

Kentucky Power Company
KPSC Case No. 2023-00040
Staff First Set of Data Responses
Dated June 23, 2023

DATA REQUEST

KPSC 1_1 Refer to the Application, Exhibit 12, Customer Notice, page 4 of 4. Also refer to the Application, Exhibit 22. In addition to the proposed transmission line project, provide an updated map showing all the transmission lines and substations referenced in the Alternative Solutions 1 and 2.

RESPONSE

Please see the requested information provided in the following three attachments:

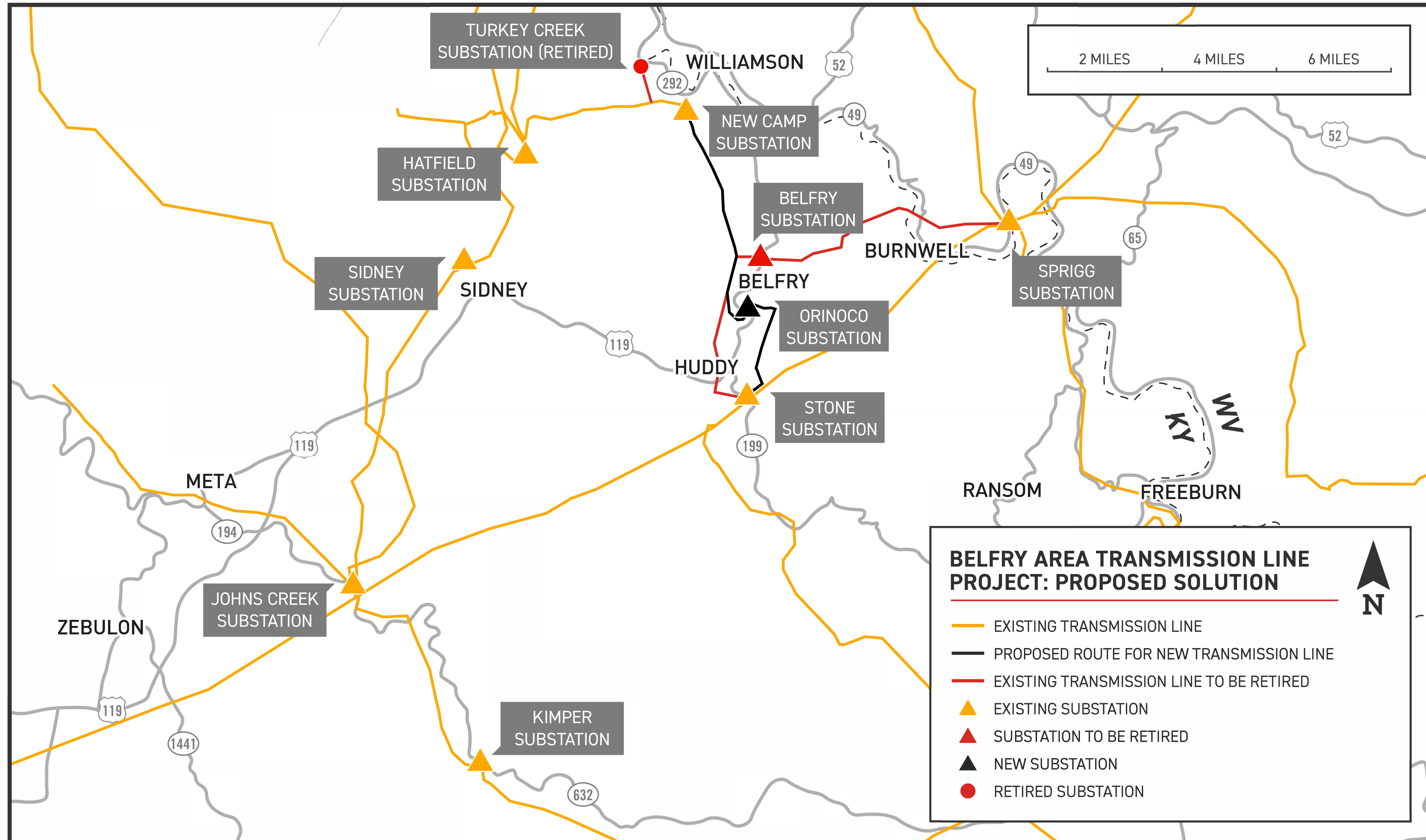
KPCO_R_KPSC_1_1_Attachment1: Proposed Project

