COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

ELECTRONIC 2019 INTEGRATED RESOURCE PLANNING REPORT OF KENTUCKY POWER COMPANY	))))	CASE NO. 2019-00443

COMMISSION STAFF'S SECOND REQUEST FOR INFORMATION TO KENTUCKY POWER COMPANY

Kentucky Power Company (Kentucky Power), pursuant to 807 KAR 5:001, is to file with the Commission an electronic version of the following information. The information requested herein is due on July 17, 2020. The Commission directs Kentucky Power to the Commission's March 16, 2020 and March 24, 2020 Orders in Case No. 2020-00085[1] regarding filings with the Commission. The Commission expects the original documents to be filed with the Commission within 30 days of the lifting of the current state of emergency. All responses in paper medium shall be appropriately bound, tabbed, and indexed. Electronic documents shall be in portable document format (PDF), shall be searchable, and shall be appropriately bookmarked.

Each response shall include the name of the witness responsible for responding to the questions related to the information provided. Each response shall be answered under oath or, for representatives of a public or private corporation or a partnership or association or a governmental agency, be accompanied by a signed certification of the

[1] Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19* (Ky. PSC Mar. 16, 2020), Order at 5–6. Case No. 2020-00085, *Electronic Emergency Docket Related to the Novel Coronavirus COVID-19* (Ky. PSC Mar. 24, 2020), Order at 1–3.

preparer or the person supervising the preparation of the response on behalf of the entity that the response is true and accurate to the best of that person's knowledge, information, and belief formed after a reasonable inquiry.

Kentucky Power shall make timely amendment to any prior response if Kentucky Power obtains information which indicates that the response was incorrect when made or, though correct when made, is now incorrect in any material respect. For any request to which Kentucky Power fails or refuses to furnish all or part of the requested information, Kentucky Power shall provide a written explanation of the specific grounds for its failure to completely and precisely respond.

Careful attention shall be given to copied material to ensure that it is legible. When the requested information has been previously provided in this proceeding in the requested format, reference may be made to the specific location of that information in responding to this request. When applicable, the requested information shall be separately provided for total company operations and jurisdictional operations. When filing a paper containing personal information, Kentucky Power shall, in accordance with 807 KAR 5:001, Section 4(10), encrypt or redact the paper so that personal information cannot be read.

1. Refer to the IRP Section 2, page 29. Explain why a high Distributed Energy Resource (DER) scenario was not chosen to be included in the various other scenarios chosen for depiction in Kentucky Power's Load Forecast scenarios. For reference, DER in this request refers to the definition used by the Federal Energy Regulatory Commission in the February 2018 Staff Report for AD18-10-000: A source or sink of power that is located on the distribution system, any subsystem thereof, or behind a customer meter.

2. Refer to the IRP Section 2, pages 6–38.

a. Identify where in the IRP Kentucky Power incorporated DER into the Load Forecasting Methodology.

b. Explain how DER are incorporated into the forecasting methodology. DER in this request refers to the definition used by the Federal Energy Regulatory Commission in the February 2018 Staff Report for AD18-10-000: A source or sink of power that is located on the distribution system, any subsystem thereof, or behind a customer meter.

3. Refer to the IRP Section 3, pages 39–72. Identify where Kentucky Power evaluates FERC order 841 regarding electricity storage as wholesale market resources.

4. Refer to the IRP Section 3.3.5 pages 46–47.

a. Explain how Kentucky Power's parent company AEP addresses climate change including any greenhouse gas reduction goals.

b. Explain how any strategy by AEP to reduce greenhouse gas emissions could affect Kentucky Power's IRP implementation.

5. Refer to the IRP Section 3.3.5 pages 46–47. Identify where Kentucky Power evaluates the PJM Study of Carbon Pricing and the effects of carbon pricing within PJM on Kentucky Power's customers.

6. Refer to the IRP Section 3.4.2. Identify where in the IRP Kentucky Power accounts for increased levels of active demand response with inverter-based resources due to the 2018 Revision to IEEE-1547 for Interconnection and Interoperability of Distributed Energy Resources with Associated Electric Power Systems Interfaces.

7. Refer to the IRP Section 3, pages 39–72. Identify where Kentucky Power evaluates electric vehicles current and future levels in terms of potential demand response.

