BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking on policies and practices for advanced metering, demand response, and dynamic pricing.	Rulemaking 02-06-001 (Filed June 6, 2002)

JOINT ASSIGNED COMMISSIONER AND ADMINISTRATIVE LAW JUDGE'S RULING PROVIDING GUIDANCE FOR THE ADVANCED METERING INFRASTRUCTURE BUSINESS CASE ANALYSIS

1. Summary

This ruling provides policy direction regarding the minimum level of system functionality that should be supported by an advanced metering infrastructure (AMI) for purposes of analyzing full-scale AMI deployment. The ruling also addresses which customer classes should be included in the AMI analysis, clarifies the costs to be included in the base case AMI analysis, directs the Working Group 3 (WG3) moderator to schedule a workshop to review sources of avoided costs for valuing peak demand reductions, seeks input on the need for a workshop on methodologies for estimating demand response, and clarifies the meaning of "out of scope" impacts.

2. Background

The purpose of this proceeding is to increase the level of demand response, in particular price responsive demand, "as a resource to enhance electric system

reliability, reduce power purchase and individual consumer costs, and protect the environment."[1] California's energy agencies have already provided some guidance on the types of rates and technologies to be supported by the AMI system in the vision statement appended to Decision 03-06-032 as Attachment A. The rate options and technology functionalities outlined in the vision statement can be utilized as the framework for the AMI system functionality and business case analysis.[2]

3. Guidance on AMI System Functionality

Agency staff from the California Energy Commission (CEC) and this Commission report that participants at the January 28, 2004 AMI workshop requested additional direction on the types of rate structures the AMI system should support and more specificity on the functional requirements of the full scale AMI system for purposes of developing the AMI business cases. Agency staff report that the AMI system functionality requirements are driven by the type of rate structures and programs the system is expected to support.

The purpose of an AMI system is to provide the metering and communications capability to economically support a wide variety of rate and associated customer service options. The ideal AMI system will maximize the amount of demand response that can be achieved cost effectively. We do not know *a priori* the particular mix of rates, programs, and customer service functions that will meet this cost effective ideal. Thus it makes sense to analyze an AMI system that supports a wide variety of potential rate structures and

[1] Ruling 02-06-001, p. 1.

[2] Key bullets related to AMI business case are reprinted as Appendix A of this ruling.

customer service options that the Commission may approve over the useful life of the AMI system.

As indicated in the original rulemaking, we prefer to take a broad view of the investigation of AMI. The Commission can always authorize a narrower scope AMI system implementation if warranted, but it is more difficult to expand functionality if it has not been considered in the business case analysis. Therefore, the AMI system analyzed should support the following six functions:

a. Implementation of the following price responsive tariffs[3] for:
   (1) Residential and Small Commercial Customers (200kW) on an opt out basis:
      (a) Two or Three Period Time-of-Use (TOU) rates with ability to change TOU period length;
      (b) Critical Peak Pricing with fixed (day ahead) notification (CPP- F);
      (c) Critical Peak Pricing with variable or hourly notification (CPP-V) rates;
      (d) Flat / inverted tier rates.
   (2) Large Customers (200 kW to 1 MW) on an opt out basis:
      (a) Critical Peak Pricing with fixed or variable notification;
      (b) Time-of-Use;
      (c) Two part hourly Real-Time Pricing.
   (3) Very large customers (over 1 MW) on an opt out basis:

[3] The costs of developing an AMI system capable of supporting a variety of rate designs and customer service applications must be separated from the actual costs associated with implementing a specific new tariff. If a party chooses to estimate the benefits of a particular dynamic rate in its AMI analysis, the benefits and the costs of implementing that rate (such as customer education or billing changes) should be separated from core costs of developing and installing AMI hardware, software, and communications systems.

(a) Two part hourly Real-Time Pricing;

(b) Critical Peak Pricing with fixed or variable notification;

(c) Time-of-Use Pricing.

b. Collection of usage data at a level of detail (interval data) that supports customer understanding of hourly usage patterns and how those usage patterns relate to energy costs.

c. Customer access to personal energy usage data with sufficient flexibility to ensure that changes in customer preference of access frequency do not result in additional AMI system hardware costs.

d. Compatible with applications that utilize collected data to provide customer education and energy management information, customized billing, and support improved complaint resolution.

e. Compatible with utility system applications that promote and enhance system operating efficiency and improve service reliability, such as remote meter reading, outage management, reduction of theft and diversion, improved forecasting, workforce management, etc.

f. Capable of interfacing with load control communication technology.

