

ENERGY DATA

UNLOCKING INNOVATION
WITH SMART POLICY

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MISSION DATA
empowering energy savings

 advanced
energy
management
alliance





ABOUT

MISSION:DATA empowering energy savings

Mission:data Coalition is a non-profit coalition of 35+ innovative technology companies that empower

consumers with access to their own energy usage data.

Mission:data advocates for customer-friendly data access policies throughout the country in order to deliver energy-savings benefits for consumers and to enable an innovative, vibrant market for energy management services.



Advanced Energy Management Alliance (AEMA) is made up of distributed energy resource (DER) companies that are united to

overcome barriers to nationwide use of demand-side resources.

We advocate for policies that empower and compensate customers appropriately for managing their energy use in a manner that contributes to a more efficient, cost-effective, resilient, reliable and environmentally sustainable grid.

EXECUTIVE SUMMARY

This report outlines how state policymakers and advocates can empower consumers to manage their utility bills with access to their own energy usage information.

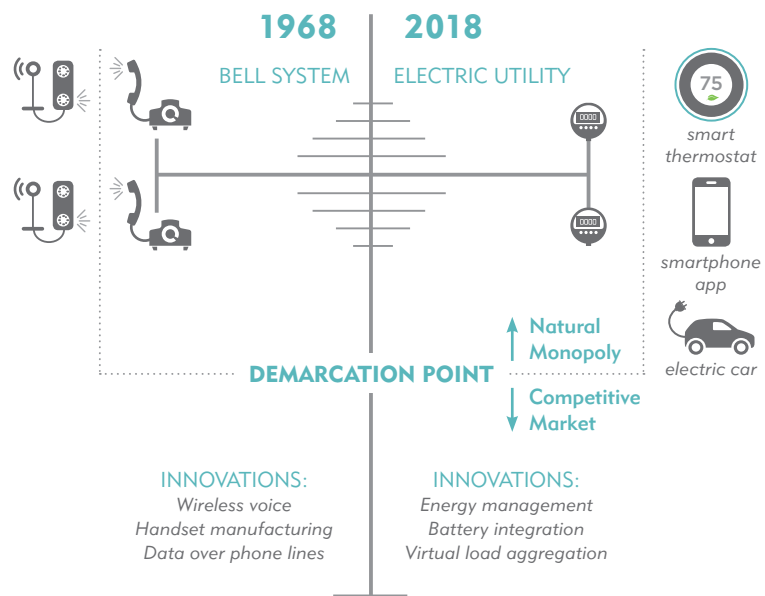
There are over 70 million “smart” meters installed by electric utilities across the U.S. But getting the most value from smart meters for consumers hasn’t been fast or easy. That’s why we synthesized the data-sharing policies of leading states into a single, comprehensive guide. Based on our experience working in over a dozen states and the District of Columbia, we outline the best practices that promote the portability of, and customer control over, their energy information. The 10 policy elements discussed in this report are meant to instruct public utility commissions (PUC) in addressing all of the relevant issues in a comprehensive data sharing policy: privacy, consumer protections, technical standards, enforcement issues and more.

State policymakers don’t have to reinvent the wheel. Leading states such as California, Illinois, New York and Texas have carefully considered data privacy and electronic access to customer data held by utilities. We believe that any state can incorporate our recommendations, even states that do not yet have smart meters. All customers benefit when they have control over their energy information in a modern, technologically-consistent manner from state to state, and from utility to utility.

As customer-owned distributed energy resources (DERs) grow at the “grid edge,” we can learn from other industries about the importance of clear policy boundaries around regulated utilities. In telecommunications some 50 years ago, the Federal Communication Commission’s (FCC) “Carterfone” decision enabled customers to attach their own accessories to AT&T’s



The FCC’s 1968 Carterfone decision defined the boundaries of monopoly telephone service.



telephone network. Before this point, telephone handsets could only be purchased from AT&T. This pivotal decision defined a demarcation point between competitive services and monopoly telephony services; it sparked innovations that include the modem and wireless voice. Today, energy consumers seek to connect their own electrical “accessories” to the grid: solar panels, electric vehicles, batteries and advanced energy management systems. The FCC’s Carterfone decision provides an excellent historical analog for defining the interface point at which regulated services should end and competitive services should begin. In that spirit, we believe that our data-sharing “rules of the road” will help create the conditions for market animation necessary for a more interactive, efficient and flexible electric grid.

