

Submission of Supplemental Projects for Inclusion in the Local Plan

Need Number: EKPC-2024-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan August 18, 2025

Previously Presented:

Solution Meeting SRRTEP-W - 10/18/2024

Need Meeting SRRTEP-W - 09/20/2024

Project Driver: Equipment Condition/Performance/Risk

Specific Assumption References:

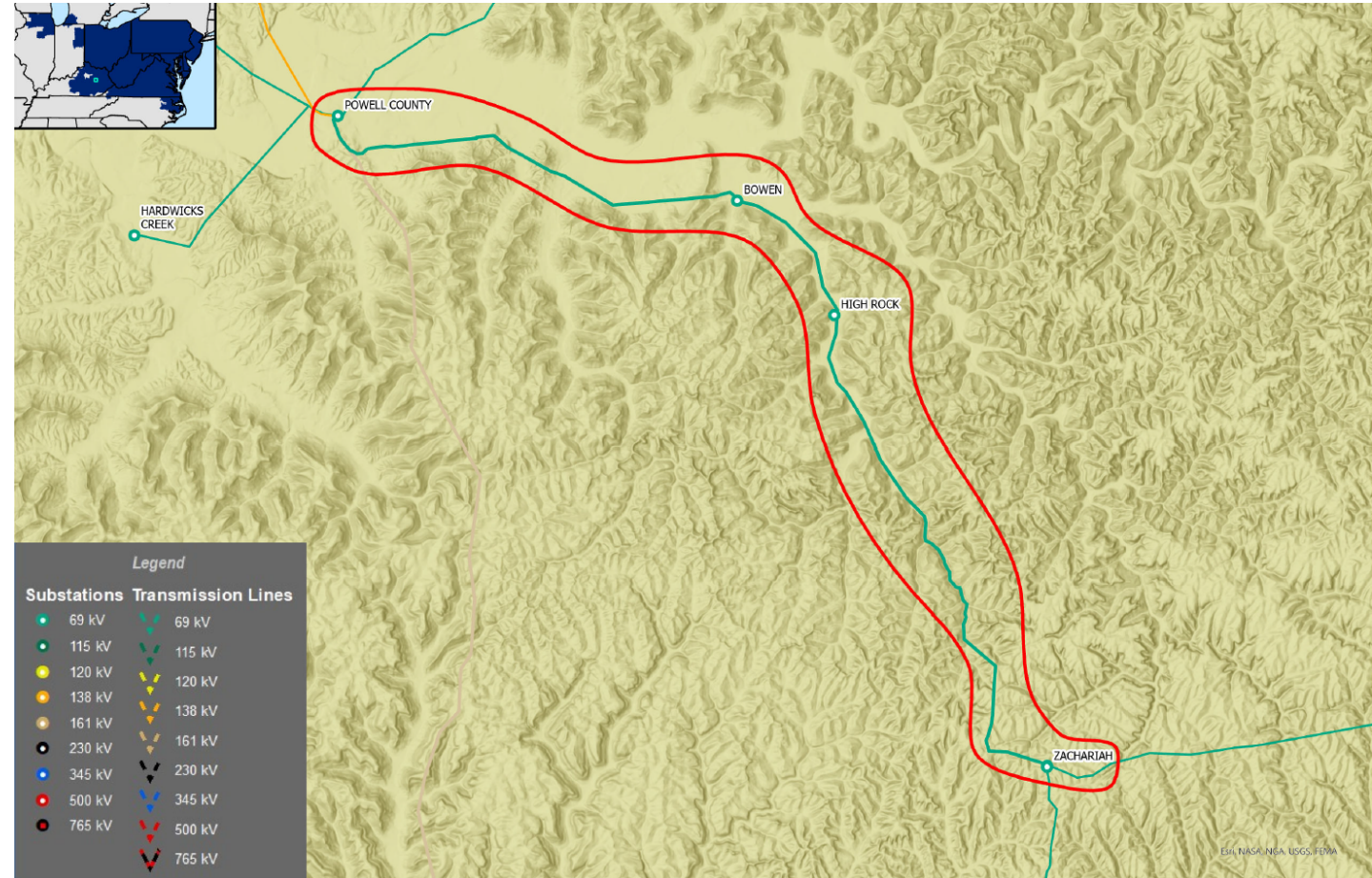
EKPC Assumptions Presentation Slide 13

Problem Statement:

The EKPC reliability team has been working to identify transmission lines sections, with single wood pole structures and 556.5 ACSR wire or larger that are known to have structural design issues. Most of the structures on these lines are believed to be over 100% capacity if the structure was new, based on EKPC current design standards. Many of the lines have been re-conducted with larger wire and very little structure design was performed at the time of the re-conductor.

The 16.85 mile, Powell County-Zachariah 69 KV line sections has been identified from the above to be addressed. The line was originally built in 1954.

Alternatives will be developed to address these structural loading concerns.



Need number(s): EKPC-2024-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan August 18, 2025

Proposed Solution:

Powell County-Zachariah: Rebuild the Powell County-Bowen-High Rock-Zachariah 69kV line section.

Transmission Cost Estimate: \$16.56 M

Alternatives Considered:

N/A

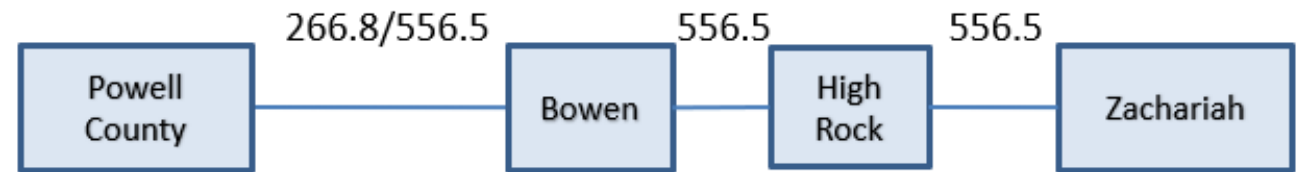
Projected In-Service: 12/31/2029

Project Status: Engineering

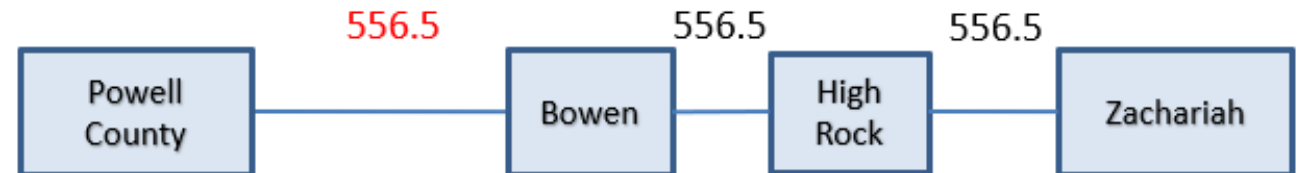
Supplemental Project ID: s3689.1

Model: N/A

Before



After



Need Number: EKPC-2024-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan September 10, 2025

