

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC APPLICATION OF KENTUCKY	)	
POWER COMPANY FOR A CERTIFICATE OF	)	
PUBLIC CONVENIENCE AND NECESSITY TO	)	CASE NO.
CONSTRUCT 69 KV TRANSMISSION LINES AND	)	2023-00040
ASSOCIATED FACILITIES IN PIKE COUNTY,	)	
KENTUCKY	)	

ORDER

On June 12, 2023, Kentucky Power Company (Kentucky Power) filed an application, pursuant to KRS 278.020(2) and 807 KAR 5:001, Section 15, for a Certificate of Public Convenience and Necessity (CPCN) authorizing it to:

1. Retire the Kentucky portion of the existing 8.2 mile 46 kilovolt (kV) transmission line between the existing Stone Substation in Pike County, Kentucky, and the Sprigg Substation in Mingo County, West Virginia. Kentucky Power will only perform the work related to the 6.5-mile portion of the transmission line located in the Commonwealth of Kentucky;<sup>1</sup>
2. Retire the existing Belfry 46 kV Substation in Pike County, Kentucky;<sup>2</sup>
3. Retire the 0.75-mile Turkey Creek 69 kV transmission line and tap;<sup>3</sup>
4. Construct Orinoco 69 kV Substation in Pike County, Kentucky;<sup>4</sup>

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<sup>1</sup> Application at 1 and Direct Testimony of Brian West (West Direct Testimony) at 7.

<sup>2</sup> Application at 1 and West Direct Testimony at 8.

<sup>3</sup> Application at 1 and West Direct Testimony at 8.

<sup>4</sup> Application at 1 and West Direct Testimony at 6.

5. Construct approximately 6.5 miles of 69 kV transmission line in Pike County, Kentucky, between the existing New Camp 69 kV Substation and the existing Stone 69 kV Substation via the new Orinoco 69 kV Substation;<sup>5</sup>

6. Perform related work, including certain substation equipment retirements and replacements, at the Stone 69 kV Substation and the New Camp 69 kV Substation;<sup>6</sup>

7. Perform reconfiguration work at the New Camp 69 kV Tap;<sup>7</sup> and

8. Perform related distribution line work to connect the Orinoco 69 kV Substation and the existing distribution line system.<sup>8</sup>

The project area is located in northeastern Pike County, Kentucky.<sup>9</sup> Kentucky Power stated that it will construct and own all of the components of the Belfry Area Transmission Line Project.<sup>10</sup> This project is substantially the same project as proposed by Kentucky Power in Case No. 2022-00236.<sup>11</sup> The Commission denied that CPCN application finding that the need was established but Kentucky Power did not demonstrate a lack of wasteful duplication.<sup>12</sup>

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<sup>5</sup> Application at 1 and West Direct Testimony at 7.

<sup>6</sup> Application at 1 and West Direct Testimony at 7.

<sup>7</sup> Application at 2 and West Direct Testimony at 7.

<sup>8</sup> Application at 2 and West Direct Testimony at 7.

<sup>9</sup> Application at 4.

<sup>10</sup> Application at 4 and 14 and West Direct Testimony at 8.

<sup>11</sup> Case 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* (Ky. PSC Jan. 5, 2023).

<sup>12</sup> Case No. 2022-00236, Jan. 5, 2023 Order.

Kentucky Power requested authority to relocate the centerline and associated right-of-way up to 200 feet in any direction from the location as shown on the maps filed with the application.<sup>13</sup> The proposed 400-foot-wide corridor creates a buffer area surrounding the centerline and the requested corridor allows flexibility for minor adjustments that may occur during the final engineering. Kentucky Power stated it did not expect that the centerline will shift significantly outside the 400-foot area shown on Exhibit 4.<sup>14</sup>

By Order issued on June 16, 2023, the Commission established a procedural schedule for the orderly processing of this matter and provided a deadline to request intervention. Kentucky Power responded to two requests for information from Commission Staff.<sup>15</sup> An informal conference was held on August 17, 2023, after which Kentucky Power filed supplemental responses to certain previous requests for information.<sup>16</sup> On September 11, 2023, Kentucky Power filed a motion to submit this matter for a decision based upon the written record. There are no intervenors. The record is complete, and the matter stands ready for a decision.

### BACKGROUND

Kentucky Power is a corporation organized on July 21, 1919, pursuant to the laws of the Commonwealth of Kentucky.<sup>17</sup> Kentucky Power is a utility as defined in

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<sup>13</sup> Application at 15-16, Exhibit 4 and West Direct Testimony at 9–10.

<sup>14</sup> Application at 16 and West Direct Testimony 9–10.

<sup>15</sup> Kentucky Power's Response to Commission Staff's First Request for Information (Staff's First Request) (filed July 12, 2023) and Kentucky Power's response to Commission Staff's Second Request for Information (Staff's Second Request) (filed Aug. 4, 2023).

<sup>16</sup> Kentucky Power's Supplemental Responses to Staff's First Request (filed Sept. 8, 2023).

<sup>17</sup> Application at 2.

