

# Exhibit J

**ICC Docket No. 17-0123**

**Commonwealth Edison Company's Response to  
Environmental Defense Fund ("EDF") Data Requests**

**EDF 2.01 – 2.06**

**Date Received: July 18, 2018**

**Date Served: August 7, 2018**

**REQUEST NO. EDF 2.04:**

How many non-RES Third Parties are currently registered through ComEd's Green Button Connect tool?

**RESPONSE:**

There are currently three (3) non-RES Third Parties that have completed their registration and available on the website.

**ICC Docket No. 17-0123**

**Commonwealth Edison Company's Response to  
Environmental Defense Fund ("EDF") Data Requests**

**EDF 2.01 – 2.06**

**Date Received: July 18, 2018**

**Date Served: August 7, 2018**

**REQUEST NO. EDF 2.05:**

How many customers are currently connected to a non-RES third party through ComEd's Green Button Connect tool?

**RESPONSE:**

As of July 27, 2018, 218 customers have connected to non-RES third party through ComEd's Green Button Connect.

# Exhibit K





# GBCMD in the Wild

UtilityAPI - Illinois Customer Data Workshop - 2023-03-22

# Real world examples and use cases of GBCMD



- **Silicon Valley Clean Energy (SVCE) - Data Hive**
  - Enables “Grid Shift” program (dynamic EV charging load management)
- **Fort Collins Utilities (FCU) - My Data**
  - Powers building benchmarking (5k sqft and up) and solar installer network scaling
- **Peninsula Clean Energy (PCE) - Data Connect**
  - Enables cities and large commercial customers to meet ESG goals
- **National Grid New York (NGNY) - GBC**
  - First certified GBCMD in the United States
- **Consumers Energy (CE) - GBC**
  - First certified GBCMD in Michigan

# Silicon Valley Clean Energy (SVCE) - Data Hive

GBCMD used for EV charging load shifting program, 150+ third parties registered, 400+ GWh usage shared <https://data.svcleanenergy.org/>

The screenshot shows the top navigation bar with links for CONTACT, NEWS, and FAQ. Below is the SVCE data hive logo and a sidebar with a 'Quick Start Guide' and 'Questions?' section. The main content area features a 'Securely Request or Share Utility Data' section with three buttons: 'REGISTER AS A THIRD PARTY', 'REGISTER AS A COMMERCIAL USER', and 'BROWSE THE DIRECTORY'. A 'Green Button Certified' logo is visible at the bottom left.

The screenshot shows the GridShift: EV Charging app interface. At the top, there are language options (中文, ESPAÑOL, Tiếng Việt) and a search bar. Below is the SVCE logo and a navigation menu with 'ABOUT', 'eHUB', 'OFFERS & SERVICES', and 'RATES & FEES'. The main content area features a large image of an EV charging station with a white charging cable. A green overlay box contains the text: 'GridShift: EV Charging' and 'A free mobile app that helps you optimize your EV charging at home to use cheaper, cleaner energy on the grid.'

The screenshot shows the directory page of the Silicon Valley Clean Energy Data Hive. It displays a grid of logos for various participating companies, including SUMMIT, PEAK, BEST, arbnco, PATHON, RECURVE, SIEMENS, CENERGY, SUN UP, EVmotion, STABLE, EDF, REC, ENGIE, pickmy solar, GreenSolar, ORION, TerraVerde, DEEP GREEN, APLO, and ivy.

# Fort Collins Utilities (FCU) - My Data

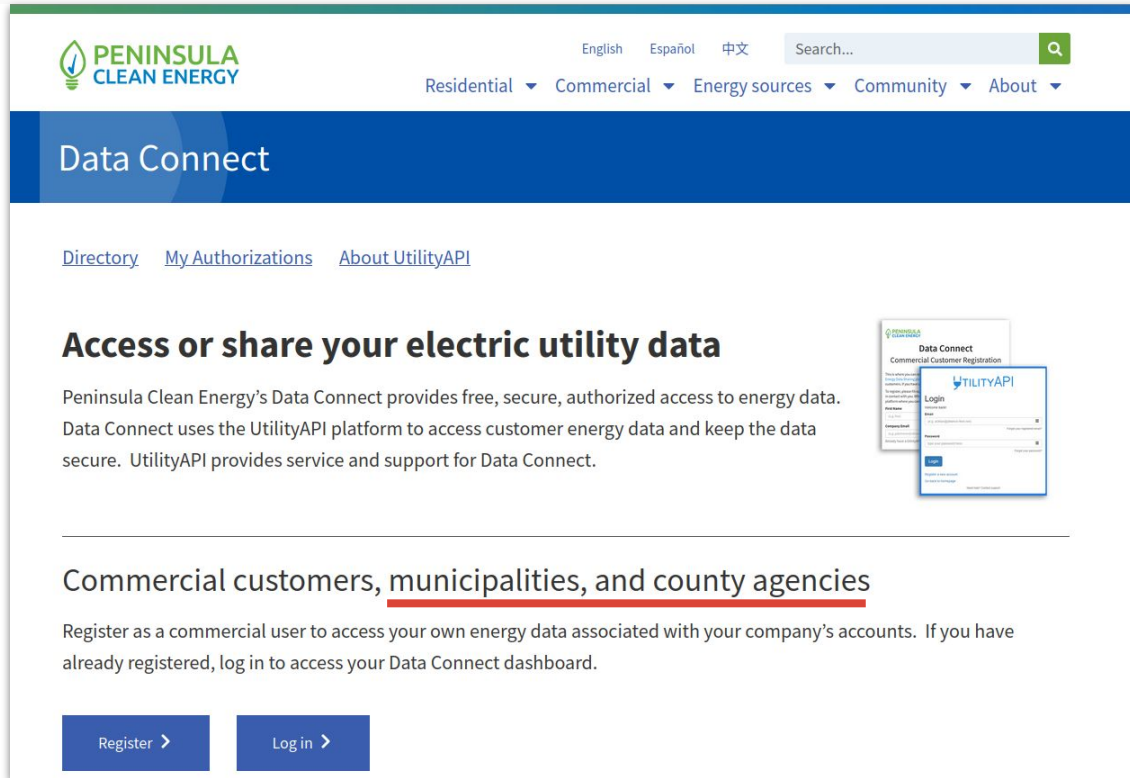
GBCMD used for solar contractor network

GBCMD used for city-wide building benchmarking (all buildings 5,000 sq ft and larger)

<https://fcgov.com/mydata>

<https://fcgov.com/bews>

# Peninsula Clean Energy (PCE) - Data Connect



English Español 中文 Search...


Residential Commercial Energy sources Community About

## Data Connect

[Directory](#) [My Authorizations](#) [About UtilityAPI](#)

### Access or share your electric utility data

Peninsula Clean Energy's Data Connect provides free, secure, authorized access to energy data. Data Connect uses the UtilityAPI platform to access customer energy data and keep the data secure. UtilityAPI provides service and support for Data Connect.



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### Commercial customers, municipalities, and county agencies

Register as a commercial user to access your own energy data associated with your company's accounts. If you have already registered, log in to access your Data Connect dashboard.

[Register >](#) [Log in >](#)

GBCMD used for providing data reporting for large commercial and municipal ESG / carbon tracking.

<https://data.peninsulacleanenergy.com/>

# National Grid, Consumers Energy - Investor-owned Utilities (IOUs)

The screenshot shows the National Grid website's 'Green Button Connect' page. The navigation bar includes 'Choose a Region', 'Gas Emergencies', 'Power Outages', 'Our Company', and 'Contact Us'. The main header features 'nationalgrid' and navigation links for 'Your Account', 'Billing & Payments', 'Save Energy & Money', 'Safety & Outages', 'Pay Your Bill', and 'Sign In / Register'. The page title is 'Green Button Connect' under the 'Electric Vehicles' category. The content explains that third-party companies offer tools to help save money on home energy costs. It includes a section 'Securely Share Your Utility Data' with a 'My Authorizations' button. Below this are two columns: 'For Customers' with a 'My Authorizations' button and 'For Third Parties' with a 'Register' button. An 'Authorized Third Parties' section lists 'Amp Energy' with the URL 'https://community-solar.energy/' and 'AmpTrade, Inc.' with the URL 'https://amptrade.com/'.

<https://greenbutton.nationalgrid.com/>

The screenshot shows the Consumers Energy website's 'Data Sharing Center' page. The navigation bar includes 'My Authorizations', 'Data Sharing Center', 'Directory', and 'FAQs'. The main header features the 'Consumers Energy' logo and the title 'Share Your Energy Data'. The content explains that Consumers Energy has made it easy for customers and third-party providers to access and share energy data securely. It includes a 'Questions?' section with a 'SUBMIT A SUPPORT REQUEST' button and a 'Review our FAQs' link. A 'Customers' section has a 'MANAGE MY AUTHORIZATIONS' button and a 'BROWSE PROVIDER DIRECTORY' button. A 'Third-Party Providers' section has a 'REGISTER AS A THIRD PARTY' button and a 'LOG IN TO YOUR DASHBOARD' button. A 'Data Privacy and Protection' section mentions certification by the Green Button Alliance and adherence to U.S. Department of Energy's Data Guard Energy Privacy guidelines, with a 'here' link. A 'GREEN BUTTON CONNECT' logo is visible in the bottom right corner.

<https://greenbutton.consumersenergy.com/>

# Conclusion

- GBCMD works at scale
- Certification works
- Wide spectrum of use cases for Green Button Connect
- Adoption requires alignment of incentives by utilities

## Use Cases:

- ★ Accelerating Distributed Energy Resource adoption
- ★ Building benchmarking
- ★ ESG / Carbon tracking
- ★ Dynamic load shifting grid programs and incentives



# Thanks!

Daniel Roesler

Founder & CTO, UtilityAPI

GBA Vice-Chair

<https://utilityapi.com/>



# Exhibit L

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# UNDERSTANDING

SMART METER  
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Version 2.0

November 3, 2014

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## Document History

| Revision Number | Revision Date | Comments  |
|-----------------|---------------|---|
| v1.0            | 11-1-2013     | First release of Understanding SMT  |
| v1.5            |               | Edited the document to make it consistent with the Fall 2014 release of SMT including the Third Party access functionality, redesign related to Customer usability, and ability for ROR to provide access to SMT API and SMT FTPS to vendors on their behalf. |

## ACKNOWLEDGEMENTS

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## Executive Summary

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Smart Meter Texas™ (SMT) is an interoperable information system which stores electric meter usage data received from participating Texas Transmission and Distribution Service Providers<sup>1</sup> (TDSPs) and provides access to meter usage data to Customers, Retail Electric Providers (REPs), and authorized Third Parties. In addition to acting as a common, interoperable interface for access to smart meter data, SMT enables In-Home Devices to be installed and connected to the Customer HAN<sup>2</sup> and enables Third Parties to communicate with Customers through their In-Home Devices. SMT also provides a convenient and easy to use process whereby Customers can grant Third Parties access to their usage information and give them permission to communicate with their In-Home Devices. By making these standardized services available to all REPs and Third Parties serving Customers in Texas and to all Customers with smart meters in the competitive regions of Texas, regardless of the TDSP service territory in which they are located or the REP or Third Party they are served by, SMT is a first-of-kind smart grid solution that is relevant and applicable to other jurisdictions.

SMT is the product of a collaborative stakeholder-driven process initiated by the Public Utility Commission of Texas (PUCT), designed to support the Advanced Metering System (AMS) deployment in the Texas competitive electricity market by leveraging the wealth of Customer usage data made available by smart meters and the associated AMS communications and information technology infrastructure. Although uniquely designed and developed for the Texas electricity market, SMT is relevant to other jurisdictions that have smart meter deployments and desire to implement the Green Button initiative. SMT provides a broad range of benefits to many market participants. Chief among these benefits are improved access and utilization of energy data. By providing timely access to energy usage data, Customers can better manage their energy consumption to lower their monthly energy expenditures and benefit from new

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<sup>1</sup> The participating Texas TDSPs are AEP Texas Central Company and AEP Texas North Company (jointly “AEP”), CenterPoint Energy Houston Electric, LLC (“CenterPoint”), Oncor Electric Delivery Company LLC (“Oncor”), and Texas-New Mexico Power Company (“TNMP”) collectively referred to as the “Joint TDSPs”.

<sup>2</sup> The Customer HAN is an energy home area network that is created using the HAN communication protocol, ZigBee SEP v1.0, located in the smart meter that is installed at the Customer premise (see definition of HAN in Section 2).

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smart grid products (e.g., bill alerts, usage summary, pre-paid service, peer compare, etc.) offered by REPs and Third Party service providers. REPs and Third Parties benefit by having one common exchange point to download Customer energy usage data regardless in which TDSP service territory the Customer is located in. Without SMT, the TDSPs, REPs, and Third Parties would have higher operational costs resulting from the development and operation of multiple data portals, multiple interfaces, and from the lack of standardization. By removing the inefficiencies, redundancies, and lack of interoperability from the process, costs for electricity service are lowered for all, including Customers.

An additional key smart grid benefit realized by the implementation of SMT is the provision of a single communications interface used for the initial installation of In-Home Devices and for Third Parties to communicate with Customers' In-Home Devices. The ability to communicate with In-Home Devices has enabled the development of innovative retail products like programmable communicating thermostats, billing information updates sent to In-Home Devices, innovative pricing products, and demand response programs. The HAN communication support provided by SMT has increased the rate of In-Home Device adoption and types of In-Home Device-related services available in Texas while reducing the overall cost of In-Home Device product development and deployment. Also, the experience gained in the development of the SMT HAN support model resulted in a refinement of the ZigBee Smart Energy Profile v1.x and enabled the creation of standardized HAN Application Programming Interfaces (APIs) for In-Home Device installation and communications. This standardization has provided Texas Customers with a greater selection of available In-Home Devices than any other electric market in the US.

The genesis of SMT can be traced back to 2007 when the PUCT scheduled workshops under its Project #34610 to create a stakeholder-driven process tasked with addressing implementation issues related to the deployment of advanced meters. Participating stakeholders in this process (which came to be known as the "Advanced Metering Implementation Team" or "AMIT"), included representatives from the Joint TDSPs, REPs, PUCT staff, consumer advocates, advanced meter manufacturers, In-Home Device manufacturers, HAN service providers, solutions vendors, and the Electric Reliability Council of Texas (ERCOT). During the course of

this consensus-driven, collaborative process, stakeholders defined business processes and requirements that would be required to support the deployment of smart meters, including retail market transactions, the exchange of Customer meter usage data, wholesale settlement among market participants, communications with In-Home Devices, and Customer education. Those business processes and requirements related to the exchange of Customer meter usage data and communications with Customer In-Home Devices formed the initial design basis for SMT.

SMT development began in 2008 and, by the end of 2010, a base set of functionality was available, including access to smart meter usage information and HAN functionality, which enabled Customers to manage their energy consumption, reduce their energy costs, and take advantage of new smart energy products and services.

The process of developing SMT followed widely recognized smart grid methodologies like the IntelliGrid Methodology for Developing Requirements for Energy Systems and the GridWise Architecture Council's (GWAC) Interoperability Layered Categories, known as the GWAC stack. SMT development was also consistent with each of the National Institute of Standards and Technology (NIST) guiding principles for identifying interoperable smart grid standards for implementation. SMT satisfies the NIST architectural goals for the smart grid and the NIST IR 7628 Guidelines for Cyber Security. By following these and other industry methodologies, best practices, and standards, SMT provides registered and authorized users access to energy usage and other related data through standardized and secure interfaces.

This document is designed to provide a comprehensive understanding of SMT, including the context in which it was developed, the methodology used for its design and development, the functionality it provides to users, the benefits that have been realized from its deployment, and the use of smart grid standards utilized to ensure that SMT is an interoperable solution. In addition, this document provides interested parties with access to key SMT artifacts (i.e., business requirements, use cases, context diagrams, etc.).

By making information about the SMT solution publicly available, this document aspires to extend the value of the solution in the following ways:

- *To demonstrate a model for the development of similar customer- and market-enabling solutions in other jurisdictions*
- *To demonstrate a model for using one common interface across multiple utilities to access consumer energy usage data*
- *To serve as a guidebook for REPs and Third Parties wanting to understand the functionality and value of the SMT solution for their businesses*
- *To demonstrate an interoperable implementation of the Green Button initiative*
- *To demonstrate a model for using one common interoperable interface to communicate with Customer In-Home Devices over multiple utility AMS communication networks*
- *To testify to the potential power of a consensus-based, stakeholder-driven approach to smart grid solution development, producing an interoperable solution that meets the needs of all stakeholders.*



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# 1 Introduction

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SMT is an interoperable smart grid solution that provides access to smart meter information and enables communication with Customer In-Home Devices using the TDSP AMS communication network. SMT hosts a common data repository storing Customer usage information and technical information related to the smart meter installed at the Customer's premise. SMT provides registered and authorized users access to this information through standard and secure interfaces. In addition, SMT enables communication with Customer In-Home Devices by providing Customers and Third Parties a standard method for connecting In-Home Devices to the Customer HAN and providing Third Parties the ability to send messages to a Customer In-Home Device.

This document is designed to provide a broad understanding of SMT, including the context in which it was developed, the methodology used for its design and development, the functionality it provides to users, the security needed to provide secure user interfaces and protect Customer data, and the use of smart grid standards utilized to ensure that SMT is an interoperable solution.

The following provides an overview of each of the sections of this document.

- 2 Acronyms and Definitions** – this section provides definitions of acronyms and terms used in this document.
  
- 3 Background and Context** – this section provides background and context information related to the Texas policy and regulatory directives that spurred the development of SMT and the Texas competitive electric market structure showing how critical it was for SMT to be interoperable. In addition, this section describes the history of SMT, the benefits provided by SMT, and how the development of SMT paralleled with the national effort to develop smart grid standards.

- 4 Methodology** – this section describes the consensus-driven process used to develop the SMT business requirements<sup>3</sup>.
- 5 Functionality** – this section introduces the SMT conceptual model and provides detail on the key functions of SMT – data repository, access meter data, Third Party access, HAN functionality, and education.
- 6 Registration and User Roles** – this section describes the secure registration process users must pass through to create an account on SMT and the roles assigned to different types of users to ensure security and privacy.
- 7 Interfaces** – this section describes the three different interfaces provided to users for accessing the SMT functionality and the type of access granted to each user depending upon their assigned role.
- 8 Use Cases** – this section describes the use case and storyboard process used to identify SMT actors and business requirements.
- 9 Security** – this section describes the variety of tools and techniques used to ensure security and privacy of Customer data and secure the SMT interfaces.
- 10 Use of Industry Standards** – this section discusses how the SMT design and implementation followed widely recognized smart grid methodologies, guiding principles, architectural goals, best practices, and smart grid and web standards to make it an interoperable smart grid solution.

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<sup>3</sup> The final SMT business requirements are filed in Project #41171 Repository of Advanced Metering Implementation Documents <http://interchange.puc.texas.gov/WebApp/Interchange/application/dbapps/filings/pgSearch.asp>

- 11 Testing** – this section describes the testing that was done to validate the SMT functionality, including In-Home Device testing.
  
- 12 Operational Support** – this section describes the system support for SMT and the Help Desk supporting SMT users.

## 2 Acronyms and Definitions

---

### 2.1 Acronyms

| Acronym     | Term  |
|-------------|---|
| AMIT        | Advanced Metering Implementation Team                       |
| AMS / AMI   | Advanced Metering System / Advanced Metering Infrastructure |
| API         | Application Programming Interface                           |
| BP          | Business Process  |
| BR          | Business Requirement  |
| CenterPoint | CenterPoint Energy Houston Electric, LLC                    |
| CSV         | Comma Separated Values                                      |
| ERCOT       | Electric Reliability Council of Texas                       |
| ESIID       | Electric Service Identifier                                 |
| FTPS        | File Transport Protocol Secure                              |
| FAQs        | Frequently Asked Questions                                  |
| GUI         | Graphical User Interface                                    |
| GWAC        | GridWise Architecture Council                               |
| HAN         | Home Area Network   |
| HB          | House Bill  |
| JDOA        | Joint Development and Operating Agreement                   |
| LSE         | LodeStar Enhanced   |
| NIST        | National Institute of Standards and Technology              |
| Oncor       | Oncor Electric Delivery Company LLC                         |
| PGP         | Pretty Good Privacy   |
| ROR         | REP of Record   |
| REP         | Retail Electric Provider                                    |
| PUCT        | Public Utility Commission of Texas                          |
| RFP         | Request for Proposal  |
| RMS         | Retail Market Subcommittee                                  |
| SDO         | Standards Development Organization                          |



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| Acronym | Term   |
|---------|--|
| SSO     | Standard Setting Organization                  |
| SGIP    | Smart Grid Interoperability Panel              |
| SMT     | Smart Meter Texas™                             |
| TNMP    | Texas-New Mexico Power Company                 |
| TX SET  | Texas Standard Electronic Transaction          |
| TDSP    | Transmission and Distribution Service Provider |

## 2.2 Definitions

| Term  | Definition  |
|---|---|
| Activity Diagram  | A graphical representation used to describe the business and operational step-by-step workflows of components in a system.  |
| Advanced Metering Implementation Team                             | A group of market participants, including representatives from the Joint TDSPs, REPs, PUCT staff, consumer advocates, advanced meter manufacturers, HAN manufacturers, HAN service providers, solutions vendors, and ERCOT who participated in PUCT Project #34610 Implementation Related to Advanced Metering.                         |
| Advanced Metering System or Advanced Metering Infrastructure      | A utility system that measures, collects, and analyzes energy usage using advanced electric meters, through various communication technologies. This infrastructure includes hardware, software, communications, customer service systems, meter data management software, metering system, network distribution business systems, etc. |
| AEP Texas Central Company and AEP Texas North Company (AEP Texas) | Two TDSPs that are operating companies of AEP serving a total of almost 1 million retail electric customers in portions of west Texas and south Texas including areas along the Texas gulf coast southwest of Houston.  |
| Agreement Key   | An alphanumeric security code provided in an email invitation to a Friend that is needed for the Friend to view their friend's smart meter usage information.   |
| Application Programming Interface                                 | A protocol intended to be used as an interface by software components to communicate with each other.   |
| Account Authorization Code  | An alphanumeric security code created by SMT for a Customer account that a Customer may give to a Third Party who wants to send an agreement invitation to the Customer. A Business Account will have an Account  |

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| Term                                     | Definition  |
|--|---|
|  | Authorization Code for each Administrator.  |
| Business Account                         | An SMT account associated with one or more ESIIDs for a user who is a Business Customer.  |
| Business Customer                        | An electric Customer who is a business company with one or more ESIIDs.   |
| Business Process                         | An activity or set of activities designed to produce a specific output. Business Processes describe large groupings of work (functionality / capabilities) that will be available (created or impacted) as a result of a project.   |
| Business Requirement                     | High-level statements of the goals, objectives, or needs of a project.  |
| CenterPoint Energy Houston Electric, LLC | A TDSP serving 2.1 million retail electric customers (1.9 million residential customers) in a 5,000-square-mile electric service territory in the Houston, Texas metropolitan area.   |
| Comma Separated Values                   | A common file format in which the data is presented as a list of fields that are separated by commas. CSV files are typically opened with an application or spreadsheet software, such as MS-Excel.   |
| Customer                                 | A Residential or Business Customer with a premise connected to one of the Joint TDSP's distribution system and has a smart meter installed.   |
| Electric Reliability Council of Texas    | The independent system operator that operates the electric grid and manages the deregulated market for 75 % of the state of Texas.  |
| Electric Service Identifier (ESIID)      | A 17 or 22-digit number used to identify a unique point of electric service delivery to a premise (home or business) and is found on the Customer electric bill.  |
| Energy Data Agreement                    | An Agreement between a Customer and a Third Party granting the Third Party the ability to view and download usage information, meter information, and premise information for one or more of the Customer's ESIIDs.   |
| File Transport Protocol Secure           | An extension to the commonly used File Transfer Protocol (FTP) that adds support for the Transport Layer Security (TLS) and the Secure Sockets Layer (SSL) cryptographic protocols. FTP is a standard communication protocol used to transfer files from one host or to another host over the internet, built on a client-server architecture and uses separate control and data connections between the client and the server. |
| Frequently Asked Questions               | A set of question and answers on the SMT web portal relating to SMT, smart meters, In-Home Devices, customer accounts, reading reports and using  |

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| Term                              | Definition   |
|-----------------------------------|--|
|                                   | data, and importing files.   |
| Friend                            | A person who has been granted access by a Residential Customer to view that Customer’s smart meter usage data.   |
| Graphical User Interface          | A type of user interface used by the SMT web portal that allows users to interact with SMT using images for the tasks of gathering and producing information.  |
| GridWise Architecture Council     | A team of industry leaders who are helping to identify areas for standardization in the smart electrical grid that allow significant levels of interoperation between system components and to outline a philosophy of inter-system operation that preserves the freedom to innovate, design, implement and maintain each organization's portion of the electrical system.   |
| Home Area Network                 | In Texas, an energy related network using the ZigBee Smart Energy Profile v1.0 protocol for communicating with In-Home Devices within the Customer premise. The HAN, in the context of this document, is created by the smart meter that has the ZigBee SEP v1.0 protocol and is installed at the Customer premise.  |
| In-Home Device                    | A device (e.g. in-home display, programmable communicating thermostat, smart appliances, etc.) that communicates on the Customer HAN. Sometimes referred to as a HAN Device.   |
| In-Home Device Agreement          | An Agreement between a Customer and a Third Party granting a Third Party the ability to add or remove an In-Home Device on the Customer HAN.   |
| In-Home Device Services Agreement | An Agreement between a Customer and a Third Party granting a Third Party the ability to send messages to a Customer’s In-Home Device.  |
| Interoperability                  | The capability of two or more networks, systems, devices, applications, or components to interwork, and to exchange and readily use information—securely, effectively, and with little or no inconvenience to the user. The Smart Grid will be a system of interoperable systems; that is, different systems will be able to exchange meaningful, actionable information in support of the safe, secure, efficient, and reliable operations of electric systems. The systems will share a common meaning of the exchanged information, and this information will elicit agreed-upon types of response. The reliability, fidelity, and security of information exchanges between and among Smart Grid systems must achieve requisite performance levels. <sup>4</sup> |

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<sup>4</sup> NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0

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| Term                                      | Definition   |
|---|--|
| Joint Development and Operating Agreement | An agreement between the Joint TDSPs to share in the development, hosting, maintenance, and operation of SMT.  |
| Joint TDSPs                               | The TDSPs AEP Texas, CenterPoint, Oncor, and TNMP, who are part of the JDOA.   |
| LodeStar Enhanced                         | An ERCOT specified file format (CSV like) for TDSPs to provide data to ERCOT for loading smart meter usage data into the settlement process.   |
| Oncor Electric Delivery Company LLC       | A TDSP serving more than 3 million retail electric customers in an electric service area that includes the Dallas-Fort Worth metroplex and portions of east, central and west Texas.   |
| Pretty Good Privacy                       | A data encryption and decryption standard that provides cryptographic privacy and authentication for data communication and storage.   |
| REP of Record                             | The Customer's current REP in the ERCOT settlement system.   |
| Residential Account                       | An SMT account associated with one or more ESIIDs for a user who is a Residential Customer.  |
| Retail Electric Provider                  | An entity that sells electric energy to retail customers in the competitive regions of Texas but does not own or operate generation assets. REPs register with the PUCT and lists of registered REPs are located on the PUCT website.  |
| Public Utility Commission of Texas        | The entity created by Texas legislation to provide statewide regulation of the rates and services of electric and telecommunications utilities and implement respective legislation.   |
| Request for Proposal                      | A solicitation made by a company interested in procurement of a commodity, service or asset, to potential suppliers to submit business proposals. It usually includes requirements for the commodity or service, and may dictate to varying degrees the exact structure and format of the supplier's response. |
| Retail Market Subcommittee                | An ERCOT subcommittee functioning as a forum for the resolution of retail market issues that directly affect ERCOT and the ERCOT protocols.  |
| Standards Development Organization        | Professional societies, industry and trade associations and membership organizations that develop standards within their area of expertise in processes marked by openness, balance, and transparency, and characterized by due process to address contrary opinions.  |
| Standard Setting                          | A broader universe of organizations and groups—formal or informal—that   |

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| Term   | Definition  |
|--|---|
| Organization                                   | develop standards, specifications, user requirements, guidelines, etc.  |
| Smart Meter Texas™                             | An internet-based interoperable smart grid solution hosting a common data repository, providing access to smart meter information, providing a method for Customers to grant Third Parties access to their usage data and In-Home Devices, and providing an interoperable method for HAN communications using the TDSP AMS communication network.                                     |
| Third Party                                    | A company that offers energy efficiency and In-Home Device services to Customers. Third Parties include REPs when REPs are offering energy efficiency services to Customers who do not buy electricity from them (i.e., not the ROR). REPs are considered Third Parties to all Customers, including the ROR Customers, when the REP is offering In-Home Device services to Customers. |
| Texas-New Mexico Power Company                 | A TDSP serving 230,000 retail electric customers in a diverse electric service area that includes north-central and west Texas and an area along the Texas gulf coast south of Houston.   |
| Texas Standard Electronic Transaction          | The procedure used in Texas to transmit standard electronic data transactions that enable and facilitate the processes of customer choice in the deregulated Texas electric market.   |
| Transmission and Distribution Service Provider | An entity that has owns and operates electrical transmission and distribution facilities and is regulated by the PUCT.  |

## 3 Background and Context

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Texas has been a frontrunner in the deployment and testing of smart meter technology and has been an early adopter of legislation and regulation related to the access of smart meter usage data. The Texas deployment of smart meters began in 2008 and, as of August 31, 2014, over 6.8 million<sup>5</sup> smart meters have been installed by the Joint TDSPs. Between 2005 and 2007, the Texas legislature and PUCT adopted legislation and regulation that resulted in smart meters being deployed and smart meter data being easily accessible by Customers and their REPs beginning in 2010. A brief explanation of the Texas electric market and a history of the development of SMT, as an interoperable solution meeting the legislative and regulatory requirements, are presented in this section.

### 3.1 Texas Policy and Regulatory Directives

In 2005, the Texas legislature directed the Public Utility Commission of Texas (PUCT) to: (a) report on the efforts of TDSPs in Texas to deploy advanced meters and their associated infrastructure, (b) identify any barriers to deploying advanced meters, and (c) provide recommendations to address such barriers<sup>6</sup>. As a result of this directive, the PUCT staff opened a rulemaking on advanced metering<sup>7</sup> in July 2005. The PUCT and market participants worked on the Advanced Metering rule for almost two years and, in May 2007, the rule was adopted. The advanced metering rule<sup>8</sup> defined the minimum functionality an advanced metering system must provide for a TDSP to receive cost recovery and to achieve the benefits outlined in the Texas law. In the 2007 legislative session, the Texas legislature passed a bill (HB 3693) expressing their intent that net metering and “advanced meter data networks be deployed as rapidly as possible.”<sup>9</sup> Following the adoption of the advanced metering rule and the passage of Texas HB

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<sup>5</sup> From the TDSP Monthly AMS Compliance Reports for Oncor Electric Delivery - Project No. 36157; CenterPoint Energy Houston Electric, LLC - Project No. 36699; AEP Texas Project No. 37907; and TNMP - Project No. 39772

<sup>6</sup> Texas HB 2129

<sup>7</sup> PUCT Project #31418 Rulemaking Relating to Advanced Metering

<sup>8</sup> PUCT Substantive Rule §25.130 - Advanced Metering

<sup>9</sup> Texas HB 3693

3693, the PUCT opened up an implementation project<sup>10</sup> relating to advanced metering in the fall of 2007. The purpose of this project was to address many implementation issues and changes needed in the Texas retail and wholesale markets as a result of the deployment of advanced meters, including access to smart meter usage data and communications with the Customer home area network (HAN).

### 3.2 Texas Electric Market

To understand the different parties involved in the development and use of SMT and to show how SMT is an interoperable solution meeting the needs of the diverse market participants, it is useful to understand the Texas electric market structure. In 1999, the Texas Legislature passed legislation that required the creation of a competitive retail electricity market that would give Customers the ability to choose their retail electric providers beginning in January 1, 2002. This legislation affected approximately 6.7 million retail customers (i.e., residential, business, and industrial) whose premises were in the service territories of the Joint TDSPs. The main functions of the vertically integrated electric power market – generating power, transmitting electricity over power lines to customer premises, and selling electric power to end-use customers – were split into three distinct and separate business entities. Table 1 provides a brief summary of the functions of each business entity in the competitive Texas electric market.

**Table 1: Functions of Unbundled Electric Companies**

| Entity                   | Function   |
|--------------------------|--|
| Power generation company | <ul style="list-style-type: none"> <li>• Own, operate, and build electric power plants</li> <li>• Sell power into a competitive wholesale electric market (i.e., to ERCOT, through bi-lateral agreements with REPs and power marketers)</li> </ul> |

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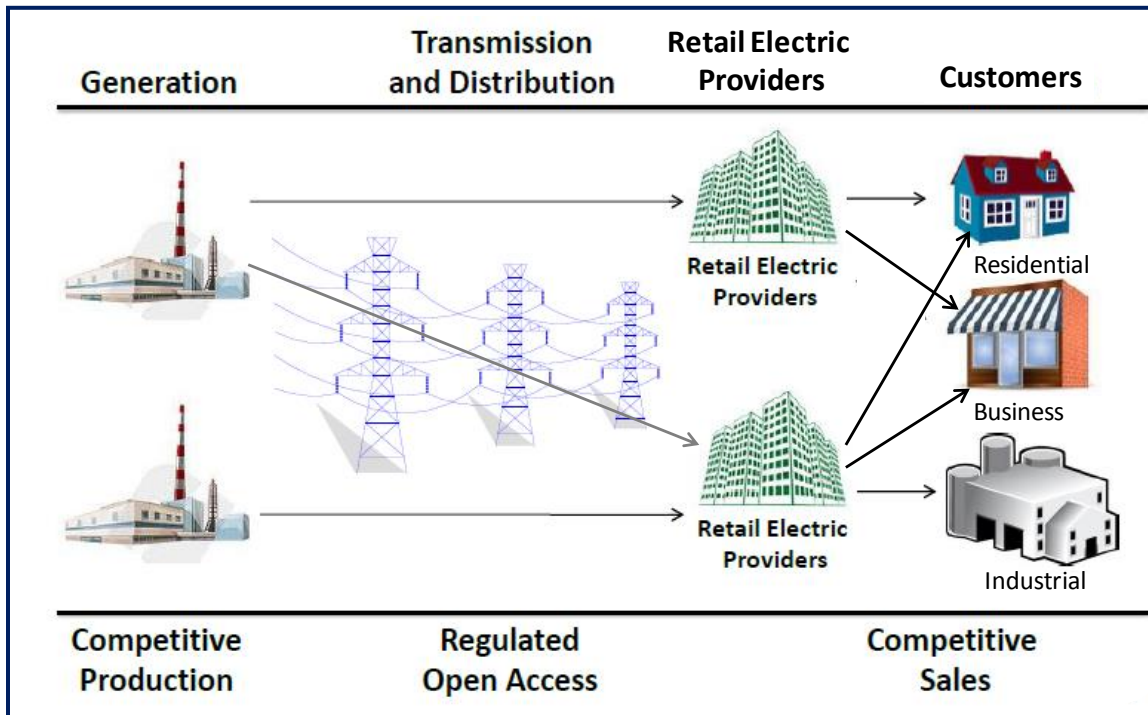
<sup>10</sup> PUCT Project #34610 Implementation Related to Advanced Metering and Staff Memorandum outlining the Project at [http://interchange.puc.state.tx.us/WebApp/Interchange/Documents/34610\\_32\\_570990.PDF](http://interchange.puc.state.tx.us/WebApp/Interchange/Documents/34610_32_570990.PDF)

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|   |  |
|---|--|
| Transmission Distribution Service Provider (TDSP) | <ul style="list-style-type: none"><li>• Regulated by the PUCT</li><li>• Own, operate (in coordination with ERCOT), and build transmission and distribution lines</li><li>• Transport electric power to all electric customers within its defined service area</li><li>• Provide metering services</li><li>• Install smart meters at residential and small business customer premises</li><li>• Bill retail electric providers for power delivery</li></ul> |
| Retail Electric Provider (REP)                    | <ul style="list-style-type: none"><li>• Purchase wholesale electric power for re-sale to retail customers</li><li>• Interface with the retail customer (e.g., marketing, billing, providing various services, etc.)</li><li>• Offer competitive prices and service offerings to retail customers in any of the Joint TDSP service areas</li></ul>  |

Figure 1 shows a simplistic view of the Texas electric market structure with the relationship between the different entities.





**Figure 1: Texas Electric Market Structure<sup>11</sup>**

This type of market structure complicates and presents unique challenges to the effective exchange of smart meter information between the market participants. For example, the entity that owns and reads the smart meter, the TDSP, is not the same entity that interfaces with the retail customer, the REP. The REP needs the Customer smart meter usage information for billing, product development, and supply risk management. Another complicating factor is that a REP may have Customers in multiple TDSP service areas and will need to interface with those TDSPs to receive the smart meter usage information. All of these complications and the requirements of the market participants were addressed in a collaborative process that resulted in the interoperable SMT solution.

<sup>11</sup> This Figure 1 includes all the retail customers who are part of the Texas competitive market structure; however, SMT is currently only applicable to residential and business customers.

### 3.3 SMT History

The history of SMT can be divided into four distinct periods, which are discussed in detail in the following sections:

- 3.3.1 SMT business requirements definition and specification: from 2007 through early 2009
- 3.3.2 SMT technical development: from late 2008 through early 2010
- 3.3.3 SMT Launch: early 2010
- 3.3.4 SMT Releases: 2010 through 2014

#### **3.3.1 SMT Business Requirements Definition and Specification**

In the fall of 2007, workshops were scheduled by PUCT Staff to create an independently facilitated, stakeholder-driven process to address issues identified by the stakeholders related to the deployment of advanced meters. The stakeholders (known as the “Advanced Metering Implementation Team” or “AMIT”), included representatives from the Joint TDSPs, REPs, PUCT staff, consumer advocates, smart meter manufacturers, In-Home Device manufacturers, HAN service providers, solutions vendors, ERCOT staff, and Solutions Cube Group LLC, the independent meeting facilitator. AMIT met frequently in regularly scheduled meetings over the course of the next nineteen months and, by May 2009, AMIT had completed a comprehensive set of business requirements<sup>12</sup> that became the basis for the design of SMT.

Through the consensus-driven process, AMIT concluded that the optimal implementation of the business requirements was one common application for all the Joint TDSPs. The Joint TDSPs implemented this decision by entering into a joint venture. In 2009, CenterPoint and Oncor signed a Joint Development and Operating Agreement (JDOA) to cooperate in the funding, development, hosting, operation, and maintenance of a common data repository, web portal, and call center. Following the PUCT approval of their advanced metering deployment plans, AEP and TNMP became parties to the JDOA in January 2010 and July 2011, respectively.

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<sup>12</sup> The final SMT business requirements are filed in Project #41171 Repository of Advanced Metering Implementation Documents <http://interchange.puc.texas.gov/WebApp/Interchange/application/dbapps/filings/pgSearch.asp>

### **3.3.2 SMT Technical Development**

In December 2008, a Request for Proposal (RFP) was issued to qualified systems integration vendors for the development, hosting, operation, and maintenance of a common web portal, including a Texas-based call center and data repository. A competitive selection process was used to evaluate the responses received as a result of the RFP and, in March 2009, IBM was selected for the work. The technical development of what was now called Smart Meter Texas (SMT) continued throughout 2009, using the AMIT web portal business requirements as the blueprint for SMT functionality and AMIT priorities as the sequencing for the release of each function. In addition to the design work, security audits and penetration tests were performed by outside security firms.

The JDOA TDSPs continued to participate as stakeholders in AMIT, providing a link between AMIT and the SMT team<sup>13</sup> whereby AMIT received status updates on the development of SMT and any required clarification of business requirements was addressed through the AMIT collaborative process.

### **3.3.3 SMT Launch**

By mid-2009, the JDOA TDSPs began holding meetings with REPs and other stakeholders to describe SMT's interface specifications and to educate the REPs on how to gain access to SMT. All REPs needed to understand the SMT business processes if they wanted to utilize the 15-minute usage data from their Customers who had smart meters.

To facilitate a smooth launch of SMT in early 2010, an integration and testing plan was developed to support the initial set of REPs wanting to integrate their systems with SMT. Testing templates and integration guides were developed and refined during the initial 2010 integration effort and then made available to other REPs that wished to integrate with SMT.

On January 31, 2010 the initial infrastructure of SMT was launched, including the joint data repository, the infrastructure to receive smart meter usage information from the TDSPs, the

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<sup>13</sup> The SMT team included the JDOA Committee, Joint TDSPs, IBM, and the SMT project manager, with support provided by Solutions Cube Group LLC

infrastructure to deliver to REPs 15-minute usage data using the SMT FTPS site, and a web portal for Customers and REPs to view and export smart meter usage information. On March 15, 2010, the full launch of SMT occurred and a second release followed soon after on August 8, 2010. The second release of SMT made all of the following functionality available to users:

- Customers and REP users could view and export information about the meter – information available includes the TDSP who owns the meter, the ESIID<sup>14</sup> associated with the premise, meter number, meter manufacturer, model, number of phases, installation date, interval setting, HAN protocol, Smart Energy Profile, etc.
- Customers and REP users could view and export premise information – information available includes the TDSP who serves the premise, ESIID associated with the premise, service voltage, premise status, premise address, meter read cycle, etc.
- Residential account users could share their usage data with Friends – Residential account users could invite up to five (5) friends or family members to view their usage data and Residential users could accept invitations to view usage data of up to five (5) friends.
- Customers, REPs, and TDSPs could add and remove In-Home Devices on the Customer HAN.
- Customers, REPs and TDSPs could view details on In-Home Devices that were installed – includes the type of In-Home Device, the name of the In-Home Device, the MAC address, and installation code.
- REPs and TDSPs could send HAN messages including load control, text, and pricing using HAN APIs.
- Regulatory users could register and create accounts on the SMT web portal –once registered would have view-only access the SMT.
- Reports on SMT statistics were generated automatically – and made available to TDSPs and Regulatory users to view and download.
- REPs could re-brand SMT for their websites – when a Customer views usage data on a REP website, an API data request is sent to SMT and the results are displayed on the REP’s website.

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<sup>14</sup> A statewide, unique number identifying a point of electric service delivery to a premise (home or business)

### **3.3.4 SMT Releases**

SMT became operational in early 2010 with a base set of requirements to meet a core set of functionality. The SMT functionality was prioritized by AMIT using the established consensus-driven process to guide the system integrators in their development work. Follow-on releases occurred that upgraded the SMT system and provided additional functionality identified during the original system specification, but considered to be of a lower priority. AMIT continued to work on defining the SMT Third Party access functionality and targeted the release of this functionality for the end of 2014. Figure 2 shows the timeline of the modifications to SMT providing progressive functionality. The version numbers in this timeline do not strictly adhere to the numbering scheme used by the SMT development team, as some versions were internal development milestones without a public release.

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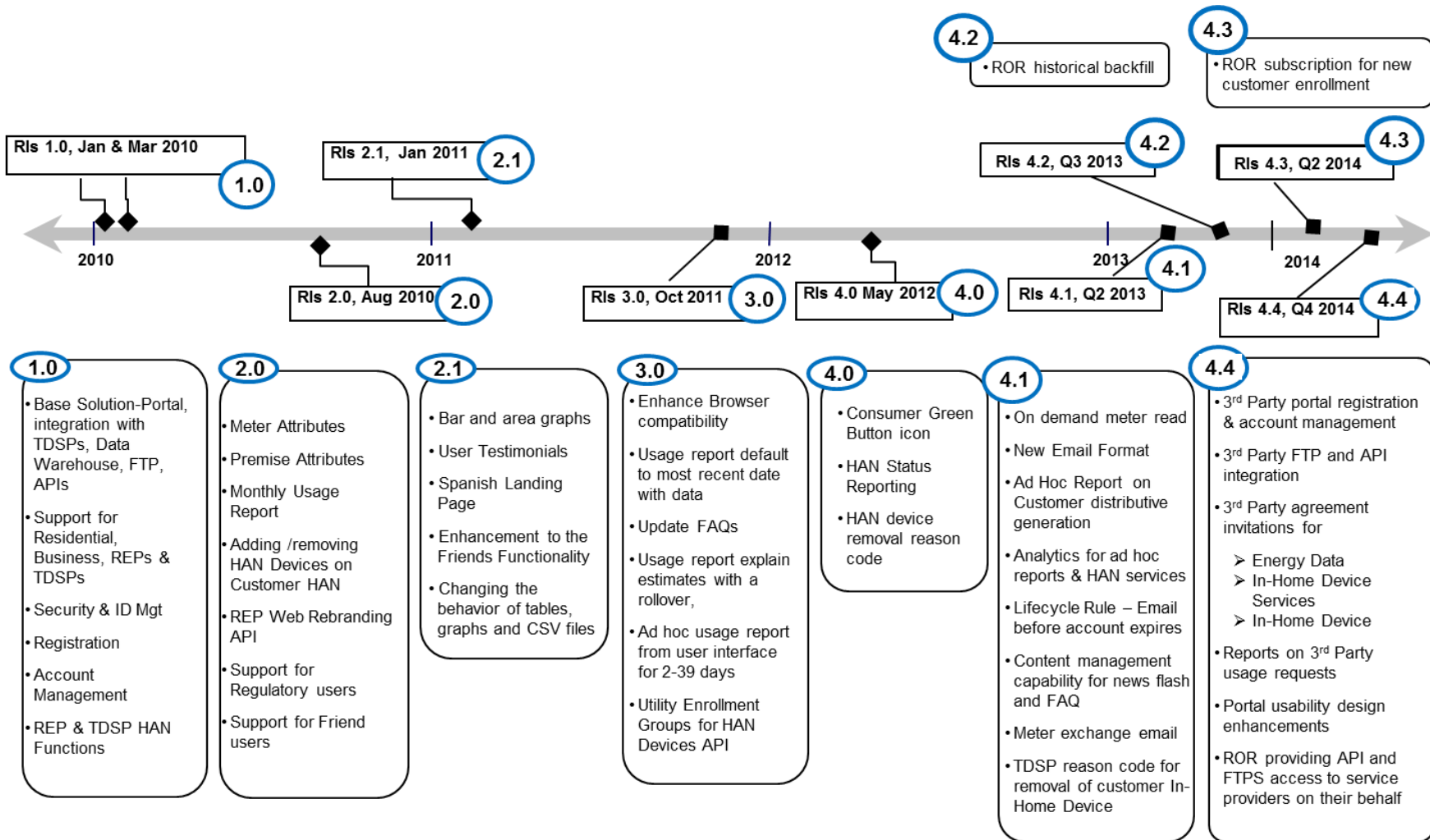


Figure 2: Timeline of SMT Releases

### **3.4 SMT Benefits**

SMT is a key component for realizing many of the benefits provided by the TDSPs' investment in AMS. Without the capabilities of SMT, the AMS benefits would be greatly reduced. The SMT solution is focused on delivering two major functionalities, the delivery of electric usage data and enabling HAN communications. Each of these functionalities enables a range of benefits attributed to smart meters.

#### ***3.4.1 Improved access and utilization of energy data***

The SMT web portal is a repository for energy usage data which can be accessed by Customers, the REP of Record (ROR), and Third Parties. The commonality of SMT to all the Joint TDSP's smart meters ensures that Consumers, RORs, and Third Parties receive consistent and timely information about Customer electric usage.

Access to usage data enables Customer to better manage consumption and lower their monthly electric bills. Customers are able to view their usage in both graphical and tabular formats for easy comparisons. The usage data can also be downloaded in common file formats to be analyzed using widely available software tools. Research focused on Customer behavior has shown that providing consumption information to end users improves energy efficiency and lowers Customer spending on electricity. REPs benefit by having one common portal to download the energy usage data that is required for business operations. Prior to the creation of SMT, the TDSPs were considering individual solutions for the delivery of smart meter data to the REPs. Without SMT, the TDSPs, REPs, and Third Parties would have higher operational costs resulting from the development and operation of multiple data portals, integration with multiple interfaces, and from the lack of standardization. The higher operational costs would be passed on to Customers, resulting in a higher cost for electric service. REPs and Third Parties also benefit from the use of a standardized data format by the TDSPs in delivering metered usage data. This standardization reduces operational costs for REPs and Third Parties which can be expected to result in savings to Customers.

SMT also provides a convenient and easy to use method for Customers to share and control access to their electric usage data. By gaining access to Customer usage data, Third Party companies can use that data to provide electric market services related to improved efficiency, demand response, greenhouse gas reduction, and improved utilization of renewable generation. The combination of a central clearinghouse of smart meter data and the access available to Customers, REPs, and Third Party service providers will enable the evolution of new electric services.

### **3.4.2 *Creation of a common HAN interface***

With variability in the Joint TDSPs geographical locations, business requirements, and deployment time lines, each TDSP deployed advanced meters from different meter manufacturers leveraging various types of communication networks. The interoperability of SMT has resolved any issues related to the differing deployments by providing a common interface that uses standard methods for installing In-Home Devices and communicating with Customer In-Home Devices. SMT has several important features available for Customers and Third Parties to make use of In-Home Devices in conjunction with the smart meter usage data. SMT provides a common interface to send standard HAN messages to Customer In-Home Devices and provides a standard method for installing and removing In-Home Devices on the Customer HAN. SMT HAN support functions provide Customers and Third Parties with simple tools to manage and control access to Customer In-Home Devices.

In-Home Devices enable or expand several of the benefits associated with smart meters. In-Home Devices can play an important role in the delivery of electric services such as programmable communicating thermostats, billing information updates sent to In-Home Devices, innovative pricing products, and demand response programs.

SMT provides a set of common HAN messages sent using the HAN APIs that enable Third Parties to communicate with Customer In-Home Devices regardless of which TDSP service territory the Customer is located. Without the HAN support provided by SMT, the rate of In-



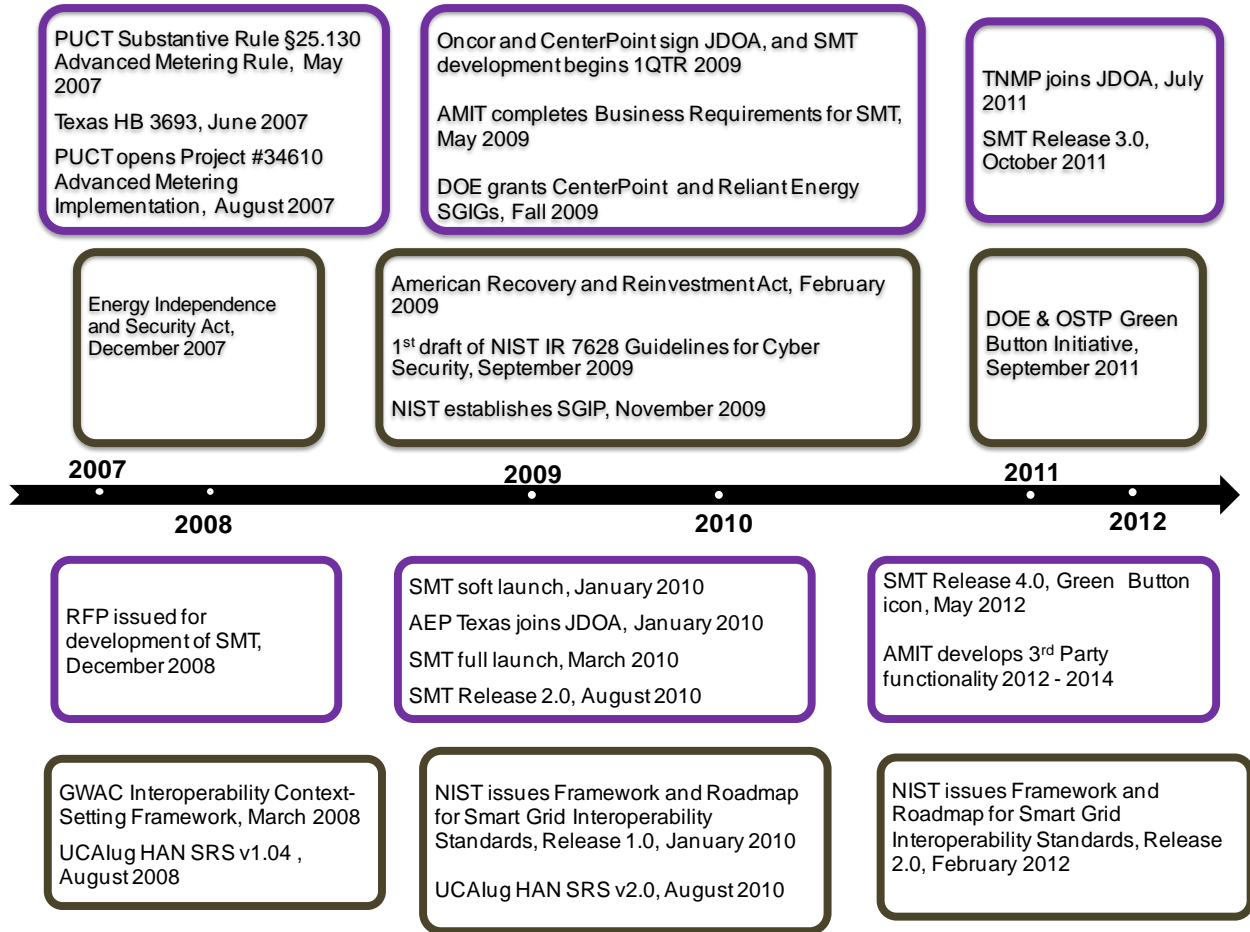
Home Device adoption and types of HAN related services available in Texas would be reduced and the costs would be higher.

Other benefits provided by SMT are the end-to-end In-Home Device testing program and the lessons learned that were shared with national smart grid standards groups. The work done by the SMT team in the development and testing of the SMT HAN functionality resulted in a refinement of the ZigBee Smart Energy Profile v1.x, the creation of standardized HAN APIs, and the creation of a standard test script to test the interoperability of In-Home Devices under development. This standardization and testing has stimulated the In-Home Device market and provided Texas Customers with a greater selection of In-Home Devices than in any other electric market in the US.

### **3.5 SMT and National Smart Grid Standards Development**

The collaborative work of AMIT, resulting in the business requirements that became the basis for the design of SMT, occurred in late 2007 through 2009. This was a little before and concurrent with the national effort to identify and develop interoperable smart grid standards. Figure 3 is a timeline showing how the development of SMT fits in with national smart grid policy and regulatory directives and the national smart grid standards effort.

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**Figure 3: Timeline of SMT and National Smart Grid Standards Development**

## 4 Methodology

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### 4.1 AMIT Meeting Attributes and Design Process

The functionality of SMT was developed in independently facilitated meetings attended by a broad set of stakeholders<sup>15</sup> who formed the AMIT. The project work done by AMIT was done using a consensus-driven process with oversight provided by the PUCT. In the AMIT meetings, the stakeholders participated by sharing viewpoints and working towards consensus regarding SMT's functionality. The AMIT meetings had the attributes of openness, balance of interest, due process, a process for appeals, and consensus. The AMIT meetings were open to any interested party and publically announced on the PUCT Project #34160 website and through emails sent to those on the AMIT listserv. All meeting attendees were encouraged to participate and share their views on the topic at hand. No view was discounted and each issue was thoroughly discussed or researched until a consensus was reached by the participants.

The process used by AMIT to determine the design and functionality of SMT substantially conformed to the methodology set forth in the IEC 62559 IntelliGrid Methodology for Developing Requirements for Energy Systems standard (see Section 10.2). This process included defining high-level business processes, creating context diagrams, identifying actors and their roles and interactions, defining projects, and creating and prioritizing business requirements with the help of use case scenarios.

### 4.2 Consensus Building Process

The open nature of the AMIT meetings involving stakeholders with varying viewpoints required the adoption of a governance process. During meetings, whenever a consensus on a particular item of discussion could not be reached, the item was delegated to a group of stakeholders who

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<sup>15</sup> AMIT included Joint TDSPs, REPs, PUCT staff, consumer advocates, smart meter manufacturers, HAN device manufacturers, HAN service providers, solutions vendors, and ERCOT staff. The AMIT meetings were facilitated by Solutions Cube Group LLC

volunteered to research the issue and report back to AMIT with a recommendation on one or more possible resolutions. Once a recommended solution was developed, the assigned group would report back to AMIT. AMIT would review the recommendation and would either incorporate the resolution into the project documents, or assign further work to the stakeholders who were working on the issue. The use of this process allowed AMIT to defer issues that could not be readily resolved and maintain progress, while still providing a mechanism to address and resolve difficult issues.

### 4.3 Identifying Business Processes

The AMIT work began with defining high-level business processes that described the general functional requirements for implementing smart meters in Texas. The Joint TDSPs were already planning and deploying smart meters and AMIT provided a forum to ensure that the deployment of the TDSP AMS met the needs of the market participants. Each of the high-level business processes described a group of associated capabilities related to the implementation of smart metering that were critical to the successful deployment of the TDSP's AMS.

- **BP-001 Access Meter Data** – transfer of meter data between Customers, TDSPs, REPs and ERCOT. Access to interval usage and historical data and standardization of security and data formats
- **BP-002 Fulfill Service Orders** – routine meter services such as reading, move in/out, disconnect/reconnect and Customer switching retailers. In Texas these services involve interactions between TDSPs, REPs, and ERCOT
- **BP-003 Provide Customer Service** – processing applications, resolving questions and complaints, providing order status, outage restoration information and access to usage data
- **BP-004 Settle Wholesale Market** – provide ERCOT with meter data necessary to settle the wholesale market
- **BP-005 Provide Usage Data** – providing usage data to Customers and REPs. This was originally a separate business process, but was later incorporated into BP-001
- **BP-006 Deploy Meters** – initial and ongoing deployment activities for smart meters

- **BP-007 Establish Communications between the Advanced Metering System (AMS) and Home Area Network (HAN)** – add/ remove In-Home Devices and send and receive messages to In-Home Devices using a secure communications link
- **BP-008 Educate Consumers** – Customer education regarding AMS, controlling usage (customer driven) and lowering costs, and other benefits of AMS

#### 4.4 Creating Context Diagrams

In addition to the high level business processes, AMIT created context diagrams for each of the identified projects, including one for the overall AMS environment. The context diagrams identified the external entities, their high level conceptual “inputs” and “outputs,” their applicability to the specific project that was being diagramed, and the applicability of each of the

high level business process to that project.

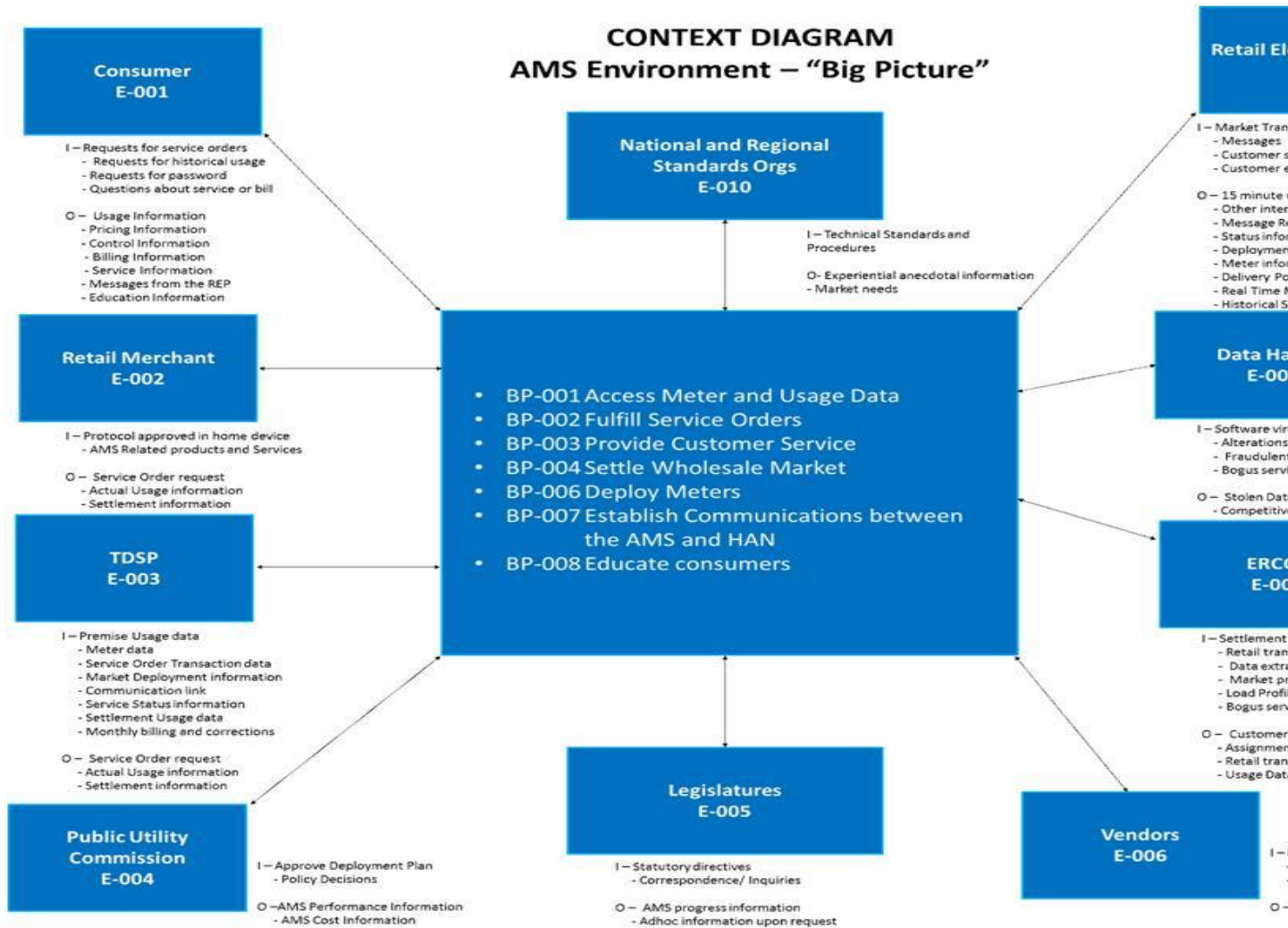


Figure 4 is the context diagram for the entire AMS environment, including the identified external entities (i.e., Consumer, Retail Merchant, TDSP, PUC, National and Regional Standards organizations, Legislatures, REP, Data Hacker, ERCOT, and Vendors) and the business processes that are applicable to the AMS environment.

