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PUBLIC SERVICE
COMMISSION

COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

AN ADJUSTMENT OF THE GAS AND	)	
ELECTRIC RATES, TERMS, AND	)	
CONDITIONS OF LOUISVILLE GAS	)	
AND ELECTRIC COMPANY	)	**CASE NO. 2003-00433**

TESTIMONY OF
GEOFFREY M. YOUNG
ASSISTANT DIRECTOR
KENTUCKY DIVISION OF ENERGY

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Comes the Kentucky Environmental and Public Protection Cabinet, Department for Natural Resources, Division of Energy (KDOE), intervenor herein, and offers the following prepared testimony in this case:

Respectfully submitted,

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TESTIMONY OF
GEOFFREY M. YOUNG, ASSISTANT DIRECTOR
KENTUCKY DIVISION OF ENERGY

Q. Please state your name and place of employment.

A. My name is Geoffrey M. Young. My place of employment is the Kentucky Division of Energy, 663 Teton Trail, Frankfort, Kentucky, 40601.

Q. What is your position?

A. I am the assistant director of the division.

Q. Please describe your education and employment experience.

A. I received a bachelor's degree in Economics from the Massachusetts Institute of Technology, a master's degree in Mechanical Engineering from the University of Massachusetts, and a master's degree in Agricultural Economics from the University of Kentucky.

From February 1978 to August 1979, I worked as a Staff Engineer at Technology + Economics, a research consulting firm in Cambridge, Massachusetts. I analyzed the economic and energy savings resulting from energy efficiency technologies and prepared a commercialization plan for a low-cost passive solar heating and cooling system.

From July 1982 to June 1983, I was the Staff Engineer at the Small Business Development Center, administered by the University of Kentucky in Lexington. I performed cost-benefit analyses of energy efficiency and renewable energy technologies, provided technical assistance to small businesses, and maintained and updated a manual with descriptions of energy technologies.

From April 1990 to September 1991, I worked for the Kentucky Division of Waste Management in the Department for Environmental Protection as an Environmental Engineering Technologist Senior. I performed technical and administrative reviews of applications for hazardous waste facility permits. I provided technical assistance to field and enforcement personnel, conducted hazardous waste facility assessments, and provided information to the public.

From September 1991 to November 1994, I worked as an Environmentalist Principal at the Kentucky Division of Energy (KDOE). My major duty was to coordinate the Alternate Energy Development Program. I administered small grants for the demonstration of renewable energy technologies, developed fact sheets and other information for the public, edited a national monthly newsletter on energy efficiency programs in the 50 states, and wrote proposals for grant funding.

I was promoted to assistant director of KDOE in November 1994. In addition to administrative duties and continuing management of the Alternate Energy Development Program, my work has focused on demand-side management, energy policy issues, energy-efficient building systems, and alternative fuels for vehicles. Since 1994, I have represented the division on Demand-Side Management Collaboratives at the Louisville Gas and Electric Company, American Electric Power Company (AEP), and Union Light, Heat and Power Company (Cinergy). I have also been the lead person for the Division in addressing electric industry regulatory issues before the Commission.

Q. Have you participated in other cases before this Commission?

A. Yes. I submitted prepared testimony in the following cases: Case No. 98-426, Application of Louisville Gas and Electric Company for Approval of an Alternative Method of Regulation of Its Rates and Service; Case No. 98-474, Application of Kentucky Utilities Company for Approval of an Alternative Method of Regulation of Its Rates and Service; Case No. 2000-459, The Joint Application of the Louisville Gas and Electric Company and Kentucky

Utilities Company for the Review, Modification and Continuation of DSM Programs and Cost Recovery Mechanisms; Case No. 2001-053, the Application of East Kentucky Power Cooperative, Inc. for a Certificate of Public Convenience and Necessity, and a Certificate of Environmental Compatibility, for the Construction of a 250 MW Coal-Fired Generating Unit (With a Circulating Fluid Bed Boiler) at the Hugh L. Spurlock Power Station and Related Transmission Facilities, Located in Mason County, Kentucky, to be Constructed Only in the Event that the Kentucky Pioneer Energy Power Purchase Agreement is Terminated; and in Administrative Case No. 387, A Review of the Adequacy of Kentucky's Generation Capacity and Transmission System. I was the lead participant and representative for KDOE in the following integrated resource planning cases: American Electric Power Company (dba AEP), Cases No. 99-437 and 2002-00377; Big Rivers Electric Corporation, Cases No. 99-429 and 2002-00428; East Kentucky Power Cooperative, Inc., Cases No. 2000-044 and 2003-00051; Louisville Gas and Electric Company and Kentucky Utilities Company, Cases No. 99-430 and 2002-00367; and the Union Light, Heat and Power Company, Case No. 99-449. I also prepared testimony for the Division to submit in Administrative Case No. 341, An Investigation Into the Feasibility of Implementing Demand-Side Management Cost Recovery and Incentive Mechanisms.

