Kentucky Power Company
KPSC Case No. 2019-00154
Commission Staff's Second set of Data Request
Dated October 10, 2019

DATA REQUEST

KPSC 2_1 Refer to the application, paragraph 9. Explain whether PJM Interconnection LLC (PJM) has made any changes in the definitions, etc., in the manner it classifies baseline and supplemental projects since the filing of Case No. 2017-00328.[1] If so, identify and explain the changes and provide a copy of the relevant provisions.

1 Case No 2017-00328, *Electronic Application of Kentucky Power Company for a Certificate of* Public Convenience and Necessity to Construct a 161 kV Transmission line in Perry and Leslie Counties, *Kentucky and Associated Facilities* (Ky. PSC Nov. 14, 2018).

RESPONSE

Kentucky Power is not aware of any changes that PJM has made in the manner in which it classifies projects as Baseline or Supplemental.

Witness: Kamran Ali

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DATA REQUEST

KPSC 2_2 Refer to the application, paragraph 10, regarding the statement that the proposed improvements to the Hazard Substation will be contained within the existing substation footprint. Explain whether Kentucky Power would have any options to acquire additional property other than the existing development if the proposed Hazard Substation improvements create an unexpected issue requiring additional space greater than the existing substation footprint.

RESPONSE

While the Hazard Substation is largely constrained, there are a few options for minor expansion at the site. Rebuilding the station in the clear was evaluated as part of the RTEP process; however, the resulting costs of rerouting the transmission and distribution circuits did not make this a cost-effective option. Kentucky Power has determined that the proposed improvements will fit within the existing footprint and does not see any need for additional space at this time.

Witness: Kamran Ali

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DATA REQUEST

KPSC 2_3 Refer to the application, paragraph 25. Identify the PJM minimum design standards with which the Hazard and Wooten substations do not comply.

RESPONSE

For work at the Hazard Substation needed to comply with PJM design standards, please refer to KPCO_R_KPSC_2_3_Attachment1. Similarly, for work at the Wooton Substation needed to comply with PJM design standards, please refer to KPCO_R_KPSC_2_3_Attachment2.

Witness: Kamran Ali

Application Exhibit 2 Identifer:	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
1	Replacement of the 161 kV circuit breaker (M) pointing towards Wooton Station.	X	X		
1	Replacement of devices for line protection and circuit breaker control associated with the 161kV Wooton line position	X	X	X	PJM Manual 07, Section 7 - Line Protection
2	Installation of a 138 kV circuit breaker with relay control on the low side of the 161 kV/138 kV transformer #3	X		X	PJM Relay Subcommittee, Protective Relaying Philosophy and Design Guidelines Section 2: Protective Relaying Philosophy
2	Replacement of devices for transmission transformer protection associated with Transformer #3	X	X	X	PJM Manual 07, Section 8 - Substation Transformer Protection
3	Installation of a new three phase 161 kV/138kV spare transformer		X		
4	Replacement of devices for line protection and circuit breaker control associated with the 69kV Bonnyman #2 (R) line position		X	X	PJM Manual 07, Section 7 - Line Protection
5	Replacement of 138 kV capacitor bank and switcher BB		X	X	AEP/KY Power Standard Mitigation Indicator List Item 1
5	Replacement of devices for capacitor bank and switcher BB protection and control		X	X	PJM Manual 07, Section 11 - Shunt Capacitor Protection
6	Replacement of existing 138kV/69kV Transformer #1		X		

Application Exhibit 2 Identifer:	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
6	Replacement of the motor operated air break (MOAB) switch and installation of a circuit switcher on the high-side of Transformer #1			X	PJM Manual 07, Section 8 - Substation Transformer Protection
6	Installation of a 69kV breaker with relay control on the low-side of 138kV/69kV Transformer #1			X	PJM Manual 07, Section 8 - Substation Transformer Protection
6	Replacement of devices for transmission transformer protection associated with Transformer #1		X	X	PJM Manual 07, Section 8 - Substation Transformer Protection
7	Replacement of existing 138kV/69kV Transformer #2		X		
7	Replacement of the motor operated air break switch and installation of a circuit switcher on the high-side of Transformer #2			X	PJM Manual 07, Section 8 - Substation Transformer Protection
7	Installation of a 69kV breaker with relay control on the low-side of 138kV/69kV Transformer #2			X	PJM Manual 07, Section 8 - Substation Transformer Protection
7	Replacement of devices for transmission transformer protection associated with Transformer #2		X	X	PJM Manual 07, Section 8 - Substation Transformer Protection
8	Replacement of 69kV capacitor bank and switcher CC		X		