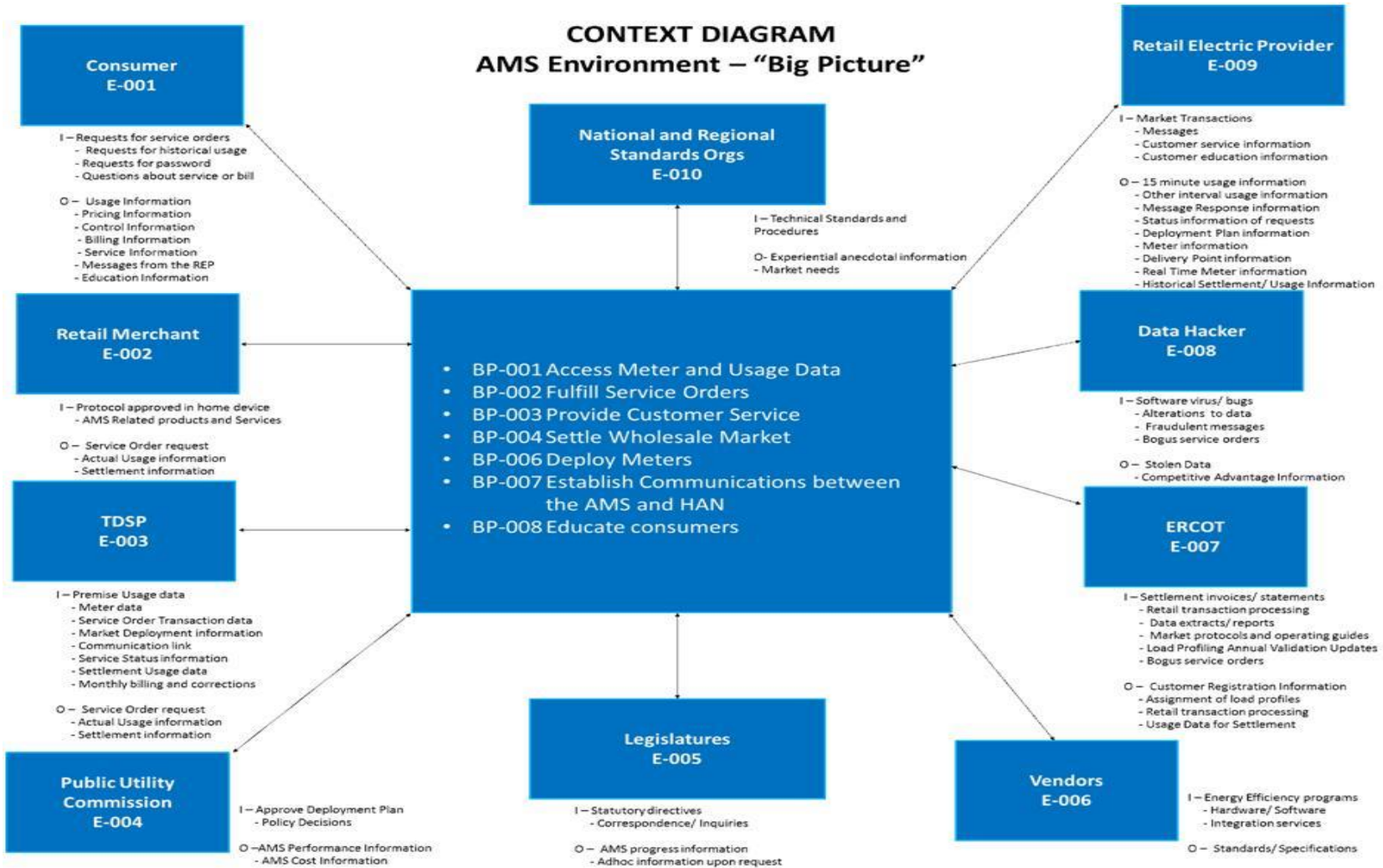


Figure 4: AMS Environment Context Diagram

Developing context diagrams for each project helped to narrow the focus of the project work and to identify the applicable business processes and external entities. For the Web Portal Project, AMIT determined that some of the external entities were out of scope and only three of the eight business processes were applicable. Figure 5 is the context diagram for the Web Portal Project.

The context diagram's external entities were the starting point for identifying the actors associated with SMT. AMIT used the use case process to develop a more specific list of actors and their roles. The use case process helped to determine the type of SMT functionality each actor could access. A more thorough discussion of actors and their roles is found in Sections 8.1 and 6.2, respectively.



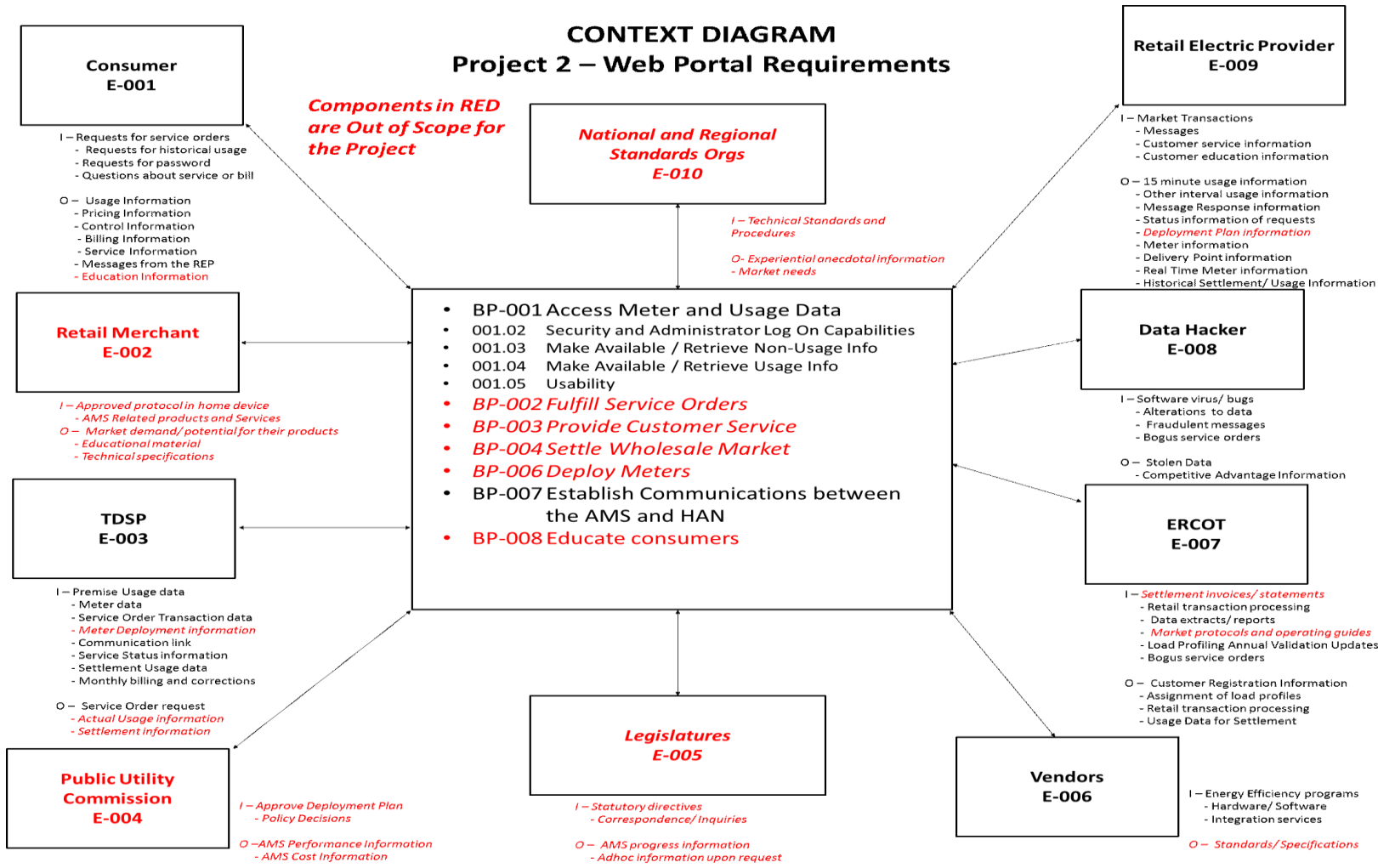


Figure 5: Web Portal Project Context Diagram

## 4.5 Defining Projects

After the high-level business processes were identified, AMIT created six projects to develop solutions that would perform these functions. Each project included functionality and requirements from one or more of the identified business processes. The six projects are identified in Table 2.

**Table 2: AMIT Projects**

| Project # | Project Name            | Description  |
|-----------|-------------------------|--|
| 1         | Interim Project         | An interim solution to provide REPs smart meter usage data prior to the launch of SMT.   |
| 2         | Web Portal              | A depository for smart meter usage information that is available to Customers, REPs, and authorized Third Parties              |
| 3         | ERCOT Settlement        | The ability for ERCOT to perform retail settlement using 15-minute usage data rather than a load profile of monthly usage data |
| 4         | Home Area Network (HAN) | Determining standard processes for the installation and communication with In-Home Devices                                     |
| 5         | Retail Market Interface | Identifying changes that deployment of smart meters would have on ERCOT retail transactions                                    |
| 6         | Education               | Identifying education needs for Customers and other market participants  |

The creation of a web portal for the access of smart meter data was the primary project that resulted in the SMT solution. However, many of the issues addressed in the other projects were interrelated and, to varying degrees, the functionality and requirements associated with the HAN, Retail Market Interface, and Education projects were included in the SMT design. The most strategic and beneficial outcome of the Web Portal project work was the development of a

comprehensive set of business requirements for a common web portal, which came to be known as Smart Meter Texas™.

## 4.6 Developing Business Requirements

To further develop the functionality and technical requirements associated with the AMIT projects, AMIT used a use case-based process (see Section 8) to ensure that a robust set of requirements were developed. Through the facilitated, stakeholder-driven process, AMIT created a set of use case scenarios which expanded the original business process functions into well-defined requirements. The requirements went through multiple reviews and edits and AMIT provided input into the prioritization of each requirement for implementation.

In addition to the core business functions and requirements that were defined in the Web Portal project, the HAN project defined a set of business processes and requirements related to the deployment of In-Home Devices. As this project developed the HAN business requirements, the HAN project's inter-relatedness with the Web Portal project became clear. Additional requirements related to the HAN were added to the web portal business requirements and prioritized as to when they would be delivered.

The work done in the Retail Market Interface project and the Education project also added additional business requirements to the web portal requirements. The need to change access to usage data at a premise when a Customer moves out or switches their REP are examples of retail market activities that became web portal requirements. In addition, the work in the Education project prompted the addition of several requirements related to Customer education and help with using SMT.

Table 3 provides examples of web portal business requirements that were influenced by the work done in the HAN project, the Retail Market Interface project, and the Education project.

**Table 3: Examples of Web Portal Business Requirements**

| Id  | Requirement   |
|---|---|
| <b>Example Business Requirements (BRs) related to HAN functionality</b> |   |
| BR- 025   | Ability for the common Web Portal to facilitate communication to and from Provisioned HAN Devices over the AMS network.   |
| BR - 025.001  | Ability for an authorized user to send a single message through the common Web Portal to multiple Provisioned HAN Devices and receive a response from each HAN Device.  |
| <b>Example BRs related to retail market activities</b>                  |   |
| BR- 031.001   | Ability for REP of record access to all the functions associated to the ESIID to be automatically revoked when the REP is no longer the REP of record due to a switch or move out.  |
| BR - 044  | Ability to terminate all users access to premise specific information whenever the TDSP is notified a Customer has moved out of a premise, via Texas SET transaction, including any authorization for 3rd party access and permissions to usage history, HAN control (e.g., the Letter Of Authorization (LOAs) associated with the user’s ESIIDs, supplemental user access, primary ESIID assignment, etc.) |
| <b>Example BRs related to education</b>                                 |   |
| BR- 034   | Ability to have online help on the web portal that explains how to use functions of the web portal.   |
| BR- 034.001   | Ability to maintain and display (add, modify) web portal specific FAQs.   |

## 4.7 Technical System Design

As the functionality and requirements were refined, various business and technical approaches for supporting a meter data web portal were discussed. Potential approaches included having each TDSP develop their own portal, a single system portal that accessed the TDSP databases,

and an ERCOT-hosted system with meter data updates sent by the TDSPs. Consensus was reached on a solution in which the Joint TDSPs would jointly own and operate a common portal and data repository that would receive data from each of the TDSPs' meter data systems.

After the consensus was reached on the technical approach and during the SMT development phase, AMIT continued to provide additional input into the development process, providing feedback on the development of the portal user interfaces and refining the requirements for the In-Home Device interfaces. During this phase of development, graphical representations of the use cases were developed. High level story-boards and more technical process flow diagrams were used to communicate the developed SMT functionality and provide traceability back to the business requirements. The use cases were also used to provide a comprehensive vision to the system integrators during SMT system development phase.

#### **4.8 SMT Process Prioritization**

AMIT conducted an additional exercise once the initial system requirements were developed and the system design was underway. The AMIT stakeholders were surveyed and asked to rank a set of processes by both their benefit to Customers and their benefit to the Texas market. The stakeholder survey data was used to create an overall prioritization; the results are seen in Figure 6. This provided the AMIT members a useful check to ensure the functionality that was being developed for the initial and subsequent SMT releases aligned with the value to both the market and Customers. AMIT understood that, from a technical standpoint, a progression of development was required and that some lower-valued functions would be delivered earlier since they supported components of the larger system.

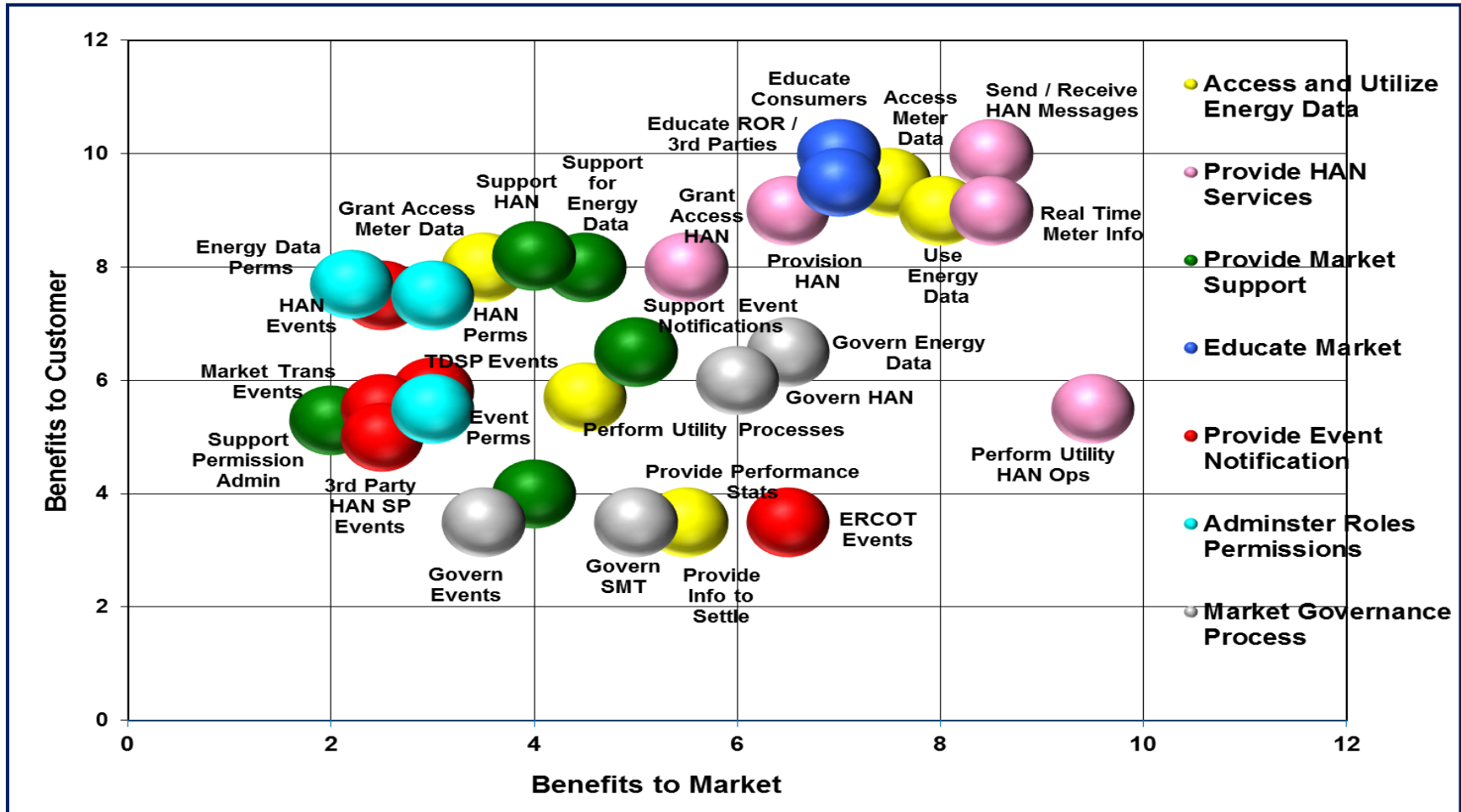


Figure 6: Process Prioritization Evaluation Results

## 4.9 SMT Deployment and Operations

After the launch of SMT in early 2010, AMIT stakeholders continued to meet to refine requirements for future system releases and define future functionality, such as the In-Home Device support and Third Party access. A change request process was initiated by AMIT to ensure that requested functionality was well vetted by the market participants. SMT was designed to change as the needs of the Texas market participants changed, and the process used to address those changes has been an evolving process. The initial change request process has evolved and new change requests will be initiated under the governance of the ERCOT Retail Market Subcommittee (RMS) through the Advanced Metering Working Group. RMS is an ERCOT subcommittee that serves as a forum for resolving retail market issues that directly affect ERCOT and retail market participants. Requests for changes to SMT would be submitted to the RMS Advanced Metering Working Group and would flow through the existing RMS approval process. If approved they are sent to the JDOA TDSPs for further review. Once a request is initiated and approved by RMS, the JDOA TDSPs perform a cost analysis on the requested change. The SMT team develops story-boards to convey how any new functionality will operate and works with the SMT Development Oversight team to review and provide input on design prior to moving forward on development and deployment. The JDOA TDSPs retain the ultimate authority for approving or rejecting any proposed modifications to SMT and the PUCT oversees the development of any remaining functionality to be provided by SMT.

## 5 Functionality

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SMT is an internet-based information system developed as an interoperable solution to standardize the smart meter information exchange between multiple market participants using secure communication channels. SMT is the common interface for accessing energy usage information and for HAN communications that use the Joint TDSPs' AMS communication networks.

### 5.1 SMT Conceptual Model

To enable smart grid functionality and interoperability, NIST encouraged the use of a conceptual model as a “tool for identifying actors and possible communications paths”<sup>16</sup>. Figure 7 is the SMT conceptual model showing the communications and data transfers between the various market participants as they relate to energy usage information and HAN communications.

SMT crosses several of the smart grid domains including the Customer, Service Provider (i.e., RORs and Third Parties), and Transmission and Distribution (i.e., TDSPs) domains. The Operations (i.e., ERCOT) domain is marginally involved for those retail market transactions, such as a Customer moving in or out of a premise or a Customer switching their REP, which affects a SMT user's authorization related to data access. Each of these smart grid domains has particular data requirements and a need for varying levels of access security. The conceptual diagram identifies the data requirements of each party and helps identify the need for multiple secure interfaces for the access of that data.

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<sup>16</sup> Page 43 of the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0



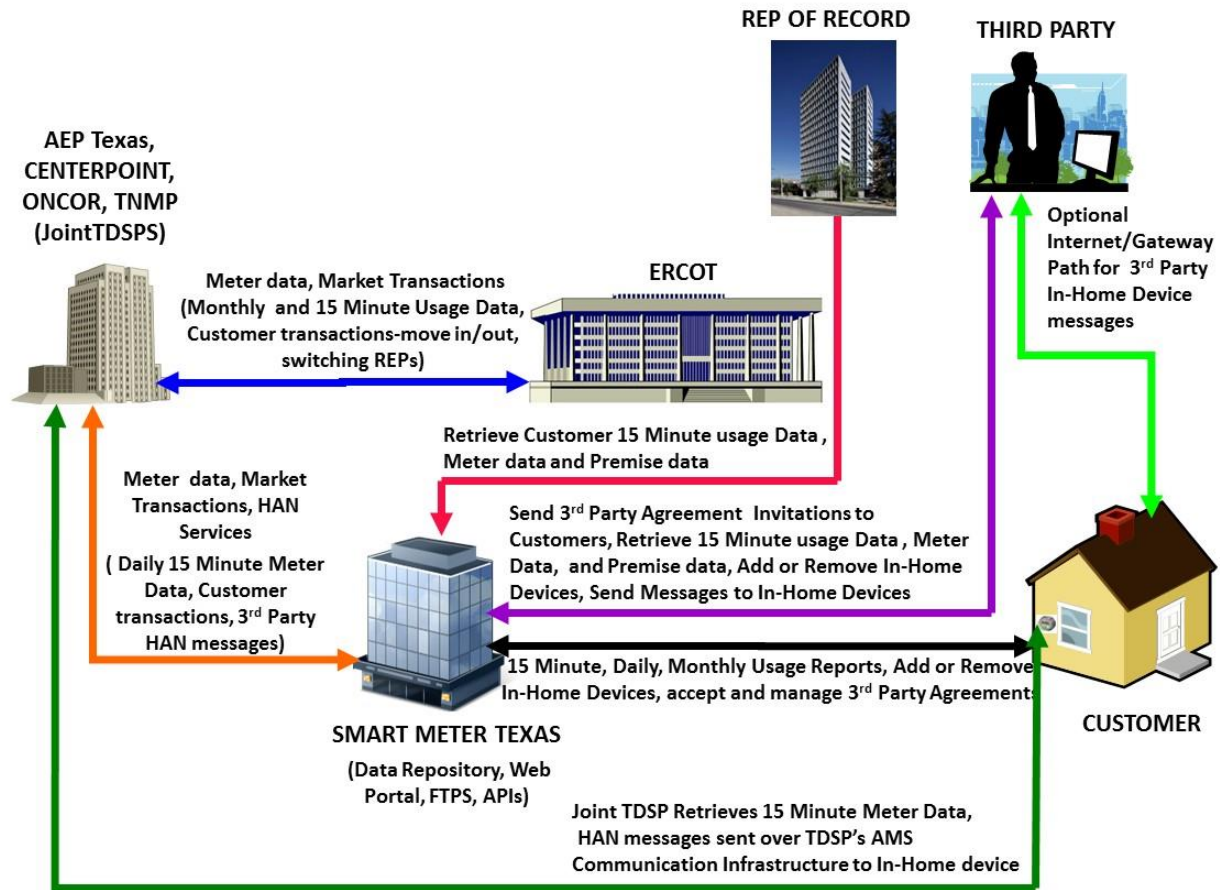


Figure 7: SMT Conceptual Model

## 5.2 SMT Functions

The high-level conceptual model identified the SMT users and their interactions, which formed the basis for determining the functionality of SMT. As discussed in Section 4.3, AMIT developed eight high-level Business Processes that described the functionality and capability that are necessary to meet the market participants' needs for communication and information exchange. Of these eight Business Processes, Access Meter Data, HAN Communications, and Educating Customers were determined to be most applicable to SMT and set forth the base functionality that should be provided by SMT. A core feature supporting the SMT function of

providing interoperable access to smart meter data is the hosting of a common data repository storing all the Joint TDSPs smart meter data. An additional key functionality provided by SMT is a convenient, easy-to-use process enabling Customers to grant Third Party access to their usage data and permission to communicate with their In-Home devices. These functions are discussed in the following Sections:

5.3 Data Repository

5.4 Meter Data Access

5.5 Third Party Access

5.6 HAN Functionality

5.7 Education

### **5.3 Data Repository**

SMT provides easy and efficient access to Customer energy usage data to a variety of SMT users because SMT hosts a common data repository for the smart meter information of all the Joint TDSPs. When the Joint TDSPs complete their smart meter deployments, the common data repository will store smart meter usage information for approximately 7 million residential and small business customers for a maximum of seven years.

On a daily basis, several times a day, the TDSPs collect a daily midnight register read and the prior day's recorded interval usage data from the smart meters they own. This data is transmitted from the smart meters back to the TDSPs using the TDSP meter communications networks (wired and wireless) designed for this purpose. The TDSPs store the meter usage data in their meter data management systems and perform a standard validation, editing, and estimation process<sup>17</sup> ("VEE") on the data before preparing standard formatted files for transmittal to SMT and ERCOT. In some cases, communications errors with individual meters may require the TDSP to estimate usage intervals. Any estimated data is marked with a status code indicating that it is estimated data. Future data uploads by the TDSP will replace these estimated data

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<sup>17</sup> TDSPs use VEE requirements as specified in the Uniform Business Practices (UBP) standard

records with actual data when it becomes available. Each day by no later than 11 p.m. on the day following the recorded usage, the TDSPs submit files in the LodeStar Enhanced (LSE) format that contain the VEE processed data to both ERCOT and SMT for all their smart meters. SMT separates the information by each REP of Record (ROR) or Third Party, and stores the files in the appropriate ROR or Third Party FTPS folder. SMT also loads the data into the data repository for SMT web portal access by all users. Figure 8 is a diagram of the flow of usage data from the Customer smart meter to the TDSP, SMT, and ERCOT, and the flow of the data within SMT to the data repository and the ROR and Third Party FTPS folders.

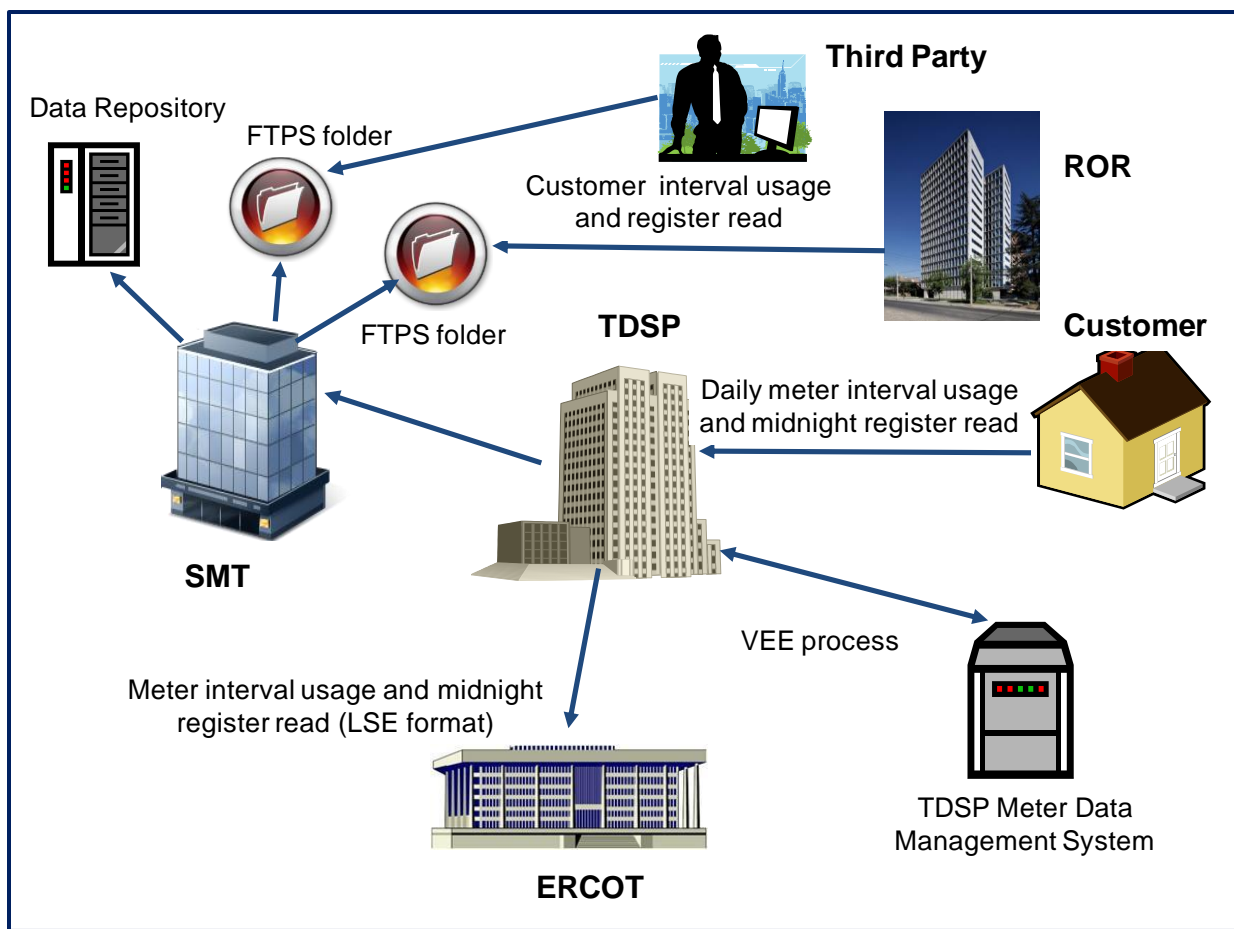


Figure 8: Meter Usage Data Flow

## 5.4 Meter Data Access

Texas was an early adopter of legislation and regulation requiring access to Customer electrical usage information. The Texas Public Utility Regulatory Act (PURA) states that “all meter data, including all data generated, provided, or otherwise made available, by advanced meters and meter information networks, shall belong to a customer”<sup>18</sup> and the PUCT Advanced Metering Rule 25.130 requires that access to smart meter data be granted to Customers, the Customer’s REP, and other entities whom the Customer authorizes. The following are key provisions in the PUCT Advanced Metering Rule regarding access to smart meter data.

- An AMS shall provide or support the following minimum system features in order to obtain cost recovery through a surcharge...the capability to provide 15-minute or shorter interval data to REPs, Customers, and the independent organization or regional transmission organization, on a daily basis, consistent with data availability, transfer and security standards adopted by the independent organization or regional transmission organization.<sup>19</sup>
- An electric utility shall provide a Customer, the Customer’s REP, and other entities authorized by the Customer read-only access to the Customer’s advanced meter data, including meter data used to calculate charges for service, historical load data, and any other proprietary Customer information. The access shall be convenient and secure, and the data shall be made available no later than the day after it was created.<sup>20</sup>
- An electric utility shall use industry standards and methods for providing secure Customer and REP access to the meter data.<sup>21</sup>
- A Customer may authorize its data to be available to an entity other than its REP.<sup>22</sup>

In early 2010, SMT made smart meter usage data available to Customers and the Customer’s Retail Electric Provider (i.e., REP of record, ROR). In 2011, on a national level, the Green Button initiative challenged utilities to give Customers access to their energy usage information

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<sup>18</sup> PURA 39.107(b)

<sup>19</sup> PUCT §25.130 (g)(1)(G)

<sup>20</sup> PUCT §25.130 (j)(1)

<sup>21</sup> PUCT §25.130 (j)(3)

<sup>22</sup> PUCT §25.130 (j)(5)

by downloading it in an easy-to-read industry standard format. SMT implemented the concept of the Green Button initiative more than a year before the issuance of the Green Button challenge.

#### **5.4.1 Customer Usage Information**

To access meter data, a user must have a valid SMT account. To create a SMT account, the user must pass through the SMT secure registration process (see Section 0). SMT provides the following Customer usage information to authorized users:

- On demand meter reads
- 15-minute interval usage
- Daily usage
- Monthly usage

SMT provides Customers, RORs, Third Parties who are authorized by a Customer, and TDSPs the ability to request an on demand (i.e., intra-day) meter register read. SMT will calculate and display the kWh consumption amount between the intra-day register read requested by the user and the last midnight register read that is in the SMT database. This information provides a near-real-time view into a Customer's electrical consumption. Users access this functionality on the SMT web portal.

The 15-minute interval, daily, and monthly reports may be viewed online in a graph and a data table for the period of time selected by the user. These reports may also be conveniently exported in either the Green Button format or the CSV format. The SMT Green Button allows users to export 13 months of energy usage data in 15-minute intervals into the industry standard XML format. Any report a Customer chooses to export will be sent to them in a file attached to an email sent to their email address. A Customer may request a maximum of the previous 13 months of 15-minute interval and Daily usage data and the previous 24 months of monthly usage data.

RORs primarily receive their Customer's usage data in files posted in a folder on the SMT FTPS site. However, RORs may also request ad hoc Customer usage reports on the SMT web portal or

using a usage API. Depending upon the size of the requested report, the ROR may retrieve the report from a FTPS folder or from a file attached to an email sent to the REP company email address. RORs may access up to seven years of Customer usage data. The most recent four years of usage data may be accessed through the web portal or requested using a usage API. Three additional years of data, stored offline, may be accessed through a special request. In addition, RORs who have vendors that perform various services (e.g. billing, EDI, demand response, etc.) on their behalf may grant these vendors access to the ROR Customer usage information in the ROR FTPS folder or by using the ROR's SMT API access. SMT has a secure process that validates the request to grant the vendor access, allows the vendor to create a user account associated with the REP as the company entity, and works with the vendor to configure and accomplish the FTPS and API integration.

A Third Party may access a Customer's usage information only after a Customer has authorized<sup>23</sup> the Third Party to receive their usage data. Third Parties may request Customer usage reports on the SMT web portal or through a usage API. The requested report will be sent to the Third Party's folder located on the SMT FTPS site. Due to security reasons, Customer usage information will not be sent to a Third Party by email. Third Parties who have an agreement with a Customer to access Customer usage data over a period of time (i.e., one month up to one year) may request scheduled reports that export requested data (i.e., daily 15-minute usage, daily meter read, monthly) for up to three months at a time or up to a year for monthly data; however, the request may not extend beyond the term of the agreement with the Customer. For example, scheduled daily 15-minute usage reports will be created once a day and will show usage for the prior day. These reports may be scheduled on the web portal or through a usage API and will be sent to the Third Party's FTPS folder. In addition, Third Parties may request a maximum of 12 months of historical usage data for their Customers.

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<sup>23</sup> A Customer grants a Third Party access to their usage information by entering into an Energy Data Agreement with the Third Party (see Section 5.5.4)

**5.4.2 Premise and Smart Meter Information**

In addition to usage information, Customers, the ROR, and Third Parties who are authorized by the Customer to access usage information, may also view, print, and export, in CSV format, information about the premise (e.g., the TDSP who reads the meter, ESIID, voltage, address, etc.) and the smart meter (e.g., meter manufacturer, last meter test date, installation date, HAN protocol, firmware version, etc.) installed at the premise. However, the Third Party will not have access to the meter number.

**5.4.3 Market Transaction Synchronization**

A party’s access to smart meter information may be affected by certain market transactions. Examples of these market transactions include a Customer moving in or out of a premise, disconnection and reconnection of a smart meter, replacement of a smart meter, and changes to a Customer’s ROR. These transactions are recorded and communicated between TDSPs, ERCOT, and REPs through Texas Standard Electronic Transactions (TX SET). To ensure that these transactions are reflected in SMT, the TDSPs send SMT a daily market transaction file that SMT uses to adjust the relationships between the ESIID, Customer, ROR, and Third Party, if applicable. Market transactions that affect relationships in SMT as listed in Table 4.

**Table 4: Market Transactions Effect on SMT Accounts**

| Market Transaction                 | Customer Account  | REP Account   | Third Party Account  |
|------------------------------------|---|---|--|
| 1. Customer moves into a premise   | Customer may add the ESIID of the smart meter to their account. | The smart meter (ESIID) is automatically added to the ROR account.  | Third Party must send Customer a new agreement and Customer must accept agreement.   |
| 2. Customer moves out of a premise | The ESIID is removed from the Customer account.                 | The ESIID is automatically removed from the ROR account and the REP will lose access to the Customer’s usage information. | All Third Party agreements associated with that ESIID are automatically terminated and any In-Home Devices are removed from the HAN. |
| 3. Meter                           | The ESIID will still be   | The ESIID will still be   | The ESIID will still be  |

| Market Transaction                  | Customer Account   | REP Account   | Third Party Account   |
|-------------------------------------|--|---|---|
| disconnect and reconnect            | associated with the Customer account but will show no usage during the period of disconnection.  | associated with the ROR account but show no usage during the period of disconnection.   | associated with any Third Party Agreements but will show no usage during the period of disconnection. |
| 4. Replacement of a smart meter     | The ESIID will remain the same but the meter number will change. SMT will automatically change the meter number associated with Customer's account to reflect the current meter number. The Customer will continue to have access to the smart meter usage data and the SMT service will be uninterrupted. Existing In-Home Devices will automatically be re-added to the Customer HAN and the Customer notified. Customer may have to reboot the In-Home Device(s) to regain functionality. | The ESIID will be linked with the new meter number and this association will be reflected in the ROR meter information. The ROR will continue to have access to the smart meter usage data and the SMT service will be uninterrupted. | No change to the Third Party agreements. The Third Party does not have access to the meter number.    |
| 5. Customer switches to another REP | The ESIID and meter number are associated with the Customer premise and Customer will see no change in their access to usage information.  | The former REP will lose access to the Customer's usage information and the new REP or ROR will gain access to it.  | No effect on the Third Party agreements.  |

### 5.5 Third Party Access

A key functionality of SMT is providing a convenient and easy-to-use process for Customers to grant Third Parties access to their energy usage information. Providing this functionality is seen as critical to bringing the benefits of the smart grid to Customers. By enabling Customers to



grant Third Parties access to their smart meter usage information, innovative energy efficiency products can be offered to Customers that will give Customers more insight and control over their energy usage and bill.

In addition, SMT provides a convenient and easy-to-use process for Customers to grant Third Parties the ability to add In-Home Devices to the Customer's HAN and to communicate with the Customer's In-Home Devices.

### **5.5.1 Customer Privacy Protection**

Ensuring the privacy of Customer data and protecting against unauthorized access are major components of the SMT security controls (see Section 9.3 and Section 10.7). Unlike TDSPs and REPs, Third Parties are not subject to PUCT customer protection rules and SMT's ability to protect the privacy of Customer data ends once a Customer has granted a Third Party access to their data. However, SMT has a defined registration process for Third Parties (see Section 6) that limits the risk of a rogue user creating a Third Party account. During the registration process, each Third Party user must agree to the SMT Terms and Conditions, which require the user to agree that their access to, including viewing, downloading, and use of Customer consumption data, is limited to data that the Third Party is authorized to access and only for the term of the authorization.

In order to encourage Third Party participation in Texas and to let the competitive market determine each Third Party's success, the requirements on Third Parties related to Customer data privacy and protection are voluntary. The Customer has the primary responsibility to determine if there is a need for data protection and the ability of the Third Party to provide that protection. To help Customers evaluate a Third Party's ability to protect their data and to make an informed decision on releasing their data to that Third Party, SMT allows a Third Party to distinguish itself by (1) voluntarily providing a link to their privacy policy and (2) voluntarily attesting to meeting the requirements of a national privacy seal. During the initial Third Party registration process, the Third Party is given the opportunity to provide this information or they may provide it at a later time by editing their company profile; however, the Third Party is not required to provide

this information to create an account on SMT. If the Third Party provides this information it will be available to the Customer in any agreement invitation correspondence sent to the Customer so the Customer may investigate and evaluate the Third Party.

In addition, SMT allows Customers, who have agreements with Third Parties, to rate the Third Party's services. The average Customer rating of the Third Party is provided to a potential customers on the agreement invitation so the Customer may judge whether or not they want to enter into an agreement with that Third Party.

### **5.5.2 *Third Party Definition***

A Third Party, in the context of SMT, is a service provider offering Customers in the competitive regions of Texas energy efficiency products and services that may use Customer smart meter usage information or In-Home Devices. The definition of Third Party includes REPs when a REP requests usage data from Customers who do not buy electricity from that REP (i.e., not the ROR). In addition, the definition of Third Party encompasses all parties, including the Customer's ROR, who want to offer products and services related to In-Home Devices.

### **5.5.3 *Agreement Invitation Process***

Third Parties who want access to Customer electric usage information or to SMT HAN functionality must have the Customer's permission to do so. SMT provides a convenient, well-documented process whereby a Third Party may request a Customer's permission and the Customer may accept or reject the request. SMT grants the Third Party access once a Customer accepts a Third Party's request.

### **5.5.4 *Third Party Agreements***

A Customer grants a Third Party permission to access to their usage data, add In-Home Devices to the Customer's HAN, or send messages to the Customer's In-Home Devices, by accepting an invitation to enter into one of three types of agreements with the Third Party (see Table 5). The Customer must enter into separate In-Home Device Services agreements for each In-Home Device they want the Third Party to access. By following the SMT Third Party agreement

invitation process, a Third Party may invite a Customer to enter into one of these three agreements and a Customer may accept, reject, or allow the invitation to expire by taking no action.

**Table 5: Third Party Agreements**

| Agreement                  | Description  |
|----------------------------|--|
| Energy Data Agreement      | <ul style="list-style-type: none"> <li>• Authorizes a Third Party to access a Customer’s energy usage data, meter information, and premise information</li> <li>• The term of the agreement may be for a one time access or with duration of 1 month up to 1 year</li> <li>• The agreement may include all of the ESIIDs in the Customer’s account or just specific ESIIDs</li> <li>• A Customer may enter into an unlimited number of Energy Data Agreements</li> </ul>                               |
| In-Home Device Agreement   | <ul style="list-style-type: none"> <li>• Authorizes a Third Party to add or remove an In-Home Device on the Customer’s HAN</li> <li>• Has no term but is automatically terminated if either the Customer or Third Party removes the In-Home Device or the Customer moves out of the premise</li> <li>• A Customer may enter into a maximum of 5 In-Home Device Agreements per smart meter</li> </ul>   |
| In-Home Services Agreement | <ul style="list-style-type: none"> <li>• Authorizes a Third Party to send specific types of messages based on SEP 1.0 to a Customer’s In-Home Device</li> <li>• An agreement can specify any combination of simple text, pricing and/or load control message types</li> <li>• Has no term but may be terminated by either the Customer or Third Party and is automatically terminated if either the Customer or Third Party removes the In-Home Device or Customer moves out of the premise</li> </ul> |

| Agreement | Description  |
|-----------|--|
|           | <ul style="list-style-type: none"><li>• A Customer may enter into a maximum of 5 In-Home Device Services Agreements per smart meter.</li></ul> |

### **5.5.5 Prerequisites to the Agreement Invitation Process**

Prior to sending an invitation to a Customer requesting the Customer’s permission for access, a few prerequisites must be satisfied by both the Customer and Third Party.

A Third Party must complete the following prior to sending an agreement invitation to a Customer:

1. Obtain the appropriate credentials and certificates for API and SMT FTPS connectivity prior to registration with SMT.

## 6 Register and create an account<sup>24</sup> on the SMT web portal (see Section 6 Registration)

3. Obtain certain information (e.g., ESIID(s), Customer Account Authorization Code or email address, In-Home Device information<sup>25</sup>, Customer name, etc.) from the Customer.

The Third Party may obtain the required information from the Customer using a variety of means (i.e., face-to-face meeting, email, phone call, etc.), all of which are outside of the SMT agreement invitation process. The Customer's ESIID, Account Authorization Code, and existing In-Home Device, if any, information may be obtained by the Customer on their SMT account. If a Customer does not have an SMT account, then their ESIID may be found on their electric bill and the In-Home Device details may be obtained from the In-Home Device installation materials. An Account Authorization Code is not required if the Customer does not have an SMT account.

### 6.1.1 Agreement Invitations

The Third Party user will create the agreement invitation by entering the information received from the Customer into a form on the SMT web portal or through an agreement invitation API. SMT will validate the information prior to sending the agreement invitation to the Customer's email address. The Customer is not required to have an SMT account to receive an agreement invitation but is required to register and create an SMT account prior to accepting an agreement invitation.

The email invitation includes the following details related to the agreement:

- Agreement type (i.e., Energy Data, In-Home Device, or In-Home Device Services)
- Energy Data Agreement duration (i.e., one time access for 15 minute, daily, or monthly usage data, continuous access from 1 month up to 12 months) and the ESIIDs included in the agreement

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<sup>24</sup> A REP who has an SMT account will not have to create a separate account but will automatically have access to SMT Third Party functionality.

<sup>25</sup> The Third Party will have the In-Home Device information if the Third Party provides the Customer with the In-Home Device.

- Links to the Third Party’s web site and privacy policy, if provided
- A national privacy seal, if the Third Party has attested to meeting the national privacy seal requirements, and privacy seal logo, if provided
- Any Customer ratings of the Third Party’s services, if available

The agreement invitation sent to the Customer remains active for a period of 30 days. The Third Party can resend an existing agreement invitation once during the 30-day invitation period as a reminder, if the Customer has not responded. If the Customer has not responded within the 30-day invitation period, the invitation expires and a new agreement invitation has to be created.

### **6.1.2 Customer Acceptance of an Agreement Invitation**

If the Customer has an SMT Account, the Customer may accept the invitation to enter into an agreement by clicking on the “Accept” button in the email. The SMT login page will be presented to the Customer and, after the Customer logs in, SMT presents an agreement acceptance confirmation page (see Figure 9). If the Customer does not have an SMT account, the Customer may accept the invitation by clicking on “Register for an SMT Account”. The SMT home page is presented to the Customer for the Customer to register and create an account on SMT. The Customer must have an SMT account in order to accept an agreement invitation.

Once a Customer accepts an agreement invitation, SMT will create an agreement between the Customer and Third Party that will remain active until the agreement expires (Energy Data Agreement only) or is terminated. Both the Customer and the Third Party will receive an email confirmation that the agreement has been accepted and created.

The screenshot shows the SMART METER TEXAS web interface. The top navigation bar includes the logo on the left and a user greeting 'Welcome, Chris' with a 'Log Out' link on the right. Below the navigation bar is a menu with options: Usage, Meters, In-Home Devices, **Agreements** (highlighted), Account Profile, Share Feedback, and Help. The main content area is titled 'My 3<sup>rd</sup> Party Agreements' and displays a confirmation message: 'Agreements / My 3<sup>rd</sup> Party Agreements / Energy Data Agreement Acceptance Confirmation'. A green checkmark icon precedes the text: 'Congratulations! You have successfully established your Energy Data Agreement with <3<sup>rd</sup> Party Name>'. Below this, a list of bullet points provides details about the agreement, including its visibility, notification, start/end dates, and data access options.

**Figure 9: Agreement Acceptance Confirmation**

### 6.1.3 Customer Rejection of an Agreement Invitation

A Customer may reject an agreement invitation by clicking the Reject button in the email. SMT will present a screen confirming the Customer’s rejection and give the Customer the option to indicate why they are rejecting the agreement invitation (see Figure 10). Both the Customer and the Third Party will receive an email notification that the agreement invitation was rejected.

The screenshot shows a confirmation message from SMART METER TEXAS. At the top, there is a blue header with the logo. Below the header, a green checkmark icon is followed by the text: "This confirms your rejection of a 3rd Party Energy Data Agreement with <3rd Party Name>." Below this, there are two bullet points: "<3rd Party Name> will receive notification of the rejected agreement." and "If you have rejected this invitation in error, please contact <3rd Party Name> to request a new agreement invitation." A light green box contains the text: "Though not required, we will appreciate it if you could please select the option below that best indicates your reason for rejecting the 3rd Party agreement invitation from <3rd Party Name>". Below this text is a list of six radio button options: "Did not agree to an agreement with this company", "Not satisfied with current service", "Do not agree with the company's privacy / security policy", "Incorrect agreement duration", "Changed my mind", and "Skip / Don't want to provide". At the bottom of the light green box is a grey button labeled "Send Feedback".

Figure 10: Agreement Rejection Confirmation

## 6.2 HAN Functionality

The PUCT Advanced Metering rule required that the TDSP AMS deployment support the “capability to communicate with devices inside the premises, including, but not limited to, usage monitoring devices, load control devices, and prepayment systems through a home area network (HAN), based on open standards and protocols that comply with nationally recognized non-proprietary standards such as ZigBee, Home-Plug, or the equivalent.”<sup>26</sup>. To satisfy this requirement, the TDSPs installed smart meters with the ZigBee SEP v1.0 HAN communication protocol. However, with variability in the Joint TDSPs geographical locations, business requirements, and deployment time lines, each TDSP deployed advanced meters from different

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<sup>26</sup> PUCT §25.130(g)(1)(J)



meter manufacturers leveraging various types of communication networks. SMT resolved any issues related to the differing deployments by developing standard HAN APIs that contain standard ZigBee SEP messages.

A user must have authorization to access the SMT HAN functionality. A residential user automatically has authorization to access the SMT HAN functionality. If the user is a Business customer, TDSP, or Third Party and has the role of an administrator, they have access to the HAN functions and other users must receive authorization from an administrator associated with their organization. In addition, Third Parties must have active In-Home Device or In-Home Services Agreements with Customers to utilize the SMT HAN functionality (see Section 5.5.4).

Table 6 lists the HAN functions that may be accessed by each of the different SMT users through the SMT interfaces that provide access to the SMT HAN functionality.

**Table 6: Access to SMT HAN Functions**

| SMT Interface     | HAN Function   | SMT User   |
|-------------------|--|--|
| <b>Web Portal</b> | Grant / Revoke HAN Access  | Residential Customer, Business Customer Administrator, Third Party Administrator |
|                   | Add / Remove an In-Home Device   | Customer, Third Party, TDSP  |
|                   | View In-Home Device Status or History                                    | Customer, Third Party  |
|                   | View HAN Messaging History   | Third Party  |
|                   | Search and list In-Home Devices  | Customer, Third Party, TDSP  |
|                   | View In-Home Device Details  | Customer, Third Party, TDSP  |
|                   | Request HAN Message Log Report   | Third Party  |
|                   | Request report on In-Home device statistics (i.e., # of In-Home devices, | TDSP, Regulatory   |

| SMT Interface   | HAN Function  | SMT User                   |
|-----------------|---|----------------------------|
|                 | and # of HAN messages sent)   |                            |
|                 | Request history of usage reports requested by a Third Party                     | Customer, TDSP, Regulatory |
|                 | Request report on # of Third Party Agreements rejected and reason for rejection | TDSP, Regulatory           |
| <b>FTPS</b>     | Receive HAN Message Log Report  | Third Party                |
| <b>HAN APIs</b> | In-Home Device Agreement request  | Third Party                |
|                 | In-Home Services Agreement request  | Third Party                |
|                 | Add / Remove an In-Home Device  | Third Party                |
|                 | Update Utility Enrollment Group   | Third Party                |
|                 | Send Price Signal   | Third Party                |
|                 | Send / Cancel Simple Text/Display   | Third Party                |
|                 | Send / Cancel Load Control Event  | Third Party                |
|                 | Cancel All Load Control Events  | Third Party                |

### **6.2.1 Adding or Removing an In-Home Device**

Customers may add and remove In-Home Devices on the Customer HAN and Third Parties may add and remove In-Home Devices once they have an In-Home Device Agreement with the Customer. Once the Customer accepts an In-Home Device Agreement, the process of adding an In-Home Device to the Customer HAN is automatically initiated by SMT.

A Customer may add or remove an In-Home device only through the SMT web portal. A Third Party may use the SMT web portal or the SMT HAN APIs to perform these functions. TDSPs

also have capability to add and remove In-Home Devices within their territories in order to provide support for Customers.

In order to add an In-Home Device the following information is requested:

- In-Home Device description (optional): name of the device (e.g., downstairs Thermostat, Kitchen Display, etc.)
- Type of In-Home Device (required): selected from a drop down menu
- MAC address (required): the device address provided by the device manufacturer and should be easily accessible (e.g., on the device, the device packaging, with the installation instructions, etc.)
- Installation code (required): the installation code is provided by the device manufacturer and should be easily accessible (e.g., on the device, the device packaging, with the installation instructions, etc.).

A Customer or Third Party with an In-Home Device Agreement may remove an In-Home Device at any time without the permission of the other party. The Customer may remove an In-Home Device by selecting the “Remove In-Home Device” button on the SMT web portal. The Customer is given the option of either keeping or terminating the In-Home Device Agreement. A Third Party may remove an In-Home Device using either the SMT web portal or the HAN APIs. Third Parties must select a reason for removal from a pre-defined list.

Customers or Third Parties may view a list on the SMT web portal of the In-Home Devices that have been added or removed from the Customer’s HAN as well as a history of all failed requests to add or remove In-Home Devices. Customers may also view In-Home Device details (e.g., MAC address, installation code, etc.) to provide to Third Parties when entering into Third Party In-Home Device Services Agreements.

### **6.2.2 In-Home Device Messages**

Third Parties may send messages to a Customer’s In-Home Device after the Customer agrees to enter into an In-Home Device Services Agreement with the Third Party. A Third Party initiates

communication with a Customer In-Home Device by sending a ZigBee SEP v1.0 message using the SMT HAN APIs. SMT will send the HAN message to the Customer's TDSP which then delivers the HAN message through the TDSP AMS communication network to the Customer's HAN which delivers the message to the In-Home Device. Third Parties may view a history<sup>27</sup> or status of HAN messages sent to devices and may create enrollment groups to send the same message to multiple In-Home Devices.

### 6.3 Education

An additional function of SMT is to educate Customers about their electric usage and teach them how to use and access SMT functionality. The Help functions and education features provided by SMT include help for individual features (see Figure 12 and Figure 13), a Help section (see Figure 11) that includes Frequently Asked Questions (FAQs), user guide, important links, contact information, SMT terms and conditions, and information about security and privacy. In addition, on the Customer SMT home page there are links, located above the Customer login box, for information about SMT, contact information, FAQs, and security information.

SMT also provides users with broadcast messages (e.g. related to planned SMT outages, new SMT features, weather alerts, etc.). These messages are located on the Customer SMT home page and as text in a yellow bar at the top of certain SMT pages (see Figure 12).

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<sup>27</sup> This includes all messages ever sent to the HAN device

The screenshot displays the SMART METER TEXAS website interface. At the top, the logo is on the left, and the user name 'Welcome, Chris' with a 'Log Out' link is on the right. A navigation bar below the logo contains links for 'Usage', 'Meters', 'In-Home Devices', 'Agreements', 'Account Profile', 'Share Feedback', and 'Help'. The 'Help' link is circled in red. A left sidebar lists various links: 'FAQs', 'User Guide', 'Important Links', 'Contact Us', 'Terms & Conditions', and 'Security & Privacy'. The main content area shows the 'Help / Frequent Asked Questions' page, which includes sections for 'About Smart Meter Texas', 'About Meters', 'About Usage', and 'About In-Home Devices', each with several hyperlinked questions.

SMART METER TEXAS™

Welcome, Chris  
Log Out

Usage Meters In-Home Devices Agreements Account Profile Share Feedback **Help**

**FAQs**  
User Guide  
Important Links  
Contact Us  
Terms & Conditions  
Security & Privacy

Help / Frequent Asked Questions

**Frequent Asked Questions**

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**About Smart Meter Texas**  
[What is Smart Meter Texas \(SMT\)?](#)  
[Who is the Smart Meter Texas Team?](#)  
[Do I have to register with Smart Meter Texas \(SMT\)?](#)  
[How can I get help if I have a problem with the SMT website?](#)  
[What is done to ensure the privacy of my personal information?](#)  
[What is a Retail Electric Provider?](#)  
[What is an Electric Utility Company?](#)  
[What is a 3<sup>rd</sup> Party Service Provider?](#) New

**About Meters**  
[What is a Smart Meter?](#)  
[What is an ESIID?](#)  
[What is my Premise?](#)  
[Which meters can I access?](#)  
[What do I need to know before I register on the SMT website?](#)  
[Why can't I see a meter that was previously in my list?](#)  
[What do I do if someone else has registered my meter on the SMT website?](#)

**About Usage**  
[What is the usage data I see displayed on the SMT website?](#)  
[Why does my usage data sometimes show up as an estimate on the SMT website?](#)  
[Who else can access my usage data, meter, and premise information?](#)  
[Can I see who has access to my usage data?](#)

**About In-Home Devices**  
[What is an In-Home Device?](#)  
[How long does it take for an In-Home Device to be added/removed from my Smart Meter?](#)

Figure 11: SMT Help Features

### 6.3.1 Help Function

On the SMT web portal pages there are numerous Help icons  that provide additional information about a feature on the page. In

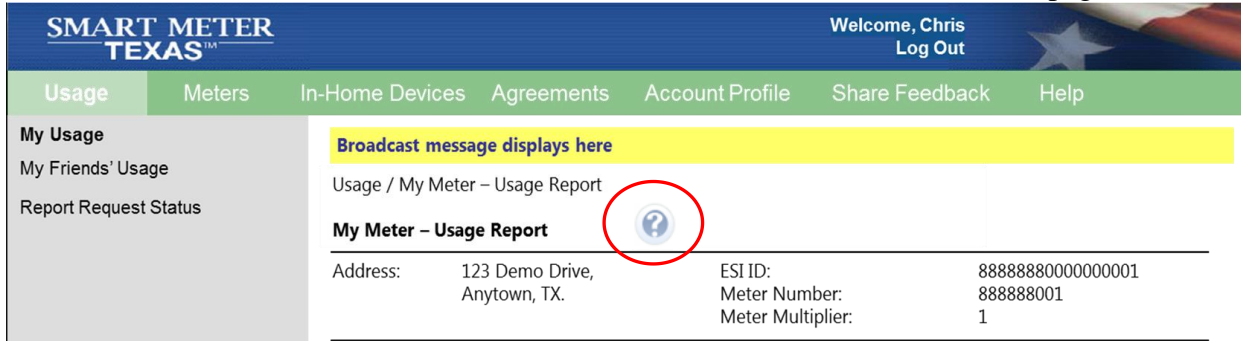




Figure 12, the Help icon  is next to “My Meter – Usage Report” allowing the user to get additional information on this feature. Figure 13 shows the result of clicking on the Help icon  giving the user additional information about the usage report. In addition, most of the fields and labels in SMT contain tool tips that display a brief description when the user rolls their mouse over the field or label.

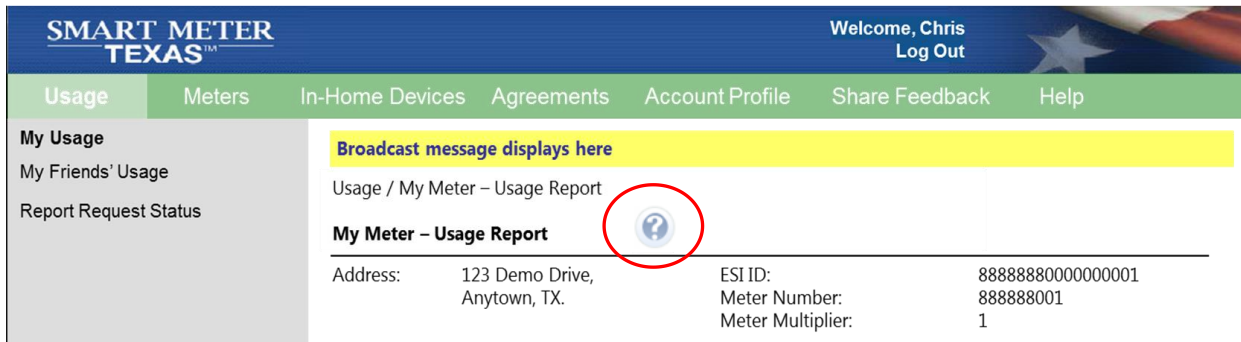
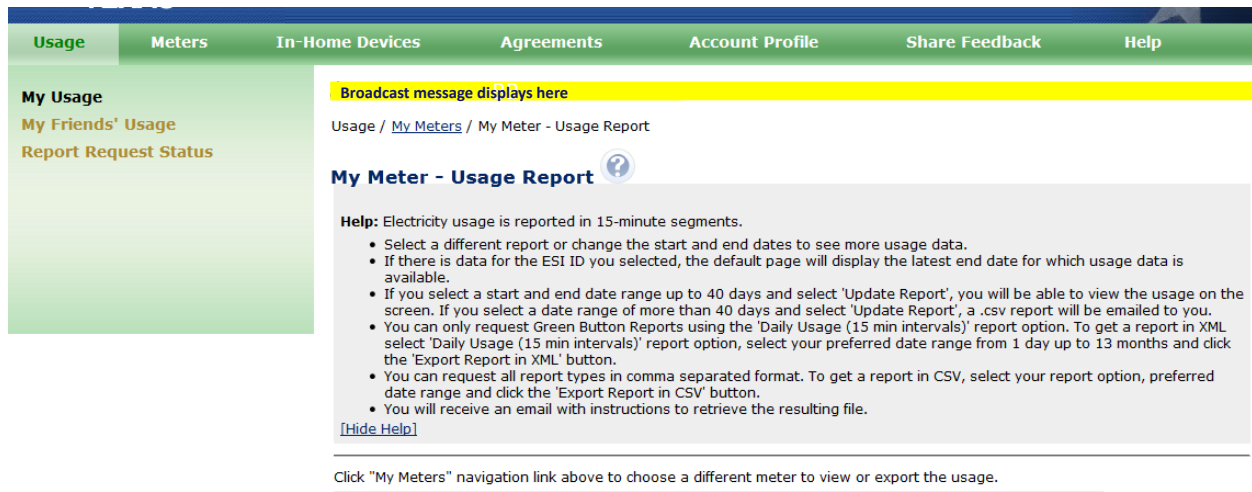


Figure 12: Help Icon  Example



**Figure 13: Help on the Usage Report**

### 6.3.2 FAQs

On the Customer SMT home page, as well as on the user’s home page after the user has logged into SMT, Customers may access a list of Frequently Asked Questions (FAQs) that cover a range of topics including:

- About Smart Meter Texas
- About Meters
- About Usage
- About In-Home Devices
- About Agreements
- About My Account
- About Reading Reports and Using the Data
- About Importing Files

### 6.3.3 User Guides

Users with a Residential or Business account may also download the SMT User Guide, in English or Spanish, which provides detailed, step by step instructions for all of the activities Customers can perform on the SMT web portal. A separate user guide is available to REP, Third

Party, and TDSP, users, which provides detailed information and instructions on accessing the SMT functionality available to such users.

A SMT In-Home Device Guide and In-Home Device Operation Support Model may be downloaded by Third Parties who are interested in providing Customers products that use the SMT HAN functionality. The In-Home Device Guide is a comprehensive document describing the SMT HAN functionality and how to access it. Included in the guide are an explanation of the roles each user has related to the SMT HAN functionality, how to connect an In-Home Device to the Customer HAN, how to send messages to an In-Home Device, the kinds of messages that may be sent to In-Home Device, a HAN API starter kit, and how to test In-Home Device. The HAN API Starter Kit describes the soapUI that can be used to invoke the SMT HAN Web Service interface and includes the following:

- a. soapUI project – Contains XML interface definitions that can be used by the soapUI application
- b. SMT's UAT/Staging SSL Certificate
- c. SMT HAN Interface Security - Describes the interface functions

#### **6.3.4 SMT Help desk**

SMT maintains a SMT help desk that allows all users to call and ask for assistance with all aspects of SMT functionality. The help desk may be contacted by calling 1-888-616-5859. The SMT help desk can help users:

- Setting up an SMT account
- Logging into their account
- Change their password
- Addressing other SMT account specific questions
- Directing users to their REP for questions related to their electric service or bill
- Access data at the FTPS site (RORs and Third Parties only)
- Answer questions about the SMT API (RORs and Third Parties only).



### **6.3.5 Other Help**

Customers are referred to the ROR should they have questions about their service or bill, understanding their usage reports, addressing missing or incorrect data in their account or usage reports, or want ideas on how to save electricity. Important links are provided to the websites of the Joint TDSOs, PUCT, and ERCOT to help Customers learn more about these organizations and what their responsibilities are related to the delivery of electricity to consumers.

## **6.4 General SMT Usability Solutions**

To increase the usability of SMT and the accessibility of its functions, SMT provides users with a language preference choice and the SMT web portal is compliant with the requirements for Internet accessibility as set forth in the Federal Rehabilitation Act, Section 508, Electronic and Information Technology<sup>28</sup>. During the registration process, the user may set their language preference to either English or Spanish. Customers may also select the preferred language on the SMT home page prior to logging into their SMT account. SMT user documentation is provided in English and Spanish and the SMT portal pages are displayed in the user's language preference. SMT implemented the Federal Rehabilitation Act, Section 508 to enable users with disabilities to access and use the SMT functionality in a manner comparable to that provided to individuals without disabilities. The SMT web portal was specifically implemented to support common ADA tools which enable the translation of portal text into voice. Extensive testing of the web portal by sight impaired people validated its accessibility, as did an ADA audit undertaken in 2012.

