

**BEFORE THE
FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20554**

In the Matter of

International Comparison and Consumer
Survey Requirements in the Broadband
Data Improvement Act

A National Broadband Plan for Our Future
NBP Public Notice #2

GN Docket No. 09-47

GN Docket No. 09-51

GN Docket No. 09-137

**COMMENTS OF THE CALIFORNIA PUBLIC UTILITIES COMMISSION
AND THE PEOPLE OF THE STATE OF CALIFORNIA
TO NBP PUBLIC NOTICE #2**

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The California Public Utilities Commission and the People of the State of California (California or CPUC) submit these comments in response to the Federal Communications Commission's (FCC or Commission) Public Notice released on September 4, 2009. In the Public Notice, the FCC seeks tailored comments on how advanced infrastructure and services could help achieve efficient implementation of Smart Grid technology.¹

I. INTRODUCTION

Section 1301 of the Energy Independence and Security Act of 2007 (EISA) states as follows:

It is the policy of the United States to support the modernization of the Nation's electricity transmission and distribution system to maintain a reliable and secure electricity infrastructure that can meet future demand growth...²

California shares this national goal, as demonstrated by its firm commitment to resource adequacy, reliability, distributed generation, and demand-side programs. Additionally, California's commitment toward a cleaner and smarter energy spectrum has produced a set of very aggressive goals that can only be achieved with a more efficient and state-of-the-art technology that will provide for a self-healing, adaptive, as well as interactive electrical grid. To this end, the CPUC already has taken steps not only towards establishing policies to build a Smart Grid system, but also to effect the actual rollout of Smart Meters, considered a necessary step towards a complete Smart Grid system.

In response to some of the specific questions in the Notice, these comments will provide an overview of the Smart Meter initiatives underway in California. We also discuss our current

¹ Comment Sought on the Implementation of Smart Grid Technology, NBP Public Notice #2, GN Docket Nos. 09-47, 09-51, 09-137, rel. Sept. 4, 2009 (Notice)

² EISA § 1301. For easy reference, the relevant portions of EISA are attached to this Order Instituting Rulemaking (OIR) as Attachment A.

proceeding on Smart Grid, as well as what research is underway with our sister agency, the California Energy Resources Conservation and Development Commission (CA Energy Commission), regarding Smart Grid systems. Finally, we will also respond to some of the specific questions in the FCC's Public Notice.

II. DISCUSSION

A. Real Time Data (Topic 4)

The FCC seeks comment on the deployment of Smart Meters, and specifically asks the following:

In current Smart Meter deployments, what percentage of customers have access to real-time consumption and/or pricing data? How is this access provided?

What are the methods by which consumers can access this data (e.g., via Smart Meter, via a utility website, via third-party websites, etc.)? What are the relative merits and risks of each method?³

California electric utilities already are deploying Advanced Metering Infrastructure (AMI) or Smart Meters that will enable the use of real-time data. Pursuant to CPUC order, all three major California electric investor-owned utilities (IOUs) currently are in the midst of deploying advanced meters in their respective territories for all small commercial and residential customers.⁴ These deployments are expected to be completed by 2012, at which time about 12 million advanced meters will have been deployed. Large commercial and industrial customers in the territories of the three major electric IOUs were equipped with Smart Meters in 2001 and 2002.

³ Notice, p.4, Questions 4.a and 4.b.

⁴ See, Decision (D.)08-08-039, Decision Approving Settlement on Southern California Edison Company Advanced Metering Infrastructure Deployment (September 18, 2008); D.06-07-027, Final Opinion Authorizing Pacific Gas and Electric Company to Deploy Advanced Metering Infrastructure (July 20, 2006); D.07-04-043, Opinion Approving Settlement on San Diego Gas & Electric Company's Advanced Metering Infrastructure Project (April 12, 2007).

In addition, all three IOUs are deploying advanced meters of similar functionality but equipped with a Home Area Network (HAN) module that can, when activated by the utility, transmit to the customer and to the utility a wireless signal carrying the consumption and pricing data associated with the household. This signal can then be received by an appropriately installed and configured in-home device with a built-in receiver tuned to this signal that can then extract and display the consumption and pricing data sent by the advanced meter *in real-time*.

