

Submission of Supplemental Projects for Inclusion in the Local Plan

EKPC Transmission Zone M-3 Process Lancaster

Need Number: EKPC-2019-001

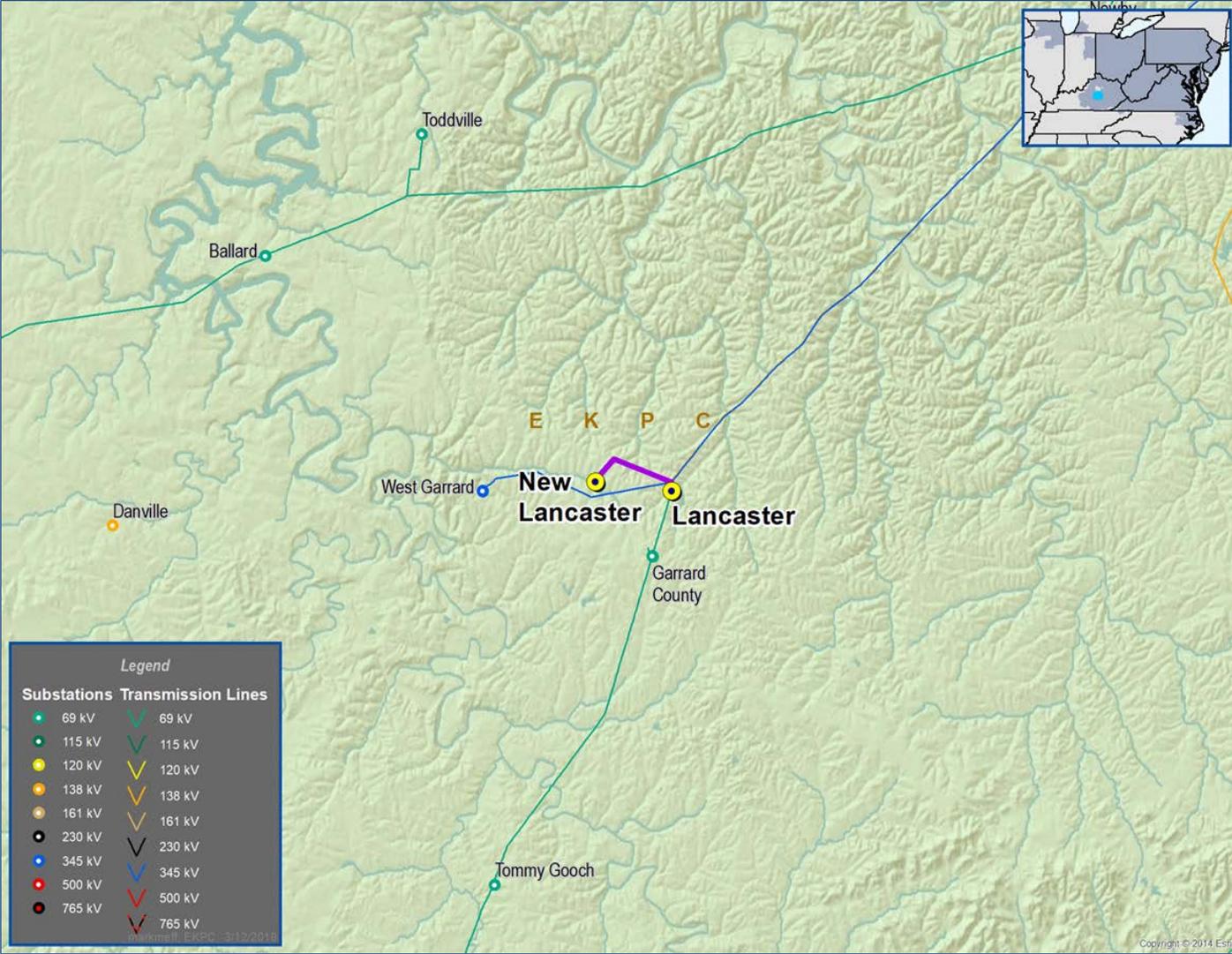
Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:
Solution Meeting 3/25/2019
Needs Meeting 2/20/2019

Project Driver:
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:
EKPC Assumptions Presentation Slide 8

Problem Statement:
The Lancaster distribution substation is 64 years old, and does not meet current EKPC standards. The substation has limited space, and due to its current configuration requires a full station outage to replace the regulators. The transformer and regulators are located inside the high side box structure. There is little clearance around the low bay which makes it impossible to use equipment when replacing any of the reclosers. The station does not have a low side transfer bus/scheme or a bypass for metering equipment. Because of the short length of the station drive way, EKPC staff have to park on the roadway to open the station gate. This station drive is located in a slight curve, which make this access a safety concern. The station drive has also had water run-off issues, and has required repairs numerous times over the last several years.



EKPC Transmission Zone M-3 Process Lancaster

Need Number: EKPC-2019-001

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Rebuild the Lancaster station in a new location, including a new 1.7 mile 69kV transmission tap line.

Ancillary Benefits: Not Applicable

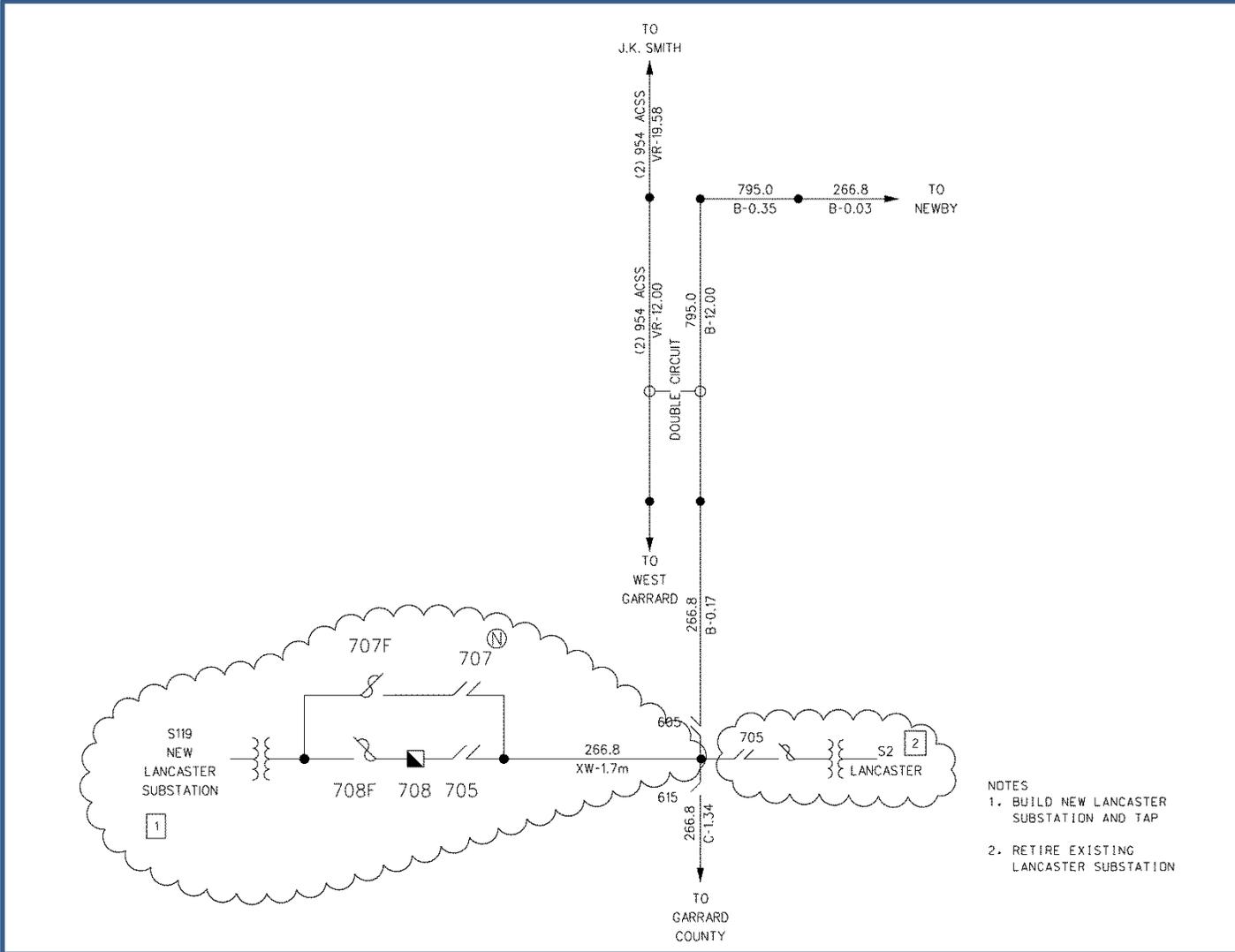
Estimated Cost: \$3.4M

Projected In-Service: 12/1/2020

Supplemental Project ID: S1936

Project Status: Engineering

Model: Not Applicable



EKPC Transmission Zone M-3 Process Skaggs

Need Number: EKPC-2019-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 3/25/2019

Needs Meeting 2/20/2019

Project Driver:

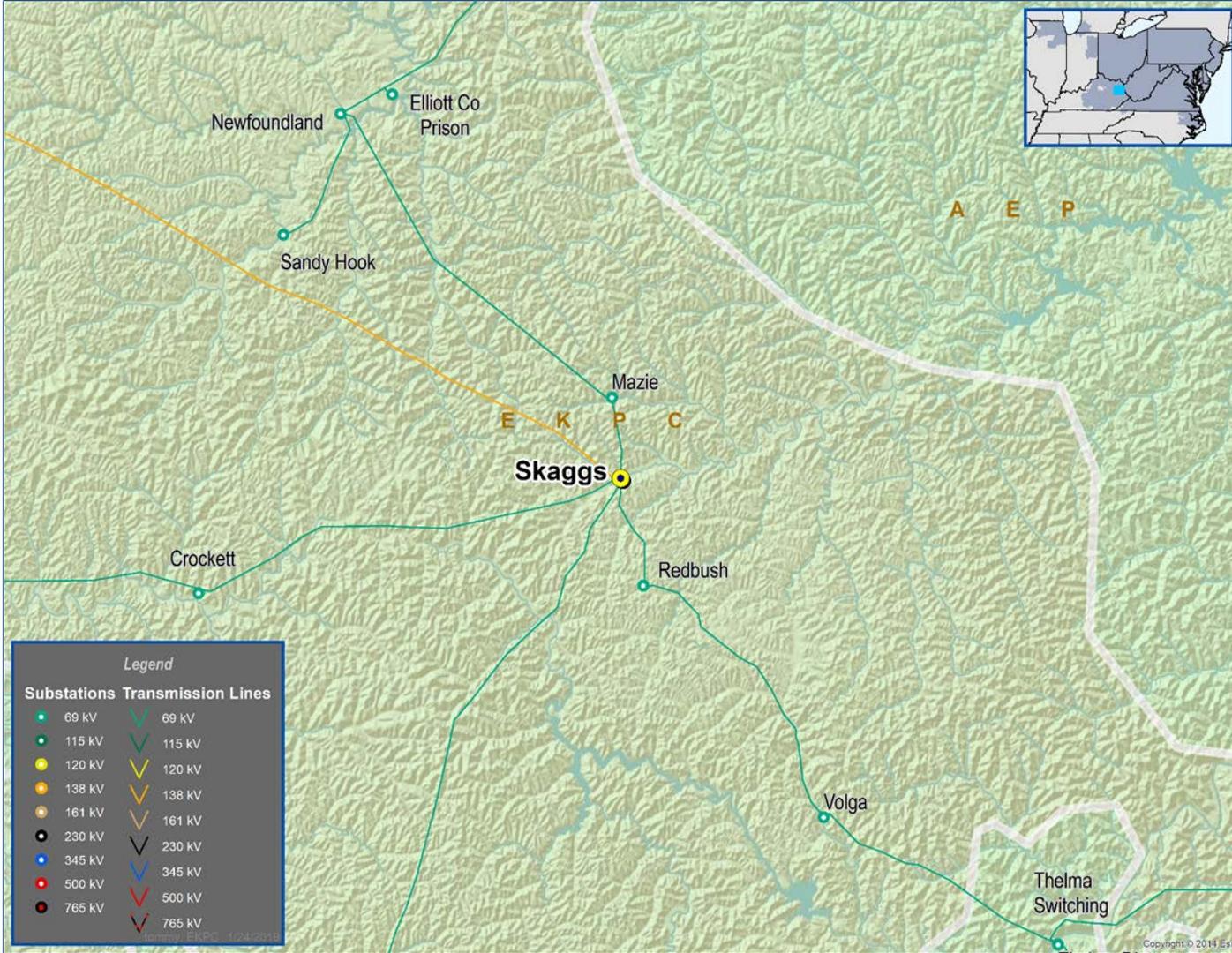
Operational Flexibility and Efficiency

Specific Assumption Reference:

EKPC Assumptions Presentation Slide 9

Problem Statement:

Real time load levels on the Skaggs 138-69 kV autotransformer have exceeded the normal transformer rating on several occasions over the last five years. During extreme weather and other system issues on January 7, 2018, real time loading on the Skaggs transformer reached 136 MVA, over 120% of the normal rating. EKPC experienced operational issues, including loss of load, during this overload event.



EKPC Transmission Zone M-3 Process Skaggs

Need Number: EKPC-2019-002

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Upgrade the Skaggs Transformer to 150 MVA

Ancillary Benefits: Not Applicable

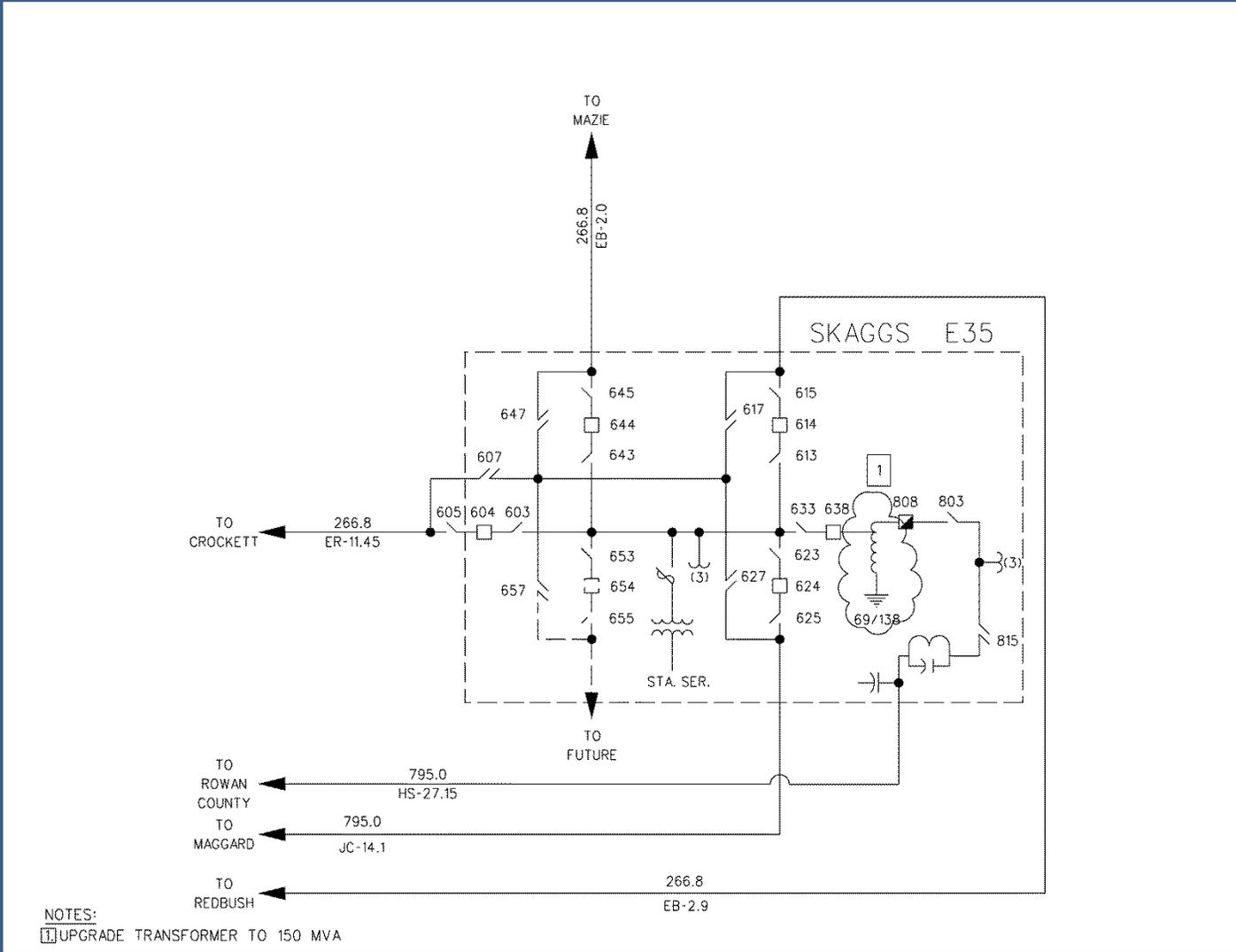
Estimated Cost: \$1.8M

Projected In-Service: 12/31/2019

Supplemental Project ID: S1937

Project Status: Engineering Procurement

Model: Not Applicable



EKPC Transmission Zone M-3 Process Rineyville

Need Number: EKPC-2019-003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 3/25/2019

Needs Meeting 2/20/2019

Project Driver:

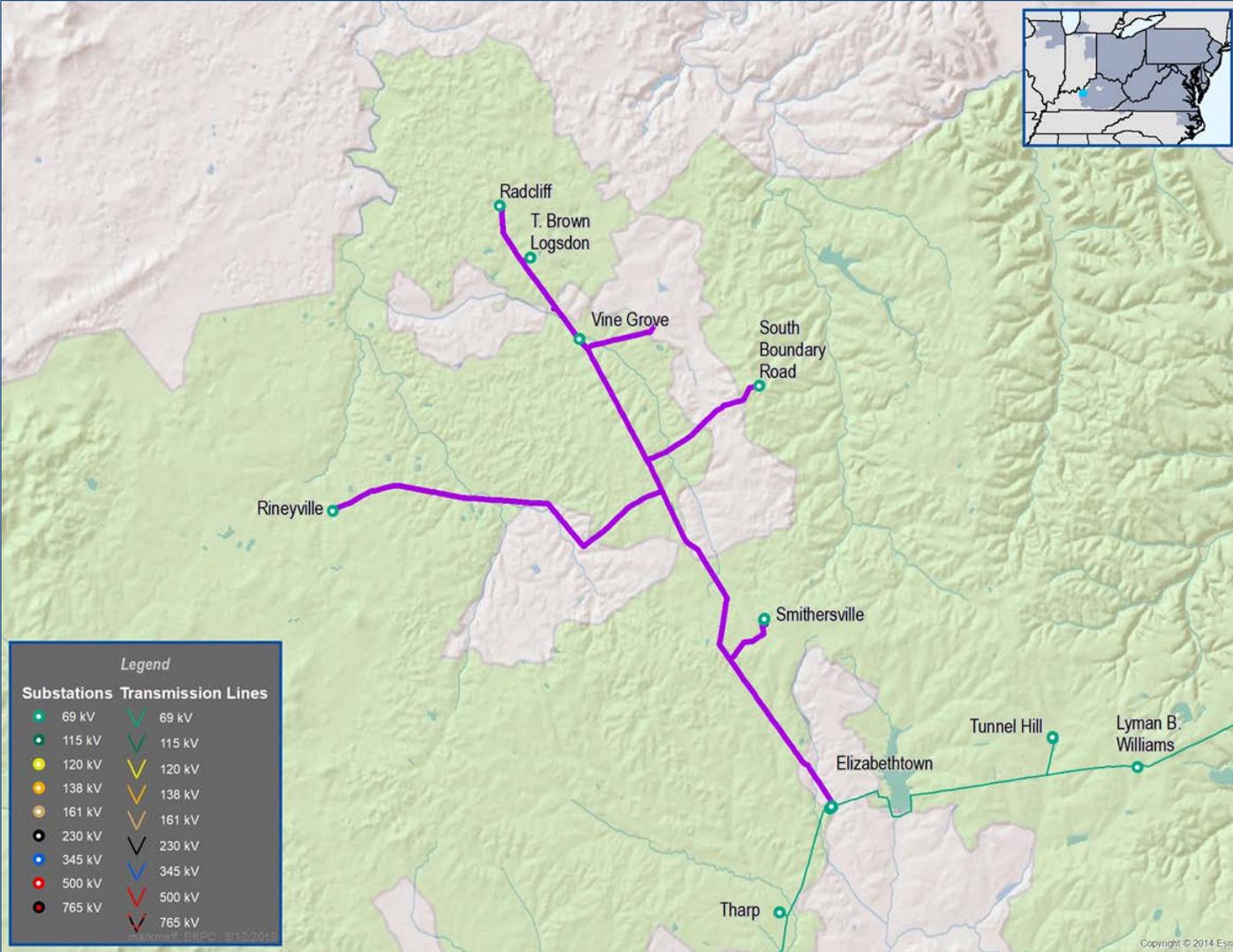
Operational Flexibility and Efficiency; Customer Service

Specific Assumption Reference:

EKPC Assumptions Presentation Slide 9

Problem Statement:

Elizabethtown – KU Rogersville 69 kV line section is one of the worst performing line sections on the EKPC system. There are a total of 7 distribution substations on this one circuit, and this is the largest number of distribution substations on a circuit on the EKPC system. These 7 distribution substations serve over 13,000 customers and almost 40% of the customers on the Nolin RECC system. Nolin has requested that EKPC develop a solution that minimizes the number of customers impacted during an outage.



EKPC Transmission Zone M-3 Process Rineyville

Need Number: EKPC-2019-003

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Build 69 kV switching station near Rineyville Junction (Patriot Parkway).

Ancillary Benefits: Not Applicable

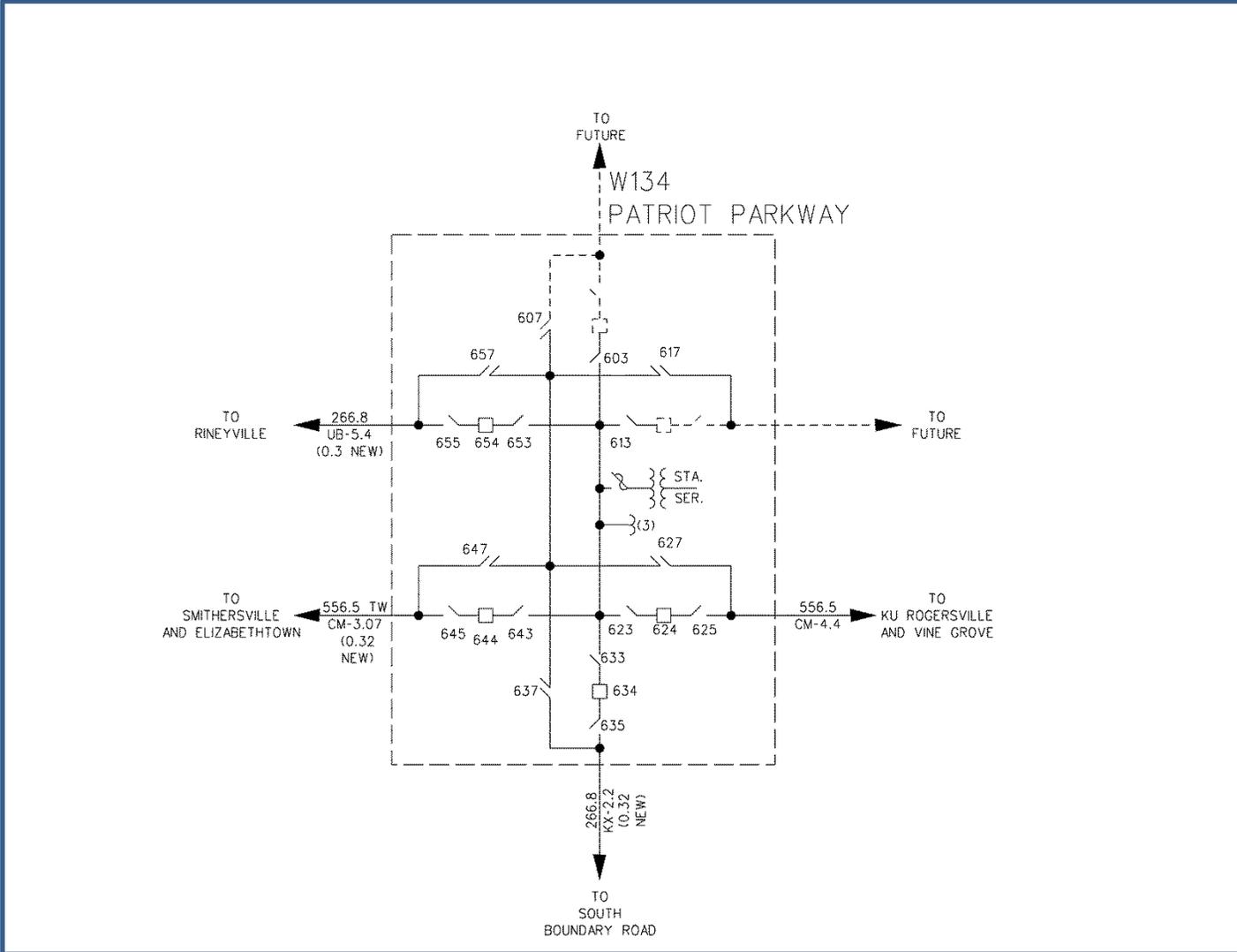
Estimated Cost: \$3.8M

Projected In-Service: 12/1/2021

Supplemental Project ID: S1938

Project Status: Scoping

Model: Not Applicable



EKPC Transmission Zone M-3 Process Monticello

Need Number: EKPC-2019-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 3/25/2019

Needs Meeting 2/20/2019

Project Driver:

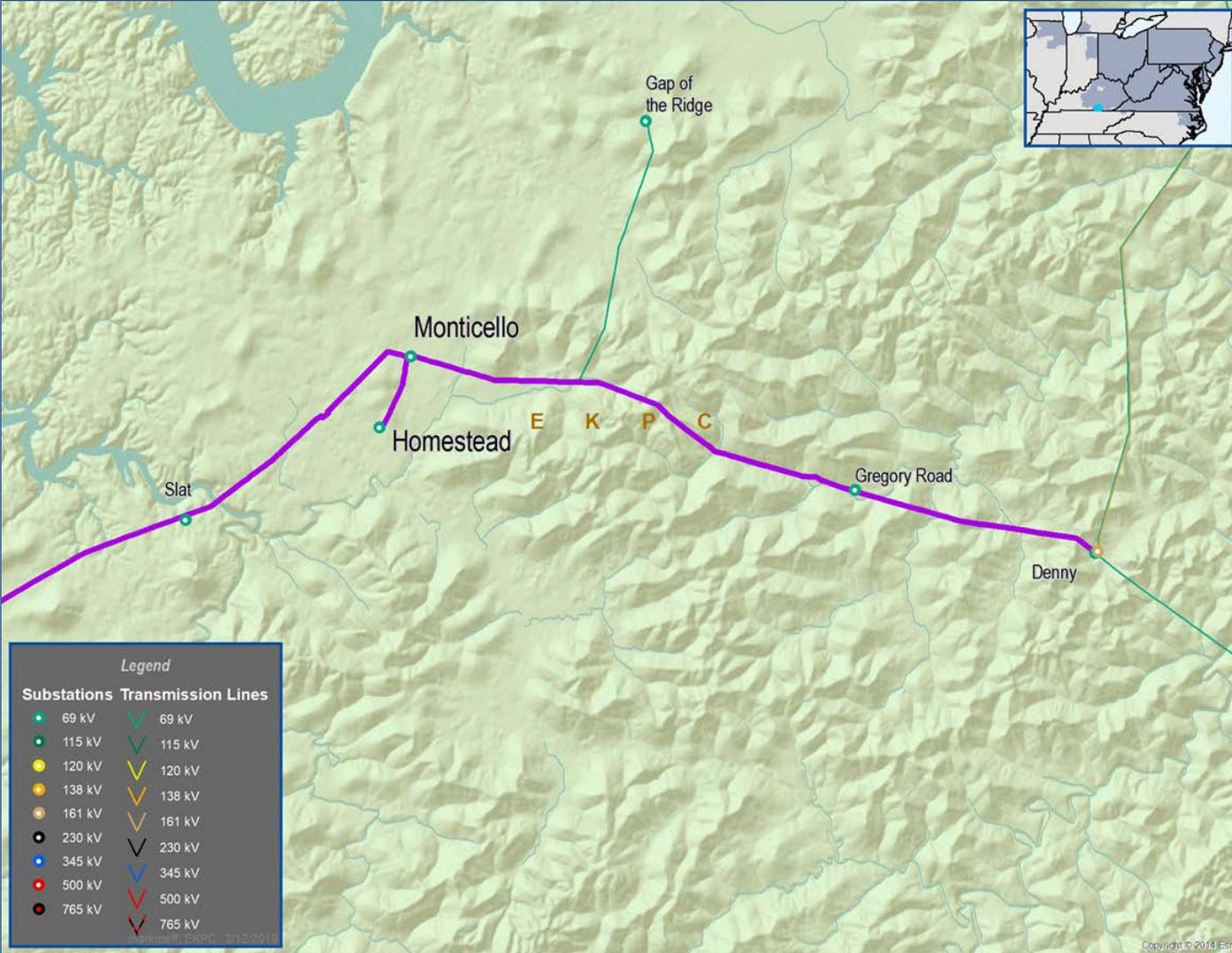
Equipment Material Condition; Operational Flexibility and Efficiency; Customer Service

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 8, 9 & 10

Problem Statement:

Denny – Wayne County: The Denny – Wayne County 69 kV line section is one of the worst performing locations on the EKPC system. This line section has five distribution substations tapped off of the main 20.4 mile line section: Slat, Homestead, Monticello, Gap of the Ridge and Gregory Road. The line was originally constructed in 1953 with 4/0 ACSR conductor, and the line section was reconducted to 556 MCM in 1985. EKPC has had numerous recent issues with cross arm failures on this line section.



EKPC Transmission Zone M-3 Process Monticello

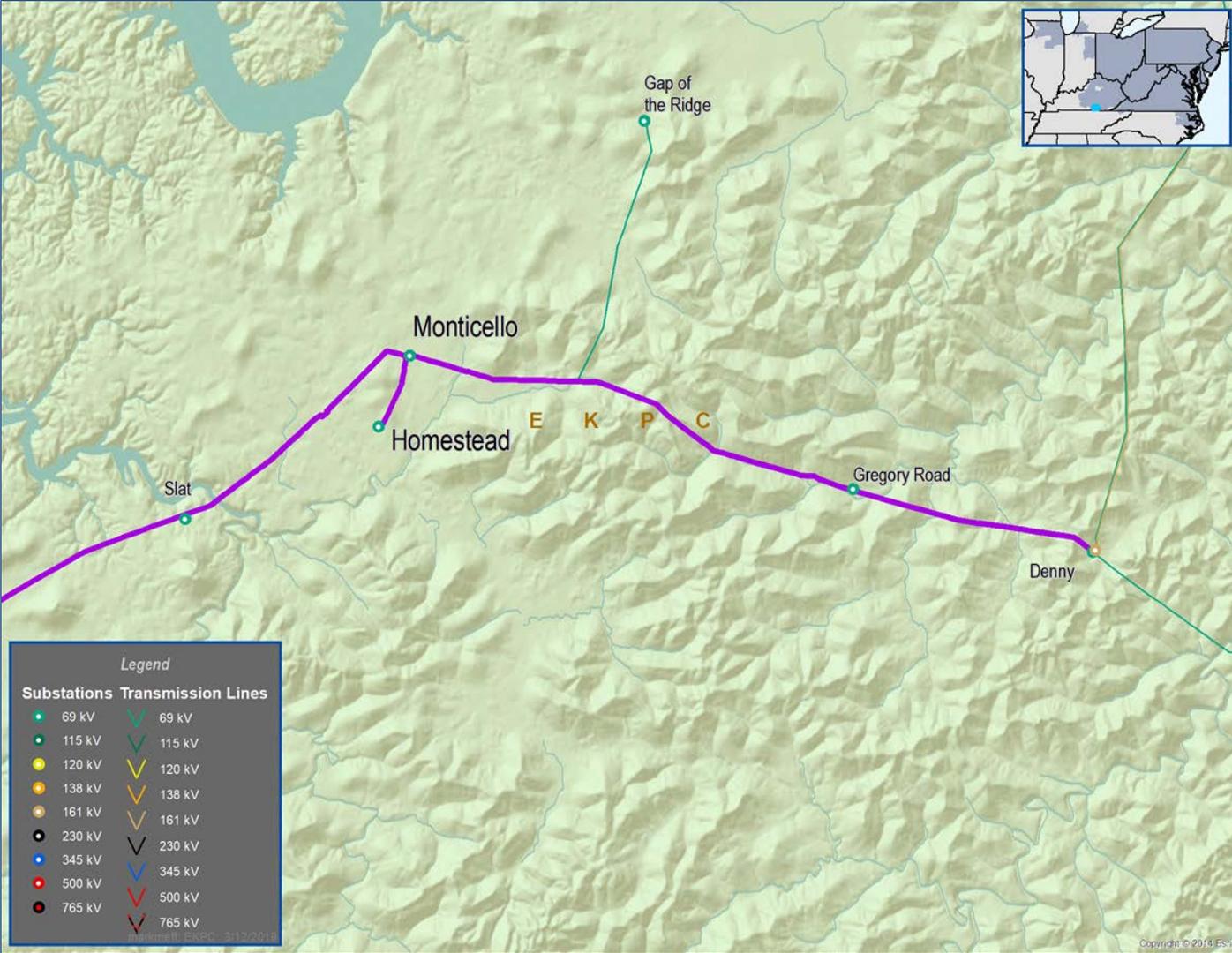
Need Number: EKPC-2019-004 (continued)

Problem Statement (continued):

Homestead: The Homestead substation is the largest substation on the South Kentucky RECC system (# of customers). The Homestead substation serves Wayne County Hospital, some nursing homes, several factories, the Wayne County School system, and over 3,200 customers. The Homestead distribution substation is served from a radial transmission feed. This tap line is approximately 1.2 miles in length, and was originally built by TVA. The line section is at least 50 years old, and has several poles that are in poor condition. South Kentucky RECC (“SKRECC”) has very limited back-feed capabilities for the Homestead substation.

Monticello: Issues identified at the Monticello distribution substation include:

- The original Monticello distribution station was constructed in 1954 and does not meet EKPC current standards.
- The current location is adjacent to a saw mill facility, and saw dust debris from this facility has caused contamination issues that have resulted in a paste build-up on equipment in the substation. Outages have been required for equipment cleaning.