KRS 278.010.<sup>18</sup> Kentucky Power is engaged in the generation, purchase, transmission, distribution, and sale of electric power.<sup>19</sup> Kentucky Power serves approximately 163,000 customers in the following 20 counties in eastern Kentucky: Boyd, Breathitt, Carter, Clay, Elliott, Floyd, Greenup, Johnson, Knott, Lawrence, Leslie, Letcher, Lewis, Magoffin, Martin, Morgan, Owsley, Perry, Pike, and Rowan.<sup>20</sup> Kentucky Power also supplies electric power at wholesale to other utilities and municipalities in Kentucky for resale.<sup>21</sup>

Kentucky Power is a wholly owned subsidiary of American Electric Power Company, Inc. (AEP).<sup>22</sup> AEP is a multi-state public utility holding company that includes utilities providing electric service to customers in parts of eleven states: Arkansas, Indiana, Kentucky, Louisiana, Michigan, Ohio, Oklahoma, Tennessee, Texas, Virginia, and West Virginia.<sup>23</sup>

Kentucky Power is a member of PJM Interconnection, LLC (PJM). PJM is a regional transmission organization (RTO) approved by the Federal Energy Regulatory Commission (FERC). The purpose of an RTO is to promote the regional administration of high-voltage transmission and ensure nondiscriminatory access to transmission systems. PJM coordinates and administers the movement of wholesale electricity in all or parts of 13 states and the District of Columbia.<sup>24</sup> The Commission approved Kentucky

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<sup>18</sup> Application at 3.

<sup>19</sup> Application at 3

<sup>20</sup> Application at 3.

<sup>21</sup> Application at 3.

<sup>22</sup> Application at 3.

<sup>23</sup> Application at 3.

<sup>24</sup> <https://pjm.com/about-pjm> Last accessed September 21, 2023.

Power's transfer of functional operation of its transmission facilities, subject to certain stipulations, to PJM by Order on May 19, 2004, in Case No. 2002-00475.<sup>25</sup> Kentucky Power began participating in the PJM energy market on October 1, 2004.<sup>26</sup>

As a participant in PJM, Kentucky Power must achieve and maintain compliance with respect to PJM's system reliability, operational performance, and market efficiency criteria determined by PJM's Office of the Interconnection.<sup>27</sup> Kentucky Power stated that the Belfry Area Transmission Line Project is proposed to address voltage drops identified by PJM as Baseline violations<sup>28</sup> at the New Camp 69 kV Substation, address the need for asset renewal and aging infrastructure on the existing Sprigg - Stone 46 kV circuit, and strengthen the reliability of the local transmission system by upgrading the existing system from 46 kV to 69 kV.<sup>29</sup> The project includes five components identified as "Baseline" by PJM transmission planning criteria and seven components considered "Supplemental" by the same criteria.<sup>30</sup> Kentucky Power maintained that Baseline projects are transmission expansions or enhancements that are required to achieve compliance

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<sup>25</sup> Case No. 2002-00475, *Application of Kentucky Power Company D/B/A American Electric Power for Approval, to the Extent Necessary, to Transfer Functional Control of Transmission Facilities Located in Kentucky to PJM Interconnection, L.L.C. Pursuant to KRS 278.218* (Ky. PSC May 19, 2004). See also Direct Testimony of Nicholas C. Koehler (Koehler Direct Testimony) (filed Sept. 8, 2022) in this proceeding at 4–7, and Application, Exhibit 17, for a detailed description of how PJM, AEP, and Kentucky Power coordinate the planning of Kentucky Power's transmission system.

<sup>26</sup> See Case No. 2019-00154, *Electronic Application of Kentucky Power Company for a Certificate of Public Convenience and Necessity to Perform Upgrade, Replacement, and Installation Work at its Existing Substation Facilities in Perry and Leslie Counties, Kentucky* (Ky. PSC May 28, 2020) and Direct Testimony of Kamran Ali (filed June 27, 2019) at 6 for a summary of Kentucky Power's history with PJM.

<sup>27</sup> Direct Testimony of Nicholas Koehler (Koehler Direct Testimony) at 6.

<sup>28</sup> Koehler Direct Testimony at 12.

<sup>29</sup> Application at 2.

<sup>30</sup> Application at 10–11.

with respect to PJM’s system reliability, operational performance, or market efficiency criteria as determined by PJM’s Office of the Interconnection, as well as projects that are needed to meet transmission owners’ local transmission planning criteria.<sup>31</sup> Further, Kentucky Power maintained that Supplemental projects include all projects that do not address minimum, bright-line transmission planning criteria, but are needed to maintain the existing grid as designed, connect new customers to the grid, satisfy contractual and regulatory requirements, and meet RTO and industry standards as set forth in the PJM Operating Agreement.<sup>32</sup> Kentucky Power asserted that the designation of a project as Baseline or Supplemental is not indicative of the level of need for a project and that the designations are not always mutually exclusive.<sup>33</sup> According to Kentucky Power, a project can sometimes be justified under either analysis.<sup>34</sup>

### THE PROPOSED PROJECT

Kentucky Power characterized the Belfry Area Transmission Line Project as a Baseline project and asset renewal project designed to address aging infrastructure and voltage violations.<sup>35</sup> A significant portion of the Project is the proposed Stone–New Camp 69 kV transmission line project, which Kentucky Power proposed to construct using a single circuit configuration crossing approximately 6.5 miles in Pike County.<sup>36</sup> Approximately 4.2 miles of this transmission line is proposed to run from the New Camp

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<sup>31</sup> Koehler Direct Testimony at 6.

<sup>32</sup> Koehler Direct Testimony at 6.

<sup>33</sup> Koehler Direct Testimony at 8–9.

<sup>34</sup> Koehler Direct Testimony at 8–9.

<sup>35</sup> Application at 19.

