PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17105-3265

Public Meeting held September 28, 2006

Commissioners Present:

Wendell F. Holland, Chairman
James H. Cawley, Vice Chairman
Bill Shane
Kim Pizzingrilli
Terrance J. Fitzpatrick

Investigation of Conservation, Energy Efficiency Activities, and Demand Side Response by Energy Utilities and Ratemaking Mechanisms to Promote Such Efforts	Docket No. M-00061984

INVESTIGATION ORDER

BY THE COMMISSION:

Through this order the Commission initiates an investigation into reasonable, cost-effective programs that electric distribution companies, electric generation suppliers, energy services providers and other stakeholders can implement to help retail electric customers conserve energy or use it more efficiently. This investigation shall also include an analysis of needed advanced metering infrastructure and appropriate ratemaking mechanisms that may remove any barriers to the development of energy efficiency, conservation, and demand side response. To expedite the investigation, we will reconvene the Demand Side Response Working Group ("DSR Working Group") for

the purpose of investigating the specific issues addressed in this order. The Director of Operations will schedule meetings of the DSR Working Group, assign Commission staff to this investigation, develop a list of issues to investigate, solicit comments from interested parties, and provide specific recommendations to the Commission at the conclusion of the investigation.

BACKGROUND

At the outset, we emphasize that this should not be an open-ended investigation with generic recommendations. These topics have been studied and explored for many years and we do not envision this investigation to be a "re-education" of what these programs are or a report on their generic pros and cons. Rather, we hope that the DSR Working Group will provide us with specific recommendations for implementation.

We have reviewed the reports prepared by the DSR Working Group in 2004 on the subjects of technology deployment, cost-recovery, benefits of demand side response, and consumer surveys.[1] We appreciate all the hard work that the original DSR Working Group put forth over the years beginning with roundtable discussions in November 2000. At that time the DSR Working Group included representatives from electric distribution companies, electric generation suppliers, the Offices of Consumer Advocate and Small Business Advocate, Industrial Energy Consumers of Pennsylvania and the PUC. The collective work product of this group is very much appreciated and the information should be used as a starting point for moving forward. While this work product and these reports have been helpful in educating the Commission about these issues, we request that the DSR Working Group provide specific policy recommendations on the subjects addressed in this order.

[1] *See* http://www.puc.state.pa.us/electric/electric_dmndsideresp.aspx.

We also note that the Commission is currently reviewing comments and reply comments from the en banc hearing on Policies to Mitigate Electric Price Increases at Docket No. M-00061957. The DSR Working Group is encouraged to review the record in the en banc proceeding and incorporate any recommendations therein.

DISCUSSION

As most homeowners and businesses are well aware, energy prices have been at all-time highs. Natural gas prices continue to hover at historically high levels, and very little respite is in sight. For example, the U.S. Energy Information Administration is projecting a 2007 residential average natural gas price of $13.53/Mcf.[2] While this price is slightly lower than the 2006 price ($13.95/Mcf vs. $13.53/Mcf), it is some 26% higher than the 2004 national average of $10.75/Mcf and 166% higher than the *inflation adjusted* price in 1995[3] (the unadjusted price would be several times higher). These national averages appear generally to track our experience in the Commonwealth.

While electric customers in many parts of the Commonwealth are protected— for now—from the increases in electric generation prices, other areas, such as Pike County, are directly feeling the effects. Consequently, this Commission has begun a separate investigation to review steps that may be appropriate in order to mitigate the hikes that have occurred, as well as those that may occur upon the termination of price protection in the 2009-2010 timeframe.

Even though this Commission and many energy utilities have various ongoing programs to encourage customers to conserve or shift usage to lower cost periods, and to assist them in identifying ways of doing so, we need to explore additional means to

[2] EIA Short-Term Energy Outlook, August 8, 2006.
[3] EIA, Annual Energy Outlook 2006 (Dec. 12, 2005). The above figures are in 2004 dollars.

promote energy efficiency, conservation, and demand side response in an expedited manner, as is discussed in greater detail in the following sections.[4] As part of this investigation, the DSR Working Group will consider what type of advanced metering infrastructure and rate making mechanisms are most conducive to these programs.

