# Sub Regional RTEP Committee: Western
# DEOK Supplemental Projects

July 21, 2023

# Solutions

Stakeholders must submit any comments within 10 days of this meeting in order to provide time necessary to consider these comments prior to the next phase of the M-3 process

# DEOK Transmission Zone M-3 Process
# Brewer

**Need Number:** DEOK-2021-009

**Process Stage:** Solutions Meeting 07-21-2023

**Process Stage:** Needs Meeting 07-16-2021

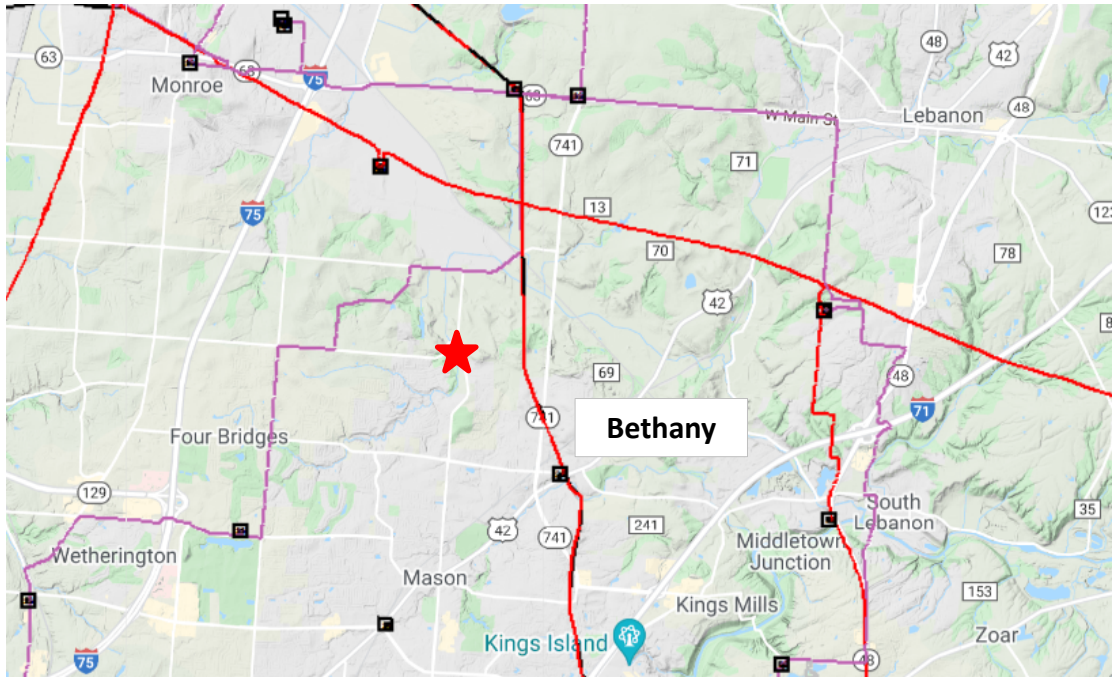
**Project Driver:** Customer service

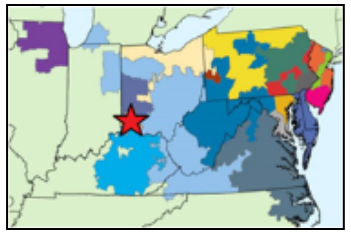
**Specific Assumption Reference:**

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

**Problem Statement:**

Duke Energy Distribution has requested a new delivery point on Brewer Road in Mason, Ohio. The city is developing a 400-acre research and development park. The expected 2 MW per year of load growth will exceed the capacity of local distribution facilities at Bethany by 2025.




345kV
138kV
69kV

# DEOK Transmission Zone M-3 Process
# Brewer

**Need Number:** DEOK-2021-009

**Process Stage:** Solutions Meeting 04-21-2023

**Process Stage:** Needs Meeting 07-16-2021

**Project Driver:** Customer service

**Specific Assumption Reference:**

Duke Energy Ohio & Kentucky Local Planning Assumptions slide 9

**Potential Solution:**

Build Brewer, a new distribution substation. Brewer will have a straight bus configuration with positions for two distribution transformers. Install one 69/13 kV, 22 MVA transformer with a circuit swithcher on the high side. The low side will be connected to 13 kV bus work with two feeder exits. Loop the Shaker Run – Liberty feeder into/out of the substation, switch connected with an automation throw over scheme (ATO).