KPCO_R_KPSC_1_1_Attachment2: Alternative Solution 1

KPCO_R_KPSC_1_1_Attachment3: Alternative Solution 2

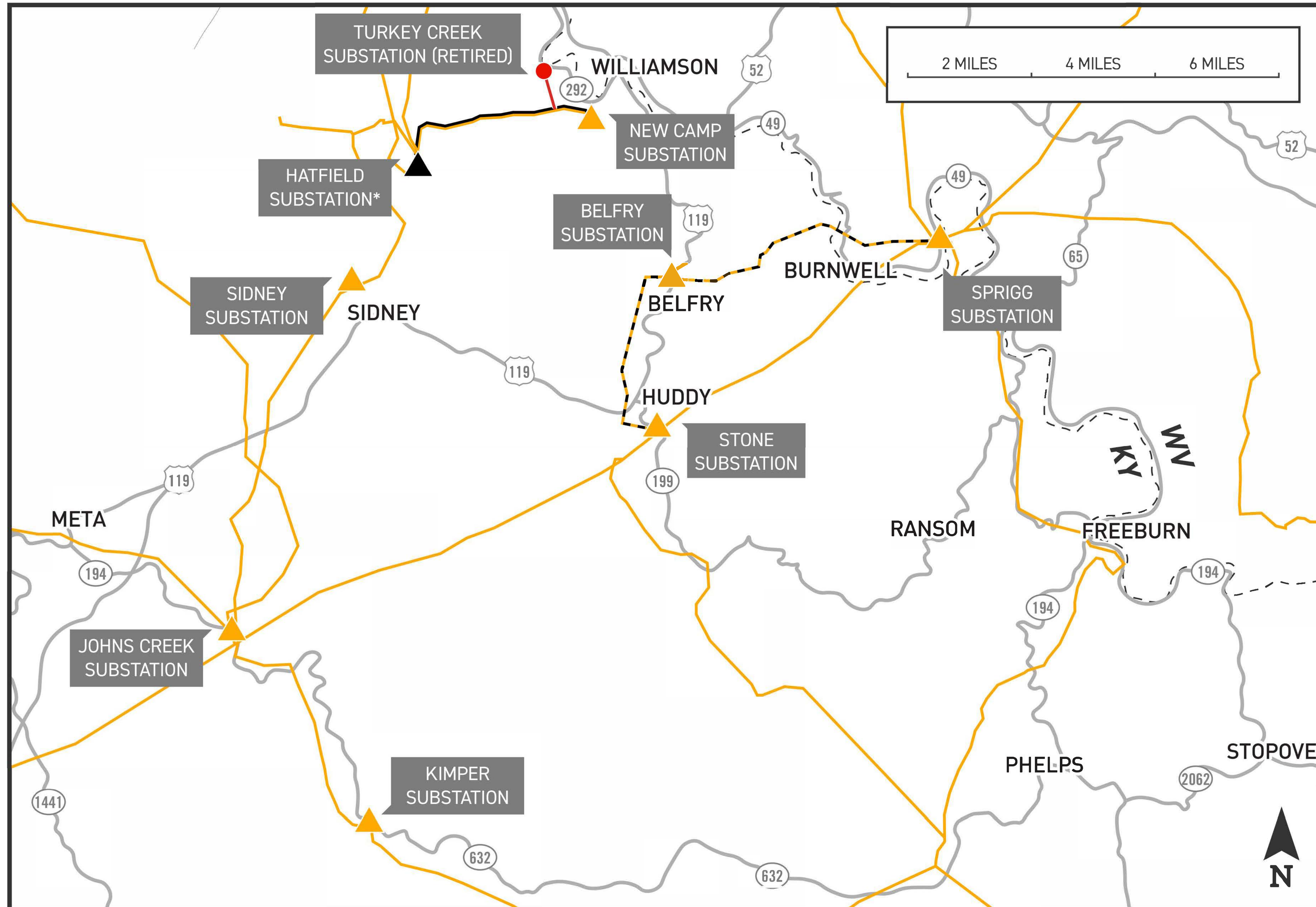
Witness: Nicolas C. Koehler

BELFRY AREA TRANSMISSION LINE PROJECT: PROPOSED PROJECT



BELFRY AREA

TRANSMISSION LINE PROJECT: ALTERNATIVE SOLUTION 1



BELFRY AREA TRANSMISSION LINE PROJECT: ALTERNATIVE SOLUTION 1

- EXISTING TRANSMISSION LINE
 - ▲ EXISTING SUBSTATION
 - ▲ EXISTING SUBSTATION TO BE UPGRADED
- THE FOLLOWING COMPONENTS ARE SUPPLEMENTAL:**
- - - EXISTING TRANSMISSION LINE TO BE REBUILT IN OR NEAR EXISTING RIGHT-OF-WAY
 - TRANSMISSION LINE TO BE CONSTRUCTED PARALLEL TO AN EXISTING LINE
 - RETIRED SUBSTATION
 - EXISTING TRANSMISSION LINE TO BE RETIRED

