BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

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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)

REPLY COMMENTS OF THE CONSUMER FEDERATION OF CALIFORNIA ON THE 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

The Consumer Federation of California (CFC) files these Reply Comments pursuant to the September 28, 2009, Joint Ruling of the Assigned Commissioner and Administrative Law Judge inviting comments on policies established by the Energy Information and Security Act of 2007 (EISA). EISA added to the Public Utility Regulatory Policies Act (PURPA) certain standards relating to the Smart Grid for state commissions to consider. The Commission has asked the parties to comment on whether or not the Commission should adopt them. The Comments were mixed.

I. EISA OBLIGATIONS RELATED TO RATEMAKING

A. Consideration of Qualified Smart Grid System Before Investing in Nonadvanced Grid Technologies.

16 USC Sec. 2621(d)(16)(A) Each State shall consider requiring that, prior to undertaking investments in nonadvanced grid technologies, an electric utility of the State demonstrate to the State that the electric utility considered an investment in a qualified smart grid system based on appropriate factors, including -

(i) total costs;
(ii) cost-effectiveness;
(iii) improved reliability;
(iv) security;
(v) system performance;

While a majority of parties filing Comments recommended that the Commission decline to adopt this standard, some of those parties also recommended that the Commission undertake some kind of planning process in which the enumerated factors were considered.[1] The Comments filed by Wal-Mart Stores and Sam's West say it best:

> There should be a smart process in place for any smart grid expenditures. As with any new investment, cost consideration should be a major point of concern, as those costs will inevitably lead back to the customer. In addition to cost considerations, reasonableness and prudence should be exercised before allowing investment and implementation of any smart grid technology. It makes little sense to make smart grid changes simply because we can. There needs to be a definitive and precise process in place to ensure that the customer will ultimately benefit from the change.

TURN recommends the Commission require the utilities to "provide adequate plans that will support evaluating alternative future investments to provide a rationale for investing in "non-advanced" versus "smart grid" technologies.[2] TURN goes on to say that [s]uch an alternatives analysis, which generally involves a consideration of cost effectiveness, should be standard business practice for evaluating the prudency of major capital investments."[3]

DRA suggests that in order to implement SB 17, the Commission "should establish a baseline of the existing infrastructure, develop a set of guiding principles governing Smart Grid, and develop a system-wide roadmap of Smart Grid, from generation to the meter."[4] CEERT echoes that recommendation: "The Commission first needs to set a policy course for what it intends to accomplish by deploying Smart Grid technologies and applications. Once that policy is established, utilities should be required to demonstrate that they are building their systems to meet those goals and objectives."[5]

CFC agrees with each of these parties. Southern California Edison (SCE), on the other hand, seems to resist the planning approach, warning that the requirements for a smart grid deployment plan by this Commission, the Energy Commission, the Independent System Operator (ISO) and key stakeholders "should possess sufficient

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1 *See e.g.,* Comments of DRA, TURN and Wal-Mart Stores/Sam's West.
2 TURN Comments at 4.
3 TURN Comments at 4.
4 DRA Comments at 4.
5 CEERT Comments at 4.

flexibility so as not to impede the progress of existing Smart Grid programs. The requirements should also allow for differences in the current status and future rates of progress of each of the IOUs' Smart Grid deployments."[6] CFC disagrees. If the Commission were to allow each utility to proceed along its own course, the end-result is unlikely to be cost-effective for the state, as a whole. As DRA suggests, there should be a reconciliation of the plans of California utilities, and a roadmap for development in the future.

B. Rate Recovery of Smart Grid Costs.

> 16 USC Sec. 2621(d)(16)(B) Each State shall consider authorizing each electric utility of the State 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 on the capital expenditures of the electric utility for the deployment of the qualified smart grid system.

The parties are in nearly uniform agreement with the Assigned Commissioner that the Commission should decline to adopt a standard allowing recovery of smart grid costs. There should be no special treatment of smart grid investments (CLECA, DRA, TURN), no recovery of costs without a deployment plan (CEERT) and no recovery of costs without a showing of prudence and reasonableness (Wal-Mart/Sam's). PG&E and others suggest the appropriate place to consider cost recovery is the General Rate Case (GRC). CFC agrees.