In addition, SMT accommodates the effect daylight savings time has on energy usage data. On the spring day that daylight savings begins, SMT displays and graphs 92 intervals of energy usage data with the 2:00 a.m. hour missing. For the fall day that daylight savings ends, SMT will display 100 intervals of energy usage data with the 1:00 a.m. hour repeated.

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<sup>28</sup> <http://www.section508.gov/summary-section508-standards>

In 2014, an effort was undertaken to improve the overall Customer user experience on the SMT web portal. A consumer insights professional<sup>29</sup> was retained to conduct a heuristic evaluation of the overall SMT site usability and compare SMT against industry standards and best practices. In addition, the design changes that were recommended and implemented were tested through in-depth interviews with both residential and business customers. Design changes as a result of these interviews were incorporated into SMT release 4.3 to further improve the user experience.

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<sup>29</sup> Shannon Graf

## 6 Registration and User Roles

### 7.1 Registration

SMT uses industry standard practices to provide a secure web portal registration process that validates the authenticity of the user and protects against unauthorized access. All users must provide general information (e.g., user name, email address, user ID, etc.) during the registration process. Additional information is also requested (see Table 7) in order to validate the authenticity of the user and to create a company account for Business Customers, REP’s, and Third Parties.

**Table 7: Additional Registration Information**

| Account Type | Additional Information  |
|--------------|---|
| Customer     | <ul style="list-style-type: none"> <li>• Preferred language (English or Spanish; default is English) (residential customer only)</li> <li>• ESIID (for one smart meter, other ESIIDs, if applicable, may be added)</li> <li>• Meter Number</li> <li>• Customer’s current REP</li> </ul> |
| Friend       | <ul style="list-style-type: none"> <li>• Preferred language (English or Spanish; default is English)</li> <li>• Agreement Key (contained in the email invitation)</li> </ul>  |
| REP          | <ul style="list-style-type: none"> <li>• DUNS Number</li> </ul>   |
| Third Party  | <ul style="list-style-type: none"> <li>• DUNS Number</li> <li>• Company URL (optional)</li> <li>• Privacy Policy URL (optional)</li> <li>• Upload company logo (optional)</li> <li>• Attest to meeting the requirements of a national privacy seal (optional)</li> </ul>                |

A Residential Customer may invite up to five Friends to view their usage data. Once invited to do so, a Friend must register and create an account on SMT to view usage data from a Residential account holder's smart meter.

The first user to set up an account for a Business Customer, REP, or Third Party must set up the company account and the first administrator account. Prior to establishing a Company account, a Third Party must obtain security credentials and connect to the SMT FTPS. The company account contains the company-level information and provides a mechanism to associate certain SMT users with a company or an organization (i.e., PUCT). The following information is required for all company accounts:

- Company name
- Company primary address (address, city, state, zip code, country)
- Preferred contact phone number
- Company account email address (for SMT communications to all company administrators)

In addition, REPs and Third Parties may provide the following optional information:

- Provide link to company privacy policy
- Provide Company URL and logo
- Attest to meeting the requirements of a national privacy seal

Company accounts have users who are assigned by their company to have the role of either an administrator or user. A company account may have up to four administrators. Once a company account has been established, the company name will appear on a list for other administrators and users to select and begin the registration process. As part of the secure registration process, additional administrators and users must be approved by an existing administrator and assigned certain permissions prior to accessing the SMT web portal functionality. A REP company account must be approved by a TDSP administrator prior to SMT activating the REP company account. SMT will request this approval from a TDSP administrator automatically when the REP company account had been set up. A Third Party company account must be approved by the SMT team prior to SMT activating the Third Party company account.

Prior to the launch of SMT, a company and an administrator account were set up for each of the Joint TDSPs and the PUCT (i.e., Regulatory user). Additional TDSP or Regulatory administrators and users may select their company name from a list to begin the registration process on SMT.

During the registration process, each user must agree to the SMT terms and conditions, which set forth the terms and conditions for use of the SMT website. The terms and conditions incorporate industry best practices related to using a website and user privacy. The SMT privacy policy is included in the terms and conditions which is easily accessible under the Security link on the SMT home page.

## 7.2 Roles

As part of the registration process, users will be allowed access to SMT functionality depending upon their role. The categorization of the user roles and their associated access to the SMT functionality is guided by the following generic role definitions:

- **Individual Account** - An individual, not associated with a company that has a need to see or retrieve data from the web portal. An Individual Account can be a Residential Customer, a Friend, or both – all with a single user ID and password.
- **Company Account** - a profile containing information about a company (i.e., TDSP, REP, Regulatory, Third Party, or Business Customer). Administrators and users are associated with the company account.
- **Administrator** - an employee or representative of a company that is assigned the role and responsibility for setting up and managing the company profile, managing (i.e., approve, terminate) other company users requesting access to SMT, and managing (i.e., grant and revoke) permissions to company users to access usage information or HAN functionality associated with the company account.
- **User** - An individual that has permission to see or retrieve data from SMT that is associated with a company. Users are granted access by one of the company's Administrators.

Company accounts provide a consistent way of handling security roles for users within an organization. Company accounts are also used to associate usage data and In-Home Device access to organizations.

Residential Customers and Friends do not belong to a company account as there is no separate company level information to track. A Residential user may only access usage data from smart meters and In-Home Devices that are associated with their account and, if invited by a Friend, may view usage data from a Friend’s smart meter. A Friend may only view usage data from a Residential Account when invited by the Residential Account holder to do so.

A Business account may only access usage data from the smart meters and In-Home Devices associated with their company. A TDSP account will have access to meter, usage, premise, and In-Home Device information for the ESIIDs that are served by that TDSP. Other TDSP companies will not have access to that same data. In a similar manner, each ESIID is associated with a specific REP and other REP companies, who are not the ROR, will not have access to that ESIID’s usage data unless the Customer grants such access through an Energy Data Agreement. Third Party accounts only have access to usage data from Customers who have entered into Energy Data Agreements with that Third Party and access to Customer In-Home Devices with those Customers who have entered into an In-Home Device or In-Home Device Services Agreements.

SMT roles consider both the company type and user type. A TDSP Administrator has a different set of permissions and functionality than a REP Administrator. Both Administrator types have a set of related functionality with respect to their company (e.g., approving new company users). Differences are present due to the different functions that TDSPs and REPs exist to serve (e.g., a TDSP Administrator is required to authorize the creation of new REP accounts). Table 8 lists the specific set of SMT functions that an account, based upon their role, may have access to.

**Table 8: SMT Functions by Account Roles**

| <b><i>Account Type</i></b> | <b>Functions</b>   |
|----------------------------|--|
| <i>Residential</i>         | <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address,</li> </ul> |

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| <b>Account Type</b>     | <b>Functions</b>  |
|-------------------------|---|
| <i>Account</i>          | <p>password, security question, Account Authorization Code)</p> <ul style="list-style-type: none"> <li>• Add and delete smart meters to their accounts, based on ESIID</li> <li>• Add or delete In-Home Devices</li> <li>• View and download usage data               <ul style="list-style-type: none"> <li>- Graphical and tabular data</li> <li>- 15 minute usage intervals, daily reads, and monthly usage</li> </ul> </li> <li>• Manage Friends               <ul style="list-style-type: none"> <li>- Invite up to 5 Friends to view usage data</li> <li>- Delete a Friend's access to the user's usage data</li> <li>- Add or delete smart meters that a Friend can view</li> <li>- Accept invitations from up to 5 Friends to view their usage data</li> </ul> </li> <li>• Accept or reject Third Party agreement invitations</li> <li>• Manage Third Party agreements (e.g., extend Energy Data Agreement, terminate agreements, etc.)</li> <li>• Search and list all agreements Customer has with Third Parties</li> <li>• View history of usage reports that have been run by Third Parties</li> <li>• Rate a Third Party that the Customer has an agreement with</li> <li>• Share feedback on Customer's experience with SMT</li> </ul> |
| <i>Friend Account</i>   | <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• Accept invitations or end access to view their Friend's usage data</li> <li>• View usage data for a Friend's smart meter               <ul style="list-style-type: none"> <li>- Graphical and tabular data</li> <li>- 15 minute usage intervals, daily reads, and monthly usage</li> </ul> </li> </ul>  |
| <i>Business Account</i> | <p>User</p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• View the company profile</li> <li>• Access usage, meter, and premise information for the smart meters that are associated with the company</li> <li>• View, add and remove In-Home Devices for the smart meters that are associated with the company, if given permission by a company administrator</li> <li>• Search and list all agreements company has with Third Parties</li> <li>• View history of usage reports that have been run by Third Parties</li> <li>• Rate a Third Party that the Customer has an agreement with</li> </ul>   |

| <b>Account Type</b> | <b>Functions</b>  |
|---------------------|---|
|                     | <ul style="list-style-type: none"> <li>• Share feedback on Customer’s experience with SMT</li> </ul>  |
|                     | <p><b>Administrator</b></p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question, Account Authorization Code<sup>30</sup>)</li> <li>• Edit the company profile</li> <li>• View, add and remove smart meters for the company</li> <li>• Access usage, meter, and premise information for the smart meters that are associated with the company</li> <li>• View, add and remove In-Home Devices for the smart meters that are associated with the company</li> <li>• Accept or reject Third Party agreement invitations</li> <li>• Manage Third Party agreements (e.g., extend Energy Data Agreement, terminate agreements, etc.)</li> <li>• Search and list all agreements company has with Third Parties</li> <li>• View history of usage reports that have been run by Third Parties</li> <li>• Approve/decline new Business administrators or users requesting access to SMT and grant them energy data or HAN permissions</li> <li>• Suspend/re-instate/revoke company user accounts that have previously been granted access to SMT</li> <li>• Rate a Third Party that the Customer has an agreement with</li> <li>• Share feedback on Customer’s experience with SMT</li> </ul> |
| <i>REP Account</i>  | <p><b>User</b></p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• View Customer usage, premise, or meter data associated with the REP, if granted access by the REP Administrator               <ul style="list-style-type: none"> <li>- Search and view data online</li> <li>- Request ad-hoc reports which will be created by SMT and then stored in the REP’s FTPS folder</li> </ul> </li> <li>• Display a list of Customer smart meters associated with the REP</li> </ul>   |

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<sup>30</sup> Each Business Account Administrator will have their own Account Authorization Code



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| <b>Account Type</b>        | <b>Functions</b>  |
|----------------------------|---|
|                            | <p>Administrator</p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e. name, phone, email address, password, security question)</li> <li>• Edit the company profile</li> <li>• Add and remove DUNS numbers for the REP company</li> <li>• Approve/decline new REP administrators or users requesting access to SMT and grant them permissions</li> <li>• Suspend/re-instate/revoke REP administrator or user accounts that have previously been granted access to SMT</li> <li>• View Customer usage, premise, or meter data associated with the REP               <ul style="list-style-type: none"> <li>- Search and view data online</li> <li>- Request ad-hoc reports which will be created by SMT and then stored in the REP's FTPS folder</li> </ul> </li> <li>• View, list, and export Customer usage, premise, and meter information for Customers associated with the REP</li> </ul>  |
| <i>Third Party Account</i> | <p>User</p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• If given permission by an administrator:               <ul style="list-style-type: none"> <li>- Initiate relationships with Customers through Energy Data Agreements, In-Home Services Agreements, and In-Home Device Agreements</li> <li>- Initiate an Energy Data Agreement extension request</li> <li>- Add and remove In-Home Devices for any Customers who have entered into an In-Home Device Agreement with the Third Party</li> <li>- View and export energy data (i.e., usage data, meter information, premise information) for Customers who have entered into an Energy Data Agreement with the Third Party</li> <li>- Send messages to In-Home devices for Customers who have entered into an In-Home Device Services Agreement with the Third Party</li> <li>- Terminate Energy Data or In-Home Device Services agreements with Customers</li> <li>- View, list, and export Customer Agreements</li> <li>- View In-Home Devices</li> <li>- View status of requested reports</li> </ul> </li> </ul> |

| <i>Account Type</i> | <b>Functions</b>   |
|---------------------|--|
|                     | <ul style="list-style-type: none"> <li>• View usage data               <ul style="list-style-type: none"> <li>- View data online</li> <li>- Request custom reports which will be created by SMT and then stored in the Third Party's FTPS folder</li> </ul> </li> <li>• Display a list of Customer smart meters associated with the Third Party</li> </ul>   |
|                     | <p>Administrator</p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• Edit the company profile</li> <li>• Initiate relationships with Customers through Energy Data Agreements, In-Home Device Services Agreements, and In-Home Device Agreements</li> <li>• View, list, and export Customer Agreements</li> <li>• Add and remove In-Home Devices for any Customers who have entered into an In-Home Device Agreement with the Third Party</li> <li>• View and export energy data (i.e., usage data, meter information, premise information) for Customers who have entered into an Energy Data Agreement with the Third Party</li> <li>• View status of requested reports</li> <li>• Send messages to In-Home Devices for Customers who have entered into an In-Home Device Services Agreement with the Third Party</li> <li>• Terminate Energy Data or In-Home Device Services agreements with Customers</li> <li>• Approve/decline new Third Party administrators and users requesting access to SMT and grant them permissions.</li> <li>• Suspend/re-instate/revoke Third Party user accounts that have previously been granted access to SMT</li> <li>• Grant or Revoke permissions to Third Party Users to access energy data for Customers who have entered into an Energy Data Agreement with the Third Party</li> <li>• Grant or Revoke permissions to Third Party Users to send messages to In-Home Devices for Customers who have entered into an In-Home Device Services Agreement</li> <li>• Grant or Revoke permissions to Third Party Users to add In-Home Devices for Customers who have entered into an In-Home Device Agreement</li> </ul> |

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| <b>Account Type</b>       | <b>Functions</b>  |
|---------------------------|---|
| <i>TDSP Account</i>       | <p><b>User</b></p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• View the TDSP company profile</li> <li>• Add and remove In-Home Devices for the smart meters that are associated with the TDSP, if a TDSP administrator has granted the user HAN authorization</li> <li>• View Customer usage data               <ul style="list-style-type: none"> <li>- View data online</li> <li>- Request custom reports which will be created by SMT and then stored in the TDSP's FTPS folder</li> </ul> </li> <li>• Display a list of Customer smart meters associated with the TDSP</li> <li>• View premise and meter information</li> </ul>   |
|                           | <p><b>Administrator</b></p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• Edit the company profile</li> <li>• View, list, and export Customer usage, premise and meter information</li> <li>• Add and remove In-Home Devices for the smart meters that are associated with the TDSP.</li> <li>• Grant or Revoke In-Home Device access permission to users associated with the TDSP</li> <li>• Approve/decline new TDSP administrators and users requesting access to SMT</li> <li>• Approve/decline new REP company accounts requesting access to SMT</li> <li>• Approve/decline a REP request to add a new DUNS number to the REP company account</li> <li>• Suspend/re-instate/revoke a REP DUNS number</li> <li>• Suspend/re-instate/revoke TDSP user accounts that have previously been granted access to SMT functionality</li> <li>• At the request of a ROR, remove a meter from a Customer's SMT account</li> <li>• View statistical reports on Third Party activity</li> </ul> |
| <i>Regulatory Account</i> | <p><b>User</b></p>  |

| <i>Account Type</i> | <b>Functions</b>  |
|---------------------|---|
|                     | <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• View Customer energy usage data</li> <li>• View statistical reports on SMT usage</li> <li>• View statistical reports on Third Party activity</li> </ul>   |
|                     | <p><b>Administrator</b></p> <ul style="list-style-type: none"> <li>• Edit personal profile information (i.e., name, phone, email address, password, security question)</li> <li>• Edit the company profile</li> <li>• View Customer energy usage data</li> <li>• View statistical reports on SMT usage</li> <li>• View statistical reports on Third Party activity</li> <li>• Approve/decline new Regulatory administrators and users requesting access to SMT functionality</li> <li>• Suspend/re-instate/revoke Regulatory user accounts that have previously been granted access to SMT</li> </ul> |

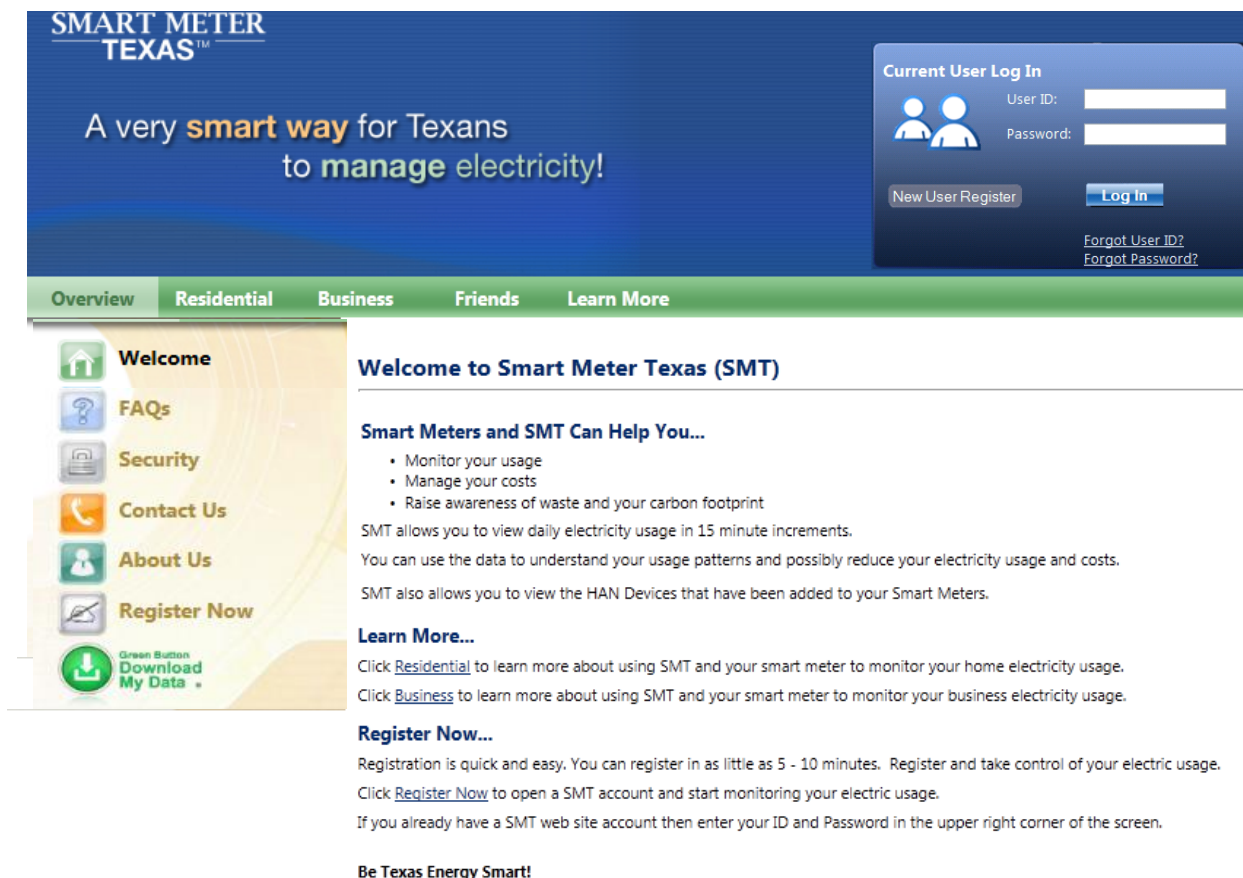
## 8 Interfaces

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SMT has three interfaces that provide users with access to SMT functionality and data. The interfaces are a graphical user interface (GUI) delivered through a web browser using a secured web connection, a secured file transport protocol (FTPS) site, and an application programming interface (API). Users have differing levels of access to these interfaces depending on their user entity and role.

### 8.1 Web Portal

The web portal is the GUI for all users of SMT and provides a straightforward, user friendly access point to SMT. The home page for the portal provides a login section for registered users, a link for new users to create an account, information about SMT functionality, and user education materials (e.g., FAQs, etc.), contact information, and SMT terms and conditions. Figure 14 shows the SMT landing page.



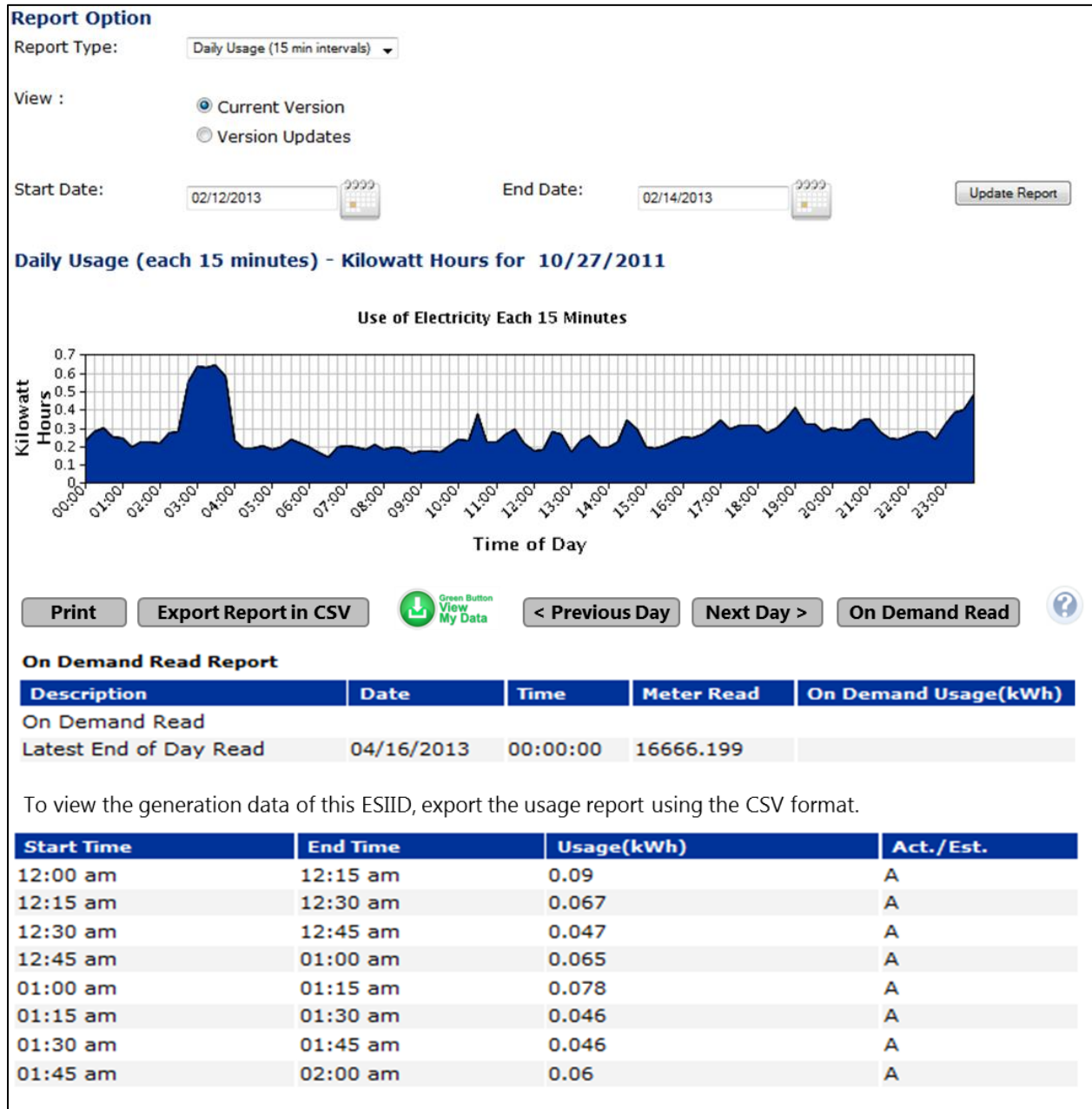
**Figure 14: Customer SMT Landing Page**

The web portal provides different functionality to registered users depending on the type of account they have, and for Customers and Friends the web portal is the only interface these users have to access SMT functionality. The types of SMT functions that are available to each type of user on the SMT web portal are listed in Table 8.

All new users of SMT register and create an account by accessing the web portal and entering the requested information appropriate to the type of account they are creating (see Table 7).

The primary function of the web portal for Customers is to provide access to their usage data. Data is displayed on the SMT web portal in both a graphical and tabular format and the user can

select 15 minute interval data, daily reads, or monthly usage data. An example of a residential user's usage data as displayed by SMT is shown in Figure 15.



**Figure 15: 15 Minute Interval Data**

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An example of a residential user's daily usage is provided in Figure 16.

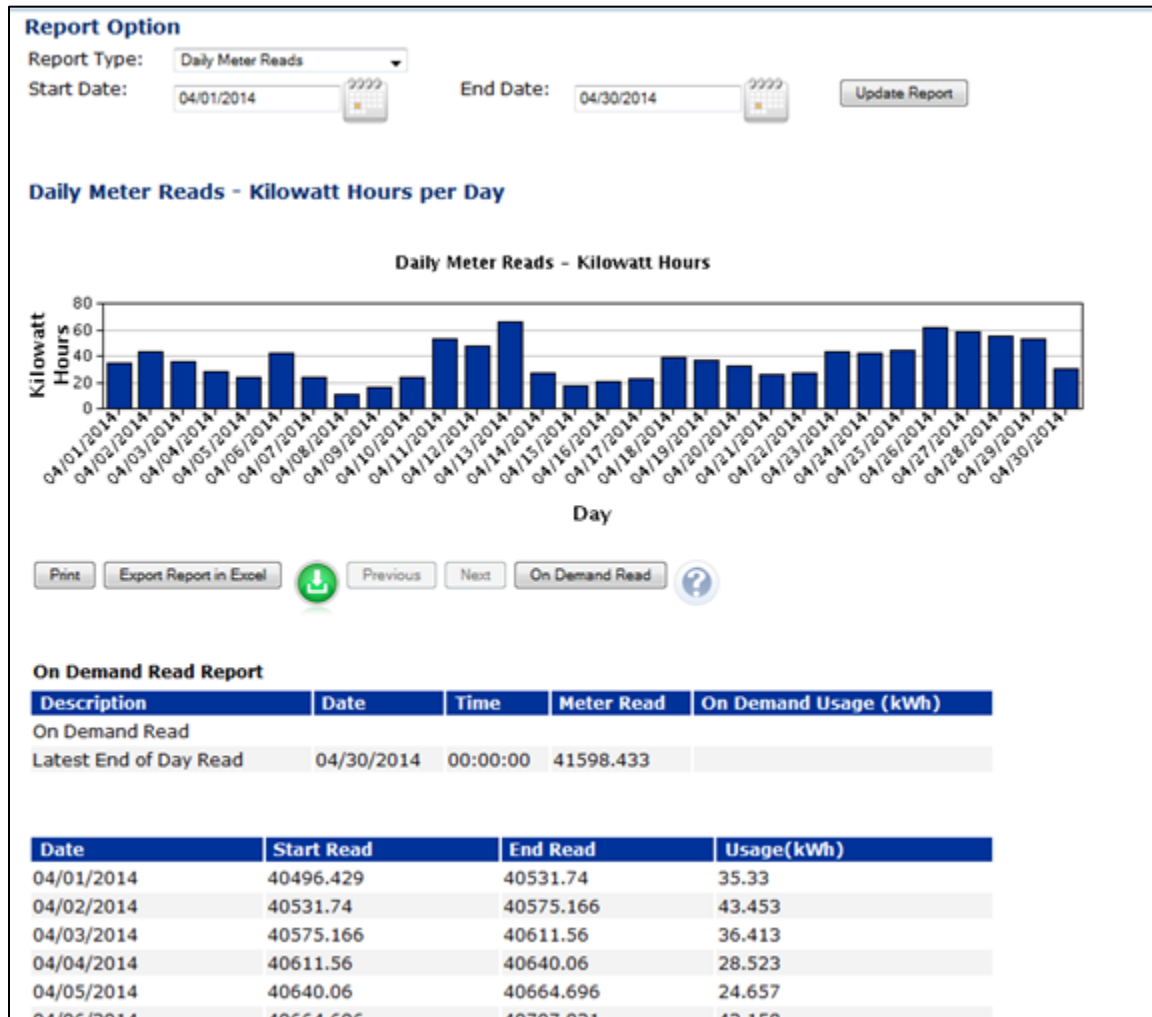
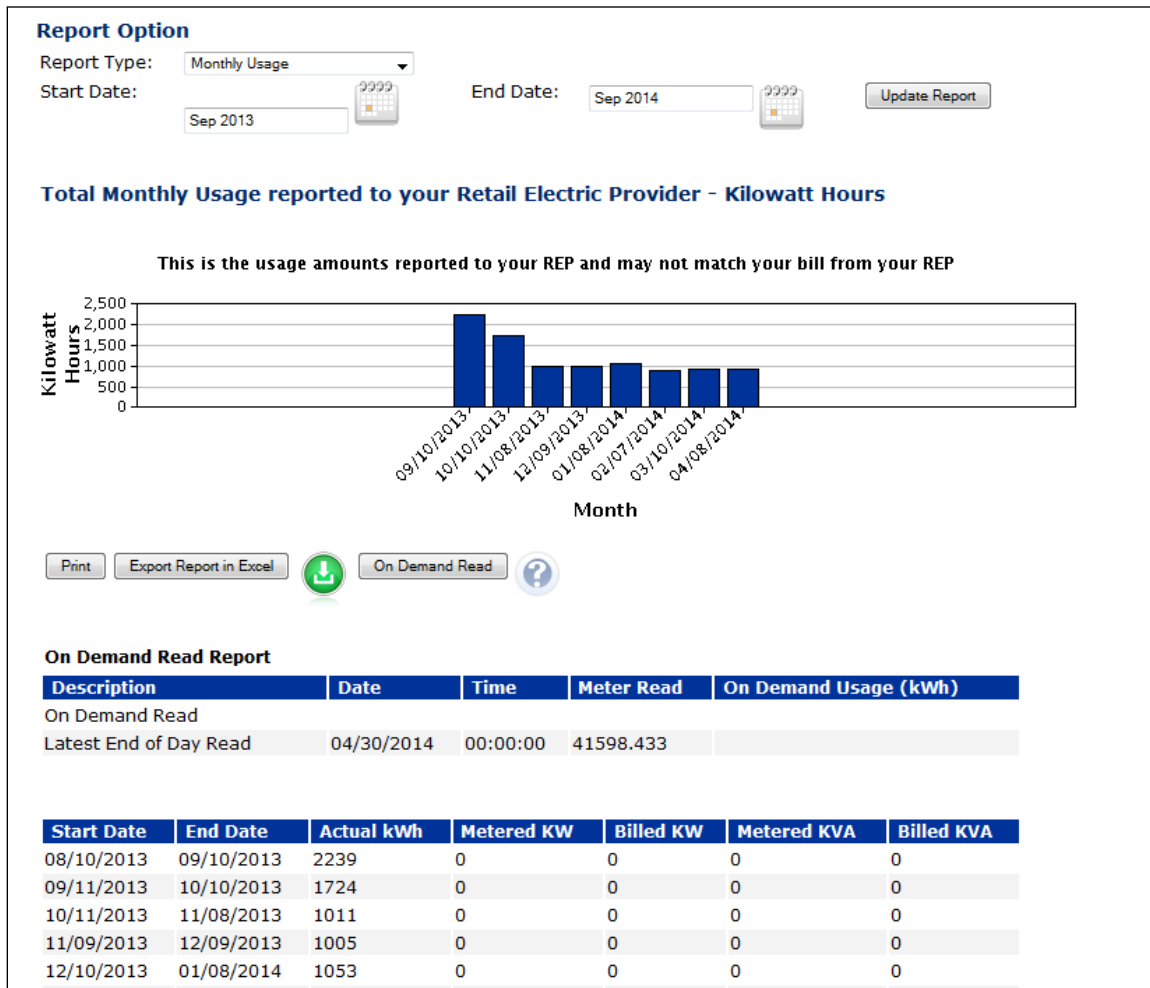


Figure 16: Daily Read Usage Report



A residential user's monthly usage data is shown in Figure 17.



**Figure 17: Monthly Usage Report**

In addition to allowing Customers to view their usage data, the portal is also the means by which they connect In-Home Devices to their HAN. A Customer may use the SMT web portal to enter the In-Home Device MAC address and installation code which are typically printed on the In-Home Device or the installation materials. This information is passed from SMT, back to the TDSP and then down to the Customer HAN created by the smart meter, which then completes

the connection process. The connection process provides a secure method to ensure that only the Customer or an authorized Third Party can connect In-Home Devices to the Customer’s HAN. An example of a Customer’s In-Home Device setup screen is shown in Figure 18.



**Figure 18: In-Home Device Setup**

Registered Business Customers have the same general web portal functionality as Residential Customers but with some differences. Business Customers have two account types, administrator and user, with some functions unavailable to the Business user account. Business Customers may also have a large number of smart meters to monitor and the SMT web portal provides tools to search for specific meters when viewing usage or creating reports. The SMT web portal also provides the interface for the Business account management functions.

Through the web portal the TDSPs, REPs, Third Parties, and Regulatory users each have account management functions for their administrators to manage the user accounts for their company. The TDSPs, REPs and Third Parties may also view meter usage data for meters associated with their company, view lists of their associated smart meters and request usage reports for multiple meters that are created by SMT and then stored in the company’s FTPS folder.

Customers, RORs, and Third Party users may also use the web portal to request an on-demand meter read. The on-demand read request results in SMT sending a data request to the

Customer's TDSP for an updated meter read. TDSPs respond by sending the most recent intra-day meter reading back to SMT and SMT will calculate and display the consumption since the last midnight register read held by SMT.

## 8.2 Secure FTP

On a daily basis the Joint TDSPs collect a daily read and the recorded interval usage data from the smart meters that they have installed. The TDSPs prepare data files to transmit to the SMT for each ROR. The data files are encrypted using Pretty Good Privacy (PGP) and are formatted using the LodeStar Enhanced (LSE) format that is used by ERCOT. The files submitted to SMT are separated by the DUNS number of the individual REPs. These files are transmitted using FTPS and stored in folders for the individual REPs who may then use FTPS to retrieve them. Each REP will have a folder for each DUNS number associated with their REP account. Each data file may contain up to 50,000 ESIIDs, so a REP with a large number of Customers will receive multiple files. As an example, a REP with one DUNS number and 75,000 Customers in each of the four TDSP service territories will have 8 data files uploaded to the FTPS on a daily basis. Data files are retained on the FTPS site for 10 days. The availability of the data once loaded to the SMT FTPS site is on the order of a few minutes.

REPs and Third Parties may use both the web portal and the API to request ad-hoc or scheduled usage reports (Third Parties only) for selected ESIIDs and date ranges. These reports are created and then stored in the requestor's folder on the FTPS site.

REPs, Third Parties, and TDSPs access the FTPS site using software known as a FTP client that enables the login and transfer of files over a secured data connection (see Figure 19). REPs and Third Parties receive a FTP user ID and password from SMT operations and install a FTPS client certificate from Verisign. REPs and Third Parties then generate a PGP key pair and provide the PGP public key and SSL public certificate to SMT host administrators. When logging on to the SMT FTPS server, the REP or Third Party enters their user ID and password to authenticate. The FTPS client and server will then establish an encrypted SSL session.

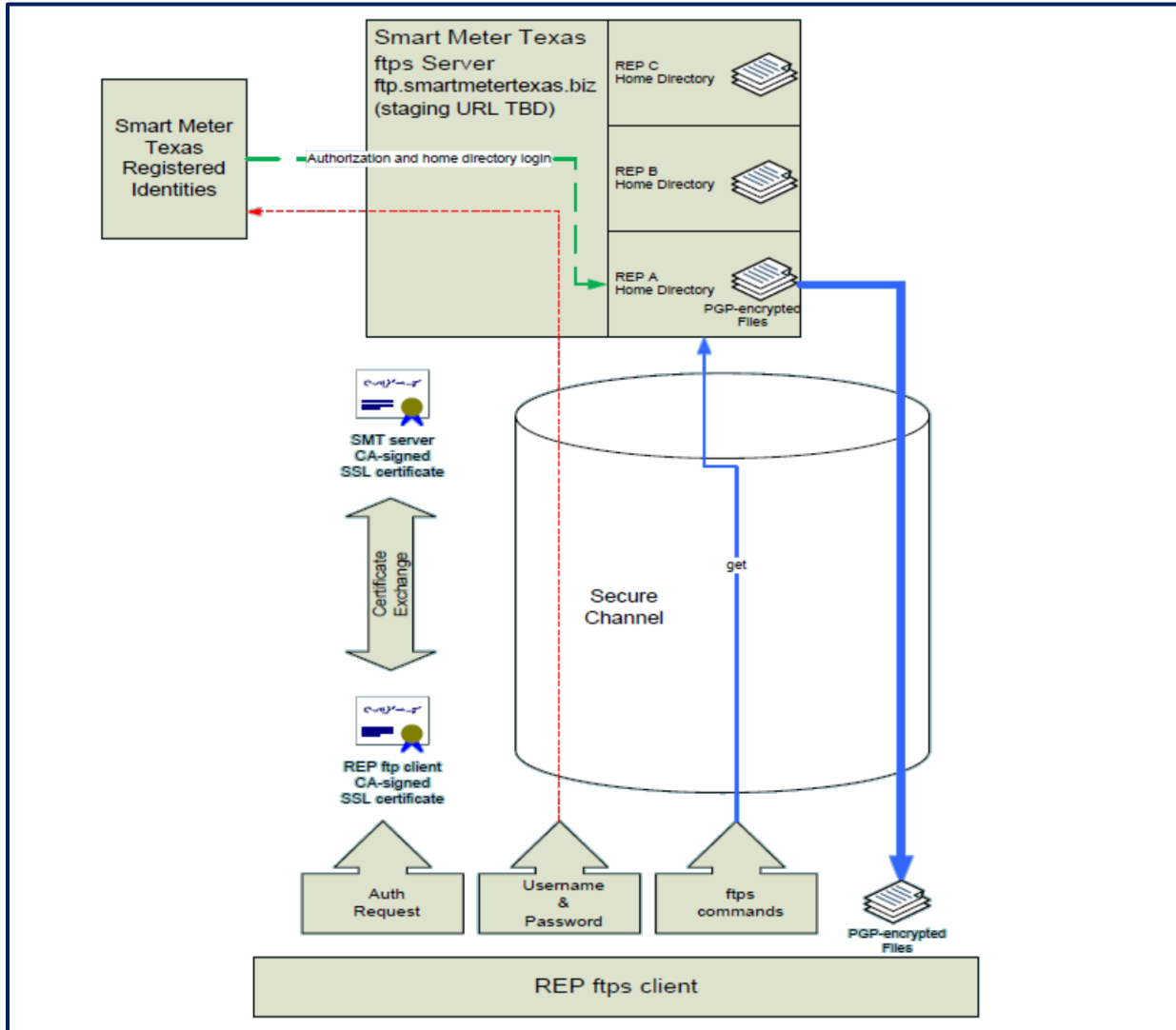


Figure 19: FTPS Interface

### 8.3 Application Programming Interface (API)

The purpose of the API interfaces are to provide a machine to machine communications channel for REP and Third Party systems to interact with SMT. API messages can be sent from a REP or Third Party system to SMT without requiring the user to login to the interactive web portal.

The API is based on the Simple Object Access Protocol (SOAP). The messages are formatted using Extensible Markup Language (XML) over a secured web connection. These messages are in text and follow strict formatting rules. REPs and Third Parties who communicate with SMT using an API do so through a two-way Secure Sockets Layer (SSL). SMT requires user credentials to be passed as part of the SOAP message. The user credentials are used to identify the user with their SMT system account. The SMT system validates the request sender and verifies that the account is authorized to access the data being requested.

RORs and Third Parties are provided with the API guide when they register for a SMT account and go through a testing procedure to validate that their system is communicating correctly using the SMT APIs. There are four different categories of APIs available: usage APIs, re-branding API, agreement invitation APIs, and HAN APIs.

The usage APIs provide functionality for RORs and Third Parties to request ad hoc energy usage data reports for their Customers. Third Parties may also request scheduled usage reports using the usage API.

The re-branding API provides functionality for RORs and Third Parties to display SMT usage data through their own portal. A Customer viewing data on the ROR or Third Party's portal will trigger a data request that is submitted to SMT through the API interface. The results of the data request are then displayed on the ROR or Third Party's portal. This process is seamless to the Customer.

The agreement invitation API provides an alternate way for Third Parties to send agreement invitations to one or more Customers.

The HAN APIs provide functionality for a Third Party, who has Customer authorization, to add or remove In-Home Devices on the Customer HAN and to communicate with those In-Home Devices. The HAN APIs use standard ZigBee SEP v1.0 messages that add or remove In-Home Devices, send or cancel text messages for display on In-Home Devices, send a price signal, send or cancel a load control message, or cancel all load control messages. A Third Party can send a

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ZigBee SEP v1.0 message to up to 10,000 addresses at a time using the HAN API. An address can be either an ESIID or an individual In-Home Device.

## 9 Use Cases

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AMIT used a use case-based process to identify actors, create business and system requirements, and to communicate the functionality required for SMT. Some systems development projects simply brainstorm a list of requirements based on the perceived functionality. A system with a diverse set of stakeholders makes it increasingly likely that such a process will miss some requirements because of miscommunication or a failure to envision various system interactions. A more comprehensive approach is the use case-based process. A use case is a sequence of events that describes one way to use a particular system. It is a story about how a particular user (actor) of a system accomplishes a goal.

### 9.1 Actors

Actors are people, systems, devices, companies or organizations that make decisions and interact with the system under design. It is helpful to have an understanding of the set of actors that were used and considered by the AMIT workshops because it provides information about the scope of interactions that SMT was designed to accommodate. The description for actors often provides additional context about the use case and assumptions being made.

The set of actors evolved during the course of the SMT system development. The AMIT workshops began with the assumption that a web portal was an appropriate system to provide meter usage data to Customers, but did not make assumptions regarding the ownership and operation of the web portal. Use cases created in later workshops recognized the actual implementation of the SMT web portal with the most recent use cases identifying SMT by name. The final list of actors listed in Table 9 became the set of SMT users, devices and systems associated with SMT.

**Table 9: SMT Actors**

| Actor                           | Actor Type | Description  |
|---------------------------------|------------|--|
| Residential Customer            | Person     | An electrical Customer of a REP who has a smart meter installed at their premise by one of the Joint TDSPs. Residential Customers typically have only one meter.   |
| Friend                          | Person     | A family member or friend of a Residential Customer who is authorized by the Residential Customer to view their usage data on the SMT web portal   |
| Business Customer Administrator | Person     | A person who works for a Business company who is an electric Customer of a REP and who has management rights associated with the company's usage data, HAN functionality, and grants permissions to other Business users to access to SMT functionality.           |
| Business Customer User          | Person     | A person who works for a Business company who is an electric Customer of a REP and who must be approved by their company administrator to access SMT and be given permission by the administrator to access certain SMT functionality associated with the company. |
| REP Administrator               | Person     | A person who works for a REP and who has management rights associated with the REP's Customer usage data, HAN functionality, and grants permissions to other REP users to access SMT functionality.  |
| REP User                        | Person     | A person who works for a REP and who must be approved by their REP administrator to access SMT and be given permission by their REP administrator to access certain SMT functionality associated with the REP's Customers.   |
| Third Party Administrator       | Person     | A person who works for a Third Party company and who has management rights associated with the Third Party's Customer usage data, HAN functionality, and grants permissions to other Third Party users to access SMT functionality.                                |



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| Actor                    | Actor Type          | Description  |
|--------------------------|---------------------|--|
| Third Party User         | Person              | A person who works for a Third Party company and who must be approved by their Third Party administrator to access SMT and be given permission by the administrator to access certain SMT functionality associated with the Third Party's Customers. |
| TDSP Administrator       | Person              | A person who works for one of the Joint TDSPs and who has management rights associated with that TDSP's Customer usage data, HAN functionality, and other TDSP users access to SMT functionality.  |
| TDSP User                | Person              | A person who works for one of the Joint TDSPs and who must be approved by their TDSP administrator to access SMT and be given permission by the administrator to access certain SMT functionality associated with the TDSP function.                 |
| Regulatory Administrator | Person              | A person who works for the PUCT and who has management rights to grant other PUCT users' access to SMT functionality.  |
| Regulatory User          | Person              | A person who works for the PUCT and who must be approved by a PUCT administrator to access certain SMT functionality.  |
| In-Home Device           | Equipment           | A device (e.g., in-home display, programmable communicating thermostat, smart appliances, etc.) that communicates on the HAN.  |
| TDSP AMS Network         | Systems & Equipment | A communication technology system installed by a TDSP that provides two-way communications to and from the smart meter.  |
| Smart Meter              | Equipment           | An advanced meter with the capabilities specified in the PUCT §25.130.   |
| SMT                      | System              | A system composed of a common data repository, web portal, FTPS folders, and APIs providing access to usage  |

| Actor | Actor Type | Description   |
|-------|------------|---|
|       |            | data, communication with HAN devices, and education to users. |

## 9.2 SMT Use Cases

The process of defining and creating use cases results in a more complete set of requirements because:

- It is done from the actor’s point of view, so it is easier to tell what interactions or steps are really necessary.
- It follows a complete path for completing a task from start to finish.

A use case may have many parts, but there are always a few basic ones, listed here in order of importance:

- The **goal** of the scenario, which is usually its name (e.g., “Customer uses web portal to view meter usage data”).
- The **narrative**. A short text describing the story.
- The **actors**. An actor is anything in the system that communicates or makes a decision. It may be a person, a device, a piece of software, an organization, or anything else that acts on its own and can have goals and responsibilities.
- The **steps**. A numbered list of discrete events that tell the story in detail. Each step identifies an actor, what the actor is doing, what information is being passed, and identifies to whom the information is sent.

Typical steps for the creation of a use case are:

1. Decide on the scope for the use case scenario.
2. List the actors and select one actor as the primary actor, whose goal will determine when the scenario is done. Additional actors may be identified during the course of writing the use case.
3. All actors are stakeholders, but there may be stakeholders who are not actors. The interests of all stakeholders must be satisfied for the scenario to be complete.

4. Identify assumptions and preconditions. What has to happen before the use case can start? Knowing this will help to identify requirements and preconditions.
5. Write the steps. As each step is written, identify the requirements and write them down. The requirements identify what the system will have to do to satisfy the goal of the use case. Requirements may also indicate: how quickly, reliably, safely, compatibly, securely, etc. the system must be to accomplish the step. Requirements can also identify changes in business processes for different stakeholders.
6. Check to see if all the stakeholders were satisfied, and in particular, if the primary actor reached its goal.
7. (Optional) Identify alternate use case scenarios. At any step where something unexpected happens, it may be useful to identify an alternate set of steps. This could be a recovery from an error condition or anything that results in a significant variation from the primary use case scenario. The alternate scenarios may halt the main success scenario, while others may rejoin it later in the sequence of steps.

The AMIT workshops used this basic process to document the requirements that defined the functionality needed for SMT to be successful. Use cases provide an excellent tool to communicate the rationale behind a set of requirements because the requirements are linked to use case steps in the context of achieving a business process.

Section 14: Appendix A provides an example of a use case developed by AMIT and Table 10 lists all the use cases that were developed by AMIT to define the SMT functionality.

**Table 10: SMT Use Cases**

| Use Case   | Use Case Description   |
|--|--|
| <i>Customer Focused Use Cases</i>  |  |
| Initial Residential Customer Log In  | The Residential Customer first time to the web portal.   |
| Residential Customer changes temporary password  | After initial registration a temporary password is sent to the Residential Customer’s email address to Log On to the Web Portal.   |
| Residential Customer Sets up ESIID(s)  | Residential Customer has completed initial registration and to continue with the Web Portal services the Customer needs to set up ESIID(s) associated with their premise.                      |
| Residential Customer authorizes a supplemental user to view their ESIID(s)   | Residential Customer has the ability to grant authority to supplemental user to view all their ESIID(s) information. (Usage, HAN, and event notification).                                     |
| Supplemental user receives email with link from the primary user that access has been granted to view their ESIID(s) | The Primary Residential Customer has given access to their ESIIDs to a supplemental user and a link is sent by the web portal for the supplemental user to log on and view the ESIIDs.         |
| Modify Supplemental users access   | Primary users can modify the supplemental user’s access by either deleting the user all together or changing their access to their viewing capabilities. ( Usage, HAN, and Event Notification) |
| Residential Customer view ESIID(s) to which you have supplemental access   | Residential Customer can view the ESIID(s) to which they have been granted access to from another Residential Customer.  |
| Residential Customer Grants Access to Third Party  | Residential Customer has the option to allow authorization to a Third Party to view their usage data.  |
| Review/Revoke Third Party  | Residential Customer can change, review, and revoke access of a Third Party that has authorization currently to view the Residential Customer’s usage data.                                    |
| Residential Customer views usage information   | Residential Customer can view usage history on the web portal.   |

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| Use Case  | Use Case Description   |
|---|--|
| Residential Customer views premise and meter data information | Residential Customer can view their premise and meter data information on the Web Portal.                      |
| Residential Customer PINGs the meter                          | Residential Customer can ping the meter to get back the most current reading or a power status from the meter. |
| Change Password   | Residential Customer has an option to change their password if needed.   |
| Change Residential Customer Profile                           | Residential Customer can change or update their profile information.   |
| Residential Customer forgets password                         | Residential Customer user does not remember their password and a temporary password is sent to them.           |

| Use Case  | Use Case Description  |
|---|---|
| Residential Customer needs help using Web Portal  | Residential Customer has questions about using the web portal the web portal; help function will answer questions concerning the Customer needs.                          |
| Event notifications   | Residential Customer can select event notifications they would like to receive by email or decline the event notifications emails.  |
| <i>Business Customer Focused Use Cases</i>  |   |
| Non-Residential Customer Admin initial Log On to the Web Portal                           | Non-Residential Customer Admin first time to the Web Portal.  |
| Non-Residential Customer Admin changes temporary password after registration              | After initial registration a temporary password is sent to the Non-Residential Customer's Admin email address to Log On to the Web Portal.                                |
| Non-Residential Customer Admin sets up ESIIDs   | Non-Residential Customer Admin sets up ESIIDs associated with their premises.   |
| Non-Residential Customer Admin Authorizes Third Party to view account                     | Non-Residential Customer Admin has the option to allow authorization to a Third Party to view their usage data.   |
| Change/Review/Revoke Third Party  | Non-Residential Customer Admin can change, review, and revoke access of a Third party that has authorization currently to view the Non-Residential Customer's usage data. |
| Change Non-Residential Customer Admin Profile   | Non-Residential Customer Admin can change or update their profile information.  |
| Select Event Notifications  | Non-Residential Customer Admin can select event notifications they would like to receive or can decline event notification emails.  |
| Non-Residential Customer Admin ability to approve/reject a Non- Residential Customer user | Non-Residential Customer Admin can approval or reject a user request to register on the Web Portal.   |

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| Use Case  | Use Case Description   |
|---|--|
| request to register   |  |
| Non-Residential Customer Admin ability to view, change, assign, and maintain roles and permissions to Non- Residential Customer User accounts | Non-Residential Customer Admin can manage the Non-Residential Customer User account with the abilities to view, change, assign and maintain roles and permissions. |
| <i>TDSP and SMT Use Cases</i>   |  |
| TDSP User creates their new web account   | A TDSP User is setting up their web account for the first time.  |
| TDSP User changes their password  | After receiving the temporary password from initial entry, TDSP user changes the password.   |
| TDSP User Requests to be a TDSP Admin (primary admin)   | This will allow a user to request designation as a TDSP Admin.   |
| TDSP User Updates the maintenance message   | TDSP plans a maintenance outage and needs to update the message to notify all web users.   |
| Troubleshoot issues   | SMT simulates ‘REP’ role or customer role to trouble-shoot issues.   |
| SMT updates broadcast message   | SMT updates the broadcast message that power was restored as of day/time.  |
| TDSP User updates Third Party List  | TDSP User receives notification of a new Third party, ABC Company, and adds it to the list.  |
| TDSP User verifies Third Party List   | TDSP User reviews the Third party list on the web portal on a periodic basis.  |
| TDSP User Manages LOAs  | TDSP User takes all existing historical LOAs that currently exist, and enters them into the web portal.  |
| TDSP User logs on to website  | Approved TDSP user needs to use the website.   |

| Use Case  | Use Case Description   |
|---|--|
| TDSP User selects user role                       | A user selects their role as a TDSP user during registration.  |
| SMT maintains the Help Information                | SMT needs to update portal help text and/or FAQs.  |
| TDSP User changes profile attributes              | TDSP User needs to modify their personal profile.  |
| <i>REP Focused Use Cases</i>                      |  |
| Assignment of REP Administrators                  | REP manager assigns up to 4 employees the role of Web Portal administrator   |
| REP Administrator Registration                    | To allow a user to designate their role as an REP Administrator in the Web Portal  |
| Logon to the Web Portal                           | The authorized User logs on to access Web Portal data  |
| Assigning roles and granting REP users permission | REP Administrator assigns roles and permission to each REP user  |
| Select Event Notifications                        | The REP Administrator will choose which notifications they will receive and what email address the notification will be sent to. |
| Access List of REP Users                          | To provide the capability for the REP Administrator to view, change, monitor and maintain REP Users roles and permissions        |
| REP User initial registration                     | To allow a user to register as a REP User in the Web Portal  |
| Logon to the Web Portal                           | The authorized User logs on to access Web Portal data  |
| REP User Modifies their user profile              | REP User modifies items in their current User Profile  |
| Access usage data for one ESIID                   | REP user accesses usage data for one ESIID and views the data on the web portal  |



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| Use Case   | Use Case Description   |
|--|--|
| Access meter and premise data for one ESIID        | REP user accesses meter attribute and premise information for one ESIID and views them on the web portal   |
| REP pings the AMS meter for real time information. | Customer calls the REP with a service issue and Customer Service Representative (CSR) pings the AMS meter to help resolve the issue.   |
| <i>HAN Focused Use Cases</i>                       |  |
| REP Load control event                             | REP sends one HAN message over the AMS to one or more Premises, which have one or more controllable loads. The messages are generated on-demand and will be treated as confidential information to be transmitted over the TDSP AMS. |
| REP sends a load control event request             | REP initiates a load control event by sending load control messages to HAN Devices over the TDSP AMS.  |
| REP sends a cancel load control message/event      | REP cancels the load control event by sending a cancellation message to one or many ESIIDs over TDSP AMS. In addition to an end mass control message, a REP may send an ad-hoc cancellation message to a single ESIID as needed.     |
| The Customer opts out of the load control event.   | Customer either opts out during the event or by selecting black-out dates as planned due to special occasions or commercial intolerance.   |
| A price message is sent once per day               | A price message is sent once per day (e.g., midnight) and includes time of use prices for the next 24 hours to one or many premises with one or many HAN Devices.  |
| Price signal is sent every 15 minutes              | REP sends price message at the beginning of each 15 minute interval to one or many premises with one or many HAN Devices.  |
| Critical price signal                              | REP sends a critical price message on demand.  |

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| Use Case  | Use Case Description   |
|---|--|
| Text message sent to a subset of premises/HAN devices   | REP sends a message (numerical or text) over the AMS to designated premises every hour of the day. Premises may have multiple HAN devices capable of receiving such a message.   |
| Text Message broadcast to all available premises/HAN devices  | REP sends a message (numerical or text) over the AMS to all available premises i.e. broadcast. Premises may have one or more HAN devices capable of receiving such a message.  |
| HAN Devices request AMS meter data  | One or more HAN Devices pull AMS meter data (e.g., data stored locally on the AMS meter such as current kwh usage, last meter read recorded, current demand, etc.).  |
| HAN Devices Respond   | One or many HAN Devices at the Premise send information (i.e., current HAN device load consumption, HAN Device status, etc.) through the AMS to the REP of record based on message received.   |
| HAN Devices Send Message  | On or more HAN Devices at the Premise send information (i.e., current load consumption, HAN Device status, etc.) through the AMS to the REP of record.   |
| HAN Devices Message Fails   | One or more HAN Devices at the Premise attempts to send information (i.e., current load consumption, HAN Device status, etc.) through the AMS to the REP of record but message delivery fails at TDSP HAN Interface.   |
| Re-establishing HAN device provisioning/communication with the new ESI following an AMS Meter exchange use case | TDSP /Utility metering maintenance will occasionally require a meter exchange. When AMS meters are exchanged, any HAN device provisioned to the former AMS meter will lose communication to the ESI, become de-provisioned, and AMS network communications to the HAN device will be lost. Following an AMS meter exchange, HAN device(s) must be re-provisioned/join to the new AMS meter. The purpose of this use case is to provide a venue for re-provisioning/joining HAN devices which lost communications with the ESI, de-provisioned during a meter exchange, with minimal consumer customer/REP inconvenience. |

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| Use Case  | Use Case Description  |
|---|---|
| REP Ordered HAN Devices – Professional Install      | The process of installing and Provisioning a REP ordered HAN Device with a professional HAN Installer through the TDSP HAN Interface.   |
| REP Ordered HAN Devices – Self Install              | The process of installing and Provisioning a REP ordered HAN Device through the TDSP HAN Interface (THI) over an AMI Network.   |
| Retail Off-The-Shelf Devices + Professional Install | The process of Provisioning a retail purchased HAN Device from installing to Provisioning. The Customer may only want to receive AMS Meter information and may choose to Register or not Register the HAN Device with a particular REP program.                             |
| Retail Off-The-Shelf Devices + Self Install         | The process of Provisioning a retail purchased HAN Device from installing to Provisioning. The Customer may only want to Provision the HAN Device to receive AMS Meter information and may choose to Register or not Register the HAN Device with a particular REP program. |
| A HAN Device is De-Provisioned                      | This use case details the process of De-Provisioning a Provisioned HAN Device.  |
| <i>Third Party Use Cases</i>                        |   |
| SMT Registered Consumer Initiates Pilot             | A SMT registered Consumer intends to participate in the Third Party Pilot project and initiates the Third Party relationship through SMT which creates an e-mail to the Smart Meter Texas Production Support team.  |
| Consumer Requests Information                       | A Consumer participating in the Third Party Pilot requests information on existing Third-Party relationships.   |
| Consumer Terminates Third-Party Relationship        | A Consumer participating in the Third Party Pilot terminates an existing Third-Party relationship.  |
| Third-Party Establishes API with SMT                | A Third-Party participating in the pilot coordinates with the SMT Production Support team to set  |

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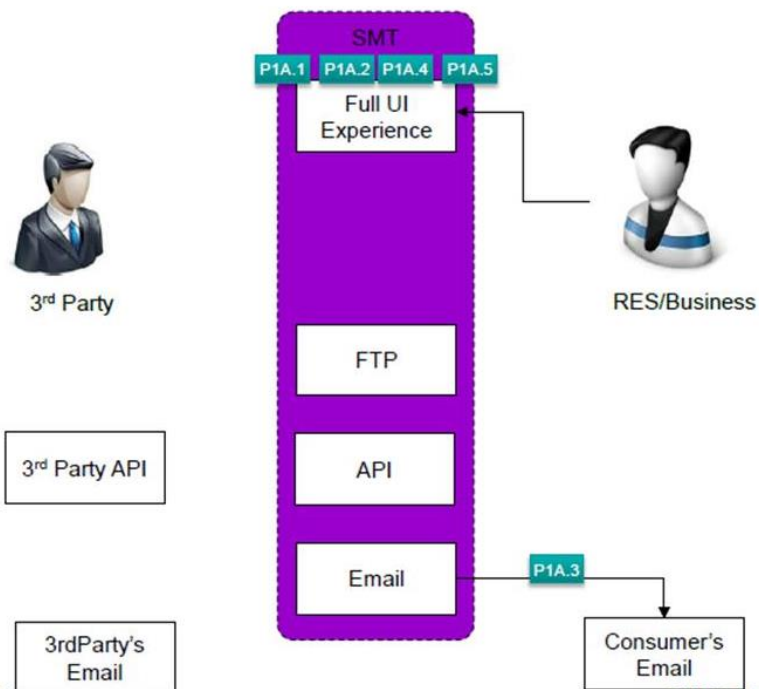
| Use Case   | Use Case Description  |
|--|---|
|  | up API access.  |
| Third-Party Requests Information on Consumer Relationships | A Third-Party participating in the pilot requests information on their existing consumer relationships. |
| Third-Party Accesses Consumer Data                         | A Third-Party participating in the pilot accesses their consumer data from SMT via API.                 |
| Third-Party HAN Provisioning                               | A Third-Party participating in the pilot utilizes SMT to Provision Customer HAN Devices.                |

### 9.3 Storyboards

A modified version of use cases were also used by AMIT. These were known by AMIT as ‘storyboards’ and closely resemble a widely accepted systems development tool known as an Activity Diagram. The storyboards are visual representations of a sequence of steps which are similar to a use case’s list of steps. The storyboard indicates the flow of actions and information among a set of actors. The storyboards generally include a brief set of steps in a list format and can also indicate references to other important information such as requirements, business processes and interfaces (see Figure 20). AMIT favored the storyboard because they were well suited for presentations and group discussions.

Business Process:

P1A: Residential Customer registers for a new SMT account



Primary Storyboard

- P1A.1** Customer navigates to SMT public unauthenticated website
- P1A.2** Customer completes and submits Residential account registration form. Customer must specify
  - Customer name
  - Email address
  - ESIID
  - Meter number
  - Retail Electric Provider (ROR)
 Customer must accept terms and conditions
- P1A.3** SMT emails temporary password to Customer
- P1A.4** Customer logs into SMT and changes temporary password and sets security question and answer
- P1A.5** SMT creates Account Authorization Code
- P1A.6** SMT presents the authenticated website
  - a) If there is a pending Energy Data or HAN Services agreement, SMT presents an Agreement acceptance page
  - b) Else, SMT presents authenticated landing page

Figure 20: Storyboard Example

# 10 Security

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## 10.1 Introduction

With the increasing presence of information technology used in the power utility industry, the need to secure those technologies has become more important now than ever before. SMT is cognizant of this need and employs a high level of security. The services provided to SMT's users are rooted in common information security technologies and practices to ensure all transactions and Customer data are protected.

SMT uses a wide array of tools and techniques to ensure security is deeply ingrained in the provided services and associated infrastructure. SMT is a web portal and because it is accessible through the internet, it is susceptible to many threats. These threats pose a security risk to SMT, risk that is subsequently overcome through the strategic application of mitigation measures. These mitigation measures can be grouped into the categories of user interface, services and integrations, user data, and web portal infrastructure.

## 10.2 Threats

An important step in effectively securing SMT is to identify the applicable threats and mitigate them. SMT's primary functionality is centered on providing smart meter usage data through web based services to Customers, REPs, and authorized Third Parties. SMT receives meter usage data through an interface with the Joint TDSPs. The primary point of attack against SMT is the collection of technologies that make up the web portal interface. Malicious activities against the web portal can come from a variety of sources. Threat agents may use a variety of methods when attempting to attack the web portal, including but not limited to, Distributed Denial of Service (DDoS), brute force attacks on login credentials, Structured Query Language (SQL) injection, cross site scripting (XSS), and exploiting insecure information systems. Threat agents may utilize indirect methods instead of a direct attack on the web portal's standard interfaces. These attacks can include email fraud that results in unauthorized access, social engineering

attempts, or compromising an asset by obtaining physical access. Natural disasters can also act as a threat to the web portal.

Recognizing the variety and types of potential attacks from threat agents, SMT has implemented a number of technologies and processes to mitigate the attack risk.