8. Refer to the IRP Section 4.4.3.1 page 84. Explain how the Incremental Energy Efficiency Modeled includes variability in customer housing and building stock characteristics.

a. Explain whether Kentucky Power utilizes the National Renewable Energy Laboratory's (NREL) ReStock in modeling the diversity of the single-family housing stock. https://resstock.nrel.gov/

b. Explain if Kentucky Power has utilized NREL's ComStock for modeling commercial building stock. *See*, https://www.nrel.gov/buildings/comstock.html

9. Refer to the IRP Section 4.4.3.3, page 89.

a. Explain if Kentucky Power modeled customer electric vehicle to grid opportunities.

b. Explain if Kentucky Power modeled utility controlled customer sited distributed generation using IEEE 1547-2018 inverters.

10. Refer to the IRP Section 4.4.3.4 page 90. Explain why Kentucky Power did not utilize hosting capacity analysis to estimate the potential for the distribution system to accommodate distributed generation and other DERs.

11. Refer to the IRP Section 4.4.3.4, page 91. Kentucky Power states, "It is significant to note that rooftop solar does not represent the most economic means for Kentucky Power to add renewable generation as the cost of rooftop solar remains considerably higher than the cost of large scale solar…"

a. Explain whether there are other factors beyond economics as to why customers choose to add rooftop solar.

b. Explain whether Kentucky Power evaluated distributed solar as a way to harden the distribution system or as support for critical facilities.

12. Refer to the IRP page 93. Explain why Kentucky Power did not choose to model a Natural Gas\Solar Hybrid plant as a new technology option.

13. Refer to the IRP Section 4.5.6.3, page 105.

a. Given Kentucky's hydroelectric potential and FERC approved hydro licenses, explain why Kentucky Power assumes that hydro is "prohibitive at this time."

b. Explain whether Kentucky Power is aware of Oak Ridge National Laboratory's HydroSource and whether Kentucky Power has evaluated these resources. *See*, https://hydrosource.ornl.gov/

c. Given the life expectancy of hydro resources, provide the Levelized Cost of Electricity (LCOE) that was evaluated for hydro that influenced Kentucky Power's determination that hydro is prohibitive at this time.

14. Refer to the IRP Section 3.6, pages 71–72. Kentucky Power states, "The distribution system has been enhanced over the years with the construction of new substation and distribution lines, to meet customers' needs and improve service reliability and quality."

a. Describe Kentucky Power's distribution system in detail, including miles of distribution lines, types, substations, etc.

b. Explain how Kentucky Power measures its distribution system performance.

c. Explain how the distribution system is performing according to the performance metrics identified.

d. Explain in detail what "to meet customers' need" means.

e. Provide Kentucky Power's customer reliability expectations.

f. Detail the number of Circuits Identified for Improvement and how many circuits, segmented, have been completed since the 2016.

g. Detail the number of customers with multiple interruptions and planned improvements for those customers.

h. Describe in detail any customer satisfaction improvements or savings that have resulted from distribution system enhancements.

15. Refer to the IRP Section 3.6, pages 71–72. Kentucky Power states, "Since 2016, Kentucky Power has upgraded distribution substations with plans to upgrade or add additional substations through 2034, mainly for service improvement opportunities."

a. Explain what capital investments have been made since 2016 to the distribution system and are forecasted for Kentucky Power's planning period.

b. Explain how Kentucky Power ensures physical and cybersecurity of the distribution system and compliance with NERC standards.

c. Explain the percent visibility through SCADA of Kentucky Power's substation and plans for SCADA expansion.

d. Explain what "service improvement opportunity" means.

16. Refer to the IRP Section 3.6, pages 71–72.

a. Describe any "smart grid" asset improvement projects for the distribution system since 2016 such as Distribution Automation and Circuit Reconfiguration.

b. Describe Kentucky Power's strategy for improvements in system reliability.

c. Describe how changes in shifting demand for electricity has increased or reduced the need for distribution system enhancements.

17. Refer to Case No 2017-00179[2], Direct Testimony of Osborne Phillips (Phillips Testimony), pages 4–7 as it relates to IRP Section 3.6 at pages 71–72. Kentucky Power discussed the types of activities that harden the distribution system and make the system more resilient. Explain what activities have been completed to date and plans for future activities.

18. Refer to Case No 2017-00179, Phillips Testimony, pages 54–57 as it relates to IRP Section 3.6 at pages 71–72. Kentucky Power detailed the types of smart grid technologies being considered.

a. DER can be used to support isolated rural areas during major outages. Explain whether and how DER is being evaluated and whether that includes the use of microgrids to support critical facilities in rural areas.

b. Explain Kentucky Power's Distribution Management System and any future plans to deploy Advanced Distribution Management Systems.

