

Submission of Supplemental Projects for Inclusion in the Local Plan

Need Number: DEOK-2021-008

Process Stage: Local Plan Submission 01-21-2022

Previously Presented:

Solutions Meeting: 10-15-2021

Needs Meeting: 7-16-2021

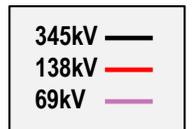
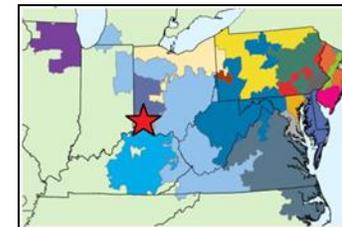
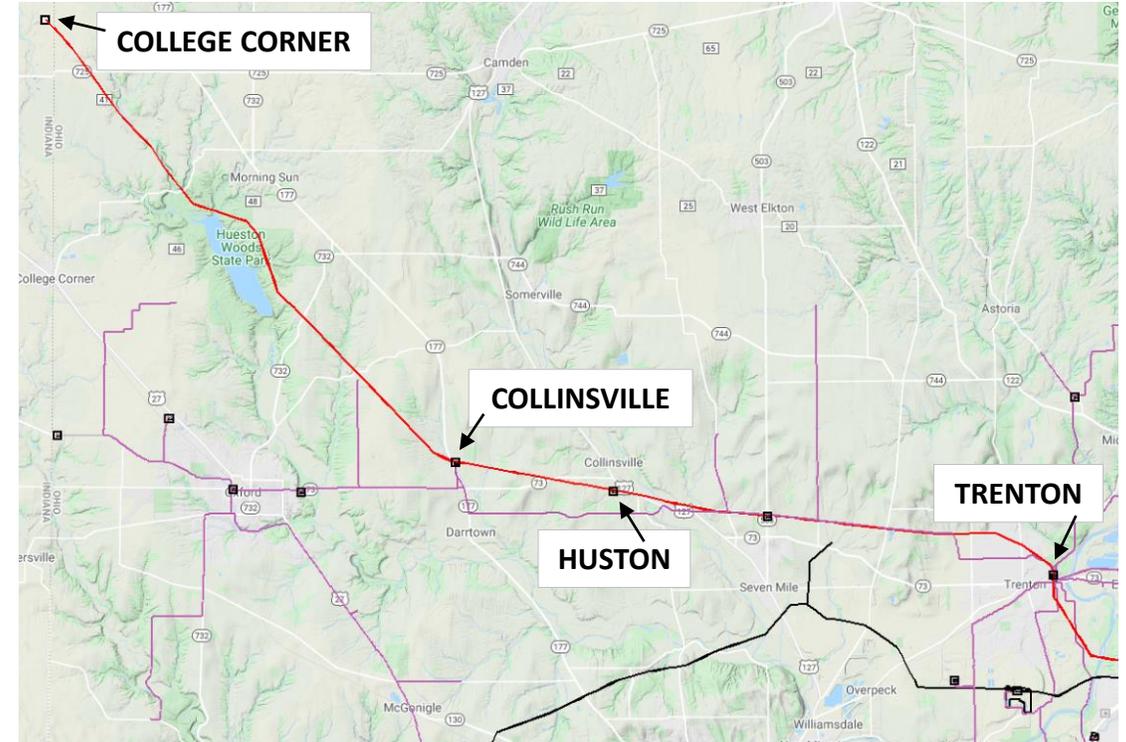
Project Driver: Equipment condition, performance and risk, Operational flexibility and efficiency, and Infrastructure resilience

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 through 8

Problem Statement:

The 138 kV feed to Collinsville has 24 miles of exposure. The feeder is breaker connected at College Corner, switched connected through Collinsville and Huston, and breaker connected at Trenton. Collinsville TB1 will be lost for a fault anywhere on the feeder or a transformer or bus failure at Huston. Collinsville's single 138/69 kV TB1 is 60 years old. Dissolved gas analysis is indicating paper insulation deterioration. Power factor is above normal limits and increasing. TB1 is fed via an obsolete, oil filled circuit breaker and is switch connected to the 69 kV bus. The 69 kV feeders into and out of Collinsville are breaker connected. However, the straight bus configuration limits switching options.



Need Number: DEOK-2021-008

Process Stage: Local Plan Submission 01-21-2022

Selected Solution:

Expand the substation. Install three 138 kV breakers to form a ring bus. Relocate the 138 kV feeder terminals. Replace TB1 with a new 138/69 kV, 150 MVA transformer. Install three 69 kV breakers to form a ring bus. Relocate the 69 kV feeder terminals. Install a control building with relaying and communications equipment. (S2659)

Estimated Transmission Cost: \$12.7M

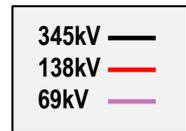
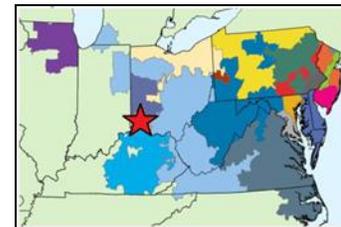
Projected In-Service Date: 07-05-2023

Supplemental Project ID: s2659

Project Status: Engineering

Model: 2021 RTEP

**Bubble Diagram Not Applicable
Station Modifications Only**



Need Number: DEOK-2021-010

Process Stage: Local Plan Submission 02-15-2022

Previously Presented:

Solutions Meeting 11-19-2021

Needs Meeting 9-17-2021

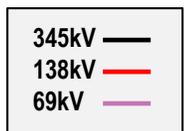
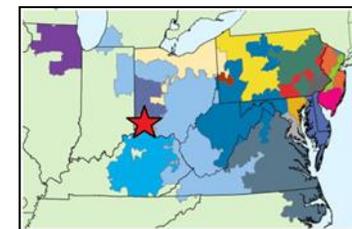
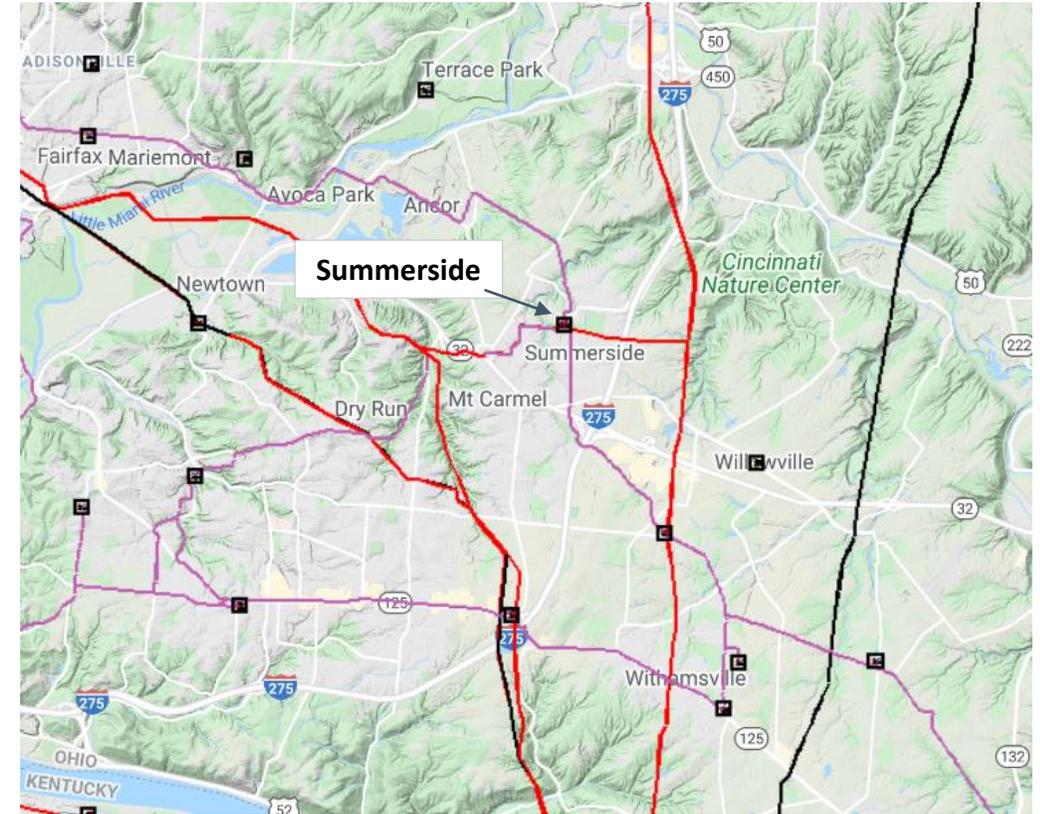
Project Driver: Equipment Condition, Performance and Risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 & 6

Problem Statement:

The 69 kV section of Summerside substation is nearly 60 years old, utilizes cap and pin insulators, has buses constructed of strain bus and an obsolete fault bus protection system. The capacitor on this bus is fuse connected, over 30 years old and at the end of its useful life. 69/34 kV Transformer 4 is 58 years old and showing signs of arcing in oil and has an old LTC design that is a high maintenance item.



Need Number: DEOK-2021-010

Process Stage: Local Plan Submission 02-15-2022

Selected Solution:

Remove existing structures, bus work, the capacitor, transformer and foundations. Expand and rebuild the 69 kV section of Summerside. Install new foundations, 2 new box structures and bus work. Reuse the existing circuit breakers and install a new zero-crossing circuit breaker connecting a new 43.2 MVAR capacitor. Install a new 69/34 kV 22.4 MVA transformer. Install a control house for relaying and communications equipment.

Estimated Transmission Cost: \$10.3M

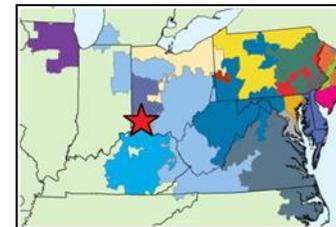
Proposed In-Service Date: 12-31-2023

Supplemental Project ID: s2661

Project Status: Engineering

Model: 2021 RTEP

**Bubble Diagram Not Applicable
Station Modifications Only**



Need Number: DEOK-2021-011

Process Stage: Local Plan Submission 02-15-2022

Previously Presented:

Solutions Meeting 11-19-2021

Needs Meeting 9-17-2021

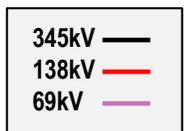
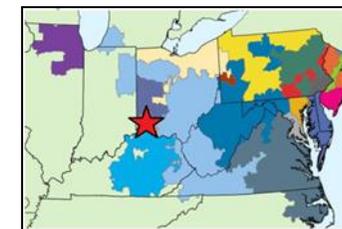
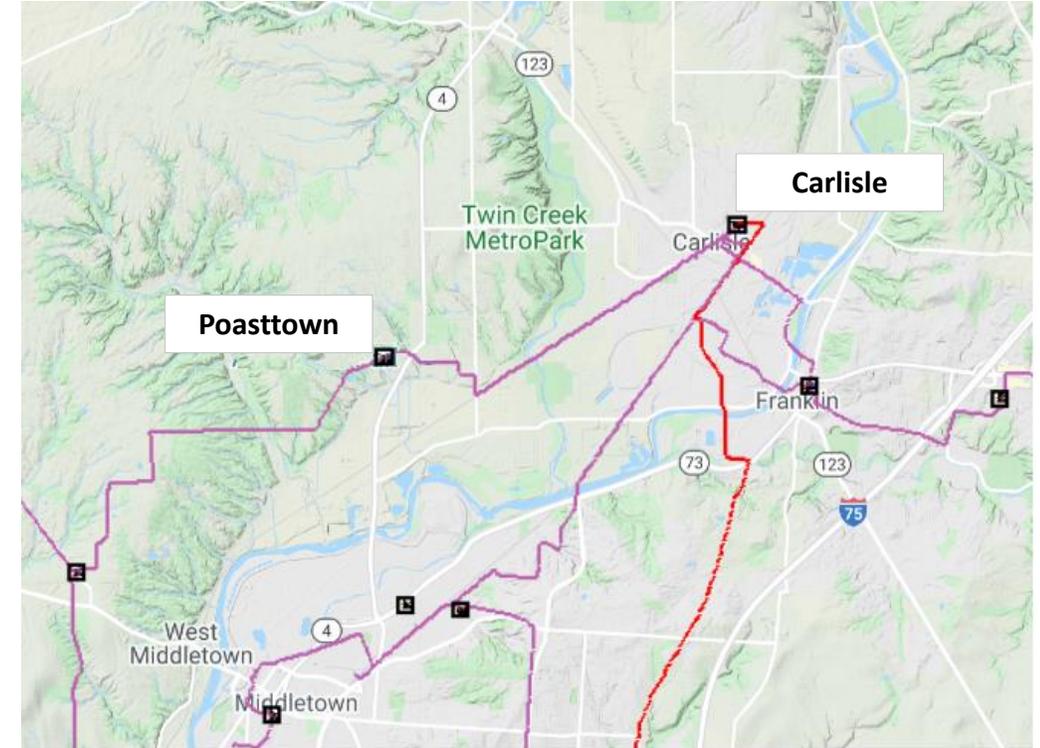
Project Driver: Equipment Condition, Performance and Risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 & 6

Problem Statement:

The six mile long 69 kV feeder from Carlisle to Poasttown serves one wholesale and 8,165 residential customers. It is an average 70 years old and constructed with wooden crossarms on 89 single wood poles. The structures have an 18% rejection rate. In the past five years there have been 11 sustained and 7 momentary outages averaging 94,972 CMI/outage.



Need Number: DEOK-2021-011

Process Stage: Local Plan Submission 02-15-2022

Selected Solution:

Rebuild the section of feeder between Carlisle and Poasttown with steel poles, new hardware and conductor. Remove two switches and a tap to an industrial customer. The capacity of the line will increase from 77 MVA to 93 MVA.