SCE's agreement with the Commission appears to be the opposite. It says "existing law and precedent … warrant recovery from ratepayers," and suggests a Commission decision not to adopt the EISA standard means rate recovery will be allowed, provided certain showings are made, like the practice adopted in FERC's smart grid policy statement.[7] SCE should be disabused of this notion. A smart grid investment should not be presumed prudent or reasonable without a showing to that effect and without a showing that it comports with the Commission's smart grid deployment plan. There is no clear demarcation point between a smart grid investment

[6] SCE Comments at 11.
[7] 128 FERC ¶ 61,060 at p. 61, ¶ 103.

and any other investment, and no reason to treat a smart grid investment any differently than other investments.

C. Obsolete Equipment

> 16 USC Sec. 2621(d)(16)(C) Each State shall consider authorizing any electric utility or other party of the State to deploy a qualified smart grid system 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.

Most parties, including SCE, agree that the ratemaking treatment of equipment rendered obsolete by the deployment of smart grid equipment should be determined in a rate case. PG&E and DRA disagree.

PG&E believes the Commission's general policy is that "the reasonable costs of obsolete investments "will be recoverable over a reasonable amortization period," and that "utilities should evaluate Smart Grid investments with the expectation that such costs will be recoverable based on the reasonableness of the initial decision to invest in the obsolete equipment."[8] PG&E offers no citation to support the claim. Adoption of the standard promoted by PG&E would preclude the Commission from considering other factual matters, *e.g.,* whether the amount proposed to be recovered is, in fact, the amount associated with obsolete investment and not some other investment, or whether the smart grid investment was made prematurely and not in accordance with an approved deployment plan. The GRC is the appropriate place to consider a utility's proposal to recover costs of 'obsolete' equipment.

DRA does not explain its statement that. "It is usually best for the Commission to allow utilities to recover the book value of obsolete equipment over its remaining depreciable life." DRA recognizes that salvage costs embedded in depreciation rates should not be recovered"[9] and that since retirement has not yet occurred, the

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[8] PG&E Comments at 3-4.

[9] Wal-Mart agrees, stating the "Commission should ensure that the equipment is truly obsolete and cannot be reused, resold, recycled or retrofitted before allowing it to be retired in order to guarantee the least impact to customs…. [T]he utilities should not earn a return on obsolete equipment. Obsolete equipment should be taken out of rate base and recovery should be accelerated to a fixed period of time … . (Wal-Mart Comments at 3)

Commission will not have reliable investment figures to review. [10] DRA should explain its position further.

II. CUSTOMER INFORMATION

Most of the issues relating to customers' and third parties' access to pricing and usage information are complex and can only be decided after weighing several factors pertaining to privacy, security, feasibility, cost, "open standards, competition, consumer choice and empowerment, and keeping pace with rapid changes in technology." [11] At least three significant issues have been addressed in this round of Comments:

- The manner in which access to customer information is provided
- The availability of customer information to third-parties
- How to protect customers' privacy interests, which is related to the question of how to keep the grid secure.

A. Access to Information

(17) SMART GRID INFORMATION-

> `(A) STANDARD- All electricity purchasers shall be provided direct access, in written or electronic machine-readable form as appropriate, to information from their electricity provider as provided in subparagraph (B).

PG&E and SCE claim that the Commission does not need to consider what access customers should have to price and usage information because the issue was decided when they asked for money to build out their advanced metering infrastructure (AMI).[12] A close look at those decisions indicates that might not be the case.

