

Demand Response and Advanced Metering Provisions in Energy Policy Act of 2005

Regulator's Perspective

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Energy Policy Act of 2005 Requires Investigation But Not Adoption of Smart Metering

Section 1252 – “Smart Metering”

- Each state regulatory authority AND each non-regulated utility (e.g. marketer or municipality) shall conduct an investigation (to be announced within 1 year of the date of EPA 2005) and issue a decision within 2 years* as to whether it is appropriate for each utility to:
 - Offer each of its customer classes, and provide individual customers upon request, time-based meters and communications devices which would enable their customers to participate in time-based pricing schedules
- State regulatory agencies which have previously considered or enacted smart metering standards within 3 years of EPA 2005 are exempt

Possible Smart Metering Options that Might be Considered

- “Time-of-Use Pricing”- where kWh price varies throughout the day according to a preset schedule (which may vary seasonally)
- “Critical Peak Pricing” – pre-set prices for peak days, with discounts for reducing consumption in peak periods
- Real-time pricing – where prices change hourly with wholesale market
- Payments to large load customers who agree in advance to reduce their load in high demand periods (essentially payments for providing DR).

PURPA Background and History *

- This is the third go-around with PURPA standards
 - The original PURPA standards in the 1978 Act
 - The PURPA standards in EPCRA 1992
 - The five new PURPA standards in EPCRA 2005

*Source: PURPA Background and History slides taken from presentation by Grace D. Soderberg to NARUC in Washington, DC, November 11, 2005

PURPA Background and History

A PURPA standard requires each State commission to consider and determine, with respect to each electric utility for which it has ratemaking authority, whether or not it is appropriate to implement the standard for the purposes of carrying out the title.

PURPA Background and History

- Consideration must be made after public notice and hearing.
- The determination must be in writing and based upon findings included in the determination and upon evidence presented at the hearing.

PURPA Background and History

- Is the standard appropriate to implement PURPA Title I's purposes?
- The Title I purposes are to encourage:
 - Conservation of energy supplied by electric utilities
 - The optimization of the efficiency of use of facilities and resources by electric utilities
 - Equitable rates to electric consumers

PURPA Background and History

- Consideration and determination of a PURPA standard is mandatory.
Adoption and implementation is **NOT** mandatory.
 - But State can determine that the standard is not appropriate to implement
 - State can determine that a standard is appropriate to carry out the purposes of the title, but decline to implement the standard

PURPA Background and History

- Consideration and determination of a PURPA standard – *continued*
 - State can determine the standard is appropriate and implement it OR
 - State can determine a standard is not appropriate to implement because of otherwise applicable State law

PURPA Background and History

- Missing the deadlines for determination of a PURPA standard triggers a requirement that the consideration and determination take place in the first subsequent rate proceeding.

EPAct 2005 PURPA Standards



- The five new PURPA standards are:
 - Net Metering
 - Fuel Sources Standard
 - Fossil Fuel Generation Efficiency Standard
 - Smart Metering (with Time-Based Rate Schedules)
 - Interconnection Standard

The Importance of Demand Response

- Electric service can be thought of as a three-legged stool
 - The generation facilities that produce the commodity
 - The transmission and distribution facilities that deliver the commodity
 - The end users that consume the commodity
- In the absence of price responsive behavior by end users, we have to “build the church for Easter Sunday”

The Importance of Demand Response (cont)

- The benefits of a well-developed demand response resource accrue both to states (and regions) that have restructured their electric industries, and those that have not
 - Reduce the need for investment in generation resources
 - Reduce the need for investment in delivery (transmission and distribution) resources
- Provide electric service to consumers in a more efficient manner
- Price-responsive customers can lower the average price they pay for electricity

The Importance of Demand Response (cont)

- In restructured markets, price-responsive behavior can provide additional benefits in that it can “discipline” the market
 - Protect against market power behavior
 - Mitigate price volatility in energy markets
 - Allow for relaxation price caps in energy markets
 - Reduce need for capacity market

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Smart Metering Standard

- Fundamental Challenge for State Regulators
 - **Identify the combination of metering technology and pricing structure that will best lead to the development of the demand response resource**
 - Consistent with state-specific circumstances

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Smart Metering Standard (cont)

- Meeting this challenge requires a consideration of the costs and benefits of various approaches
- Costs and benefits are likely to vary across customer classes
- Let's consider four customer classes
 - **Large C&I**
 - **Medium C&I**
 - **Small C&I**
 - **Residential**

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Smart Metering Standard (cont)

- What are the characteristics of each class that provide important information?
 1. % of total customer base vs. % of total energy consumption
 - Indicates “bang for the buck”
 2. Currently installed metering technology
 - Obvious cost implications
 3. Status of competitive options
 - Will the market or regulated electric companies play the lead role?

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Smart Metering Standard (cont)

- As an example, let's compare the large C&I customer class with the residential class in MA
- % of total customer base vs. % of total energy consumption
 - Large customers represent less than 0.5% of total customers, but consume almost 40% of total energy
 - Residential customers represent almost 90% of total customers, but consume less than 40% of total energy
- Currently installed metering technology
 - Large customers have metering that is capable of recording hourly consumption
 - Residential customers meters typically record monthly consumption
- Status of competitive options
 - Almost 70% of large customer load is served by the competitive market
 - About 7% of residential load is served by the competitive market

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Smart Metering Standard (cont)

- Clearly, one size is not likely to fit all
- For example:
 - If one were to phase-in a demand response approach, large customers represent the biggest bang for the buck
 - The cost of installing meters for each residential customer (2.25 million in MA) would lead one to explore options that do not require comprehensive metering installations
 - Distribution companies are likely to play a key role in developing the demand response resource for residential customers, whereas we can rely on the market to provide this resource for large customers

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Smart Metering Standard (cont)

- Pricing options for state regulators:
 - Time-of-use
 - Critical peak
 - Real time
 - Credits for peak load reduction
- Restructured and non-restructured states will likely evaluate these options differently, particularly for large customers that have competitive options
 - Restructured states could implement a mandatory hourly-price Basic Service product for large customers, with the understanding that the customers have the option to look to the competitive market for a hedged product
 - This option would not exist in non-restructured states, thus making a mandatory “supply” rate truly mandatory

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Smart Metering Standard (cont)

- Metering options for state regulators:
 - The widespread installation of advanced metering, with costs likely recovered through base rates
 - Tariffs that make advanced metering available to customers upon request
 - These currently exist in MA

[Conclusion]

- The process for developing standards is likely to be relatively resource intensive
- However, given the importance of developing the demand response resource, the time and effort required is likely to be well-spent