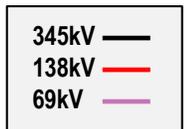
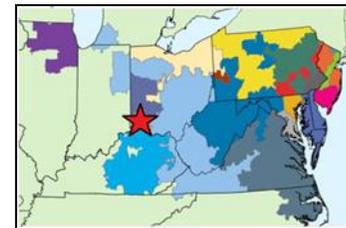
Estimated Transmission Cost: \$15.1M

Proposed In-Service Date: 12-31-2024

Supplemental Project ID: s2662

Project Status: Engineering

Model: 2021 RTEP



Need Number: DEOK-2021-001

Process Stage: Local Plan Submission 03-03-2022

Previously Presented:

Solutions Meeting 12-17-2021

Needs Meeting 02-17-2021

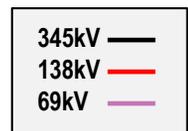
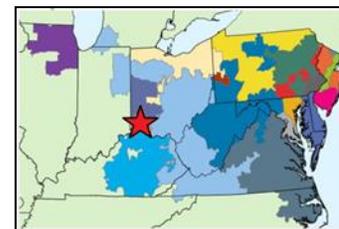
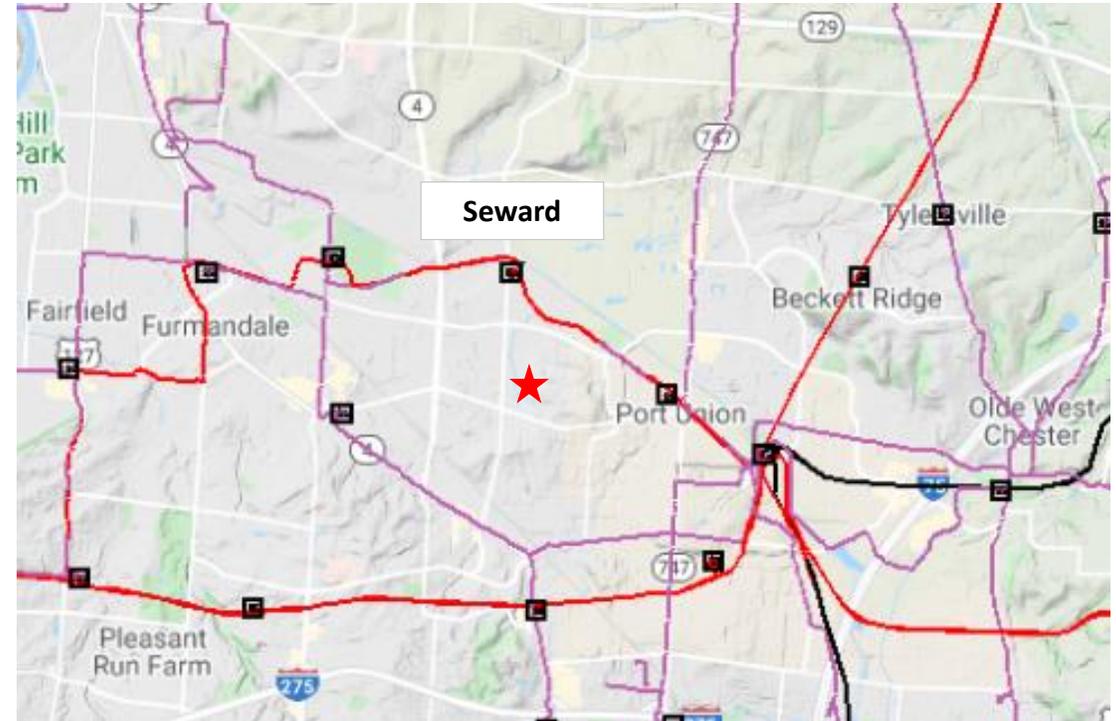
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

An existing customer has requested an additional 20MW of distribution service by summer of 2022. This exceeds the capability of the existing distribution infrastructure in the local area. Duke Energy Distribution has requested additional capacity delivery through Seward substation.



Need Number: DEOK-2021-001

Process Stage: Local Plan Submission 03-03-2022

Previously Presented:

Solutions Meeting 12-17-2021

Needs Meeting 02-17-2021

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Potential Solution:

Install a new box structure. Move the Seward-Port Union feeder termination from a monopole to the new box structure. Install CCVTs and a line disconnect for the new feeder connection. Install two new switches and 138 kV bus work to form a ring bus. Install a 138/13 kV, 22 MVA transformer with a bus disconnect, circuit switcher and wave trap on the high side of the transformer. Install protection and controls for the new equipment in the existing control enclosure.

Estimated Transmission Cost: \$2.4M

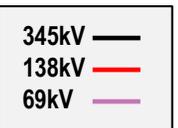
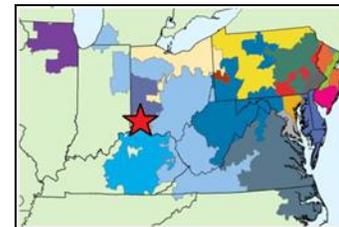
Proposed In-Service Date: 12-31-2022

Supplemental Project ID: s2666

Project Status: Engineering

Model: 2021 RTEP

**Bubble Diagram Not Applicable
Station Modifications Only**



Need Number: DEOK-2018-003

Process Stage: Local Plan Submission 04-22-2022

Previously Presented:

Solutions Meeting 01-21-2022

Needs Meeting 11-29-2018

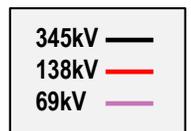
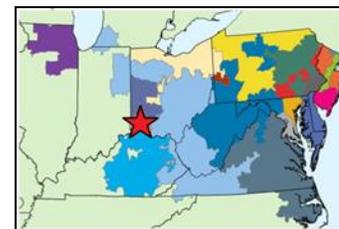
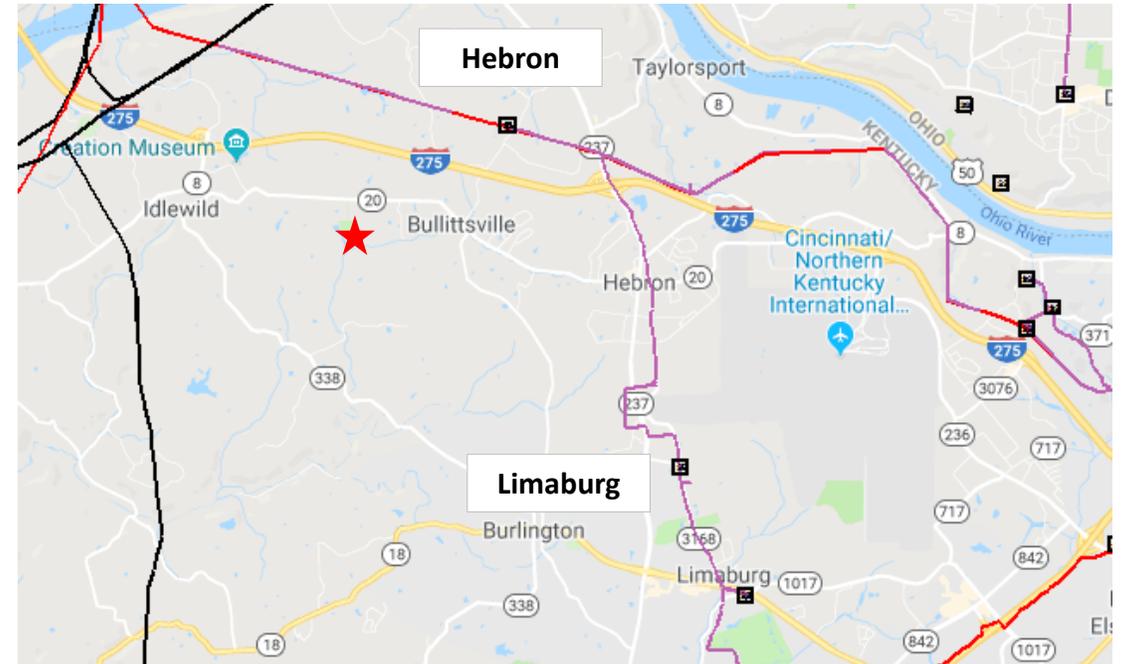
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