Q. Why did KDOE submit a motion for full intervention in this rate case?

A. KDOE has a statutory mandate to "develop and implement programs for the development, conservation, and utilization of energy in a manner to meet human needs while maintaining Kentucky's economy at the highest feasible level." Rate cases determine far more than allowable revenues and rate levels alone. The Commission, in the context of rate cases, routinely determines the utility's rate structure as well. Changes in the rate structure provide economic incentives to customers, and incentives in turn affect the degree of interest and commitment the parties will show toward measures that improve energy efficiency and economic efficiency. This testimony will therefore focus on issues of rate structure and the economic incentives faced by the utility and its customers.

Q. What goals should be foremost in designing energy utility rates?

A. The Commission has a statutory mandate to ensure that the rates of regulated utilities are "fair, just and reasonable," and to ensure that "Every utility shall furnish adequate, efficient and reasonable service..." KRS 278.030. Utility rates should therefore be set at levels that are fair, just and reasonable and structured in a manner that ensures the adequacy of supply in the short and long term and promotes economic efficiency for producers and consumers. Within these broad guidelines, regulatory policy has usually taken the form of seeking a stable balance among competing priorities and interests.

Unfortunately, most of the traditional electricity tariffs now in place in LG&E's service territory break the connection between the wholesale and retail markets. Although the wholesale value of electricity fluctuates daily and hourly, most retail customers pay static, average prices per kWh. The result is a lower level of demand response than could be achieved, with very significant losses in economic efficiency and increased risks of system overloads and blackouts during peak load conditions. Certain changes in the structure of the rates could convey price information to customers to a much greater extent than the set of tariffs being proposed by the utility and its consultants in this case.

In addition, KDOE believes that ongoing changes in technology have the potential to improve energy and economic efficiency for both the utility and its customers. There are presently many organizations investigating sets of technologies that could be combined into the "electric grid of the future." To cite just one example: "The Electricity Innovation Institute (E2I), an affiliate of EPRI, recently selected a team headed by GE Global Research to assist in the initial development of an industry-wide architecture to meet the emerging needs of a digital society. The 18-month, multi-million dollar project will define an overall technical framework for the design of communications and intelligent equipment necessary to support the 'smart grid' electric system of the future." This institute has formed the Consortium for Electric Infrastructure to Support a Digital Society (CEIDS), a collaborative research initiative whose mission is "to provide the science and technology that will power a digital economy and integrate energy users and markets through a unique collaboration of public, private and governmental stakeholders." Members of CEIDS include Alliant Energy, Bonneville Power Administration, Electricité de France, Exelon, the Long Island Power Authority, the New York Power Authority, the Salt River Project, TXU, We Energies and Cisco Systems. Web link: http://www.epri.com/journal/details.asp?id=540&doctype=news.

The future electric grid will make greater use of microprocessors, distributed generation, and decentralized control technologies in order to reduce waste throughout the system and enhance the value of the electric services provided. The long-term result will be an electrical generation, transmission, distribution, and consumption system that provides dramatically improved performance, reliability, resilience and efficiency. Patrick Mazza, "The Smart Energy Network: Electricity's Third Great Revolution," internet links at http://www.climatesolutions.org/pubs/pdfs/SmartEnergy.pdf or http://www.climatesolutions.org/pubs/pdfs/Smart%20Energy%20PDF.pdf. KDOE believes that tariffs should be designed in ways that help lower the barriers that presently prevent such technological innovations from being made.

Q. Do you have any general recommendations or proposals in regard to the utility's rate structure?

A. Yes. KDOE is concerned that the proposed rates, like the existing rates, do not vary as a function of the number of kilowatt-hour (kWh) sold. When the price of electricity is fixed, the utility and its shareholders gain additional profit from each additional kWh sold. This constitutes an extremely powerful built-in incentive for the utility to boost sales of electricity, as well as an incentive for the utility to oppose or block measures to improve energy efficiency or to enable self-generation by their customers, regardless of how cost-effective such measures might be. In this respect, the economic interests of the utility come into direct conflict with the best interests of its customers. The problem was clearly identified and well described in 1989 by David Moskovitz in his report, *Profits and Progress Through Least-Cost Planning,* National Association of Regulatory Utility Commissioners, Washington, DC. In a July 1991 article in the *Electricity Journal*, he summarized the problem as follows: "The current rate setting process provides utilities with very strong financial *dis*incentives to pursue least-cost plans. The heart of the problem is that increased sales always increase profits and lower sales always cut into earnings. Breaking the linkage – decoupling – is the single most important reform regulators can make." "Decoupling Sales and Profits: An Incentive Approach that Works," David Moscovitz and Gary Swofford, 1991, pp. 46-53. KDOE believes this is still the case in Kentucky today.

If the set of tariffs proposed by LG&E is approved as submitted, the financial incentives facing the utility will continue to reward the utility for investing in supply-side resources and penalize investment in and cooperation with effective demand-side management (DSM) programs. The result is likely to be continued systematic over-investment in the supply side and under-investment in the demand side compared to the economically optimal outcome, with higher utility revenue requirements and higher total resource costs to society than necessary. Kentucky's businesses and individuals will continue to spend more than necessary for their electric services in the long run, and the Commonwealth's overall economy will operate at a lower level than it potentially could.

