



# SRRTEP Committee: Western DEOK Supplemental Projects

January 17, 2020



# 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

**Need Number:** DEOK-2019-023

**Process Stage:** Solutions Meeting 01-17-2020

**Previously Presented:** Needs Meeting 11-22-2019

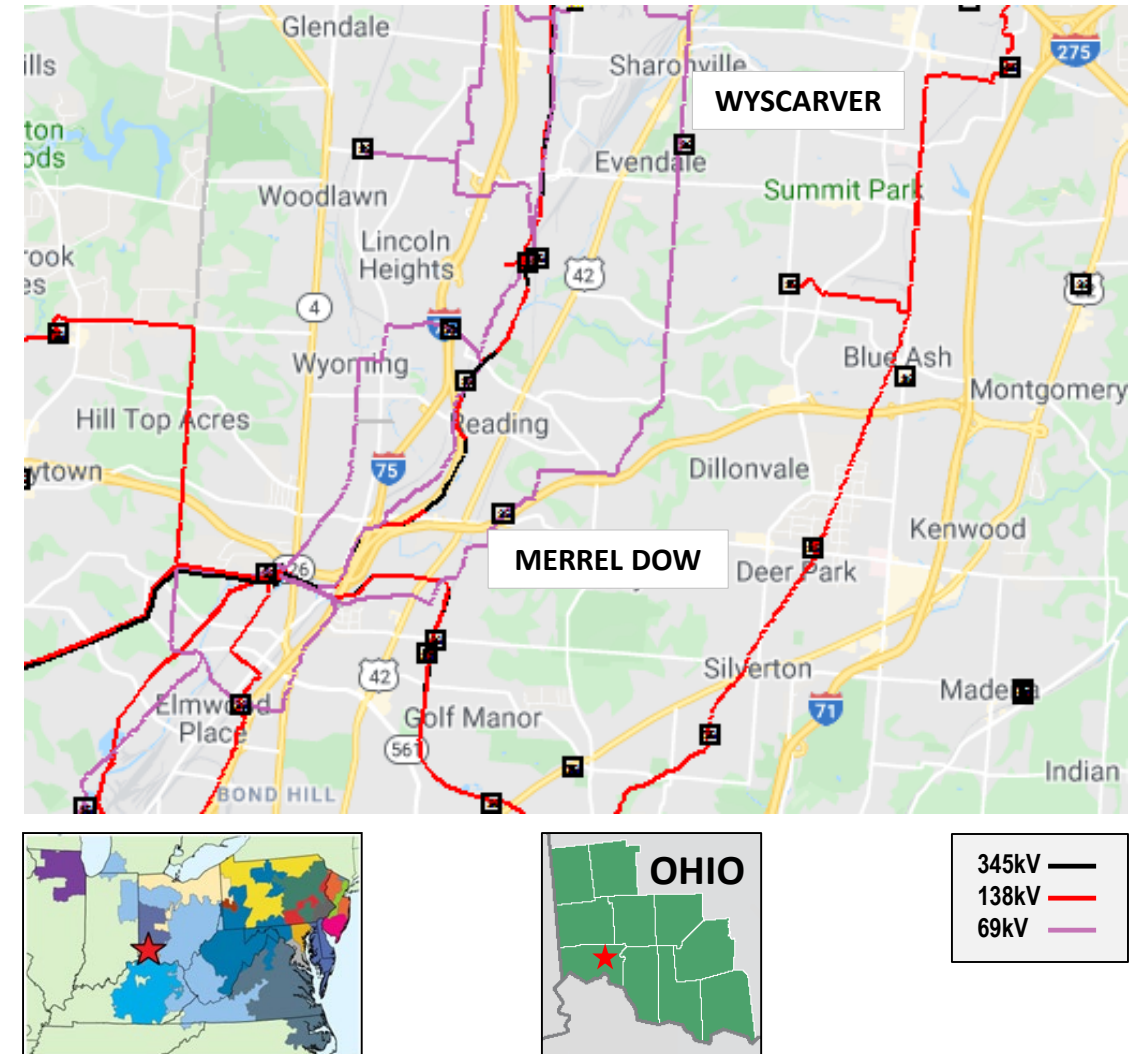
**Project Driver:** Equipment Condition, Performance and Risk

**Specific Assumption Reference:**

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

**Problem Statement:**

The 69kV feeder from Wyscarver to Marion Merrell Dow is in deteriorating condition. Constructed in 1940 with wooden mono poles and cross arms, and 300 and 400 kcmil copper conductor, 18% of the 101 structures were rejected and 12 open conditions were reported during a recent inspection. The line has had one momentary and eight sustained outages in the last five years with 5,042 customers experiencing an average outage time of 574 minutes.