New and existing industrial load growth in the area west of the Cincinnati/Northern Kentucky International Airport is predicted to exceed the capacity of the local distribution system. An additional 40MWs is requested.





Need Number: DEOK-2018-003

Process Stage: Local Plan Submission 04-22-2022

Previously Presented:

Solutions Meeting 01-21-2022

Needs Meeting 11-29-2018

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Potential Solution:

Install a new substation, Litton, with two take-off structures, bus work, eight motorized bus disconnects, two motorized line disconnects and two CCVTs for use in an ATO scheme. Loop the 69kV feeder from Hebron to Limaburg through the substation. Retire eight wooden poles. Install 12 light duty steel poles with 750 feet of 954 ACSR and OPGW. Transfer the static from the wooden poles to the new steel poles.

Alternatives: none

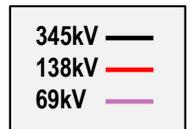
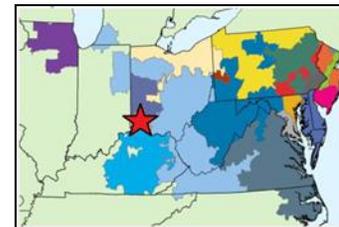
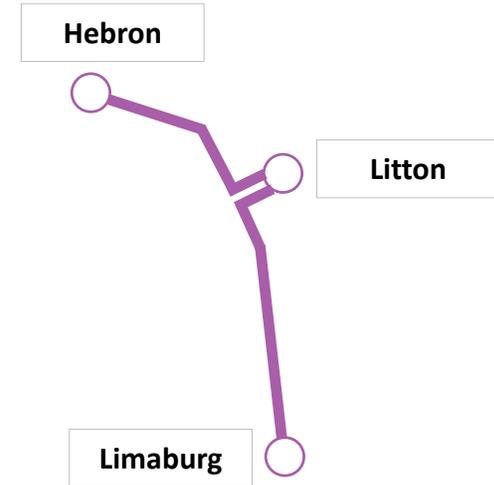
Transmission Cost Estimate: \$4.8M

Proposed In-Service Date: 06-01-2024

Supplemental Project ID: s2681

Project Status: Engineering

Model: 2021 RTEP





DEOK Transmission Zone M-3 Process Dicks Creek Gas Substation

Need Number: DEOK-2022-002

Process Stage: Local Plan Submission 04-28-2022

Previously Presented:

Solutions Meeting 02-18-2022

Needs Meeting 01-21-2022

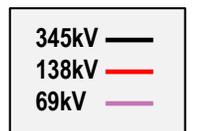
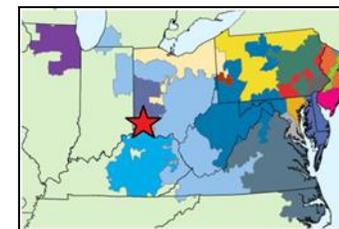
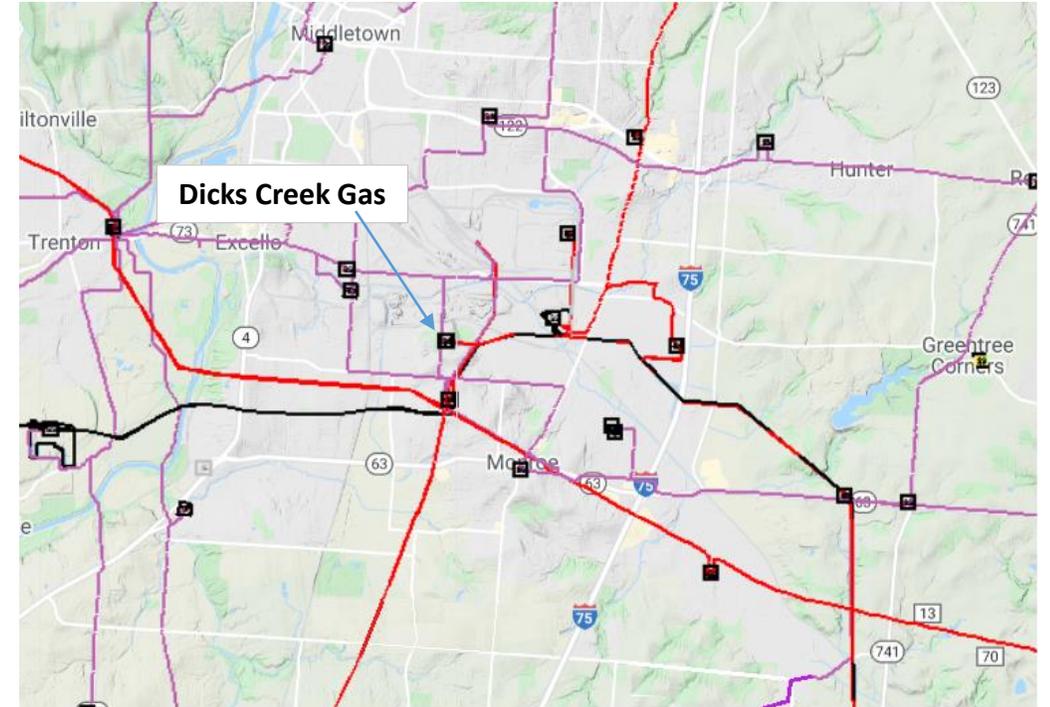
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

Duke Energy Distribution is retiring and demolishing Dicks Creek Gas substation. They have requested removal of the transmission system connection.