The most straightforward solution to the problem of perverse utility incentives is revenue indexing, also known as a revenue cap. Revenue indexing sets the company's allowed revenue or revenue per customer. If sales of electricity increase, the price is adjusted downward to keep revenue constant. If sales decline as a result of effective DSM activities or an increase in the amount of cogeneration, the price is adjusted upwards to compensate. A balancing adjustment factor compensates for any differences during the previous period between the actual revenue and the allowed revenue. The revenue-per-customer approach can be used if it is felt that the utility's allowed revenues should change as the number of customers changes over time. Moscovitz and Swofford, *Ibid*; also, Sheryl Carter, "Breaking the Consumption Habit: Ratemaking for Efficient Resource Decisions," *Electricity Journal*, December 2001, pp. 66-74.

In the short run, utility costs vary more directly with the number of customers served than with the number of kWh produced. However, in the long run, demand for energy is the fundamental driver of utility costs. For this reason, it is important to implement rate designs that send the proper economic signals to consumers about the value of consumption, while making use of revenue-setting approaches that encourage utilities to minimize their costs (increase their profits) by taking actions that improve the overall efficiency with which electricity is used. Weston, Frederick, *Charging for Distribution Utility Services: Issues in Rate Design*, Regulatory Assistance Project, September 2001, pp. 40-44, www.raponline.org.

When applied as an alternative to traditional rate-making (by which prices are set by the regulators and revenues depend wholly upon sales), revenue indexing removes the financial incentive for a utility to boost sales and oppose cost-effective DSM. For this reason, KDOE proposes that any tariffs instituted for LG&E, in all of its customer classes, be based on revenue indexing. It should be noted that revenue indexing, in the form of a "DSM Revenues from Lost Sales factor" (DRLS), was actually in effect at LG&E between 1994 and 1999 for its residential customer class. A similar mechanism was also in effect at the Union Light, Heat and Power Company (Cinergy) in northern Kentucky over approximately the same period of time. Although it is true that there were disputes in implementing the DRLS decoupling procedure that eventually led LG&E to propose its termination, KDOE believes the problems should have been addressed in ways other than by terminating this innovative and extremely beneficial feature of the residential tariff. Indeed, the decoupling concept should have been extended to all other rate classes as well.

Q. Are there any disadvantages to revenue indexing?

A. The major drawback of revenue indexing is that the price of electricity is subject to fluctuations resulting from external factors such as the weather and cycles of economic activity in the region. This could be difficult to explain to customers and could lead to dissatisfaction.

Q. Are there any solutions to the fluctuations resulting from weather and business cycles?

A. Eric Hirst has developed a method called "statistical recoupling" that minimizes such price fluctuations by using an econometric model to establish the utility's allowed revenue. The model includes terms for weather and economic activity; the coefficients are derived from historical data. Hirst, Eric, "Statistical Recoupling: A New Way to Break the Link Between Electric-Utility Sales and Revenues," September, 1993, Oak Ridge National Laboratory, Oak Ridge, Tennessee, ORNL/CON-372, pp. 11-23; also, "Regulating As If Customers Matter: Utility Incentives to Affect Load Growth," Eric Hirst and Eric Blank, Land and Water Fund of the Rockies, Boulder, CO, January 1993. The net result of this approach is that the utility's financial incentives would be brought into closer alignment with the interests of its customers, while exogenous price fluctuations would be kept to a minimum.

Q. Do you have any other general recommendations or proposals in regard to the utility's rate structure?

A. Yes. There are far too many adjustment clauses. Each adjustment clause carries with it administrative and regulatory costs, and makes the price less understandable and predictable by customers.

The Fuel Adjustment Clause should be eliminated. While such a clause might have some justification in states where natural gas or fuel oil comprise a significant amount of the annual power plant fuel, Kentucky is overwhelmingly served by coal, the price of which is relatively stable over long periods of time. The fuel adjustment clause makes the problem of perverse utility incentives worse by making it profitable for the utility to try to sell more energy even during peak load conditions. "Time to Face FACs: How Fuel Adjustment Clauses Undermine Energy Efficiency," Richard E. Morgan, *Electricity Journal*, October 1993, pp. 34-41.

The Demand-Side Management Cost Recovery Mechanism should be converted into a revenue indexing mechanism based on statistical recoupling as outlined above. Because revenue indexing only removes the incentive to boost kWh sales and does not provide a positive incentive for the utility to change its behavior and promote energy efficiency and combined heat and power (CHP) in a serious way, an incentive factor should be added to the revenue indexing mechanism to reward the utility for implementing cost-effective DSM and CHP programs. This incentive factor could include a clause that adjusts rates downward to the degree that the utility fails to achieve energy efficiency gains (i.e., the incentive factor could become a penalty for failure to achieve results in this area).

The Environmental Cost Recovery Surcharge should be eliminated and environmental compliance costs included in base rates. Emission control technologies are an integral part of the generation technologies the utility has chosen to depend on, and their capital and operating costs are part of the normal costs of doing business.

The Merger Surcredit Rider should be eliminated and its financial effects should be included in base rates. The merger was a one-time event and is presumably not going to be reversed and reinstituted several times in the future. The occasion of a general rate case is the most appropriate time to fold this factor into the base rates.

