



California Public Utilities Commission

Energy Data Center

BRIEFING PAPER

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Summary

Aggregated customer energy usage information is available, but access to that information is often difficult. Consolidating that information in one location, such as a data center, should help improve state energy policies and create new market opportunities to save energy.

Introduction

The energy sector is moving and transforming itself to operate within the information age. The granularity of energy consumption information that is available now compared to ten years ago is enormous and can be immensely useful.

With the deployment of advanced meters, the customer is now able to get information about their usage the next day. Going forward that information will be made available to the customer instantaneously. The granularity of energy information that is available now compared to ten years ago is enormous. Such information may help individual customers better manage their own usage and lower their bills, and enable third parties to offer additional services directly to customers.

More granular customer usage data can help policy makers adopt more effective policies. It can allow 1) a better understanding of how and when customers consume energy; 2) an evaluation of current programs; 3) the tailoring of energy efficiency and demand response programs; 4) improved planning and maintenance of utility and grid operations; and 5) a better understanding of new varieties of generation or demand response programs and their impacts on the distribution grid. The geographical and time granularity of data can give us a better understanding of consumption of different sectors and segments of California.

Third parties offering innovative programs and products directly to customers also have a clear interest in obtaining customer data in order to show benefits from the program or product to potential customers. With more granular data, companies could also invent new energy saving products for customers.

Customer-Specific Data versus Aggregated and Anonymous Data

In the Commission Privacy Rules governing energy usage data, there is a difference between customer-specific data that would reveal personally identifiable information and aggregated and anonymous data that would not violate customers' privacy. This whitepaper will mainly address the need for aggregated and anonymous data. **Aggregated data that does not contain personally-identifiable information, is not subject to the Commission's Privacy Rules, nor is a Non-Disclosure Agreement (NDA) required to obtain such information.** This is noted in D.11-07-056 and affirmed in D.12.08-045. The Appendix section "Current Methods for Obtaining Customer-Specific Data" addresses access to customer-specific data in more detail.

Current Challenges to Accessing Aggregated Data

Currently, many organizations request access to customer usage information to research customer usage patterns and to measure the effectiveness of various State and Commission energy-related programs, such as energy efficiency and demand response. Yet, such information is not readily available. When a utility does make it available, it is often out of scope, aggregated beyond what is necessary to protect customer privacy and not useful to the requestors, and outdated. An on-going concern is whether, and to what extent if any, the utilities act against the interests or wishes of the customer and erect barriers to limit the opportunity for authorized third parties to obtain customer usage information. An additional concern is whether the utility acts as barrier against the sharing of aggregated data with governmental organizations that are seeking data for research or operational purposes.

Perhaps even more frustrating, each utility interprets state law and the Commission's rules differently, and has a different relation with representatives from state or local government. For example, PG&E has a uniform NDA in place, and, subject to certain conditions, generally will make customer-identifiable data available to government entities.¹ Other utilities take a far more reluctant stance on making customer-identifiable data available to governmental third parties.

In order to provide aggregated and anonymized data, the obvious question is how does one determine what is aggregated enough or anonymized enough. To date, this question has been negotiated between governmental entities, utility representatives, and Commission representatives.² At least one utility has proposed adoption of the 15/15 Rule as a methodology to determine what is sufficiently aggregated.³ As noted below, the Privacy Rules did not create a methodology or a definition of what is aggregated; rather, the Privacy Rules maintained a flexible approach that only requires that "the release of data does not disclose or reveal specific customer information because of the size of the group, rate classification, or nature of the information."⁴

By eliminating the utility as the gate-keeper for obtaining aggregated and anonymized data, it may allow for a more open process for governmental organizations and other researchers to obtain this type of data.

Currently, customer-specific data is available to governmental entities like state universities or local government through an NDA with the Commission. See Appendix section "Current Methods for Obtaining Customer-Specific Data".

¹ More recently, PG&E insisted on a certain level of cyber-security assurance for any third party obtaining data pursuant to this NDA. In addition, for purposes of the NDA, the data is treated as a "trade secret" of PG&E; this is done to ensure that customer-identifiable data in the hands of a governmental entity is not subject to a Public Records Act request.

² Commission Staff will hold a workshop in mid-October to discuss how utilities define aggregated data and the necessary levels of aggregation.