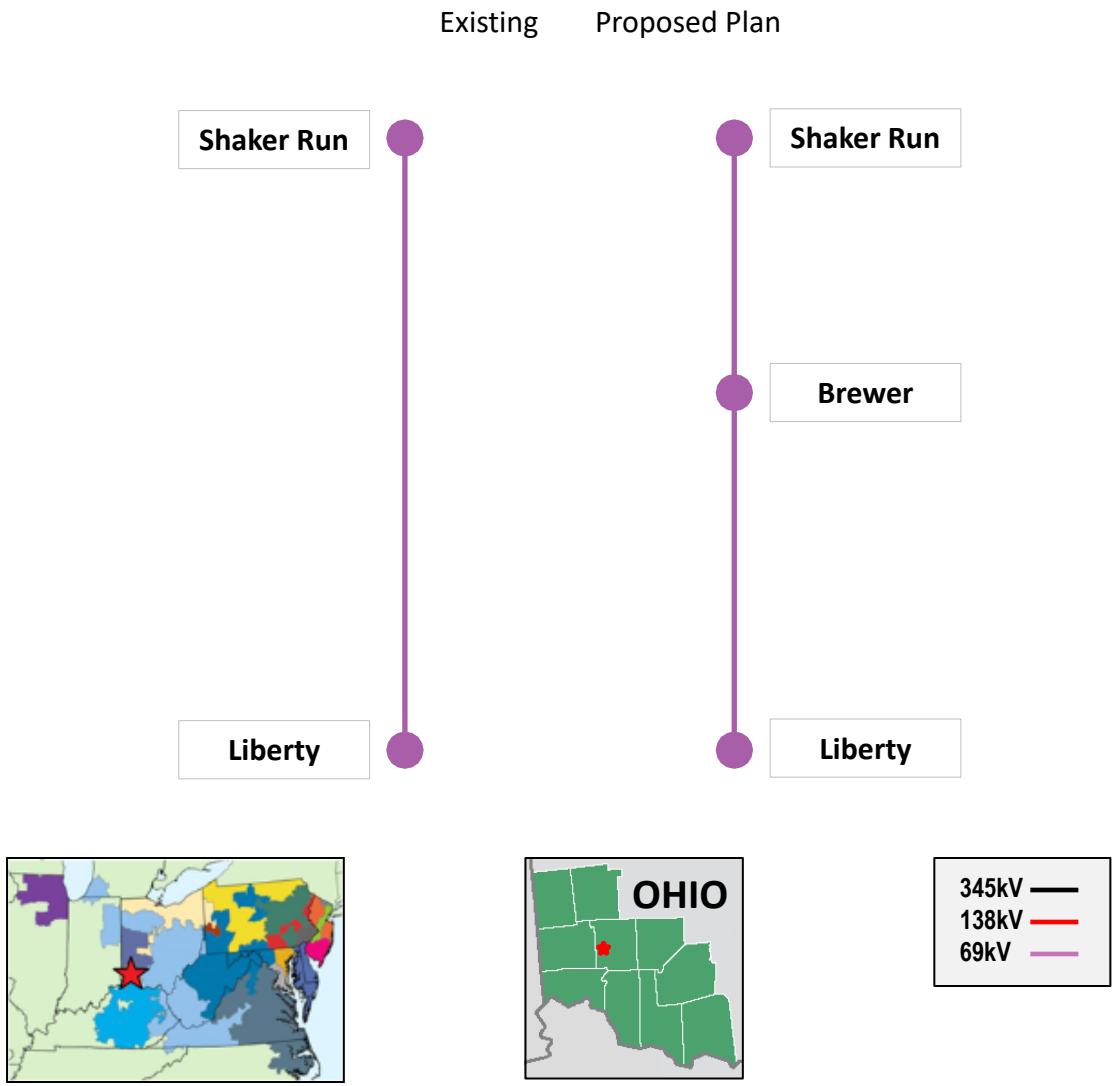
**Ancillary Benefits:** The new substation is close to the load center. The ATO will increase reliability with the ability to switch between feeders in the event of a loss of either feeder. The Shaker Run – Liberty feeder is lightly loaded so has capacity to accommodate future load growth.

