

Submission of Supplemental Projects for Inclusion in the Local Plan

DEOK Local Plan - 2025

Need Number: DEOK-2023-001

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 09/20/2024

Needs Meeting 01/20/2023

Project Driver: Equipment condition, performance and risk

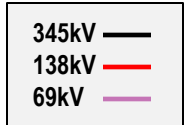
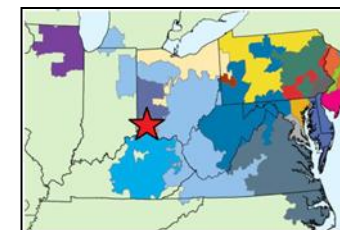
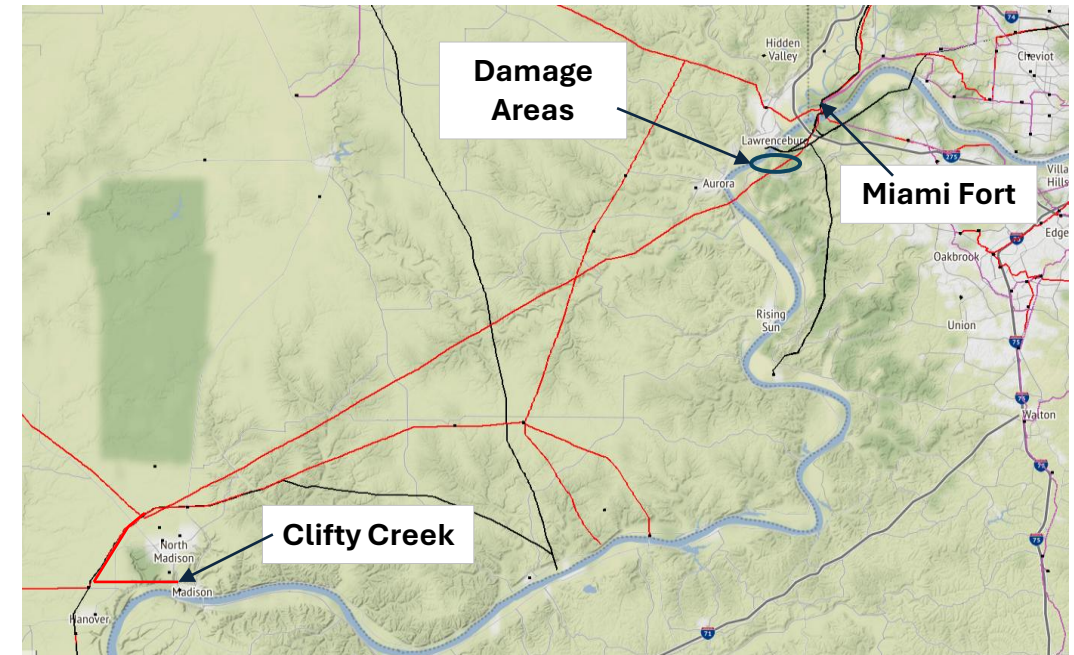
Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 6-7

Problem Statement:

The 138 kV feeder from Miami Fort (Duke Energy) – Clifty Creek (OVEC) is

93 years old, 47 miles long, and constructed of single circuit lattice towers with 336 ACSR conductor. Near Petersburg, Kentucky a 2000 ft section of static failed dropping onto the B phase conductor. The breaker at Clifty Creek opened due to the fault. The protection at Miami Fort failed to operate which caused B phase to see 900 Amps. The line is rated at 542 Amps. After fifteen minutes, nine miles west of the initial static failure, a B phase conductor failed falling to the ground. Flexing of the towers snapped two statics. 3700 ft of line is damaged at this location. An analysis of the failed conductor was performed. Visual inspection found extensive corrosion and pitting on the outer conductor. Rust was noted to various degrees on the steel core. Tensile testing on the core showed breaking strength approximately 26% lower than the ASTM requirement. Zinc coating was found to have an area density 15% lower than the required minimum. We believe these test results to be indicative of the condition of the remaining line.