### **10.3 Mitigation**

To effectively mitigate threats and vulnerabilities, SMT has implemented a robust and encompassing security model. This model reflects state laws, industry-independent regulation, applicable guidelines from national organizations, and business-consistent IT security measures. Many of the security features come through a strategic partnership with the solution provider that leverage their secure web technologies and capitalizes on the solution provider's extensive industry experience. Additional mitigation measures are the use of industry standard practices, many of which are provided by the National Institute of Standards and Technology (NIST).

#### **10.3.1 User Interface**

Many of the techniques applied to mitigate threat agent attacks directly address the potential vulnerabilities that are derived from a user's interaction with the SMT web portal. The web portal is presented to the user over a secured communication channel using Hyper Text Transfer Protocol (HTTP) over Secure Sockets Layer/Transport Layer Security (SSL/TLS), known as HTTPS. The HTTPS connection ensures that malicious actors are not able to eavesdrop on the information passed between the user's web browser and the SMT web server. SMT also isolates the web server from the backend information systems using a separate secured line of communication which is also encrypted using SSL/TLS. This ensures that users are not able to directly access the backend systems and that both communication channels are encrypted. Additionally, the internal connection provides a control point which can be used to apply



additional security measures. This use of HTTPS and internal isolation are identified in NIST Special Publication (SP) 800-95<sup>31</sup>, a Guide to Securing Web Services.

### **10.3.2 Services and Integration**

SMT also uses a private and encrypted connection between the SMT web portal and TDSP information systems utilizing a Virtual Private Network (VPN) connection. Using a VPN connection between information systems mitigates threats derived from observing the traffic between two information systems. NIST SP 800-47, *Security Guide for Interconnecting Information Technology Systems*<sup>32</sup>, indicates that a VPN connection is appropriate between the SMT web portal and the TDSP information systems and validates the use of a VPN connection as a security control to mitigate risk.

An important service for business transactions between the SMT and Third Parties, REPs, and TDSPs is the ability to transfer files. SMT operates a File Transfer Protocol (FTP) server over SSL/TLS by utilizing the FTP Secure (FTPS) communication protocol. Using the FTPS connection ensures an encrypted connection that safeguards the contents of the files being transferred. To further protect data being transferred to and from the FTP server, the files themselves are encrypted with Pretty Good Privacy (PGP). The combination of FTPS and PGP ensures that data coming into and leaving the web portal is secured both at rest and in transit. Since SMT is a common data depository for four TDSPs, a further security precaution taken is the segmentation of the files into entity owned directories, providing the ability to control access to files. The combination of these security controls provides a high degree of security and mitigates the risks of data theft.

### **10.3.3 User Data**

As a part of SMT's commitment to protect user data and ensure maximum levels of privacy, SMT ensures that a file or message containing user data must be encrypted when transferred

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<sup>31</sup> <http://csrc.nist.gov/publications/nistpubs/800-95/SP800-95.pdf>

<sup>32</sup> <http://csrc.nist.gov/publications/nistpubs/800-47/sp800-47.pdf>

between internal system boundaries. This control measure provides a reasonable level of security to a user's data. In order to protect SMT's web portal users, a one way password hashing algorithm is in place to mitigate risk associated with leaked passwords. Password hashes provide security due to their irreversible one way cryptographic function. In the unlikely event that the web portal's password database has been compromised, the attacker will only have the hash, not the clear text password. Hashing user passwords is a recommended practice as outlined in draft publication NIST SP 800-118, *Guide to Enterprise Password Management*<sup>33</sup>.

#### **10.3.4 Web Portal Infrastructure**

The complete network of information systems that comprise the SMT web portal must be protected from threats as well. The recommendations provided in NIST publication 800-44v2, *Guidelines on Securing Public Web Servers*<sup>34</sup>, have been carefully evaluated and implemented to secure SMT's network infrastructure. Multiple firewall layers isolate internal resources to mitigate the risk that comes from exposing the internal network to external users. The architecture ensures the maximum protection available for the network by preventing direct access to internal systems, mitigating a significant portion of vulnerabilities relative to public facing information systems.

Network segmentation is a crucial part of ensuring security across all information systems. Virtual Local Area Networks (VLAN) provide this segmentation by logically separating networks into manageable groups. VLANs provide isolated network groups that greatly enhance security while mitigating risk. SMT uses VLANs and has configured many distinct segments to protect each network. In addition to VLANs, the network has been configured into multiple zones. Each zone is further separated by a firewall to allow granular control of the flow of information, ensuring a high level of security.

SMT utilizes a system to continuously monitor the infrastructure for security related events. Multiple information systems on the network provide security event information that is used to

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<sup>33</sup> <http://csrc.nist.gov/publications/drafts/800-118/draft-sp800-118.pdf>

<sup>34</sup> <http://csrc.nist.gov/publications/nistpubs/800-44-ver2/SP800-44v2.pdf>

correlate the security status of the operating environment. This real time picture of the network provides an unprecedented capability to quickly identify and mitigate threats. The monitoring system ensures security throughout the network by correlating information which is used to protect information systems and users.

On a regular basis, SMT undergoes independent vendor security reviews on all new design and functional implementations. Following SMT's first year of operation, SMT underwent an end-to-end security review and future end-to-end security reviews will be planned. The independent security reviews are conducted by a wide variety of vendors with different skill sets in order to ensure a thorough and comprehensive review.

#### **10.4 SMT and NIST IR 7628**

The NIST IR 7628, *Guidelines for Smart Grid Cyber Security*<sup>35</sup> is a three volume report developed using a consensus process by the Cyber Security Working Group of the Smart Grid Interoperability Panel (SGIP). The NIST IR 7628 provides an analytical framework to help utility industry organizations to develop or evaluate cyber security policies and strategies to assess risk and identify the appropriate cyber security requirements for their systems. SMT's development began prior to the development of the NIST IR 7628 document, but AMIT was aware of the cyber security work being done by the SGIP and this industry guidance was helpful in the final evaluation of SMT's security requirements.

AMIT identified the set of security requirements for SMT listed in Table 11. The SMT security requirements also satisfy NIST IR 7628 security requirements as shown in the third column of the table. Additionally, other NIST IR 7628 requirements are satisfied by SMT system

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<sup>35</sup> <http://csrc.nist.gov/publications/nistir/ir7628/introduction-to-nistir-7628.pdf> and [http://csrc.nist.gov/publications/nistir/ir7628/nistir-7628\\_voll.pdf](http://csrc.nist.gov/publications/nistir/ir7628/nistir-7628_voll.pdf)

architecture and policy, but were not specifically identified in the original SMT business requirements and are outside the scope of this document.

**Table 11: SMT Security Requirements**

| SMT Requirement ID | Requirement  | NIST IR 7628  |
|--------------------|--|---|
| BR- 017.010        | Ability to block access to a user and force a password reset, via email, if they enter the incorrect password 4 times within 5 minutes.  | SG.AC-8 Unsuccessful Login Attempts   |
| BR- 017.011        | Ability to require a user to respond to a confirmation email, sent to the user’s e-mail address they are registering with, to validate the email address is correct before allowing them to move forward with the registration process (e.g. send and receive a confirmation). | SG.AC-2 Remote Access Policy and Procedures<br>SG.AC-15 Remote Access                 |
| BR- 017.016        | Ability to require a user to change their temporary password after the first log-in with their temporary password.   | SG.AC-21 Passwords  |
| BR- 061            | Ability to purge any user ID after a period of 13 months of inactivity (i.e., not logged on to the web portal). Includes all user ID types.  | SG.AC-3 Account Management  |
| BR- 028.024        | Ability to restrict TDSP access only to data associated with the ESIIDs within that TDSPs territory (e.g., meter data, premise data, usage data)   | SG.AC-3 Account Management<br>SG.AC-6 Separation of Duties<br>SG.AC-7 Lease Privilege |
| BR- 031            | Ability to establish and maintain security controls associated with portal access for REP of Record.   | SG.AC-3 Account Management  |
| BR- 028.010        | Ability to grant and/or block access to certain data based on security level (e.g. Customer role, REP role, Admin role, etc.)  | SG.AC-3 Account Management<br>SG.AC-6 Separation of Duties<br>SG.AC-7 Lease           |

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| SMT Requirement ID | Requirement  | NIST IR 7628  |
|--------------------|--|---|
|                    |  | Privilege   |
| BR- 031.002        | Ability to allow REP of Record access to usage data, meter attributes, and premise information for ESIIDS that are currently served by that REP.   | SG.AC-3 Account Management  |
| BR- 017.017        | Ability to utilize security (e.g., CAPTCHA) procedures during the user’s initial registration.<br><br>Includes the ability to cancel the registration process to the web portal requiring the user to start the registration process over, after 3 unsuccessful attempts to correctly enter the CAPTCHA. | SG.AC-2 Remote Access Policy and Procedures<br><br>SG.AC-15 Remote Access |
| BR- 028            | Ability to provide appropriate level of security depending on who is accessing the ESIID data on the common web portal.  | SG.AC-3 Account Management<br><br>SG.AC-6 Separation of Duties            |
| BR- 017.003        | Ability to allow a minimum of at least 6 characters and no more than 24 characters letters and numbers, case sensitive, in the password.<br><br>Additionally, the password cannot be the user name.  | SG.AC-21 Passwords  |
| BR- 017.007        | Ability to set up and store a user specified password security question and answer   | SG.AC-2 Remote Access Policy and Procedures<br><br>SG.AC-15 Remote Access |
| BR- 017.002        | Ability to allow up to a minimum of 5 and a maximum of 100 alphas / numbers / special characters, except slashes and single and double quotes, in the user id  | SG.AC-2 Remote Access Policy and Procedures<br><br>SG.AC-15 Remote Access |

## 11 Use of Industry Standards

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The process of developing and implementing SMT followed widely recognized smart grid methodologies, guiding principles, architectural goals, best practices, smart grid standards and web standards. During the development of SMT, many documents were produced and lessons were learned and these were shared with national smart grid SDOs and SSOs through AMIT member participation in these organizations.

Use of standards was an important requirement of the PUCT Advanced Metering rule. PUCT §25.130(j) (3) required that “an electric utility shall use industry standards and methods for

providing secure Customer and REP access to the meter data.”<sup>36</sup>

In order to meet this requirement, interested market participants came together as the Advanced Metering Implementation Team (“AMIT”) under the PUCT initiated Project #34610 Implementation Project Relating to Advanced Metering (see Section 3.3). AMIT embarked on a consensus-driven process resulting in the development of an interoperable framework whereby timely smart meter usage information was readily available and communication with Customer

Interoperability is a critical smart grid governing principle necessary for the development of successful standards. This concept was initially described by the GridWise Architecture Council in a 2005 whitepaper and used by NIST to identify smart grid standards for implementation. The following definition of interoperability is found in the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0.

“**Interoperability:** The capability of two or more networks, systems, devices, applications, or components to interwork, and to exchange and readily use information—securely, effectively, and with little or no inconvenience to the user. The Smart Grid will be a system of interoperable systems; that is, different systems will be able to exchange meaningful, actionable information in support of the safe, secure, efficient, and reliable operations of electric systems. The systems will share a common meaning of the exchanged information, and this information will elicit agreed-upon types of response. The reliability, fidelity, and security of information exchanges between and among Smart Grid systems must achieve requisite performance levels.”

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<sup>36</sup> <http://www.puc.texas.gov/agency/rulesnlaws/subrules/electric/25.130/25.130.pdf>

In-Home Devices was enabled. In order for SMT to be interoperable, its development and implementation utilized best practices and industry standards. The following are the guiding principles, architectural goals, best practices, smart grid standards and web standards that were used in the SMT development work and incorporated in its implementation. Each of these industry standards and SMT's conformance with them are discussed in detail in the following Sections.

- Section 11.1** GWAC Interoperability Layered Categories 4-8
- Section 11.2** IntelliGrid Methodology for developing requirements for Energy Systems
- Section 11.3.1** NIST Guiding Principles for identifying interoperable smart grid standards
- Section 11.3.2** NIST Architectural Goals for the Smart Grid
- Section 11.4** Green Button Initiative
- Section 11.5** PCI and NERC CIP cyber security standards
- Section 11.6** ZigBee Smart Energy Profile
- Section 11.7** NAESB Third Party Access to Smart Meter-based Information
- Section 11.8** UCAIug Home Area Network System Requirements Specification
- Section 11.9** Web Standards

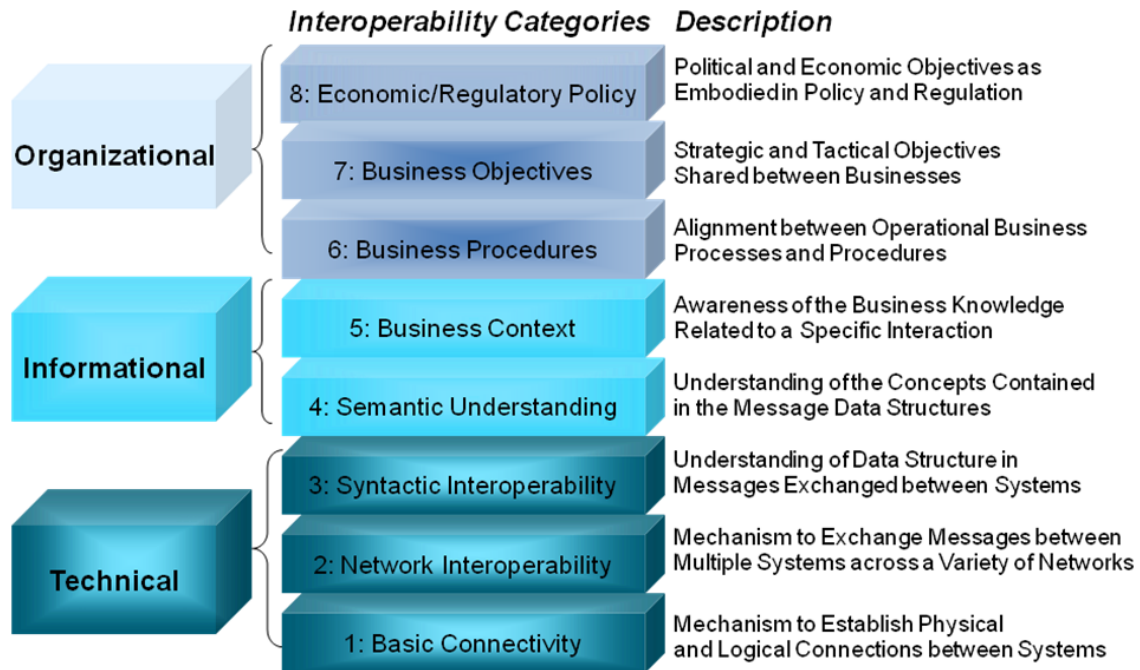
## 11.1 GWAC Interoperability Layered Categories

SMT is a large, integrated, complex system of systems and, because it involves the interaction of multiple market participants and their systems, it requires different layers of interoperability to produce standard processes and procedures related to smart meter data access and communication with In-Home Devices. The layers of interoperability have been categorized by the GridWise Architecture Council (“GWAC”) into the eight layers listed in Figure 21<sup>37</sup> that

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<sup>37</sup> GridWise® Interoperability Context-Setting Framework, March 2008, page 5

comprise a vertical cross-section of the degrees of interoperation necessary to enable various interactions and transactions between systems and participants on the smart grid. Each layer is dependent upon and is enabled by the interoperability of the layer below it. This eight-layer stack provides a context for determining interoperability requirements and defining exchanges of information between the participants.



**Figure 21: GWAC Interoperability Layered Categories**

The nature and complexity of the Texas market structure and the need for SMT to be an interoperable solution resulted in the use of all eight interoperability categories. This section however will only focus on the layered categories 8 through 4. Economic and Regulatory Policy, category 8, set the context and need for the development of an interoperable solution by the introduction of new policies and the passage of new laws and regulations. The remaining interoperability categories (i.e., layers 7 through 4) were addressed by the multiple market participants who participated in the AMIT discussions and the SMT team who built SMT using the web portal business requirements supplied by AMIT. SMT was a success because the multiple market participants engaged in negotiation, compromise, and agreements within and



between the interoperability layers 7 through 4. The following Table 12<sup>38</sup> shows the applicability of the GWAC “stack” to the SMT framework.

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<sup>38</sup> The format of this table is from Section 5 Examples of Applying the Framework of the GridWise® Interoperability Context-Setting Framework, March 2008, page 36

**Table 12: SMT Framework**

| Interoperability Category  | Tools, Systems, Key Actors   | Interoperation across organizational boundaries where agreements must be reached   |
|--|--|--|
| ORGANIZATIONAL   |  |  |
| <p>8: Economic / Regulatory Policy</p> <p>Political and economic objectives as embodied in policy and regulation</p> | <p>Lawmakers (e.g., federal, state, international, etc.)</p> <p>Policy makers (e.g., FERC, National Association of Regulatory Utility Commissions (NARUC), Public Utility Commissions, White House Office of Science and Technology Policy (OSTP), etc.)</p> <p>Government organizations (e.g., Department of Energy (DOE), NIST Smart Grid Interoperability Panel (SGIP), etc.)</p> | <p>The following are examples of different policy, regulatory, and economic objectives that influenced the development of SMT.</p> <ul style="list-style-type: none"> <li>- In 2005 in HB 2129, the Texas legislature in directed the Public Utility Commission of Texas (“PUCT”) (a) to report on the efforts of TDSPs in Texas to deploy advanced meters and their associated infrastructure, (b) to identify any barriers to deploying advanced meters, and (c) to provide recommendations to address such barriers.</li> <li>- In 2007, the Energy Independence and Security Act (“EISA”) declares the policy of the US is to support a smart grid.</li> <li>- In 2007, in HB 3693, the Texas Legislature encouraged smart grid networks be deployed as rapidly as possible.</li> <li>- In 2007, PUCT adopted the Advanced Metering rule setting forth the requirements for TDSP advanced metering deployments.</li> <li>- In 2007, the PUCT Advanced Metering Implementation Project (Project #34610) was initiated to defined requirements for a data depository, data exchange between market participants and interfaces for the successful deployment of In-Home Devices.</li> <li>- In 2009, the American Recovery and Reinvestment Act (ARRA) funded \$3.3 billion</li> </ul> |

| Interoperability Category  | Tools, Systems, Key Actors  | Interoperation across organizational boundaries where agreements must be reached  |
|--|---|---|
|  |   | <p>for DOE Smart Grid Investment Grants (SGIG).</p> <ul style="list-style-type: none"> <li>- In 2011, the White House Office of Science and Technology Policy issues a challenge<sup>39</sup> to the electric industry to provide electricity Customers with easy access to their energy usage data in a consumer-friendly and computer-friendly format via a "Green Button" on electric utilities' website</li> </ul>  |
| <p>7: Business Objectives</p> <p>Strategic and tactical objectives shared between businesses</p> | <p>Policy Makers</p> <p>ERCOT, TDSPs, REPs</p> <p>Hardware and Software Technology Vendors</p> <p>In-Home Device Manufacturers</p> <p>Smart Meter Manufacturers</p> <p>Consumer Advocates</p> <p>Smart Grid service providers</p> | <p>The following lists various market participant objectives where negotiation, compromise and agreement had to be reached in order to achieve the objectives.</p> <ul style="list-style-type: none"> <li>- DOE funds SGIG projects for CenterPoint Energy (a TDSP) and Reliant Energy (a REP).</li> <li>- AMIT is formed through Project #34610 and includes TDSPs, REPs, PUCT staff, consumer advocates, advanced meter manufacturers, In-Home Device manufacturers, HAN service providers, solutions vendors, and ERCOT.</li> <li>- TDSPs want to deploy smart meter technology and receive cost recovery on their investments.</li> <li>- Customers, PUCT, DOE, and White House Office of Science and Technology Policy want Customers to have easy access to their electric usage information.</li> <li>- TDSPs, ERCOT, and REPs want to improve the smart meter data transport between them by establishing or defining a standard mechanism for data transport, format, communication, and acquisition.</li> <li>- AMIT wants to define the functions of the TDSP</li> </ul> |

<sup>39</sup> <http://www.whitehouse.gov/blog/2011/09/15/modeling-green-energy-challenge-after-blue-button>

| Interoperability Category | Tools, Systems, Key Actors | Interoperation across organizational boundaries where agreements must be reached  |
|---------------------------|----------------------------|---|
|                           |                            | <p>web portal as required by the PUCT Advanced Metering System rule and prioritize the functions</p> <ul style="list-style-type: none"> <li>- PUCT, DOE, and White House Office of Science and Technology Policy wants to achieve measurable benefits for Customers based on new actions that the Customer or others can take using the advanced metering system features.</li> <li>- PUCT wants the number of Customers taking service on smart meter based retail products to increase.</li> <li>- AMIT wants to standardize the means for market participants to engage in communication with In-Home Devices using the TDSP AMS communication network.</li> <li>- PUCT, REPs, TDSPs want to provide Consumer education about how and when they consume energy, the cost of that energy and what they can do to lower their bill.</li> <li>- Third party service providers want access to Customer usage information and to communicate with Customer In-Home Devices.</li> <li>- In spring 2009, AMIT agrees on a set of 85 business requirements for the design of a web portal that provides easy access to smart meter information and a means to communicate with Customer In-Home Devices.</li> <li>- In first half of 2014, Third Party access to Customer usage information and communication with Customer In-Home Devices is enabled through SMT.</li> </ul> |

| Interoperability Category   | Tools, Systems, Key Actors   | Interoperation across organizational boundaries where agreements must be reached   |
|---|--|--|
| <p>6: Business Procedures</p> <p>Alignment between Operational Business Processes and Procedures</p>    | <p>AMIT</p> <p>SMT</p> <p>APIs, SMT FTPS site</p> <p>Lodestar Enhanced file format</p> <p>XML and CSV format</p> <p>Hardware and Software Technology Vendors</p> | <ul style="list-style-type: none"> <li>- The format for usage data to be received by ERCOT, REPs, Third Parties, and Customers is determined.</li> <li>- TDSP's use the LSE file format for Customer usage data files sent to ERCOT and REPS.</li> <li>- A SMT FTPS site is set up for REPs and Third Parties to retrieve their Customer's smart meter usage data.</li> <li>- Standard usage APIs are created for REPs and Third Parties to request ad-hoc usage reports and for Third Parties to request scheduled usage reports.</li> <li>- Standard HAN APIs are created for Third Parties to add/remove In-Home Devices on a Customer's HAN and to communicate with those In-Home Devices.</li> <li>- AMIT and the SMT team develop notification procedures and education materials.</li> <li>- GUIs are developed and tested for the SMT web portal.</li> <li>- Customers may export usage data in an XML or CSV format.</li> </ul> |
| INFORMATIONAL   |  |  |
| <p>5: Business Context</p> <p>Awareness of the business knowledge related to a specific interaction</p> | <p>TDSPs</p> <p>Solution provider</p> <p>AMIT</p> <p>Consumer insights professional</p>  | <ul style="list-style-type: none"> <li>- In 2008, AMIT agrees on the technical design for a common web portal.</li> <li>- A competitive RFP process for the development of the common web portal results in the selection of a solution provider.</li> <li>- Oncor and CenterPoint negotiate a Joint Development and Operation Agreement for the development and support of SMT.</li> </ul>  |

| Interoperability Category  | Tools, Systems, Key Actors                     | Interoperation across organizational boundaries where agreements must be reached   |
|--|--|--|
|  |  | <ul style="list-style-type: none"> <li>- AEP and TNMP join the JDOA after the approval of their smart meter deployment plans.</li> <li>- AMIT defines a change request process for modifications to SMT.</li> <li>- AMIT and SMT team prioritize the functions of SMT for development in SMT releases.</li> <li>- A security audit is performed on SMT.</li> <li>- An evaluation of the overall SMT site usability was conducted and upgrades to the Customer site were undertaken to improve the user experience</li> </ul> |
| <p>4: Semantic Understanding</p> <p>Understanding of concepts contained in the message data structures</p> | <p>Industry Alliances and Standards Bodies</p> | <p>ERCOT LSE file format</p> <p>ZigBee SEP v1.0</p> <p>FTPS</p> <p>API</p> <p>CSV</p> <p>XML</p> <p>Green Button Initiative</p>  |

## 11.2 IntelliGrid Methodology

Although AMIT did not formally adopt the IEC 62559 IntelliGrid Methodology for Developing Requirements for Energy Systems<sup>40</sup> to design SMT, the process that was followed by AMIT directly corresponds to the proscribed methodology of that standard. The IntelliGrid methodology was originally developed as part of the IntelliGrid Architecture developed by the

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<sup>40</sup> IEC 62559 Publicly Available Specification [http://webstore.iec.ch/webstore/webstore.nsf/Artnum\\_PK/38920](http://webstore.iec.ch/webstore/webstore.nsf/Artnum_PK/38920)

Electrical Power Research Institute (EPRI), as a means to implement the "IntelliGrid vision" of the automated, self-healing, and efficient power system of the future. It has been used in several major smart meter and smart grid projects by utilities across the US and has been shown to provide significant value to the organizations who utilize it. The IntelliGrid Method is summarized in Figure 22 and

Figure 23.

AMIT's application of the IntelliGrid methodology corresponds to the significant process elements. The focused nature of developing a data repository and web portal for SMT meant that some portions of the IntelliGrid method could be deprecated while still achieving the overall benefits for following the methodology.

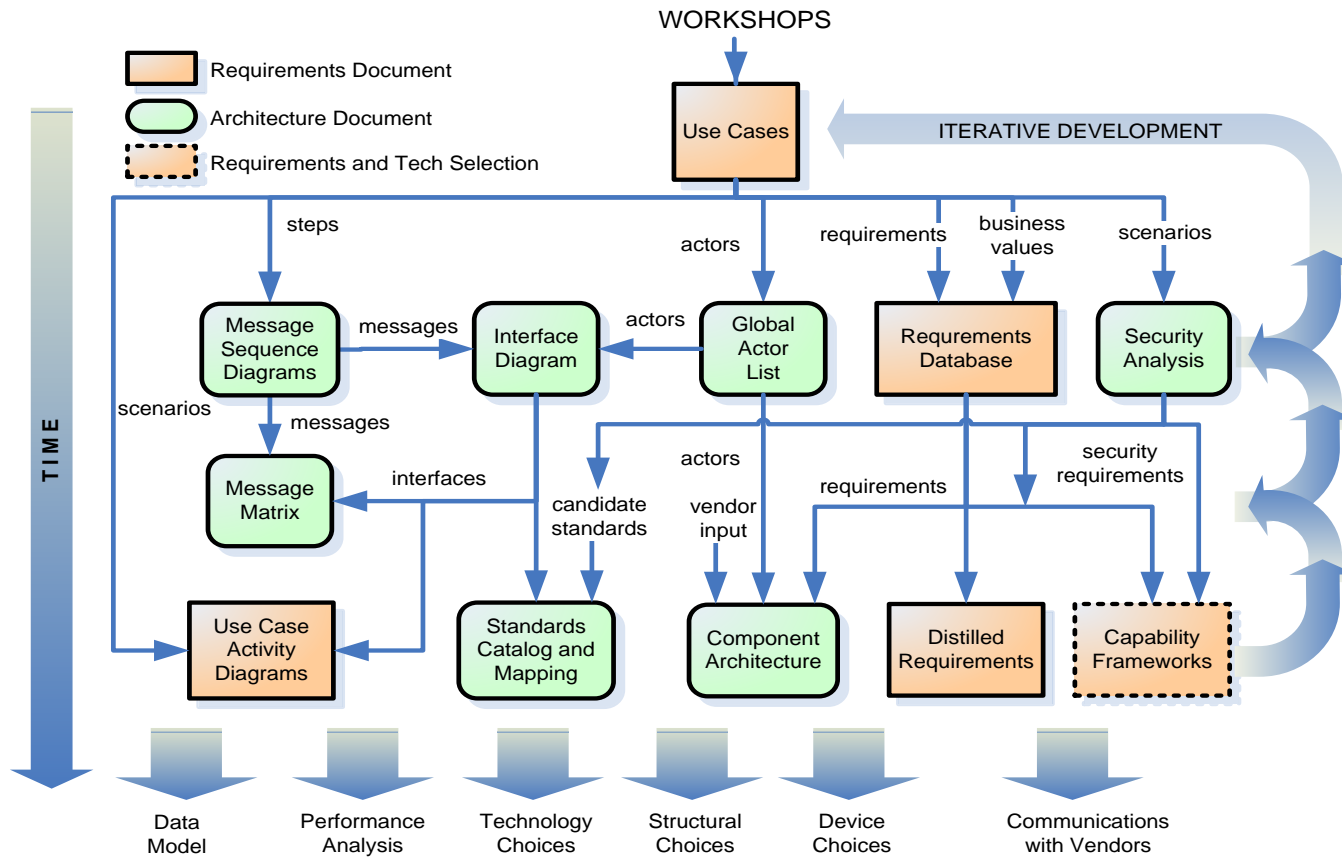


Figure 22: Requirements and Systems Architecture Process<sup>41</sup>

<sup>41</sup> IEC/PAS 62559 Figure 11, Section 8.



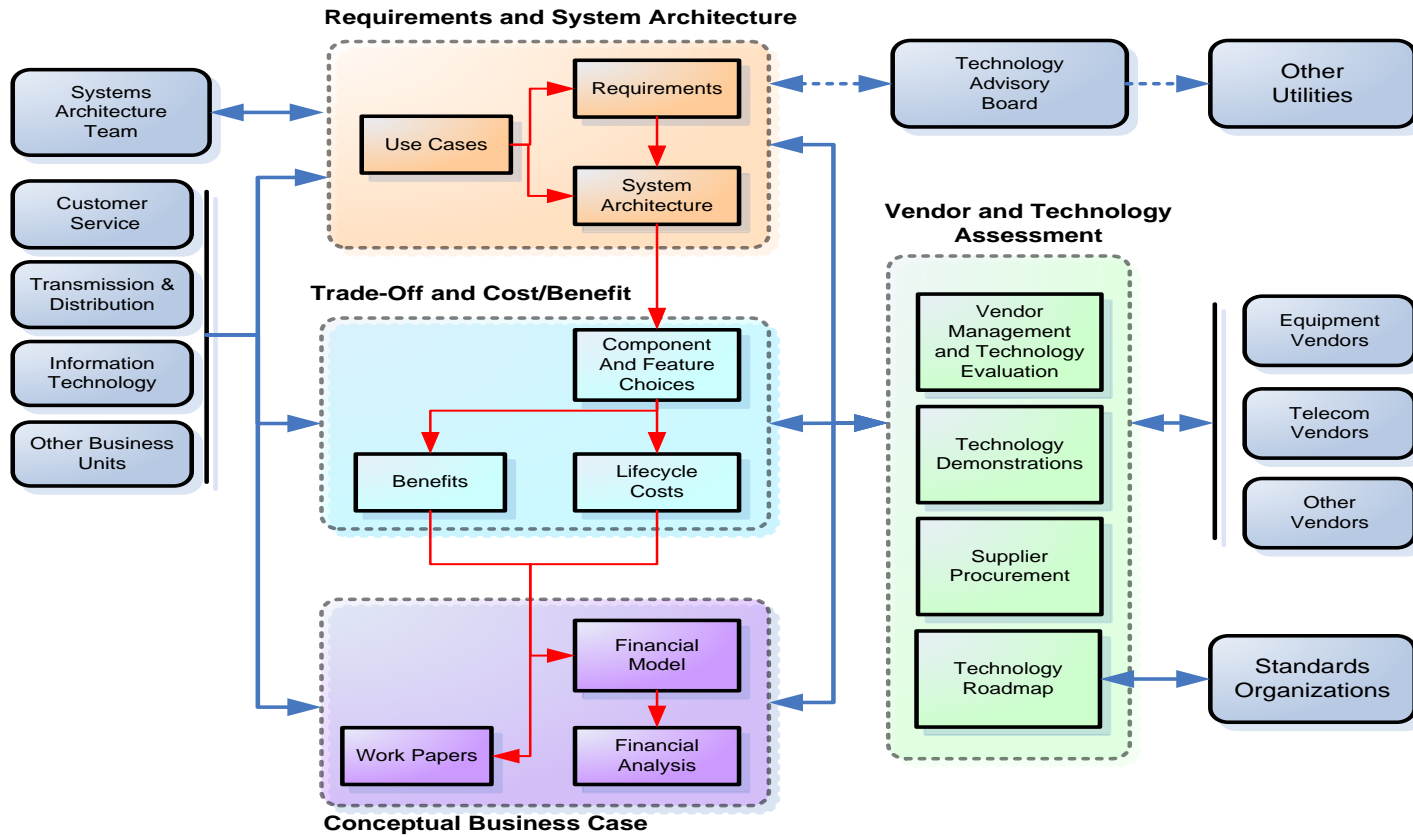


Figure 23: Technology Selection, Business Case and Deployment Process<sup>42</sup>

<sup>42</sup> IEC/PAS 62559, Figure 12

Figure 22 illustrates the initial requirements definition and systems architecture development processes, while

Figure 23 illustrates the later steps of business case analysis, technology selection, and deployment.

The first step of the IntelliGrid methodology is to determine business and regulatory drivers to clearly identify what financial problems or regulatory compliance issues are being addressed. The next step is to choose the focus areas that apply to the specific utility automation project. AMIT had clear direction from the PUCT Advanced Metering Rule and identified the core business processes as well as sub dividing the work into separate focus area projects.

The following are the next steps in the IntelliGrid Methodology:

- Identify Candidate Technologies
- Define a High-Level Business Case
- Refine Process for Your Organization
- Identify Stakeholders
- Establish a Project Team
- Select Teams

These steps complete what IntelliGrid terms Phase 1, to determine business needs and plan projects. The creation of AMIT and its defined projects were focused on specific technical activities and needs in Texas related to the deployment of smart meters. Since AMIT was a public, open process, the project teams were less rigid than that of a single business entity. Team members came from the various businesses, organizations and other participating stakeholders and were to a large degree self-selected. The initial AMIT workshops were focused on project scoping and satisfied the general intent of IntelliGrid's Phase 1.

Phase 2 of the IntelliGrid process is for stakeholders to define user requirements with use cases. In the AMIT projects that resulted in the creation of SMT the market participants developed numerous use cases (see Section 9) to describe the envisioned high level processes for Customers, TDSPs, REPs, and Third Parties. The use cases provided the workshop team members with a narrative framework to define the requirements. The IntelliGrid standard also

includes using the use cases and requirements to develop additional diagrams that provide more detail for system design. These diagrams include activity diagrams which are graphical representations of use cases and are similar to the storyboard diagrams that AMIT began to use in later workshops. Other diagrams are interface and message sequence diagrams which provide a level of detail that was not appropriate for the AMIT workshops, but were later created by the selected system developer.

The final phase of the IntelliGrid methodology is technology selection and development. This was largely outside the scope of the AMIT workgroup and these activities were performed by the system developer as part of taking the AMIT use cases and requirements and developing the SMT solution.

### **11.3 NIST Guiding Principles and Architectural Goals**

In the NIST Framework and Roadmap for Smart Grid Interoperability Standards<sup>43</sup>, NIST provided fifteen guiding principles<sup>44</sup> to be used for identifying whether a smart grid standard is interoperable and eleven architectural goals<sup>45</sup> for the smart grid. Even though SMT was developed prior to the issuance of the NIST Framework and Roadmap, SMT and its development is consistent with each guiding principle and satisfies the NIST smart grid architectural goals. The following is a detailed discussion of how SMT conforms to each of the NIST guiding principles, satisfies the architectural goals, and achieves interoperability in its implementation.

#### ***11.3.1 NIST Guiding Principles for Identifying Interoperable Smart Grid Standards for Implementation***

##### **1. Is well-established and widely acknowledged as important to the Smart Grid.**

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<sup>43</sup> NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 1.0 ([http://www.nist.gov/public\\_affairs/releases/upload/smartgrid\\_interoperability\\_final.pdf](http://www.nist.gov/public_affairs/releases/upload/smartgrid_interoperability_final.pdf)) and Release 2.0

<sup>44</sup> Pg. 64 of the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0

<sup>45</sup> Ibid, page 39-40.

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Historically, in the competitive regions of Texas, electric meters were read once a month and Customers were informed of their usage in a bill received by the Customer up to thirty days after the usage was recorded. Customers had no insight into how and when they used electricity and had no way to know what their monthly bill would be until the bill was received. The installation of smart meters has provided the means for electricity usage to be recorded and reported in increments of 15-minutes. SMT was developed as an interoperable solution for consumers to access their electricity usage information on a day-after basis, providing them with a much better understanding of how and when they use electricity. In addition, SMT broke new ground by enabling communication with Customer In-Home devices, and providing a convenient and easy way for Customers to share their usage data with Third Parties. This access to timely usage information and communication with In-Home devices, coupled with innovative Third Party products leveraging usage information and HAN communication, enables Customers to manage their electricity in an informed manner.

Customer access to electricity consumption is widely acknowledged as important to the success of the smart grid. The Texas law, the PUCT substantive rules, the DOE, and the White House Office of Science and Technology Policy (OSTP) all stress the necessity of Customers having access to their electricity usage information and the ability to share that information with Third Parties service providers.

In the Texas Public Utility Regulatory Act (“PURA”) it states the following:

“All meter data, including all data generated, provided, or otherwise made available, by advanced meters and meter information networks, shall belong to a Customer, including data used to calculate charges for service, historical load data, and any other proprietary Customer information. A Customer may authorize its data to be provided to one or more retail electric providers under rules and charges established by the commission.”<sup>46</sup>

The PUCT Advanced Metering Rule requires the following:

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<sup>46</sup> PURA 2011 Section 39.107(b) (<http://www.puc.texas.gov/agency/rulesnlaws/statutes/Pura11.pdf>)

“An electric utility shall provide a Customer, the Customer’s REP, and other entities authorized by the Customer read-only access to the Customer’s advanced meter data, including meter data used to calculate charges for service, historical load data, and any other proprietary Customer information. The access shall be convenient and secure, and the data shall be made available no later than the day after it was created.”<sup>47</sup>

The DOE and the White House Office OSTP initiated the Green Button initiative. The Green Button initiative is a challenge to the electric utility industry to “empower residential consumers to better manage their electricity consumption by allowing them and authorized Third Parties access to their electricity usage information on demand through a standardized data access architecture.”<sup>48</sup>

SMT has been in operation since January 2010 and has gone through over four successful revisions. SMT is used as a data repository for the Joint TDSP’s smart meter usage information for over 6.8 million Customers. By August 2014, SMT was accessed by 84 REPs with 642 users and over 61,640 Customers with 8,603 In-Home Devices<sup>49</sup>. By the end of 2014, Third Parties will have access to SMT functionality.

SMT is a well-established interoperable standard used by many market participants and meets the requirements of the Texas law, PUCT substantive rules, and the Green Button initiative. In conclusion, SMT meets the NIST guiding principle of being well established and widely acknowledged as important to the smart grid.

## **2. Is an open, stable, and mature industry-level standard developed in a consensus process from a standards development organization (SDO)**

The business requirements and framework for SMT were developed by AMIT, which is a standards-setting organization (“SSO”). This term is defined by NIST as “the broader universe

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<sup>47</sup> PUCT §25.130(j) (<http://www.puc.texas.gov/agency/ruleslaws/subrules/electric/25.130/25.130.pdf>)

<sup>48</sup> Introducing Green Button Association for Demand Response and Smart Grid webinar January 20, 2012 ([http://www.nist.gov/smartgrid/upload/1-20-12\\_Green\\_Button\\_Webinar\\_-\\_Wollman\\_and\\_Irwin.pdf](http://www.nist.gov/smartgrid/upload/1-20-12_Green_Button_Webinar_-_Wollman_and_Irwin.pdf))

<sup>49</sup> Source: AMWG\_Monthly\_Market\_Reports\_and\_Formats\_9\_11\_14\_v1\_0.ppt (<http://www.ercot.com/calendar/2014/09/20140923-AMWG>)

of organizations and groups—formal or informal—that develop standards, specifications, user requirements, guidelines, etc.”<sup>50</sup> In addition, the process that AMIT used to develop the SMT business requirements meets the requirements of a voluntary consensus standards body, as defined by OMB Circular A-119<sup>51</sup>, and had the following attributes: 1) openness, 2) balance of interest, 3) due process, 4) a process for appeals, and 5) consensus. AMIT was open to all interested market participants and included representatives from TDSPs, REPs, PUCT, consumer advocates, technology vendors, etc. The meetings of AMIT were conducted such that all opinions could be openly expressed and that each issue was discussed or researched until a consensus was reached by the participants. See Sections 4.1 and 4.2 for a further discussion on how the AMIT meetings were conducted.

### **3. Enables the transition of the legacy power grid to the Smart Grid**

The legacy power grid provided monthly usage information to Customers up to a month after consumption. SMT provides usage information on a day after basis and near real time basis through the on demand register read function. SMT enables real time access to usage information by enabling communications with Customer In-Home Devices.

### **4. Has, or is expected to have, significant implementations, adoption, and use**

The Joint TDSPs deposit all of their Customer’s 15-minute usage data in the SMT data repository and when all the smart meters are deployed over 7 million Customers will have access to their usage data as soon as the day after consumption. In addition, 84 REPs receive 15-minute usage information for their Customers and by the end of 2014 authorized Third Parties will have access to usage information. Over 61,640 Customers have registered on SMT and are currently using the functionality of SMT. Table 13 provides statistics on the use of SMT as of August 2014.

**Table 13: SMT Statistics**

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<sup>50</sup> Page 61 of the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0

<sup>51</sup> OMB Circular A-119, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities, February 10, 1998, <http://www.nist.gov/standardsgov/omb119.cfm>.

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| Statistic                                     | Number    |
|---|-----------|
| Smart meters integrated to SMT data warehouse | 6,833,099 |
| Number of Business Accounts                   | 2,725     |
| Number of Residential Accounts                | 58,915    |
| Number of REP Companies                       | 84        |
| Average Customer logins per month             | 30,000    |
| Number of In-Home Devices deployed            | 8,603     |
| Number of messages sent to In-Home Devices    | 7,655     |

As a result of having access to Customer’s 15-minute usage information, innovative products<sup>52</sup> are being developed and offered to Customers providing Customers with information and tools to manage their electricity usage. Vendors are developing and deploying In-Home Devices, pre-payment plans, time-of-use, and load control plans —and are offering these plans to Customers. Analysis of Customer usage information is being provided through emails, portals, gadgets, and In-Home Devices. Energy management services are being provided, and Customers may sign up to receive bill and usage alerts. By the end of 2014, Third Parties will have access to Customer usage information, when authorized by a Customer, and will be able to offer additional innovated products.

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<sup>52</sup> The presentations - Texas Paves the Way in Smart Metering and Smart Meter Functionality Implementation Update – are filed in PUCT #41171 Repository of Advanced Metering Implementation Documents <http://interchange.puc.texas.gov/WebApp/Interchange/application/dbapps/filings/pgSearch.asp>

**5. Is supported by an SDO or standards- or specification-setting organization (SSO) such as a user's group to ensure that it is regularly revised and improved to meet changing requirements and that there is a strategy for continued relevance.**

SMT is supported, maintained, and revised by AMIT, an SSO (see governing principle #2). SMT has had four successful releases since its launch in 2010 (see Figure 2). SMT has a defined change request process to address any changes requested by market participants that has evolved over time (see Section 4.9).

**6. Is developed and adopted internationally, wherever practical.**

The SMT business requirements were developed by AMIT but are available to any interested party and have been shared with Google, the California Public Utility Commission, Origin Energy, an Australian utility, and other entities from around the world including Japan, Russia, Norway and others who have been referred to the AMIT project site located on the PUCT website. The SMT business requirements were supplied to OpenSG's OpenADE for use in their work on Third Party access to consumer usage information.

**7. Is integrated and harmonized, or there is a plan to integrate and harmonize it with complementing standards across the utility enterprise through the use of an industry architecture that documents key points of interoperability and interfaces.**

SMT has multiple points of interoperability between the TDSPs, ERCOT, REPs, Third Parties, and Customers and each party may access SMT functionality through one of three defined interfaces (i.e., a GUI, FTPS site, and APIs). Figure 24 illustrates each point of interoperability and the three interfaces.



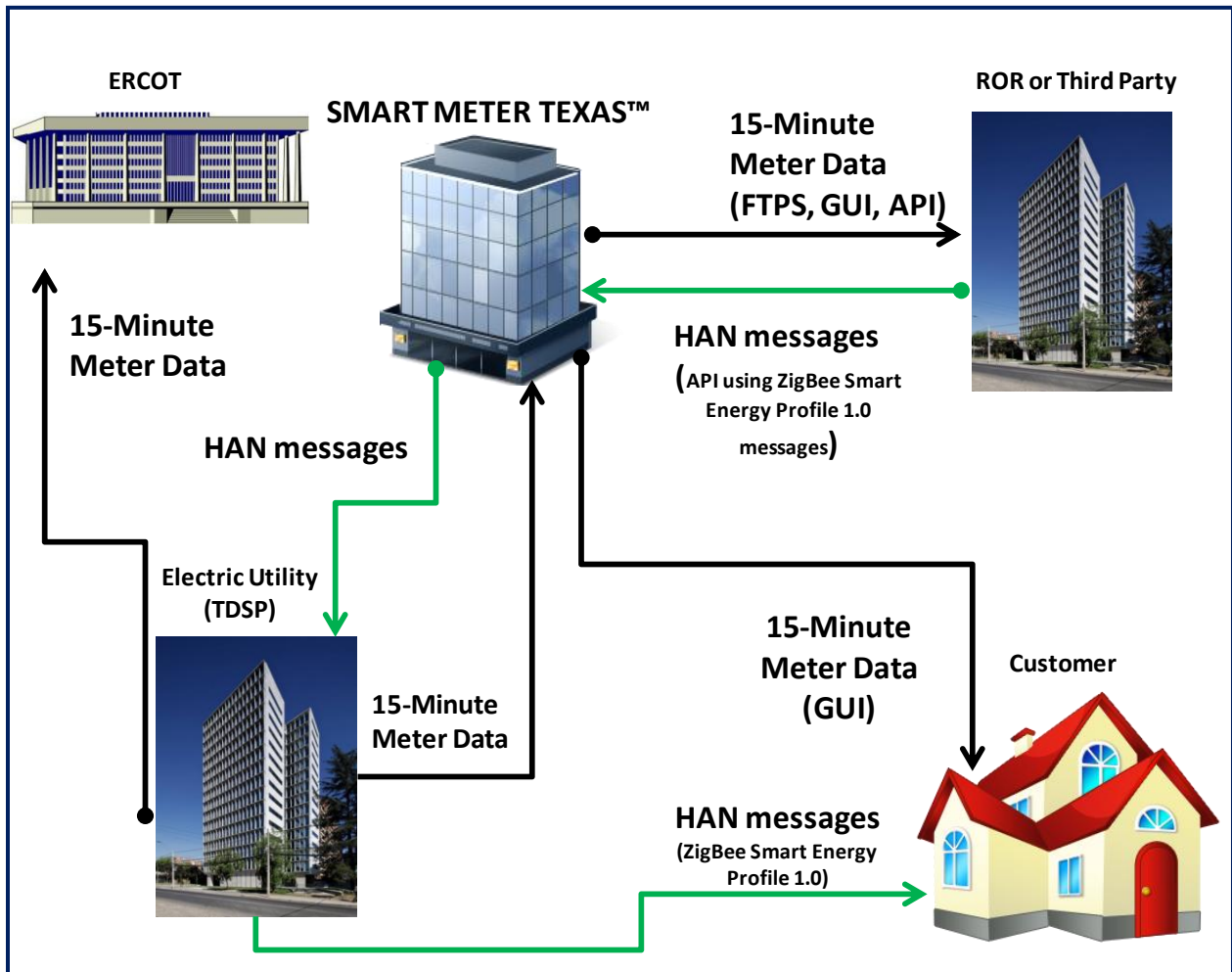


Figure 24: SMT Key Points of Interoperability and Interfaces

Since interoperability results in the exchange and use of information in a secure and effective manner with little or no inconvenience to the user, AMIT agreed to use the existing ERCOT LodeStar Enhanced (“LSE”) file format for the energy usage information transmitted to ERCOT and the FTPS site for REP and Third Party access. Use of this existing format minimized the cost to the TDSPs and ERCOT.

The TDSPs chose different smart meter manufacturers (i.e., Itron, Landis+Gyr, and SmartSynch) for their smart meter installations, however, all the meters utilized the ZigBee Smart Energy Profile (SEP) v1.0 as the In-Home Device communications and information model. There was no standard utilized by the TDSPs for implementing the ZigBee SEP v1.0 functionality so the

market participants worked together to create a common implementation of the SEP and to develop standard APIs enabling users to send HAN messages (e.g., text, load control, and pricing) to any In-Home Device installed in any of the TDSP's service territory regardless of the meter manufacturer or the communications technology installed.

SMT implemented the concept of the Green Button initiative a year prior to the issuing of the Green Button challenge. In 2012, shortly after the challenge was issued, a Green Button icon was added to several SMT web portal pages. The Green Button on SMT enables Customers, with little effort, to download their energy usage information into the standard XML format. Customers can then easily load the information into other programs or share their usage information with Third Parties to help them manage their electricity use.

**8. Enables one or more of the framework characteristics as defined by EISA<sup>53</sup> or enables one or more of the six chief characteristics of the envisioned Smart Grid<sup>54</sup>.**

SMT enables the following EISA Smart Grid Functions:

- The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations, to or from or by means of the electric utility system, through one or a combination of devices and technologies.
- The ability to develop, store, send and receive digital information concerning electricity use, costs, prices, time of use, nature of use, storage, or other information relevant to device, grid, or utility operations to or from a computer or other control device.
- The ability to measure or monitor electricity use as a function of time of day and to store, synthesize or report that information by digital means.
- The ability of any appliance or machine to respond to such signals, measurements, or communications automatically or in a manner programmed by its owner or operator without independent human intervention.

SMT enables the following DOE Smart Grid characteristics:

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<sup>53</sup> Energy Independence and Security Act of 2007 [Public Law No: 110-140] Title XIII, Sec. 1305.

<sup>54</sup> U.S. Department of Energy, Smart Grid System Report, July 2009.

- Informed participation by Customers by giving Customers access to their 15-minute electrical usage no later than the day after consumption and provides a standard mechanism for HAN devices to be installed in the Customer home for access to real time usage information.
- New products, services, and markets by providing REPs and authorized Third Parties access to a Customer's usage data and a standard mechanism for two way communication to HAN devices in a Customer's home.

**9. Addresses, or is likely to address, anticipated Smart Grid requirements identified through the NIST workshops and other stakeholder engagement.**

AMIT representatives are very active in the development of national smart grid standards. Several AMIT representatives participate in and hold key positions of leadership in several SGIP Priority Action Plans (PAPs), NAESB task forces, the UCAIug OpenSG users group, the SGIP Smart Grid Testing and Certification Committee, the SGIP Implementation Methods Committee, the SGIP governing board, and the ZigBee Alliance. By participating in the development of national smart grid standards, AMIT representatives are aware of smart grid standards that might be useful in the Texas market and could be utilized by SMT. When the Green Button initiative was launched, AMIT used the change request process to add the Green Button icon into a new release of SMT.

**10. Is applicable to one of the priority areas identified by FERC<sup>55</sup> and NIST:**

- Demand Response and Consumer Energy Efficiency;
- Wide Area Situational Awareness;
- Electric Storage;
- Electric Transportation;
- Advanced Metering Infrastructure;
- Distribution Grid Management;
- Cyber security; and

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<sup>55</sup> Federal Energy Regulatory Commission, *Smart Grid Policy*, 128 FERC ¶ 61,060 [Docket No. PL09-4-000] July 16, 2009. See <http://www.ferc.gov/whats-new/comm-meet/2009/071609/E-3.pdf>

- Network Communications.

SMT is applicable to the Demand Response and Consumer Energy Efficiency, Advanced Metering Infrastructure, and Network Communications priority areas.

- a. Demand Response and Consumer Energy Efficiency: SMT provides Customers with their energy usage information on a day after or real time basis and enables HAN messages to be sent to Customer HAN devices. One of the HAN messages that can be sent using the SMT HAN APIs is a load control message. Access to usage information helps Customers gain an understanding of how they use electricity and allows service providers to provide various products to Customers helping them manage their energy consumption.
- b. Advanced Metering Infrastructure: SMT is a common data repository housing all the smart meter usage information for four TDSPs.
- c. Network Communications: SMT enables standard HAN messages to be sent to Customer HAN devices through APIs sent to the TDSPs who transmit the HAN messages over their communications network, to the smart meter and then to the HAN device.

**11. Focuses on the semantic understanding layer of the GWAC stack, which has been identified as most critical to Smart Grid interoperability.**

In order for usage information to be provided to ERCOT, REPs, Third Parties, and Customers and to enable In-Home Device communication, an understanding of the needs of the parties and of the information transferred was critical. To achieve this clear understanding, the work done by the collaborative effort of AMIT determined what data would be available, how it would be available, the format the data would be in, and to whom it would be made available. Many use cases were developed to help the parties understand and clarify the relationships, responsibilities, and information transfer between the parties. Consensus was reached on the data formats to use in transferring the usage information. The parties agreed to use the existing LSE format for the

energy usage data in the file the TDSPs send to ERCOT and SMT. The XML and CSV formats are used when a user exports energy usage information from the SMT web portal. Since all the smart meters utilize the ZigBee SEP v1.0 HAN communication protocol, the parties came to a consensus on the implementation of the SEP in the TDSP smart meters so that standard HAN APIs could be developed and the HAN communications would be interoperable with all the Joint TDSP's smart meters.

**12. Is openly available under fair, reasonable, and non-discriminatory terms.**

The SMT business requirements are freely available at no charge to any interested party and all the documents related to the work done by AMIT are available in PUCT Project #41171<sup>56</sup> Repository of Advanced Metering Implementation Documents. This document was developed to provide other electric industry participants with an understanding of the interoperable SMT solution and to provide access to key artifacts (i.e., business requirements, use cases, etc.).

Use of SMT is accessible at no charge to Customers, RORs, Third Parties, TDSPs and Regulatory users.

**13. Has associated conformance tests or a strategy for achieving them.**

SMT has gone through extensive testing with the TDSPs, REPs, Third Parties, and In-Home Device manufacturers (see Section 12). Standardized work sessions were held for REPs and Third Parties on the FTSP and API integration that enables access to Customer's energy usage information and to communicate with Customer In-Home Devices. A series of Texas ZigFests were held to allow In-Home Device manufactures and REPs to test the installation and communication with In-Home Devices. Standard test scripts were developed for this testing process using standard HAN message APIs.

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<sup>56</sup> <http://interchange.puc.texas.gov/WebApp/Interchange/application/dbapps/filings/pgSearch.asp>

**14. Accommodates legacy implementations.**

Since ERCOT utilized the LSE data format for transfers of energy usage information from the TDSPs, this same format is used in the files that RORs and Third Parties retrieve from their folders on the SMT FTPS site.

**15. Allows for additional functionality and innovation through:**

- Symmetry – facilitates bidirectional flows of energy and information.
- Transparency – supports a transparent and auditable chain of transactions.
- Composition – facilitates building of complex interfaces from simpler ones.
- Extensibility – enables adding new functions or modifying existing ones.
- Loose coupling – helps to create a flexible platform that can support valid bilateral and multilateral transactions without elaborate prearrangement.
- Layered systems – separates functions, with each layer providing services to the layer above and receiving services from the layer below.
- Shallow integration – does not require detailed mutual information to interact with other managed or configured components.

SMT allows for additional functionality and innovation through:

- Symmetry – enables communication with Customer In-Home Devices through standard HAN APIs
- Composition – allows REPs and authorized Third Parties to innovate with HAN products through the use of internet gateways and to display usage information on their own portals through the use of the rebranding API
- Extensibility – through the change request process SMT can add new functions or modify existing ones.

In conclusion, SMT and its development and implementation are consistent with each of the NIST guiding principles for identifying interoperable smart grid standards for implementation.

### 11.3.2 NIST Architectural Goals for the Smart Grid

In the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0, NIST expanded the list of architectural goals to the following eleven goals. SMT satisfies each of these goals as shown in the following discussion in Table 14.

**Table 14: NIST Smart Grid Architectural Goals**

| Goal             | Goal Definition  | SMT Compliance   |
|------------------|--|--|
| Options          | Architectures should support a broad range of technology options—both legacy and new. Architectures should be flexible enough to incorporate evolving technologies as well as to work with legacy applications and devices in a standard way, avoiding as much additional capital investment and/or customization as possible. | The SMT business requirements are technology independent allowing for flexibility in implementation. SMT utilizes the legacy LSE format for the usage data files but the SMT business requirements don't restrict the use of other formats. If some of the TDSPs adopt the ZigBee Smart Energy Profile (SEP) v2.0 in the future, SMT and AMIT will follow the guidance set forth in PAP 18: SEP 1.x to SEP 2.0 Transition and Coexistence Guidelines and Best Practices to minimize the expense and stranding of existing In-Home Devices. |
| Interoperability | Architectures must support interfacing with other systems. This includes the integration of interoperable third-party products into the management and cyber security infrastructures.   | SMT provides convenient, easy to use interfaces for TDSPs, REPS, Third Parties, Customers, and Customer In-Home Devices to exchange energy usage information and HAN messages through several standard interfaces: a web portal, FTPS, and APIs. (See Figure 24.)  |
| Maintainability  | Architectures should support the ability of systems to be safely, securely, and reliably maintained throughout their life cycle.   | SMT's underlying system architecture is built on a robust and mature set of software systems with enterprise level hardware systems. The widespread use of these underlying software and hardware components across many industries ensures continued vendor   |

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| Goal           | Goal Definition  | SMT Compliance  |
|----------------|--|---|
|                |  | support, broad industry knowledge base, and evolving best practices.  |
| Upgradeability | Architectures should support the ability of systems to be enhanced without difficulty and to remain operational during periods of partial system upgrades.   | SMT has the ability to be upgraded through a defined change request process with minimal inconvenience to users. SMT has had multiple releases since it began operation in 2010. (See Figure 2 and NIST guiding principle #5) SMT maintenance and new releases are conducted as much as possible during off-peak hours and detailed planning is done to make the duration as short as possible. Market participants are notified of any pending interruption of service due to maintenance or installation of new releases.   |
| Innovation     | Architectures should enable and foster innovation. This includes the ability to accommodate innovation in regulations and policies; business processes and procedures; information processing; technical communications; and the integration of new and innovative energy systems. | SMT enables and fosters innovation as evidenced by the new energy management products being offered to Customers associated with usage information and In-Home Devices (see NIST guiding principle #4). When the DOE and the White House Office of Science and Technology Policy initiated the Green Button Initiative, SMT incorporated the Green Button icon on Customer pages in the SMT web portal. If the ZigBee SEP 2.0 HAN communication protocol is adopted by the TDSPs in the future, the APIs may be modified to reflect this change. Additional innovation will be enabled when Third Parties are granted access to SMT functionality by the end of 2014. |
| Scalability    | Architectures should include architectural elements that are   | SMT was initially developed as a common data repository for   |



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| Goal        | Goal Definition   | SMT Compliance  |
|-------------|---|---|
|             | <p>appropriate for the applications that reside within them. The architectures must support development of massively scaled, well-managed, and secure systems with life spans appropriate for the type of system, which range from 5 to 30 years.</p> | <p>CenterPoint Energy and Oncor and was later expanded to include AEP Texas and TNMP. It is segregated so that each TDSP has access to only the meter data of their Customers. Access to usage information initially was only given to Customers and their ROR. By the end of 2014, SMT will be expanded to include Third Parties giving them the opportunity to offer innovative energy management products to Customers.</p>  |
| Legacy      | <p>Architectures should support legacy system integration and migration.</p>  | <p>SMT supports the use of the LodeStar Enhanced (LSE) file format for transmitting energy usage information since this format was currently in use by ERCOT and the TDSPs.</p>   |
| Security    | <p>Architectures should support the capability to resist unwanted intrusion, both physical and cyber. This support must satisfy all security requirements of the system components.</p>   | <p>SMT has the capability to resist unwanted cyber intrusion through the use of common information security technologies and practices and it satisfies the NIST IR security requirements for this type of system. (See Section 10)</p>   |
| Flexibility | <p>Architectures should allow an implementer to choose the type and order of implementation and to choose which parts of the architecture to implement without incurring penalties for selecting a different implementation.</p>                      | <p>The functionality of SMT was developed in stages in accordance with the priorities determined by AMIT.</p> <p>The SMT business requirements are technology independent allowing for flexibility in implementation. For example, the LSE format was chosen by AMIT for transmitting usage information, but this does not limit other implementers from choosing another format. Also, all or a portion of the business requirements may be implemented depending upon the needs of the market participants. SMT</p> |

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| Goal          | Goal Definition   | SMT Compliance   |
|---------------|---|--|
|               |   | <p>provides energy usage information and the ability to send HAN messages to Customer In-Home Devices. Other implementers may choose to only provide access to energy usage information.</p>   |
| Governance    | <p>Architectures should promote a well-managed system of systems that will be enabled through consistent policies over its continuing design and operation for its entire life cycle.</p>   | <p>SMT is managed through the TDSP Joint Operating Agreement and a defined change request process initially governed by AMIT, an SSO, and once SMT entered into a steady state, governed by an ERCOT subcommittee with a structured working group and a defined approval request process. (See Section 3.3 and NIST governing principle #5)</p>  |
| Affordability | <p>Should enable multivendor procurement of interoperable Smart Grid equipment through the development of mature national and international markets. Architecture should fundamentally enable capital savings as well as life cycle savings through standards-based operations and maintenance.</p> | <p>The TDSPs using SMT have installed meters using three different meter manufacturers and are utilizing different communications technology; however, SMT accepts and stores the usage information regardless of the meter manufacturer or communication technology. In addition, SMT is able to send standard HAN messages to all the smart meters regardless of the manufacturer or communication technology utilized by a TDSP. A considerable expense was avoided by the TDSPs, RORs, and Third Parties by having one common point of access for Customer meter information and In-Home Device communication instead of multiple TDSP solutions. In addition, a considerable expense was avoided by ERCOT and the TDSPs through the use of the existing LSE format for usage information. REPs,</p> |

| Goal | Goal Definition | SMT Compliance   |
|------|-----------------|--|
|      |                 | Third Parties, and Customers are able to select In-Home devices from multiple vendors due to the interoperability provided by SMT. |

SMT satisfies the NIST architectural goals for the smart grid.

### 11.4 Green Button Initiative

In 2011, the OSTP and Department of Energy (DOE) challenged the electric utility industry to launch a Green Button Initiative that would give consumers access to their energy usage information by downloading it in an easy-to-read industry standard format. SMT implemented the concept of the Green Button initiative over a year prior to the issuance of the Green Button challenge. Shortly after the challenge was issued, SMT strategically placed a Green Button icon on several portal pages. On the SMT web portal, Customers can request 13 months of 15-minute usage data in the industry standard XML format and a file will be emailed to the Customer. Customers may then easily load the information into programs that help manage their electricity use or share their usage information with Third Parties who want to provide energy management

services to Customers.

