COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

CONSIDERATION OF THE REQUIREMENTS OF THE FEDERAL ENERGY POLICY ACT OF 2005 REGARDING TIME-BASED METERING, DEMAND RESPONSE, AND INTERCONNECTION SERVICE	))))))	ADMINISTRATIVE CASE NO. 2006-00045

O R D E R

On August 8, 2005, President George W. Bush signed into law the Energy Policy Act of 2005 ("EPAct 2005"). EPAct 2005 amends the Public Utility Regulatory Policies Act of 1978 ("PURPA") by adopting new standards for electric utilities regarding net metering, fuel source diversity, fossil fuel generation efficiency, smart metering, cogeneration and small power production, and interconnection. EPAct 2005 requires that certain actions be taken by each electric utility and each state regulatory authority regarding the EPAct 2005 amendments.

The Commission initiated this administrative proceeding on February 24, 2006, to consider the requirements of EPAct 2005, Subtitle E Section 1252, Smart Metering, which concerns time-based metering and demand response, and Section 1254, Interconnection.

EPAct 2005 requires each state regulatory authority to conduct a formal investigation and issue a decision on whether or not it is appropriate to implement certain Section 1252, Smart Metering standards no later than 18 months after the enactment of EPAct 2005. State regulatory authorities are also required to commence

consideration of the Section 1254, Interconnection standard or set a hearing date for its consideration no later than one year after the enactment of EPAct 2005. Each state regulatory authority is to complete its consideration and make a determination whether to implement the interconnection standard within two years after the enactment of EPAct 2005.

A hearing was held on July 18, 2006 to consider the time-based metering and interconnection standards set forth in EPAct 2005. With the issuance of its Order in this proceeding, the Commission satisfies the EPAct 2005 requirements relating to Section 1252, Smart Metering, and Section 1254, Interconnection.

All of Kentucky's jurisdictional electric utilities have been made parties to this case even though, according to Title I of PURPA, not all are subject to these sections of EPAct 2005. Intervention was granted to the Attorney General's Office of Rate Intervention ("AG"), Hunt Technologies and Cellnet Technology ("Hunt" and "Cellnet"), Kentucky Industrial Utility Customers, Inc. ("KIUC"), Metro Human Needs Alliance ("MHNA"), and PJM Interconnection ("PJM") (collectively "Intervenors").

The Order initiating this case included a procedural schedule which provided for discovery, the filing of testimony by the jurisdictional utilities and Intervenors, a public hearing, and the filing of post-hearing briefs. In addition to receiving testimony, the Commission received comments from individuals who are not parties to this case. One individual, Geoffrey Young, presented comments at the hearing. He addressed numerous issues including the standards for interconnecting customer-owned generation to the utility's grid. Ten other individuals filed comments, all in opposition to the mandatory adoption of smart metering standards.

SECTION 1252, SMART METERING

EPAct 2005 Section 1252, Smart Metering, requires each state regulatory authority to conduct a formal investigation and issue a decision on whether or not it is appropriate to implement certain Section 1252 standards. Two Section 1252 standards directly impact Kentucky.

The first standard, if adopted, would require each jurisdictional electric utility to offer each customer class, and provide upon request, a time-based rate schedule where the rate charged varies during different time periods and reflects the variance in the utility's cost of service. A time-based rate schedule will allow a customer to manage energy use and cost through advanced metering and communications technology.

The types of time-based rate schedules that may be offered and thus considered include:

- Time-of-use pricing – prices are pre-established for a specific time period on an advanced or forward basis based on the utility's cost of service. This allows consumers to vary demand and usage in response to these prices to manage their energy cost by shifting usage to a lower cost period or reducing overall consumption.

- Critical peak pricing – time-of-use prices are in effect except for certain peak days when prices may reflect costs at a higher cost of service. Consumers may receive additional discounts for reducing peak period energy consumption.

- Real-time pricing – prices are set for a specific time period on an advanced or forward basis reflecting the utility's cost of service. Real-time prices may change as often as hourly.

- Credits for consumers with large loads that enter into pre-established peak load reduction agreements that reduce a utility's planned load capacity obligations.

The second standard, if adopted, would require each utility to provide each customer requesting a time-based rate with a meter capable of enabling the utility to offer and the customer to accept and receive such a rate.