We recognize that there may be additional levels of "system" functionality or technical requirements that need to be specified by the utility and other parties to ensure accurate cost comparisons between different AMI systems. These may relate to the frequency of meter polling, scalability of IT infrastructure, the amount of data storage in meters versus other collection points in the network, and communications systems needed to support these functions. These specifications are best handled by the experts and we urge the "functionality" subcommittee set up by WG3 to develop a matrix that includes any additional specifications necessary to implement the policy direction above.

4. Customer Classes to be Included in the AMI Analysis

At the workshop, additional questions surfaced about which customer classes are to be included in the AMI system cost benefit analysis. Some parties indicated they plan to propose deployment of an AMI system serving only the mass market (residential and small commercial customers).

We clarify that the Commission anticipates that full scale implementation of AMI will provide **all** customers in **all** rate classes with the option to choose between dynamic and static rate structures. We are not interested in an analysis of the costs and benefits of AMI that is limited to residential or small commercial customers because system benefits inure to all customer classes that cannot be separated from the costs of AMI deployment. While we can compartmentalize the costs of AMI and load control systems to specific customer classes, it is not possible to isolate the benefits from demand response to one or more customer class since the system-wide benefits of demand response will flow to all classes. Thus the costs and benefits to of deploying an AMI system all customer classes must be quantified.

5. Costs to be Included in Base Case AMI Scenario

The September 19, 2003 ruling indicated that "(t)he Base Case must identify the actual costs of maintaining the existing metering and related support systems" and "identify the any significant investments in new metering systems made during the last five years." (See September 19, 2003 Assigned Commissioner and Administrative Law Judge's Ruling, Attachment A, p. 7.) Despite this guidance, at the January 28, 2004 workshop, some parties proposed to develop incremental cost estimates for the full and partial deployment of AMI scenarios without describing their estimates of maintaining their metering and billing systems in the base case. This information is important because without

knowing what additional costs utilities have recently incurred and are expect to incur in the next several years for existing metering, billing, and other back office systems, it is impossible to develop an accurate estimate of the incremental costs of partial or full scale AMI deployment. Thus we expect the scenario analysis to include a full accounting of all of the costs of installing and maintaining the metering and related support systems for the base case, partial deployment and full scale AMI deployment scenarios.[4]

6. Methodology to use in the Valuation of Demand Response Benefits

At the workshop some participants suggested there was a need to hold a workshop to develop a common methodology to quantify avoided costs for use in valuing peak demand reductions. We agree that a workshop on this topic would be useful and direct the WG3 moderator to schedule a workshop to review potential sources of avoided costs for inputs in the AMI business case analysis.[5]

---

[4] For example, the analysis should identify whether separate metering, billing, customer information, and communication systems will serve each customer class or a common system will serve all customers, whether new systems will be developed or existing systems can be modified to achieve the same functionality and the potential cost of these options.

[5] We note that on February 6, 2004, the Assigned Commissioner in R.01-08-028 (the Energy Efficiency Rulemaking) issued a ruling setting a workshop in June 2004 to address issues surrounding avoided costs. (See http://www.cpuc.ca.gov/WORD_PDF/RULINGS/33895.doc.) We do not intend to duplicate the purpose of that workshop here but hope that the workshop in this docket will allow us to provide guidance on what avoided cost inputs should be utilized in the AMI business case analysis on a more expedited schedule than would be possible were we to await the results of the workshop in R.01-08-028.

Participants also suggested that a workshop be held to develop a common methodology to estimate the level of demand response that could be available by customer class as a result of the AMI deployment scenarios. We are not sure if having a workshop on the demand response impact methodology is appropriate now given that WG3 is focused on reviewing load impacts from the Statewide Pricing Pilot and WG2 members are focused on developing estimates of demand response impacts for the March 31, 2004 filing. We solicit input from parties on the need to hold a workshop on methodologies for estimating demand response in the near term. Parties should provide their input to the WG3 moderator via email (Mmesseng@energy.state.ca.us) with a copy to ALJ Cooke (mlc@cpuc.ca.gov) by February 25, 2004.