**Estimated Transmission Cost:** $2.4MM

**Proposed In-Service Date:** 12-18-2025

**Project Status:** Engineering

**Model:** 2022 RTEP



# DEOK Transmission Zone M-3 Process
# Wilder

**Need Number:** DEOK-2022-007

**Process Stage:** Solutions Meeting 07-21-2023

**Previously Presented:** Needs Meeting 07-22-2022

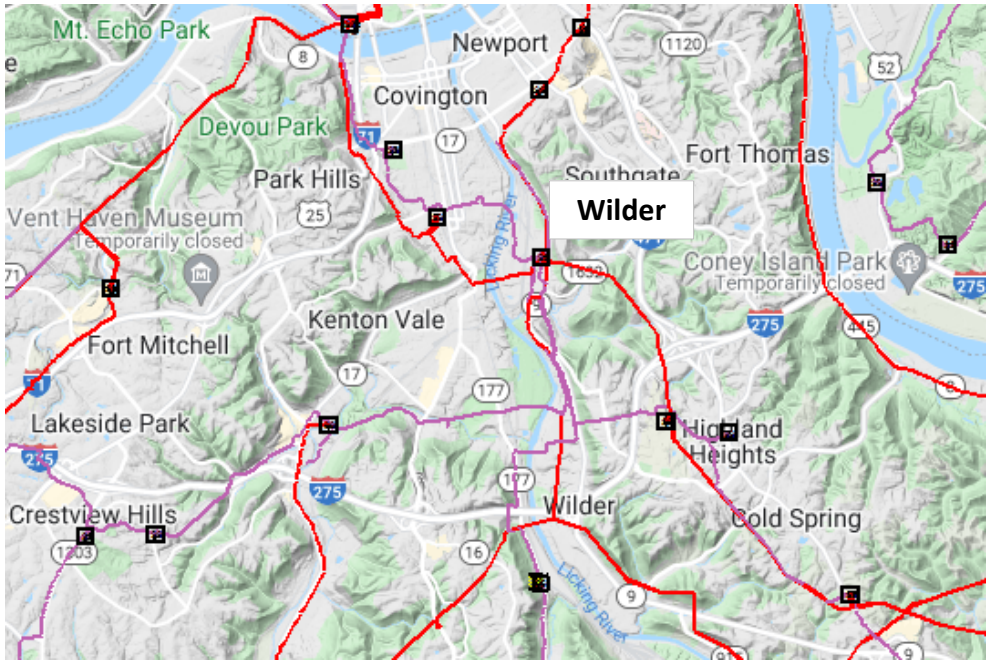
**Project Driver:** Equipment Condition, Performance and Risk

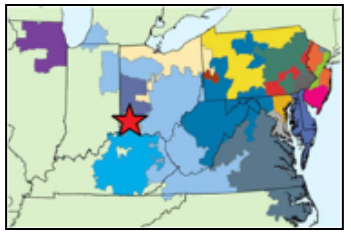
**Specific Assumption Reference:**

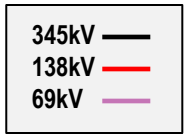
Duke Energy Ohio & Kentucky Local Planning Assumptions slides 5 & 6

**Problem Statement:**

138/69/34 kV Transformer 2 at Wilder is in deteriorating condition. It's 66 years old, is overheating during summer months during normal operating conditions, and shows elevated Ethane and Ethylene levels. The coolers have continuing issues and require more frequent maintenance. Spare parts availability for the cooling pump and fans is limited.



# DEOK Transmission Zone M-3 Process
# Wilder

**Need Number:** DEOK-2022-007

**Process Stage:** Solutions Meeting 07-21-2023

**Previously Presented:** Needs Meeting 07-22-2022

**Project Driver:** Equipment Condition, Performance and Risk

**Specific Assumption Reference:**

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

**Potential Solution:**

Remove 138/69/34 kV Transformer 2. Install a 138/69 kV, 150 MVA transformer to feed the 69 kV bus and a 138/34 kV, 33 MVA transformer to feed the 34 kV bus. Install a circuit switcher for the new high side connection to the 138/34 kV transformer. Expand the substation and relocate transmission lines and structures to accommodate the new equipment.

**Ancillary Benefits:** The 138/69 kV transformer can deliver an additional 50 MVA to the 69 kV system. The 138/34 kV transformer isolates the transmission system from faults on the distribution system.

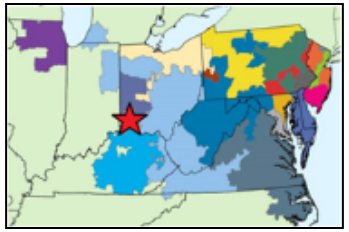
**Estimated Transmission Cost:** $10,991,229