<sup>36</sup> West Direct Testimony at 5–6.

substation to the Orinoco Substation, and then from the Orinoco Substation an additional 2.3 miles of 69 kV transmission line will run to Stone Substation.<sup>37</sup> Kentucky Power proposed to construct 6.5 miles of 69 kV transmission line between New Camp and Stone Substations via a newly constructed Orinoco Substation, which will replace the existing Belfry 46 kV Substation, and to retire 8.2 miles of 46 kV transmission line.

Kentucky Power also proposed changes and additions to several circuit breakers. At the Stone Substation, Circuit Breaker A is proposed to remain in place and be utilized as T1 low-side breaker; Circuit Breaker B is proposed to remain in place and be utilized as the new Hatfield (via Orinoco and New Camp) 69 kV line breaker.<sup>38</sup> Kentucky Power proposed to add a new 69 kV Circuit Breaker E for the Coleman Line exiting in Stone Substation and to retire the 46 kV equipment from Stone Substation.<sup>39</sup> Additionally, Kentucky Power proposed to reconfigure the New Camp 69 kV Tap, including access road improvements/installation and temporary wire and permanent wire work along with dead end structures installation.<sup>40</sup> At New Camp Substation, Kentucky Power stated that it planned to rebuild the 69 kV bus, add a 69 kV motor-operated air break (MOAB) switch and replace the 69 kV Ground switch Z1 with a 69 kV circuit switcher on the New Camp Transformer.<sup>41</sup> Kentucky Power identified the construction of the 69 kV transmission line

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<sup>37</sup> West Direct Testimony at 7.

<sup>38</sup> West Direct Testimony at 7–8.

<sup>39</sup> West Direct Testimony at 7–8.

<sup>40</sup> West Direct Testimony at 7–8.

<sup>41</sup> West Direct Testimony at 7–8.

as well the new substation were needed for Kentucky Power to meet its obligations to PJM.<sup>42</sup>

However, Kentucky Power also maintained that these components are needed for it to provide adequate, efficient and reasonable service. Voltage drop violations were identified at the New Camp 69 kV substation in the event of an N-1-1 scenario that involves the loss of the 138/69 kV transformer at Johns Creek and the loss of the Inez-Sprigg 138 kV Line.<sup>43</sup> Kentucky Power maintained that failure to address PJM Baseline voltage violations would result in Kentucky Power being required to drop load to avoid the voltage violations.<sup>44</sup> Further, Kentucky Power stated that PJM transmission planning treats load dropping as an acceptable means of mitigating potential system reliability criteria violations under certain scenarios, but that doing so is contrary to Kentucky Power's obligation under KRS 278.030(3) to provide adequate, efficient and reasonable service.<sup>45</sup> Kentucky Power asserted that retiring the 46 kV Stone–Sprigg transmission line and the Belfry 46 kV Substation, and constructing the 69 kV Project as proposed will solve the identified voltage violations.<sup>46</sup> In support of retiring the 46 kV transmission line and substation, Kentucky Power asserted that 46 kV is considered an obsolete operating voltage as the replacement parts for 46 kV rated equipment are no longer available.<sup>47</sup> Additionally, Kentucky Power stated that construction of the Project would provide the

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<sup>42</sup> West Direct Testimony at 6.

<sup>43</sup> Koehler Direct Testimony at 12.

<sup>44</sup> Koehler Direct Testimony at 13–14.

<sup>45</sup> Koehler Direct Testimony at 9.

<sup>46</sup> Koehler Direct Testimony at 17

<sup>47</sup> Kentucky Power's Response to Staff's Second Request, Item 1.

New Camp Substation with looped service, rather than maintaining the current radial-feed service to customers served by that substation.<sup>48</sup> Kentucky Power stated that the existing Stone–Sprigg 46 kV transmission lines total approximately 8.2 miles and were originally installed in the 1940s.<sup>49</sup> Approximately 6.5 miles of the line passes through Kentucky and is owned by Kentucky Power; the remaining 1.7 miles of line is located in West Virginia and owned by Appalachian Power Company.<sup>50</sup> Kentucky Power maintained that the existing 1940s-era 46 kV network in the Belfry area has reached a level of deterioration that requires replacement.<sup>51</sup> To support its position that a replacement of the line is required due to its deteriorated condition, Kentucky Power provided that from 2017 to 2021, the Stone–Sprigg transmission line experienced a total of ten momentary and five permanent outages, which resulted in 880,039 customer minutes of interruption.<sup>52</sup> The momentary outages were due to lightening and ice or snow.<sup>53</sup> The permanent outages were due to vegetation fall-ins from outside of the right-of-way, wind, lightening, and cross-arm failure.<sup>54</sup>

The Supplemental Components of the Belfry Area Transmission Line Project that Kentucky Power proposed are to replace the Belfry Substation with a newly constructed Orinoco Substation by installing a 69 kV double-box bay, a 12 kV rural bay to be built in

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<sup>48</sup> Koehler Direct Testimony at 10.

<sup>49</sup> West Direct Testimony at 17 and Koehler Direct Testimony at 10.

<sup>50</sup> Koehler Direct Testimony at 10–11.

<sup>51</sup> Koehler Direct Testimony at 17.

<sup>52</sup> Koehler Direct Testimony at 11.

<sup>53</sup> Koehler Direct Testimony at 11.