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Previously Presented:

Solutions Meeting 09/20/2024

Needs Meeting 01/20/2023

Project Driver: Equipment condition, performance and risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 6-7

Solution:

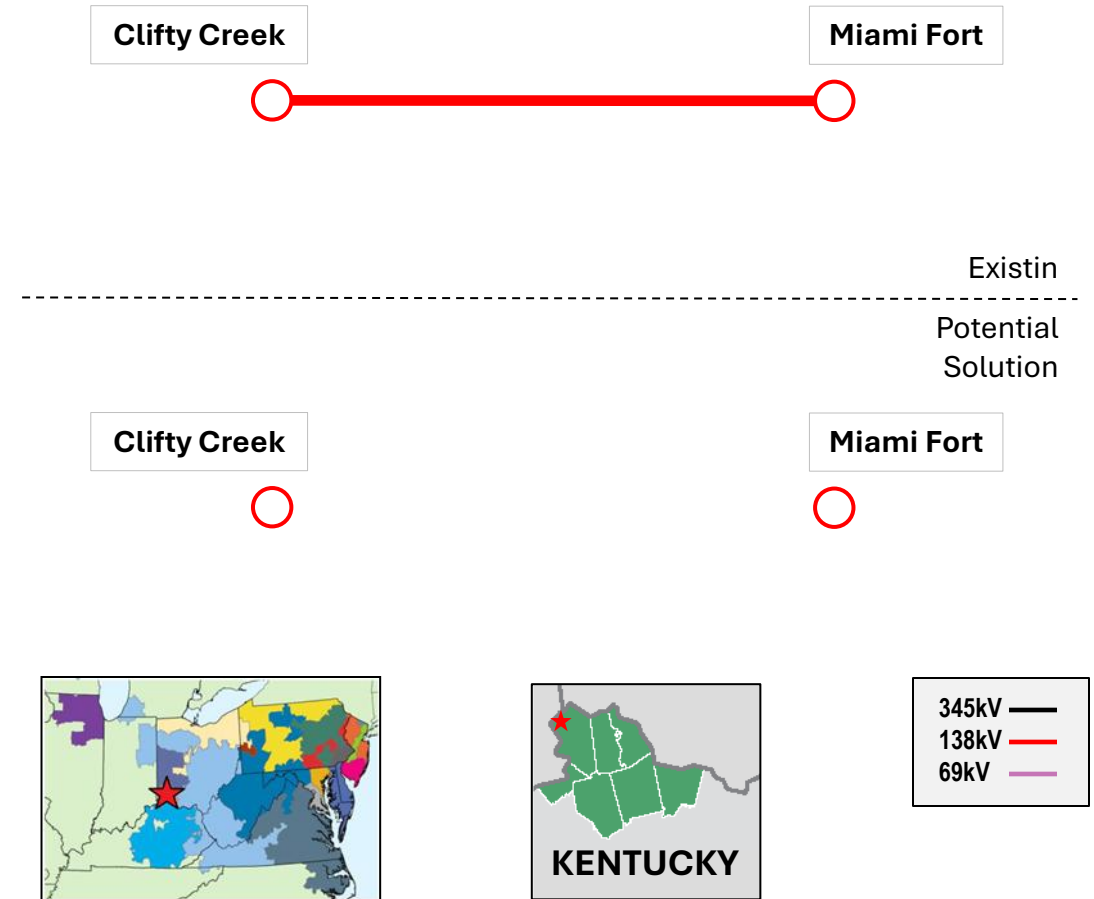
Retire the line.