Previously Presented:

Solution Meeting SRRTEP-W - 10/18/2024

Need Meeting SRRTEP-W - 09/20/2024

Project Driver: Customer Service

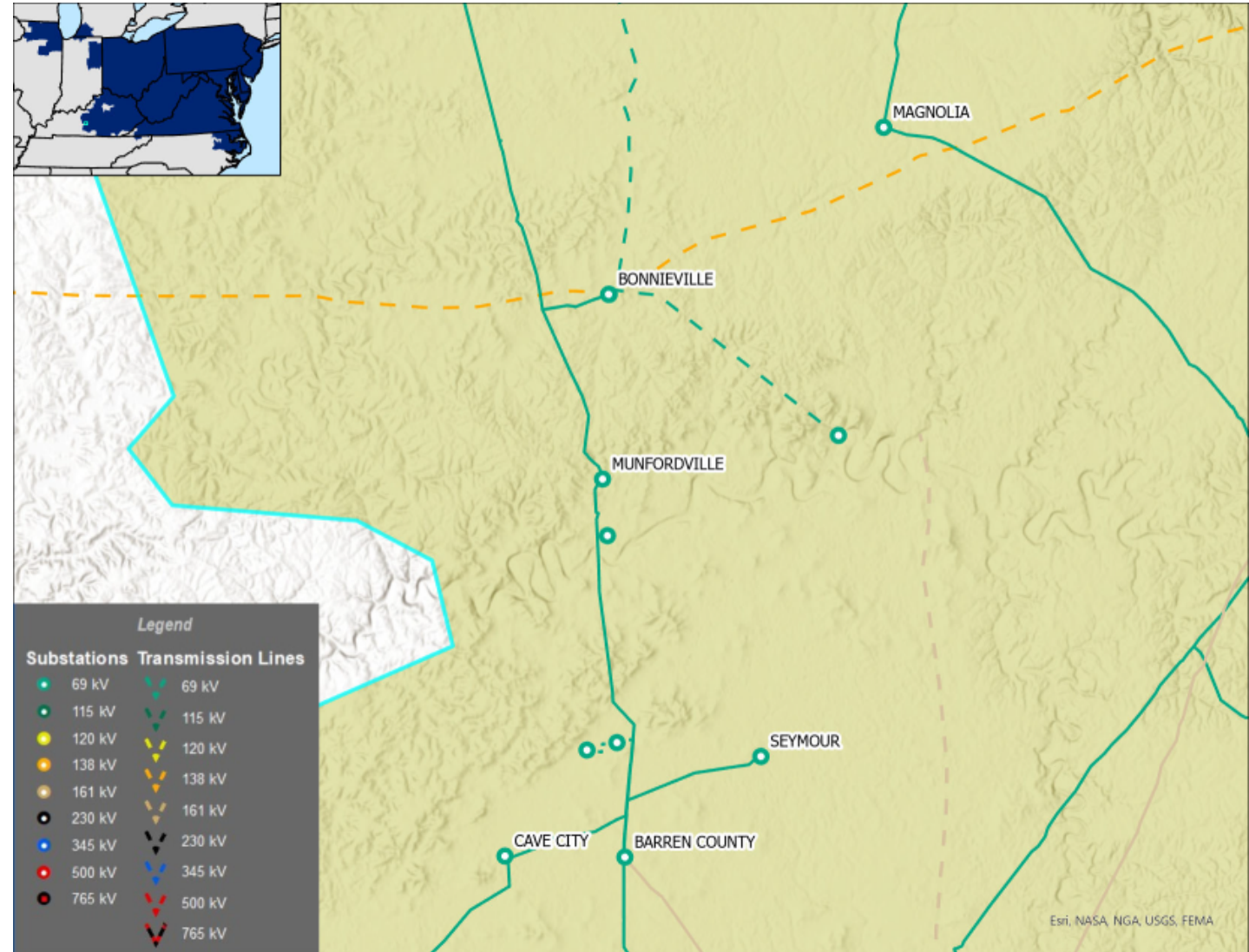
Specific Assumption References:

EKPC Assumptions Presentation Slide 15

Problem Statement:

The Munfordville substation distribution feeder currently serves ~1,800 customers and is roughly 175 miles in length. The feeder serves the area surrounding the Nolin Lake and is ~15 miles from the Munfordville substation.

Approximately 50% of the feeders load is at the tail end of the circuit where load growth is expected to continue. During high loading customers near the end of the line are experiencing low voltage. Existing distribution infrastructure is not capable of addressing the issues in this area. EKPC will develop and evaluate alternatives to address all issues listed above.



EKPC Transmission Zone M-3 Process Munfordville, KY

Need number(s): EKPC-2024-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan September 10, 2025

Proposed Solution:

Cub Run 69-25 KV, 12/16/20 MVA distribution substation: Construct a 69-25 KV, 12/16/20 MVA distribution substation ("Cub Run"). Estimated Cost:

Bonnieville - Cub Run 69kV Tap: Construct a new 11.4 mile 69 kV transmission line from EKPC's Bonnieville substation to serve the Cub Run distribution substation. Estimated Cost:

Bonnieville 69kV Substation: Construct a new 69 kV box structure, install 3 new 69kV breakers and reconfigure Bonnieville 69 kV circuits to accommodate the Cub Run circuit.. Estimated Cost: \$1.579 M

Transmission Cost Estimate: \$1.579 M

Alternatives Considered:

Alternative 1 – Tap the Bonnieville – Munfordville 69kV line and construct a new 9.1 mile 69 kV transmission line and a 69-25 KV, 12/16/20 MVA distribution substation ("Cub Run"). Distribution Cost: \$13M

Alternative 2 – Tap the KU 138 kV transmission line and construct a new 5.65 mile 138 kV transmission line and a 138-25 KV, 12/16/20 MVA distribution substation ("Cub Run"). Distribution Cost: \$28.6M

