



LG&E Energy Corp.
220 West Main Street (40202)
P.O. Box 32030
Louisville, Kentucky 40232

January 12, 2004

RECEIVED

JAN 13 2004

PUBLIC SERVICE
COMMISSION

Mr. Thomas Dorman, Executive Director
Public Service Commission
211 Sower Boulevard
P. O. Box 615
Frankfort, Kentucky 40602

RE: *INVESTIGATION INTO THE MEMBERSHIP OF LOUISVILLE GAS AND ELECTRIC COMPANY AND KENTUCKY UTILITIES COMPANY IN THE MIDWEST INDEPENDENT TRANSMISSION SYSTEM OPERATOR, INC. CASE NO. 2003-00266*

Dear Mr. Dorman:

Please find enclosed Louisville Gas and Electric Company's and Kentucky Utilities Company's initial set of data requests for information to Midwest Independent System Operator, Inc. ("MISO").

Please contact me if you have any questions concerning this filing.

Sincerely,

John Wolfram
Manager, Regulatory Policy / Strategy

Enclosures

¹ "Effective December 30, 2003, LG&E Energy LLC, a Kentucky limited liability company, was the successor by assignment and subsequent merger of all of the assets and liabilities of LG&E Energy Corp., a Kentucky corporation."

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

RECEIVED

JAN 13 2004

PUBLIC SERVICE
COMMISSION

In the Matter of:

INVESTIGATION INTO THE MEMBERSHIP OF)
LOUISVILLE GAS AND ELECTRIC COMPANY)
AND KENTUCKY UTILITIES COMPANY IN THE) CASE NO. 2003-00266
MIDWEST INDEPENDENT TRANSMISSION)
SYSTEM OPERATOR, INC.)

**LOUISVILLE GAS AND ELECTRIC COMPANY
AND KENTUCKY UTILITIES COMPANY'S
INITIAL DATA REQUESTS FOR INFORMATION
TO THE MIDWEST INDEPENDENT SYSTEM OPERATOR, INC.**

Louisville Gas and Electric Company ("LG&E") and Kentucky Utilities Company ("KU") submit their initial set of data requests for information to Midwest Independent System Operator, Inc. ("MISO").

Instructions

As used herein, "Documents" include all correspondence, memoranda, notes, maps, drawings, surveys or other written recorded materials, whether external or internal, of every kind or description, in the possession of or accessible to MISO, its witnesses or its counsel. Please identify by name, title, position and responsibility the person or persons answering each of these requests for information for MISO for each response.

- a. Identify for each Request (a) the witness who is responding and will be prepared to answer further questions about the subject matter of that Request and (b) any other person who prepared or provided information for the response.
- b. These Requests are continuing, so as to require further and supplemental responses if LG&E/KU locates, receives, or generates additional information

within the scope of these Requests between the time of the response and the time of any hearing conducted in this case.

- c. If any Request appears confusing or it is not clear what information is being sought, please seek clarification from the undersigned counsel.
- d. In these Requests, “document” refers to writings and records of every type and encompasses a tangible or intangible compilation of data or information.
 1. Documents that are in electronic form, e.g., e-mail, computerized forms, or databases, may be provided as print-outs (hard copies) or sent in a usable electronic format on a diskette or other storage medium or via e-mail or the Internet.
 2. If a document requested is readily available and downloadable from Internet (including the Web), it is a sufficient response to identify the document, provide a specific address, and give any necessary directions for downloading it.
 3. If a response is provided by reference to, or in the form of, a database, identify and explain each field or variable contained in or categorizing the data unless it is self-evident to a person not otherwise familiar with the database.
 4. If no document is responsive to a request calling for a document, then so state and treat the question as requesting a textual response.
- e. If MISO has objections to any Request on the grounds that the requested information is proprietary in nature, and MISO intends to seek confidential treatment of that information from the Commission pursuant to 807 KAR 5:001 § 7, please notify undersigned counsel in advance of filing and serving the responses regarding the subject matter and the intent to seek confidential treatment.
- f. Capitalized or *italicized* terms in these Information Requests are defined as follows:
 1. LG&E/KU — LG&E and KU, collectively and individually.
 2. Commission — Kentucky Public Service Commission.
 3. FERC — Federal Energy Regulatory Commission.
 4. MISO – Midwest Independent Transmission System Operator, Inc.
 5. NERC – North American Electric Reliability Counsel
 6. TLR – Transmission Loading Relief
 7. *CB Study* – MISO cost-benefit analysis attached to the testimony of Robert N. McNamara as Exhibit RRM-1.
 8. *Charts* – the charts and tables accompany the MISO cost-benefit analysis attached to the testimony of Robert N. McNamara as Exhibit RRM-1.