<sup>54</sup> Koehler Direct Testimony at 11.

the clear southwest of the existing Belfry Station, a 69/12 kV 20 MVA transformer, and three 12 kV breakers.<sup>55</sup> Kentucky Power proposed to retire the Belfry 46 kV Substation and the 46 kV equipment from Stone Substation.<sup>56</sup> Kentucky Power also proposed replacing a MOAB switch Y at the Hatfield Substation with a 69 kV Circuit Breaker toward Stone Substation (via New Camp and Orinoco Substations).<sup>57</sup> Additionally, Kentucky Power proposed to retire the 46 kV equipment at Sprigg Substation toward Stone Substation (via Belfry Substation), 0.75 miles of the Turkey Creek 69 kV line and retire the Turkey Creek Tap, and approximately 8.2 miles of the 46 kV Sprigg–Stone 46 kV Circuit.<sup>58</sup> Kentucky Power asserted that in addition to being needed to address aging infrastructure and voltage violations, the Belfry Area Transmission Line Project will result in increased capacity of the 69 kV network in the area and improve reliability.<sup>59</sup>

This area of Kentucky Power’s 69 kV system has received multiple new customer requests from crypto currency mining customers. Cyber Innovations Group LLC has a ten-year Economic Development Rider (EDR) contract approved by the Commission<sup>60</sup> for its Belfry Facility for 23 MW of load and Discover AI LLC has a ten-year EDR approved by the Commission<sup>61</sup> for its Kimper facility for 15 MW in Pike County.<sup>62</sup> Kentucky Power

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<sup>55</sup> Koehler Direct Testimony at 16.

<sup>56</sup> Koehler Direct Testimony at 16.

<sup>57</sup> Koehler Direct Testimony at 16.

<sup>58</sup> Koehler Direct Testimony at 16.

<sup>59</sup> Koehler Direct Testimony at 13–14.

<sup>60</sup> Koehler Direct Testimony at 13.

<sup>61</sup> Koehler Direct Testimony at 13.

<sup>62</sup> Koehler Direct Testimony at 13.

maintained that the proposed project adds a new 69 kV source to Hatfield substation (via New Camp–Stone line), which will strengthen the 69 kV system, improve reliability for existing and new customers, and allows for further load growth in the area.<sup>63</sup> Kentucky Power reported that currently the New Camp 69 kV Substation serves approximately 13.9 MVA of load and 947 customers, including an Appalachian Regional Hospital facility, a water treatment plant, a wastewater treatment plant, and police and fire facilities.<sup>64</sup>

Additionally, Kentucky Power stated that the Belfry substation currently serves approximately 12.2 MVA of load and 1,547 customers.<sup>65</sup> Kentucky Power also maintained that currently, the transmission line has 55 structures, 47 of them located in Kentucky.<sup>66</sup> Kentucky Power averred that the majority of the structures are wood, and upon inspection, 32 unique structures out of 47 have at least one open condition.<sup>67</sup> An open condition is an existing and unaddressed physical condition associated with a transmission line component.<sup>68</sup> Kentucky Power alleged that currently, 112 open structural conditions exist on the 1940s-era transmission line; these consist of: poles with rot top (30), poles with rot heart (27), crossarms with rot top (10), woodpecker damaged poles (8), loose knee/vee braces (6), cracked poles (5), insect damaged poles (5), knee/vee braces with rot top (4), leaning in-line poles (2), bowed cross arms (2), broken crossarms (2), bowed X-braces (2), cracked X-braces (2), a broken pole (1), a pole with

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<sup>63</sup> Koehler Direct Testimony at 13.

<sup>64</sup> Koehler Direct Testimony at 12–13.

<sup>65</sup> Koehler Direct Testimony at 12.

<sup>66</sup> Koehler Direct Testimony at 11.

<sup>67</sup> Koehler Direct Testimony at 11.

<sup>68</sup> Koehler Direct Testimony at 11.

rot pocket (1), a push pole with rot heart (1), a broken X-brace (1), a disconnected X-brace (1), a bowed knee/vee brace (1), and an insect damaged knee/vee brace (1).<sup>69</sup> Kentucky Power stated that currently, there are 11 open hardware conditions consisting of loose guys (9), a broken guy (1), and a broken insulator (1).<sup>70</sup> Additionally, Kentucky Power asserted that there are currently 7 open forestry conditions consisting of bush clearances (6) and a hazard tree (1),<sup>71</sup> as well as 3 open conductor conditions consisting of broken strands (1), burnt conductor (1), and damaged conductor (1).<sup>72</sup> Kentucky Power stated that all but one of these open conditions were first reported or confirmed during walking inspections of the system occurring in 2019 and 2021.<sup>73</sup> According to Kentucky Power, a routine aerial inspection in April 2022 revealed a broken insulator.<sup>74</sup> Kentucky Power maintained that this project is needed to replace aged infrastructure that is experiencing deterioration and equipment failure due to the fact that much of it was installed in the 1940s.<sup>75</sup>

#### Right-of Way Expansion

The width of the current right-of-way is 100 feet. Kentucky Power requested the authority to move the proposed centerline up to 200 feet in any direction.<sup>76</sup> There are

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<sup>69</sup> Koehler Direct Testimony at 11.

<sup>70</sup> Koehler Direct Testimony at 11

<sup>71</sup> Koehler Direct Testimony at 12.

<sup>72</sup> Koehler Direct Testimony at 12.

<sup>73</sup> Koehler Direct Testimony at 12.

<sup>74</sup> Koehler Direct Testimony at 12.

<sup>75</sup> Koehler Direct Testimony at 12.