The Earning Sharing Mechanism should be retained because if all of the rate reforms we are proposing are implemented, the net impacts on the utility's profitability will be somewhat uncertain in the short term while participants gain experience with the new incentive structure. There should be a way to share any unintended savings or costs that may result between customers and utility shareholders.

The Value Delivery Surcredit should be eliminated and its financial effects should be included in base rates. The reasoning is the same as for the Merger Surcredit Rider.

The Franchise Fee and School Tax riders need to be retained, but it would be simpler if they were combined into a single adjustment factor called "School Tax and Franchise Fee Rider" or some other general term.

The eight adjustment clauses that are attached to each proposed tariff would be reduced to three: a Revenue Indexing and Efficiency Clause, an Earning Sharing Mechanism, and a School Tax and Franchise Fee Rider.

Q. Do you have any comments or recommendations about the proposed Residential Service (RS) rate?

A. LG&E is proposing that the monthly customer charge be raised from $3.31 per meter per month to $9.00 per month. KDOE believes this is a move in the wrong direction, and proposes instead that the customer charge either remain unchanged or decrease. This issue was brought up in a data request, Question No. KDOE-1, and Witness W. Steven Seelye's response. When KDOE suggested lowering the customer charge instead of raising it, Mr. Seelye appealed to the cost of service study (COSS) and asserted that if the COSS is ignored when setting rates, customers may end up making "uneconomic resource decisions." Response to Question No. KDOE-1b. KDOE does not believe that the logic applies in this particular situation.

In Kentucky's regulated electricity market, if a customer does not like the level of the monthly fixed charge, his or her only available choice is to stop paying the bill and stop receiving electric service. Because electric service is a necessity for most customers today, and going entirely off the grid through self-generation is extremely expensive, negligibly few customers will be able to choose this option. All customers will simply have to accept a higher monthly fixed charge and will face relatively lower energy charges. The net economic incentive they will get from this rate change is an incentive to use more energy. At a time when LG&E is planning to add expensive new generating capacity to meet increasing demands, KDOE believes this is the wrong price signal to send to customers. In contrast, if the customer charge were to be reduced and the costs recovered through a higher energy rate, customers would have more of an incentive to reduce energy waste or invest in energy-efficient technologies. In this particular situation, it is the COSS-derived rate that will lead to "uneconomic resource decisions" by customers, not the alternative rate reforms proposed by KDOE.

Increasing the monthly customer charge entails negative impacts on equity in addition to the negative impacts on efficiency. On average, low-income customers tend to use less energy. The customer charge therefore represents a relatively higher proportion of their monthly bills. The percentage increase in their bills will be larger than the percentage increase in the bills of higher-income, higher-usage customers, and they will be less able to afford the increase.

In responding to Question No. KDOE-1d, Mr. Seelye asserted that "If a competitive market were ever fully introduced in Kentucky, customer charges would likely increase and the energy charges would decrease to accurately reflect cost causation." KDOE is unconvinced of this point as well. In a competitive market, electric service providers would be expected to develop a range of strategies to serve the market or certain segments thereof. Residential customers who use a lot of energy would have an incentive to choose a pricing plan with high monthly charges and relatively low energy rates, and conversely. While some suppliers may indeed increase their customer charges, we can easily imagine that an energy service provider whose competitive strategy is to appeal to the lower-usage segment of the market would offer a plan with a lower monthly customer charge and relatively higher energy rates. We are aware of an analogous situation in the highly competitive long distance telephone service market. Customers who make a lot of long distance phone calls may choose a plan with a higher monthly fee and a lower per-minute rate, while lower-usage customers may choose a plan with a lower monthly fee (or no monthly fee) and a higher per-minute rate. Suppliers in competitive markets devise a wide range of different strategies to try to recover their costs, manage their economic risks and make a profit.

Mr. Seelye notes that a rate with a higher customer charge reduces the variability of bills as a function of the weather. Response to Question No. KDOE-1d. The statistical recoupling method proposed by KDOE, however, provides a more effective way to reduce weather-related bill variability without the drawback of reducing customers' incentives to use energy efficiently. The recoupling parameter associated with the weather can be set in order to allocate the weather-related risks between customers and utility shareholders in an equitable and reasonable manner.

Q. What other changes in the RS rate should be considered for implementation?

A. The fact that dynamic price information is not being conveyed to most residential customers gives rise to significant economic inefficiency. Economist Paul Joskow of MIT likens traditional time-invariant rates to "a supermarket charging for a cart of groceries based on the average cost per pound of groceries in a sample of shopping carts that passed through the cashier's desk rather than based on the individual items in the cart." Joskow, "Why Do We Need Electricity Retailers? Or Can You Get It Cheaper Wholesale?" MIT, February 13, 2000, p.17. Web link: http://web.mit.edu/ceepr/www/2000-001.pdf.