# DEOK Transmission Zone M-3 Process Wyscarver – Merrell Dow

**Need Number:** DEOK-2019-023

**Process Stage:** Solutions Meeting 01-17-2020

**Potential Solution:**

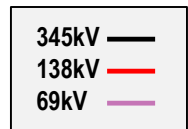
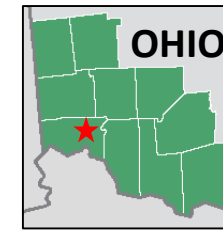
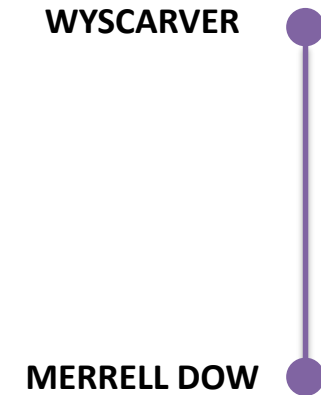
Rebuild 4.2 miles of feeder between Wyscarver and Marion Merrell Dow with 101 new steel poles, hardware and conductor. The capacity of the line will increase from 73MVA to 100MVA (substation switch limited).

**Estimated Cost:** \$7.15M

**Projected In-service Date:** 06-01-2022

**Project Status:** Scoping

**Model:** 2019 RTEP Summer





# DEOK Transmission Zone M-3 Process

**Need Number:** DEOK-2019-025

**Process Stage:** Solutions Meeting 01-17-2020

**Previously Presented:** Needs Meeting 11-22-2019

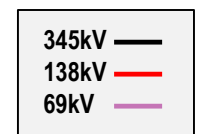
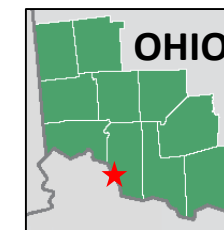
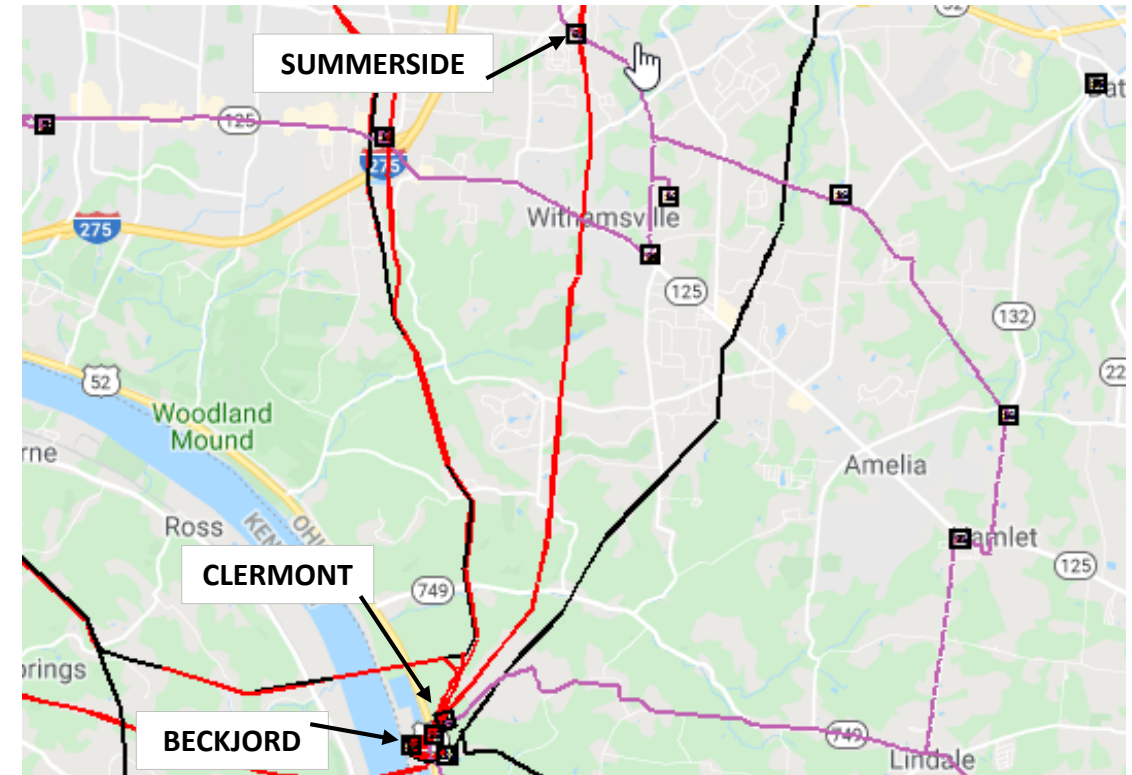
**Project Driver:** Equipment Condition, Performance and Risk