A. Efficient Energy Usage and Conservation

As we anticipate another winter of high energy prices, there is an acute need to find ways to assist utility customers in dealing with record high bills. Any comprehensive plan must necessarily include efforts to encourage customers to reduce their use of energy through conservation and energy efficiency. Although this Commission has been diligent in assuring that utility rates are only as high as they need to be to permit the utility to recover its actual costs and no more, those actual costs continue to increase at an alarming rate. And, for the most part, the increases are outside the control of Pennsylvania's energy utilities and this Commission. The best way to reduce a customer's energy bill in this environment of intensifying world energy prices is by continuing to educate customers on how to use less energy and to efficiently use only what is required.

There are numerous benefits that will accrue from pursuing an aggressive conservation program. While individual customers will obviously achieve benefits by reducing their overall energy bill, some studies indicate that such reductions can actually reduce natural gas prices for all customers.[5] Similar studies regarding electricity pricing

[4] For example, utility regulators from Pennsylvania, New Jersey, Delaware, Maryland, and the District of Columbia, in collaboration with federal and regional authorities, are members of the Mid-Atlantic Distributed Resources Initiative which advocates accelerated implementation of distributed energy resources in the region.

[5] A 2003 study found that increasing energy efficiency by 5% could reduce natural gas prices by as much as 20%. Neal, Shipley & Brown, *Impact of Energy Efficiency & Renewable Energy on Natural Gas Markets*, American Council for an Energy Efficient Economy, September 12, 2003.

have indicated that encouraging individual customers to reduce their usage at peak times can result in reductions in overall wholesale prices.[6]

One crucially important source of conservation assistance is the utilities themselves. They may be in the best position to know which customers would most benefit from assistance and what programs might work best on their system. Certainly, all of the major energy utilities have at least some programs to help customers, particularly low income customers, use energy more efficiently. Efficiency and conservation efforts can also be encouraged or provided by regional transmission organizations, the private sector, or non-profit organizations. This includes non-profit organizations created with specific conservation and efficiency goals, such as the New York State Energy Research and Development Authority and various sustainable energy boards.

We would like recommendations from the DSR Working Group on specific energy efficiency and conservation measures that can be implemented in a cost-effective manner for all customers. In the current environment, utility efforts to assist their customers to reduce usage (thereby helping them to reduce their bills) is as essential a part of the utility's public service obligation as is securing adequate sources of supply or maintaining a safe and reliable distribution network.[7]

B. Demand Side Response

Another means of reducing energy costs is the reduction of energy use during peak periods of the day or year, when energy costs are highest. Currently, most electric utility

[6] *See* Eric Hurst, *Barriers to Price Responsive Demand in Wholesale Electricity Markets*, Edison Electric Institute, June 2002; Severin Borenstein, *The Trouble With Electricity Markets (and some solutions)*, University of California Energy Institute, January 2001.
[7] *See* 66 Pa.C.S. §§ 1301, 1501.

customers pay a rate that is constant throughout the day, and even throughout the year, and thus they have little or no economic incentive to help reduce energy costs during peak cost periods. Many jurisdictions throughout the United States are increasingly looking at aligning the wholesale electricity costs of providing power with retail rates through innovative pricing programs, such as time-of-use rates, critical peak power rates, seasonal rates, and hourly pricing programs.

These programs include financial incentives that reward consumers for reducing energy usage during peak cost periods or for reliability purposes. These can be in the form of passive programs that permit the utility or a third party to reduce demand automatically (e.g., water heating or HVAC control programs), or voluntary/active programs (e.g., economic or emergency load response programs).

An example of this type of approach that the DSR Working Group should consider is a program offered by Toronto Hydro-Electric System Limited, which is referred to as the "10/10 Program." One of the most interesting aspects of this 10/10 Program is that it focuses on rewarding residential and small commercial customers for achieving specific conservation goals. Many believe that demand response programs have been the domain of large commercial and industrial customers. These larger customers are presumed to be the most cost conscious and the most responsive to economic signals. Because of this assumption, the potential for small customers to also participate in demand response programs has been greatly discounted. Some highlights of the 10/10 Program are:

- All residential and small commercial (< 50 kW) customers are eligible.
- The customers are automatically enrolled.
- No special metering is required.
- Customers that reduce their consumption during the 10/10 Program period (July 15 to September 15) by 10 percent or more will be given an additional 10 percent rebate off their total bill for the program period.