DEOK Transmission Zone M-3 Process Dicks Creek Gas Substation

Need Number: DEOK-2022-002

Process Stage: Local Plan Submission 04-28-2022

Previously Presented:

Solutions Meeting 02-18-2022

Needs Meeting 01-21-2022

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Selected Solution:

Retire the one wood pole between the tap and substation. Retire 2 spans of conductor. Install post insulators for jumper support at the former tap.

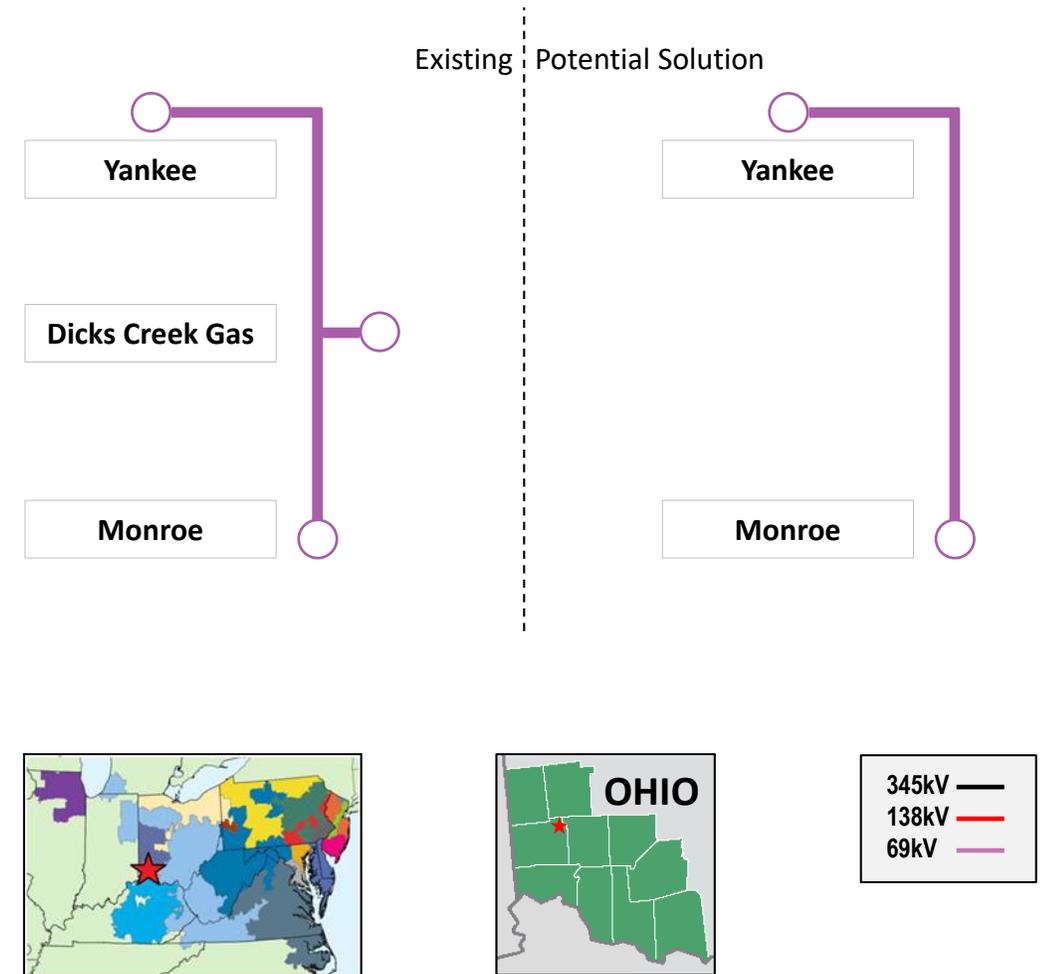
Estimated Transmission Cost: \$80,419

Projected In-Service Date: 07-06-2022

Supplemental Project ID: s2689

Project Status: Engineering

Model: 2021 RTEP



Need Number: DEOK-2022-003

Process Stage: Local Plan Submission 08-29-2022

Previously Presented:

Solutions Meeting 03-18-2022

Needs Meeting 02-18-2022

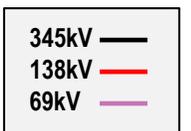
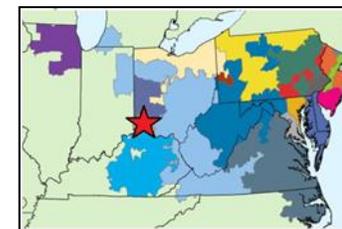
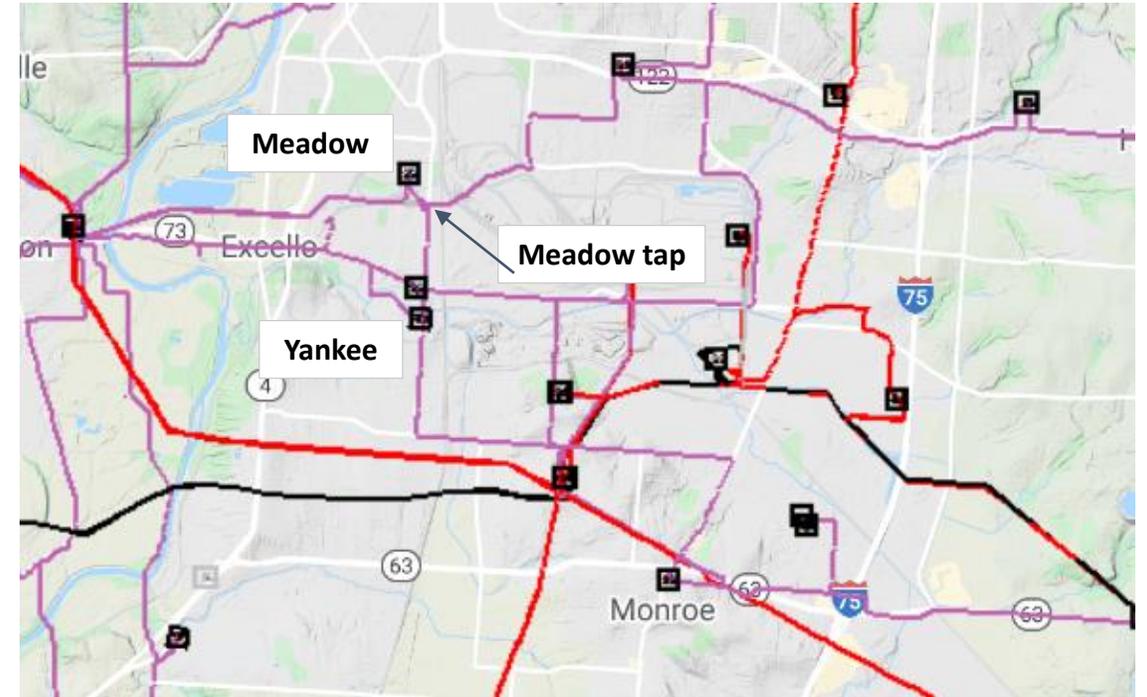
Project Driver: Equipment Condition, Performance and Risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 & 6

Problem Statement:

A section of 69 kV feeder between Meadow substation and Meadow tap is in deteriorating condition. The 14 wooden structures in this section are 56 years old, have woodpecker damage, top rot, crossarm rot, crossarms with temporary repairs and buried down guy anchors.