Lacking any incentive to control the timing of their electricity use, residential customers bring down the utility's load factor and increase its operating costs. In its data request, KDOE suggested that "Ideally, in order to provide the most direct linkage between the marginal costs faced by the utility and the prices faced by customers, all customers should be served under real-time pricing mechanisms." Witness Steven Seelye responded by agreeing that "Real time pricing would provide customers with a good indication of the cost of serving them at any particular point in time," but went on to say that most utilities do not have the necessary metering and communication equipment installed at the present time. Response to Question No. KDOE-8. In his direct testimony, Mr. Seelye referred in general terms to the high cost of installing advanced metering equipment, but later admitted that "the Company has not performed" analyses of the costs of such equipment. W. Steven Seelye, direct testimony, Volume 4 of 7, page 70, lines 6-13; Response to Question No. KDOE-8.

KDOE believes that the potential economic benefits of increased demand response in all customer classes are very large. These benefits include improved load factors, reduced operating costs, reduced economic inefficiency, relieving of transmission and distribution constraints, improved grid reliability, reduced wholesale market price spikes, reduced potential for the exercise of wholesale market power, and lower customer bills. "Demand Response: Not Just Rhetoric, It Can Truly Be the Silver Bullet," Michael O'Sheasy, *Electricity Journal*, December 2003, pp.52-53. Mr. O'Sheasy describes and summarizes the characteristics of a set of demand-response approaches: conventional time-of-use (TOU) pricing, day-type TOU pricing, critical-period TOU pricing, occasional real-time pricing, and real-time pricing (RTP). He explains why RTP leads to the most economically efficient outcome, but acknowledges that "Large social benefits can be achieved by offering dynamic pricing to larger customers (i.e., your grandmother need not be on RTP)." *Ibid.*, pp. 54-56.

Georgia Power Company presently operates the largest RTP program in the world, with over 1,600 participating customers and a peak period price response of 800 to 1,000 MW out of a 16,000 MW utility. The program is voluntary and offers participating customers hedging products to enable them to reduce their price risk. The customer pays for a baseline level of usage (i.e., recent historical usage). Differences in usage from the baseline, positive or negative, are billed at RTP prices. "Real Time Pricing at Georgia Power Company," Michael O'Sheasy, Christensen Associates, PowerPoint presentation to the Committee on Regional Electric Power Cooperation September 30, 2002. Web link: http://www.westgov.org/wieb/meetings/crepcfall2002/briefing%20materials/ppt/m_osheasy.ppt#257,1, Committee on Regional Electric Power Cooperation .

Clearly, Georgia Power found it economically advantageous to invest in the advanced metering and communication equipment needed to implement its RTP program. LG&E and KU have found through their experience with the Demand Conservation Program that the per-unit cost of electronic communication and control equipment declines dramatically when large quantities are ordered. In addition, continuing rapid technological advances are steadily bringing down the cost of advanced metering and control equipment. It is likely that these technologies are now within the range of cost-effectiveness for a utility-scale program in Kentucky.

Witness Steven Seelye stated that "it is not anticipated that there would be significant customer demand for such rate options at the present time. Such rate options could be offered if there were sufficient customer demand for such rates, but the cost of the equipment would need to be built into the rates." Response to Question No. KDOE-9. In the context of Kentucky's regulated utility market, it is not clear what Mr. Seelye means by the term, "customer demand." Is he referring to the number of customers who call or write to LG&E demanding that dynamic pricing options be developed and offered? How many customers are aware that such options exist? In a regulated retail market, the way rate options come into existence is when the utility proposes a new tariff to the Commission and the Commission approves (or modifies) it. A good example is the recently-developed Residential Prepaid Metering tariff. Only then do customers have the opportunity to demonstrate, through their exercise of consumer choice, whether they prefer the option or not. In the absence of a pilot dynamic pricing tariff, coupled with an effort to inform customers of the existence and potential benefits of their options, it is not clear how the utility would ever be able to ascertain the true level of "customer demand" for such options. Georgia Power Company discovered that when a RTP option was offered, a substantial number of customers from all customer classes found it worth choosing.

LG&E should begin laying the foundation today for greatly increased use of dynamic pricing in the future. RTP (or at least TOU) options should be made available to all customer classes. KDOE believes it should be possible for the utility and its consultants to research RTP programs such as the Georgia Power program and develop a voluntary tariff to include in the present rate case, at least on a pilot program basis. If that is not possible, the company should conduct an analysis of the costs and benefits of embarking on what we believe is an inevitable transition toward more dynamic pricing. The only caveat we would suggest is that the company should choose technologies that allow enough flexibility for future modifications and upgrades to be made as they become available.

Q. Do you have any comment about the proposed replacement of the declining and inclining block rates by a flat rate?

A. In general, KDOE opposes declining block rates because they provide an economic incentive for customers to use more energy. Inclining block rates are appropriate when a utility faces marginal production costs that are higher than average embedded costs, which is the case for LG&E and much of this country's utility industry today.