[2] Case No. 2017-00179, *Electronic Application of Kentucky Power Company for (1) A General Adjustment Of Its Rates For Electric Service; (2) An Order Approving Its 2017 Environmental Compliance Plan; (3) An Order Approving Its Tariffs And Riders; (4) An Order Approving Accounting Practices To Establish Regulatory Assets And Liabilities; And (5) An Order Granting All Other Required Approvals And Relief*, (Ky. PSC Jan. 18, 2018).

19. Refer to the IRP Section 5.0, page 110.

a. Explain in more detail the methodology by which *Plexos* minimizes the capital and production related costs.

b. Explain whether *Plexos* allows different mathematical methods of optimization. If so, list the various optimization methods and explain whether those were considered in the formulation of the preferred plan.

20. Refer to Kentucky Power's Response to Commission Staff's First Request for Information (Staff's First Request), Item 2b. Provide further explanation of how the potential load of Braidy Industries was discounted to reflect risk and included in the load forecast.

21. Refer to Kentucky Power's Response to the Attorney General's First Request for Information, Item 6.

a. Provide the remaining useful life of each of Kentucky Power's generation units as modeled in the IRP. In addition, if there is any difference, provide the remaining useful lives according to the depreciation schedule of each unit.

b. Provide an explanation of the parameters used that govern if and when the models would choose to retire a generation unit. Include in the response an explanation of the logic the model goes through to determine whether a unit should be retired or not.

c. Explain how often each of the two Mitchell units are accepted by PJM in the energy market an if the bid price is equal to or below LMP on an hourly basis over the last 12 months, and whether the two units are designated as must run by PJM.

22. Refer to Kentucky Power's Response to Staff's First Request, Items 7a and 24.

a. Explain the characteristics of the reclaimed coal mining land that prevented the siting of the solar generation facility.

b. Explain whether the characteristics discussed in part a. are inherent in the other reclaimed coal mining land in Kentucky Power's service territory such that it would prevent the siting of other solar generation facilities.

23. Refer to Kentucky Power's Response to Staff's First Request, Item 9a.

a. Explain the decision to model wind resources as 30 year owned resources instead of a 20-year power purchase agreement.

b. Provide a discussion of the costs and benefits associated with owning renewable generation versus those of purchasing renewable power through a PPA.

24. Refer to Kentucky Power's Response to Staff's First Request, Item 9d. Elaborate on the expectation that AEP's Generation Company won't renew the Rockport Unit 2 lease.

25. Refer to the IRP at 2247 or 2268 and Kentucky Power's Response to Staff's First Request, Items 12b and 13.

a. Provide further explanation as to how Kentucky Power's historic electricity prices are derived, i.e., the extent to which the various components to Kentucky Power's customer bills including energy rates, fuel charge, environmental surcharge, taxes, etc., are incorporated into the electricity prices for each of the customer classes listed in the table on page 2247.

b. If any of the various components of customers' bills are not included in electricity prices, explain why not.

26. Refer to Kentucky Power's Response to Staff's First Request, Item 31. Explain the meaning of "full net metering."

27. Refer to Kentucky Power's Response to Staff's First Request, Item 32.

a. Explain the criteria Kentucky Power uses to select circuits eligible for VVO measures.

b. Attachment 1 contains the results of a VVO study concluded in 2015. Explain whether Kentucky Power plans to conduct further circuit studies to ascertain the possibility of implementing VVO on additional circuits.

28. Refer to Kentucky Power's Response to Staff's First Request, Item 40.

a. Explain whether the Demand Side Management and Energy Efficiency (DSM/EE) programs modeled as a supply side resource are considered dispatchable. If not, provide further explanation of the logic for including the EE bundles listed in Section 4.4.3.1.

b. Refer to IRP Sections 2.4.4.2 and 2.4.4.3. Explain whether and how the DSM/EE programs listed in Section 4.4.3.1 are incorporated in the Statistically Adjusted End-Use (SAE) models used to forecast Residential and Commercial Energy Sales.

c. Refer to IRP Table ES-1 at ES-4. The Preferred Plan for capacity additions include New EE. Since the Plexos model considers these programs to be cost-effective as a supply side resource, explain which EE programs are included in the Preferred Plan and whether their inclusion also means that these programs would satisfy

the traditional California cost-effectiveness tests in order to offer them under Kentucky Power's DSM programs.

29. Refer to Kentucky Power's Response to Staff's First Request, Item 43a. Provide further detail on the 6.8 MW distributed generator at Inez Power, LLC.

a. Explain the nature of Inez Power LLC and the expected in service date.

b. If known, explain whether Inez Power LLC will operate as a merchant generator and sell its energy into the PJM markets.

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DATED JUN 18 2020

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