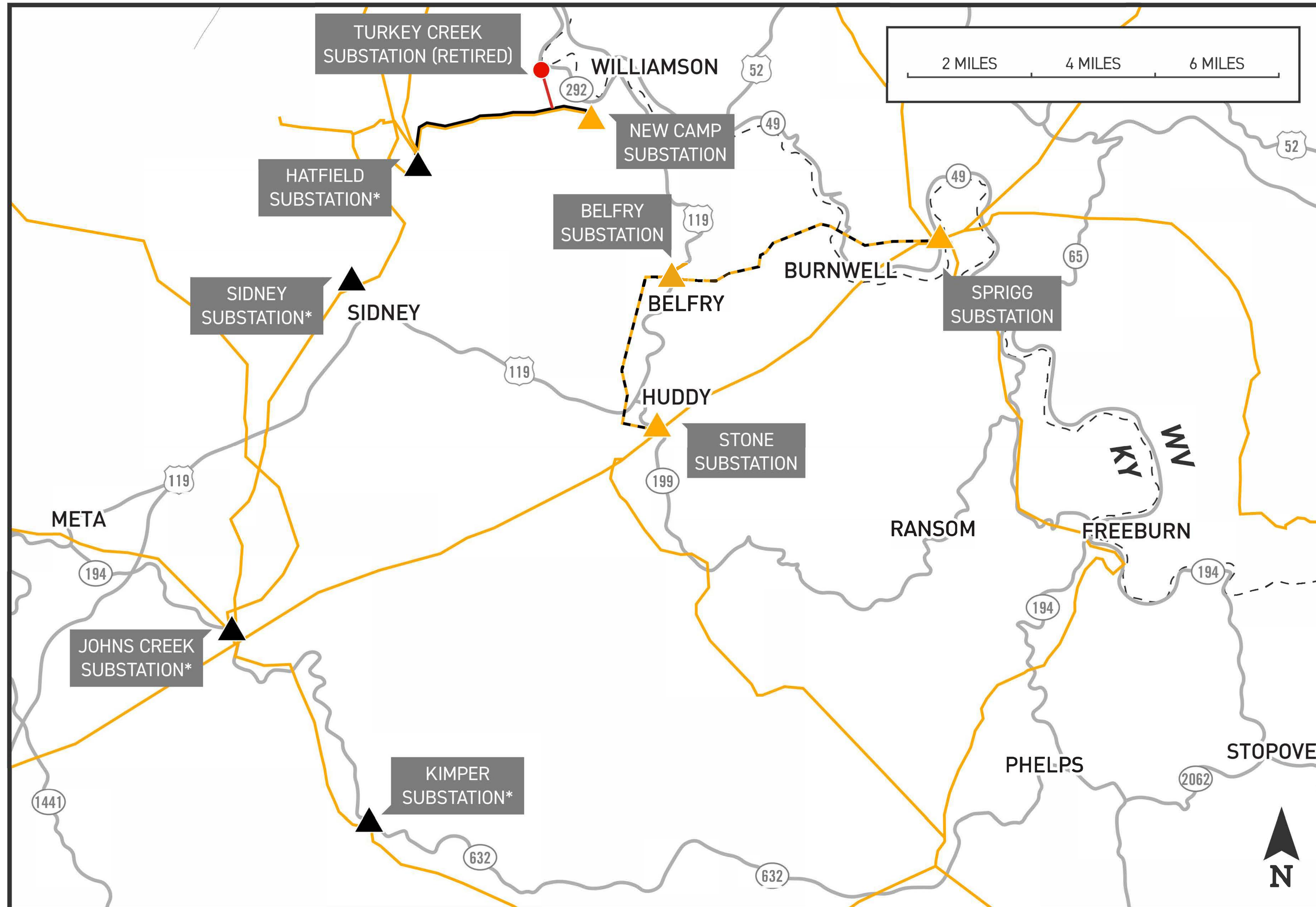
***The following components are baseline:**

Upgrades at Hatfield Substation:

- Expand the station to allow installation of new 138/69/12kV 130 MVA transformer and related equipment.
- Expand the 138kV and 69kV buses to allow the additional transformer installation and allow the new 69kV line to New Camp Substation.
- Install a 138kV breaker on the Inez line, new 69kV transformer low side breaker and 138kV circuit switcher.

BELFRY AREA

TRANSMISSION LINE PROJECT: ALTERNATIVE SOLUTION 2



BELFRY AREA TRANSMISSION LINE PROJECT: ALTERNATIVE SOLUTION 2

- EXISTING TRANSMISSION LINE
- ▲ EXISTING SUBSTATION
- ▲ EXISTING SUBSTATION TO BE UPGRADED

THE FOLLOWING COMPONENTS ARE SUPPLEMENTAL:

- EXISTING TRANSMISSION LINE TO BE REBUILT IN OR NEAR EXISTING RIGHT-OF-WAY
- TRANSMISSION LINE TO BE CONSTRUCTED PARALLEL TO AN EXISTING LINE
- RETIRED SUBSTATION
- EXISTING TRANSMISSION LINE TO BE RETIRED

***The following components are baseline:**

- Hatfield Substation - Install a new 23 MVAR capacitor bank and a 69kV capacitor switcher.
- Sidney Substation - Install a new 11.5 MVAR capacitor bank, a 69kV capacitor bank switcher, and a 69 kV bus.
- Johns Creek Substation - Replace a 9.6 MVAR capacitor bank and associated equipment with a new 23 MVAR capacitor bank.
- Kimper Substation - Install a new 11.5 MVAR capacitor bank and 69kV cap bank switcher.

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KPSC 1_2 Refer to the Application, Exhibit 22.

a. Provide a comparison of the project components in Alternative Solutions 1 and 2 to the two Alternative Solutions provided in Case No. 2022-00236.² Include in the comparison the estimated cost of each project component.

b. In the present proceeding, for each Alternative Solution project component not included as part of the Alternative Solutions in Case No. 2022-00236, explain why the project was not included previously.

c. In the present proceeding, for each Alternative Solution project component not included as part of the Alternative Solutions in Case No. 2022-00236, explain whether the separate project components were already in Kentucky Power's construction work plan when Case No 2022-00236 was filed.

²Case No. 2022-00236, Electronic Application of Kentucky Power Company for a Certificate of Public Convenience and Necessity to Construct 69 KV Transmission Lines and Associated Facilities in Pike County, Kentucky (filed Sept. 8, 2022)

RESPONSE

a. As a threshold matter, the Company notes that the "alternative solutions in Case No. 2022-00236" as referenced in the question are in fact not solutions sufficient to address the electrical requirements of the project (see response in subpart (b) for additional information.) In contrast, the components listed for either of Alternative 1 and Alternative 2 as described in the current application would address the electrical requirements of the project. The Company further notes that Alternative 1 and Alternative 2 are inferior electrically and more costly financially, compared to the Proposed Project. Because the "alternative solutions in Case No. 2022-00236" were and are insufficient to address the Project's electrical requirements , they cannot be considered alternatives solutions.

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b. Alternative Solutions 1 and 2 were not described in Case No. 2022-000236 because they had not been developed at the time of the filing of that case. The “alternative solutions in Case No. 2022-00236” and the associated high-level estimated costs as of 2020 were not presented as part of the application in that case. They were only produced directly in response to Commission Staff’s first set of data requests, Item 28, and were never intended to represent an alternative solution to the Proposed Project because they no longer addressed the requirements in the project area by the time the application in Case No. 2022-00236 was filed.