**Proposed In-Service Date:** 05-08-2026

**Project Status:** Scoping

**Model:** 2022 RTEP

**Bubble Diagram Not Applicable**
**Station Modifications Only**



# DEOK Transmission Zone M-3 Process
# Decoursey

**Need Number:** DEOK-2023-004

**Process Stage:** Solutions Meeting 07/21/2023

**Previously Presented:** Needs Meeting 04/21/2023

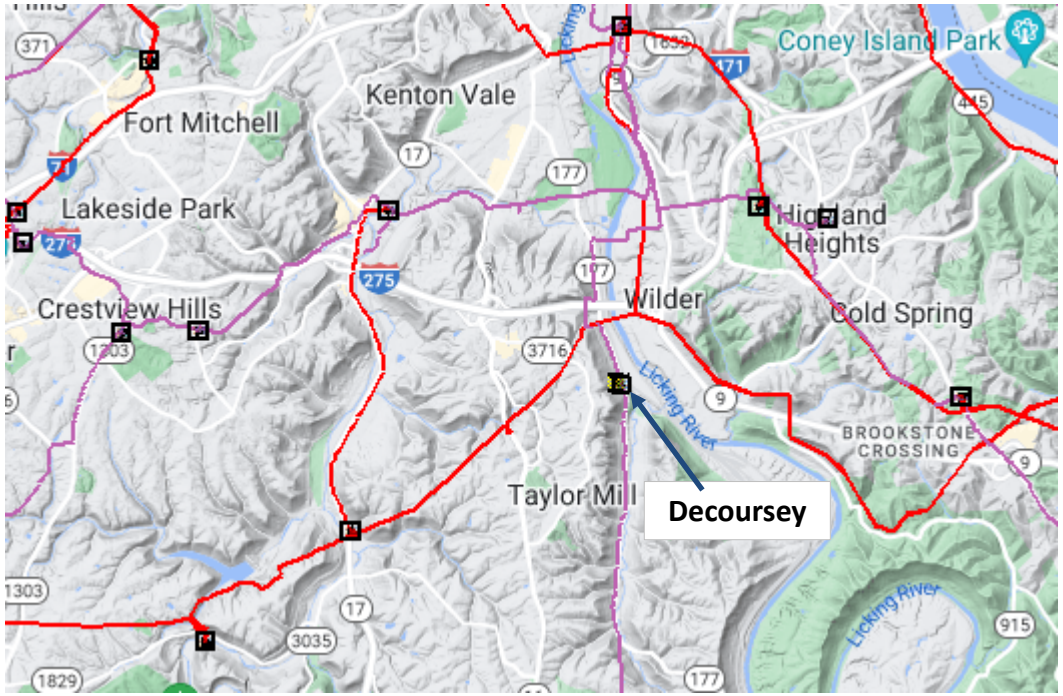
**Project Driver:** Equipment condition, performance and risk

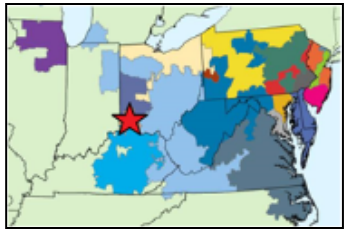
**Specific Assumption Reference:**

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

**Problem Statement:**

Decoursey substation was originally constructed in the 1940's as a 33-4 kV substation. The electrical equipment was converted to 69-13 kV in 1970, but the structural supports were never modified to accommodate the higher voltages. Pole-mounted switches are utilized outside the station fence and a series of hydraulic and electronic reclosers currently provide circuit protection. There is no SCADA; outage notification is only provided by customer call. The single 69/13 kV, 10 MVA transformer that serves 2069 customers is routinely operated at or exceeding its rated capacity. There is no station breaker and not enough space to install one on the existing steel which is rusted. The station layout does not meet minimum approach distance standards. This land-locked station is on a hillside and has no room for expansion.




345kV
138kV
69kV

# DEOK Transmission Zone M-3 Process
# Decoursey

**Need Number:** DEOK-2023-004

**Process Stage:** Solutions Meeting 07/21/2023

**Previously Presented:** Needs Meeting 04/21/2023

**Project Driver:** Equipment condition, performance and risk

**Specific Assumption Reference:**

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

**Potential Solution:**

Retire Decoursey substation. Build Taylor Mill, a new substation on adjacent land. Install two H-frame take-off structures with motor operated line disconnect switches to loop through the 69 kV feeder, voltage sensors for an automatic throw over scheme (ATO), and 69 kV bus separated with a tie switch in the center. Install a circuit switcher to connect a new 69/13 kV, 22 MVA distribution transformer, and 13 kV bus, circuit breakers and regulators for two feeder exits.