Estimated Transmission Cost: \$39.0 MM

Proposed In-Service Date: 12/31/2026

Supplemental Project ID: s3598.1

Project Status: Engineering



Need Number: DEOK-2024-003

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 03/14/2025

Solutions Meeting 02/14/2025

Needs Meeting 02/16/2024

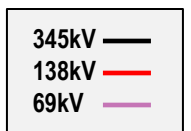
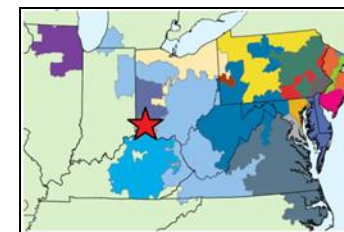
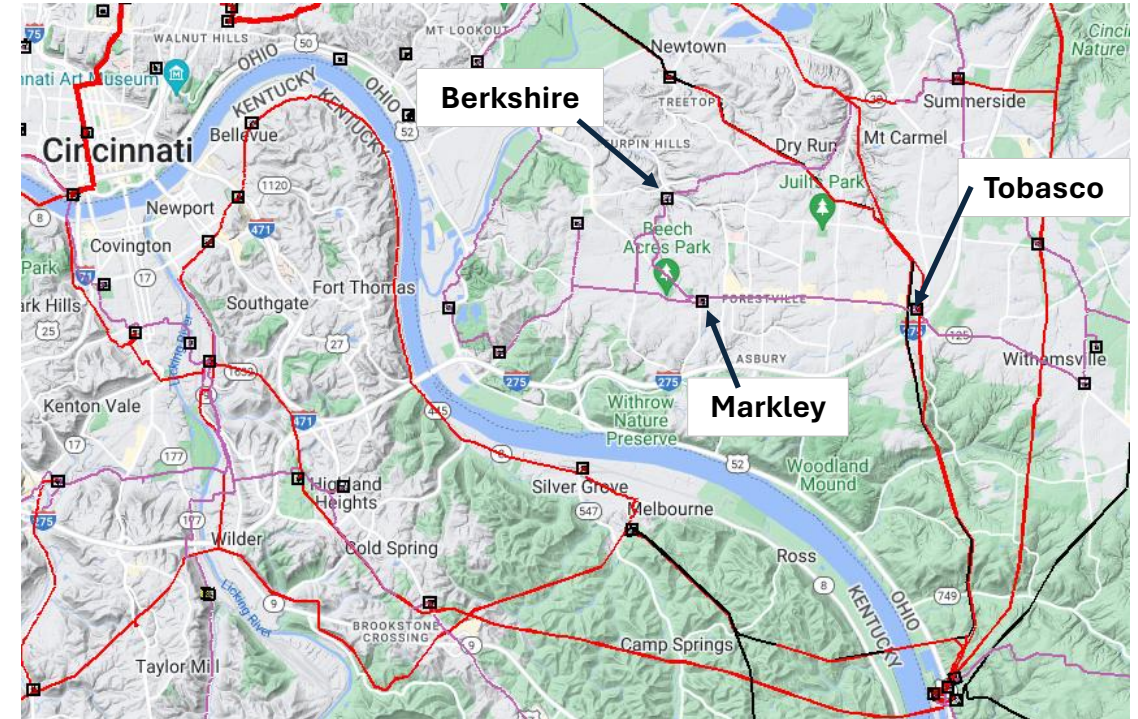
Project Driver: Infrastructure resilience, Equipment condition, performance and risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 7-8, 10

Problem Statement:

Markley substation has three 69/13 kV distribution transformers that feed two circuits each. The substation is a straight bus configuration with a switch connected feeder at each end. Restoration time is slower due to not having an automatic throw-over scheme and the lack of bus section isolation. SW 684 at one end is more than twenty years old. The manufacture date is unknown, but the last version of this switch was produced in 2004. It has worn contacts and linkages. Spare parts are difficult to find. 69 kV circuit breakers CB677 and CB684 connect the bus to the high side of transformers TB1 and TB2. The breakers are 45 and 44 years old, oil filled and in declining condition. The mechanisms, linkages, & interrupters of these breakers are worn to the point where proper measurements are difficult to maintain. This can lead to mis-operations jeopardizing reliability. Spare parts for these older oil breakers are becoming difficult to find and are no longer available from the vendor. TB1 is 57 years old and has an arcing in oil tap changer. The tap changer has been problematic requiring several extensive services and expensive repairs. Switchgear 1 is also 57 years old and in declining condition, showing rust on the top and sides. Holes are forming allowing moisture to penetrate the enclosure.



Need Number: DEOK-2024-003

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 03/14/2025

Solutions Meeting 02/14/2025

Needs Meeting 02/16/2024

Project Driver: Infrastructure resilience, Equipment condition, performance and risk

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slides 7-8, 10

Solution:

Replace the two end-bus switches with 69 kV, 2000A, motorized switches. Install an automatic throw-over scheme. Replace an existing switch and add a second switch to the bus with 69 kV, 2000A, manually operated switches so that each of the three bus sections and transformers can be isolated. Replace circuit breakers CB677 and CB684 with circuit switchers. Replace TB1 and Switchgear 1.