SNAPSHOT OF ENERGY DATA SHARING POLICIES

(as of late 2017)

CALIFORNIA

11.5 MILLION ELECTRIC METERS

2013: CPUC approves applications for GBC implementation at investor-owned utilities (D.13-09-025)

2017: CPUC approves resolution on the "click-through" process to streamline the customer authorization process (Resolution E-4868)

COLORADO

1.5 MILLION ELECTRIC METERS (XCEL ENERGY)

2017: PUC approves settlement agreement for deployment of advanced meters with GBC to go live in 2020 (16A-0588E)

HAWAI'I

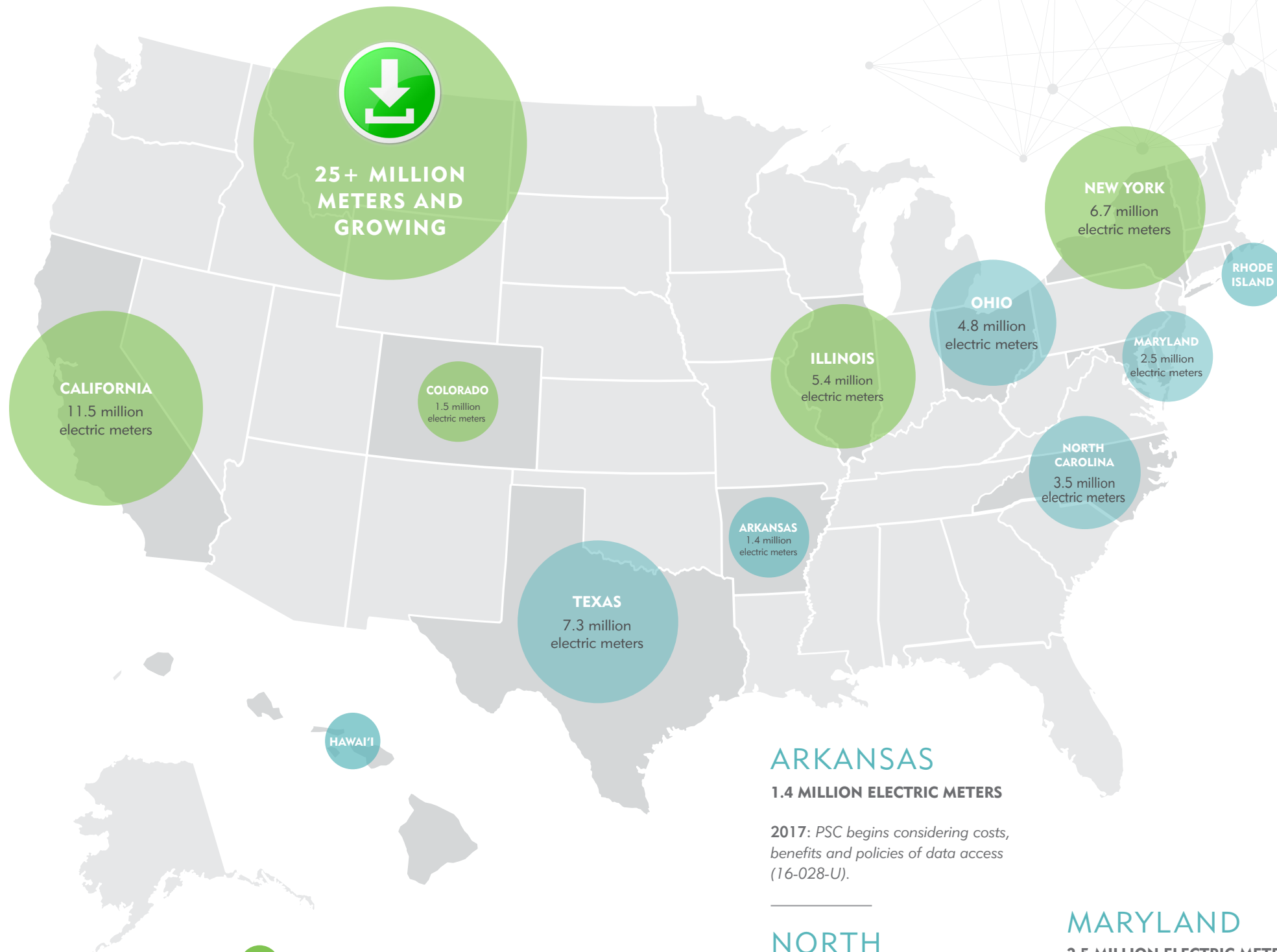
0.4 MILLION ELECTRIC METERS

2017: PUC requires grid modernization plan to address "data access and privacy"; in response, HECO's plan hints at GBC for "customer-authorized third parties" (2016-0087)

TEXAS

7.3 MILLION ELECTRIC METERS (ERCOT REGION)

2015-2017: PUCT considers changes to Smart Meter Texas (SMT) to adhere to the GBC standard (46204, 46206, 47472)



- GREEN BUTTON CONNECT (GBC) MANDATE IN PLACE
- UNDER CONSIDERATION

NEW YORK

6.7 MILLION ELECTRIC METERS

2016: PSC's REV Track Two order requires GBC for any utility that pursues advanced metering (14-M-0101). GBC planned by ConEd, Orange & Rockland, NYSEG, RG&E and National Grid