7. "Out of Scope" Impacts

Some parties appear to have misunderstood the "out of scope" categorization of impacts referenced in the November 24, 2003 Assigned Commissioner's Ruling. "Out of scope" is intended to mean the impact will not be relevant to the decision of this proceeding. "Out of scope" does not mean "difficult to quantify" or "unrelated to utility cash flow" as some parties appear to suggest. We expect that impacts will be assessed at some level, whether using rigorous quantitative methods or more qualitatively. To the extent that assessments have to rely upon limited data (creating greater uncertainty about a particular cost or benefit), it is appropriate to document these instances in the actual AMI analysis.

Therefore, **IT IS RULED** that:

1. The advanced metering infrastructure (AMI) system analyzed should (at a minimum) support the functions set forth in Section 3 herein.

2. The costs and benefits of deploying an AMI system to all customer classes must be analyzed in the business case.

3. Expected costs for maintaining existing metering, billing, and other back office systems must be quantified as part of the base case scenario.

4. The Working Group 3 (WG3) moderator should schedule a workshop to review potential sources of avoided costs for inputs into the business case analysis.

5. Parties should provide input to the WG3 facilitator by email (Mmesseng@energy.state.ca.us) with a copy to ALJ Cooke (mlc@cpuc.ca.gov) by February 25, 2004 about the need to hold a workshop in the near term on methodologies for estimating demand response.

6. Difficult to quantify impacts should still be assessed in the AMI analysis, even if a more qualitative assessment is required to do so.

Dated February 19, 2004, at San Francisco, California.

/s/ MICHAEL R. PEEVEY	/s/ MICHELLE COOKE by LTC
Michael R. Peevey	Michelle Cooke
Assigned Commissioner	Administrative Law Judge

Appendix A

Previous Guidance on the Scope of the AMI Analysis

From Decision 03-06-032, Attachment A, p. 3.

- Technologies to enable demand response may also provide other customer service benefits including outage detection and management, power quality management, and other information capabilities
  …
- Customers should have the ability to choose voluntarily among various tariff options, including:
  - Very large customers (over 1 MW): Hourly real-time pricing (RTP), critical peak pricing (CPP), or Time-of-Use (TOU) Pricing
  - Large customers (200 kW to 1 MW): CPP, TOU or RTP
  - Residential and small commercial customers (under 200 kW): CPP, TOU or flat rate (the latter with an appropriate hedge for risk protection)"

  …
- All customers should be provided an advanced metering system capable of supporting a TOU tariff or better, if cost-effective, and with minimal hardware upgrades necessary to choose among various dynamic tariffs.
- All customers who choose to should be able to conveniently access their usage information using communications media (e.g., over the internet, via on-site devices, or other means chosen by the customer and respectful of potential privacy concerns)
- The broadest possible range of metering and communications technologies that can enable demand response should be encouraged (i.e., optionality), but all technologies should be compatible with utility billing and other back-office systems

Additional guidance on the definition of full scale AMI implementation was presented in the draft analysis framework attached to the September 19, 2003 ruling. Full implementation was described as follows:

> Assumes full system implementation (gas and electric) over a five-year period with support for TOU, Critical Peak Pricing and two-part RTP for the largest C / I customers. Implementation should specify an advanced metering infrastructure (AMI) with interval metering (minimum 15 minute intervals) and remote communication capability. Useful modifications to outage detection

and other operating systems that are associated with the use of the AMI system should also be specified.

CERTIFICATE OF SERVICE

I certify that I have by mail, and by electronic mail to the parties to which an electronic mail address has been provided, this day served a true copy of the original attached Joint Assigned Commissioner and Administrative Law Judge's Ruling Providing Guidance for the Advanced Metering Infrastructure Business Case Analysis on all parties of record in this proceeding or their attorneys of record.

Dated February 19, 2004, at San Francisco, California.

/s/ KRIS KELLER
Kris Keller

N O T I C E

Parties should notify the Process Office, Public Utilities Commission, 505 Van Ness Avenue, Room 2000, San Francisco, CA 94102, of any change of address to insure that they continue to receive documents. You must indicate the proceeding number on the service list on which your name appears.

* *

The Commission's policy is to schedule hearings (meetings, workshops, etc.) in locations that are accessible to people with disabilities. To verify that a particular location is accessible, call: Calendar Clerk (415) 703-1203.

If specialized accommodations for the disabled are needed, e.g., sign language interpreters, those making the arrangements must call the Public Advisor at

(415) 703-2074, TTY 1-866-836-7825 or (415) 703-5282 at least three working days in advance of the event.