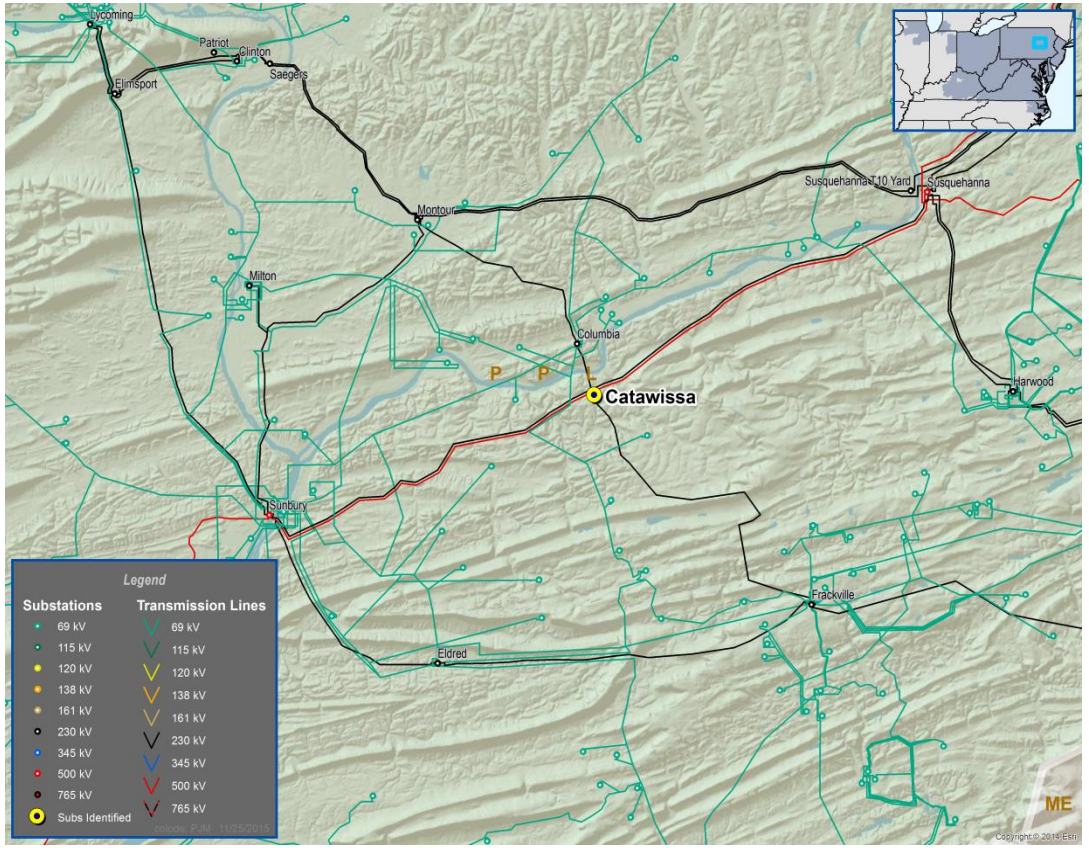
Submission of PPL Supplemental Projects for Inclusion in the Local Plan

The following three slides are, Local Plan for S1106 project scope change
Original project was presented Pre M3 process

Submission of Supplemental Project for inclusion in the Local Plan 3/24/2020

S1106 Project Scope Change

- The project was presented pre M3 process in January, 2016
- Project S1106 (Catawissa substation) was identified to address stability issue in the Montour area. Three phase fault with normal clearing on double circuit Montour-Susquehanna 230 kV line will cause generator instability and tripping of multiple power plants (~2400 MW).
- The project was a new substation which taps the Sunbury – Susquehanna 500kV on the high side and Sunbury – Susquehanna & Colombia – Frackville 230 kV circuits on the low side



Existing Solution:

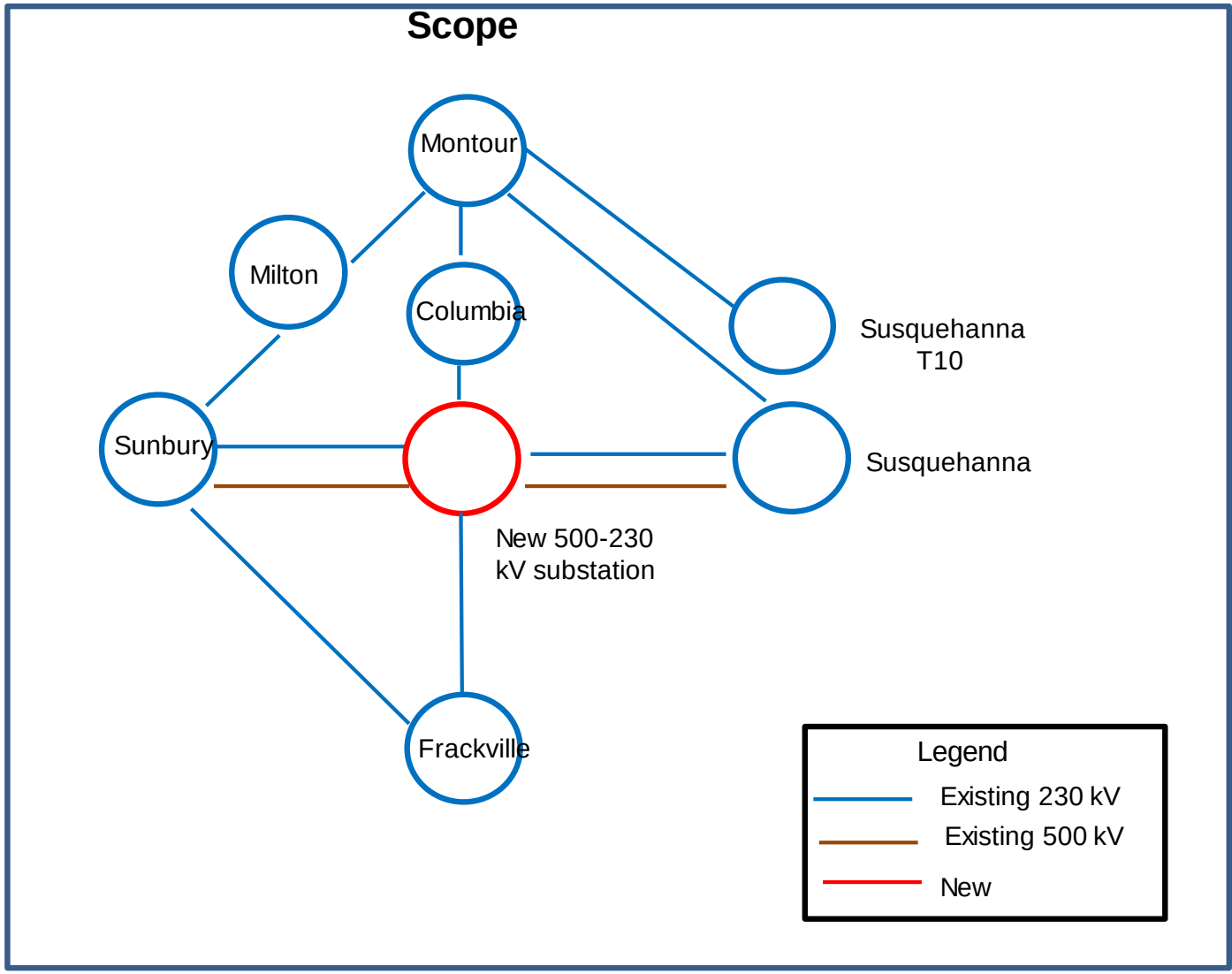
Build a new 500-230 kV substation and associated transmission work by tapping Sunbury-Susquehanna 500 and 230 kV lines and Columbia-Frackville 230 kV line.

Estimated Project Cost: $95M

Projected In-Service: 07/31/2022

Model: 2020

Old Scope



Updated Potential Solution:

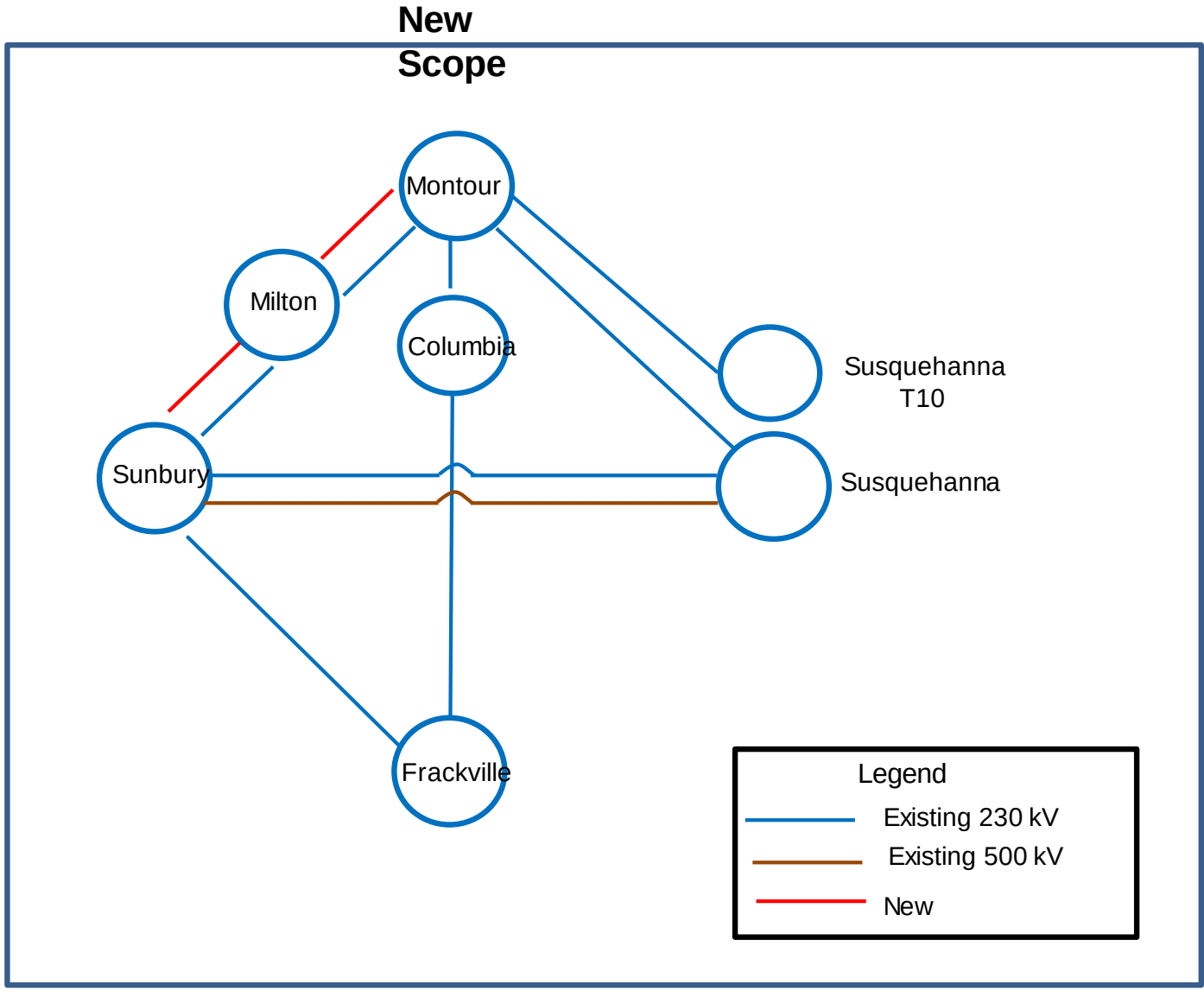
- Establish ~22 miles of second circuit on existing 230 kV lines between Montour, Milton and Sunbury substations.
    - Rebuild ~12 miles of Montour-Milton 230 kV line to double circuit.
    - Change the operating voltage of ~10 miles of 69 kV line between MILT and SUNB 230 kV substations.
- Perform line terminal work at Montour, Milton and Sunbury 230 kV substations to terminate the new circuit.

Estimated Project Cost: $63M

Projected In-Service: 07/31/2023

Project Status: Conceptual

Model: 2020



PPL Transmission Zone M-3 Process
Ringtown 69kV Tap

Need Number: PPL-2019-0015

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Previously Presented:

Needs Meeting February 22, 2019

Solution Meeting November 18, 2019

Project Driver:

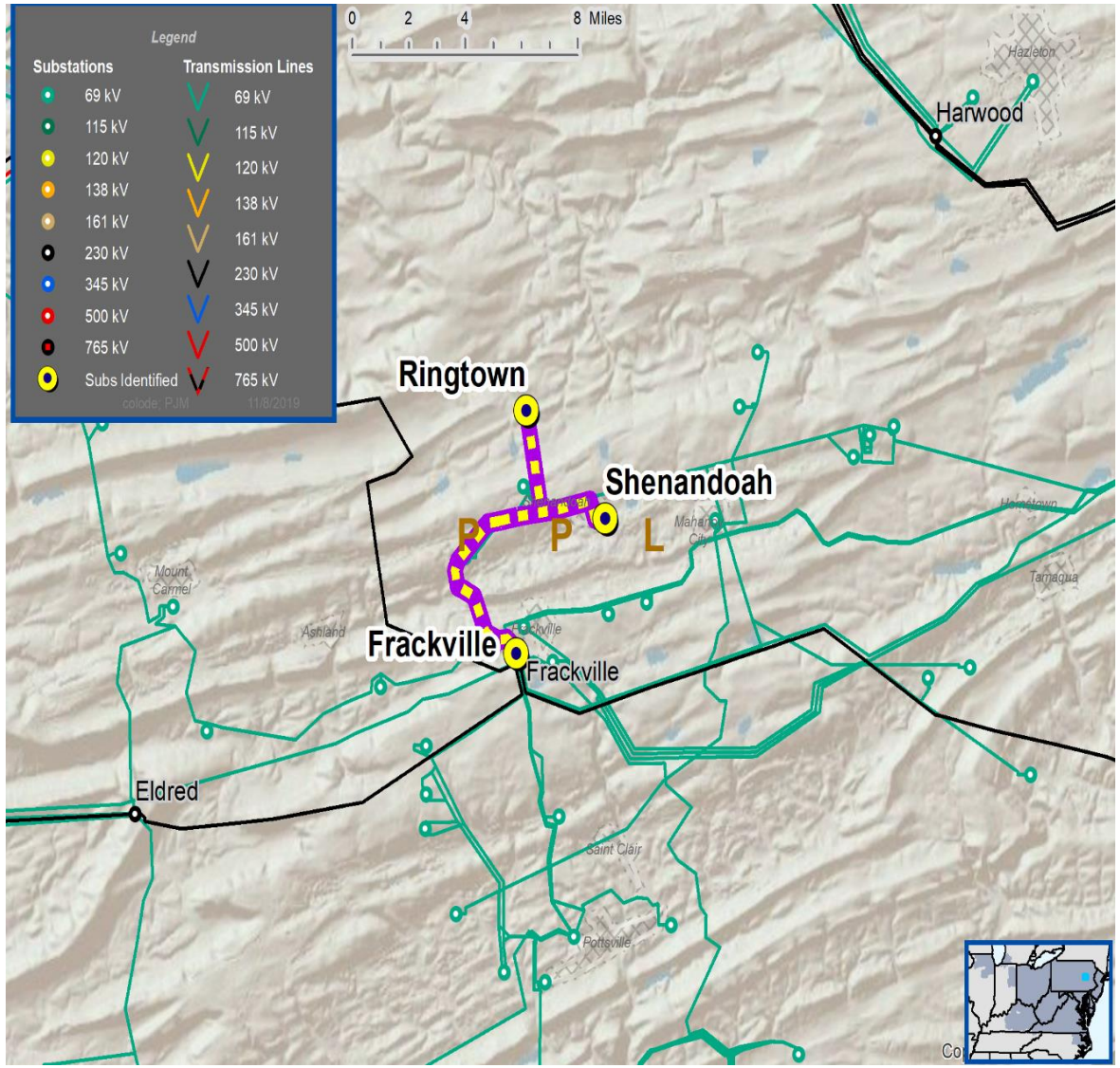
Customer Service

Specific Assumption Reference:

[PPL 2019 Annual Assumptions]

Problem Statement:

A PPL Distribution 12kV circuit is prone to long outages due to its inaccessible terrain. This radial tap serves over 1,000 customers that have been subject to numerous outages since 2013.



PPL Transmission Zone M-3 Process
Ringtown 69kV Tap

Need Number: PPL-2019-0015

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Selected Solution:

Install new 69-12kV Ringtown substation and interconnect the distribution substation with a 69kV tap from the existing Frackville – Shenandoah 69kV line.

- Build 0.1 miles of new 69kV single circuit initial future double circuit line with steel poles and 556 ACSR conductor.

