

NO LONGER A PRIVATE ISSUE: ANALYZING AND SOLVING CALIFORNIA'S SMART  
METER DATA ACCESS DEBATE

Sam Andre

Like most Americans, every month I receive an electric bill. My bill contains traditional electric bill information, including the amount owed and the payment deadline. However, recently the utility added to these figures a comparison of my energy use to that of my neighbors. This information, laying innocuously on the edge of my bill, reflects an important step towards energy efficiency: the use of smart meter data. Whether experiencing a long winter necessitating the high use of heat and light, or utilizing old and inefficient appliances until able to afford a new set, as an electric customer I may face high and unforeseeable electricity costs. Yet, with granular smart meter data in hand, I hold a helpful tool for making efficient energy decisions and subsequently reducing my energy costs.<sup>1</sup>

With local electricity demand high, and state energy efficiency goals recently taking effect, California champions the use of smart meters as a way to increase energy efficiency.<sup>2</sup>

---

<sup>1</sup> *The Benefits of Smart Meters*, CAL. P.U.C.,

<http://www.cpuc.ca.gov/PUC/energy/Demand+Response/benefits.htm> (last modified Mar. 3, 2010) (“Allows customers to make informed decisions by providing highly detailed information about electricity usage and costs. Armed with a better understanding of their energy use, consumers can make informed decisions on how to optimize their electricity consumption and reduce their bills.”).

<sup>2</sup> For information on California energy saving goals, *see* Order Instituting Rulemaking to Examine the Commission's Future Energy Efficiency Policies, Administration and Programs, 2004 WL 2327931 (Cal. P.U.C. 2004) (providing background on California energy savings goals, their implementation, and continued rulemaking process).

However, with smart meters providing a flood of consumption data, privacy concerns threaten the value of using this information.<sup>3</sup> Specifically, questions arise such as how state utilities may release energy consumption data, to whom that information may be released, and in what form the records will be received. California currently allows individual customers and various third parties to access data through direct disclosure and aggregation methods like California's 15/15 rule.<sup>4</sup> Yet, even with this system in place, detractors argue that the data released tends to be de-identified beyond analytic use,<sup>5</sup> or conversely that privacy mechanisms insufficiently protect personal information.<sup>6</sup> Due to these valid criticisms, California must find a balance between privacy concerns and energy efficiency in order to resolve this data access debate.

---

<sup>3</sup> Federico Guerrini, *Smart Meters: Between Economic Benefits And Privacy Concerns*, FORBES (June 1, 2014), <http://www.forbes.com/sites/federicoguerrini/2014/06/01/smart-meters-friends-or-foes-between-economic-benefits-and-privacy-concerns/> (“Privacy is probably the most sensitive issue . . . information about the energy consumption of a family or of an individual, can reveal a lot of details about the life of the persons monitored.”).

<sup>4</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, 2014 WL 1931946, \*20 (Cal. P.U.C. 2014) (proper aggregation for residential customer data includes information from 15 or more customers with no one customer accounting for more than 20% of total consumption).

<sup>5</sup> AUDREY LEE, ENERGY DATA CENTER 1–2 (Cal. P.U.C. Policy & Planning Div. ed., 2012), available at <http://www.cpuc.ca.gov/NR/rdonlyres/8B005D2C-9698-4F16-BB2B-D07E707DA676/0/EnergyDataCenterFinal.pdf> (listing concerns regarding over-aggregation of data to the point of uselessness).

<sup>6</sup> Decision Adopting Rules to Protect the Privacy & Security of the Elec. Usage Data of the Customers of Pacific Gas and Elec. Company, Southern California Edison Company, & San

This note argues that, as California authorizes more smart meters to prompt efficient energy habits, it must utilize a balanced access system protecting personal information from disclosure while allowing requesting entities straightforward data access for effective analysis. Part I describes the use and benefits of smart meters in the U.S. and California. Part II analyzes the effectiveness of California's smart meter data privacy procedures. Finally, Part III offers a solution to California's data privacy debate. This note concludes that California should develop an energy data center, creating a centralized repository for consumption data, increasing data security since only one state agency would control data access.<sup>7</sup> In addition, this note supports the data center's use of California's current data disclosure practices to insure the helpfulness of data analysis, including the allowance of large sets of monthly aggregated data to be released to third parties along with individual-level information upon customer written consent.<sup>8</sup>

### I. SMART METER USE AND BENEFITS

As electricity constitutes approximately 40% of U.S. energy use,<sup>9</sup> utilizing the country's roughly 50 million installed smart meters may provide significant benefits.<sup>10</sup> Typically, utilities

---

Diego Gas & Electric Company, Decision 11-07-056, 22 (Cal. P.U.C. 2011) (stating how non-aggregated data increases the likelihood of unauthorized disclosure of personal information).