RHODE ISLAND

0.5 MILLION ELECTRIC METERS

2017: PUC report on "Power Sector Transformation" calls for National Grid to address data access

OHIO

4.8 MILLION ELECTRIC METERS

2016: AEP Ohio agrees to hold gridSMART collaborative meetings to discuss data access (ongoing)

2017: PUCO approves Dayton Power & Light settlement that mentions GBC (16-395-EL-SSO); Duke Energy Ohio cases ongoing

ILLINOIS

5.4 MILLION ELECTRIC METERS

2016: ICC approves authorization processes for non-retail electric service providers, a prerequisite to GBC (15-0073)

2017: ICC approves Open Data Access Framework in which Ameren Illinois and ComEd agree to implement GBC (14-0507)

ARKANSAS

1.4 MILLION ELECTRIC METERS

2017: PSC begins considering costs, benefits and policies of data access (16-028-U).

NORTH CAROLINA

3.5 MILLION ELECTRIC METERS

2017: NCUC considers GBC in Smart Grid Technology Plans, saying data access is "essential" but declines to open a rulemaking process (E-100, Sub 147). Duke Energy rate cases underway.

MARYLAND

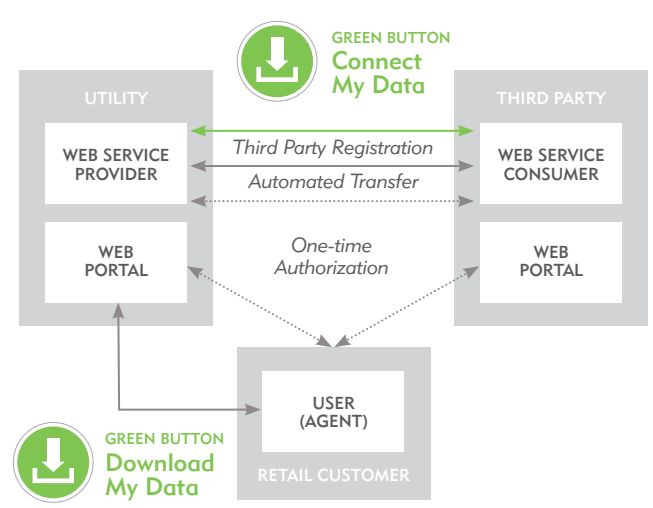
2.5 MILLION ELECTRIC METERS

2016: PSC considers "maximizing AMI's benefits for Maryland ratepayers" (PC44)