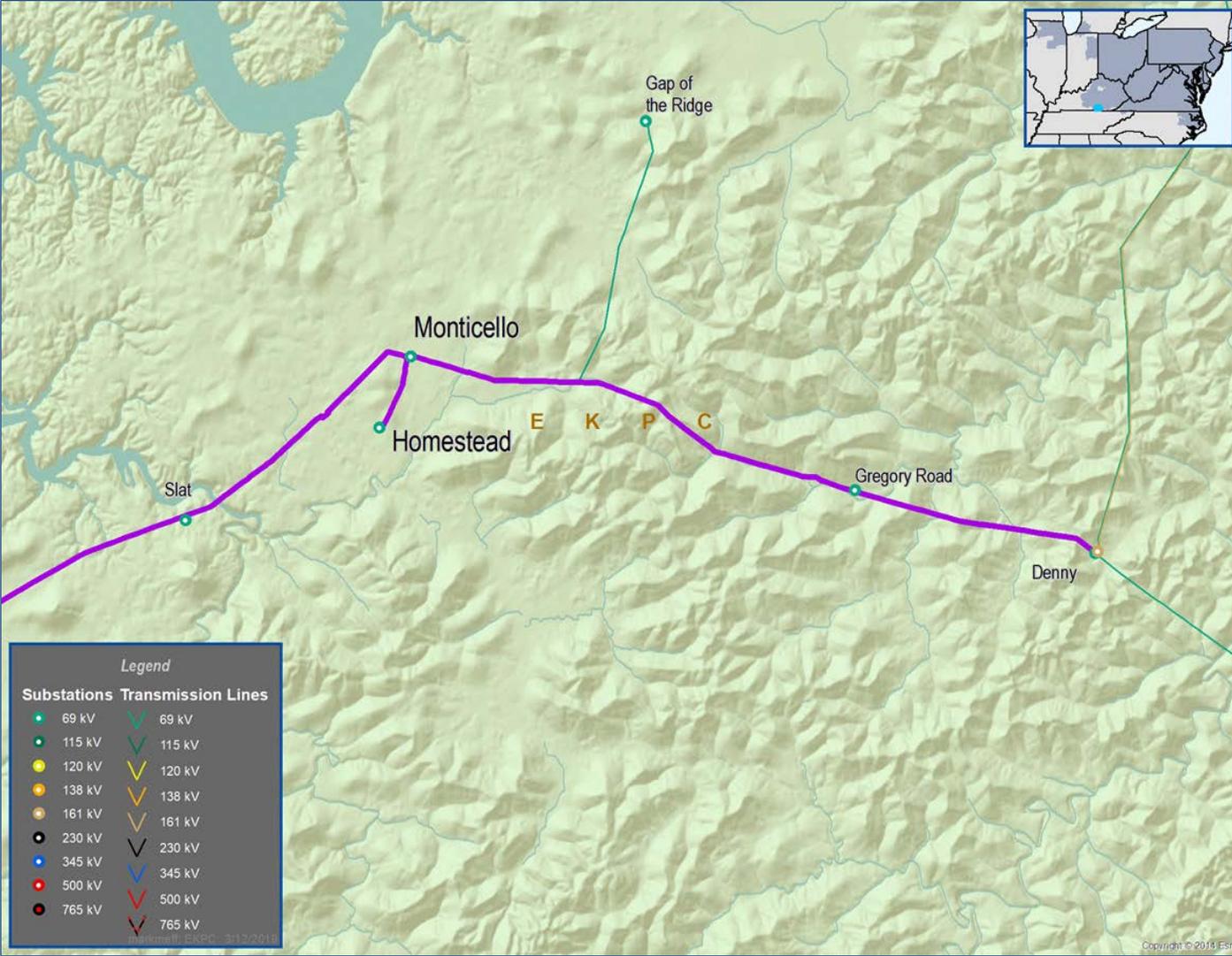
EKPC Transmission Zone M-3 Process Monticello

Need Number: EKPC-2019-004 (continued)

Problem Statement (continued):

Monticello (continued):

- The station has a mix of both 12.5 kV and 25 kV low side voltages, and the station has a non-standard wood structure that was constructed for the 25 kV auto transformer bank. This wood structure is in poor condition.
- The station does not have the EKPC standard low bay transfer scheme, which causes additional outage time and creates a heightened safety risk when taking equipment out of service for maintenance activities.
- The station does not have the EKPC standard metering bypass switching scheme, which causes additional outage time when replacing or working on the metering equipment.
- SKRECC cannot back-feed all of the load on this station during an outage.



EKPC Transmission Zone M-3 Process Monticello

Need Number: EKPC-2019-004

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Rebuild Monticello Substation on new site with a 69 kV breaker station. Rebuild Homestead Tap partially on new R/W (1.3 miles).

Ancillary Benefits: Not Applicable

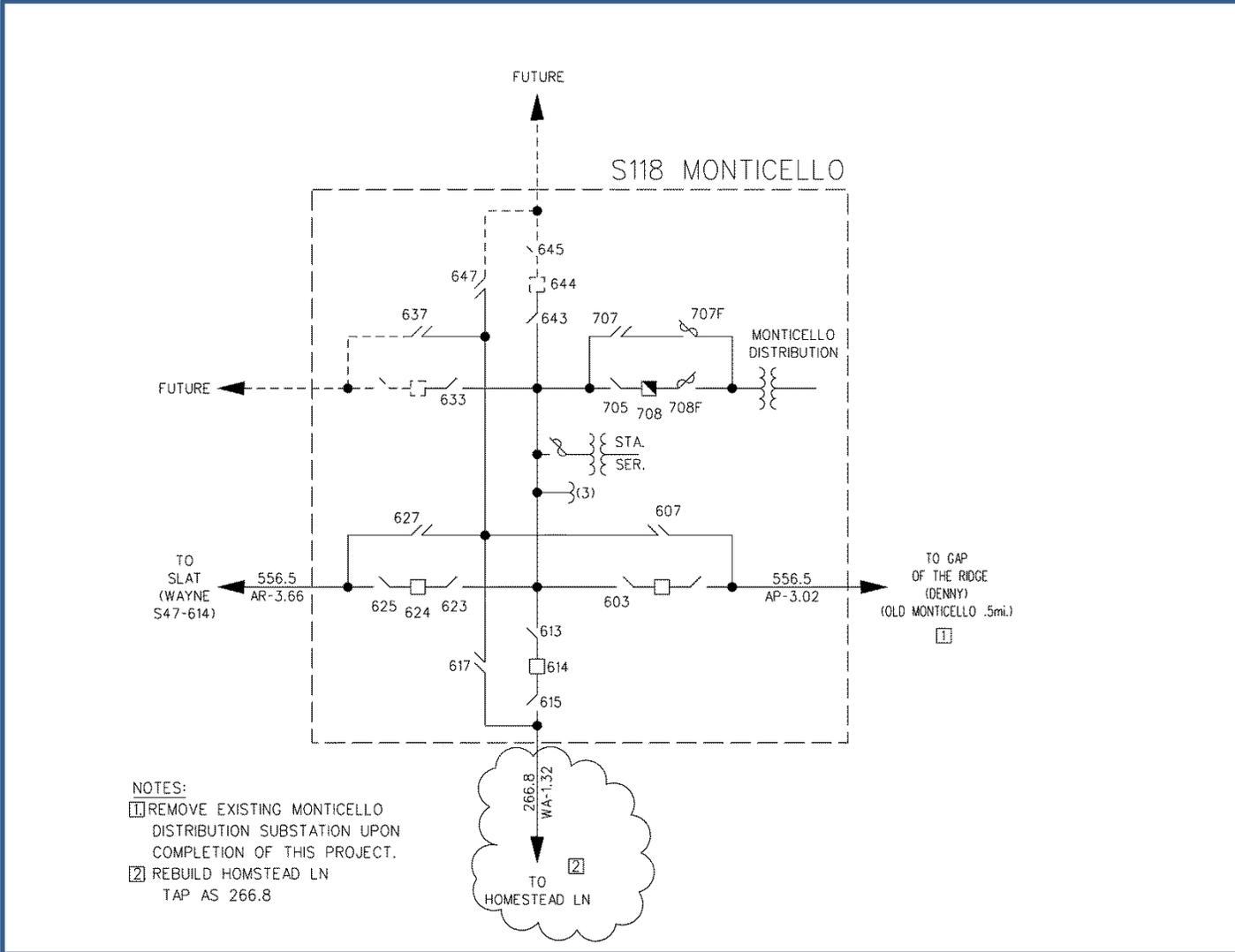
Estimated Cost: \$5.5M

Projected In-Service: 12/1/2020

Supplemental Project ID: S1939

Project Status: Engineering

Model: Not Applicable



EKPC Transmission Zone M-3 Process Boone County-Williamstown

Need Number: EKPC-2019-005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 3/25/2019

Needs Meeting 2/20/2019

Project Driver:

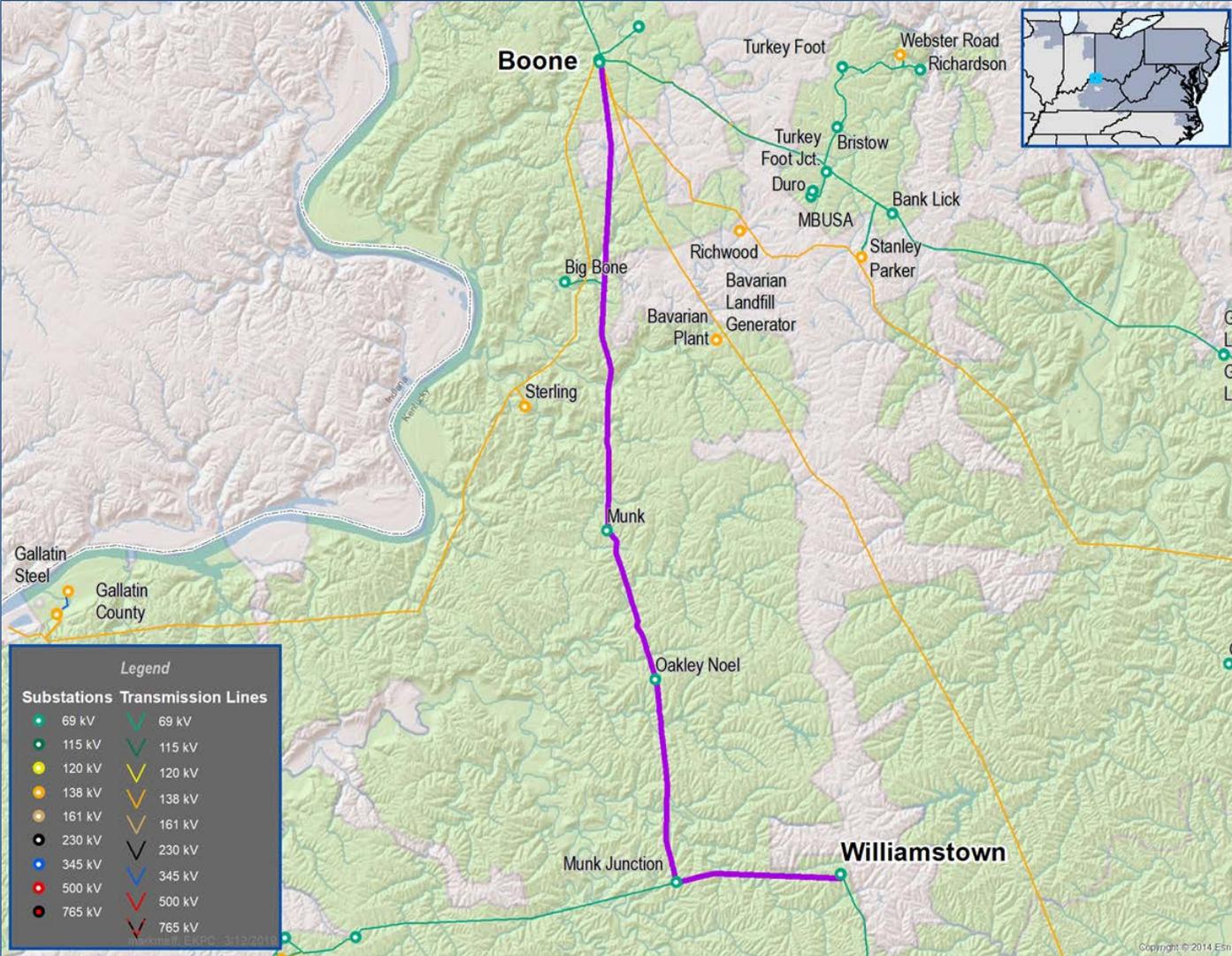
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 8