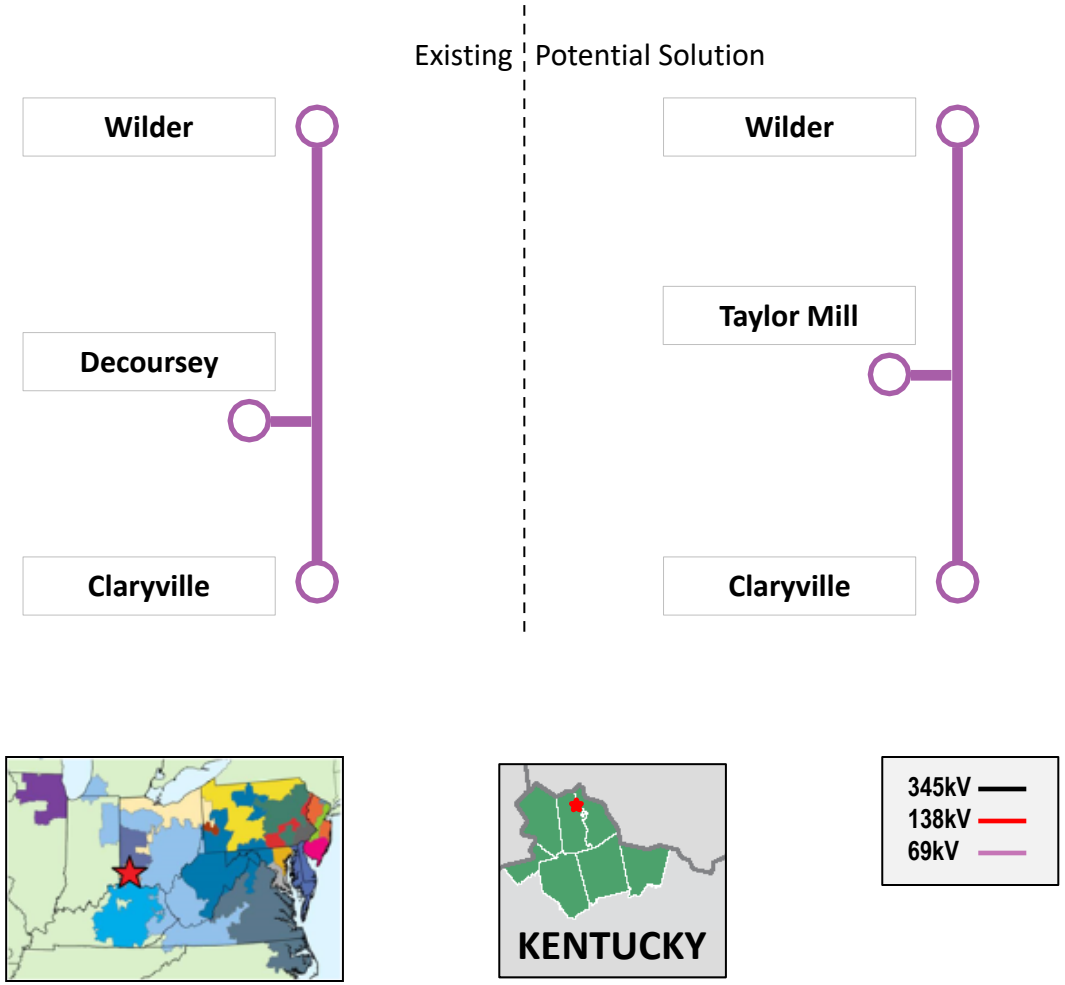
**Ancillary Benefits:** The ATO will isolate faults for faster service restoration. The circuit switcher will protect the 69 kV feeder from faults on the 13 kV system. The 69 kV tie switch creates a position for a second transformer.

**Estimated Transmission Cost:** $2,989,794

**Proposed In-Service Date:** 11-22-2024

**Project Status:** Scoping

**Model:** 2022 RTEP



# Appendix

# High Level M-3 Meeting Schedule

Assumptions

| Activity | Timing |
|---|---|
| Posting of TO Assumptions Meeting information | 20 days before Assumptions Meeting |
| Stakeholder comments | 10 days after Assumptions Meeting |

Needs

| Activity | Timing |
|---|---|
| TOs and Stakeholders Post Needs Meeting slides | 10 days before Needs Meeting |
| Stakeholder comments | 10 days after Needs Meeting |

Solutions

| Activity | Timing |
|---|---|
| TOs and Stakeholders Post Solutions Meeting slides | 10 days before Solutions Meeting |
| Stakeholder comments | 10 days after Solutions Meeting |

Submission of Supplemental Projects & Local Plan

| Activity | Timing |
|---|---|
| Do No Harm (DNH) analysis for selected solution | Prior to posting selected solution |
| Post selected solution(s) | Following completion of DNH analysis |
| Stakeholder comments | 10 days prior to Local Plan Submission for integration into RTEP |
| Local Plan submitted to PJM for integration into RTEP | Following review and consideration of comments received after posting of selected solutions |

# Revision History

7/11/2023 – V1 – Original version posted to pjm.com