Market Efficiency Proposal Window
2016-2017 Long Term Proposal Window 1A

2016-2017 Long Term Proposal Window 1A

- Addendum 2016-2017 Long Term Proposal Window 1A
  - Opened on September 14, 2017
  - Closed on September 28, 2017.
  - Solicited proposals to address the Tanners Creek - Dearborn 345 kV thermal constraint, which is a Reliability Pricing Model (RPM) constraint.

- Target facility Tanners Creek - Dearborn 345 kV is the next limiting element in the 2020/2021 RPM Base Residual Auction CETL study for the DEOK LDA*

- Data posted on the PJM website:
  - http://www.pjm.com/planning/rtep-development/expansion-plan-process/ferc-order-1000/rtep-proposal-windows/2016-2017-rtep-long-term-proposal-window.aspx

* After RTEP baseline upgrade b2831 (Upgrade the Tanner Creek - Miami Fort 345 kV circuit) is constructed

Projects Received

- 3 Market Efficiency Proposals
  - 1 Greenfield
    - $12.7M
  - 2 Upgrades
    - $0.6 - $4.9M
- 2 proposing entities
  - LS Power
  - AEP

RPM Evaluation

- PJM Analysis Completed
  - Determined CETL impact of proposed projects (see next slide)
  - Completed 2020/2021 RPM Base Residual Auction model for multiple study years
  - Determined RPM and Energy estimated benefits for proposed projects

- Market Efficiency Status
  - Project 201617_1A-2A proposed by AEP to be recommended for board approval:
    - Upgrade terminal equipment at Tanners Creek 345kV station. Upgrade 345kV Bus and Risers at Tanners Creek for the Dearborn circuit.
    - Cost $0.6 million

- Additional Projects provide no incremental benefit

RPM Evaluation - CETL Analysis (LDA DEOK)

- Base Case was updated with the portion of the reliability project 2017_1-6A to be recommended in the Reliability Window 1 (see Appendix A)

CETL Analysis	Proposer	Project In-Service Year	Project Cost ($M)	DEOK Price Separation?
Base				Yes
201617_1-1A	NTD	2021	$12.70	No
201617_1-2A	AEP	2021	$0.60	No
201617_1-2B	AEP	2021	$4.90	No

201617_1A-1A

Project ID: 201617_1A-1A

Proposed by: Northeast Transmission Development (NTD)

Proposed Solution: Greenfield.
New 345 kV switching station ("Twelvemile"). Build a 345 kV switching station ("Twelvemile") interconnecting the existing Silver Grove - Zimmer 345 kV transmission line and the Pierce - Buffington 345 kV transmission line.