- Customers that achieve less than the 10 percent reduction will not be eligible for any rebates, although they still have achieved the benefits of lower electricity charges.
- The costs of the program are allocated only to the two eligible customer classes.

The 10/10 Program also includes a potential for a Lost Revenue Adjustment Mechanism to address the loss of distribution revenues.

Proponents of 10/10 Program believe that it may encourage residential and small commercial customers to modify their electricity usage and become more aware of energy conservation and its benefits. They also hold that there will be a "spill over" benefit from other customers who may not achieve the targeted 10 percent reduction yet still benefit from lower electricity bills.

The DSR approaches of the type described above can reduce energy bills and enhance overall system reliability. The DSR Working Group should provide specific recommendations on the types of programs that should be implemented.

C. Advanced Metering Infrastructure

Many demand side response strategies cannot be implemented without development of a robust and advanced metering infrastructure ("AMI") that can provide, at a minimum, hourly or sub-hourly metering information on a timelier basis. For example, time-based rates and many load response programs cannot be effectively administered without the availability of actual hourly usage information.[8]

[8] The DSR Working Group should address the effects of the Commission adopting flat rates instead of time-of-use rates for default service. Would other benefits of AMI (for example, reduced operational costs, improved customer service, quicker emergency response, improved reliability, better capability to participate in demand response

Implementation of advanced metering systems can provide many secondary benefits such as enhanced reliability, improved customer service, and reduced operating costs. Often, these secondary benefits alone justify the long term investment in such metering systems.[9] Given the potential for these systems to help mitigate energy price increases and improve service in the future, we should examine more closely the potential benefits and costs for all utilities in Pennsylvania to develop our advanced metering infrastructure. The DSR Working Group should make specific recommendations regarding implementation, if appropriate, and look for new ways to communicate this information to utilities, customers, competitive energy suppliers, and other customer representatives.[10]

D. Ratemaking Mechanisms

The DSR Working Group should also explore the effective ratemaking mechanisms that remove any existing disincentives to utilities' pursuit of aggressive energy efficiency, conservation or demand side response initiatives.

Traditionally, a utility's base rates have been established on the basis of a typical (or "pro forma") level of test year sales. If the utility increased sales over that test year level, it increased its annual revenues, and, if all other parts of the ratemaking calculation remained the same, it earned a greater return for its investors. Conversely, if sales decreased in relation to test year levels, the utility collected fewer revenues than anticipated and, in turn, earned a lower return than it was given an opportunity to earn by the Commission in its rate case. For some utilities, lower sales may affect their ability to maintain a safe and reliable infrastructure. These ratemaking facts have led commentators

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programs and retail choice alternatives, and overall economies of scale in AMI) exceed the costs of such an investment in our utility infrastructure?

[9] Reply comments of the Pennsylvania Department of Environmental Protection on Policies to Mitigate Potential Electricity Price Increases, Docket No. M-00061957.

[10] Again, we do not envision this investigation as a generic exploration of the pros and cons of energy efficiency or demand side response programs. We encourage the DSR Working Group to examine the recent Federal Energy Regulatory Commission Staff Report on the Assessment of Demand Response & Advanced Metering at Docket No. AD-06-2-000 for general background information and resource guide.

to observe that utilities not only have no incentive to assist their customers to reduce usage, but actually have a strong incentive to increase usage on their systems, especially between base rate cases.[11]

Several major studies have investigated ratemaking policies and programs that can be implemented to reduce or eliminate this potential barrier to aggressive promotion of conservation and energy efficiency by utilities.[12] One mechanism that has been identified as useful in removing any disincentives has been dubbed "revenue decoupling," which has been described as preventing financial erosion from future reductions in consumption so that utilities will not be harmed by those reductions when revenues fall below the levels on which the utility's base rates were set.[13] The imposition of a decoupling mechanism permits a utility to recover its fixed and construction-related costs in the face of continual reductions in usage caused by the installation of more energy efficient appliances and prudent conservation steps. It is argued that the value to the customer of the increased conservation steps promoted or made possible by the utility far outweighs any additional charge resulting from the decoupling mechanism.