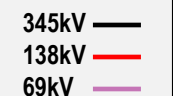
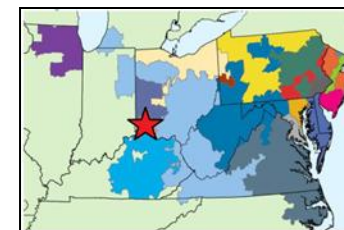
Estimated Transmission Cost: \$1,080,019

Proposed In-Service Date: 12/11/2026

Supplemental Project ID: s3599.1

Project Status: Engineering

**Bubble Diagram Not Applicable
Station Modifications Only**



Need Number: DEOK-2024-004

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 02/14/2025

Needs Meeting 03/15/2024

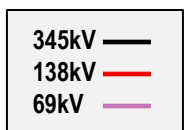
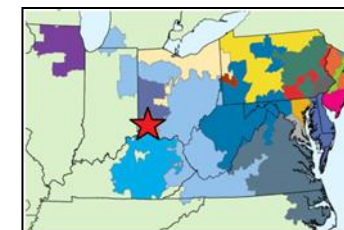
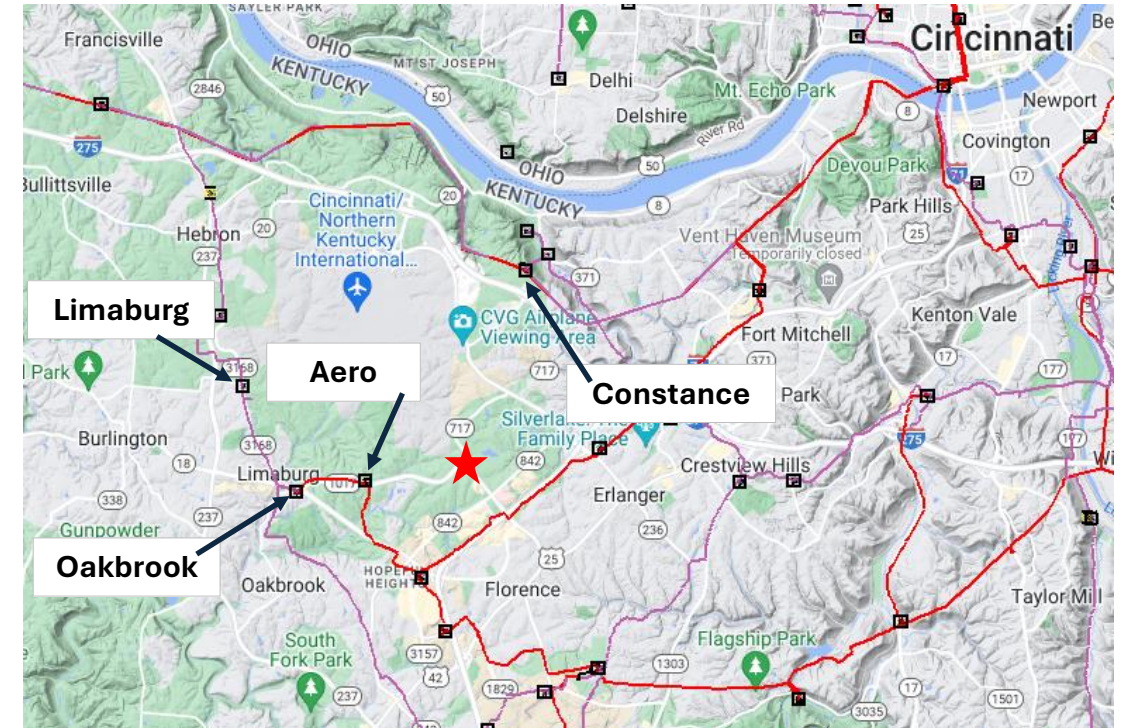
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Problem Statement:

Duke Energy Distribution has asked for a new delivery point near Turfway Road in the Florence, Kentucky area. The distribution system in this area is heavily loaded with a large commercial and industrial customer presence. Feeders at nearby substations Limaburg, Oakbrook, Aero and Constance are expected to see a 30% load increase by 2025 and some will exceed their capacity by 2028.