Problem Statement:

The Boone County – Williamstown 69 kV line section is 60 years old. The LineVue robot from Kinectrics Corporation revealed the majority of the line section to be in below average or poor condition (static and conductor). The EKPC Reliability team has included this line section in their top 10 of line sections that should be addressed due to the condition assessment.



EKPC Transmission Zone M-3 Process Boone County-Williamstown

Need Number: EKPC-2019-005

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Rebuild Boone County to Williamstown line using 556.5 ACSR/TW(28.5 miles).

Ancillary Benefits: Not Applicable

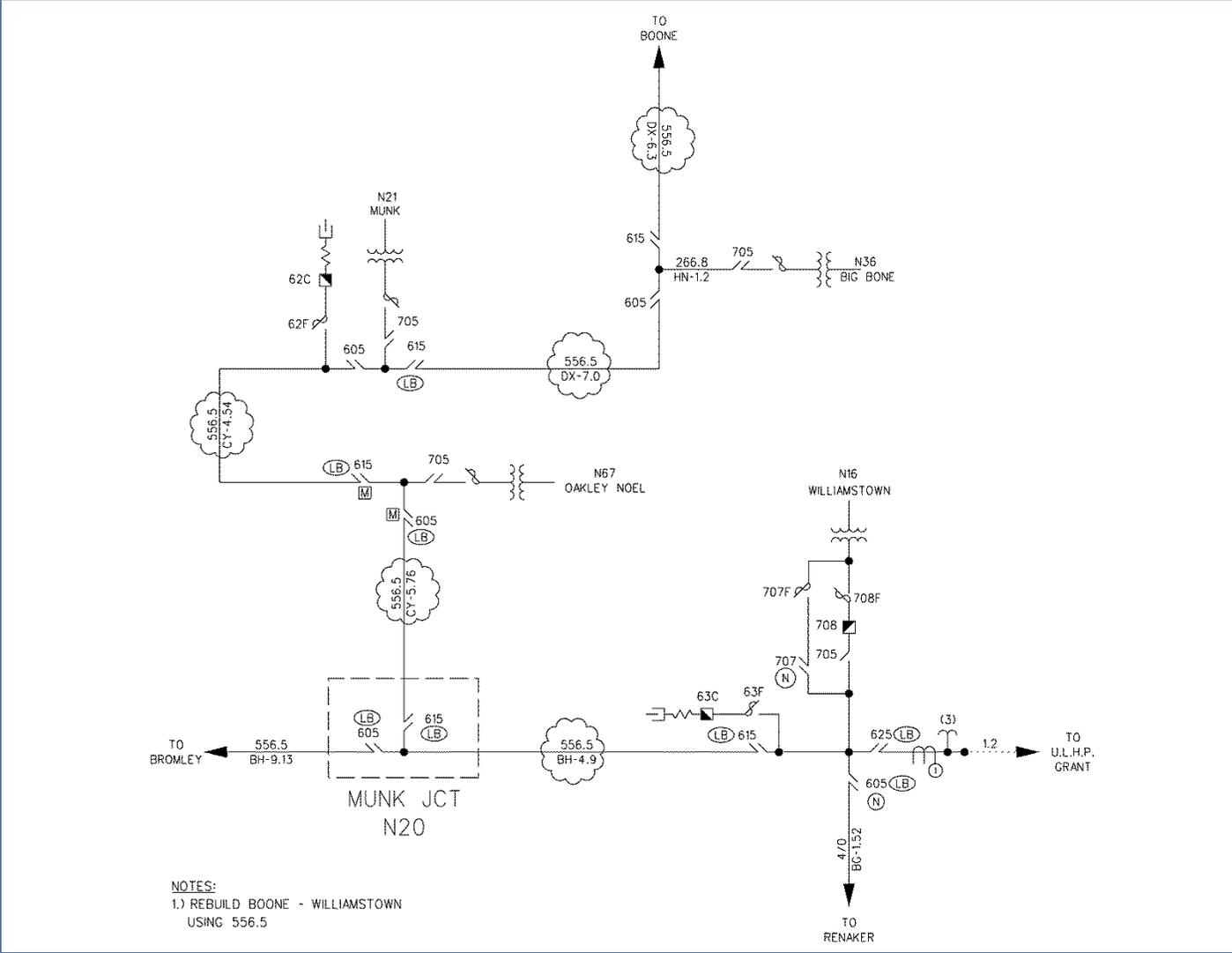
Estimated Cost: \$15.8M

Projected In-Service: 12/1/2024

Supplemental Project ID: S1940

Project Status: Scoping

Model: Not Applicable



EKPC Transmission Zone M-3 Process KU Wofford-Whitley City

Need Number: EKPC-2019-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 3/25/2019

Needs Meeting 2/20/2019

Project Driver:

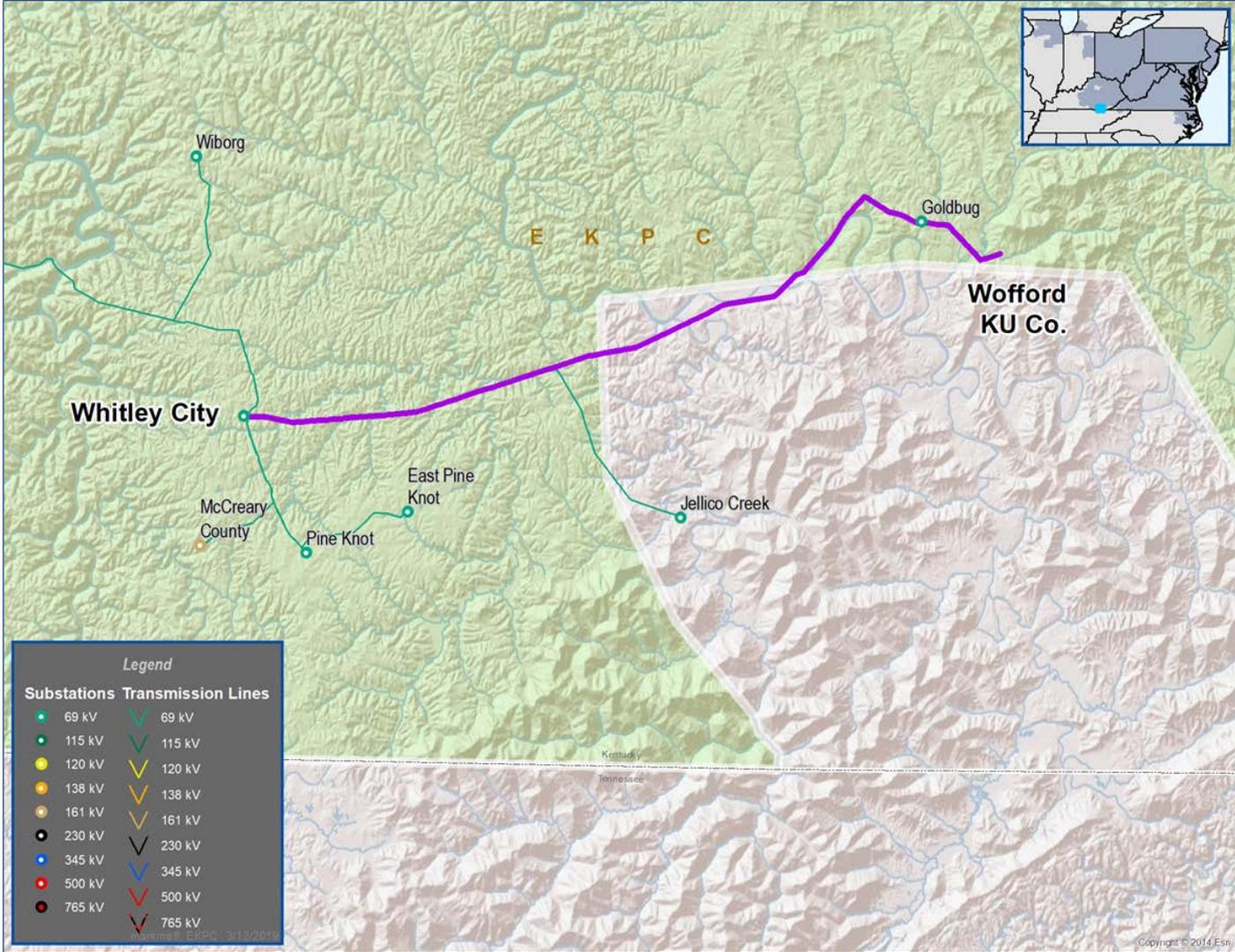
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 8

Problem Statement:

The KU Wofford – Whitley City 69 kV line section is 67 years old. The LineVue robot from Kinectrics Corporation revealed that the majority of the line section is in poor condition (static and conductor). The EKPC Reliability team has included this line section in their top 10 of line sections that should be addressed due to the condition assessment.