Witness Steven Seelye tries to use COSS arguments to determine whether inclining or declining block rates are appropriate, but the relationships he identifies are weak and tenuous. In his direct testimony, pp. 63-64, Mr. Seelye states, "If load factors within a customer class increase with greater usage, then a declining-block rate structure can be supported. However if load factors within a customer class decrease in relation to greater usage, then an inverted block rate structure can be supported." When our data request asked what assumptions about customer behavior underlie this statement, Mr. Seelye replied, "This statement is not based on an assumption, it is based on mathematics." Response to Question No. KDOE-3a. Mr. Seelye is incorrect. Given a distribution of customers wherein the load shape of the average high-usage customer is better than that of the average low-usage customer, and given an extraneous event that induces all customers to increase their energy usage, Mr. Seelye is *assuming* that the load shape of formerly low-usage customers will come to more closely resemble the load shape of formerly higher-usage customers. This is not a mathematical certainty but an assumption about how customers will behave, at the margin, under changing market conditions. It may be a reasonable assumption, but it is an assumption nonetheless. As we suggested in our data request, the *actual* effects on customers' load shapes will depend on the energy-related technologies and options that are available and known to customers at the time. Question No. KDOE-3c. The actual effects on their load shape will also depend on whatever other programs and rate options are available to them, for example, DSM programs or RTP and TOU rates.

KDOE proposes a three-pronged strategy for LG&E to pursue in order to improve load shapes, improve energy efficiency and reduce customer bills in the residential sector: 1) design and institute inclining block rates in this rate case to provide an economic incentive for customers to reduce energy waste; 2) provide an optional RTP or TOU tariff in this rate case to provide an incentive for customers to shift their loads away from peak load periods; and 3) enhance the company's portfolio of DSM programs to provide customers with information about technologies that can help them modify their energy use, and incentives to reduce the capital costs and perceived risks of investing in such technologies.

Q. Does the proposed RS rate structure have any positive features?

A. KDOE endorses the concept of charging higher energy rates in summer than in the other seasons. The two reasons are that the cost of electricity, as reflected by regional wholesale electric prices, tends to be higher in the summer than at other times of the year, and that growing summer peak loads appear to be driving LG&E's resource acquisition decisions during the next few years. Seasonal rates should be supplemented by optional RTP or TOU tariffs, which would convey more precise and effective price signals than the seasonal rates alone.

Q. Do you have any comments or recommendations about the proposed Residential Prepaid Metering (RPM) rate?

A. The same general comments about the RS rate also apply to the RPM rate – i.e., the need to decouple revenue from sales, institute inclining block rates, reduce the number of adjustment clauses, and provide dynamic pricing options. The proposed monthly customer charge is much too high, particularly in view of the fact that LG&E is marketing the meters primarily to lower-income customers. Witness Butch Cockerill referred to the cost of the meters when answering Question No. KDOE-5 about why the monthly charge is being set so high. In general, KDOE believes it is a nice thing when one can design rates that conform to a COSS, but only if there are not good reasons to depart from it. This is one situation where there are compelling reasons of equity and efficiency to do so. The RPM monthly customer charge – i.e., the sum of the prepaid metering facilities charge and the basic customer charge – should be set equal to or below the level of the RS monthly customer charge, and the costs should be recovered via a higher RPM energy charge. In the present case, that would imply that the RPM customer plus facilities charges should total $3.31 per month or less.

In addition, LG&E should seek to purchase more advanced pre-pay meters that are capable of accommodating seasonal rates and other dynamic pricing options as described above. Response to Question No. KDOE-6.

Q. Do you have any comments or recommendations about the proposed General Service (GS) rate?

A. Some of the same general comments about the RS rate also apply to the GS rate – i.e., the need to decouple revenue from sales, reduce the number of adjustment clauses, provide dynamic pricing options, maintain the monthly customer charge at its present level or reduce it, and retain a seasonal price differential. Because GS customers are much more diverse in nature than residential customers, it may not be appropriate to introduce strongly inclining block rates in this customer class. A slightly inclining block rate structure is probably appropriate.

Q. Do you have any comments or recommendations about the proposed Large Commercial (LC) rate?

A. Some of our general comments apply to the LC rate: the need to decouple revenue from sales, reduce the number of adjustment clauses, maintain the monthly customer charge at its present level or reduce it, and retain a seasonal price differential. The LC rate, however, adds several forms of dynamic pricing. One form is the demand charge, which is seasonally differentiated. A dynamic pricing option is provided via the Large Commercial Time-of-Day (LC-TOD) rate. Another dynamic pricing option is provided via the Curtailable Service Rider (CSR), which is proposed to be available to those LC customers that contract for at least 1,000 kW to be subject to curtailment and yet have a monthly demand less than 2,000 kW. However, in thinking about the latter option, it seems unlikely that there would be many customers with a demand less than 2,000 kW who would choose to place at least 1,000 kW of their requirements at risk of curtailment.

If the utility's goals are to improve the system load factor and assign costs to those customers that cause them, the demand charge is an imprecise tool in comparison to RTP or TOU pricing. The billing demand is a function of the highest load recorded during any 15-minute period in the month, regardless of when it occurs. Proposed Tariff Sheet No. 15. A hypothetical Customer A, whose load shape matches that of the utility, would be billed the same amount as a Customer B with an identical load shape that is inverted, i.e., whose peak usage occurs at night and whose trough occurs during the utility's peak daytime hours. Indeed, Customer B would cost the utility significantly less to serve than a Customer C, whose monthly kWh usage is the same and whose load shape is a horizontal line. Customer C, however, would pay the least under a rate structure that includes a demand charge.

For this reason, KDOE recommends that all demand charges be phased out and replaced by RTP whenever possible. For large customers, the costs of advanced metering and communication equipment is not likely to pose a problem, because these costs can be spread out and recovered over a large number of kWh as compared to the residential sector.