2017: PSC cites the benefits of new technologies to consumers; declares that customer data "belongs to the customer"; draft rules call for GBC implementation (PC44)

GLOSSARY OF TERMS

CUSTOMER	A utility customer – residential, commercial or industrial.
THIRD PARTY	An energy management company, solar company, consultant or other entity authorized by the customer to receive the customer’s energy information held by utilities.
GREEN BUTTON CONNECT MY DATA (GBC)	GBC is the standard for sharing energy information from a utility to a Third Party with customer consent. Also known by its technical name, the North American Energy Standards Board’s Energy Services Provider Interface (ESPI).



For more information about Green Button Connect, see "Got Data? The Value of Energy Data Access to Consumers."

ELEMENTS OF A DATA SHARING POLICY

Based on our experience with public utility commissions in over a dozen states and the District of Columbia, AEMA and Mission:data propose a 10-point framework of a comprehensive energy data sharing policy. By making customers’ energy information held by electricity and natural gas utilities portable and easily accessible, customers can take advantage of new technologies that will help them manage their monthly utility bills.

Our objectives in creating this framework are:

- To effectively balance consumers’ rights to privacy and security of their personal information with the rights to conveniently access energy information and new energy management technologies.
- To promote consistency in data-sharing policies from state to state, and utility to utility, so that technology providers can flourish in a more uniform environment across the nation.
- To assist state commissions in holistic treatment of data access and data privacy, thereby avoiding many pitfalls of piecemeal treatment.

Our recommendations are intended to apply to both electric and natural gas utilities.

1. DEFINITION OF ENERGY DATA: The following four categories of information capture the range of customer information that should be portable, meaning that customers should be able to instruct utilities to transmit the information to a Third Party. Any information that is

specific to the customer, or generated by the activity of the customer — such as energy usage and resulting bills is referred to as “standard customer data.”

Customer data: Name, address, phone number, etc.

Billing data: Information generally contained on bills and having to do with payment such as what rate(s) the customer is on, what retail provider the customer uses, billing cycle dates, account number(s), meter number(s), payment history, and line items of costs such as volumetric charges, delivery charges, demand charges, taxes, fees, etc. Utilities should support up to four (4) years of historic billing data, or the length of the time the customer has been at the premise in question, whichever is less.

Usage data: Electric or natural gas usage in kilowatt-hours, cubic feet or therms, containing both “register reads” (i.e. representing the overall usage to date, equivalent to the dial positions of an older, analog meter) and “interval reads,” also known as a “load profile,” which is time-series energy use typically in hourly or 15-minute periods. Utilities should support up to four (4) years of historic usage data, or the length of the time the customer has been at the premise in question, whichever is less.

Systems data: This could include the customer assigned peak load contribution, energy and capacity loss factors, or other information needed for wholesale market participation. Examples from different wholesale grid operators are below.

	CALIFORNIA (CAISO)	NEW YORK (NYISO)	PJM
Examples of systems data necessary for wholesale market participation	<i>Phode Sublap LCA LSE MDMA MSP</i>	<i>Installed Capacity tag (ICAP)</i>	<i>Peak load contribution (capacity and transmission)</i>

2. FORMAT AND TRANSMISSION PROTOCOL:

Recognizing that customer choice is enhanced when utilities adhere to nationally-recognized, open standards and best practices, Green Button Connect (GBC) should be adopted by utilities to transfer standard customer data to authorized Third Parties.