After the components of the “alternative solutions” described in Case No. 2022-00236 were presented to PJM during Regional Transmission Expansion Plan (“RTEP”) planning process meetings in December 2020 and January 2021, load requirements in the area increased. Those additional requirements rendered the upgrades included in the “alternate solutions in Case No. 2022-00236” insufficient to address the requirements in the area by the time that case was filed. As such, the Company presented only the Proposed Solution as part of its application in Case No. 2022-00236. Alternative Solutions 1 and 2 were developed specifically as part of this application in response to the Commission’s January 5, 2023 order in Case No. 2022-00236, and still are electrically inferior to the Proposed Project and are more costly financially. Please also see the Company’s response to KPSC 1-11.

c. No, they were not. Nor are they in the Company’s construction work plan after this case (Case No. 2023-00040) was filed. Please see the Company’s response to subparts (a) and (b).

Witness: Nicolas C. Koehler

DATA REQUEST

KPSC 1_3 Refer to the Application, Exhibit 22. If one of the Alternative Solutions were to be constructed in lieu of the proposed project and the Belfry substation is not retired, explain whether the Belfry substation would need to be retired and replaced by the Orinoco substation at a later date. Include in the response the proposed date the Belfry substation would be retired.

RESPONSE

Importantly, neither Alternative Solution 1 nor Alternative Solution 2 should be constructed in lieu of the Proposed Project because both of those two alternative solutions are inferior electrically and would cost more to construct. Constructing Alternative Solution 1 or Alternative Solution 2 in lieu of the Proposed Project would not be to the benefit of customers from a service and reliability perspective or from a financial perspective. See the Direct Testimony of Company Witness Koehler for additional information. Notwithstanding, yes, the Belfry Substation would need to be replaced if the Stone to Sprigg line rebuild alternatives were to be constructed as opposed to the Proposed Project. The Belfry Substation's condition has asset renewal needs associated with it. Absent the Proposed Project, the Belfry Substation would be expected to be retired and a replacement of this substation would be necessary within the next five years.

Based on current information, it is expected that the Belfry substation cannot be effectively rebuilt in place, and therefore, absent the Proposed Project, it would be necessary to construct a greenfield substation such as the Orinoco substation. The Belfry Substation's 46/12kV transformer, structures, breakers, and associated equipment are legacy assets that need to be replaced. Please see Exhibit 20, Line (E) in the Application for additional information.

The following is a summary of the asset renewal needs at the Belfry substation:

- Belfry substation currently contains wood structures dating back to 1976 and have experienced weathering and deterioration, including rot at the ground level of four of the poles.

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- One of the two 12kV breakers is an oil filled type breaker. This breaker is of 1975 vintage. This breaker is oil filled without oil containment; oil filled breakers have much more maintenance required due to oil handling than their modern, vacuum counterparts do not require. This circuit breaker has experienced 42 fault operations which exceeds the manufacturer's designed number of full fault operations (10). Each of these fault operations is likely not at the full fault current rating of the circuit breakers, but with each fault operation of any magnitude comes accelerated aging.
- The Belfry 46/12kV transformer is of 1976 vintage and is in poor condition. Elevated levels of Carbon Dioxide and Ethane indicate excessive decomposition of the paper insulating materials. Analysis indicates overheating faults have occurred within the main tank based on the gassing concentrations, further degrading the insulating paper materials. The presence of Carbon Dioxide and Ethane, along with the indication of overheating indicates decomposition of the paper insulation that impairs the unit's ability to withstand future short circuit or through fault events due to the state of the paper insulation. A possible cause of overheating is having blocked or restricted oil flow in windings ducts/channels, which is likely occurring in this unit based on the interfacial tension (IFT) levels measured. The low levels of IFT indicate sludge is the radiators, core, and coil. This is an indication of an aged oil with polar contaminants and oxidation byproducts. This is a contaminated oil favoring accelerated aging of the insulation and formation of sludge which will impair proper oil circulation. Elevated moisture levels are above the threshold for a unit of this voltage class of 25 PPM. This measurement provides an indication that the transformer may have elevated moisture content. Elevated moisture level can be a result of gasket leaks or breakdown in oil or paper/pressboard insulation. The low levels of Dielectric strength indicate an increase in particles within the oil, decreasing the ability of the oil to withstand fault events, which can damage the paper insulation. The upward trend in insulation power factor and its historical volatility also indicates an increase in particles within the oil. The values of IFT, moisture, dielectric strength, and power factor indicate the dielectric strength of the insulation system (oil and paper) is in poor condition, which impairs the unit's ability to withstand electrical faults.

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- Belfry Substation currently deploys 10 relays, implemented to ensure the adequate protection and operation of the substation. Currently, all 10 relays (100% of all station relays) need replacement. Of these, 8 are of the electromechanical type which have significant limitations with regards to spare part availability and fault data collection and retention. In addition, these relays lack vendor support.
- There is insufficient access around the back side of the station to perform regular maintenance activities. Mobile transformer installation severely limits station access. The mobile must be backed into the station and left in the gate opening. Rebuilding on the existing site would be extremely difficult as there is no room to rebuild and keep station in service.

Due to the reasons listed above, the Belfry Substation would need to be rebuilt in the clear at a new site (such as the proposed Orinoco Substation site) near the load center.

The Belfry Substation is served off the Sprigg – Stone 46kV circuit; the proposed time to rebuild Belfry Substation would be at the same time the Stone – Sprigg 46kV line were to be rebuilt. Scheduling the substation replacement with the 46kV line would take advantage of efficiencies in resource mobilization, would facilitate the identification of an optimal substation site and would be more cost effective. However, if the hypothetical re-construction of the Stone-Sprigg line and the Belfry Substation were done at different times, it is reasonable to expect that additional costs would be incurred.