Application Exhibit 2 Identifer:	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
8	Replacement of devices for capacitor bank and switcher CC protection and control		X	X	PJM Manual 07, Section 11 - Shunt Capacitor Protection
9	Replacement of the 69kV circuit breaker (S) pointing towards Daisy Station		X		
9	Replacement of devices for line protection and circuit breaker control associated with the 69kV Daisy line position		X	X	PJM Manual 07, Section 7 - Line Protection; IEEE PSRC I22 Report
10	Replacement of the 69kV circuit breaker pointing towards Leslie Station		X		
10	Replacement of devices for line protection and circuit breaker (E) control associated with the 69kV Leslie line position		X	X	PJM Manual 07, Section 7: Line Protection; IEEE PSRC I22 Report
11	Replacement of the 69kV circuit breaker (F) pointing towards Bonnyman Station via the number one circuit		X		
11	Replacement of devices for line protection and circuit breaker control associated with the 69kV Bonnyman #1 line position		X	X	PJM Manual 07, Section 7 - Line Protection; IEEE PSRC I22 Report
12	Installation of a 69kV circuit breaker connecting 69 kV bus #1 and bus #2		X	X	PJM DEDSTF Section 4.3 - Bus Configuration
13	Replacement of the motor operated air break switch and installation of a circuit switcher on the high-side of Transformer #4			X	PJM Manual 07, Section 8 - Substation Transformer Protection

Application Exhibit 2 Identifer:	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
13	Installation of a 34.5kV breaker with relay control on the low-side of 138kV/34.5kV Transformer #4			X	PJM Manual 07, Section 8 - Substation Transformer Protection
13	Replacement of devices for transmission transformer protection associated with Transformer #4		X	X	PJM Manual 07, Section 8 - Substation Transformer Protection
14	Replacement of devices for line protection and circuit breaker control associated with the 34.5kV Blackgold line position		X	X	PJM Manual 07 Section 7 - Line Protection; IEEE PSRC I22 Report
15	Replacement of the 34.5kV circuit breaker (A) pointing towards Kenmont Station		X		
15	Replacement of devices for line protection and circuit breaker control associated with the 34.5kV Kenmont line position		X	X	PJM Manual 07 Section 7 - Line Protection; IEEE PSRC I22 Report
16	Replacement of devices for distribution transformer protection associated with Transformer #5		X	X	IEEE PSRC I22 Report
17	Replacement of the 12kV circuit breaker (c) servicing Hazard		X		
17	Replacement of devices for feeder protection and circuit breaker control associated with the 12kV Hazard feeder position		X	X	IEEE PSRC I22 Report
18	Replacement of the 12kV (D) circuit breaker spare		X		

Application Exhibit 2 Identifer:	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
18	Replacement of devices for feeder protection and circuit breaker control associated with the 12kV spare feeder position		X	X	IEEE PSRC I22 Report
19	Installation of coupling capacitor voltage transformers on 69kV Bus #1 and #2			X	PJM Manual 07, Section 7 - Line Protection
19	Installation of devices for 69kV Bus #1 and #2 protection			X	PJM DEDSTF Section 5.2 - System Protection Requirements for Facilities below 200kV ; PJM Manual 07, Section 9 - Bus Protection; PJM Manual 07, Appendix A - Use of Dual Trip Coils
19	Replacement of coupling capacitor voltage transformers on 138kV Bus #2	X		X	PJM DEDSTF Section 4.4 - Accessability, Section 4.11 - Raceways
19	Replacement of devices for 138kV Bus #2 protection	X	X	X	PJM DEDSTF Section 5.2 - System Protection Requirements for Facilities below 200kV ; PJM Manual 07, Section 9 - Bus Protection; PJM Manual 07, Appendix A - Use of Dual Trip Coils
20	Installation of a 138 kV circuit breaker pointing towards Beckham Station.			X	PJM Manual 07 Section 7 - Line Protection; AEP Standard Mitigation Indicator List Item 1
20	Replacement of devices for line protection and circuit breaker control associated with the 138kV Beckham line position		X	X	PJM Manual 07 Section 7 - Line Protection; AEP Standard Mitigation Indicator List Item 1