Projected In-Service: 12/31/2026

Project Status: Engineering

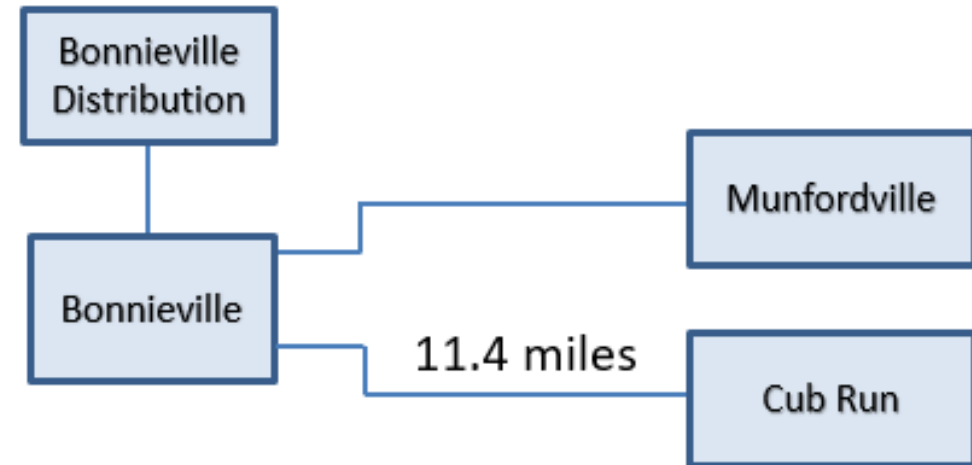
Supplemental Project ID: s3690.1-.3

Model: N/A

Before



After



Need Number: EKPC-2024-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan August 18, 2025

Previously Presented:

Solution Meeting SRRTEP-W - 12/13/2024

Need Meeting SRRTEP-W - 10/18/2024

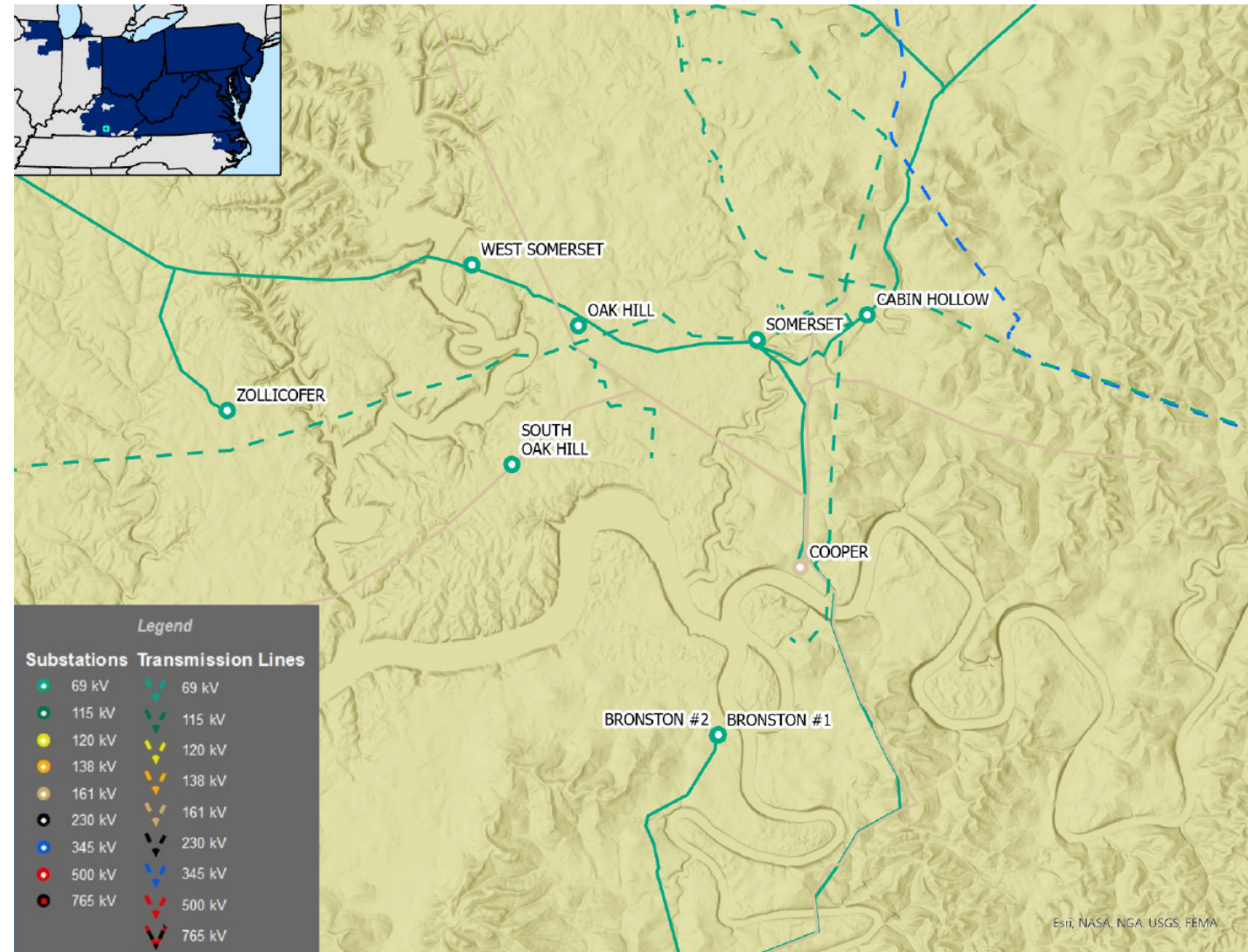
Project Driver: Operational Flexibility and Efficiency

Specific Assumption References:

EKPC Assumptions Presentation Slide 14

Problem Statement:

EKPC set back-to-back all-time winter peaks during winter storm Elliott in December 2022 and Winter Storm Gerri in January 2024. During these storms EKPC faced many real time operational challenges due to the extreme cold temperatures, high loads and unplanned outages around the southern portion of the EKPC transmission system. EKPC's only generation in the southern portion of the system is comprised of the Cooper 1 and 2 generators with around 30 load serving substations in the immediate area. System Operation and Planning studies have shown during these conditions if the Cooper generators are unavailable, voltage constraints around the Cooper area would be certain. EKPC's System Operations group has requested additional voltage support for this area as risk management against similar future winter weather conditions.



Need number(s): EKPC-2024-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan August 18, 2025

Proposed Solution:

Cooper 69kV Capacitor Bank: Install a new 40.818 MVAR capacitor bank at Cooper 69kV substation.