The screenshot displays the SMART METER TEXAS customer interface. At the top, it says "Welcome, Chris" and "Log Out". A navigation bar includes "Usage", "Meters", "In-Home Devices", "Agreements", "Account Profile", "Share Feedback", and "Help". The "Usage" section is active, showing "My Usage", "My Friends' Usage", and "Report Request Status". A yellow banner reads "Broadcast message displays here". Below, it shows "Usage / My Meter - Usage Report" and "My Meter - Usage Report" with a help icon. Account details include: Address: 123 Demo Drive, Anytown, TX.; ESI ID: 8888888000000001; Meter Number: 888888001; Meter Multiplier: 1. The "Report Option" section has "Report Type: Daily Usage (15 min intervals)", "Start Date: 05/05/2013", and "End Date: 05/05/2013", with an "Update Report" button. A line graph titled "Daily Usage (each 15 minutes) - Kilowatt Hours for 05/05/2013" shows "Use of Electricity Each 15 Minutes" with a y-axis of "Kilowatt Hours" (0 to 2) and an x-axis of "Time of Day" (12:00 am to 11:00 pm). At the bottom, there are buttons for "Print", "Export Report in Excel", a circled "Green Button View My Data" icon, "< Previous Day", "Next Day >", and "On Demand Read".

Figure 25 shows the Green Button icon on the SMT Customer home page.

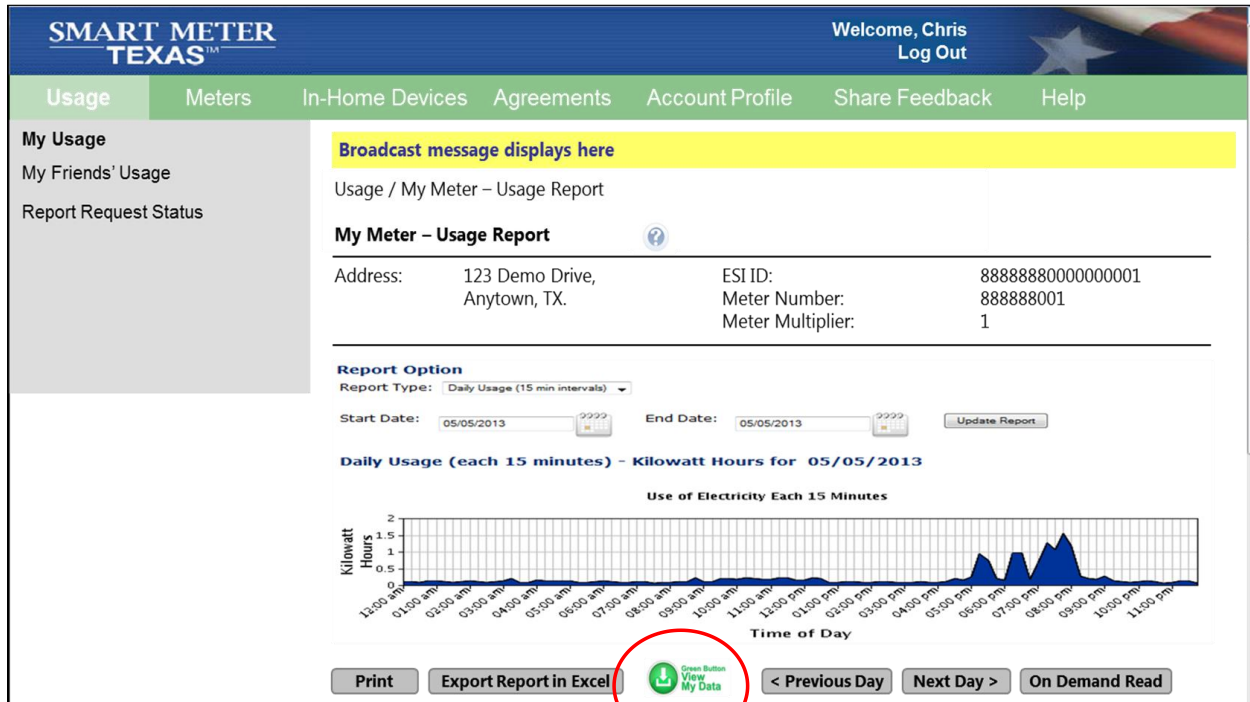


Figure 25: Green Button

## 11.5 PCI and NERC CIP Security Standards

During the development of the SMT business requirements, AMIT created a task to evaluate both the Payment Card Industry Data Security Standard (PCI DSS) and the NERC Critical Infrastructure Protection (CIP) standards to determine which, if any, of these standards apply and what requirements applied to SMT. The NERC CIP standards have continued to evolve with the forthcoming version 5 being applicable to the bulk electric system which does not include SMT. The task group identified cyber security standards best practices and specific requirements for SMT from their review of these standards. At a high level, the requirements are:

1. Build and maintain a secure network
  - a. PCI Requirement – Install and maintain a firewall configuration to protect critical data

- b. PCI Requirement – Do not use vendor supplied system defaults for system passwords and other security parameters
  - c. NERC CIP 005-1 – Electronic Security Perimeter
2. Protect critical data
  - a. PCI Requirement – Protect stored critical data
  - b. PCI Requirement – Encrypt transmission of critical data across open, public networks
3. Identify critical cyber assets
  - a. NERC CIP 002-1 – Critical Cyber Asset Identification
4. Maintain a vulnerability management program
  - a. PCI Requirement – Use and regularly update anti-virus software
  - b. PCI Requirement – Develop and maintain secure systems and applications
  - c. NERC CIP 007-1 – Systems Security Management
5. Implement strong access control measures
  - a. PCI Requirement – Restrict access to critical data by business need-to-know
  - b. PCI Requirement – Assign a unique ID to each person with computer access
  - c. PCI Requirement – Restrict physical access to critical data
  - d. NERC CIP 006-1 – Physical Security of Critical Cyber Assets
6. Regularly monitor and test networks
  - a. PCI Requirement – Track and monitor all access to network resources and critical data
  - b. PCI Requirement – Regularly test security systems and processes
7. Maintain an information security policy
  - a. PCI Requirement – Maintain a policy that addresses information security
  - b. NERC CIP 003-1 – Security Management Controls
8. Conduct cyber security awareness and training programs
  - a. NERC CIP 004-1 – Personnel and Training
9. Preparation for and recovery from cyber incidents
  - a. NERC CIP 008-1 – Incident Reporting and Response Planning
  - b. NERC CIP 009-1 – Recovery Plans for Critical Cyber Assets

Each of the above elements provided input and direction to the SMT system architecture and to the development of SMT's security policies. Although these standards do not directly apply to a system like SMT, the application of their cyber security best practices was appropriate for SMT.

## 11.6 ZigBee Smart Energy Profile

The PUCT Substantive Rule §25.130 Advanced Metering included specific requirements related to the HAN in order for a TDSP to receive approval and cost recovery for their AMS deployments (see Table 15). The Joint TDSPs deployed smart meters that included the ZigBee Smart Energy Profile 1.0 (SEP 1.0) firmware to partially satisfy these requirements and SMT provided the functionality to enabled the communication requirements of the rule.

**Table 15: PUCT Advanced Metering Rule HAN Requirements**

| Rule Reference  | HAN Requirement  |
|-----------------|--|
| 25.130(g)(a)(B) | two-way communications   |
| 25.130(g)(a)(E) | the capability to provide direct, real-time access to Customer usage data to the Customer and the Customer's REP   |
| 25.130(g)(a)(F) | means by which the REP can provide price signals to the Customer   |
| 25.130(g)(a)(J) | capability to communicate with devices inside the premises, including, but not limited to, usage monitoring devices, load control devices, and prepayment systems through a home area network (HAN), based on open standards and protocols that comply with nationally recognized non-proprietary standards such as ZigBee, Home-Plug, or the equivalent |
| 25.130(g)(a)(K) | the ability to upgrade these minimum capabilities as technology advances   |

### 11.6.1 ZigBee SEP 1.0

ZigBee is a high level wireless communication protocol based on the IEEE 802.15.4 wireless standard network. ZigBee uses small, ultra-low power digital radios to create a wireless network connecting different devices together for secure communications. SEP 1.0 is an interoperable

public application software developed by the ZigBee Alliance<sup>57</sup> that enables In-Home Device interoperability regardless of the device manufacturer. SEP 1.0 provides a set of functionality for HANs designed to meet the requirements established in the OpenHAN System Requirements Specification<sup>58</sup>. Functionality provided by SEP 1.0 are real-time electrical usage data, pricing support, text messaging, direct load control, and demand response capability. Real-time electrical usage is supplied to In-Home Devices directly from the smart meter and the remaining SEP 1.0 capabilities are enabled by the SMT APIs.

### **11.6.2 SEP Upgradeability**

The ZigBee Alliance continues to upgrade the capabilities of SEP with versions 1.x and 2.0. Versions in the 1.0 family are backwards compatible and will coexist with SEP 1.0 In-Home Devices on the HAN. Additional capabilities included in SEP 1.1 are over the air (OTA) upgrade, pricing options for blocks/tiers, support for multiple energy services interfaces and trust center swap out capability. SEP 2.0 is a further development of the SEP and includes several key features such as support of multiple MAC/PHY layers, multiple security protocols, and requirements from the OpenHAN 2.0 System Requirements Specification<sup>59</sup>. SEP 2.0 is a significant upgrade to the SEP and was one of the 37 standards<sup>60</sup> identified by NIST as relevant to the smart grid because it is technology independent, IP based, and useful for many smart grid applications. However, SEP 2.0 is not backwards compatible with the SEP 1.x family and cannot coexist with SEP 1.x In-Home Devices.

Since Texas will have a significant deployment of smart meters and In-Home Devices that include the SEP 1.0 firmware before SEP 2.0 is commercially available, several members of AMIT worked within a SGIP Priority Action Plan (PAP) to address this upgradeability issue. PAP 18 was established in 2011 to specifically address SEP 1.x to SEP 2.0 migration and coexistence. Several AMIT members participated and one of the AMIT members led the effort.

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<sup>57</sup> Several members of AMIT participate in the ZigBee Alliance and are on the ZigBee Alliance board of directors

<sup>58</sup> [UtilityAMI 2008 Home Area Network v1.04](#) (produced by the Utility Communications Architecture International Users Group (UCAIug))

<sup>59</sup> [UCAIug Home Area Network System Requirements Specification v2.0](#)

<sup>60</sup> Page 96 of the NIST Framework and Roadmap for Smart Grid Interoperability Standards, Release 2.0



The result of the PAP 18 effort was a white paper<sup>61</sup>, which included a set of recommendations and best practices for the migration of SEP 1.x firmware to SEP 2.0. If and when the TDSPs decide to upgrade the SEP firmware in the smart meters the recommendations and best practices in the PAP 18 white paper will minimize the cost of the migration and the disruption of the Customer HAN.

### **11.7 NAESB Third Party Access to Smart Meter-based Information**

Third Party access to Customer usage information is a key benefit of the smart grid encouraged by Texas law, the PUCT, DOE, and the White House OSTP. Allowing Third Parties access to Customer usage information provides energy efficiency benefits to Customers through innovative Third Party products and services. Due to privacy concerns, market participants requested that NAESB develop voluntary best practices for the disclosure of Customer smart meter information. One of the AMIT members led the effort and several other AMIT members participated in the Data Privacy Task Force resulting in the voluntary NAESB standard REQ.22 - Third Party Access to Smart Meter-based Information Model Business Practices (MBPs).

SMT adopted many of the model business practices in this standard. SMT conforms to the high level principles in the standard related to the ease of granting Third Party access and the accessibility and transparency of the SMT privacy policy. SMT provides an easy to use, traceable method for Customers to grant Third Parties access to their usage information. SMT's privacy policy is clearly stated in its Terms and Conditions, which are accessible through a link which is strategically placed on the SMT web portal and in communications to Customers regarding Third Party access. In addition, Third Parties may voluntarily attest to meeting the requirements of a national privacy seal and provide a link to their privacy policy, both of which are provided in Third Party communications with the Customer.

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<sup>61</sup> The "SEP 1.x to SEP 2.0 Transition and Coexistence White Paper" is a work of the Smart Grid Interoperability Panel PAP 18 Working Group, Document Number: 2011-008, Version: 1.0, © 22 July 2011 by the SGIP.

The NAESB model business practices for Third Party access to usage information are grouped into ten (10) privacy categories which are discussed in the following sections.

### ***11.7.1 Management and Accountability***

Business practices in this category relate to internal policies and best practices on the disclosure of smart meter-based information to Third Parties. SMT conforms to these business practices by allowing only the Customer to authorize a Third Party access to their usage information by entering into an Energy Data Agreement with the Third Party. The NAESB model business practice related to recording and retaining records on the disclosures of information to Third Parties is also part of the SMT process. SMT creates reports documenting how many Energy Data Agreements have been entered into by Customers and how many usage reports are requested by Third Parties. TDSPs and Regulatory users may view these reports and Customers may view reports on the number of usage reports a Third Party requests for their data.

The model business practice governing unauthorized access by a terminated employee is in the SMT design. Administrators for each type of user (i.e., Business Customer, REP, Third Party, TDSP, and Regulatory) have the ability to terminate access by any user that is associated with their company account, thus avoiding unauthorized access by a terminated employee.

### ***11.7.2 Notice and Purpose***

Business practices in this category relate to providing a clear notice to Customers that their usage information will not be disclosed to a Third Party unless the Customer authorizes such disclosure, providing understandable and easily accessible privacy policies, and providing understandable authorization terms and conditions. SMT has adopted these business practices.

SMT has easy to understand Customer User Guides that explain how a Customer may authorize a Third Party to access to their usage data. In the email invitation sent to the Customer, it informs the Customer that if they accept the email invitation they are authorizing the Third Party to have access to their energy data and encourages the Customer to review the Third Party's

privacy policy, if provided. The following is in the email agreement invitation that a Customer receives:

“This agreement allows < 3rd Party name> to see and download your energy usage, meter and premise information.”

“If available, you are encouraged to review their privacy policy as it relates to how they manage your information before accepting this agreement..”

The email invitation includes all the authorization terms and conditions, a link to the Third Party’s privacy policy, if such link is provided by the Third Party, and a link to SMT’s privacy policy. In addition, SMT allows a Third Party to state whether they meet the requirements of a national privacy seal.

### **11.7.3 Choice and Consent**

Business practices in this category relate to obtaining and verifying the Customer’s authorization or withdrawal of authorization through a clear, concise, understandable, and easily accessible method. A Customer’s authorization is obtained and verified by SMT when the Customer accepts an email invitation to enter into an Energy Data Agreement with a Third Party. The Customer may withdraw their authorization at any time without the consent of the Third Party by terminating the Energy Data Agreement on the SMT web portal.

### **11.7.4 Collection and Scope**

The business practice in this category limits the Third Party’s collection of smart meter information to only the information and for the stated purpose as set forth in the Customer’s authorization. SMT will only allow a Third Party access to a Customer’s usage information for the period of time set forth in the Energy Data Agreement. SMT will terminate the Third Party’s access immediately following a Customer’s termination of the Energy Data Agreement.

### **11.7.5 Use and Retention**

The business practices in this category relate to a Third Party's retention of Customer smart meter information. A Third Party data retention policy is out of scope for SMT.

### **11.7.6 Individual Access**

The business practices in this category relate to providing Customers access to their smart meter information. Providing Customers access to their usage information is one of the primary functions of SMT. SMT provides this access through the SMT web portal so Customers can view and export their data.

### **11.7.7 Disclosure and Limiting Use**

The business practices in this category relate to disclosing Customer usage information to authorized Third Parties, disclosing aggregated usage information, not disclosing the usage information of a previous resident, and disclosing usage information to a law enforcement agency or court of law.

SMT has a defined process for Third Party access to Customer usage information and only allows a Third Party access when an Energy Data Agreement is active between the Third Party and the Customer. When a Customer moves into a premise, that information is conveyed to SMT through a daily file of market transactions sent by each TDSP and SMT will block a new resident's access to the previous resident's usage information. SMT website Terms and Conditions, which all users must agree to prior to accessing SMT functionality, states that SMT will only disclose Customer usage information to a governmental agency or entity when required to by law, regulation, rule, or court order.

### **11.7.8 Security and Safeguards**

The business practices in this category relate to the use of information privacy protections, performing a risk assessment related to unauthorized access, developing a comprehensive set of

privacy use cases to track smart meter information, and measures to protect the accuracy of the data.

SMT adheres to best practices as defined by PCI and NERC CIP cyber security standards (see Section 11.4) for protection of Customer privacy. SMT has implemented a number of technologies to mitigate the risk of unauthorized access (see Section 10). The PUCT Advanced Metering rule required that “an independent security audit of the mechanism for Customer and REP access to meter data [be] conducted within one year of initiating such access and promptly report the results to the commission.”<sup>62</sup> This security audit had been conducted.

Extensive storyboards have been created that detail the flow of smart meter information to Third Parties beginning with the Customer authorization through the Energy Data Agreement and ending with the termination of the Energy Data Agreement or when a Customer moves out of a residence. To protect the privacy of the Customer information, usage reports requested by Third Parties are sent to the Third Party’s SMT FTPS folder rather than by email.

The accuracy of the usage information is a function of the TDSPS and is out of scope for SMT.

#### **11.7.9 Accuracy and Quality**

The business practices in this category relate to the accuracy and quality of the usage information. The TDSP is responsible for the accuracy and quality of the usage information and SMT is responsible for making the data available; therefore this category is out of scope for SMT.

#### **11.7.10 Openness, Monitoring, and Challenging Compliance**

The business practices in this category relate to providing Customer education and establishing complaint procedures to address Customer disputes regarding disclosure of smart meter information to Third Parties. Prior to implementation of the SMT Third Party access function,

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<sup>62</sup> PUCT §25.130(j)(3)

Customers will be notified and the Customer User Guides will be updated. Establishing complaint procedures is done through Texas law or PUCT rules and is out of scope for SMT.

In addition to adopting many of these model business practices for the SMT functions related to energy usage information, SMT has adopted as many as are applicable to the SMT HAN functions.

## **11.8 UCAIug Home Area Network System Requirements Specification**

In 2008, the UCAIug HAN System Requirement Specification (SRS) v1.04 was initially developed to set forth the requirements for a Customer energy HAN that is able to engage in secure two-way communications between HAN service providers and Customer In-Home Devices. One of the stated purposes of the HAN SRS was as follows:

“Utilities and other Service Providers interested in establishing two-way communication with home area networks are encouraged to utilize and reference this document when evaluating and/or procuring smart grid systems that interact with HANs”.

AMIT reviewed the HAN SRS to get an overview of the requirements for the Customer HAN, various In-Home Devices, and HAN communications. AMIT created additional use cases on how an In-Home device would be added or removed from a Customer HAN and how a Customer enrolls their In-Home device in a service provider program. The use cases identified In-Home Device and smart meter security codes needed to securely join the In-Home Device to the HAN. These use cases were presented to the UCAIug HAN Task Force along with use cases and requirements from other companies when the HAN task force began to work on an updated version of the HAN SRS. The HAN task force was led by an AMIT member and other AMIT members participated and contributed to the work. Version 2.0 of the HAN SRS was released in August 2010 and included an expanded discussion of architectural considerations, a detailed discussion on In-Home Device commissioning, registration, and enrollment, and new requirements related to each of these processes.

SMT enables the process described in version 2.0 of the HAN SRS<sup>63</sup> of adding an In-Home Device to the Customer HAN (i.e., commissioning and registration). Once a Customer has accepted an In-Home Device Agreement with a Third Party, SMT will automatically initiate the process of adding an In-Home Device to the Customer HAN. In addition, SMT enables the enrollment of Customer In-Home Devices in Third Party programs, a process discussed in the HAN SRS, through the In-Home Device Services Agreement. Once an In-Home Device Services Agreement is in place between a Customer and Third Party, SMT enables a Third Party to send messages to a Customer's In-Home Device using one of the standard HAN APIs.

## 11.9 Web Standards

The SMT portal uses several common web technologies to ensure a broad compatibility with users' web browsers to ensure a common appearance while still maintaining security. The portal follows recommendations from the World Wide Web Consortium (W3C) with respect to the use of Extensible Hypertext Markup Language (XHTML) and Cascading Style Sheets (CSS). The portal also follows industry best practices for JavaScript that conform to standards developed by Ecma International (formerly the European Computer Manufacturers Association). Other standards for the delivery of web pages and naming conventions conform to documents published by the Internet Engineering Task Force (IETF).

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<sup>63</sup> [UCAIug Home Area Network System Requirements Specification v2.0](#)

## 12 Testing

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### 12.1 SMT System

#### 12.1.1 Internal Testing

SMT is a collection of enterprise systems that have largely been out of scope for discussion in this report. The system developer and integrator was largely responsible for ensuring that the underlying architecture of SMT was fully tested and met the system requirements.

Test conditions for SMT were developed by referring to the source documents that AMIT created, in addition to documents created during the detailed system development. Sources for the test conditions include:

- AMIT Business Requirements
- SMT User's Guide
- SMT Design Documents
- SMT Functionality Matrix
- SMT 1.1 and 2.0 Dashboard.

Each functional release of SMT is tested against a number of test conditions, with each subsequent release requiring fewer tests to validate the new functionality. New releases include testing to verify that existing functions have not been interrupted. In addition, SMT has undergone numerous independent vendor security reviews by a wide variety of vendors (see Section 10.3.4).

#### 12.1.2 External Testing

SMT is designed to interact with a large number of external entities. The development of a standardized set of interfaces has enabled uniform testing and acceptance procedures.

REPs and Third Parties are provided with documentation and technical support to develop system integrations for using both the FTPS and APIs. For FTPS, proper configuration of the security mechanisms are the primary goals. Steps for FTPS configuration include:



1. Obtain FTPS client security certificate (self-signed)
2. Provide public PGP key to SMT (self-signed)
3. Obtain credentials and addresses for SMT staging environment
4. Coordinate download testing with SMT.

The APIs require similar security measures and also add additional technical complexities associated with the correct creation, transmission and receipt of SOAP XML messages. SMT provides user guides to REPs and Third Parties to help them integrate with SMT.

## 12.2 In-Home Devices

AMIT workshops and early TDSP testing of meter deployments indicated a gap between SMT as the common In-Home Device interface for Third Parties and the differences between the Joint TDSPs' implementation of the HAN functionality. The various smart meter and In-Home Device vendors had different interpretations of ZigBee SEP v1.0 specifications, resulting in a lack of interoperability. To bridge this gap, AMIT worked to clarify the HAN requirements and the Joint TDSPs worked with smart meter and In-Home Device vendors to produce a common implementation of ZigBee SEP v1.0.

Oncor and CenterPoint sponsored a series of ZigBee test events in Texas known as 'ZigFesTx'. The purpose of the ZigFests was to resolve any SEP v1.0 implementation differences and to produce an interoperable HAN communication functionality using SMT as the common interface. The ZigFests were performed using two testing stages. Early testing involved using pre-production In-Home Devices with ZigBee's standardized SEP 1.0 test processes. Later testing occurred with production hardware using security certificates in an end-to-end test through the SMT web portal, the TDSP metering head end systems, and down to the smart meters. The use of multiple meters and multiple devices in a simulated production environment enabled rapid progress in resolving any interoperability issues. The ZigFest tests were the first opportunity for many In-Home Device manufacturers to work in a live environment with smart meters. The tests also allowed participants to quickly find and resolve firmware issues in both meters and In-Home Devices. The tests identified the different interpretations of SEP v1.0 and

opportunities for new features. Any issues that could not be resolved were sent to the ZigBee Alliance and new features were incorporated into ZigBee SEP v1.1.

The TDSPs test, verify functionality, and report on In-Home Devices which work with their smart meters. The TDSPs regularly update the list of functional devices and provide the list in the monthly ERCOT RMS Advanced Meter Working Group (AMWG) meetings. The list is posted on the ERCOT website under the AMWG meetings.

## 13 Operational Support

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### 13.1 System Support

A number of advanced enterprise systems operating on high reliability server hardware ensure that SMT's functionality is continuously provided to the Customers, REPs, Third Parties, TDSPs, and Regulatory users.

The SMT vendor support team provides continuous network monitoring and intrusion protection. Quarterly scans of internet facing IP addresses are performed and the results are reported to the TDSPs. Any discovered vulnerabilities are discussed and addressed by the JDOA and vendor support team. Additionally, the TDSPs can conduct independent security audits as they see fit to provide an additional level of oversight.

System compliance monitoring is another responsibility of the SMT vendor support team. System security policies and technical device configurations are maintained in software tools that scan quarterly for compliance. Non-compliance issues are resolved based on their severity or documented as exceptions and included in policy updates. The system policy is reviewed and refreshed every 18 months.

SMT application monitoring addresses:

- Application server unavailability
- Failure of key functionality
- System storage usage monitoring and alerts
- Incident ticket notifications by email and text
- Daily registration reports including registrations, In-Home Devices, etc.
- Daily manual system health check procedures and reports

SMT hardware monitoring includes:

- Internal systems that provide SMT functionality

- Network event monitoring
- Health check scans to measure compliance against the security policies

SMT is a 24x7 application with occasional maintenance windows that typically occur during low usage periods (i.e., Saturday 2:00 a.m. until noon on Sunday). All maintenance is conducted during off-hours as best as possible and detail planning occurs to make maintenance periods as short and efficient as possible.

While there are no contractual service level agreements for data delivery or historical data, soft targets have been established. These soft targets are:

- Files received by 7 p.m. are posted to the SMT FTP server by 11 p.m. that day
- Files received by 7 p.m. are posted to the SMT data warehouse by 6 a.m. the next day.

SMT vendors have service level agreements for monthly server availability and for acknowledgement and resolution time for issues that occur based on the issue severity.

SMT sends notifications to the Texas market listservs (RMS) to indicate when SMT will be unavailable. Planned maintenance notifications are made at least 3 days prior. SMT web portal outages lasting longer than 15 minutes will be reported to the market and if any interruption is planned to occur to market facing services, 30 day, 10 day, 2 day and 1 day notices are sent.

The SMT JDOA reviews monthly and annual GUI reporting statistics and tracks key metrics including:

- Number of users in all roles by associated TDSP
- Growth of users in all entity roles
- Number of ESIDs and meters
- Number of In-Home Devices.

## 13.2 Disaster Recovery

SMT system disaster recovery is supported through change control processes that ensure that system changes are replicated across the primary and secondary systems, and a backup strategy

that minimizes the loss of data during a system transition to the secondary data center. SMT's backup data center is located out of state, providing a significant geographical separation to help protect against localized environmental disasters. SMT has a well-documented plan that quickly restores the functional capabilities of SMT and then allows the system to gracefully transition back to the primary center at the appropriate time. SMT performs annual live testing of its disaster recovery strategy to ensure that it operates as designed and meets the design goals for system availability.

### **13.3 SMT Help Desk**

SMT operates a call center to assist users by phone and email to answer common questions and provide technical support for all Customers, REPs, and Third Parties. The help desk provides support for all types of interactions with the SMT web portal, including account registration, account lock out, and data retrieval. In some cases users needing assistance will be directed to other appropriate contacts for assistance with a problem that is outside the scope of SMT's functionality. Typically this may be to direct users to their REP, a Third Party, TDSP or a hardware device vendor.

The help desk support materials are regularly reviewed to ensure that consistent support is provided and to identify new question topics that require the development of new support materials.

The help desk has the following service level objectives:

- Help desk average speed to answer - target is 90% of calls within 60 seconds
- Help desk abandon rate - abandon call rate target is less than 6% of calls.

## 14 Appendix A: – Example Use Case

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### 14.1 Example Use Case

Included here is a detailed example of a well-documented use case. AMIT workshop stakeholders developed this and similar use cases, reaching consensus on the steps and discussing the business and system requirements necessary to achieve the described scenario.

#### 14.1.1 Use Case Description

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##### 14.1.1.1 Use Case Title

Retail Off-The-Shelf Devices + Self Install

##### 14.1.1.2 Use Case Summary

The process of adding a retail purchased HAN Device, from installation to web portal enrollment. The Customer may only want to install the HAN Device to receive AMS Meter information and may choose to enroll or not enroll the HAN Device with a particular REP program.

##### 14.1.1.3 Use Case Detailed Narrative

The use case is triggered by the Customer acquiring a HAN Device from an indirect source [i.e., not from the REP] and wanting to install it at the premise.

An AMS Meter is installed and the AMS Network is communicating with the ESI is a pre-condition for this use case. AMS Meter and premise information must be captured during AMS Meter installation by TDSP / Utility for use in Provisioning a HAN Device. Specifically, the AMS Meter information that is needed to address the ESI at the premise through the AMS Network is available to the TDSP. The AMS Meter at time of deployment is assumed to have no

pre-commissioning of HAN Device networking details. The HAN Device is assumed to have no knowledge of security credentials for the AMS Meter HAN communications link.

To begin the Provisioning process, the Customer must identify themselves to their REP/ Common Web Portal with their unique Customer id [e.g. Customer account, premise address, meter number, etc.]. This information given to the REP / Common Web Portal must uniquely identify the Customer, the Customer premise and the specific AMS Meter for that premise. The Customer must provide the necessary HAN Device networking details [e.g. MAC address, Installation Code] to the REP / Common Web Portal. These HAN Device networking details will be used by the ESI to Provision the HAN Device to the AMS Meter. The Customer has several ways to contact the REP to begin the installation process including:

1. logging into REP web site and loading the HAN device networking details
2. phone—live agent or IVR; the exception path for IVR would lead to a live agent
3. logging into a third party website, with a national database for registration
4. initiating the process through an appropriate retail channel

The Customer will contact their REP (prior to Common Web Portal implementation) or logon to the Common Web Portal (after implementation of the Common Web Portal) to begin the Provisioning process. This process will be complete when the HAN Device is successfully Provisioned to the customer's ESI and the HAN Device indicates it is joined to the ESI. In addition, after the implementation of the Common Web Portal, the Common Web Portal will update the list of Provisioned HAN Devices with the new HAN Device and Customer will provide a unique descriptive label to identify the HAN Device in the Common Web Portal. Additionally, if the Customer wants to Register the HAN Device for a particular REP program, the Customer will contact their REP. Once the REP / Common Web Portal receives the Provisioning request from the Customer, the request is communicated by way of an accessible interface such as a Common Web Portal or a standard API (WSDL or Web Service Definition Language) over the AMS Network to the ESI. The mechanism used for joining a HAN Device to the ESI is the ZigBee Smart Energy procedure (see ZigBee Smart Energy Profile r14, section

5.4.2.1). The ESI must be configured with security credentials derived from installation codes of the HAN Device before the HAN Device can attempt to join the AMS Meter's Smart Energy HAN communication link. The appropriate HAN Device security credentials will be submitted to the appropriate ESI via the AMS Network.

Once the ESI is prepared to allow the appropriate HAN Devices to join, the Customer simply powers on the HAN Device and follows the HAN Device manufacturer's instructions. The HAN device will perform a secure transaction to join to its preconfigured ESI. Following a successful join, the HAN Device is considered Provisioned and could engage in two-way communication through the ESI over the AMS Network.

#### **14.1.1.4 Business Rules and Assumptions**

1. This use case is typically for Residential Customers.
2. AMS Meter is installed at the premise and the AMS Network is communicating with the ESI.
3. The AMS Network has an accessible interface available to REPs or 3rd parties to communicate with the ESI.
4. HAN Communication in the premise is using the Smart Energy protocol.
5. All HAN Devices and the ESI must come from the manufacturer with valid security credentials loaded, that were issued by an authorized party as required by the Smart Energy specification.
6. HAN Devices have no knowledge of ESI security credentials when they are deployed.
7. The AMS Meter information, which is obtained during installation of the AMS Meter, is available.
8. HAN Devices, with the specifications listed above, are available for a Customer to purchase at a retail outlet.
9. HAN Devices are packaged with manufacturer's instructions on how the Customer can initiate the joining process.
10. Customer has access to HAN Device network details (e.g. MAC address, Installation Code).
11. Customer has access to customer information (e.g. Customer account, premise address, meter number).



12. The Common Web Portal will provide an indication that a HAN Device is Provisioned to the ESI and provide a means to label the HAN Device.
13. The HAN Device will provide an indication of the success or failure to the Customer of the Provisioning outcome with the ESI.
14. This use case shall conform to applicable national standards for Smart Energy and HAN applications as those standards develop.
15. Definitions

Provisioning - Establishing a secure communication link between the ESI and a HAN Device such that communications to and from the HAN Device can be delivered over the AMS Network. This encompasses commissioning, beaconing, discovery. Provisioning on its own does not provide any link or communication between the HAN Device and the REP back office.

Registration - Process of enrolling a HAN Device in a program in the REP CSS. Provisioning is a pre-condition of registering a HAN Device. Registration is out of scope for this use case.

De-Provisioning – Process of terminating the HAN Device communication with the AMS network through the ESI. This De-Provisioning process is out of scope for this use case and will be covered in another use case. See Tasks 157 and 172.

De-Registering – Process of terminating the HAN Device’s enrollment in a REP program. De-Registering is out of scope for this use case.

### 14.1.2 Actors

| Actor Name        | Actor Type (person, equipment, system, etc.) | Actor Description  |
|-------------------|--|--|
| AMS Meter         | Equipment                                    | An advanced meter with the capabilities specified in the PUCT §25.130  |
| AMS Network       | Equipment                                    | A TDSP system that provides two-way communication system to / from the THI   |
| Common Web Portal | System                                       | A web portal which allows authorized users access to Customer usage, meter attributes, premise information, HAN Device information and enables communication with HAN Devices.                     |
| Customer          | Person                                       | Customer of REP who has an AMS Meter installed at their Premise.   |
| CSS               | System                                       | A Customer service system –a system that provides the ability to view Consumer-specific information regarding billing, tariffs, programs, metering, interval usage, and HAN Devices, etc.          |
| HAN Devices       | Equipment                                    | Equipment owned by the Customer and installed in the Customer premise capable of two-way communication with the THI  |
| REP               | Business                                     | Retail Electric Provider - An employee of the REP, or agent of a REP, who is authorized to send/receive messages to/from a HAN Device. In some areas, this function may be handled by the Utility. |
| Retailer          | Business                                     | [to be defined]  |
| TDSP / Utility    | Business                                     | Transmission and Distribution Service Provider (ERCOT) or Utility (non-ERCOT) responsible for the AMS Meter and AMS Network  |

| Actor Name | Actor Type (person, equipment, system, etc.) | Actor Description   |
|------------|--|---|
| ESI        | System                                       | TDSP Energy Services Interface – Provides security and, often, coordination functions that enable secure interactions between relevant Home Area Network (HAN) Devices and the TDSP (Utility) and REP. Permits applications such as remote load control, monitoring and control of distributed generation, in-home display of Customer usage, reading of non-energy meters, and integration with building management systems. Also provides auditing/logging functions that record transactions to and from HAN |

### 14.1.3 Step by Step analysis of use case

#### 14.1.3.1 Scenario Description

| Triggering Event   | Primary Actor | Pre-Condition   | Post Condition   |
|--|---------------|---|--|
| Customer purchases a HAN Device at a retail outlet and wants to install it in their premise. | Customer      | <ul style="list-style-type: none"> <li>• AMS Meter is installed at the premise and the ESI is communicating (2-way) with the AMS Network</li> <li>• HAN Device comes pre- packaged with the HAN Device networking details accessible to the Customer and includes the manufacturer’s instructions for joining to the ESI.</li> <li>• Customer or REP has access to the AMS Network via the Common Web Portal or an API</li> </ul> | HAN Device is Provisioned to the ESI and able to participate in 2-way communication over the AMS Network. Optionally, the HAN Device may be Registered with a REP program. |

**14.1.3.2 Steps for the Scenario**

| Step # | Actor  | Description of the Step   | Additional Notes   |
|--------|--|---|--|
| #      | What Actor, either primary or secondary is responsible for the activity in this step | Describe the actions that take place in this step. The step should be described in active, present tense. | Elaborate on any additional description or value of the step to help support the descriptions  |
| 1      | Customer   | The Customer acquires a HAN Device and decides to connect it to the ESI.                                  | <p>The HAN Device must have valid security credentials loaded.</p> <p>HAN Device has the HAN Device networking details accessible to the Customer/Installer and includes the manufacturer’s instructions for joining to the ESI.</p> |

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| Step # | Actor                   | Description of the Step  | Additional Notes   |
|--------|-------------------------|--|--|
| 2      | Customer                | <p>Prior to Common Web Portal implementation:<br/>The Customer contacts the REP and gives the REP the HAN Device networking details (e.g. MAC Address, Installation Code) and the Customer account information (e.g. customer ID, premise address, meter number, etc.) and a unique descriptive label describing the HAN Device.</p> <p>After Common Web Portal implementation:<br/>Customer logs on to the Common Web Portal and inputs the HAN Device networking details (e.g., MAC Address, Installation Code) along with a unique descriptive label describing the HAN Device.</p> | <p>Methods for contacting the REP can include:</p> <ul style="list-style-type: none"> <li>• REP web site</li> <li>• Phone</li> <li>• Live agent</li> <li>• IVR</li> <li>• Third party, national database for registration</li> <li>• Retailer</li> </ul> |
| 3      | REP / Common Web Portal | <p>Prior to Common Web Portal implementation:<br/>REP verifies the Customer's identity.</p> <p>After Common Web Portal implementation:<br/>Common Web Portal verifies Customer's identity.</p>   |  |

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| Step # | Actor                 | Description of the Step   | Additional Notes  |
|--------|-----------------------|---|---|
| 4      | REP / TDSP / ESI      | <p>The HAN Device provisioning process is initiated by the REP / Customer.</p> <p>The REP / Customer identifies the target devices (HAN Devices and AMS Meter) and provides the necessary information (e.g. customer information, meter information, and HAN Device networking details) to the TDSP</p> <p>TDSP validates REP/ Customer access, customer information, and meter information.</p> <p>The TDSP enables the Provisioning process by sending the necessary information via the AMS Network to the ESI</p> | <p>Method is preferably by way of an accessible interface such as a Common Web Portal or standard API (WSDL).</p> <p>The TDSP will store the HAN Device security credentials.</p> <p>Exception case: If the number of HAN Devices exceeds the allowed amount, then REP/Customer/ HAN installer is notified.</p> |
| 5      | AMS Network / ESI     | <p>The AMS Network (this may be the ESI) generates security keys using the HAN networking details.</p>  |   |
| 6      | Customer / HAN Device | <p>The Customer simply powers on the HAN Device and initiates the joining process per the HAN Device manufacturer's instructions.</p>   | <p>Different HAN Devices may employ different methods to initiate the joining process such as simply powering the device on or by pushing one of multiple buttons.</p>  |
| 7      | HAN Device / ESI      | <p>Upon initiating the join process, the HAN Device will scan for ESIs to join. It is possible the HAN Device may be in range of more than one ESI and will attempt to join the first ESI it finds. However, only the ESI that has the correct security credentials for this specific HAN Device will allow the HAN Device to join.</p>   | <p>Exception: If an ESI receives a request from a HAN Device it does not recognize it will not allow the HAN Device to join to it. The HAN Device will try other ESIs until it is allowed to complete the join process.</p>   |

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| Step # | Actor                 | Description of the Step  | Additional Notes   |
|--------|-----------------------|--|--|
| 8      | ESI                   | ESI validates the HAN Device, and if successful, initiates a more secure link for future communications.   | <p>The THI controls the process whereby the AMS Meter and HAN Device exchange information and completes mutual authentication.</p> <p>The ESI security keys will allow the ESI to identify the correct HAN Devices to allow onto the AMS Network.</p> <p>ESI encrypts all traffic between HAN Devices and the ESI during the join process, prior to the establishment of security keys based on certificate information.</p> |
| 9      | HAN Device            | Communicates with ESI to accept the new secure link and secure communications for all additional information   |  |
| 10     | HAN Device / Customer | The HAN Device will provide feedback to the Customer on successful or unsuccessful Provisioning.   | If unsuccessful, the HAN Device should provide an appropriate feedback to the Customer.  |
| 11     | ESI                   | ESI communicates, to the Common Web Portal, the successful provisioning of a HAN device.   |  |
| 12     | Common Web Portal     | The Common Web Portal updates the list of Provisioned HAN Devices and pending Provision requests by changing the status from pending to Provisioned. | Completion of the Provisioning process and the update in the Common Web Portal is desired in less than one minute  |

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| Step #           | Actor                   | Description of the Step   | Additional Notes |
|------------------|-------------------------|---|------------------|
| 12<br>(optional) | Customer                | Customer contacts REP and requests that their Provisioned HAN Device be Registered with a REP program. Customer gives the REP the HAN Device descriptive label identifying the HAN Device, if more than one HAN Device is |                  |
| 13<br>(optional) | REP / Common Web Portal | REP verifies in the Common Web Portal that the HAN Device is Provisioned and completes the Registration of the HAN Device with the appropriate REP program in the REP   |                  |



# Exhibit M

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

CASE 20-M-0082 - Proceeding on Motion of the Commission Regarding  
Strategic Use of Energy Related Data.

ORDER IMPLEMENTING AN INTEGRATED ENERGY DATA RESOURCE

Issued and Effective: February 11, 2021

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STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

At a session of the Public Service  
Commission held in the City of  
Albany on February 11, 2021

COMMISSIONERS PRESENT:

John B. Rhodes, Chair  
Diane X. Burman, dissenting  
James S. Alesi  
Tracey A. Edwards  
John B. Howard

CASE 20-M-0082 - Proceeding on Motion of the Commission Regarding  
Strategic Use of Energy Related Data.

ORDER IMPLEMENTING AN INTEGRATED ENERGY DATA RESOURCE

(Issued and Effective February 11, 2021)

BY THE COMMISSION:

INTRODUCTION

New York is transforming its electricity system into one that is cleaner, more resilient, and more affordable. Effective access to useful energy data will play a critical role in this transformation, unleashing the power of integrated energy customer data and energy system data to speed the deployment of clean energy solutions. This will attract investment, enable analytics, help identify operational efficiencies, promote innovation, and encourage new business models, which will in-turn create value for customers and the State's energy system. The creation of an Integrated Energy Data Resource (IEDR) will provide New York's energy stakeholders with a platform that enables effective access and use of such integrated energy customer data and energy system data.

On May 29, 2020, Department of Public Service Staff (DPS Staff) filed the "Department of Public Service Staff Whitepaper Recommendation to Implement an Integrated Energy Data Resource" (the Whitepaper),<sup>1</sup> which describes the current state of access to energy-related data for New York State and recommends an approach for the creation of an IEDR that would provide a platform for access to customer and system data. The Whitepaper also includes an analysis of energy data initiatives in other jurisdictions and specific recommendations for stakeholder engagement, data resource design, data resource use cases, implementation, and operation.

Broadly, the Whitepaper recommends that the IEDR collect and integrate a large and diverse set of energy-related information on one statewide data platform. To advance the development of a statewide IEDR, the Whitepaper details specifics related to the IEDR's purpose, scope, capabilities, program management, and governance for the Public Service Commission's (Commission) consideration.

By this order, the Commission adopts the recommendation to establish a statewide IEDR and adopts the detailed path as described in the Whitepaper, with modifications. As discussed below, the Commission directs the implementation of an IEDR that securely collects, integrates, and provides useful access to a large and diverse set of energy-related information on one statewide data platform. The types of information and tools made accessible through the IEDR should provide useful insights related to the provision and use of

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<sup>1</sup> Case 20-M-0082, Department of Public Service Staff Whitepaper Recommendation to Implement an Integrated Energy Data Resource (filed May 29, 2020) (the Whitepaper).

electricity and natural gas in New York State. While numerous data-related initiatives exist in New York, encompassing both customer and system data access, the Commission's actions will accelerate efficient and expanded useful access to useful energy data, for all types of users, including Energy Service Entities (ESEs), utilities, governmental agencies and academics. To enable implementation, this Order directs the development of the IEDR's design and adopts the necessary frameworks for funding, program management, and governance.

#### SUMMARY OF THE WHITEPAPER

The Whitepaper provides relevant background information on recent regulatory actions in New York State, including the Pilot Data Platform,<sup>2</sup> and a summary of the Distributed Energy Resource (DER) Industry Group Initiative.<sup>3</sup> It then describes the existing energy information framework in New York, emphasizing that while the volume and variety of accessible utility data has increased since 2014, the current status and rate of progress does not meet Commission expectations due to several issues that are preventing useful

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<sup>2</sup> The Storage Deployment Order directed DPS Staff and the New York State Energy Research and Development Authority (NYSERDA) to lead coordination efforts with the Joint Utilities, Long Island Power Authority (LIPA), New York Power Authority (NYPA), and other stakeholders to develop and implement a Pilot Data Platform (Pilot Data Platform) with the assistance of a third party platform provider. See, Case 18-E-0130, Energy Storage Deployment Program, Order Establishing Energy Storage Goal and Deployment Policy (issued December 13, 2018) (Storage Deployment Order), p. 84.

<sup>3</sup> Case 16-M-0411, In the Matter of Distributed System Implementation Plans, Summary Report: Distributed Energy Resource Market Enablement Data Needs (filed as a Public Comment January 6, 2020).

access to useful data. These issues include availability, accessibility, and usefulness of information. The Whitepaper identifies notable energy data initiatives in other states, including California, Illinois, New Hampshire, and Texas. While each state initiative has one or more goal and characteristic that informed the recommendations, none of the other state initiatives match the scope and depth of the IEDR proposal.

Next, the Whitepaper proposes a detailed path forward to develop and operate an IEDR that will collect, integrate, and make useful a large and diverse set of energy related information on one statewide data platform to materially improve stakeholders' ability to understand and affect the provision and use of electricity and natural gas in New York State. The detailed path assumes that the IEDR evolves in a sequence that begins with a "minimum viable data set" closely aligned with use-case priorities. The execution of the path begins with the assignment of a Program Sponsor role, for which DPS Staff recommended NYSERDA. The Program Sponsor would first select the Program Manager. Once retained, the Program Manager would determine and recommend a team structure that would be best suited for each course of action, including Stakeholder Engagement, Architecture, Design, Implementation, and Operation. The Program Sponsor and Program Manager's work would be overseen by way of a Steering Committee and Advisory Group.

The Whitepaper also describes DPS Staff's effort working with NYSERDA to issue a Request for Information (RFI) to obtain the information needed to inform the Commission of the expected expenditures necessary to build and operate the IEDR. The Whitepaper suggests that the Commission use such information, as well as information obtained through the comment process, to set an overall budget cap to be managed by the

Program Sponsor and to understand the sequence and timing of work and expenditures by all program participants.

Lastly, the Whitepaper delineates the roles and responsibilities of each of the relevant entities involved. In addition to the Commission, other State agencies and entities would have a role in implementing the IEDR, including NYSEDA, NYPA, LIPA, the New York Independent System Operator, Inc. (NYISO), and the New York State investor-owned electric and gas utilities (IOUs).<sup>4</sup>

#### PUBLIC NOTICE

Pursuant to the State Administrative Procedure Act (SAPA) §202(1), a Notice of Proposed Rulemaking (Notice) was published in the State Register on June 24, 2020, [SAPA No. 20-M-0082SP2]. The minimum time period for submission of comments pursuant to the SAPA Notice expired on August 24, 2020. In addition, on June 30, 2020, the Secretary to the Commission (Secretary) issued a Notice of Stakeholder Meeting and Soliciting Comments (Secretary's Notice), which invited stakeholders to submit written initial comments by August 24, 2020, and reply comments by September 11, 2020. The Secretary's Notice also invited interested stakeholders to a technical conference held by DPS Staff on July 22, 2020, and conducted via

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<sup>4</sup> New York's electric and gas IOUs are: Consolidated Edison Company of New York, Inc. (Con Edison), Orange and Rockland Utilities, Inc. (O&R), Central Hudson Gas & Electric Corporation (Central Hudson), Niagara Mohawk Power Corporation d/b/a National Grid (National Grid), New York State Electric & Gas Corporation (NYSEG), Rochester Gas and Electric Corporation (RG&E), National Fuel Gas Distribution Corporation (National Fuel), St. Lawrence Gas Company, Inc. (St. Lawrence Gas), Keyspan Energy Delivery New York (KEDNY), and Keyspan Energy Delivery Long Island (KEDLI).



WebEx. In response to the SAPA Notice and the Secretary's Notice, comments were filed by several organizations and individuals. A complete summary of these comments is included in Appendix A, and they have been considered and addressed in the discussion below.

LEGAL AUTHORITY

The Public Service Law (PSL) provides the Commission with broad jurisdiction and authority related to the "[m]anufacture, conveying, transportation, sale, or distribution of ... electricity ... ." <sup>5</sup> Furthermore, PSL §5(2) instructs the Commission to "encourage all persons and corporations subject to its jurisdiction to formulate and carry out long-range programs ... with economy, efficiency, and care for the public safety, the preservation of environmental values and the conservation of natural resources." The Commission's supervision of electric corporations includes the responsibility to ensure that all charges made by such corporation for any service rendered shall be just and reasonable. <sup>6</sup> PSL §66 empowers the Commission to "[p]rescribe from time to time the efficiency of the electric supply system." The Commission may exercise this broad authority to direct regulatory standards to execute the provisions contained in the PSL. Additionally, the Commission has the authority to direct the treatment of DER by electric corporations. <sup>7</sup>

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<sup>5</sup> PSL §5.

<sup>6</sup> PSL §65.

<sup>7</sup> PSL §§5(2), 66(1), 66(2), 66(3), 66-c, 66-j, and 74.

DISCUSSION

I. The Need for a Statewide Integrated Energy Data Resource  
Whitepaper Recommendations

The Whitepaper notes that since 2014, as part of the Commission's Reforming the Energy Vision (REV) efforts, each utility has independently implemented a portfolio of stakeholder-facing online resources that provide access to various types of system-related information.<sup>8</sup> Those resources are summarized in Appendix A of the Whitepaper. DPS Staff provides an evaluation of the current portfolio of utility-provided data access resources by examining the availability, accessibility, and usefulness of customer and system data provided by the utilities. Overall, DPS Staff opines that the development of utility-provided resources to-date represents notable progress that should generally be maintained until the IEDR can replace and surpass those tools. However, DPS Staff's analysis concludes that IOU progress falls short of timely providing the State's energy stakeholders with useful access to useful energy-related data.

DPS Staff recommends that the Commission direct the planning, design, implementation, and operation of a statewide IEDR that will collect, integrate, analyze, and manage a wide variety of standardized energy-related information from the State's utilities and other sources. DPS Staff asserts that integrating such information in one location would enable DER providers, utilities, energy consumers, government agencies, and others to more readily develop valuable technical and business

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<sup>8</sup> Case 14-M-0101, Proceeding on Motion of the Commission in Regard to Reforming the Energy Vision, Order Adopting Regulatory Policy Framework and Implementation Plan (issued February 26, 2015) (REV Track One Order), p. 92.

insights by using queries and other functions to filter, aggregate, analyze, and generate useful information. The Whitepaper suggests that those insights will, in turn, lead to faster and better policy, investment, and operational decisions that will accelerate the realization of New York State's REV and Climate Leadership and Community Protection Act (CLCPA) goals. Furthermore, DPS Staff asserts that the proposed IEDR strategy is the least-cost approach to drive progress toward improved information access and usefulness. To achieve that result, DPS Staff provides detailed recommendations for the elements of a comprehensive IEDR program framework comprising program sponsorship, program oversight, program management, system architecture, system design, system implementation, system operation, and stakeholder engagement.

Comments

The Joint Utilities<sup>9</sup> agree with Staff that, properly developed, a standardized platform has the potential to facilitate investment and community planning that will accelerate the deployment of clean energy solutions throughout New York State. The Joint Utilities also state that the IEDR development should be nimble, able to respond to evolving market needs and technological capabilities in a timely and cost-effective manner, while providing upfront value that third parties and developers need to design and launch products.

Logical Buildings agrees with the need for a central repository for all the information that may be utilized for providing energy management services. They also agree that material relevant to educate third parties as to which

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<sup>9</sup> The Joint Utilities are: Central Hudson, Con Edison, NYSEG, National Grid, O&R, and RG&E.

geographic areas may have the highest need for certain services should also be made available to DER developers.

While Logical Buildings asserts that the process for companies trying to access data is currently overly complicated and needs simplification, a number of commenters including the Association for Energy Affordability (AEA), Advanced Energy Economy (AEE), Flux Tailor and the Retail Energy Supply Association (RESA), agreed that the provision of data under existing Commission rules and existing utility practices should continue without interruption while the proposed IEDR is developed and adopted.

#### Determination

The Commission finds that the current state of energy stakeholders' access to energy information provided by New York State's utilities is inadequate and inefficient. It is clear that the utilities' existing and currently planned data access resources and practices will likely fall short of the State's needs. Further, the Commission agrees with comments asserting that the current processes for gaining access to utility-provided data is burdensome.

Consequently, the Commission affirms that it is necessary to expeditiously implement the IEDR as recommended by DPS Staff in the Whitepaper.

DPS Staff's proposal for implementing a centralized, statewide IEDR provides a comprehensive and coherent vision to move beyond the current landscape's serious shortcomings. The Commission agrees with DPS Staff's assertion that the proposed IEDR will provide New York State's energy stakeholders with useful access to useful energy-related information and tools in a manner that will most efficiently accelerate progress toward achieving the State's clean energy and climate goals.

Furthermore, the Commission finds that DPS Staff's detailed recommendations for program structure and execution will effectively address the commenter concerns regarding program governance, goals, milestones, timeframes, and stakeholder involvement.

The Commission notes that several programs have been initiated relating to various aspects of accessing and using energy customer and energy system data. The actions directed by this Order specify the next steps to substantially increase useful access to useful energy-related data through the IEDR, while not prematurely transitioning away from data access tools and resources that are already operational. Considering the time needed to implement all the IEDR capabilities, it will be necessary and reasonable for the utilities to maintain existing data access resources and to continue developing currently planned resource enhancements and additions that would provide stakeholders with earlier access to more data.

## II. IEDR Program Parameters

### A. IEDR Program Scope

#### Whitepaper Recommendations

Staff proposes that the statewide IEDR would collect, integrate, analyze, and manage a wide variety of standardized energy-related information from the State's electric and gas utilities and other sources. In addition to collecting and housing the data, the IEDR would provide a collection of analytic tools that would enable users to design and run useful queries and calculations that operate across all the data types in the system and be a trusted resource for the State's energy stakeholders. The number and functionality of those tools should increase over time to align with the various use cases

that develop. In addition, to comply with the data privacy and protection framework adopted by the Commission, the users' access to the IEDR's various tools would be governed by access controls that align with the legitimate needs of each user type while also preventing unwarranted access to information that does not serve those legitimate needs.

The Whitepaper indicates IEDR should also perform other functions to produce additional useful information that is derived from the information acquired from its outside sources. For example, one such function would compensate for the large amount of missing consumption interval data (due to the lack of widely implemented smart metering) by synthesizing estimated customer interval data based on the customer's monthly consumption and the generic load profile for the customer type. Another example is users' ability to obtain calculated monthly bill estimates based on a customer's energy usage data and digitized tariff parameters.

In addition, the design, operation, and management of the IEDR should readily accommodate adding new information sources, information types, and functions as new market and utility needs emerge. Over time, the IEDR should evolve to include useful information and functions related to weather, demographics, zoning, building attributes, land attributes, property taxes, real estate values, locations of environmental justice areas, Electric Vehicle (EV) registrations, EV charger types and locations, EV charger loads, localized grid load-serving capacity, DER aggregations by operator, DER aggregations by grid service, and power quality measurements.

According to DPS Staff, relational information that describes the relationships among the various information elements in the IEDR must also be included since it would

materially affect the users' ability to find, analyze, and generate useful information. The IEDR should also be able to continually analyze its various data sets to generate additional relational information that is not obtainable from outside sources.

To address the standardization of data, DPS Staff recommends that all information providers should fully align each provided data element's attributes with standards for the attributes required to meet the needs of the use cases enabled by the IEDR. Important attributes that significantly affect a data element's usefulness - including temporal granularity, spatial granularity, precision, accuracy, age, and uniformity - should all meet or exceed minimum levels of adequacy for each use case that employs that data element.

DPS Staff recognized that the Commission is also considering the establishment of new state policies for a uniform and comprehensive Data Access Framework to govern the means and methods for accessing and protecting all types of energy-related information. DPS Staff recommends that all aspects of implementing and operating the proposed IEDR must comply with the policies comprising any future new Data Access Framework.

Finally, DPS Staff includes, as Appendix B of the Whitepaper, a table listing the recommended data items to be acquired, integrated, managed, analyzed, and made accessible by the proposed IEDR. That list includes both structured data (organized and sortable numbers, letters, words, and phrases) and unstructured data (documents, diagrams, images, and video items that are characterized by metadata). Recognizing the need to approach the execution of the IEDR in phases, DPS Staff indicates which data items should be implemented in Phase 1 and

which should be implemented in Phase 2, based on use case priorities.

Comments

As discussed above related to the need for the statewide IEDR, several stakeholders support the general scope of the IEDR. The Joint Utilities state that the proposed scope is ambitious from a technical perspective and will take many years to be fully realized and recommend that the Commission direct DPS Staff to work with stakeholders to develop a comprehensive scoping phase before continuing further IEDR development. Several commenters specifically supported evolving the platform from an initial set of core use cases, for which the City of New York, as well as Mission Data, provided input.

With regard to collecting large and diverse sets of data, Climate Action Associates (CAA) stated that emphasis should be on: standardizing utility-provided data and making it available to third parties; avoiding investment in custom tools for individual use cases; and, an effort by the Joint Utilities to understand and harmonize basic utility data management practices. AEE also recommends first focusing on standardizing data. RESA stresses that utilities must take all necessary steps to ensure that the IEDR contains timely and accurate information.

Determination

The Commission agrees with DPS Staff's recommended scope for a statewide IEDR that will collect, integrate, analyze, and manage a wide variety of standardized energy-related information from the State's electric and gas utilities and other sources. In addition, the inclusion of analytic tools that would enable DER providers, utilities, government agencies, and others to more readily develop valuable technical and



business insights will, in turn, lead to faster and better policy, investment, and operational decisions that will accelerate realization of New York State's clean energy goals. In addition, the Commission notes that the IEDR will enable entities that would like to perform their own data analytics and services by having access to the various data sources.

Furthermore, the Commission agrees with the proposed development approach that is centered around identifying and prioritizing IEDR use cases that provide the most value to New York State's energy stakeholders. To enhance stakeholder value over the long-term, the IEDR's design, operation, and management shall readily accommodate adding new information sources, information types, and analytic functions as new beneficial use cases emerge. A use case will be particularly beneficial if it materially improves or accelerates investment, operational, or regulatory decisions related to DERs, energy efficiency, environmental justice, or electrification strategies for transportation and buildings, thereby facilitating faster fulfillment of one or more of New York State's REV and CLCPA objectives.

The Commission also agrees with DPS Staff's assertion that much of the IEDR's value will depend on the extent to which the State's energy stakeholders trust the IEDR as a reliable source of accurate information. Consequently, to establish and maintain that trust, the IEDR must be designed, implemented, and operated in a manner that ensures the integrity and accuracy of data stored within the IEDR.

In a closely related part of this proceeding, the Commission is considering new state policies for a uniform and comprehensive Data Access Framework to govern the means and methods for accessing and protecting all types of energy-related

information.<sup>10</sup> Consequently, all aspects of implementing and operating the proposed IEDR must comply with any future policies adopted under a new Data Access Framework.

#### B. IEDR Program Schedule

##### Whitepaper Recommendations

The Whitepaper suggests that the Program Manager should be required to submit to the Program Sponsor detailed budgets and schedules for each aspect of building the IEDR. Such budgets and schedules should reflect an IEDR development approach that is centered around identifying and prioritizing IEDR use cases that provide the most value to New York State's energy stakeholders. DPS Staff further notes that the IEDR's design, operation, and management should readily accommodate adding new information sources, information types, and analytic functions as new market and utility needs emerge.

##### Comments

The Joint Utilities believe it is essential that the IEDR development schedule accurately reflect each utility's varying timelines and their investments in information systems and data sharing capabilities, as data flowing from and across these foundational systems will dictate what information can be made available to third parties in the IEDR. The Joint Utilities agree that the platform should evolve from a set of baseline or core use cases and system requirements that are prioritized based on cost-effectiveness and stakeholder value. RESA states that an implementation schedule that identifies goals and milestones, recognizes dependencies between goals and

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<sup>10</sup> Case 20-M-0082, Data Access Framework Whitepaper (filed May, 29, 2020).

milestones, and establishes each activity's timing is an essential feature to the successful implementation of the IEDR. Determination

DPS Staff defined a two-phase schedule in both the RFI to the market and information requests to the utilities as part of DPS Staff's efforts to obtain the best possible cost information to inform the Commission determination on the IEDR budget. Since the budget caps we adopt below are based on those assumptions, we adopt that approach for the IEDR program schedule. Therefore, Program Phase 1, the initial IEDR implementation, shall enable at least five of the highest priority use cases with the expectation that there could be ten or more achieved. Program Phase 2 shall expand and enhance the initial IEDR to enable approximately an additional forty use cases incrementally, by building upon the success of Phase 1. The total duration for enabling approximately 50 IEDR use cases shall be about 60 months. Phase 1 shall be completed in 24 - 30 months. Phase 2 shall be completed in 30 - 36 months. Operation of the utility's IEDR data feeds shall persist for the life of the IEDR (multiple decades). The Commission notes that the prioritization and implementation will reflect technical conditions and stakeholder input and shall be based on the Project Manager's recommendations after consultation with the Advisory Group and Steering Committee.

Noting that the Joint Utilities recommend that the schedule should take into account the varying timelines of each utility's current capabilities as it relates to collection and provision of the various data elements, the Commission defers decision of any phased implementation at the utility level to the design and development process to be carried out by the Project Manager. The Commission expects those processes to

consider the different data readiness levels at each utility and consider such criteria as advanced metering infrastructure (AMI) implementation status, overall size of customer base, DER market activities, and smart grid implementation status.

C. IEDR Program Budget Cap and Cost Recovery  
Whitepaper Recommendations

DPS Staff proposes that the Program Budget should encompass all Commission-directed expenditures related to planning, designing, building, administering, and operating the central IEDR. Following the Initial Program Schedule's approval, the Program Manager, working with the Program Sponsor and other appropriate entities, should develop an Initial Program Budget that describes the type, purpose, predicted timing, and estimated amount of all significant expenditures. As the program progresses, program expenditures' scope and timing will come into better focus; consequently, the Program Manager and Program Sponsor should regularly meet to review actual and predicted program expenditures and determine whether budget and/or scope modifications are needed.

DPS Staff recommends that funding should be provided from all jurisdictional electric and gas ratepayers. This includes the initial funding needed to implement the IEDR, as well as ongoing funding for operating and enhancing the IEDR. DPS Staff anticipates that LIPA and NYPA will engage in the IEDR development and implementation process. This would allow LIPA and NYPA to align the various energy-related data activities under their control with the statewide IEDR ultimately directed by the Commission to maximize benefits of the resource to New York State.

To get information related to cost, DPS Staff worked with NYSERDA to issue a RFI to obtain information from a number of solution providers to inform the Commission on the expected expenditures necessary to build and operate the central IEDR. DPS Staff also sought comment from each utility pertaining to its anticipated IEDR-related work and expenditures needed to provide the data items listed in Appendix B of the Whitepaper.

Comments

The Joint Utilities requested clarification on the cost recovery mechanism for implementing the IEDR, believing that NYPA and LIPA should share a portion of the cost for development. The Joint Utilities believe that in Appendix B there are aspects of DPS Staff's request that are not detailed to the point that the Joint Utilities can prepare a cost estimate.

