BEFORE THE ARIZONA CORPORATION COMMISSION

MIKE GLEASON
Chairman
WILLIAM A. MUNDELL
Commissioner
JEFF HATCH-MILLER
Commissioner
KRISTIN K. MAYES
Commissioner
GARY PIERCE
Commissioner

IN THE MATTER OF SMART METERING REQUIREMENTS OF SECTION 1252 OF THE ENERGY POLICY ACT OF 2005

DOCKET NO.E-00000A-06-0038

DECISION NO. 69736

ORDER

Open Meeting
July 24 and 25, 2007
Phoenix, Arizona

BY THE COMMISSION:

FINDINGS OF FACT

Introduction

1. The Energy Policy Act of 2005 requires each state regulatory authority to consider certain PURPA[1] standards, including one on Time-based Metering and Communications, included in the section entitled Smart Metering. The Commission may decline to implement the standard or adopt a modified standard. The Commission was required to begin its consideration by August 8, 2006, and must complete its consideration by August 8, 2007. On January 23, 2006, Staff filed a memo in Docket Control to open a docket on Smart Metering.

2. A workshop was held on June 7, 2007. Participants in the Workshops included representatives from utilities, government agencies, advocates for renewable resources, product

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[1] Public Utility Regulatory Policies Act of 1978.

suppliers, and others. Written comments were received by Arizona Public Service Company ("APS"), and Tucson Electric Power Company ("TEP")/UNS Electric, Inc.

PURPA Standard on Time-Based Metering and Communications

3. In Section 1252 Smart Metering, the Energy Policy Act of 2005 (EPACT) requires each state regulatory authority to consider a PURPA standard on Time-based Metering and Communications. The standard would apply to utilities with greater than 500,000 MWh in annual retail sales. The Commission may decline to implement the standard or adopt a modified standard. The standard is as follows:

(14) TIME-BASED METERING AND COMMUNICATIONS. –

(A) Not later than 18 months after the date of enactment of this paragraph, each electric utility shall offer each of its customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology.

(B) The types of time-based rate schedules that may be offered under the schedule referred to in subparagraph (A) include, among others –

(i) time-of-use pricing whereby electricity prices are set for a specific time period on an advance or forward basis, typically not changing more often than twice a year, based on the utility's cost of generating and/or purchasing such electricity at the wholesale level for the benefit of the consumer. Prices paid for energy consumed during these periods shall be pre-established and known to consumers in advance of such consumption, allowing them to vary their demand and usage in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall;

(ii) critical peak pricing whereby time-of-use prices are in effect except for certain peak days, when prices may reflect the costs of generating and/or purchasing electricity at the wholesale level and when consumers may receive additional discounts for reducing peak period energy consumption;

(iii) real-time pricing whereby electricity prices are set for a specific time period on an advanced or forward basis, reflecting the utility's cost of generating and/or purchasing electricity at the wholesale

level, and may change as often as hourly; and

(iv) credits for consumers with large loads who enter into pre-established peak load reduction agreements that reduce a utility's planned capacity obligations.

(C) Each electric utility subject to subparagraph (A) shall provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.

4. Although the 18-month utility compliance deadline contained in paragraph A of the standard appears to be in conflict with the two-year statutory deadline for the Commission to consider the standard, the Commission can modify the utility compliance deadline in the standard to be a different time period.

5. In addition, there is a related provision in the Energy Policy Act of 2005 which states the following:

(i) TIME-BASED METERING AND COMMUNICATIONS. - In making a determination with respect to the standard established by section 111(d)(14), the investigation requirement of section 111(d)(14)(F) shall be as follows: Each State regulatory authority shall conduct an investigation and issue a decision whether or not it is appropriate for electric utilities to provide and install time-based meters and communications devices for each of their customers which enable such customers to participate in time-based pricing rate schedules and other demand response programs.

6. The Commission is required to consider the three purposes of PURPA in its determination of whether to adopt the Time-based Metering and Communications standard. The three purposes of PURPA are as follows:

- conservation of energy supplied by electric utilities,
- optimal efficiency of electric utility facilities and resources, and
- equitable rates for electric consumers

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7. Information regarding the timing of electric usage may enable customers to modify usage patterns, and the associated price signals may provide an incentive to modify usage patterns or to conserve. When customers shift load to lower cost periods, utilities may utilize their facilities more efficiently. Electric rates can become more equitable for customers by charging prices that are more in line with the underlying cost at the time of consumption. However, both the benefits and the costs of Advanced Metering and Communications should be considered before requiring full-scale implementation.