None of the parties submitting testimony or briefs support the mandated adoption of the Section 1252 smart metering standards. The electric utilities all support the idea of smart metering, time-based pricing, and demand response but oppose the imposition of statewide standards. The Intervenors testified that they also support the idea behind the programs but have concerns about the imposition of non-voluntary statewide standards that may increase the costs of non-participants.

As shown by the testimony of Kentucky's jurisdictional electric utilities, Kentucky's low electricity rates, the minimal difference between current rates and real-time prices, and the uncertainty of the costs and benefits of smart metering all make it inappropriate for the Commission to mandate a statewide smart metering standard. Those same factors also make it questionable whether Kentucky's electricity consumers could enjoy reduced costs from mandated smart metering or real–time pricing.

With the exception of certain direct load control and off-peak electric thermal storage ("ETS") tariffs, few of Kentucky's jurisdictional electric utilities offer time-based rate schedules to their residential customers.

Two of the cooperatives served by Big Rivers Electric Corporation ("Big Rivers"), Jackson Purchase Energy Corporation ("Jackson Purchase") and Kenergy Corp. ("Kenergy"), offered a time-based tariff that became effective in 1991, but it was subsequently withdrawn due to lack of interest.[1] Currently, Big Rivers' third member cooperative, Meade County Rural Electric Cooperative Corp. ("Meade County RECC"), has an optional time-of-day rate (on peak/off-peak pricing) available to residential,

[1] Big Rivers' Response to the Commission's Order dated February 24, 2006, Smart Metering, Item 1.

commercial and industrial customers.[2] None of Big Rivers' members offer direct load control tariffs.

Duke Energy Kentucky, Inc. ("Duke Kentucky") offers its residential customers a direct load control tariff for air conditioners but does not offer any time-based tariff to its residential customers. Duke Kentucky does have time-of-use, real time pricing and load management tariffs available for its commercial and industrial customers.

Members of East Kentucky Power Cooperative, Inc. ("EKPC") offer a variety of time-of-day pricing and load management, and interruptible tariffs to their commercial and industrial customers. Most, but not all, of EKPC's members offer an off-peak, time-of-use tariff available to residential customers with ETS capability. Of the 4,870 customers on time-of-day or interruptible rates, 4,769 or roughly 99.8 percent are on the ETS tariffs.[3] Five of EKPC's members offer residential time-of-use pricing but have no customers currently on those tariffs. EKPC and its members do offer an array of demand-side management ("DSM") programs to their residential customers.[4]

Kentucky Power Company ("Kentucky Power") offers a variety of time-based metering and demand response tariff provisions. Kentucky Power offers residential customers load management and time-of-day options. A separate residential water heating load management tariff is in effect but is available to currently-served customers

[2] Meade County RECC's Response to the Commission's Order dated February 24, 2006, Smart Metering, Item 1.

[3] Testimony of William A. Bosta, Index of Rate Schedules.

[4] EKPC's Response to the Commission's Order dated February 24, 2006, Smart Metering, Item 1.

only. Load management, time-of-day pricing, interruptible, and curtailable tariffs are available to commercial and industrial customers.[5]

Kentucky Utilities Company ("KU") and Louisville Gas and Electric Company ("LG&E") offer time-of-day pricing, load reduction incentive and curtailable service tariffs to their commercial and industrial customers.[6] There are no time-based tariffs offered to residential customers, but LG&E is developing a residential real-time pricing pilot program pursuant to the settlement agreement in Case No. 2004-00433.[7] With regard to demand response, KU and LG&E offer demand reduction and energy conservation programs to residential and small commercial customers. Their "Demand Conservation" programs, offered since 2001, provide load management cycling of participants' air conditioning, electric water heating and pool pumps. According to KU and LG&E, over 93,000 load management devices are in operation governing over 85 MW during the summer peak.[8]

All of the electric utilities testified that they have found little or no interest in time-of-use rates by residential customers. Duke Kentucky stated that a residential time-of-use rate had been offered by its parent company in Ohio for years but had never attracted a large number of participants, provided significant system benefits, or

[5] Kentucky Power's Response to the Commission'a Order dated February 24, 2006, Smart Metering, Item 1, at 2.