Determination

Given the multi-year and methodical approach to designing, developing, and implementing the statewide IEDR, the Commission finds it necessary to determine funding for Phase 1, as defined above, in this Order. Furthermore, funding for Phase 1 is determined for those efforts that shall be undertaken and competitively procured by the Project sponsor which include:

- Managing the IEDR Program
- Developing the IEDR Architecture
- Developing and Integrating Detailed IEDR Designs and Specifications
- Deploying and Integrating IEDR Components and Services
- Testing and Commissioning IEDR Use Cases
- Operating the IEDR

In parallel to the efforts to be carried out by the Project Sponsor, funding for Phase 1 is determined for the gas and electric utilities that will need to perform the following:

- Managing the utility's Internal IEDR Data Sourcing

Program

- Developing the Architecture for the utility's IEDR Data Sourcing Resources and Processes
- Developing and Integrating Detailed Designs and Specifications for the utility's IEDR Data Sourcing Resources and Processes
- Deploying and Integrating the utility's IEDR Data Sourcing Resources and Processes
- Testing and Commissioning IEDR Use Cases
- Operating and Managing the utility's IEDR Data Sourcing Resources and Processes

Based on the efforts of DPS Staff to obtain cost information from the results of the RFI, as well as the stakeholder comments and replies to information requests submitted to the utilities from DPS Staff, the Commission establishes a budget cap of \$13.5 million for the Program Sponsor's efforts for Phase 1, including \$12 million for procured resources and \$1.5 million for the NYSERDA administrative costs as Project Sponsor.

While both gas and electric customers in New York State will benefit from the IEDR, recovering these costs from only electric customers will simplify the recovery and is equitable since all gas customers are also electric customers. We also agree with the Joint Utilities that NYPA and LIPA should share a portion of the Phase 1 development costs given the anticipated statewide benefits of the IEDR Program, and accordingly request that each contribute an amount based on their respective portions of total electric load for 2019, subject to approval by NYPA and LIPA's governing boards. The remaining costs shall be allocated and collected from the jurisdictional electric utilities in the same manner as the current authorized costs are being allocated and collected via the existing Bill-As-You-Go agreements that NYSERDA has with each utility. This should simplify the administration and help

to avoid cash flow issues between collections and expenditures. Collections for the IEDR Program are incremental to any collection schedule already approved in the Commission's Clean Energy Fund Order, which utilizes the existing Bill-As-You-Go agreements.<sup>11</sup> To document and effectuate this decision, NYSERDA is directed to file an updated Bill-As-You-Go Summary with the Commission within 60 days of the issuance of this Order and make any necessary changes to the funding agreements with the individual utilities.

Each of the utility's budget caps to complete the data sourcing efforts for Phase 1 shall be as follows. Con Edison, Central Hudson and National Grid shall be subject to a \$12 million cap each. O&R, NYSEG, and RG&E shall be subject to a \$6 million cap each. These budget caps shall cover the data sourcing efforts for the electric and gas businesses of each respective utility, with the exception of Con Edison that shall also include the steam business. All efforts shall be made to maximize efficiencies by the use of shared services to enable such data sourcing across the businesses of each IOU. National Fuel Gas, St. Lawrence Gas, KEDNY and KEDLI, shall each be subject to a budget cap of \$1 million. Each IOU shall defer applicable costs, up to their individual cap, for future recovery in their next rate case filing after Phase 1 is completed. Applicable costs shall include incremental operation and maintenance expenses, net of related savings, and carrying

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<sup>11</sup> Case 14-M-0094, et al., Order Authorizing the Clean Energy Fund Framework (issued January 21, 2016), p. 98 (Clean Energy Fund Order). The Clean Energy Fund Order authorized the Bill-As-You-Go approach to better match collections with expenditures, where collections are retained in utility accounts and transferred to NYSERDA at a specified frequency based on actual program expenditures.

costs on capital expenditures, which includes the "return-on" and "return-of" the investment, net of related incremental savings. The deferral balance shall accrue carrying costs at the rate specified in each IOU's existing rate plan.

Since several IOUs are already in the process of planning and/or implementing certain information technology (IT) projects that would enable the collection and transfer of the data elements required under Phase 1 of the IEDR Program, the budget caps and deferral authority provided in this Order are for incremental projects and expenditures above and beyond those already in each utility's current five year IT budgets and plans.

The Commission anticipates that LIPA and NYPA will actively engage in the IEDR development and implementation process and therefore will align their various energy-related data activities under their control to enable the transfer of the same data elements as those being provided by the jurisdictional utilities to maximize benefits of the resource to New York State. This engagement should include LIPA and NYPA participation in the Utility Coordination Group described later in this Order.

Several commenters note the importance of having access to technical expertise; for example AEE recommends that the Commission seek outside expertise to supplement DPS Staff's capabilities. The Commission agrees with this comment, particularly as it relates to understanding the efforts and investments needed at each utility to enable the assembling and transfer of data to the IEDR. While we are setting budget caps on each utility, the expectation is that the actual investments needed will be revealed and more fully understood as we move through the design and implementation process of the IEDR.



During these tasks, DPS Staff will require a dedicated resource to oversee and provide guidance on the utility data sourcing efforts and investments. Therefore, NYSERDA, as Project Sponsor, shall include in its implementation plan, the provision of such resources.

Funding for Phase 2 of the IEDR will be the subject of future Commission action that will be informed by the Project Sponsor reports due in 2023, as described later in this Order.

### III. IEDR Program Governance

#### A. IEDR Program Sponsor

##### Whitepaper Recommendations

In the Whitepaper, DPS Staff proposes establishing a Program Sponsor as the entity responsible for defining, initiating, overseeing, and facilitating the IEDR Program on behalf of the State. Staff identifies and recommends NYSERDA as the most appropriate candidate for this role. DPS Staff further recommends that the Program Sponsor's principal duties should include:

- 1) creating the IEDR Program Charter to formally establish the program's purpose, scope, guiding principles, objectives, participants, roles, and responsibilities;
- 2) organizing the membership and initial meeting schedule for an IEDR Steering Committee comprising five members of DPS Staff and four members of NYSERDA Staff;
- 3) organizing the membership and initial meeting schedule for an IEDR program Advisory Group comprising representatives for all significant stakeholder categories;
- 4) specifying, procuring, and administering the services provided by a professional Program Manager;
- 5) providing the program's participants with the means and methods for accessing and expending the funds allocated to the program by the Commission;

- 6) ensuring robust stakeholder engagement throughout the life of the IEDR program;
- 7) monitoring adherence to the Program Charter by all program participants; and,
- 8) helping the Program Manager investigate and resolve issues that could negatively affect the program's costs, schedule, or benefits.

Comments

There was a general consensus that the Sponsor should have access to resources who can provide: all necessary technical expertise; experience in identifying and procuring applicable software; experience in developing and integrating similar information systems; experience enabling and managing user access to secure data; strong cybersecurity acumen; and, an understanding of how energy solution providers can effectively apply integrated energy data. Logical Buildings and NYSERDA agreed that NYSERDA would be a good fit for the Program Sponsor role. CAA stated its concerns about the potential lack of participation by experts without compensation.

Determination

The Commission recognizes the need for an effective IEDR Program Sponsor and assigns the role to NYSERDA. In this role, NYSERDA will be responsible for defining, initiating, overseeing, and facilitating the IEDR Program on behalf of the State. NYSERDA's principal duties as Program Sponsor shall include:

- 1) creating the IEDR Program Charter to formally establish the program's purpose, scope, guiding principles, objectives, participants, roles, and responsibilities;
- 2) organizing the membership and initial meeting schedule for an IEDR Steering Committee comprising five members of DPS Staff and four members of NYSERDA Staff;

- 3) organizing the membership and initial meeting schedule for an IEDR program Advisory Group comprising representatives for all significant stakeholder categories;
- 4) specifying, procuring, and administering the services provided by a professional Program Manager;
- 5) providing the program's participants with the means and methods for accessing and expending the funds allocated to the program by the Commission;
- 6) ensuring robust stakeholder engagement throughout the life of the IEDR program;
- 7) monitoring adherence to the Program Charter by all program participants; and,
- 8) helping the Program Manager investigate and resolve issues that could negatively affect the program's costs, schedule, or benefits.

Given the multi-stage process that the Project Sponsor is expected to carry out, the Commission shall require NYSERDA to file an initial Implementation Plan within 30 days of the effective date of this Order, detailing how it will carry out its duties as the Program Sponsor up to the commencement of the Program Manager. The Implementation Plan shall then be updated and filed by August 10, 2021, following the procurement of the Program Manager, to reflect all of the subsequent tasks to be carried out to complete implementation of Phase 1 of the IEDR Program. Staff shall review the Implementation Plan filings to ensure compliance with this Order and provide any feedback to NYSERDA as necessary. NYSERDA, as the Program Sponsor, shall continue performing its duties as needed throughout the life of the IEDR.

#### B. IEDR Program Steering Committee

##### Whitepaper Recommendations

In the Whitepaper, DPS Staff states that the launch and progress of the proposed IEDR program should be overseen by

well-qualified persons who are tasked with effectively and timely monitoring program execution while providing guidance to the Program Sponsor and Program Manager as needed to help ensure program success. To that end, DPS Staff proposes that the Program Sponsor should convene an IEDR Steering Committee comprising five members of DPS Staff and four members of NYSERDA Staff. DPS Staff proposes that the Steering Committee should begin its work by selecting the members of the IEDR Advisory Group and should then meet regularly to timely review and, when necessary, act on: 1) program issues that require Steering Committee awareness and possible actions or decisions; 2) significant program risks that require management and mitigation; 3) planned and unplanned deviations from the program scope, schedule, or budget; and, 4) upcoming program milestones - especially those that depend on Steering Committee actions or decisions. DPS Staff states that the Steering Committee should also timely review all Advisory Group inputs and ensure that the Program Manager appropriately incorporates those inputs into the program's various workstreams. Finally, DPS Staff recommends that the Steering Committee should continue functioning over the life of the IEDR.

Comments

There was broad support for the creation of a Steering Committee from the commenters. NYSERDA asserts that the Steering Committee will ensure direct DPS Staff involvement throughout the duration of the process, and notes that a flexible regulatory construct should be in place to ensure full compliance by the jurisdictional entities to meet the needs of the IEDR as those needs are identified. RESA also supports the Steering Committee, adding that it should meet as frequent as

needed and that members should be chosen through experienced-based qualifications.

Determination

The Commission directs the Program Sponsor to convene an IEDR Steering Committee comprising five members of DPS Staff and four members of NYSERDA Staff who have the necessary experience, knowledge, and skills, to carry out the tasks as described in the Whitepaper. At its core, the Steering Committee will address policy, schedule, and budget issues based on the Project Sponsor's recommendations to be developed in consultation with the Project Manager.

The Program Sponsor shall schedule the Steering Committee's first meeting to occur within 60 days of this Order's issuance. In the early stages of the IEDR program, the Steering Committee shall meet monthly, with remote participation enabled by a virtual meeting technology such as WebEx or Microsoft Teams. As the program matures and stabilizes, Steering Committee meetings' frequency could decrease to bi-monthly and then to quarterly. Further, Steering Committee members are expected to participate personally in the committee's activities - substitutions or proxies should be prohibited. Finally, the Steering Committee shall function over the life of the IEDR.

C. IEDR Program Advisory Group

Whitepaper Recommendations

In the Whitepaper, DPS Staff states that the Program Sponsor should convene an IEDR Advisory Group to enable stakeholder groups to timely provide informed commentary and guidance to the program team. DPS Staff further states that the Advisory Group's members should be selected by the IEDR Steering

Committee and should represent all relevant stakeholder groups including, but not limited to: DER developers; electric and gas utilities; energy consumers; state and local government entities; and interested industry groups. DPS Staff also notes that the number and diversity of Advisory Group members should ensure adequate representation across stakeholder groups while remaining manageable.

DPS Staff recommends that the scope of Advisory Group activities includes timely reviews and guidance related to: 1) IEDR use cases and their respective requirements; 2) priorities and schedules for enabling use cases; 3) planned IEDR capabilities; 4) required stakeholder capabilities; 5) user interfaces and experience; 6) IEDR development and testing; 7) program governance; and, 8) upcoming program milestones - especially those that depend on Advisory Group guidance. DPS Staff also recommends having Advisory Group members act as testers whenever user acceptance testing (UAT) is performed. Furthermore, appropriate Advisory Group members shall be included as participants in any IEDR stakeholder surveys, focus groups, feedback sessions, or workshops.

In addition, DPS Staff states that the Program Sponsor should: 1) schedule the Advisory Group's first meeting to occur as soon as possible after its members are determined by the Steering Committee; 2) enable remote participation in Advisory Group meetings through a virtual meeting technology such as WebEx or Microsoft Teams; and, 3) schedule the Advisory Group's meetings to occur midway between the Steering Committee's scheduled meetings to ensure enough time for transfers of information to and from the Steering Committee. DPS Staff notes that, as the program matures and stabilizes, the Advisory Group's meetings' frequency should decrease to align with the

Steering Committee's shifts to bi-monthly and then quarterly meetings. DPS Staff further advises that the Advisory Group's members should be expected to participate personally in group activities - substitutions or proxies should be prohibited. Finally, Staff recommends that the Advisory Group should function over the life of the IEDR.

Comments

There was broad support for the creation of an Advisory Group from the commenters, including specific backing from NYPA who would like to see its Grid Flexibility and Clean Energy Advisory Service group be included as an initial member. RESA and Logical Buildings support the creation of an Advisory Group that represents all stakeholder interests as no single stakeholder can represent the varying interests in the energy market. CAA believes that the Advisory Group should have a more active design role and recommends establishing an Advisory Services Fund to support it.

Determination

The Commission directs the Program Sponsor to convene an IEDR Advisory Group to enable stakeholder groups to timely provide informed commentary and guidance to the program team and carry out the activities as described in the Whitepaper. The Commission notes that in addition to the Advisory Group, the Project Sponsor, together with the Program Manager, shall create opportunities for broad stakeholder engagement as described in the Program Execution section below. The Advisory Group is an essential source of expertise that will provide comments and recommendations on issues and decisions that will be considered by the Program Manager and Project Sponsor but does not hold any decision-making authority. The Advisory Group's members shall be selected by the Steering Committee and shall represent all

relevant stakeholder groups including, but not limited to: DER developers; electric and gas utilities; energy consumers; state and local government entities; and interested industry groups. The number and diversity of Advisory Group members should ensure adequate representation across stakeholder groups while remaining manageable.

IX. IEDR Program Execution  
Whitepaper Recommendations

The Whitepaper details the major components necessary to accomplish the IEDR. Those include Program Management, Solution Architecture, System Design, System Implementation, and System Operation.

In the IEDR White Paper, DPS Staff recommends that the Program Sponsor should acquire and oversee the services of a highly-qualified professional Program Manager to be responsible for organizing, administering, and reporting on the day-to-day activities required for IEDR implementation. DPS Staff notes that the program management services specified by the Program Sponsor and performed by the Program Manager should include: 1) developing and managing a detailed budget for all IEDR program execution costs related to the central IEDR platform; 2) developing and managing a detailed work breakdown and schedule for all program execution tasks related to the central IEDR platform; 3) specifying, procuring, and overseeing all of the professional technical services needed for all program execution tasks related to the central IEDR platform (architecture, design, implementation, and operation); 4) procuring all equipment, software, facilities, and services required to build and operate the central IEDR platform; 5) rigorously and timely identifying, reporting, and mitigating risks that could increase



the funds and/or time needed for any program execution activities related to the central IEDR platform; 6) regularly preparing and presenting program status reports that fully detail all program execution tasks completed, in-progress, and planned; 7) developing, implementing, facilitating, and documenting a rigorous process for IEDR Advisory Group engagement and communication to inform and guide all program life cycle phases; and, 8) coordinating the specification, timing, and execution of work related to the IEDR data feeds provided by the utilities and other data sources.

The Whitepaper describes that the Solution Architecture would provide the information needed to specify the complete IEDR design requirements. To ensure realization of the IEDR's potential value, a Solution Architect should employ an approach structured to identify, understand, and prioritize potential IEDR use cases. In addition, the Solution Architect should rigorously identify and comply with all applicable requirements concerning confidentiality and system security, as would be established in a Data Access Framework for Strategic Use of Energy-Related Data.

Before developing the detailed IEDR design requirements, the Whitepaper states that the Solution Architect should prepare a Preliminary Design Plan that describes the elements, structure, timing, deliverables, and estimated cost of the design effort. Following the Preliminary Design Plan's approval, the Solution Architect, assisted by other entities as needed, should specify the detailed requirements for fully designing the IEDR. The complete IEDR design would comprise descriptive text, specifications, tables, diagrams, configuration parameters, data definitions, data schemas, computer code, operating procedures, and other work products

that describe and explain all aspects of the IEDR's composition, configuration, and operation. The complete design scope should encompass the IEDR and all the other entities (systems and people) that will interact with the IEDR. The finished design should provide all the information needed to specify, procure, and execute all necessary IEDR implementation services. The Program Manager should procure the necessary design services based on the requirements specified.

The Whitepaper explains that IEDR System Implementation comprises full deployment, integration, and activation of all elements needed to fully implement the IEDR. Working within the Advisory Group engagement process managed by the Program Manager, DPS Staff recommends that the Implementation Contractor should obtain implementation-related inputs from the utilities, third-party data sources, providers of system components and services, and the System Operator. The System Implementation Contractor - with guidance and assistance provided as needed by the Program Manager, Solution Architect, Design Contractor, and System Operator - should acquire, deploy, test, and commission all IEDR elements as designed and in accordance with the Implementation Schedule.

Finally, IEDR System Operation comprises all the planning, scheduling, system administration, process control, monitoring, maintenance, access control, problem detection/resolution, change management, user support, and reporting activities needed to effectively manage the functionality and performance of operational IEDR capabilities.

#### Comments

Many commenters agreed with the necessary responsibilities delegated to the Program Manager, but there were concerns raised about their authorities and intents.

Mission Data advised the Commission to be wary of other entities that could serve in this role while not having the public's best interest in mind. Regarding a similar concern, RESA believes the task of selecting the Program Manager should not be assigned exclusively to the Program Sponsor. According to RESA, members of the Steering Committee and Advisory Group should have experience and knowledge to guide selection of the Program Manager. RESA also believes that the Commission should require the Solution Architect to provide the opportunity for, and take into consideration, input from all stakeholders, not just specific stakeholders in regard to the preliminary design plan describing the elements, structure, timing, deliverables, and estimated cost of the design effort. Alpha Struxure (ASX) recommends that the Program Manager should explicitly report to the Program Sponsor (NYSERDA). CAA expressed concerns regarding conflicts of interest and the role of Program Manager. They suggest an alternative governance model that organizes roles into separate design and implementation tracts. They also agree with AEA, AEE, the Joint Utilities, and RESA that more information, in part from stakeholders, as well as clear goals, milestones, and timeframes should be established to guide progress.

The Joint Utilities stress the importance of using lessons learned in the Pilot IEDR when addressing the work required to implement something similar or greater on a statewide scale. CAA believes the Solution Architect should either be NYSERDA staff or an ombudsman contractor. NYSERDA emphasizes the need for strong market engagement, agreeing with a detailed implementation and verification process. The U.S. Environmental Protection Agency (EPA) recommends integrating their Portfolio Manager web services within the IEDR

functionality, allowing building owners and operators to request the automated delivery of data directly from the IEDR. Flux Tailor believes that DPS Staff, NYSERDA, the utilities, and stakeholders should collaborate on technical work outside of this proceeding.

Determination

Within six months from this Order's issuance, the Program Sponsor shall acquire the services of a highly qualified Program Manager to carry out the activities as described in the Whitepaper. The Program Sponsor's acquisition of a Program Manager shall be informed by the Steering Committee. Guiding principles for the IEDR's procurement strategy include obtaining the best overall value for New York State and involved stakeholders, accelerating implementation timelines, reducing initiative costs and risks, and protecting the robust scope through sourcing high-quality components to be deployed during the IEDR implementation. The Commission expects that the Program Manager will identify opportunities for obtaining economies of scale and/or scope from any contracting required to obtain the needed professional services for the Solution Architecture, System Design, System Implementation, and System Operation in order to afford the decision-making flexibility that enables best possible procurement execution. Each functional need or project phase or service provider need not be a different entity or contracted for separately, even though the Whitepaper described the work to be done in bucketed groups.

The Commission directs the Project Sponsor to be accountable for stakeholder engagement and to meet those responsibilities through the support of, and the defined tasks of, the Program Manager. To address several commenter's suggestions that additional stakeholder engagement is necessary

prior to implementation of the IEDR, the Commission determines that NYSERDA, as Project Sponsor, shall include a near-term process to solicit stakeholder comments addressing, at a minimum, initial use case prioritization along with the rationale supporting that use, prior to selection of the Program Manager and seating of the Advisory Group. This widespread stakeholder outreach should result in a valuable information resource for the Program Manager and Advisory Group.

The Commission reiterates and affirms that data is owned by ratepayers and not the utilities. Nonetheless, management of data and providing useful access to useful information is a core business activity of New York's utilities. For these reasons, the Commission directs NYSERDA to form a Utility Coordination Group as a necessary component of the IEDR Program execution. The Utility Coordination Group shall include members of the Steering Committee (DPS Staff and NYSERDA) or designees, Project Sponsor, Program Manager, Staff Resource for Utility Data Systems, and the senior-level leader of each utility IEDR implementation team, which the Commission directs be formed at each utility. The Utility Coordination Group will also be used to assure alignment of implementation schedules and policies of the IEDR and the potential Data Access Framework. NYSERDA, as Project Sponsor, shall include the formation of the Utility Coordination Group in its Implementation Plan.

#### X. Accountability and Reporting

##### Whitepaper Recommendations

The Whitepaper describes that the Program Manager should implement and maintain a program reporting framework that includes: (1) monthly production and publication of reports that address all aspects of the IEDR program; (2) ongoing maintenance

of a program dashboard that presents an at-a-glance summary of program status; and, (3) frequent briefings to the Program Sponsor, Steering Committee, and Advisory Group. DPS Staff suggests that program reports should, in the context of the program schedule and budget, describe and explain (where necessary) the program's accomplishments and expenditures to date, current work and expenditures in progress, the latest program risk assessment and mitigation plan, and upcoming work and expenditures.

Comments

No party commented specifically on the reporting requirement recommendations in the Whitepaper.

Determination

Given that the Commission has selected NYSERDA to be the Program Sponsor directly responsible for defining, initiating, overseeing, and facilitating the IEDR Program on behalf of the State, it is NYSERDA that shall work with the Steering Committee, Advisory Group, and the Program Manager to monitor the program schedule and budget and have the responsibility to report to the Commission. The Commission recognizes that regular accountability and reporting measures are necessary for large, multi-year projects like the IEDR Program. Therefore, the Commission adopts the recommended reporting requirements from the Whitepaper and directs NYSERDA to file quarterly reports in this proceeding, with reports being filed at the end of April, July, October, and January for the prior quarter, including information from the Program Manager monthly reports, addressing all aspects of the IEDR program. In addition, NYSERDA shall create a publicly accessible program dashboard that presents an at-a-glance summary of the IEDR program and shall maintain the dashboard on an ongoing basis.

In addition to the quarterly reports, the Commission

shall also require two additional reports from the Project Sponsor that will inform the Commission's future directives regarding the IEDR Program. At the end of Phase 1, after the initial use cases have been implemented and are operational, NYSERDA shall file a IEDR Phase 1 Status and Summary Report, on or before July 30, 2023, which is twenty-four months after the Program Manager is expected to begin its work. The second report shall be an IEDR Phase 2 Proposal, filed on or before January 15, 2023, six months prior to end of end of Phase 1, that addresses the remainder of the use cases to be implemented by July 30, 2026. This report shall include any information necessary to support Phase 2 funding and authorization, for efforts of the Project Sponsor and of the utilities, and shall be informed by the design and implementation process to date. Given the need for the IEDR Phase 2 Proposal to include details on the efforts and investments necessary at each utility to implement Phase 2, the Utility IEDR Implementation Teams shall provide such input to NYSERDA to be incorporated into the report, through the Utility Coordination Group process.

Given the extensive engagement expected from the utilities to enable the IEDR Program, the Commission directs each electric and gas utility to establish an IEDR Implementation Team. Each utility implementation team shall be led by a member of the company's senior management team. The utility IEDR Implementation Team leader shall have an obligation to actively engage with the IEDR Program Manager on all aspects of the IEDR Program execution, and have the specific obligation to share information and data as necessary within the timeframes to be established by the process. The utility IEDR Implementation Teams shall have the obligation to continually identify opportunities where the IEDR can provide value to the

respective utility's planning, operations, and Distributed Energy System Implementation Plan (DSIP)<sup>12</sup> data obligations in the most effective and efficient manner. To monitor the utility's obligations related to the IEDR Program, each utility shall file a quarterly report on IEDR enablement project planning and investments, with reports being filed at the end of April, July, October, and January for the prior quarter. Also included in these quarterly reports shall be any prospective economies of scope or scale identified for existing utility planning, operations, and DSIP data responsibilities that can be achieved as a result of the IEDR implementation.

#### CONCLUSION

The need to provide useful access to useful energy data to enable achievement of the State's energy policy goals is apparent. The timing to provide such access has become urgent with the recent adoption of the CLCPA. Evolving the existing fragmented framework will not meet New York State's energy industry stakeholders' needs most efficiently and effectively. The Commission's adoption of an IEDR, and associated development, build, and implementation processes, will meet those needs efficiently and effectively by taking advantage of economies of scale, minimizing the duplication of implementation and operating costs, reducing the costs to implement, and maintaining data quality and uniformity.

#### The Commission orders:

1. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State

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<sup>12</sup> See, Case 16-M-0411, In the Matter of Distributed System Implementation Plans.



Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, National Fuel Gas Distribution Corporation, St. Lawrence Gas Company, Inc., KeySpan Energy Delivery New York, and KeySpan Energy Delivery Long Island are directed to work with the Department of Public Service Staff and the New York State Energy Research and Development Authority to implement a statewide Integrated Energy Data Resource Program, as discussed in the body of this Order.

2. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, National Fuel Gas Distribution Corporation, St. Lawrence Gas Company, Inc., KeySpan Energy Delivery New York, and KeySpan Energy Delivery Long Island shall establish an Integrated Energy Data Resource Implementation Team, led by a member of the company's senior management team.

3. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation shall file tariff amendments necessary to effectuate the recovery of costs associated with the Integrated Energy Data Resource Program, on not less than 30 days' notice, to become effective on a temporary basis on June 1, 2021, as discussed in the body of this Order.

4. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State

Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, National Fuel Gas Distribution Corporation, St. Lawrence Gas Company, Inc., KeySpan Energy Delivery New York, and KeySpan Energy Delivery Long Island are directed to each file, within 30 days of the issuance of this Order, General Accounting Procedures associated with the Integrated Energy Data Resource implementation cost deferral provisions discussed in the body of this Order.

5. Central Hudson Gas & Electric Corporation, Consolidated Edison Company of New York, Inc., New York State Electric & Gas Corporation, Niagara Mohawk Power Corporation d/b/a National Grid, Orange and Rockland Utilities, Inc., Rochester Gas and Electric Corporation, National Fuel Gas Distribution Corporation, St. Lawrence Gas Company, Inc., KeySpan Energy Delivery New York, and KeySpan Energy Delivery Long Island are directed to each file quarterly reports on Integrated Energy Data Resource enablement project planning and investments, as discussed in the body of this Order, with the first report being due on or before October 31, 2021.

6. The New York State Energy Research and Development Authority shall file an initial Implementation Plan within 30 days of the issuance of this Order, and an updated Implementation Plan by August 10, 2021, as discussed in the body of this Order.

7. The New York State Energy Research and Development Authority shall file an updated Bill-As-You-Go Summary, as discussed in the body of this Order, within 60 days of the issuance of this Order.

8. The New York State Energy Research and Development Authority shall file quarterly reports, as discussed in the body

of this Order, with the first report being due on or before October 31, 2021.

9. The New York State Energy Research and Development Authority shall create a publicly accessible program dashboard that presents an at-a-glance summary of the Integrated Energy Data Resource program by October 31, 2021, and shall maintain the dashboard on an ongoing basis.

10. The New York State Energy Research and Development Authority shall file, as discussed in the body of this Order, an Integrated Energy Data Resource Program Phase 1 Status and Summary Report, on or before July 30, 2023. The New York State Energy Research and Development Authority shall file a second report, as discussed in the body of this Order, regarding the Integrated Energy Data Resource Program Phase 2 Proposal, filed on or before January 15, 2023, six months prior to the end of Phase 1, that addresses the remainder of the use cases to be implemented by July 30, 2026.

11. The requirements of Public Service Law §66(12)(b) and 16 NYCRR §720-8.1, related to newspaper publication of the tariff amendments required by Ordering Clause No. 3, are waived.

12. In the Secretary's sole discretion, the deadlines set forth in this Order may be extended. Any request for an extension must be in writing, must include a justification for the extension, and must be filed at least three days prior to the affected deadline.

13. This proceeding is continued.

By the Commission,

(SIGNED)

MICHELLE L. PHILLIPS  
Secretary

**Appendix A - Comment Summaries**

Parties who submitted comments:

Climate Action Associates (CAA)  
Flux Tailor  
Association for Energy Affordability (AEA)  
The City of New York  
Joint Utilities  
NYSERDA  
Mission Data  
Logical Buildings  
RESA  
NYPA  
Advanced Energy Economy (AEE)  
Utilidata  
Alpha Struxure (ASX)  
U.S. Environmental Protection Agency

**Purpose and Scope**

AEE recommends that the efforts to standardize data begin first while a decision on the IEDR is held off until more feedback has been gathered, the proposal has been refined, and that a comprehensive schedule for stakeholder engagement is put in development for the Data Access Framework and IEDR. They also believe that the standardization of data should be considered a "no regrets" step that should take place regardless of the ultimate outcome of the IEDR.

CAA believes IEDR should focus on the standardization of data and making it available to third parties while avoiding investment in custom tools for individual use cases. CAA recommends that the Proceeding be amended with a Joint Utilities (JU) effort to understand and harmonize basic utility data management practices necessary to create IEDR data, although the Joint Utilities disagree with this method

The City of New York would like the Commission to consider its needs to access anonymized or aggregated data as well as the expected increase in energy consumption from EV charging stations when drafting the IEDR. The City utilizes this data to draft climate and energy policy.

Flux Tailor believes that DPS, NYSERDA, the utilities, and stakeholders should collaborate on technical work outside of the DPS Proceeding. They believe there is not enough time for the NYSERDA RFI/RFP process and think that focus should be placed on "minimum viable product" expansions and improvements to existing systems in the near future.

RESA believes there are many benefits that ESCOs can provide that the Whitepaper did not address and would like more attention given to the subject. RESA also believes that an implementation schedule that identifies goals and milestones, recognizes dependencies between goals and milestones, and establishes the timing of each activity is an essential feature to the successful implementation of the IEDR.

ASX is a firm proponent of the minimum viable data set, acknowledging that putting the power of data in just a few hands is not best for innovation, cost savings, and emissions reductions. Once a MVDS is established, then an expansion over time of the IEDR Data can be made with lessons learned from the stakeholder use of MVDS. This creates a much more open, need-based IEDR valuable to a wide base of stakeholders in NY.

### **Parallel Programs**

AEA believes the provision of data under existing Commission rules and existing utility practices should continue without interruption while the new system is being developed and adopted. Flux Tailor strongly agrees with this statement.

AEE believes that utility capabilities, including portals and interfaces that directly serve customers and third parties, should continue apace and parallel with the development of an IEDR to avoid slowing progress or even backtracking while the platform is in the process of development and deployment.

Flux Tailor believes that pausing development of ConEd's ShareMyData portal is not beneficial for near term advancements in the project because waiting for the implementation of IEDR would take too long.

RESA believes that the Commission should not lose sight of the potential for incremental, near-term enhancements and projects that utilities are currently working on.

**The Current State of Access to New York State Energy Information**

The Joint Utilities believe it is essential that the IEDR development plan accurately reflect the varying timelines of each utility and their investments in information systems and data sharing capabilities, as data flowing from and across these foundational systems will dictate what information can be made available to third parties in the IEDR. The Joint Utilities stress the importance of using lessons learned in the Pilot IEDR when addressing the work required to implement something similar or greater on a statewide scale. The Joint Utilities strongly believe that the Framework and the data access roles require more consideration. Ineffective access controls could place customer and system data at risk of inappropriate disclosure.

Logical Buildings believe that the future process for companies trying to access data, especially via the Green Button Connect process, should be less time consuming and complicated than it is today. They also request that companies that have already gone through this process are not required to do so a second time. However, the Joint Utilities believe this brings unnecessary risk to customers and utility systems.

Mission Data believes the absence of important details regarding problems with permission-based customer energy data exchanges in New York today indicates that the Commission does not yet fully understand the problems it is trying to solve. These include the methods customers are able to authenticate and authorize a third party to access their usage and billing data.

RESA is concerned with the inconsistencies that currently exist between utilities regarding their data reporting. They stress that utilities must take all necessary steps to ensure that the IEDR contains timely and accurate information.

ASX points out that the availability of energy data is not consistent across NYS, partially due to inconsistent implementation of AMI. ASX considers a broader implementation of AMI as very important to the success of integrated energy data resource (IEDR).

Utilidata emphasis three important recommendations to achieve the IEDR's goals. These include linking development of AMI with

the IEDR to ensure easy collection of customer and system data, recognizing the importance of real-time, grid-edge data for both operations and planning, and requiring key capabilities for new AMI rollouts to ensure that this major investment can provide actionable data to the IEDR platform.

### **The Path Ahead**

AEA believes that more information is needed on how the IEDR will be operationalized regarding the number of providers, future changes, complaint reporting, and future technological advancements.

AEE recommends that the Commission seek more stakeholder input on whether the IEDR should be a centralized system versus a user interface for a more network-based system as it considers the development of the IEDR.

CAA is concerned with the role of the project manager being an independent contractor due to a lack of experience and conflicts of interest. They propose an alternative governance model that organizes roles into separate design and implementation tracts, with both tracts managed by NYSERDA acting as the Program Manager.

The Joint Utilities believe that the IEDR Whitepaper benchmarking discussion lacked acknowledgments of crucial data privacy changes that may impact the Joint Utilities' ability to provide customer information.

RESA believes that the Commission should establish clear goals, milestones, and timeframes to guide progress toward developing and implementing the IEDR in a phased approach with help from highly qualified personnel and input from a full range of stakeholders.

### **General Recommendations for an Integrated Energy Data Resource**

The City of New York currently experiences a gap in its benchmarking building energy usage data when it comes to buildings smaller than 25,000 sq. feet. The City believes this would make a good use case for IEDR. Mission Data strongly agrees with The City of New York's request that building owners receiving monthly whole-building aggregated usage data should not be subject to any eligibility requirements. Mission data also supports the Commission collecting statistics from Energy

Services Entities (ESEs) seeking certification to find out how long it takes to become certified as an accountability measure.

The Joint Utilities agree that the IEDR development approach should be nimble, able to respond to evolving market needs and technological capabilities in a timely and cost-effective manner while providing upfront value that third parties and developers need to design and launch products. They also believe that the platform should evolve from a set of baseline or core use cases and system requirements that are prioritized based on cost-effectiveness and stakeholder value. Additionally, they believe that Staff and the Commission should clearly define limitations on liability for the Joint Utilities following the transmittal of data to the platform. They believe it is crucial that the Joint Utilities not be held responsible for instances which ESEs make improper use of customer or system data.

The Joint Utilities recommend that the cost recovery mechanism for implementation of the IEDR be clarified before development is approved. The Joint Utilities support NYPA's and LIPA's involvement in the IEDR development process, but also believe they should share a portion of the cost for development. They also believe that not all system and customer data should be centralized, as it is not always cost-effective to do so.

RESA believes that if there is any opportunity for the data to vary between EDI and the IEDR (e.g., data is entered manually in the IEDR), the Commission should clarify that, in the event of a discrepancy, the EDI data will be considered the accurate information.

AEE advises against large investments in on-premises hardware and supporting systems to support the IEDR. It would be a nearly impossible task to appropriately size on-premises computing systems up front when the design and user demand are hard to predict and may also vary considerably over time. They believe the capabilities of the system should be prioritized by the use cases they serve.

The EPA recommends integrating their Portfolio Manager web services within the IEDR functionality to capture and house details that will subsequently facilitate meter-to-building mapping and allow building owners and operators to request the automated delivery of data directly from the IEDR, rather than relying on a patchwork of individual utility solutions. This would simplify the process for building owners/operators as they



would only need to manage one process for obtaining customer data and deal with one source of customer questions.

ASX affirms the NY DPS Staff recommendation that a state-wide system described as an integrated energy data resource (IEDR) would become a basis for enabling utilities, customers, distributed energy resource (DER) providers, various agencies, and others who offer energy data assistance for the purpose of moving a new energy landscape forward.

### **Program Oversight**

CAA believes that the Advisory Group should have a more active design role and recommends establishing an Advisory Services Fund to support it.

Logical Buildings agrees that there should be an Advisory group designated to work with stakeholder groups in order to obtain guidance about what information is important for each type of system participant.

NYP&A supports the creation of a Steering Committee and Advisory Group and requests that its Grid Flexibility and Clean Energy Advisory Service group be included as an initial member of the Advisory Group. They believe their participation in the Advisory Group can offer stakeholders, the Steering Committee, the Program Sponsor, and the Program Manager with common, effective practices and lessons learned that will allow for the development of an IEDR that is tailored to meet both customer needs and achievement of the CLCPA's clean energy goals. NYP&A supports a structure that allows stakeholders and subject matter experts to be directly involved in program development but cautions against prescribing firm outputs from each group at the outset of the program.

NYSD&E supports the proposal in the Staff Whitepaper to employ a Steering Committee to ensure direct DPS Staff involvement throughout the duration of the process, however, a flexible regulatory construct should be in place to ensure full compliance by the jurisdictional entities to meet the needs of the IEDR as those needs are identified. This includes cooperation from the utilities to align utility capital and operations planning and regulatory requirements for the creation and operation of the IEDR. Also, the foundational data access framework issues would need to be resolved prior to developing the IEDR.

RESA believes the Commission should establish experience-based qualification requirements for Steering Committee members. Additionally, the Steering Committee should meet as frequently as necessary to achieve IEDR milestones, even if that is more than once a month. RESA supports an Advisory Group that represents all stakeholder interests as no single stakeholder can represent the varying interests in the energy market.

**Program Sponsor**

AEE does not recommend a specific project sponsor at this time but does urge the Commission to consider the risks and reward structure associated with IEDR as a vital design component that will determine the program's ultimate success.

CAA believes that the PSC cannot expect experts to substantively engage unless they have an opportunity to be compensated. NYSERDA could issue a PON asking for proposals for IEDR public and private use cases, providing selected proponents resources to join the Advisory Group and to test the IEDR platform as a client.

Logical Buildings agrees that NYSERDA would be an appropriate Program Sponsor.

NYSERDA recommends that any entity serving as Program Sponsor should have access to technical expertise, prior experience in identifying software, and developing solutions for information systems along with experience enabling and managing user access to secure data, cybersecurity acumen, and an understanding of how solutions providers can better utilize grid-related energy data.

**Program Manager**

Mission Data is concerned with the significant delegation of the Commission's authority to other entities that, unlike the Commission, are not designed to serve the broader public interest.

RESA believes that the task of selecting the Program Manager should not be assigned exclusively to the Program Sponsor. Members of the Steering Committee and Advisory Group will have experience and knowledge that could guide selection of the Program Manager. This program manager should also be responsible for protecting against cybersecurity risks.

ASX recommends the Program Manager (NYSERDA) should explicitly report to the Program Sponsor. ASX recommends the Program Manager could be an external entity skilled in defining and delivering substantial data-based systems for broad stakeholder groups.

### **Solution Architect**

CAA believes the Solution Architect should either be NYSERDA staff or an Ombudsman contractor.

Logical Buildings agrees with the need for a central repository for all the information that may be utilized for providing energy management services. They also agree that material relevant to educate third parties as to which geographic areas may have the highest need for certain services should also be made available to DER developers.

RESA believes that the following should be added to the nonexclusive list of use cases that the Solution Architect should include presented in the Whitepaper: Use cases supporting ESCO functions and Use cases supporting academic/research functions. RESA also believes that the Commission should assign the highest priority level to use cases supporting ESCO functions.

The EPA agrees with the consideration of the "building energy benchmarking" use case and stresses that "building owners and operators" will need to be included in the list of specific "user categories" to be considered. They caution against the owner/operator being treated as a unique category of data requestor with a unique need for streamlined access to the whole-building consumption data in question. They also believe it important to consider a functional distinction between customers, building owners/operators, and other third parties, and to ensure that data access authorization requirements recognize the unique position of the building owner/operator.

### **IEDR Design, Implementation, and Operation**

CAA thinks that NYSERDA, with help from the Solution Architect, can procure a technology contractor to supply these services.

The City of New York, along with ConEd and National Grid, have developed records that match customer accounts to individual buildings. Currently, there is no formally established method in place for the utilities to update the building/account matching

records to ensure that the correct energy consumption values are being submitted for energy benchmarking reports, and the City requests this to be included in the IEDR.

The Joint Utilities believe that in Appendix B there are aspects of Staff's request that are not detailed to the point that the Joint Utilities can prepare a cost estimate.

Mission Data believes that aggregation standards should evolve over time and should be based on a mathematically rigorous framework approved by the Commission. The public release of different aggregated datasets should be tailored to the particulars of the use case; mathematically analyzed; and revisited over time as circumstances change. They propose eight different categories of use cases based on whether or not customer consent is required prior to exchange of the information.

NYSERDA believes that a detailed implementation and verification process with strong market engagement is required. They also believe the Commission should determine the most responsible way to set privacy, cyber and other related standards and the most responsible way to establish accountability and responsibility when it comes to security.

RESA believes that the Commission should require the Solution Architect to provide the opportunity for, and take into consideration, input from all stakeholders, not just specific stakeholders in regard to the preliminary design plan describing the elements, structure, timing, deliverables, and estimated cost of the design effort.

ASX recommends that the Program Sponsor and Program Manager could establish an IEDR deployment plan that starts with what data is available and grows with the subsequent deployment of data infrastructure, such as AMI, hence an iterative release approach.

#### **Appendix B Data Elements**

The EPA comments on additional data points for consideration such as a unique building identifier. Many utilities currently do not track the concept of a building or property in their customer information systems, something that could prove useful in meter-to-building mapping for aggregated data provision. EPA suggests the Unique Building Identifier (UBID), which is currently being piloted by the Pacific Northwest National Lab

(PNNL). Additionally, persistent documentation of the mapping relationships for verification of accuracy of the consumption data being reported should be recorded. EPA recommends the IEDR team coordinates with the ENERGY STAR team who are currently in the process of scoping functionality in Portfolio Manager that would allow for the identification and documentation of the "constituent" meters for which consumption values are being combined into whole-building totals for ultimate entry as an "aggregate" or "virtual" meter object in Portfolio Manager. Property owners have increasingly including clauses in their lease documents that allow data release authorization. The EPA brings attention to these clauses so that the IEDR can facilitate release of this data upon request. Additionally, for properties with on-site renewables, the IEDR should have data points for gross amount of grid electricity delivered to a building for a given time period or the specific amount of electricity generated onsite and sold back to the grid for that same time period.

# Exhibit N

**STATE OF NEW HAMPSHIRE  
PUBLIC UTILITIES COMMISSION**

**DE 19-197**

**Electric and Natural Gas Utilities**

**Development of a Statewide, Multi-Use Online Energy Data Platform**

**Order Approving Settlement and Establishing a Process  
for Developing a Statewide Data Platform**

**O R D E R N O. 26,589**

**March 2, 2022**

In this order, the Commission approves the design and framework proposed by the parties in this matter for the development and implementation of a state-wide Multi-Use Energy Data Platform. The Commission supports making utility data available while implementing strong privacy and security standards to protect the data of utilities and their customers. Impaired access to customer usage data is a potential barrier to competitive market entry. The Commission will continue to work with the utilities and their customers until this data platform is readily available.

The data platform is designed to enable customers, as well as third-party energy providers, to access energy consumption data from all regulated electric and natural gas utilities through one secure portal using protocols identified by the parties to this proceeding, the “Green Button Connect” protocols. Customers must opt-in to have their data accessed through the portal and customer data will be protected from unauthorized users.

Before moving forward with requests for proposals to develop the data platform, the Commission requires additional detail on software design, customer preferences, and available technology. The Commission also requires that the stakeholders initiate the development of a cost-benefit methodology before moving forward with requests for

proposals. The development of the cost-benefit methodology will inform required cost-benefit analysis after the result of the requests for proposals is finalized. Such a cost-benefit analysis should inform not only whether the development of the state-wide data platform is reasonable and in the public interest, but should also enable a study to provide a prospective look at the rate-design that ensures costs are appropriately recovered from the beneficiaries of the state-wide data platform.<sup>1</sup>

## **I. BACKGROUND AND PROCEDURAL HISTORY**

On December 13, 2019, the Commission issued an order of notice opening this docket as required by SB 284-FN (2019), codified as RSA 378:50-:54. The new subdivision titled, “Multi-Use Energy Data Platform,” provides for the establishment of a statewide online energy data platform, which would allow utilities, their customers, and third-parties, to access and share data regarding customer energy usage. This docket was established to determine how the energy data platform will be developed, implemented, and maintained, and whether the costs of doing so are reasonable and in the public interest.

The electric and natural gas utilities were designated as parties to the proceeding (NH Utilities). The Office of Consumer Advocate (OCA) indicated its intent to participate. The following parties entered petitions to intervene; Mission: data Coalition, Freedom Logistics, LLC, Kat McGhee, UtilityAPI, Inc., Town of Hanover, Patricia Martin, Clean Energy New Hampshire, City of Lebanon, Community Choice Partners, Inc., the Direct Energy Companies, Packetized Energy Technologies, Inc.,

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<sup>1</sup> To enable a timely Commission approval of forthcoming implementation of the state-wide data platform, following the completion of the RFP process, it is important that the requested information and other important milestones follow a timeline, which is shown for illustrative purposes in Section D of this order.



and Greentel Group. The Commission granted all requests for intervention on April 17, 2020.

The parties filed scoping comments on March 11, 2020, use cases in early April, and additional comments on the use cases on April 15, and 23, 2020. Parties filed testimony on August 17, 2020, with certain intervenors filing jointly as consolidated groups. Parties filed rebuttal testimony on October 23, 2020. On April 28, 2021, the parties filed a joint settlement agreement (Settlement). On May 5, 2021, the Commission held a hearing on the Settlement.

## **II. SETTLEMENT**

Although the parties had differing positions as expressed in their comments, testimony and rebuttal testimony, they eventually agreed to the terms of the Settlement. Below are certain key elements contained in the Settlement regarding the development and implementation of the state-wide data platform.

### **A. Platform Design**

The Settlement provides that a virtual Multi-Use Energy Data Platform (Platform) design is most feasible and cost-effective to construct and is also adaptable to future functionalities. The Settlement provides that the NH Utilities shall develop a Platform consisting of:

“(1) a single, unified internet-hosted resource web portal and central Application Programming Interface (“API”) that allows customers and other non-utility third-parties to register to access and share combined utility data and participate in sharing additional data directly via APIs, through which market participants can register for access to data (the “Platform Hub”);

(2) APIs developed individually by or for each NH Utility that shall furnish data to the Platform Hub (“Utility-Specific APIs”); and

(3) a Platform “back end” at each NH Utility that shall operate in parallel with the other two elements, so that Utility-Specific APIs and the Platform Hub share standardized data in accordance with Connect My Data supported standards adopted by the Green Button Alliance and aggregated data.

In addition to the three specific elements, the Platform shall also include user interface, user support, ongoing maintenance, and security reviews of Platform users. Each NH Utility shall use a common model to standardize data to have the same meaning, format and relationships, referred to herein as the “Logical Data Model”.

Each NH Utility shall, at a minimum, provide the data types specified in the Logical Data Model via the Platform Hub. No data supplied to the Platform Hub by a Utility-Specific API shall be stored by the Platform Hub except as may be technically necessary for brief periods to allow the Platform Hub to function effectively.

Each NH Utility shall develop a plan for program administration that includes, but is not limited to:

- (1) NH Utilities’ customer consent processes and records maintenance.
- (2) Platform user authorization and registration processes, including security authorization and monitoring;
- (3) tracking and auditing; and
- (4) preferences (i.e., which accounts to share and other future options).”

Settlement at 5-6.

Each utility plan for program administration shall be subject to the approval of the Platform Governance Council. Each utility’s customer support functions shall be coordinated to support the customers as well as the authorized third-party users of the data platform.

All data provided by the Platform Hub shall conform to the Logical Data Model and any data provided that is included shall be in a current Green Button Connect My Data standard, unless otherwise agreed by the Platform Governance Council and approved by the Commission. As additional data elements are identified for future inclusion in the Platform, that are not part of the Green Button Connect My Data Standard, the NH Utilities or Governance Council should seek to obtain certification from the Green Button Alliance before the Council considers other standard formats for data sharing. If available, at least 24 months of historical customer data shall be

provided by the NH Utilities, in a standardized format that is as accurate and contemporaneous to other data available in the NH Utility systems.

Consistent with RSA 378:50-51, customers of a NH Utility must affirmatively opt-in to share their individual energy-usage data via the Platform or as otherwise ordered by the Commission or required by law. Customer authorizations shall extend for a maximum of up to five years with an annual notice providing an option to revoke such authorization.

### **B. Platform Administration and Operation**

The Platform Hub shall be developed, operated and hosted by a party or parties under contract to the NH Utilities. Regardless of the arrangements for operation and administration of the Platform, the NH Utilities shall have a role in administering and enforcing the security and privacy standards of the Platform, including Platform user eligibility and security standards, and customer consent. The entity or entities responsible for developing and hosting the Platform Hub shall be selected through a request for proposal (RFP) process.

### **C. Governance**

The NH Utilities shall establish a Platform Governance Council (“Council”) for oversight of the Platform. The Council shall consist of the following 12 members:

- (a) three utility representatives, one chosen by each investor-owned utility that shares data via the Platform Hub, provided that affiliated electric and natural gas utilities shall be entitled to one member representing both affiliates.
- (b) three representatives of third-party users of Platform data;
- (c) one representative of New Hampshire municipalities either participating in or with an aggregation plan developed for community power aggregation pursuant to RSA 53-E;
- (d) one representative of the OCA, chosen by the Consumer Advocate;
- (e) one representative of large commercial/industrial customers;

- (f) one representative of small commercial/industrial customers;
- (g) one representative of the academic community with an interest in research germane to the purposes of the Platform; and
- (h) one representative from Staff.<sup>2</sup>

Settlement at 8-9.

The Council is responsible for supervising the administration and operation of the Data Platform including changes needed, standard processes, performance metrics and resolution of disputes among various Platform users. The Council shall make decisions by consensus and a member may request that the Commission resolve disputes when agreement cannot be reached through the consensus process.

The Council shall provide an analysis to the Commission consisting of a narrative statement and evaluation that provides support for any issue or recommendation that has cost recovery implications. Any issue or determination that exceeds the costs approved by the Commission that would necessitate further cost recovery from NH Utility customers shall be submitted for Commission review and approval. Likewise, any determination implicating inclusion of grid operations data or planning data shall be subject to and contingent upon Commission review and approval.

### **C. Platform Security and Privacy Standards**

The data platform shall be implemented to protect customers and their data adequately and to comply with applicable New Hampshire law, including but not limited to RSA 378:50-54 and RSA 363:37-38. The NH Utilities shall be prohibited from unilaterally imposing, without an order from the Commission or unless required

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<sup>2</sup> With the establishment of the Public Utilities Commission and the Department of Energy (DOE) effective July 1, 2021, this reference should be to the DOE staff.

by law, any term, condition, restriction, requirement, cost or financial security upon Platform users that is not explicitly specified in the Settlement.

NH Utilities shall conduct additional reviews of the privacy and security requirements from time to time and propose changes to the Council for approval. Once such changes are approved, the NH Utilities and Platform Hub operator shall implement any necessary and appropriate modifications of the privacy and security requirements.

**D. Cost Reasonableness**

This docket should remain open for a review and determination by the Commission concerning whether the Platform should be built or whether it should be deferred pursuant to RSA 378:51. To facilitate this determination, as soon as is practicable, but in any event no longer than one (1) year from the date of Commission approval of this Settlement, the Settling Parties commit to the following actions:

“(a) the NH Utilities shall utilize an RFP process which the Council shall review to select one or more contractors to develop and operate the Platform Hub;

(b) the Council shall review on a confidential basis all responses to the RFP;

(c) the Council shall make a recommendation to select one or more contractors to develop and operate the Platform Hub;

(d) the NH Utilities shall utilize an RFP process to hire a consultant to review for the Council the Utility proposals for Back-End Integration and construction of the Utility-Specific APIs for consideration as the Settling Parties balance the needs of the Platform and the NH Utility Back-End Integration; and

(e) the NH Utilities and the Council shall develop for submission to the Commission an estimate of the cost of the Platform development, deployment, and operation, including both Back-End Integration and the construction of the Utility-Specific APIs and Platform Hub, and an estimated range of annual operation costs to be incurred by Platform Hub operation.”

Settlement at 13-14.

### **E. Cost Recovery**

RSA 378:54 provides that the utilities may “[i]mpose reasonable charges to third parties for access to data via the multi-use, online energy data platform; and [o]therwise recover costs from customers in a timely manner as approved by the commission.” Once the Platform is operational the Council shall consider a fee structure for Platform users to defray Platform construction and operational costs to the NH Utility customers. Initial design and RFP development along with all consultant, operating and capital costs shall be recoverable from NH Utility customers only to the extent that such costs are reasonable, prudently incurred and in the public interest, and are not otherwise recovered from Platform users or other funding sources. Once a vendor has been selected and Platform cost estimates are known, the Council shall file those estimates for the Commission’s determination of:

- (1) whether those costs appear reasonable pursuant to RSA 378:51, III;
- (2) the mechanism through which utilities may recover platform costs from customers in a timely manner pursuant to RSA 378:54, II; and
- (3) the venue through which the Commission shall determine whether the Platform was prudently deployed.

Settlement at 15.

Commission review of prudently incurred deployment and recovery of costs will occur in one docket for the combined NH Utilities. Costs associated with the Platform Hub and other shared costs between the NH Utilities shall be allocated by the preceding year’s total New Hampshire retail revenue.

### **III. COMMISSION ANALYSIS**

#### **A. Legal Standard**

Unless precluded by law, disposition may be made of any contested case at any time prior to the entry of a final decision or order. RSA 541-A:31, V(a). Pursuant to

N.H. Admin. R., Puc 203.20(b), the Commission shall approve the disposition of any contested case by stipulation if it determines that the result is just and reasonable and serves the public interest. The Commission encourages parties to settle disagreements through negotiation and compromise because it is an opportunity for creative problem solving, allows parties to reach a result in line with their expectations, and is often a better alternative to litigation. *Hampstead Area Water Company, Inc.*, Order No. 26,131 at 3 (May 3, 2018). Nonetheless, the Commission cannot approve a settlement, even when all parties agree, without independently determining that the result comports with applicable standards. *Id.*

RSA 378:51, II requires that our review of the Settlement be conducted in an adjudicative docket. Further, it requires us to consider whether the Settlement addresses the following requirements for the design and operation of the energy Platform:

- (a) Governance, development, implementation, change management, and versioning of the statewide, multi-use, online energy data platform.
- (b) Standards for data accuracy, retention, availability, privacy, and security, including the integrity and uniformity of the logical data model.
- (c) Financial security standards or other mechanisms to assure compliance with privacy standards by third parties.

RSA 378:51, II.

In reviewing the Settlement, we will also consider whether the terms of the Settlement satisfy the following statutory Platform requirements.

- I. Design and operate the energy data platform to provide opportunities for utilities, their customers, and third parties to access the online energy data platform and to participate in data sharing.
- II. Require, as a condition of accessing the online energy data platform, that a third party complete a qualification and registration process to ensure that any customer data downloaded from the platform remains in a safe, secure environment according to data privacy standards established by the commission.

III. Administer the online energy data platform in a manner consistent with RSA 363:38. RSA 378:52

The platform established under RSA 378:51 shall be certified by the Green Button Alliance and support the Energy Service Provider Interface of the North American Energy Standards Board and the Green Button "Connect My Data" initiative of the Green Button Alliance.

RSA 378:53

In addition to setting out the requirements for the data platform and the framework for the Commission's review of the design of the data platform, the statute requires the Commission to consider the costs of developing the data platform and the impacts of those costs on utility ratepayers.

The department of energy shall defer the implementation of the statewide, multi-use, online energy data platform pursuant to paragraph I if the commission determines that the cost of such platform to be recovered from customers is unreasonable and not in the public interest.

RSA 378:51, III.

At a later stage when the costs of the data platform are known, the Commission is required to approve the mechanisms for the utilities to recover the costs from utility customers and other users of the data platform.

The utilities may:

- I. Impose reasonable charges to third parties for access to data via the multi-use, online energy data platform; and
- II. Otherwise recover costs from customers in a timely manner as approved by the commission.

RSA 378:54 Cost Recovery.

## **B. Settlement**

We commend the parties to this docket for their collaboration in reaching a framework for moving forward to design, and to assign costs, to the development of a State-wide Multi-Use Energy Data Platform. We note that where the Settlement refers to Staff, those provisions should be interpreted to refer to Department of Energy Staff.



At this point, we are considering a Settlement which covers a number of preliminary matters involving the platform design, and the decision-making process for further refining the platform requirements to the point at which an RFP can be issued for the software development. We are not at a point yet where the financial costs and benefits of the software development is fully developed for a Commission determination pursuant to RSA 378:51, III. At this preliminary juncture, we find that the Settlement contains terms which satisfy the requirement of RSA 378:52, and :53. We will also review the Settlement according to the standard of Commission review provided in RSA 378:51, II. We note that consistent with RSA 378:51, II, the Settlement was developed through an adjudicative process.

### **1. Governance, Development, Implementation**

The proposed Platform Governance Council addresses the need for governance over the development and implementation process by assigning all major decisions to the Council for resolution on a consensus basis. Nonetheless, the Settlement provides for the Commission to resolve disputes among members of the Council when necessary. By including representatives of various potential stakeholders on the Council, the parties have ensured that the Platform will be enabled to meet the needs of the represented stakeholders. We are concerned that non-participating customers may not be adequately represented on the Council. Nonetheless, we find that the Platform Governance Council structure allows for meaningful stakeholder input, and is consistent with statutory requirements. *See* RSA 378:51, II(a). When the Commission reviews the reasonableness of the projected costs of the data platform at a later stage in the development process, the Commission will need to consider impacts to both participating and non-participating customers.

The Data Platform as outlined in the Settlement is designed to allow customers, and authorized third-parties, access to the same customer usage data in one virtual platform across all five utilities. This design meets one of the primary statutory goals. See RSA 378:52, I. The third-party registration process and the requirement for a customer to opt-in to the use of the Platform are consistent with the goal of protecting customer data. See RSA 378:52, II. Further the recommended platform design structure with the public facing data platform providing data retrieval, as opposed to data storage, appears to limit potential improper access to customer data, and to be prudent, efficient, and consistent with statutory goals. RSA 378:52, II(a).

The Settling Parties propose to develop and implement the data platform software through an RFP for development and administration of the Platform. We agree that such technical services should be priced based upon a competitive bid process, however, we believe that additional Commission involvement prior to the issuance of an RFP is warranted to ensure that the bids result in a software development process that is successful and provides the lowest cost for implementation. See our discussion of project leadership and management and Commission oversight below. We find that the Settlement when modified by the processes described in Section D, below, adequately addresses software development issues as required by RSA 378:51, II(a).

The Settling Parties propose to issue an RFP for a consultant to assist in developing an RFP for the utility specific back-end and the utility-specific API. We believe that such expert technical assistance will be helpful in determining what design options will be least cost and most likely to result in a successful development process. For these reasons, and with the addition of the technical project leadership and Commission oversight discussed in Section D below, we find that the Settlement

conforms to the governance, development, and implementation requirements of RSA 378:51, II.

## **2. Data Accuracy, Retention, Availability, Privacy, And Security**

The recommended platform design structure with the public facing data platform providing data retrieval, as opposed to data storage, appears to support data privacy and security. The cybersecurity of the platform data is a critical element as recognized in RSA 378:51, II. The proposed platform design provides for compliance with customer privacy protections, RSA 363:38, and for regular utility review of those protections. Further, the goal of providing 24 months of usage data of quality and accuracy commensurate with the utility data, is consistent with statutory goals. We will expect any platform development proposal to give priority and detail to all cybersecurity elements. Thus, we find the Data Platform design described in the Settlement is a good preliminary framework and is consistent with the data accuracy, retention, availability, privacy, and security requirements of RSA 378:51, II(b). We will expect the parties to describe in more detail current privacy standards in place at the utility API's and the commensurate standards to be applied to third-parties seeking access to customer data.

## **3. Mechanisms to Assure Compliance with Privacy Standards**

Appendix C to the Settlement gives a detailed description of the registration process for third-party Platform users. Depending upon the level of data requested, the third-party is required to meet varying levels of data security. To assess data security, a third-party must complete a detailed questionnaire concerning the security level and adequacy of its practices and its capacity to protect customer data. Either the utility, or an authorized centralized cyber authority, shall assess Platform users' compliance with privacy standards before allowing them to register to access varying levels of data

through the Platform. The registration process involves an initial security assessment, and then an on-going annual attestation regarding cybersecurity practices. Users' access to the Platform will be terminated for any failure to meet cybersecurity standards. We find, as a preliminary matter, the registration practices described in Appendix C are consistent with the requirements to assure compliance with privacy standards by third parties of RSA 378:51, II(c). We will require additional detail on the registration process, to ensure compliance with current best practices in the utility industry, as the parties prepare the RFP for Platform development.

### **C. Needed Project Leadership and Management**

A key to successful and economically efficient development of the software needed to support the proposed Data Platform is having a software development project manager with the technical expertise to lead a complex project such as the one proposed in RSA 378:50-54. As an intervenor and sponsor of SB 284-FN (2019), Representative McGhee stated in her petition to intervene:

“In that process, my background as a Technology Program Manager helped with communication and understanding of the work that had already been completed on the road toward requirements gathering and the development of a logical data-model standard for the statewide, online energy platform. This docket differs from other PUC dockets in that it requires not only a state and utility collaboration, but also the integration and management of a software project for which the state must supply some measure of technical expertise and oversight to achieve its goals.

The logical data-model standard, which could also be referred to as the New Hampshire Energy Data Standard, was conceived and designed by state resources to facilitate the collaboration with the state's utilities. The problem of state ownership has been and remains a potential point of failure for this project because there is no natural state agency or department home for the technical project management to live within the State of New Hampshire's bureaucracy. Without specific and dedicated ownership for the technical aspects of the project on the state side, it is highly unlikely the project will meet its intended objectives in a timely and cost-effective manner.”  
Petition to Intervene, Kat McGhee at 2-3.

We will expect the parties to propose ways to provide the necessary technical leadership for this software development project as they refine the software design and

move toward the RFP process. Without adequate technical leadership the project costs will be hard to manage efficiently and effectively.

#### **D. Commission Oversight**

In order to fulfill our obligations to review and approve any costs associated with the data platform, RSA 378:51, III, and to minimize those costs pursuant to RSA 363:17-a, we will require some additional Commission oversight of the development process. In order to obtain the lowest possible cost for developing the data platform, as well as for the utility back-end integration and the utility API, we direct the parties to develop a more detailed description of the data and functions needed for platform operation. The customer interface should be illustrated in a way that describes the customer or third-party experience with the API. An actual demonstration of the user experience with the Data Platform API would be most helpful.