By the time advanced meter deployment is completed, all residential households and commercial and industrial entities in the territories of the three major California electric IOUs will have advanced meters equipped with a HAN module. This deployment will enable real-time data access, if the household or business entity chooses to exercise that option as discussed above. Presently, none of the installed meters have activated their HAN module, for reasons discussed below.

With the advanced meter in place in the service territories of the major IOUs in California, consumers will have a choice of several options to access the consumption and pricing data associated with their households:

- Paper bills: household data is accumulated for one month and then sent to the customer via paper bill.
- Utility-provided web portal: data with hourly granularity is made available to the customer on a one-day after basis through the customer's utility-provided web portal/account.
- Third party – provided web portal: the household data, again, with hourly granularity, is transmitted by the utility to a customer authorized 3rd-party, who in turn makes it available to the customer on a customer-assigned web-portal provided by the third-party. This information may be made available to the customer on a sooner than day after basis.
- HAN-enabled in-home devices.

Each of these options has advantages and disadvantages. Paper bills are more secure than in-home devices, but only provide customers with data every 30 days. Using a web portal, provided by either an IOU or a third party, can produce data on usage much more quickly, and can allow consumers to make more informed decisions about their usage, but has some associated security concerns. The HAN-enabled in-home device provides the fastest method of providing customers with pricing and usage information, and allows customers to customize their own energy management. But it relies on market standardization, the devices could be costly, and it also raises some security and privacy concerns. All of these options pose the potential to overwhelm the customer with data that he/she may not want or need. An important part of this process is ensuring that the customer has a choice both of how to receive this information as well as how to respond to this information.

Currently, approximately 1.5 million smart meters have been installed in California; most have been placed in Pacific Gas & Electric's service territory. However, the utilities have not yet activated the HAN signal on these meters as some of the key standards and security protocols (necessary to ensure a robust experience by the consumer) are yet to be completed by the respective standards bodies. When such technical progress is completed, the CPUC expects that utilities will be able to activate the HAN module on the meter and consumers will be able to purchase HAN-enabled in-home devices to access the advanced meter and obtain their household consumption and pricing data, if they so choose.

Because of this delay in activating the HAN signal, the market for these products is still in its infancy and may take several more years of product development and standardization. However, the CPUC anticipates that those customers who choose to make use of this information will be better able to make an informed decision about their usage, be it in response to a price

signal, an emergency notification, relation to their pricing tier, or even the Greenhouse Gas (GHG) emissions of the marginal unit. By providing consumers with this ability, consumers will potentially be able to more effectively manage their consumption and lower their bills.

The CPUC expects that when customers are presented with information about their usage, they will achieve an energy efficiency gain, to the extent they choose to respond to these signals, by taking steps to reduce overall consumption. If consumers are provided with a price signal, consumers can respond to that signal, by, for example, shifting usage to a lower cost period or reducing their overall peak usage through certain energy efficiency investments. Consumers who choose to make use of this information can potentially reduce their overall bills and consume energy more efficiently and cost-effectively.

B. Overview of CPUC Ongoing Smart Grid Proceeding And California Senate Bill 17

In December 2008, pursuant to EISA and acting on its own motion, the CPUC initiated a proceeding to consider policies for California IOUs to enhance the ability of the electric grid to support important policy goals including reducing greenhouse gas emissions, increasing energy efficiency and demand response, expanding the use of renewable energy, and improving reliability. In this proceeding, the CPUC will consider setting policies, standards, and protocols to guide the development of a smart grid system, and to facilitate integration of new technologies such as distributed generation, storage, demand-side technologies, and electric vehicles.