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1_4 Explain whether and to what extent either of the alternative solutions would remedy the specific issues being addressed by this project.

RESPONSE

Assuming they can be constructed as described, the components described as Alternative Solution 1 and Alternative Solution 2 in this application would address the requirements of the project, although in a manner that is electrically not as effective as the Proposed Project, and at a higher cost compared to the Proposed Project. Please see the Direct Testimony of Company Witness Koehler for additional details. Alternative Solution 1 and Alternative Solution 2 additionally make it more likely that future upgrades in the area would be required sooner, as compared with the Proposed Project. Also, each of Alternative Solution 1 and Alternative Solution 2 would require the construction of significantly longer transmission lines, as compared with the Proposed Project.

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1_5 Refer to the Direct Testimony of Nicholas Koehler, page 19, lines 10–13 and line 23. Also refer to the Application, Exhibit 22. Provide supporting calculations and documentation for the allegation that the cost of Alternatives 1 and 2 is \$15 million more than the proposed project.

RESPONSE

Please see KPCO_R_KPSC_1_5_Attachment1, Page 1 of 2, for a comparison of the costs of the Proposed Project with the Alternative Solutions. See KPCO_R_KPSC_1_5_Attachment1, Page 2 of 2, for the detailed costs of the Alternative Solutions. The cost estimates for these comparisons are comparable on an in-service date basis.

As noted in the comparison presented in Attachment1, the cost of the Proposed Project (including some retirement work required on the Stone-Sprigg line in West Virginia), is approximately \$49 million. The estimated costs in the Kentucky jurisdiction¹ of Alternative Solution 1 is approximately \$64 million and for Alternative Solution 2 is approximately \$67 million. As discussed in the notes to Attachment1, Page 1 of 2, the variances can be attributed to three factors:

1) Higher costs of \$13.6 million for the transmission lines due to significantly longer lengths (5.5 miles, nearly twice the length of the proposed project) that would be required under the Alternative Solutions as compared to the Proposed Project. Under the former there is a requirement to rebuild about 12 miles of new 69kV transmission lines; the Proposed Project requires building only 6.5 miles of line. (See application at 37a.) Note also that under the Alternative Solutions, the rebuilt Stone-Sprigg line would have to be operated at 46kV, despite being built at 69kV capacity. There is no such limitation for the new 69kV line built as part of the Proposed Project.

2) Under Alternative Solutions 1 and 2, \$3.4 million and \$6.2 million in additional station costs would be required, as shown on Attachment1, Page 1 of 2. Additionally, along with these higher costs, the Belfry Substation would also need to be rebuilt to 69kV capacity at some point in the next five years, as previously noted in the response to KPSC 1_3.

¹ The cost of Alternative Solutions 1 and 2 including work that would be required in West Virginia is \$73.8 million and \$76.5 million, respectively, as opposed to the proposed project total cost of \$49 million. The additional amount reflects line removal costs of \$1.05 million and line construction costs of \$8.7 million.

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3) These higher costs for the Alternative Solutions are mitigated by lower removal costs. Removal costs under the Alternative Solutions are \$700K lower primarily due to not having to remove the Belfry Substation.

Witness: Nicolas C. Koehler

DETAIL OF PROPOSED PROJECT VERSUS ALTERNATIVE SOLUTIONS 1 and 2.
 Detail of the Alternative Solutions is found on page 2 of this Attachment.

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 Attachment 1
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Proposed Project	Description	Proposed Project Costs	Alternative Solution 1	Alternative Solution 2	Differences (Project - Alt 1/Project - Alt 2)	Description	
Line Work Total		30,588,061.69	44,200,000.00	44,200,000.00			
	Orinoco - Stone TLINE	9,408,694.76			(13,611,938.31)	The greater cost of line investments under the Alternative Solutions are due to the larger amount of line miles that are required under the Alternative Solutions. While the Company's Proposed Solution requires the construction of 6.5 miles of line, the Alternative Solutions will require construction/reconstruction of approximately 10 miles in Kentucky.	
	Orinoco - Stone ROW	795,732.00			(13,611,938.31)		
	New Camp - Orinoco TLINE	16,645,708.53					
	New Camp - Orinoco ROW	1,153,912.00					
	New Camp Tap TLINE	617,410.71					
	New Camp Tap ROW	71,577.14					
	Belfry - Stone Trans Fiber	417,886.83					
	Orinoco Distribution Line Work	1,477,139.73					
Removal Total		6,794,418.16	6,090,000.00	6,090,000.00	704,418.16		The Proposed Solution will incur larger amounts for removal costs than the Alternative Solutions due to the retirement of the Sprigg-Stone 46 kV line as well as the removal of the Belfry station. Under the Alternative Solutions, removal costs are limited to replacement of the Sprigg-Stone Line.
	Sprigg - Stone Removal KY	5,471,900.49			704,418.16		
	Belfry Removal	560,668.12					
	Sprigg Station Removal Work	183,678.65					
	Turkey Creek Tap Removal	578,170.90					
Station Total		10,296,728.06	13,745,197.00	16,500,945.00	(3,448,468.94)	Due to additional work required at existing stations, both Alternative Solutions will result in necessary higher investment at those stations in lieu of the Proposed Project.	
	Hatfield Station Work	793,278.00			(6,204,216.94)		
	Stone Station Work	1,120,725.86					
	Orinoco Station	4,727,542.34					
	Orinoco Station Land Purchase	728,357.00					
	New Camp Substation Work	2,520,281.22					
	New Camp - Orinoco TFC (Transition Fiber Cable).	406,543.65					
Project Total in Kentucky Jurisdiction		47,679,207.91	64,035,197.00	66,790,945.00	(16,355,989.09)		
P19305006	Sprigg - Stone Removal WV (1)	1,052,697.00			(19,111,737.09)		
	Total Proposed Project	48,731,904.91					
	Rounded	49,000,000.00					

Note (1): This line represents retirement work on the Sprigg-Stone line in West Virginia. Note that these amounts were included in the estimate of \$49 million dollars presented at paragraph 54 in the Application.