Information Requests

1. Mr. Harszy (p. 5, *ll.* 15-18) states: “The State Estimator is a highly sophisticated computer model that uses real time measurements from the System Control and Data Acquisition System (“SCADA”) supplied by member control areas to provide a periodic calculation of the current condition of the entire system.

- a. Does MISO acquire SCADA information from only MISO member systems?
- b. If so, what SCADA information is obtained and how frequently is it supplied?
- c. If the answer to (a) is No, what non-MISO entities supply SCADA information?
- d. Is there a reciprocal agreement between MISO and the entities listed in (c) regarding an exchange of information as inputs to State Estimators?

2. Mr. Harszy (p.6, *ll.* 17-18) states: “At the time of the August 14 blackout, the Midwest ISO’s State Estimator had not yet been fully deployed by mapping into the system all of the 230 kV transmission facilities in and around the Midwest ISO footprint.” In addition to the State Estimator not having been “fully deployed” on August 14, were there any other reasons in addition to those identified in the Joint Task Force Interim Report on the Aug. 14, 2003 blackout¹ why the State Estimator did not provide MISO with contingency analysis during the afternoon of August 14, 2003?

3. Mr. Harszy (p. 8. *ll.* 3-12), in referring to the charts that accompany his testimony (i.e., Chart 1, Exhibit RCH-1), concludes that the increase between 2001 and 2003 in the number of hours that an LGEE flowgate was in TLR due to a contingency external to Kentucky was due to an increase in reliability after the MISO became Reliability Coordinator. Did MISO make any attempt to weather normalize the comparison between years 2001 and 2002 in the charts accompanying the witness’s testimony?

4. Does MISO provide Reliability Authority services to non-MISO control areas in the MidAmerica Power Pool (MAPP)?

- a. If so, what does MISO charge non-MISO member control areas in MAPP for provision of Reliability Authority services?
- b. If so, is there such a control area in MAPP comparably sized with respect to LG&E/KU, and what does MISO charge that control area for Reliability Authority services?

5. Mr. Harszy (p. 11 *l.* 13 to p. 12 *l.* 17) discusses the MISO’s regional planning process.

- a. Does MISO’s coordinated planning process require entities interested in any benefits associated with regional planning to become members of MISO?

¹ U.S. Canada Power System Outage Task Force, Interim Report: Causes of the August 14th Blackout in the United States and Canada, November 2003.

- b. Does MISO have plans to coordinate its regional transmission expansion planning with other non-MISO member entities (e.g., TVA, PJM, and SPP)? If so, briefly describe these plans and name the entities involved.
- c. Does MISO have plans to coordinate its regional transmission expansion planning with such entities as East Kentucky Power Cooperative (“EKPC”) or Big Rivers Electric Cooperative (“BREC”)?

6. Mr. Harszy (p. 12 *ll.* 3-8) discusses the MISO’s ability to monitor and analyze “chronic” power flow constraints.

- a. Does Mr. Harszy, by his statements here, mean to imply that, if LG&E/KU were not in the MISO market footprint, security constraints arising from power flows on the Blue Lick-Bullitt County 161 kV line or the Ghent 345/138 kV transformer would be ignored by MISO?
- b. If LG&E/KU were required by an order from the Commission to exit MISO, would it be possible for LG&E/KU and MISO to enter into a market-to-non-market operating agreement similar to that currently being negotiated between PJM and MISO?

7. Mr. Falk (p. 17 *ll.* 15-18) states that if LG&E/KU were to operate as a standalone system at a higher level of system security than before MISO took over as Reliability Authority, such operation would “perforce include more costs which have not been included in their testimony.” Has Mr. Falk performed any analysis of the costs of this higher level of system security? If so, please provide a copy of this analysis.