kV Level: 345 kV

In-Service Cost ($M): $12.7, B/C Ratio = 8.88

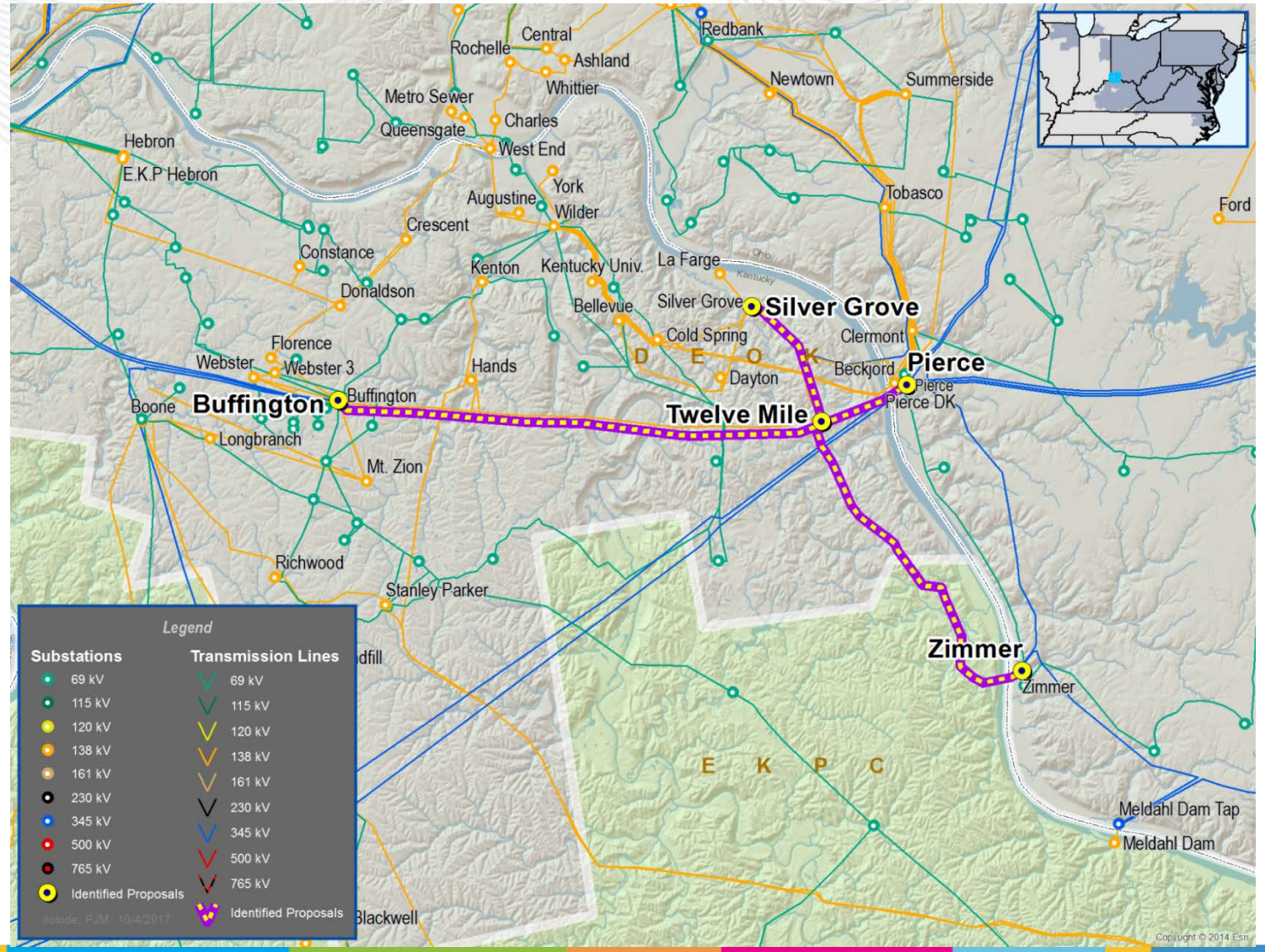
In-Service Date: 6/1/2021

Target Zone: DEOK LDA

ME Constraints:
TANNERS CREEK - MIAMI FORT 345 kV

Notes:

- Same project was submitted as 2017_1-2E to the reliability window, PJM 2017 Proposal Window 1, to address reliability violations.
- This RPM project is not currently recommended.



Project ID: 201617_1A-2A

Proposed by: American Electric Power (AEP)

Proposed Solution: Upgrade
Upgrade terminal equipment at Tanners Creek 345kV station
Upgrade 345kV Bus and Risers at Tanners Creek for the Dearborn circuit.