Detailed Summary of Alternative Solutions 1 and 2:

Line No.	Asset	Company	Type of Cost	Description	Total Loaded Cost					
					Alternative Solution 1			Alternative Solution 2		
					Baseline 1	Supplemental 1	Total Alternative Solution 1	Baseline 2	Supplemental 2	Total Alternative Solution 2
STATION CAPITAL WORK										
1	Hatfield Station	KPCO	Cap Ex	Baseline Alternative Solution 1_Hatfield substation - Install a new 138/69/12kV 130 MVA transformer, including yard expansion, new DICM, new 138kV line breakers, and relocating existing equipment.	10,355,306					
2	Breaks Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Breaks substation - Remote end work required due to Cap Bank addition at Kimper				342,936		
3	Coleman Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Coleman substation - Remote end work required due to Cap Bank addition at Kimper				576,391		
4	Hatfield Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Hatfield substation -Install new 69kV cap bank.				1,548,451	115,707	
5	John's Creek Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Johns Creek substation - Replacing existing 69kV Cap Bank with larger unit				939,903		
6	Kimper Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Kimper substation -Replace existing 69kV cap bank with larger unit, including yard expansion.				2,228,018		
7	Sidney Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Sidney substation - Replacing existing 69kV Cap Bank with larger unit				1,894,115		
8	Hatfield Station	KPCO	Cap Ex	Supplemental Alternative Solution 1_Hatfield substation - Install additional 69kV New Camp line exit and replace existing New Camp line switch with a breaker (yard expansion is completed under the Baseline Alternative Solution #1 at Hatfield substation)		582,748				
9	Hatfield Station	KPCO	Cap Ex	Supplemental Alternative Solution 2_Hatfield substation - Install additional 69kV New Camp line exit and replace existing New Camp line switch with a breaker, including a yard expansion, new DICM, and relocation of existing equipment. No existing equipment relocation or yard expansion, or new DICM is required to meet the Baseline Alternative Solution 2 at Hatfield substation)					5,673,309	
10	Sprigg Station	APCO	Cap Ex	Supplemental Alternative Solution 1 & 2_Sprigg substation - Remote end (line relaying) work to coordinate with the Sprigg-Stone line rebuild.		805,312			805,312	
11	Stone Station	KPCO	Cap Ex	Supplemental Alternative Solution 1 & 2_Stone substation - Remote end (line relaying) work to coordinate with the Sprigg-Stone line rebuild.		236,380			236,380	
	Hatfield Station Land Expansion	KPCO	Cap Ex	Baseline Alternative Solution 1 & 2_Hatfield substation - Expansion Property Purchase	753,940			753,940		
12	Hatfield Station	KPCO	Cap Ex	Baseline Alternative Solution 1_Hatfield substation - Install a new 138/69/12kV 130 MVA transformer, including yard expansion, new DICM, new 138kV line breakers, and relocating existing equipment.	918,122					
13	Breaks Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Breaks substation - Remote end work required due to Cap Bank addition at Kimper				18,490		
14	Coleman Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Coleman substation - Remote end work required due to Cap Bank addition at Kimper				20,961		
15	John's Creek Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Johns Creek substation - Replacing existing 69kV Cap Bank with larger unit				90,314		
16	Hatfield Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Hatfield substation -Install new 69kV cap bank, including yard expansion.				214,198		
17	Sidney Station	KPCO	Cap Ex	Baseline Alternative Solution 2_Sidney substation - Replacing existing 69kV Cap Bank with larger unit				29,015		
18	Hatfield Station	KPCO	Cap Ex	Supplemental Alternative Solution 2_Hatfield substation - Install additional 69kV New Camp line exit and replace existing New Camp line switch with a breaker, including a yard expansion, new DICM, and relocation of existing equipment. No existing equipment relocation or yard expansion, or new DICM is required to meet the Baseline Alternative Solution 2 at Hatfield substation)					920,116	
19	Sprigg Station	APCO	Cap Ex	Supplemental Alternative Solution 1 & 2_Sprigg substation - Remote end (line relaying) work to coordinate with the Sprigg-Stone line rebuild.						
20				Subtotal - Station Installation Costs	<u>12,027,368</u>	<u>1,717,829</u>	<u>13,745,197</u>	<u>8,656,732</u>	<u>7,844,213</u>	<u>16,500,945</u>
LINE CAPITAL WORK										
21	Stone - Belfry Line	KPCO	Cap Ex	Stone Substation to Belfry Switching Structure – 4.06 Miles (Includes ROW)	17,400,000			17,400,000		
22	Belfry - Sprigg Line	KPCO	Cap Ex	Belfry Switching Structure to Sprigg Substation - 4.84 Miles (Includes ROW, excludes 8.7M in WV) Will be built at 69kV but operated at 46 kV.	13,050,000			13,050,000		
23	Hatfield - New Camp Line	KPCO	Cap Ex	Hatfield Substation to New Camp Substation – 3.1 Miles	13,050,000			13,050,000		
	New Camp Tap	KPCO	Cap Ex	T-Line Configuration of New Camp 69kV Tap for New Camp Substation Expansion	700,000			700,000		
24				Subtotal - Line Installation Costs	<u>44,200,000</u>	<u>-</u>	<u>44,200,000</u>	<u>44,200,000</u>	<u>-</u>	<u>44,200,000</u>
REMOVAL WORK										
25	Removal of Retired Line	KPCO	Removal	Removal of retiring T-Lines. (8.25 Miles of single circuit 46kV and .75 miles of 69. kV) - excludes WV	6,090,000		6,090,000	6,090,000	-	6,090,000
26				TOTAL COSTS OF PROJECT ALTERNATIVE SOLUTIONS (1)	<u>62,317,368</u>	<u>1,717,829</u>	<u>64,035,197</u>	<u>58,946,732</u>	<u>7,844,213</u>	<u>66,790,945</u>
27				Additional Line Costs that would be incurred In West Virginia.	9,750,000	-	9,750,000	9,750,000		9,750,000
28				Total Project Costs (Kentucky and West Virginia).	<u>72,067,368</u>	<u>1,717,829</u>	<u>73,785,197</u>	<u>68,696,732</u>	<u>7,844,213</u>	<u>76,540,945</u>