³ See Southern California Edison Advice Letter 2644-E (filed October 27, 2011) and "Protest of the Local Government Sustainable Energy Coalition on Southern California Edison Advice Letter 2644-E" (filed November 16, 2011).

⁴ D.11-07-056, Attachment D at Section 6(g).

Energy Data Center as a Possible Solution

The creation of an energy data center could provide greater availability, geographically and temporally, of aggregated and anonymized customer energy usage data in the long run, thereby lowering potential utility barriers to this data.⁵

There are three possible roles for the energy data center:

1. *Aggregate and anonymize customer-specific data such that it protects customers' privacy and make it available to the public in a timely manner.* This data needs to be aggregated to protect customer privacy, but disaggregated enough to be useful. The temporal level of data could be monthly usage or more granular, depending on what is practical and most useful. Organizations seeking aggregated data not being provided by the energy data center could make special requests and compensate the center accordingly, inversely depending on the value of the requested aggregated data to utility customers.
2. *Provide independent research and analysis of current state, Commission, and utility programs using customer-specific data but publishing results of that analysis in an aggregated and anonymized form that protects customers' privacy.* This research could be done by the data center at the request of the Commission and/or on its own accord. With access to customer-specific information, the data center may have freer rein to do analysis of specific Commission and utility programs, and be able to release results in an aggregated and anonymized form. To the extent that a governmental entity would like to work with the data center and access customer usage information to perform joint research, that governmental entity would need to sign an NDA with the Commission to maintain the privacy and security of customer information, and would need to state the purpose for which it seeks customer data (see item 3).
3. *Facilitate the transfer of customer-specific data to a governmental organization, provided that governmental organization has an NDA with the Commission.* If a request for data information would release customer identifiable data, even though the data would be made available by the data center, an NDA would still need to be signed between the governmental organization and the Commission. The data center would not be allowed to enter into NDAs on its own with other governmental organizations. The Commission would still need to oversee and enter into those NDAs with other governmental organizations. Pursuant to the NDA, the Commission will ensure the protection and privacy of customer-specific data, and that governmental organization will be bound by the Commission's Privacy Rules.

⁵ Nevertheless, the Commission currently maintains exclusive jurisdiction over the investor-owned utilities in the State and has the power to direct utilities to share data with third parties should the Commission so choose. See P.U. Code § 8380(e)(3) which provides the Commission with authority to direct the release of customer identifiable information without a customer's consent.

There are two possibilities for the transfer of the customer-specific data from the utility to the energy data center:

1. The energy data center would have an NDA with the Commission. Under that NDA, the data center would need to ensure that unauthorized release of identifiable customer data does not occur. When operational, the utility would send customer-specific information to the Commission on an ongoing basis through a data request. The Commission would in turn send the data to the data center under the NDA, in a secure and protected manner on an ongoing basis.
2. Alternatively, the Commission could direct the utilities to give customer-specific data to the energy data center, pursuant to an NDA between the data center and the utility,

It is important to note that the Government Code limits the entities that the Commission can enter into NDAs with to other governmental entities. Therefore, the energy data center will have to be a governmental entity. For example, the data center could be part of a University of California campus.

Utility Customer Benefits of an Energy Data Center

There are many benefits of an energy data center that provides aggregated and anonymized data to the public. The utility customer benefits of the structure of an independent center are:

- address the need by other governmental organizations and the public to obtain aggregated and anonymized data
- overcome many deficiencies in our current practice (see section “Current Challenges to Accessing Aggregated Data”)
- reducing the time-frame for a governmental organization to obtain customer-identifiable data (where the governmental organization only has an NDA with the Commission),

The utility customer benefits of the aggregated and anonymized data itself are:

- an understanding of customer usage profiles and patterns;
- an ability to guide and modify existing and future Commission-directed and other state energy programs from energy efficiency to distributed generation to the smart grid;
- an evaluation on how well utility programs perform;
- identification of rate impacts across climate zones and rate impacts of certain types of customers within a climate zone (For example, currently there is little information about how each neighborhood within the county of San Francisco consumes energy; does Pacific Heights use more energy than the Tenderloin District.);
- the creation of new opportunities in the market for the development of energy saving products

Many other benefits are possible and should be contemplated.

