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January 12, 2009

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HAND DELIVERED

Jeff R. Derouen
Executive Director
Public Service Commission
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RE: ***Considerations of the New Federal Standards of the Energy Independence and Security Act of 2007*** **- Case No. 2008-00408**

Dear Mr. Derouen:

Please find enclosed and accept for filing the original and ten copies of the testimony of Errol K. Wagner in this matter. A copy also is being served on all parties on the attached service list.

Please do not hesitate to contact me if you have any questions.

Very truly yours,

Mark R. Overstreet

cc: Errol K. Wagner
All Persons On Attached Service List

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COMMONWEALTH OF KENTUCKY

BEFORE THE

PUBLIC SERVICE COMMISSION OF KENTUCKY

IN THE MATTER OF

CONSIDERATION OF THE NEW FEDERAL STANDARDS OF THE ENERGY *INDEPENDENCE AND SECURITY ACT OF* 2007	)))	ADMINISTRATIVE CASE NO. 2008-00408

DIRECT TESTIMONY OF ERROL K WAGNER
ON *BEHALF OF*

KENTUCKY POWER COMPANY

January 12, 2009

DIRECT TESTIMONY OF

ERROL K. WAGNER, ON BEHALF OF
KENTUCKY POWER COMPANY

BEFORE THE PUBLIC SERVICE COMMISSION OF KENTUCKY

INTRODUCTION

Q: PLEASE STATE YOUR NAME, POSITION AND BUSINESS ADDRESS.

A: My name is Errol K. Wagner. My position is Director of Regulatory Services, Kentucky Power Company ("Kentucky Power" or "Company"). My business address is 101A Enterprise Drive, Frankfort, Kentucky 40602.

BACKGROUND

Q: PLEASE SUMMARIZE YOUR EDUCATIONAL BACKGROUND AND BUSINESS EXPERIENCE.

A: I received a Bachelor of Science degree with a major in accounting from Elizabethtown College, Elizabethtown, Pennsylvania in December 1973. I am a Certified Public Accountant. I worked for two certified public accounting firms prior to joining the Pennsylvania Public Utility Commission Staff in 1976. In 1982, I joined the American Electric Power Service Corporation ("AEPSC") as a Rate Case Coordinator. In 1986, I transferred from AEPSC to Kentucky as the Assistant Rates, Tariffs and Special Contracts Director. In July 1987, I assumed my current position.

Q: WHAT ARE YOUR RESPONSIBILITIES AS DIRECTOR OF REGULATORY SERVICES?

A: I supervise and direct Kentucky Power's Regulatory Services Department, which has the responsibility for rate and regulatory matters affecting Kentucky Power. This includes the preparation of and coordination of the Company's exhibits and testimony in rate cases and any other formal filings before state and federal regulatory bodies. Another

responsibility is assuring the proper application of the Company's rates in all classifications of business.

Q: TO WHOM DO YOU REPORT?

A: I report to the President of Kentucky Power, Mr. Timothy C. Mosher, who also is located in Frankfort, Kentucky. Kentucky Power, of course, is a wholly-owned operating company of American Electric Power Company ("AEP.")

Q: HAVE YOU PREVIOUSLY TESTIFIED BEFORE THIS COMMISSION?

A: Yes. I have testified before this Commission in numerous regulatory proceedings involving the adjustment in electric base rates, the fuel adjustment clause, the operation of the environmental cost recovery mechanism, approval of certificates of public convenience and necessity and other regulatory matters. I also testified in Case No. 2005-00341, Kentucky Power's last case seeking a general adjustment in electric base rates.

PURPOSE OF TESTIMONY

Q: WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A: To address the questions posed by the Commission in its November 13, 2008 Order in this proceeding. Specifically, I will address whether the Commission should adopt the federal standards established by the Energy Independence and Security Act of 2007 ("EISA 2007") with respect to (a) Integrated Resource Planning (Section 532(a)(16)); (b) Rate Design Modification to Promote Energy Efficiency Investments – Electric Utilities (Section 532(a)(17)); (c) Consideration of Smart Grid Investments (Section 1307(a)(16)); (d) Smart Grid Information (Section 1307(a)(17)); and (e) Additional Incentives for the Recovery, Use and Prevention of Industrial Waste Energy (Section 374).

Q: DOES THE COMPANY FAVOR THE ADOPTION BY THE COMMISSION, OR WHERE NECESSARY, THE KENTUCKY GENERAL ASSEMBLY, OF THE FEDERAL EISA 2007 STANDARDS YOU JUST IDENTIFIED?

A: Only in part. Kentucky Power supports the adoption of EISA 2007 standards with respect to:

- Consideration of Smart Grid Investments (Section 1307(a)(16))
- Smart Grid Information (Section 1307(a)(17))

On the other hand, Kentucky Power believes that adoption of the EISA 2007 standards concerning the remaining topics is unnecessary. The Commission presently possesses sufficient authority under existing statutes and regulations to ensure that energy efficiency resources are considered in the Integrated Resource Planning Process. Coupled with the Commission's general ratemaking, certificate, and Demand Side Management authority, the Commission and electric utilities have more than adequate ability to advance the purposes of federal law.

INTEGRATED RESOURCE PLANNING (SECTION 532(A))

Q: MUST THE COMMISSION ADOPT THE EISA 2007 STANDARDS?

A. EISA 2007 does not mandate adoption of the standards by this Commission. To the contrary, the pertinent statutes simply require that the Commission consider adopting the federal standards based upon a record developed following public notice and hearing. In addition, if the Commission elects not to adopt the federal standard it must make public in writing its decision and the reasons supporting it.

Q: WHAT IS THE INTEGRATED RESOURCE REQUIREMENT OF EISA 2007?

A: Section 532(a)(16) of EISA 2007 amends 16 U.S.C. 2621(d) by requiring State commissions to determine whether implementation of the federal standard regarding

Integrated Resource Planning is appropriate to carry out the purposes of the Public Utility Regulatory Policy Act.

Q: WHAT ARE THE PURPOSES OF THE PUBLIC UTILITY REGULATORY POLICY ACT?

A: 16 U.S.C. 2611 identifies the following purposes for the Public Utility Regulatory Policy Act ("PURPA"):

- conservation of energy supplied by electric utilities;
- the optimization of the efficiency of use of facilities and resources by electric utilities; and
- equitable rates to electric consumers.

Q: WHAT IS THE EISA 2007 FEDERAL STANDARD REGARDING INTEGRATED RESOURCE PLANNING?

A: The federal standard, as set out in Section 532(a) of EISA 2007, requires each utility to "(A) integrate energy efficiency resources into utility, State, and regional plans; and (B) adopt policies establishing cost-effective energy efficiency as a priority resource."

Q: WHAT IS ENCOMPASSED WITHIN THE TERM "ENERGY EFFICIENCY RESOURCES" AS USED IN SECTION 532?

A: The term does not appear to be defined in either EISA 2007 or PURPA. Nevertheless, my understanding is that the term encompasses any resource or program that improves the efficient use of energy on a cost-effective basis. That means, of course, that it can be either a supply-side measure or a demand-side measure. In fact, Kentucky Power believes the Commission, ratepayers and utilities should be indifferent to whether the resource that is deployed is a supply-side measure or a demand-side measure. The goal should be to deploy the most cost-effective energy efficiency measures.

Q: WITH THAT AS BACKGROUND, DOES KENTUCKY POWER BELIEVE THAT ADOPTION BY THE COMMISSION OF THIS FEDERAL STANDARD IS AN APPROPRIATE MEANS OF CARRYING OUT THE PURPOSES OF PURPA?

A: No. The Integrated Resource Plan ("IRP") filed by each utility pursuant to 807 KAR 5:058 allows utilities to integrate energy efficiency standards into the IRP and to adopt policies establishing cost-effective energy efficiency as a priority resource. In addition, the Commission's general ratemaking authority, its certificate of public convenience and necessity authority in connection with the acquisition of new generating resources, and its authority under KRS 278.285 to approve cost-effective demand-side management programs, ensures that cost-effective energy efficiency will be established as a priority resource. As a result, adoption of the federal standard is superfluous.

A. Integrated Resource Planning in Kentucky.

Q: PLEASE DESCRIBE FOR THE COMMISSION THE REQUIREMENTS FOR INTEGRATED RESOURCE PLANS IN KENTUCKY THAT PRESENTLY ARE IN PLACE?

A: 807 KAR 5:058 directs each electric utility, except distribution companies with less than $10,000,000 a year in annual revenue and distribution cooperatives organized under Chapter 279 of the Kentucky Revised Statutes, to file each three years an integrated resource ("IRP") plan that meets the requirements of the regulation.

Q: WHAT IS REQUIRED TO BE INCLUDED IN THE IRP?

A: The requirements for the IRP filed pursuant to 807 KAR 5:058 are extremely detailed but include: (a) information on the filing utility, its customers, service territory and facilities; (b) load forecasts; and (c) planned resource acquisitions and other steps to meet load increases.

Q: ARE ENERGY EFFICIENCY RESOURCES INCORPORATED INTO THE IRPS FILED PURSUANT TO 807 KAR 5:058?