EKPC Transmission Zone M-3 Process KU Wofford-Whitley City

Need Number: EKPC-2019-006

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Rebuild using 556.5 MCM ACSR/TW conductor (20.7 miles)

Ancillary Benefits: Not Applicable

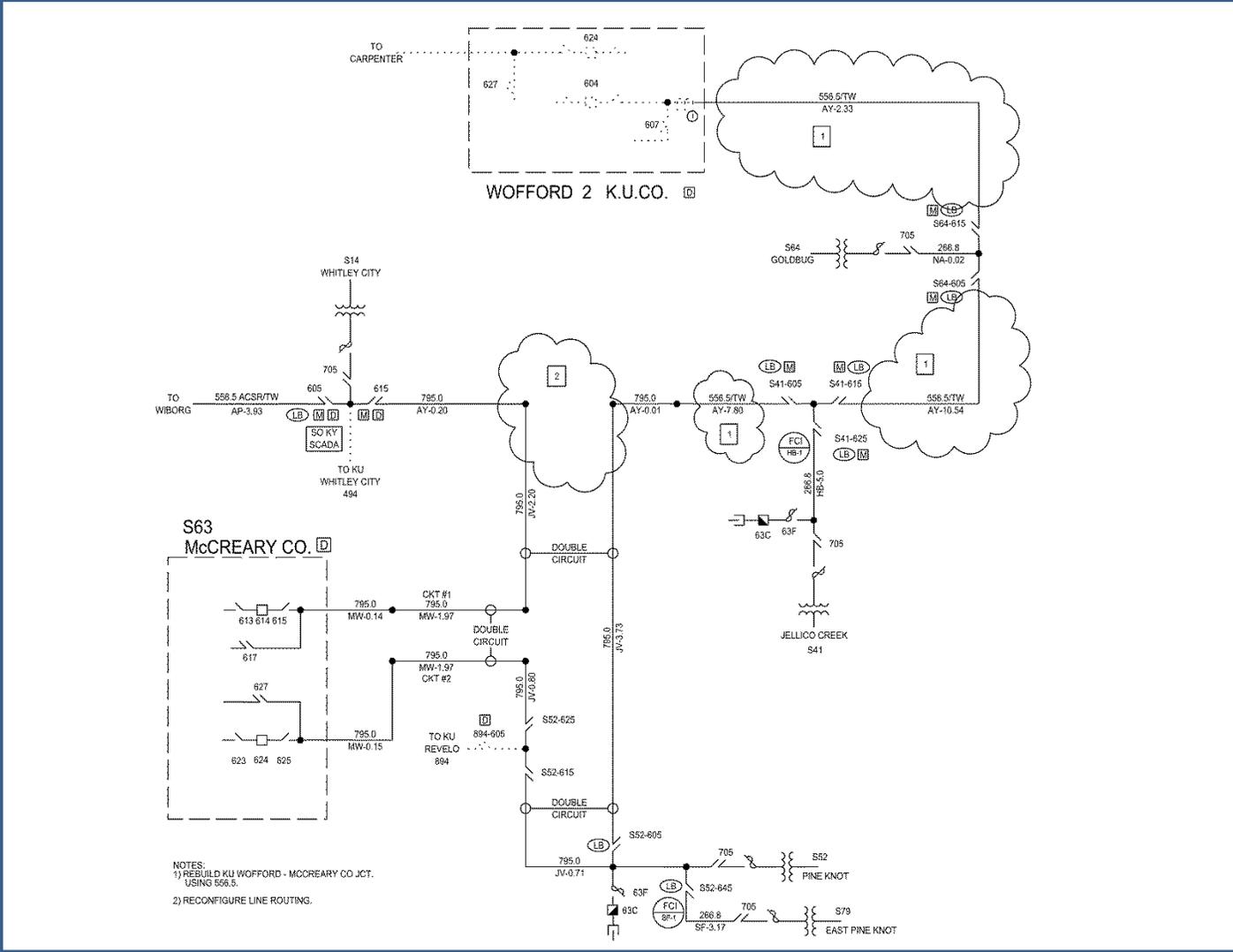
Estimated Cost: \$13M

Projected In-Service: 12/31/2022

Supplemental Project ID: S1941

Project Status: Scoping

Model: Not Applicable



EKPC Transmission Zone M-3 Process Grants Lick-Griffin Jct

Need Number: EKPC-2019-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 4/23/2019

Needs Meeting 2/20/2019

Project Driver:

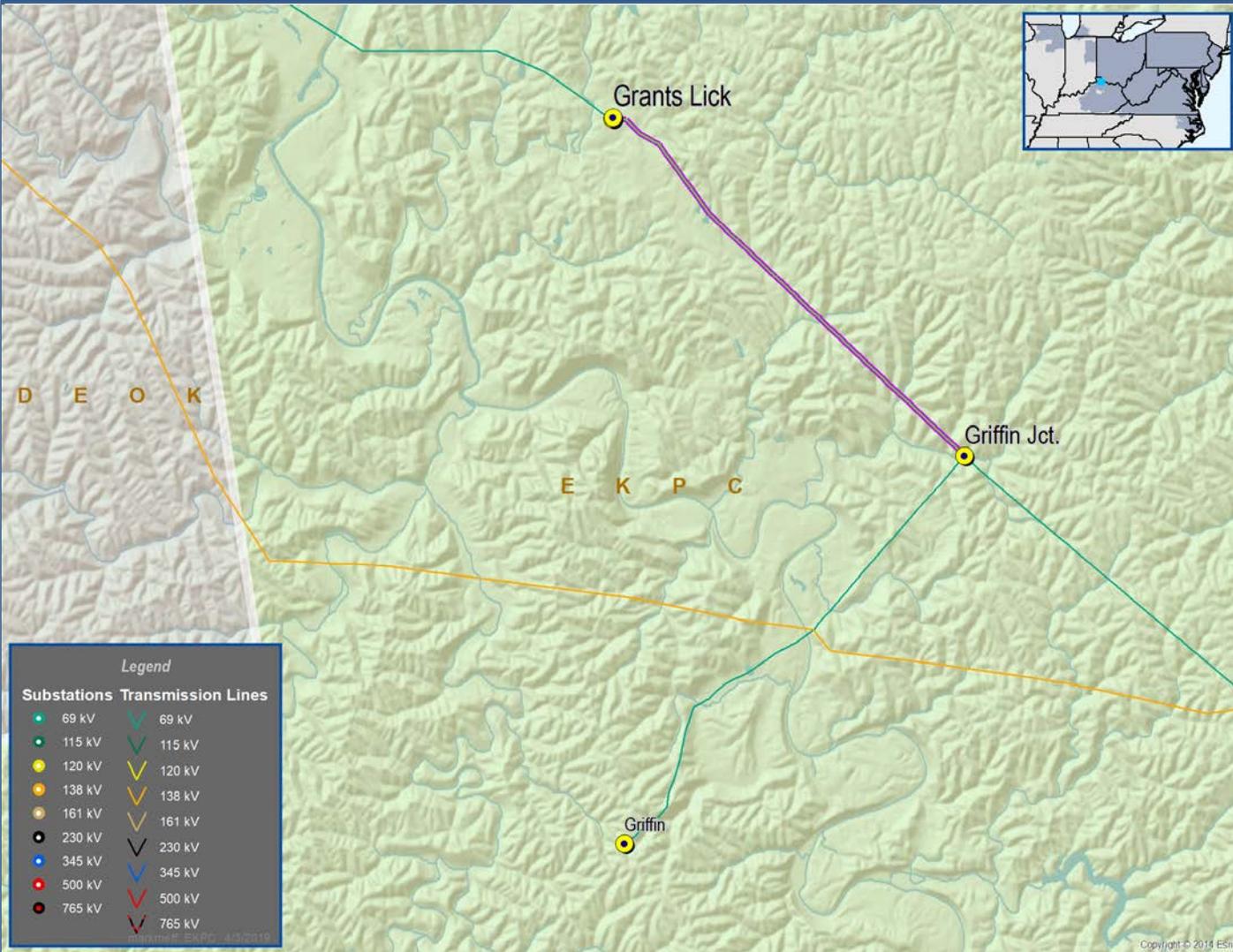
Equipment Material Condition, Performance and Risk

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 8

Problem Statement:

The Grants Lick to Griffin Junction line section is 62 years old. The LineVue robot from Kinectrics Corporation revealed that the majority of the line section is in poor condition (static and conductor). The EKPC Reliability team has included this line section in their top 10 of line sections that should be addressed due to the condition assessment.