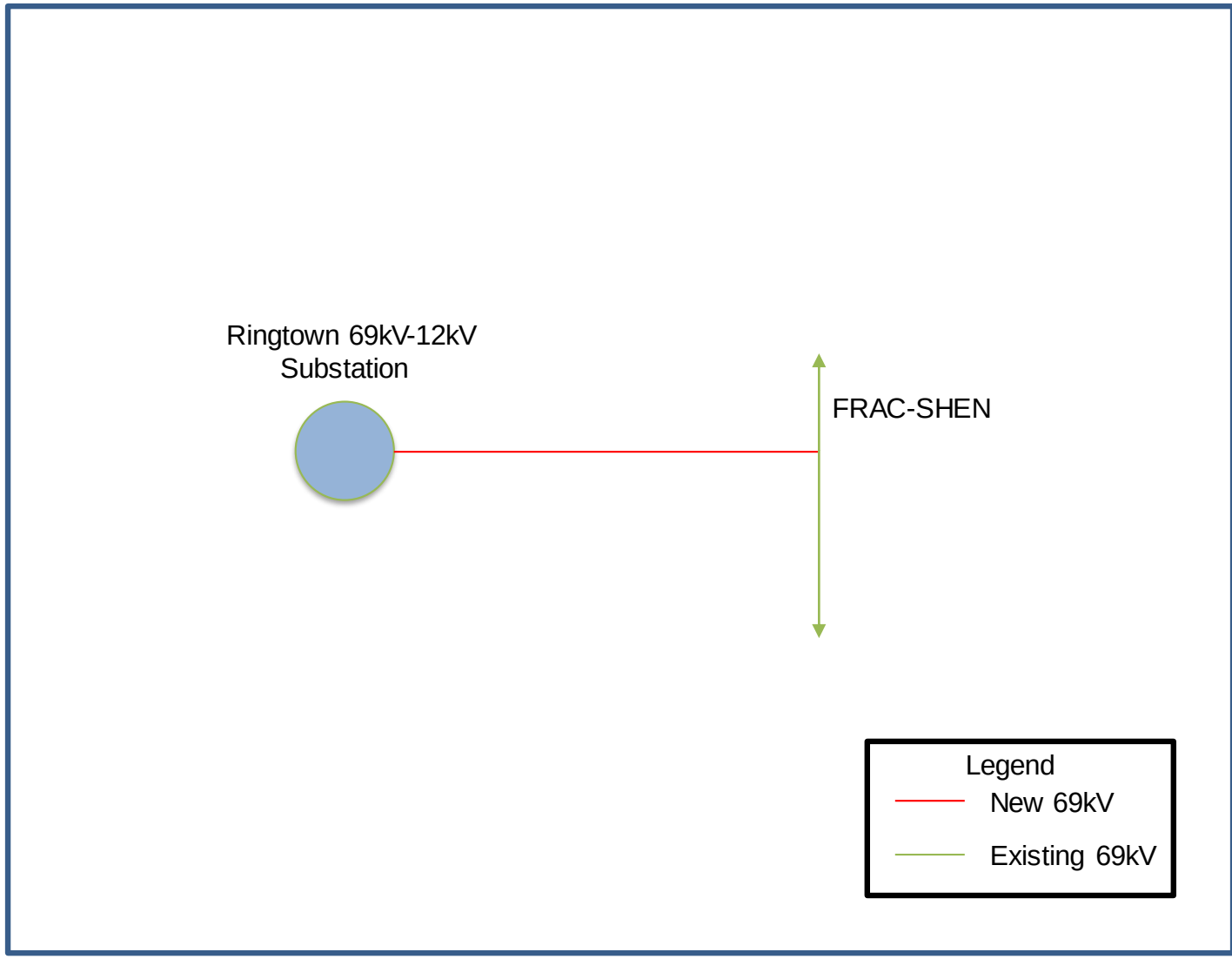
Estimated Cost: $0.9M

Projected In-Service: 11/30/2021

Supplemental Project ID: s2168

Project Status: Planning

Model: 2022 Case



PPL Transmission Zone M-3 Process
Theta 69kV Tap

Need Number: PPL-2019-0018

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Previously Presented:

Needs Meeting February 22, 2019

Solution Meeting November 18, 2019

Project Driver:

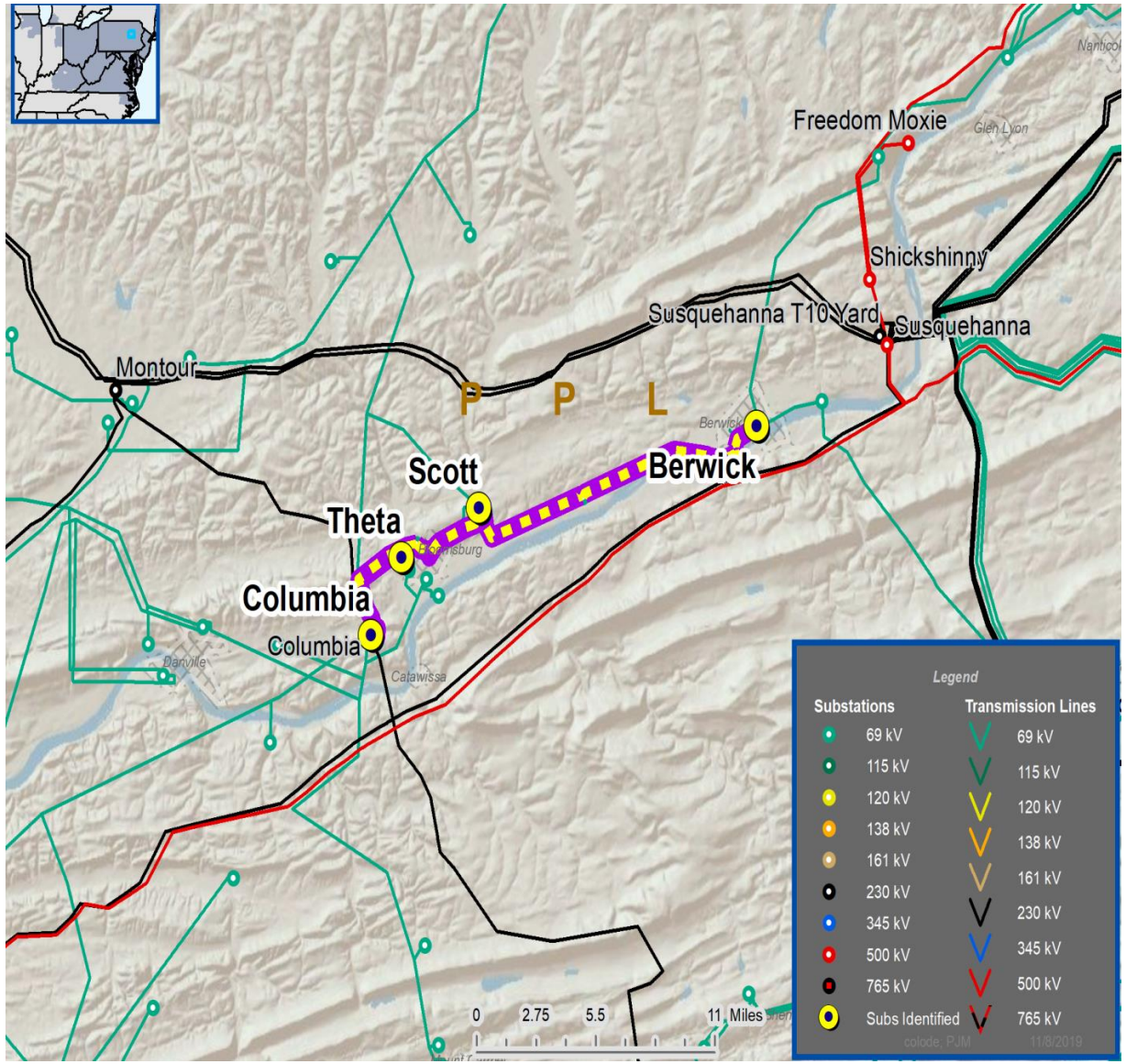
Customer Service

Specific Assumption Reference:

PPL 2019 Annual Assumptions

Problem Statement:

PPL Distribution has submitted a request for a 69 kV transmission source to their new Theta 69/12kV substation to improve reliability in the area.



PPL Transmission Zone M-3 Process
Theta 69kV Tap

Need Number: PPL-2019-0018

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Selected Solution:

Install new 69-12kV Theta substation and interconnect the distribution substation with a double circuit 69kV tap from the existing Columbia – Scott and Columbia – Berwick 69kV lines.

- Build 0.2 miles of new 69kV double circuit line with steel poles and 556 ACSR conductor.

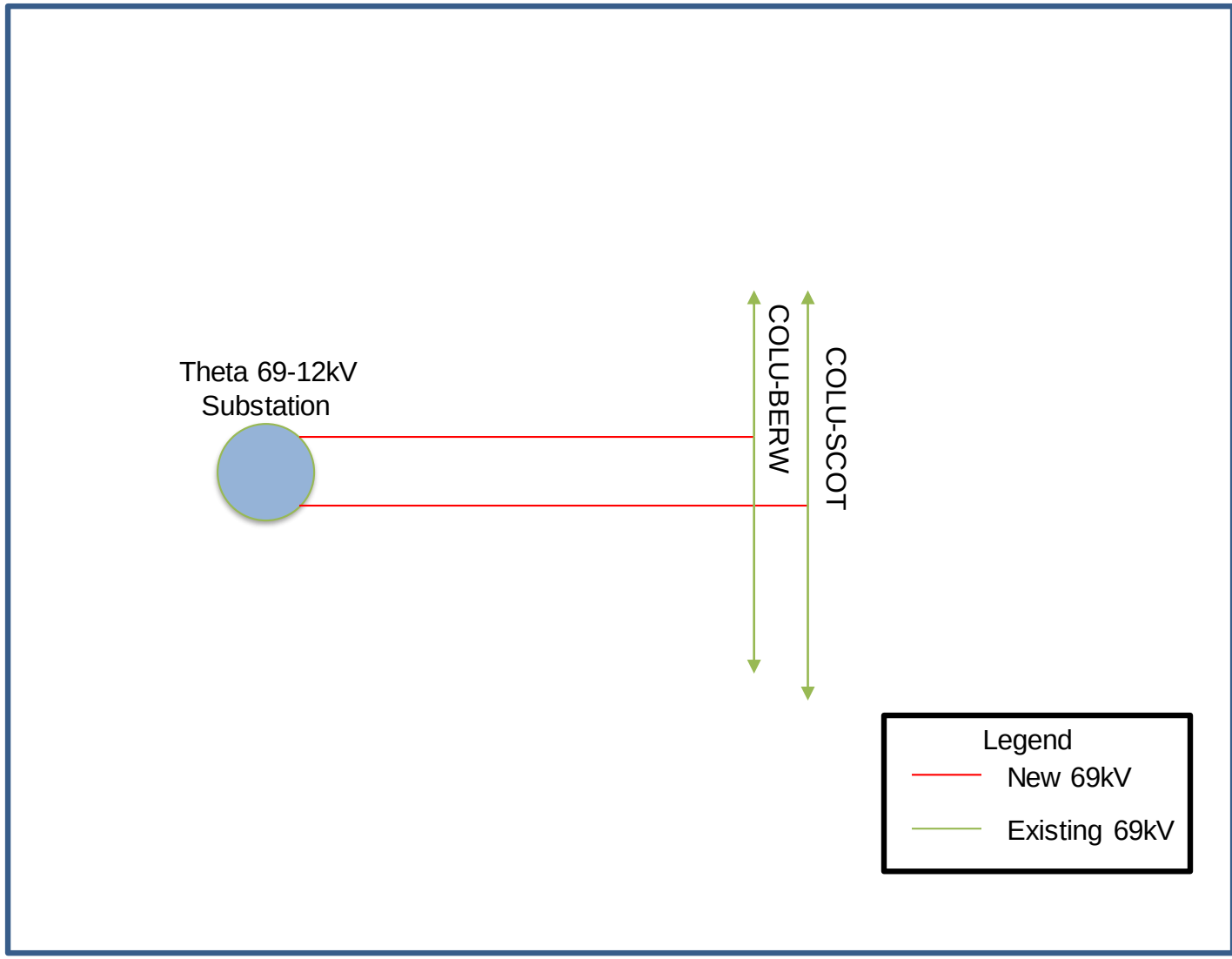
Estimated Cost: $1.4M

Projected In-Service: 11/30/2022

Supplemental Project ID: s2169

Project Status: Planning

Model: 2023 Case



PPL Transmission Zone M-3 Process
West Allentown, PA

Need Number: PPL-2019-0019

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Previously Presented:

Needs Meeting December 16, 2019

Solution Meeting February 11, 2020

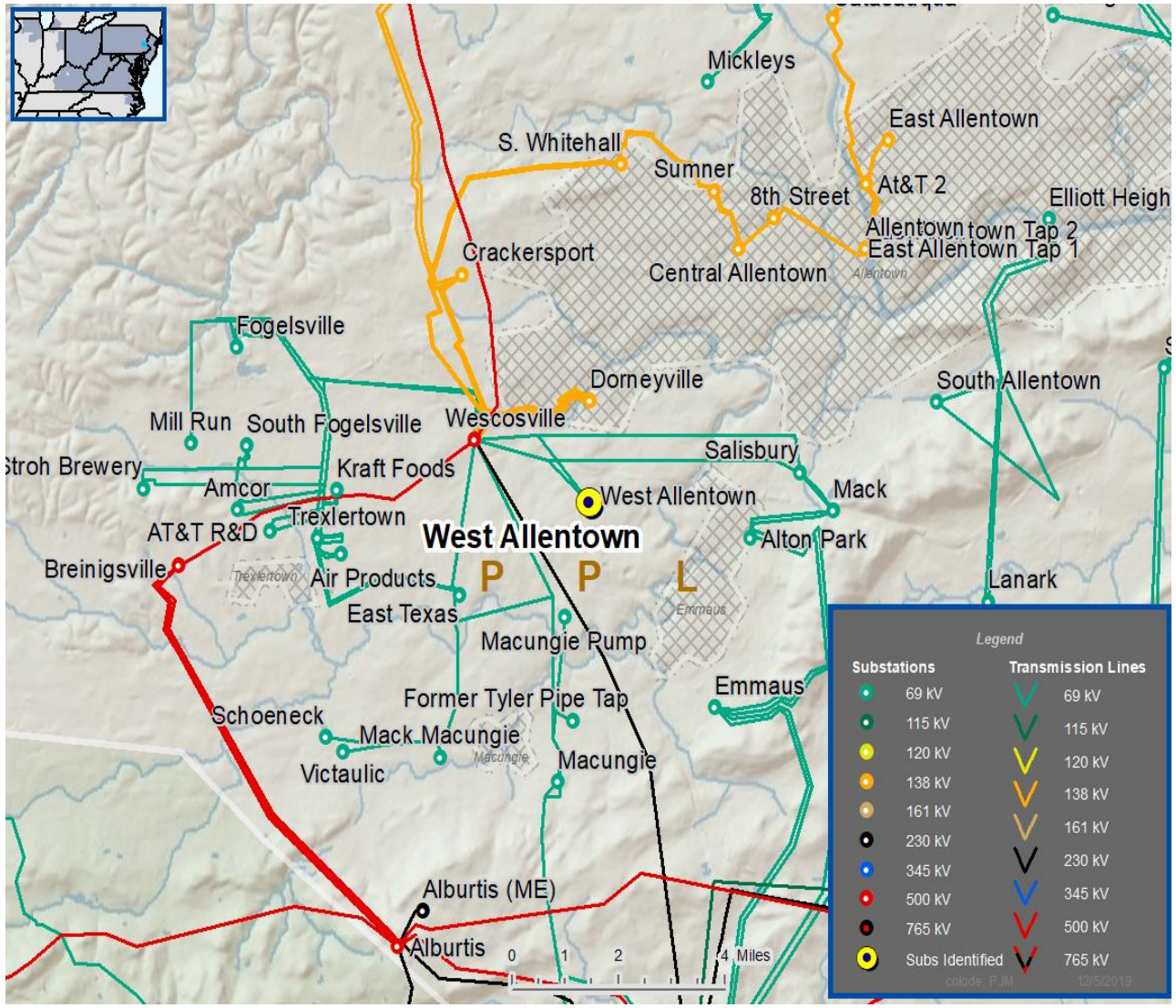
Project Driver: Customer Service

Specific Assumption Reference:

[PPL 2019 Annual Assumptions]

Problem Statement:

New customer has submitted a request to have their facility served from a 69kV transmission line. The load is approximately 25 MVA.



PPL Transmission Zone M-3 Process
Customer 69kV Tap

Need Number: PPL-2019-0019

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Selected Solution:

Extend a new single 69kV tap from the existing Wescosville-Breinigsville 1 69kV line to interconnect a new customer 69-13.8kV substation.

- Build 0.1 miles of new 69kV single circuit line using 556 ACSR conductor.

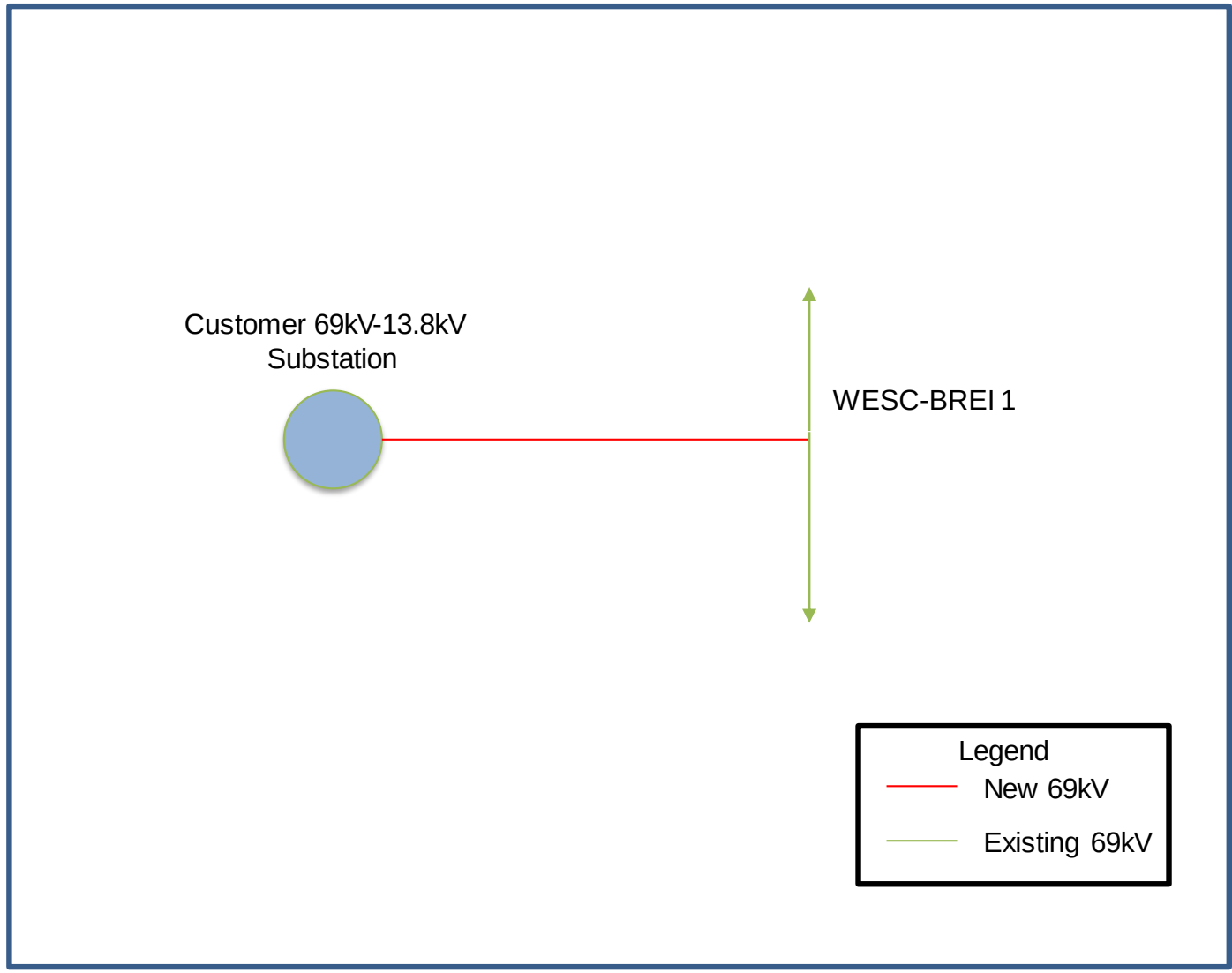
Estimated Cost: $0.9M

Projected In-Service: 11/30/2020

Supplemental Project ID: s2202

Project Status: Planning

Model: 2020



PPL Transmission Zone M-3 Process
West Allentown, PA

Need Number: PPL-2019-0020

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Previously Presented:

Needs Meeting December 16, 2019

Solution Meeting February 11, 2020

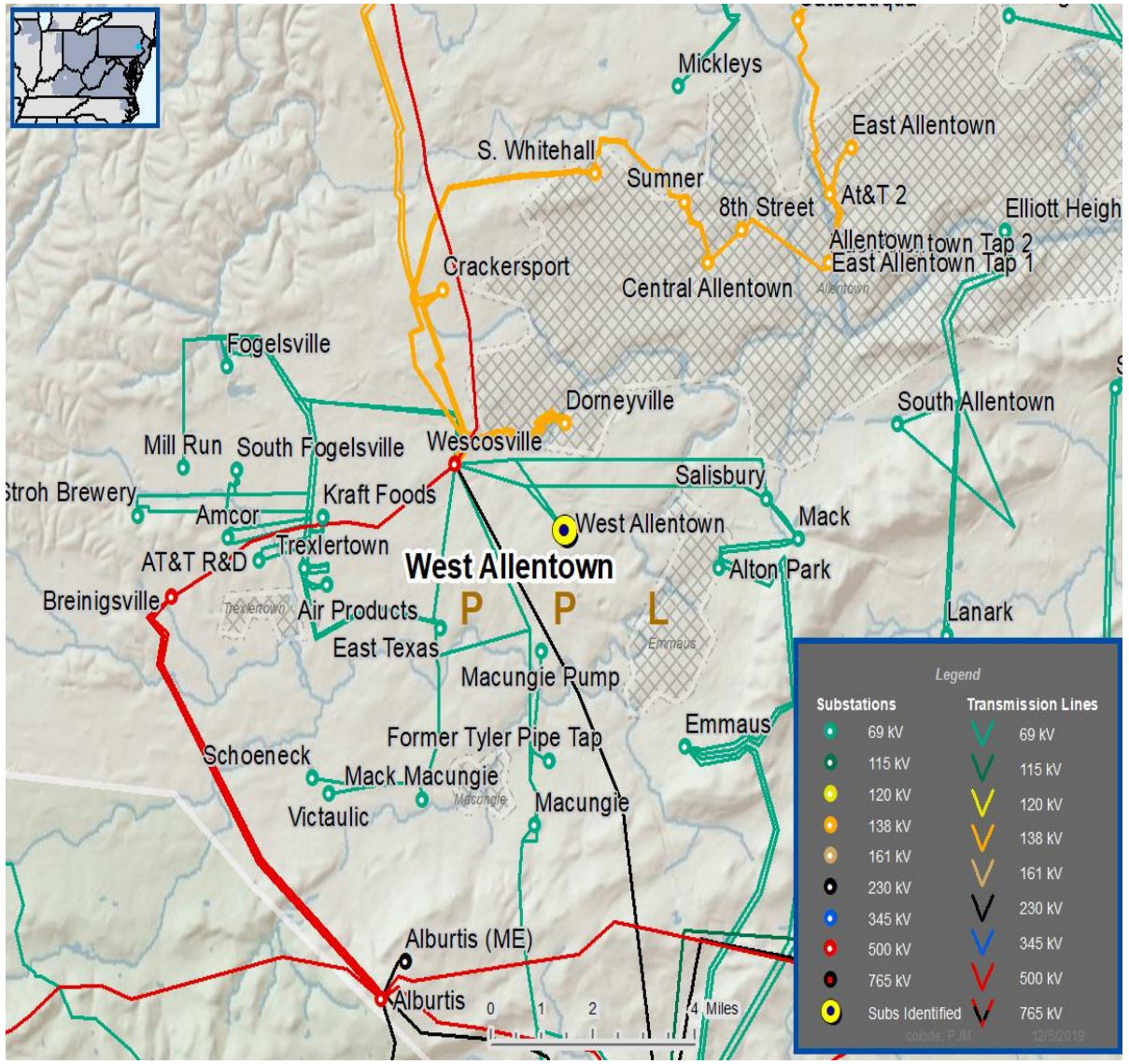
Project Driver: Customer Service

Specific Assumption Reference:

PPL 2019 Annual Assumptions

Problem Statement:

New customer has submitted a request to have their facility served from a 69kV transmission line. The load is approximately 12 MVA.