A. Yes. 807 KAR 5:058, Section 8(1) requires each plan to include "assessment of potentially cost-effective resource options available to" the filing utility. Those resources, of course, include cost-effective energy efficient resources. In addition, 807 KAR 5:058, Section 5(4) directs each utility filing an IRP to include a summary "of the utility's planned resource acquisitions, including improvements in operating efficiency of existing facilities, [and] demand-side programs... ."

B. The Manner In Which Kentucky Power Accounts For Energy Efficiency Resources In Developing Its IRP.

Q. WHAT ARE THE FUNDAMENTAL STEPS AND CONSIDERATIONS USED BY AEP AND KENTUCKY POWER IN DEVELOPING AN INTEGRATED RESOURCE PLAN?

The Integrated Resource Planning function includes the following basic steps:

1. *Load Forecasting (Energy and Demand)* — Development of an energy and peak demand forecast for internal load, as well as an estimation of current demand-side management impacts.
2. *Review and Assessment of Current Generation Resources* — Evaluation of physical and economic factors, including those that may affect the continued operation of any of the System's current generation resources.
3. *Reliability Analysis and Reserve Criteria* — Consideration of Regional Transmission Organization or zonal requirements concerning sufficiency of capacity planning reserves.

4. *Determination of Need for Additional Total Resources and Assessment of Duty Cycle "Mix"* — Matching existing and currently planned capacity resources against total requirements (load plus reserve requirements) to determine projected future needs.

5. *Identification of Resource Options* — Consideration of various methods of potential capacity resources to address need, including: market purchases of firm capacity, generating unit additions utilizing varying technology options and alternatives, and purchase of existing generating assets. Also includes consideration of demand reduction options and energy efficiency measures.

6. *Determination of Optimal Resource Amount, Timing and Type* — Consideration of the analytically-optimal resource technology and fuel-source diversity "mix", as well as optimal timing of new capacity resources within the planning period, all assessed under various economic risk factors.

Q. HAVE ENERGY EFFICIENCY RESOURCES BEEN INTEGRATED IN AEP'S LONG TERM LOAD AND DEMAND FORECASTS?

A: Yes. The AEP Economic Forecasting department has adopted Statistically Adjusted End-use (SAE) models for forecasting long-term Residential and Commercial kWh energy sales and peak demand. SAE models are econometric models with features of end-use models included to specifically account for energy efficiency impacts, such as those included in the Energy Policy Act of 2005 (EPAct 2005) and the EISA 2007. The SAE models used by AEP are third-party proprietary products that have found wide acceptance among utilities and state regulatory commissions. The SAE approach explicitly accounts for energy efficiency and thus has served to slightly lower the forecast of Residential and Commercial class demand and energy in the forecast horizon particularly when EPAct 2005 and EISA impacts begin to manifest.

Q: CAN YOU PROVIDE THE COMMISSION WITH A FURTHER EXPLANATION OF HOW THE SAE MODELS EMPLOYED BY AEP ON BEHALF OF KENTUCKY POWER EXPLICITLY ACCOUNT FOR THE PLANNED DEPLOYMENT OF ENERGY EFFICIENCY RESOURCES?

A: Certainly. As I mentioned earlier, SAE models are econometric models with features of end-use models included to explicitly account for energy efficiency impacts, such as those included in the EPAct 2005 and EISA 2007. More particularly, legislatively-mandated efficiency standards, such as those in EISA 2007, are incorporated in SAE through ties between the model and the detailed and highly regarded forecasts prepared by the U.S. Department of Energy's Energy Information Administration. In addition, the SAE models can explicitly account for the deployment of cost-effective energy efficient resources. SAE models use structured end-use variables that embody end-use trends, including equipment saturation levels and efficiency. Factors are included to account for changes in energy prices, household size, home size, income, and weather conditions. The regression models estimate the relationship between observed customer usage and the structured end-use variables. The result is a model that has implicit end-use structure, but is econometric in the estimation.

Q: DOES THE CURRENT IRP PROCESS PERMIT THE COMMISSION TO ENSURE THAT EACH UTILITY INTEGRATES ENERGY EFFICIENCY STANDARDS INTO ITS IRP AND ADOPTS POLICIES ESTABLISHING COST-EFFECTIVE ENERGY EFFICIENCY AS A PRIORITY RESOURCE?

A: Yes. Under 807 KAR 5:058, Section 11, the Commission reviews each submitted IRP. As part of that review, the Commission can convene conferences and take written discovery. In addition, third-parties may intervene and participate in the discovery process. At the conclusion of the review, Commission staff issues a report in which it offers suggestions and recommendations for subsequent filings.

Q. THE EISA 2007 STANDARD ENVISIONS INTEGRATION OF ENERGY EFFICIENCY RESOURCES INTO "UTILITY, STATE, AND REGIONAL PLANS." DOES KENTUCKY POWER'S IRP ADDRESS INTEGRATION OF ENERGY-EFFICIENCY RESOURCES INTO AREAS OUTSIDE ITS SERVICE TERRITORY?

A: Most certainly. Kentucky Power is part of the AEP-East Zone. The AEP-East Zone, which includes Appalachian Power Company, Columbus Southern Power Company, Indiana Michigan Power Company, and Ohio Power Company in addition to Kentucky Power, is designed, built and operated as a fully-integrated electrical system. This means that load forecasts and resource requirements projections are performed on an AEP-East Zone-wide basis. These forecasts and resource requirements are then used in the preparation of the Kentucky Power IRP.

C. Kentucky Power's Adoption Of Policies Making Cost-Effective Energy Efficiency A Primary Resource.

Q: HAS KENTUCKY POWER ADOPTED POLICIES ESTABLISHING COST-EFFECTIVE ENERGY EFFICIENCY AS A PRIORITY RESOURCE?

A: Yes it has, even though over the past decade or more, low regional price levels of market energy and capacity have limited the opportunities for cost-effective[1] Demand Response /Energy Efficiency ("DR/EE") programs other than Real Time Pricing ("RTP") arrangements for larger commercial and industrial customers. Notwithstanding that fact, Kentucky Power offers its customers those energy efficiency programs described below. They include:

- Targeted Energy Efficiency (TEE) Program. The TEE program is designed to perform energy audits, provide energy education to all households, perform blower

[1] As measured by the specific benefit-to-cost ratio of the program itself Program measurements, including the Participant test, the Rate Impact Measure (RIM) test, and the Total Resource Cost (TRC) test, seek to determine the comparative benefit associated with the avoided capacity and/or energy costs gained by the program's demonstrated demand/load shift *versus* the attendant equipment and any and all necessary administrative costs of the program itself.

door tests and install extensive weatherization and energy conservation measures to low-income customers.

- Modified Energy Fitness Program. Available to consumers who use an average of 1,000 kWh or more a month; it includes weatherization measures, pipe wrap, and promotes the use of Compact Fluorescent Lights.

- Mobile Home Heat Pump Program. Includes incentives to upgrade mobile homes' Heating Ventilation and Air Conditioning ("HVAC") systems with efficient heat pumps.

- Mobile Home New Construction Program. Encourages, through incentives, construction of mobile homes that utilize efficient heat pumps instead of conventional HVAC systems.

The impact of these Kentucky programs is implicit in the load forecast used in Kentucky Power's IRPs.

Q: DOES KENTUCKY POWER EXPECT REGIONAL ENERGY AND CAPACITY COSTS TO RETURN TO THE LOWER LEVELS OF THE PAST?

A: No. It is anticipated that avoided capacity prices will continue to rise in coming years in conjunction with expected regional capacity addition requirements. Some DR/EE measures beyond RTP, for example, advanced time of day and interruptible-type programs that have historically not been cost-effective due to immature technologies as well as low avoided costs, could begin to emerge going forward and be made available to Kentucky Power customers with appropriate Advanced Metering Infrastructure ("AMI.").

Q. IS AEP CONSIDERING ADDITIONAL FUTURE DEMAND RESPONSE AND ENERGY EFFICIENCY PROGRAMS IN ADDITION TO THOSE CONTEMPLATED IN THE RESOURCE ASSESSMENT ACTIVITY JUST DISCUSSED?

A. Yes. AEP currently is exploring and identifying additional DR/EE technologies and programs that may be pursued in its various jurisdictions, including Kentucky. However, it is critical to understand in the context of this process that any such initiative will be subject to regulatory approval and, as importantly, customer acceptance. Therefore, such

efforts should be viewed as a potential resource when considering the Company's obligation to perform prudent long-term resource planning.

Q. IN THE CONTEXT OF PLANNING FOR CAPACITY RESOURCES, WHAT IS THE PURPOSE OF ENERGY EFFICIENCY AND HOW SHOULD IT BE ASSESSED?

A: Generally, the economic purpose of energy efficiency programs including demand reduction programs, collectively, is to reduce customer load (i.e., peak demand, energy requirements, or both). DR/EE programs' availability, economics, the utility's avoided energy and capacity costs, the allocation of the programs' costs and benefits, and the effect on—and assumed acceptance by—customers are factors that must be considered in DR/EE measure/program analysis. At the end of the day, however, the program or measure must be cost-effective.

Q: EARLIER YOU MENTIONED THE AUTHORITY GRANTED TO UTILITIES AND THE COMMISSION UNDER KENTUCKY'S DEMAND-SIDE MANAGEMENT STATUTE. IS THAT RELEVANT TO ADOPTION BY KENTUCKY JURISDICTIONAL UTILITIES OF ENERGY EFFICIENCY AS A PRIMARY RESOURCE?