**Specific Assumption Reference:**

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

**Problem Statement:**

Clermont substation is one of three sources of supply to the far eastern 69kV system serving large portions of Clermont and Brown Counties. The vintage 1950's substation is in deteriorating condition. Structural steel is rusting. Concrete footings are starting to crack and spall. There are 138kV & 69kV cap and pin insulators which are prone to failure. Clermont has two 138/69kV 33MVA transformers. TB1 was manufactured in 1953. TB2 was manufactured in 1962. Both transformers continue to show increasing levels of gassing. Elevated levels of acetylene indicate internal problems. Doble testing indicates the insulation on the windings is deteriorating. Ground switches are used as high side protective devices. This old design causes a fault on the 138kV system when they operate, interrupting the 138kV Circuit from Beckjord to Summerside. If there is a fault on a transformer or bus it could result in a sustained outage to the 138kV circuit, effectively causing all of Clermont substation to be de-energized. It is impossible to install high side circuit switchers as protective devices and 138kV line switches for sectionalizing due to the configuration of the substation. To do this would require a complete substation rebuild. The hillside site is too small to reconfigure or rebuild to current standards.





# DEOK Transmission Zone M-3 Process Clermont, Beckjord

**Need Number:** DEOK-2019-025

**Process Stage:** Solutions Meeting 01-17-2020

### Potential Solution:

At Clermont: Retire the substation. Remove all equipment, foundations, underground cables, cableways, fencing and the control building. Connect the 138kV feeder from Beckjord to the feeder from Summerside. Connect the 69kV feeder from Blairville to the feeder from Amelia. At Beckjord: Replace the 138kV oil filled circuit breaker that connects to the high side of the existing 138/69kV transformer, install a new 138kV breaker connecting to a new 138/69kV 150MVA transformer, expand the substation and install four 69kV circuit breakers to form a ring bus.

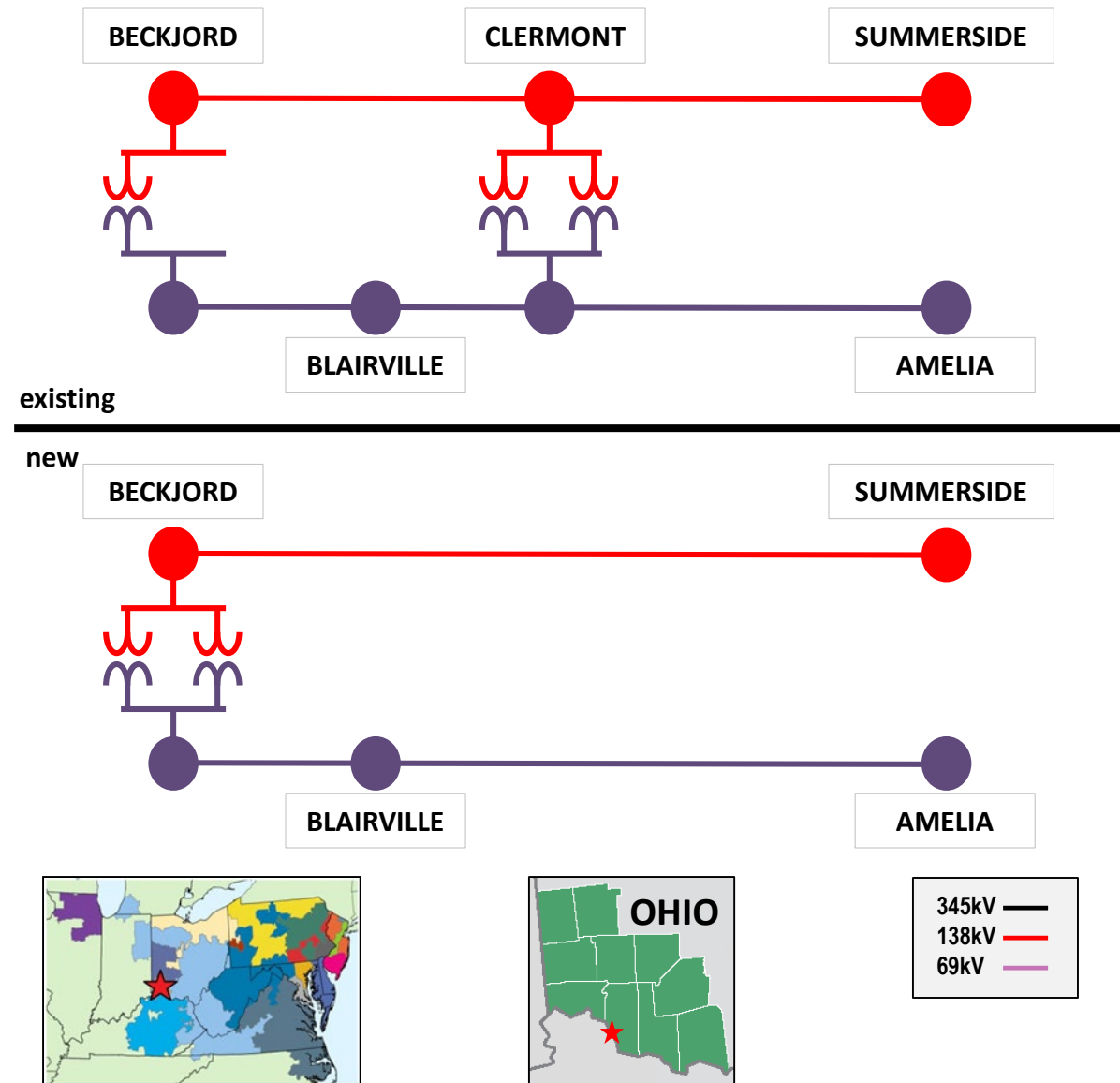
**Ancillary Benefits:** Resiliency and options for switching due to the ring bus configuration and the the new transformer at Beckjord.