<sup>7</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*16 (stating the CPUC will not create an Energy Data Center at this time, but will study its potential benefits).

<sup>8</sup> *Id.* at \*11 (describing how data access is influenced by the characteristics of the data).

<sup>9</sup> *Energy and You*, U.S. EPA, <http://www.epa.gov/cleanenergy/energy-and-you/> (last updated Feb. 19, 2014).

use smart meters to measure a customer's hourly, monthly, or yearly energy use.<sup>11</sup> Customers then access their data history through electronic portals, such as the utility's website, in order to optimize energy usage and decrease their bills by adjusting electricity usage in response to changes in demand and prices.<sup>12</sup> To enhance potential benefits, future smart meters may include in-home display devices allowing customers to monitor their electricity usage in real-time like the numbers at a gasoline pump.<sup>13</sup> Customers could then respond instantaneously to changes in energy prices or reliability by manually or automatically reducing energy use when they exceed a pre-determined usage threshold.<sup>14</sup>

In addition to cost cutting, smart meters increase the reliability of electric services and aid environmental protection. Smart meters allow utilities to detect power outages and restore service quickly, leading to less customer usage disruption.<sup>15</sup> Also, efficient customer usage reduces the need to use older, less efficient plants to meet demand.<sup>16</sup> Older plants, known as "peaker" power plants, are employed only during high demand periods and typically emit higher

---

<sup>10</sup> INSTITUTE FOR ELECTRIC INNOVATION, UTILITY-SCALE SMART METER DEPLOYMENTS 1 (The Edison Found. ed., Sept. 2014), *available at* [http://www.edisonfoundation.net/iei/Documents/IEI\\_SmartMeterUpdate\\_0914.pdf](http://www.edisonfoundation.net/iei/Documents/IEI_SmartMeterUpdate_0914.pdf).

<sup>11</sup> *The Benefits of Smart Meters*, CAL. P.U.C., <http://www.cpuc.ca.gov/PUC/energy/Demand+Response/benefits.htm> (last modified Mar. 3, 2010).

<sup>12</sup> *Id.*

<sup>13</sup> *Id.*

<sup>14</sup> *Id.*

<sup>15</sup> *Id.*

<sup>16</sup> *Id.*

amounts of green house gases than regular plants due to being older and less efficient than regular plants.<sup>17</sup> Therefore, eliminating the use of older plants benefits the public by reducing adverse emissions and decreasing customer rates, as the increased costs of relying on less efficient plants pass to electric customers through rates.<sup>18</sup>

Recognizing these smart meter benefits, California and its public utilities commission (CPUC) authorized the replacement of old meters with smart meters.<sup>19</sup> Amongst its three largest independently owned utilities, the CPUC allowed the installation of nearly 12 million smart meters across the state.<sup>20</sup> Through this smart grid, California analyzes energy flow from transmission to customer usage “to keep it in balance, and improve reliability and make the grid more resilient in the face of outages and other problems.”<sup>21</sup> In addition to installation, individual utilities and the CPUC designed electric rate structures based on smart meter data that support time-based rates (charging customers variably based on energy used in peak and non-peak hours) instead of flat fees to promote shifting of customer usage.<sup>22</sup> One example of such a rate program

---

<sup>17</sup> *Id.*

<sup>18</sup> *Id.*

<sup>19</sup> *Id.*

<sup>20</sup> INSTITUTE FOR ELECTRIC INNOVATION, *supra* note 10, at 9–10 (listing smart meter installation numbers for Southern California Edison (4,990,000), San Diego Gas and Electric Company (1,406,000), and Pacific Gas and Electric Company (5,140,000)).

<sup>21</sup> *The Benefits of Smart Meters*, *supra* note 11.