DEOK Transmission Zone M-3 Process Meadow – Meadow Tap

Need Number: DEOK-2022-003

Process Stage: Local Plan Submission 08-29-2022

Previously Presented:

Solutions Meeting 03-18-2022

Needs Meeting 02-18-2022

Project Driver: Equipment Condition, Performance and Risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 & 6

Selected Solution:

Replace the wooden structures with embedded steel structures.
Reconductor with 954ACSR. The summer rating will increase to 97/97 MVA SN/SE, 121/121 MVA SN/SE.

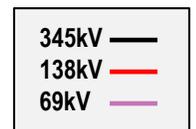
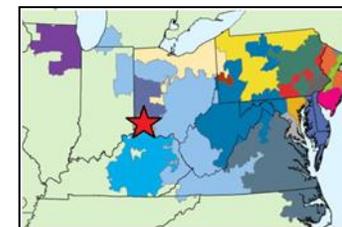
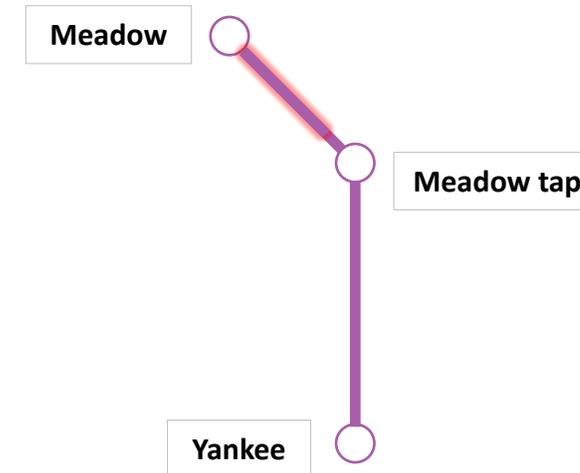
Estimated Transmission Cost: \$1,628,642

Projected In-Service Date: 11-08-2022

Supplemental Project ID: s2744

Project Status: Engineering

Model: 2021 RTEP



Need Number: DEOK-2022-004

Process Stage: Local Plan Submission 08-29-2022

Previously Presented:

Solutions Meeting 03-18-2022

Needs Meeting 02-18-2022

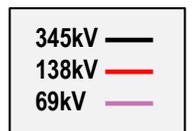
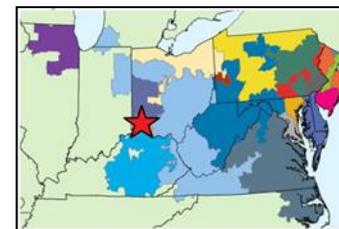
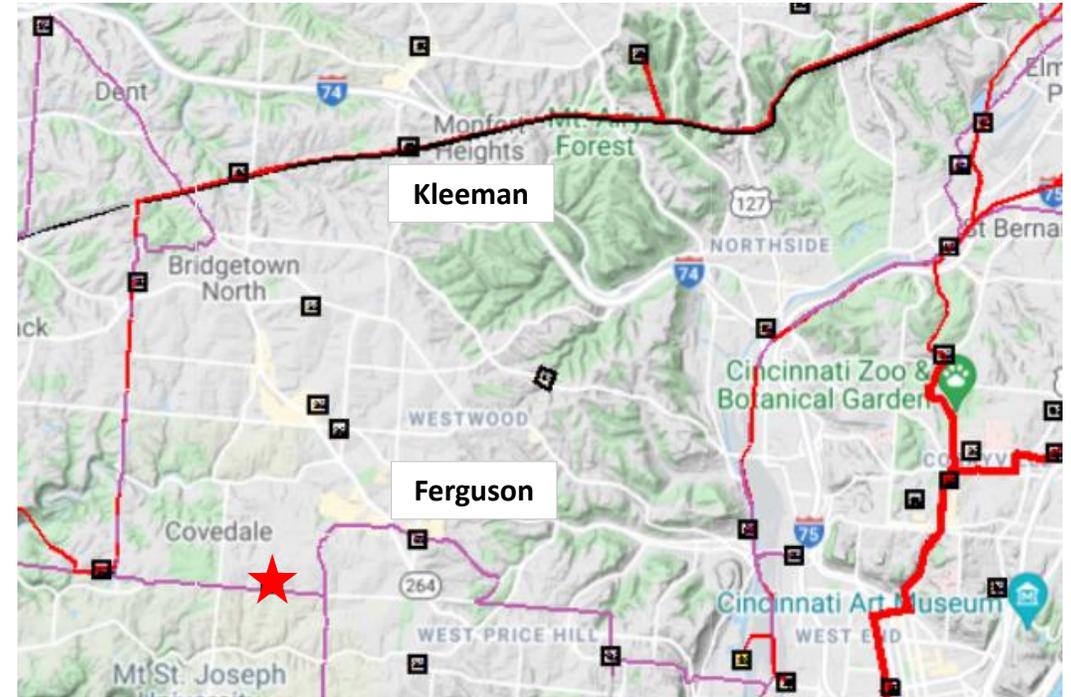
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

Duke Energy Distribution has asked for a new delivery point near Linneman Avenue in the Covedale area of Cincinnati. The distribution transformers that serve the Westwood and Covedale areas from Ferguson and Kleeman are peaking at 100% of rated capacity.





DEOK Transmission Zone M-3 Process Linneman

Need Number: DEOK-2022-004

Process Stage: Local Plan Submission 08-29-2022

Previously Presented:

Solutions Meeting 03-18-2022

Needs Meeting 02-18-2022

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Selected Solution:

Build a new substation named Linneman. Loop the nearby Ebenezer-Ferguson-Delhi 69 kV feeder through Linneman switch connecting the feeder to the bus. Install a 69 kV circuit switcher to connect a 69/13 kV 22 MVA distribution transformer. Install a control enclosure to house relaying and communications equipment.

