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BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Consider Smart Grid Technologies Pursuant to Federal Legislation and on the Commission's own Motion to Actively Guide Policy in California's Development of a Smart Grid System.	Rulemaking 08-12-009 (Filed December 18, 2008)

PROPOSAL OF THE CONSUMER FEDERATION OF CALIFORNIA ON PRICING INFORMATION COMMUNICATED TO CUSTOMERS AND PROPOSAL ON POLICIES AND PROCEDURES TO PROTECT THE PRIVACY AND SECURITY OF CUSTOMER INFORMATION

I. Introduction

This proposal is filed pursuant to Commissioner Ryan's ruling dated September 27, 2010 Section 3.5, inviting proposals by parties on the subject of providing price information to customers with the development of California's Smart Grid System.

Consumer Federation of California has written a proposal that focuses on the way pricing and usage information should be made available to the customer. CFC proposes 1) Utilities develop a comprehensive digital platform where customers can view energy usage simultaneously with the cost of their electricity 2) Utilities develop complementary services to further enhance customers' ability

to control and monitor usage 3) the usage and pricing information provided should be comprehensible and relevant to the ratepayer 4) the information should be provided multiple times throughout the day to maximize customers' ability to make an informed and actionable decision.

II. Background

On December 29, 2009 the Commission issued decision D.09-12-046 adopting policies and findings pursuant to the smart grid policies established by the Energy Information and Security Act of 2007.[1] Within these adopted policies, the Commission adopted a policy goal that the utilities provide consumers with access to electricity price information by the end of 2010. The Assigned Commissioner revisited this policy goal in her September 27 ruling, and addressed the issue of *what* price should be communicated to the consumer. The Assigned Commissioner stated in her ruling "At the PHC, several parties noted that since residential prices vary with consumption, it is unclear what price to communicate to customers." [2] The general concern centered on the Commission's goal of eventually providing near real time pricing to customers with the development of Smart Grid technologies, and the practicality of achieving this goal given California's current tiered rate structure with residential customers.

III. CFC's position on price communication.

1. Communicating Real-time prices within residential tiered rate plan.

The Consumer Federation of California conducted research concerning communicating pricing, particularly real time pricing, to customers. CFC found examples of utilities communicating real time pricing to residential customers participating in real-time pricing programs. Both Ameren Utilities Illinois and

[1] D09-12-046 at 1.
[2] Commisioner's ruling dated September 27, 2010 at 6.

ComEd Utilites have had residential real-time pricing programs in place since 2007. These programs are optional and customers may choose to participate in this alternative pricing program in lieu of a flat rate tariff.[3]

There are reported benefits with communicating real time wholesale and retail prices to participating customers.[4] Customers are able to keep track of their energy usage, manage their usage, conserve, and shift their consumption from peak to off peak times.[5] Customers participating in the real-time pricing program (RTP) reap the benefit of increased savings on their electricity bill.[6] In addition, the RTP pricing program benefits *all* customers because "a relatively small fraction of price responsive demand can have sizeable impacts on market-wide price spikes and electric system efficiency."[7]

2. CFC could not find sufficient data to support a conclusion that communicating real-time pricing to residential customers will benefit customers if the customer is on a tiered –rate plan

The Commission has set a goal of communicating real-time retail and wholesale prices to customers who are paying a tiered rate based on amount of

[3] Ameren Illinois Utilities Annual Report 2009 at 1. Find report at http://www.icc.illinois.gov/docket/files.aspx?no=06-0691&docId=150357; Commonwealth Edison Annual report 2009 at 3. Find report at http://www.icc.illinois.gov/docket/files.aspx?no=06-0617&docId=150360.

