STATE OF ILLINOIS

ILLINOIS COMMERCE COMMISSION

The Citizens Utility Board and	)	
The Environmental Defense Fund	)	Docket No. 14-0507
Proceeding to Adopt the Illinois	)	(filed August 15, 2014)
Open Data Access Framework	)	

MISSION:DATA COALITION'S RESPONSE TO ICC COMMISSIONERS DATA REQUEST

The Mission:Data Coalition[1], a national coalition of technology companies delivering data-enabled consumer-focused energy services and solutions [2], appreciates the opportunity to respond to the Commission's data request in connection with the Illinois Open Data Access Framework proceeding, dated September 23, 2014.

Mission:data believes consumers should have convenient, electronic access to the best available information about their own electricity use in order to fully leverage consumer benefits made possible by Advanced Metering Infrastructure. Implementation of the Open Data Access Framework will establish Illinois as a leader in empowering its consumers with the means to better manage their energy use. Mission:data, which has engaged on behalf of consumer data access at commissions across the country, is pleased to have the opportunity to support the work of the Commission.

1. To the best of your ability, please provide a comprehensive list of States whose Public Utility Commissions, or equivalent regulatory authority, have specifically addressed any one or all of the following issues within the context of smart meter or smart grid implementation: data ownership, types of data, third-party access to data, data formats, methods of delivering data, timeliness of data delivery, quality of data, data security, the use of national standards, and whether or not charges should be assessed for accessing data.

[1] www.missiondata.org

[2] Our members are developing innovative information technologies to achieve significant energy savings in both the residential and commercial sectors at scale. They include Alarm.com, Bidgely, BlueLine Innovations, BrightPower, BuildingIQ, the Cleanweb Initiative, EcoFactor, EnerNOC, EnergyHub, Genability, Home Energy Analytics, iControl Networks, Lucid, People Power, Plotwatt, Rainforest Automation, Retroficiency, Solar City, Stem, ThinkEco, Verdafero, Utilisave and WattzOn.

a. Please describe the issue(s), the manner of proceeding in which the issue was addressed and the date that the issue was resolved. Please also provide an explanation of how the State Commission or equivalent regulatory authority resolved the issue(s).

Mission:data has reviewed dockets from across the country and prepared the enclosed "Summary of Data Proceedings" that lists the states that have opened proceedings addressing the issues set forth in the data request. Docket numbers are included.

We also recommend A Regulator's Privacy Guide to Third-Party Data Access for Energy Efficiency,[3] authored by SEE Action, the State and Local Energy Efficiency Action Network, facilitated by the U.S. Department of Energy and the U.S. Environmental Protection Agency. This guide lists eight jurisdictions that have adopted statutes, regulations or regulatory commission orders governing third party access to data[4]. These states include California, Colorado, Oklahoma, Oregon, Texas, Vermont, Washington, Wisconsin.

Mission:data notes that regulatory commissions in other states like Arizona, New York and Massachusetts have signaled their intent to empower their consumers with energy data access but that detailed rules to achieve this are not yet in place. Illinois's adoption of the Open Data Access Framework will enable Illinois ratepayers to fully realize the demand side benefits from the state's AMI investment while also providing a strong example to other states.

Only two states with smart meter deployments on the scale of Illinois's deployment -- California and Texas -- have issued detailed orders providing consumers and authorized third parties with access to their electricity data through both of the mediums advocated by Mission:data, namely (1) data backhauled from the smart meter to the utility and provided to the consumer or designated third party via a web service, and (2) data provided in real-time from the smart meter to the premise. Colorado is currently establishing detailed rules addressing backhauled data, although its smart meter deployment is modest. These three states have addressed the questions posed by the Commission in some detail and Mission:data therefore believes that their examples may prove especially helpful to the Commission.

