

IMPROVING ACCESS TO SMART METER DATA IN TEXAS

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About the South-central Partnership for Energy Efficiency as a Resource (SPEER)

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I. EXECUTIVE SUMMARY

The Texas legislature authorized the accelerated roll-out of advanced meter infrastructure in 2005, because the availability of interval consumption data for all customers promised not only to support more efficient electricity services, but also to unleash untold customer service innovation. Indeed, today there are a wide variety of new data-driven customer services emerging to improve comfort, convenience, and safety, but barriers still exist to consumer adoption in Texas.

Data from the advanced meter infrastructure can allow customers to use cloud-based digital services to understand and control their energy use, respond to prices, optimize comfort and cost, or even contribute to reliable operation of the grid. Service providers can access meter data to more quickly analyze building or systems problems, identify maintenance needs, or properly size new equipment installations. Telecom and entertainment services providers are beginning to expand digital home management services to incorporate energy features to their voice, Internet, and entertainment offerings, all based on the potential availability of interval meter data.

Texas is a top-tier smart energy state, with 15-minute interval meter data from over 7 million smart meters. Competitive retail electric providers and the independent system operator (ERCOT) consume the data daily to support both retail and wholesale operations. Customers have access to their electric consumption data on a single, shared website that is owned by the utilities, known as Smart Meter Texas, or SMT. The Public Utility Commission of Texas (PUCT) adopted a third-party data

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access policy in 2007¹ and enabling functionality was implemented on the utilities' website in November of 2014. SMT therefore now enables competitive energy services providers (CSPs) to tap into the data stream, with customer permission, in order to provide additional data-driven services to customers.

Despite the policy and core functionality for CSP data access being in place, market participation has remained extremely low. There are approximately 100 registered CSPs with a total of 1800 active data sharing agreements after 18 months of market activity. Therefore, on average, each registered CSP gains access to only one new customer's data each month. The primary reason for this lack of growth is the process for customers to authorize a CSP to access their meter data, which is onerous by today's standards for online transactions.

¹ <u>http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.130/25.130.pdf</u>

Consumer advocates, and regulators are concerned that access to interval consumption data could be misused by third parties. While we argue that third-party CSPs should have the same simple access to meter data as third-party retail electric providers, we acknowledge that the PUCT does not have the same authority to impose rules of conduct, or penalties. Still, imposing added regulatory burden on emerging technology offerings may stifle the very innovation we seek to unleash here, and we note the

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commission does have sufficient authority to regulate how the utilities make data available and to whom. We offer two alternative policy options here, however, that could be considered to clarify or strengthen enforcement capacity to assure that CSPs do not misuse customer data or seek to obtain unauthorized access to customer data.

The first option is to leverage the current contract CSPs must agree to, in order to gain access to the SMT data repository. Its Terms and Conditions² can establish precise requirements for CSPs, mechanisms for demonstrating compliance, and clear consequences for non-compliance. Supporting revisions to current PUCT rules might be adopted to give the utilities direction, and comfort, with this enforcement role. The second option is to seek new legislation providing the PUCT some clear regulatory authority over CSPs and providing a new registration option for CSPs seeking authorized access to customer smart meter data.

II. INTRODUCTION

Texas was an early adopter of advanced metering systems (AMS), driven by legislation adopted in 2005, and has remained a leader in smart energy policy. SMT contains 15-minute interval consumption data histories for the 7.1 million residential and commercial meters in the ERCOT areas open to retail electric competition (excluding approximately 12,100 customers³ with a peak demand above the 700 kW threshold for mandatory IDR meter installation⁴).