A: Yes. KRS 278.285 authorizes Kentucky jurisdictional utilities to implement, subject to Commission approval, demand side management programs. By definition, such programs include "any conservation, load management, or other utility activity intended to influence the level or pattern of customer usage or demand." KRS 278.010(17). In approving a proposed demand-side management program, the Commission is directed to consider, among other factors, the changes in consumption to be achieved through the proposed program, whether the program results in any unreasonable disadvantage to a customer class, and the "extent to which the plan provides programs that are available, affordable and useful to all customers." KRS 278.285(1).

Q: OTHER THAN AUTHORIZING UTILITIES TO DEPLOY APPROVED DEMAND-SIDE MANAGEMENT PROGRAMS HOW DOES KRS 278.285 FACILITATE THE ADOPTION BY KENTUCKY JURISDICTIONAL UTILITIES OF COST-EFFECTIVE ENERGY EFFICIENCY AS A PRIMARY RESOURCE?

A: It does so in two respects. First, one of the factors to be considered by the Commission in approving any proposed program is whether the plan is cost-effective. KRS 278.285(1)(b). Second, but equally important, the statute allows the utility, again subject to Commission approval, to recover from ratepayers through a demand-side management mechanism "the full costs of commission approved demand-side management programs," all "revenues lost by implementing" the programs, and financial incentives "for implementing cost-effective demand-side management programs." KRS 278.285(2).

Q: UNDER THE KENTUCKY STATUTORY SCHEME IS THE COMMISSION REQUIRED TO CONSIDER HOW DEMAND-SIDE MANAGEMENT PROGRAMS RELATE TO THE UTILITY'S INTEGRATED RESOURCE PLAN?

A: Yes. In approving any proposed demand-side management plan, the Commission is required to consider whether the utility's "proposed demand-side management programs are consistent with its most recent integrated resources plan." KRS 278.285(1)(d).

Q: DOES THE REQUIREMENT UNDER KRS 278.020 THAT A UTILITY SEEKING TO CONSTRUCT ANY "PLANT, EQUIPMENT, PROPERTY OR FACILITY FOR FURNISHING ELECTRIC UTILITY SERVICE TO PUBLIC" OBTAIN A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FROM THE COMMISSION ENCOURAGE THE ADOPTION OF POLICIES ESTABLISHING COST-EFFECTIVE ENERGY EFFICIENCY AS A PRIORITY RESOURCE?

A: Yes. In determining whether a proposed facility is required by the public convenience and necessity, the Commission may consider, to be balanced against other factors, whether the proposed project is consistent with the utility's most recent IRP and the

actions taken by the utility to implement cost-effective energy efficiency to forestall or reduce the need for the proposed facility.

Q: CAN THE COMMISSION USE ITS GENERAL RATEMAKING AUTHORITY TO ENCOURAGE THE ESTABLISHMENT BY JURISDICTIONAL UTILITIES OF COST-EFFECTIVE ENERGY EFFICIENCY AS A PRIMARY RESOURCE?

A: Yes. The Commission enjoys broad authority under KRS 278.030, KRS 278.040, KRS 278.190 and the *Hope Natural Gas* standard to design rates that provide financial rewards to utilities employing cost-effective energy efficiency as a primary resource.

Q: MR. WAGNER, EISA 2007 REQUIRES THE COMMISSION TO DETERMINE WHETHER ADOPTION OF THE EISA 2007 STANDARD FOR INTEGRATED RESOURCE PLANNING WILL FURTHER THE PURPOSES OF PURPA. YOU PREVIOUSLY INDICATED THAT THOSE PURPOSES INCLUDE CONSERVATION OF ENERGY, OPTIMIZATION OF EFFICIENCY AND EQUITABLE RATES. WILL ADOPTION OF THE EISA STANDARD FOR INTEGRATED RESOURCE PLANNING ADVANCE THOSE PURPOSES?

A: It is difficult to determine, given the general nature of the standard. In fact, that question may only be answered if and when the standard is adopted and implemented by the Commission. What is clear is that the Commission currently possesses the authority to address and advance the PUPRA purposes through Integrated Resource Planning and otherwise by means of its current statutory and regulatory authority.

Q: DOES THAT MEAN YOU BELIEVE KENTUCKY SHOULD NOT ADOPT THE EISA 2007 STANDARD RELATED TO INTEGRATED RESOURCE PLANNING?

A. Yes. As discussed above, the current Integrated Resource Planning process, coupled with the authority granted utilities and the Commission under KRS 278.285 (demand-side management), and the Commission's general ratemaking and certificate authority, meets the requirements of the federal standard.

Q: ARE THERE ALTERNATE STANDARDS KENTUCKY SHOULD ADOPT?

A. No. Kentucky Power is unaware of any alternate standard that should be considered.

RATE DESIGN MODIFICATIONS TO PROMOTE COST-EFFECTIVE ENERGY EFFICIENCY AND ENERGY EFFICIENT INVESTMENTS (SECTION 532(A)(17).

Q: PLEASE DESCRIBE THE FEDERAL STANDARD FOR DESIGNING RATES TO PROMOTE COST-EFFECTIVE ENERGY EFFICIENCY AND ENERGY EFFICIENT INVESTMENTS UNDER SECTION 532(A) (17) OF EISA 2007?

A: Section 532(a)(17) of EISA 2007 amends 16 U.S.C. 2621(d) by requiring State commissions to determine whether designing rates that provide utilities with incentives to implement cost-effective energy efficiency and that promote energy efficiency investments is appropriate to carry out the purposes of PURPA. In making the determination, the Commission is required to consider six options for designing rates to provide incentives.

Q: WHAT ARE THOSE OPTIONS?

A: Section 532(a)(17) requires the Commission to consider whether it should adopt a standard for rate design that would include:

- removal of throughput incentives and other disincentives to energy efficiency
- providing utility incentives for the successful management of energy efficiency programs
- incorporating energy efficiency as one of several objectives in rate design
- adopting rate designs that encourage energy efficiency by each customer class
- allowing timely recovery of energy efficiency costs
- offering demand-side management programs, home energy audits and other programs to promote energy efficiency by consumers

as a means of promoting energy efficiency by customers and the utility, and to encourage energy efficient investments.

Q: SHOULD THE COMMISSION REQUIRE THE COMPANY TO TAKE SPECIFIC ACTIONS TO IMPLEMENT THE EISA 2007 STANDARD WITH RESPECT TO RATE DESIGN TO PROMOTE ENERGY EFFICIENCY?

A. No. In large part it would appear unnecessary. As I explain below, the Commission currently enjoys sufficient authority under the demand-side management statute, KRS 278.285 and its general ratemaking authority to design rates that encourage energy efficiency and promote energy efficiency investments on both the demand-side and the supply-side.

Q: DOES THE COMMISSION HAVE THE GENERAL RATEMAKING AUTHORITY TO APPROVE RATES THAT ENCOURAGE ENERGY EFFICIENCY?

A. Yes. In fact, Kentucky Power currently offers a variety of tariffs and tariff provisions to its customers that promote the efficient use of electrical energy.

Q. PLEASE DESCRIBE THE COMPANY'S CURRENT TARIFF OFFERINGS THAT PROMOTE ENERGY EFFICIENCY?

A. Exhibit EKW-1 summarizes the tariffs offered by the Company that contain provisions promoting energy efficiency. These offerings range from energy storage/load management time-of-use tariffs available to most customers, to interruptible/curtailable tariff offerings available to the Company's larger customers.

Q. HOW DO TIME-OF-USE TARIFFS AND PROVISIONS PROMOTE ENERGY EFFICIENCY?

A. Time-of-use tariffs and provisions generally impose both higher rates for on-peak period use and lower rates for off-peak period use. Time-of-use tariffs allow customers who are both willing and able to utilize them to reduce their own costs but also the cost of electricity for all customers. Even if the customer does not reduce total usage, the

efficiency of the electrical system is improved by reduction in peak usage that is shifted to off-peak time periods.

Q. HOW DO INTERRUPTIBLE TARIFFS PROMOTE ENERGY EFFICIENCY?

A. Interruptible tariffs contain features that require participating customers to reduce load upon request of the Company. The Company may request load reductions when available capacity is constrained, market prices are high or an emergency condition exists. Interruptible tariff features may allow the Company to avoid, or to at least postpone, the need for additional generating capacity, thereby improving the efficient use of existing capacity.

Q. HAS KENTUCKY POWER TAKEN ANY STEPS RECENTLY WITH RESPECT TO RATE DESIGN MODIFICATIONS OR NEW TARIFF OFFERINGS THAT PROMOTE ENERGY EFFICIENCY INVESTMENT?

A. Yes. Kentucky Power first offered net metering service to its customers in May, 2005. In its last rate case, whereby rates became effective in March, 2006, the Company removed the declining block structure from its standard residential tariff. In June, 2008, the Company implemented an Experimental Real-Time Pricing Tariff for its large commercial and industrial customers. Most recently, Kentucky Power instituted a Green Pricing Option Rider for its customers in August, 2008.

