

**BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA**

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**Petition to Adopt, Amend, or Repeal a regulation to the
California Public Utilities Commission**

**Petition to Establish a Minimum Level of Competence for any and all Digital
Information controlling or generated in SmartGrid systems falling under the CPUC's
regulatory control**

Abstract:

This is a formal petition under Utility Code Section 1708.5 to accomplish two milestones to protect the End-Users (Consumers) of the SmartGrid system by establishing a minimum standard of competence for information generation by SmartGrid components operated as part of any Utility in the State of California. This petition is specific to the Digital Evidence applicability that output from the SmartGrid's operations produces, and to how it is maintained as control/use data used in SmartRate systems.

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Petition to Institute a Rule enforcing California Evidence Standards in SmartGrid and SmartRate AMR/AMI systems.

This is a petition to the California Public Utilities Commission (CPUC) to under Utility Code section §1708.5 , in its Rulemaking Operations, formally establish two requirements for any Data Processing or SmartGrid AMR/AMI systems

Rule 6.3 Compliance

This petition is fully compliant with Section 6.3, and in particular recognizes the applicable Digital Evidence standards set for in California v Klahed, a ruling fully affirmed by the California Appellate Court (see attached ruling).

Per Rule 6.3a, since there is a factual standard issued by the 6th District California Appellate Affirmation of the Khaled ruling provides the requirements for generating Trustworthy Evidence, i.e. evidence which can be used before a California Court.

This petition is submitted by electronic filing for review before the PUC and is served electronically throughout the 08-12-009 service list since it is a petition specific to SmartGrid and SCADA operations everywhere in the State of California.

Introduction

The “all Digital Evidence must meet minimum Court Standards” Petition

Since the Energy Marketplace enabled by SmartGrid is based in allowing the Consumer open access to Power and Utility Providers by turning the Grid itself into a Last-Mile type operation, and to mirror the Telecom Grid’s operations to an extent, this fundamental statement of evidence competence is necessary.

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Traditionally, technology has refused to conform to Law and Process

As underlying history, these standards of evidence are oft times ignored by technologists as 'inconvenient' and in this instance where a system is being fielded to serve the public trust and interest, these issues of competence in the evidence model for all digital systems must be enforced to protect the consumers and the People of the State of California from unintentional errors and potential purposeful frauds which could be perpetrated against them through Time of Use (TOU) billing errors.

Technology in the case of SmartGrid must implement the Rule of Law

To 'fix' this potential for problems the technology used in the SmartGrid must either produce competent evidence on its own or through being leveraged through some other process to mitigate the design flaws or fundamental weaknesses which would appear through the Evidence Audit of the technologies and their operation.

Discussion

SmartGrid Evidence Standards

To start this analysis we need to set a stake in the ground for any digital billing and TOU control practice which meets proper evidence standards. And further that as part of practice, all SmartGrid systems (as in Energy, Water, Heat, etc.) must produce a proper set of evidence as proof of their operations, and logs which provably allow for their documentation of the delivery of service and the settlement processes.

CPUC already has rules pertaining to computer information (10.3 and 10.4) and these would also apply to SmartMeters and their operations as well as devices which connected to the Meter either directly or through the power lines as well.

State and Federal Standards for Court Admissibility of Evidence already exist

Certichron also believes that to make SmartGrid a success that functionally speaking the trust processes around the TOU Monitoring need to be ones which provide a truly objective

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and arms-length evidence model for all TOU/Primary Providers, and the related Consumer transactions whether they occur over the SmartGrid itself, the Internet, another telecommunications service interface or other Energy/Utility delivery models including but not limited to traditional DA, DR or other account relationships. Further, those optional third-party monitoring services should be available to allow for an independent provider of Trust to any of the SmartGrid's transaction process(es) as an Energy Management Service component or stand-alone offering.

Further that both State and Federal governments already have well tested and easily met Digital Evidence standards in both their Courts and before their Agencies, and that the CPUC's operations are constrained therein.

To facilitate this Certichron believes therefor that it is appropriate to specify that

“Any and all SmartGrid monitoring processes must also produce court admissible evidence of operations which meets the minimum legal standards for digital evidence both at the State of California's level and that of the Federal Government”.

as part operating requirements for any systems which will generate data which may be used as testimony or reporting of fact before the Public Utilities Commissions, California and Federal Courts.

Federal Evidence Requirements

The reason is that both State and Federal evidence standards are required since it is already common practice in California to take bulk power from independent, private and Federal sources outside of California making the Federal standards apply.

The inclusion of a third party, to generate and officiate those evidentiary grade time stamps as part of every transaction is another potential key step towards assuring compliance with the state and federal evidentiary standards. It is for that we also seek acknowledgement in the Petitions as well.