<sup>76</sup> Application at 15–16, West Direct Testimony at 9–10.

several sections of the lines that will require more than the current 100-foot right-of-way.<sup>77</sup> This deviation would include the entirety of the proposed route and its known, needed variances due to conductor blowout requirements.<sup>78</sup>

#### Request to Move the Centerline

Kentucky Power requested authority to shift the centerline up to 200 feet in either direction of the location that appears on the map it submitted with its application. In support of this request Kentucky Power stated that the 400-foot-wide area allows for ground surveys, final engineering, and right-of-way negotiations.<sup>79</sup> Kentucky Power stated that it is requesting this authority to provide for design flexibility, but that it has no expectation that the centerline will shift significantly from what is shown on the maps in Exhibit 4.<sup>80</sup> Kentucky Power stated that it mailed a notice of its proposed project to all landowners within the 400-foot wide area of the centerline.<sup>81</sup> Kentucky Power proposed to file a motion into the record of this proceeding to request a move of the centerline greater than 200 feet in either direction from the centerline as it appears on the maps filled with its application.<sup>82</sup> Kentucky Power stated that any such motion would identify the proposed new location of the centerline, the affected landowner(s), and state in detail,

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<sup>77</sup> West Direct Testimony at 9-10, Span 5 – 6 130 ft., Span 11 – 12 120ft., Span 15 – 16: 160ft., Span 18 – 19 120ft., Span 21 – 22 130ft., Span 32 – 33 360ft., Span 33 – 34 130ft., Span 34 – 35 110ft., Span 35 – 36 130ft.

<sup>78</sup> West Direct Testimony at 11–12.

<sup>79</sup> West Direct Testimony at 9–10.

<sup>80</sup> West Direct Testimony at 10–11.

<sup>81</sup> West Direct Testimony at 13.

<sup>82</sup> West Direct Testimony at 13–14.

and with technical specificity, the need for the proposed modification of the centerline.<sup>83</sup> Kentucky Power proposed to serve its motion for approval to move the centerline on any affected landowner(s), even if not a party to this proceeding.<sup>84</sup> Kentucky Power respectfully requested that the Commission use its best efforts to rule on such motions within 14 days of receipt of adequate information to consider the request.<sup>85</sup>

### Financial Aspects

Kentucky Power estimated the total cost of the project is approximately \$49 million.<sup>86</sup> The breakdown of the cost estimate is (1) approximately \$30 million for transmission line work including right-of-way acquisition; (2) approximately \$10 million for construction and upgrade of the substations and switch structure; (3) approximately \$8 million for station removals and retirement work; and (4) approximately \$1 million for distribution line work.<sup>87</sup> Kentucky Power stated that it anticipates funding the cost of the project through its operating cash flow and other internally generated funds.<sup>88</sup> Kentucky Power stated that it will own the project in its entirety. Neither AEP Kentucky Transmission Company (AEP Kentucky Transco) nor any successor entity will own or invest in the project.<sup>89</sup> Kentucky Power stated that the cost of the project will not materially

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<sup>83</sup> Application, at 16, West Direct Testimony at 13.

<sup>84</sup> Application at 16.

<sup>85</sup> Application at 16.

<sup>86</sup> Application at 14.

<sup>87</sup> Application at 14.

<sup>88</sup> Application at 14.

<sup>89</sup> Application at 14.

affect the financial condition of Kentucky Power.<sup>90</sup> Kentucky Power projects the annual operating cost will be approximately \$70,000 for general maintenance and inspection.<sup>91</sup> The projected annual additional ad valorem taxes resulting from that portion of the project located in the Commonwealth, and hence to be paid by Kentucky Power, are expected to total approximately \$603,201. Kentucky Power's assets, net of regulatory assets and deferred charges, as of March 31, 2023, totaled \$2.273 billion.<sup>92</sup> The cost of the Project represents an increase of approximately 2.3 percent in those assets.<sup>93</sup> The project will not require the issuance of debt and will not affect the completion of any other capital project.<sup>94</sup>

### Construction Schedule

Kentucky Power anticipated commencing work, subject to the grant of the requested authority, beginning the third quarter of 2024.<sup>95</sup> The related distribution work is estimated to begin the fourth quarter of 2024.<sup>96</sup> The expected in-service date for the project is in the fourth quarter of 2025.<sup>97</sup>

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<sup>90</sup> West Direct Testimony at 17.

<sup>91</sup> Application at 14 and West Direct Testimony at 17.

<sup>92</sup> West Direct Testimony at 17.

<sup>93</sup> West Direct Testimony at 17.

<sup>94</sup> West Direct Testimony at 17.

<sup>95</sup> West Direct Testimony at 14.

<sup>96</sup> West Direct Testimony at 14.

<sup>97</sup> Koehler Direct Testimony at 14.

## Alternatives Considered

Kentucky Power stated that it considered two alternatives to the proposed project, Alternative 1 and Alternative 2.<sup>98</sup> The cost to construct Alternative 1 is \$63.8 million, and the cost to construct Alternative 2 is \$66.6 million.<sup>99</sup> Both Alternative 1 and Alternative 2 utilize the same Supplemental components, but different Baseline Components.<sup>100</sup> Both alternatives include rebuilding 8.2 miles of line between Sprigg and Stone Substations to 69 kV standards, operated at 46 kV, and address the needs at the existing Belfry Substation site.<sup>101</sup> Both Alternatives include installing 3.1 miles of new 69 kV line to loop New Camp Substation from Hatfield Substation.<sup>102</sup>

As for Baseline components of the alternatives considered, Alternative 1 addresses the voltage drop violations that were observed under a N-1-1 contingency loss of two 138 kV sources in the area, which radializes the load and causes voltage drop by expanding the Hatfield Substation to install a redundant 138/69 kV transformer and related equipment.<sup>103</sup> Alternative 2 consists of installing a new 23 MVAR capacitor bank at Hatfield Substation, replacing the 9.6 MVAR capacitor bank with a 23 MVAR capacitor bank at the Johns Creek Substation, installing an 11.5 MVAR capacitor bank at the Sidney Substation, and installing an 11.5 MVAR capacitor bank at the Kimper Substation.<sup>104</sup>

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<sup>98</sup> Application at 9.