Q. HOW DO NET METERING SERVICE AND GREEN PRICING PROMOTE ENERGY EFFICIENCY?

A. While net metering and green pricing may not generally be thought of as "energy efficiency" programs, both programs encourage the use of renewable energy resources which, in turn, may provide for more efficient use of all energy resources. Thus far, Kentucky Power has no net metering or green pricing customers.

Q. ARE THERE ANY OTHER ACTIONS THE COMPANY CAN TAKE WITH RESPECT TO RATE DESIGN MODIFICATIONS OR ADDITIONAL TARIFF OFFERINGS THAT WILL PROMOTE ENERGY EFFICIENCY INVESTMENT?

A. The Company can continue to try to implement traditional rate design goals as such opportunities present themselves in the context of its general rate cases. Traditional rate design goals include continued movement toward full cost-based rates including customer charges, demand charges and commercial and industrial tariffs which encourage customers to improve their load factors. One non-traditional action Kentucky Power can take is the implementation of a Smart Grid system that would allow the Company to offer additional programs and tariffs such as direct load control, more dynamic time-of-use tariffs, critical peak pricing, etc.

Q: AMONG THE POLICY OPTIONS TO BE CONSIDERED UNDER THE FEDERAL STANDARD IS THE IMPLEMENTATION OF DEMAND-SIDE MANAGEMENT PROGRAMS. DOES THE COMMISSION'S AUTHORITY UNDER KRS 278.285 MEET THE REQUIREMENTS OF THE FEDERAL STANDARD?

A: It most certainly does. In fact, some of Kentucky Power's sister operating companies have proposed Kentucky's demand-side management statute as a model for other jurisdictions. In particular, the criteria for the approval of demand-side management programs affords utilities and the Commission flexibility in the design and approval of demand-side programs. Equally important, KRS 278.285 provides for:

- Recovery of program costs
- Recovery of net lost revenues
- Shared savings
- A return on expenditures that allows resources invested in demand-side management to be viewed by shareholders the same way as resources invested in new generation

Finally, the statute also permits contemporaneous recovery by a utility of costs and a return on expenditures through a rider with true-ups.

Q: BY DEFINITION, KRS 278.285 IS APPLICABLE ONLY TO DEMAND-SIDE PROGRAMS. SHOULD THE COMMISSION FAVOR DEMAND-SIDE INITIATIVES OVER ENERGY EFFICIENCY MEASURES DIRECTED TOWARD THE SUPPLY SIDE?

A: Absolutely not. As I mentioned earlier, Kentucky Power believes that the Commission, rate payers and utilities should be indifferent whether energy efficiency is achieved through supply-side or demand-side initiatives. The real criterion should be whether a particular proposal is cost-effective. To achieve such a level playing field, supply-side initiatives should be eligible for the same treatment accorded demand-side initiatives under KRS 278.285.

Q: IN THE ABSENCE OF A SPECIFIC STATUTE, DO YOU BELIEVE THE COMMISSION HAS THE AUTHORITY UNDER ITS GENERAL RATEMAKING STATUTES TO TREAT SUPPLY-SIDE ENERGY EFFICIENCY INITIATIVES IN THE SAME FASHION AS IS ACCORDED DEMAND-SIDE MEASURES?

A: Although I am not an attorney, and I recognize there are some who disagree, I believe the Commission enjoys such authority as part of its general ratemaking power. Certainly, such treatment is no more extreme, or unwarranted, than the flexible rates tied to the price of aluminum that were approved by the Commission, the Franklin Circuit Court and the Kentucky Court of Appeals in the Big Rivers case (P.S.C. Case No. 9885).

Q. *OTHER THAN THOSE OFFERED UNDER PROGRAMS APPROVED PURSUANT TO KRS 278.285, WHAT HAS BEEN THE LEVEL OF CUSTOMER PARTICIPATION IN THESE ENERGY EFFICIENCY AND LOAD MANAGEMENT PROGRAMS?*

A. While energy efficiency or load management provisions are available to most Kentucky Power customers, less than ½ of 1% of the Company's customers have elected to take

service under one of these provisions. As of October 2008, that included 332 residential, 211 commercial and 20 industrial customers. It should be noted that Kentucky Power's largest customers (7,500 kW and above) must take service under Tariff C.I.P.-T.O.D., which requires time-of-day metering. They are included in the above customers.

Q: DO YOU EXPECT CUSTOMER PARTICIPATION TO REMAIN THIS LOW IN THE FUTURE?

A: No. Given the current level of the Company's rates, most customers have decided that the economic rewards associated with participating in the various energy efficiency programs do not outweigh the inconvenience or other costs associated with changing their usage characteristics. As capacity and energy prices increase, as expected, these programs should prove more attractive.

Q: HAVE PROGRAMS AUTHORIZED UNDER KRS 278.285 EXPERIENCED A BETTER PARTICIPATION RATE?

A: Yes, substantially higher. Between 1996 and June, 2008, the demand-side management programs deployed by Kentucky Power pursuant to KRS 278.285 had more than 19,000 participants. Of the 19,000 participants, 16,642 participated in residential demand side management programs, 2,397 participated in commercial demand-side management programs and 65 participated in the industrial demand-side management program. These participants constitute nearly 11% of Kentucky Power's customers as of June 30, 2008. See Exhibit EKW-2.

Q. PLEASE SUMMARIZE KENTUCKY POWER'S POSITION ON WHETHER THE COMMISSION SHOULD ADOPT THE EISA 2007 STANDARD WITH RESPECT TO RATE DESIGN MODIFICATIONS TO PROMOTE ENERGY EFFICIENCY.

A: Kentucky Power believes there is no need for the Commission to adopt the federal standard. The Commission currently enjoys sufficient authority under its existing

general ratemaking and demand-side management statutes. It is also very clear that the Company currently offers a variety of energy efficiency options for its customers and has been supplementing these programs over time, as appropriate. Kentucky Power does encourage the Commission to expand its use of the ratemaking mechanisms currently employed for demand-side energy efficiency projects to supply-side projects. Any further action on this matter must balance the costs of metering, implementation, etc., with potential benefits to Kentucky Power's customers.

Q: WILL FAILING TO ADOPT THE EISA 2007 STANDARDS REGARDING RATE DESIGN MODIFICATIONS PREVENT THE COMMISSION FROM ADVANCING THE PURPOSES OF PURPA THROUGH PROMOTING COST-EFFECTIVE ENERGY EFFICIENCY AND ENERGY EFFICIENT INVESTMENT?

A: No. As I just mentioned, the Commission currently possesses the necessary authority.

Q: ARE THERE ALTERNATE STANDARDS KENTUCKY SHOULD ADOPT?

A. No. Other than expanding the use of the ratemaking mechanisms currently employed for demand-side energy efficiency projects to supply-side projects, Kentucky Power is unaware of any alternate standard the Commission should consider.

CONSIDERATION OF SMART GRID INVESTMENTS
AND SMART GRID INFORMATION STANDARDS (SECTION 1307(A))

A. Smart Grid Investments.

Q: PLEASE DESCRIBE THE FEDERAL STANDARD FOR SMART GRID INVESTMENT AND INFORMATION UNDER SECTION 1307(A)) OF EISA 2007.

A: The provision requires State consideration (presumably consideration by this Commission is sufficient) of two separate but related standards pertaining to smart grids. The first, which generally consists of three subsections, would require utilities to consider smart grid technologies before investing in traditional transmission and distribution

systems. It also deals with the financial consequences of such investments. The second standard would require utilities to provide electricity purchasers with information on prices and usage and establishes certain requirements for accessibility of the information.

Q: WHAT ARE THE THREE SUBPARTS YOU MENTIONED WITH RESPECT TO SMART GRID INVESTMENTS?

A: The first subpart would require that prior to making an investment in "nonadvanced grid technologies," an electric utility considered (and presumably rejected) investment in "a qualified smart grid system" based upon appropriate factors. The provision goes on to list six non-exclusive factors, such as total cost, security and cost-effectiveness, the electric utility should weigh in considering its investment. In the second subpart the State would consider permitting rate recovery of "any capital, operating expenditure, or other costs relating to the deployment of a qualified smart grid system, including a reasonable rate of return on the capital expenditures...." The third subpart deals with recovery of the remaining book-value costs of any equipment rendered obsolete by the deployment of the "qualified smart grid system."

Q: WHAT IS A SMART GRID SYSTEM?

A: Although neither EISA 2007 nor PURPA (nor any other statute) explicitly define a smart grid system, Section 1301 of EISA, in setting forth the policy of the United States, identifies ten characteristics of a smart grid:

> It is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth and to achieve each of the following, which together characterize a Smart Grid:
>
> 1. Increased use of digital information and controls technology to improve reliability, security, and efficiency of the electric grid.

2. Dynamic optimization of grid operations and resources, with full cyber-security.

3. Deployment and integration of distributed resources and generation, including renewable resources.

4. Development and incorporation of demand response, demand-side resources, and energy-efficiency resources.

5. Deployment of "smart" technologies (real-time, automated, interactive technologies that optimize the physical operation of appliances and consumer devices) for metering, communications concerning grid operations and status, and distribution automation.

6. Integration of "smart" appliances and consumer devices.

7. Deployment and integration of advanced electricity storage and peak-shaving technologies, including plug-in electric and hybrid electric vehicles, and thermal-storage air conditioning.

