

Mary Klos
Klos Energy Consulting
W404 County Road K
Brillion, WI 54110
mary.klos@klosenergy.com

February 13, 2011

Public Utilities Commission of Ohio

RE: Comments In the Matter of the Commission's Review of Time-Differentiated and Dynamic Pricing Options for Retail Electric Services, Case No. 12-150-EL-COI

My name is Mary Klos. I have designed, evaluated and participated in dynamic pricing rate offerings for over thirty years. I appreciate this opportunity to share my experiences with the Ohio PUC to help create the best dynamic pricing options for the people of Ohio.

I am fortunate that I have lived in Wisconsin Public Service Corporation's (WPSC) electric service territory for most of my life since they were among the earliest providers of time-of-use (TOU) rates to the Residential class. Their first Residential TOU rate was offered in the late 1970's. I have participated in their two-tier TOU rate for much of the last thirty years and I am currently enrolled in their new three-tier TOU rate. I applied to participate in their Critical Peak Pricing (CPP) rate, but learned that the area I live in did not have the necessary metering/communications capability to allow my participation in CPP.

I also had the opportunity to work for WPSC over much of the last thirty years in a variety of areas: load forecasting, demand-side management planning and market research. In these roles I was responsible for estimating the impacts of their Interruptible rates for large industrial customers and their Direct Load Control (DLC) and TOU rates for residential customers. I also helped design two CPP rate offerings: one for mid-sized commercial customers and one for residential customers. The residential design work included managing a pilot to test the use of controllable thermostats and color-changing orbs as technology enhancements to the rate.

For the last several years I have worked as a program evaluation consultant for Summit Blue Consulting and Navigant, specializing in the impact evaluation of demand response and dynamic pricing programs from across North America. I served as project manager for the evaluation of the residential Real-Time Pricing (RTP) programs at Ameren Illinois and Commonwealth Edison.

With this background and experience with dynamic pricing, I would like to share some of what I have learned with the Ohio PUC in response to their current investigation.

(6)(a) Should EDUs offer consumers with advanced or interval meters time-differentiated or dynamic

retail rates to ensure that such options are available to such consumers? In addition to or in conjunction with Commission-approved time of use programs, should such choices include dynamic pricing options that reflect time varying PJM Interconnection, LLC (PJM) market prices?

Customers want choice, but they also want simplicity. They want simplicity both in the design of an individual rate and in the effort to compare optional rates. It is my opinion that the best balance between choice and simplicity would be the offering of just two options to all small customers: flat rate and real-time pricing (RTP).

Although I have had fun in my career trying to design the optimal revenue-neutral TOU or CPP rate to encourage customer participation and maximize system benefits, I have come to the conclusion that there is no optimal design. All TOU and CPP (and Peak Time Rebate (PTR)) rate designs are an attempt to put actual market prices into buckets and then average prices across the buckets. This will always create sub-optimal market information for the customer to respond to. Then, to try to make things a little better, we often try to offer a variety of time periods and price differentials for the customer to choose from. This effort ends up adding complexity to the selection process, making it a more expensive and daunting task for the typical customer.

Real-time pricing is the only option that gives accurate price information to customers for all times of the year. One of my personal peeves as a consumer of TOU rates is that they generally continue to have high price peak periods even during spring and fall months when I know from my experience that market prices are not that high during those times of the year. Why should I keep altering my daily behavior when it really doesn't make much difference to the system? The solution to that design problem is something closer to a CPP or PTR rate that focuses on high price hours, but here the problem is that all program benefit has to come from changing behavior during a relatively few number of hours. Given that we use electricity 8,760 hours per year but the number of CPP hours is usually less than 300, it is hard to get the overall bill, and consequent customer behavior, to change unless the price during those few hours is set very high – often higher than real market prices. It requires a distortion of market prices.

It seems that the major objection to offering real-time prices is the perceived complexity of the design. Yes, it is more complex to create or re-construct a bill when every hour has a different price. However, if the smart meter is already in place then today's modern computing environment can make the calculations simple. While expensive to put into place, both Ameren Illinois Utilities and Commonwealth Edison have shown that the continuing program benefits outweigh the initial implementation costs after only a few years (see Navigant's evaluation of these two programs at the Web links listed below).

