

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

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

COMMISSION STAFF'S FIRST 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 May 21, 2020. The Commission directs Kentucky Power to the Commission's March 16, 2020 and March 24, 2020 Orders in Case No. 2020-00085¹ 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. Responses to requests for information in paper medium, when filed, 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 preparer or the person supervising the preparation of the response on behalf of the entity

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.

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 it 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, pages ES-1 and 2. Provide the year and amount of Kentucky Power's highest annual energy requirement.
2. Refer to the IRP, page ES-2.
 - a. Explain any changes in the forecasted load for the industrial class from the 2016 IRP to the current IRP.
 - b. Over the next 15 years, Kentucky Power's sales forecast is relatively flat. Explain whether this projection takes into account the cancellation of Enerblu, the

uncertainty surrounding Brady Industries, and the recent economic events surrounding COVID-19. If not, explain how the sales projection would differ after accounting for these events.

3. Refer to the IRP, page ES-3, at which it states, in relevant part, the Plexos® modeling was performed through the year 2049, so as to properly consider various cost-based “end-effects” for the resource alternatives being considered.

a. Explain why Kentucky Power decided to use a 30-year term to perform its modeling, which contrasts with the 20-year term utilized in Case No. 2016-00413.²

b. Explain in further detail what is meant by “end-effects for resource alternatives being considered” that led Kentucky Power to choose to use a 30-year term to perform its modeling.

4. Refer to the IRP, page ES-4. Explain whether the short-term market purchases (STMP) will conform to PJM requirements and whether they will be managed with additional hedging or insurance.

5. Refer to the IRP, pages ES-6 through E-7. Provide the impacts of the changes in generation resources from a reliance on coal-based generation to an increased reliance on demand-side and renewable resources on the reliability of Kentucky Power’s system over the planning period.

6. Refer to the IRP, page ES-7. Kentucky Power states that its exposure to energy, fuel, and potential carbon prices is reduced through the Preferred Plan’s significant increase in renewable energy. Explain whether the decreased risk associated

² Case No. 2016-00413, *Electronic 2016 Integrated Resource Planning Report of Kentucky Power Company to the Public Service Commission of Kentucky* (Ky. PSC May 19, 2018).

with energy, fuel and carbon prices outweighs the risk to reliability associated with renewables.

7. Refer to the IPR, page ES-9 which lists Kentucky Power's three-year action plan.

a. Provide a list of green power tariff alternatives that Kentucky Power is evaluating.

b. Regarding Kentucky Power's proposed action to initiate Requests for Proposals (RFP):

(1) Explain whether these requests will be for power generated within Kentucky Power's service territory; and

(2) Explain whether these requests will be made by Kentucky Power alone or in conjunction with another utility (AEP affiliate or otherwise) as part of a larger request.

c. Regarding increasing the levels of energy efficiency (EE), explain whether Kentucky Power believes the level of adoption within their service territory will be at, below, or greater than the national level. Provide support for this assumption.

8. Refer to the IRP, Volume A, page 4, Table 1.

a. Provide an explanation for the decrease of on-peak energy prices between the 2016 and 2019 IPRs.

b. Provide an explanation for the increase in off-peak energy prices between the 2016 and 2019 IRPs.

c. Provide an explanation why, through 2028, the capacity prices are higher in the 2019 IRP than in the 2016 IRP and then are lower 2029 through 2034.

9. Refer to the IRP, page 5.
 - a. Provide a comparison of the 2019 and 2016 cost assumptions for solar and wind energy, including transmission costs.
 - b. Provide a comparison of Kentucky Power and the Energy Information Administration's cost for solar and wind energy using the same criteria and over the same period.
 - c. Explain the factors that led to the increased reliance on solar energy over wind energy in the 2019 IRP versus the 2016 IRP.
 - d. Explain why Kentucky Power decided not to extend the UPA from Rockport.
 - e. Refer to the IRP, page 5. Given Kentucky Power's significant increase in renewable energy over the planning period, explain why battery storage was excluded from the plan.
10. Refer to the IRP, Section 2.0, generally. If not addressed above, explain the effect of the COVID-19 virus on Kentucky Power's current sales by customer class and what longer-term effect, if any, Kentucky Power is projecting.
11. Refer to the IRP, Section 2.2.1, page 7.
 - a. Provide the Moody's Analytics economic forecast report issued in December 2018.
 - b. Explain whether Kentucky Power believes that a 2.0 percent annual increase in gross domestic product is realistic for Kentucky Power's service territory.
12. Refer to the IRP Section 2.4, pages 11–21, and Exhibits C-20 and H.

a. Provide the various model equations (including supporting models) in functional form, identifying each variable used to derive the sales and peak load forecasts for each of the customer classes.

b. For each of the models provide a listing of the sources of the data used in the equations. For variables developed by Kentucky Power internally, describe how the variables were derived.