Under current rules, it is possible for an energy data center to be set up without a Commission-initiated data center. A governmental entity like a University of California campus could establish an NDA with the Commission for customer-specific data across all the energy utilities under the Commission's jurisdiction, and then make that data available to the public in an aggregated and anonymized form that does not violate customers' privacy. (See Appendix section "Current Methods for Obtaining Customer-Specific Data"). Unfortunately, this process usually results in a long delay for governmental organizations to access customer-specific data due to staffing and resource constraints within the Commission. It is in this respect that creating a centralized depository to enable governmental organizations to access aggregated and anonymized customer data would be beneficial, with appropriate rules in place to protect the privacy of individual customers and the security of their data.

Obligation to Protect Customer Privacy in Setting up Energy Data Center

Clearly, ensuring that customer data is kept confidential, private and secure is an overriding goal of the state and the Commission. The Commission's rules, and state law, provides for the sharing of customer data for certain purposes without customer consent, but also allows for the customer to provide their own consent to other third parties. In the cases where there is no customer consent, the Commission must be careful in directing the release of customer information to a third party for a specific purpose, but also ensuring customer privacy of that data.⁶ On the other hand, aggregated data that does not contain personally-identifiable information, is not subject to the Commission's Privacy Rules, nor is an NDA required to obtain such information. Therefore, the Commission must ensure that the creation of an energy data center will not violate the Commission's Privacy Rules.

Privacy Rules

As early as 1997, before the installation of advanced meters, the Legislature recognized that customer usage information is confidential. In P.U. Code Sec. 394.4(a), the Legislature stated:

Customer information shall be confidential unless the customer consents in writing. This shall encompass confidentiality of customer specific billing, credit or usage information. This requirement shall not extend to disclosure of generic information regarding the usage, load shape, or other general characteristics of a group or rate classification, unless the release of that information would reveal customer specific information because of the size of the group, rate classification, or nature of the information.

SB 1476 provided additional details around the confidentiality of customer usage data generated by advanced meters. SB 1476 noted that "an electrical corporation or gas corporation shall not share, disclose, or otherwise make accessible to any third party a customer's electrical or gas

⁶ Indeed, in order to support the maxim of data minimization contained in the Commission's Privacy Rules and the Fair Information Practice Principles, a third party should only receive "as much covered information as is reasonably necessary" and should "maintain covered information only for as long as reasonably necessary." D.11-07-056, Attachment D at 5(a) and (b).

consumption data, except as provided in subdivision (e) or upon the consent of the customer.”⁷
Subdivision (e) provides for three exceptions:

- 1) Nothing in this section shall preclude an electrical corporation or gas corporation from using customer aggregate electrical or gas consumption data for analysis, reporting, or program management if all information has been removed regarding the individual identity of a customer;
- 2) Nothing in this section shall preclude an electrical corporation or gas corporation from disclosing a customer’s electrical or gas consumption data to a third party for system, grid, or operational needs, or the implementation of demand response, energy management, or energy efficiency programs, provided that, for contracts entered into after January 1, 2011, the utility has required by contract that the third party implement and maintain reasonable security procedures and practices appropriate to the nature of the information, to protect the personal information from unauthorized access, destruction, use, modification, or disclosure, and prohibits the use of data for a secondary commercial purpose not related to the primary purpose of the contract without the customer’s consent; and,
- 3) Nothing in this section shall preclude an electrical corporation or a gas corporation from disclosing electrical or gas consumption data as required or permitted under state or federal law or by an order of the commission.

In D.11-07-056, the Commission provided additional direction to the utilities regarding the availability of customer data and what is necessary to ensure that customer data is kept confidential, private and secure. In that decision, the Commission adopted a set of Privacy Rules,⁸ based on the Fair Information Practice Principles,⁹ which govern the utility treatment of customer usage information generated by advanced meters. It outlined under what circumstances customer usage information can be shared without customer consent, what requirements are imposed upon the utility and those that receive customer usage information to ensure data is kept confidential, private and secure, and what rights customers have to share data with other third parties. Notably, as it regards the availability of aggregated customer data, the Privacy Rules state:

Availability of Aggregated Usage Data. Covered entities shall permit the use of aggregated usage data that is removed of all personally-identifiable information to be used for analysis, reporting or program management provided that the release of that data does not disclose or reveal specific customer information because of the size of the group, rate classification, or nature of the information.¹⁰

In addition, the Privacy Rules outlined an additional principle of privacy practices: an entity should only collect, store, use and disclose only as much data as is necessary to accomplish the purpose for which it is required or authorized by the customer.¹¹

⁷ P.U. Code Sec. 8380(b)(1).