PPL Transmission Zone M-3 Process
Customer 69kV Tap

Need Number: PPL-2019-0020

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Selected Solution:

Extend a new single 69kV tap from the existing Wescosville-Breinigsville 2 69kV line to interconnect a new customer 69-4.16kV substation.

- Build 0.2 miles of new 69kV single circuit line using 556 ACSR conductor.

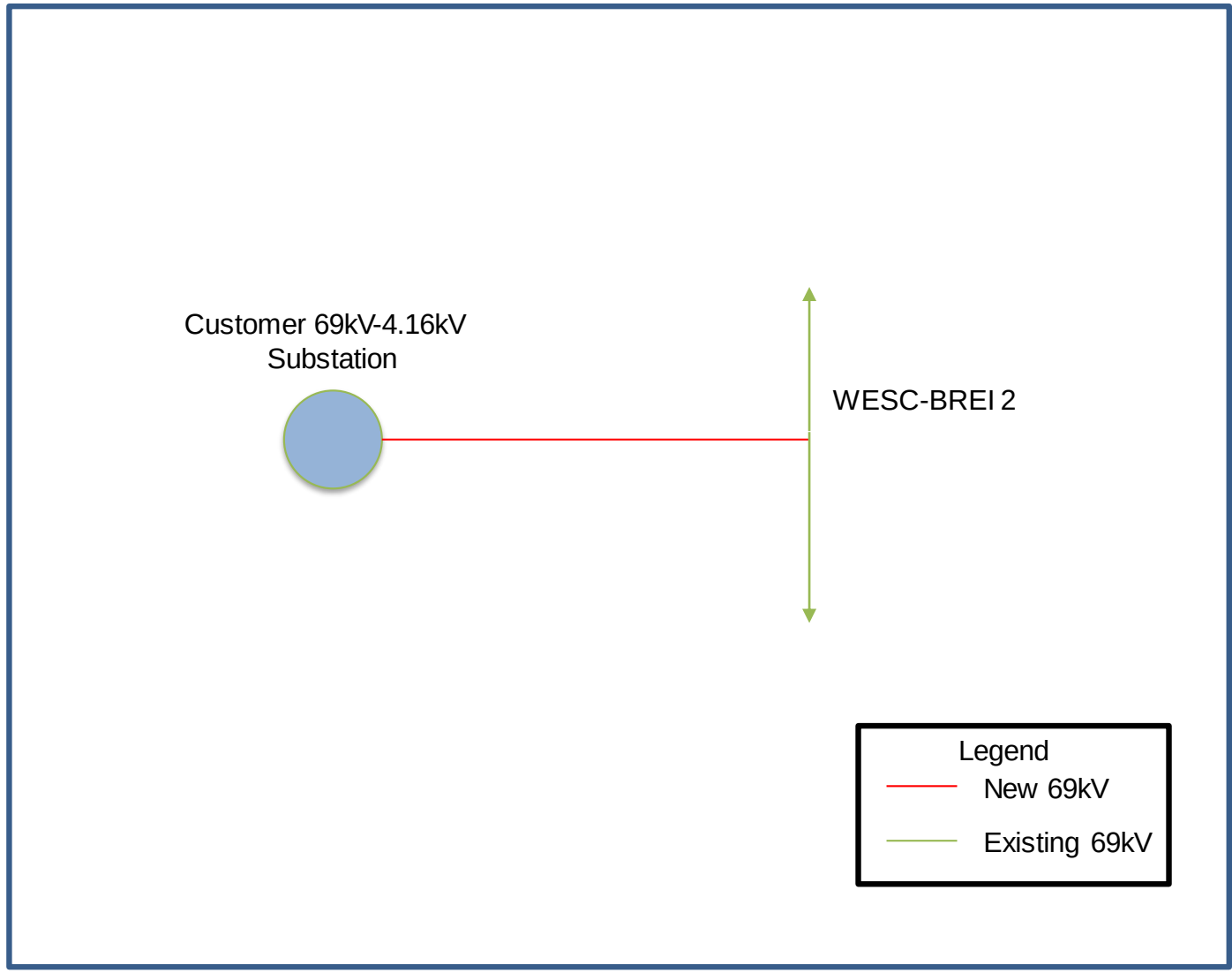
Estimated Cost: $1.2M

Projected In-Service: 6/30/2021

Supplemental Project ID: s2203

Project Status: Planning

Model: 2021



PPL Transmission Zone M-3 Process
Harrisburg, PA

Need Number: PPL-2019-0021

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Previously Presented:

Needs Meeting December 16, 2019

Solution Meeting February 11, 2020

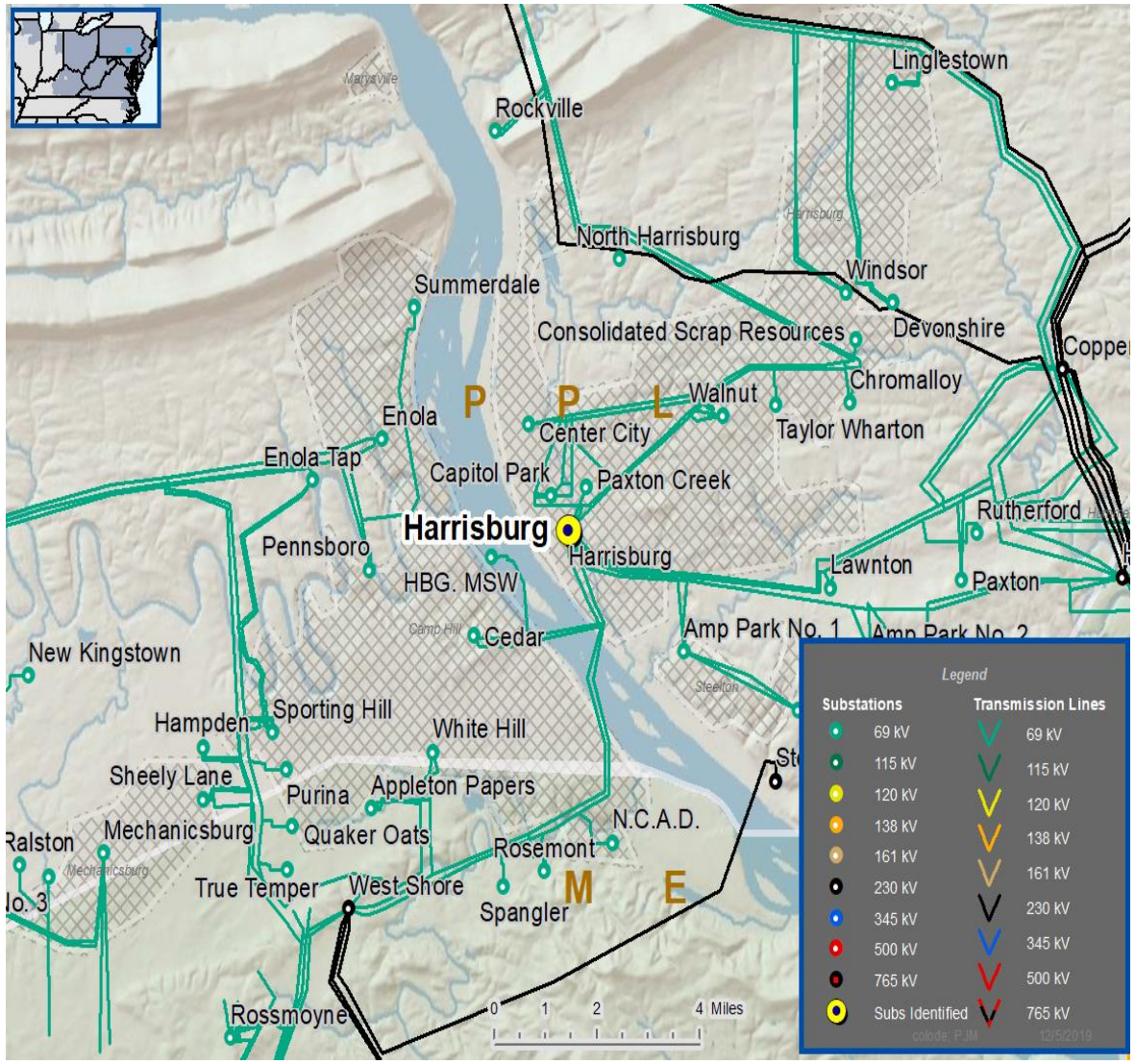
Project Driver: Customer Service

Specific Assumption Reference:

[PPL 2019 Annual Assumptions]

Problem Statement:

New customer has submitted a request to have their facility served from a 69kV transmission line. The load is approximately 5 MVA.



PPL Transmission Zone M-3 Process
Customer 69kV Tap

Need Number: PPL-2019-0021

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 6/2/2020

Selected Solution:

Extend a new single 69kV tap from the existing Hummelstown-Harrisburg 1 69kV line to interconnect a new customer 69-12kV substation.

- Build 0.3 miles of new 69kV single circuit line using 556 ACSR conductor.

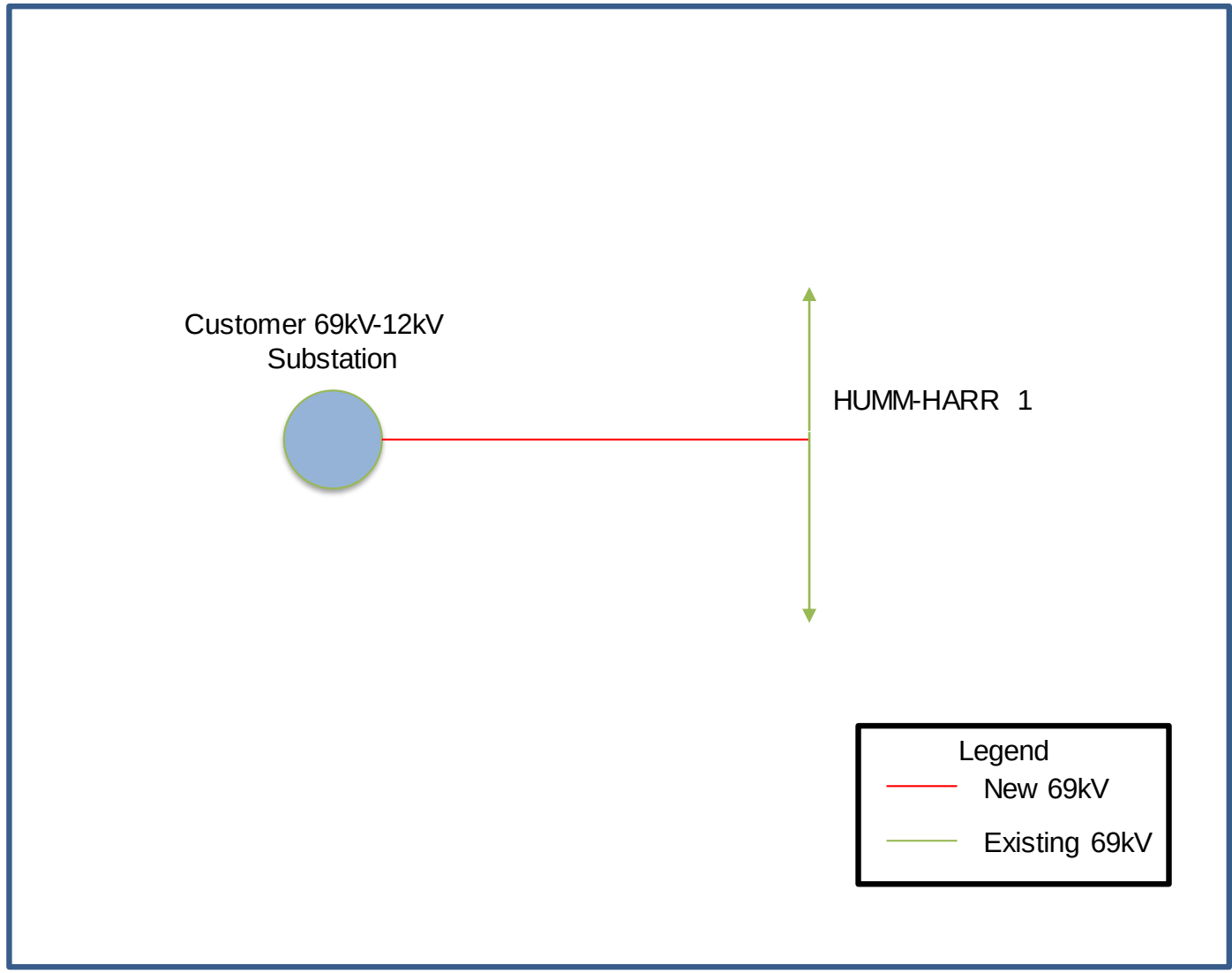
Estimated Cost: $2.3M

Projected In-Service: 2/28/2021

Supplemental Project ID: s2204

Project Status: Planning

Model: 2021



PPL Transmission Zone: Supplemental Summit-Lackawanna 1 & 2 230kV

Need Number: PPL-2020-0001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

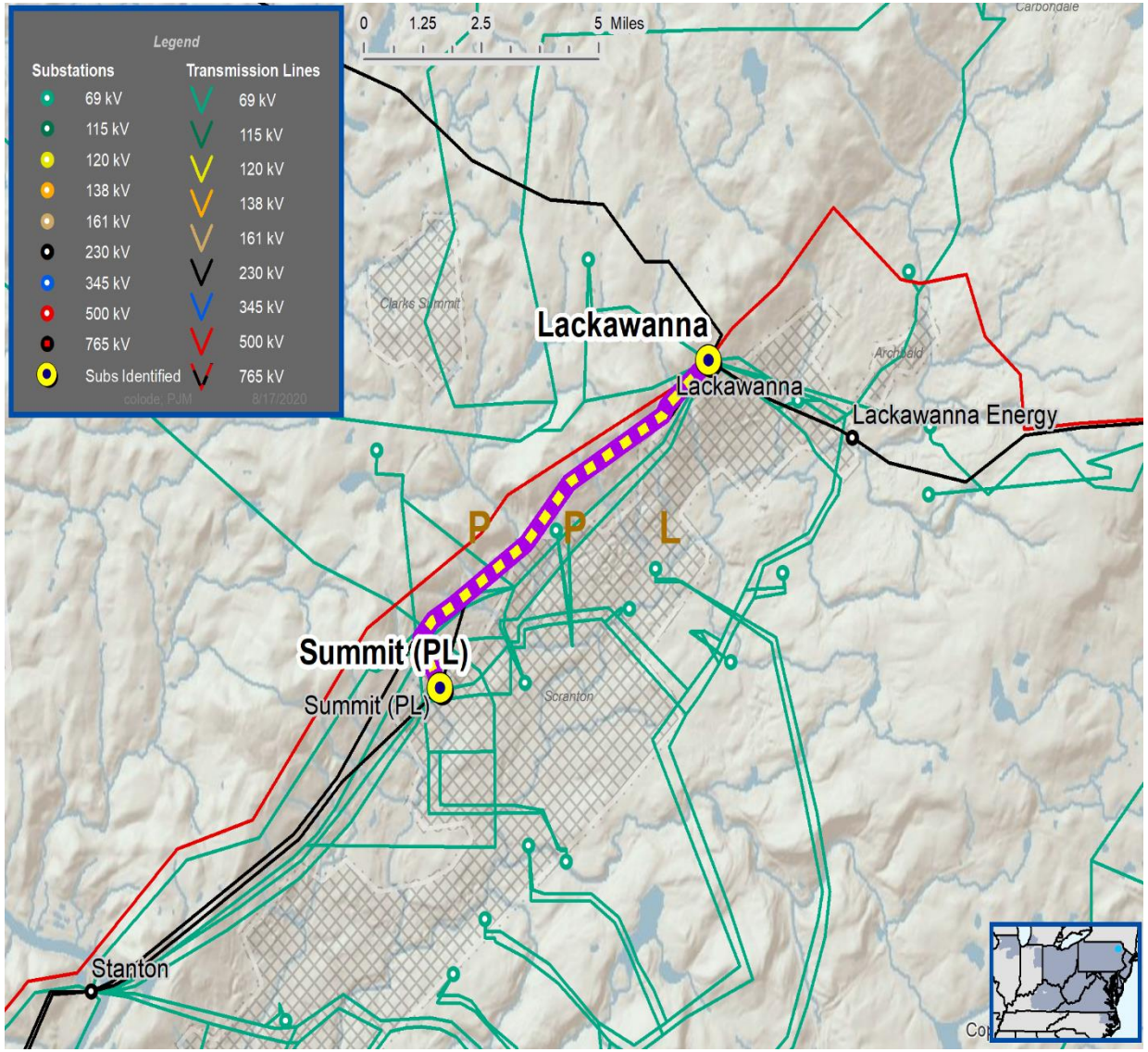
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 5 mile stretch of the Summit-Lackawanna 1 & 2 230kV line, there are 30 weathering steel Corten lattice towers that were installed in 1970.
- 62% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be several thermal violations and approximately175 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental Summit-Lackawanna 1 & 2 230kV

Need Number: PPL-2020-0001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Summit-Lackawanna 1 & 2 230kV