Transmission Cost Estimate: \$0.656 M

Alternatives Considered:

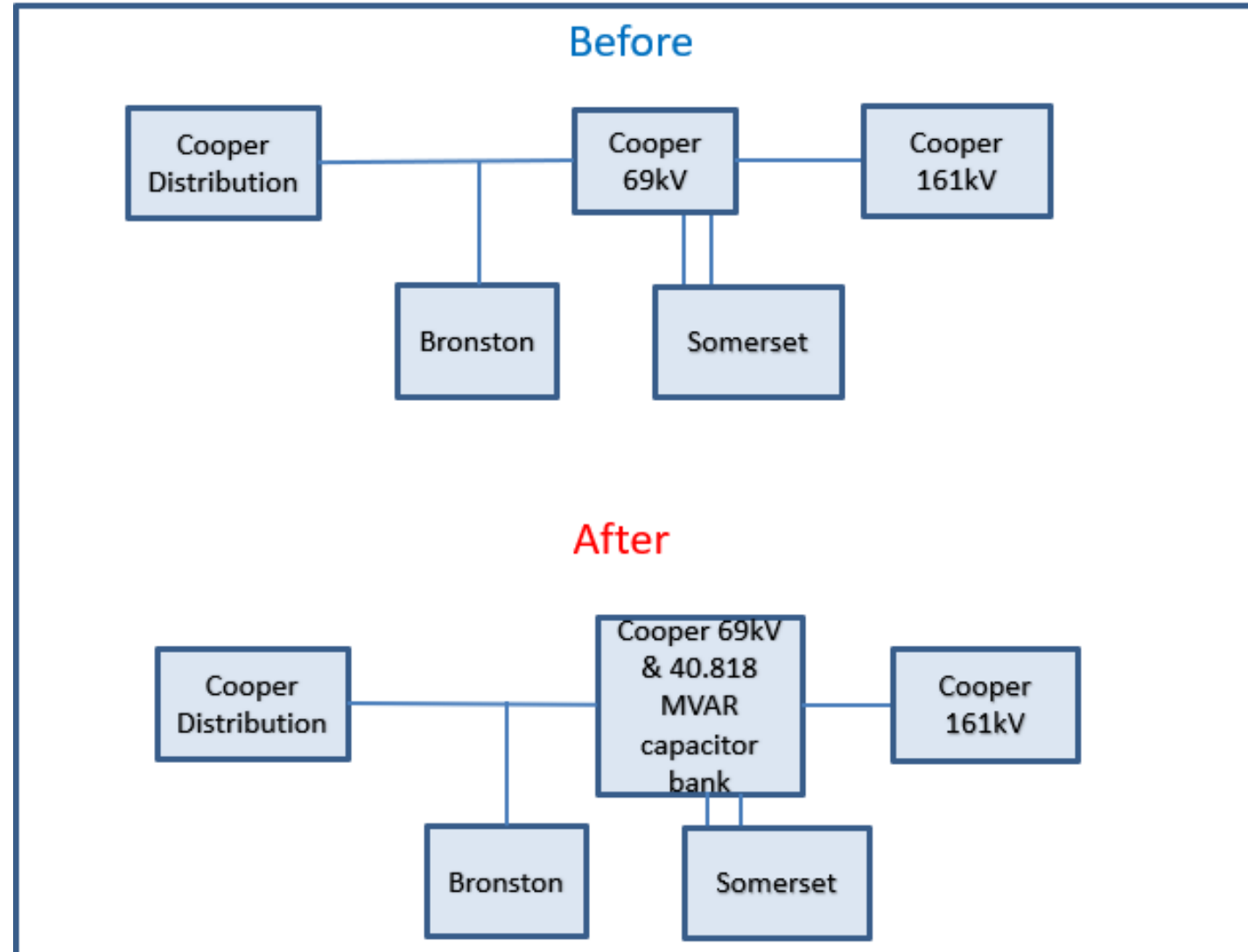
N/A

Projected In-Service: 06/01/2026

Project Status: Engineering

Supplemental Project ID: s3192.1

Model: N/A



EKPC Transmission Zone M-3 Process Dale Station 69 & 138 kV Substation

Need Number: EKPC-2024-003

Process Stage: Scope Change to Existing Supplemental Project

Previously Presented:

Solution Meeting SRRTEP-W - 10/18/2024

Need Meeting SRRTEP-W – 9/18/2024

Supplemental Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

EKPC Assumptions Presentation Slide 13

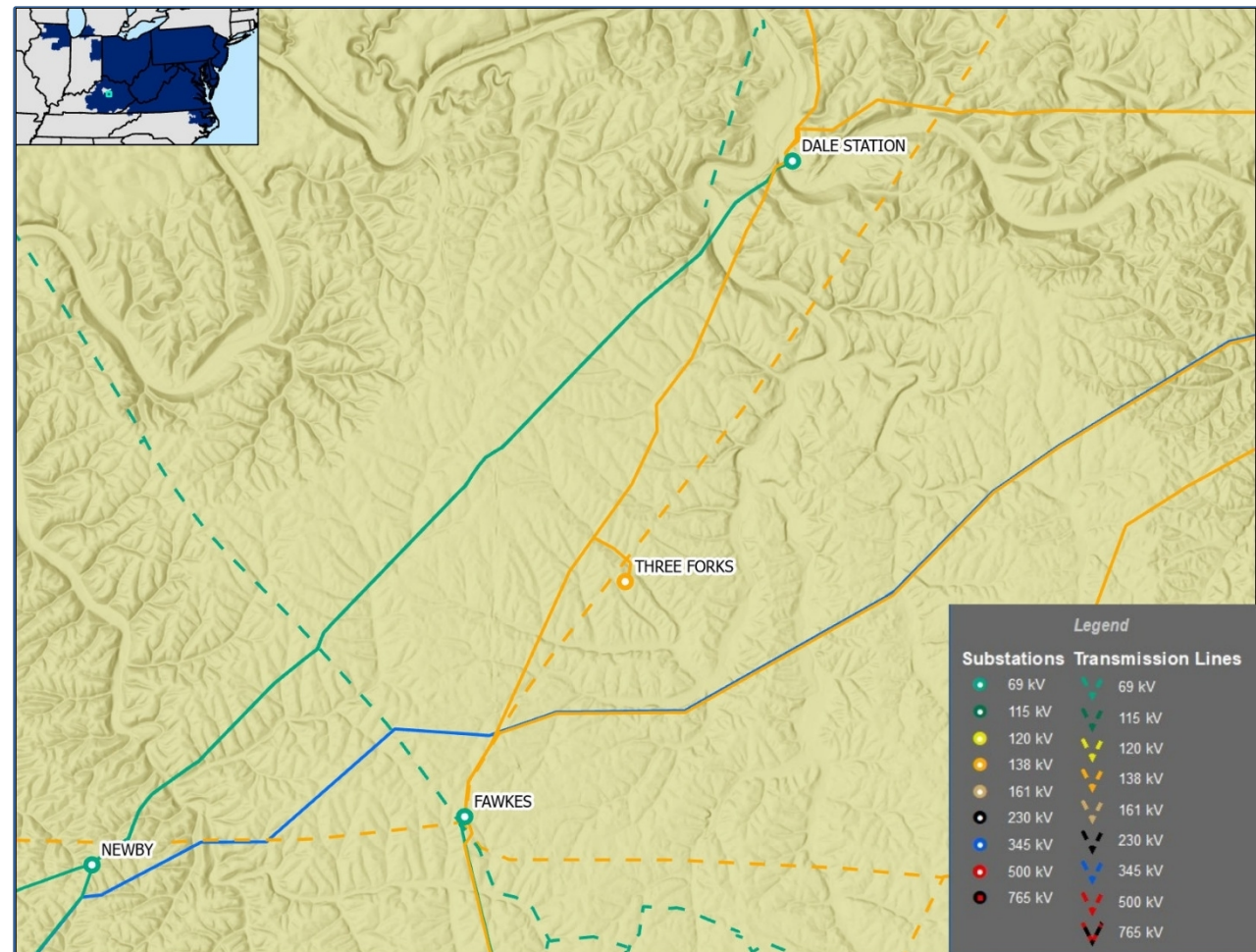
Problem Statement:

The Dale Station 69 & 138 kV substation was constructed in 1954 and is experiencing numerous of issues associated with aging condition and safety.

- Breakers antiquated and less reliable compared to newer breaker designs.
- Switches severely limit access to the end bays for performing switch maintenance, and can be susceptible to operational and maintenance issues.
- Arrestors are reaching end of useful life due to an older porcelain design that is prone to catastrophic failure.
- Bus potential transformers require a bus outage in order to properly service and maintain minimum approach distance.
- The main and transfer buses are cable design with outdated insulators (evidence of corona).

Based on this information, the EKPC Reliability team has concluded that this substation is at or near end of life and should be addressed due to the condition.

Model: N/A



EKPC Transmission Zone M-3 Process Dale Station 69 & 138 kV Substation

Need Number: EKPC-2024-003

Process Stage: Scope Change to Existing Supplemental Project

This proposed solution was determined after a holistic assessment of the Need EKPC-2024-003 and the aging condition and safety concerns of the Newby Distribution substation. The Dale 69 & 138 kV substation and the Newby substation are the terminating ends of the Dale-Newby 69 kV line section. This resulted in a review of the previous approved EKPC-2022-004 solution (s2873) which resulted in a EKPC-2022-004 scope change.

Proposed Solution:

Rebuild the Dale substation as a 138 kV transmission station only, retiring the last remaining 69 kV transmission equipment at the station.

Transmission Cost: \$8.8M

Ancillary Benefits:

- Eliminates O&M of the 69 kV station and associated equipment

Alternatives Considered:

Rebuild Dale as a 69 & 138 kV transmission station

Transmission Cost: \$13.3M

Projected In-Service: 6/1/2029

Project Status: Engineering

Model: N/A

Before

Dale
69 & 138kV

After

Dale
138kV

EKPC Transmission Zone M-3 Process

Dale – Newby 69 KV

Need Number: EKPC-2022-004

Process Stage: Scope Change to Existing Supplemental Project

Reason for Scope Change: All-inclusive review of the area including Need EKPC-2024-003, the aging condition and safety concerns of the Newby Distribution substation and Need-EKPC-2022-004.

Newby Distribution Concerns:

- Built in 1954.
- There are grounding wells, but no ground grid.
- The high side structure is rusting and has porcelain lightning arrestors which should be changed to a polymer type for safety.
- The high side switch needs replacing.
- The low bay structure is extremely compact with metering equipment, regulators, and OCRs in close proximity. This arrangement creates difficulties for safety, maintenance, and restoration.
- No bypass bus.
- Failing fence, foundations and deterioration across various other station components.

Previously Presented:

Needs Meeting – May 19, 2022

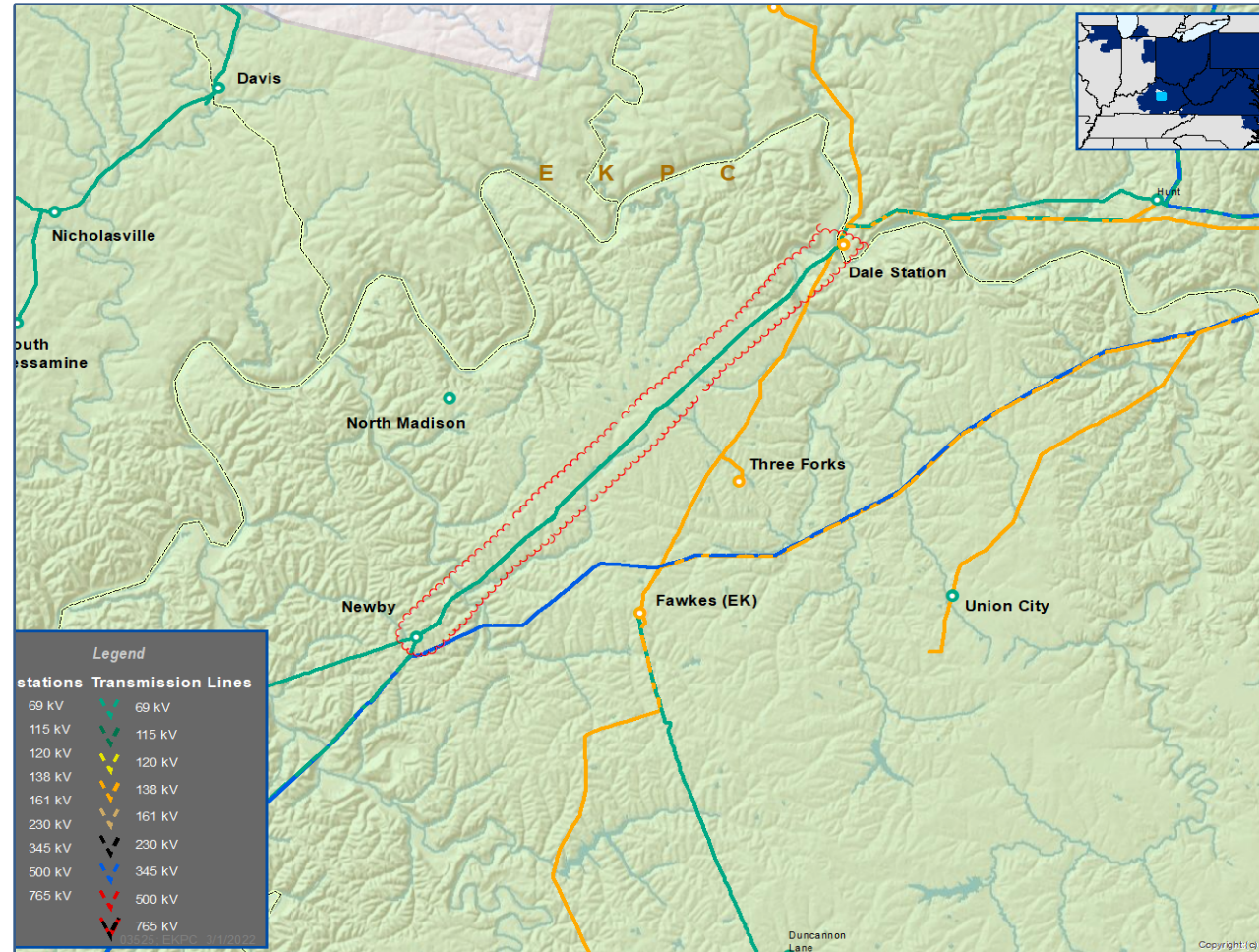
Solutions Meeting – October 14, 2022

Supplemental Project Driver:

Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 13



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

Need Number: EKPC-2022-004

Process Stage: Scope Change to Existing Supplemental Project

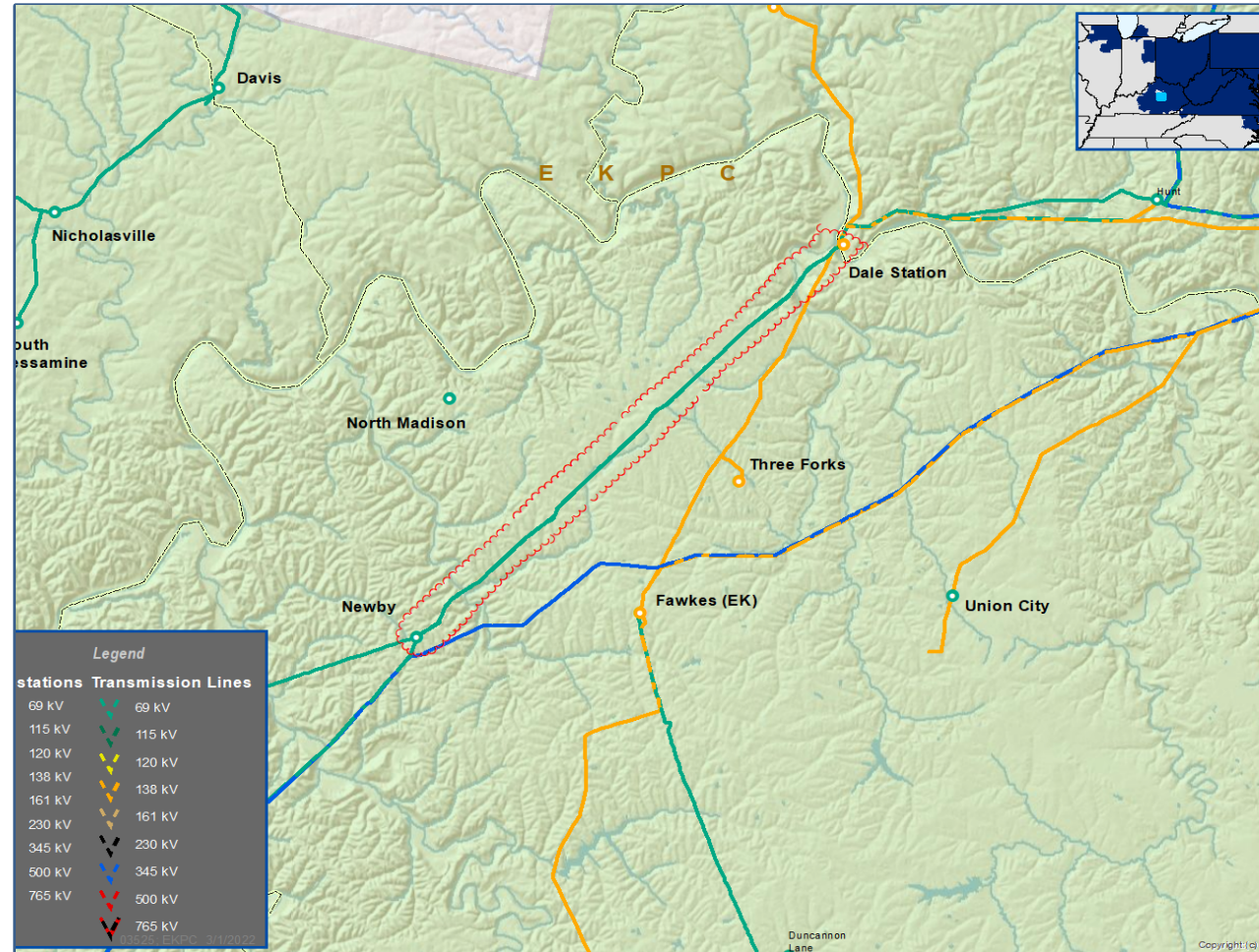
Problem Statement:

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.