² https://www.smartmetertexas.com/CAP/public/content/SMT_Terms_and_Conditions_English.pdf

³ <u>http://www.ercot.com/calendar/2015/10/6/75334-COPS-RMS-WORKSHOPS</u> (see BUSIDRRQ Counts IDR Threshold Workshop IV 10 06 16 Final.ppt)

⁴ <u>http://www.ercot.com/mktrules/nprotocols/current</u> (see Section 18: Load Profiling, subsection 18.6.1)

Among the many benefits envisioned by the statute, the utility AMS enables a daily flow of 15-minute interval meter data for wholesale settlement and retail pricing. In addition, customers can also securely access their meter data at a common web portal, known as Smart Meter Texas, ownership and management of which is shared by multiple investor-owned utilities.⁵ Data is loaded to SMT by the utilities on the day after consumption and is then available not only to customers but also to their retail electric providers (REPs) and, to any CSPs who are authorized by the customer.

The full potential of the advanced metering network cannot be realized until customers can quickly and easily grant access to meter data to their chosen CSP application provider. Approximately 100 CSP companies have registered on the SMT portal to access meter data and offer services to customers, indicating significant business interest in the market. In most ways, the stage has been well set for a vibrant competitive energy services marketplace, but process improvement is required to stimulate CSP investment in meter datadriven services to deliver significant benefits to customers.

Texas residential and small and medium sized commercial consumers in the competitive retail electricity market in ERCOT have paid roughly \$2.5B for the deployment of advanced meters and related infrastructure. The 15-minute interval data automatically captured and transmitted every day by smart meters has enabled huge benefits, including improved reliability, improved accuracy of daily wholesale settlement, daily (vs. monthly) flow of meter data, retail pricing that better reflects wholesale costs, remote meter reading and remote connect/disconnect, on-demand meter reads, same-day switching, improved load forecasting, and the creation of a whole new category of energy management products and services that can be offered by both REPs and CSPs.

Numerous technology companies in energy services, home automation, and security have developed hardware and software products that leverage smart meter data. These providers offer an increasingly diverse array of services including energy and demand management, virtual energy audits, solar and storage assessments, distributed generation monitoring, disaggregation services, demand response programs, real-time price signals, usage and bill monitoring, and smart retail "power shopping." Services that can aggregate small flexible loads to shape usage or provide demand response can play an increasingly important role in the efficient operation of customer properties and also have the potential to provide societal benefits to the grid. However, difficulty accessing interval meter data has been shown to be a barrier to realizing the full potential of these innovative and beneficial customer services.

⁵ AEP Texas, CenterPoint Energy, Oncor Electric Delivery and Texas-New Mexico Power

III. BACKGROUND

It has been nearly a decade since the Public Utility Commission of Texas (PUCT) adopted Substantive Rule §25.130 in 2007, Advanced Metering, which authorized utility cost recovery for installing advanced metering systems (AMS) and set certain policy goals. Specifically, the rule indicates that the AMS should encourage demand response and provide more choices for customers.⁶ Also, utilities must provide "convenient and secure"⁷ access to advanced meter data to the customer, the customer's REP, and to any other entities that are authorized by the customer no later than the day after it is created.⁸

In support of these and other provisions in the rule, Texas utilities created SMT, a common web portal where smart meter data can be securely viewed and downloaded. CSP access to meter data was made available in November 2014, 7 years and 5 months after the rule was adopted.

After experiencing 18 months of CSP access in its current form, it is now clear that the process for sharing meter data with CSPs is "convenient" for neither customers, nor their chosen service providers. Difficult access is hampering the development of the competitive energy services market, resulting in fewer choices and limited benefits for customers. Policy changes should be adopted to support a revised process that is far simpler, secure and more convenient.

IV. THE PROBLEM

While many of the utility, wholesale settlement, and competitive electric retail benefits envisioned for the deployment of AMI are being realized, the engagement of customers with competitive energy

services providers is not among them. As reported at the Advanced Metering Working Group in Aug 2016⁹, there were only 1735 active data-sharing agreements in SMT at that time, in a universe of over 7 million meters – a mere fraction of the potential associated with the policy direction and market opportunity for CSP access.