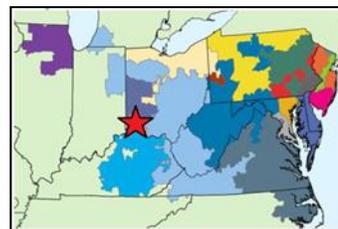
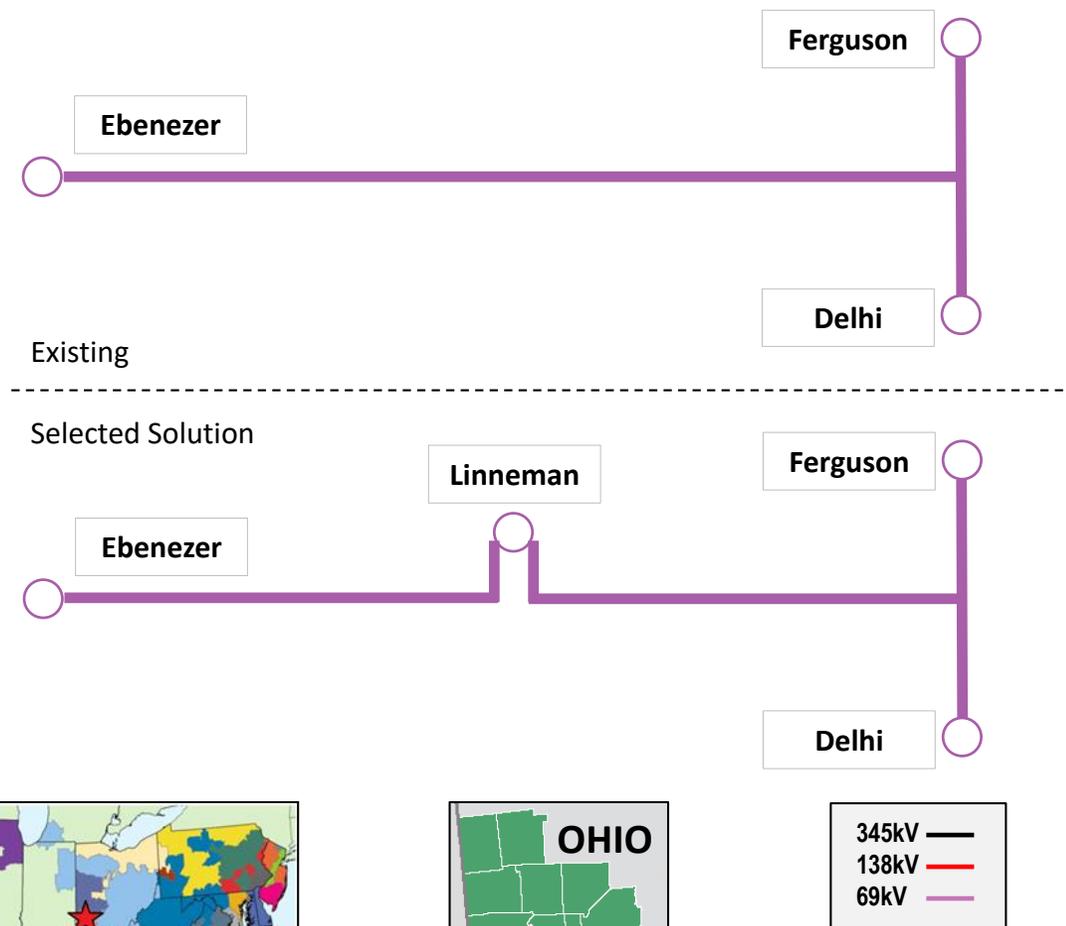
Estimated Transmission Cost: \$2,863,197

Projected In-Service Date: 11-18-2025

Supplemental Project ID: s2745

Project Status: Engineering

Model: 2021 RTEP



Need Number: DEOK-2021-012

Process Stage: Local Plan Submission 10-10-2022

Previously Presented:

Solutions Meeting 04-22-2022

Needs Meeting 11-19-2021

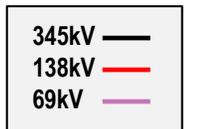
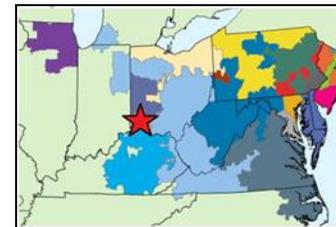
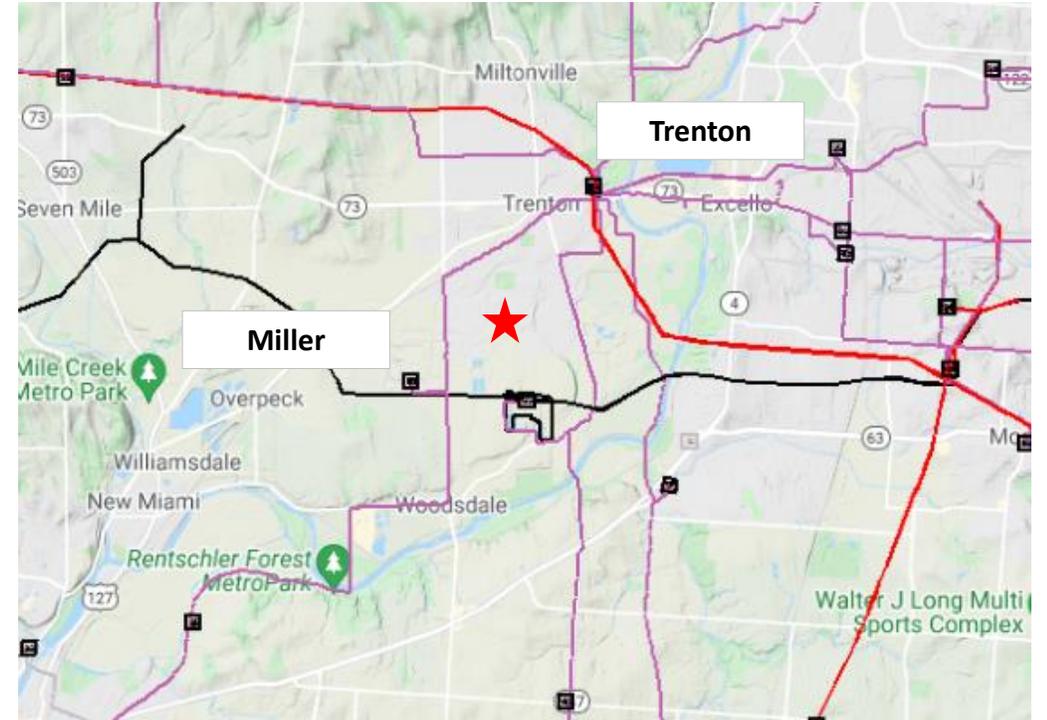
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

Duke Energy Distribution has requested a new delivery point near Kennel Road in Butler County Ohio. An existing customer is relocating to a new site for expansion. 10 MVA is required by Q1 2024 with a total 16 MVA required by Q1 2025.



Need Number: DEOK-2021-012

Process Stage: Local Plan Submission 10-10-2022

Previously Presented:

Solutions Meeting 04-22-2022

Needs Meeting 11-19-2021

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Proposed Solution:

Construct a new 69 kV ring bus substation named Kennel. Install six circuit breakers and one 69/13 kV, 22 MVA transformer. Loop the 69 kV feeders currently feeding adjacent Miller substation through Kennel. Refeed Miller from Kennel. Distribution will feed the relocating customer from this new substation.