[6] Testimony of Kent W. Blake, Exhibit KWB-1.

[7] Case No. 2003-00433, An Adjustment of the Gas and Electric Rates, Terms, and Conditions of Louisville Gas and Electric Company, final Order June 30, 2004.

[8] Testimony of Gregory Fergason at 3.

changed customer behavior.[9] Kentucky Power believes that most of its customers have decided that the economic rewards of time-based programs do not outweigh the inconvenience or cost.[10]

Duke Kentucky states that it is indifferent to the adoption of the EPAct 2005 time-based pricing standards so long as (1) they are not mandatory for all customers[11] and (2) any time-based program based on the standards is cost-effective.[12] EKPC argues that, due to rate levels and metering costs, its members' residential customers may not shift load under time-based pricing and believes that the Commission should authorize a limited pilot program before enacting any statewide program.[13] Kentucky Power argues that the Commission should not mandate the installation of smart meters for all its customers because no single smart meter solution will work in all circumstances. Kentucky Power's experience has been that providing credits to customers with large loads who enter into peak load reduction agreements is the most cost-effective approach for the company to control peak load.[14] KU and LG&E argue that they are opposed to any statewide mandatory standards concerning smart metering, time-based rates or demand response because there is insufficient data

[9] Duke Kentucky's Response to Commission's Order dated February 24, 2006, Smart Metering, Item 4.

[10] Testimony of David M. Roush at 5.

[11] Testimony of Bruce L Sailers at 7.

[12] Id. at 10.

[13] Testimony of William A. Bosta at 6.

[14] Testimony of David M. Roush at 6.

concerning the demand response effect of time-based programs beyond those currently offered and there is insufficient data concerning the cost-effectiveness of such programs.[15]

MHNA is an alliance of community nonprofit and governmental agencies serving low income households and individuals in the Louisville Metro area. Nineteen of MHNA's 35 members provide assistance to low income persons.[16] MHNA does not oppose time-based pricing on principle; however, it would oppose any program that would result in higher costs to low-income customers. MHNA expressed its concerns that, if required to participate, low-income consumers may actually face higher costs. These customers would have to pay for the cost of the smart meters and may not have the ability to shift usage to lower cost time periods. MHNA would oppose the imposition of the time-based pricing standards if the utilities would impose costs on non-participants for system-wide infrastructure improvements, even if the programs were offered on a voluntary basis. Therefore, MHNA does not recommend that the Commission mandate any time-based pricing program. MHNA would support a pilot program so long as it did not require mandatory participation and non-participants would not bear any of the costs of the program. MHNA is especially concerned that low-income customers, the elderly, the disabled and the unemployed do not have the ability to take advantage of time-based programs but may face higher electricity costs depending upon the program.[17]

[15] Testimony of Kent W. Blake at 2 and 3.

[16] Testimony of Marlon Cummings at 1.

[17] Id. at 3-5.

PJM is the regional transmission organization ("RTO") authorized by the Federal Energy Regulatory Commission to operate the transmission grid in the District of Columbia and in all or parts of 13 states, including Kentucky. It is responsible for facilitating the reliable supply of energy to wholesale electricity customers in the PJM region.[18] Noting that demand-side response benefits the wholesale electricity market and that demand-side response participation in wholesale electricity market is underdeveloped, PJM briefly described its demand response programs and their benefits.[19] PJM expressed no opinion as to whether the Commission should adopt the EPAct 2005 smart metering standards, but it did encourage the Commission to explore policies and standards that could bring the benefits of demand-side resources to Kentucky.[20]

Hunt produces meters, including smart meters, for use in the electric, water and natural gas utilities markets. Hunt also delivers advanced metering infrastructure ("AMI") solutions to its customers several of which are in Kentucky. Cellnet is a provider of products that enable utilities' information systems to communicate with residential, commercial and industrial meters using wireless technology. Hunt and Cellnet have been involved in more than 10 EPAct 2005 smart metering proceedings.[21] Hunt and Cellnet testified that they generally support the testimony filed by the jurisdictional electric utilities and provided some additional comments.

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[18] Testimony of Thomas Welch at 3.

[19] Id. at 4-6.

[20] Id. at 9.

[21] Testimony of Scott H. DeBroff at 2.