<sup>22</sup> *See, e.g.*, Decision on Peak Day Pricing for Pacific Gas and Electric Company, Decision 09-02-022, 2–3 (Cal. P.U.C. 2009) (adopting and implementing default and optional critical peak pricing, and time-of-use rates); SDG&E, EX ANTE LOAD IMPACT FORECAST FOR SDG&E PEAK TIME REBATE 1 (Apr. 12, 2011) (Peak Time Rebate (PTR) load impact forecast for 2012–2021

is Pacific Gas and Electric Company's SmartRate program, charging residential customers time-based rates and notifying them of high demand times in order to save money by using less energy during these periods.<sup>23</sup> Overall, these measures advance California's "energy policies, such as promoting conservation, reducing demand in response to grid events and price signals, reducing summer peak demands, and efficiently incorporating renewable energy and electric vehicles into grid operations."<sup>24</sup>

## II. CALIFORNIA DATA PRIVACY PROCEDURES

In order to induce energy efficient practices, smart meter data needs to be disclosed to the customer. However, other parties such as government entities and researchers need consumption data to inform regulations or to analyze data trends in order to plan future efficient energy habits. Due to the sensitive personal information recoverable in smart meter data, such as what times of the day customers are home and using electricity, the release of such information necessitates adequate privacy protections.<sup>25</sup> Overall, such safeguards must balance customer privacy with

---

for residential customers); EDISON INT'L, EDISON SMARTCONNECT-BUILDING A SMARTER, CLEANER ENERGY FUTURE WITH OUR CUSTOMERS 1 (2007) (providing information on Southern California Edison's SmartConnect program providing customers with time-based rates).

<sup>23</sup> *SmartRate Add-on*, PG&E,

<http://www.pge.com/en/myhome/saveenergymoney/plans/smartrate/index.page?> (last visited Oct. 22, 2014) (summarizing how the SmartRate program works).

<sup>24</sup> Decision 11-07-056, at 22.

<sup>25</sup> Guerrini, *supra* note 3 ("Privacy is probably the most sensitive issue . . . information about the energy consumption of a family or of an individual, can reveal a lot of details about the life of the persons monitored. From when and for how long they stay at home, to the kind of devices

third party interests, insuring that the disclosed data contains usable usage information for analysts while eliminating threats to customer confidentiality.<sup>26</sup>

In an attempt to balance these conflicting data interests, California employs a system of open data access for customers,<sup>27</sup> as well as for third parties utilizing acceptable de-identification techniques.<sup>28</sup> In general, the CPUC recognizes that “the consumer has a right to the usage data,” and due to the likely non-existent threat to customer privacy from disclosure to a customer of their own data, California procedures normally permit such disclosures.<sup>29</sup> For example, utilities must provide customer pricing and usage data upon the request of an electric customer, and must release that data in customer-friendly manners such as a website or mail.<sup>30</sup> Also, each day’s usage data must be available for disclosure to customers by the following day, including applicable cost details and granular data matching the data intervals programmed into the customer’s smart meter.<sup>31</sup>

---

used (expensive gadgets, medical equipment and so on), to the movements inside the house – from the dining room (where the TV has just been turned on) to the kitchen.”).

<sup>26</sup> *Id.* (discussing the tradeoff between customer privacy and efficiency).

<sup>27</sup> CAL. PUB. UTIL. CODE § 8380(a)(4) (“An electrical or gas corporation that utilizes an advanced metering infrastructure that allows a customer to access the customer’s electrical and gas consumption data shall ensure that the customer has an option to access that data.”).

<sup>28</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*1 (rules providing access to energy consumption data by local governments, researchers, and government agencies).

<sup>29</sup> Decision 11-07-056, at 35.

<sup>30</sup> *Id.* at 2–3.

<sup>31</sup> *Id.* at 3.

In contrast to disclosure to individual customers, allowing third party data access presents greater risks to personal privacy and thus demands more stringent disclosure procedures. Third parties receive requested data in two ways: direct customer consent or utility disclosure of aggregated data. In regards to direct customer consent, in its May 2014 “Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data,” the CPUC “requires the consent of the person to whom the usage or usage-related data pertains before the release of that data to a third party.”<sup>32</sup> This ruling specifically applies to detailed energy data, requiring customer consent before disclosing sensitive usage information including dwelling characteristics.<sup>33</sup>

Utilities circumvent the customer consent requirement by releasing aggregated data with no personally identifiable information to third parties.<sup>34</sup> To reach acceptable levels of aggregation, utilities follow diverse rules for different types of customers. In the case of residential data disclosures, utilities release data “stripped of personal identifying information

---

<sup>32</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*11 (exploring how data may be released depending on the nature of the data requested).