[4] Ameren Illinois Utilities Annual Report 2009 at 33; ComEd Utilities Annual Report 2009 at 3-21. Ameren Illinois Utilities reported In 2009, the aggregate savings for Power Smart Pricing participants was $1,388,996.09 which represents a 23.6% total savings compared to what the same bills would have been under the standard rate. Average annualized savings were $304.98 or 24.4%. However, savings varied greatly by month, and to a lesser extent by which Ameren Illinois utility the participant was a customer of, because the underlying standard rates were different. ComEd reported that 95% of RRTP Participants saved money in 2009 compared to what they would have spent if they had remained on ComEd's fixed-price rate instead of RRTP, assuming the same electricity consumption; In 2009, RRTP Participants collectively saved more than $1,485,000, or 19%, off their total electricity bills; The average Participant reduced their electric bill by 15% in 2009 compared to what they would have spent if they had remained on ComEd's fixed-price rate instead of RRTP, regardless of how much time the Participant was enrolled in theRRTP Program; The average Participant reduced their electric bill by 12% between 2007 (when the program began) and 2009 compared to what they would have spent if they had remained on ComEd's fixed-price rate instead of RRTP, regardless of how much time the Participant was enrolled in the RRTP Program.

[5] Ameren Illinois Utilities Annual Report 2009 at 4.

[6] Ameren Illinois Utilities Annual Report 2009 at 4.

[7] Ameren Illinois Utilities Annual Report 2009 at 4.

consumption.[8] This is in contrast to communicating real time retail and whole sale prices to customers who are participating in a real time pricing program. A concern is whether a customer will be able to use the wholesale and retail real time prices in a productive way to conserve energy and save on their electricity bill. For example, customers may receive a real time wholesale price but this wholesale price may mean nothing to a customer who is paying his or her electricity bill based on some average price that does not reflect the wholesale price at the time of consumption. However, if the utilities decide to implement optional real-time pricing programs to their residential customers, then participating customers will benefit from having these prices communicated to them, and non-participating customers will benefit from customers participating in the real-time pricing program.[9]

III. Comprehensible presentation of pricing and usage information is essential to making information valuable.

CFC cannot, at this time, take a position on what price should be communicated to a customer. CFC can declare with certainty that the *manner* in which pricing is communicated, whatever price the Commission chooses, will be instrumental in achieving goals that are most relevant to consumers: managing energy usage and saving money on electricity bills. CFC would like to propose suggestions that will maximize a utility customer's ability to make more informed and immediate decisions on how to save on their electricity bills while also realizing the environmental impacts of their energy usage. Because Californian residential customers pay their bills according to a tiered rate plan, these suggestions are in the context of California's current tiered rate plan.

[8] D09-12-046 at 1.
[9] Ameren Utilities Illinois Annual Report 2009 at 5.

c. CFC supports developing a comprehensive digital platform where customers can monitor their electricity usage along with the cost of their electricity.

Consumer Federation of California suggests utilities develop technologies, such as robust web portals, where consumers can create secure accounts. The web portal will act as a central access point for all online bill and energy use comparisons, along with other innovative energy management tools.

b. CFC suggests a simultaneous visual display of both usage and costs associated with customer's usage to maximize customer understanding.

CFC believes that this digital platform should display both usage and cost associated with usage simultaneously, so that customers can weigh energy usage against the cost of energy to the customer and make an immediate decision based on the information received. For example, once logged into their secure account, customers should be able to see a display of their current bill-to-date, what their bill is projected to be at the end of the month, how their current use and bill-to date compares to the previous month and the consumer's environmental impact in relation to their electric usage. CFC believes that having all of this information available on one display screen so that the customer views their information easily and without having to make complicated calculations will be the pivotal but necessary step in eliminating customer confusion while maximizing energy efficiency.[10]

1. California Utilities' current platform for customer access

SCE: Currently, SCE describes on its web site the platform it has created: "Smart meters will measure your electricity usage on an interval basis and communicate it back to SCE so we can share this information with you online. Residential customers will see usage data in hourly increments; business customers will see usage data in 15-minute increments. Monitoring your energy

[10] CFC bases their suggestion on the Bluebonnet "Net Energy Market Web Portal" model found on http://www.bluebonnetelectric.coop/news/newsdetail.aspx?itemID=55.

usage will help you understand how usage affects your cost. Measurement will not be specific to any particular appliance or electrical device."

> **CFC's suggestions**: SCE is currently developing a platform where customers will have access to their usage. It is unclear as to whether this platform will display energy usage and cost of that usage to the customer simultaneously. In the framework of a tiered rate plan, this can be done by displaying the customer's usage, what their bill is to date as result of the energy usage, and how their bill compares to a projected dollar amount established by the customer.