The low volume of energy data sharing agreements to date is likely related to the fact that consumers have come to expect a certain level of simplicity and The low volume of energy data sharing agreements is related to the fact that consumers have come to expect a certain level of simplicity and convenience, especially in online services.

convenience, especially in online services. With a single click or two, individuals can share their location and payment information with ride hailing apps like Uber and Lyft. They can monitor their bank

⁶ <u>http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.130/25.130.pdf</u>

⁷ The word convenient is defined as "allowing you to do something easily or without trouble"

⁸ http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.130/25.130.pdf

⁹ http://www.ercot.com/calendar/2016/8/23/81401-AMWG

accounts and budgets through apps like Intuit's Mint.com, and they can complete credit card transactions with their fingerprint through services like Apple Pay and Android Pay.

The broad adoption of these services—Uber reported completing 62 million rides in a single month (July 2016)¹⁰, while Apple Pay adds one million new users each week¹¹—speaks to customers' clear willingness to share sensitive information with service providers that they trust. In this perspective, the lack of customer and CSP activity on SMT indicates that the current process for sharing smart meter data does not meet today's customer requirements for convenience.

This lack of convenience not only reduces customer engagement with SMT, but it also drives up the per-customer costs of CSPs to enroll customers. This lack of convenience not only reduces customer engagement with SMT, but it also drives up the percustomer costs for CSPs to enroll customers. Successful web services like Uber have experienced rapid growth by streamlining and automating as many processes as possible to reduce costs and increase convenience for customers. An indication that the SMT process needs improvement is that 2845 SMT help-desk tickets were opened by customers between January and July 2016,

representing 38% of the total number of new residential registrations during that same time period (7495).¹² Low-cost access to meter data is an especially critical requirement for many emerging low-cost, low-revenue, information-based apps which can require many thousands of customers in order to generate sufficient revenues.

Only 73,000 residential and business customers are registered on the SMT website to access their data, many of which are associated with a state mandated program for low income participants, or more expensive on-site solar installations. The failure to attract more transactions is no big surprise to energy services providers in the business of turning meter data into actionable information that customers can understand. The original design of the meter data networks in Texas contemplated that data availability would lead to a flowering of innovative energy information and management services, but we haven't gone the final mile of this journey.

Innovative technology companies using meter data to deliver valuable benefits to customers, the grid and society want to do business in Texas. With up to 71,000 MW of summer peak demand, the market opportunity is enormous for intelligent energy management systems or services. In fact, 98 CSP companies have registered on SMT, as of August 1, 2016. Seventeen (17%) of these companies have successfully integrated with the File Transfer Protocol (FTP), in which meter data files are retrieved from a secure SMT folder and 10 (10%) of these companies have also integrated with the Automatic

¹⁰ http://www.businessinsider.com/uber-completes-62-million-trips-july-2016-8

¹¹ http://fortune.com/2016/07/26/apple-pay-contactless/

¹² <u>http://www.ercot.com/committee/amwg</u> (see monthly reports)

Programming Interface (API), which enables automation and scalability to support high volumes of customers and meter data. An additional 26 companies have at least one active agreement in place with a customer to access meter data directly on the SMT website (without FTP or API). In total, there are 41 non-REP CSP companies that have at least one active energy data sharing agreement in place and the total volume of active energy data agreements was 1735 as of August 1, 2016. Interest exists, but why is scale not being achieved?

The state's highly customized process for data sharing creates a barrier to CSP market entry. The importance of removing such barriers to data access for CSPs is widely recognized in the industry, and not unique to Texas. In fact, a group of approximately 40 such companies who are members of a non-profit organization known as the Mission:Data Coalition, advocate for customer-friendly data access policies and processes across the country in hopes of helping to deliver benefits for consumers and to enable markets for energy management services.¹³

The SMT site requires customers to perform multiple steps, largely in an effort to protect consumers from unintentionally authorizing access to their meter data. The primary developers of this multi-step process were the utilities and the consumer protection advocates from the Texas Office of Public Utility Counsel, who are charged with protecting consumer privacy. While there was some involvement of third-party digital services providers, this early work on SMT predated the real emergence of the majority of smart applications arising in response to the potential availability of data, as well as some of today's technology practices. In hindsight, sensitivity to protection of data privacy outweighed the goal of convenience, much as it has in many other states.