Ancillary Benefits: Operational flexibility, Infrastructure resilience

Alternatives: none

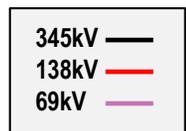
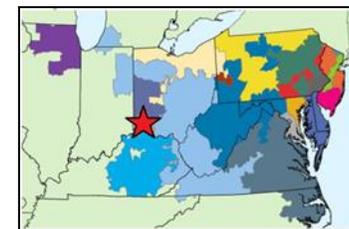
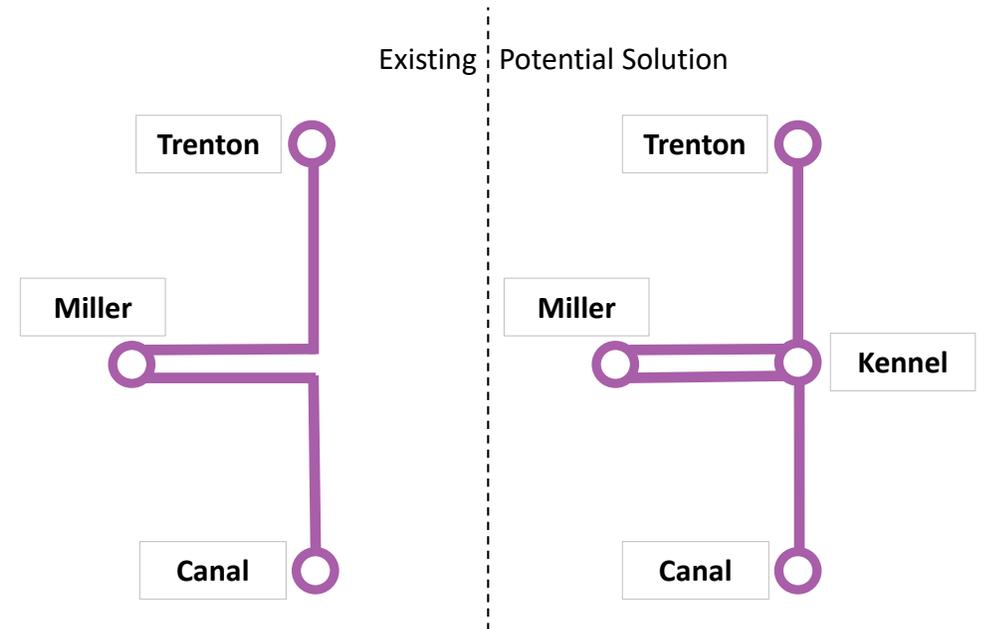
Estimated Transmission Cost: \$6,671,179

Proposed In-Service Date: 03-26-2024

Supplemental Project ID: s2769

Project Status: Engineering

Model: 2021 RTEP



Need Number: DEOK-2022-005

Process Stage: Local Plan Submission 10-13-2022

Previously Presented:

Solutions Meeting 07-22-2022

Needs Meeting 04-22-2022

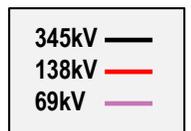
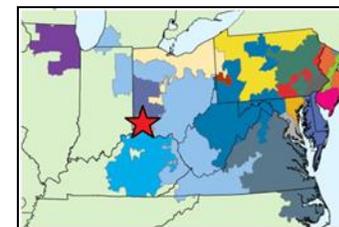
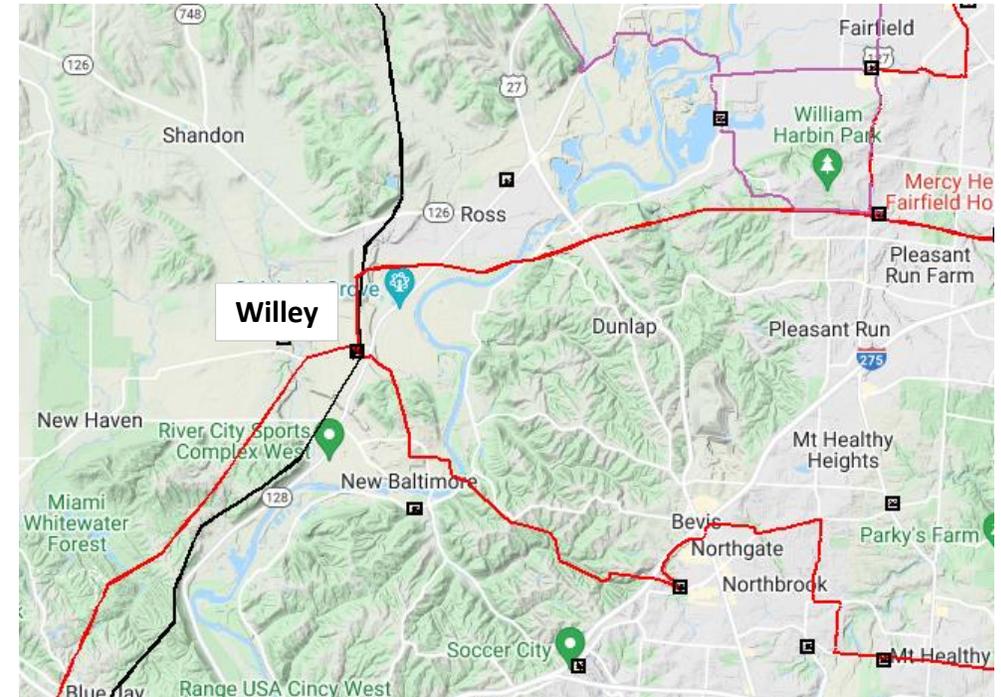
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Problem Statement:

Duke Energy Distribution has asked for a second delivery point at Willey substation. The single 138/34 kV, 56 MVA distribution transformer at Willey is peaking at 100% of rated capacity.



Need Number: DEOK-2022-005

Process Stage: Local Plan Submission 10-13-2022

Previously Presented:

Solutions Meeting 07-22-2022

Needs Meeting 04-22-2022

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

Potential Solution:

Install a new, second 138/34 kV, 60MVA transformer to feed a new, second 34 kV bus. Install a new 138 kV circuit breaker to connect the new transformer. Move two of the four existing 34 kV feeders to the new 34 kV bus to distribute load between transformers.

Alternatives: none

Estimated Transmission Cost: \$0

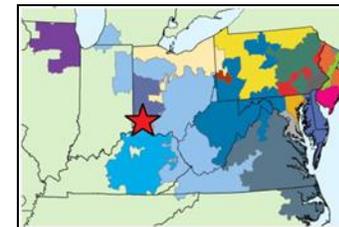
Proposed In-Service Date: 08-10-2023

Supplemental Project ID: s2800

Project Status: Engineering

Model: 2021 RTEP

**Bubble Diagram Not Applicable
Station Modifications Only**



Revision History

1/22/2022 – V1 – Added Slides #2-3, S2659

2/15/2022 – V2 – Added Slides #4-7, S2661 and S2662

3/3/2022 – V3 – Added Slides #8-9, S2666

4/22/2022 – V4 – Added Slides #10-11, S2681

4/29/2022 – V5 – Added Slides #12-13, S2689

8/29/2022 – V6 – Added Slides #14-13, S2744 and S2745

10/11/2022 – V7 – Added Slides #18-19, S2769

10/13/2022 – V8 – Added Slides #20-21, S2800