8. Provision to consumers of timely information and control options.

9. Development of standards for communication and interoperability of appliances and equipment connected to the electric grid, including the infrastructure serving the grid.

10. Identification and lowering of unreasonable or unnecessary barriers to adoption of smart grid technologies, practices, and services.

Presumably, a smart grid would embody some or all of these characteristics. More generally, as one consultant to the United States Department of Energy explained, a smart grid system will assist in converting the current system for generating and delivering electric power from one that is centralized and producer-controlled to "one that is less centralized and more consumer-interactive." Litos Strategic Communications, *The Smart Grid: An Introduction* (2008). Significantly, although smart-metering is an important component of a smart grid, the smart grid is not limited to smart-metering.

Q: WITH THAT AS BACKGROUND, AND TURNING TO THE FIRST SUBPART OF THE SMART GRID INVESTMENT PROVISION YOU MENTIONED ABOVE, DOES THE COMMISSION CURRENTLY POSSESS THE AUTHORITY TO REQUIRE A UTILITY SEEKING TO MAKE AN INVESTMENT IN A NONADVANCED TRANSMISSION SYSTEM TO DEMONSTRATE THAT IT CONSIDERED INVESTMENT IN A QUALIFIED SMART GRID SYSTEM?

A: Yes, at least to the extent that such investment would require a certificate of public convenience and necessity issued pursuant to KRS 278.020(1) and KRS 278.020(2). With respect to other investments the statutory authority does not appear to exist.

Q: IN LIGHT OF THIS "GAP" IN THE COMMISSION'S AUTHORITY, IS ADOPTION OF THE FEDERAL SMART GRID INVESTMENT STANDARD REQUIRED TO CARRY OUT THE PURPOSES OF PURPA?

A: At least in the case of Kentucky Power, the answer is no. In fact, Kentucky Power, as an operating unit of AEP, has participated in the development of AEP's smart grid initiative. Known as ***gridSMART***^{SM}, it began in 2007, and is a multi-year initiative by AEP and its operating companies that includes a suite of customer programs and advanced technology initiatives that will move AEP into a new era of energy delivery and customer service. It includes consumer programs, new energy delivery system technologies, integrated future generation and storage devices, and advanced internal system efficiencies. There are three main components of AEP's *gridSMART*^{SM} initiative that align directly with the EISA 2007's definition of a smart grid. These include advanced meter infrastructure (AMI), distribution grid management, and home area networks (HAN), along with the information technology systems that support and integrate each.

(1) Advanced Meter Infrastructure (AMI)

Q: WHAT FEATURES COMPRISE AN AMI SYSTEM?

A: Three features comprise the AMI system: smart meters, two-way communications networks and the information technology systems to support their interaction. AMI uses internal communications systems to convey real-time energy use and load information to both AEP and to the customer.

Q: WHAT BENEFITS DOES AN AMI SYSTEM OFFER?

A: AMI provides capability to monitor equipment and can quickly convey information about certain malfunctions and operating conditions. It also facilitates customers' ability to achieve benefits related to certain future customer-owned advanced technologies and appliances.

In addition, when paired with tariff options and the HAN, AMI can empower customers to control their energy usage by providing real-time information and usage data, allowing them to better understand their energy consumption and potentially reduce their electricity bill. In addition, AMI can help speed service restoration through better information about the facilities involved. Customers also can receive faster response to service requests, including meter reading and service connection, due to remote execution of those activities.

Finally, because AMI allows for remote connect or disconnect, AEP is able to improve service response and worker safety. Power quality monitoring can improve customer satisfaction while tamper detection capability deters energy theft. Less personal interaction with energized equipment also improves employee and public safety.

(2) Distribution Grid Management.

Q: MR. WAGNER, PLEASE DESCRIBE THE DISTRIBUTION GRID MANAGEMENT COMPONENT OF AEP'S *gridSMART*℠ INITIATIVE.

A: Distribution grid management provides real-time control and monitoring of selected electrical components within the distribution system. The electrical components to be controlled and monitored include capacitor banks, voltage regulators, reclosers, and automated line switches. These electrical components will be connected via a two-way wireless communication system to AEP's dispatch operations center. The capacitor banks, voltage regulators, and reclosers will be equipped with sensors, which provide information on operational status and analog data such as voltage or current. When a fault occurs, automated switches isolate a circuit by automatically opening (de-energizing) or closing (re-energizing), depending on its location. Only the customers in the section of line where the fault occurs experience a sustained outage. Customers in the other line sections are immediately transferred to another source thus limiting their outage to only a momentary interruption. The communication system used may also allow for a pathway for the customers' meters to communicate real-time information on outage cause and anticipated duration. The time required to identify the fault location and the facility damages can be reduced as crews responding will have a smaller area to patrol and possibly some additional information on the nature of the fault.

Sensors and intelligent controllers can monitor load flow characteristics and direct controls on capacitor and voltage regulating equipment to optimize power factor (VAR flow) and voltage levels. Power factor optimization improves energy efficiency by reducing losses on the system. Voltage optimization can allow a reduction of system

voltage that still maintains minimum levels needed by customers but will cause a corresponding reduction in energy consumption.

Q: WHAT ARE SOME OF THOSE BENEFITS?

A Distribution grid management is an integral part of the gridSMART initiative due to the reliability and energy efficiency benefits it can provide. The reliability benefits are mostly societal with some cost savings as system repair needs can be identified and completed more quickly. The energy efficiency benefits can help lower both the amount and cost of energy by reducing losses, energy usage, and peak demand requirements. Distribution grid management provides these benefits through the use of advanced technology. While the reliability benefits are realized mostly by the customers in areas where grid management is applied the energy efficiency benefits are realized by all consumers and also help achieve improvements needed to influence global climate change.

(3) Home Area Network (HAN).

Q: MR. WAGNER, WHAT IS THE FINAL COMPONENT OF THE AEP'S *gridSMART*℠ INITIATIVE?

A: The Home Area Network. It is located within customers' homes and allows customers to conserve energy and save money through increased information and control of their electric usage.

Q: WHAT IS THE THE HOME AREA NETWORK?

A: Customers will receive a programmable communicating thermostat (PCT) in their homes or businesses. PCTs will have the ability to receive electrical energy consumption data from the meter, store the data, and provide the customer with real-time and historical energy usage. The PCT can receive price signals from electric meters and be

programmed to regulate temperature accordingly, allowing the customer to regulate their indoor temperature in response to daily or seasonal electric price fluctuations while maintaining an acceptable level of comfort. Advanced PCTs available today also have the capability to cycle air conditioning on and off upon receiving a critical peak signal from the electric meter.

Q: IS THE HOME AREA NETWORK LIMITED TO PCTS?

A: No. Another HAN enabled component is a Load Control Switch (LCS). An LCS is a device installed ahead of a major electrical appliance that can either turn the appliance on or off or cycle the appliance on and off as in the case of an air conditioning unit. For customers that choose a direct load control or interruptible tariff, the LCS would receive commands from the electric meter, respond accordingly, and send a signal back to the meter to confirm action has been taken.

Q: WHAT ADVANTAGES DOES THE HAN PROVIDE?

A: Today, customers can only determine energy usage after the fact through their monthly bill. The HAN can provide real-time and historical electrical usage, providing the customer with the knowledge and opportunity to control usage, conserve energy and save money. In addition, HAN will enable AEP to provide the customer pricing options including time-differentiated rates. Data collected by the HAN can help AEP shape future pricing programs to suit customers' needs. In addition, as customers save money by shifting load to off-peak hours, it will help AEP reduce demand and potentially defer the need for new generation.

Q: YOU ALSO MENTIONED THAT INFORMATION TECHNOLOGY SYSTEMS ARE PART OF AEP'S *gridSMART*℠ INITIATIVE. PLEASE EXPLAIN.

A: Other information technology systems that are integral to the *gridSMART*℠ initiative include meter data management (MDM), outage management system (OMS) and geographical information system (GIS). These systems allow for data to be obtained, stored, shared and analyzed across business applications within AEP. A well conceived system architecture and integration will transform data into valuable information that is readily available and used to improve operations and service to customers.

(4) Deployment of *grid*SMART℠ in Kentucky.

Q: MUST THE *gridSMART*℠ COMPONENTS BE DEPLOYED SIMULTANEOUSLY?

A: Not necessarily. The AMI and HAN portions of *gridSMART*℠ are closely linked and can use a common communication system. HAN communications also can be established by other means, i.e., paging, broadband and cellular networks. The considerations to be reviewed are the timing of the investments planned and the technology deployed. Distribution grid management can be undertaken on a stand alone basis. The key is to build the communications network to maximize initial benefits, while planning for future gridSMART℠ deployments.

Q: HAS *gridSMART*℠ BEEN DEPLOYED IN KENTUCKY?

A: There has only been a limited deployment in the pilot phase. The process for evaluating smart grid investments is to determine the current state of the utility assets, energy costs and infrastructure expansion and replacement plans. Smart grid principles can and will be adopted by utilities such as Kentucky Power, but the pace at which smart grid

components will be deployed will depend on appropriate regulatory models and each utility's access to capital, as well as the condition and age of assets currently in service.

Q: WHAT ARE KENTUCKY POWER'S CURRENT PLANS FOR DEPLOYING *gridSMART*℠ IN KENTUCKY?