V. THE CURRENT PROCESS

PUCT Substantive Rules require that access to data be both "convenient and secure." While customer data privacy is of paramount importance, customers should also be afforded a level of convenience consistent with the best practices in today's digital world that have been shown to foster growth in new markets. Today, a customer can purchase a cup of coffee, a book, a theater seat, an airplane ticket or hotel accommodations with as little as one "click." Given its market structure, Texas is pioneering this specific process in the electric industry and has built a strong and unique platform with the potential to propel forward innovation in demand-side services, with only a few incremental adjustments. The current process is outlined in **Table 1**.

There are two primary barriers for customers in this process. The first is the requirement that customers register on SMT, the second is the registration process itself, including the information required to register (see step 7), which is highly prone to entry errors. This confusing, multi-step registration process requiring manual entry of multiple, lengthy account numbers is a significant barrier to market entry and growth. EnergyHub¹⁴, a provider of cloud-based energy services software, has

¹³ <u>http://www.missiondata.org/</u>

¹⁴ <u>http://www.energyhub.com/solutions</u>

documented in a 2016 whitepaper¹⁵ the enormous impact that the enrollment process can have on customer adoption rates. Their experience enrolling customers for demand response programs reveals the severe friction caused by requiring customers to provide their utility account numbers vs. only requiring their name and service address. When account numbers were required, only 9% of invited customers agreed to participate in the DR program. When account numbers were not required, 55% of invited customers agreed to participate. Stated another way, requiring utility account numbers resulted in an 84% drop-off in initial customer uptake.

Table 1 – Overview of Current Process

Overview of Current Process

Step 1: CSP registers on SMT

Step 2: CSP solicits customer

Step 3: Customer provides email address and Electric Service Identifier (ESID) to CSP

Step 4: CSP logs into SMT and submits customer info collected in step 3

Step 5: SMT sends system-generated email to customer with contract terms and CSP logo

Step 6: <u>**Customer**</u> receives email and clicks "*Register for an SMT Account*" (this assumes the customer has not previously registered on SMT)

Step 7: <u>**Customer**</u> is redirected to SMT website registration page. Registration requires the customer to provide their name, email address, service address, ESID, meter number and the name of their current retail electric provider (this initiates authentication of the customer's identity and customer authorization of the CSP)

Step 8: <u>**Customer**</u> receives an email from SMT with a temporary password (assuming successful validation by SMT of the information entered in Step 7)

Step 9: <u>**Customer**</u> logs into SMT, changes password and sets a security question (this completes authentication of the customer's identity and customer authorization of the CSP)

Step 10: CSP access is granted and a confirmation email is sent to the CSP

¹⁵ <u>http://www.energyhub.com/blog/optimizing-demand-response-enrollment</u>

VI. AN IMPROVED PROCESS

For CSP data access to truly take hold, scale-up and deliver significant benefits, customers must be able to share their meter data as easily as they are able to enroll for electricity service. One of the most effective policy opportunities available for unlocking the potential for CSP innovation with meter data in Texas is to allow customers to sign up to share their smart meter data by using their readily-known personal information (name, email address and service address). We propose that their personal information would be used to initiate the process directly with the CSP and the electric meter number would then be requested to authenticate the customer's identity and complete the authorization process. Under such a standard, customers could share their data in two steps rather than five:

- 1) Customer provides their name, email address and service address directly to the CSP, and;
- 2) Customer agrees to a contract that arrives by email (authorization) and provides their electric meter number to confirm their identity (authentication).

These two steps could accomplish the two fundamental requirements to assure data privacy protection; authentication of the customer's identity, and authorization by that customer for the selected CSP. The use of the meter number is suggested because it is a piece of unique and proprietary information assigned by the utility, known by SMT and required on all customer electricity bills. Another option considered was to use the ESID instead of the meter number, however, ESIDs are far less secure (they are publicly posted online, by service address)¹⁶ and may be prone to higher typographical error as they are 17-digit numbers. Meter numbers on the other hand are not publicly available online and contain only approximately 10 characters.