8. Mr. Falk asserts (p. 2, *ll.* 17-21) that “the pre-Midwest ISO LG&E/KU system was, on some occasions, being run in a state in which the probabilities of outage were higher than design criteria dictate. With enough incidents in these conditions, it is a probabilistic certainty that additional incidents of lost load will occur. The fact that LG&E and KU experienced no outages in this period was a matter of luck.”

- a. Given the “probabilistic certainty,” how many days or years would Mr. Falk expect the LG&E/KU system to operate on a standalone system before “additional incidents of lost load will occur”?
- b. Please define what Mr. Falk means “luck” as he has used that word in describing LG&E/KU’s experience. Does Mr. Falk believe that “luck” is something that happens randomly, or that tends to repeat itself?

9. Mr. Falk has presented two figures, one at the top of p. 11 and one at the top of p. 12. Please explain the relationship between these two figures.

10. Please provide all data and work papers that support or are in any way related to Mr. Falk’s calculation of the value(s) of probability p_i used to develop the table on page 16.

Please provide all data and work papers that support or are in any way related to his calculation of the aggregate value of increased reliability (as discussed throughout pp. 10 - 18, including all work papers and data supporting his calculations of the following:

- a. the probability of an outage from an undeclared TLR,
- b. the kilowatt-hours lost in a typical outage, and
- c. the value of lost load from lost kilowatt-hours.

11. Mr. Falk states (p. 13, *ll.* 7-8) that the August 14, 2003 “outage was really one-in-a-hundred year occurrence...” Please provide the evidence that the August 14 event was a one-in-a-hundred year occurrence.

12. Please provide copies of the following documents cited in Mr. Falk’s resume (MISO Exhibit JF-1):

- a. Guest Editorial regarding the Electric Blackout of August, 2003, *Electricity Journal*, November 2003, pp. 83-84.
- b. “Electricity Regulation: The Mess We’re In, How We Got There, And The Road Out,” presented at a Foundation for American Communications Seminar, Washington, DC, January 27, 2003.
- c. “A Contrarian View of Enron,” Marsh, Inc. Power Group Conference, Palm Harbor, FL, February 20, 2002
- d. “Competitive Markets for Power 2001: An Electrical Odyssey,” presented at the US annual meeting. Key Largo, Florida, June 13, 2001
- e. “Electricity Restructuring: The (Pretty) Good, The (Pretty) Bad, and the (Extremely) Ugly,” Marsh, Inc. Power Group Conference, Palm Harbor, Florida, February 14, 2001

13. Mr. Falk (p. 5, *ll.* 2-17) discusses the relationship between a security system violation and a loss of load. Then (p. 8 *ll.* 7-15) he explains why he focused on Level 4 TLR calls.

- a. Please provide the evidence that Mr. Falk relied upon to assert the Level 4 TLRs examined involved security system violations or that the system was “already being run in unsafe conditions.”
- b. When a Level 4 TLR is called, is a security system violation always involved?
- c. When a Level 4 TLR is called, does it require load shedding?
- d. Please provide the evidence that Mr. Falk relied upon to make the assumption that his examination was limited to “circumstances with the highest probability of lost load.” In other words, what evidence does Mr. Falk rely upon to assume that Level 4 TLRs are the contingencies for which the probability of lost load is the highest?

14. Mr. Falk (p. 12, *ll.* 10-16) discusses his examination of the NERC Disturbance Analysis Working Group (“DAWG”) reports on major disturbances since 1990.

- a. For the period of 1990-2003, how many transmission related outages (excluding those attributable to weather) occurred on LG&E/KU’s system?
- b. Over the period 2002-2003 how many transmission related outages (excluding weather related) occurred on systems under MISO’s operational control or within the MISO footprint?
- c. Please provide the evidence that Mr. Falk relied upon to assume that the 2.6 million kWh that he states represents the “average number of kilowatt-hours lost in a disturbance,” a number that is based on his examination of the DAWG reports on disturbances, could reasonably be used to represent the average number of kilowatt-hours lost in a disturbance effecting the LG&E/KU system.

15. Please provide all empirical studies that Mr. Falk relied upon to assume that the distribution of outage costs derived from his Monte Carlo simulation is representative or characteristic of the distribution of outage costs associated with outages in the LG&E/KU service territory or outages within neighboring control areas that would impact LG&E/KU’s service territory and its retail customers.