kV Level: 345 kV

In-Service Cost ($M): $0.6, B/C Ratio = 151.61

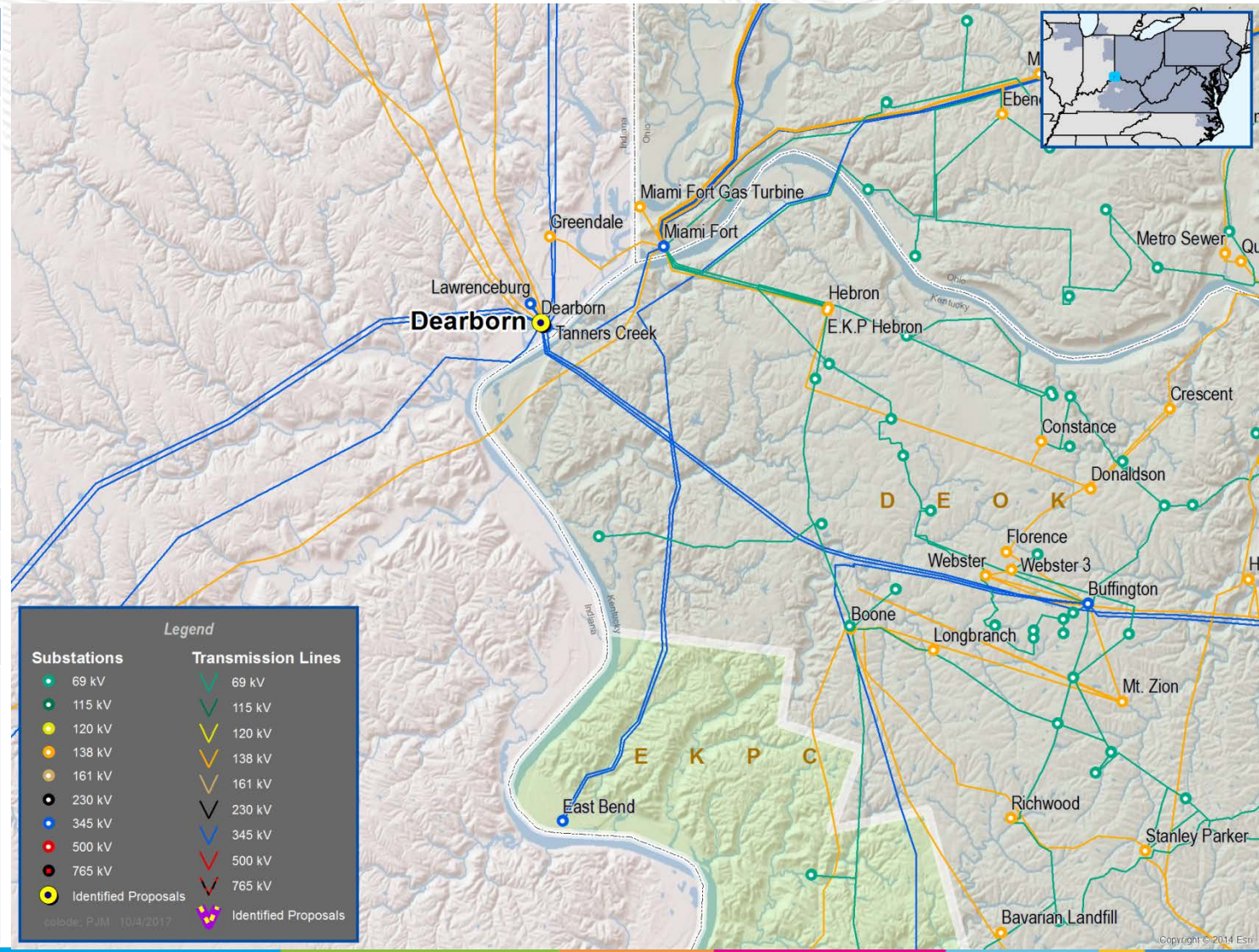
In-Service Date: 6/1/2021

Target Zone: DEOK LDA

ME Constraints:
TANNERS CREEK - MIAMI FORT 345 kV

Notes:

- Very low cost
- Anticipate recommendation for Board approval in December 2017
- Designated Entity: AEP (the local TO)



201617_1A-2B

Project ID: 201617_1A-2B

Proposed by: American Electric Power (AEP)

Proposed Solution: Upgrade
Establish Tanners Creek - Dearborn 345kV Circuit #2
Install two 345kV CB at Dearborn station for Tanners Creek Circuits #1 and #2 and one 345kV CB at Tanners Creek for Dearborn Circuit #2.