PG & E : PG &E 's platform for customer access includes tools to see why bill amounts vary. In addition, the customer can perform usage comparisons as well as use an online energy audit to see you how the customer's usage compares to others and what measures the customer can take to reduce usage and save money.

> **CFC's suggestions:** it is unclear whether all PG &E customers can view their usage compared with a bill-to-date dollar amount. It is also unclear how often updated information is available to all customers. CFC believes that both energy usage along with a relevant dollar amount should be displayed online on one screen. In addition, both energy usage and dollar amount should be updated and available on a regular basis so that customers will be able to act on the information provided in a timely fashion.

SDG&E : SDG&E platform for customer access describes an account that customers can log into. Here they can view energy consumption, energy consumption history, and view usage comparisons on a spreadsheet.

CFC suggestions: CFC makes the same suggestions as it did above for both SCE and PG &E. Consumption should be viewed against a bill-to-date dollar amount on a regular basis.

c. CFC suggests utilities provide complementary services, in addition to secure web portals, so consumers can monitor consumption and cost relevant to consumer's needs.

In addition to secure accounts, the CFC advocates for the installation of features where customers receive a text message, emails or phone that alerts them not only to their energy usage but when their electric use exceeds the projected dollar amount they established in their secure account profile.[11] This projected dollar amount can be established by the amount the customer was billed in prior months. This will increase customers' ability to control their consumption while reducing alarm when customers' receive a bill that exceeds their expected dollar amount.

CFC recognizes that some utilities have alert systems in place, where a customer can receive alerts when they are about to move to a higher tier. Even though a customer receives an alert about their tier, the customer does not receive notification of how much their bill is going to cost as result of this move into a higher tier. Customers still have to assume the task of calculating the cost of their usage. Although this is not an obstacle of insurmountable proportions, it is nevertheless, an unnecessary hurdle, given the cost-effectiveness of installing such a feature.

V. Customer response to pricing information is largely dependent on the frequency with which updated pricing information is available.

As mentioned above, CFC believes access to electricity usage information is meaningless unless electric usage is viewed simultaneously with its cost to the customer. In addition, CFC believes that access to both electricity usage and

[11] http://www.bluebonnetelectric.coop/news/newsdetail.aspx?itemID=55

pricing information simultaneously will be ineffectual unless a customer can access this information frequently.

Pub. Util. Code § 8360 (h) states that:

> It is the policy of the state to modernize the state's electrical transmission and distribution system to maintain safe, reliable, efficient, and secure electrical service with infrastructure that can meet future growth in demand and achieve all of the following, which together characterize a smart grid: …
>
> (h) provide consumers with *timely* information and control options.

CFC interprets *timely* as time suitable enough for the customer to take immediate action on the pricing and usage information received. CFC believes that customers receiving information on a daily basis with 24 hour lag is too much of a delay to take immediate action and alter consumption. Instead, CFC suggests the ability to access updated pricing and usage information multiple times throughout the day will be the most effectual in customer's ability to monitor consumption. This means that the customers who log in to view their usage will be able to see updated information throughout the day and make decisions on their usage based on this updated information.

VI. Conclusion

CFC advocates delivering relevant, comprehensive pricing information that the consumer will be able to use in order to make informed decisions regarding their consumption, their electrical bill, their impact on the electric grid, and their impact on the environment. CFC believes that the Commission should principally focus on the visual display of information as well as complementary features alerting customers of their usage and the cost of their usage to maximize customer comprehension and energy efficiency. This can be done under the current residential tiered rate plans as well as other pricing plans.

POLICIES AND PROCEDURES TO PROTECT THE PRIVACY AND SECURITY OF CUSTOMER INFORMATION

The ACR "invite[s] any party to this proceeding to propose a set of policies and procedures that will help protect the privacy of a customer's data, will help ensure its security and will permit access to the information by authorized third parties."[12] CFC accepts the invitation.