In his response to Question No. KDOE-11, witness Steven Seelye made the following point about real-time pricing for large commercial and industrial customers: "Since a large portion of the Company's generation capacity consists of coal-fired units, its hourly production costs (average cost of fuel and variable operation and maintenance expenses) do not vary from hour to hour as much as utilities with a larger portion of gas-fired generation, making real-time pricing less effective than it might otherwise be for other utilities." KDOE disagrees with this assessment. The price of electricity in the wholesale market in this region, indeed in the United

States as a whole, varies significantly by hour of the day and season of the year. By vigorously promoting RTP and TOU tariffs in all of its customer classes, over the next several years LG&E may be able to shift large amounts of consumption from on-peak to shoulder and off-peak periods and improve the system load factor significantly. This would decrease the amount of on-peak power the company would need to generate or purchase from the wholesale market. The costs of supplying power would remain low, and customers, the local economy and the utility itself would be the long-term beneficiaries. Customers of other utilities throughout the region would also benefit during peak load periods, because LG&E could use RTP to dampen the demand of its own customers rather than adding their demand to a wholesale market that was temporarily facing high prices. Costly price spikes could thereby be prevented or lessened. If the system load shape were eventually to come to resemble that of the hypothetical Customer B in the discussion above, LG&E might even be able to profit by selling excess power to the wholesale market during regional peak periods and buying inexpensive wholesale power during regional low-demand periods.

This reasoning also refutes witness Michael Beer's comments on RTP in his response to Question No. KDOE-16. He stated that "The Company disputes both the assertion that real-time pricing mechanisms necessarily 'more closely couple customer incentives to the ever-changing cost situation faced by the utility,' and the assertion that the 'cost situation faced by the utility' is 'ever-changing.'" Mr. Beer's response contradicts that of witness Steven Seelye, who acknowledged that "Real time pricing would provide customers with a good indication of the cost of serving them at any particular point in time." Response to Question No. KDOE-11. Unless a utility owns only one generating unit, its cost situation will change as a function of system demand. During system peak periods, the utility will need to operate its high-cost peaking units. This in turn will raise its average per-kWh cost of generation at that moment. Another part of the cost situation faced by LG&E is the price of power on the wholesale market, which changes hour by hour and season by season, as illustrated by price data that LG&E itself has provided. RTP allows the utility to pass price information to consumers on a day-ahead or hour-ahead basis. "Real Time Pricing at Georgia Power Company," Michael O'Sheasy, Christensen Associates, PowerPoint presentation to the Committee on Regional Electric Power Cooperation, September 30, 2002, Slide 6. Web link: http://www.westgov.org/wieb/meetings/crepcfall2002/briefing%20materials/ppt/m_osheasy.ppt#257,1,Committee on Regional Electric Power Cooperation . In contrast, LG&E's present rates are fixed in tariff sheets and hardly transmit dynamic price information to customers at all. The CSR and the Demand Conservation Program simply alter customers' consumption without transmitting price information to them and allowing them to choose their level of demand response. Mr. Beer seems to be trying to dispute two observations that are virtually self-evident.

Q. Do you have any comments or recommendations about the proposed Large Commercial Time-of-Day (LC-TOD) rate?

A. Some of our general comments apply to the LC-TOD rate: the need to decouple revenue from sales, reduce the number of adjustment clauses, maintain the monthly customer charge at its present level or reduce it, and retain a seasonal price differential. KDOE also strongly recommends that a RTP option be developed for this customer class to replace the demand charges, which are less well-focused. By this we mean that the proposed LC-TOD rate gives a customer no incentive to shift its peak load from one hour to another within a peak period. That is, a customer whose peak demand occurs at 4:30 pm on a summer afternoon pays the same demand charge as a customer whose peak demand occurs at 8:45 pm. In effect, RTP would replace the TOD concept.

Q. Do you have any comments or recommendations about the proposed Large Power Industrial (LP) rate?

A. Some of our general comments apply to the LP rate: the need to decouple revenue from sales, reduce the number of adjustment clauses, maintain the monthly customer charge at its present level or reduce it, and retain a seasonal price differential. KDOE strongly recommends that a RTP option be developed for this customer class in order to increase the amount of demand response present in the system.

KDOE also has a concern about the wording in the tariff that relates to opting out of the Demand-Side Management Cost Recovery Mechanism (DSMRM). In out data request, we cited KRS 278.285, the statute that applies to demand-side management (DSM) programs, which contains the following provisions in Section (3):

> The commission shall assign the cost of demand-side management programs only to the class or classes of customers which benefit from the programs. The commission shall allow individual industrial customers with energy intensive processes to implement cost-effective energy efficiency measures in lieu of measures approved as part of the utility's demand-side management programs if the alternative measures by these customers are not subsidized by other customer classes. Such individual industrial customers shall not be assigned the cost of demand-side management programs.