A: Kentucky Power converted all residential meters to automated metering reading (AMR) technology in 2006, and thus the Company is not currently proposing to convert to AMI technology until 2012 or later. This would allow Kentucky Power and its ratepayers to continue to reap the benefits, improved meter read attainment, accuracy and cost and safety reductions that are being provided by the AMR technology. In addition, industry projections predict that the cost of AMI technology will decline from current prices as more utilities adopt the technology, which would be a benefit to Kentucky Power customers.

Q: EARLIER YOU MENTIONED THAT IT OFTEN TIMES MAKES SENSE TO DEPLOY AMI AND HAN SIMULTANEOUSLY. DOES KENTUCKY POWER PROPOSE DEPLOYING HAN PRIOR TO THE PROJECTED 2012 DEPLOYMENT OF AMI?

A: Generally, no. Kentucky Power currently believes the more prudent course would be to implement home area network technologies in conjunction with its AMI roll out. This strategy allows for using the same AMI communications infrastructure for the HAN. Kentucky Power, however, is investigating in-home display technologies that work with the current AMR system and provide customers information on their electrical usage. If this technology proves to be viable and economical a pilot could be initiated prior to the 2012 timeframe.

Q: WHAT ARE KENTUCKY POWER'S PLANS WITH RESPECT TO DISTRIBUTION GRID MANAGEMENT?

A: Kentucky Power has undertaken three distribution automation projects demonstrating Distribution Grid Management concepts. In addition, Kentucky Power is planning for the implementation of supervisory control and data acquisition (SCADA) at all of its substations. Kentucky Power also is planning to automate portions of its distribution grid.

Q: WHAT ARE THE THREE DEMONSTRATION PROJECTS?

A: The projects involved are the Cannonsburg area in the Ashland District, the Buckhorn area in the Hazard District, and the Inez area in the Pikeville District.

Q: WHAT IS THE CANNONSBURG DEMONSTRATION PROJECT?

A: In the Cannonsburg area, a project is underway involving portions of three circuits from two substations. Kentucky Power is using the project to perform load transfers during outages. This area served by the circuits and substations consists of a mix of residential and commercial load, including schools, fire departments, retail stores, water, and sewer facilities. To date, the project has shown:

- The Cannonsburg Station's Cannonsburg 34 kV Circuit, with about 1,400 customers, can be transferred anytime, limiting the effects of a circuit outage to about 500 customers.

- The Cannonsburg Station's Route 3 34 kV Circuit (2,200 customers), can be transferred anytime, limiting the effects of a circuit outage to about 500 customers.

- The Princess Station's Meade 34 kV Circuit, (1,600 customers) can be transferred about 90% of the year (except during winter peak), limiting the effects of a circuit outage to about 600 customers (about 1,000 customers during peak winter load conditions).

Q: WHAT IS THE BUCKHORN AREA WORK?

A: The Haddix station, Canoe 34 kV circuit serves 1236 customers in Breathitt and Perry Counties, Kentucky. The extremity of the circuit (19.6 miles from Canoe station) serves the town of Buckhorn, Kentucky. The Chavies station, Chavies 12 kV circuit serves 728 customers in Perry County and on its extremity (7.5 miles from Chavies station), Buckhorn State Park and Lodge. These two circuits can be tied together at their extremities via stepdown transformers on the end of the Canoe circuit and customers from both circuits can be transferred to the other in outage recovery situations from either circuit. Unfortunately, both circuits traverse over extremely mountainous terrain and are subject to frequent outages of long duration. The Canoe circuit is one of the five worst performing circuits in the Hazard region. The region has received numerous outage complaints as a result of both circuits' performance. Kentucky Power is installing automatic switches and other devices to enable the automatic transfer of 351 customers and the town of Buckhorn from the Canoe circuit and 237 customers and the Buckhorn State Park and Lodge from the Chavies circuit in outage recovery situations of either circuit. This procedure will reduce outage time and customer minutes of interruption thus improving customer relations in the Buckhorn area. The project is in the engineering phase, and is expected to go in service in 2009.

Q: PLEASE DESCRIBE THE INEZ AREA WORK AND EXPLAIN ITS SIGNIFICANCE.

A: The Inez 34 kV circuit is among the longest and worst performing circuits in the Region resulting in numerous customer complaints of frequent outages of long duration, due largely to rugged terrain in mountainous areas that impairs service restoration efforts. The Inez 34 kV circuit, the only circuit served from the Dewey 138-34 kV, 25 MVA

Station, serves the town of Inez, Kentucky, which is the county seat of Martin County, Kentucky. The Martin County Courthouse is located in Inez and houses all branches of the county government. The county water supply system, middle school, high school, and businesses are also located in the town of Inez.

The Inez 34 kV circuit ties to the Lovely Station, Lovely 34 kV circuit which has the capacity to serve the town of Inez at peak load periods upon an outage of the Inez 34 kV circuit. Under light load conditions, the Lovely 34 kV circuit has the capability to serve all 2,053 customers served by the Inez 34 kV circuit.

Kentucky Power installed switching devices that automatically transfer the town of Inez to the Lovely 34 kV circuit upon an outage at Dewey Station or the Inez 34 kV circuit, even during peak load periods, which will reduce Customer Minutes Interrupted and promote better community relations by providing shorter outage durations for the town of Inez during contingency situations. This arrangement will also reduce Customer Minutes Interrupted for 452 customers during peak load conditions and 1,363 customers during light load conditions normally served by the Lovely 34 kV circuit, upon an outage of the Lovely Station or the Lovely 34 kV circuit by automatically transferring these customers to the Dewey Station, Inez 34 kV circuit. This project is in service.

Q: BEYOND THE THREE COMPONENTS OF AEP'S *grid*SMART℠ INITIATIVE YOU JUST DISCUSSED, IS AEP OR KENTUCKY POWER DEVELOPING ANY OTHER SMART GRID PROJECTS?

A: AEP has successfully installed sodium sulfide (NaS) batteries on the distribution grid to help with system reliability and defer capacity additions. Kentucky Power has identified six locations that are potential candidates for the NaS battery technology. The estimated cost of a battery installation is $5 million per MW.

(5) Financial Aspects of the Federal Smart Grid Standard.

Q: EARLIER YOU MENTIONED THE EISA 2007 SMART GRID STANDARD INCLUDED TWO FINANCIAL COMPONENTS. WHAT ARE THEY?

A: The two pertinent provisions would permit utilities to recover the costs of their investments in smart grids, as well as the recovery of the remaining book-value costs of any equipment rendered obsolete by the deployment of the "qualified smart grid system."

Q: DOES KENTUCKY POWER HAVE A POSITION WITH RESPECT TO THE COMMISSION'S ADOPTION THE EISA 2007 SMART GRID INVESTMENT STANDARDS, INCLUDING BUT NOT LIMITED TO THE FINANCIAL STANDARDS?

A: Yes. Kentucky Power believes that the large investments required for ratepayers to reap the benefits of a smart grid system will not be made unless utilities are assured of their ability to earn a return on and to recover their investments, including any remaining investment in facilities rendered obsolete as a result of the company's smart grid investments. Both of the EISA 2007 Smart Grid financial standards will allow such investment and thus Kentucky Power supports the adoption of the standards by the Commission. Kentucky Power also supports the Commission's explicit recognition of the need to foster smart grid investments through the adoption of the first part of the federal smart grid standards.

Q: DO YOU HAVE ANY ADDITIONAL COMMENTS RELATING TO THE EISA 2007 SMART GRID INVESTMENT STANDARDS?

A: Yes. First, Kentucky Power anticipates that because of the speed with which smart grid technology will develop, the economic life of many smart grid investments will be much shorter than the equipment it is replacing or supplementing. This, of course, will mean higher depreciation rates. Second, with respect to each smart grid investment, the utility

should be permitted to recover its costs, including operating costs and return on and of capital investments, net of benefits.

Q: ARE THERE ALTERNATE STANDARDS KENTUCKY SHOULD CONSIDER?

A. Kentucky Power is unaware of any alternate standard the Commission should consider.

B. Smart Grid Information Standards.

Q: WHAT IS THE EISA 2007 STANDARD WITH RESPECT TO SMART GRID INFORMATION?

A: Section 1307(a)(17) requires electric providers such as Kentucky Power to provide customers with direct access to time-based information on electricity and usage as well as annual reports on sources of generation.

Q: IF THE STANDARD IS ADOPTED, WHAT INFORMATION MUST BE PROVIDED REGARDING PRICES?

A: If fully implemented, the standard would require utilities to provide time-based prices for electricity in both the wholesale and retail markets.

Q: TO WHOM MUST THE INFORMATION BE PROVIDED?

A: To both purchasers and "other interested persons." The statute does not define who "other interested persons" might be, but the term seems broad enough to include the general public.

Q: DOES KENTUCKY POWER SUPPORT PROVIDING INFORMATION ON WHOLESALE RATES?

A: No. AEP, Kentucky Power's parent, is a member of PJM Interconnection, a regional transmission organization. Wholesale sales of energy and capacity by Kentucky Power are scheduled and settled through PJM Interconnection. Information regarding Kentucky Power's wholesale prices is made available to wholesale purchasers through PJM Interconnection. Any requirement that Kentucky Power provide such information would

require Kentucky Power to duplicate the information already available and potentially result in confusion. Stated otherwise, Kentucky Power believes that as it applies to Kentucky Power's wholesale prices, the federal standard is unnecessary and should not be adopted.