Background

8. EPACT uses all of these terms: "Advanced Metering and Communications," "Smart Metering," and "Time-based Metering and Communications."

9. Advanced Metering and Communications is usually known as Advanced Metering Infrastructure (AMI). AMI should not be confused with Automated Meter Reading (AMR) which only refers to the meter reading process which includes drive-by and hand-held meter reading systems. AMR meters have one-way communication. AMI is a fixed network system that can read meters at any time and support a variety of complex rates.

10. A Smart Meter can be defined as an interval meter with two-way communication capability that can relay data from the meter to the utility or vice versa. The end-point devices must be capable of being upgraded remotely, and the interval data need to be collected at least daily. However, the functionality of AMI can also be achieved with a "dumb" meter/smart network by moving the processing out of the meters and into the communication network to be shared by many meters.

11. Capabilities of Smart Meters and AMI include on-demand meter reading, outage management, critical peak pricing support, direct load control program support, demand response program support, pre-paid metering support, virtual disconnects, and others.

12. Time-based Metering and Communications consists of meters and systems that enable customers to participate in time-of-use (TOU), critical peak pricing (CPP), or real-time pricing (RTP) programs by either recording consumption during specific time periods or providing information to customers about market costs at specific times.

Discussion and Analysis

13. Some Arizona electric distribution utilities already offer time-based rates to their customers, and some of those utilities have already begun to introduce AMI in their service areas. The AMI technology varies substantially among the utilities. It appears that one technology may be most feasible for a densely populated area, but a different technology would be used in a rural area.

14. APS has begun implementation of an AMI system that consists of a cellular wireless public network with hub meters and client meters. Each hub meter is in contact with multiple client meters. These meters are considered Smart Meters. TEP has begun using a dumb meter/smart network approach. It uses one-way communications from the radio frequency meter but derives interval data which are passed back to the meter data management system. The investment is in the network rather than in the meter. Trico Electric Cooperative uses a cellular AMI system for its TOU, commercial, and interruptible customers. Trico's largest customers can obtain real time information through Trico's website. Half of Trico's meters are read remotely, and half are read using a drive-by system.

15. Both benefits and costs of AMI and time-based rates should be considered. Benefits of AMI include reduced meter reading costs, reduced meter reading access issues, ability to remotely program meters to facilitate rate changes, flexibility in billing cycles, and fewer field visits. Fewer field visits result in less mileage, reduced fuel consumption, fewer emissions, and possibly fewer vehicular accidents. AMI provides a tool for innovative rate design, a source for load data and system planning data, a gateway for future services the utility may choose to provide, increased reliability because of outage and restoration notification, a decrease in energy theft with the ability of looking at energy patterns, and a change in the utility mindset from re-active to pro-active.

16. Costs of AMI can include the costs for the meters, meter installation, a Meter Data Management System, data management labor, communications, back office software and servers, the integration of the AMI system to other systems, repairs to customer equipment, and other associated costs. As of February 2007, APS had purchased 29,872 AMI meters at an average cost

of about $97 per meter. The communication cost per AMI meter was about $0.15 per month, compared to a meter read cost of about $0.90 per conventional meter. During a six-month period, APS spent about $700,000 for integration of the AMI system and the Customer Information System.

17. AMI represents a significant investment by utilities and is still an evolving technology. Utilities should investigate their needs and those of their customers to determine if the benefits of AMI outweigh the costs and which AMI technology would be most appropriate to use.

18. Benefits of time-based rates may include an improved load shape for the utility with a reduced peak and the potential to defer capacity construction, increased reliability, better alignment of rates to costs, mitigation of price increases, an ability for the customer to save, increased customer satisfaction, and potential environmental benefits. Negative outcomes of time-based rates could include increased off-peak usage, increased load on the call center, and customer dissatisfaction.

19. Costs related to TOU include costs for meters, meter installation, meter reading, back office and operational support, customer education, marketing, training customer service staff, and other items. TEP has found the cost to read a TOU meter manually to be $2.24 per read, compared to $0.56 for the aggregated meter read cost for all meter reads within the TEP service territory. Changes to the TOU rates require reprogramming the meter through field visits. The costs for CPP include all of the costs for TOU plus the costs for communication to customers, the costs for the collection of interval data (including the costs for the interval meters, the costs for obtaining the data, and additional back-office cost to process the data), costs for increased customer education, and acceleration of depreciation of meter stock. Costs for RTP include the costs for TOU and CPP plus higher costs for communication to customers.