3. THIRD PARTY ELIGIBILITY CRITERIA:

Third parties should be required to meet the following eligibility criteria:

1. Provide utilities its contact information, including federal tax ID number;
2. Provide a certificate of good standing from the state;
3. Agree to reasonable terms of utility data access (see #4 below);
4. Complete a technical interoperability test with a utility's GBC platform.

4. BINDING TERMS OF USE:

Third Parties should agree to binding terms of use when registering with a utility to receive customer data. A contractual agreement should address the following:

1. Privacy policy: A Third Party's privacy policy must be conspicuously posted on its website.
2. Prohibited uses: Third Parties may not use standard customer data for anything other than the purposes specified. The "purpose" statement should be succinct and understandable. In addition, Third Parties may not sell standard customer data to other entities, except to contractors or affiliates that must abide by requirements of equal or greater stringency.
3. Waiver of liability: Third Parties must waive liability claims against the utility for the Third Party's use of standard customer data.

5. CLEAR AUTHORIZATION LANGUAGE.

Standardized language should be presented to the customer to support informed consent. Authorization language should address the following:

1. **Description of standard customer data.** The customer should have a clear, plain-English description of the standard customer data (or relevant subset) to be shared with a Third Party.

2. Length of authorization. The term length (e.g., number of months). Unlimited terms should be permitted at the option of the customer. This is also known as "valid until rescinded." Third Parties should be able to optionally specify a minimum term.

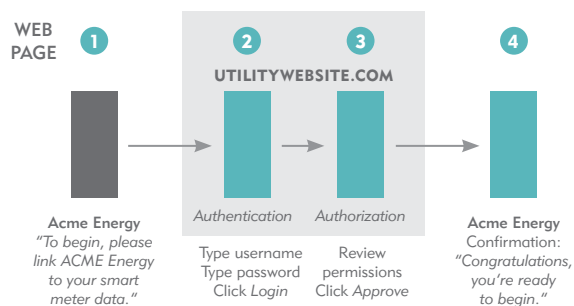
3. Purpose specification. A succinct, plain-English statement of the Third Party's purpose in accessing standard customer data, as defined by the Third Party.

4. Revocation procedure. A succinct statement about how a customer can revoke access at any time (see also #7 below). If a Third Party will not terminate access or is not responding to customer requests, then a customer should always be able to revoke authorization by contacting the utility.

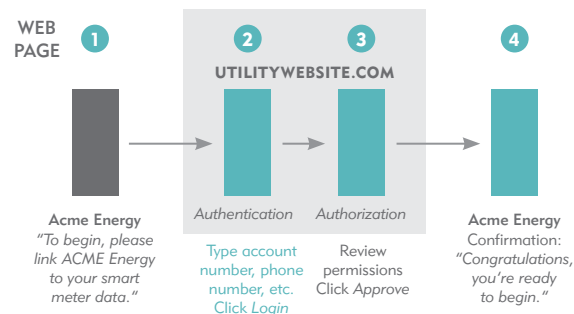
6. STREAMLINED CUSTOMER EXPERIENCE AND EASE-OF-USE.

There are five (5) discrete authorization processes. These processes should make use of a customer's online utility account, if one is already created, but a utility account should not be required. The first two processes use the GBC standard and OAuth 2.0¹ for online authentication and authorization. Two additional processes are discussed that further reduce customer effort, or "friction," required to share their data; these approaches place more burden and expense on third parties, but also allow increased control over the customer experience. The final process is paper-based and should be retained for customers who do not want to use an online account.

1. Customer has an online utility account.



2. Authorization without a utility account.



¹ OAuth 2.0 is used by major websites such as Facebook, Twitter and LinkedIn. For information on the OAuth 2.0 standard, see <https://oauth.net/2/>

In the above scenarios, the utility should strive to minimize the number of “screens” required of the consumer as much as possible. For example, in scenarios #1 and #2 above, there is one (1) authentication page and one (1) authorization page.