Hunt and Cellnet agree with Duke Kentucky that smart metering will require a cost-benefit analysis before a utility would invest in advanced metering infrastructure. They also agree with KU and LG&E that how certain kinds of smart metering, time-based rates and demand response programs will function will vary, depending on where they are implemented in Kentucky. Hunt and Cellnet support EKPC's continued offering of time-of-day programs to large commercial and industrial customers. They also support EKPC's recommendation to implement pilot programs to test the system capabilities of all utilities that had made AMI investments, provided the costs of the programs are borne by the entities that benefit. Finally, Hunt and Cellnet support Big Rivers' concerns about the utilities' abilities to recover the costs of advanced metering and the assurance of no cross-subsidization.[22]

Having reviewed the testimony in this proceeding and publicly available information regarding time-based pricing, the Commission has determined that the Smart Metering standards as set forth in Section 1252 of EPAct 2005 should not be adopted by Kentucky's jurisdictional electric utilities. The Commission finds that the combination of Kentucky's low rates for electricity, the significant costs and the uncertainty of benefits do not support the need for mandated smart metering standards at this time.

It does appear, however, that certain aspects of demand response programs and time-based pricing are not only practical but economically feasible at this time and should be further explored. While we are not mandating any particular standard, the

[22] Id. at 3-5.

Commission does direct each jurisdictional electric utility to give further consideration to demand response and time-based products as discussed in this Order.

The jurisdictional electric utilities either specifically cited or generally referenced the varied array of DSM programs they offer their customers. While recognizing the different characteristics of each utility's service territory, the Commission strongly encourages the jurisdictional electric utilities to consider broadening the array of DSM programs available. The load management programs offered by KU and LG&E, where air conditioning systems, electric water heaters and pool pumps are cycled, appear to have been particularly effective in that KU and LG&E have identified a temporary demand reduction potential of over 85 MW. The Commission encourages the electric utilities with load management programs to consider greater promotion of their benefits and minimal costs and strongly encourages those utilities without these types of programs to study the practicality of introducing a residential load management program.

The testimony in this proceeding also showed that, taken as a whole, the jurisdictional electric utilities offer a broad array of time-based pricing products, some mandatory, predominantly to the large commercial and industrial classes that have a greater capability to modify their consumption.

For residential customers, on-peak/off-peak time-of-use or critical peak pricing may hold more potential than real-time pricing products, which would require the use of smart meters, special communication software and perhaps modification of the utility's billing system. As KU and LG&E state, the on-peak/off-peak time-of-use or critical peak pricing forms of time-based pricing also "have costs and benefits more suited to

demand response."[23] Currently, only Kentucky Power and a few distribution cooperatives offer on-peak/off-peak time-of-use or critical peak pricing forms of time-based programs to their residential customers. As with load management programs, the Commission encourages the electric utilities offering these tariffs to their residential customers to consider greater promotion of their benefits and minimal costs and strongly encourages those utilities without these types of tariffs to study the practicality of introducing residential time-of-use tariffs.

With respect to the pilot real-time pricing program LG&E was developing pursuant to the settlement agreement in Case No. 2004-00433, LG&E stated that it believed that it would be in its customers' best interest to delay implementation until the Commission issued an Order in this case and, therefore, is awaiting further direction from the Commission.[24] The Commission believes that the issues regarding the requirements of EPAct 2005 which concerned LG&E have been resolved. Therefore, LG&E is directed to finalize the proposed pilot program in accordance with the settlement agreement and submit the plan for the Commission's consideration within 90 days of the date of this Order.

As opposed to Kentucky's residential customers, Kentucky's large commercial and industrial customers operate on some form of on-peak/off-peak time-of-use tariffs as well as curtailable or interruptible service tariffs. Many have done so since shortly

[23] KU and LG&E's Response to the Commission's Order dated February 24, 2006, Smart Metering, Item 3 at 2.

