

Submission of Supplemental Projects for Inclusion in the Local Plan

EKPC Transmission Zone M-3 Process

Dale – Newby 69 KV

Need Number: EKPC-2022-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan – July 18, 2023

Previously Presented:

- Needs Meeting –May 19, 2022
- Solution Meeting – October 14, 2022

Supplemental Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

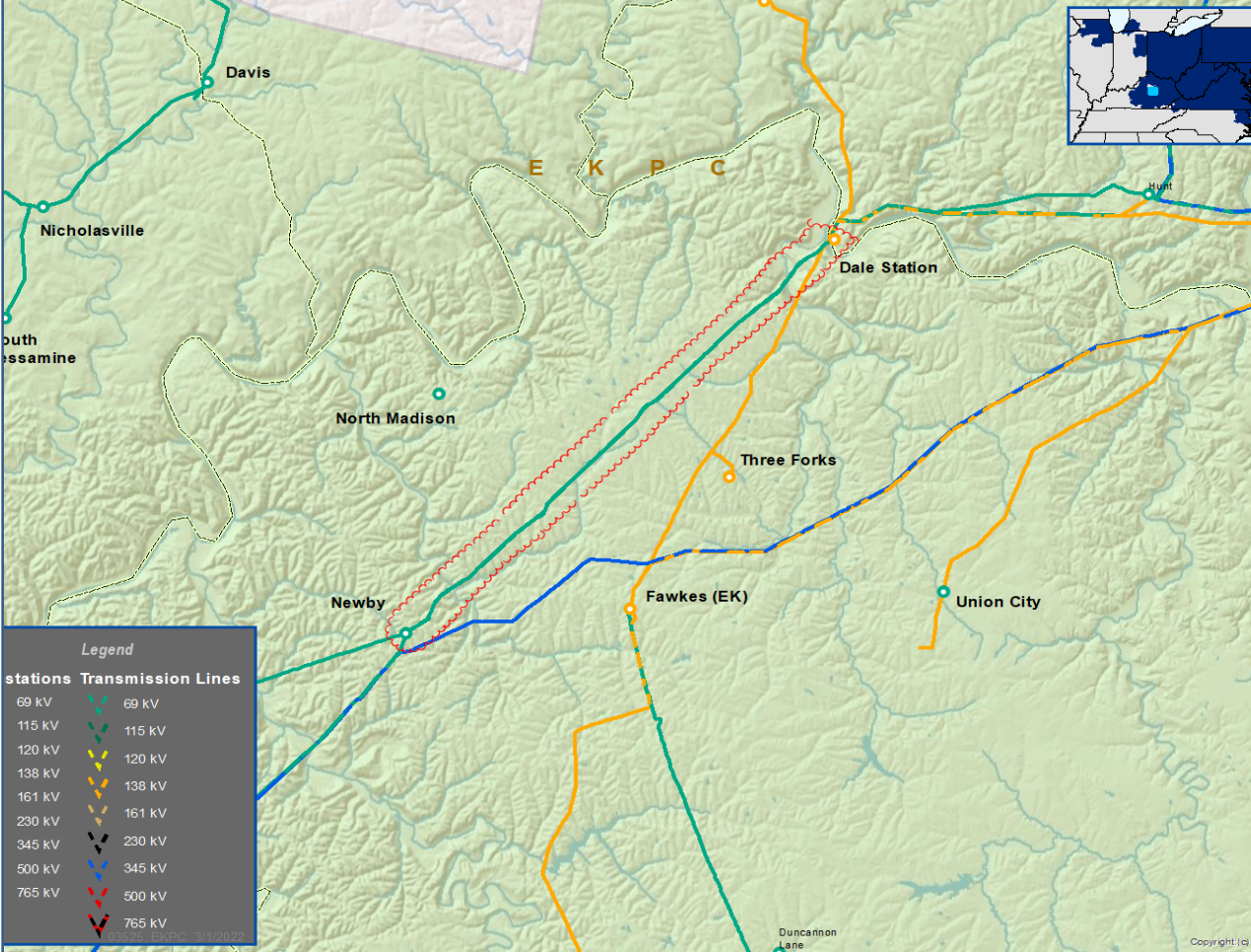
EKPC Assumptions Presentation Slides 13

Problem Statement:

The 11.1 mile, Dale - Newby double circuit 69 KV transmission line section is 70 years old.

Testing from the LineVue robot from Kinectrics Corporation deemed the condition of the line as unacceptable. The testing identified instances of rusting, pitting, and broken strands. Based on this testing information, the EKPC Reliability team has concluded that this line should be addressed due to the condition assessment.

Model: N/A



EKPC Transmission Zone M-3 Process Dale-Newby 69 KV

Need Number: EKPC-2022-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Rebuild 11.1 mile Dale-Newby line section as double-circuit 69 kV using 556 ACSR Conductor.

Transmission Cost: \$12.6M

Ancillary Benefits:

- None

Alternatives Considered:

Alternative 1 - Retire Dale-Newby; Construct a new 69 KV line from Fawkes-Crooksville to serve Newby.
Transmission Cost: \$5.8M

Alternative 2 - Retire Dale-Newby; Construct a new 138 KV line from Fawkes-West Berea. Rebuild Newby as 138/12.5 KV to serve Newby from new line.

Transmission Cost: \$8.5M

Alternative 3 - Rebuild Dale-Newby as single-circuit 69 kV and serve Newby from this line. Construct 69 KV line from Lancaster to Toddville.

Transmission Cost: \$18.1M

Alternative 4 - Retire Dale-Newby; Construct EK Fawkes-Newby 138 kV and rebuild Newby as 138/12.5 KV to serve from new line.

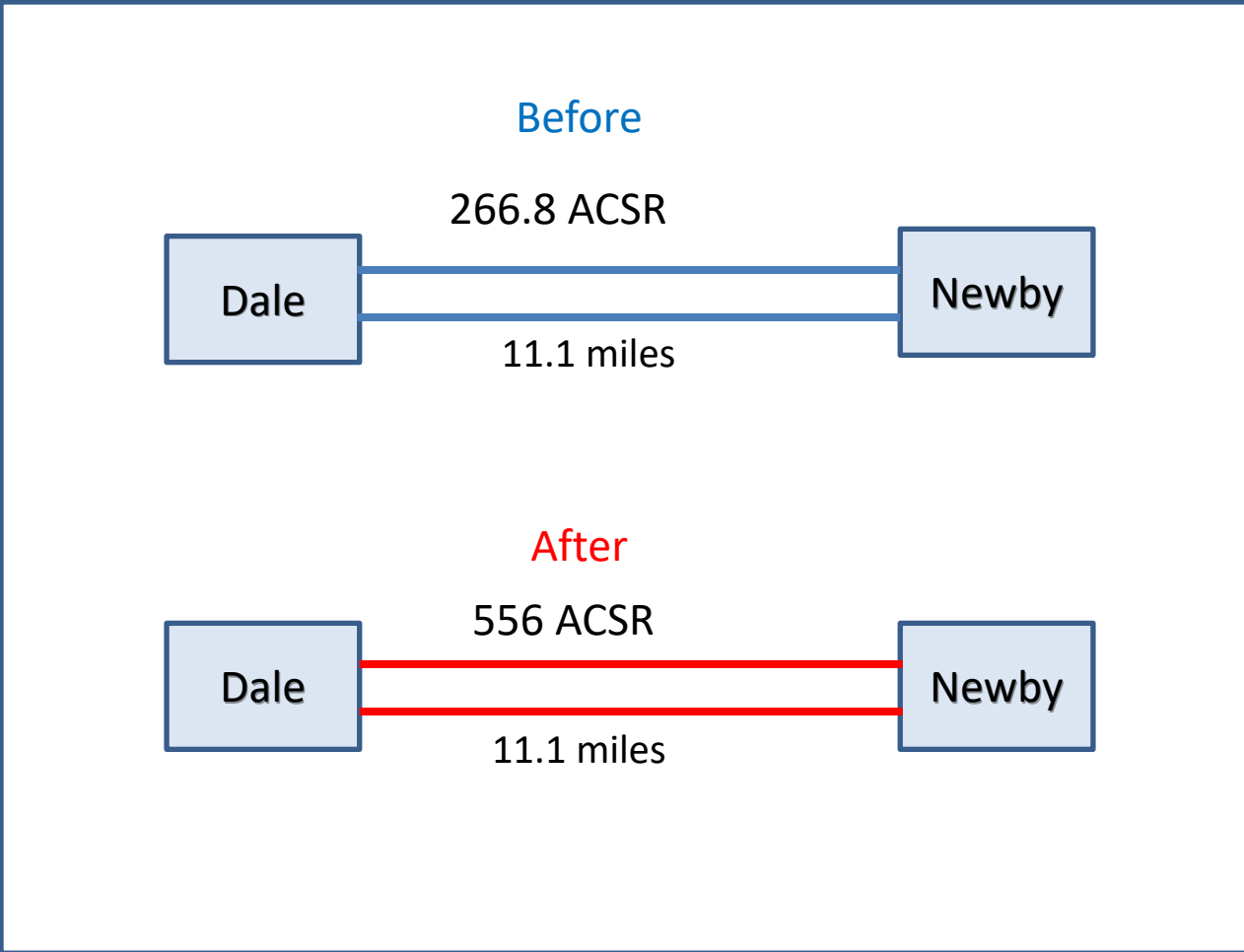
Transmission Cost: \$14.2M

Projected In-Service: 12/31/2028

Project Status: Engineering

Supplemental Project ID: s2873

Model: N/A



EKPC Transmission Zone M-3 Process Stephensburg – Vertrees 69 KV

Need Number: EKPC-2022-005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan – July 18, 2023

Previously Presented:

- Needs Meeting –October 14, 2022
- Solutions Meeting – November 18, 2022

Supplemental Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

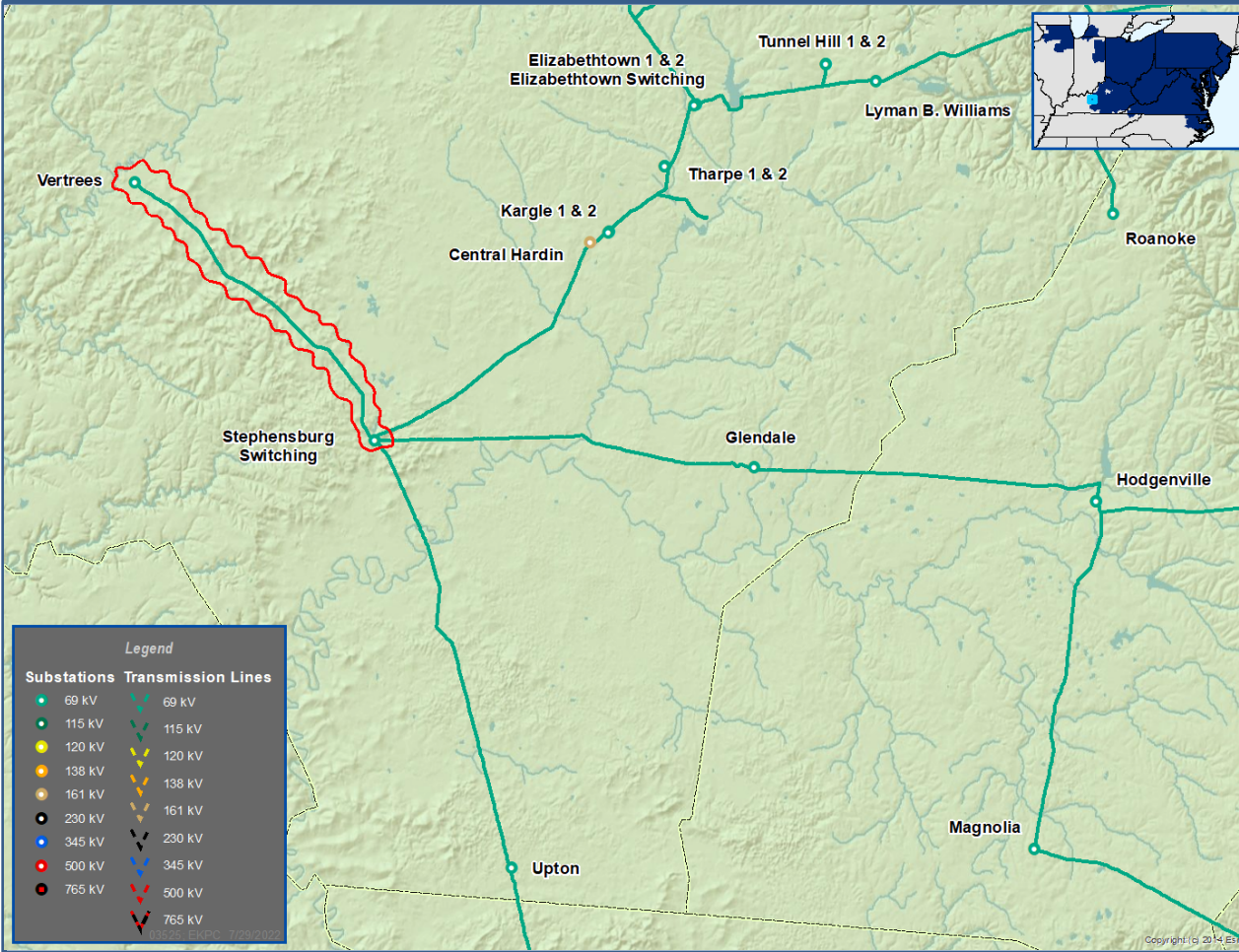
EKPC Assumptions Presentation Slides 13

Problem Statement:

The 8.7 mile, Stephensburg-Vertrees 69 KV transmission line section is 65 years old.

Testing from the LineVue robot from Kinectrics Corporation deemed the condition of the line as unacceptable. The testing identified instances of rusting, pitting, and broken strands. Based on this testing information, the EKPC Reliability team has concluded that this line should be addressed due to the condition assessment.

Model: N/A



EKPC Transmission Zone M-3 Process Stephensburg – Vertrees 69 KV

Need Number: EKPC-2022-005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Build a new 8.7 mile Stephensburg – Vertrees 69 KV line using 556 ACSR/TW conductor adjacent to the existing line section. Retire the existing line section.

Distribution Cost: \$6.83M

Transmission Cost: \$0.0M

Ancillary Benefits:

- None

Alternatives Considered:

Alternative 1 – Build a new Vertrees – Rineyville (9.46 miles) 69 KV line section and retire the existing Stephensburg – Vertrees line section. Rebuild Tharp Tap-Elizabethtown KU using 954 ACSR and increase the maximum operating temperature of the EK Elizabethtown-Tharp Tap to 302F.

Distribution Cost: \$10.7M

Transmission Cost: \$1.4M

Alternative 2 – Build a new Vertrees-Rineyville (9.46 miles) 69 KV line section using 556 ACSR and rebuild Stephensburg –Vertrees using 556 ACSR (8.7 miles).

Distribution Cost: \$0.0M

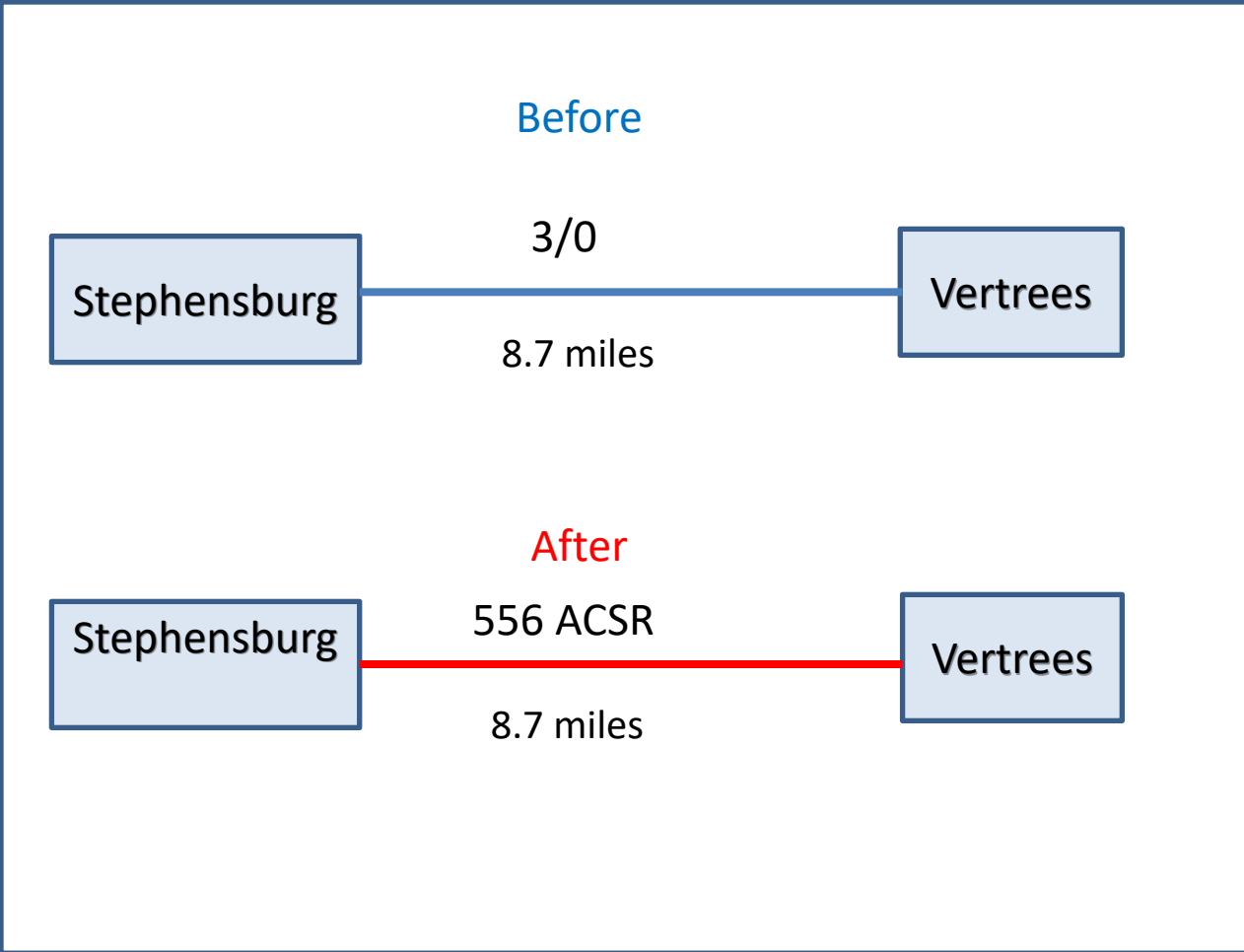
Transmission Cost: \$17.5M

Projected In-Service: 6/1/2024

Project Status: Engineering

Supplemental Project ID: s2874

Model: N/A



EKPC Transmission Zone M-3 Process Laurel Co Industrial Area 69 KV

Need Number: EKPC-2022-006

Process Stage: : Submission of Supplemental Project for inclusion in the Local Plan – July 18, 2023

Previously Presented:

- Needs Meeting –October 14, 2022
- Solutions Meeting – November 18, 2022

Supplemental Project Driver:

Customer Service

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 15

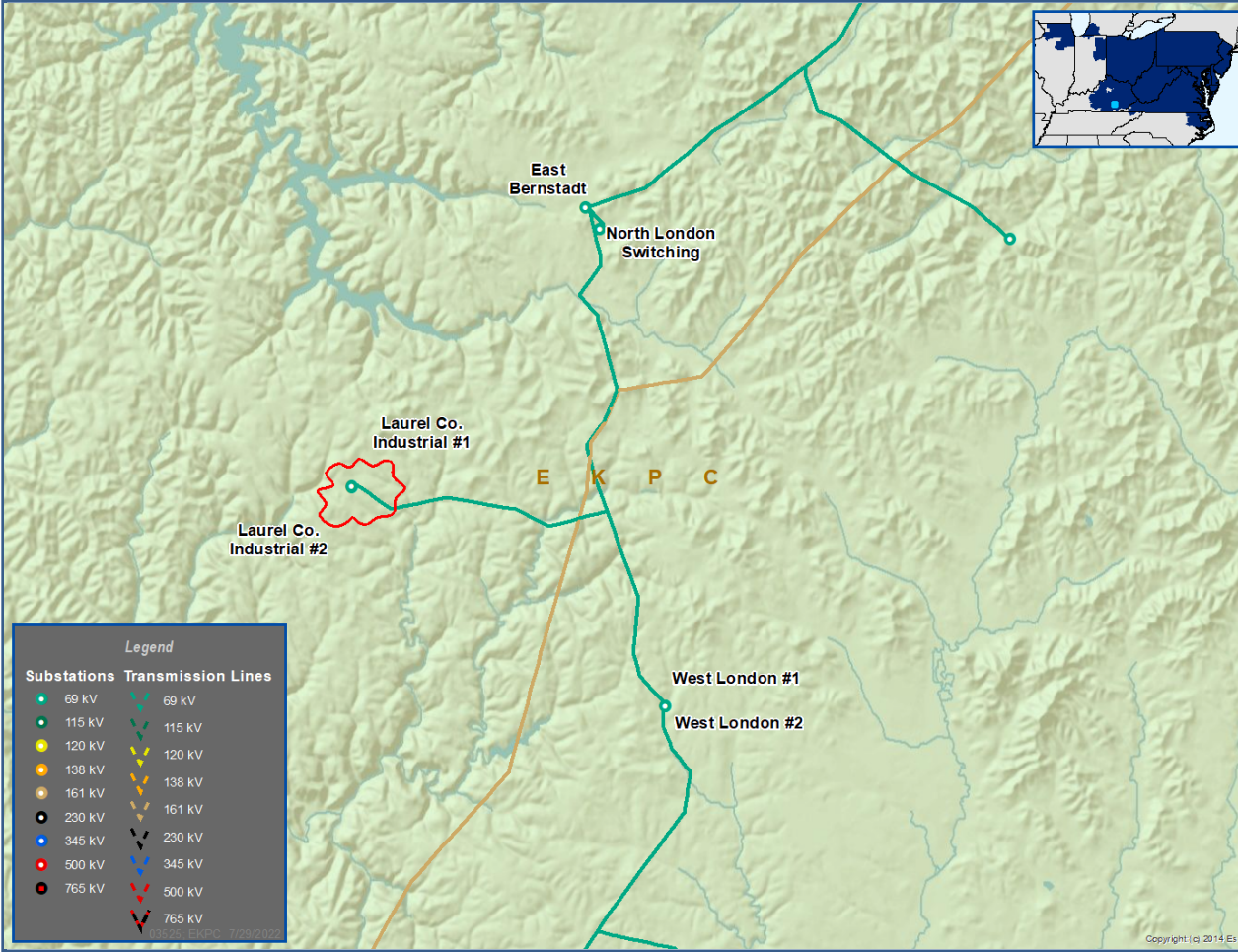
Problem Statement:

The load in the area of the Laurel County Industrial distribution substation has expanded to the maximum capacity of the Laurel County Industrial #1 11.2/14 MVA distribution transformer. Additionally, an industrial customer served from this substation is planning an expansion to add additional load, this would cause the load to exceed the maximum rating of the distribution transformer.

The 69 KV circuit that serves this area currently feeds six distribution substations with one serving a critical hospital load. Distribution outages in the area have been exacerbated due to limited distribution back feed capabilities, limited by loading of nearby distribution feeders.

A solution is needed to address these issues to improve the reliability of the distribution system in the area.

Model: N/A



EKPC Transmission Zone M-3 Process Laurel Co Industrial Area 69 KV

Need Number: EKPC-2022-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Build a new Dav Lane 4 breaker 69 KV switching station with a 69/12.47 KV, 12/16/20 MVA distribution substation, near the Laurel Co Industrial tap point.

Distribution Cost: \$2.9M

Transmission Cost: \$3.8M

Ancillary Benefits:

- Increased reliability to critical loads
- Provides operational flexibility
- Reduces restoration times

Alternatives Considered:

Alternative 1 – Build a new Dav Lane 69/12.47 KV, 12/16/20 MVA distribution substation. Construct a new 0.3 mile 69 KV tap line to serve the new distribution station from the North London-Laurel Co Industrial Tap 69 KV transmission line. Create a normally open connection at the Dave Lane tap point to the West London substation. Install a capacitor bank at the new Dav Lane station.

Distribution Cost: \$4M

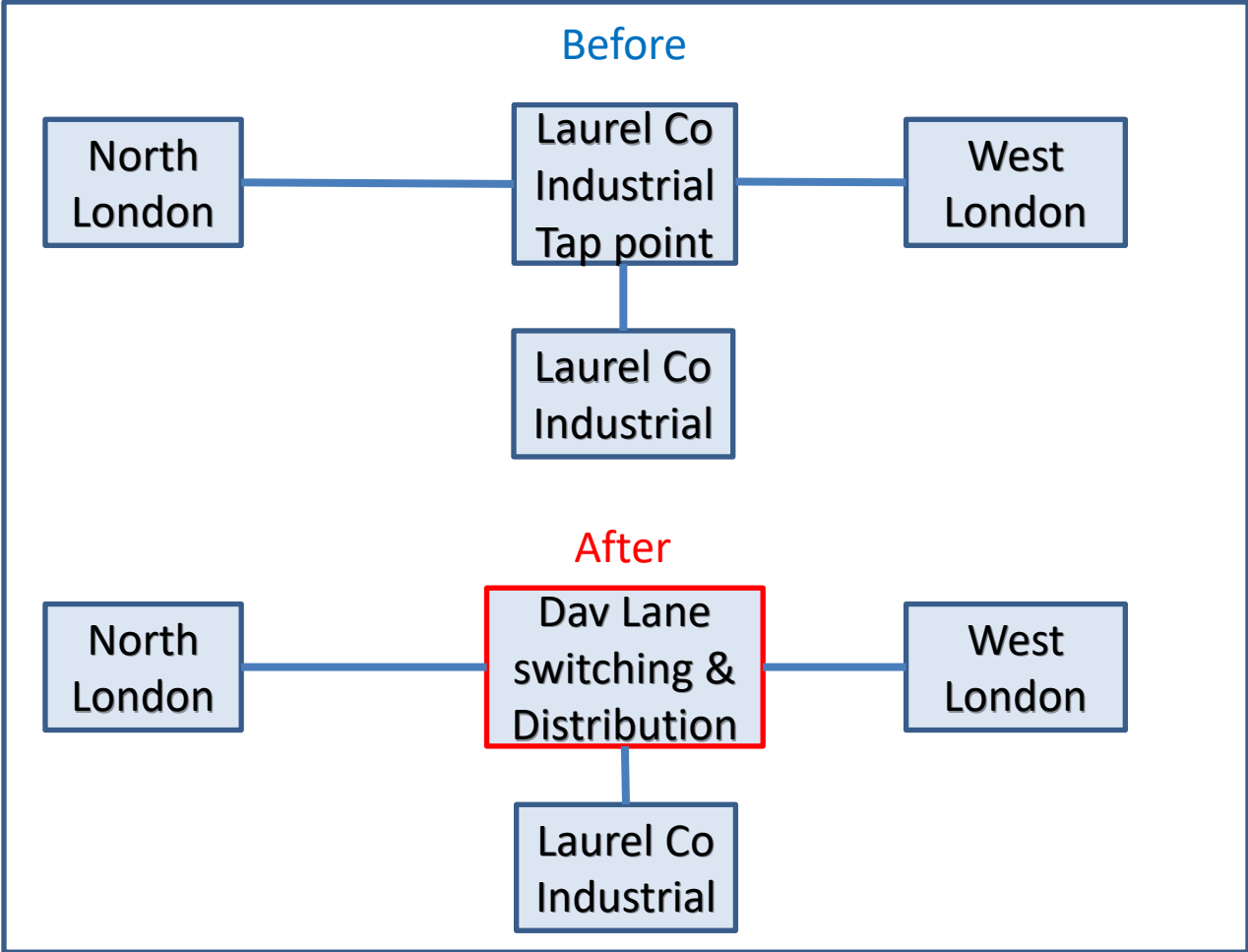
Transmission Cost: \$0.6M

Projected In-Service: 6/1/2024

Project Status: Engineering

Supplemental Project ID: s2875

Model: N/A



EKPC Transmission Zone M-3 Process Cincinnati/Northern KY Airport Area Customer Service

Need Number: EKPC-2020-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Previously Presented:

- Needs Meeting –March 19, 2020
- Solution Meeting – November 18, 2022

Supplemental Project Driver:

Customer Service

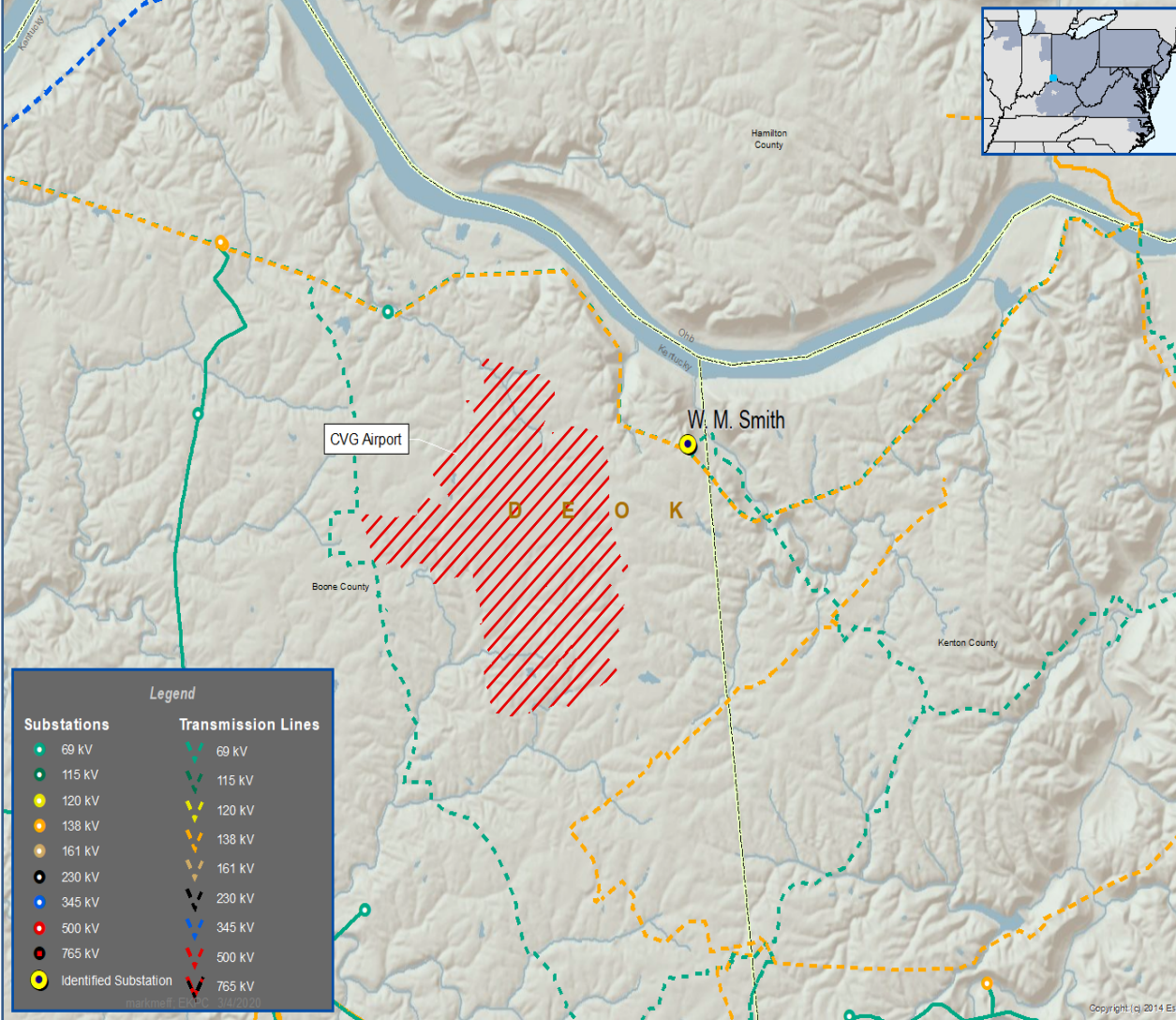
Specific Assumption Reference:

EKPC Assumptions Presentation Slide 15

Problem Statement:

The distribution cooperative serving the area in the vicinity of the Cincinnati/Northern Kentucky International Airport has requested that EKPC develop a solution to improve service reliability to customers, provide back-feed capability, and add substation transformer capacity for expected load growth in the area. This area is currently served by EKPC’s W.M. Smith distribution substation. The footprint of that substation is compressed, and future expansion is not possible at that location. Additionally, the existing substation is located on the fringe of the load pocket and is not adjacent to the airport, where the growth is expected to occur.

Model: N/A



EKPC Transmission Zone M-3 Process Cincinnati/Northern KY Airport Area Customer Service

Need Number: EKPC-2020-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Install a new 69 KV breaker at EKPC’s Hebron substation, construct a new 7.6 mile 69 kV transmission line from EKPC’s Hebron 69 KV substation to serve a new 69-13.2 kV, 12/16/20 MVA Mineola Pike distribution substation.

Additionally, the Downing substation will be served from this new line section, resulting in changing the Downing normally closed connection to DEOK to a normally-open connection configuration.

Distribution Cost: \$26.7M

Transmission Cost: \$0.73M

Ancillary Benefits:

- Large long-term NITS savings
- Reduces reliance on foreign utilities
- Provides greater back-feed capabilities to the area

Alternatives Considered:

Install necessary infrastructure at DEOK’s Constance 138 KV substation and construct a new 1.0 mile 138 kV transmission line from the Constance substation to serve a new 138-13.2 kV, 12/16/20 MVA Mineola Pike distribution substation.

Distribution Cost: \$9.54M

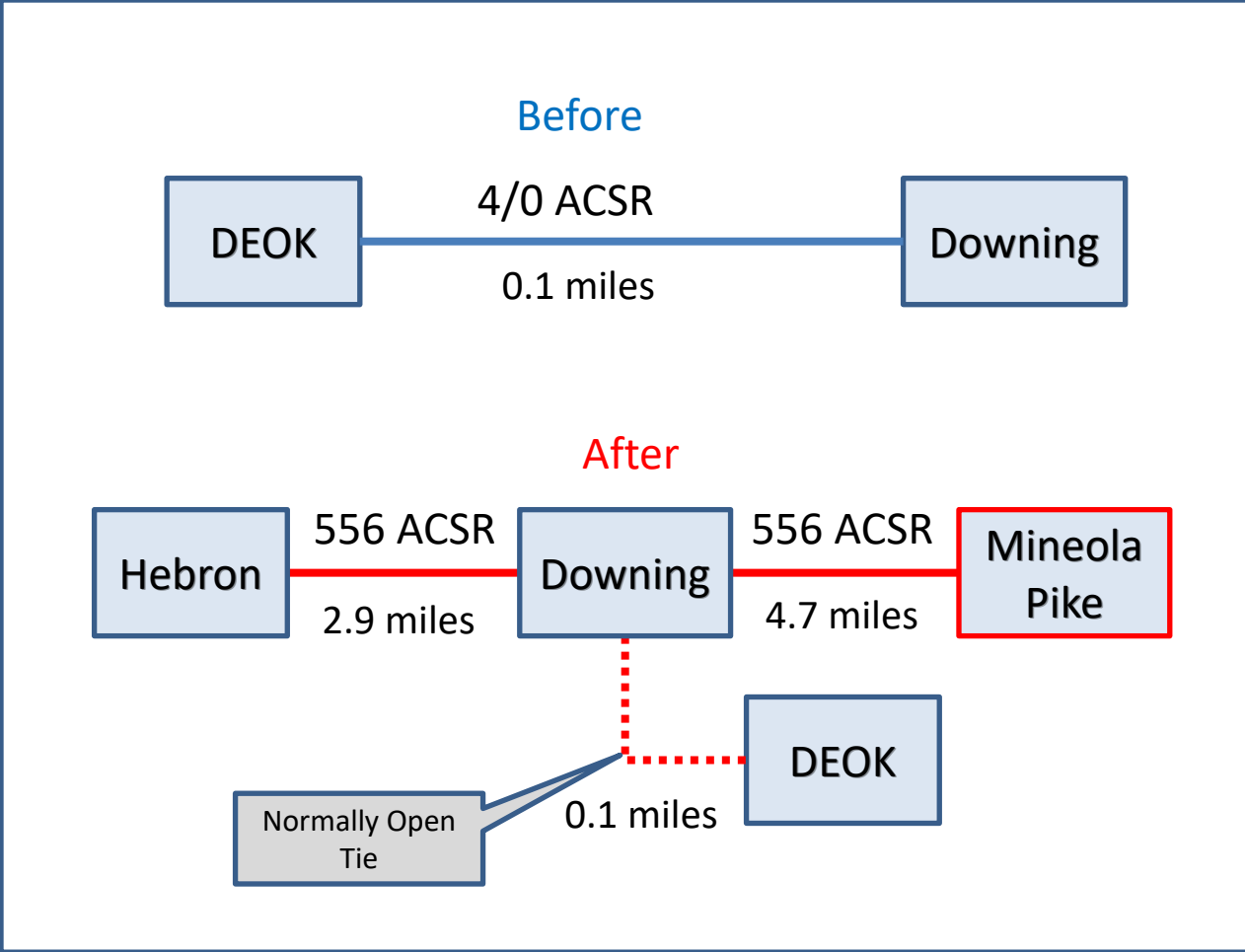
Transmission Cost: \$8.01M

Projected In-Service: 12/31/2024

Project Status: Engineering

Supplemental Project ID: s2876

Model: N/A



EKPC Transmission Zone M-3 Process Hardin County New Customer Load

Need Number: EKPC-2022-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Previously Presented:

Need Meeting – December 16, 2022

Solutions Meeting – January 20, 2023

Supplemental Project Driver:

Customer Service

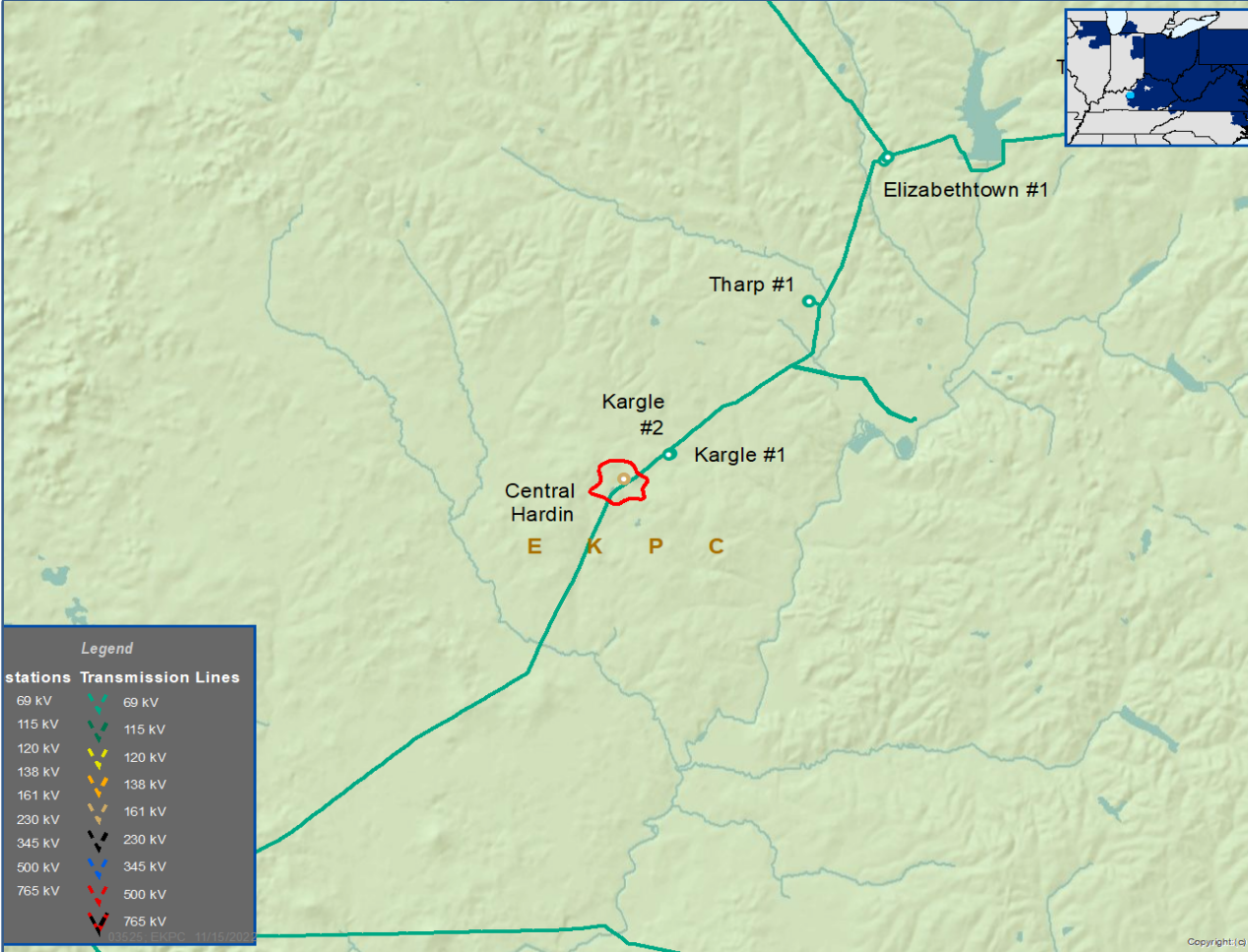
Specific Assumption Reference:

EKPC Assumptions Presentation Slide 15

Problem Statement:

A new customer has requested a new delivery point for a peak demand of 15.0 MW by 12/31/2023. The new delivery point is located in Hardin Co, KY adjacent to EKPC’s Central Hardin 138/69 KV substation. The existing distribution infrastructure is not capable of serving this request.

Model: N/A



EKPC Transmission Zone M-3 Process Hardin County New Customer Load

Need Number: EKPC-2022-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan – July 18, 2023

Proposed Solution:

Build a new 69-13.2kV 18/24/30 MVA distribution substation at Central Hardin.

Distribution Cost: \$3.62M

Transmission Cost: \$0.0M

Ancillary Benefits:

- None

Alternatives Considered:

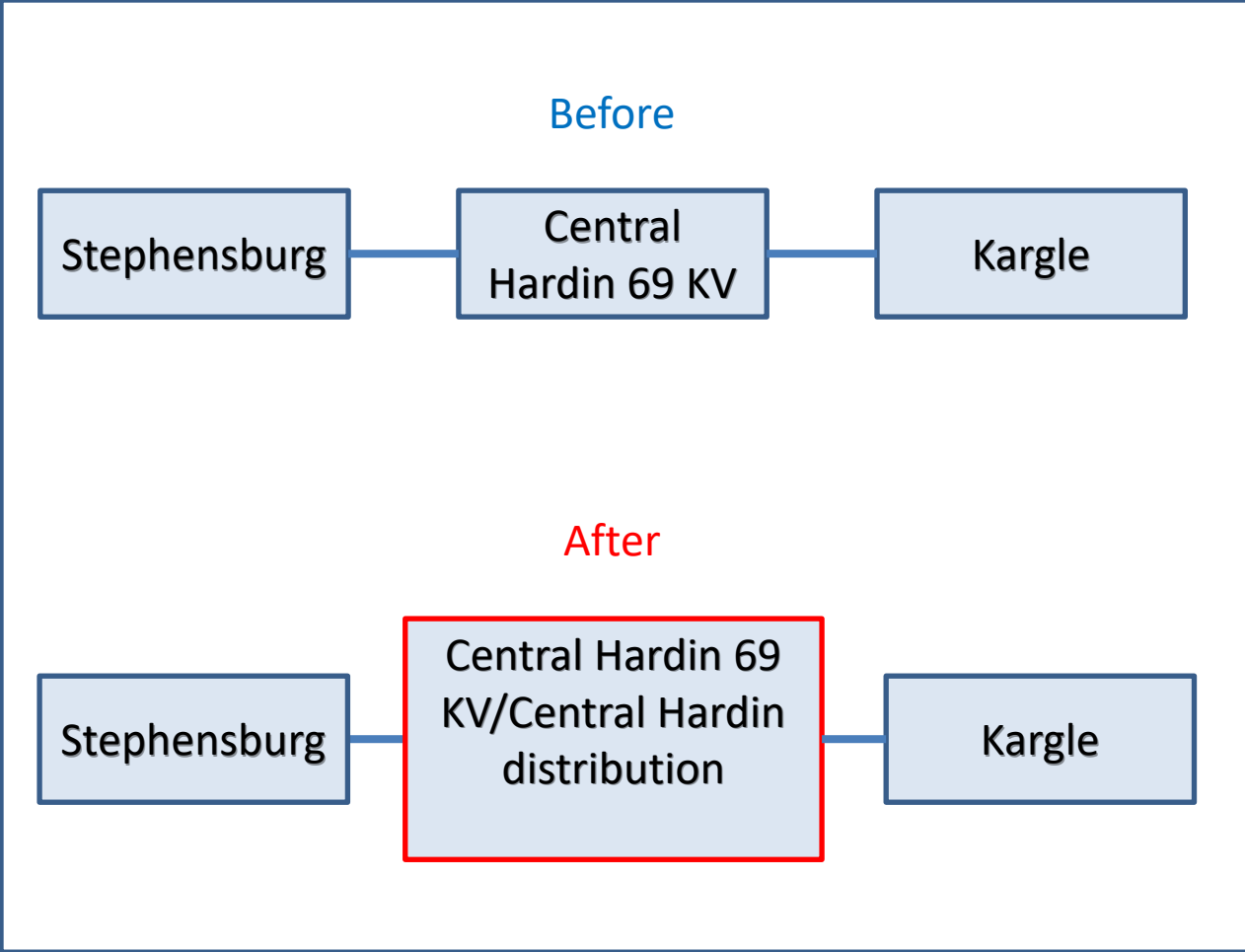
- None

Projected In-Service: 12/31/2023

Project Status: Under Construction

Supplemental Project ID: s2877

Model: N/A



EKPC Transmission Zone M-3 Process Richmond-Berea Area

Need Number: EKPC-2022-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Previously Presented:

Need Meeting – December 16, 2022
Solutions Meeting – January 20, 2023

Supplemental Project Driver:

Customer Service

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 15

Problem Statement:

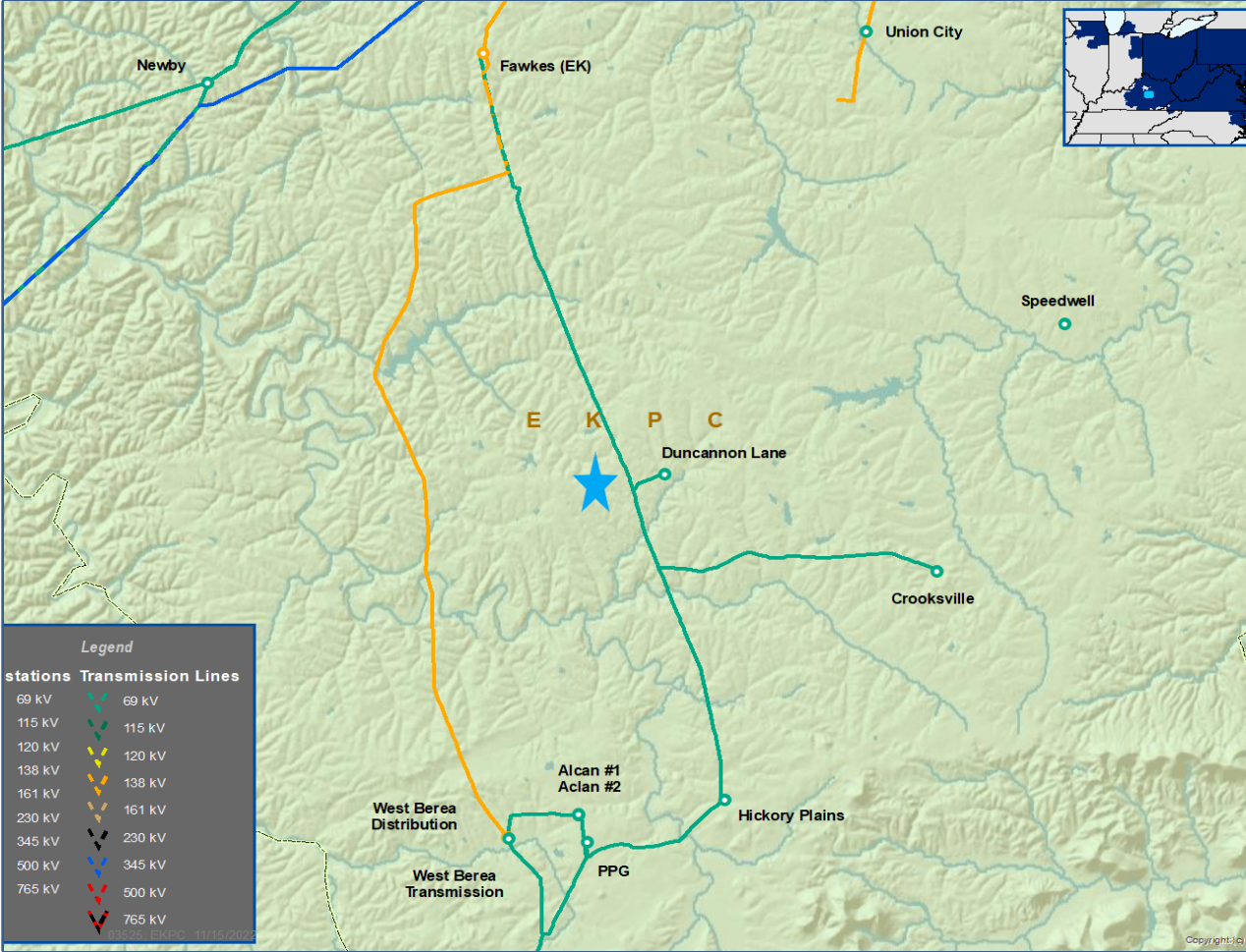
EKPC’s Economic Development department has had large number of greater than 50 MW+ peak demand potential industrial facilities that have expressed interest in a new industrial site located in Madison County, KY. This industrial site is adjacent to Interstate 75 and the Duncannon Lane 69 KV tap point, indicated by blue mark on the map.