Need Number: DEOK-2024-004

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 02/14/2025

Needs Meeting 03/15/2024

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Solution:

Build a new substation, Turfway, with a switch connected straight bus configuration, two circuit-switcher connected 138/34 kV, 22.5 MVA transformers with two distribution exits each.

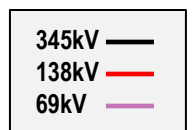
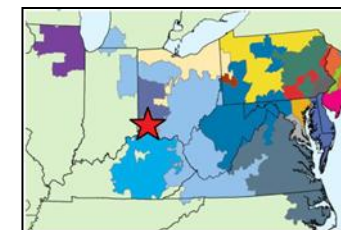
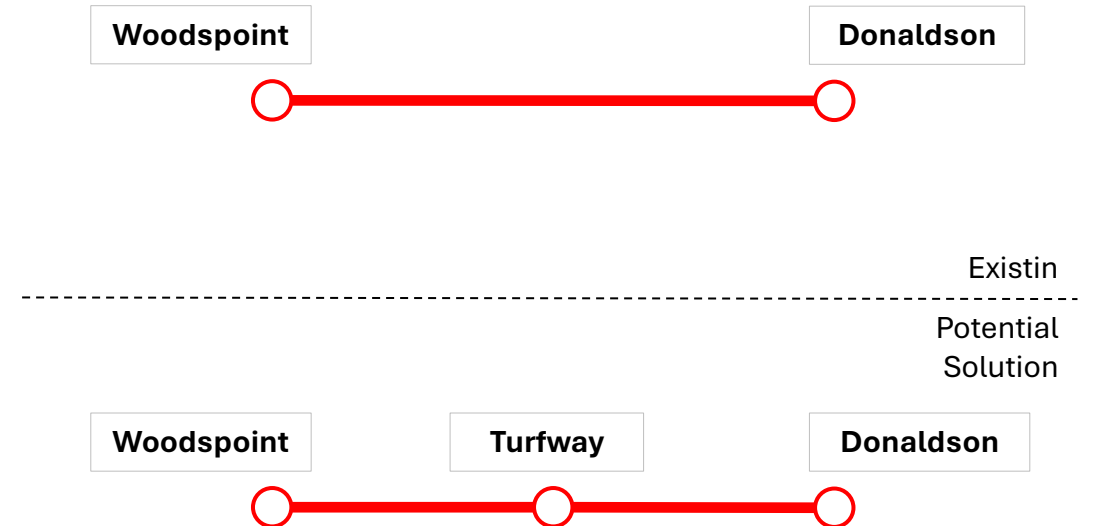
Intercept the Donaldson-Woodspoint 138 kV circuit looping it through Turfway. The total length of new feeder and right-of way is approximately two miles.