<sup>33</sup> ALEX CHANG ET AL., EXPLORING THE FEASIBILITY AND IMPLEMENTATION OF A CALIFORNIA ENERGY DATA CENTER 13 (Cal. P.U.C. 2013).

<sup>34</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*11 (describing how access to data depends on the characteristics of the data sought); Decision 11-07-056, at 87 (permitting third party use of “aggregated 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.”).



and aggregated to a monthly time period and aggregated to the zip code level” including at least 100 residential customers’ information.<sup>35</sup> For commercial or agricultural customers, proper aggregation requires that the customer’s information constitute no more than “15% of total consumption, [and] be aggregated with the data from a bordering zip code (either by adding it to a bordering zip code with 15 or more commercial or agricultural customers.”<sup>36</sup> Local governments receive more granular data from commercial and agricultural customers than the typical third party, receiving information aggregated to the census block level,<sup>37</sup> while researchers also gain access to such granular data by adhering to Data Request and Release Procedures.<sup>38</sup> Finally, for industrial customer data the CPUC created a 5/25 rule, aggregating the data of “five or more customers . . . [where] no single customer accounts for more than 25%.”<sup>39</sup>

In addition to such aggregation measures, the CPUC requires utilities to implement procedural and administrative safeguards for energy consumption data. For example, when disclosing data a utility must “use reasonable security procedures and practices to protect a customer’s unencrypted electrical or gas consumption data from unauthorized access,

---

<sup>35</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*82.

<sup>36</sup> *Id.* at \*82.

<sup>37</sup> *Id.* at \*92 (“shall provide the local government with yearly, quarterly, and monthly, data aggregated and anonymized to the census block group level.”).

<sup>38</sup> *Id.* at Attachment A (an example of the Data Request and Release Procedures).

<sup>39</sup> *Id.* at \*84.

destruction, use, modification, or disclosure.”<sup>40</sup> Also, each utility must issue annual transparency reports describing the number of demands the utilities receive for consumption data, and the number of customer records disclosed.<sup>41</sup> Overall, these privacy rules apply to Pacific Gas & Electric, San Diego Gas & Electric, and Southern California Edison, the companies assisting in the operations of these utilities, companies under contract with these utilities, and any other

---

<sup>40</sup> CAL. PUB. UTIL. CODE § 8380(d); *see also id.* at § 8380(e)(2) (allowing disclosure of information for a contract’s primary purpose as long as it protects personal information from unauthorized access, use, or disclosure).

<sup>41</sup> Decision 11-07-056, at 163 (“Pacific Gas and Electric Company, Southern California Edison Company, and San Diego Gas & Electric Company must each submit annual privacy reports to the Executive Director, commencing with calendar year 2012, no later than 120 days after the end of the calendar year.”); Guerrini, *supra* note 3 (describing the implementation of California data privacy rules requiring annual transparency reports from utilities). For examples of these reports, *see* PAC. GAS AND ELEC. CO., PACIFIC GAS AND ELECTRIC COMPANY’S SMART GRID ANNUAL PRIVACY REPORT 2012, 1 (Apr. 30, 2013), *available at* <http://www.cpuc.ca.gov/NR/rdonlyres/3F0B72CB-8FC6-4ECC-BF2F-A579513EB522/0/PGESmartGridAnnualPrivacyReport2013.pdf>; SAN DIEGO GAS & ELEC. CO., ANNUAL PRIVACY REPORT OF SDG&E 1 (2013), *available at* [http://www.cpuc.ca.gov/NR/rdonlyres/1AAFED95-3F3F-4296-B4B6-8CB8E6704CC1/0/SDGAnnual\\_Privacy\\_Report\\_2012.pdf](http://www.cpuc.ca.gov/NR/rdonlyres/1AAFED95-3F3F-4296-B4B6-8CB8E6704CC1/0/SDGAnnual_Privacy_Report_2012.pdf); S. CAL. EDISON CO., SOUTHERN CALIFORNIA EDISON COMPANY’S ANNUAL PRIVACY REPORT 2012, 1 (Apr. 2013), *available at* <http://www.cpuc.ca.gov/NR/rdonlyres/56281147-02B8-42FC-A768-1448ED18373C/0/SCESmartGridAnnualPrivacyReport2013.pdf>.