Selected Solution: Rebuild the 5-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 175MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

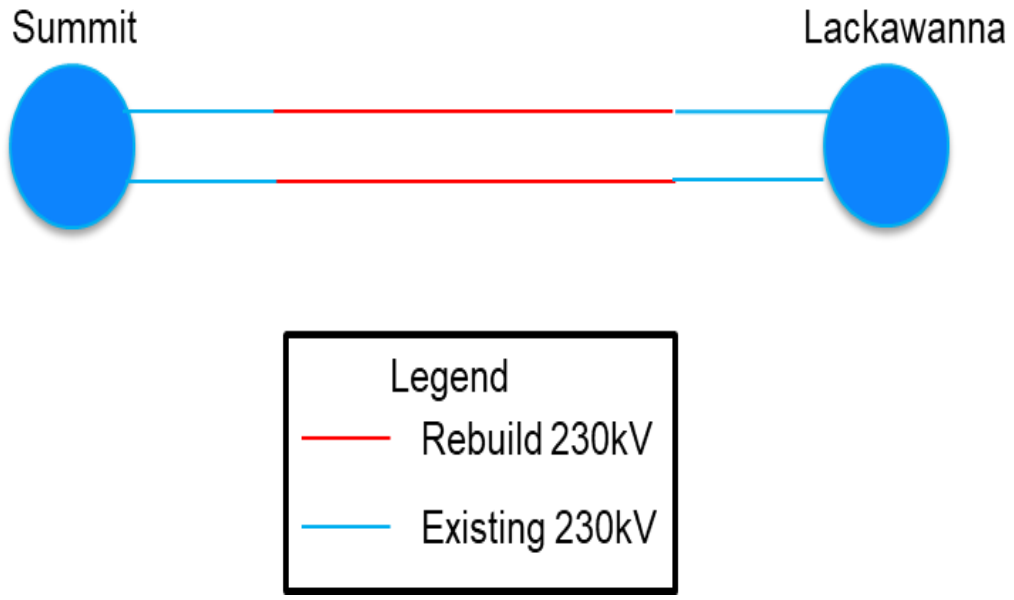
Estimated Project Cost: $14.3M

Project IS Date: 12/31/2023

Supplemental Project ID: S2363

Project Status: Conceptual

Model: 2024 Case



PPL Transmission Zone: Supplemental Elimsport-Lycoming 2 & 3 230kV

Need Number: PPL-2020-0002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

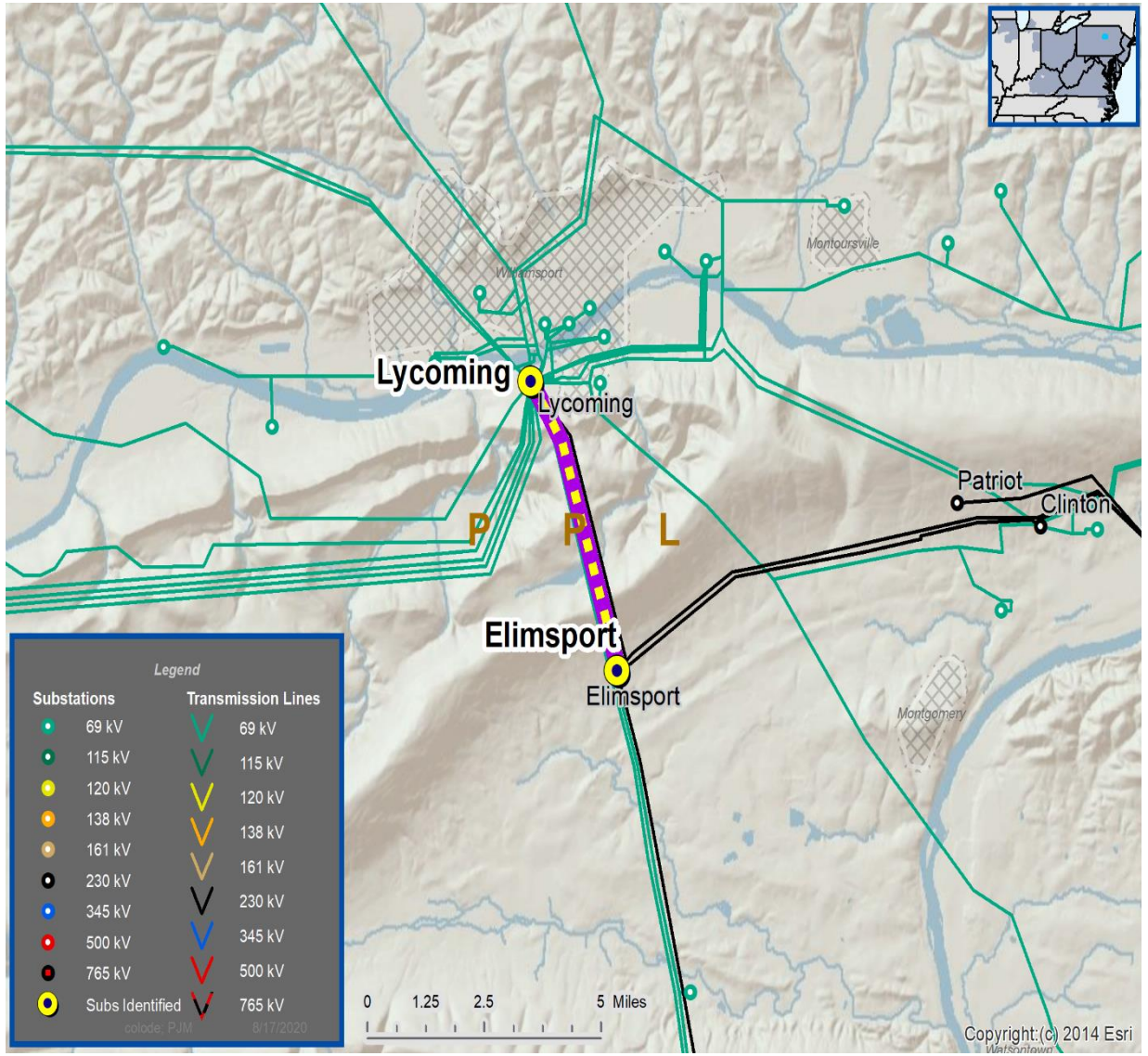
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 4.1 mile stretch of the Elimsport-Lycoming 2 & 3 230kV line, there are 25 weathering steel Corten lattice towers that were installed in 1971.
- 76% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. Approximately 315 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

[PPL 2020 Annual Assumptions]



PPL Transmission Zone: Supplemental Elimsport-Lycoming 2 & 3 230kV

Need Number: PPL-2020-0002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Elimsport-Lycoming 2 & 3 230kV

Selected Solution: Rebuild the 4.1-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 315MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

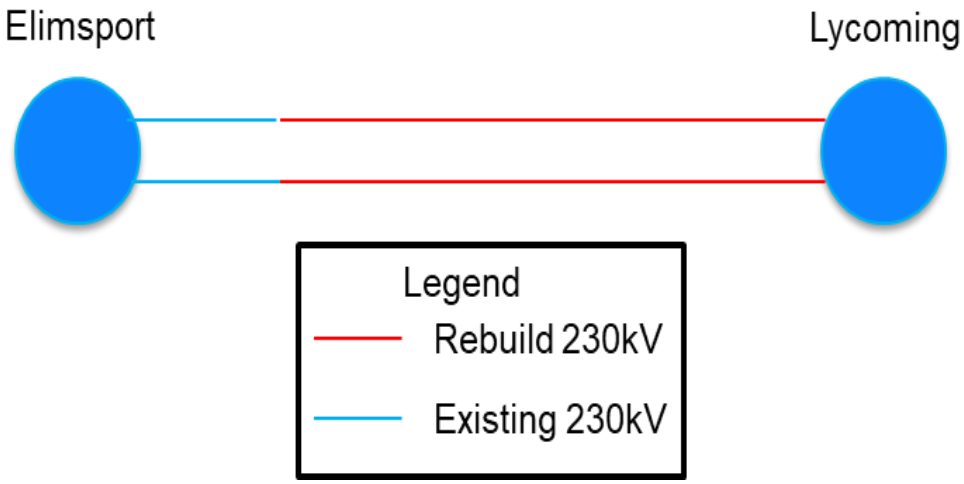
Estimated Project Cost: $10.4M

Project IS Date: 12/31/2023

Supplemental Project ID: S2364

Project Status: Conceptual

Model: 2024 Case



PPL Transmission Zone: Supplemental Manor-Millwood 230kV & Face Rock-Millwood 1 69kV

Need Number: PPL-2020-0003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020 and 09/10/2020

Solution Slide Presented: 10/6/2020 and 10/15/2020

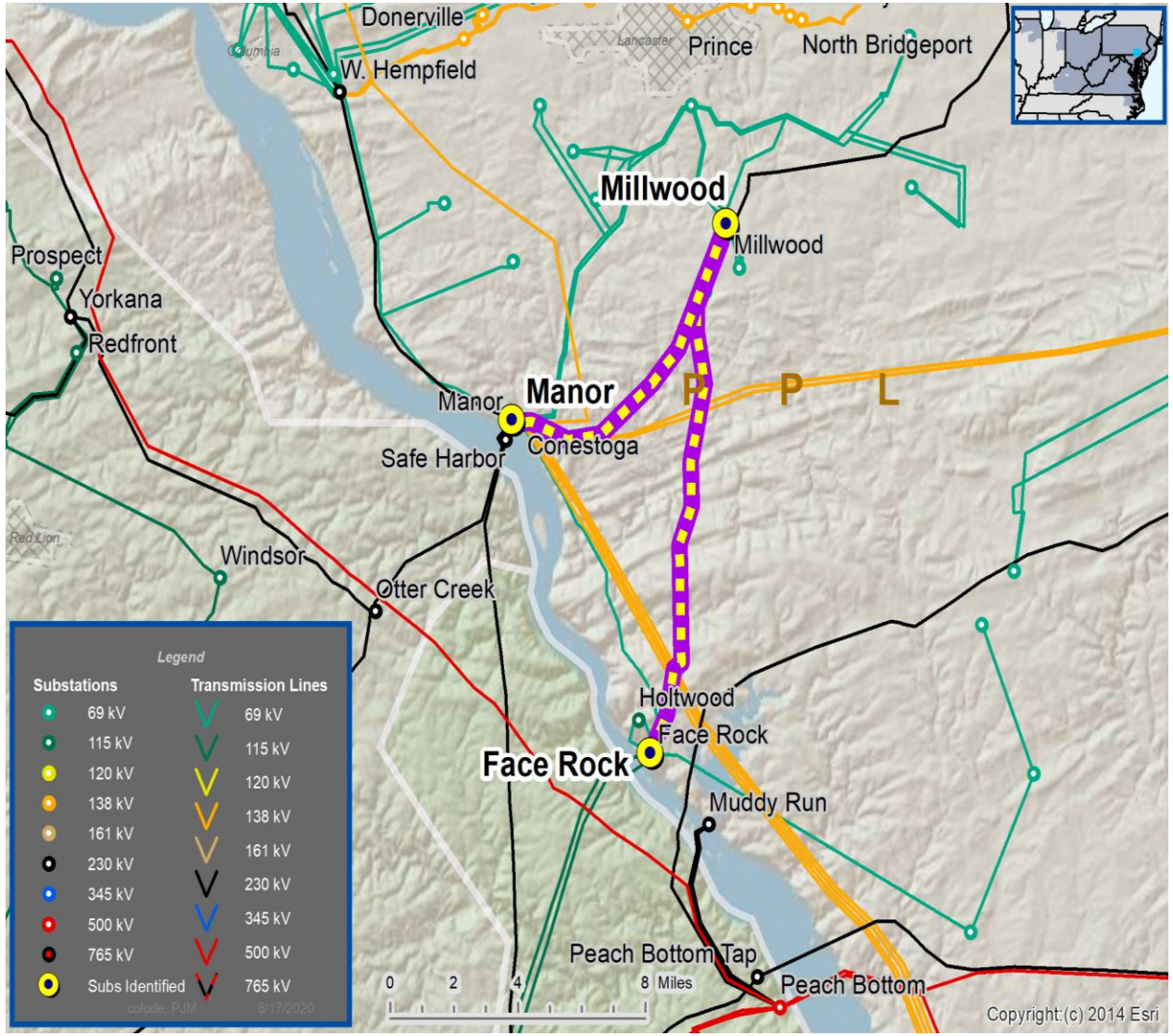
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 5.2 mile stretch of the Manor-Millwood 230kV line and Face Rock-Millwood 1 69kV line, there are 28 weathering steel Corten lattice towers that were installed in 1967.
- 83% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve approximately 200 MW of local load. Absence of this line will cause a thermal violation for the next N-1 contingency.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental
Manor-Millwood 230kV & Face Rock-Millwood 1 69kV

Need Number: PPL-2020-0003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

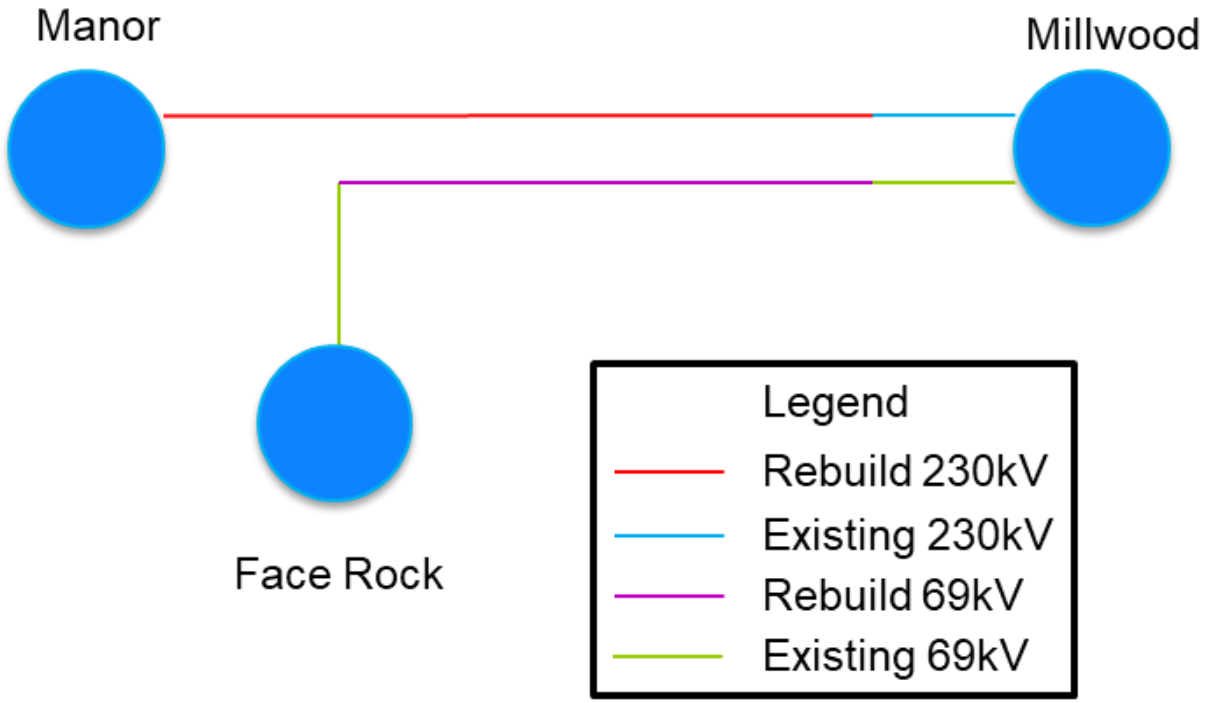
Manor-Millwood 230kV & Face Rock-Millwood 1 69kV

Selected Solution: Rebuild the 5.2-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Removal is infeasible due to this line serving approximately 200 MW of local load. Absence of this line will cause a thermal violation for the next N-1 contingency.
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $13.2M
Project IS Date: 12/31/2024
Supplemental Project ID: S2365
Project Status: Conceptual
Model: 2025 Case



PPL Transmission Zone: Supplemental Montour-Milton 230kV

Need Number: PPL-2020-0004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

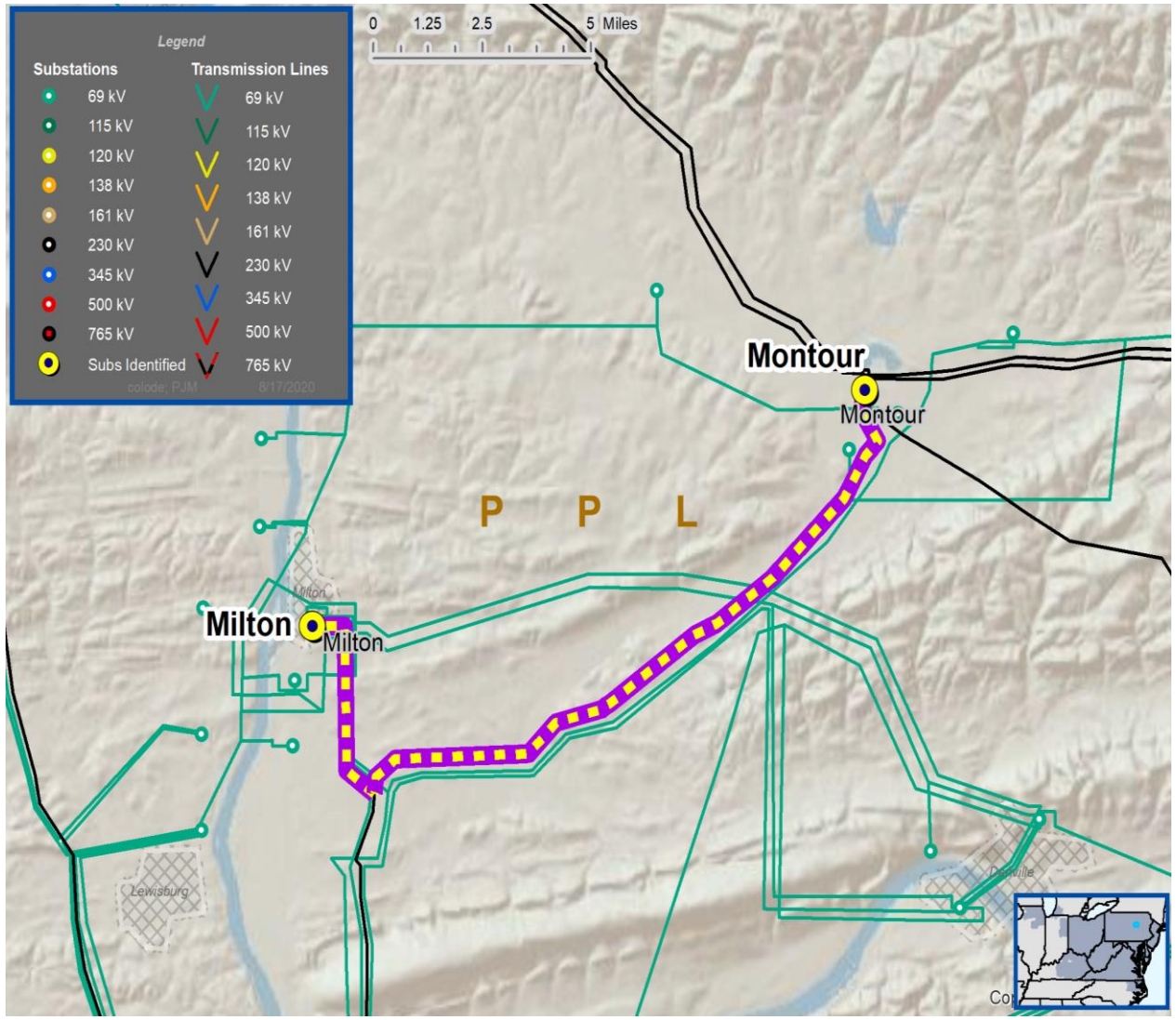
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 10.7 mile stretch of the Montour-Milton 230kV line, there are 63 weathering steel Corten lattice towers that were installed in 1971.
- 72% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be several thermal violations and approximately 105 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental Montour-Milton 230kV