EKPC Transmission Zone M-3 Process Grants Lick-Griffin Jct

Need Number: EKPC-2019-007

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Selected Solution:

Rebuild Grants Lick-Griffin Jct 69 KV line using 556.5 ACSR/TW (5.8 miles).

Ancillary Benefits: Not Applicable

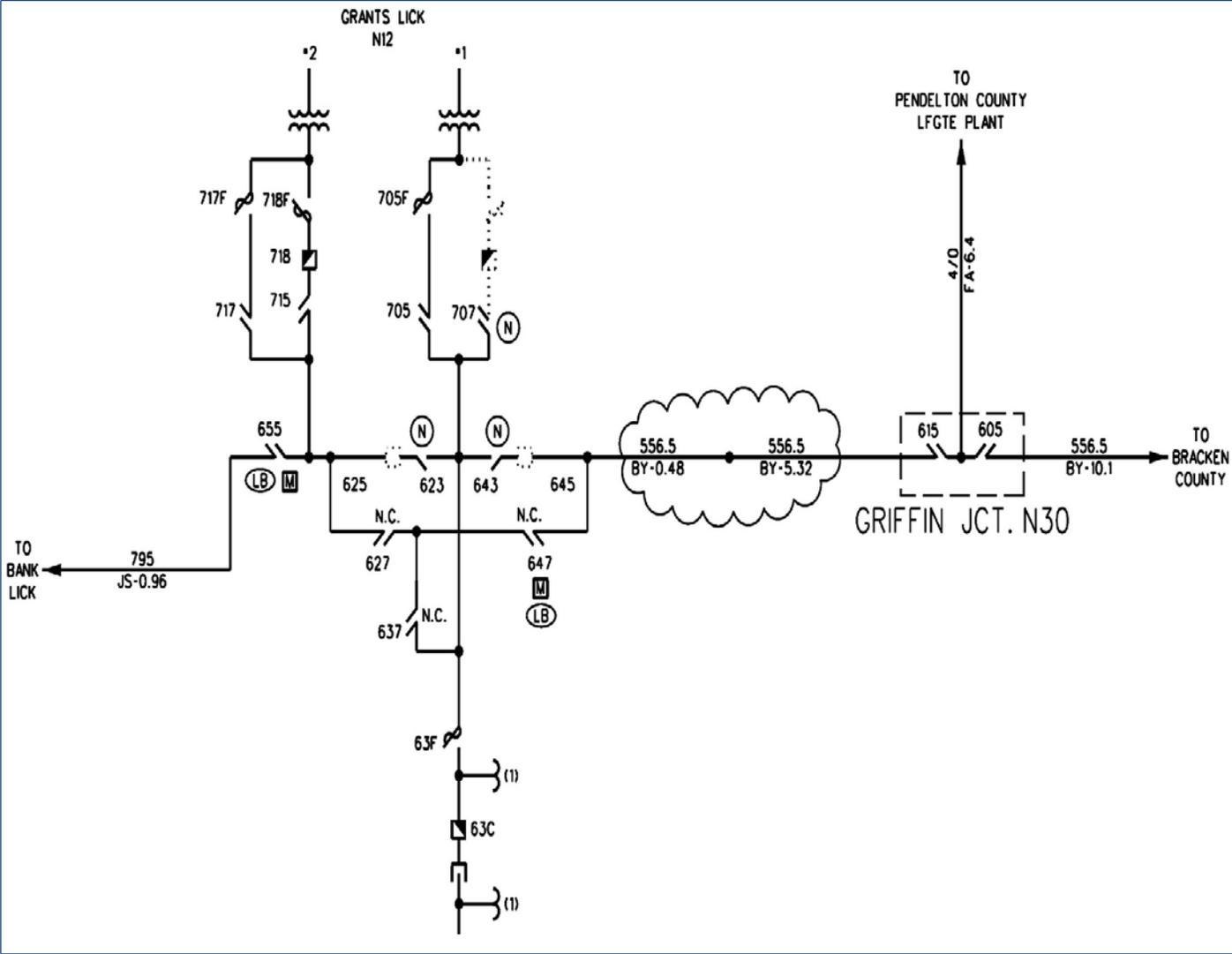
Estimated Cost: \$2.5M

Projected In-Service: 12/31/2021

Supplemental Project ID: S1942

Project Status: Scoping

Model: Not Applicable



EKPC Transmission Zone M-3 Process Elizabethtown

Need Number: EKPC-2019-008

Process Stage: Submission of Supplemental Project for inclusion in the Local Plan 9/16/2019

Previously Presented:

Solution Meeting 6/17/2019

Needs Meeting 4/23/2019

Project Driver:

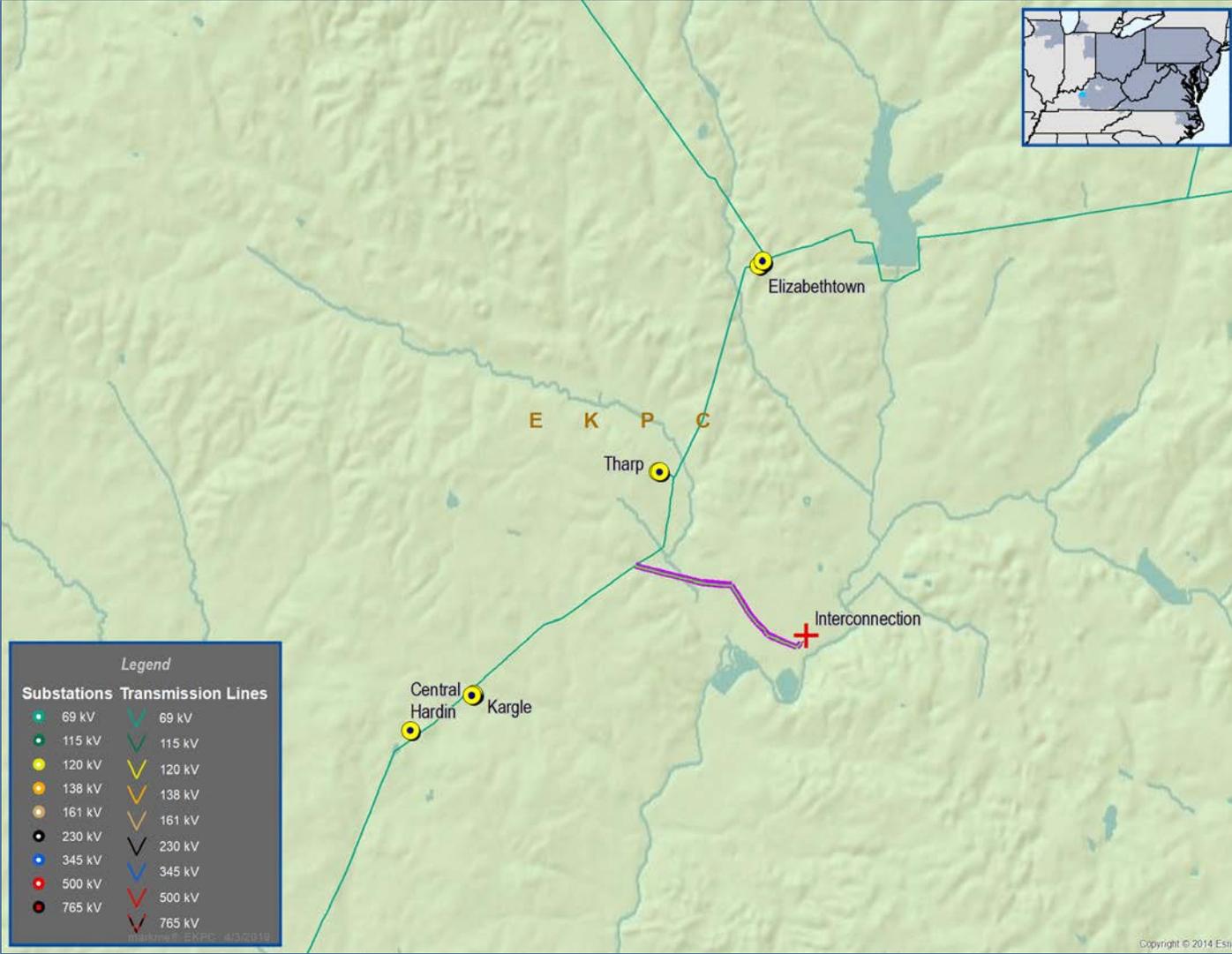
Equipment Material Condition, Performance and Risk/Operational Flexibility and Efficiency

Specific Assumption Reference:

EKPC Assumptions Presentation Slides 8 and 9

Problem Statement:

The EKPC-owned Kargle-LGE/KU Elizabethtown 69 kV tie-line was the most restrictive facility for scheduling of maintenance outages on the EKPC transmission system for the 2016-2017 period due to the conductor rating. Additionally, this facility restricts the ability of LGE/KU to schedule outages on the transmission system in the area. These restrictions are prevalent even during light load conditions, resulting in either inability to take maintenance outages or sectionalizing of the transmission system to shed load for subsequent outages in the area. Furthermore, this facility was constructed in 1958, and many of the wood poles are in marginal condition.



Revision History

- 9/16/2019 – V1 – Local Plan posted to pjm.com for S1936 – S1943