Application Exhibit 2 Identifier	Work Description	Needed to implement the construction approved in Case No. 2017-00328	Needed to address deteriorating and obsolete equipment	Needed to comply with existing PJM and Kentucky Power design standards	PJM/Kentucky Power design standards reference
A	Installation of station class surge arresters attached to the upper beam of the existing 161kV box bay structure on the 161kV Hazard Line position	X		X	PJM DEDSTF Section 4.7 - Insulation Coordination and Lighting Protection
B	Installation of two coupling capacitor voltage transformers on Phase 2 and Phase 3 of the 161kV bus	X		X	PJM Manual 07, Section 7 - Line Protection (required to coordinate protection with Hazard remote end)
C	Installation of telecommunication fiber equipment	X		X	PJM Manual 07, Section 7 - Line Protection (required to coordinate protection with Hazard remote end)

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KPSC 2_4 Refer to the application, paragraph 28. Identify the current safety, clearance, or structural standards in which the Hazard and Wooten substations do not comply with the applicable NESC requirements.

RESPONSE

AEP maintains an internal guideline labeled "Equipment Stair and Platform Guidelines." That guideline references "NESC Handbook, 7th Edition, Section 11 – Protective Arrangements in Electric Supply Stations". There are a number of elements at Hazard that do not comply with current subsections 112 (Floors, Floor Openings, Passageways, and Stairs), 113 (Exits), 124 (Guarding Live Parts), and 125 (Working Spaces around Electrical Equipment). The primary concerns that are addressed by the upgrades in the project include the following:

- Railings – railings for all platforms shall meet requirements of 42" railings with an intermediate rail and a 4" toe board. All platforms over 4 feet in height shall have a latch in accordance with OSHA 1910.23.
- Platforms – Platforms shall be engineered per specific loading requirements. Many of the platforms within the station do not have calculations on file and cannot be verified. Several of the platforms have wooden floors which have deteriorated over time.
- Guarding of Live Parts – From the top of the platforms, the 12kV breakers have approximately 6'-4" to the top of the breaker housing and about 8'-2" to the top of the bushings via the taught string rule of the NESC. Current standards require this to be at least 9'-0" for a 110kV BIL (15kV) installation.
- Working Space (600V or less) – 3' clear distances are required between energized equipment for examination, adjusting, servicing or maintenance. Many of the platforms do not allow for this clearance when working with enclosures or equipment cabinets.

Witness: Kamran Ali

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DATA REQUEST

KPSC 2_5 Refer to the application, paragraphs 11 and 56, regarding the load in the Hazard area. Paragraph 11 lists the load at 30 MW; paragraph 56 lists the load at 300 MW. Provide the correct amount of load.

RESPONSE

Paragraph 11 refers to the 30 MW load directly served from Hazard station via distribution located at the station. Conversely, the 300 MW load referenced in paragraph 56 of the application is the approximate load in the Hazard area transmission network. That area generally encompasses Kentucky Power's facilities in Perry, Leslie, Letcher, Breathitt, and southern Knott counties.

Witness: Kamran Ali

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DATA REQUEST

KPSC 2_6 Refer to the application, paragraph 44. Identify any projected operating and maintenance cost savings expected at the Hazard and Wooten substations if the Commission approves the proposed project.

RESPONSE

The estimated cost savings for replacing transformers and circuit breakers are based upon changes in the interval at which the equipment is physically inspected. Even though the equipment is inspected on multi- year cycles, the dollar savings have been averaged to represent savings on an annual basis.

Replacing transformers is expected to extend maintenance cycles from an approximate 8-year interval (or more frequently depending on specific equipment condition) to a 10-year interval. This shift is expected to result in operating and maintenance (O&M) cost savings of approximately $700 on an annual basis. Similarly, installing new circuit breakers will allow the Company to move from a 6-year maintenance cycle (or more frequently depending on specific equipment condition) to 12-year cycle. This change is expected to provide an annual savings of approximately $2,700. There will also be a corresponding reduction in corrective maintenance that generally occurs when older, deteriorated substation elements are replaced. The Company has not attempted to quantify this savings given the large number of factors and underlying trends that can also influence O&M costs such as labor costs, load growth, weather events, and the cost of replacement parts.