Need Number: PPL-2020-0004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

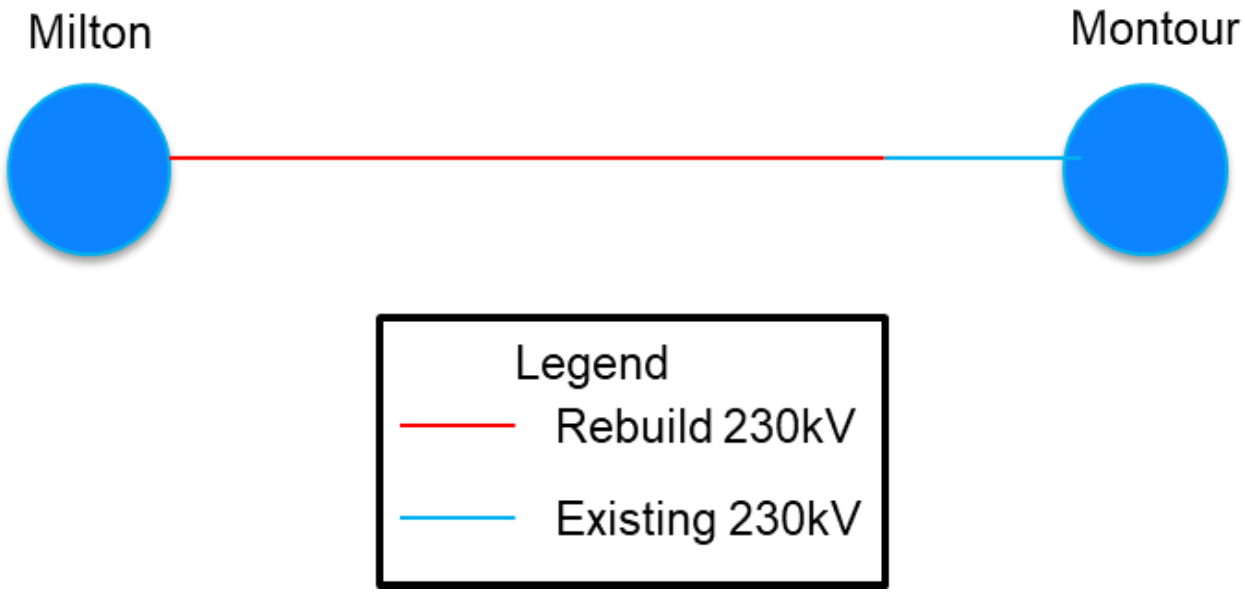
Montour-Milton 230kV

Selected Solution: This line will be rebuilt under S1106.

TO Alternative:

- Removal of the Circuit: Infeasible due to 105MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: Budgeted under S1106
Project IS Date: 12/31/2023
Supplemental Project ID:S1106
Project Status: Conceptual
Model: 2024 Case



PPL Transmission Zone: Supplemental Sunbury-Milton 230kV & Sunbury-Milton 69kV

Need Number: PPL-2020-0005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020 and 09/10/2020

Solution Slide Presented: 10/6/2020 and 10/15/2020

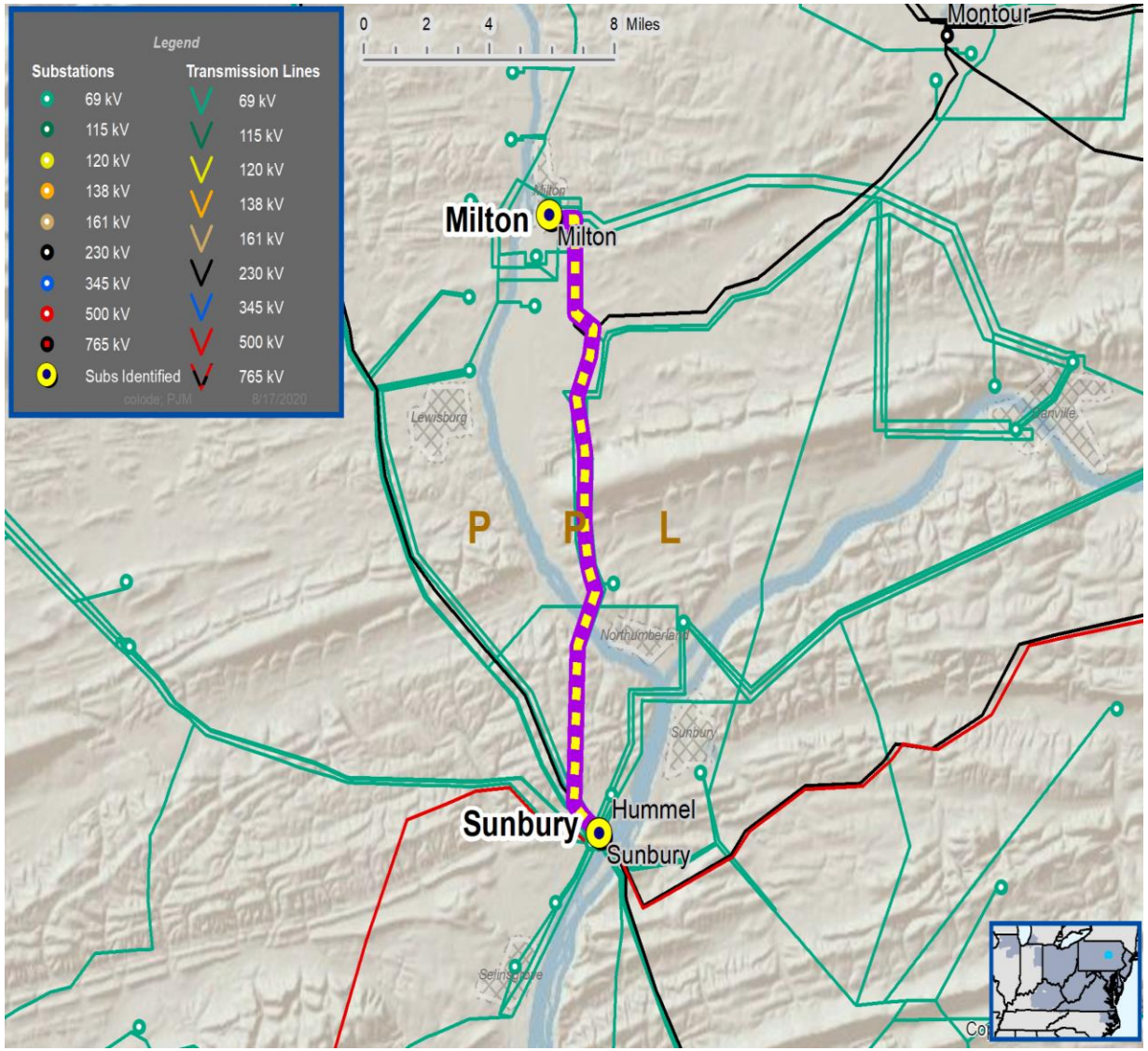
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 10.4 mile stretch of the Sunbury-Milton 230kV and Sunbury-Milton 69kV lines, there are 68 weathering steel Corten lattice towers that were installed in 1969.
- 99% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be several thermal violations and approximately 105 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental Sunbury-Milton 230kV & Sunbury-Milton 69kV

Need Number: PPL-2020-0005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

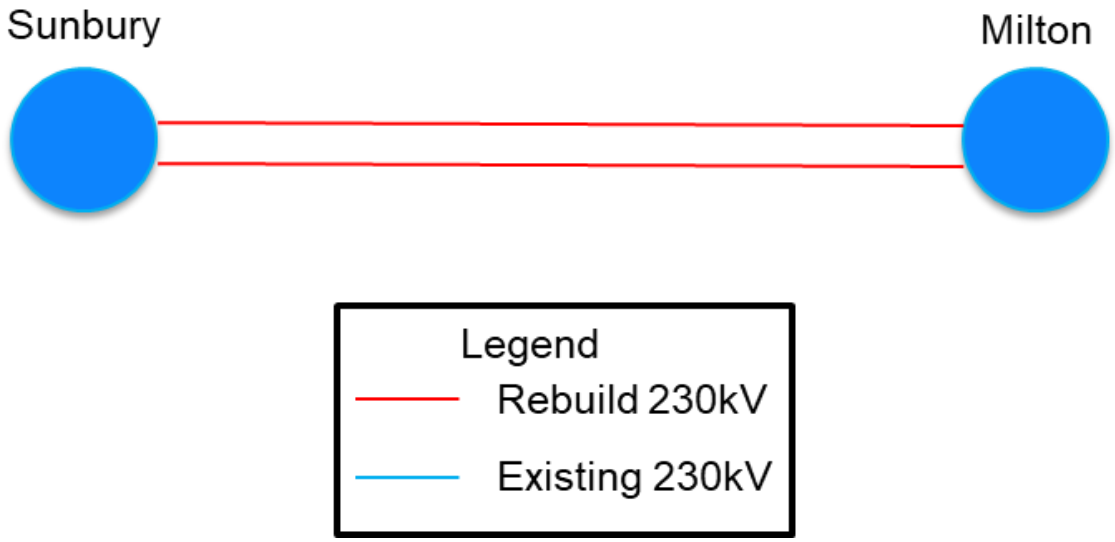
Sunbury-Milton 230kV & Sunbury-Milton 69kV

Selected Solution: Rebuild the entire 10.5-mile SUNB-MILT line with steel monopoles and new conductor. Project will be coordinated with S1106.

TO Alternative:

- Removal of the Circuits: Infeasible due to 105MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $26.1M
Project IS Date: 12/31/2023
Supplemental Project ID: S2366
Project Status: Conceptual
Model: 2024 Case



PPL Transmission Zone: Supplemental Stanton-Summit 3 & 4 230kV

Need Number: PPL-2020-0006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

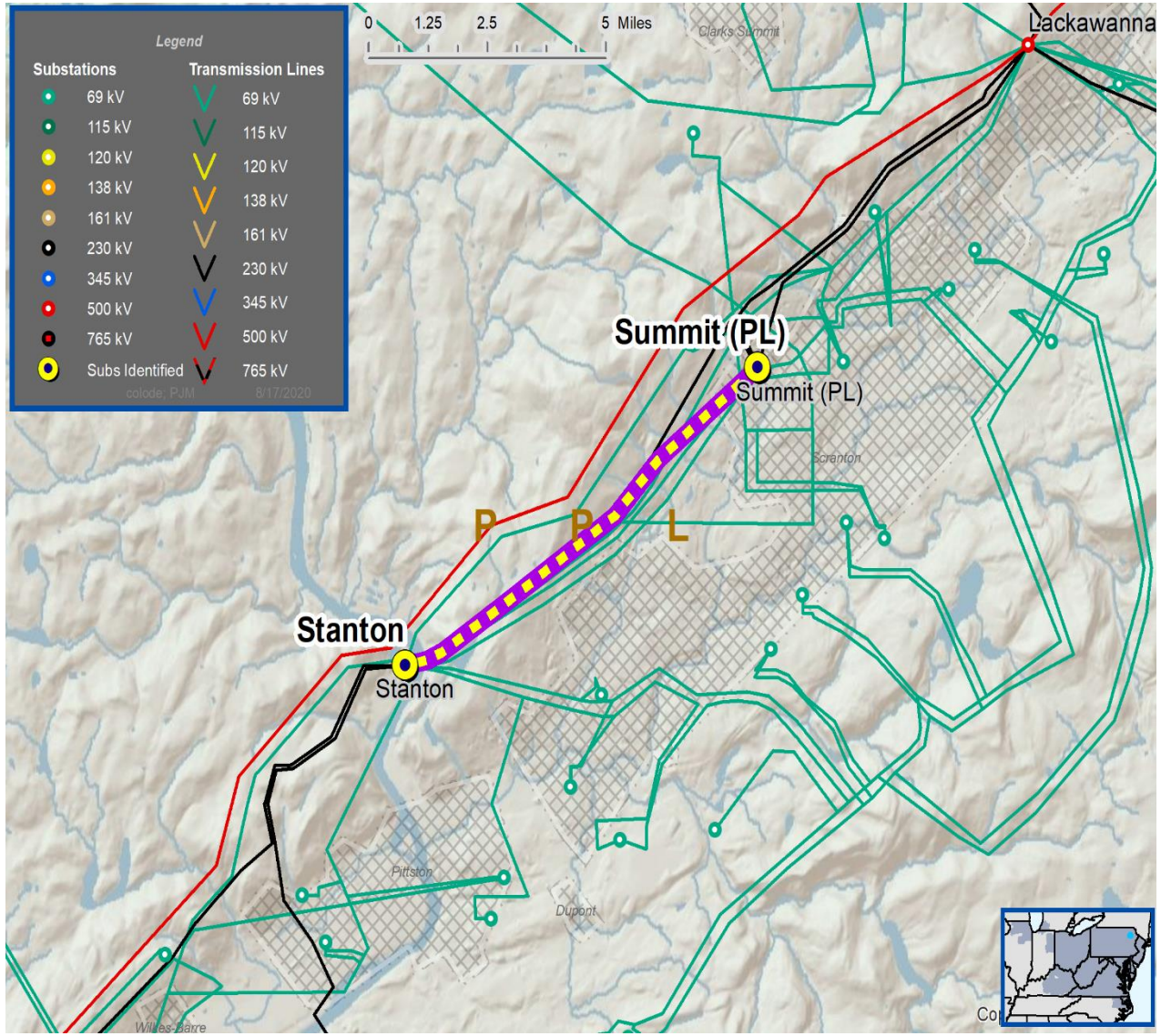
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 7.7 mile stretch of the Stanton-Summit 3 & 4 230kV lines, there are 46 weathering steel Corten lattice towers that were installed in 1970.
- 76% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be thermal and voltage violations and approximately 175 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

[PPL 2020 Annual Assumptions]



PPL Transmission Zone: Supplemental
Stanton-Summit 3 & 4 230kV

Need Number: PPL-2020-0006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

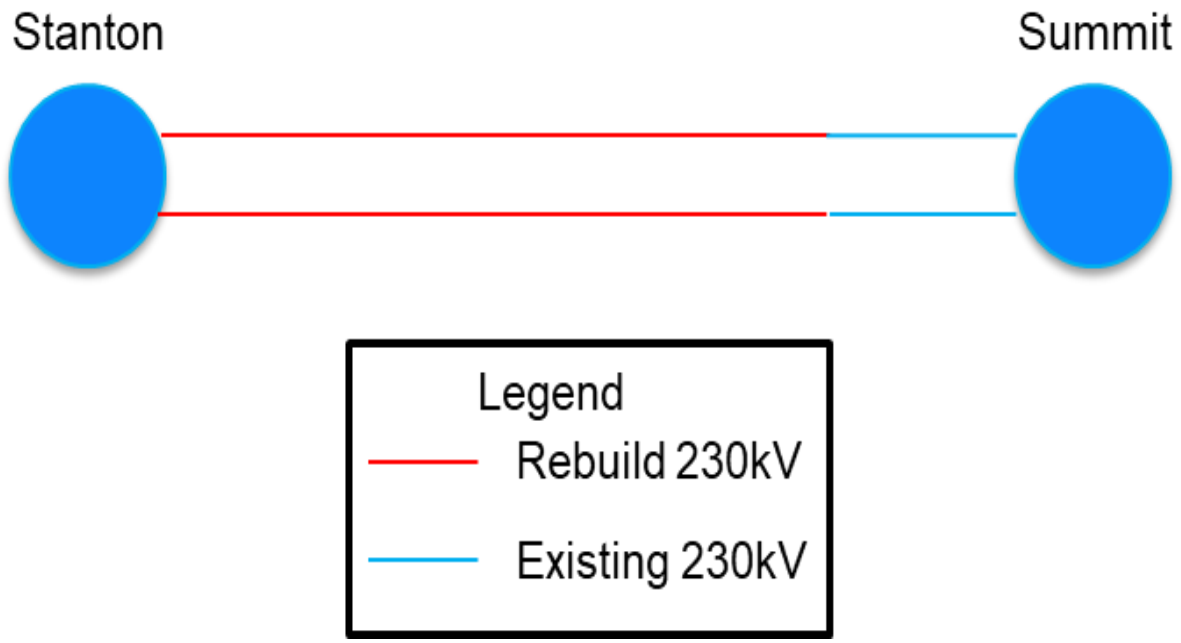
Stanton-Summit 3 & 4 230kV

Selected Solution: Rebuild the 7.7-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 175MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $21.1M
Project IS Date: 12/31/2025
Supplemental Project ID: S2367
Project Status: Conceptual
Model: 2026 Case



PPL Transmission Zone: Supplemental
Saegers-Elimsport & Clinton-Elimsport/Clinton-Saegers 230kV lines

Need Number: PPL-2020-0007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

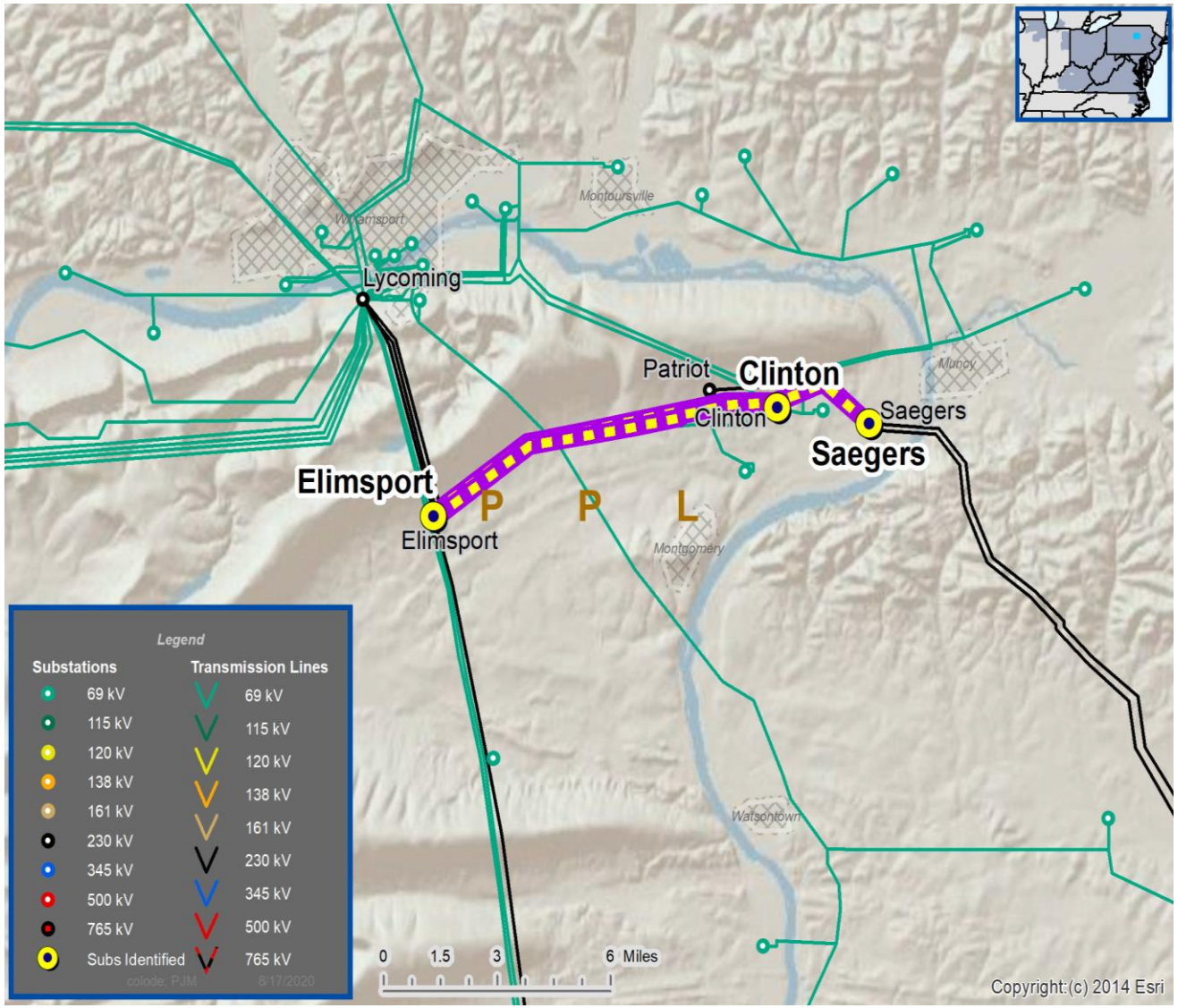
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over an 8.0 mile stretch of the Saegers-Elimsport and Clinton-Elimsport/Clinton-Saegers 230kV lines, there are 48 weathering steel Corten lattice towers that were installed in 1971.
- 69% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. Approximately 465 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental
Saegers-Elimsport & Clinton-Elimsport/Clinton-Saegers 230kV lines