Due to the attractive geographic location of Richmond and Berea, and the availability of land in the area that can be developed for large industrial customers, there is a high likelihood for an increase in the electrical demand in the area.

The existing transmission system in the area can not serve a load of this magnitude. The Fawkes-West Berea 69 KV circuit has reached its maximum available capacity level and is highly depended upon the 138 KV connections in the area.

Alternatives will be developed to provide service to the site to adequately and reliably serve a large amount of load.

Model: N/A



EKPC Transmission Zone M-3 Process Richmond-Berea Area

Need Number: EKPC-2022-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Modify the scope of (b3762) the Fawkes-Duncannon Lane Tap (7.2 mile) single-circuit 69 KV rebuild to rebuild this line as a double-circuit 138 KV & 69 KV line.

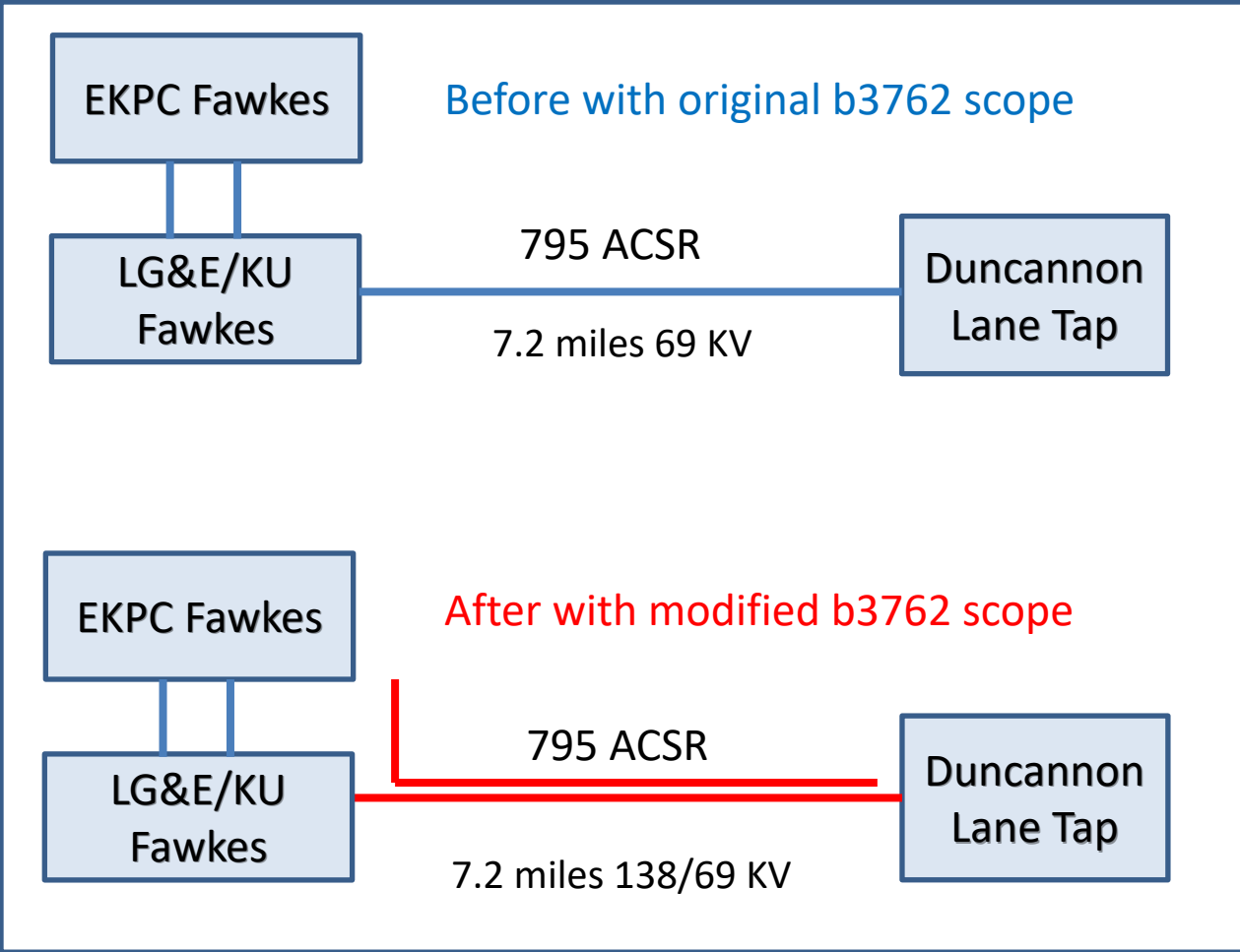
This will allow EKPC to take advantage of the existing rights-of-way to establish a new 138 KV path, as well as the efficiency of constructing both circuits simultaneously. EKPC plans to energize the 69 KV portion of the double-circuit as the replacement for the existing 69 kV line between the KU Fawkes and Duncannon Lane Tap terminating points to align with (b3762). The 138 KV portion of the double-circuit would not be terminated at either end until load growth, other future system changes in the area, or increased operational/reliability concerns drives the need for the 138 KV circuit to be connected to the system.

Distribution Cost: \$0.0M
Transmission Cost: \$10.5M

This is the estimated incremental cost of modifying the scope of the rebuild from a single-circuit 69 kV line to a double-circuit 138 & 69 kV line. The estimated total cost of this proposed project and (b3762) is \$19.0M.

Ancillary Benefits:

- Unlike alternatives considered, EKPC will be able to terminate the new 138 KV circuit at each end relatively expediently when needed to provide additional support to the area, either for loads connecting to the existing 69 KV system or for a large load that would be served at 138 KV transmission voltage, or if EKPC determines that operational and/or reliability needs necessitate that the circuit should be energized.



EKPC Transmission Zone M-3 Process Richmond-Berea Area

Need Number: EKPC-2022-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Proposed Solution:

Modify the scope of (b3762) the Fawkes-Duncannon Lane Tap (7.2 mile) single-circuit 69 KV rebuild to rebuild this line as a double-circuit 138 KV & 69 KV line.

Alternatives Considered:

Alternative 1 – Build a new 138 KV transmission station (“Madison County”) with associated breakers near the Duncannon Lane Tap location for termination of the new 138 KV (14.5 mile) transmission line from a new 138 KV switching station at Union City.

Distribution Cost: \$0.0M
Transmission Cost: \$32.9M

Alternative 2 – Build a new 138 KV transmission station (“Madison County”) with associated breakers near the Duncannon Lane Tap location for termination of the new 138 KV (9.7 mile) line from Newby. Rebuild one of the two 11.1 mile double circuit Dale-Newby 69 KV lines as a 138 KV line using 795 MCM ACSR. Add necessary 138 KV terminal equipment at the Dale substation for termination of the new Dale-Newby-Madison County 138 KV line.

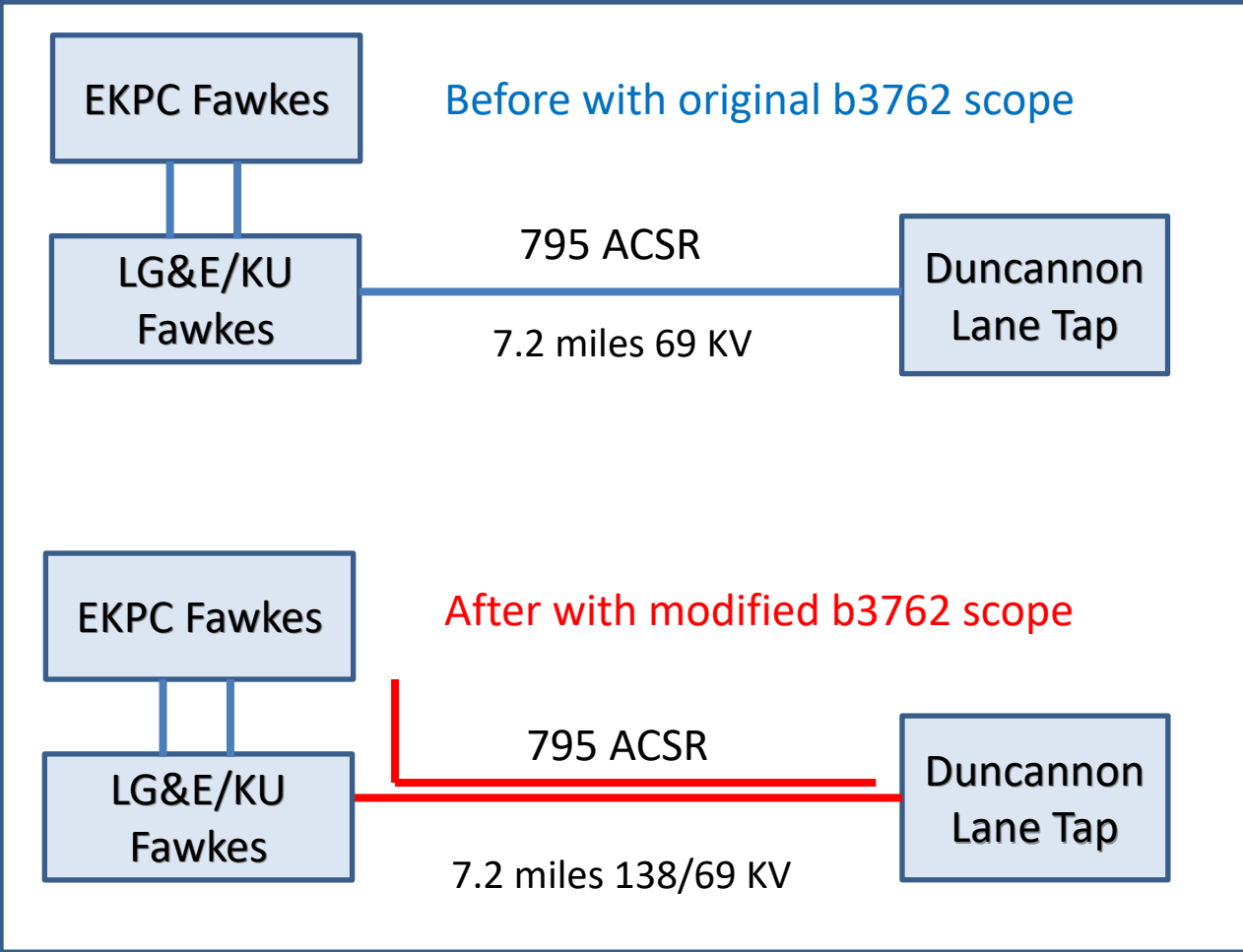
Distribution Cost: \$0.0M
Transmission Cost: \$29.6M