(1) The amounts shown here are for the Kentucky Jurisdiction portion of the Alternative Solutions. The Alternative Solutions involve an additional \$8.7 million in line construction costs, and \$1.05 million in removal costs in West Virginia.

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DATA REQUEST

KPSC 1_6 Refer to the Direct Testimony of George Reese. Define “conductor sway” and describe how it factors into Kentucky Power’s siting study.

RESPONSE

Conductor sway is defined as the distance from the overhead conductor at rest to the physical location of the conductor when displaced by wind. Adequate right-of-way (“ROW”) must be obtained to encompass the resulting conductor zone. Situations where a wider ROW may be necessary due to conductor sway were considered in all steps of the Siting Study.

Sway was considered when developing potential Study Segment locations. In areas where buildings would be located in proximity to the line, the potential need for a wider ROW to accommodate conductor sway was considered to evaluate whether the purchase of buildings would be necessary. This was considered a constraint and these locations were typically avoided. For example, there are two residences on Pecco Hollow Road that would likely be within the conductor sway area and would likely need to be removed if the line was rebuilt in place. This location was instead avoided.

The potential impacts of conductor sway were also considered in evaluating the Study Segments and Alternative Routes in order to minimize and avoid impacts to buildings or other sensitive resources. Study Segment 02 was eliminated due to concerns regarding the potential need to remove residences from beneath the span across Forest Hills Road to accommodate conductor sway.

Finally, the preliminary engineering design of the Proposed Route further defined areas of conductor sway. These are indicated on Attachment H to the Siting Study (Application, Exhibit 10, Attachment H). These areas were reviewed for potential impacts to buildings and other resources within the expanded ROW.

Witness: George T. Reese

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KPSC 1_7 Explain the difference in the meanings of “conductor blow-out” and “conductor sway” in terms of how Kentucky Power has used them in this Application.

RESPONSE

The terms are used interchangeably in this application. Please also see the Company's response to KPSC 1_6.

Witness: George T. Reese

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DATA REQUEST

KPSC 1_8 Refer to Case No. 2022-00236, Kentucky Power’s response to Staff’s First Request for Information (Staff’s First Request), Item 11. Provide an updated chart containing a cost breakdown of each route including both the preferred route and the alternative route.

RESPONSE

The below costs represent the best estimates the Company has at this time without completion of final ROW acquisition, access road determination, and final structure siting. The values have not changed from what was provided in the above referenced response in Case No. 2022-00236.

New Camp- Orinoco			Orinoco- Stone		
A	B	C- Proposed	D	E- Proposed	F
\$20.8M	\$25.2M	\$18.6M	\$10.2M	\$10.2M	\$11.9M

Witness: Nicolas C. Koehler

Witness: George T. Reese

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KPSC 1_9 Refer to Case No. 2022-00236, Kentucky Power's response to Staff's First Request, Item 28. Explain whether there are any changes in the estimated \$32.1 million supplemental alternative and \$0.37 baseline alternative transmission costs.

RESPONSE

Please see the Company's response to KPSC 1_2.

The referenced scopes (i.e. the supplemental line rebuild and the baseline capacitor bank) are not under consideration, because they are not viable solutions for the requirements of the project, and therefore cannot appropriately be considered alternatives. It is important to note that the estimates provided in the response to KPSC_1-28 from Case No. 2022-00236 related to scopes first developed when the project was originally presented in December 2020 and January 2021 to PJM. However, those proposals were immediately rejected by PJM and the Company because, when presented at these PJM stakeholder meetings, the Proposed Project was more cost effective than the alternative (i.e. the combined supplemental and baseline scopes referenced in the question). In 2022 and now, these scopes are in fact not alternatives because they no longer address the requirements of the project, and thus were not presented as alternatives as part of the Company's application in Case No. 2022-00236 or in this case.

In contrast, in the current Application the Company describes, for illustrative purposes, two alternative solutions (identified as Alternative Solution 1 and Alternative Solution 2). These two alternative solutions are presented in Exhibit 22 and discussed in Section VII in Company Witness Koehler's testimony filed in this Case. While viable, Alternative Solution 1 and Alternative Solution 2 are electrically inferior to, and as discussed in KPSC-1-5, would cost more than the Proposed Project. Alternative Solution 1 or Alternative Solution 2 also are reasonably expected to require additional investments in the future to address expected load growth in the area (which the Company notes is one of the areas with expected growth within its service territory).

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1_10 Refer to Case No. 2022-00236, January 5, 2023 Order. Provide a detailed explanation and analysis of how the 69 kV transmission line and substation upgrades proposed in this application do not result in wasteful duplication. In the response, specifically address how the proposed project would not result in an excess of capacity over need or excessive investment in relation to productivity or efficiency.