Need Number: PPL-2020-0007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

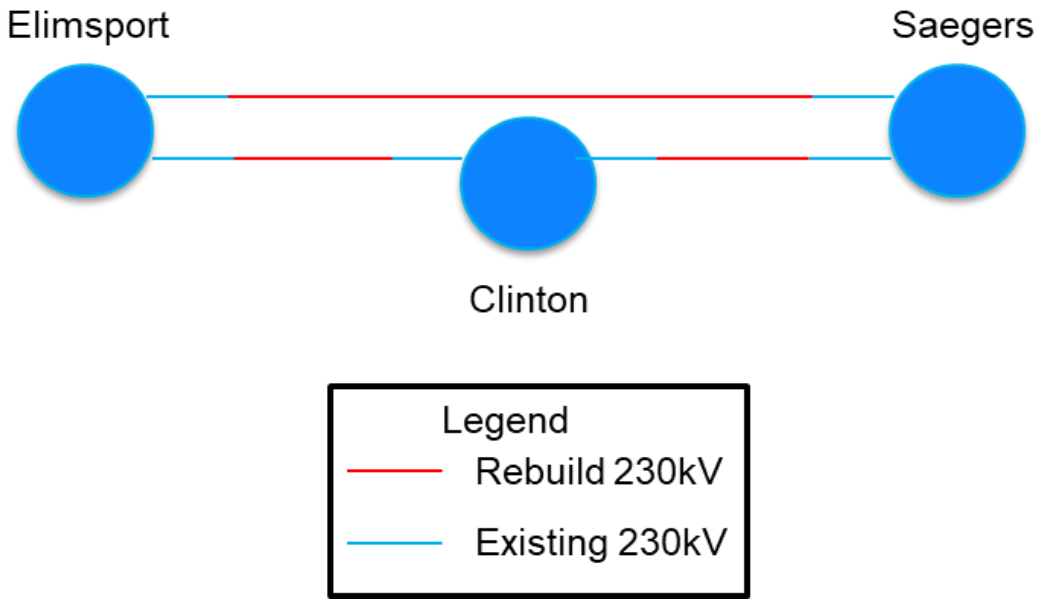
Saegers-Elimsport & Clinton-Elimsport/Clinton-Saegers 230kV lines

Selected Solution: Rebuild the 8.0 miles of Corten tower sections with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 465MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $23.1M
Project IS Date: 12/31/2026
Supplemental Project ID: S2368
Project Status: Conceptual
Model: 2027 Case



PPL Transmission Zone: Supplemental
South Akron-Millwood 230kV & Millwood-Strasburg tie 69kV

Need Number: PPL-2020-0008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020 and 09/10/2020

Solution Slide Presented: 10/6/2020 and 10/15/2020

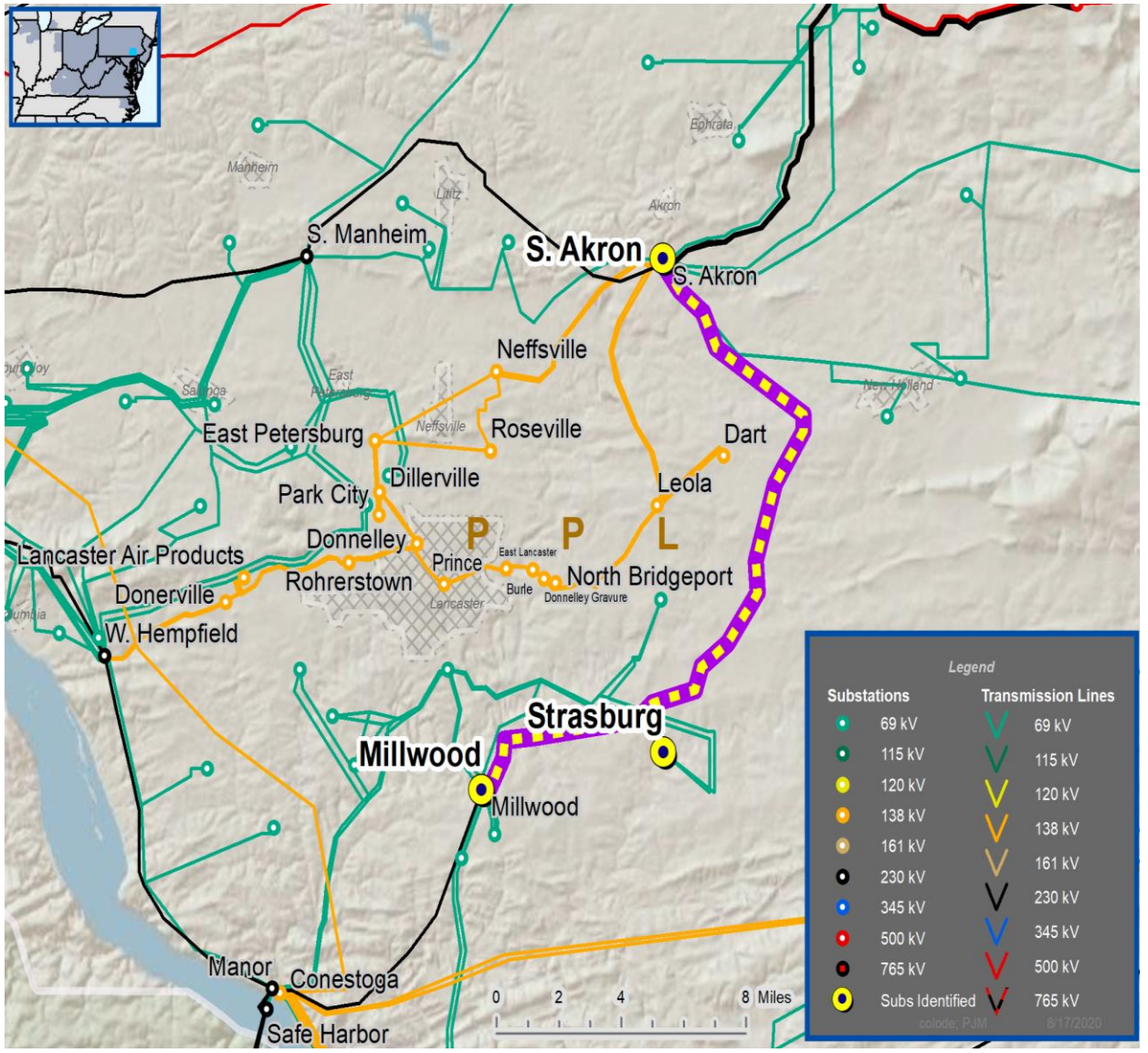
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 20.4 mile stretch of the South Akron-Millwood 230kV and the Millwood-Strasburg tie 69kV lines, there are 125 weathering steel Corten lattice towers that were installed in 1967.
- 97% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230/69 kV circuit required to serve approximately 25 MW of local load. Absence of this circuit will cause several thermal and voltage violations in the area for the next N-1 contingency.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental
South Akron-Millwood 230kV & Millwood-Strasburg tie 69kV

Need Number: PPL-2020-0008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

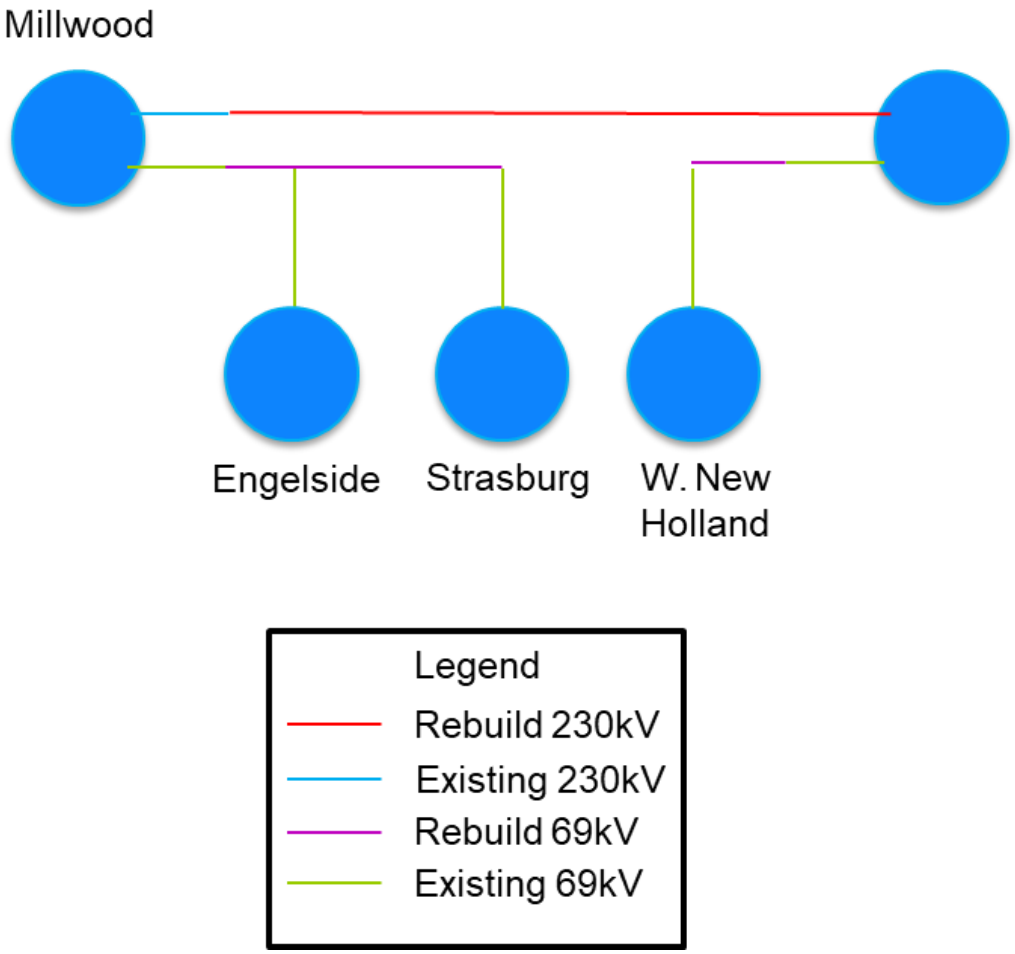
South Akron-Millwood 230kV & Millwood-Strasburg tie 69kV

Selected Solution: Rebuild the 20.4-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 25MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $53.3M
Project IS Date: 12/31/2025
Supplemental Project ID: S2369
Project Status: Conceptual
Model: 2026 Case



PPL Transmission Zone: Supplemental Montour-Saegers 1 & 2 230kV

Need Number: PPL-2020-0009

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

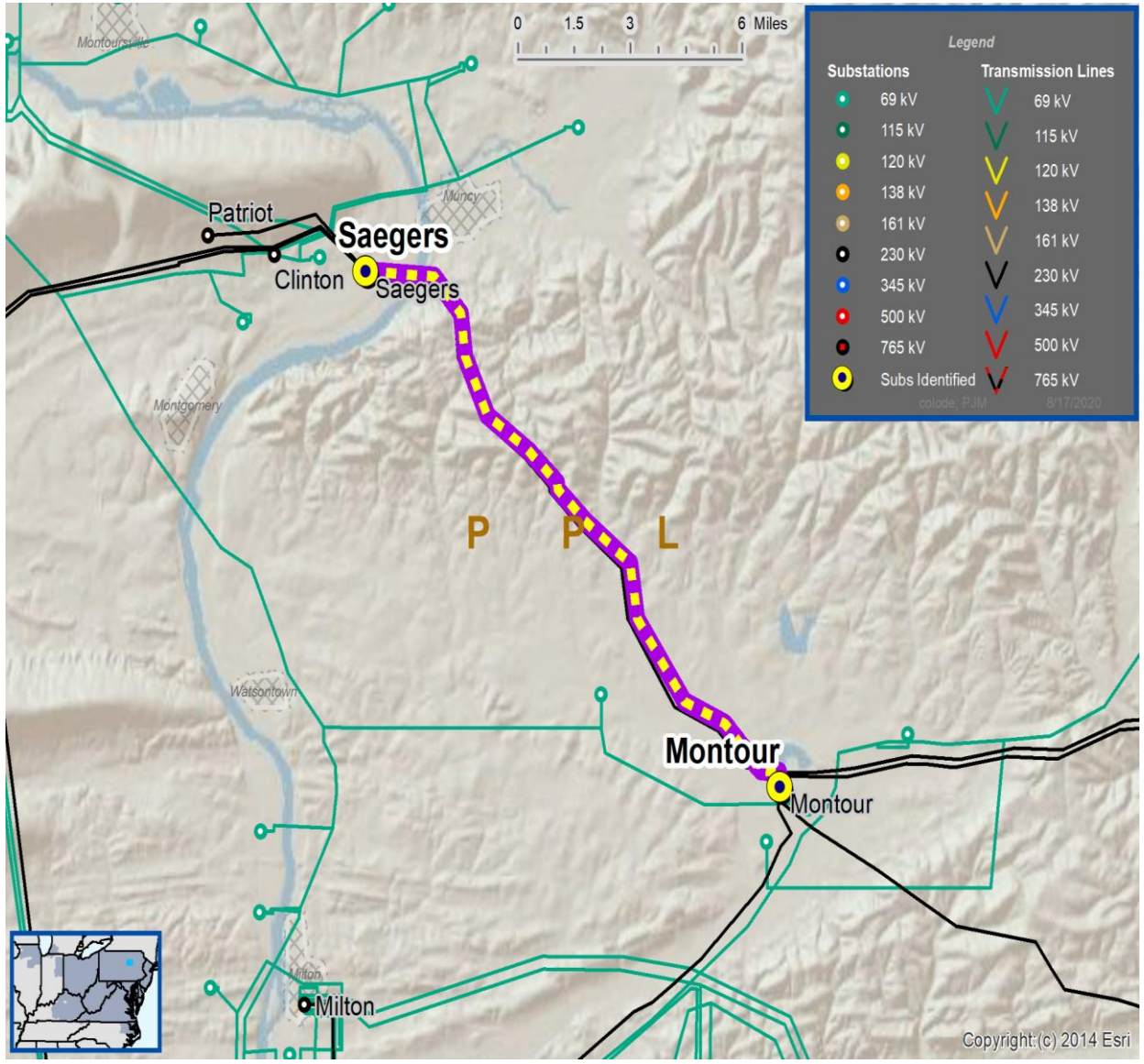
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 6.2 mile stretch of the Montour-Saegers 1 & 2 230kV lines, there are 38 weathering steel Corten lattice towers that were installed in 1971.
- 35% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. Approximately 465 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental
Montour-Saegers 1 & 2 230kV

Need Number: PPL-2020-0009

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Montour-Saegers 1 & 2 230kV

Selected Solution: Rebuild the 6.2-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 465MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $17.5M
Project IS Date: 12/31/2027
Supplemental Project ID: S2370
Project Status: Conceptual
Model: 2028 Case

PPL Transmission Zone: Supplemental Jenkins-Stanton & Mountain-Stanton 230kV

Need Number: PPL-2020-0010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

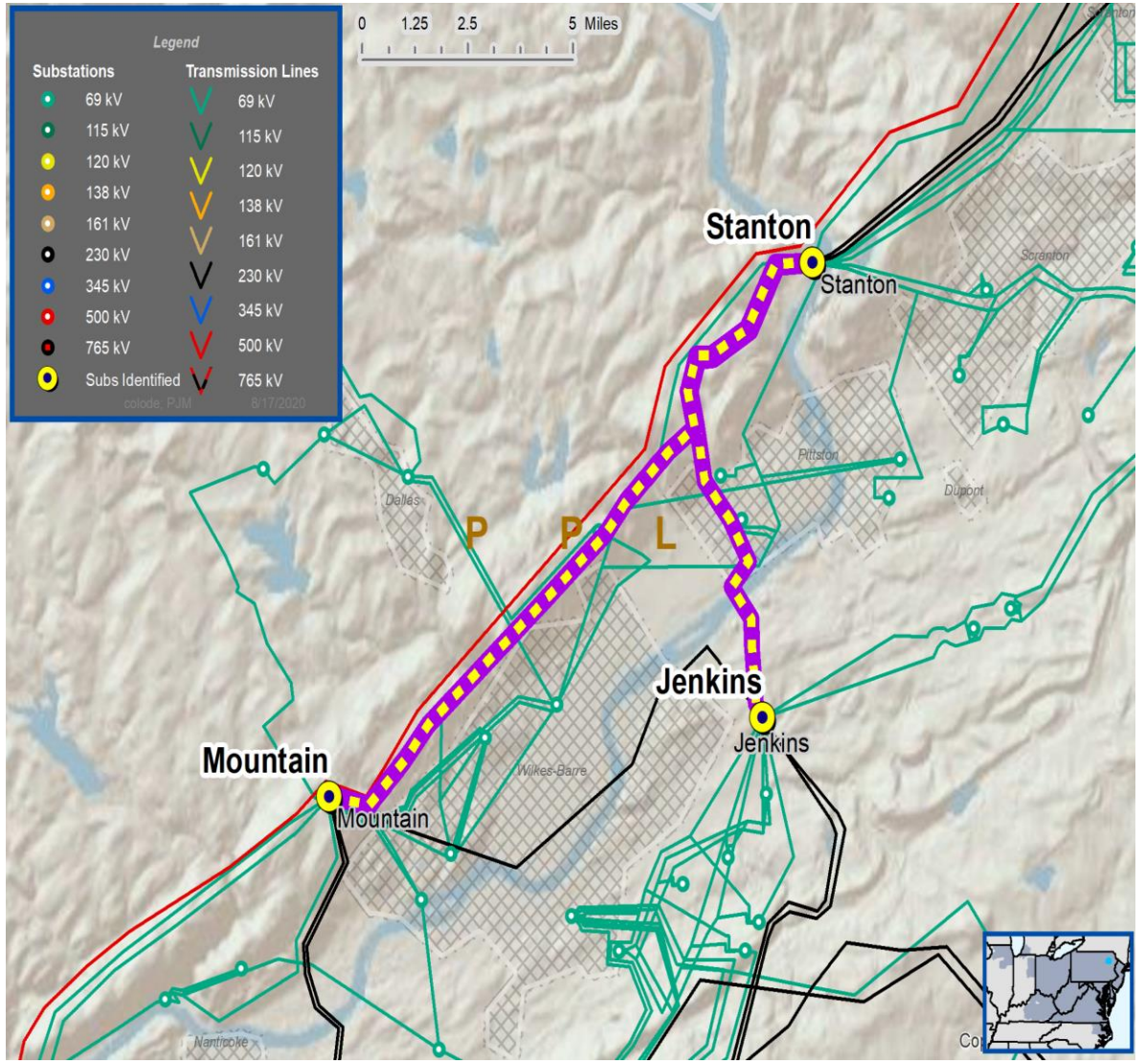
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over an 8.5 mile stretch of the Jenkins-Stanton and Mountain-Stanton 230kV lines, there are 49 weathering steel Corten lattice towers that were installed in 1972.
- 95% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be thermal and voltage violations and approximately 175 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