13. Refer to the IRP, Section 2.2.2, page 7. Provide a more robust description of how the price forecast was developed.

14. Refer to the IRP, Section 2.2.3 at 7, Figure 4, page 21, and Exhibits C-1 and C-2A.

a. Provide a listing of individual customer additions, retentions, or expansions that were included in the load forecast including the dates and loads.

b. If not answered above, explain the reason for the ramping up of industrial sales in Figure 4 in the 2021–2024 timeframe.

c. If the increase in industrial sales does not materialize, explain how that would affect Kentucky Power’s load forecast overall and how that would affect the Plexos model supply optimization results.

15. Refer to the IRP, Sections 2.2.4, page 8, 5.2.2, page 115, and 5.2.2.4, page 123.

a. Explain whether the normal weather assumptions used in the forecast is based on a 30-year, 20–year, or some other period.

b. Explain whether and how the optimization scenarios incorporate variations in weather.

16. Refer to the IRP, Section 2.2.5, page 8. Explain why the load forecast reflects no DSM activity after the Rockport UPA is terminated.

17. Refer to the IRP, Section 2.3, page 9.

a. The long-term forecast models incorporate regional economic data.

Please define what states and counties this regional economic data encompasses.

b. Describe the structural shift that Kentucky Power expects to occur in the underlying economy

c. Describe what and how professional judgement was used to blend the short-term model results with the long-term models, thus ensuring reasonable peak model results.

18. Refer to the IRP, Section 2.4.4, page 13. Provide the lag time used for the price of electricity and other fuels.

19. Refer to the IRP, Section 2.4.4.4, page 17. Given the decline in the mining industry, explain why Kentucky Power models mine power separately.

20. Refer to the IRP, Section 2.6.2, page 25, and Exhibit C-6. Although no demand-side management (DSM) and EE was included in the forecast, explain whether any existing DSM/EE measures were modeled.

21. Refer to the IRP, Section 2.7, pages 27–30, Figure 10, and Exhibit C-10. For each of the load forecast scenarios, provide a comparison of the base case assumptions and how the assumptions were changed in each energy and demand forecast scenario.

22. Refer to the IRP, Section 2.8, pages 31–32. Provide the short- and long-run elasticity utilized.

23. Refer to the IRP, Section 2.9.3, page 34. Provide the most recent residential customer survey and all reports on the results.

24. Refer to the IRP, Section 3.2, page 41.

a. For the additional 20 MW of solar generation:

(1) Explain how Kentucky Power plans to procure the 20 MW.

(2) If Kentucky Power plans to build the 20 MW, provide the time line for the construction.

b. Provide by what other means Kentucky Power will arrange to meet its obligations.

25. Refer to the IRP, Section 3.3. Provide any updates to environmental regulations that will impact Kentucky Power.

26. Refer to the IRP, Section 3.3.2, page 43. Provide a detailed explanation of the scientific risk and policy assessments for the proposed 2021 National Ambient Air Quality Standards rule.

27. Refer to the IRP, Section 3.3.6, page 47. Provide an update to the Coal Combustion Residual Rule that was anticipated near the end of 2019 or early 2020.

28. Refer to the IRP, Section 3.4.2.1, page 55. For the two customers with demand-response (DR) capability, provide the type of DR.

29. Refer to the IRP, Section 3.4.3, page 56. Explain the type of EE resources that will be added in 2022.

30. Refer to the IRP, Section 3.4.4, pages 57–59.

a. Explain whether the discussion is predicated on Kentucky Power's current tariff and the net metering limitations in Kentucky.

b. Explain how the economics of net metering would change if Kentucky Power disaggregated its current Tariff R.S. Residential Service to remove a portion of the fixed costs that are now collected through the service and energy charges.

c. For the forecast of residential solar installations, explain how the forecast was developed and provide the annual growth rates.

