D R A M

DEMAND RESPONSE *and* **ADVANCED METERING** *Coalition*

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Public Utilities Commission of Ohio
Docketing Division
180 East Broad Street
Columbus, Ohio 43215-3793

Re: CASE NO. 05-1500-EL-COI

Dear Public Utilities Commission:

Enclosed is an original and (15) copies of Comments on behalf of the Demand Response and Advanced Metering Coalition (DRAM) in response to the questions raised in the Commission's Order of December 14, 2005 in Case No. 05-1500-EL-COI.

DRAM recognizes that the enclosed comments are being filed one business day late. This delay was due to ensuring that the information provided in the comments was complete and accurate. We do not believe that any other party is harmed by the one-day delay and we request that the Commission deem the comments to be timely filed.

DRAM's comments are limited to the Sections of the subject Order that deal with Smart Metering.

Please contact me if there are any questions on the enclosed comments or on this filing.

Thank you,

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Comments

Of the

Demand Response and Advanced Metering Coalition (DRAM)

To the

Public Utilities Commission of Ohio

In Response to

Questions Put Forth in the December 14, 2005 Commission Order

In

Case 05-1500-EL-COI

February 3, 2006

I. Introduction

The Demand Response and Advanced Metering Coalition (DRAM) is a national organization focused on education and outreach on demand response and its enabling technologies and products. DRAM's members[1] include the leading providers of advanced metering and other technologies as well as the leading providers of demand response capacity. We applaud the Public Utilities Commission of Ohio for its prompt action to implement EPACT Section 1252 and we welcome this opportunity to provide comments on the questions that the Commission has put forth.

The Commission's Order of December 14th, 2005 infers that the Commission will convene a technical conference to follow receipt of the responses to the current set of questions. DRAM would also welcome an opportunity to be a participant in this Technical Conference and could provide additional detail regarding the current questions as well as on other topics that the Commission will explore as part of its investigation of demand response and advanced metering.

DRAM would also note another potential component of the Commission's activities pursuant to Section 1252 of EPACT. That Section contains many provisions related to demand response and its enabling technologies, in particular time-based pricing and advanced metering. It also goes beyond those aspects of demand response, however, and discusses other types of demand response. In this regard, the Commission should consider viewing demand response more holistically in its investigation so that additional demand response options are explored and presented as candidates for the State's demand response portfolio and the portfolios of various parties within the State.

II. Questions

[1] DRAM Members participating in these comments include: eMeter, Landis + Gyr, DCSI/TWACS, Echelon, SmartSynch, Silver Spring Networks, Electric City Corporation, Comverge, Invensys, and EnerNOC.

DRAM has tried to respond to the Commission's questions as directly as possible and to provide detail where possible. However, as noted above, DRAM expects that it would be able to provide more information and more detail as part of the Technical Conference that the subject Order envisions.

A. What is the effect of "smart" or real time pricing metering on customers" demand response?

The question the Commission poses is two-fold, i.e. the effect on the customer of dynamic pricing and the effect on the customer of having new and better information about their usage and their bill. The other aspect of the question is what type of customer is being contemplated – mass market or large C/I.

There is a substantial body of research available that demonstrates that customers will indeed respond to time-varying prices. DRAM recommends two studies among others on this question. One is a survey of the literature and past research efforts on customer acceptance. The other is the final report on the Statewide Pricing Pilot (SPP) recently completed in California.[2]

The importance of the information as well as the price signal should not be discounted. While electricity consumers have become used to receiving and having detailed information on their purchases of most other goods and commodities, they still in most cases receive a simple piece of information about their electricity purchases – the total amount of kWh they have used during a billing period and the total amount they should pay.