Before embarking on additional design work on the Platform, each of the electric and gas utilities are directed to conduct customer surveys of a statistically valid representative sample of their New Hampshire customer classes to determine for each of the customer classes, the current level of customer interest and the likelihood of customers opting-in to the use of the data platform. The Commission encourages the utilities to use a professional survey management company to conduct the survey and to coordinate the survey effort across utilities to achieve consistency of approach and survey results. We also direct that the survey data collected through the survey be filed with the Commission in this docket.

Further, before proposing the form of an RFP for the Platform, the parties should survey existing software, and software under development in other jurisdictions, to determine whether any costs can be saved through licensing existing technology. We request that the parties report on the status of any development or

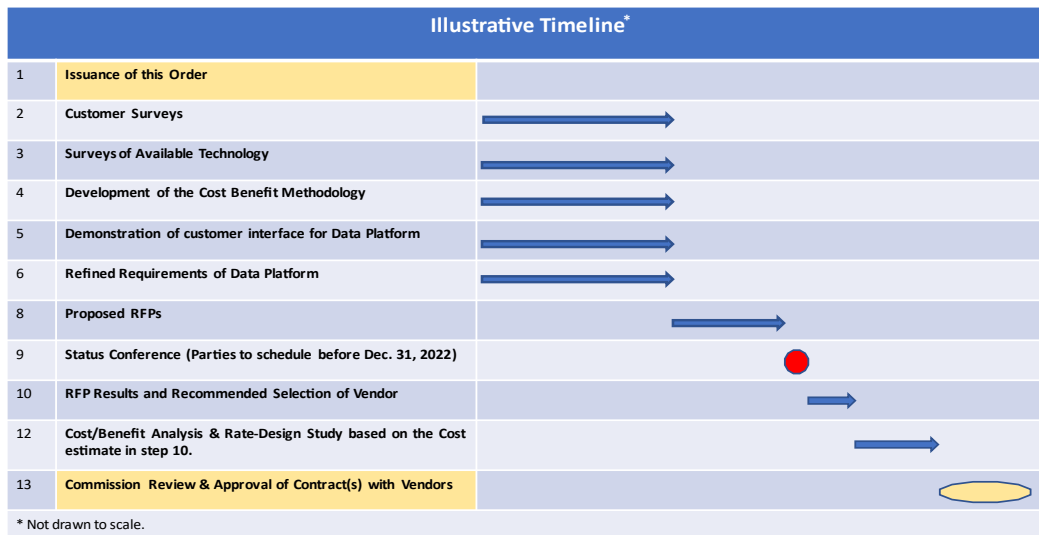
implementation of a similar data platform in utility service territories outside New Hampshire. The parties should use an approach aimed at reducing risks and costs in the software development process. This is a complex and ambitious undertaking which has the potential to be very costly.

The Commission requires the parties to submit the RFP for the consultant to assist with the RFP process for the integration of the utility back-end and utility API to the Commission for review and approval prior to issuance. The Commission also requires the parties to submit the proposed RFP for the platform development to the Commission for review and approval prior to issuance. Should the parties determine that other RFPs are needed, those must also be submitted for Commission approval prior to issuance.

In considering future requests for cost recovery for the costs of the Data Platform design and implementation, we will be guided by the principles of cost causation and cost benefits. Recovery of costs from the different customer classes and users should be reasonably aligned with the benefits they receive. After the RFP for the Data Platform is issued, the Commission requires that the parties provide a forward-looking benefit-cost analysis and recommend a rate design that reasonably aligns cost recovery across users and ratepayers with the benefits they receive. The steps<sup>3</sup> required for Commission oversight, as shown on an illustrative timeline below, and are subject to update depending upon the results of the analysis required by the parties and the Commission.

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<sup>3</sup> Some of the steps may overlap differently, but they would still have to pivot around the Status Conference (Step 9) as illustrated for a timely Commission approval of the implementation of the state-wide Multi-Use Energy Data Platform.



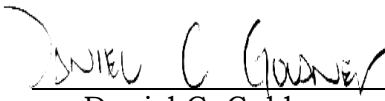
**Based upon the foregoing, it is hereby**

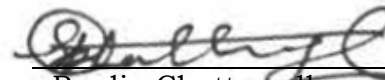
**ORDERED**, Settlement is **APPROVED** subject to the additional Commission oversight discussed herein; and it is

**FURTHER ORDERED**, that the parties should notify the Commission when they are ready to schedule a status conference to present customer survey data, technology surveys, customer interface demonstrations, methods for determining cost/benefit of data platform, and proposed RFPs, as discussed herein; and it is

**FURTHER ORDERED**, that no RFP shall issue for the Data Platform, for the consultant to assist with the NH Utility back-office integration and API, or for any other purpose without prior Commission approval.

By order of the Public Utilities Commission of New Hampshire this second day of March, 2022.

  
Daniel C. Goldner  
Chairman

  
Pradip Chattopadhyay  
Commissioner

  
Anne Ross  
Commissioner

## Service List - Docket Related

Docket# : 19-197

Printed: 3/2/2022

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# Exhibit O

## Share My Data Platform Terms and Conditions (for Registering 3<sup>rd</sup> Parties)

**NOTICE:** BY CLICKING THE OK BUTTON BELOW, YOU ACKNOWLEDGE THAT YOU HAVE READ AND AGREE TO COMPLY WITH THE FOLLOWING TERMS AND CONDITIONS THAT GOVERN YOUR USE OF THE PG&E SHARE MY DATA PLATFORM AND RELATED PG&E FACILITIES (“SHARE MY DATA PLATFORM TERMS”) AND THE CUSTOMER DATA ACCESS (CDA) [TARIFF](#). IF YOU DO NOT AGREE TO COMPLY WITH THE SHARE MY DATA PLATFORM TERMS AND THE CDA TARIFF, DO NOT PROCEED WITH THE SHARE MY DATA REGISTRATION PROCESS.

**1. Introduction.** By agreeing to these terms and conditions (“Share My Data Platform Terms”), you acknowledge that you are aware of and agree to comply with the terms of all applicable state and federal laws and rules relating to customer privacy, including the California Consumer Privacy Act, the California Information Practices Act, and the California Public Utilities Commission’s “Rules Regarding Privacy and Security Protections for Energy Usage Data” and other consumer privacy rules referenced in the PG&E Privacy Policy posted online at <http://www.pge.com/about/company/privacy/customer/>, which laws and rules are incorporated and made a part of these Terms and Conditions by reference. Upon PG&E’s acceptance of your completed Registration for Share My Data and your executed agreement to comply with the CDA Tariff (posted online at [http://www.pge.com/notes/rates/tariffs/tm2/pdf/ELEC\\_4378-E-A.pdf](http://www.pge.com/notes/rates/tariffs/tm2/pdf/ELEC_4378-E-A.pdf)) and the terms and conditions specified herein, the Share My Data Platform Terms and Conditions shall constitute the “Agreement” between you and PG&E. If you are using the Share My Data Platform to provide products or services to PG&E or its customers under a separate agreement with PG&E or a contractor of PG&E, the terms and conditions of the separate contract with PG&E or PG&E’s contractor apply to the extent inconsistent with these Share My Data Platform Terms and Conditions. If you do not agree to the CDA Tariff and terms of this Agreement (including complying with all applicable state and federal laws and rules relating to customer privacy), withdraw your Registration. The terms of this Agreement shall remain in force and apply for the duration of your use of the Share My Data Platform.

**Note:** Access to Customer energy data by Community Choice Aggregators (CCAs) is governed by Electric [Rule 23, Community Choice Aggregation Service](#) and Electric Schedule E-CCAINFO. As such, CCA’s are not subject to the same Customer Authorization requirements as other Share My Data Platform Applicants and are correspondingly not subject to all of the Terms and Conditions specified herein. The following sections and subsections are NOT applicable to CCAs:

- Section 9. Terms and Termination. Paragraphs (g) and (h)
- CDA Tariff. Any and all portions of the CDA Tariff related to Customer Authorization of access to their energy usage and Customer data

**2. Definitions.** The following terms shall have these defined meanings for purposes of this Agreement:

“Applicant” means the entity registering to use the Share My Data Platform.

“Authorization End Date” means, as selected by customer, the date when on-going (future) data access is discontinued.

“CPUC” means the California Public Utilities Commission.

“Customer” means an agricultural, industrial, residential and/or small or medium customer which receives electric and/or natural gas services services from or on behalf of PG&E.

“Customer Data” means collectively, any and all data and information of or concerning any identified or identifiable Customer as set forth in Section 394(a) of the California Public Utilities Code and Sections

8380(a) of the California Public Utilities Code and implementing rules of the CPUC, whether derived directly or indirectly, including, without limitation:

**Name, address and telephone number; device IDs; e-mail addresses; billing information; electric and gas energy usage, electric service (including, without limitation, service account number, service agreement, service start date, electricity demand (in kilowatts), natural gas demand (in therms), monthly billed revenue, billing dates, billing history, credit history, rate schedule(s), meter read dates, interval usage or interval time-of-use indicators, or number or type of meters at a location; but not aggregated or anonymized information regarding the usage, load shape, or other general characteristics of a customer, group or rate classification, unless the release of that information would directly or indirectly permit the derivation of the above-referenced personally identifiable information.**

“Share My Data” means PG&E’s Share My Data Platform.

“My Data” means any Customer Data as defined above that a specific PG&E customer has requested to be disclosed to the customer for purposes of the customer sharing the data with an Applicant registered under this program.

“Representatives” means your organization’s directors, officers, employees, agents, consultants, contractors, subcontractors, or advisors who have a direct need to access Customer Data in the course of your business activities.

“Service” means the Applicant’s hosted service, mobile app or software application.

**3. Conditions of Participation** Upon your agreement to the Share My Data Platform Terms & Conditions and PG&E’s acceptance of your Registration, you will be requested to complete Connectivity Testing within 90 days to verify that you have the capability to access authorized customer data using the Share My Data Platform. Once Connectivity Testing is successfully completed, you will be eligible for Customers to authorize release of their data to you via the Share My Data Platform according to the limiting parameters they specify. In order to continue to use the Share My Data Platform you agree that you and your Representatives:

- (a) will not make any representations, warranties, or guarantees to Customers on behalf of PG&E;
- (b) will comply with all applicable federal, state and local laws and regulations (including, but not limited to laws and rules protecting customer privacy and regulating your professional

status and licensing requirements, if any) and all other applicable governmental laws, statutes and regulations;

- (c) prior to and as a condition of Applicant's registration and use of the Share My Data platform under the Agreement, Applicant will demonstrate to PG&E's satisfaction that Applicant has conspicuously posted its privacy and cyber-security policy and controls in a manner reasonably accessible to consumers;
- (d) will upon request provide PG&E with copies of Applicant's terms of use/ terms of service and privacy and cyber-security policy and controls prior to Applicant's registration and use of the Share My Data Platform pursuant to the Share My Data Terms and Conditions and any subsequent revisions or updates to the foregoing.
- (e) will complete connectivity testing within 90 days. PG&E reserves the right to reject any Registration application that does not complete connectivity testing within the allotted timeframe of 90 days.
- (f) will exchange with PG&E and maintain unexpired, unrevoked RSA certificates with a public key length of at least 2048 bits issued by a PG&E supported Certificate Authority.
- (g) will implement Transport Layer Security for all exchanges with PG&E.
- (h) will incorporate industry standard controls into your Service that prevent a 'Denial of Service' type of attack;
- (i) will provide complete and valid information and if requested by PG&E any subsequent clarifying information in a reasonable and timely manner

**4. Notification of Security Incidents.** Applicant will immediately notify PG&E upon discovery of any actual or suspected breach or compromise of the privacy, security, confidentiality or integrity of the PG&E Share My Data Platform and any other PG&E Systems (each an "Incident").

Such notice will include:

- (a) a brief summary of the issue, facts and status of Applicant's investigation of the incident;
- (b) the potential number of Customers affected by the Incident; and
- (c) any other information pertinent to PG&E's understanding of the Incident.

**5. Access to PG&E Systems.** If Applicant obtains or is granted access to any of PG&E's systems, networks, databases, computers, telecommunications or other information systems owned, controlled or operated by or on its behalf (collectively "Systems"), then such access, in all cases, is subject to Applicant's compliance with all then-current PG&E policies, and requirements, including, but not limited to all physical and cyber security, privacy, safety, information technology, and business conduct policies and requirements. Access to any Systems is solely for the purpose of Applicant accessing Customer Data during Applicant's use of the Share My Data Platform, but not otherwise. In no event shall Applicant access or make use of the Systems for any other purpose.

## **6. Indemnification and Insurance.**

**6.1 Indemnification.** Applicant will defend, indemnify and hold PG&E, its affiliates and their respective officers, directors, employees, sublicensees, consultants, Customers and agents harmless from and against any and all claims, losses, liabilities, damages, expenses and costs (including attorneys' fees and court costs) arising out of or related to:

- (a) any actual or alleged breach of any representation, warranty or other provision of the Share My Data Platform Terms and Conditions and Agreement by Applicant;
- (b) any actual or alleged infringement of any intellectual property rights by the Service, or Customer's use of the Service;
- (c) any unauthorized use, disclosure, dissemination or destruction of Customer Data or PG&E data or property; and
- (d) Applicant's failure to comply with applicable local, state, or federal laws, regulations, ordinances, and directives relating to the Service or Customer's use of the Service (each a "Claim"). PG&E shall give prompt written notice of a Claim and PG&E will have the right (but no obligation) to participate in the defense of such Claim at its expense. In no event will Applicant settle any Claim without PG&E's prior written consent, not to be unreasonably delayed.

**6.2 Insurance.** Throughout Applicant's use of the Share My Data Platform, Applicant has and will maintain insurance coverage, at its expense, sufficient to cover any liabilities or claims for damages that may result from your use of the Share My Data Platform and access to PG&E Systems. A copy of said insurance policies shall be provided to PG&E upon request. Applicant shall provide PG&E with not less than 30 days' written notice of any cancellation or material changes to its insurance coverage.

## **7. Warranties and Warranty Disclaimer.**

**7.1. Warranties.** Applicant represents and warrants that:

(a) Applicant has full right and power to enter into and perform this Agreement and its performance under this Agreement will not conflict with any other obligation Applicant may have to any other party, except that, if Applicant is using the Share My Data Platform to provide products or services to PG&E or its customers under a separate agreement with PG&E or a contractor of PG&E, the terms and conditions of the separate contract with PG&E or PG&E's contractor apply to the extent inconsistent with these Share My Data Platform Terms and Conditions;

(b) Applicant maintains appropriate privacy and security measures, controls and technologies to comply with the obligations in Sections 1, 3, 4 and the Privacy Policy,

(c) Applicant has secured Entrust security certificates for both inbound and outbound API communications and shall maintain such Entrust security certificates throughout Applicant's use of the Share My Data Platform;

(d) the Service, including all elements thereof, does not infringe the intellectual property rights of any third party; and

(e) Applicant, its employees, subcontractors, and agents will comply with all applicable local, state, or federal laws, regulations, and directives.

**7.2 Warranty Disclaimer.** YOU EXPRESSLY ACKNOWLEDGE AND AGREE THAT YOUR USE OF THE SHARE MY DATA PLATFORM IS AT YOUR SOLE RISK AND, TO THE MAXIMUM EXTENT PERMITTED BY LAW, THE SHARE MY DATA PLATFORM ARE PROVIDED "AS IS" AND "AS AVAILABLE", WITH ALL FAULTS AND WITHOUT WARRANTY OF ANY KIND, AND PG&E HEREBY DISCLAIMS ALL WARRANTIES AND CONDITIONS WITH RESPECT TO THE SHARE MY DATA API, EITHER EXPRESS OR IMPLIED OR STATUTORY,

INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF: MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, ACCURACY, AND NONINFRINGEMENT OF THIRD-PARTY RIGHTS. PG&E FURTHER DISCLAIMS, TO THE MAXIMUM EXTENT PERMITTED BY LAW, ANY WARRANTIES AGAINST INTERFERENCE



WITH YOUR QUIET ENJOYMENT OF THE SHARE MY DATA API, THAT THE FUNCTIONS CONTAINED IN OR SERVICES PERFORMED OR PROVIDED BY THE SHARE MY DATA API WILL MEET YOUR REQUIREMENTS, AND THAT THE OPERATION OF THE SHARE MY DATA API WILL BE UNINTERRUPTED OR ERROR-FREE. NO ORAL OR WRITTEN INFORMATION OR ADVICE GIVEN BY US, OUR REPRESENTATIVES, OR LICENSORS SHALL CREATE ANY SORT OF WARRANTY.

**8. Limitation of Liability.** EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, IN NO EVENT SHALL PG&E BE LIABLE FOR PERSONAL INJURY, PROPERTY DAMAGE, OR ANY INCIDENTAL, SPECIAL, DIRECT, INDIRECT, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES WHATSOEVER, INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF PROFITS, LOSS OF DATA, LOSS OF USE, OR LOSS OF BUSINESS OPPORTUNITY, ARISING OUT OF OR RELATED TO YOUR USE OR INABILITY TO USE THE PG&E APP OR ANY SERVICES, HOWEVER CAUSED, REGARDLESS OF THE THEORY OF LIABILITY (CONTRACT, TORT, OR OTHERWISE) AND EVEN IF PG&E HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES IN ADVANCE. In no event shall PG&E's total liability to Applicant for all damages (other than as may be required by applicable law in cases involving personal injury) exceed the amount of fifty dollars (\$50.00). The foregoing limitations will apply even if the above stated remedy fails of its essential purpose.

**9. Term and Termination.** PG&E may terminate this Agreement immediately to the extent consistent with the applicable CPUC rules, CDA Tariff, or PG&E's cyber security or customer privacy policies, controls or requirements, including removal of access to the Share My Data Platform and any Customer Data to which this Agreement relates, upon the occurrence of any one of the following events (each a "Cause"):

- (a) you fail to comply with any of the terms of this Agreement, including, without limitation, the terms governing the use of Customer Data;
- (b) you infringe any intellectual property right of PG&E or a third party, or engage in any other activities prohibited by law;
- (c) you fail to comply with the terms of the Share My Data Platform as specified in the CDA Tariff and this agreement;
- (d) you fail to successfully complete the connectivity testing within 90 days;
- (e) your access to the Share My Data Platform represents an imminent threat of damage to physical security, cyber-security or safe and reliable operation of PG&E's utility facilities or system; or
- (f) you demonstrate prolonged periods of inactivity of 6 months or more for reasons which include but are not limited to failure to pull customer data which you have been authorized to

receive, failure to receive any customer authorizations after completion of registration, or dissolution of your Company. PG&E reserves the right to investigate reasons for inactivity and take corrective action which may include termination of this agreement.

In the event any of the above occurs, PG&E if practicable may provide you with written or e-mail notice of termination of this Agreement.

(g) Your authorization to receive access to any individual Customer's Data will also be revoked immediately upon PG&E's receipt of a request by a Customer or Customers to revoke authorization from said Customers. In such cases, you will NOT be notified by PG&E of authorization revocations.

(h) PG&E's termination under this section shall not prejudice any rights PG&E may have under this Agreement or in law, equity or otherwise. Sections 2, 4, 6, 7, 8, and 10 through 12 shall survive termination of the Share My Data Platform Terms for any reason.

**10. Relationship of the Parties.** You acknowledge that nothing in this Agreement shall be construed as creating a partnership, joint venture or agency relationship between you and PG&E. You shall not advertise, promote, or suggest in any manner that the Services you provide to Customers in connection with the Share My Data Platform are provided by, sponsored by, or associated in any way with PG&E, or that you are employed by, affiliated with, or sponsored by PG&E, except to state that you have successfully completed all requirements for your use of the Share My Data Platform and access to PG&E Systems. During the term of this Agreement, you shall insert the following language in each contract pursuant to which you will provide the Service to Customers: "PG&E is not a party to this Agreement, and shall have no liability whatsoever with respect to any of the Services that are the subject of this contract. The Service I provide under this contract are not provided, licensed, warranted or sponsored by PG&E."

**11. Governing Law, Forum and Remedies.** The laws of the State of California, excluding its conflicts of law rules, govern the Agreement and your use of the Share My Data Platform. Any litigation related to the Agreement or your use of the Share My Data Platform must be brought and enforced in, and will be under the exclusive jurisdiction of, the courts of the State of California in San Francisco County or the federal courts of the United States for the Northern District of California. PG&E reserves the right to seek any and all remedies available at law or in equity for your violation of the Share My Data Platform Terms.

**12. General.** You may not assign your rights or obligations under these Share My Data Platform Terms. Any unauthorized assignment will be void. PG&E will not be liable for performance or delays beyond its reasonable control. A waiver of any breach or default under these Share My Data Platform Terms shall not constitute a waiver of any subsequent breach or default. If a court of competent jurisdiction holds that any provision of these Share My Data Platform Terms are invalid or unenforceable, the remaining portions will remain in full force and effect, and the parties will replace the invalid or unenforceable provision with a valid and enforceable provision that achieves the original intent of the parties and the economic effect of the Share My Data Platform Terms. These Share My Data Platform Terms, including any additional terms referenced in the CDA Tariff below, constitute the entire agreement between PG&E and you with regard to your use of the Share My Data Platform and supersede all prior negotiations, agreements, and understandings with respect to the subject matter, and no addition to or deletion from or modification of any of the provisions hereto shall be binding upon PG&E unless made in writing and signed by an authorized representative of PG&E. Any term or condition on any other document submitted by you shall be of no force or effect whatsoever, and is specifically rejected. PG&E reserves the right to change this Agreement at any time and

without notice. Notices of changes to the Agreement will be given by PG&E posting the changes on the PG&E Site and will be deemed given when posted. You will have a commercially reasonable time to implement such changes by PG&E, not to exceed thirty (30) days.

Click on the OK Button below to acknowledge your agreement to comply with the Share My Data Platform Terms and Conditions specified herein and the [Customer Data Access \(CDA\) Tariff](#).

*“PG&E” refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. © 2014 Pacific Gas and Electric Company. All rights reserved.*

# Exhibit P

## GREEN BUTTON CONNECT MY DATA ACCESS AGREEMENT

## ("AGREEMENT")

1. **General.** SCE's Green Button Connect My Data services ("Green Button Services") allows customers to provide third parties with access to their interval usage data ("Customer Data"). By accepting below, you represent that the SCE customer whose Customer Data you are requesting to access has authorized your access.
2. **Eligibility.** To access Customer Data, you must have registered on SCE.com and provided basic information, and be able to access and retain electronic documents over the Internet. Upon your acceptance of this Agreement, SCE will notify the customer of your request for access.
3. **Your Password.** You must use a username and password to access the Green Button Services. Your password must be kept confidential at all times and should not be provided to any other party. You are responsible for keeping your password confidential and protecting it against improper and unauthorized use. If you fail to do so, you will be solely responsible for any and all transactions, entries or instructions initiated through the use of your password, and any and all claims, losses, damages, expenses and costs incurred by the improper or unauthorized use of your password and/or the use of your password by others. You may also reset your password online by selecting "Password" from the Green Button Services Log-In screen. If you have forgotten your username and/or Password, online reminder capabilities are available to assist you in remembering them by selecting "Forgot My Username or Password" from the Log-In screen.
4. **Availability.** Your Green Button Services account is designed to be available to you seven days a week, 24 hours a day. However, SCE shall not be liable to you or any other person for your inability to receive electronic messages or to access to your account.
5. **Contact Information.** As a user, it is your responsibility to ensure that your contact and other required information such as your name and email address are current, accurate, and updated promptly. Changes to your contact and other information can be made online.
6. **Fees.** SCE does not charge you a fee for your use of your Green Button Services account.
7. **Notices to SCE.** Please direct all correspondence to the following e-mail address and telephone number: [amg@sce.com](mailto:amg@sce.com); Telephone: 844 279 6616, Monday through Friday from 8 a.m. to 5 p.m. prevailing time in the Pacific time zone (excluding holidays).
8. **Amendments.** The terms of your Green Button Services account and of this Agreement may be modified or amended by SCE from time to time. In such event, SCE will provide notice to you in accordance with applicable law, which may be accomplished by posting such change on SCE's Website at [www.sce.com](http://www.sce.com). Any use of your Green Button Services account after SCE provides notice of change will constitute your agreement to such change(s). You should discontinue use of your Green Button Services account if you do not agree with and do not want to accept any such amendments.
9. **Governing Law.** This Agreement shall be governed by the laws of the State of California without regard to its conflicts of laws principles.
10. **Disclaimer of Warranties.** The Green Button Services and any content, information, software, functions and applets provided on or through the Green Button Services are made available on an "as is" and "as available" basis. SCE does not warrant that the Green Button Services or any content or services provided in connection with the Green Button Services, including your Green Button Services account, will be timely, secure,

uninterrupted, or error-free, or that defects in the Green Button Services or in any content or services provided through the Green Button Services, including your Green Button Services account, as may exist from time to time, will be corrected. SCE will not be responsible for errors, omissions, interruptions, deletions, defects or delays in the operation of or transmission of data through the Green Button Services, any services, including your Green Button Services account, or related content, including those due to communication line failures, or computer viruses associated with the operation of the Green Button Services. SCE MAKES NO EXPRESS OR IMPLIED WARRANTIES WITH RESPECT TO THE GREEN BUTTON SERVICES OR YOUR GREEN BUTTON SERVICES ACCOUNT, INCLUDING WITHOUT LIMITATION THE WARRANTIES OF TITLE, NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE. YOU EXPRESSLY AGREE TO USE THE GREEN BUTTON SERVICES AND YOUR GREEN BUTTON SERVICES ACCOUNT AT YOUR SOLE RISK.

11. **Limitation of Liability.** SCE, its affiliates or subsidiaries, and their officers, directors, employees, agents, successors, or assigns, will not be liable to you or any third party for any indirect, consequential, incidental, exemplary, special or punitive damages (including without limitation, damages resulting from lost data, lost profits, or costs of procurement of substitute products or services) arising out of or in connection with your Green Button Services account. In no event will the liability of SCE, its affiliates or subsidiaries, or their officers, directors, employees, agents, successors, or assigns, under any theory of liability (whether in contract, tort, strict liability, or otherwise) exceed \$100, regardless of whether such parties have been advised of the possibility of such damages.

12. **Indemnification.** You agree to indemnify, defend and hold harmless SCE, its affiliates and subsidiaries, and their officers, directors, employees, agents, successors, or assigns from any and all liabilities, costs and expenses (including reasonable attorneys' and experts' fees) in connection with any claim by the SCE customer arising out of or relating to your access to Customer Data through the Green Button Service, other than those claims caused by SCE's negligence or willful misconduct.

13. **Use of Electronic Communication.** By accepting below or otherwise using your Green Button Services account, you also agree that any and all notices, disclosures and communications regarding your Green Button Services account between you and SCE, including this Agreement, may be made electronically, including by SCE posting to its Website in accordance with applicable law. Any electronic notice, disclosure or communication SCE makes will be considered made when transmitted by SCE.

14. **Privacy of Information.** You acknowledge that SCE will receive certain personal, private and/or confidential information in connection with your use of your Green Button Services account; and that absent your express authorization, SCE will not rent, sell or otherwise make available to any third party for any reason any of this information that personally identifies you or your SCE.com account, other than to provide services or to comply with applicable laws or regulations, including CPUC or court orders.

By checking the box for "I have read and agree to terms and conditions" you are providing a symbol of your signature that the information you have provided is true and correct; that you have read, understand, accept and agree to the terms of this Agreement; and constitutes your representation that you are duly authorized to enter into this Agreement.

You may print this Agreement for your records using the Print feature of your browser.



## **Exhibit Q**

## GREEN BUTTON PROGRAM TERMS OF USE

Participation in San Diego Gas & Electric's ("SDG&E") Green Button Connect ("GBC") program is contingent on and subject to Requestor's acceptance of the following "Terms of Use":

1. SDG&E reserves the right to change, implement, modify, or remove restrictions and limits to these Terms of Use at any time. Updates to these Terms of Use will be posted on SDG&E's website.
2. Through the GBC program, SDG&E provides its customers with the ability to consent to transfer of such customer's energy usage data ("Data") to third parties. Requestor shall not be eligible to receive Data without such customer's prior written consent to such transfer.
3. SDG&E MAKES NO REPRESENTATIONS ABOUT THE DATA FOR ANY PURPOSE, INCLUDING BUT NOT LIMITED TO THE ACCURACY, QUALITY OR VALIDITY OF THE DATA. ALL DATA IS PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND. SDG&E HEREBY DISCLAIMS ALL WARRANTIES AND CONDITIONS WITH REGARD TO THIS INFORMATION, INCLUDING ALL WARRANTIES AND CONDITIONS OF MERCHANTABILITY, WHETHER EXPRESS, IMPLIED OR STATUTORY, FITNESS FOR A PARTICULAR PURPOSE, TITLE AND NON-INFRINGEMENT. IN NO EVENT SHALL SDG&E BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER RESULTING FROM LOSS OF USE, DATA OR PROFITS, WHETHER IN AN ACTION OF CONTRACT, NEGLIGENCE OR OTHER TORTIOUS ACTION, ARISING OUT OF OR IN CONNECTION WITH THE USE OR QUALITY OF THE DATA.
4. The Data may include technical inaccuracies or typographical errors. Changes are periodically added to the information herein. SDG&E may make improvements and/or changes to the Data and/or the GBC program at any time.
5. As a condition of Requestor's use of the Data, Requestor shall not use the Data for any purpose that is unlawful or prohibited by these terms, conditions, and notices. Requestor may not use the Data or the GBC program in any manner that could damage, disable, overburden, or impair any SDG&E server, or the network(s) connected to any SDG&E server, or interfere with any other party's use and enjoyment of the Data. Requestor may not attempt to gain unauthorized access to any Data, other accounts, computer systems or networks connected to any SDG&E server or to any of the Data, through hacking, password mining or any other means.
6. SDG&E will make reasonable commercial efforts to provide limited technical support to Requestor during business hours as necessary to access the Data. However, SDG&E does not guarantee any level of service to Requestor, verbally or in writing, and will not be responsible for any losses or expenses associated with an interruption, lack of responsiveness, or performance lag in the GBC program services.
7. SDG&E reserves the right to terminate Requestor's access to any or all of the Data at any time, without notice, for any reason whatsoever. Any violation of any of these Terms of Use shall be grounds for immediate and permanent suspension of Requestor from the GBC program. SDG&E

has no obligation to monitor Requestor's use of the Data or its participation in the GBC program.

8. To the extent permitted by applicable law, requestor covenants and agrees to indemnify, defend and hold harmless SDG&E (including its officers and directors, employees and agents, as well as its divisions and subsidiaries and their officers, directors, employees and agents) from and against any and all claims, demands, penalties, suits, losses, costs, expenses, obligations, liabilities, damages, recoveries and deficiencies, including investigatory costs, reasonable attorneys' fees, and any extra claims, obligations, payments and costs, however they may be described and arise, that SDG&E shall incur or suffer resulting from or arising out of: (a) the failure of Requestor to comply with all federal, state and local laws and regulations applicable to the Data or the use thereof; (b) any breach by Requestor of these Terms of Use; (c) unauthorized disclosure of the Data to any other third party or (d) any acts or omissions of Requestor with respect to Requestor's use of the Data or participation in the GBC program.

# Exhibit R

**STATE OF NEW HAMPSHIRE**  
**BEFORE THE**  
**PUBLIC UTILITIES COMMISSION**  
**ELECTRIC AND NATURAL GAS UTILITIES**

Development of a Statewide, Multi-Use Online Energy Data Platform

Docket No. DE 19-197

Scoping Comments of Mission:data Coalition

Pursuant to the Secretarial Letter dated February 14, 2020, and Staff's scoping comment solicitation dated February 10, 2020, Mission:data Coalition ("Mission:data") hereby provides its comments on the scope of Docket No. DE 19-197.

**A. Introduction**

By way of background, Mission:data is a not-for-profit organization focused on advancing policies that improve utility customers' access to, and utilization of, their own energy usage and cost data, including the ability to easily and electronically share that information with third party distributed energy resources ("DERs"). Mission:data believes that consumers should have convenient access to the best available information about their own energy use in order to save money and take advantage of innovative energy-related services. Mission:data advocates across the country for "data portability" policies based on widely-adopted national standards and best practices. Mission:data has been deeply involved in the development of "data access" proceedings at other state public utility commissions across the country. Since 2013, we have participated in data privacy, data access, smart meter applications and rate cases before numerous state commissions. Our recommendations and expert testimony concerning the Green Button Connect ("GBC") standard for exchanging energy-related data have been adopted in five (5) states, covering over 36.2 million electric meters

nationwide. Most relevant to the present docket is our experience in other states, such as Texas, where a state-wide repository for energy-related information across multiple utilities has been implemented.

Mission:data's primary interest in the present docket is to improve how DERs can receive customer-specific energy information from utilities with customer consent. Customer energy information ("CEI") includes information about energy usage, billing, account(s), and energy efficiency ("EE") or demand management program participation. Mission:data understands, and is sympathetic to, the desires of other parties who are interested in facilitating easier access to information for entities other than DERs, such as cities and towns, community choice aggregators ("CCA"), EE program administrators, researchers and the general public. Therefore, while Mission:data's comments focus primarily on improving DERs' access to CEI with consent, we also attempt to identify overlaps and synergies with other "use cases" for a state-wide, multi-use energy data platform.

Finally, Mission:data addresses the questions in order below. If a question is omitted, Mission:data has no comment at this time.

## **B. Response to "Functionalities" Scoping Comment Solicitation**

1. *What functionalities should a statewide multi-use energy data platform offer to customers, Distributed Energy Resource (DER) providers, Competitive Suppliers, and other users, including any applications and business uses?*

At the outset, Mission:data believes it is critical to define "energy data." Our high-level definitions, as Michael Murray presented at the February 3<sup>rd</sup>, 2020 technical conference, fall into these three categories: (1) Customer energy information ("CEI") is information specific to an individual customer, such as energy usage, billing, account information, and EE or demand management program participation or eligibility information; (2) Aggregated information is energy

usage summed across a grouping of multiple meters in a building, municipality, zip code, or other aggregations over different timescales; and (3) grid operations and planning data (“grid data” for shorthand).

In the table below, Mission:data provides nine (9) high-level functions of the state-wide data platform. All nine functions involve aforementioned definitions #1 and #2 of energy data – in other words, customer energy information (“CEI”) and aggregated data.

|                                  | <b><i>Functions / Use Cases</i></b>   | <b><i>Users</i></b>               |
|----------------------------------|---|-----------------------------------|
| <b><i>Phase 1 Priorities</i></b> | 1. Providing individual customer energy information (“CEI”)                         | DERs, Competitive Suppliers, CCAs |
|                                  | 2. Providing individual- or community-level energy data                             | CCAs                              |
|                                  | 3. Providing whole-building energy data for EE, EnergyStar                          | Building owners, Towns/Cities     |
|                                  | 4. Providing community-level data for municipalities (for purposes other than CCAs) | Towns/Cities                      |
| <b><i>Phase 2 Priorities</i></b> | 5. DER registry   | <i>Various parties</i>            |
|                                  | 6. DER or utility data to NEPOOL, ISO-NE  | <i>Various parties</i>            |
|                                  | 7. EE program analysis  | <i>Various parties</i>            |
|                                  | 8. State-wide energy dashboard  | General public                    |
|                                  | 9. REC tracking   | <i>Various parties</i>            |

Mission:data believes “Phase 1 Priorities” should be considered first in this docket. There are several reasons why: In our experience working across 14 states and the District of Columbia over the past seven years, functions #1 through #4 provide the most immediate value to a broad range of ratepayers. Managing energy usage and costs in the most efficient way possible provides extensive benefits to customers, particularly as new technologies such as smart thermostats, energy management software tools, and smartphone “apps” for controlling Internet-of-Things devices

proliferate. Finally, Mission:data notes that functions #1 through #4 generally comport with the Office of the Consumer Advocate’s (“OCA”) “high priority use cases” that were developed over the past several years in adjacent proceedings.

In addition, Mission:data strongly believes that functions #1 through #4 should be considered first in this docket because all other questions posed in Staff’s scoping comment solicitation are dependent upon defined functions of a state-wide data platform. The Commission cannot make informed decisions about platform governance, data accuracy, privacy, and eligibility criteria for third parties seeking access to certain information without knowing *what* data are involved and for *what purpose* it is sought. Therefore, Mission:data strongly recommends that the March 18, 2020 technical session focus exclusively on the functions for the state-wide data platform, prior to any other questions being addressed.

*2. What level of energy data granularity appropriately balances costs of collecting, storing, and transmitting energy data with the incremental benefits of increased granularity?*

Answering this question depends upon the intended meaning of “energy data granularity.” Mission:data assumes the phrase refers to energy *usage* granularity – in other words, kilowatt-hours of energy consumed in time intervals of 30 days, 60 minutes, 15 minutes or 5 minutes. (“Energy data granularity” could also refer to grid data at various spatial scales; Mission:data assumes that is not the intended meaning.)

Mission:data strongly believes in a “best available” standard for energy usage interval data. The “best available” standard means that the shortest interval of usage data that is collected by the metering and information technology (“IT”) systems of the utility – whatever that interval may be – should be made available to both customers and customer-authorized DERs. In Mission:data’s view, a state-wide data platform should not mandate that participating utilities alter their metering or information technology (“IT”) systems in order to achieve a common time interval due to a



Commission order in the present docket. Mission:data's reasoning is simply that the present docket is not intended to impose wholesale, multi-million-dollar meter replacement requirements upon utilities. Utilities in other jurisdictions have often been found to have different time intervals programmed into their meters – whether advanced metering infrastructure (“AMI”), automated meter reading (“AMR”) systems, or conventional digital or electromechanical meters – across various customer classes; Mission:data believes that, at this early stage, requirements to substantially modify or replace utilities' existing metering and IT systems should be determined in other dockets. Mission:data notes that, in competitive areas of Texas, virtually all electric meters are required by Commission rules to collect energy usage data at 15-minute intervals. This standardization was important to the efficient operation of the Texas market, but most pertinent to this case is the fact that the Public Utility Commission of Texas's Substantive Rules 25.130, which requires 15-minute collection intervals, were put in place in 2007, *before* legislation authorized widespread AMI deployment. It was easy and cost-effective to standardize the time interval before advanced meters were installed because Texas utilities' requests for proposals for AMI could include such requirements. In contrast, New Hampshire utilities have a mix of AMI, AMR, conventional meters and interval data recorders (“IDR”) for certain customers. While Mission:data believes that standardizing New Hampshire utility meters on consistent time intervals is a worthy and noble goal, Mission:data believes it would be inappropriate for this particular docket to introduce requirements that would implicate large-scale infrastructure replacements.

### *3. How often should the data be updated?*

Whether in regard to energy usage data, billing data, account data, or other customer-specific information, Mission:data believes the update frequency that provides the greatest value to ratepayers is “as soon as possible.” As mentioned above, Mission:data does not believe it is appropriate for this docket to trigger large infrastructure modifications on the part of utilities, and so it would be unwise

to specify a hard-and-fast rule for update frequency. However, given the metering and IT systems a utility has installed, the utility should be required to promptly update the state-wide data platform with information gathered or processed by the utility.

As for energy usage data specifically, it is important to discuss energy usage data latency. Generally speaking, low latencies have been shown to lead to greater energy conservation outcomes than high latencies. This is because consumers can learn more effectively about the energy usage of appliances and devices with near-real-time feedback. For example, a meta-analysis of 57 energy information feedback studies by the American Council for an Energy Efficient Economy (“ACEEE”) found that monthly feedback on utility bills could generate energy savings of 2% - 3.8%, whereas real-time feedback could generate energy savings of 9.2%.<sup>1</sup>

While lower latencies are preferred, it is important to note the different levels of energy usage data *quality* that are found in utilities’ IT systems. For example, usage data collected by a meter is considered “raw” and is not used for billing until it has gone through a processing operation known as validation, editing and estimation (“VEE”). VEE is essentially a set of rules necessary to fairly handle glitches and gaps in interval usage data. While “raw” usage data may be available every 4-6 hours from an AMI head-end system, VEE’d usage data may not be available until a batch process is executed by a Meter Data Management System, either once per day or once per month. In Mission:data’s experience, competitive suppliers are often concerned with “revenue-quality” interval meter data because settling energy procurement transactions is of paramount importance. However, DERs are not interested solely in revenue-quality usage data. If a DER could receive “raw” data on a much shorter timescale – keeping in mind that it may have some inaccuracies – that is a trade that most DERs are willing to make because the economically optimal operation of DERs depends upon

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<sup>1</sup> Ehrhardt-Martinez, Karen, Kat Donnelly and John “Skip” Laitner. 2010. Advanced Metering Initiatives and Residential Feedback Programs: A Meta-Review for Household Electricity-Saving Opportunities. Washington, D.C.: American Council for an Energy-Efficient Economy.

rapid responses to changing conditions. Therefore, Mission:data strongly recommends that the Commission consider making “raw” usage data available to customer-authorized DERs as quickly as the utility receives it, in addition to the revenue-quality usage data following VEE.

As for billing data, it is typical for bills to be generated by utilities once per month. Therefore, Mission:data would expect billing data to be available in the state-wide data platform promptly after a bill is generated – say, within a few hours’ time. As for historical bills, they should be stored and available immediately to DERs electronically following customer authorization.

4. *Should the customer data platform focus only on energy usage data as measured at the meter, or include other data and/or data sources? If other data sources, how should those sources be included and at what cost?*

Mission:data strongly believes that other information besides energy usage data as measured at the meter is essential to be included in the state-wide data platform. The simple reason is that usage data alone is insufficient for customers to take advantage of many DERs. Lessons learned from other jurisdictions, such as Illinois, also provide a cautionary tale of how a narrow focus on usage data will prevent DERs from serving customers effectively.

DERs broadly, and Mission:data member companies in particular, provide a wide range of products and services to residential, commercial and industrial customers that require simple, convenient, and secure access to customer information *other* than usage data. Consider the following examples:

- Utility bill management services are a multi-hundred-million-dollar-per-year industry in the U.S., helping commercial customers gather, analyze and manage their utility costs. For at least a decade, the electric utility industry’s “national accounts” – that is, large, multi-site commercial customers with locations across the country – have complained to utilities and the Edison Electric Institute about the lack of consistency among utilities in accessing their billing information. Many publicly-traded

companies are required by their investors to submit environmental, social and governance (“ESG”) reports with enterprise-wide energy usage and cost statistics, meaning that consistent access to billing information is a critical business requirement.

- Demand response (“DR”) applications require account, rate and wholesale market information in order to function. In California, for example, residential customers are only eligible to participate in certain DR programs if they are not on a “peak day pricing” rate; therefore, third party DR providers cannot assess a prospective customer’s eligibility without knowing what rate the customer is on. In addition, the California Independent System Operator (“CAISO”) establishes requirements for registering DR locations in its resource adequacy market. These locations are not street addresses; they include the aggregation point or “pricing node” on the transmission system, information which, for all practical purposes, can only be obtained by the distribution utility. In part due to the difficulty that third party DR providers experienced in registering customers for DR with CAISO, the California Commission instituted a lengthy rulemaking proceeding which culminated in a definitive mandate of investor-owned utilities to provide demand response participation information to third party DR providers. That list is attached hereto.<sup>2</sup>

The best example of DERs’ need for electronic access to account and billing data, and not just usage data, comes from Illinois. Commonwealth Edison (“ComEd”) was ordered to implement GBC in 2017; the Illinois Commission’s order, and later ComEd’s tariff, were strictly limited to providing electronic access to energy usage data. ComEd’s tariff states, “a Third Party may access historical AMI Interval Data that are available for such retail customer for up to twenty-four (24) consecutive months via the Green Button Connect.”<sup>3</sup> A Mission:data member serves retail chains in Illinois with a web-based energy analysis tool that helps owners and managers reduce their utility

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<sup>2</sup> Excerpt from California Public Utilities Commission, “Customer Data Access Committee Whitepaper.” May 21, 2018.

<sup>3</sup> See Illinois Commerce Commission Docket No. 14-0507, Final Order, dated July 26, 2017; ComEd Rate Data Access and Retrieval Tenets (DART). Effective 5/23/16, Sheet 226-229. Available at <https://www.comed.com/MyAccount/MyBillUsage/Pages/CurrentRatesTariffs.aspx>

costs. This firm registered to use ComEd's GBC system. However, ComEd's GBC turned out not to be useful, since these retail chains have multiple locations in and around Chicago; the firm would receive energy usage data files from ComEd, but could not ascertain *to which location* the energy usage was attributed. The firm described the effort of implementing support for ComEd's GBC as "a massive waste of time."

In 2017, Mission:data and the Advanced Energy Management Alliance published a whitepaper, "Energy Data: Unlocking Innovation with Smart Policy," that provides 10 recommendations for data portability policies.<sup>4</sup> In the report, we put forth the following definition of CEI. Note that usage data is only one component of the information that should be electronically accessible to customer-authorized DERs:

- **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.
- **System data [necessary for participation in energy efficiency or demand response programs]:** This could include the customer assigned peak load contribution, energy and capacity loss factors, or other information needed for wholesale market participation.

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<sup>4</sup> Mission:data Coalition and Advanced Energy Management Alliance. "Energy Data: Unlocking Innovation with Smart Policy." December, 2017. Available at <http://www.missiondata.io/s/Energy-data-unlocking-innovation-with-smart-policy.pdf>

The above definition, “system data,” involves participation in EE or demand response (“DR”) programs. More recent definitions of this concept from other jurisdictions may be helpful.

Mission:data collaborated with North Attorney Attorney General Josh Stein in drafting a comprehensive data privacy and data portability rule which was submitted last month to the North Carolina Utilities Commission. The draft rule contained this definition for information that a utility must make electronically available to customer-authorized DERs:

any information that might be necessary for participation in, or to determine customer eligibility for, bill payment assistance, renewable energy, demand-side management, load management, or energy efficiency programs.<sup>5</sup>

In addition, reflecting the need of energy management firms to access customer information *other* than usage information in order to serve their customers, the Green Button Alliance, a non-profit which leads the technical development of the Green Button standard, has sought to increase the amount of customer information incorporated into the Green Button standard. In April, 2019, the North American Energy Standards Board (“NAESB”), an ANSI-accredited standards development organization, ratified an update to the Green Button standard that contains significant amounts of information other than energy usage data such as premise addresses, account details, demand response information, etc. Other utilities nationwide, such as in California and New York, are currently providing billing information, account numbers, premise addresses, and other data points to customer-authorized DERs. Furthermore, Ohio’s “Data and Modern Grid” working group recently made recommendations to the Ohio Commission that include the provision of account numbers, customer address, and other account information in addition to energy usage data.<sup>6</sup>

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<sup>5</sup> North Carolina Utilities Commission Docket No. E-100, Sub 161. North Carolina Attorney General’s Office Proposed Rule R8-51 and Initial Comments, dated February 10<sup>th</sup>, 2020. Initial Comments available at: <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=333627b1-b94e-4624-87e5-c04bc3b07cca> Draft rule available at: <https://starw1.ncuc.net/NCUC/ViewFile.aspx?Id=d4c63203-1607-4f07-a776-580639ab2260>

<sup>6</sup> Final Report by Enernex to Public Utilities Commission of Ohio on behalf of the Data and Modern Grid Workgroup. November 20, 2019. Available at

To be clear, Mission:data does **not** believe that the data utilities should provide should be unlimited. The North Carolina Attorney General’s draft rule includes a definition of “unshareable personal data,” which Mission:data believes serves as a sound protection against identity theft and other potential violations of customers’ privacy:

**"Unshareable personal data"** means the birth date, social security number, biometrics, bank and credit card account numbers, driver's license number, credit reporting information, bankruptcy or probate information, health information, or network or internet protocol address of the customer or any person at the customer’s location. This personal information is specifically excluded from the definition of standard customer data and, as stated in subdivision (d)(9) of this Rule, will not be shared by a utility with any party other than the customer.

*5. Is the energy data platform under consideration in this docket the appropriate mechanism to provide information on energy system data? Why or why not?*

In Mission:data’s recommended list of nine (9) functions, presented above, grid data is expressly excluded. This is for two reasons. First, Mission:data notes that “grid data,” or any similar references thereto, does not appear anywhere in the text of Senate Bill 284 (SB284), which led to the creation of this adjudicative proceeding. Instead, SB284 references “individual customer data,” which it defines as “the customer's name, address, opt-in status pursuant to RSA 374:62, energy usage as recorded by meters supplied by electric and natural gas utilities, and other data segments established and authorized by the commission.” Since grid data involves attributes of the power system that involve multiple customers, such as distribution feeders that serve multiple end users, it is clear that grid data cannot be “individual customer data” as defined in SB284 because it does not pertain to any individual customer. Based upon the plain language of SB284, Mission:data concludes that the General Court of New Hampshire did not intend the present docket to consider grid data.

Second, in our experience, grid data in other states has been the subject of extensive, years-long dockets of immense complexity. The potential release of grid data to non-utility entities necessarily requires consideration of confidentiality, the risks of disclosure to the safety and operation of the distribution grid, and extensive power engineering and planning processes. California's Distributed Resource Planning docket has been ongoing since 2016, for example. Mission:data believes that DERs can benefit from access to grid data in certain circumstances; however, we do not believe the present docket is an appropriate venue for considering grid data in the state-wide data platform at this time because, in addition to grid data not being mentioned in the enabling legislation, focusing on grid data would necessarily introduce substantial delays in the present docket, preventing Commission action on "individual customer data" cited in SB284. For these reasons, Mission:data believes that grid data is, and should be, outside the scope of this proceeding.

**C. Response to "Database Structure and Management" Scoping Comment Solicitation**

- 1. Please describe any preferred approaches to governance, development, implementation, change management, and versioning of the platform.*

Mission:data believes these are very complex topics that are best discussed in upcoming technical workshops, once the initial list of prioritized functionalities has been established (see functions #1 through #4 described above). At the outset, however, Mission:data believes it is important to learn from other jurisdictions in answering this question. Texas provides a helpful case study. Smart Meter Texas ("SMT") is owned and maintained by four transmission and distribution utilities in Texas. While its design was very thoughtful and forward-thinking, it suffered from implementation problems, including an extremely poor user experience and system outages that lasted for hours, days or weeks at a time. In Mission:data's judgment, much of the problems stemmed from the utilities' contract with IBM to implement SMT. The contract with SMT was signed well before the business



requirements were well known, a factor which undoubtedly led to “short-changing” the implementation once detailed requirements were developed. After IBM won the contract, it had little incentive to improve SMT incrementally over time. For example, parties would ask for very minor modifications to improve usability, and IBM used its contract as leverage to extract exorbitant fees. As a result, the user experience was neglected and became so sub-standard that it became the topic of three proceedings before the Public Utility Commission of Texas (Project Nos. 46204, 46206 and 47472). Only after four years did the Texas Commission finally approve a comprehensive settlement agreement that required a dramatically streamlined user experience. More information about Texas is contained in an article, “5 Things You Should Know About Smart Meter Texas,” attached hereto.

In addition, Mission:data provides a table of different jurisdictions and their policy and technical approach to managing data portability, attached hereto.

*2. Please describe any preferred standards for data accuracy, retention, availability, privacy, and security.*

Regarding accuracy and retention, see Mission:data’s comments above, in which we stated that four (4) years of historical energy usage and billing information should be available. As for accuracy, it is extremely important that the information in the state-wide repository be continuously accurate, and that if there are inaccuracies, those should be immediately remedied.

Regarding availability, Mission:data has, in our 2017 report “Energy Data” cited above, recommended a 99.9% uptime requirement, as measured on a monthly basis. This is due to the poor uptime seen in early implementations of SMT and other similar systems across the country. Mission:data notes that virtually all modern IT systems today come with a “service level agreement” that guarantees availability above a certain percentage. Failure to meet those uptime targets should subject the operator of the platform to financial penalties.

Finally, regarding privacy and security, Mission:data strongly recommends the Commission consider the North Carolina Attorney General's Office draft rule mentioned previously. As a comprehensive, 16-page rule, we are unaware of any other state that has proposed as thorough a set of requirements as North Carolina has.

4. *Please comment on the definitions of the terms “common base of energy data,” and “user friendly interface,” and describe how they relate to preferred database structure and management approaches.*

Regarding “user friendly interface,” Mission:data has spent considerable time over the past three years addressing these issues. Regrettably, user experience has been neglected in virtually every utility's implementation of Green Button Connect over the past five years, requiring extensive remediation efforts. A lengthy proceeding in California resulted in user experience requirements that can be succinctly described as “two screens, and two clicks.”<sup>7</sup> In other words, a customer should be able to authorize access to a third party DER on a website with only two web pages (one for authentication, one for authorization) and two “clicks” of the mouse. The web pages must be optimized for mobile devices as well as desktop computers. These requirements were established because Southern California Edison's original implementation of GBC involved over ten (10) screens, a dozen or more clicks, and it was virtually unusable on mobile web browsers. Mission:data's recommendation is that New Hampshire's state-wide data platform **must** meet user experience requirements and best practices as they evolve.

For reference, Mission:data strongly encourages all parties and the Commission to read our 2019 report, “Energy Data Portability: Assessing Utility Performance and Preventing ‘Evil Nudges,’”

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<sup>7</sup> Resolution E-4868. California Public Utilities Commission

which describes how poorly designed user experiences can dramatically hinder customer adoption of DERs.<sup>8</sup>

**D. Response to “Costs and Benefits” Scoping Comment Solicitation**

1. *What are the likely incremental benefits and costs of a single statewide database compared to utility specific energy data access mechanisms?*

On this topic, we strongly believe that centralization in some form is important. The common problem seen by our 30 members across utilities with different data portability systems is that there is a non-trivial cost to (i) integrating with each utility’s IT system in the first place and (ii) managing that IT connection over time. These are costs that are eventually passed on to customers who use DER products and services. If the number of connections can be reduced, then costs to customers will be cut accordingly. This is precisely the reason why Texas opted to build Smart Meter Texas – the reduction of marginal costs associated with exchanging information.

**E. Response to “Obligations of Database Users” Scoping Comment Solicitation**

The following response applies to questions #1 through #4 in this sub-section.

Please see the attached table showing the “eligibility criteria” for third party DERs established in other jurisdictions. Mission:data believes that California’s requirement is the best and simplest, and we note it has been copied by other states as well. California requires that third party recipients of individual CEI with consent (i) provide their contact information to the utility, (ii) agree to the Commission’s privacy rules, (iii) demonstrate technical interoperability and (iv) not be on the list of “banned” third parties as maintained by the Commission. For more information on

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<sup>8</sup> Mission:data Coalition. “Energy Data Portability: Assessing Utility Performance and Preventing ‘Evil Nudges.’” 2019. Available at <http://www.missiondata.io/s/Energy-Data-Portability.pdf>

California's eligibility criteria and enforcement process against "bad actors," see Decision D.13-09-025 from the California Public Utilities Commission.

Finally, we note that the North Carolina Attorney General's draft rule incorporates California's eligibility requirements, but adds a fifth requirement: Data recipients must be a signatory to the Department of Energy's "DataGuard" privacy standard. Mission:data supports adherence to DataGuard as a reasonable customer protection measure.

As for registration or certification timeframes, Mission:data believes registration should be indefinite, until terminated by the Commission. It is important that the Commission – and not a utility – be the entity that can terminate or revoke registration of a third party data recipient, in order to ensure third party's due process rights. Other jurisdictions that do not afford due process rights to third parties have created so much business risks and uncertainty to third party DERs that the GBC systems have been little used.

As for non-disclosure agreements ("NDA"), Mission:data notes that NDAs can create conflicts with a customer's wishes. While an NDA to protect customer privacy sounds reasonable enough on its face, the reality is that NDAs in other jurisdictions – such as New York, where the utilities unilaterally imposed strict NDAs on third party DERs in 2018 – can, by being too broad, contravene the intentions of customers. For example, suppose a customer wishes to send their data to a solar company, "Acme Solar." Acme Solar, in turn, goes to multiple rooftop solar installers to receive price quotes. The customer authorizes Acme Solar to exchange his or her information with multiple installers in order to receive the price quotes. This would run into direct conflict with an NDA that might forbid Acme Solar from exchanging customer information with any entity. For these reasons, Mission:data argues that utilities should not be permitted to require NDAs. Instead, the Commission should determine a set of privacy standards that protect customers while also giving customers the ability to access products or services through multiple levels of vendors. Mission:data has termed these vendors as "Nth parties," extending the concept of third parties, fourth parties, and

fifth parties, etc. Our recent paper discusses both legal and technical mechanisms to address these issues.<sup>9</sup>

Finally, as for financial security standards, Mission:data is strongly opposed to financial requirements of any kind for DERs that receive CEI with customer consent. This is because no other jurisdiction in the U.S. today requires it, and imposing a financial requirement such as a fee or surety bond would put New Hampshire out of step with every other state in the country. Part of the success of low-cost DERs that help customers and utilities alike is having a consistent market in which consumers can benefit from economies of scale; that requires some level of consistency among jurisdictions. To date, all other jurisdictions that have considered financial requirements for DERs have ultimately rejected them because they were not necessary to meet the ultimate goals of consumer protection. Instead, Mission:data believes that reasonable privacy policies, such as the North Carolina Attorney General’s draft rule, or the DataGuard privacy standard, should be adopted.

Mission:data appreciates the opportunity to file these comments and looks forward to working with the parties on these important topics in the months ahead.

Sincerely,

\_\_\_\_\_/s/\_\_\_\_\_  
Michael Murray, President  
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<sup>9</sup> “Beyond Third Parties: Promoting Innovation Through Energy Data Sharing With ‘Nth’ Parties.” Mission:data Coalition and Flux Tailor. October, 2019. Available at <http://www.missiondata.io/s/ThirdPartiesAndBeyond-s4wb.pdf>

March 11<sup>th</sup>, 2020

Certificate of Service

I hereby certify that a copy of this *Scoping Comments of Mission:data Coalition* was provided via electronic mail to the individuals included on the Commission's service list for this docket.

\_\_\_\_\_/s/\_\_\_\_\_  
Michael Murray

**APPENDIX D:**

## Rule 24/32 Expanded Data Set

| <b>EXPANDED RULE 24/32 DATA ELEMENTS</b>  |  |
|---|--|
| <b>Account Elements</b>                   | <b>Bill tier breakdown (if any)</b>                                |
| Account name (ACME INC. or JOE SMITH)     | Name (Over Baseline 1%-30%)  |
| Account address (123 OFFICE ST...)        | Volume (1234.2)  |
| Account ID (2-xxx...)                     | Cost (\$100.23)  |
| <b>Outage block (A000)</b>                | <b>Bill TOU kwh breakdown (if any)</b>                             |
| <b>Service Elements</b>                   | Name (Summer Off Peak)   |
| Utility Unique Identifier                 | Volume (1234.2)  |
| Service ID (3-xxx...)                     | Cost (\$100.23)  |
| Service address (123 MAIN ST #100...)     | <b>Bill demand breakdown (if any)</b>                              |
| Service tariff (D-TOU)                    | Name (Summer Max Demand)   |
| Service voltage (if relevant)             | Volume (1234.2)  |
| Service meter number (if any)             | Cost (\$100.23)  |
| # of Service meters                       | <b>Bill line items (sum should equal bill total charges above)</b> |
| Meter Read Cycle                          | Charge name (DWR Bond Charge)                                      |
| Sub-Load Aggregation Point (Sub-LAP)      | Volume (1234.2)  |
| Pricing Node (PNode)                      | Unit (kWh)   |
| Known future changes Status of Service    | Rate (\$0.032/kWh)   |
| Service tariff options (CARE, FERA, etc.) | Cost (\$100.23)  |
| Known future changes to Sub-LAP           | <b>Tracked line items</b>  |
| Known future changes to PNode             | Charge name (e.g. Net In/Net Out)                                  |
| Local Capacity Area                       | Volume (1234.2 in kWh)   |
| Known future changes Local Capacity Area  | Unit (kWh)   |
| Standby Rate Option if On-Site Generation | Rate (\$0.032/kWh, if any)   |
| Customer Class Indicator                  | Cost (\$100.23, if any)  |
| <b>Billing Elements</b>                   | <b>Historical Intervals</b>  |
| Bill start date                           | Start  |
| Bill end date                             | Duration   |
| Bill total charges (\$)                   | Volume (1234.2)  |
| Bill total kWh                            | Unit (kWh)   |

| <b>EXPANDED RULE 24/32 DATA ELEMENTS (CONTINUED)</b>                |   |
|---|---|
| <b>Utility Demand Response Programs</b>                             | <b>Service Providers</b>  |
| Program Name  | LSE   |
| Earliest End Date w/o penalty                                       | MDMA  |
| Earliest End Date regardless penalty                                | MSP   |
| Capacity Reservation Level (CRL) for CPP/PDP customers              | Known future changes to LSE   |
|   | Contact Information for LSE, MDMA, MSP  |
| DR Program Nomination if fixed                                      |   |
|   |   |
|   |   |
| <b>DATA ELEMENTS NOT REQUIRED IN EXPANDED DATA SET (ALL 3 IOUs)</b> | <b>Historical Bills (PDF)</b>   |
|   | <b>Payment Information</b>  |
|   |   |
| <b>DATA ELEMENTS NOT REQUIRED IN EXPANDED DATA SET (SCE ONLY)</b>   | <b>Service Elements</b>   |
|   | <i># of Service Meters</i>  |
|   | <i>Standby Rate Option if On-Site Generation (but "S" indicated in rate schedule)</i> |



# MISSION:DATA

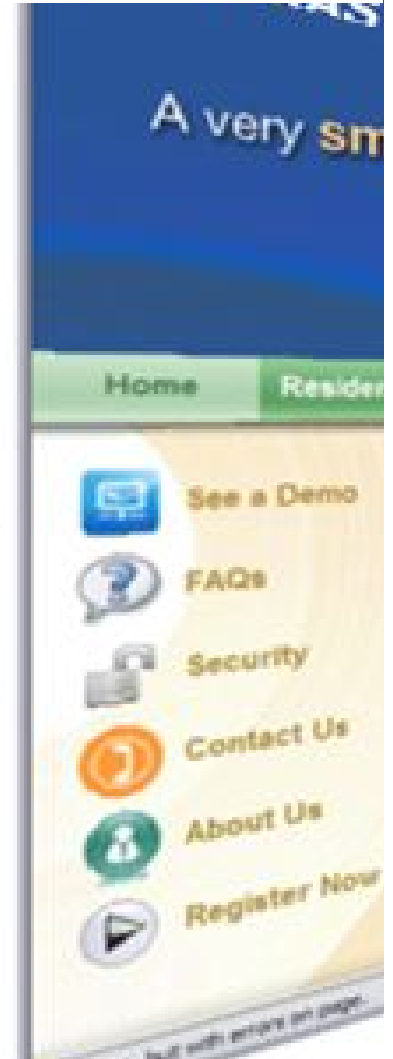
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## 5 THINGS YOU SHOULD KNOW ABOUT SMART METER TEXAS

September 22, 2017  
 by [Michael Murray](#)



### #1. SMT'S CONCEPTUAL DESIGN WAS AHEAD OF ITS TIME.

In 2008, while some states' smart meter deployments were delayed by large protests, and other utilities struggled to understand and operationalize “big data” concepts for the first time, Texas embarked on what is still today a cutting edge design: a centralized web portal across most of the state. In addition to supporting some retail functions such as same-day switching between suppliers, SMT was designed from the beginning to (i) centralize all data collected by AEP, Centerpoint, Oncor and TNMP, (ii) provide data to customer-authorized third parties through a standardized interface, and (iii) support Home Area Network (HAN) device provisioning. Texas was then what California is now -- a

national leader in smart grid. Texas utilities gave presentations about their lessons learned to utilities and commissions across the country. A report called “Understanding Smart Meter Texas” showed the system architecture:

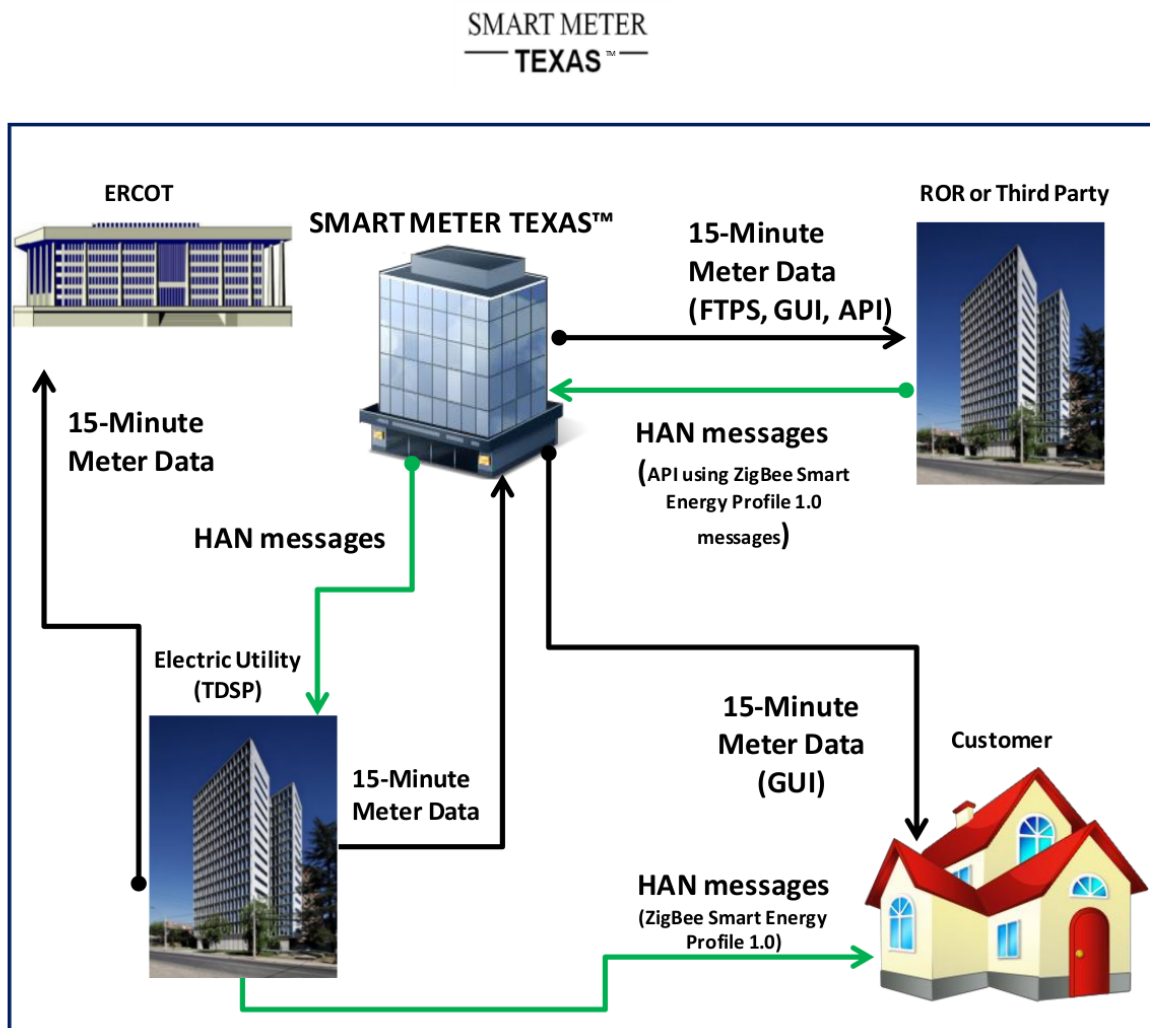


Figure 24: SMT Key Points of Interoperability and Interfaces

## #2. TEXAS’S LAWS AND RULES SEEMED PERFECT.

It is difficult to find a state besides Texas whose laws and regulations are better suited to accommodate data access and support energy entrepreneurs. Going back to 2005, the state legislature declared that “all meter data...shall belong to a customer,” eliminating many ownership claims by utilities or REPs that would have otherwise had a chilling effect on the market. Texas also makes third party access a requirement. PUC rule §25.130(j), in a section titled “Access to meter data,” says:

“An electric utility shall provide a customer...and other entities authorized by a customer read-only access to the customer’s advanced meter data, including...historical load data, and any

other proprietary customer information. The access shall be convenient and secure, and the data shall be made available no later than the day after it was created.”