31. Refer to the IRP, Section 3.4.4, page 58. Explain why a discount rate of 10 percent was chosen.

32. Refer to the IRP, Section 3.4.5, page 60.

a. Provide the current amount of Volt VAR Optimization (VVO) on Kentucky Power's system.

b. Provide the technological improvements in VVO since the 2016 IRP.

c. Regarding the limited VVO rollouts:

(1) Provide the number of installations; and

(2) Provide the reports supporting this energy demand reduction.

33. Refer to the IRP, Section 3.5, page 62. Regarding transmission:

a. Confirm that a CPCN was applied for on each transmission project listed in Section 3.5.8, and provide their corresponding Case No.;

b. Provide an update to the transmission projects listed in Section 3.5.8 and any additional transmission projects since the filing of the 2019 IRP;

c. Provide a list of PJM transmission projects and the annual costs for Kentucky Power for the past five years and estimated cost for the next five years;

d. Explain the process Kentucky Power uses to prioritize transmission projects;

- e. Explain the process PJM uses to prioritize transmission projects;
- f. Provide Kentucky Power's assessment of the transmission system and its ability to continue to meet load obligations; and
- g. Explain whether Kentucky Power applies for a CPCN for each transmission project, and if not, provide a description of transmission projects undertaken in the last five years and anticipated in the next five years for which a CPCN is not or was not needed.

34. Refer to the IRP, Sections 4.3, pages 76–77, and 5.2.1, pages 113–114.

a. Explain whether the Fundamentals Forecast is significantly different if 20-year average heating and cooling degree days are assumed, as opposed to using 30-year averages.

b. Explain the relationship, if any, between forecasted data provided by the U.S. Energy Information Agency and the Fundamentals Forecast.

c. If not provided above, explain the sources of data that serve as the basis for the Base, Lower, and Upper Band forecasts.

d. Explain the differences in assumptions between the commodity pricing scenarios for the base, low and high band forecasts.

35. Refer to the IRP, Section 3.6, page 72. Provide any studies Kentucky Power has reviewed when evaluating Distributed Energy Resources as an alternative for capacity and reliability upgrades.

36. Refer to the IRP, Section 4.3, page 76. Kentucky Power and AEP operate within PJM. It is reasonable to assume that changing economic conditions occurring within PJM, surrounding RTO territories, and along fuel supply chains could affect the

Fundamentals Forecast. Explain how operating conditions across North America affect zonal energy market prices.

37. Refer to the IRP, Section 4.3.1, page 78.

a. Provide support of the 3.5 percent escalation for the CO₂ dispatch burden.

b. Explain why Kentucky Power believes such an escalation is reasonable.

38. Refer to the IRP, Section 4.4.1, page 83. Kentucky Power states that incremental DSM program impacts are modeled on the supply side; however, on page 8, Section 2.2.5, it states that no DSM programs are forecasted on the demand side. Reconcile these two statements.

39. Refer to the IRP, Sections 4.4.2 and 4.4.3, pages 83–89. Aside from Volt VAR Optimization, provide a discussion of any other initiatives to enhance the efficiency of the distribution and transmission systems, including substations.

40. Refer to the IRP, Section 4.4.3.1. Explain how the EE measures impact the supply-side forecast, but not the demand-side forecast.

41. Refer to the IRP, Section 4, Figure 26, page 91. Regarding distributed generation, specifically rooftop solar, provide an update of the annual installation cost, number of installations, payments to customers, and MW installed disaggregated for residential and commercial customers over the forecast period.

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

a. Explain why DR was modeled as a possible supply-side input when it was not included in the demand-side forecast.

b. Explain why industrial loads were not included as potential new DR program participants.