<sup>99</sup> Application, Exhibit 22 at 1.

<sup>100</sup> Koehler Direct Testimony at 18.

<sup>101</sup> Koehler Direct Testimony at 18.

<sup>102</sup> Koehler Direct Testimony at 18.

<sup>103</sup> Koehler Direct Testimony at 18, and Exhibit 22 at 2.

<sup>104</sup> Koehler Direct Testimony at 18–19.

Kentucky Power maintained that although both alternatives address the voltage drop issues, they do so at a higher cost and neither alternative addresses concerns regarding future load growth.<sup>105</sup>

As for alternatives to the route of the proposed project, Kentucky Power stated that it engaged GAI Consultants, Inc. (GAI) to identify and evaluate routes on which to build the 69 kV transmission line, to identify and evaluate sites for the proposed Orinoco 69 kV Substation, and to prepare a siting study for the Belfry Area Transmission Line Project.<sup>106</sup> Kentucky Power stated that GAI considered several different segments and different routes.<sup>107</sup> Kentucky Power maintained that the proposed route selected between the New Camp and Orinoco Substations had several advantages over the alternative routes: it is the shortest route; it utilized a portion of the existing right-of-way; it lies in proximity to existing access roads that may be able to be used during construction and for maintenance; it requires the least amount of tree clearing; it avoids conflicts with a natural gas pipeline on a narrow ridge; and avoids crossing US 119 and associated development.<sup>108</sup> According to Kentucky Power, the proposed route selected between the Orinoco and Stone Substations is preferential because it is the shortest; it is not outage constrained; it enters the Stone Substation from the preferred direction; and it crosses fewer steep slopes.<sup>109</sup> Kentucky Power stated that it did not want to select a route that crossed heavily developed areas and wanted to minimize outages for customers during

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<sup>105</sup>Koehler Direct Testimony at 19.

<sup>106</sup> Application at 11.

<sup>107</sup> Application at 11–13.

<sup>108</sup> Application at 12.

<sup>109</sup> Application at 12–13.

project construction.<sup>110</sup> According to Kentucky Power, the combination of the proposed routes between the New Camp and Orinoco Substations and between the Orinoco and Stone Substations represent the most direct, efficient route and minimizes impacts to residences, viewsheds and environmental resources while utilizing existing right-of-way to the greatest extent feasible.<sup>111</sup>

### LEGAL STANDARD

The Commission's standard of review regarding a CPCN is well settled. Under KRS 278.020(1), no utility may construct or acquire any facility to be used in providing utility service to the public until it has obtained a CPCN from this Commission. To obtain a CPCN, the utility must demonstrate a need for such facilities and an absence of wasteful duplication.<sup>112</sup>

"Need" requires:

[A] showing of a substantial inadequacy of existing service, involving a consumer market sufficiently large to make it economically feasible for the new system or facility to be constructed or operated. [T]he inadequacy must be due either to a substantial deficiency of service facilities, beyond what could be supplied by normal improvements in the ordinary course of business; or to indifference, poor management or disregard of the rights of consumers, persisting over such a period of time as to establish an inability or unwillingness to render adequate service.<sup>113</sup>

"Wasteful duplication" is defined as "an excess of capacity over need" and "an excessive investment in relation to productivity or efficiency, and an unnecessary multiplicity of

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<sup>110</sup> Direct Testimony of George T. Reese (Reese Direct Testimony) at 8–9.

<sup>111</sup> Reese Direct Testimony at 21.

<sup>112</sup> *Kentucky Utilities Co. v. Pub. Serv. Comm'n*, 252 S.W.2d 885 (Ky. 1952).

<sup>113</sup> *Kentucky Utilities Co.* at 890.

physical properties.”<sup>114</sup> To demonstrate that a proposed facility does not result in wasteful duplication, the Commission has held that the applicant must demonstrate that a thorough review of all reasonable alternatives has been performed.<sup>115</sup> The fundamental principle of reasonable, least-cost alternative is embedded in such an analysis. Selection of a proposal that ultimately costs more than an alternative does not necessarily result in wasteful duplication.<sup>116</sup> All relevant factors must be balanced.<sup>117</sup>

### DISCUSSION AND FINDINGS

Kentucky Power stated that this project is required to address voltage issues resulting in PJM Baseline violations at the New Camp 69 kV Substation, to address the need for asset renewal and aging infrastructure on the existing Sprigg–Stone 46 kV circuit, and to strengthen the reliability of the local transmission system by upgrading the existing system from 46 kV to 69 kV.<sup>118</sup>

Having reviewed the record and being otherwise sufficiently advised, the Commission finds that Kentucky Power has established sufficient evidence to demonstrate that the proposed transmission project is needed to provide adequate, efficient, and reasonable service for the reasons discussed below.

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<sup>114</sup> *Kentucky Utilities Co.* at 890.

<sup>115</sup> Case No. 2005-00142, *Joint Application of Louisville Gas and Electric Company and Kentucky Utilities Company for the Construction of Transmission Facilities in Jefferson, Bullitt, Meade, and Hardin Counties, Kentucky* (Ky. PSC Sept. 8, 2005).