Estimated Transmission Cost: \$13M

Proposed In-Service Date: 07/25/2029

Supplemental Project ID: s3600.1

Project Status: Scoping



Need Number: DEOK-2024-006

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 09/13/2024

Needs Meeting 06/04/2024

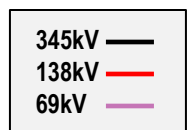
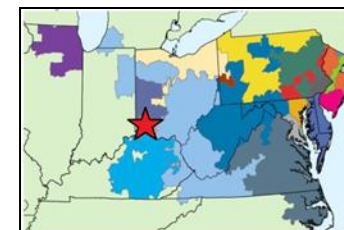
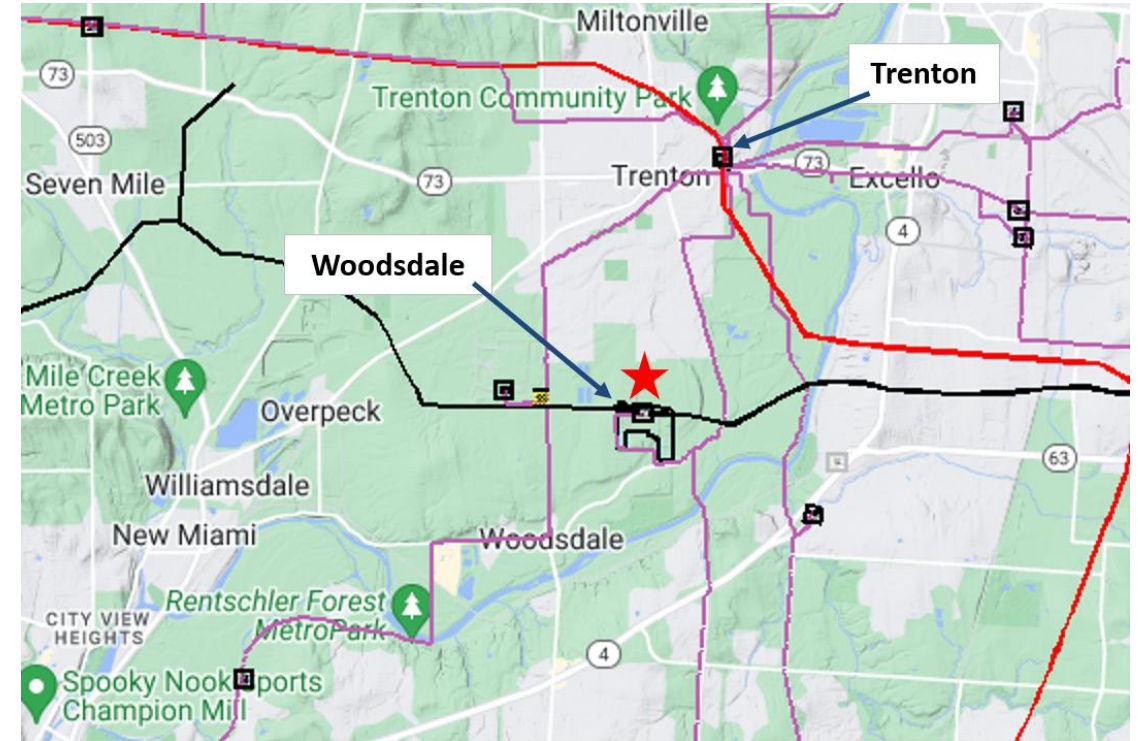
Project Drivers: Customer Service

Specific Assumption References:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Problem Statement:

A new customer has requested transmission service near Trenton in Butler County, OH. The initial load is expected to be 15 MW in 2025, ramping to 500 MW in 2028.



Need Number: DEOK-2024-006

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 09/13/2024

Needs Meeting 06/04/2024

Project Drivers: Customer Service

Specific Assumption References:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Solution:

Supply the customer facility with two feeds from the directly adjacent Woodsdale 345 kV substation by expanding and modifying the Woodsdale ring-bus into a breaker-and-a-half configuration. Seven new 345kV circuit breakers with associated equipment will be required.