43. Refer to the IRP, Section 4.4.3.6, pages 91–92.

a. Provide a list of the commercial and industrial customers in Kentucky Power's service territory that, as a practical matter, have the potential to cogenerate power and the estimated MW that could be produced as assumed in Kentucky Power's modeling.

b. For the generic combined heat and power option, explain whether Kentucky Power or the host owns the facility and whether any part of the facility is already present or whether it must be built from the ground up.

c. Cogeneration does not have to be limited to just customers utilizing waste heat to make steam. Explain whether any of Kentucky Power's industrial or commercial customers have approached Kentucky Power with the prospect of generating its own energy behind the meter regardless of technology.

d. Explain whether any of Kentucky Power's industrial or commercial customers have approached Kentucky Power with the prospect of generating its own energy behind the meter in pursuit of its own corporate green energy goals. If so, explain where those discussions stand.

44. Refer to the IRP, Section 3.3.4.3, page 90, at which Kentucky Power discusses the determination of the level of Distributed Generation (DG) penetration, Kentucky Power created a forecast using existing levels of DG and the incremental additions from PJM's forecast. Provide the calculations used to create the forecast, and detail any assumptions made to generate the forecast.

45. Refer to the IRP, section 4.5.4.2, page 96.

a. State whether aeroderivatives have black start capability.

b. Identify the Kentucky Power units that have black start capability and would be utilized by PJM as such.

46. Refer to the IRP, Section 4.5.5, page 98. Explain the impacts the proposed Minimum Offer Pricing Rule (MOPR) currently under consideration by the Federal Energy Regulatory Commission will have on Kentucky Power's short-term market purchase program.

47. Refer to the IRP, Sections 1.5 Table 1 at 4, 4.5.1, page 92, and 5.3 Table 17, page 128.

a. Explain whether Kentucky Power explored the option of only purchasing the capacity and any energy beyond 2023 as opposed to new construction after the expiration of the Rockport unit power agreement (UPA). If so, explain how the option was explored and the pricing options available to Kentucky Power. If not, explain why not.

b. With the expiration of the Rockport UPA, explain whether Kentucky Power explored the option of changing its participation in PJM from FRR to RPM. If so, explain the results of that study. If not, explain why not.

c. Explain whether and how the MOPR will affect Kentucky Power.

d. Explain whether Kentucky Power's Preferred Plan, as reported in Table 17, means that Kentucky Power is going to add up to 253 MW of new solar nameplate and 129 MW of new solar firm by 2024.

e. Explain the difference between new solar nameplate and new solar firm as reported in Table ES-1.

48. Refer to the IRP, Section 4.5.2, page 93, Table 13.

a. Provide an explanation of the differences between E and F class combustion turbines.

b. Provide an explanation of the differences between H and J class combined cycle combustion turbines.

c. The Table appears to have footnotes attached to select column and row headings. Provide a copy of the table with the attendant footnotes attached.

49. Refer to the IRP, Section 4.5.5, page 99. Explain Kentucky Power's understanding of the availability of third-party capacity purchases and how that limited Kentucky Power's consideration of purchases to no later than 2024.

50. Refer to the IRP, Section 4.5.6, page 100. Provide support for the assumption that the RTO and other key stakeholders will support a higher penetration and capacity planning value of wind and solar.

51. Refer to the IRP, Section 4.5.6.1, Figure 29, page 102.

a. Explain the difference between Tier 1 and Tier 2 and the reason for the cost difference.

b. Provide support for the 1 percent solar escalation cost.

52. Refer to the IRP, Sections 4.5.6.1, pages 100–103, and 5.2.1, pages 113–114. Also, refer to Figure 30, page 103.

a. Explain the difference between Residential and Commercial solar installation cost and why commercial solar is consistently more expensive to install.

b. Explain whether large scale solar was modeled on the same basis as for CTs and NGCCs (i.e., Kentucky Power owning a share of a larger facility). If not, explain why not.

c. Explain whether Kentucky Power modeled various limits to Kentucky Power's load obligation below or above 15 percent.

53. Refer to the IRP, Section 4.5.6.2, pages 103–105.

a. Explain whether the Wind option being modeled and the modeling cost was predicated on the facility to be constructed in the Company's service territory.

b. Explain whether the Wind option was included in the model as a stand-alone facility or on the same basis as the CTs and NGCCs were modeled (i.e., Kentucky Power owning a share of a larger facility).

c. Explain why the two tranches of wind resources have differing capacity factors.

54. Refer to the IRP, Section 4.6, pages 106–107. Each supply-side and demand-side resource is offered into the Plexos model on an equivalent basis. Provide a table comparing the values for capacity, energy production (or savings), and cost for each resource offered into the model.