There are many factors to be taken into account in this proceeding. They include:

- the need to guard customer information to avoid adverse public reaction to the smart grid;
- the process by which information may be released to the customer so he or she is able to manage usage;
- the release of information to third parties and assertion of jurisdiction to require third parties to maintain the privacy of the information;
- limitations on how much data is necessary and should be stored and what information may be shared among utility subsystems;
- the avoidance of data mining;
- controls on access to customer information, including the training of personnel and the need to update procedures and software;
- the response plan to data breaches.

There are studies which address these issues and help in formulating regulatory protections for customer information.

The Department of Energy recently issued a report on "Data Access And Privacy Issues Related To Smart Grid Technologies,"[13] which it characterizes as "a coherent summary of developing trends, consensuses, and potential best practices emerging as States use or adapt existing legal regimes to

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[12] Assigned Commissioner's Ruling (09-27-10) at § 3.6, p. 6.

[13] DOE: Data Access And Privacy Issues Related To Smart Grid Technologies (Oct. 5, 2010). http://www.gc.energy.gov/documents/Broadband_Report_Data_Privacy_10_5.pdf

accommodate the deployment of Smart Grid technologies."[14] The report recognizes the importance of making customer information secure:

> As DOE has emphasized, the promise of the Smart Grid is enormous and includes improved reliability, flexibility, and power quality, as well as a reduction in peak demand and transmission costs, environmental benefits, and increased security, energy efficiency, and durability and ease of repair in response to attacks or natural disasters. But DOE also recognizes that long-term success of Smart Grid technologies depends upon understanding and respecting consumers' reasonable expectations of privacy, security, and control over who has access to potentially revealing energy-usage data. [15]

Inadequate protection of customer information can harm them: "Such information could reveal personal details about the lives of consumers, such as their daily schedules (including times when they are at or away from home or asleep), whether their homes are equipped with alarm systems, whether they own expensive electronic equipment such as plasma TVs, and whether they use certain types of medical equipment.[16]

DOE makes the following recommendations[17]:

- DOE notes that consumer education about the benefits of Smart Grid and the use of Smart Grid technologies will be of significant important to the success of Smart Grid. The pace of deployment will also be important and should not outpace consumer education.

- Because of its detailed nature, [energy consumption] information should be accorded privacy protections – and the accord of these protections will do much to increase consumer acceptance of Smart Grid. While utilities need access to this energy consumption data for operational purposes, both residential and commercial consumers should be able to access their own energy consumption data and decide whether to grant access to third parties.

- the conditions under which consumers can authorize third-party access … should include a prohibition on disclosure of consumer data to third parties in the absence of affirmative consumer authorization, and that the

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14 *Id.* at 2.
15 *Id.* at 2.
16 *Id.* at 2.
17 *Id.* at 3.

authorization should specify the purposes for which the third party is authorized to use the data, the term of the authorization, and the means for withdrawing an authorization. Commenters also generally agreed that authorized third parties should be required to protect the privacy and security of consumer data and use it only for the purposes specified in the authorization, and that states should define the circumstances, conditions, and data that utilities should disclose to third parties.

- Consequently, deployment of Smart Grid technologies should not presume that low-income, minority, and elderly constituents will be harmed by, or should be excluded from, the Smart Grid. Rather, deployment strategies should be crafted to identify and serve the needs of these important constituencies.

A Report prepared for the Colorado Public Utilities Commission[18] discusses many of the issues being considered here, and suggests ways to balance the many policies affected by rules relating to privacy. The author emphasizes the importance of protecting private information:

> "[T]hree pressures urge that the privacy concerns be addressed earlier rather than later. First, the privacy concerns are real, and should be addressed proactively in order to protect consumers. Second and related, a salient privacy invasion—were it to happen and get press—could create significant opposition to smart grid deployment efforts. Third, information controls that govern which parties have access to smart grid information when, and what they can do with it, will be a critical part of the networking architecture and will inform—and constrain—viable business models for edge services."[19]

The Quinn Report also provides a quick summary of California laws protecting customer information, as well as laws of Texas and Connecticut.