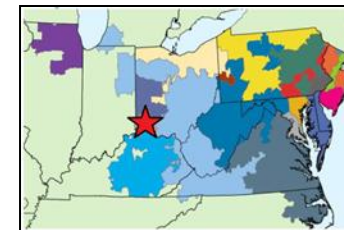
Estimated Transmission Cost: \$36.2M

Proposed In-Service Date: 03/01/2026

Supplemental Project ID: s3601.1

Project Status: Scoping

**Bubble Diagram Not Applicable
Station Modifications Only**



345kV —
138kV —
69kV —

Need Number: DEOK-2024-007

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 04/11/2025

Needs Meeting 09/20/2024

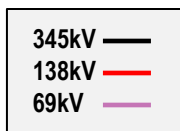
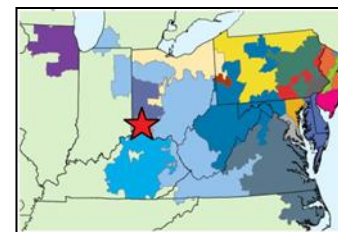
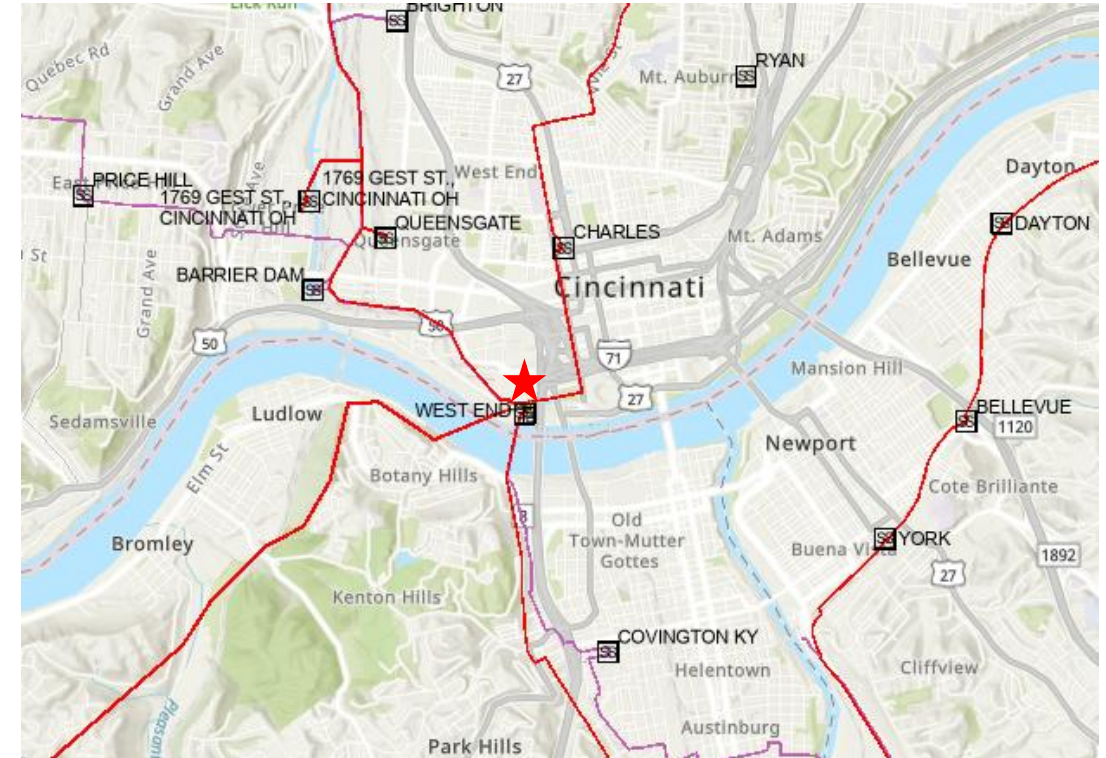
Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Problem Statement:

Duke Energy Distribution has requested a new delivery point near Mehring Way in Cincinnati. The adjacent West End distribution substation supplies the downtown Cincinnati network and is being rebuilt. Radial feeders will be moved to buses in this new location to isolate them from the network feeders, increasing the reliability and voltage/VAR management of the downtown Cincinnati network.



Need Number: DEOK-2024-007

Process Stage: Local Plan Submission 09/09/2025

Previously Presented:

Solutions Meeting 04/11/2025

Needs Meeting 09/20/2024

Project Driver: Customer Service

Specific Assumption Reference:

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 6

Solution:

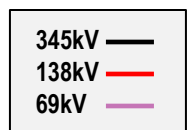
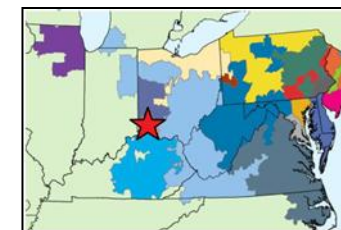
Build a new 138 kV, 6-breaker ring bus substation named Front Street. Connect Front Street to West End with two feeders landing in non-adjacent positions, acting as a loop. In the remaining four positions install 138/13 kV, 33 MVA transformers to support four independent distribution bus sections each connecting three feeders and two switched 3.6 MVAR capacitors. At West End, install four 138 kV circuit breakers to create positions for the two feeders to Front. The feeders are each approximately 350 feet long, will be constructed of 954 ACSS conductor, and have capacities of 301/301 MVA summer, 378/378 MVA winter.

Estimated Transmission Cost: \$41,915,473

Proposed In-Service Date: 01/22/2030

Supplemental Project ID: s3703

Project Status: Engineering



Revision History

09/02/25 – V1 – Added s3598.1, s3599.1, s3600.1, s3601.1

09/09/25 – V2 – Added s3703