In order to provide electricity consumers with time-based pricing and better information about their bill, it is necessary to capture more information about how and when those

[2] King and Chatterjee, "Predicting California Demand Response", Public Utilities Fortnightly, July 1, 2003 (also available at www.dramcoaliton.org) and Charles River Associaites, California Statewide Pricing Pilot Final Report, March 16, 2005 (available at http://www.energy.ca.gov/demandresponse/documents/group3_final_reports/2005-03-24_SPP_FINAL_REP.PDF.

consumers are using electricity. Through deployment of an advanced meter, with interval measurement and communications capabilities that allow data to be provided promptly and regularly to the electricity provider, the consumer and other appropriate parties, usage is tracked and captured and used to enable a variety of time-based pricing options, ranging from time-of-use (TOU) to Critical Peak Pricing (CPP) to Real Time Pricing (RTP).

B. What are the latest developments in "smart metering" or real-time pricing metering technologies?

The metering industry has undergone significant transformation in recent years, The industry has moved from offering automated meter reading (AMR), a technological breakthrough that automated the collection of meter data and reduced the costs of performing such, to offering advanced metering systems that not only enable time-based pricing and demand response but also provide a substantial basket of non-demand response benefits, particularly in the area of system operations and customer benefits. Examples of the latter include improved outage management and call center operations.

As with any other industry such as computers or telecommunications, the advanced metering industry is not static. It continues and will continue to be in a constant state of evolution, as companies conduct research and develop and bring improved technology and products to the market place.

1. What is the current cost of these technologies?

Figures as high as $4-500 are often cited as the cost per customers of advanced metering. Costs in this range could be correct for the cost for metering for large business customers who require more functionality and capabilities. Costs in this

range could be correct for advanced metering systems used with mass market customers in limited participation pilot programs.

Such cost figures are not correct, however, for the per customer cost for a mass deployment to all mass market customers of a utility. That cost, based on a summary of data collected for several eastern U.S. utility procurements, is more on the order of $100 per customer, inclusive of meters, communications, training, IT support, and installation.

2. Are any associated communications equipment required? Please clarify as to cost and availability of communications equipment.

The definition of an Advanced Metering System includes the requirement that the system be capable of communications between the meter and the utility data management systems, including CIS and billing systems. According to DRAM's definition, the system should be capable of allowing metered data to be received by the utility on at least a daily basis.

There are many different technology options for providing this communications ability. They include wireless, RF and power line communications. While employing different technology approaches, each of these options is capable of providing the functionality and capabilities which policy makers should be working to put in place and which utilities are seeking to have.

The last statement could be said to be key from a policy making standpoint. Policy makers should not attempt to pick a winning technology when it comes to advanced metering and the communications systems that enable such. In order to allow utilities to take advantage of the full product variation in the market place (and the competition that exists because of it), policy makers must focus on designating the functionality and capabilities to be provided or enabled by an

advanced metering system, and then let utilities make the most appropriate choice of product/technology based on the specifics of their situation.

C. Should Smart Metering be made mandatory?

The idea of a mandate normally evokes cautious and sometimes strong reactions among those upon whom the mandate falls. If the question is instead posed as "should all customers be provided with a smart meter?" a different approach to addressing this issue is possible.

First, Subsection 1252 (a) of EPACT appears to be written from the standpoint of creating a customer right to a choice of time-based pricing options and to the meter that enables such[3]. This is reinforced by the language later in Subsection (a)[4] which states that customers in restructured states not being served by the traditional electricity supplier are nevertheless entitled to receive to have the same choice, i.e. time-based pricing and advanced metering.

Second, while not all customers may initially choose to be placed on time-based pricing, it is difficult in advance to know which customers will do what. Customers also change their usage requirements and patterns over time; they also move in and out of their dwellings. By enabling all premises with such meters, and enabling any or all of them to choose time-based pricing options, the broadest and fullest range of demand response capability is put in place, and the longest term, institutionalized demand response resource is established.