Illinois Commerce Commission, Case 06-0693

Ameren Illinois Utilities, Evaluation of Power Smart Pricing 2008-2010

<http://www.icc.illinois.gov/downloads/public/edocket/292827.pdf>

<http://www.icc.illinois.gov/downloads/public/edocket/292828.pdf>

<http://www.icc.illinois.gov/downloads/public/edocket/292829.pdf>

Illinois Commerce Commission, Case 06-0617

Commonwealth Edison, Evaluation of Residential Real Time Pricing 2007-2010

<http://www.icc.illinois.gov/downloads/public/edocket/296671.pdf>

Some believe that rates which change every hour would be too complex for customers to react to. However, CNTenergy, an affiliate of Community Neighborhood Technology in Chicago has shown that customers can be given simple and understandable instructions, like 'use less electricity on hot summer afternoons' and benefit from RTP rates. CNT implemented the RTP program for Ameren Illinois Utilities.

Commonwealth Edison links both energy and capacity charges directly to PJM market prices, giving customers the optimal opportunity to respond to and benefit from market prices without any distortions. Not only does the direct linkage of RTP rates to PJM market prices optimize resource allocation for everyone, but it also takes away all the risk incumbent on the distribution utility when they try to design a sub-optimal TOU or CPP or PTR rate that is both beneficial to customers and revenue-neutral for themselves.

So, RTP rates have been proven to be cost-effective to implement and understandable to customers. Plus, they are the best possible reflection of actual market prices day and night all year round.

(6)(b) Should EDUs offer consumers with advanced or interval meters two-part dynamic pricing, such that the offer provides a dynamic price signal and a hedging or insurance component that addresses consumer risk aversion?

Again, I think it is best to keep things simple and not include any hedging or insurance component with the RTP offering. Any hedging or insurance adjustment would be very arbitrary since it is based on market price variations over the long term and no one has a good sense of what market price equilibrium is over the long-term, especially when looking into the future. An RTP customer has the power to change their usage patterns and mitigate any sharp market price increases, particularly if they happen only during peak periods. If prices change dramatically across all hours, it is likely that it would not take long for the higher energy costs to be reflected in the flat rate, also, so it does not put RTP participants at a great disadvantage.

(6)(c) Are there specific forms of dynamic or time-differentiated pricing which should be offered to different groups or classes of customers who have the requisite metering?

I believe that Real-Time Pricing should be the only EDU offer to large customers with a demand of 500 kW or larger. It is important that the largest customers receive the correct price signals directly from the market since they have the greatest ability to adjust their loads and optimize the system. Customers 500 kW or smaller should have the option of the flat rate or RTP.

One additional consideration here is for the smallest customers. The RTP rate should not have any additional customer charge. If it does, the extra charge could easily offset the volume of benefits that the smallest customers are able to generate for themselves on RTP rates and make them not want to participate. This can particularly affect low income customers who are often low usage customers.

Imagine a budget-conscious customer that uses electricity mainly for refrigeration and lighting, the two

most common electric uses. The cost of refrigeration immediately drops when moving from a flat rate to RTP because its use is constant across all hours and half of all hours are nights or weekends, the lowest price times. Flat rates are based on averages which assume that most use is during the higher price times. Lights will certainly be needed during winter peak hours, but winter peak prices tend to be much lower than summer peak prices so RTP does not cause a significant problem here. The use of CFLs and LEDs can also help the customer reduce their winter lighting costs substantially. This low use customer could easily reap a small amount of savings from RTP rates, but only if they are not forced to pay an additional customer charge based on average use patterns across all customers.

(6)(d) Should the Commission support well designed field tests by EDUs and/or CRES providers of additional time-differentiated or dynamic pricing options and various approaches to and combinations of consumer education, targeted messaging, information feedback, and/or enabling technology to better assess what options may work best for consumers and have the greatest beneficial impacts?

As much as I enjoy doing field tests and pilots of dynamic pricing options, I have to be honest here and say that I really don't think there is a need to do any more. Doing a well designed field test is very expensive. Many have already been done across the country and impact results are consistent. Here are a few rules-of-thumb that I have concluded from the variety of dynamic pricing evaluations I have done and reviewed:

1. Customers do respond to dynamic pricing rates.
2. Adding technology helps them respond more.
3. Residential RTP customers reduce their peak loads by approximately 0.25 kW per customer on average.
4. Combining that with automatic air-conditioning direct load control can increase the peak reduction to 1 kW.
5. Adding an in-home energy monitoring device will reduce annual consumption by a few percent.