Cyber Security – Secure and provable/private record services

First, on the issue of cyber security, the Proposed Decision cites three documents that National Institute of Standards and Technology (“NIST”) Computer Security Resource Center¹, a service of the NIST Information Technology Laboratory, who in cooperation with the Department of Homeland Security have prepared that provide Federal guidance on cyber security issues. However, as the Proposed Decision points out, while these guidelines provide useful guidance, they alone cannot address all of the potential security permutations that a deployment presents.

To do that effectively, utilities and their third-party time-service providers will need to fully meet existing US and California State Evidence Standards as a point of sale control system opening up a number of control opportunities as well as a new service for CAISO possibly (i.e. vending machine licenses for each SmartGrid meter operating as an energy purchase and control station).

We do differ however from AT&T's reasoning about who should be involved in keeping the providers honest. To quote AT&T's response in another 08-12-009 filing:

“The Grid should be thoroughly reviewed for potential security breaches, but utilities and communications providers should use their own professional judgment, as informed by the NIST and DHS general guidance, to determine the steps to take to ensure security while controlling the costs which consumers ultimately must bear. This places cyber security responsibility squarely where it should be – on the utility operating the particular aspect of the Smart Grid. Allowing utilities to demonstrate reasoned conformance with the NIST and DHS guidelines rather than requiring absolute compliance will encourage better and more adaptive cyber security practices. And adaptation is what cyber security is all about. Standards are relatively static but cyber risks are dynamic.”

We disagree with AT&T's view as highlighted above. The risks in allowing the delivery operator to stand as the trusted-partner is contrary to all objective control practices used today in all regulated industries. This is no more than the “Trust Me I promise I will do it right” commentary we heard from Enron and many others over the last two decades.

¹¹ <http://csrc.nist.gov/index.html>

California's SmartGrid needs trust capability which exceeds any one party's potential to commit frauds.

Bluntly the system must be better than the people who operate it to protect the Public Trust it is being rolled out to support.

This applies to Time of Use controls especially since there are legal requirements under US law for which timescale, in this case NIST(UTC) must be used for legally enforceable time-service transactions.

Likewise from a trust perspective while the "Operator of the Last Mile" provisioning is one party who should be tracking the Time Of Use controls they are not an objective representative of the end-user's Time of Use Data.

Why? A simple 2 minute 'time-slip' for instance in a billing cycle would produce a misstatement and the associated billing for hundreds of millions of dollars over a year for most medium sized utilities and that scales for the larger entities here in the State of California.

Adding a trusted-third party to the SmartGrid's operations

Traditional Network Service providers have learned that two party transactions are generally just that. Meaning that the evidence they produce is generally tied to the testimony of the two parties involved directly making it he-said, she-said in form.

In the Utility Operations world this takes on new meaning since TOU billing is becoming key to managing costs and keeping proper use loading consistent. The only way to provably add trust is to add a trusted third party

Because of this potential and the sheer number of intended frauds from an investment standpoint in the Energy Sector over the last ten years, there is a serious lack of trust in

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Energy Sector executives. When leveraged against the misstatement of client-use in Smart Meter operations which have in fact occurred, a trusted third party to any of these operations of the SmartGrid is the only reliable way to create global levels of trust.

Simply put, Time of Use (TOU) service models mandate a provable way to document the use of the Energy commodity. They also strongly define where customer controls start and suppliers infrastructure ends.

SmartGrid and the Vision

With regard to the existing and new SmartGrid itself, the few considerations we propose to make are made in the Proposed Decision, and are made to ensure that the Grid can provide reliable evidence of its proper operation, and through this to create the transparency necessary in an open market.

[p.108] “16. A presentation of a Smart Grid Vision Statement that shows that the proposed deployment plan advances a “Smart Electric Market” that is transparent and demand responsive, provides pricing information and promotes an open energy trade and delivery platform would be consistent with SB 17 policies and initiatives.”

With a fully empowered and transparent grid the End-User should be able to buy their energy from anyone offering it for sale and contract for the delivery of that energy through their Last Mile Provider. The enablement of the SmartGrid as a transparent platform for energy distribution requires a uniform evidence model which meets all the legal requirements for operations both within and across State borders. Certichron believes that the rate design embodied in this description is easily accomplished by the integration of a proper legal model and trusted third party.

Applicable Security Standards – NIST SP800-52 and 53

The controls which allow for billing and adaptive rate plans to be put in place need to be provable and secure, and as such meet both NIST SP800-52² and 53³ standards for Information Security as well as the NIST ICS recommendation. Additionally there are a set of US Critical Infrastructure Controls which DHS has in place which any Utility Service operated to serve the Public Interest must meet.

With advanced pooling and local/regional energy reservoirs being used to buffer D/A and other bulk purchases, the smart solution is one which fully implements a set of controls that comply completely with NIST service requirements including the use of the NIST timebase as the trust-anchor for all transactions.

CPUC Open Rate Models

We strongly agree that tariffs and pricing impact all forms of supply and demand-side activities, including direct access (“DA”), demand response (“DR”), energy efficiency (“EE”), and time of use (“TOU”) systems and as mandated are easily delivered when they are operated with a trusted third party time-service provider and that evidentiary grade time and trusted-third party security model will address the control-processes needed to enable all of the open rates contemplated in the ruling.