The AMI case cited by SCE[13] ended in a settlement and is, thus, not a precedential decision. Rule 12 of the Commission's Rules of Practice and Procedure states that adoption of a settlement "does not constitute approval of, or precedent regarding, any principle or issue in the proceeding or in any future proceeding." Further, the Commission's consideration of the issue in the AMI case was not whether access

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[10] DRA Comments at 5-6.
[11] Google Comments filed October 26, 2009 at 2.
[12] SCE asked for $1.63 billion in A.07-07-026; PG&E asked for an additional $466.7 million to upgrade a previously approved AMI system; it's total cost with the upgrade was $3.099 billion.D.09-03-026 at 30.
[13] SCE Comments at 6, n. 16.

should be given customers. It was whether the type of AMI meter SCE had selected would satisfy the Commission's minimum functionality criteria. Since "[n]o party disputes that SCE's proposed AMI system and the system described in the settlement agreement meets these six requirements," the Commission approved the settlement.[14] The ruling on third-party access in the AMI decision, likewise, was limited to the question of whether SCE's AMI system "will support the provision of meter-reading and related services to third parties."[15] While it might be inferred that requiring the provision of meters capable of providing customer information meant utilities would provide access to the metered information, the decision does not explicitly state the rights of the consumer to access of metered information.

The same is true in PG&E's upgrade case. In D.09-03-026, the issue before the Commission was whether to fund PG&E's upgrade of its advanced metering infrastructure. The capabilities of the HAN system were discussed.[16] The Commission determined, "This is an appropriate time to authorize deployment of HAN gateway devices for PG&E. PG&E's request to do so is reasonable."[17] There was no discussion of customers' rights in that decision.

The Commission should decide in this proceeding, and state, that "[a]ll electricity purchasers shall be provided direct access, in written or electronic machine-readable form as appropriate, to information from their electricity provider." The 'reaffirmation of expectations' in the September 28, 2009 Ruling, is not the finding required under EISA, and the Joint Ruling does not reference any other explicit finding on that issue.

San Diego Gas & Electric suggests that other rights should also be defined: "If the Commission should specify recommendations on how to facilitate real-time access to energy usage information, the recommendations should clearly define the rights, responsibilities, and obligations of all parties involved in this data exchange: the utilities, the customers, and any third-parties."[18] CFC agrees that there is much to discuss on this front. Technical details about how to make access available without compromising

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14 D.08-09-039 at 41-43.
15 D.08-09-039 at 49
16 D.09-03-026 at 9.
17 D.09-03-026 at 12.
18 SDG&E Comments at 4.

privacy and security interests need to be discussed and, perhaps, a set of functionality requirements defined in that area. A separate phase of this proceeding should be convened to consider these important issues.

B. What information must be made available?.

Part B of 16 U.S.C. § 1621(d)(19) describes the kind of information which utilities would be expected to provide.

> `(B) INFORMATION- Information provided under this section, to the extent practicable, shall include:
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> > `(i) PRICES- Purchasers and other interested persons shall be provided with information on—
> >
> > > `(I) time-based electricity prices in the wholesale electricity market; and
> > >
> > > `(II) time-based electricity retail prices or rates that are available to the purchasers.
> >
> > `(ii) USAGE- Purchasers shall be provided with the number of electricity units, expressed in kwh, purchased by them.
> >
> > `(iii) INTERVALS AND PROJECTIONS- Updates of information on prices and usage shall be offered on not less than a daily basis, shall include hourly price and use information, where available, and shall include a day-ahead projection of such price information to the extent available.
> >
> > `(iv) SOURCES- Purchasers and other interested persons shall be provided annually with written information on the sources of the power provided by the utility, to the extent it can be determined, by type of generation, including greenhouse gas emissions associated with each type of generation, for intervals during which such information is available on a cost-effective basis.

Most of the parties commenting on this standard addressed the question of whether utilities should be required to provide real-time usage information. Two utilities attempt to defer that decision to some other proceeding. SDG&E suggests a rate design proceeding. PG&E suggests the Dynamic Pricing and Rate Design Window proceedings. SCE says it is unable to provide dynamic pricing without more money, and even then, making real-time information available would interfere with its AMI implementation plan.

A question which should be posed to the utilities is, 'Why are smart meters being installed, at a cost of many billions of dollars, if not to allow customers to see their usage and change their consumption patterns?' And why was that functionality not installed with the meter?