companies gaining access to customer usage data from these utilities after receiving authorization by the customer.<sup>42</sup>

### III. EFFECTIVENESS OF SMART METER DATA PRIVACY PROCEDURES

Through the above-mentioned privacy standards, the CPUC boasts a “reasonable” system protecting customer data privacy while insuring data accessibility for customers and third parties for energy management, conservation, or research purposes.<sup>43</sup> By enabling customers and researchers to assess energy usage through smart meter data, California promotes its goals of energy conservation and reduction of electricity demand during high peak times.<sup>44</sup> Under the installed aggregation rules, requesting entities bypass traditional and more cumbersome information gathering procedures (writing and installing contracts between utilities and parties, relying on CPUC orders, or gaining direct consent from customers), supporting third party goals of data analysis and energy efficiency.<sup>45</sup> In general, such benefits point to the validity of a relaxed data access system supporting data access and efficient privacy measures.

Although CPUC privacy procedures produce significant benefits, multiple issues question their effectiveness in balancing privacy and accessibility. In regards to customer privacy, CPUC

---

<sup>42</sup> Decision 11-07-056, at 2 (listing which entities must follow these privacy rules).

<sup>43</sup> *Id.* at 5 (finding CPUC privacy provisions to be effective in balancing privacy and accessibility concerns).

<sup>44</sup> *Id.* at 22.

<sup>45</sup> *See* CAL. PUB. UTIL. CODE § 8380(e)(2) (“provided that . . . the utility has required by contract that the third party implement and maintain reasonable security procedures and practices . . . .”); *id.* at § 8380(e)(3) (“This section shall not preclude an electrical corporation or 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.”).

evidence “shows that access to detailed, disaggregated data on energy consumption can reveal some information that people may consider private.”<sup>46</sup> The CPUC attempts to monitor and prevent unwanted disclosures of data by utilities through required annual privacy reports including “(1) the number of authorized third parties accessing covered information, (2) the number of non-compliances with this rule or with contractual provisions required by this rule experienced by the utility, and the number of customers affected by each non-compliance and a detailed description of each non-compliance.”<sup>47</sup> Yet, these reports reveal high numbers of data disclosures.<sup>48</sup> Such significant disclosures may increase the chances of personal information being improperly released or uncovered due to multiple third parties handling this potentially sensitive data, consequently defeating California’s privacy measures.

Even when utilities disclose properly aggregated data, some personal information remains recoverable.<sup>49</sup> Through the comparison of aggregated energy usage data and publicly

---

<sup>46</sup> Decision 11-07-056, at 22.

<sup>47</sup> SAN DIEGO GAS & ELEC. CO., ANNUAL PRIVACY REPORT OF SDG&E 2 (2013), *available at* [http://www.cpuc.ca.gov/NR/rdonlyres/1AAFED95-3F3F-4296-B4B6-8CB8E6704CC1/0/SDGEAnnual\\_Privacy\\_Report\\_2012.pdf](http://www.cpuc.ca.gov/NR/rdonlyres/1AAFED95-3F3F-4296-B4B6-8CB8E6704CC1/0/SDGEAnnual_Privacy_Report_2012.pdf).

<sup>48</sup> *See, e.g.* S. CAL. EDISON CO., SOUTHERN CALIFORNIA EDISON COMPANY’S ANNUAL PRIVACY REPORT 2012, 5 (Apr. 2013), *available at* <http://www.cpuc.ca.gov/NR/rdonlyres/56281147-02B8-42FC-A768-1448ED18373C/0/SCESmartGridAnnualPrivacyReport2013.pdf> (Twenty-one third parties gaining access to detailed customer usage information in 2013); SAN DIEGO GAS & ELEC. CO., *supra* note **Error! Bookmark not defined.**, at 5 (210 third parties gaining access to detailed customer usage information in 2012).