Meter Management Solutions exist which allow the use of already deployed accessible meters as well as more network/communication savvy meters so the ability to deploy safe and secure meters as well as Internet and existing Last Mile based control systems as in solutions like those proposed by AT&T and other Internet Service Providers make the potentials of an open marketplace attainable in a much more aggressive timeline that many would think.

With the Meter as the Bright-Line CPE demarcation point it becomes the key agent for

² <http://csrc.nist.gov/publications/nistpubs/800-52/SP800-52.pdf>

³ <http://csrc.nist.gov/publications/nistpubs/800-53-Rev2/sp800-53-rev2-final.pdf>

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controlling the timely logging of its activities. Certichron supports commentary from Wal-Mart and others on the importance of properly demarking customer and supplier perimeters as well.

Other CPUC Dockets this affects

Certichron also notices that Evidence Standards and in particular time-management in AMI services are a key component in TOU billing systems and should be afforded the same consideration in at least two other planning related open rulemaking dockets at the Commission, namely:

- Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long Term Procurement Plans, R.10-05-006, filed May 6, 2010;

and

- Order Instituting Rulemaking to Oversee the Resource Adequacy Program, Consider Refinements, and Establish Annual Local Procurement Obligations, R.09-10-032, filed October 29, 2009.

Certichron believes the same set of services proposed here for 09-12-008 and based on the availability of real NIST calibrated time services to the meter and AMI infrastructure, that the Commission is warranted in continuing to meet the milestone deadlines and goals for providing consumers with access to data adopted in D.09-12-046, with three milestones,

those being:

- the policy objective for the provision of retail and wholesale price information by the “end of 2010,” ; and
- which also provides access to usage data through an agreement with a third party by the “end of 2010,”; and
- Access to usage information on a near real-time basis for customers with an Advanced Metering Infrastructure (AMI) meter by the “end of 2011.”

Investor Owned Utilities (IOU's) and Providers each qualifying their operating Security Models

Certichron also applauds AT&T's commentary of

"IT SHOULD BE MADE CLEAR THAT IN ADDITION TO FOLLOWING THE NATIONAL GUIDELINES UTILITIES AND COMMUNICATIONS PROVIDERS MUST ENGAGE IN THEIR OWN DETAILED CYBER SECURITY RISK ASSESSMENT."

In that each open and transparent delivery, accounting and billing control system used in the SmartGrid must meet the minimum legal standard for trading and delivery of energy in all rate models. AT&T also notices that the standards are National ones making time a key federally supplied resource in the TOU operations.

To insure this Certichron proposes a set of additional language to the decision providing direction about what evidence standards the Grid's operation will provide and how these are to be administered to insure compliance with Court Evidence Standards in those proceedings before PUC's Administrative Law Judges, California, and Federal Courts that any participant in the California Smart Grid may come to face.

Breaking up the SmartGrid model – defining the CPE Demarcation point

Much talk has been made on defining responsibility for security in operations based on which SmartGrid component we are referring to. This has culminated in the creation of the Bright-Line Concept regarding Customer's CPE and where the customer's infrastructure begins from the Grid it is interfaced to. Certichron believes that to be truly open that Customer's must also be able to contract for third-party independently verified time services as a service to 'keep the Grid Operator honest' and to insure their rights are properly protected therein.

Certichron believes that from an evidence perspective this is also important in the definition of where the "hard-lines in the sand" in the deployment model are drawn. These

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controls will effect what the SmartGrid will be and what it evolves into. The analysis and placement of proper demarcation controls will better define who is responsible and for what they are responsible for. For instance privacy and information integrity laws clearly apply to information on the client's side of the SmartMeter installation and as such that information will have to be provably protected in the SmartMeter operations model. Likewise, how all of the key calibration data is delivered to the meter must also be documented in these operations models.

Conclusion

In closing this we applaud the Commissioner's work in this ruling and believe it is in the best interest to keep the decisions time-lines intact since the technology to address the control issues and quality of evidence being produced at all levels of the SmartGrid system exists today and is in fact ready for use in California. To that end and before the Administrative Law Judges of the Commission we petition as follows:

Petition for an issuance of a Rule regarding that "SmartGrid systems must produce evidence meeting the defined standards for court admissibility"

Certichron formally petitions the CPUC to issue specific guidance that "All SmartGrid" component systems and infrastructure components (as well as existing operating SCADA systems) must meet the California State Evidence Standards as enforced by California v Khaled, and that all SmartGrid components also comply with CPUC Rules 10.3 and 10.4 (see Appendices) in that their vendor's and operator's must produce ongoing evidence of their operation which meets the California State and Federal Rules of evidence and precedents such as Lorraine v Markel⁴ (see Appendices).

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⁴ Lorraine v. Markel Am. Ins. Co., 241 FRD 534 (D. Md. 2007)

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