[24] KU and LG&E's Response to the Second Data Request of Commission Staff dated April 13, 2006, Item 22 at 5 and 6.

after the Commission adopted the PURPA Section 111 standards in 1982.[25] In that proceeding, the Commission adopted standards that generally prohibited declining block rates and mandated the implementation of time-of-day rates, seasonal rates, interruptible rates and load management techniques for each customer class.[26]

At this time, however, only Duke Kentucky offers a real-time pricing tariff. The Commission believes that some of the large commercial and industrial customers of the other jurisdictional utilities may benefit from real-time pricing tariffs because such customers have greater operating flexibility and, therefore, greater ability to modify their consumption patterns. In addition, the cost of implementing real-time pricing may be cost effective for these larger customers. The Commission further finds that the potential for significant savings from commercial and industrial real-time pricing programs has not been adequately investigated in the Commonwealth. To gain information and attempt to ascertain the viability and effectiveness of real-time pricing for larger customers, the Commission will require that pilot programs be developed and offered to such customers. The Commission, therefore, directs Kentucky Power, KU and LG&E to develop voluntary pilot real-time pricing programs for their large commercial and industrial customers. Big Rivers and EKPC are directed to work with each other, in conjunction with their member distribution cooperatives, to develop one or more voluntary real-time pricing pilot programs to be offered by a representative but selective group of members to their large commercial and industrial customers.

[25] Administrative Case No, 203, The Determinations with Respect to the Ratemaking Standards of the Public Utility Regulatory Policies Act of 1978 Identified in Section 111(d)(1)-(6), Order dated February 28, 1982.

[26] Id. at 17-43.65

Kentucky's jurisdictional electric utilities, with the exception of Duke Kentucky, are to submit the proposed real-time pricing tariffs for their large commercial and industrial customers for Commission consideration within 120 days of the date of this Order. The pilot programs should be designed to operate for an initial term of three years. Annual reports will be required with the content to be determined after the proposed pilots have been filed. The filings should clearly define and address all aspects of such a program from selection of pricing periods to proposed costs.

Given the decision not to adopt the Section 1252, Smart Metering standards, the Commission further finds that it will not require the electric utilities to provide a time-based meter appropriate for such a rate as set forth in the second Smart Metering standard. The Commission will, however, require the utilities proposing real-time pilot programs to provide appropriate metering to participants in those programs.

SECTION 1254, INTERCONNECTION

If adopted, Section 1254, the Interconnection standard, would require each electric utility to make interconnection service available to any customer. EPAct 2005 defines interconnection service as service to an electric consumer under which a generating facility on the consumer's premises is connected to the local distribution facilities. The service is to be offered based on standards developed by the Institute of Electrical Electronics Engineers: IEEE Standard 1547 for Interconnecting Distributed Resources with Electric Power Systems ("IEEE 1547"). The IEEE 1547 standards provide for just and reasonable agreements and procedures to be established so the services offered promote current best practices of interconnection for distributed generation.

According to their testimony, reliance solely on IEEE 1547 is a concern of the electric utilities. All of the jurisdictional electric utilities have some sort of interconnection process, procedure or guidelines. Certain interconnection requirements are referenced in their small power and cogeneration tariffs as well as their net metering tariffs. The majority of the net metering tariffs filed by the electric utilities specifically reference compliance with IEEE 1547. Some of the electric utilities believe that adoption of a statewide standard may be beneficial in that it would promote uniform interconnection practices. However, none of the electric utilities believe that IEEE 1547 alone is sufficient, and they recommend that any standard adopted not limit their flexibility to include additional interconnection requirements for safety and reliability. The electric utilities also recommend that any standard adopted should not prevent them from full recovery of interconnection costs from the connecting generation source.

None of the intervening parties submitting briefs addressed interconnection, although PJM did address interconnection in its pre-filed testimony. While PJM expressed no opinion as to whether the Commission should adopt the EPAct 2005 interconnection standard, it did encourage the Commission to explore policies and standards that could bring the benefit of demand side resources to Kentucky.[27]

Based on a review of the evidence, the Commission must concur with the jurisdictional electric utilities and find that, while IEEE 1547 addresses interconnection of distributed resources of 10 MVA or less, IEEE 1547 alone will not be sufficient to ensure the safety and reliability of the transmission and distributions systems.[28] As

[27] Testimony of Thomas Welch at 9.

[28] Testimony of Travis D. Housley at 5.