Third, the cost implications of metering deployment cannot be ignored, and may in fact be the predominant factor in addressing this question. Deploying advanced metering to

[3] Section 1252 (a) (14) (A) states that "The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology"
[4] Section 1252 (a) (14) (E) states that " In a state that permits third-party marketers to sell electric energy to retail electric consumers, such consumers shall be entitled to receive the same time-based metering and communications device and service as a retail electric consumer of the electric utility".

mass market customers on an ad hoc basis has been demonstrated to cost up to 10 times as much per customer as compared to a mass deployment. The most significant cost differential comes in the installation costs. The costs of deploying manpower and equipment on an ad hoc basis (both temporally and geographically) is significantly higher than the cost (per unit) of installation via a mass deployment.

Fourth, it is worth noting that the cost differential cited above is the major factor behind the failure of competitive metering as a framework/system for spurring the installation of advanced metering in the U.S. Whereas some years ago some states thought that competitive metering would accelerate meter deployment, the opposite has been the case. Retail marketers and other candidates for competitive provision of metering have found such to be cost prohibitive and little to no metering activity has taken place under competitive regimes. As a result, most of the states which originally pursued competitive metering have rescinded or are in the process of rescinding the regulations and statutes on this.

Finally, one issue not raised by the Commission in its questions is an important one related to this question – cost recovery. If utilities are to be the parties that deploy advanced metering, which DRAM strongly believes should be the case, they should be provided with assurance of full rate recovery for the costs of undertaking such. Given the importance of having advanced metering in place – not only to enable demand response but to capture all of the reliability, system operations and customer service benefits – DRAM believes that it may be appropriate to also consider incentives for utilities to move forward with metering deployments.

1. **If all customers were required to have time-of-day or real-time pricing metering, what would the cost be to the company/customer?**

   DRAM understands this to be a question about cost per customer, which it has addressed in its answer to Question A above. DRAM would however address another issue that this question raises, i.e. that different

meters may be required or sought to enable different types of time-based pricing. DRAM contends that this is not the way to think about advanced metering, particularly in light of EPACT Section 1252. The idea behind advanced metering is to install/deploy meters that would enable a wide variety of time-based pricing options, both those know now and those that may be developed in the future. Advanced metering systems that measure usage in at least hourly intervals and which allow daily data collection/retrieval of data provide the flexibility for customers and policy makers to choose from a wide variety of pricing options.

2. How would the results of such metering be displayed to the customer? On the customer's bill? Would the customer billing format have to be changed to accommodate this information?

Frequent feedback to electricity consumers can be a powerful tool in helping them to understand the nature of their usage patterns and the varying cost of their usage according to the time they use it. Such frequent feedback can better help them to manage their usage and as a result, their electricity bill.

However, the power of providing time-based usage together with a price signal to the customer via the customer's regular monthly bill should not be underestimated. After all, to charge a customer on a time of usage basis, all that is required is to a) measure the usage in a way that it can be segregated according to certain intervals, and b) let the customer know ahead of time what the price will be for usage during those intervals. This would require a change to the billing format.

D. What sort of "real-time prices" would be displayed? At the cost to the EDU or CRES Provider?

The term "real-time" pricing can mean different things as it is used in the electricity industry today. It is most often thought of as true real-time pricing, i.e. pricing that varies on an hourly basis, with little advanced notice provided to customers. But it can also encompass other forms of pricing such as hourly day ahead.

The other issue which may be implied with the question is whether or not customers require pricing information to be available to them if they are not on true real-time pricing. The capability to do such exists, particularly in terms of providing such on a secure web site that the customer can access to see real time consumption and pricing information.

As with anything else, however, there is a cost associated with establishing such a real-time flow of information to mass market customers and the cost-effectiveness of doing such will depend on the specifics of the situation.

The bottom line is that there are numerous ways to get price signals to customers. They range from generic notices provided via traditional media (TV, Radio and Print) to email, text messaging, and telephone options to "orbs" that glow different colors based on the pricing and/or usage period to sophisticated systems whereby end use equipment is set to recognize and automatically react to a an electronically received price signal. Electricity customers vary in what "flavor" of demand response product they may want and how and how often they want to receive price signals. The Commission should consider this "one-size-does-not-necessarily-fit-all" rule as it proceeds in its investigation.