<sup>116</sup> See *Kentucky Utilities Co. v. Pub. Serv. Comm’n*, 390 S.W.2d 168, 175 (Ky. 1965). (See also Case No. 2005-00089, *The Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity to Construct a 138 kV Electric Transmission Line in Rowan County, Kentucky* (Ky. PSC Aug. 19, 2005)).

<sup>117</sup> Case No. 2005-00089, Aug. 19, 2005 final Order at 6.

<sup>118</sup> Koehler Direct Testimony at 10–11.

Kentucky Power maintained that it must address the Baseline violations to meet its obligations to PJM and that it desires to avoid doing so by simply engaging in load dropping because resorting to load dropping in this circumstance is contrary to Kentucky Power's obligation under KRS 278.030(2) to provide adequate, efficient and reasonable service;<sup>119</sup> even though PJM regards this an acceptable means of mitigating potential system reliability criteria violations under certain scenarios.

The Commission notes that Kentucky Power has recently sought approval for a number of transmission facility replacement and refurbishment projects that involve replacing and upgrading aging infrastructure, sometimes, as here, involving poles, conductors, and other equipment originally installed in the 1940s or earlier.<sup>120</sup> This project is a continuation of Kentucky Power's efforts to upgrade its system by replacing infrastructure components that are at the end of their useful life.

The Commission places great weight on the evidence of record concerning the deteriorated state of the existing transmission line. Kentucky Power has presented reports of 112 open conditions along the lines and has documentation of numerous momentary and permanent outages affecting the customers served from these facilities. Considering the vintage of the majority of the facilities to be replaced, they have, or soon

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<sup>119</sup> Koehler Direct Testimony at 9.

<sup>120</sup> See Case No. 2022-00118, *Electronic Application of Kentucky Power for a Certificate of Public Convenience and Necessity to Rebuild the Wooton-Stinnett Portion of the Hazard-Pineville 161 kV Line in Leslie County, Kentucky* (Ky. PSC Sep. 22, 2022); Case No. 2017-00328, *Electronic Application of Kentucky Power Company for Certificate of Public Convenience and Necessity to Construct a 161 kV Transmission Line in Perry and Leslie Counties, Kentucky and associated Facilities* (Ky. PSC Mar. 16, 2018); Case No. 2021-00346, *Electronic Application of Kentucky Power Company for a Certificate of Public Convenience and Necessity to Construct a 138 kV Transmission Line and Associated Facilities in Breathitt, Floyd and Knott Counties, Kentucky* (Ky. PSC Apr. 13, 2022); and Case No. 2019-00154, *Electronic Application of Kentucky Power Company for a Certificate of Public Convenience and Necessity to Perform Upgrade, Replacement, and Installation Work at its Existing Substation Facilities in Perry and Leslie counties, Kentucky* (Ky. PSC June 4, 2020).

will, exceed their useful lives.<sup>121</sup> Kentucky Power must provide adequate, efficient and reasonable service.<sup>122</sup> In order to do so, Kentucky Power must maintain a reliable transmission system with sufficient capacity to meet current needs as well as provide for foreseeable load growth. Given the age and condition of the facilities to be replaced, it is reasonably expected that the open conditions and outages along this line will continue.

The Commission has expressed its concern in the past regarding the number service outages experienced by Kentucky Power customers.<sup>123</sup> The voltage criteria violations, if not addressed, will result in more outages because customer outages are how electric utilities achieve load dropping. For these reasons, the Commission finds that Kentucky Power has demonstrated a need for the proposed project.

The Commission finds that there is sufficient evidence in the record that the proposed project does not create wasteful duplication. The Commission notes that, in this case, the proposed project is the least cost option considered by Kentucky Power.<sup>124</sup> The proposed project is approximately \$15 million less to construct than the two alternatives considered by Kentucky Power.<sup>125</sup> One of the main cost drivers of the

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<sup>121</sup> See Case No. 2022-00118; Response to Staff's First Request, Item 10a. Kentucky Power stated that the expected useful life of wooden transmission line structures generally ranges from 35 to 75 years depending upon geographical location, operations, and varying environmental factors. The project proposed in the current proceeding will replace wooden structures that are 70 years old and the majority of which have existing open conditions.

<sup>122</sup> KRS 278.030(2).

<sup>123</sup> See Case No. 2021-00481, *Electronic Joint Application of American Electric Power Company, Inc., Kentucky Power Company and Liberty Utilities Co. for Approval of the Transfer of Ownership and Control of Kentucky Power Company* (Ky. PSC Jan. 13, 2021), Order at 48–53.

<sup>124</sup> Kentucky Power's Response to Commission Staff's First Request for Information (Staff's First Request) (filed Jul. 12, 2023), Item 5, Attachment 1.

<sup>125</sup> Kentucky Power's Response to Staff's First Request, Item 5, Attachment 1.

alternatives would be the requirement to construct approximately 10 miles of new transmission line as opposed to the 6.5 miles as part of the proposed project.<sup>126</sup>

Currently, according to Kentucky Power, the existing 46 kV network is insufficient to serve the needs of the area, as it would not solve all of the identified baseline, operational, and performance requirements in the area and has reached a level of deterioration that requires its replacement.<sup>127</sup> The increased load required by customers between the application in Case No. 2022-00236 and this case also affected the proposed project.<sup>128</sup> Additionally, Kentucky Power noted that 46kV is an obsolete operating voltage for a subtransmission system, and since 46 kV designed voltage equipment is less available, the risk of prolonged outages increases as the stock inventory of AEP's 46 kV equipment depletes.<sup>129</sup>

Kentucky Power noted that the proposed project also will provide looped service to New Camp Substation, which is radially fed. Radial feeds increase customer exposure to outages, for any maintenance activities or unplanned outages associated with the equipment or the line serving the customers.<sup>130</sup> The Commission appreciates the explanations provided regarding the proposed projects benefits as compared to the alternatives. Specifically, that in Alternative 1 “the new transformer is not a ‘diverse’ source, meaning that the tie to the 138 kV network is still occurring at Hatfield Station. If

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<sup>126</sup> Kentucky Power's Response to Staff's First Request, Item 5, Attachment 1.