[PPL 2020 Annual Assumptions]



PPL Transmission Zone: Supplemental Jenkins-Stanton & Mountain-Stanton 230kV

Need Number: PPL-2020-0010

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

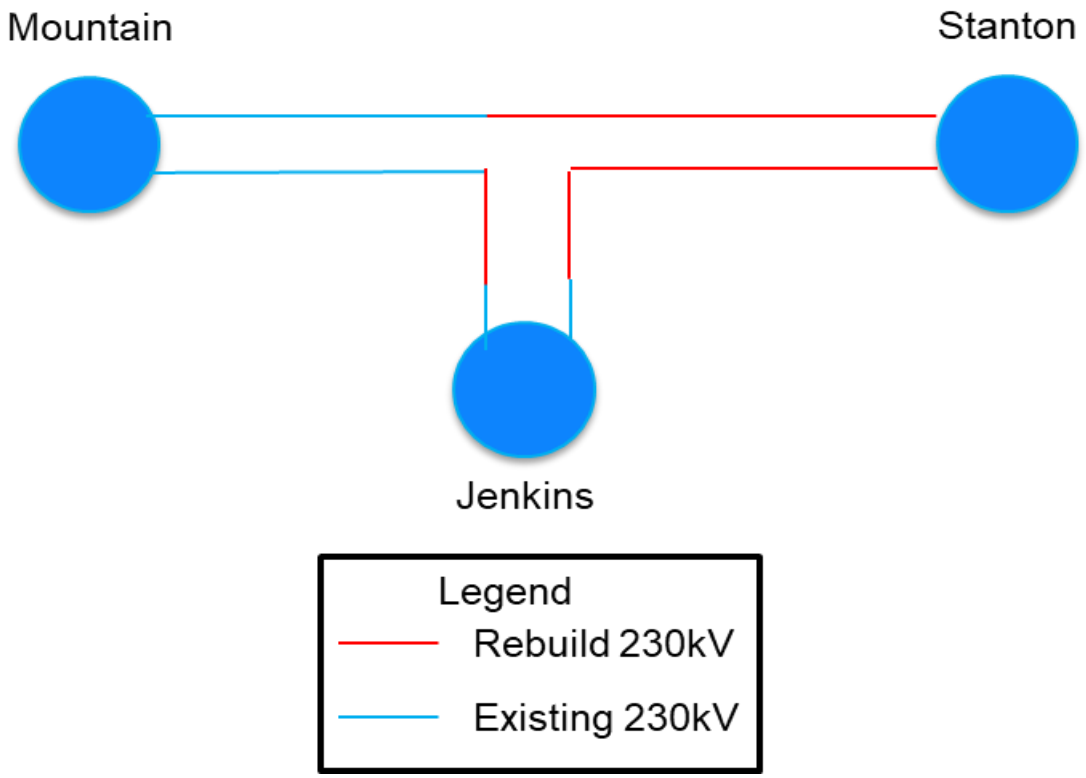
Jenkins-Stanton & Mountain-Stanton 230kV

Selected Solution: Rebuild the 8.5-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 175MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $22.8M
Project IS Date: 12/31/2028
Supplemental Project ID: S2371
Project Status: Conceptual
Model: 2029 Case



PPL Transmission Zone: Supplemental Mountain-Stanton & Mountain-Jenkins 230kV

Need Number: PPL-2020-0011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

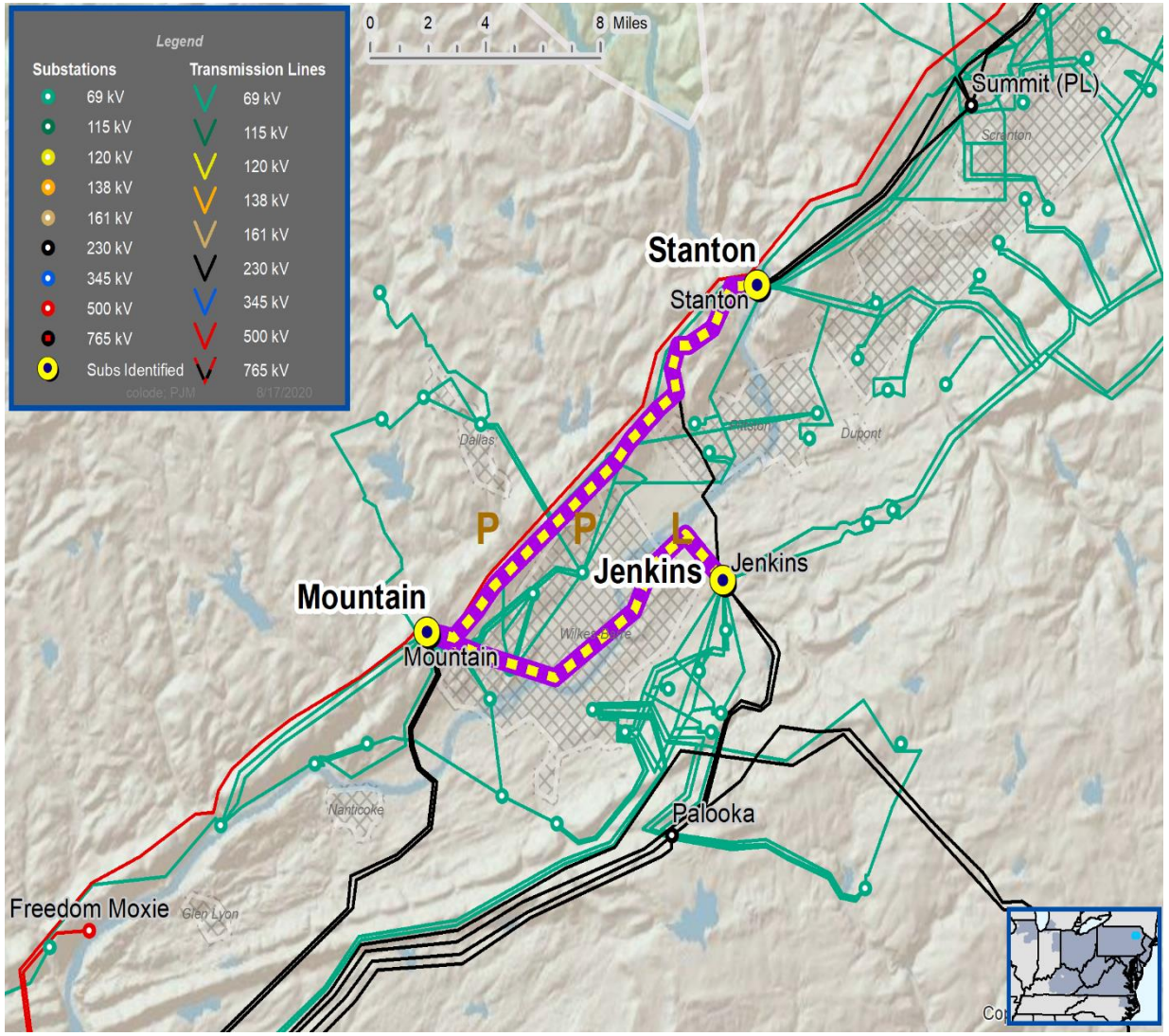
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 9.8 mile stretch of the Mountain-Stanton and Mountain-Jenkins 230kV lines, there are 55 weathering steel Corten lattice towers that were installed in 1972.
- 97% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. Approximately 190 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental Mountain-Stanton & Mountain-Jenkins 230kV

Need Number: PPL-2020-0011

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

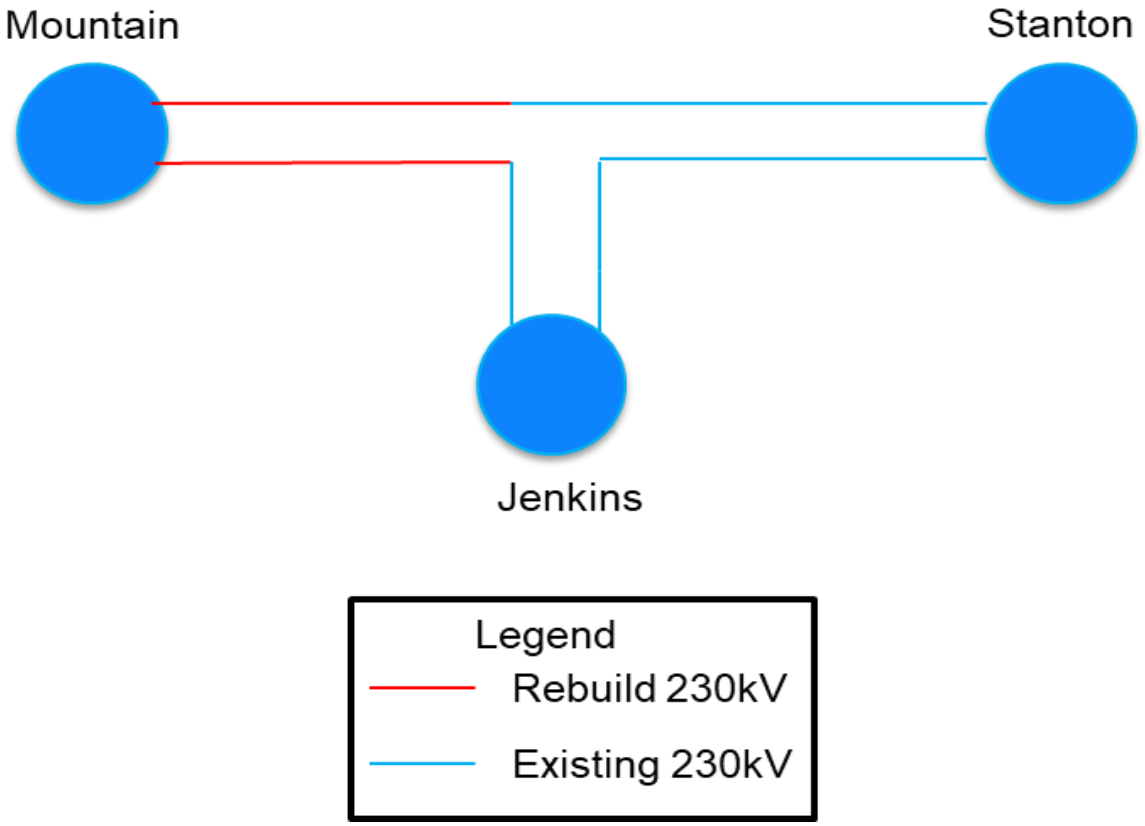
Mountain-Stanton & Mountain-Jenkins 230kV

Selected Solution: Rebuild the 9.8-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 190MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $27M
Project IS Date: 12/31/2029
Supplemental Project ID: S2372
Project Status: Conceptual
Model: 2030 Case



PPL Transmission Zone: Supplemental
Montour-Susquehanna & Montour-Susquehanna T10 230kV

Need Number: PPL-2020-0012

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

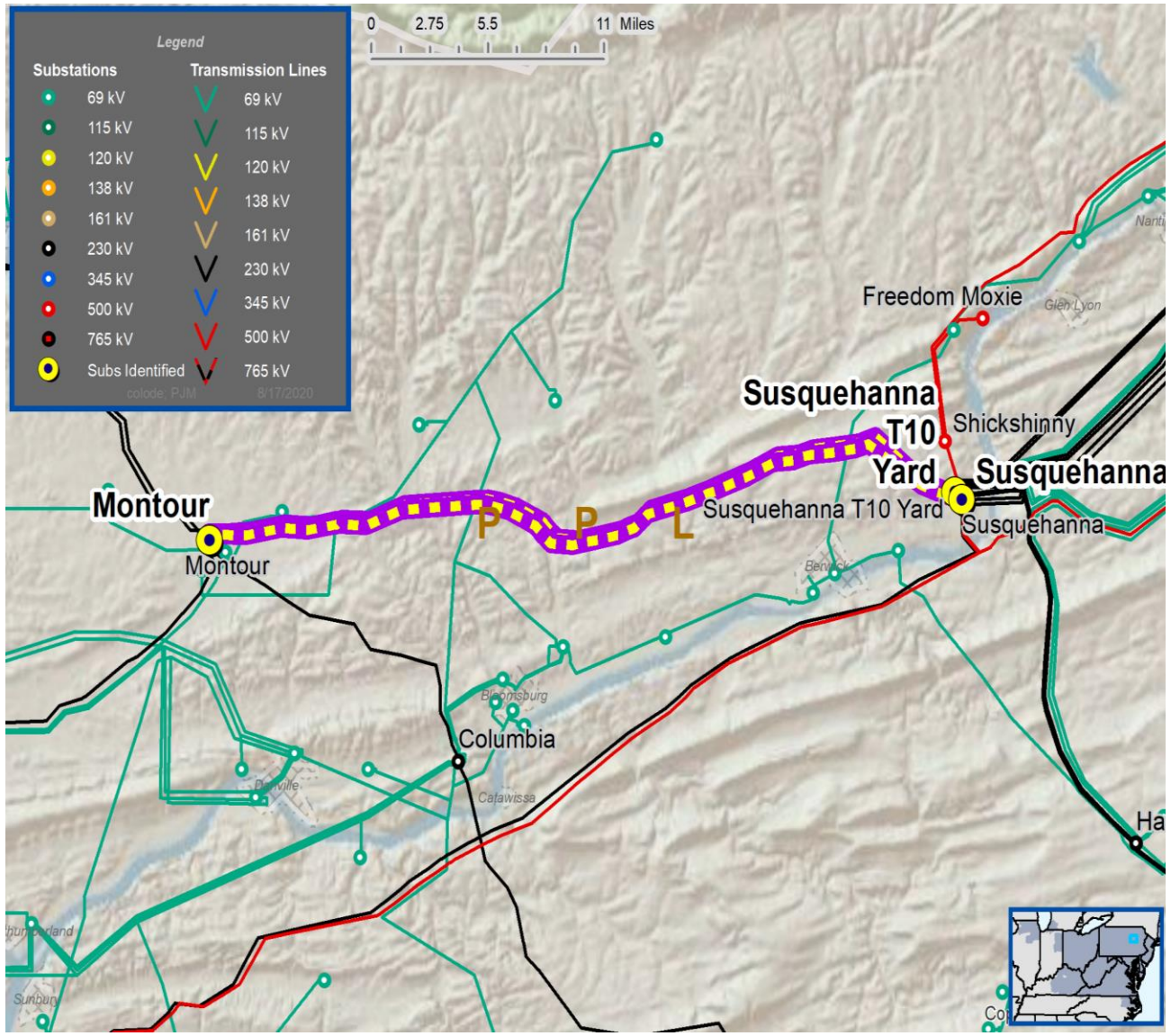
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 21.9 mile stretch of the Montour-Susquehanna and Montour-Susquehanna T10 230kV lines, there are 132 weathering steel Corten lattice towers that were installed in 1971.
- 74% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be several thermal violations and approximately 60 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental
Montour-Susquehanna & Montour-Susquehanna T10 230kV

Need Number: PPL-2020-0012

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

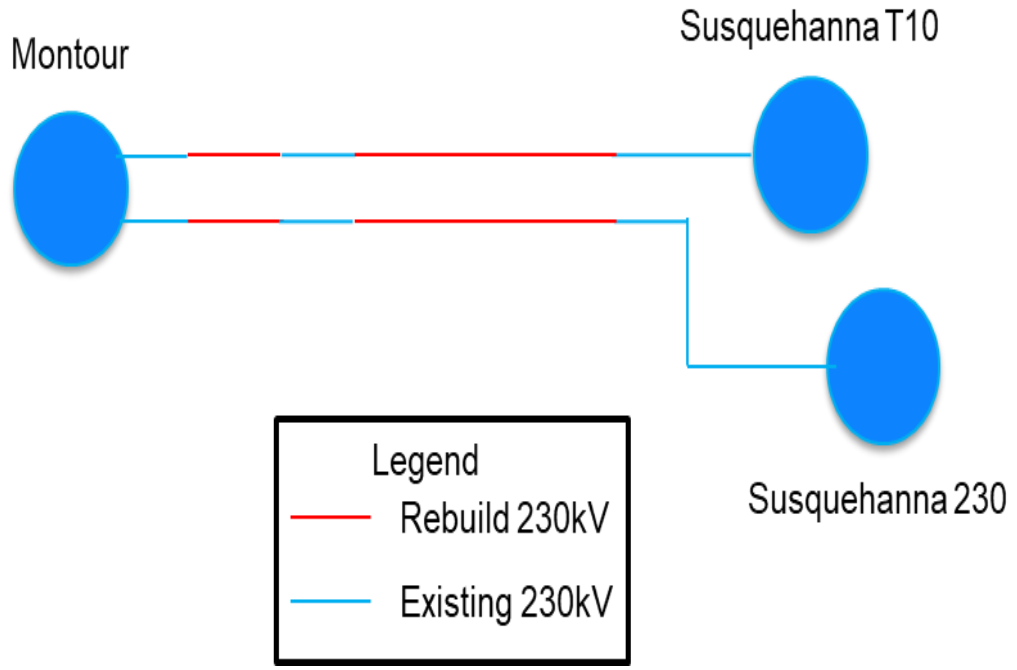
Montour-Susquehanna & Montour-Susquehanna T10 230kV

Selected Solution: Rebuild the 21.9 miles of Corten tower sections with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 60MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $69.6M
Project IS Date: 12/31/2029
Supplemental Project ID: S2373
Project Status: Conceptual
Model: 2030 Case



PPL Transmission Zone: Supplemental
Siegfried-Harwood & Harwood-East Palmerton/Siegfried-East Palmerton 230kV