DRA challenges SCE's claim that it will have to ask for more money to provide information in real time, stating "The IOUs' authorized AMI project costs include budgets to test and ensure HAN connectivity with the household."[19] SCE needs to explain why its installation schedule does not include activation of HAN capability.

CEERT has provided references to numerous studies showing a customer's awareness of real-time prices of electricity discourages consumption:

> Behavioral research indicates that consumers respond most effectively to the direct feedback allowed by the display of near real-time information, even in the absence of energy efficient end-use devices, demand response programs or dynamic pricing. In this regard, numerous studies during the last several years have demonstrated improved customer response when provided with information displaying near real-time feedback on pricing and usage. [20]

Some utilities may already have the capability of providing real-time information. In San Diego's case, which was also resolved by settlement, the company indicated the software needed to provide real-time information would be in place by mid-2008.

> From 2008 through 2010, SDG&E seeks to deploy approximately 1.4 million new, AMI-enabled, solid state electric meters … In advance of deployment, SDG&E intends to perform approximately 18 months of information technology (IT) related work beginning in early 2007. The IT work will enable the meter deployment and put in place systems suitable to manage and store the data the advanced meters will produce.
>
> SDG&E contends deploying AMI will improve customer service in several ways. First, it will transform the meter reading process by improving the accuracy and timeliness of utility bills. Second, it will provide near real time energy usage information empowering customers to make informed choices about their energy usage.
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> SDG&E's asserts its AMI proposal is an important first step towards developing a "smart grid" in the San Diego region. [21]

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19 DRA Comments (Oct. 26, 2009) at 10.

20 CEERT Comments (Oct. 26, 2009) at 8-9.

21 D.07-04-043 at 10

SDG&E now has partners which are already implementing smart grid measures. SDG&E, UC San Diego and CleanTECH San Diego announced on September 17, 2009, “the formation of a coalition of 25 local, national and global organizations to transform the San Diego region's electrical grid into a digital smart grid.”[22] According to Byron Washom, director of strategic energy initiatives at UC San Diego, "Where many utilities are looking to launch smart grid technology, SDG&E and UC San Diego have been working together for years and are already implementing it. … We have all of the elements staged to make this regional demonstration replicable on a national and international scale."[23]

It may be true that real-time information is not being provided because functionalizing the meter is low on the utilities’ list of priorities, as suggested by CEERT.[24] Reuters reported in 2009 that SCE had just ordered a pad-mounted Distribution Static VAR Compensator ("dSVC") solution from American Superconductor Corp.[25] The article goes on to state, “The utility is leading initiatives in the three "Smart Grid" technology areas of transmission, distribution and customer metering. AMSC will provide SCE with customized SVC controls to be deployed in its "Circuit of the Future" to provide improved voltage regulation for all of its retail electric customers while simultaneously delivering significant protection against major voltage sags.”[26] Apparently SCE has the time and money to improve customers’ voltage regulation, but not their access to real-time information.

In PG&E’s case, one news source reports that an intentional decision has been made to “wait for the Open Smart Grid group to come up with a standard interface for energy management software before it decides to sign up for Google’s PowerMeter, Microsoft’s Hohm, or similar offerings from other companies.”[27]

> “I don’t want to pick winners,” said Tang [PG&E’s senior director of the Smart Energy Web]. “I want to work on more of a neutral ground.” Tang

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22 MARKETWIRE, Energy Technology Coalition Formed to Develop San Diego 'Smart Grid' (Sept. 17, 2009).

23 *Id.*

24 CEERT Comments at 2.

25 Reuters, “Southern California Edison to Deploy AMSC's Smart Grid dSVC(TM) Solution in Its "Circuit of the Future” March 10, 2009).

26 *Id.*

27 Reuters, PG&E Waiting For Smart Grid Standards (July 5, 2009)

> went on to explain that with the numerous development firms and their various options for energy management, PG&E is hesitant to pick one unless the integration is seamless and processes involved are standardised. Tang said that PG&E isn't going to develop software for third parties because the utility lacks those resources.[28]

Mr. Tang also has responsibility for Clean Air Transportation (including Plug-In Electric Hybrid Vehicles), which brings to mind the question of priorities.