Such mechanisms have been implemented by some states.[14] It is particularly noteworthy that an eminent environmental advocacy group like the Natural Resources Defense Council would advocate the adoption of ratemaking mechanisms to separate a utility's margin recoveries from throughput, thereby enabling the utility to aggressively promote conservation programs to help customers reduce their consumption.

On the other hand, such mechanisms have also been criticized by various parties. Criticisms include concerns that decoupling mechanisms create more volatile and

[11] Joint Statement of the American Gas Association and the Natural Resources Defense Council on Energy Efficiency at 2 (July 2004).
[12] *See* National Regulatory Research Institute ("NRRI") Report 06-06: *Revenue Decoupling for Natural Gas Utilities* (April 2006). Based at Ohio State University, NRRI is the non-profit research arm of the National Association of Regulatory Utility Commissioners.
[13] *Id*., at 9-10.
[14] *Id*., at 4-6.

unpredictable rates and reduce a utility's incentive to offer innovative services. There are also concerns about public reaction, in part because the concept may be difficult to explain to customers.[15] The DSR Working Group should fully investigate these concerns and provide specific recommendations for future action, if appropriate.

CONCLUSION

An investigation into efficient energy usage, conservation, demand side response, advanced metering infrastructure, and appropriate ratemaking mechanisms will permit the Commission to review available evidence of the necessity, costs and benefits of various programs and approaches. Doing so generically will prevent the specific facts and circumstances of individual utilities from skewing the results. The initiation of this investigation is not intended to preempt or prejudge any proposals by individual utilities or other stakeholders. Such requests, if they come before us, will be considered on the record before us in that proceeding; **THEREFORE:**

IT IS ORDERED THAT:

1. The Commission initiate an investigation of:

(a) Energy utilities' current efforts to assist their customers to reduce usage, increase energy efficiency, and implement demand side response programs (including implementation of time-based rates), and whether additional cost effective and reasonable steps can be taken to increase those efforts materially (and, if so, the nature of those activities and the costs that the utility or other entity and customers would incur to implement them); and

[15] *Id.*, at 18.

(b) Whether Advanced Metering Infrastructure should be developed by Pennsylvania utilities, and, if so, the timeline and standards that should be established for the implementation of these systems for the various customer classes and the methods of sharing this information with customers, competitive energy suppliers, and other customer representatives.

(c) Whether revenue decoupling or other similar mechanisms are necessary or appropriate to assure that energy utilities, and in particular natural gas utilities, aggressively encourage and implement conservation and energy efficiency in their service territories, and whether such mechanisms are fair to customers and otherwise in the public interest. At a minimum, the following legal and policy questions should be addressed: whether such mechanisms are legally permissible in Pennsylvania; whether such mechanisms are actually necessary in order to obtain the participation of energy utilities in conservation promotion activities; and whether the costs of implementing such mechanisms outweigh any benefits, and, if the benefits are greater, what type of decoupling approach is optimal.

2. The Director of Operations reconvene the DSR Working Group for the purpose of investigating the issues addressed in this order. The Director shall schedule meetings of the DSR Working Group, assign Commission Staff to this investigation, provide a specific list developed by the working group of issues to investigate, solicit comments from interested parties, and provide specific recommendations to the Commission at the conclusion of the investigation, where working group consensus is attained. Where working group consensus is not attained, Commission Staff shall develop a strawman proposal for Commission review and allow parties to comment on the staff recommendation. The Director shall also develop a schedule for this

investigation that will permit the Commission to issue findings and conclusions on or before May 15, 2007.

3. A copy of this order be published in the Pennsylvania Bulletin.

BY THE COMMISSION,

James J. McNulty,
Secretary

(SEAL)
ORDER ADOPTED: September 28, 2006
ORDER ENTERED: October 11, 2006