Additional cost savings is expected from the replacement of electromechanical relays with microprocessor relays. Routine maintenance cycles will not change as a result of these replacements; however, the number of relays requiring routine maintenance will be significantly reduced, thereby lowering annual O&M costs by approximately $1,200. There will also be further reductions in O&M due to the remote connectivity of the new relays. This is because remote access to relay data and fault information will reduce the number of trips that workers will have to make to the site. Similarly, replacing the existing remote terminal unit is expected to reduce site visits to troubleshoot SCADA related issues. The Company has not attempted to quantify these additional savings for the same reasons applicable to corrective maintenance.

Witness: Ranie K. Wohnhas

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DATA REQUEST

KPSC 2_7 Refer to Kentucky Power's response to Commission Staff's First Request for Information (Staff's First Request), Item 1.

a. Identify where in the Ali Testimony that discusses the need for a spare three-phase 161 /138 kV transformer during planned outages or routine forced outages.
b. Provide an example of when a planned outage would include maintenance of an existing transformer that would require that transformer to be taken offline and state how often this type of maintenance would occur.
c. Explain what is meant by "routine forced outages" and state whether it is industry standard or typical for an electric utility to carry a spare transformer for reliability purposes resulting from routine forced outages.
d. State whether Kentucky Power conducted a cost-benefit analysis to evaluate whether the investment in the three-phase 161/138 kV spare transformer is economical in terms of improving reliability during planned outages and more routine forced outage situations.
e. State whether Kentucky Power has a mobile substation that would address the reliability needs during planned outages or routine forced outages at the Hazard Substation.

RESPONSE

a. On page 13, lines 14 through 19, Company Witness Ali describes the need for a spare three-phase 161/138kV transformer in order to mitigate outages caused by transformer #3 being unavailable for service. This unavailability could be the result of either a planned outage or a forced outage.

b. As stated in the response to Staff 2-6, replacing transformers is expected to extend maintenance cycles from 8-year to 10-year intervals. This routine maintenance work typically requires an 8-10 hour outage to complete. If any unscheduled maintenance activities are found to be necessary and require that personnel physically climb on the transformer, remove the oil or electrically test of the winding the transformer, this maintenance work will also require that the transformer be removed from service. It should be noted that the addition of a spare transformer is not driven by maintenance concerns but by potential failure concerns. These concerns are discussed further in the response to subpart d.

c. The term "routine forced outages" refers to a typical fault that might be experienced on a transmission system. Kentucky Power is aware that many utilities have developed strategies for the deployment of spare transformers.

d. Kentucky Power did not conduct a cost-benefit analysis for this spare transformer. Instead, the decision to include a spare transformer as part of this project was based on two important considerations. The first was the critical nature of the Hazard Substation. This Substation connects with adjacent utilities LG&E, KU, TVA as well as numerous distributions feeds. A failure of this transformer could cause significant wide-spread service interruptions. The second consideration was the unique voltage requirements of this particular transformer. The 161/138 kV transformer at Hazard station is the only transformer of this voltage class on the AEP Eastern footprint. Without a spare, the lead times required to replace this type of transformer could be up to one year.

e. The three transformers at Hazard Station are of different sizes and voltage classes. Transformer #1 is a three-phase 138/69-12kV autotransformer with a nameplate rating of 50 MVA, Transformer #2 is a three-phase 138/69-12kV autotransformer rated 130 MVA, and Transformer #3 is composed of three single-phase 161.8/139.85-11.5kV autotransformers, each rated 45 MVA, with total nominal bank capacity of 135 MVA. AEP's largest 138/69kV mobile units are 3-phase and rated at 50 MVA. One of these mobile units could be used to support Transformer #1 but not Transformer #2. There are no mobile units available to Kentucky Power that can be used to address outages for transmission and sub-transmission transformers such as Transformer #2 or Transformer #3. This is because transformers with a rating of 130 MVA would generally be too large and too heavy to transport. It is also very likely that such a mobile unit would not fit within the confines of the substation. Additionally, mobile units are not intended to replace spare equipment for planning purposes.

Kentucky Power does have mobile units (mobile stations, including a transformer, or mobile transformers) than can, and have been used to, address planned and forced outages for distribution transformers at the Hazard Substation.