Projected In-Service: 12/31/2024

Project Status: Engineering

Supplemental Project ID: s2878

Model: N/A



EKPC Transmission Zone M-3 Process Penn area

Need Number: EKPC-2023-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –July 18, 2023

Previously Presented:

- Need Meeting – March 17, 2023
- Solutions Meeting – April 21, 2023

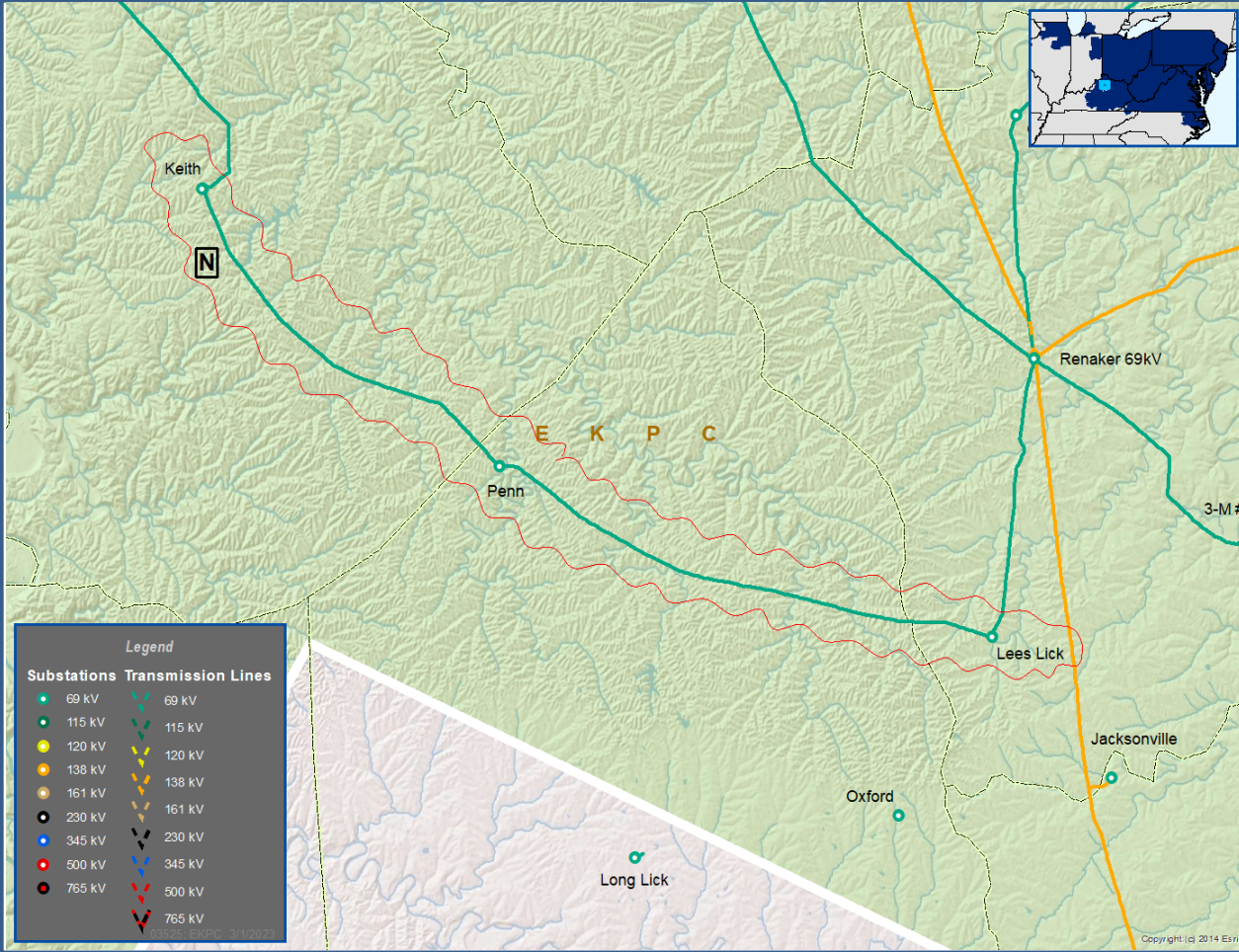
Supplemental Project Driver:
Operational Flexibility and Efficiency; Customer Service

Specific Assumption Reference:
EKPC Assumptions Presentation Slides 14 & 15

Problem Statement:
During real time system operations, closing the normally open Keith-Penn 69 KV line section is utilized under various conditions. However, doing so creates a three terminal line section which causes system protection concerns. An internal EKPC study performed in 2017, showed the need for this line section to be operated normally closed under numerous N-1-1 conditions.

EKPC is currently rebuilding the Penn distribution substation due to aging condition issues.

Model: N/A



EKPC Transmission Zone M-3 Process Penn Area

Need Number: EKPC-2023-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan – July 18, 2023

Proposed Solution:
Install 3, 69 KV breakers and associated equipment at the Penn distribution substation. Operate the Keith-Penn 69 KV line section as normally closed.

Transmission Cost: \$3.7M
Distribution Cost: \$0.0M

Ancillary Benefits:

- None

Alternatives Considered:

- Rebuild the Penn distribution substation and continue to operate the normally open switch associated with the Keith-Penn 69 KV line as needed.

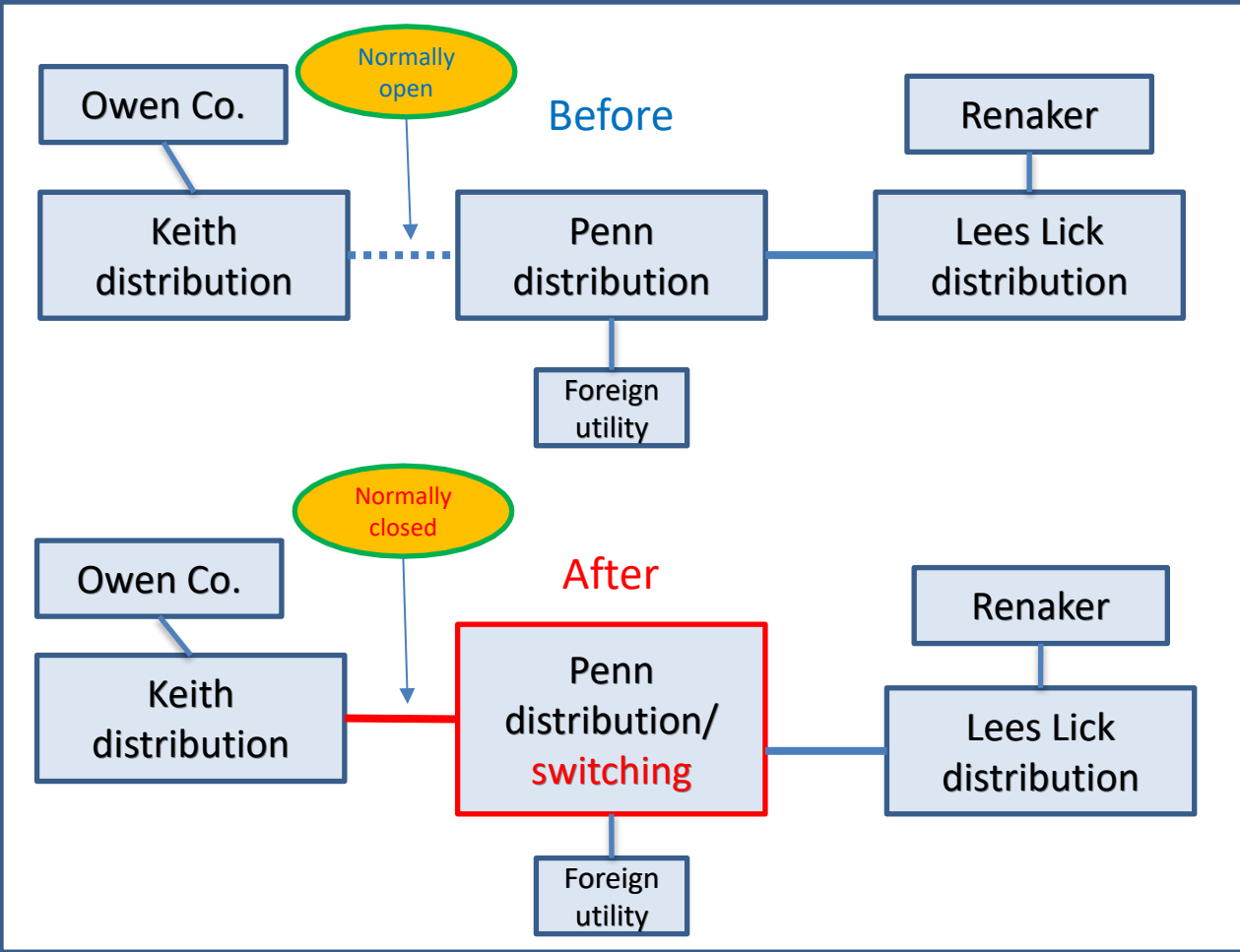
Transmission Cost: \$0.0M

Projected In-Service: 5/1/2023

Project Status: Energized

Supplemental Project ID: s2879

Model: N/A



EKPC Transmission Zone M-3 Process Frenchburg

Need Number: EKPC-2023-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan –October 11, 2023