kV Level: 345 kV

In-Service Cost ($M): $4.9, B/C Ratio = 18.6

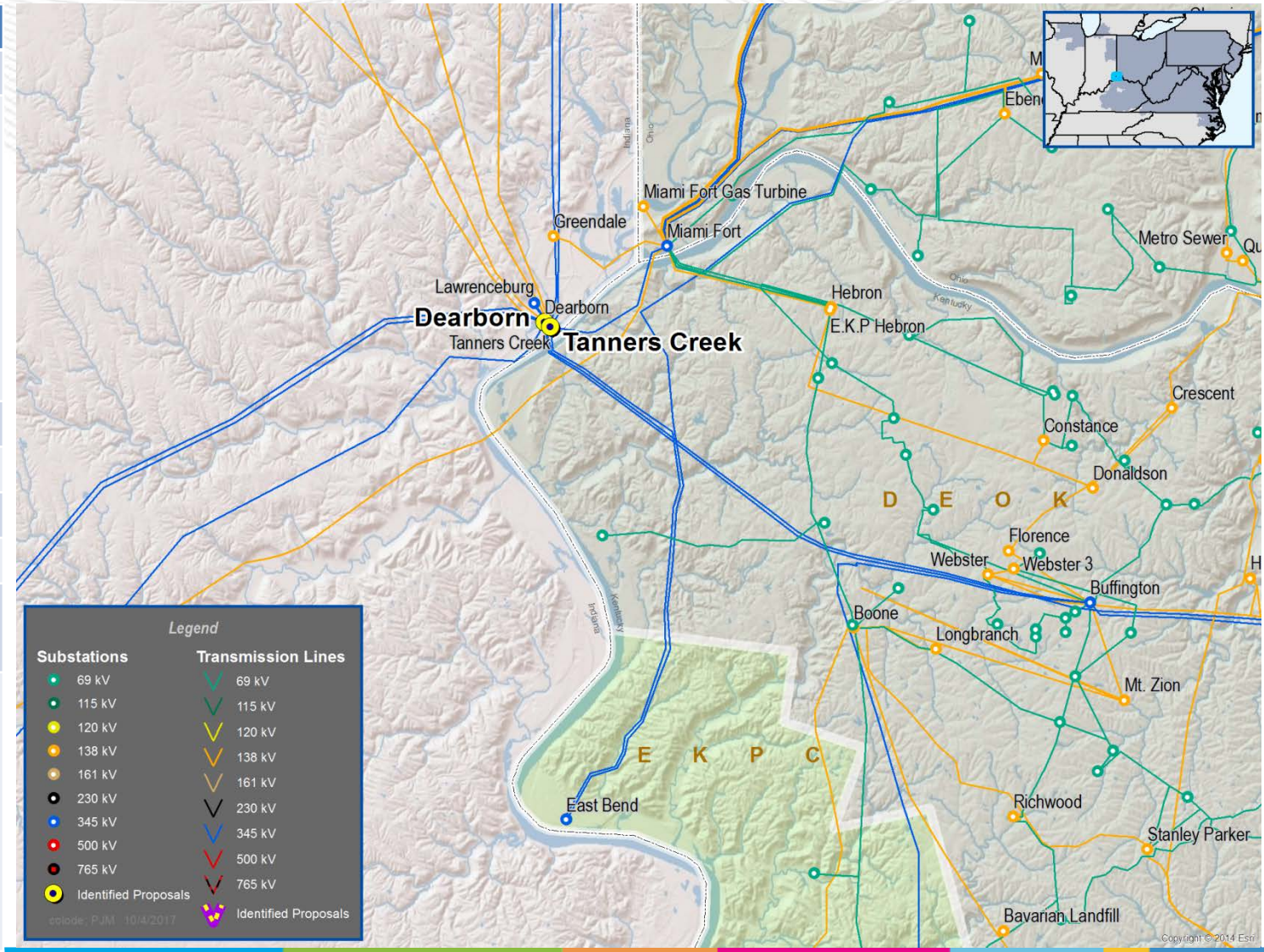
In-Service Date: 6/1/2021

Target Zone: DEOK LDA

ME Constraints:
TANNERS CREEK - MIAMI FORT 345 kV

Notes:

- Cost higher and B/C ratio lower than 201617_1A-2A proposal
- This RPM project is not currently recommended.



December 2017 PJM Board Approval

- PJM anticipates that the Market Efficiency baseline solution 201617_1A-2A proposed by AEP will be presented to the PJM Board in December and recommended for inclusion in the RTEP.

Appendix A
Portion of 2017_1-6A
(Preliminary Reliability Recommendation DEOK Transmission Zone)