The suggested process in Table 1 strikes a balance between the desire for convenience and protecting customer privacy concerns, by enabling customers to easily initiate the sharing process with known information (name, email and service address) and only later requiring confirmation of their identity and intent by submitting the far more secure meter number into a form that is only accessible through the customer's private email account. So, for example, a customer could sign up for a new service initially on a mobile device, and then later confirm by responding to the email when they have access to their meter number.

¹⁶ <u>http://www.ercot.com/mktinfo/retail</u> (see TDSP ESI ID Reports)

Table 2: Process Comparison

A comparison of the current and suggested processes for a customer to authorize a CSP to access their meter data. Removing the requirement for customers to register on SMT reduces the number of customer steps from five to two.

Current Process	Suggested Process
Step 1: CSP registers on SMT	Step 1: Same as current
Step 2: CSP solicits customer	Step 2: Same as current
Step 3: Customer provides email address and ESID to CSP	Step 3: Customer provides name, email address and service address to CSP
Step 4: CSP submits customer info and contract terms to SMT via secure connection	Step 4: Same as current
Step 5: SMT sends email to customer with contract terms and CSP logo (Cc: to CSP)	Step 5: Same as current
Step 6: Customer receives email and clicks "Register for an SMT Account"	Step 6: Customer receives email from SMT, agrees to contract terms and enters meter number (found on electric bill) for authentication purposes.
Step 7: Customer registers on SMT (requires ESID, meter number and name of current REP)	Step 7: SMT verifies that the meter number matches the service address and sends confirmation email alerts to customer and CSP
Step 8: Customer receives temporary password by email	Step 8: CSP access is granted
Step 9: Customer logs into SMT with temporary password and changes password	
Step 10: CSP access is granted	

Under this suggested process, customers are not required to register and create an individual account on SMT, removing a primary market barrier. The email invitation sent by SMT to the customer (see Step 6 above) would provide the customer with information about their rights, including the right to withdraw authorization, and would also contain the contract terms for data sharing and a convenient way for the customer to "click" to confirm their authorization and enter their meter number. After the customer has entered their meter number (for authentication of their identity) and has agreed to the CSP contract terms, the pending request would be submitted back to SMT for validation that the meter number matches the service address provided and confirmation of the customer's agreement to the CSP terms authorizing access to their meter data. After successful validation, a confirmation email to the customer and the CSP would put all parties on notice that the customer was successfully signed up and that their data was now available to the CSP.

VII. POLICY SOLUTIONS

Although the process can be improved with the changes discussed above, potential policy barriers also exist. Allowing customers to provide select CSPs with this simple access to meter data, however, raises concerns among regulators that they lack the enforcement authority to assure that authorized CSPs use data obtained appropriately. Unlike regulated retail electric providers, CSPs for example would not be subject to customer protection rules of the PUCT, although they certainly must recognize the same legal boundaries under which all businesses operate.

Through extensive interviews with stakeholders, two primary policy alternatives have emerged. Through extensive interviews with stakeholders, two primary policy alternatives have emerged. Option one would require little, perhaps no, regulatory change by relying upon the SMT Website Terms and Conditions (Terms) which CSPs must agree to upon registering to use SMT. It is notable that the current version of the SMT Terms already clearly prohibits unauthorized data access or misuse of customer meter data and is clear that compliance with the Terms is a condition of continued use of the web portal.¹⁷ To date, while usage is low

as noted, we are unaware of any abuses being reported, and no CSPs have been banned from SMT for violating the Website Terms and Conditions.

Nevertheless, under this scenario, stakeholders could be asked to work together to ensure the Terms include sufficiently clear eligibility criteria for CSP participation and ongoing access to SMT. Failure to adhere to the requirements in the Terms should result in enforcement consequences prescribed in the Terms, including full or partial suspension from using SMT. Measures might include an addendum to the standard Terms requiring, for example, annual reporting of customer authorizations, self-reporting of known violations, or an annual affidavit attesting to compliance with the Terms. There could also be language added to the Terms that would allow for enforcement measures intermediate to complete

¹⁷ https://www.smartmetertexas.com/CAP/public/content/SMT Terms and Conditions English.pdf

banishment. Utilities and the PUCT or other consumer protection organizations could then publicize avenues to register complaints by customers that might trigger enforcement steps. Utilities may seek assurances, in PUCT rules, that they bear no liability for the actions of CSPs authorized by a customer, or seek rule language to clarify the enforcement authority to oversee compliance with the Terms.