<sup>127</sup> Koehler Direct Testimony at 17.

<sup>128</sup> Koehler Direct Testimony at 13-14 and Kentucky Power's Supplemental Response to Commission Staff's First Request for Information (filed Sept. 8, 2023), Item 4.

<sup>129</sup> Kentucky Power's Supplemental Response to Commission Staff's First Request for Information (filed Sept. 8, 2023), Item 10.

<sup>130</sup> Koehler Direct Testimony at 20.

Hatfield Station were rendered unavailable or out of service, the same voltage issues could arise if the Johns Creek transformer were to also go out of service.”<sup>131</sup> Alternative 2 included the installation of capacitor banks and the installation of multiple capacitor banks may lead to “hunting”.<sup>132</sup> The proposed project does not create either issue.

PJM’s Regional Transmission Expansion Process (RTEP), in which Kentucky Power participates as discussed above, identifies reliability issues, and PJM’s Office of the Interconnection sets minimal criteria for all PJM members to meet. However, Kentucky Power’s participation in the RTEP process is not a substitute for Kentucky Power’s meeting its burden of proof under the legal standard required by Kentucky law to obtain a CPCN. However, in this case, Kentucky Power did request an informal conference and made an effort to improve the record. The Commission appreciates the supplemental responses and notes that the information was helpful in making the final determination in this matter.

For the reasons set forth above, the Commission finds that Kentucky Power has presented sufficient evidence on the record that established that the Belfry Area Transmission Line Project is the least cost, most reasonable alternative to address the

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<sup>131</sup> Koehler Direct Testimony at 13–14 and Kentucky Power’s Supplemental Response to Commission Staff’s First Request for Information (filed Sept. 8, 2023), Item 4. “Alternative Solution 1 proposes to rebuild the 46 kV line, continue to serve Belfry Station at 46 kV, construct a new line from Hatfield to New Camp to provide looped service (basically, looped service provides a second source to serve a station, which strengthens the reliability of the system and reduces risk of outages for customers), and install a second 138/69 kV transformer at Hatfield Station. The second transformer at Hatfield Station eliminates the voltage drop issue by introducing a redundant transformer at the location where one already exists, thus eliminating the contingency that causes the drop in the first place.”

<sup>132</sup> Kentucky Power’s Supplemental Response to Commission Staff’s First Request for Information (filed Sept. 8, 2023), Item 4. “Hunting refers to a situation where one capacitor bank may turn on, increasing voltages in the area. However, the capacitor turning on may cause high voltages at a different bus, thus causing a second capacitor bank to turn off. This second bank turning off may then lead to lower voltages elsewhere, causing a third capacitor bank to turn back on. In other words, the coordination of settings and capacitor banks becomes very difficult in a small area due to a cascading-type effect of turning on and off when reacting to voltage levels that are too high or too low.”

identified need for improved transmission facilities in the area. The Commission finds that the requested right-of-way is appropriate and the process for a deviation is also appropriate.

IT IS THEREFORE ORDERED that:

1. Kentucky Power is granted a CPCN to construct and operate the Belfrey Area 69 kV Transmission Project as described in its application, with the conditions expressed in this Order.

2. Kentucky Power shall file a survey of the final location of the transmission facilities after any modifications are finalized as authorized by this Order and before construction begins.

3. Kentucky Power shall notify the Commission upon knowledge of any material changes to the project, including but not limited to, increase in cost, any significant delays in construction, or any changes in the route of the transmission line not expressly authorized by this Order.

4. Kentucky Power shall file as built drawings and maps within 60 days of the completion of the construction authorized by this Order.

5. Kentucky Power shall furnish documentation of the total costs of this project including the cost of construction and all other capitalized costs, including, but not limited to, engineering, legal, and administrative expenses, within 60 days of the date construction is substantially completed. Construction costs shall be classified into appropriate plant accounts in accordance with the Uniform System of Accounts for electric utilities prescribed by the Commission.

6. Kentucky Power shall file with the Commission any permits acquired in connection with this project within 30 days of issuance of the permit.

7. Kentucky Power shall apply for a CPCN for a modified route if another agency requires an alteration of the line that does not meet all of the conditions listed above.

8. Kentucky Power shall not move the centerline of the Belfrey Area 69 kV Transmission Line more than 100 feet in any direction from the location as shown on the maps filed in this proceeding without first seeking Commission approval.

9. Any documents filed in the future pursuant to ordering paragraphs 2, 3, 4, 5, or 6 shall reference this case number and shall be retained in the post-case correspondence file.

10. This case is closed and removed from the Commission's docket.

PUBLIC SERVICE COMMISSION

  
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Chairman

  
\_\_\_\_\_  
Vice Chairman

  
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Commissioner

ENTERED  
OCT 06 2023      bsb  
KENTUCKY PUBLIC  
SERVICE COMMISSION

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