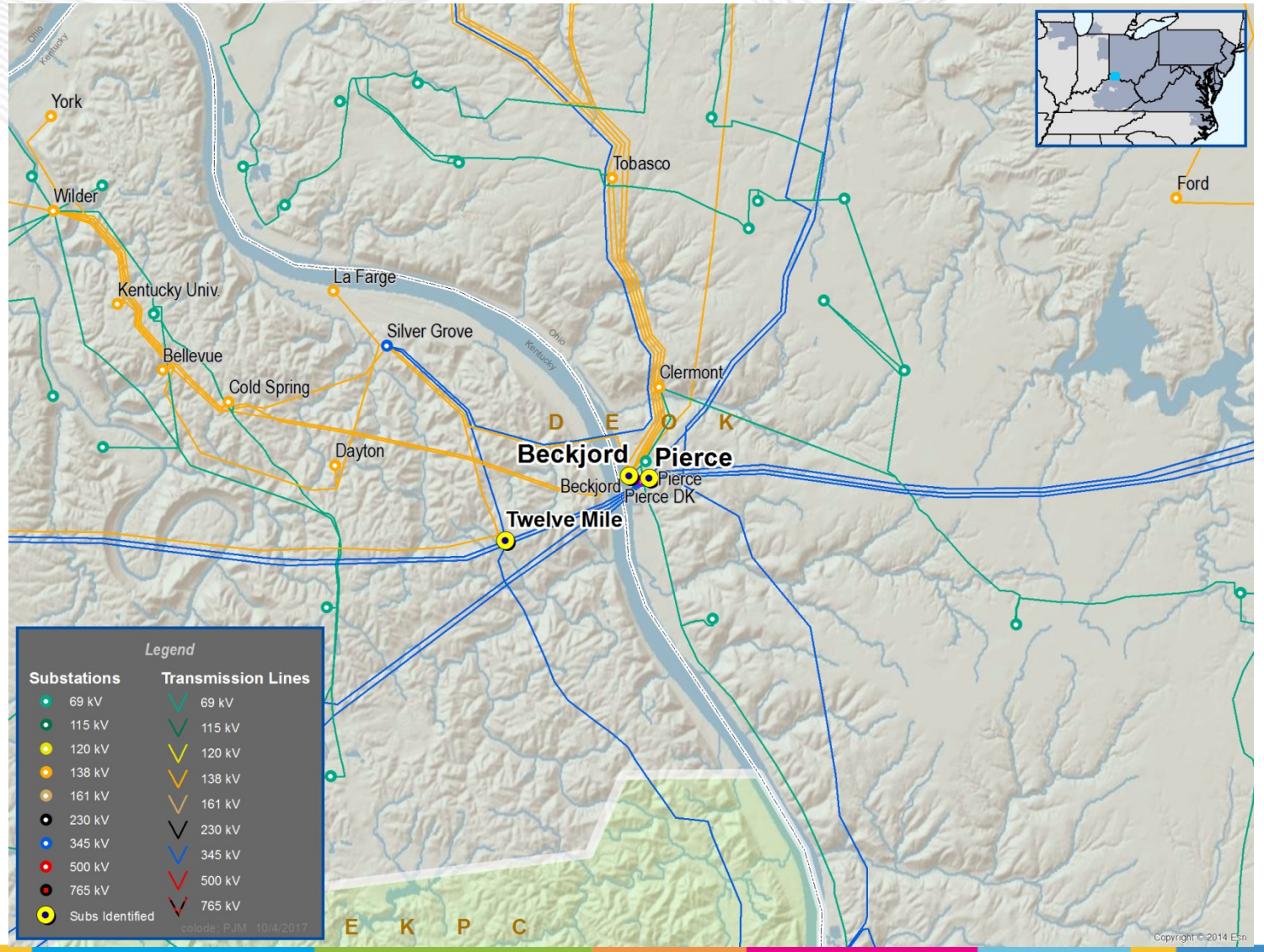
Reliability Recommendation DEOK Transmission Zone

Preliminary Recommendation: (Portion of 2017_1-6A)
Install a new 345kV breaker “1422” so Pierce 345/138KV transformer #18 is now fed in a double breaker, double bus configuration.
Remove X-533 No. 2 to the first tower outside the station. Install a new first tower for X-533 No.2.
Install new 345KV breaker B and move the Buffington-Pierce 345kV feeder to the B-C junction. Install a new tower at the first tower outside the station for Buffington-Pierce 345kV line.
Remove breaker A and move the Pierce 345/138kV transformer #17 feed to the C-D junction.
Replace breaker 822 at Beckjord 138kV substation to increase the rating from Pierce to Beckjord 138kV to 603MVA.

Estimated Project Cost: $ 9.17 M

Required IS date: 6/1/2021

Project Status: Conceptual



Revision History

- V1 – 10/30/2017 – Original Slides Posted