**Estimated Transmission Cost:** \$4.6M (total cost: \$12.2M)

**Projected In-service Date:** 06-21-2023

**Project Status:** Scoping

**Model:** 2019 RTEP Summer





**Need Number:** DEOK-2019-026

**Process Stage:** Solutions Meeting 01-17-2020

**Previously Presented:** Needs Meeting 11-22-2019

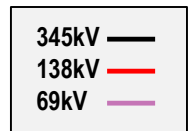
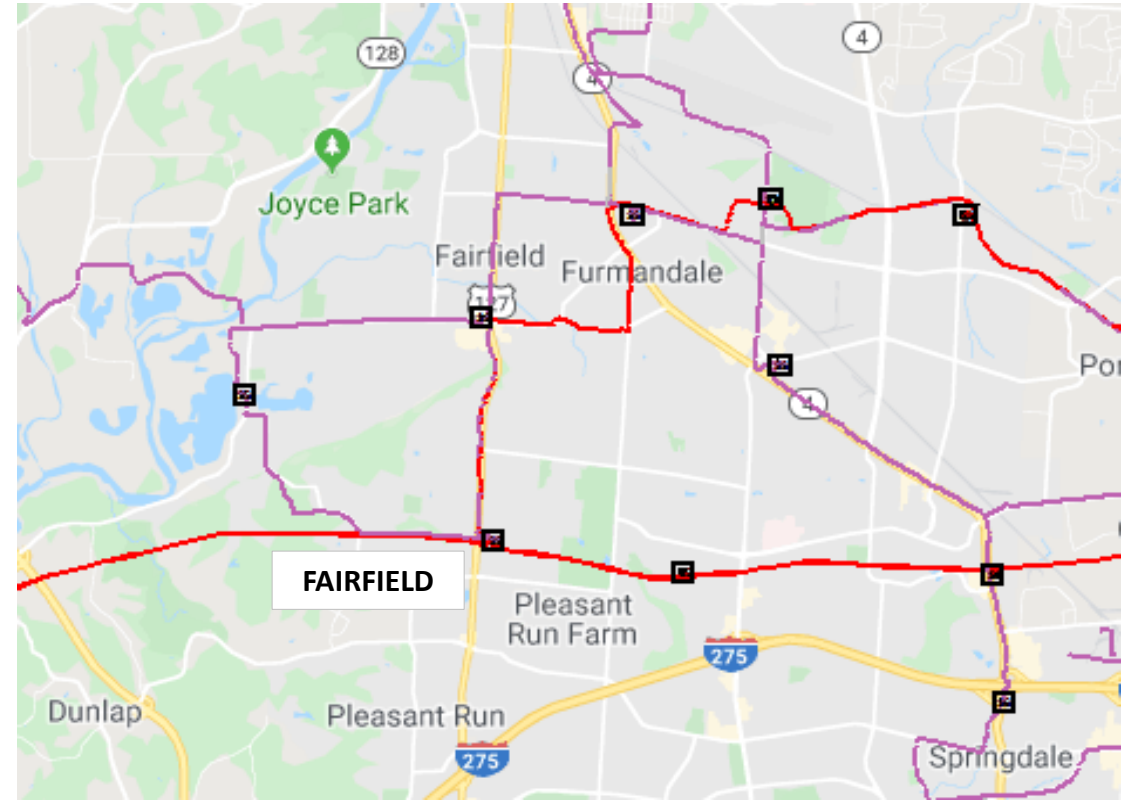
**Project Driver:** Equipment Condition, Performance and Risk