RESPONSE

The Proposed Project is neither wasteful or duplicative because it is the most cost effective solution (requiring half as much transmission line length as Alternatives Solutions 1 and 2) for the requirements for the area from a reliability and service perspective.

The Proposed Project provides an effective solution electrically to service requirements in the area. Without the Proposed Project, customers in the area and in other surrounding areas would be exposed to increased risk of failure of electric service, longer and/or more frequent outages, and deteriorated reliability. The components comprising the Proposed Project do not duplicate electrical capabilities currently present in Kentucky Power's service network. The Project will not result in wasteful or excessive investment, as illustrated by the fact that it is a more effective solution electrically and is less costly compared to other alternatives. The Proposed Project does not provide excessive capacity to the area, but rather addresses the needs of the area in a way that is cost effective and will delay the need for future upgrades.

The Company notes that the Proposed Project is comprised of the same key components (i.e., same 69kV transmission line and substation upgrades) in both Case No. 2022-00236 and Case No. 2023-00040. Specifically, these key components include the following: (a) construction of a new 69kV line between New Camp and Stone substation, (b) construction of Orinoco 69kV substation and (c) substation work required at New Camp, Hatfield, and Stone substations to allow for construction of the new 69kV line. The Proposed Project is electrically superior, more reliable, and more cost effective than any viable alternative.

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The proposed 69kV work would not result in an excess of capacity or excessive investment, as it is adequate to accommodate the expected load growth in the area and address identified baseline and supplemental needs, and further allow for load growth in the area with less investment compared to the other alternatives as described in the Application which, as mentioned before, are inferior electrically and more costly. Please also see the Direct Testimony of Company Witnesses Koehler and West for additional details.

Witness: Nicolas C. Koehler

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DATA REQUEST

KPSC 1_11 Explain whether Kentucky Power considered any other alternate solutions other than those discussed in the Application.

RESPONSE

There are no other viable solutions that the Company identified. Upon review, Alternative Solutions 1 and 2 were the only alternatives that were both plausibly constructable and would be sufficient to address the identified needs; however, these alternatives still would be electrically inferior and more costly as compared to the Proposed Project. The Company rejects and does not provide further consideration to options that are determined to be insufficient to address the requirements of the project. The Company conducted a comprehensive analysis of the needs in the area and of possible solutions, both prior to the filing of the application in Case No. 2022-00236 and prior to the filing of the application in the current case, as well as in advance of presenting solutions to PJM in the context of PJM's Regional Transmission Expansion Plan planning process. That analysis resulted in the presentation of the project proposed in Case No. 2022-00236, and again proposed, but certain necessary enhancements addressing needs not present at the time of the application in Case No. 2022-00236, in the current Application (see the Company's response to KPSC 1-2).

As a result of the Commission's denial of the application in Case No. 2022-00236, the Company re-examined possible alternatives to address the requirements of the area, and developed the alternatives identified as Alternative Solution 1 and Alternative Solution 2, described in the application. The development of these alternatives was not the result of the Company's normal planning process, because the Company does not in the normal course of business develop the cost estimates and advanced engineering analysis required to describe Alternative Solution 1 and Alternative Solution 2 when it is clear at a later stage of the evaluation process that such alternatives are likely to be less effective electrically and more costly financially than an identified solution. Additionally, alternatives that do not satisfy the requirements of the project (such as those originally described during presentations to PJM during the RTEP process) are not the subject of further consideration, time and resources once it is determined that they are not sufficient to meet the requirements of the project. The Company uses its engineering judgment in making such planning determinations.

Witness: Nicolas C. Koehler



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E-Signature Summary

E-Signature 1: Nicolas C Koehler (NCK)

July 11, 2023 07:09:49 -8:00 [448512599A15] [167.239.221.104]
 nckoehler@aep.com (Principal) (Personally Known)

E-Signature Notary: Marilyn Michelle Caldwell (MMC)

July 11, 2023 07:09:49 -8:00 [441B30020E7B] [167.239.221.106]
 mmcaldwell@aep.com

I, Marilyn Michelle Caldwell, did witness the participants named above electronically sign this document.



VERIFICATION

The undersigned, Nicolas C. Koehler, being duly sworn, deposes and says he is the Director of East Transmission Planning for American Electric 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.

Nicolas C Koehler
Signed on 2023/07/11 07:09:49 -8:00
Nicolas C. Koehler

Commonwealth of Kentucky)
)
County of Boyd) Case No. 2023-00040

Subscribed and sworn to before me, a Notary Public in and before said County and State, by Nicolas C. Koehler, on July 11, 2023.

Not Marilyn Caldwell

MARILYN MICHELLE CALDWELL
ONLINE NOTARY PUBLIC
STATE AT LARGE KENTUCKY
Commission # **KYNP71841**
My Commission Expires May 05, 2027

Notarial act performed by audio-visual communication

My Commission Expires May 5, 2027

Notary ID Number KYNP71841

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VERIFICATION

The undersigned, George T. Reese, being duly sworn, deposes and says he is the Vice President, Business Sector Manager for Power Delivery – Environmental for GAI Consultants, Inc., 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.



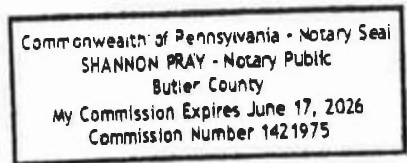
George T. Reese

STATE OF PENNSYLVANIA)
)
COUNTY OF BUTLER) Case No. 2023-00040

Subscribed and sworn to before me, a Notary Public in and before said County and State, by George T. Reese, on July 11, 2023.



Notary Public



Notary ID Number 1421975