There are a lot of questions which should be investigated by the Commission to determine when and how customers are going to get usage and pricing data from their meters, and whether we have already paid for that functionality or not.

C. Third Party Access.

> `(C) ACCESS- Purchasers shall be able to access their own information at any time through the Internet and on other means of communication elected by that utility for Smart Grid applications. Other interested persons shall be able to access information not specific to any purchaser through the Internet. Information specific to any purchaser shall be provided solely to that purchaser.'.

The importance of having rules and standards in place to protect the privacy and security of communication between multiple layers of intelligent systems is obvious to us all. It may make the difference between wide-scale customer resistance to the concept of a smart grid, or acceptance. Consumers are concerned that unfriendly people will become aware of details of their daily life and use that information to their detriment. Examples: Your insurance company will know you come home on weekends at 2:15 a.m., just after the bars close; they raise your premiums. Burglars discover your living patterns and know when your house will be empty. The police know you weren't at home on the night you are suspected to have stolen merchandise at a downtown store.[29]

It is not just purveyors of Home Area Network devices who pose a threat to consumer privacy. It is the contractor who performs data collection, billing, customer

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[28] *Id.* SCE, on the other hand, is attempting to patent "a method for communicating between a utility and individual customer location ...via the Internet or via an advanced utility meter." Smart Grid News.com, P. Bane, "Utility Attempts to Patent Advanced Metering" (Sept. 11, 2008)

[29] B. Sullivan, "Red Tape Chronicles" http://redtape.msnbc.com/2009/10/would-you-sign-up-for-a-discount-with-your-power-company-in-exchange-for-surrendering-control-of-your-thermostat-what-if-it.html.

support or web-services for the utility. Where broadband over power lines is used, a hacker may be reading AMI data or modifying it over the internet. Common internet attacks could be brought against the electrical grid or individual customers.

> [T]he AMI architecture will determine the points of security vulnerability. Wireless sensor networks, for example, are subject to the general security problems of computer networks, ordinary wireless networks, and ad-hoc networks. The limited resources of common sensor nodes – slow CPUs and small memories – hinder the use of cryptography defenses. Packet jamming and insertion may occur over any network or link layer in the communication infrastructure. Adversaries may use simulated nodes, out-of-band channels, and modified or self-generated data to facilitate sinkhole attacks, acknowledgement spoofing, rushing attacks, HELLO floods, or blended attacks. These may result in denial of service to customers or utilities (e.g., access to billing information or energy usage), payment avoidance, system overload, reduced quality of service, and violation of power control protocols. Indeed, AMI security weaknesses could enable penetration of presently secure systems."[30]

The National Institute of Standards and Technology released its first draft of the "Framework and Roadmap for Smart Grid Interoperability Standards" *(hereafter,* NIST Roadmap*)* in September 2009.[31] It points out that "[t]he major benefit provided by the Smart Grid, *i.e.,* the ability to get richer data to and from customer meters and other electric devices, is also its Achilles' heel from a privacy viewpoint."[32] A Privacy Impact Assessment (PIA) performed by NIST discovered that there is a "lack of consistent and comprehensive privacy policies, standards and supporting procedures throughout the states," while at the same time the Smart Grid's "management and information collection and use creates a very significant privacy risk that must be addressed." [33]

California puts a high value on privacy. The right to privacy is incorporated in our Constitution.[34] Several parties have identified statutes and tariffs that bear on the issue of privacy. SCE points to PU Code section 394.4(a), which was part of a larger Code section enacted to protect customers from Direct Access. Section 394.4 directed the

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30 Smart Grid News, M. Foley: Data Privacy and Security Issues for Advanced Metering Systems (July 1, 2008). http://www.smartgridnews.com/artman/publish/industry/Data_Privacy_and_Security_Issues_for_Advanced_Metering_Systems_Part_2-453.html