Furthermore, Texas law explicitly endorsed the idea of using advanced meters to help customers manage their energy usage, not simply to provide operational benefits to utilities. [PURA §38.107](#) reads:

“It is the intent of the Legislature that net metering and advanced meter information networks be deployed as rapidly as possible to allow customers to better manage energy use and control costs...”

We’d kill to have these laws in other states.

### #3. SMT WAS DESIGNED TO USE THE LATEST NIST STANDARDS, INCLUDING GREEN BUTTON CONNECT.

Having fought for Green Button Connect (GBC) in Texas since 2014, we were quite surprised to find that a 2013 [“final business requirements”](#) document includes OpenESPI, a technical term for GBC.

**Mission:data** @mission\_data · Sep 19

Wow. Just wow. 2013 Smart Meter Texas requirement calls for Green Button Connect (OpenESPI), yet never implemented. Great oversight, folks!

| Green Button Requirements |  |
|---------------------------|--|
| BR-306                    | Ability for 3 <sup>rd</sup> parties to use Green Button functionality to access customer data (e.g. Open ADE, Open ESPI, etc.) |

1 1 1

But GBC was never implemented. Instead, Green Button Download My Data was added to SMT, and business requirement #306 was forgotten.

The utility trade association, Edison Electric Institute, acknowledged the fundamental challenge facing Download My Data, [writing in 2012](#): “The downloading process is a barrier....Connect My Data will become the norm.”

### #4. GOOD LAWS AREN’T ENOUGH. IMPLEMENTATION MATTERS.

Unfortunately, even under the best regulatory framework, IT systems don’t solve their own problems. The management of SMT has left much to be desired. The November, 2014 unveiling of SMT to third parties was very rocky. One outage lasted for two full weeks, cutting off data access entirely. And [technical support for third parties has been poor](#). Unfortunately, problems are experienced by

customers, too, not merely third parties: **According to an analysis of help desk records for the past 12 months by Mission:data, 59% of nearly 5,000 support tickets involve problems accessing or using the website.** Problems include not being able to find the correct meter, web browser errors and being unable to reset a lost password. The subpar user experience created by Texas utilities gives entrepreneurs a feeling a helplessness: even the best smartphone app in the world will flop if its success depends upon customers logging in to a poorly-designed utility website.

## #5. REFORM IS UNDERWAY.

After three years and as many dockets at the PUCT considering the funding, performance and third party access components of SMT, no reforms have yet been made. A new case promises to finally put issues of policy and implementation to rest. [Project 47472](#) is a contested case with utilities, REPs, consumers and third parties. The current SMT vendor, IBM, has a contract that expires in 2018, so the opportunity is to “reset” SMT with a clean slate. Mission:data seeks reforms in the areas of service quality, performance tracking and accountability, full implementation of Green Button Connect, and an excellent user experience. Mission:data looks forward to working on these issues this fall in order to bring the most advanced energy management technologies to 7 million Texas consumers.



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**Leon** 6 months ago · 0 Likes

Thanks for the detailed information.

Using SMT web site to monitor data is like driving a car by only looking at what happened in the rear view mirror 2 days ago. The almost 48 hour delay in data is pathetic in this day and age. While using the Home Area Network and a good 3rd party device is a much better approach to getting real time data, it also has it flaws. Oncor is very reticent in their support and always assumes the issue is on the consumer side (probably for good reason). I've been using two approved, 3rd party devices for 3 years with good results on the HAN, but one recent morning both disconnected at exactly the same time from the Zigbee meter network. Even though SMT says it is ready to accept my smart units back into the HAN, neither device ever sees the Zigbee network (within 3' of the meter). I am going on three weeks with no HAN connection.

I am also 5 calls into Oncor in this same time period. I finally had to quote chapter and verse of the PUC rule to them requiring Oncor to provide me a working HAN for connecting. After three weeks of cajoling, begging and finally convincing them I know what I am talking about (I am a degreed engineer that supports various network environments for a living), they will have someone contact me within two work weeks to setup an appointment to come out and check my meter. What a pain!

I have invested quite a bit of time writing smart home management software to manage power usage based on the meter HAN interface working reliably. It's worthless if Oncor can't/won't fix their end. I cannot imagine if this happened to a typical customer just wanting to monitor their power usage. They'd be lost.

[Newer](#) / [Older](#)

## FIND US:

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Seattle, WA 98107



**Mission:data**

Interestingly, the  
federal

## Regional Comparisons of Data Access

Michael Murray, Mission:data Coalition  
[michael@missiondata.io](mailto:michael@missiondata.io)

### Comparison of States With Data Access Policies Enacted:

|   |                   |
|---|-------------------|
| G | Green = very good |
| Y | Yellow = mixed    |
| R | Red = poor        |

|  | <u>California</u> | <u>Colorado</u> | <u>Illinois</u> | <u>New York</u>   | <u>Texas</u> |
|--|-------------------|-----------------|-----------------|-------------------|--------------|
| <i>Date that utility I.T. systems were implemented for third party use</i>   | 2016              | 2021            | 2018            | 2019 (ConEd only) | 2016         |
| <b><u>Policy Attributes</u></b>  |                   |                 |                 |                   |              |
| Data access must be centralized across utilities                             | R                 | R               | R               | R                 | G            |
| No utility liability for a third party's misuse of customer data             | G                 | G               | G               | R                 | G            |
| Simple third party eligibility criteria established by the Commission        | Y                 | G               | G               | R                 | G            |
| Utility system uptime/performance is tracked & reported                      | Y                 | R               | R               | R                 | G            |
|  |                   |                 |                 |                   |              |
| <b><u>Technical Attributes</u></b>   |                   |                 |                 |                   |              |
| Consistency between utility implementations                                  | Y                 | n/a             | Y               | n/a               | Y            |
| Certified by Green Button Alliance   | R                 | Tbd             | R               | R                 | n/a          |
| Outage/downtime notices are provided   | Y                 | Tbd             | Y               | R                 | G            |
| Retail Customer information is provided, such as account/billing information | Y                 | Tbd             | R               | Y                 | n/a          |
| Tariff information provided  | G                 | Tbd             | R               | G                 | n/a          |
| Sandbox provided   | Y                 | Tbd             | Y               | G                 | G            |
| Utility participates in standards development committees                     | Y                 | R               | R               | R                 | R            |
| OAuth2.0 support   | Y                 | n/a             | R               | R                 | n/a          |

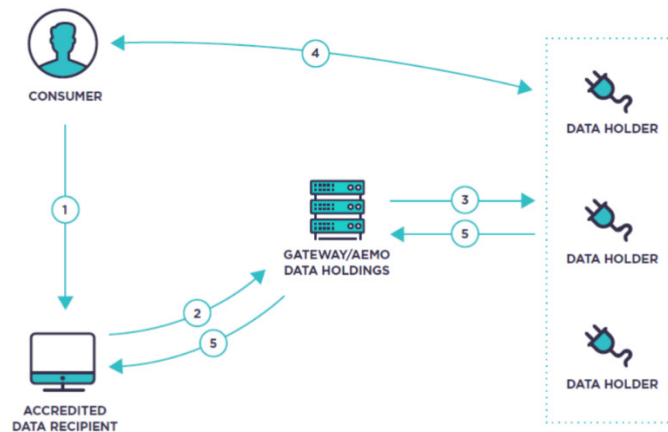
| <b>Support for Third Parties</b>                | <u>California</u> | <u>Colorado</u> | <u>Illinois</u> | <u>New York</u> | <u>Texas</u> |
|---|-------------------|-----------------|-----------------|-----------------|--------------|
| Thorough online documentation                   | Y                 | n/a             | R               | R               | Y            |
| Quickly facilitates onboarding of Third Parties | Y                 | n/a             | R               | R               | Y            |
| Support tickets/bug tracking system             | Y                 | n/a             | R               | R               | G            |

| <b>Customer experience</b>   | <u>California</u> | <u>Colorado</u> | <u>Illinois</u> | <u>New York</u> | <u>Texas</u> |
|--|-------------------|-----------------|-----------------|-----------------|--------------|
| Responsive HTML to different screen sizes/devices  | Y                 | n/a             | Y               | Y               | Y            |
| Support “alternate authentication” if a customer does not want to create an online utility account | Y                 | n/a             | R               | R               | G            |
| Streamlined authorization in less than 2 screens and 2 “clicks”                                    | Y                 | n/a             | Y               | Y               | G            |

**Other Regions Investigating Data Access:**

Australia’s federal government is implementing a comprehensive data access scheme. This is one of the best models because (i) third parties are centrally “accredited” (licensed) across the country; (ii) user authorization is consistent and centralized, which will dramatically streamline customer education efforts; and (iii) APIs are standardized so that “data holders” (i.e. network utilities) must provide data via identical methods across the country.

High-level transaction flow (third party access):



The European Data Alliance is working toward standardized access to energy data across the continent pursuant to a European directive. The exact nature of the standard, and how it is centralized, is yet to be determined. <https://www.dataalliance.eu/>

## Green Button Connect: State-Level Policy Summary

| <i>State</i>  | <i>Who submits consent to the utility – the customer or third party?</i>                           | <i>Technical standard required by Commission</i>  | <i>Scope of data</i>  | <i>Third party eligibility criteria</i>   |
|---|--|---|---|---|
| <b>California</b><br>(E-4868, D1309025, Rule 24/32) | “Click-Through” process adopted allows customer to begin and end enrollment on Third Party website | Green Button Connect (GBC), Use Case 2.   | 48 months interval usage history, ongoing 15- or 60-minute readings, billing and account info, tariff, DR participation info, Home Area Network.                                      | Provide contact info, agree to privacy terms, must not be on the Commission-maintained list of “banned” third parties.          |
| <b>Colorado</b><br>(16A-0588E, 18A-0194E)           | Customer. The customer needs to log into the utility’s website to grant an authorization.          | “A nationally-recognized open standard and best practice.” GBC today, and utility has burden to prove GBC is no longer appropriate. | Usage history, near-real-time 15-minute readings and Home Area Network.   | None. Rule 3027(e) says, “Nothing in these rules shall limit a customer’s right to provide his or her customer data to anyone.” |
| <b>Illinois</b><br>(17-0123, 15-0073, 14-0507)      | Customer.  | Green Button Connect (GBC)  | 24 months interval usage history, ongoing 30-minute readings every day, and Home Area Network   | None  |
| <b>New York</b><br>(15-M-0180, 14-M-0101)           | ConEd supports customer submissions today, but PSC orders call for third party submissions as well | “Green Button Connect or alternate standard with similar functionality”   | 24 months interval usage history (marked actual, estimated or billed), ongoing 5- or 15-min readings, service address, electric account number, meter numbers, “ICAP” tag, rate class | Third parties required to sign Data Security Agreement (DSA).   |
| <b>Texas</b><br>(47472)                             | Third party; SMT then emails the customer a link to confirm  | Green Button API <sup>1</sup>   | 24 months interval usage history, ongoing 15-minute readings (billing data not available)   | Must agree to SMT Terms and Conditions.   |

<sup>1</sup> Texas deviates slightly from the standard in order to accommodate Texas’s unique market structure in which the retailers hold the consumer relationship, not the utility. Thus, the Green Button APIs are used, but not the authorization standard within Green Button Connect known as “OAuth.”



| <i>State</i>      | <i>Standard authorization language for customers</i> | <i>Commission jurisdiction over third parties</i>  | <i>I.T. performance monitoring &amp; transparency</i>  | <i>User experience requirements</i>   |
|-------------------|--|--|--|---|
| <b>California</b> | None (except for lengthy privacy policy).            | Commission claims jurisdiction over any entity receiving utility-held data about 11 or more customers per D.11-07-056, but courts have not yet weighed in. | Website must show real-time performance statistics including availability, “funnel” metrics and start-to-finish times. | Extensive: 2 screens and 4 clicks (see E-4868), no account required at utility website, optimization for mobile devices required.             |
| <b>Colorado</b>   | Yes, approved in 15A-0789E.                          | None.  | Annual testing and reporting on I.T. system availability and performance metrics.                                      | Xcel will work to “minimize the number of screens and clicks required” and minimize the time lag between authorization and data transmission. |
| <b>Illinois</b>   | Yes, approved in 15-0073.                            | None.  | None.  | None.   |
| <b>New York</b>   | None   | Commission claims jurisdiction: DER Business Practice Manual; “truth in advertising” (15-M-0180 DER Oversight Order, Oct 19, 2017)                         | None.  | None.   |
| <b>Texas</b>      | Yes  | None.  | 99.5% uptime requirement and monthly reporting on various metrics.   | Detailed specifications include: no online utility account requirement, one click to confirm from email link.                                 |

# Exhibit S



April 29, 2019

**Via electronic mail**

Hon. Kathleen H. Burgess  
Secretary to the Commission  
New York State Public Service Commission  
Empire State Plaza  
Agency Building 3  
Albany, NY 12223-1350  
[secretary@dps.ny.gov](mailto:secretary@dps.ny.gov)

**Re: 18-M-0376 et al., Proceeding on Motion of the Commission Regarding Cyber Security Protocols and Protections in the Energy Market Place**

Please find enclosed the Response of Mission:data Coalition to the Commission's Notice Soliciting Comments dated February 20, 2019. The aforementioned notice also cited Case Nos. 18-M-0084, 16-M-0411 and 15-M-0180.

If you have any questions about this letter or have difficulty viewing the enclosed PDF, please contact me

Respectfully submitted,

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**STATE OF NEW YORK**  
**PUBLIC SERVICE COMMISSION**

|  |                |
|--|----------------|
| Proceeding on Motion of the Commission Regarding Cyber Security Protocols and Protections in the Energy Market Place | Case 18-M-0376 |
| In the Matter of a Comprehensive Energy Efficiency Initiative  | Case 18-M-0084 |
| In the Matter of Distributed System Implementation Plans   | Case 16-M-0411 |
| In the Matter of Regulation and Oversight of Distributed Energy Resource Providers and Products                      | Case 15-M-0180 |

**Response of Mission:data Coalition**

**To the Commission’s February 20, 2019 Notice Soliciting Comments**

**1. Introduction**

On February 20, 2019, the New York Public Service Commission (“Commission”) issued the above-referenced Notice Soliciting Comments (the “Notice”), in which the Commission asked for comments from parties regarding several petitions, described below. Mission:data Coalition (“Mission:data”) hereby submits this Response to the Notice.

Mission:data strongly urges the Commission to dismiss the February 4, 2019 Joint Utilities’ *Petition for Approval of the Business-to-Business Process Used to Formulate a Data Security Agreement and for Affirming the Joint Utilities’ Authority to Require and Enforce Execution of the Data Security Agreement by Entities Seeking Access to the Utility Customer Data or Utility Systems* in Case Nos. 18-M-0376 and 15-M-0180 (the “Joint Utility Petition”). While a well-known cybersecurity breach occurred in 2018 at a vendor to energy services

companies (“ESCOs”), the Joint Utilities seek to exploit the current climate of fear surrounding cybersecurity risks in order to inappropriately seize certain powers over distributed energy resource (“DER”) suppliers. Such powers are exceptionally broad in scope and would be in conflict with prior Commission orders. Furthermore, by granting the Joint Utility Petition, the Commission would abdicate its authority on policymaking and dispute resolution, and would delegate such authorities exclusively to the utilities without justification. Finally, given the chilling effect on DERs that approval of the Joint Utilities Petition would have, Mission:data concludes that, if approved, the Commission must necessarily retract substantial portions of the “Reforming the Energy Vision” (“REV”) policy framework as they relate to third-party DERs. Finally, to resolve the disputes surrounding Data Security Agreements more holistically, Mission:data recommends using Staff’s distinction between “system risk” and “data misuse risk” to require utilities to own their system risk, but the Commission should explicitly waive the Joint Utilities’ liability for data misuse risk so long as the data is transferred pursuant to customer consent and is encrypted in transit.

## **2. Background**

On November 21, 2017, Mission:data filed a *Petition for Declaratory Ruling Regarding the DER Oversight Order’s Exemption of DER Suppliers from Certain Cybersecurity Requirements* (“Mission:data Petition”) in which Mission:data sought interpretation of the October 19, 2017 *Order Establishing Oversight Framework and Uniform Business Practices for Distributed Energy Resource Suppliers* (“DER Oversight Order”).

On November 8, 2018, the JU submitted a *Petition for Declaratory Ruling Regarding Their Authority to Discontinue Utility Access to Energy Service Companies in Violation of the Uniform Business Practices* (“JU Declaratory Ruling Petition”).

On February 4, 2019 in Case Nos. 18-M-0376 and 15-M-0180, the Joint Utilities<sup>1</sup> filed a *Petition for Approval of the Business-to-Business Process Used to Formulate a Data Security*

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<sup>1</sup> The Joint Utilities (or “JU”) consist of Consolidated Edison Company of New York, Inc. (“ConEd”), Orange and Rockland Utilities, Inc., Central Hudson Gas & Electric Corporation, National Fuel Gas Distribution Corporation, The Brooklyn Union Gas Company d/b/a National Grid NY, KeySpan Gas East Corporation d/b/a National Grid, and Niagara Mohawk Power Corporation d/b/a National Grid, and New York State Electric & Gas Corporation and Rochester Gas and Electric Corporation.

*Agreement and for Affirming the Joint Utilities' Authority to Require and Enforce Execution of the Data Security Agreement by Entities Seeking Access to the Utility Customer Data or Utility Systems (the "Joint Utility Petition").*

### **3. The Joint Utility Petition Seeks Authorities That Are Inconsistent Or Incompatible With Commission Orders**

The Joint Utility Petition seeks exceptionally broad authority that goes well beyond what the Commission has dictated in previous orders. The Joint Utility Petition would, if approved, be incompatible with Commission orders in at least six (6) different respects. Each of the reasons represent a fatal flaw to the Joint Utilities Petition.

#### **a) The Joint Utilities seek to enforce Data Security Agreements on all entities, but the DER Oversight Order states that data security agreements do not apply to DERs that use Green Button Connect ("GBC").**

First, as we argued in the Mission:data Petition,<sup>2</sup> the DER Oversight Order clearly states: "This section does not impose any obligations on DER suppliers that do not request or receive data using EDI [Electronic Data Interchange]." The section in question, Section 2(C), refers in sub-section (F) to the NIST Cybersecurity Framework ("DER suppliers that obtain customer information from the distribution utility or DSP must have processes and procedures in place regarding cybersecurity consistent with the National Institute of Standards and Technology Cybersecurity Framework") and in sub-section (G) to data security ("DER suppliers that obtain customer information from the distribution utility or DSP must comply with any data security requirements imposed by that utility or by Commission rules on ESCOs and/or any data security requirements associated with EDI eligibility"). Such provisions are clearly exempted for DERs that use GBC, and yet the Joint Utilities Petition would, if granted, violate the plain language of the DER Oversight Order.

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<sup>2</sup> Mission:data Coalition. Petition for Declaratory Ruling Regarding the DER Oversight Order's Exemption of DER Suppliers from Certain Cybersecurity Requirements. Case No. 18-M-0376, dated November 30, 2018.

**b) The Joint Utilities seek the authority to terminate data access to DERs that use GBC, but the Uniform Business Practices – Distributed Energy Resource Suppliers (“UBP-DERS”) have no such provision.**

In the “final” version of the Data Security Agreement and Self-Attestation of Information Security Controls (“DSA”) dated August 16, 2018 and posted on the Commission’s website,<sup>3</sup> the DSA allows the utility to unilaterally terminate data-sharing with a DER:

This Agreement shall be effective as of the date first set forth above and shall remain in effect until terminated in accordance with the provisions of the service agreement, if any, between the Parties or the UBP or UBP DERS and upon not less than thirty (30) days’ prior written notice...**Further, Utility may terminate this Agreement immediately upon notice to ESE in the event of a material breach hereof by ESE or its Third-Party Representatives. For the purpose of clarity, a breach of Sections 3-4, 6-11, 13, 14, 16, and 24 shall be a material breach hereof...**<sup>4</sup>

The entity that decides whether a DER is in breach of the DSA is not specified. In the absence of a neutral, independent party making such a determination (such as the Commission), the Joint Utilities will undoubtedly seize on the opportunity to revoke electronic access at the sole discretion of the Joint Utilities without needing to satisfy an objectively-determined, independently-verified violation of the DSA. Mission:data believes that the language above, in particular its lack of due process before the Commission surrounding a potential DSA violation, would in effect grant utilities the right of unilateral termination. After all, the determination of whether a violation occurred would be in the utilities’ hands. (Furthermore, as explained below, DERs that use Green Button Connect (“GBC”) will immediately be in breach of the DSA after commencing electronic communications via GBC, so termination by the Joint Utilities is a constant threat even in the absence of the DER causing harm to the customer or utility.)

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<sup>3</sup> The DSA and related materials are posted at <http://www3.dps.ny.gov/W/PSCWeb.nsf/All/4A24D0D51395B1F8852582A2004398A3?OpenDocument>.

<sup>4</sup> Data Security Agreement at p. 12. Emphasis added. [http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/4a24d0d51395b1f8852582a2004398a3/\\$FILE/86804390.pdf/DSA%20Final%20Clean%2008-16-2018.pdf](http://www3.dps.ny.gov/W/PSCWeb.nsf/96f0fec0b45a3c6485257688006a701a/4a24d0d51395b1f8852582a2004398a3/$FILE/86804390.pdf/DSA%20Final%20Clean%2008-16-2018.pdf)

However, there is no termination right of the Joint Utilities specified in the UBP-DERS. The only mention of the word “termination” in the UBP-DERS is in relation to termination fees that DERs charge customers.<sup>5</sup> It would appear that the Joint Utilities have presumed that they can avail themselves of termination provisions approved only for ESCOs and apply such termination provisions to DERs without authorization by the Commission. Section 2(F)(1)(a) of the UBP-ESCO is cited by the Joint Utilities<sup>6</sup> as the source of their authority to terminate access to DERs that use GBC, but the UBP-ESCO do not apply to DERs. The truth is that the Commission-approved UBP-DERS provide no such termination right by the Joint Utilities. Simply put, the Joint Utilities claim an authority over DERs that does not exist.<sup>7</sup>

**c) The DSAs originated from a Commission order that did not include DERs in the definition of “energy services entities.”**

On June 14, 2018, the Commission issued an *Order Instituting Proceeding* in Case No. 18-M-0376, thereby beginning the process that led to the development of the DSA. Once again, the Joint Utilities assert an equivalence between users of the EDI and GBC platforms that does not exist in the plain text of Commission orders. Case No. 18-M-0376’s *Order Instituting Proceeding* defined energy services entities (“ESEs”) as “ESCOs, Electronic Data Interchange (EDI) providers, and any other third party that contracts with an ESCO to communicate data between the ESCO and the utility.”<sup>8</sup> Of course, DER providers often seek access to customer data (with customer permission) without being a commodity supplier or without contracting with an ESCO.

This is not the first time the Joint Utilities have asserted that there should be equivalent treatment between entities that use EDI and GBC despite Commission orders stating otherwise. In a *Request for Clarification* dated November 21, 2018, the Joint Utilities argue that the

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<sup>5</sup> See, e.g., Section 3(C)(B)(2)(A)(2) of UBP-DERS.

<sup>6</sup> Joint Utilities Petition at p. 16.

<sup>7</sup> The Joint Utilities have acknowledged that existing Commission orders and rules do not provide the Joint Utilities with explicit termination rights, an authority the Joint Utilities seek from the Commission: “The Joint Utilities *assert* that the following DERS UBP rule applies to all DERS, regardless of the platform they are using to obtain customer-specified data...” Joint Utilities Petition at p. 16. Emphasis added.

<sup>8</sup> Case No. 18-M-0376, Order Instituting Proceeding. June 14, 2018 at p. 2.



Commission should amend the DER Oversight Order so that DERs that use GBC become subject to Section 2C's provisions in order to "provide essential protections to customers and Commission oversight over DERS."<sup>9</sup> However, the Joint Utilities simultaneously admitted that the UBP-DERS as written does not apply to entities that use EDI: "Section 2C, however, applies only to DERS obtaining data through EDI, and specifically does not apply to other either existing or planned platforms for receiving customer data."<sup>10</sup> Twice the Commission has limited the application of data security provisions to entities that use EDI, and yet the Joint Utilities Petition ignores this important distinction.

**d) Granting Joint Utilities the power to amend the DSA in unknown ways in the future would likely lead to conflicts with Commission orders and rules.**

The Joint Utilities seek not only the power to enforce the DSA as they see fit but also the unilateral authority to modify the DSA in unknown and unknowable ways in the future. The Joint Utilities ask the Commission to:

Authorize the amendment of the DSA going forward through the business to business process which should include at a minimum, standard requirements that: (1) specify compliance with the Uniform Business Practices ("UBP"), UBP DERS, or other applicable Commission rules; (2) address the transfer of information; (3) maintain the confidentiality of Joint Utilities and the ESCOs, DERS, Direct Customers, and their applicable contractors (collectively, "Energy Service Entities" or "ESEs") information, including the protection of customer data; (4) requiring the return and destruction of information; (5) address each Party's responsibility and liability for data security incidents; (6) require cyber security insurance; (7) define minimum cyber security requirements; (8) address how to determine whether ESEs have and maintain minimum levels of cyber security; and (9) require ESE indemnification of the Joint Utilities...<sup>11</sup>

Mission: data has already noted above that the Joint Utilities seek broad authority to apply to GBC users the data security requirements and termination rights that the Commission decided

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<sup>9</sup> Joint Utilities Request for Clarification in Case No. 15-M-0180, dated November 21, 2018 at p. 2.

<sup>10</sup> *Ibid.* at p. 3.

<sup>11</sup> Joint Utilities Petition at p. 1-2.

previously should only be associated with EDI users. It is thus reasonable to ask what *additional* provisions will be concocted by the Joint Utilities over time to harm the adoption of DERs by skirting, modifying, extending or undermining Commission orders and rules. In the “business-to-business” process, the Joint Utilities have no incentive to accommodate any participant’s suggested amendments to the DSA, nor do the Joint Utilities suffer any risk of penalty for denying any participant’s suggested amendments to the DSA. As proposed, the “business-to-business” process is controlled entirely by the Joint Utilities; anyone who denies this reality could be accused of fanciful thinking. This is why numerous parties – including ESCOs,<sup>12</sup> DERs<sup>13</sup> and Mission:data – have repeatedly called for the Commission to intervene and prohibit what is in effect unilateral determinations about the DSA’s terms by the Joint Utilities.

Several potential examples illustrate how pernicious the Joint Utilities’ authority to modify the DSA at will could be. Suppose the Joint Utilities decide to remove billing information from its information technology platforms for DERs without justification. Billing information is used by DERs such as energy efficiency firms to monitor and estimate energy savings resulting from retrofits or behavioral changes over time. The Joint Utilities could create a false story to justify the withdrawal of billing information, such as that billing information purportedly requires additional cybersecurity protection and that the DSAs are being modified “out of necessity.” DERs will have no choice but to accept the demands of the Joint Utilities because failure to sign a DSA will result in termination of all access to data. Furthermore, the DERs will have limited recourse at the Commission. If DERs were to file complaints to the Commission about the Joint Utilities’ modifications to the DSA, the complaints would likely be denied due to the Commission’s prior pre-approval of virtually all but the most egregious DSA amendments.

In another example, suppose the Joint Utilities decide to dramatically increase the audit requirements. The Joint Utilities could force DERs to accept costly on-site audits of DERs’

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<sup>12</sup> See, e.g., *Final Comments of DSA Coalition Members on Proposed Data Security Agreement and Proposed Self-Attestation*. Case No. 18-M-0376, September 21, 2018 at p. 2 (“...the DSA Coalition strongly believes that core aspects of the DSA remain unresolved and should be revisited by the Commission in a full rulemaking proceeding”).

<sup>13</sup> See, e.g., *Response of Advanced Energy Management Alliance on Petition for a Declaratory Ruling Regarding the DER Oversight Order’s Exemption of DER Suppliers From Certain Cybersecurity Requirements*. Case No. 18-M-0376, December 21, 2018 at p. 5 (“DER Suppliers are hesitant to preemptively agree to provisions within the DSAs [in the business-to-business stakeholder process] that may or may not be found to be applicable...”).

premises, and the Joint Utilities would send the bill for these unnecessary and inflated “audit services” to DERs to pay. Failure to pay what is in effect an extortionate fee would result in the DERs’ termination of data access. This would be a convenient, perfectly permissible method for the Joint Utilities to act anti-competitively and disrupt DERs’ businesses under the Joint Utility Petition. Technically, the Joint Utilities could argue that they are not in violation of the REV Track 2 Order’s requirement that “basic data” be provided “at no cost” because cybersecurity practices are not implicated in the costs of providing “basic data.” Such erroneous amendments to the DSA by the Joint Utilities would waste Commission time and resources over a period of months as complaint after complaint would be filed by DERs seeking relief. Instead of the Commission pro-actively preventing abuses by the state’s Joint Utilities, as the Commission should be doing, the Joint Utilities Petition would, if approved, shortcut evidence-based Commission deliberations and shift the risk of abuses by the Joint Utilities onto DERs in advance of a hearing before the Commission.

Mission:data takes little comfort in the purported assurances advanced by some parties that the above activities “simply wouldn’t happen.” Put simply, the Joint Utilities seek to eliminate the due process rights of DERs. As co-equal market participants providing energy-related services to customers in New York, DERs have equal rights to participate in rulemaking dockets concerning Commission oversight over DERs that use GBC. That includes the right to participate in proceedings before the Commission without being subjected to what is, in essence, forced settlement negotiations with the Joint Utilities – the “business-to-business” process – where the Joint Utilities’ whims will have already been pre-approved by the Commission. The Commission should deliberate and approve changes to the DSA *before* an agreement is foisted upon DERs by the Joint Utilities rather than *after* new terms and conditions are imposed.

**e) The Commission has recognized that GBC users should have different terms and conditions than EDI users, but the Joint Utilities Petition seek identical terms and conditions.**

Recognizing that GBC users’ terms and conditions should be different from the DSA, the Commission took two recent actions. First, the Commission created the GB Working Group. In a February 7, 2019 notice, the Commission wrote:

In order for the full benefits of GBC to be realized, responsibilities for third parties accessing data through GBC as well as the utilities' interaction with these third parties must be clearly articulated in a GBC terms and conditions agreement. The working group will focus only on the terms and conditions necessary for the useful and effective implementation of Green Button Connect in a consistent manner throughout the State.<sup>14</sup>

The above notice is dated February 7, 2019, some six (6) months *after* the DSA was “finalized.” Second, the Commission’s December 13, 2018 *Order Adopting Accelerated Energy Efficiency Targets* (the “EE Order”) states:

In order for the full benefits of GBC to be realized, responsibilities for third parties accessing data through GBC as well as the utilities' interaction with these third parties must be clearly articulated in a GBC Terms and Conditions agreement. This agreement must, among other things, include reasonable requirements for third parties to ensure the privacy and integrity of customers' data in relation to the risk associated with any breach [*sic.*] of customer data. Parties have had difficulty agreeing on terms and conditions, particularly with respect to data security. The utilities and Staff are directed to conduct a collaborative with DER providers and other interested parties to develop GBC terms and conditions that are consistent across utility service territories.<sup>15</sup>

Other Commission actions in favor of a distinction between EDI and GBC terms of use predate the DSA even further: the DER Oversight Order, dated October 19, 2017, states: “Additional methods of sharing data [beyond EDI] are already being implemented through technologies such as AMI and in other venues, including through Green Button Connect...Requirements and policies associated with receiving data through these systems will be developed in those venues.”<sup>16</sup> The “venues” to which the Commission referred are not Case No. 18-M-0376, in which the DSAs were developed, but rather Case Nos. 13-E-0030 (Con Edison AMI approval order) and 14-M-0101 (REV, Distributed System Implementation Plans).

Approval of the Joint Utilities Petition would render the EE Order and the GBC Working Group moot. It is difficult to believe that the Commission would find the DSA acceptable to

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14 *Notice of Green Button Connect Working Group*. New York Public Service Commission. Case No. 18-M-0084 et al. February 7, 2019 at p. 2.

15 *Order Adopting Accelerated Energy Efficiency Targets*. New York Public Service Commission. Case No. 18-M-0084, In the Matter of a Comprehensive Energy Efficiency Initiative. December 13, 2018 at p. 44.

16 DER Oversight Order at p. 28.

GBC users as written given the aforementioned inconsistencies with the EE Order. The Commission has not yet decided what GBC terms and conditions will be, and Mission:data believes the Commission should allow that effort to run its course, with a formal action ultimately taken by the Commission. The Joint Utilities' proposal to impose the DSA – and all future changes thereto – now for GBC users is inconsistent with Commission orders that clearly sought bespoke terms for GBC users.

**f) Approving the Joint Utility Petition would disregard the EE Order's criteria for GBC terms and conditions.**

The final conflict between the Joint Utilities Petition and Commission precedent has to do with the EE Order. The EE Order prescribed a specific principle about the terms and conditions for GBC users: “The terms and conditions should make it no more difficult for a DER provider, for whom a customer has provided consent, to access data than it is for the individual customer to access data.”<sup>17</sup> To Mission:data's knowledge, no similar requirement exists for the terms of use associated with EDI users, such as ESCOs.

The GBC Working Group has not yet discussed exactly what GBC terms and conditions would satisfy this “no more difficult” standard, but it is safe to say that the DSA is unlikely to pass such a test. A brief comparison of the DSA with the method by which customers access their own information now is instructive. Individual customers can access their energy usage information on a utility's website without holding \$5 million in cybersecurity breach insurance; without obtaining a SOC II audit of the customer's security practices and controls; without being contractually prohibited from making “derivations” of their energy usage information; and so on. On its face, the DSA is unquestionably more difficult for a DER to adhere to than it is for a customer to access his or her own information. In this respect, the Joint Utilities Petition conflicts with yet another Commission precedent.

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<sup>17</sup> EE Order at p. 44.

#### **4. Approving the Joint Utility Petition Would be an Abdication of the Commission’s Duty**

The Joint Utilities Petition asks the Commission to issue a ruling that the “business-to-business process...was appropriate for development of the DSA.”<sup>18</sup> In essence, the Joint Utilities seek the Commission’s bestowal of legitimacy upon the business-to-business process that led to the creation of the DSA.

At first, the appropriateness of the business-to-business process might sound reasonable because the Commission itself supported the business-to-business process in the *Order Initiating Proceeding* in Case No. 18-M-0376: “The Commission supports the business-to-business process...”<sup>19</sup> But upon closer examination, the business-to-business process has numerous flaws. The People of the State of New York, acting through the Legislature, vested the Commission with the authority to regulate utilities. The People did not grant *the utilities* such authority. Affirming the business-to-business process’s appropriateness would be an abdication of the Commission’s legal responsibilities. After all, it is the Commission that was designed to serve as an independent authority that affords due process to parties in a dispute. The Commission would cede its responsibility as a neutral overseer by delegating authority to the Joint Utilities.

Other parties have challenged the appropriateness and legality of the business-to-business process as well. The Retail Energy Supply Association (“RESA”) recently argued the imposition of the DSA by the Joint Utilities on ESCOs would amount to a breach of the State Administrative Procedure Act (“SAPA”).<sup>20</sup> Others have argued that if the Joint Utilities are permitted to unilaterally expand the scope of Case No. 18-M-0376 to DERs, serious procedural and due process concerns would be raised because DERs were not provided with sufficient notice of such discussions.<sup>21</sup> Mission:data believes that approving the appropriateness of the

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<sup>18</sup> *Ibid.*

<sup>19</sup> Case No. 18-M-0376, Order Instituting Proceeding, dated June 14, 2018 at p. 3.

<sup>20</sup> *Response of RESA to the Joint Utilities’ Petition for Declaratory Ruling Regarding Their Authority to Discontinue Utility Access to Energy Services Companies in Violation of the Uniform Business Practices*. Case Nos. 98-M-1343 and 18-M-0376, filed December 21, 2018.

<sup>21</sup> See, e.g., *Corrected Comments of Advanced Energy Management Alliance on Data Security Agreements and Self-Attestation Forms for Distributed Energy Resource Suppliers*, Case No. 18-M-0376, dated December 18, 2018 at p. 5; *Final Comments of DSA Coalition Members on Proposed Data Security Agreement and Proposed Self-Attestation*, Case No. 18-M-0376, New York Retail Choice Coalition, filed September 21, 2018 at p. 7.

business-to-business process would be a dereliction by the Commission, irreparably harming the Commission's credibility on this and future cases.

Despite the Joint Utilities' claim that "concessions" on the DSA stemming from the utility-controlled negotiations are themselves evidence of due process, the reality for DERs is quite different. Many DERs feel the business-to-business process was coercive. The Joint Utilities cite large numbers of meetings, stakeholders and written feedback as evidence of the DSA's thoroughness and legitimacy. However, for DERs, the temerity of these claims is extraordinary. How can the Joint Utilities be allowed to use a stakeholder's mere attendance at a meeting as justification for the Joint Utilities' position? If allowed to stand, stakeholders could be disincentivized from attending any stakeholder meeting in the future, lest their presence at meetings, or their opinions made known therein, be misrepresented by the Joint Utilities.

While it is true that the Commission initiated the business-to-business process, it is not necessarily true that the Commission must accept its result. The Commission's original approval described in the *Order Initiating Proceeding* of Case No. 18-M-0376 was limited to *initiating* a business-to-business discussion as a *possible* mechanism to resolve disputes over data security topics. In Mission:data's view, the Commission can, without contradiction, support a *process* and not support its *outcome*.

## **5. The Joint Utilities Petition Should Be Denied Because the DSA Contains Vague Language That Immediately Put DER Providers In Violation Of Its Terms**

By approving the Joint Utilities Petition, the Commission would turn a blind eye to disturbingly vague language in the DSAs. At least two fatally-flawed sections of the DSA would immediately result in GBC users, such as DERs, being in violation.

The first such clause is Section 14(a) of the DSA, which reads:

ESE shall not create or maintain data which are derivative of Confidential Utility Information except for the purpose of performing its obligations under this Agreement or as authorized by the UBP or UBP DERS. For purposes of this Agreement, the following shall not be considered Confidential Utility Information or a derivative thereof: (i) any customer contracts, customer invoices, or any other documents created by ESE that reference estimated or actual measured



customer usage information, which ESE needs to maintain for any tax, financial reporting or other legitimate business purposes consistent with the UBP or UBP DERS; and (ii) Data collected by ESE from customers through its website or other interactions based on those customers' interest in receiving information from or otherwise engaging with ESE or its partners.<sup>22</sup>

The first sentence cited above is the most striking. The prohibition on creating or maintaining “derivatives” of energy data would do two things. First, “derivations” are so broadly defined as to encompass practically every processing function of customer-authorized software programs: counting time-series energy usage records in a database; creating daily averages of energy use for comparison purposes; correlating energy use with outdoor temperature in order to assess weather-normalized energy usage patterns; and so on. The phrase “for the purpose of performing its obligations under this Agreement” does not release DERs from the DSA’s handcuffs; performing the DSA’s obligations refers to the DERs’ obligations *to the utility*, not to the customer. And neither does the phrase “as authorized by the UBP or UBP DERS” help matters because the UBP-DERS similarly does not tie the DERs’ acceptable use of customer data to the scope of the customer’s authorization. Essentially, all DER software applications with which Mission:data is familiar would immediately be in breach of the DSA.

Second, the prohibition of “derivatives” would clearly conflict with customer-authorized purposes. What if customers *want* to DERs to create derivative energy information in order to receive recommendations based upon that analysis? Creating derivatives should be encouraged by the Commission, not prohibited. After all, engaging customers with new data analysis techniques that help save energy was one of the primary goals of REV. And yet, the DSA is inherently blind to the scope of the customer’s authorization to access information.

Even if the Joint Utilities were to choose not to enforce the DSA for violations of Section 14(a), the damage will have been done: DERs would suffer unacceptable and unnecessary business uncertainty. In Greek mythology, the Sword of Damocles refers to the precarious anxiety experienced by Damocles who takes the King’s seat of power: Damocles notices a sword’s blade is held above his head, supported only by a single horse hair that could break at any moment. Similarly, DERs will experience the continuous threat of business interruption because enforcement of the DSA would be entirely up to the whims of the Joint Utilities.

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<sup>22</sup> DSA, Section 14(a) at p. 9.



The second fatal flaw of vague language in the DSA involves customer consent. Section 4 reads:

The Parties agree that the UBP and UBP DERS govern an ESE's obligation to obtain informed consent from all customers about whom ESE requests data from Utility. The ESE agrees to comply with the UBP and UBP DERS on customer consent and the Utility's tariffs regarding customer consent.

One portion of the UBP-DERS, Section 2(C)(B)(3), reads: "A DER supplier shall retain, for a minimum of two years or for the length of the sales agreement, whichever is longer, verifiable proof, including but not limited to a recording or signed writing, of authorization for each customer."

Under the Joint Utilities Request for Clarification, Section 2(C) in its entirety would become applicable to GBC users, including the citation above. Thus, DER suppliers would be obligated to hold the customer's authorization for inspection by the Commission for a minimum of two years. That might sound reasonable, but according to the GBC technical standard, it is the *utility*, not the DER, that receives the customer authorization. The DER has no way of knowing that an authorization has occurred until it receives confirmation *from the utility*. DERs could certainly retain the utility's electronic representation of that consent, but the utility's electronic representation is not the original, and so it may not meet the definition of "verifiable." In other words, the DER could immediately be in breach of the DSA.

## **6. The Joint Utilities' Response to Mission:data's Petition for Declaratory Ruling**

On December 21, 2018, the Joint Utilities filed a *Response to Mission:data's Petition for Declaratory Ruling* (the "Joint Utilities Response") in Case Nos. 15-M-0180 and 18-M-0376. Mission:data will briefly reply to the Joint Utilities Response since it appeared as Attachment 5 in the Joint Utilities Petition.

**(a) The Joint Utilities argue that Mission:data's Petition for Declaratory Ruling is moot. If so, then so is the Joint Utilities Petition.**

As mentioned above, the EE Order directed Department of Public Service Staff (“Staff”) to convene a collaborative with interested stakeholders specifically to develop GBC terms and conditions.<sup>23</sup> The Joint Utilities Response cited the EE Order and concluded: “Mission:data’s Petition is moot because the Joint Utilities will be working with Staff and interested stakeholders, including presumably Mission:data, to develop appropriate GBC cyber security and customer data protections.”<sup>24</sup>

The Joint Utilities’ reasoning is deeply troubling. The Joint Utilities are arguing that a Commission order, i.e. the DER Oversight Order, should not be enforced by the Commission merely because a *related* proceeding is ongoing. Affirming the Joint Utilities’ argument would set a dangerous precedent, crippling the Commission’s powers to enforce innumerable rules and orders from the past. How many proceedings are currently pending before the Commission that are related – even closely related? It is almost impossible to count. The net effect of the Joint Utilities’ reasoning is that wide swaths of the Commission’s existing rules and orders would be rendered impotent.

Also, rejecting Mission:data’s petition because it is allegedly “moot” cuts both ways: the Commission must also simultaneously reject the Joint Utilities Petition as being moot. The Joint Utilities seek authority under the UBP-DERS to enforce the DSA over any entity that uses GBC. If the Commission’s consideration of GBC terms and conditions in an ongoing proceeding is reason to deny Mission:data’s petition concerning the DER Oversight Order’s cybersecurity requirements, then the Commission must also deny the Joint Utilities’ request to enforce the DSA against GBC users because of ongoing proceedings discussing cybersecurity requirements. Both Mission:data and the Joint Utilities seek guidance from the Commission on the applicability of the DER Oversight Order; it would be illogical for the Commission to apply different standards to the respective petitions of Mission:data and the Joint Utilities.

**(b) The Joint Utilities are incorrect that other jurisdictions require adherence to terms and conditions similar to the DSA.**

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<sup>23</sup> EE Order at p. 44.

<sup>24</sup> Joint Utilities Response at p. 2.

In a presentation at a November 18, 2018 workshop, Mission:data presented information about other state public utility commissions and the range of requirements that utilities in other jurisdictions impose of DERs that receive customer energy information. The Joint Utilities attempt to dismiss this information as being inaccurate, but in fact, the policies cited show how out of step the DSA is with the norms of other jurisdictions. Many terms in the DSA simply do not exist in other jurisdictions, as explained below. Furthermore, to the extent Commonwealth Edison and Pacific Gas & Electric have required certain terms beyond their respective commission-approved tariffs, then those additional requirements are unenforceable because commission orders and tariffs supersede. Any requirements on GBC users that go beyond commission orders and tariffs in the states mentioned by the Joint Utilities represent exactly the type of extrajudicial seizure of authority about which Mission:data is very concerned could occur in New York.

The Joint Utilities cite Commonwealth Edison’s “Data Services Handbook for Third Parties” that references a non-disclosure agreement (“NDA”). The NDA cannot be found either on Commonwealth Edison’s website or the registration materials that third parties receive,<sup>25</sup> so it is impossible to know its precise contents. Nevertheless, the NDA is unenforceable to the extent it conflicts with Illinois’s Commission-approved tariff that governs GBC or the Commission decision authorizing GBC. Contrary to the Joint Utilities’ claims, the tariff’s requirements of third party registration with Commonwealth Edison are much simpler than those in the DSA. Third parties (i.e., GBC users) must (i) meet certain confidentiality requirements, as explained below; (ii) complete interoperability testing with the utility and (iii) submit a registration with contact information. Regarding confidentiality, third parties must:

treat such data specific to such retail customer that it accesses and/or retrieves as confidential information and ensure the confidentiality of such data specific to such retail customer in accordance with all applicable statutes and regulatory orders or rules...

agree that such data specific to such retail customer must not be sold or licensed to any other entity for any purpose...

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<sup>25</sup> In spite of the “Data Service Handbook” referencing the NDA, a third party registrant at Commonwealth Edison reported to Mission:data that no NDA was required.

agree that such data specific to such retail customer must not be used for commercial purposes not reasonably related to the conduct of the Company's business.<sup>26</sup>

Third parties are also permitted to disclose customer energy data to their "contracted third party vendors or its affiliates" so long as such disclosure is consistent with the customer-specified purpose.<sup>27</sup>

That is the extent of Illinois's non-disclosure and cybersecurity requirements of GBC users. Mission: data notes that none of the following elements of the DSA are present in Commonwealth Edison's tariffs or required agreements (and this is not exhaustive):

- adherence to specific, named cybersecurity standards including NIST SP 800-53 and ISO 27001 / 27002;
- a SOC II audit, or any other on-site audit rights for the utility to inspect the third party's facilities;
- notification to the utility of a data security incident;
- prohibitions on creating or maintaining "derivations" of energy data;
- prohibitions on sharing energy data with "third-party representatives" unless consistent with the customer-authorized purpose;
- return or destruction of customer energy data following termination; and
- cybersecurity breach insurance

The Joint Utilities state that Commonwealth Edison requires "clear provisions relating to data loss or breach," but the above terms are clearly *not* "akin to the types of provisions in the DSA."<sup>28</sup>

The Joint Utilities also cite California's commission and Pacific Gas & Electric ("PG&E") as having rules consistent with the DSA. However, this claim falls apart upon scrutiny. The Joint Utilities appear to argue that the DSA is consistent with California policy

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<sup>26</sup> Commonwealth Edison Company. Rate DART Data Access and Retrieval Tenets, effective May 23, 2016. 4<sup>th</sup> Revised Sheet No. 229-230.

<sup>27</sup> Illinois Commerce Commission. Final Order in Docket No. 15-0073, dated March 23, 2016 at p. 15.

28 Joint Utilities Response at p. 18.

merely because the California commission’s privacy rules are “strict” and “lengthy.” California’s privacy rules are indeed lengthy, but it doesn’t necessarily follow that California’s policies are consistent with the DSA. Mission:data’s presentation at the November 18, 2018 workshop included a table showing “cybersecurity requirements.” Under California, it said “reasonable safeguards.” Mission:data stands by the words in our presentation. When referring to requirements specific to cybersecurity measures – and not to *all* conceivable terms and conditions – the lengthy California privacy rules say nothing about encryption, SOC II compliance, NIST standards, ISO 27001, or cybersecurity breach insurance. Instead, Section 8, Data Security, of California’s privacy rules read simply: “Covered entities shall implement reasonable administrative, technical, and physical safeguards to protect covered information from unauthorized access, destruction, use, modification, or disclosure.”<sup>29</sup> This is symmetrical with California Senate Bill 1476’s (Padilla, 2010) requirement that utilities provide “reasonable security procedures and practices.”<sup>30</sup>

The Joint Utilities also opine that California’s policies “apply not only to the third party registering to use GBC, but also their agents, contractors and subcontractors.”<sup>31</sup> That is true, but third parties may disclose customer data to agents, contractors and subcontractors so long as the customer consents. And when customer consent is provided for such sharing, California rules deviate substantially from the DSA’s provisions. Specifically, California rules differ from the DSA in terms of (i) advance written subcontractor agreement to the DSA (including cloud hosting providers); (ii) flow-down provisions surrounding audit rights and assistance to the utility; and (iii) information security programs as specified on the self-attestation. While Mission:data does not deny that California’s privacy rule is lengthy, it is substantially different from the DSA.

Finally, the Joint Utilities cite PG&E’s terms and conditions for GBC users as including an insurance requirement. The Joint Utilities are correct: Mission:data was unaware that PG&E’s terms require third parties to “insurance coverage...sufficient to cover any liabilities or claims for

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<sup>29</sup> California Public Utilities Commission. Decision D.11-07-056 at Attachment D, p. 11. Available at <http://docs.cpuc.ca.gov/PublishedDocs/PUBLISHED/GRAPHICS/140370.PDF>.

<sup>30</sup> California Senate Bill 1476 (Padilla, 2010). As cited in *Ibid.*, Attachment A at p. 2.

<sup>31</sup> Joint Utilities Response at p. 18.

damages that may result....”<sup>32</sup> However, the Joint Utilities’ argument is moot because this requirement is unenforceable, as it is inconsistent with both the California commission’s privacy rules and PG&E’s tariff known as Rule 25. (Mission:data will be asking the California commission to order PG&E to rescind any terms and conditions that are in conflict with, or go beyond, commission orders.) As stated above, Mission:data’s overriding concern is that, absent clear Commission direction, utilities will take every opportunity to seize additional powers over third parties and require onerous terms that inhibit DER growth. Rather than support the Joint Utilities argument, the examples cited further validate Mission:data’s concern that the business-to-business process is deeply flawed and that utilities in any state should not be permitted to have control over the terms and conditions governing their data-exchange relationships with DERs.

## **7. If the Joint Utilities Petition is Approved, the Commission Must Rescind Substantial Portions of REV**

If the Commission votes to approve the Joint Utilities Petition, the Commission should be aware of the repercussions. By granting substantial new authorities to utilities, the Commission will be affirming precisely the opposite principle of what REV envisioned: a dynamic, third-party DER driven market. Instead of utilities serving as “distribution system platforms,” which connotes the *enabling* of future innovations, utilities will inhibit data-driven DER adoption while citing “cybersecurity” as a justification. To use an analogy, instead of an open internet, the Commission will be opting for the “walled garden” approach of American Online in the 1990s in which consumers only have access to the services that are vetted, approved and maintained by the utility.

Customer choice of DERs was essential to the Commission’s REV decisions over the years. The Commission stated that “the objective of REV is to create a marketplace for DER based upon consumer information and choice.”<sup>33</sup> For similar reasons, the Commission also

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<sup>32</sup> Available at:

[https://www.pge.com/includes/docs/pdfs/myhome/addservices/moreservices/sharemydata/ShareMyData\\_Platform\\_TermsOfUse.pdf](https://www.pge.com/includes/docs/pdfs/myhome/addservices/moreservices/sharemydata/ShareMyData_Platform_TermsOfUse.pdf)

<sup>33</sup> Order Adopting Regulatory Policy Framework and Implementation Plan. Case No. 14-M-0101, February 26, 2015 at p. 66.

opposed utility ownership of DERs: “We do not generally favor utility ownership of DER assets. We are persuaded that unrestricted utility participation in DER markets presents a risk of undermining markets more than a potential for accelerating market growth.”<sup>34</sup> The Commission noted that many DERs “suggest that anything short of a robust flow of information would allow utilities to exercise market power sufficient to stifle third-party entry.”<sup>35</sup> Given the DSAs’ one-sidedness and departure from other states’ norms regarding third party terms and conditions, it would appear that DSAs are precisely the stifling instruments that the Commission had feared would inhibit data-driven DER adoption.

If the Commission approves the Joint Utilities Petition, then the Commission must also acknowledge that several core tenets of the REV initiative are essentially dead. It is difficult to see how data-driven, third party DERs will "animate the market" when the Joint Utilities are permitted to stifle innovation with the DSAs as written.

## **8. Recommendations For Bespoke GBC Terms and Conditions**

Although Mission:data strongly urges the Commission to reject the Joint Utilities Petition, Mission:data understands that merely rejecting the petition does not solve all the challenges faced by the Commission. Numerous underlying problems will persist despite a rejection of the Joint Utilities Petition. Mission:data believes that, in order to constructively resolve the issues before the Commission, root causes must be addressed. Toward that end, Mission:data provides the following recommendations.

First, the relationship between customers, DERs and utilities needs to be clearly understood. The Joint Utilities fundamentally misread the relationship between themselves and DERs. Many DERs that seek to use GBC are not utility vendors like Opower, commodity suppliers like ESCOs, or government agencies such as community choice aggregators (“CCAs”). The reason why the Joint Utilities’ boilerplate contracts and cybersecurity requirements should not apply in the same way to DERs is that customers are totally free to choose or decline DER products and services. No one is requiring customers to buy DER products or services like smart

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<sup>34</sup> Ibid at p. 67.

<sup>35</sup> Order Adopting Regulatory Policy Framework and Implementation Plan. Case No. 14-M-0101, February 26, 2015 at p. 57.

thermostats, energy efficiency smartphone “apps” or smart power strips. If a customer buys such a product, it should not be the utility’s responsibility to prevent downstream harms that might result.

In one sense, the Joint Utilities are correct when they argue that the DSA is “routine” and typical of the utility industry: utility vendors, ESCOs and CCAs are required to sign agreements similar to the DSA. But the Joint Utilities fail to understand why DERs that seek to use GBC are different. GBC users are not the utility’s vendors. Once customer data is released to a third party entity, it is that entity who is solely responsible for any harms the customer might experience. For REV to succeed, the dynamism of a competitive market must be allowed to flourish. But Mission:data is very concerned that REV will not succeed so long as utilities perceive themselves as responsible for the entirety of the customer’s commercial relationships with DERs that utilize customer data.

In telecommunications, there is the concept of the “demarcation point” which separates the monopoly utility from the competitive market. The telephone box on the side of a customer’s home is the termination point of the local exchange’s copper wire. The telco is responsible for the wire up to that point. Beyond that point, the telco is not responsible. Often referred to as “inside wiring,” the customer is responsible for its upkeep and maintenance. Customers are also free to choose whatever landline or portable phone they want. A similar demarcation point needs to be defined for utilities in New York in order for REV to succeed. Mission:data would argue that customer’s consent to share data with a third party should mark that demarcation point.

**(a) Staff’s distinction between “system risk” and “data misuse risk” is important. The Commission should require utilities to own their system risk but disown any downstream data misuse risk.**

In a recent workshop, Staff articulated the difference between “system risk” and “data misuse risk.” System risk is the cybersecurity threat utilities face by having any entity access their I.T. systems. Data misuse risk is the risk that a customer-authorized third party will abuse the customer’s privacy rights using information collected from the utility. This distinction is a positive step forward, but the Commission should go further and require utilities to be responsible for their own system risks while explicitly waiving their responsibilities to mitigate data misuse risks by placing data misuse risks solely on DER suppliers.



Regarding system risks, Mission:data believes the utilities should be solely responsible for their I.T. systems. If a utility's GBC platform is breached, it is the utility's responsibility. Similarly, a breach of the utility's customer web portal would be the utility's responsibility – not the users of the platform. The GBC standard ensures that customer data is only released with customer consent, and that such release occurs via Transport Layer Security, i.e. an encrypted channel. If the GBC platform is successfully attacked, that can only be because the utility has not adequately prepared and managed its systems. Shifting system cybersecurity responsibilities onto GBC users would therefore be inappropriate.

Second, the Commission should not conflate the system security risks of GBC with EDI. The Joint Utilities have falsely claimed that all interactions with utility I.T. systems pose identical risks: “These risks include the ability of DERs to harm a utility system during the regular exchange of information as well as the potential loss of customer data. This risk exists not only using the EDI platform, but also other electronic data platforms, including GBC.”<sup>36</sup> As was explained in detail during a recent stakeholder workshop, GBC, unlike EDI, requires utility-processed customer consent prior to releasing data.

As for data misuse risk, Mission:data argues that the Commission should explicitly waive the Joint Utilities' liability, so long as the data is transferred pursuant to customer consent and is encrypted in transit. This waiver is the only way to remove the utilities from taking a “policeman”-type role over GBC users. While it is reasonable and necessary for utilities to “police” the data management practices of their vendors, the same is not true of GBC users. Without an explicit waiver by the Commission, it is unlikely that we will make headway in constructively resolving these issues.

**(b) Look to California for enforcement procedures.**

One of Mission:data's gravest concerns about the DSA is the lack of due process afforded to DERs that use GBC. When a dispute arises, the Joint Utilities will have full control over the DERs' fate. California wrestled with this problem in 2013 and found a good solution, portions of which have been adopted in states such as Colorado, Illinois and Texas.

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<sup>36</sup> Joint Utilities Response at p. 15.

First, California established eligibility criteria for third parties. To be eligible, third parties must:

1. Provide utilities their contact information, including federal tax identification number, so as to uniquely identify third parties across the three investor-owned electric utilities;
2. Demonstrate technical capability to interact with the GBC platform;
3. Acknowledge receipt of the commission's privacy rules; and
4. Not be present on the commission's list of "banned" third parties.

Next, the California commission established a process by which utilities can report to the commission a "reasonable suspicion" of a third party's violation of privacy rules, and the commission will investigate. If the third party is found to have violated the rules, the commission can place the offending third party on the "banned" list. It is important to note that the utility does not have the ability to unilaterally revoke a third party's access; it is only by reporting a suspected violation that the utility "passes off" responsibility for investigation and enforcement to the commission.

California's enforcement mechanism has served the state well. Since the release of the investor-owned utilities' GBC platforms in 2016, Mission:data understands that several suspected violations have been reported to the commission, although to our knowledge, no third party has yet been banned. Customers may seek redress before the commission but it is not the utility's responsibility to vet third parties or enforce privacy policies against third parties. According to the commission's privacy rules, "After a secure transfer, the electrical corporation shall not be responsible for the security of the covered data or its use or misuse by such third party."<sup>37</sup>

## **9. Conclusion**

Mission:data hopes that the information provided herein is helpful as the Commission deliberates these issues. Thank you for the opportunity to provide comments.

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<sup>37</sup> California Public Utilities Commission, D.11-07-056 at Attachment D, p. 9.

Respectfully submitted,

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