Witness: Michael G. Lasslo and Kamran Ali

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DATA REQUEST

KPSC 2_8 Refer to Kentucky Power's response to Staff's First Request, Item 4. Given that all of the proposed transmission elements were identified within the last ten years as needing to be addressed, explain in more detail which of the factors identified in this response and in the Direct Testimony of Kamran Ali, Exhibit KA-1, page 15 of 16, prompted Kentucky Power to delay replacing or upgrading those project elements that were determined to have significant deterioration until now.

RESPONSE

Kentucky Power schedules transmission projects with careful consideration of various factors including, but not limited to, those discussed in further detail below.

The first consideration is the severity of condition. It would be inconsistent with Kentucky Power's obligation to provide safe, adequate, and reliable service to allow transmission facilities to run to failure. If the condition of an asset is determined to warrant immediate replacement, the Company will expedite this work to the extent possible. None of the elements identified in the Company's Application were found to meet this level of severity.

Another consideration is outage availability. In the case of the Hazard Substation, the bus configuration and critical nature of the station require that outages be carefully planned to limit the impact on customers. Grouping the station work into one project will allow the Company to perform the necessary work while minimizing service interruptions.

A final consideration is cost. When feasible, Kentucky Power coordinates maintenance, replacement and upgrade projects at a single substation to eliminate avoidable mobilization costs and to limit additional costs that would be incurred by performing the work over separate construction periods. In the case of the Hazard and Wooton Stations, the accumulation of equipment issues provides an opportunity for the Company to realize such cost efficiencies.

Witness: Kamran Ali

DATA REQUEST

KPSC 2_9 Refer to Kentucky Power's response to Staff's First Request, Item 5.a.

a. Provide a brief description of an electrical discharge of high energy, thermal faults, stray gassing, and overheating due to system conditions and explain what causes these events.

b. Explain the cause of the Transformer #4 failure in May 2017 and provide the life expectancy of that transformer at the time of its failure.

RESPONSE

a. The term "electrical discharges of high energy" refers to electrical faults where the level of electric current rises to the highest level the electrical grid can supply. These high currents flow through the transformer windings and produce powerful electromechanical forces that attempt to push the windings apart. Depending on the number of faults and the amount of energy contained in the faults, the windings can move and loosen resulting in under-oil arcing and hot spots (thermal faults).
Stray gassing refers to unexpected gas formations at lower temperatures (usually between 80 and 250 degrees Celsius). The stray gases are dissolved in the transformer insulating oil and can also migrate to the nitrogen filled gas space that is located above the insulating oil in the transformer tank.

A thermal fault is a high temperature hot spot in the winding of the transformer that may not produce an arc but is of sufficiently high temperature to degrade the cellulosic (paper) insulation of the windings.

Internal arcing represents a rapid release of electrical energy which causes deterioration of the insulation materials.
Internal arcing, thermal faults, stray gassing and overheating are conditions that can be detected by the concentration of dissolved gases in the oil (Dissolved Gas Analysis). Combustible gases that have migrated to the gas space above the transformer insulating oil can be detected by a Total Combustible Gas Analysis (TCG) test. The TCG test does not identify the individual types of combustible gases present, but does give a percent of total combustible gases.
Internal arcing in the transformer can be detected by elevated levels of acetylene in the insulating oil inside the transformer. A breakdown in the dielectric strength of the winding insulation and the insulating oil due to external faults, contamination, or other causes can lead to the formation of arcing inside the tank of the transformer.

Thermal faults are evidenced by assessing the levels of carbon monoxide, carbon dioxide, ethane, and ethylene in the insulating oil inside the transformer. Carbon monoxide and carbon dioxide result from overheating of the paper insulation of the windings while ethane and ethylene result from degradation of the transformer insulating oil.

System conditions that can contribute to the above events include tree or other vegetation contact with the conductors, high winds blowing the conductors together, failures of line and station equipment, heavy ice and snow loading, animals, vandalism, forest fires, vehicle accidents, and lightning strikes.

There have been 36 events where forced outage events on facilities connected to equipment at the Hazard Substation has directly caused the 138/69kV Transformers #1 & #2 to experience through faults (AG 2-1).

b. The failure of Transformer # 4 in May 2017 was a winding failure. A Transformer Turns Ratio (TTR) test confirmed the cause. This test was conducted after a sudden pressure alarm caused Transformer #4 to trip out of service.

