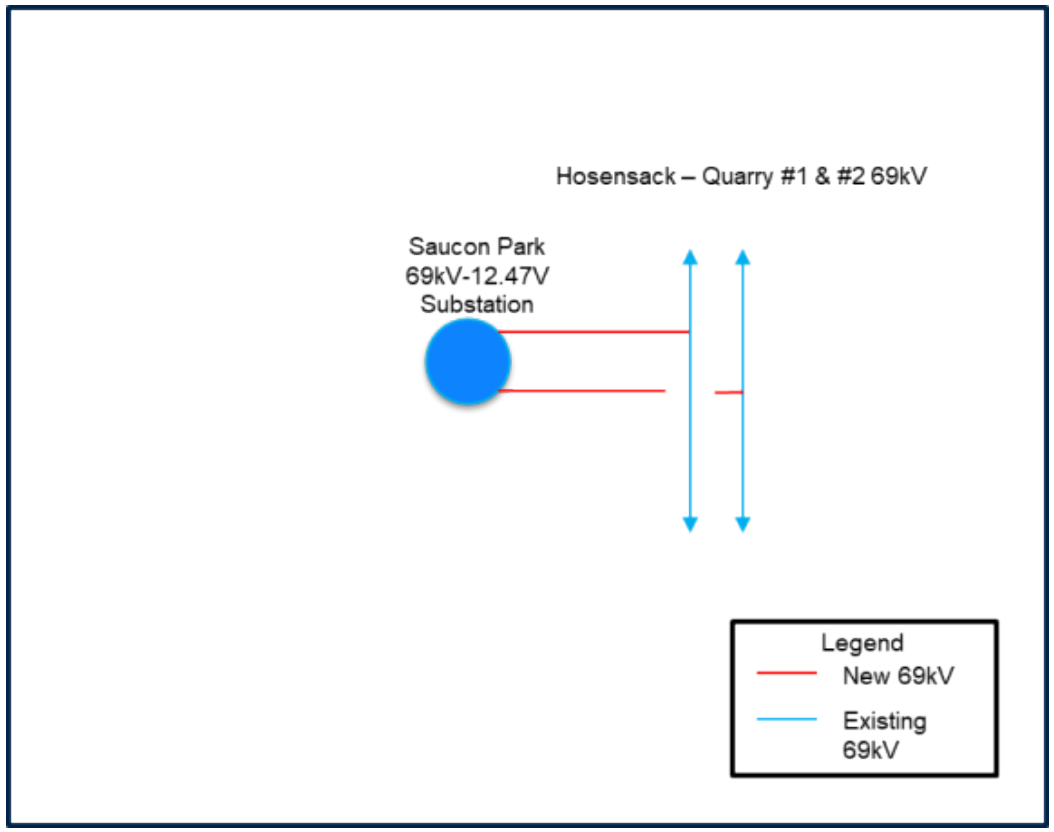
Estimated Project Cost: $1.1M

Projected In-Service: 5/1/2025

Project Status: Conceptual

Model: 2025

Supplemental Number: s2958



PPL Transmission Zone: Supplemental

Need Number: PPL-2023-0006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/25/2023

Need Slide Presented: 4/20/2023

Solution Slide Presented: 5/18/2023

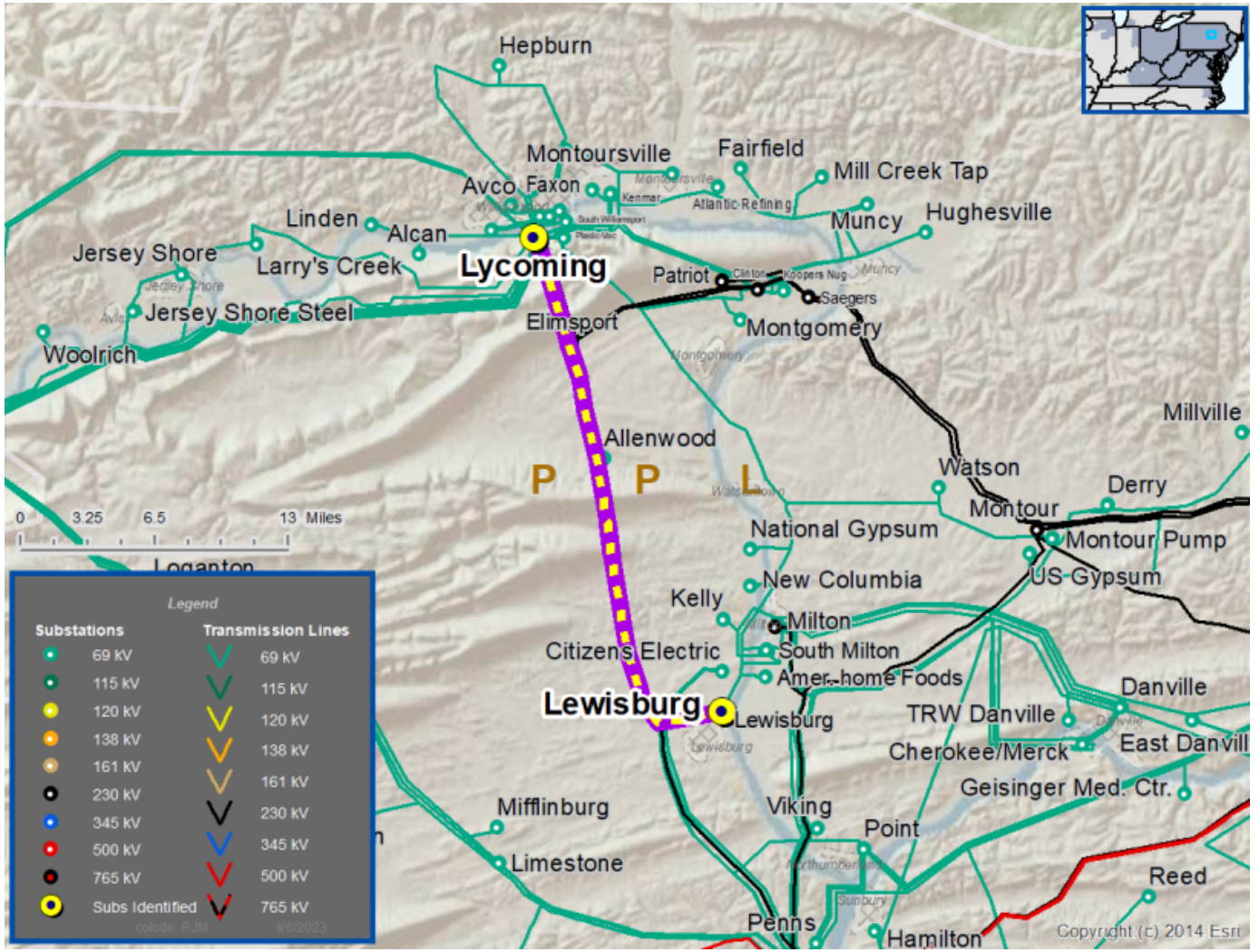
Supplemental Project Driver: Equipment Material Condition, Performance and Risk;