<sup>49</sup> BRANDON J. MURRILL ET AL., SMART METER DATA: PRIVACY AND CYBERSECURITY 6 (Cong. Research Serv. 2012) (“Even privacy safeguards, such as “anonymizing” data so that it does not

available information, a third party can potentially re-identify an individual.<sup>50</sup> The fact that smart meters collect highly personable information such as an account holder's name, address, and bills exacerbates this potential re-identification of a customer's data.<sup>51</sup> In addition, smart meter data is stored in many different locations, such as with multiple utilities or on wireless networks.<sup>52</sup> Such de-centralized data storage increases the chances of data interception due to more entities gaining access to it, and due to the fact that the information must travel through more circuits to reach their destinations.<sup>53</sup> Therefore, to best insure that threats to data privacy do not out-balance disclosure benefits, these shortcomings of California's current privacy procedures must be addressed.

#### IV. ENERGY DATA CENTER: IMPROVING CALIFORNIA'S DATA ACCESS SYSTEM

To best resolve the smart meter data access debate, California should build an energy data center. As a center would act as a central repository for smart meter data, singularly collecting and disclosing information now controlled by multiple utilities, this option would resolve the previously mentioned issues with California's current data privacy system. In 2014,

---

reflect identity, are not foolproof.”).

<sup>50</sup> *Id.* See also NAT'L INST. OF STANDARDS AND TECH., GUIDELINES FOR SMART GRID CYBER SEC.: VOL. 2, PRIVACY AND THE SMART GRID 14 (2010) (detailing how anonymized data may be re-identified to reveal personal information).

<sup>51</sup> MURRILL, *supra* note 49, at 6 (“a smart grid will . . . store data on the account holder's name, service address, billing information, networked appliances in the home, and meter IP address.”).

<sup>52</sup> *Id.* at 7.

<sup>53</sup> *Id.* (“Thus, because it is widely dispersed, it becomes more vulnerable to interception by unauthorized parties<sup>56</sup> and to accidental breach.”).

the CPUC discussed how it could create a center to be a strong intermediary for data access.<sup>54</sup> This discussion built upon data access challenges the CPUC explored in a 2012 briefing paper, finding that a center “should help improve state energy policies and create new market opportunities to save energy.”<sup>55</sup> Yet, California has yet to develop a center while the CPUC declined to do anything other than study the issue in subsequent proceedings.<sup>56</sup> To realize the substantial benefits of a center, California needs to begin center construction by promulgating rules regulating the building of a center and deciding where to house the facility.<sup>57</sup>

The creation of a data center would prove undemanding for California to complete. First, as the state government is already tasked with creating privacy rules, California would simply be fulfilling its duty by creating a center regulating data access. Also, the cost of the facility would be insubstantial, as Direct Technology, a consulting firm experienced with building energy

---

<sup>54</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*3 (“[T]he workshops . . . also explored issues relating to an Energy Data Center.”).

<sup>55</sup> LEE, *supra* note 5, at 1.

<sup>56</sup> Decision Adopting Rules to Provide Access to Energy Usage-Related Data While Protecting Privacy of Personal Data, at \*16 (“[T]he Commission continues to see the importance of exploring the value of a dedicated energy data center in the future.”).

<sup>57</sup> Jeff St. John, *An “Energy Data Center” for California’s Smart Grid?*, GREENTECHMEDIA (Nov. 15, 2012), <http://www.greentechmedia.com/articles/read/an-energy-data-center-for-californias-smart-grid> (“the Energy Data Center itself will have to be hosted by a government player, such as a University of California campus, the paper noted. That means that the CPUC needs to hash out the rules for what it’s legally allowed to do to promote the creation.”).

databases, estimated the cost of building a center to be \$3 million.<sup>58</sup> This one-time fee includes the building of the center, data security framework, and data conversion.<sup>59</sup> In addition to building expenditures, maintenance of the center would cost approximately \$1.2 million annually.<sup>60</sup> The California Center for Sustainable Communities estimated similar costs for building and maintaining the center.<sup>61</sup> Overall, such expenditures are minimal when compared to the state's overall projected expenditures of \$107,987,000,000 for 2014-15.<sup>62</sup>

One benefit of a center would be the elimination of state utilities as the “gate-keeper” of customer information.<sup>63</sup> Presently, California stores smart meter data on multiple utility storage devices and with smart grid vendors.<sup>64</sup> Once built, the center would collect usage data in one location through non-disclosure agreements requiring utilities to automatically upload customer data to the center.<sup>65</sup> By centralizing customer data, the center would facilitate a single interpretation of state and CPUC privacy rules instead of multiple utilities.<sup>66</sup> With only a single interpretation of how to aggregate data and release it, requesting parties and customers could more easily understand the data disclosure process, how to comply with it, and what version of information will be disclosed to them. Also, by reducing the number of parties handling usage

---

<sup>58</sup> CHANG, *supra* note 33, at 13.