Supplemental Project ID: s2873

Model: N/A



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

Need Number: EKPC-2022-004

Process Stage: Scope Change to Existing Supplemental Project

Proposed Solution: (s2873)

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

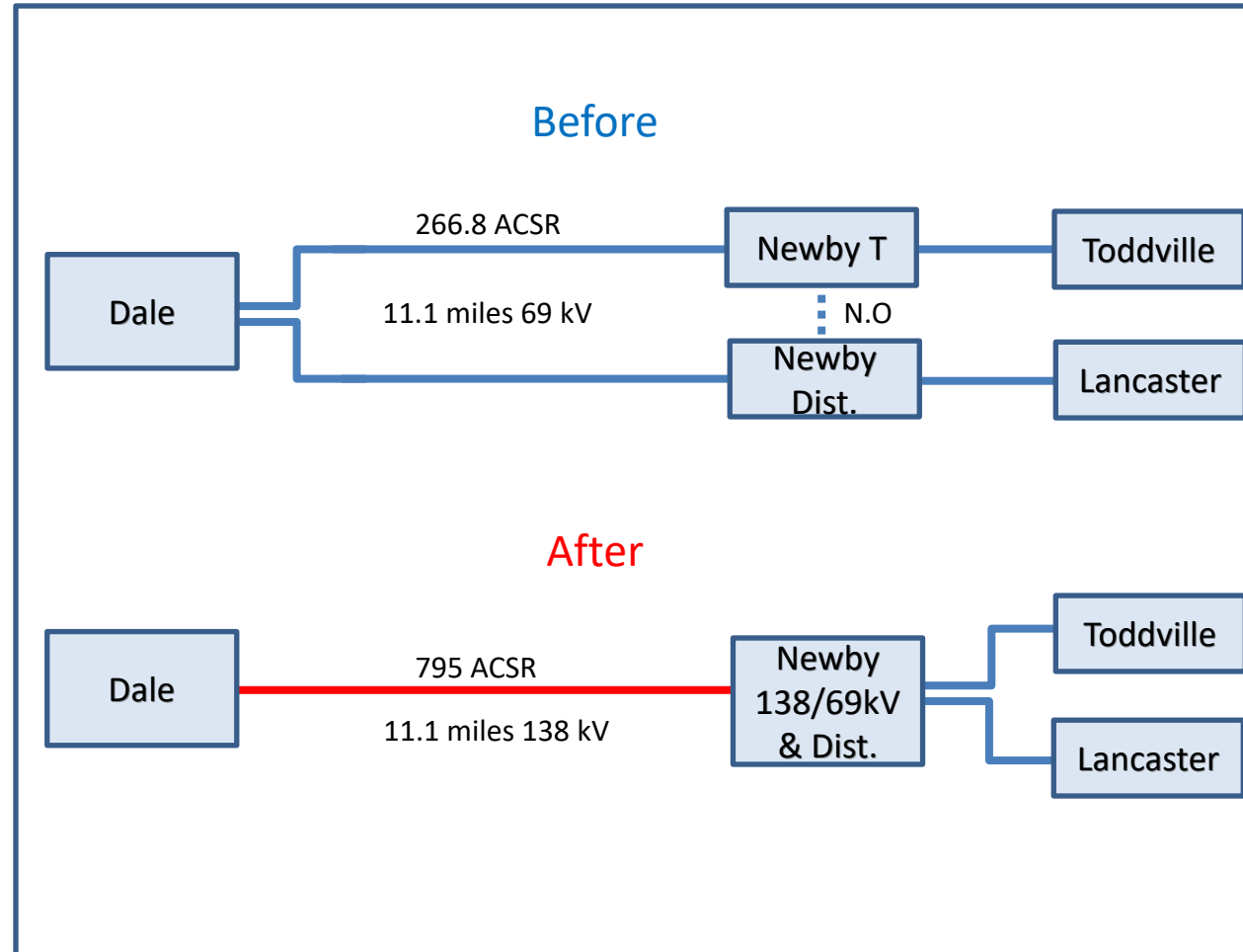
Rebuild 11.1 mile Dale-Newby line section as single circuit 138 kV using 795 ACSR, rebuild Newby as 138/69 kV and relocate the Dale 138/69 kV transformer, construct a 69 kV box structure and install 4 – 69 kV circuit breakers at Newby, rebuild Newby 69/12.5 kV distribution station.

Transmission Cost: ~~\$12.6M~~ \$22.9M

Distribution Cost: \$3.7M

Ancillary Benefits:

- ~~None~~
- Brings a new 138 kV source to the area, enabling future expansion capabilities.
- Expands 69 kV station at Newby to allow for future expansion.



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

Need Number: EKPC-2022-004

Process Stage: Scope Change to Existing Supplemental Project

Alternatives Considered:

Alternative 1 – Rebuild Dale-Newby 69kV dbl circuit, rebuild Newby 69/12.5 kV distribution as a 69 kV switching station with 4-69 kV circuit breakers.

Transmission Cost: \$21.7

Distribution Cost: \$3.7M

Alternative 2 - Retire Dale-Newby; Construct EK Fawkes-Newby 138 kV and rebuild Newby as 138/69 kV transmission station w/ 4 – 69kV circuit breakers and rebuild Newby 69/12.5 KV.