Researchers at CyberKnowledge and the U.C. Berkeley prepared a report for the California Energy Commission "regarding various legal and technical aspects of smart grid network security and information privacy concerns, including a review of California's pertinent regulations. The report is called

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[18] *Id.*

[19] E. Quinn, "*Smart Metering and Privacy: Existing Law and Competing Policies*. (a Report for the Colorado Public Utilities Commission), Spring 2009. http://www.dora.state.co.us/puc/docketsdecisions/DocketFilings/09I-593EG/09I-593EG_Spring2009Report-SmartGridPrivacy.pdf

"Network Security Architecture for Demand Response/Sensor Networks,"[20] and identifies the privacy and security issues of advanced metering and demand response, recommending possible technical and legal solutions. Its stated purpose is to promote increased discussion of the important and somewhat overlooked security and privacy concerns raised by the introduction of this technology.[21]

Some of the recommendations in the report are:

- Rules covering data privacy and business record handling in the utilities should be extended to cover access to such data regardless of whether it resides, temporarily or long-term, within the utility or on third-party premises. Consistent rules should be developed so there is no question that the requirements for access to data are just as stringent if the data is located off site.

- Guidelines for how much data is necessary and should be stored for the purposes of customer service, and how much information may be shared among utility subsystems should be set by the appropriate regulatory body, and only that data which is essential for performing mandatory functions should be saved or shared.

- Access to hourly customer usage data should be limited within the utility itself. Utility sub-systems should be required to identify precise data requirements for their research and business needs, justify the granularity of usage data that they request, and should be provided with no more data than necessary to accomplish stated goals. Systems that do not require identifiable data should not have access to it.

- Separate data access mechanisms should be provided for systems that do and do not require identifiable data.

- The data mining of hourly usage data by utilities should be carefully monitored and regulated.

- Laws controlling law enforcement access to utility records should be updated to ensure that personal information gained through data-mining, smart meter, sensor, or smart appliance data is not available to law enforcement without a warrant.

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[20] *Id.* at 19-20. "*Network Security Architecture for Demand Response/Sensor Networks" can be found at* http://sites.energetics.com/MADRI/toolbox/pdfs/standards/network_security_final_report.pdf;

[21] CyberKnowledge and U.C. Berkeley, Report to Energy Commission, "*Network Security Architecture for Demand Response/Sensor Networks* at 9.

NIST's "Guidelines for Smart Grid Cyber Security"[22] also provides recommendations on policy and procedures to be adopted by an organization in order to protect information. While some are discussed in the context of security, they would appear to be equally applicable to privacy protection. A few of NIST's recommendations are shown below:

- Identity validation/background checks should be based on the individual's area of responsibility and the type of information authorized to access. The more sensitive information available to an individual, the deeper and more detailed the validation and checking process should be

- An adequate security awareness program is a key element of an organization's policy framework to guard against vulnerabilities introduced by insufficiently trained personnel. … The security profile will always be changing and so will the need for new procedures, new technologies, and reinforcement of the importance of the cyber security program.

- A patch management process is necessary to ensure that software and firmware are kept current,

- It is essential to ensure within the various plant/system disaster recovery plans that are in place that an associated cyber contingency plan and cyber security incident response plan is developed

- An incident response process is required to ensure proper notification, response, and recovery in the event of an incident

[22] NISTIR 7628, "Guidelines for Smart Grid Cyber Security: Vol. 3, Supportive Analyses and Reference" (Smart Grid Interoperability Panel, Cyber Security Working Group – August 2010) http://www.scribd.com/doc/37067944/nistir-7628-vol3

CFC recommends that as the Commission weighs various policies, it recognize the importance of protecting privacy not only for the customer whose information has been gathered by the utility, but also for the success of smart grid development.

Dated October 15, 2010

Respectfully submitted,

By: _____//s//_____ and By: _____//s//_____

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CERTIFICATE OF SERVICE

I hereby certify that on October 15, 2010, I served by e-mail all parties on the service list for R.08-12-009, for which an email address was known, true copies of the original of the following document which is attached hereto:

PROPOSAL OF THE CONSUMER FEDERATION OF CALIFORNIA ON PRICING INFORMATION COMMUNICATED TO CUSTOMERS AND PROPOSAL ON POLICIES AND PROCEDURES TO PROTECT THE PRIVACY AND SECURITY OF CUSTOMER INFORMATION

The names and e-mail addresses of parties served by e-mail are shown on an attachment.

Dated: October 15, 2010

Respectfully submitted,

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