<sup>59</sup> *Id.*

<sup>60</sup> *Id.*

<sup>61</sup> *Id.*

<sup>62</sup> EDMUND G. BROWN, CALIFORNIA STATE BUDGET 2014-15, 9 (2014).

<sup>63</sup> LEE, *supra* note 5, at 2.

<sup>64</sup> St. John, *supra* note 57.

<sup>65</sup> LEE, *supra* note 5, at 3 (listing ways in which the center could collect data).

<sup>66</sup> *Id.* at 2.

information, the center would reduce the amount of time it takes for a requesting party to receive data.<sup>67</sup> Such efficiency allows researchers and government entities to more quickly utilize usage data for public benefit.

In addition to data centralization benefits, the center would protect personal information by employing current California disclosure procedures via a query tool. Through this data request tool, customers access their usage data online or through other user-friendly forums.<sup>68</sup> This information would include monthly user data, which is less controversial than hourly data as it contains less personalized information.<sup>69</sup> By requesting data through the query tool, a third party need only indicate what type of information it wants and the system then supplies that data.<sup>70</sup> As the data returned via the query system would be aggregated according to CPUC standards, and only be handled by the center, risks to privacy would remain slim. These privacy methods do lower data quality, making it more difficult for researchers to complete beneficial analyses, but this disadvantage is outbalanced by the ease of data access and protection of personal information.<sup>71</sup>

With such easily accessed and protected data, customers and third parties can promote energy efficiency in more targeted ways. By analyzing granted data, researchers readily identify high-energy uses and variations in customer consumption, increasing the effectiveness of

---

<sup>67</sup> *Id.* at 4.

<sup>68</sup> St. John, *supra* note 57 (using Texas' Smart Meter Texas portal as an example for customer data access).

<sup>69</sup> CHANG, *supra* note 33, at 9 (discussing the use of monthly data).

<sup>70</sup> *Id.* at 14.

<sup>71</sup> *Id.* (discussing disadvantages to implementing a query system for data access).



efficiency programs through accurate analysis.<sup>72</sup> Also, as alternative energy and product companies rely on consumption data for product designs, streamlining data access to such parties may lead to the growth of sustainable and energy efficient industries.<sup>73</sup> Finally, the quality of data remains valuable due to the use of monthly data and ease of access, allowing researchers to “accurately analyze and predict consumption behavior, leading to better policy designs that can meet conservation and energy efficiency goals.”<sup>74</sup> Due to such positive elements, a center presents an ideal option for California to balance privacy concerns and energy efficiency goals.

## V. Conclusion

Through the implementation of smart meters in California, customers and third parties gain access to highly granular energy consumption data. With such information, energy users have the knowledge to make more energy efficient decisions by changing electricity usage during peak pricing hours or updating inefficient household appliances. Also, third parties use such data to analyze energy trends in order to create efficiency programs or market efficient items. Yet, smart meters pose a risk to personal privacy as their data contains highly specific details on who a person is, where that person lives, and when they are using energy in their home. Due to these conflicting characteristics of smart meters, multiple issues arise regarding data access.

Although many of California’s current data disclosure rules limitedly balance customer privacy and data access, such as by disclosing aggregated data to requesting parties, such rules lead to inconsistent disclosure policies as they are implemented by multiple, uncoordinated utilities. To better balance smart meter data benefits and detriments, California should create an

---

<sup>72</sup> *Id.*

<sup>73</sup> *Id.* at 6.

<sup>74</sup> *Id.* at 9.

energy data center to collect all energy consumption data in one location. A center would install one data disclosure policy in place of multiple utility versions, increasing the efficiency of data access. Also, through a query tool disclosing aggregated monthly data, the center would insure customer privacy while also providing usable information for third parties to use for important data analysis. Therefore, by creating an energy data center, California would successfully balance smart meter data access issues and realize the information's energy efficiency benefits.