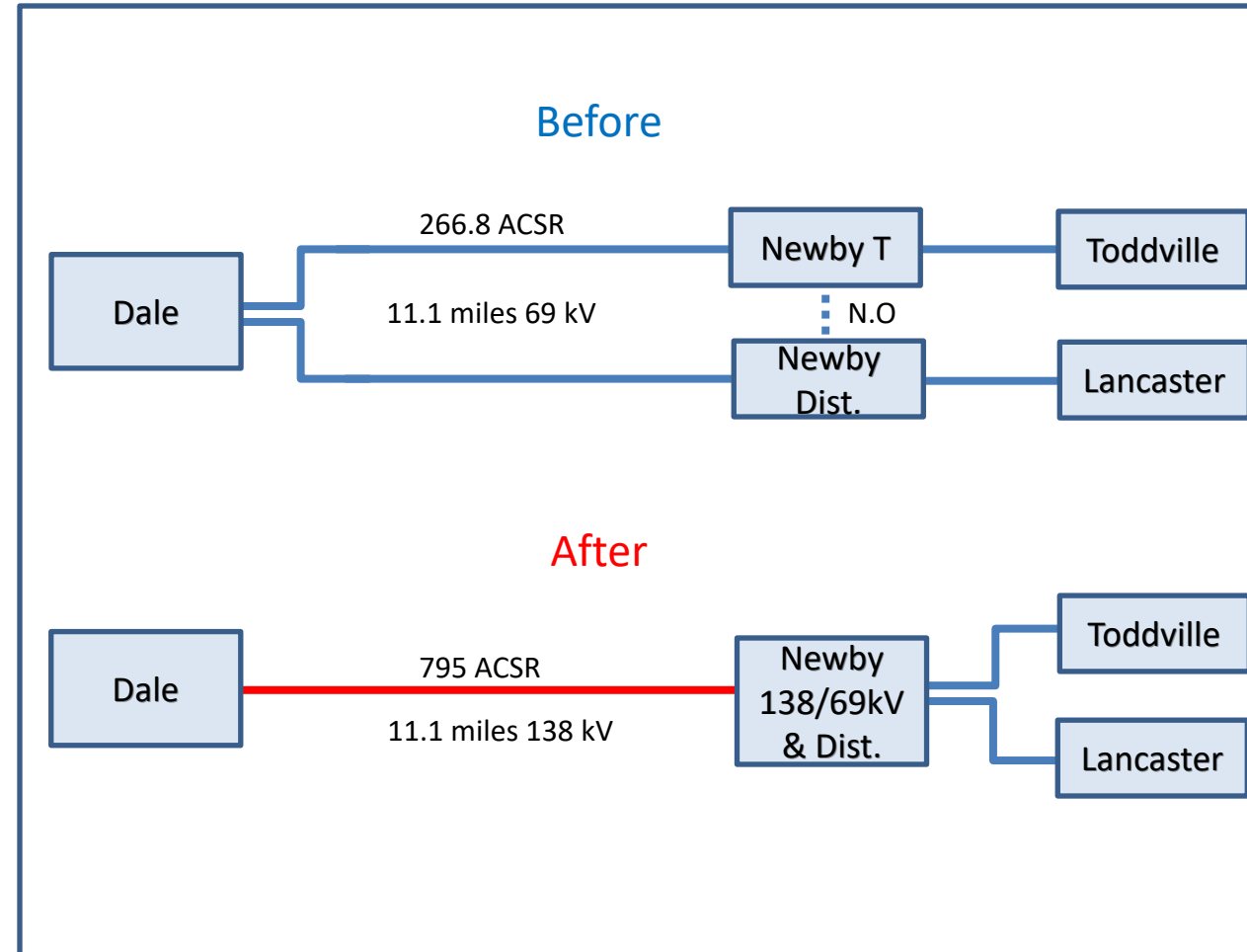
Transmission Cost: \$32.4M

Distribution Cost: \$3.7M

Alternative 3 - Retire Dale-Newby; Construct EK Fawkes-Newby 69 kV and rebuild Newby 69/12.5 kV distribution as a 69 kV switching station with 4 – 69 kV circuit breakers.

Transmission Cost: \$30.2M

Distribution Cost: \$3.7M



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

Need Number: EKPC-2022-004

Process Stage: Scope Change to Existing Supplemental Project

Previous 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.~~

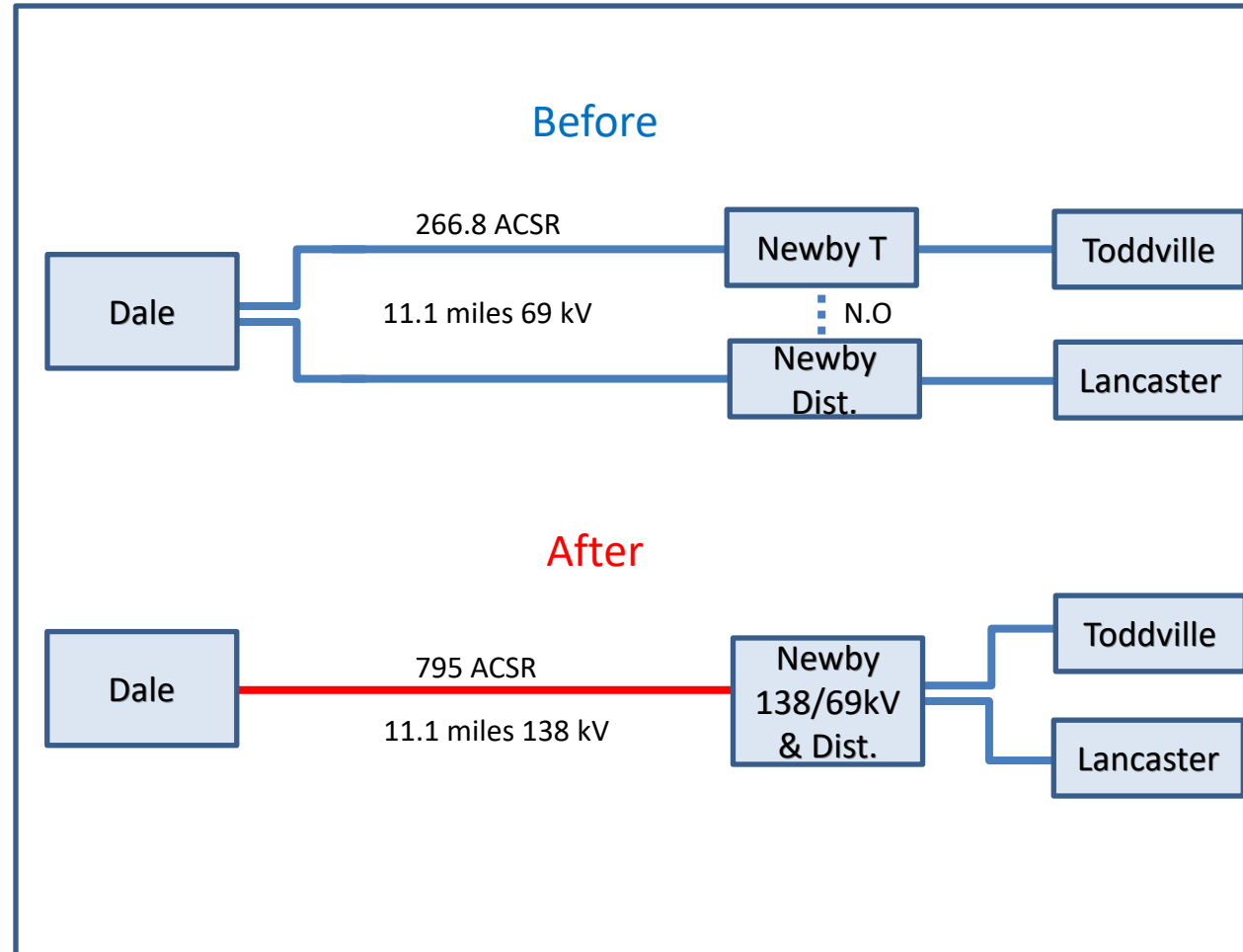
~~Transmission Cost: \$14.2M~~

Projected In-Service: ~~12/31/2028~~ 6/1/2029

Project Status: Engineering

Supplemental Project ID: s2873

Model: N/A



Revision History

9/26/2025 – V1 – Added s3689, s3690, s3692, and s2873 scope change