31 http://www.nist.gov/public_affairs/releases/smartgrid_interoperability.pdf

32 NIST Roadmap at 84.

33 NIST Roadmap at 84.

34 CAL. CONST. art. 1, § 1.

Commission to adopt rules implementing certain minimum standards specified in the statute, including "Customer information shall be confidential unless the customer consents in writing." In D.97-10-031, also referenced by SCE, the Commission identified how much customer-related information could be released. The dimensions of that decision are outdated and need a second look. In D.97-10-031, the Commission ordered that monthly usage data was to be released when the customer switched to an ESP and every six months thereafter. In this proceeding we are talking about a much more frequent, automated release of data concerning a customer's use of individual appliances.

Another statute coming out of the restructuring period was 393(f), referenced by DRA. That statute provided that "[a]ccess by electrical corporations and third-party providers to the usage information output interface shall be at the sole discretion of the customer, except to the extent that the customer enters into a billing relationship with an electrical corporation or energy service provider."[35] DRA also references PU Code section 585, which allows the Commission to establish rules governing access to utility computer models. In that context, the statute says, "These provisions shall provide for the confidentiality of records, the protection of proprietary information, and the protection of the reasonable expectation of customers of public utilities in the privacy of customer-specific records maintained by the utility. "

These statutes, and the Constitution, form the basis of a privacy policy which could be adopted for the smart grid. The National Institute of Standards and Technology discusses in its 'NIST Framework' release, the "complexity, large number of stakeholders, and highly time-sensitive operational requirements of the Smart Grid, which "makes it very vulnerable to breaches of security."[36]

> Cyber security must address not only deliberate attacks, such as from disgruntled employees, industrial espionage, an terrorists, but inadvertent compromises of the information infrastructure due to user errors, equipment failures, and natural disasters.[37]

Cyber security is intricately related to privacy.

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35 PU Code § 393(f)(6)

36 NIST Roadmap at p. 74.

37 *Id.*

NIST suggests that "an overall cyber security risk management framework" should be developed for the Smart Grid. "The goal is to ensure that a comprehensive assessment of the systems and components of the Smart Grid is completed. Following the risk assessment the next step is to select and tailor (as necessary) the security requirements."[38] The result of NIST's work is out for comment and a revised draft will be published in December 2009.

III. MULTI-JURISDICTIONAL AND SMALL UTILITIES

The Joint Ruling determines that the small size and nature of the operations of PacifiCorp, Sierra Pacific, Mountain Utilities, and Bear Valley Electric make it inappropriate to impose the PURPA standards. At some point in time, however, these small and multistate utilities will have to begin considering how to adapt their operations to smart grid technologies and operations. The concept of a Smart Grid is to replace "outmoded trunk lines (that connect our regional grids) with a single high-voltage transmission line that crosses the nation incorporating nodes along the way that allow individual sub-grids or generating stations to plug in."[39] Utilities which fail to prepare for operation of the Smart Grid will become roadblocks on the path to that that goal.

IV. CONCLUSION

There are a host of concerns to be explored in the privacy arena. CFC reiterates its request, jointly made with TURN, that the Commission provide an opportunity for additional public input and fact-gathering to address the consumer privacy and home security issues that arise with development of the Smart Grid.

Dated: November 2, 2009

Respectfully submitted,
CONSUMER FEDERATION OF CALIFORNIA

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[38] NIST Roadmap at 75.

[39] Dr. Bill Chameides, The New Smart Grid (Feb. 27, 2009) http://www.popsci.com/node/32597

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 R.08-12-009**

CERTIFICATE OF SERVICE

I hereby certify that on November 2, 2009, I served by e-mail all parties on the service lists 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:

REPLY COMMENTS OF THE CONSUMER FEDERATION OF CALIFORNIA TO 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

The names and e-mail addresses of parties served by e-mail are shown on an attachment. In addition, I served the following persons by enclosing said document in an envelope addressed to them and depositing the envelope in the U.S. Mail, with postage prepaid.

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