Tariff Sheet No. 71, however, which describes the DSMRM, addresses the opt-out provision as follows: "Customers served under Industrial Power Rate LP and Industrial Power Time-of-Day Rate LP-TOD who elect not to participate in a demand-side management program hereunder shall not be assessed a charge pursuant to this mechanism." The clear implication is that *any* industrial customer may opt out of the DSMRM at will. The tariff sheet language does not mention the fact that by statute, the opt-out provision is available only to industrial customers "with energy intensive processes" and which have implemented or committed to implement "cost-effective energy efficiency measures." KDOE clearly identified this problem during the company's most recent integrated resource planning (IRP) case, Case No. 2002-00367.

In responding to this data request, witness Michael S. Beer stated that "the Company notified only the industrial customers with energy intensive processes – not all industrial customers – of their ability to opt out of the program, pursuant to the regulation." Response to Question No. KDOE-14. This response does not address the concern. Mr. Beer did not specify how many customers were contacted, the precise wording of the communication, or how LG&E determined which customers have energy-intensive processes. He did not describe the procedure LG&E uses, if any, to determine whether a customer wishing to opt out has implemented or committed to implement cost-effective energy efficiency measures. In addition, tariff sheets are public documents. Any industrial customer interested in understanding the DSMRM line item that appears on the bill would be able to find the tariff via the Commission's web site. Any customer reading the wording printed there could reasonably conclude that he or she could opt out of the DSMRM at will.

The wording of the tariff sheet should be modified to state that only customers that have energy-intensive processes and that have implemented or committed to implement cost-effective energy efficiency measures may opt out of the DSMRM, pursuant to KRS 278.285(3). In addition, we suggest that the Commission promulgate a regulation to clarify the definition of "energy-intensive processes" and to specify the procedure whereby an industrial customer may demonstrate that it has implemented or committed to implement cost-effective energy efficiency measures. If this is not done, the current lack of clarity will persist, many customers may opt out in contravention to the letter and intent of the statute, and cost-effective industrial DSM activities will be unnecessarily impeded.

Q. Do you have any comments or recommendations about the proposed Large Power Industrial Time-of-Day (LP-TOD) rate?

A. Some of our general comments apply to the LP-TOD rate: the need to decouple revenue from sales, reduce the number of adjustment clauses, maintain the monthly customer charge at its present level or reduce it, and retain a seasonal price differential. KDOE also strongly recommends that a RTP option be developed for this customer class to replace the demand charges, which are less well-focused. By this we mean that the proposed LP-TOD rate gives a customer no incentive to shift its peak load from one hour to another within a peak period. That is, a customer whose peak demand occurs at 4:30 p.m. on a summer afternoon pays the same demand charge as a customer whose peak demand occurs at 8:45 p.m. In effect, RTP would replace the TOD concept.

The same comments we made concerning the wording of the clause related to the DSMRM applies to this tariff as well.

Q. Do you have any comments or recommendations about the Small Capacity Cogeneration and Small Power Production Qualifying Facilities (SQF) tariff and the Large Capacity Cogeneration and Small Power Production Qualifying Facilities (LQF) tariffs?

A. KDOE recognizes that these rates are not generally determined during a general rate case proceeding. We request to be notified when the relevant proceeding comes up in May of this year.

Q. Do you have any comments or recommendations about the Curtailable Service Rider (CSR)?

A. Once a customer signs up for the CSR, it has little or no control over when and how often its service will be curtailed (within the limits specified in the contract). If a customer is curtailed too often during critical production runs, its only options are to pay sizable non-compliance charges and/or go off the CSR tariff. KDOE believes that the RTP approach, whereby each customer can choose its preferred level of curtailment as a function of changing market conditions and short-term production requirements, is a more economically efficient strategy that can yield the same desired effect – improved demand response – while increasing the value provided to customers. The CSR should be replaced by RTP as soon as practicable.

Q. Do you have any comments or recommendations about the Supplemental or Standby Service Rider?

A. KDOE is concerned that the rate of $6.25 per kW of Contract Demand may constitute another economic barrier to customers wishing to install cost-effective CHP systems. See Sean Casten's response to Jay Morrison, "Why We Need Standby Rates for On-Site Generation," *Electricity Journal*, October 2003, pp. 74-84. We hope this rider will be considered in the context of the SQF and LQF proceeding that is planned for May of this year.

Q. Do you have any comments or recommendations about the Demand-Side Management Cost Recovery Mechanism, Tariff Sheet No. 71?

A. Yes, the wording in the first paragraph that relates to the industrial customer opt-out procedure needs to be modified to conform to KRS 278.285(3), as discussed above.

Q. Does this conclude your prepared testimony?

A. Yes.

VERIFICATION

I, Geoffrey M. Young, state that I have read the foregoing testimony and that to the best of my knowledge and belief all statements and allegations contained therein are true and correct.

Geoffrey M Young

Geoffrey M. Young, Assistant Director
Division of Energy
Department for Natural Resources

Subscribed and sworn to before me by Geoffrey M. Young, this the 23rd day of March, 2004.

Jonnie Lee Rutledge

NOTARY PUBLIC

My Commission Expires: Dec. 2, 05.

CERTIFICATE OF SERVICE

I hereby certify that on the 23rd day of March, 2004, a true and accurate copy of the foregoing **Testimony of Geoffrey M. Young** was mailed, postage pre-paid, to the following:

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