Need Number: PPL-2020-0013

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

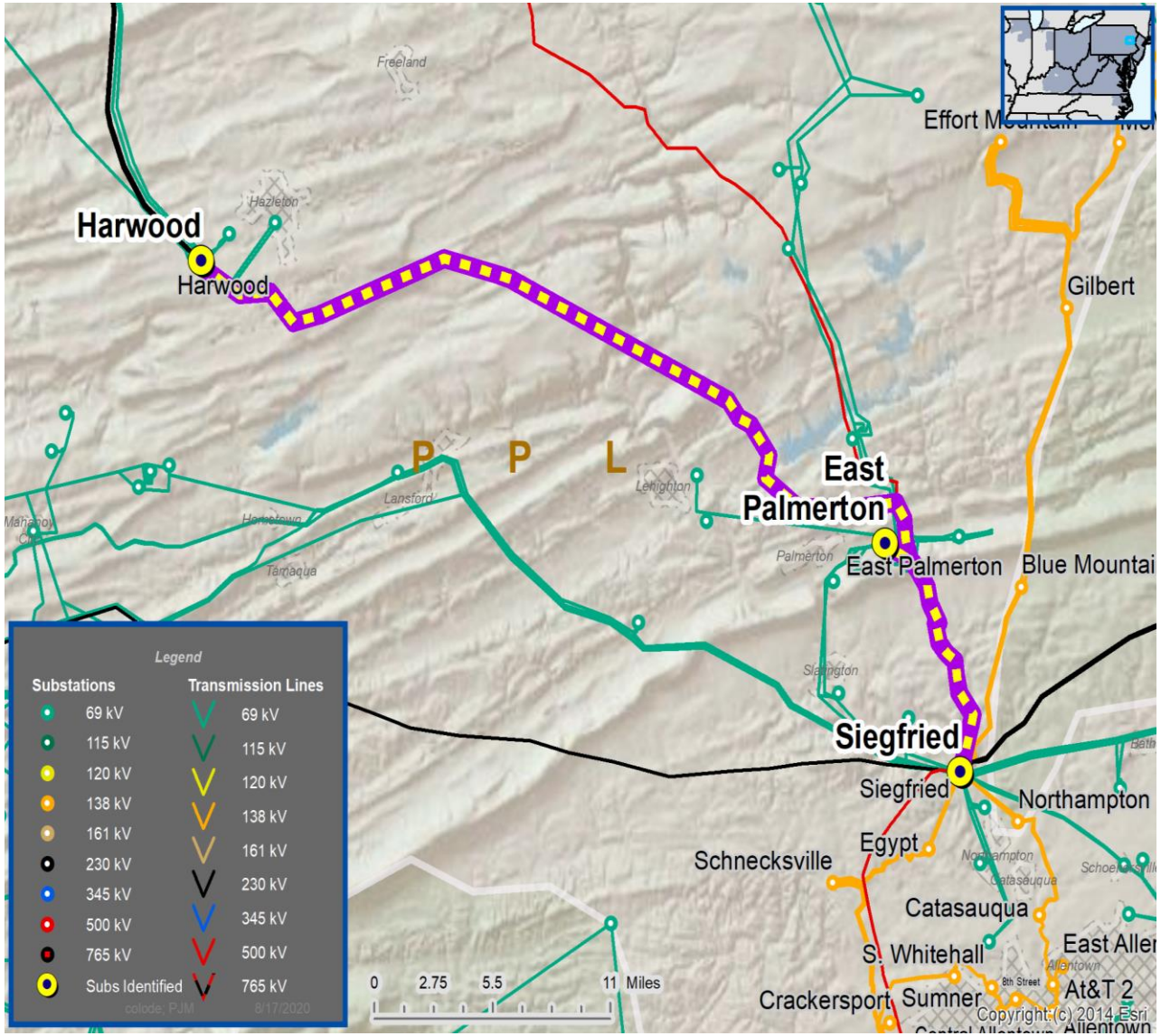
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 38.0 mile stretch of the Siegfried-Harwood and Harwood-East Palmerton/Siegfried-East Palmerton 230kV lines, there are 221 weathering steel Corten lattice towers that were installed in 1969.
- 94% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be a thermal violation and approximately 280 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

[PPL 2020 Annual Assumptions]



PPL Transmission Zone: Supplemental
Siegfried-Harwood & Harwood-East Palmerton/Siegfried-East Palmerton 230kV

Need Number: PPL-2020-0013

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

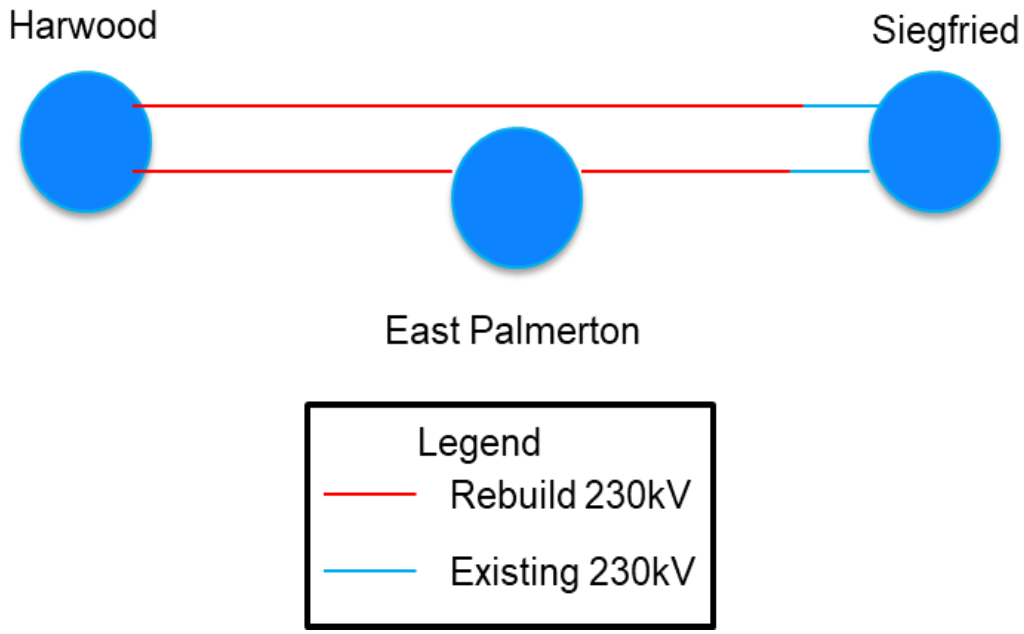
Siegfried-Harwood & Harwood-East Palmerton/Siegfried-East Palmerton 230kV

Selected Solution: Rebuild the 38.0 miles of Corten tower sections with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 280MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $136.8M
Project IS Date: 12/31/2026
Supplemental Project ID: S2374
Project Status: Conceptual
Model: 2027 Case



PPL Transmission Zone: Supplemental Montour-Columbia 230kV

Need Number: PPL-2020-0014

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

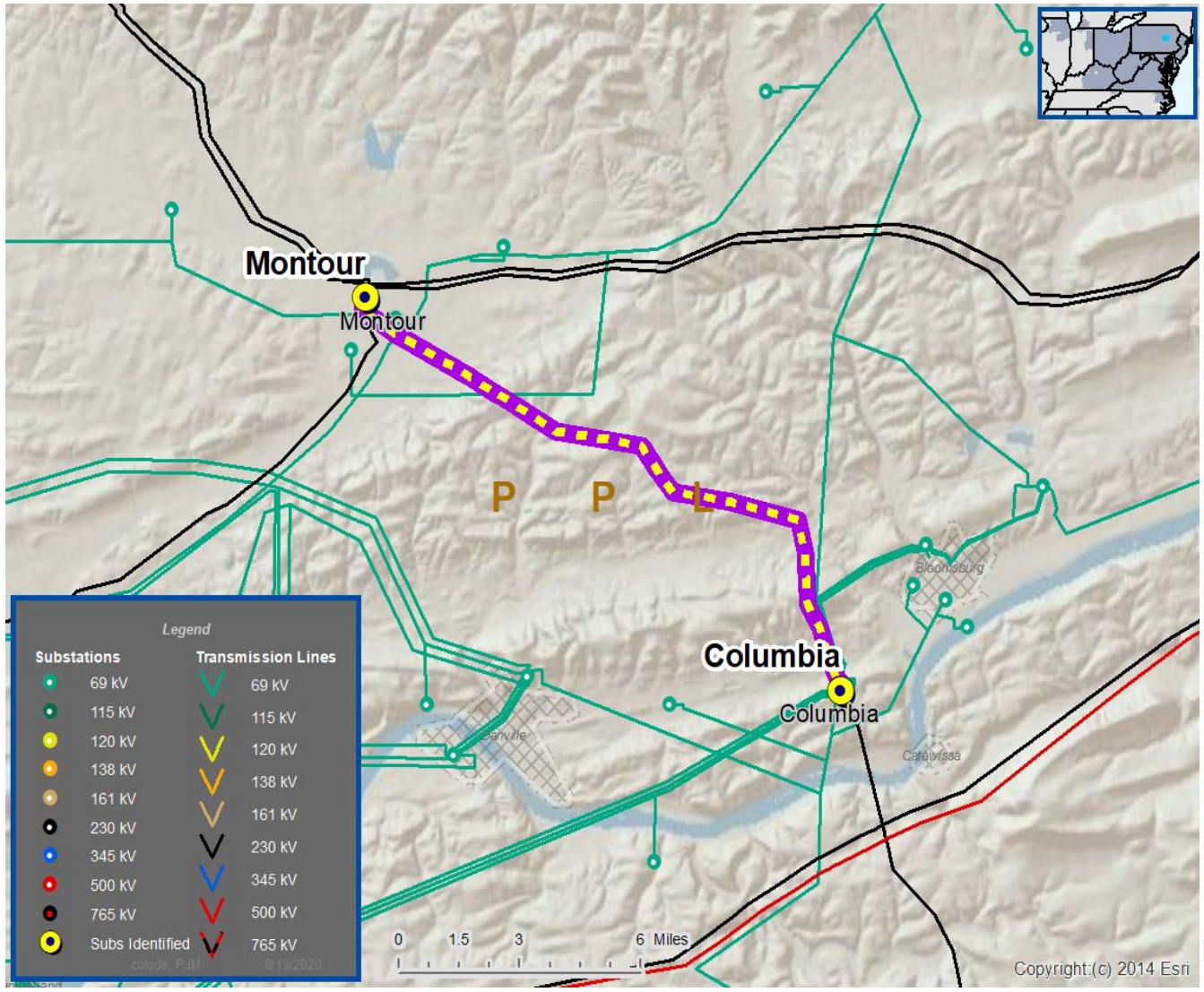
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 9.25 mile stretch of the Montour-Columbia 230kV line, there are 42 weathering steel Corten lattice towers that were installed in 1973.
- 86% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. There will be thermal & voltage violations and approximately 400 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

[PPL 2020 Annual Assumptions]



PPL Transmission Zone: Supplemental
Montour-Columbia 230kV

Need Number: PPL-2020-0014

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

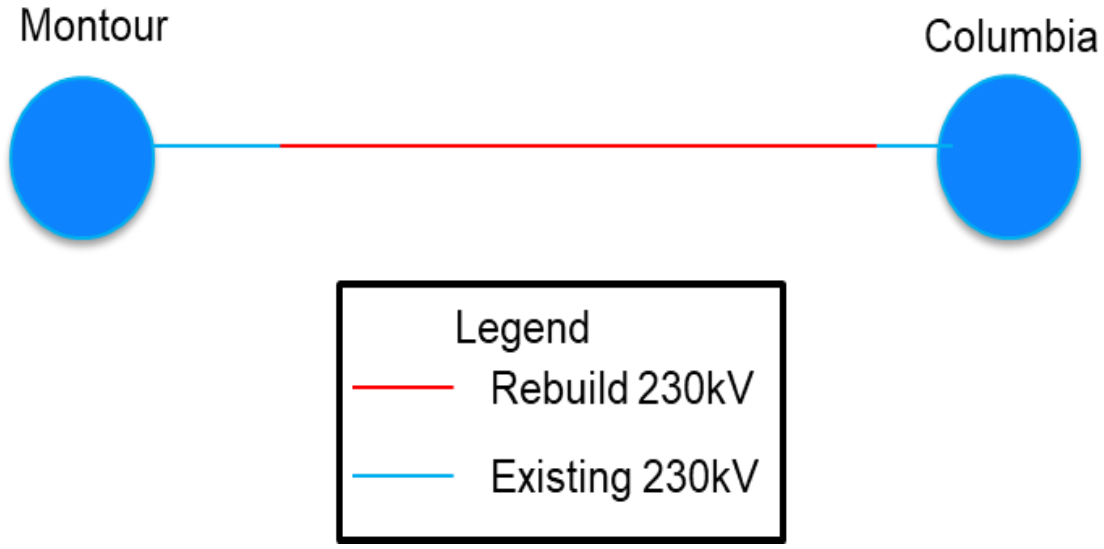
Montour-Columbia 230kV

Selected Solution: Rebuild the 9.25-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 400MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

Estimated Project Cost: $28.2M
Project IS Date: 12/31/2028
Supplemental Project ID: S2375
Project Status: Conceptual
Model: 2029 Case



PPL Transmission Zone: Supplemental Frackville-Columbia 230kV

Need Number: PPL-2020-0015

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Need Slide Presented: 09/01/2020

Solution Slide Presented: 10/6/2020

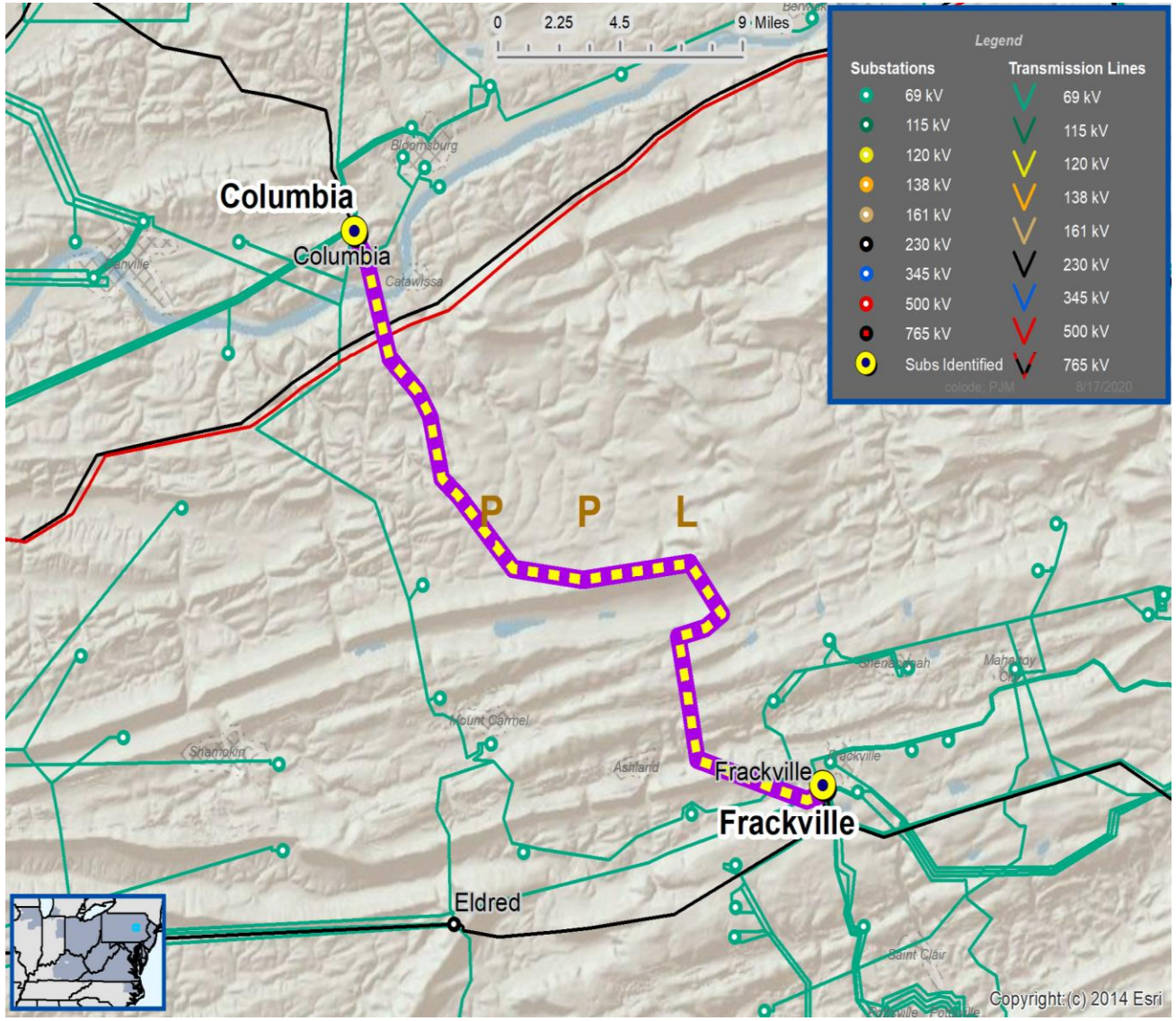
Supplemental Project Driver: Equipment Material Condition, Performance, and Risk.

Problem Statement:

- Over a 25.9 mile stretch of the Frackville-Columbia 230kV line, there are 115 weathering steel Corten lattice towers that were installed in 1973.
- 93% of the structures on this line are Corten Towers.
- A third-party inspection and analysis was conducted on a statistically significant sample of 192 out of the 1284 Corten structures on the PPL system. All the towers inspected exhibited section loss on numerous members and over 90% of the joints had visible pack-out.
- The report rated all the Corten towers inspected in poor or worse condition and concluded that the towers require near-term mitigation.
- This is an important 230 kV circuit required to serve the local load. Approximately 245 MW of local load will be out of power for the next N-1 contingency without this circuit.

Specific Assumption References:

PPL 2020 Annual Assumptions



PPL Transmission Zone: Supplemental Frackville-Columbia 230kV

Need Number: PPL-2020-0015

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 11/4/2020

Frackville-Columbia 230kV

Selected Solution: Rebuild the 25.9-mile Corten tower section with steel monopoles and new conductor.

TO Alternative:

- Removal of the Circuits: Infeasible due to 245MW load drop
- Remediation of the towers: Not cost effective over the life of the asset

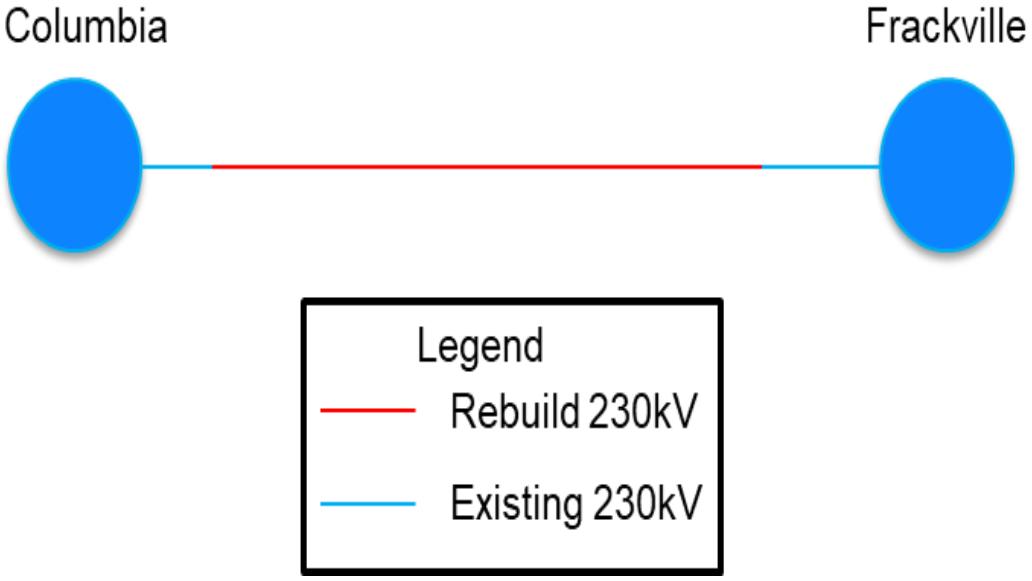
Estimated Project Cost: $91.9M

Project IS Date: 12/31/2030

Supplemental Project ID: S2376

Project Status: Conceptual

Model: 2031 Case



Revision History

3/24/2020 – V1 – Local Plan for s1106 posted to pjm.com

6/2/2020 – V2 – added local plan for s2168, s2169, s2202, s2203, s2204

11/4/2020 – V3 – added local plan for s2363 to s2376