EKPC states, while IEEE 1547 sets the minimum requirements for connecting a 10 MVA generating system, a substantial redesign of the distribution system may still be required to ensure safe and reliable operation.[29] In addition, we agree with Kentucky Power that the unique design, construction and operation of each electric utility's power system are "practical considerations" that argue against imposing a statewide standard.[30]

Therefore, the Commission finds that a single statewide interconnection standard should not be adopted. We believe that the electric utilities have adequately demonstrated that compliance with IEEE 1547 alone is not sufficient to ensure the safety and reliability of an electric utility's transmission and distribution system. Nevertheless, we believe that the record demonstrates the merit of the requirements of IEEE 1547 and conclude that each jurisdictional electric utility should include IEEE 1547 as the core of its technical interconnection requirements for generation resources of 10 MVA and below.

PURPA AND NON-PURPA ELECTRIC UTILITIES

As stated earlier in this Order, not all of Kentucky's jurisdictional electric utilities are subject to PURPA or EPAct 2005. Only those electric utilities with total annual retail sales greater than 500 million kilowatt hours ("kWh"), or 500,000 megawatt hours, are subject. Big Rivers and EKPC are not subject to PURPA or the standards as set forth in EPAct 2005 because all of their sales are at wholesale. Meade County RECC, a member of Big Rivers, and Big Sandy RECC, Clark Energy Cooperative, Cumberland

[29] Testimony of Paul A. Dolloff at 9 and 10.

[30] Testimony of Stephen E. Early at 1 and 2.

Valley Electric, Farmers RECC, Grayson RECC, Inter-County Energy Cooperative, Licking Valley RECC, and Shelby Energy Cooperative, all members of EKPC, are also not subject to PURPA or the standards as set forth in EPAct 2005 because their retail sales do not exceed the minimum requirement.

In their brief, noting that they are not PURPA-covered utilities, Big Rivers and Meade County RECC asked the Commission to find them exempt from any Commission order requiring compliance with the EPAct standards. In addition, Jackson Purchase notes that a list of covered utilities published in August 2006 by the federal Department of Energy ("DOE") erroneously lists Jackson Purchase as a PURPA-covered utility that is not subject to Commission jurisdiction and asks the Commission to notify DOE of its error by October 1, 2006.

In its brief, EKPC also notes that it and several of its members are not PURPA-covered utilities. EKPC notes that it is participating in this case for the purpose of coordinating the representation of its member systems and describes various actions it has taken under PURPA on behalf of its members. EKPC does not request to be exempted from any Commission directive. EKPC states that it will continue to provide services to its members that are beneficial and economical in relation to any EPAct standards that are adopted by the Commission.

The Commission reviewed DOE's August 2006 list of covered utilities and submitted pertinent corrections to DOE on September 11, 2006. The exemption from PURPA and certain aspects of EPAct 2005 that Big Rivers notes in its brief, however, does not impact the Commission's jurisdiction over such utilities. Pursuant to its authority under Chapter 278 of the Kentucky Revised Statues, the Commission has

determined, based on the record in this case, that the requirements set forth in this Order should apply to each jurisdictional electric utility, irrespective of that utility's status under PURPA.

SUMMARY

Although the Commission has determined that Kentucky's jurisdictional electric utilities need not adopt either the Section 1252, Smart Metering standard or the Section 1254, Interconnection standard, the Commission finds value in the theory behind these standards, as have the electric utilities and Intervenors. The Commission is sensitive to the concerns expressed by the electric utilities and Intervenors in this proceeding. The Commission believes that its decision balances the positive aspects of the standards with the concerns of the parties in this proceeding.

IT IS THEREFORE ORDERED that:

1. The EPAct 2005 Section 1252, Smart Metering and Section 1254, Interconnection standards shall not be adopted.

2. LG&E shall finalize its proposed residential real-time pilot pricing program in accordance with the settlement in Case No. 2003-00433 and submit the plan for Commission consideration within 90 days of the date of this Order.

3. Big Rivers, EKPC, Kentucky Power, KU, and LG&E shall develop voluntary pilot real-time pricing programs for their large commercial and industrial customers in accordance with the discussion in this Order.

4. Each jurisdictional electric utility shall include IEEE 1547 as the core of its technical interconnection requirements for generation resources of 10 MVA and below by inclusion in its policies and procedures, or tariffs whichever is appropriate.

Done at Frankfort, Kentucky, this 21st day of December, 2006.

By the Commission

ATTEST:

Executive Director