More specifically, the proceeding seeks to achieve the following:

- Consider the principles and criteria that should guide the CPUC's Smart Grid policies;
- Address the specific provisions of Energy Independence and Securities Act of 2007 (EISA) that relate to Smart Grid investments and information;

- Determine the characteristics and requirements of a Smart Grid in California that would support existing policies;
- Identify the IOUs' existing activities and investments related to a Smart Grid;
- Consider whether standards and protocols are needed for the deployment of a Smart Grid in California and, if so, identify what the CPUC's role should be in standards development, if any;
- Determine how the CPUC should assess the costs and benefits of Smart Grid-related expenditures that may be necessary to meet the state's future needs; and
- Develop an appropriate regulatory approach to support the development of a cost-effective Smart Grid in California.

The proceeding will not, however, develop a “definition” of Smart Grid. A “Smart Grid” is not a policy destination, but a policy direction that subsumes a host of related activities which will evolve over time and as technology develops. A static definition of “Smart Grid” at this nascent stage may hinder California's ultimate efforts to craft policies.

As part of this proceeding the CPUC held five workshops that involved vendors, regulators, utilities, and consumer advocates with the goal of responding to the smart grid policies identified in the proceeding. Here is a summary of the goals of the workshops.

Workshop 1: Consumer Issues

The focus of the first workshop was on the point of contact between the Smart Grid and consumers, including residential, commercial, industrial, and agricultural consumers. This workshop addressed the following areas:

- Timely customer access to and use of the customer's electricity usage information and access to electricity prices;
- Interoperability of customer-owned distributed energy resources, including generation and storage;
- Interoperability of other consumer-owned devices, such as programmable communicating thermostats and energy management systems, with the grid through Home Area Networks and other means; and

- Cyber-security issues including policies to ensure customer privacy.

Workshop 2: Delivery System with Emphasis on Distribution

The subject of the second workshop was on Smart Grid issues most relevant at the distribution level. Issues included the following:

- The integration of distributed energy resources, including generation and storage into the distribution system;
- Extending situational awareness from the transmission system into the distribution system;
- Distribution automation;
- Increasing the efficiency of the distribution system; and
- Cyber-security issues to protect the utility's systems and facilities.

Workshop 3: Delivery System with Emphasis on Transmission

The focus of the third workshop was on Smart Grid issues that arise at the transmission level. This workshop addressed those transmission issues related to the Smart Grid, such as cyber security, wide-area situational awareness, and interoperability. Workshop participants identified various ways of modernizing the transmission system.

Workshop 4: Integration of Plug-In Hybrid Electric Vehicles and Electric Vehicles

The subject of the fourth workshop was the eventual proliferation of plug-in hybrid electric vehicles and electric vehicles. Workshop participants discussed interoperability, the potential for storage in such vehicles, battery charging, and other policy issues that need to be addressed for the electric grid to interact with a significant number of electric vehicles.

Workshop 5: Regulatory Approach

The fifth workshop focused on the development of a regulatory approach to develop a smarter grid in California in a manner that is in the public interest. For example, the utilities could be required to assess their status with regards to the metrics developed in the proceeding as

a way of determining how “smart” each utility’s grid currently is. Periodic reports could then be required to assess progress as measured by the metrics.

We are currently in the process of gathering comments and evaluating proposals on all of the areas that have been identified such as cyber-security, customer access, and customer privacy among many other issues. The CPUC anticipates issuing a decision by December 2009 addressing these policy areas, and would welcome the opportunity to share with the FCC the findings in our final decision. Additionally, the CPUC recently issued a ruling seeking comments on proposed policies and findings in response to proposed standards included in EISA.⁵ Specifically, this ruling directs parties to comment on five questions as directed by EISA:

- 1) Should the [CPUC] Require Each [Electric] Utility to Demonstrate that it has Considered a Smart Grid Investment Before Making any Grid Investment?;
- 2) Should the [CPUC] Authorize Each Electric Utility to Recover From Ratepayers any Capital, Operating Expenditure, or Other Costs of the Electric Utility Relating to the Deployment of a Qualified Smart Grid System, Including a Reasonable Rate of Return?;
- 3) Should the [CPUC] Authorize any Electric Utility that Deploys a Smart Grid to Recover in a Timely Manner the Remaining Book-Value Costs of Any Equipment Rendered Obsolete by the Deployment of the Qualified Smart Grid System, Based on the Remaining Depreciable Life of the Obsolete Equipment?;
- 4) Should the [CPUC] Require [Electric] Utilities to Provide Customers with Access to the Information Referenced in 16 U.S.C. § 1621(d)(19)(B) of PURPA in Written and Electronic Form?; and
- 5) Should the [CPUC] Require Utilities to Provide Purchasers of Electricity with Access to their Own Information at Any Time Through the Internet and on Other Means of Communications Elected by the Utility? Should the [CPUC] Require Utilities to Provide Other Interested Persons Access to Information not Specific to Any Purchaser through the Internet?

⁵ Assigned Commissioner and Administrative Law Judge’s Joint Ruling Inviting Comments on Proposed Policies and Findings Pertaining to the Smart Grid Policies Established by the Energy Information and Security Act of 2007, R.08-12-009 (Sep. 28, 2009)

Responses to this ruling will help to further inform the CPUC about next steps regarding future policies on what types of information that should be transmitted to customers, how can customers be provided with better access to this information, and who and how may this information be provided to customers.

Lastly, during the period of the CPUC's ongoing proceeding, Smart Grid policies have also been the subject of California legislation. Senate Bill (SB) 17 (Padilla), was enacted by the California Legislature, and is currently awaiting the Governor's signature. SB 17 requires the CPUC, by July 1, 2010, and in consultation with key stakeholders, to determine the requirements for a smart grid deployment plan consistent with the policies set forth in the bill and in federal law. To ensure the complete deployment of a Smart Grid system in California, the bill would require each California electrical corporation, by July 1, 2011, to develop and submit a Smart Grid deployment plan to the CPUC for approval.

C. Activities of the California Energy Commission

The California Energy Commission Public Interest Energy Research (PIER) Program has been researching critical areas of the California Smart Grid for several years. The FCC may find the research efforts of the CA Energy Commission useful as the Commission develops the National Broadband Plan.

The following is a brief review of some of the PIER Program's current research efforts:

- 1) The CA Energy Commission is currently in the final stages of awarding two contracts to develop a road map that defines the "Pathway to the California Smart Grid of 2020". One of these efforts will be completed by a team of utility experts and the other by a team of commercial industry experts. The use of two contracts is expected to provide California a more balanced technology and implementation view on the key items that need to be completed to ensure California has a successful Smart Grid in 2020.

- 2) The CA Energy Commission is in the final stages of forming a Research Smart Grid Center at the California State University at Sacramento. This center will research areas such as: smart grid standards, interoperability issues, commonality issues, field demonstrations of key Smart Grid Technologies and help California understand the issues and solutions associated with implementing the Smart Grid of the Future.
- 3) In 2008, the CA Energy Commission completed a research contract with the Electric Power Research Institute (EPRI) to provide an initial definition of how the California Smart Grid should be defined and to identify what key research and development technologies should be considered for further development in the future.
- 4) In 2008, the CA Energy Commission completed a research effort to define the standard and protocols that need to be addressed by California to ensure the state has a statewide Smart Grid system and not several pockets of small Smart Grid systems within the state.
- 5) In 2008, the CA Energy Commission completed a research effort to define which Smart Grid technologies have the potential of increasing the renewable penetration on the California Grid and that can help California meet the desired goal of having 33% renewable generation by 2020.
- 6) The CA Energy Commission is providing co-funding to several utility scale micro-grid field demonstrations where new and emerging Smart Grid technologies are being demonstrated and evaluated in actual field sites.
- 7) The CA Energy Commission has formed a Smart Grid Technical Advisory Committee with representatives from the government, industry, academia and other interested parties to address Smart Grid implementation issues and to help the Energy Commission identify future research and development efforts that need to be completed to ensure California can implement a successful Smart Grid in the future.

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III. CONCLUSION

The CPUC appreciates this opportunity to inform the FCC of California's current Smart Grid efforts, and offers to share with the FCC the findings from our ongoing proceeding addressing policies for a Smart Grid system.

Respectfully submitted,

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