Q: DOES KENTUCKY POWER OBJECT TO MAKING RETAIL PRICE INFORMATION AVAILABLE?

A: No. Unlike wholesale sales of capacity and energy, retail sales are made through Kentucky Power. Information concerning Kentucky Power's on-peak/off-peak and traditional rates is available around the clock through Kentucky Power's website, the Commission's website (through access to Kentucky Power's tariff filings) and Kentucky Power's call center. In addition, the Commission recently approved Kentucky Power offering of service to certain industrial and commercial under a real-time pricing tariff. Customers receiving service under that tariff have access to the hourly price through special communications links with PJM Interconnection. In sum, Kentucky Power's customers already have access to the most-current information regarding pertinent retail prices. That is all the federal standard, which refers to "prices or rates that are available to purchasers," requires.

Q: AS ADDITIONAL TIME-BASED TARIFFS ARE MADE AVAILABLE BY THE COMPANY AND APPROVED BY THE COMMISSION, DOES KENTUCKY POWER ANTICIPATE MAKING THE CORRESPONDING TIME-BASED PRICING INFORMATION AVAILABLE TO ITS RETAIL CUSTOMERS?

A: Yes, although it appears at present that such tariff offerings must await deployment of *gridSMART*℠ in Kentucky. For example, with the pertinent components of *gridSMART*℠ in place, Kentucky Power can provide retail prices on a near real-time basis through HAN technology. In addition, once a need for such information develops, hourly prices

can be provided daily through a web portal. Finally, day-ahead pricing information can be provided once tariff offerings incorporating such information are developed by Kentucky Power and approved by the Commission. Any requirement that the Company make such information available prior to any need for it would impose unnecessary costs on Kentucky Power's ratepayers.

Q: MR. WAGNER, THE FEDERAL STANDARD ALSO CONTEMPLATES MAKING INFORMATION REGARDING CUSTOMER USAGE AVAILABLE. DOES KENTUCKY POWER CURRENTLY PROVIDE SUCH INFORMATION?

A: Customers taking service under traditional tariff offerings receive usage information with their monthly bills. In each month's bill usage information is provided for the current billing period plus monthly usage for the trailing 12-month period. Customers taking service under the Company's time of day tariffs receive the on-peak and off-peak usage information for the current billing period with their monthly bills. Although no customers currently are taking service under the Company's new RTP tariff offering, such customers will be able to access hourly information through the company's website.

Q: DO KENTUCKY POWER'S CURRENT USAGE INFORMATION REPORTING PRACTICES COMPORT WITH THE EISA 2007 SMART GRID INFORMATION STANDARD?

A: No. That standard requires usage information to be made available daily and reported on an hourly basis. As tariffs are developed and approved that would permit customers to benefit from the receipt of more frequent usage information, the Company anticipates providing such information. Until then, Kentucky Power believes that adoption of the EISA 2007 Smart Grid Information standard would not benefit ratepayers and instead would require that they absorb the cost of producing and reporting information for which

they have no real use. As I indicated earlier, such rate offerings must await the deployment of the necessary components of *gridSMART*℠

Q: SECTION 1307(A) ALSO CONTEMPLATES ANNUAL REPORTS ON THE SOURCES OF GENERATION AVAILABLE TO A UTILITY. IN ADDITION, TO THE EXTENT IT IS AVAILABLE, SUCH REPORTS WOULD ALSO INCLUDE INFORMATION ON "GREENHOUSE GAS EMISSIONS" ASSOCIATED WITH EACH TYPE OF GENERATION. WOULD KENTUCKY POWER OBJECT TO PROVIDING THAT INFORMATION?

A: No. It is important to keep in mind, however, that as part of the AEP-East Zone Kentucky Power's generation sources include AEP-East generating units. Thus, the information provided would include all such units. An example of the type of report that can be provided is attached to my testimony as Exhibit EKW-3.

Q: DOES KENTUCKY POWER RECOMMEND COMMISSION ADOPTION OF AN ALTERNATE STANDARD?

A: No, but as discussed above, any standard adopted should be limited to retail prices and include only the information necessary for the customer to take advantage of the Company's Commission-approved tariff offerings.

STANDARDS FOR THE PREVENTION, RECOVERY AND USE OF WASTE ENERGY [SECTION 374]

Q: MR. WAGNER, THE LAST EISA 2007 STANDARD THE COMMISSION HAS ASKED KENTUCKY POWER AND OTHER UTILITIES TO COMMENT UPON IS THE STANDARD DEALING WITH WASTE ENERGY. WHAT DOES IT PROVIDE?

A: Unlike the other EISA 2007 standards, which amend PURPA, the Section 374 standard creates obligations outside of PURPA. But as is the case with the standards discussed above that amend PURPA, the Commission may decline to adopt the EISA standard regarding waste energy.

Q: DOES SECTION 374 DIFFER FROM THOSE PORTIONS OF EISA 2007 IN ANY FASHION?

A: Yes. Two points seem important. First, the time for considering standards runs from the date an application for a waste energy project is received by the Commission, rather than, as in the case of the provisions amending PURPA, the date EISA 2007 standards were enacted. Second, it appears from Section 374(b) that the determination is to be made on a project-by-project basis.

Q: MR. WAGNER, PLEASE BRIEFLY EXPLAIN THE SECTION 374 STANDARD.

A: It is entitled "Additional Incentives for the Recovery, Use and Reduction of Industrial Waste Energy" and is intended to encourage industrial "waste energy" recovery projects that generate net excess electricity or recoverable thermal energy or excess gas. Such waste energy can include heat, hot water, steam, gas, pressure drops or even electricity. Under Section 372 of EISA 2007, the Administrator of the Environmental Protection Agency is required to establish an inventory of waste energy recovery projects ("the Registry") and to evaluate the 5-year payback feasibility of the project. The United States will also provide financial incentives to the owners/operators of the projects and, perhaps, to the utility.

Q: WHAT IS THE TIME PERIOD FOR COMMISSION ACTION UNDER SECTION 374?

A: Within six months of receipt of an application for the owner or operator of an eligible project, the Commission must give notice, conduct a public hearing and enter a written order deciding whether the Section 374 standards are to be applied to the project.

Q: WHAT IS AN ELIGIBLE PROJECT?

A: Eligible project is my term, not the term Congress employed in the Section 374. Instead, Section 374 refers to a "waste energy recovery project identified on the Registry." Section 374(b). The Registry in turn is established by the Administrator of the Environmental Protection Agency. Section 372(d). To be included on the Registry the project must become economically feasible within five years of commencement of operations, and must not have been developed or used for the primary purpose of making sales of excess electric power under Section 374. Section 372(c).

Q: WHAT DOES THE SECTION 374 STANDARD PROVIDE?

A: The Commission must first determine whether the eligible project would benefit from one of the four options set out at Section 374(c). They include the sale of the excess power to the utility, transmission of the excess power by the utility for direct sale to a third party on the utility's system, transport of the power over private transmission lines or disposition of the excess power in accordance with a private agreement. Next, the Commission must determine whether to apply the rates and conditions set out in Section 374(d) to the transaction.

Q: ARE THE FOUR OPTIONS DESCRIBED IN SECTION 374(C) CURRENTLY AVAILABLE TO KENTUCKY POWER'S CUSTOMERS?

A: With a single exception, the answer is yes. Section 374(c)(1) would permit the waste energy recovery project owner or operator to sell the net excess electricity to Kentucky Power. Presently, Kentucky Power has two Commission-approved tariffs, COGEN/SPP I and COGEN/SPP II, that provide for just such sales. If the waste energy recovery project owner or operator for any reason prefers to sell the electricity into the wholesale market, then Kentucky Power will provide transmission service, through PJM

Interconnection, for the sale under the terms and conditions of its Federal Energy Regulatory Commission-approved Open Access Transmission Tariff ("OATT"). Lastly, Kentucky Power and an owner or operator may currently enter into a private arrangement, such as contemplated by Section 374(c)(4), by means of special contracts filed with and approved by the Commission.

Q: YOU MENTIONED A SINGLE EXCEPTION. WHAT IS IT?

A: Section 374(c)(2) provides that "[t]he electric utility shall transport the net excess power on behalf of the project owner or operator to up to 3 separate locations on the system of the utility for direct sale by the owner or operator to third parties at those locations." As I just indicated, direct sales to other utilities – that is, wholesale transactions – can be accomplished through Kentucky Power's OATT. On the other hand, direct sales by an owner or operator – that is, retail wheeling – is prohibited by Kentucky law. Specifically, KRS 278.016 divides the Commonwealth into certified territories and prohibits the retail sale of electricity in a utility's certified territory by any supplier other than the utility assigned to the territory. In addition, KRS 278.018(2) grants "each retail electric supplier" "the exclusive right to furnish retail electric service to all electric consuming facilities within its certified territory." Thus, retail sales by a waste energy project owner or operator are expressly proscribed by Kentucky law. Those statutes, and perhaps others, would have to be amended by the Kentucky General Assembly before retail sales pursuant to Section 374(c)(2), which merely supplements but does not preempt State law, could be consummated. As an aside, in recent years the Commission refused to follow other States along the path toward retail competition. The results of

such efforts in other States do not suggest that the Commission should reverse that position, even to the limited extent contemplated by Section 374(c)(2).