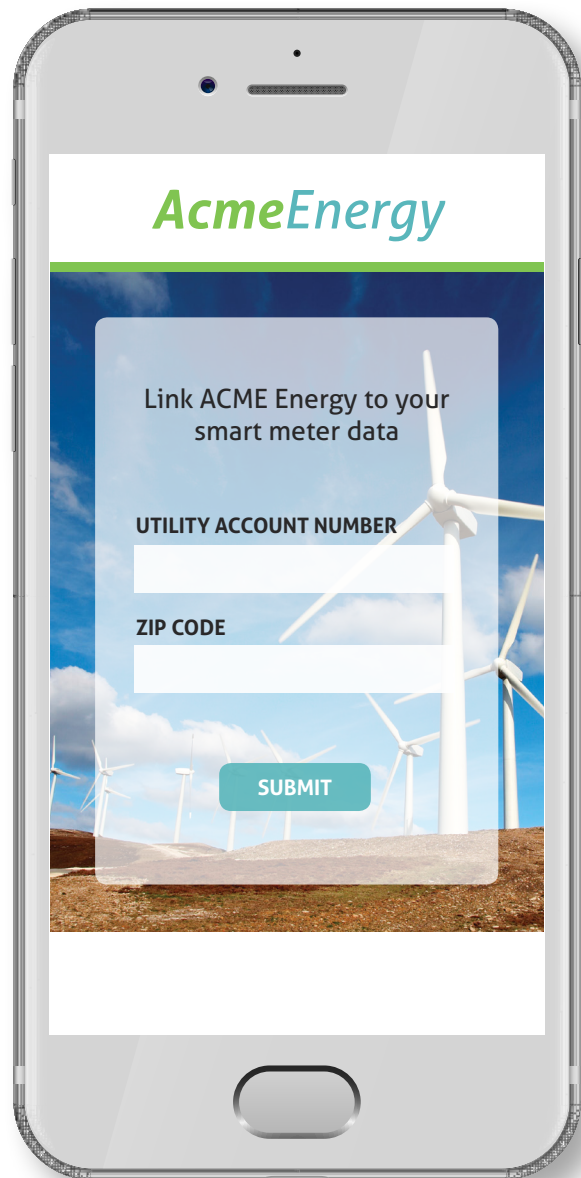
Nevertheless, while one (1) authentication page and one (1) authorization page is helpful in reducing “customer fatigue,” empirical evidence suggests that even the above process leads to customer drop-offs, with mobile web browsers being particularly vulnerable.² Therefore, utilities should support authorization processes that use Third Party designs, as discussed below.

3. Customer authorization via Third Party designs. This process allows the Third Party to more completely manage the communication with the utility and the customer experience. The utility will verify customer credentials, but the Third Party can embed the authentication function into its website or mobile application, further reducing friction associated with the transaction. The authentication and authorization information are securely passed to the utility and confirmed in real time.

4. Warrant process. A “warrant process” allows utility verification of the authorization to be delayed or waived entirely. The Third Party would obtain the authentication and authorization required, and keep such authorization on file, where it could be confirmed at any time by an audit. This allows the utility or regulatory authority to confirm anytime that a valid authorization has been obtained, but does not require the development of real-time response capabilities by the utilities’ systems. This option gives the Third Party maximum flexibility in designing the user experience and adapting it to technological changes over time. It also minimizes any additional technical functionality that the utility would have to create to accommodate customer authentication and authorization. The warrant process is used today by retail energy providers in states with competition and is generally offered only to entities licensed by state commissions.

Both authorization options #3 and #4 give Third Parties the power to create a seamless customer experience, and to modify such designs as technologies and user expectations change without burdening the utility. In these scenarios, Third Parties are less vulnerable to a poor user interface offered by the utility that does not sufficiently accommodate evolving customer needs.

5. A paper-based form (intended primarily for commercial and industrial customers) should continue to be permitted for data sharing.