⁸ D.11-07-056 at Attachment D (Privacy Rules).

⁹ See “Fair Information Practice Principles,” Federal Trade Commission (last updated June 25, 2007) (available at <http://www.ftc.gov/reports/privacy3/fairinfo.shtml>); “Privacy Policy Guidance Memorandum,” Department of Homeland Security (December 29, 2008).

¹⁰ D.11-07-056, Attachment D at Section 6(g).

¹¹ D.11-07-056, Attachment D at Section 5.

Rulemaking

The Commission should consider opening a rulemaking to consider the creation of an energy data center and the benefits it can offer. Should the Commission open a rulemaking to facilitate access to aggregated and anonymized customer usage data, it is imperative to stay within the confines of existing privacy statutes and Commission rules.

The rulemaking at a minimum will need to address the following questions:

- Is a rulemaking necessary under current practices to make aggregated and anonymized data available to the public? Should the Commission establish an energy data center?
- What is the value of an energy data center for utility customers and what is the cost?
- How should the energy data center be set up? We have proposed one model but others may be possible within the confines of statutes, rules, and codes. What are the responsibilities of the energy data center beyond providing aggregated data to utility customers and the general public? Should additional research and evaluation of Commission programs be included?
- How should it be funded? Cap-and-trade auction revenue administrative funds, electric program investment charge (EPIC) funds, energy efficiency evaluation, measurement, and verification (EM&V) funds, a new source from utility customers?
- How can the Commission ensure the protection of customer-specific energy usage data at the energy data center and provide the necessary oversight? Are cyber security requirements necessary? Are further guidelines for aggregation necessary?
- A following phase of the rulemaking would determine the data center selection method.

Appendix

Current Methods for Obtaining Customer-Specific Data

The current practice for obtaining customer-specific energy usage data depends upon the purpose for which a third party is collecting the data.

Through customer consent: One way of obtaining customer-specific usage information is through the Green Button DownloadMyData application, where customers can download and share their usage information. The Green Button DownloadMyData is available on customers' My Account webpage through their utility, and can be shared with any third party the customer chooses. Starting next year, the utilities are expected to implement the next iteration, Green Button ConnectMyData¹², which would allow an authorized third party to automatically obtain customer-specific usage data, when authorized by the customer, in a machine-to-machine transaction. The data that will be the hourly usage information currently collected by the advanced meters, for at least the prior 13 months. At this time, this capability will be limited to only residential customers; the availability of commercial and industrial customers' data is expected to be delayed due to software issues and other constraints.

In addition, third parties such as an Energy Services Provider (ESP), can also obtain customer usage information through a Customer Information Service Request (CISR) form.¹³ This form allows a customer to consent to the sharing of their usage information with a third party.

By contractors to a utility: Utility contractors implementing energy efficiency or demand response programs can sign an NDA with each utility.¹⁴ The NDA covers what data will be shared between the utility and the third party contractor, terms under which the data is being provided, and any responsibilities assigned to the utility and third party to ensure the privacy and security of customer identifiable data.

By Community Choice Aggregator: State statutes provide for a Community Choice Aggregator (CCA), to obtain customer identifiable usage data to support their operations. In order to obtain this information, the CCA must also sign an NDA with the utility to preserve customer privacy, much the same way as a utility contractor would.¹⁵

Through an order of the Commission: According to SB 1476 subdivision (e), "Nothing in this section shall preclude an electrical corporation or a gas corporation from disclosing electrical or gas consumption data as required or permitted under state or federal law or by an order of the commission."

¹² Currently, the Commission is considering an effort by SDG&E, SCE and PG&E to support the Green Button ConnectMyData application, which will develop a process to enable a customer-authorized third party to obtain the hourly, next day customer usage data in a standardized manner and obtain data directly from the utility. See A.12-03-002, *et al.*

¹³ An example of a utility CISR form can be found here: http://www.sce.com/NR/rdonlyres/FDF989BB-8BE5-4158-BAB5-2F9EC69E1DF5/0/BIP_CISR_Form.pdf. A CISR form can be used by any other third party seeking customer usage information. For example, solar providers can use a CISR form to obtain customer usage information to help site a solar installation, run billing estimates, and perform bill audits on behalf of prospective and current customers. The Commission recently issued a resolution directing utilities and these third parties to develop a more streamlined process for obtaining customer data. See Resolution E-4481 (____) at Ordering Paragraph 8 (directing parties to work in conjunction with utility Green Button efforts prescribed in D.11-07-056).