Transformer #4 was manufactured in 1990. Based on the life expectancy of similar transformers, Transformer # 4 would have been expected to have 20 or more years of remaining life expectancy at the time of its failure.

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DATA REQUEST

KPSC 2_10 Refer to Kentucky Power's response to Staff's First Request, Item 6.

a. Provide the SAIDI and SAIFI for the Hazard and Wooten substations for the three calendar years ended December 31, 2018.

b. Identify and explain the reason(s) for all outages at the Hazard and Wooten Substations for the three years ended December 31,

RESPONSE

a. All values are IEEE SAIDI and SAIFI and include jurisdictional major event days.
Hazard SAIDI

2016	2017	2018
366.7	814.7	404.4

Hazard SAIFI

2016	2017	2018
1.67205	8.24973	1.75635

Wooton SAIDI & SAIFI

Wooton is a switching station and as such serves no customers. Therefore, its SAIDI and SAIFI values are 0.

b. There were many events that resulted in outages at Hazard between 2016 and 2018. The reasons for the outages can be summarized in the categories below:

- Weather
- Equipment Failures associated with Station or T-Line components
- Animal Intrusion
- Vegetation
- Pole Fires

Witness: Michael G. Lasslo

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DATA REQUEST

KPSC 2_11 Refer to Kentucky Power's response to the Attorney General's Initial Data Requests, Item 2, regarding the two alternatives that were presented at the PJM stakeholder process for the Hazard Substation. Identify those two alternatives, provide the cost estimates associated with each alternative, and explain why the one alternative was considered not practicable.

RESPONSE

The first alternative evaluated by the Company involved rebuilding the station in the clear. However, the lack of suitable sites in close proximity to the station due to the mountainous terrain and nearby population would have resulted in significant rerouting of the six transmission circuits and the four distribution circuits located within the existing station. A conceptual estimate of $35 million was developed for this option. As a result, the Company determined that this would not be a cost effective alternative. In addition, the relocation of the circuits and station would have been extremely challenging, if not infeasible, because of siting constraints.

The second alternative evaluated by the Company was only for the 69kV portion of the project. This alternative included reconstructing the existing 69 kV yard into a ring bus configuration. However, the Company determined that this work was not physically possible due to the extensive outages that would be required and the constructability challenges presented by the slopes and different grade levels of the station yard. Given that this alternative was clearly not cost-effective and possibly infeasible due to constructability aspects, a formal cost estimate was not developed for this alternative.

Witness: Kamran Ali

VERIFICATION

The undersigned, Kamran Ali, being duly sworn, deposes and says he is the Managing Director of Transmission Planning, American Electric Power Service Corporation, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.

Kamran Ali

State of Ohio)
) Case No. 2019-00154
County of Franklin)

Subscribed and sworn before me, a Notary Public, by Kamran Ali this 15th day of October, 2019.

Notary Public

My Commission Expires 06·06·2022

NOTARIAL SEAL
STATE OF OHIO

Andrea Maree Guthbert
NOTARY PUBLIC - OHIO
MY COMMISSION EXPIRES
06-06-2022

VERIFICATION

The undersigned, Ranie K. Wohnhas, being duly sworn, deposes and says he is the Managing Director of Regulatory & Finance for Kentucky Power, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.

Ranie K. Wohnhas

Commonwealth of Kentucky)
) Case No. 2019-00154
County of Boyd)

Subscribed and sworn before me, a Notary Public, by Ranie K. Wohnhas this _____ day of October, 2019.

Pamela Hawthorne #619486
Notary Public

My Commission Expires 3-18-2023

VERIFICATION

The undersigned, Michael G. Lasslo, being duly sworn, deposes and says he is the Reliability Manager for Kentucky Power, that he has personal knowledge of the matters set forth in the foregoing responses and the information contained therein is true and correct to the best of his information, knowledge, and belief.

Michael G. Lasslo

Commonwealth of Kentucky)
) Case No. 2019-00154
County of Perry)

Subscribed and sworn before me, a Notary Public, by Michael G. Lasslo this 22nd day of October, 2019.

Ellis R McKnight
Notary Public

My Commission Expires June 21, 2022