**Specific Assumption Reference:**

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

**Problem Statement:**

At Fairfield substation 138/34kV 56MVA TB1 is showing high levels of dissolved combustible gasses, especially acetylene indicating arcing in this 54 year old transformer. 138/69/34kV TB2's tertiary winding is connected to a grounding transformer and a 34kV distribution bus. This old system design exposes the transmission system to greater risk due to faults on the distribution system.



**Need Number:** DEOK-2019-026

**Process Stage:** Solutions Meeting 01-17-2020

**Potential Solution:**

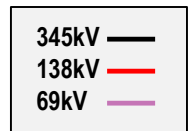
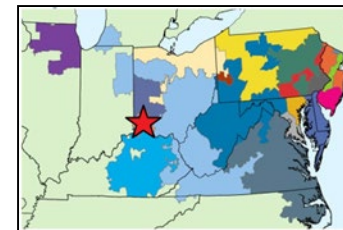
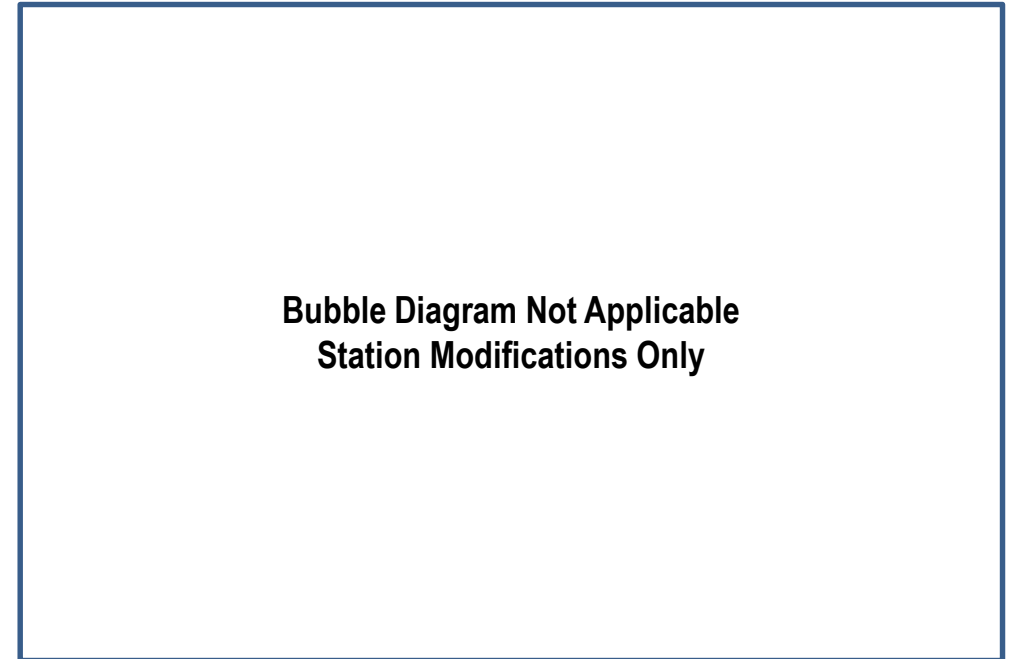
Replace TB1 with a 138/34kV 60MVA transformer. Disconnect TB2's 34kV tertiary winding. Replace that source with a new 69/34kV 33MVA transformer.

**Estimated Cost:** \$4.7M

**Projected In-service Date:** 06-01-2021

**Project Status:** Scoping

**Model:** 2019 RTEP Summer





# 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

1/6/2020 – V1 – Original version posted to pjm.com

1/23/2020 – V2 – Slide #6, Added the Estimated Transmission Cost for DEOK-2019-025