55. Refer to the IRP, Sections 4.5.2, Table 13, page 93, and 5.2.1, pages 113–114. Table 13 illustrates modeling the CTs and NGCCs at the cost of an entire unit.

a. Explain why only a 50 percent share of two combustion turbine units was modeled rather than a 100 percent share of one combustion turbine.

b. Explain why a 25 percent share of a natural gas combined cycle facility was modeled rather than a larger percentage of a smaller unit.

c. For parts a. and b. above, explain whether there will be a need for additional power in the AEP East system and whether the same assumptions were made for other AEP East operating companies' IRPs. If so, explain whether the modeling results indicated that the larger units should be built, in which year, and the identity of the shared ownership companies.

d. Explain whether the modeled peaking capacity and intermediate baseload capacity modeled is within Kentucky Power's service territory.

e. Explain why the wind resources have differing levelized costs of energy.

f. Explain why the solar Tiers have differing costs/mWh.

g. Provide support for the compound annual growth rate of DG of 19.8 percent over the planning period.

56. Refer to the IRP, Sections 4.7, Item 4, page 108, and 5.3, Table 17, page 128. Item 4 states that Kentucky Power has included 20 MW of solar resources in its "Going In Position". Table 17 shows that Kentucky Power's capacity position in 2021 is 232 MW.

a. Explain whether Kentucky Power's capacity position as of the date of this Order is 236 MW.

b. Explain whether the 236 MW includes the 20 MW of solar capacity.

c. Explain when Kentucky Power intends to file a CPCN to construct the 20-MW facility.

d. Explain when Kentucky Power anticipates filing CPCNs for the new solar nameplate and firm solar capacity listed in Table 17.

57. Refer to the IRP, Section 5.1, page 110. Provide Kentucky Power's capital structure and associated weighted average cost of capital.

58. Refer to the IRP, Section 5.2.2.4, page 123. Explain the participants in the key Stakeholder technical conference and what the key stakeholders were asked to evaluate. Include in the answer any conference materials provided to participants and participant responses.

59. Refer to the IRP, Exhibits E1 and E2, and Sections 5.2 and 5.3. Throughout the discussion, Kentucky Power compares and contrasts the various modeling scenarios. Even though it is clear that the Preferred Plan is comparably cost effective over the 15-year time horizon and contains elements common to many of the comparison scenarios, it is not clear exactly how Kentucky Power arrived at its Preferred Plan. Explain how Kentucky Power arrived at the precise resource mix and the timing of the resource implementation as outlined in the Preferred Plan.

60. Refer to the IRP, Section 4.4, Demand-Side Management (DSM) Program Screening & Evaluation Process.

a. Explain in detail, the potential incremental DSM programs that were developed for potential EE bundles as a resource option.

b. Explain the process in which the Volt VAR Optimization (VVO) tranches were modeled.

61. Refer to the IRP, Section 2.9.1, page 32, at which Kentucky Power states the economy in their service area continues to be sluggish.

a. Describe any ongoing plans or efforts to attract economic development to Kentucky Power's service area.

b. State whether Kentucky Power has had any successes or failures in attracting economic development to their service area.

c. Describe Kentucky Power's process for attracting economic development and commercial or industrial customers.

d. State whether any large commercial or industrial customer has expressed a desire to purchase renewable energy from Kentucky Power.

62. Refer to the IRP, Section 4.5.6, page 99.

a. State whether any RFPs have been planned or issued in search of renewable power options.

b. Describe Kentucky Power's process for planning and procuring renewable energy sources.

63. Refer to the IRP, Volume A, Section 2.2.1, page 7.

a. Describe how regional economic data is applied to make projections for Kentucky Power's specific service area.

b. State whether other economic forecasts besides Moody's Analytics were evaluated for the purposes of this IRP. If not, explain why.

64. Refer to the IRP, Appendix C-8.

a. Explain whether this blending is an illustration or the actual blending used.

b. If it is an illustration, provide a similar table of the actual forecast, weights, and blended forecast.

65. Refer to the IRP, Appendix C-19. Provide the labels for the graph.



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DATED APR 28 2020

cc: Parties of Record

Case No. 2019-00443

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