Secure authorization fully designed by Third Party

7. FEATURES OF UTILITY DATA-SHARING PLATFORMS FOR THIRD PARTIES:

- 1. Testing and production environment.** Utilities should provide a testing environment and a production environment of GBC for Third Parties’ use.
- 2. Multiple display names to reduce customer confusion.** Utilities should enable third parties to use data services or other contracted support, while operating under their own consumer brand. For example, if “SmithCo” manages the collection of standard customer data on behalf of “AcmeEnergy,”

² See, e.g., “Optimizing the demand response program enrollment process.” White paper by EnergyHub, Inc. dated April, 2016. Available at <http://www.energyhub.com/blog/optimizing-demand-response-enrollment>

then “SmithCo” should be able to be seen by the customer as “AcmeEnergy,” in addition to its own name.

8. REVOCATION PROCESS: The revocation process should first encourage the customer to revoke the service by contacting the Third Party directly, to avoid bothering the utility. However, if a customer is unable to contact a Third Party, or a Third Party is not responding, the customer should be able to terminate a data-sharing agreement at any time through the utility’s GBC web portal or by calling the utility.

9. ENFORCEMENT PROCESS AGAINST A “BAD ACTOR.”

In our experience, agreement of a consumer to share their data with a specified Third Party does not require state commissions to adopt the same level of regulation for third parties as that reserved for retail electric providers.³ Nevertheless, an enforcement process is both reasonable and necessary, and should include the following elements:

1. Either the utility on its own motion, or a consumer via complaint, should be able to trigger an investigation by the state commission of the Third Party’s adherence to the data sharing agreement with the utility, and the scope of the given customer’s authorization;
2. A customer complaint about a breach of agreement by a Third Party can trigger an investigation, but until a commission judgment has been made, Third Party access may not be suspended by the utility unilaterally for the customer in question;
3. Inadvertent mistakes may eventually occur through simple data transpositions (i.e. “fat fingers”), misunderstandings or other unwitting actions. In all cases, due process should be afforded to Third Parties in any dispute, including reasonable notice, the opportunity to respond to contemplated enforcement actions, the ability to defend its actions, and provision of a cure period. Most Third Parties want to have customer feedback in order to be able to respond appropriately to customer complaints.



³ In states with retail competition, retail energy providers must comply with various consumer protection rules.

4. Ultimately, based on its own investigation, state commissions can order a utility to shut off data to a Third Party for a “pattern or practice” of violating requirements. Termination should be proportional to the judged offenses, enabling termination of a specific customer(s) data, temporary suspension, or complete termination.

For clarity, a customer may terminate a data sharing agreement at any time. Data-sharing agreements should expire upon the date specified by the customer, unless earlier terminated by order of the commission.

10. QUALITY OF SERVICE; TRANSPARENCY. The following requirements ensure that customer choice of energy management services is fully realized by providing web services and GBC platforms at a sufficiently high level of service such that market participants can depend upon the GBC platforms.

1. Utilities should strictly adhere to the most current GBC standard and documented best practices.
2. Utilities must attain periodic certification of GBC by the nonprofit Green Button Alliance, with non-compliance remedied in a timely manner.
3. Utilities should make their best efforts to implement GBC in technologically consistent ways with one another, with customers having nearly identical user experiences.
4. Utility performance metrics reported on daily basis, including technical support response times and resolution times, data fulfillment times, customer webpage loading times, system outage statistics, mobile device compatibility, and usage statistics such as number of historic data transfers and number of ongoing data-sharing agreements.
5. Data accuracy must be properly denoted in GBC by using the “QualityOfReading” feature, allowing the utility to specify whether energy readings are “raw,” “validated” or “billing quality.” Updates to any data as a result of the validation, editing or estimation (VEE) process should be automatically provided at no charge to Third Parties.
6. Service level agreement: GBC downtime should not exceed 6 hours per calendar month, including scheduled maintenance windows.
7. A clear enforcement process against the utility should be articulated if the utility does not honor authorizations in a timely manner, breaches the service level agreement, or is subject to a verified complaint by a Third Party.



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