20. Utilities should offer voluntary time-based rate schedules that can provide benefits to both customers and utilities. However, each utility should be allowed to determine which type(s) of time-based rate schedules are appropriate for which customer classes in its area.

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Staff Recommendations

21. Staff recommends that the Commission adopt a modified version of the PURPA standard on Time-based Metering and Communications.

22. The modified standard would be as follows:

(14) TIME-BASED METERING AND COMMUNICATIONS. –

(A) ~~Not later than 18 months after the date of enactment of this paragraph,~~ Within 18 months of Commission adoption of this standard, each electric distribution utility shall offer to appropriate customer classes, and provide individual customers upon customer request, a time-based rate schedule under which the rate charged by the electric utility varies during different time periods and reflects the variance, if any, in the utility's costs of generating and purchasing electricity at the wholesale level. Within 18 months of Commission adoption of this standard, each electric distribution utility shall investigate the feasibility and cost-effectiveness of implementing advanced metering infrastructure for its service territory and shall begin implementing the technology if feasible and cost-effective. ~~The time-based rate schedule shall enable the electric consumer to manage energy use and cost through advanced metering and communications technology.~~

(B) The types of time-based rate schedules that may be offered under the schedule referred to in subparagraph (A) include, among others-

(i) time-of-use pricing whereby electricity prices are set for a specific time period on an advance or forward basis, typically not changing more often than twice a year, based on the utility's cost of generating and/or purchasing such electricity at the wholesale level for the benefit of the consumer. Prices paid for energy consumed during these periods shall be pre-established and known to consumers in advance of such consumption, allowing them to vary their demand and usage in response to such prices and manage their energy costs by shifting usage to a lower cost period or reducing their consumption overall;

(ii) critical peak pricing whereby time-of-use prices are in effect except for certain peak days, when prices may reflect the costs of generating and/or purchasing electricity at the wholesale level and when consumers may receive additional discounts for reducing peak period energy consumption;

(iii) real-time pricing whereby electricity prices are set for a specific time period on an advanced or forward basis, reflecting the utility's cost of generating and/or purchasing electricity at the wholesale level, and may change as often as hourly; and

(iv) credits for consumers with large loads who enter into pre-established peak load reduction agreements that reduce a utility's planned capacity obligations.

(C) Each electric utility subject to subparagraph (A) shall provide each customer requesting a time-based rate with a time-based meter capable of enabling the utility and customer to offer and receive such rate, respectively.

23. Staff's proposed standard would apply to all electric distribution companies in Arizona that are regulated by the Commission. This would be in contrast to the PURPA standard that applies only to electric distribution companies with retail sales of more than 500,000 MWh.

24. In summary, Staff has recommended that the Commission adopt a modified version of the PURPA standard on Time-based Metering and Communications, as included in Finding of Fact No. 22, that would apply to all electric distribution companies in Arizona that are regulated by the Commission.

CONCLUSIONS OF LAW

1. The Commission has jurisdiction the subject matter of the application.

2. The Commission, having reviewed the application and Staff's Memorandum dated July 18, 2007, concludes that it is in the public interest to adopt a modified version of the PURPA standard on Time-based Metering and Communications.

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ORDER

IT IS THEREFORE ORDERED that a modified version of the PURPA standard on Time-based Metering and Communications, as included in Finding of Fact No. 22, that would apply to all electric distribution companies in Arizona that are regulated by the Commission is adopted.

IT IS FURTHER ORDERED that this Decision shall become effective immediately.

BY THE ORDER OF THE ARIZONA CORPORATION COMMISSION

CHAIRMAN COMMISSIONER

COMMISSIONER COMMISSIONER COMMISSIONER

IN WITNESS WHEREOF, I BRIAN C. McNEIL, Executive Director of the Arizona Corporation Commission, have hereunto, set my hand and caused the official seal of this Commission to be affixed at the Capitol, in the City of Phoenix, this 30th day of July, 2007.

BRIAN C. McNEIL
Executive Director

DISSENT: _____

DISSENT: _____

EGJ:BEK:lhm\RM

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