Previously Presented:

- Need Meeting – June 16, 2023
- Solutions Meeting – July 21, 2023

Supplemental Project Driver:

Equipment Material Condition, Performance and Risk

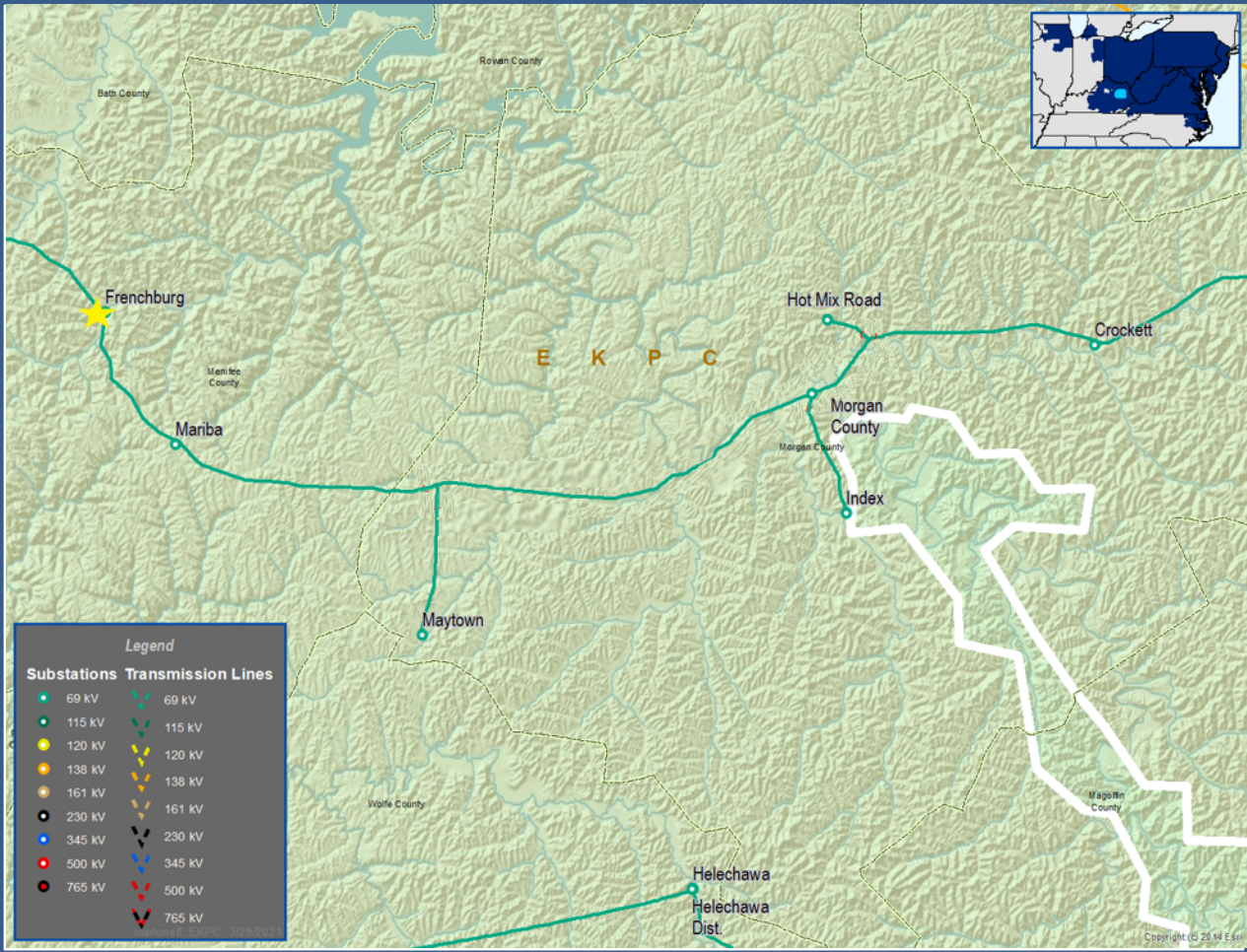
Specific Assumption Reference:

EKPC Assumptions Presentation Slide 13

Problem Statement:

Options have been evaluated to address aging condition issues of the Frenchburg distribution substation. It has been determined that more space is needed to achieve EKPC’s standard substation design requirements. EKPC’s planning department has been asked to evaluate the ongoing need of the Frenchburg 10.8 MVAR capacitor bank due to space limitations at the site.

Model: N/A



EKPC Transmission Zone M-3 Process Frenchburg

Need Number: EKPC-2023-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan – October 11, 2023

Proposed Solution:

It has been determined that the Frenchburg capacitor bank is no longer needed for voltage support in the area. The 10.8 MVAR capacitor bank will be removed during construction. The removal of the capacitor bank will provide the additional space needed to achieve EKPC’s standard substation design requirements, enabling the substation to be rebuilt on the existing property.

Transmission Cost: \$0.0M

Ancillary Benefits:

- None

Alternatives Considered:

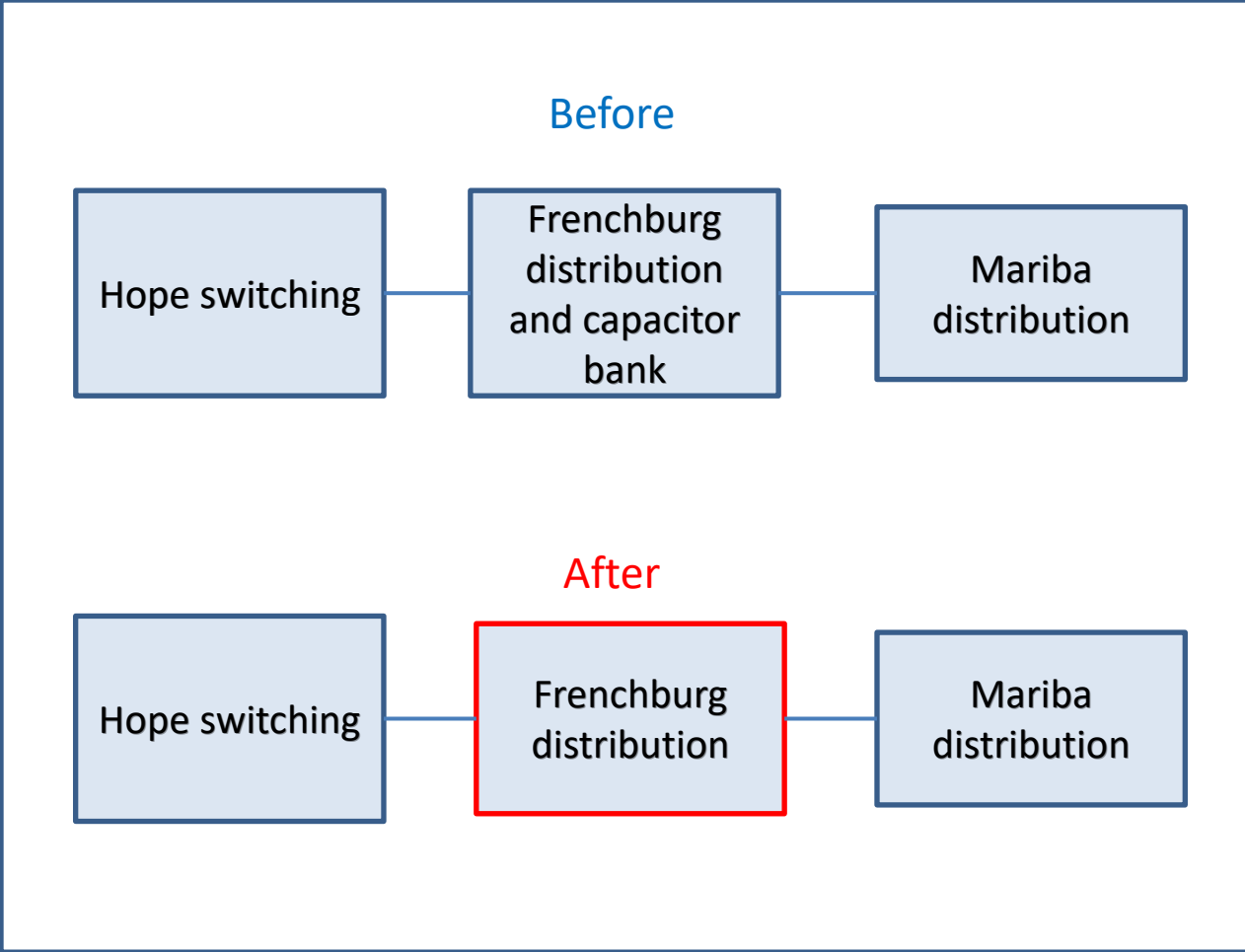
- None

Projected In-Service: 12/31/2023

Project Status: Engineering

Supplemental Project ID: s2977

Model: N/A



Revision History

7/20/2023 – V1 – Added s2873 - s2879

10/12/2023 – V2 – Added s2977