16. Please provide an estimate of the difference between the probability of a power outage with LG&E/KU operating as a standalone system and the probability of a power outage with LG&E/KU as a member of MISO. What would this difference in probabilities be if MISO continued to provide Reliability Authority and security services to LG&E/KU operating as a standalone system?

17. Mr. Torgerson (p. 7 *ll.* 3-7) suggests through the quote from the MISO Open Access Transmission Tariff (“OATT”) that non-MISO facilities are integrated with MISO facilities, and therefore all customers using the grid share in the costs.

- a. Does MISO currently provide services designed to “ensure the reliability of the bulk power system” to any non-MISO entities, for example, entities within MAPP?
- b. If the answer to (a) is yes, will MISO continue to provide such services after startup of the MISO Day 2 market?
- c. Does Mr. Torgerson believe it is possible for MISO to provide identical reliability services to LG&E/KU were the Companies to withdraw from MISO? If not, please explain why not.

18. Mr. Torgerson (p. 8 *ll.* 17-27), in response to the Question “Is the Midwest ISO creating the benefits that were envisioned by its founding members, this Commission, the FERC and other state commissions?” answers “Absolutely.” With regard to ensuring the reliability of the bulk power system, please reconcile that answer with what could be a reasonable expectation of the Commission with regard to MISO’s ensuring system

reliability, namely that there be no widespread power outages, such as the August 14th blackout.

19. Regard the preparation of the various components of the cost-benefit analysis supported in witnesses' testimony and exhibits:

- a. Please state the names, corporate affiliation and position of all people involved directly or indirectly in the preparation of this testimony. Include all contacts with outside consultants and government regulators and their staff.
- b. Did MISO receive, directly or indirectly, any input from or have any discussions with FERC Commissioners or FERC staff about the cost-benefit analysis that MISO was preparing for this case, or about any aspect of this case?
- c. If the answer to (b) is yes, please provide all notes, information and any other correspondence by whatever means (electronic and non-electronic) that outline the FERC's and/or their staff input into this process.

20. Please provide a list of the specific services that are provided or will be provided by MISO that create merger benefits for LG&E/KU retail customers.

21. Please provide all data, work papers and any other supporting documents that were used by Mr. McNamara or by any persons that Mr. McNamara supervised in the preparation of the cost-benefit study for which Mr. McNamara provides testimony in this proceeding. Please provide all electronic files, such as Excel Spreadsheets, Access Databases, CSV files (i.e., text files) and files that are the product of any computer software programs that were used in the conduct of the study on which Mr. McNamara testifies.

22. Mr. McNamara (p. 4, *ll.* 17 –19) states that continued membership after the implementation of centralized security constrained economic dispatch and the resulting day-ahead and real-time energy markets yields yearly ongoing net benefits of approximately \$12 million per year. Mr. McNamara, (p. 5 *l.* 15) states that, compared to the stand-alone case, it is anticipated that LG&E/KU will realize approximately \$8.3 million in additional benefits from being part of a large regional wholesale electricity market. Please account for the difference between the \$8.3 million and \$12 million.

23. Mr. McNamara (p. 14, *ll.* 18-25) describes how NERC TLR procedures can affect transactions. Will MISO use TLRs after the Day 2 startup? If so, will MISO base its TLR calls on actual power flows or on estimated distribution factors?

24. Mr. McNamara (p. 16, *ll.* 1-20) discusses MISO's use of real-time information from multiple utilities.

- a. Will MISO be able to perform in real-time the analysis that Mr. McNamara describes in his testimony as "after the fact"?

- b. Please explain why the use of AEP is a reasonable example even though AEP is not (and does not intend to be) a MISO member.
- c. What is the status of negotiations with AEP on a coordination agreement with MISO?

25. Mr. McNamara states (p. 18, *l.* 2) that “We do not anticipate continuing to have short-term TRM in the real-time market.” How does the MISO propose to facilitate transmission capacity for Automatic Reserve Sharing within ECAR, which is currently included in the TRM?

26. Referring to Mr. McNamara’s testimony (p. 7, *ll.* 18-25). Does MISO need full participation of all MISO generation and load in the set of day ahead and real-time offers and bids in order to “provide its members the benefit of coordinated economic unit commitment and dispatch?” If not, what level of participation is required?