E. How would the customer be expected to make use of the information?

Customers have demonstrated in many different programs and pilots[5] that they will modify their usage in response to price, with mass market customers having greater price elasticity than larger business customers. These modifications will come not only in the form of shifts of usage from peak period to off-peak periods, but in overall usage reductions, as some of the usage reduced on peak is not replace off-peak.

For years, mainly in the context of energy efficiency, one has heard the mantra "how can one manage what one cannot measure". With advanced metering and a variety of time-based pricing options, customers will finally have the information they need to be able to not only practice demand response but also become smarter, more efficient electricity consumers overall.

F. Should smart metering be voluntary and installed at the customer's request? Please clarify the cost-effectiveness and the benefits of this technology and the extent to which such technologies might be deployed.

Relative to the first question posed, for reasons stated in DRAM's responses to Questions B and C above we believe that it is in the interest of all parties, particularly from a cost standpoint, to pursue a mass deployment of advanced metering. This would not therefore involve customers volunteering to have an advanced meter.

The other related issue is whether time-based pricing should be voluntary for the customer, or perhaps more pointedly, what is the definition of "voluntary". Placing customers on time-based pricing whereby they can opt out of such rates at any time should be considered to be voluntary – the customer has the choice to opt-out of the rate and is not required to be on the time-based option.

[5] Among the sources to be considered include King and Chatterjee, "Predicting California Demand Response", Public Utilities Fortnightly, July 1, 2003 (also available at www.dramcoaliton.org) and Charles River Associaites, California Statewide Pricing Pilot Final Report, March 16, 2005 (available at http://www.energy.ca.gov/demandresponse/documents/group3_final_reports/2005-03-24_SPP_FINAL_REP.PDF.

The second question posed is important and deserves more extended treatment via the Technical Conference. This is because one of the challenges that is present in the consideration of demand response and advanced metering is that the benefits of advanced metering being in place are not only in the demand response area. Advanced metering, both the functionality it provides and the data is yields, brings with it new benefits to the utility in terms of optimizing the system, deferring expansion costs, reducing theft, enhancing outage detection and restoration, allowing remote connection and disconnection, and reducing costs such as meter reading. It can also open new opportunities to the utility and the customer whereby the former provides the latter with new products and services. It can be the case, and indeed has been the case with some utilities, that this "bundle" of non-demand-response benefits is almost enough in and of itself to make an advanced metering deployment cost-effective.

There can be other beneficiaries from an advanced metering deployment, including one sector that is important in the State of Ohio. Advanced metering systems provide an entirely new foundation upon which to build a competitive retail market. Advanced metering systems increase the accuracy and timeliness of data collection and transmittal and can improve the settlement process. The existence of the meters at customer premises also allows competitive retail marketers to offer new types of retail price products to customers.

Finally, there is the issue of leakage of benefits, which occurs where benefits occurs to parties outside of those who paid for the installation of the metering that created the benefit. This can happen in the case of some of the benefits and beneficiaries discussed above. But it can also happen in the case of customers not participating in demand response options (who benefit by wholesale price dampening resulting from other customers who do participate). It can also happen when parts of an interconnected region undertake demand response and others on the same system benefit as a result.

III. Conclusion

Policy makers at all levels of government, and from all regions of the country, increasingly signal their interest in, if not desire for, increased levels of demand response. The next step is to begin the work of putting demand response pricing, programs and products in place, together with the deployment of the technologies such as advanced metering that are necessary for this to occur. With this proceeding, the State of Ohio has taken this next step. The Demand Response and Advanced Metering Coalition commends the Commission for its initiative and looks forward to being of assistance to as it proceeds.

IV. For more information

More information on demand response and advanced metering can be found on the DRAM Website at www.dramcoalition.org.

For questions regarding this submittal, please contact:

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