A second option would require new legislation to provide the PUCT with limited authority to register and oversee any non-REP CSP seeking the right to participate in a meter data access protocol. The criteria for CSP use of SMT and access to customer meter data would also need to be clarified and codified by PUCT rule under this option. Should legislative authority be granted to register CSPs and enforce proper access to and use of customer data, there may even be opportunities to further simplify the enrollment process. However, this would be a lengthy process, and CSPs are not anxious to become subject to further regulations.

The goal of this approach would be the same as the first approach: to enable a pathway for CSPs to acquire customer authorizations outside of SMT, for example, entirely on their own websites. By establishing a registration regime that is appropriate for software companies as opposed to retail electric commodity providers, CSPs might be able to access a customer's meter data by simply entering the customer's name, email and service address into SMT, and confirming the customer's agreement by email. The PUCT would retain the right, either on its own motion, or upon a complaint, to audit a CSP at any time to assure such customer authorizations were properly obtained, and have access to a range of clearly delineated enforcement rights.

This is a more heavy-handed regulatory approach than providing for enforcement through the SMT Terms and PUCT rule, but it could give the state clear authority to be proactive on behalf of customers. An energy management or demand response provider, particularly in the mass market, may generate such relatively low revenue per customer and require the enrollment of so many customers to sustain its business, that registering with the PUCT and submitting to additional regulation—in exchange for more streamlined data sharing—would be an acceptable alternative to the current arrangement.

Both of these policy alternatives justify and enable a similar process for customer authorization and CSP data access. The primary difference would be whether CSP use of data is overseen by the utilities or by the PUCT directly. The primary benefits of the first option are relative ease of implementation and low regulatory hurdles. The PUCT could give direction to the market (by rule, if necessary) to create an expedited data-sharing program that does not require separate customer registration on SMT. The program would be limited to CSPs who agree to specific Terms designed to protect customer privacy and to ensure CSP compliance and accountability. Failure to comply with the Terms would have predefined consequences.

VIII. CONCLUSION

Convenient CSP access to smart meter data is required by PUCT rule, yet the current process is not convenient. The market for data-driven energy services companies is currently stifled by the complexity of the SMT process, and policy changes are required to allow the streamlining needed to enable the system to deliver on the benefits envisioned for the deployment of AMS networks. This will enable customers to authorize CSPs to access their meter data without being required to register on SMT.

Customers should be able to share their meter data without the burden of registering on SMT.

Unlocking the potential of AMS networks to contribute to energy management and other CSP services requires commercial-quality solutions that are proven to work in today's digital markets. The process that was implemented in 2014 has failed to attract and retain the investment of CSPs who are active in other markets. Many CSPs have expressed an interest in SMT as evidenced by the large number of companies (98) that have registered on SMT, however, the total number of customers who have successfully authorized one of these companies to access their meter data is only 1735 in a universe of over 7 million meters¹⁸.

Texas has only just begun to extract the potential value of smart meter data. REPs have easy access to their customers' meter data and are providing value-added services to retain electricity customers. But many companies that were built on deriving value from smart meter data are not yet investing significant resources in Texas at a meaningful scale. Nobody knows what specific innovations in technology and cloud-computing software might arise and proliferate in an open access market, but few will occur under the current process for sharing data. The potential for aggregation, automation and participation in ERCOT energy and ancillary services markets are highly attractive opportunities that, if facilitated by the right policy, will increase market efficiencies and drive down consumer energy costs. Leveraging smart meter data to provide customers with more smart choices for managing energy is smart policy for Texas.

¹⁸ <u>http://www.ercot.com/calendar/2016/8/23/81401-AMWG</u>