27. Mr. McNamara (p. 8) acknowledges that through and out rates will be eliminated. Will the proposed elimination of the through and out rates between MISO and PJM change the hurdle rates discussed on page 8? If so, by how much? If not, why not?

28. Mr. McNamara (p. 14, *ll.* 1-2) discusses the average unused available transmission capacity (“ATC”) during the TLR calls. Does the 9.31% unused ATC include any “head room” related to a safety factor, for example, 95% of OSL, used in issuing TLRs?

29. Referring to Mr. McNamara’s Exhibit RRM-1 [p. 2 *et seq.*].

- a. For what sample of hours were production costs and power flow modeling results calculated?
- b. Were results calculated for a hypothetical peak hour only, for all 8,760 hours of 2004 or some other year, or for some other period(s)?

30. Referring to Exhibit RRM-1, pp. 6-7. Please provide an electronic file (e.g., Excel spreadsheet) that has complete LMP results for all periods and both the LG&E/KU as MISO member case and the LG&E/KU as standalone system case.

31. Referring to Mr. McNamara’s Exhibit RRM-1, p. 8.

- a. Please identify any facilities, other than FG 2195 and FG 2500, on which you made Transmission Reserve Margin (TRM) adjustments.
- b. For all facilities on which you made TRM adjustments, what capacities did you assume for the standalone alternative before and after the adjustments?
- c. What capacities did you assume for all such facilities on which you made TRM adjustments for the LG&E-within-MISO alternative?

32. Referring to Mr. McNamara's Exhibit RRM-1, Table RRM 1-1. What was assumed with regard to LG&E/KU retail load paying Schedule 1, 7, 8, and 14 charges under the standalone system option?

33. Referring to Mr. McNamara's Exhibit RRM-1, Table RRM 1-3.

- a. Please explain the basis or rationale for each of the figures with values above 0.10.
- b. Please confirm that these figures are in units of \$/MWh.

34. Referring to Mr. McNamara's Exhibit RRM-1, Table RRM 1-6.

- a. Please explain how congestion costs can be negative and why the largest absolute congestion costs (7/20, hours 15 and 17) are negative.
- b. In hours when congestion costs are negative, are prices at LG&E/KU's resource locations higher than prices at LG&E/KU's sink locations? If so, how can this occur?
- c. Does the analysis implicitly assume that, in hours when congestion costs are negative, LG&E/KU is transporting power from high-cost locations to low-cost locations? And if it does not assume that, what does it assume?

35. Referring to Mr. McNamara's Exhibit RRM-1, (p. 11), does the figure assume that the FTR payouts to LG&E/KU in the Day 2 Market will equal 100% of their nominal value? If not, what was assumed?

36. Referring to Mr. McNamara's Exhibit RRM-1, and his discussion of the PROMOD IV model (Section 2.0, Quantification of Near Term Congestion Management and Net Margin On Off-system Sales Benefits).

- a. Please provide all of the supporting documents, work papers and data supporting these documents and work papers for the analysis conducted of the quantification of near-term congestion management and net margin on off-system sales benefits.
- b. What is the objective function used in the PROMOD IV model employed by MISO?
- c. Do the "transmission interface limits" used by PROMOD IV change dynamically within PROMOD IV in response to changes in flows throughout a 24 hour period?
- d. Cases 2.7.3 and 2.7.4 imposed hurdle rates on certain LG&E/KU transactions because LG&E/KU was not a member of an RTO. Were similar hurdle rates applied to other non-RTO participant entities in the Eastern Interconnect? If so, what were these hurdle rates?

- e. Mr. McNamara (p. 2, Exhibit RRM-1) states that the PROMOD IV model calculates hourly production costs and location-specific market clearing prices.
 - i. How is the output from PROMOD IV analysis used to calculate the benefits of FTRs, given that MISO has proposed to apply FTRs to the day-ahead market?
 - ii. Does this mean that, for the results of the PROMOD IV model to be used to calculate the benefits of FTRs, it must be assumed that hourly day-of-dispatch results from PROMOD IV are an accurate representation of day-ahead market outcomes?