Problem Statement:

The Lycoming - Lewisburg 69kV Tap is a reliability risk due to poor asset health. The line is in poor condition with the original assets installed in 1945 (18.5 miles) with 266 kcmil ACSR conductor. The structures are mostly wood poles with steel poles interspersed.

Specific Assumption References:

[PPL 2023 Annual Assumptions]



PPL Transmission Zone: Supplemental

Need Number: PPL-2023-0006

Proposed Solution:

Remove 16.5 miles of the existing Lycoming – Lewisburg 69kV line. Remaining 2 miles will be rebuilt as part of s0968.4 and will become part of the Milton – Lewisburg line.

Alternatives Considered:

1. Rebuilding the line was considered. The LYCO-LBRG line is no longer needed after projects s0968.4, s0968.5, and PPL-2022-0009.

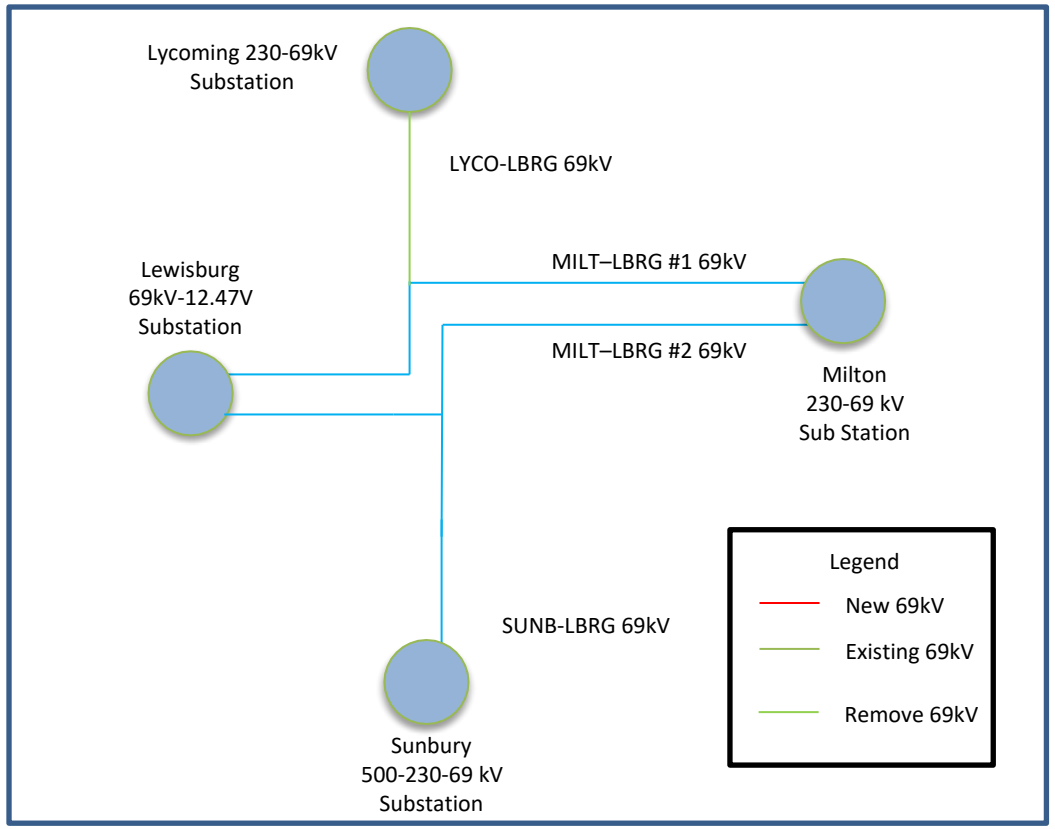
Estimated Project Cost: $3.5M

Projected In-Service: 5/1/2025

Project Status: Conceptual

Model: 2025

Supplemental Number: s2963



Revision History

3/17/2023 – V1 – Local Plan for s2753,s2837,s2842 posted to pjm.com

9/11/2023 – V2 – Added Local Plan for s2894, s2895, s2896, s2890, s2891, s2902, s2903

9/25/2023 – V3 – Added Local Plan for s2958 and s2963