We have a good idea of how customers respond when they are on dynamic pricing rates. We don't need to study that any more. However, we do need to develop better information in two other areas:

1. How can we reduce the technology costs of delivering RTP programs that include information feedback and enabling technologies?
2. How can we improve consumer education and targeted messaging to increase customer participation in RTP programs?

Reducing costs and improving participation rates are the two areas that should receive additional study .

(6)(e) What barriers, if any, are there to CRES providers offering dynamic pricing to consumers with advanced or interval meters? What steps, if any, should the Commission consider to encourage or to remove barriers to CRES providers offering packages that include dynamic pricing?

No comment.

(6)(f) Should EDUs and/or CRES providers develop and implement a plan to better inform eligible

consumers regarding time-differentiated and dynamic pricing options? If so, what should such plans include?

No comment.

(7) To facilitate bill comparisons, the Commission is seeking comments on the development of a standardized approach for providing customer bill comparisons, including reports showing possible benefits of adoption of dynamic price offerings for consumers.

It is difficult to create a good bill comparison for a time-of-use or dynamic pricing option for any particular customer without knowing their individual load curve. Results will also vary significantly by month, so it is important to do a comparison for a full year.

If a full year of previous hourly load data is available for a customer, then the historical use should be used to create the bill comparison. If it is not available, then there are two options.

If the comparison needs to be shown on a printed piece of paper, like a bill, then the best that can be done is a comparison based on the class average load curve. This would need to include prominent footnotes on how much the difference can vary based on individual customer usage patterns. Some information on the type of customer that can save would also be helpful.

If the comparison can be interactive, like on a Web page, then the customer should be asked which major appliances they own and what their typical usage patterns are for each appliance. With this information, reasonable enduse load shapes can be created to get a good estimate of the household load shape. The same information can then be used to offer tips on how to get even more savings. For example, if they have air-conditioning that they say is used all summer long the expected load shape can follow a normal weather pattern. But the customer can also be shown how much money they could save if they used a programmable thermostat to shift some afternoon air-conditioning load to overnight pre-cooling.

Just as important as showing bill comparisons to potential dynamic pricing customers is reporting bill savings on a timely basis to customers who are participating in dynamic pricing. For over twenty years, Wisconsin Public Service Corporation has included the following footnote on the monthly bill for each TOU customer: "Congratulations! You have saved \$x.xx for the period mm/dd/yyyy to mm/dd/yyyy by being on your current rate." Of course, if there is no savings that month, the 'Congratulations' is dropped. TOU participants in focus groups repeatedly report how much they look forward to and depend on that message each month as a way of tracking how they are doing and making changes if needed.

(8)(a) Is the development of such an on-line application reasonable and practical?

I think that the development of an interactive application that queries customers about their appliance holdings and usage patterns would be both reasonable and practical. It would be inexpensive to develop and I believe it would be fairly accurate. It would also be able to provide critical information on what alternative bills would be without changing usage patterns and what alternative bills could be

with some shifting of load.

It is very important to compare savings on RTP without changes in usage to savings on RTP after taking different actions to maximize bill savings. The savings should reflect changes in both energy and capacity charges. To keep the number of options from becoming overwhelming to the customer, it is helpful to be offering only a single rate alternative, RTP, instead of a variety of TOU, CPP and PTR rates.

(8)(b) Are comparable applications already commercially available? If so, what steps, if any, should the Commission consider to facilitate appropriate customer access to such applications?

I don't know what is commercially available.

(8)(c) What elements would help make such an application useful to customers?

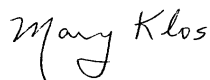
It has to show bill comparisons with no change in usage patterns as well as potential savings with changes in usage patterns. It also has to reflect both energy and capacity charges.

(8)(d) Are there alternative approaches which the Commission should consider that could provide customers comparable or superior capabilities for comparing different forms of pricing and different competitive retail service offerings?

No comment

Thank you for the opportunity to comment on these matters.

Sincerely,

A handwritten signature in cursive script that reads "Mary Klos".

Mary Klos
mary.klos@klosenergy.com

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/13/2012 5:21:51 PM

in

Case No(s). 12-0150-EL-COI

Summary: Comments Comments from Mary Klos electronically filed by Ms. Mary A Klos on behalf of Klos, Mary A Ms.