Q: DOES KENTUCKY POWER FAVOR THE COMMISSION'S ADOPTION OF THE EISA 2007 SECTION 374 STANDARD?

A: It would appear unnecessary, except for retail sales pursuant to Section 374(c)(2), in which case the standard contravenes Kentucky law.

Q: DOES THAT COMPLETE YOUR TESTIMONY?

A: Yes.

VERIFICATION

COMMONWEALTH OF KENTUCKY)
) **CASE NO. 2008-00408**
COUNTY OF FRANKLIN)

The undersigned, **Errol Wagner**, being duly sworn, deposes and says he is the Director of Regulatory Services for Kentucky Power Company, that he has personal knowledge of the matters set forth in the foregoing testimony, and the answers contained therein are true and correct to the best of his information, knowledge and belief.

Errol K. Wagner

ERROL K. WAGNER

Subscribed and sworn to before me, a Notary Public in and before said County and State, this 9th day of January 2009.

Judy K. Jackett Loss (SEAL)

Notary Public

My Commission Expires:

January 14, 2009

Kentucky Power Company
Energy Efficiency-Related Tariff Provisions

Tariff/Rider	Description of Service/Provision
Residential	
Tariff RS	Storage/Load Management water heating
Tariff RS-LM-TOD	Load management time-of-day
Tariff RS-TOD	Time-of-day
Commercial & Industrial	
Tariff SGS	Load management time-of-day
Tariff MGS	Recreational lighting Load management time-of-day
Tariff MGS-TOD	Time-of-day
Tariff LGS	Load management time-of-day
Tariff QP	Off-peak excess billing demand
Tariff CIP-TOD	Time-of-day billing demand
Tariff IRP/CS-IRP	Interruptible
Rider ECS	Emergency curtailable
Rider PCS	Price curtailable
Tariff NMS	Net metering
Tariff RTP	Experimental real-time pricing
Rider GPO	Green pricing

Service Description

Storage/Load Management Water Heating - Available to customers who install a Company approved water heating system which consumes electrical energy during off-peak hours and stores hot water for use during on-peak hours Customer receives reduced energy charge for fixed block of monthly kWh

Load Management Time-of-Day Service/Provision - Available to customers who use devices with time-differentiated load characteristics that consume energy only during off-peak hours and store energy for use during on-peak hours Customer is served under time-of-day energy charges

Time-of-Day Service - Optional tariff for customers that are capable and willing to consume electrical energy primarily during the Company's designated off-peak period to take advantage of the price differential between on-peak and off-peak energy rates

Recreational/Athletic Field Lighting Service - Available to customers for separately metered lighting of non-profit outdoor recreational facilities

Off-Peak Excess/ TOD Billing Demand - Available to customers who operate primarily during the off-peak period and request installation of time-of-day metering in order to take service under this provision A reduced rate is applied to either all off-peak demand or excess off-peak demands

Interruptible Service/ECS/PCS - Available to customers that are willing to reduce load upon request by the Company Customer either receives a reduced demand charge or a payment for amounts reduced

Net Metering - Available to customers with their own renewable fuel generation source Customers can offset their purchases of electricity from their utility with their own generation

Real-Time Pricing - Available to customers who can change behavior based upon a day-ahead schedule of hourly prices

Green Pricing - Programs which allow customers to support the development of renewable energy sources by paying a small premium on their electric bills

Kentucky Power Company
Summary of DSM Participants by Program
From Year 1996 to June 30, 2008

Exhibit EKW-2

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	YTD June 2008	Total
Residential Programs														
Energy Fitness	552	962	992	306	0	0	0	0	0	0	0	0	0	2,812
Targeted Energy Fitness														
- All Electric	223	293	253	141	165	150	139	169	161	173	162	228	119	2,376
- Non-All Electric	74	119	66	20	49	64	45	76	82	83	80	79	56	893
Compact Fluorescent Bulbs	269	0	0	0	0	0	0	0	0	0	0	0	0	269
High Efficiency Heat Pump														
- Resistance Heat	539	343	129	239	63	53	1	0	0	0	0	0	0	1,367
- Non-Resistance Heat	527	310	90	2	0	0	0	0	0	0	0	0	0	929
High Efficiency Heat Pump														
- Mobile Home	356	236	239	235	88	100	86	63	87	74	93	95	61	1,813
Mobile Home New Construction														
- Heat Pump	0	0	33	221	195	175	118	110	138	150	184	213	95	1,632
- Air Conditioner	0	0	0	0	0	0	0	1	1	0	0	0	0	2
Modified Energy Fitness	0	0	0	0	0	0	0	542	725	722	1,000	1,000	560	4,549
Total Residential Programs	**2,540**	**2,263**	**1,802**	**1,164**	**560**	**542**	**389**	**961**	**1,194**	**1,202**	**1,519**	**1,615**	**891**	**16,642**
Commercial Programs														
Smart Audit Participants														
Class I	91	412	382	374	303	265	125	0	0	0	0	0	0	1,952
Class II	5	37	37	37	37	33	8	0	0	0	0	0	0	194
Smart Incentive Participants														
Existing Building	1	11	37	31	40	30	32	0	0	0	0	0	0	182
New Building	0	1	6	11	4	26	21	0	0	0	0	0	0	69
Total Commercial Programs	**97**	**461**	**462**	**453**	**384**	**354**	**186**	**0**	**0**	**0**	**0**	**0**	**0**	**2,397**
Industrial Programs														
Smart Audit Participants														
Class I	15	30	15	0	0	0	0	0	0	0	0	0	0	60
Class II	2	1	1	0	0	0	0	0	0	0	0	0	0	4
Smart Incentive Participants														
General	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Compressed Air	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Industrial Programs	**17**	**31**	**17**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**65**
Total Participants	**2,654**	**2,755**	**2,281**	**1,617**	**944**	**896**	**575**	**961**	**1,194**	**1,202**	**1,519**	**1,615**	**891**	**19,104**
Number of Retail Customers 12 Months Ended June 30, 2008														**175,907**
Percentage of DSM Participants To Retail Customers														**10.86%**

Environmental Disclosure

American Electric Power

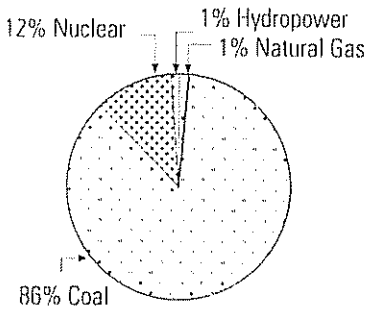
Projected Data for the 2009 Calendar Year

Actual Data for the 2008 Calendar Year

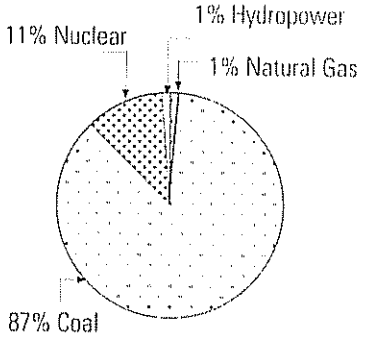
Generation Resource Mix –

A comparison between the sources of generation projected to be used to generate this product and the actual resources used during this period

Projected:



Actual:



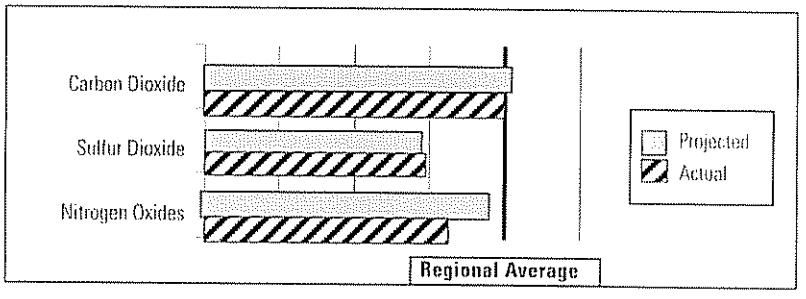
Environmental Characteristics –

A description of the characteristics associated with each possible generation resource

Biomass power	Air emissions and solid waste
Coal power	Air emissions and solid waste
Hydro power	Wildlife impacts
Natural gas power	Air emissions and solid waste
Nuclear power	Radioactive waste
Oil power	Air emissions and solid waste
Other sources	Unknown impacts
Solar power	No significant impacts
Unknown purchased resources	Unknown impacts
Wind power	Wildlife impacts

Air Emissions –

Product-specific projected and actual air emissions for this period compared to the regional average air emissions



Radioactive waste –

Product-specific projected and actual radioactive waste for this period

Type:	Projected Quantity:	Actual Quantity:	
High-level Radioactive Waste	0.00650	0.00646	lbs/1,000 kWh
Low-level Radioactive Waste	0.00053	0.00070	ft^3/1,000 kWh

With in-depth analysis, the environmental characteristics of any form of electric generation will reveal benefits as well as costs

For further information, contact AEP at www.AEP.com, by phone at 1-800-277-2177