37. With respect to the PROMOD IV inputs:

- a. Did constructing a set of appropriate data inputs for PROMOD IV require a detailed examination of the various federal submittals or did it make use of an aggregated database provided by a vendor? If a vendor database was used, who was the vendor?
- b. In Exhibit RRM-1, (p.2), it is stated that the PROMOD IV model captures operating details of 5,000 generating units in the entire Eastern Interconnect. How many generating units in the Eastern Interconnect were not included in PROMOD IV model? What criteria were used to exclude generators or generating units?
- c. Is the PROMOD IV model NOX and SO2 emission-constrained?
- d. How were spinning and operating reserves modeled?
- e. How is hydroelectric generation modeled?
- f. How are scheduled maintenance outages on nuclear and fossil units modeled?
- g. Please provide all input data for LG&E/KU generating units, load forecasts, and the characterization of its transmission system.
- h. Please identify the RTO membership of all load and generating units in the model.
- i. Was AEP assumed to be in or out of PJM for the 2004 simulation and the various cases modeled?
- j. How does the model address generating capacity scarcity? Did the model identify any scarcity in 2004 and if so, what was the impact?

38. With respect to PROMOD IV model outputs:

- a. Please provide all model outputs related to LG&E/KU units.

- b. Please provide the outputs from PROMOD IV modeling in all cases for LG&E/KU OSS volumes and margins by hour or peak type (5x16, 2x16, 7x8) by month.
- c. Since only 2004 was modeled, were any sensitivities performed for changes in natural gas and coal prices. If so, please provide.
- d. Please provide all outputs on LMP prices, marginal losses and marginal congestion costs for all LSEs and all generating units modeled in the 2004 simulation cases examined.

39. Refer to Exhibit RRM-1, Section 2.11.

- a. If LG&E/KU is being inefficient by generating and selling less energy prior to the LMP market, what entities are also being inefficient by generating and selling too much energy? Please identify all volumes by source and hour.
- b. Has the PROMOD IV model for 2004 been benchmarked against 2002 actuals? If so, provide the results of that benchmarking. If not, why not?

40. Refer to Exhibit RRM-1, Section 2.7.3.

- a. Was MISO / PJM PTP service applied to all non RTO members in the PROMOD model analysis?
- b. How were PTP transmission costs modeled for all non RTO entities in the Eastern Interconnect?
- c. Please provide transmission rates, including losses, used for all systems in the model.
- d. Please provide the support for and explain in detail the basis for the transaction fee of \$3/MWH.

41. Refer to Exhibit RRM-1, Section 3 and table RRM_1-6. In calculating the congestion cost not covered by FTRs, it appears MISO only considered hours in which the load exceeds the FTRs held. Please verify whether the FTR holder could be exposed to cost in hours in which the load is less than the FTRs held?

42. Refer to Table RRM_1-5. Please provide all of the supporting calculations and describe the source data for all elements of this table.

43. Refer to Exhibit RRM-1, Section 5 (p. 15).

- a. Please provide financial analysis that supports MISO's assertion on p. 15 that creating a new energy market is the least-cost means to accomplish the activities enumerated.

- b. Referencing the middle of p. 16. Please provide all supporting documents related to the claim that a 100 MW peak reduction could be achieved on LG&E / KU system as a result of “transparent spot markets.”

44. Mr. Holstein (p. 12, *ll.* 7-19) discusses estimates of the withdrawal fee that would be assessed LG&E/KU. Please provide all work papers that support your calculation of this \$38.2 million withdrawal fee.

45. Mr. Holstein (p. 14, *l.* 14) in the table presents estimates of the Schedules 10, 16, and 17 charges for LG&E/KU for the period 2004 to 2010. Please provide all work papers that support your calculation of these charges.

46. Mr. Holstein (p. 15 *ll.* 13-25) states: “I believe it is appropriate for all Schedule 10 costs to date to be capitalized and recovered through retail rates for the same reasons I believe prospective costs should be included in retail rates.” Does Mr. Holstein mean to suggest that future charges that LG&E/KU pays to MISO for capital and operating costs through Schedule 10, 16 and 17 charges should be capitalized and recovered in LG&E’s and KU’s rates to retail customers?

47. Mr. Holstein (p. 15) talks about “the federal requirement to join an RTO as a means of mitigating market power.” What “federal requirement” is the witness referring to?

48. How much has the increase in the MISO footprint over the past 2 years decreased LG&E/KU costs under Schedule 10?