¹⁴ As directed by P.U. Code 8380(e)(2), customer consent is not required for this purpose.

¹⁵ In the alternative, a customer can sign a consent form to allow the utility to share their data with an ESP or CCA. In addition, the Commission recently issued Decision 12-08-045 which expanded the Privacy Rules to cover ESPs that serve residential and small commercial customers, and CCAs.

By governmental entities through an NDA with the Commission: There remain other parties who, for one reason or another, seek customer data to do general electricity sector research or to support Commission or state authorized programs. In limited circumstances, another method for providing customer identifiable data to an organization has been practiced by the Commission when the requests come from the state or local government or other governmental research organizations.¹⁶ When a representative from another governmental seeks customer identifiable information, and cannot come to an agreement on an NDA with the utility, the Commission may act as an intermediary to bridge the desires of the governmental or research organization and the concerns of the utility. There are several reasons for the Commission to be involved in this process, including utility concerns around providing data to a competitor, the requests themselves would result in the release of customer identifiable data without customer consent, or concerns related to NDAs and Public Records Act requests.¹⁷

Other States:

In other states, such as Vermont and Wisconsin, which have independent administrators of energy efficiency programs, that allows them to package access to customer data and programs together, those entities have reached separate agreements with the local utilities to provide those administrators with access to customer data. These independent energy efficiency administrators are responsible for managing the statewide energy efficiency portfolio, provide funding directly to energy efficiency providers, and provide research and results of its efforts on energy efficiency programs in the state.¹⁸ For example, in Vermont, the Public Service Board directed the Vermont utilities to share customer usage information with the administrator, but sharing of that data with other third parties is explicitly limited to only energy efficiency purposes.¹⁹ Further, Vermont allows for aggregation of customer data to be made available; Vermont defines an acceptable aggregated level to be no smaller than the “town level.”²⁰ In Wisconsin, on the other hand, the energy efficiency administrator enters into an agreement with the utilities that specifies how the administrator will handle the data, including a) that it will protect the confidentiality of customer information, b) specifies how long the administrator will retain the information, c) specifies when the administrator will destroy the information, and d) states that it will pay a monetary penalty for any unauthorized release of data.²¹

The Colorado Public Utility Commission has gone even further by adopting a “15/15 Rule”²² to govern the release of aggregated customer data. The 15/15 Rule adopted by the Colorado PUC is, essentially, the same rule adopted by the Commission in 1997 as part of the Direct Access proceeding and is applicable in that context only.²³ The 15/15 Rule states that an aggregation

¹⁶ The Commission can only enter into NDAs with other governmental organizations.

¹⁷ Customer-identifiable data that is obtained from the utility, even under an NDA, may not be sufficiently protected from Public Records Act requests from other governmental bodies, such as law enforcement. The Public Records Act generally prohibits the release of customer-identifiable usage information, with several exceptions, notably, upon the request of law enforcement or a Court-issued warrant or subpoena. As noted in fn. 16, *infra*, classifying customer-identifiable data as a utility trade secret provides additional protection, but may limit a third party’s full use of the data.

¹⁸ To some extent, having a third party administrator of energy efficiency programs would greatly enhance the viability of and improve the availability of both aggregated and anonymized customer data and identifiable customer data to third parties.

¹⁹ VEIC Order of Appointment Process & Administrative Document. Docket 7466. State of Vermont Public Service Board.

²⁰ *Id.*

²¹ Provision of Energy Utility Customer Information to Focus on Energy. Docket No. 9501- GF - 101 Wisconsin Public Service Commission.

²² 4 COLO. CODE REGS. 723-3 Part 3 §3031(b)(c).

²³ The “15/15 Rule” was adopted in D.97-10-031 and is included in Schedule CCA-INFO.

sample must have more than 15 customers and no single customer's data may comprise more than 15 percent of the total aggregated data. While this may be a useful standard methodology, it is not without its critics.