California. California has consistently embraced data access as a requirement in connection with AMI deployment. The Commission established six functional requirements for AMI systems, including collection of "data at a detail level that supports customer understanding of hourly usage patterns and their relation to energy costs" and "access to personal usage data such that customer access frequency does not result in additional AMI system hardware costs." (See A.05-03-016, 2006 and A.06-12-026, 2007, approving pre-deployment funding for PG&E and Southern California Edison AMI projects, respectively.) California has not made a determination regarding ownership of energy usage data, but it has clearly established that

[3] https://www4.eere.energy.gov/seeaction/publication/regulators-privacy-guide-third-party-data-access-energy-efficiency

[4] https://www4.eere.energy.gov/seeaction/sites/default/files/pdfs/cib_regulator_privacy_guide.pdf p.vii.

consumers have a right to receive that data and share it with third parties of their choice (see D 11-07-056, p. 36). California requires investor-owned utilities to provide backhauled data to customers and third parties designated by the customer via the Energy Services Provider Interface (ESPI) and activate the HAN radio for real-time data. Following is a summary of the major California PUC decisions addressing questions posed in the ICC's data request.

D 09-12-046, dated December 17, 2009, required IOUs to (1) provide "an authorized third party with access to the customer's usage information collected by the utility" by end of 2010 and to (2) provide customers with access to smart meter data on a "real-time or near real-time basis no later than the end of 2011." (Neither deadline was achieved.)

D 11-07-056, dated July 28, 2011, ordered strict timelines for activation of backhauled data access and HAN enablement. It adopted privacy and security rules governing smart meter data, among other requirements. The Order included the following salient directives:

- Within 6 months, all IOUs must provide, or continue to provide, customers with price and usage data. It must be "updated on at least a daily basis, with each day's usage data, along with applicable price and cost details and with hourly or 15-minute granularity (matching the time granularity programmed into the customer's smart meter) available by the next day. Residential customers must be offered "bill-to-date, bill forecast data, projected month-end tiered rate, and notifications to customers as they cross tiers to higher rates." (Ordering Paragraphs 5, 6).
- The IOUs must work with the California Independent System Operator (CAISO) in developing a methodology to make wholesale prices available to customers on each company's website. (Ordering Paragraph 7).
- Within 6 months, the IOUs must provide third parties access to a customer's usage data via the backhaul when authorized by the customer. The utilities were to coordinate with each other to "propose a common data format to the extent possible and be consistent with national data standards efforts." The approaches must propose for third parties "eligibility criteria and a process for determining eligibility where the Commission can exercise oversight over third parties receiving this data." (Ordering paragraphs 8, 9).
- Within 6 months, the IOUs must complete a pilot study to provide price information to consumers in real time or near real-time. (Ordering Paragraph 10)
- Within 4 months, the IOUs must submit plans to implement HAN functionality. These implementation plans must include initial deployments of at least 5,000 HAN devices. The implementation strategies must address issues such as costs, expanded data access and granularity, current and evolving national standards and security risk mitigation and best practices, etc. (Ordering Paragraph 11.)
- Regarding privacy and security, D 11-07-056 reaffirmed the PUC's jurisdiction over utilities and authority to require utilities to extend those rules to third parties under contract with utilities, but did not address the question of jurisdiction over third parties

not under contract to a utility. The utility is required to educate customers about the "potential uses and abuses of usage data" (36). The rules do not regulate the consumer's own decision as to with whom to share data, but provide that the utility is not responsible for policing those entities who receive information pursuant to a Commission requirement or customer wishes (p. 35). The rules outline a distinction between primary purposes (providing customers with a certain feature or service) and secondary purposes (e.g., marketing purposes, amalgamation with other data sets) and require customer consent before a utility can share data with a third party. A customer's consent is presumed indefinite but can be revoked at any time.

Resolution E-4527 (HAN implementation). Following protests of utility HAN implementation plans, the Commission in Resolution E-4527, dated September 27, 2012, imposed specific deadlines and requirements for implementation of HAN functionality. IOUs were required:

- to begin accepting HAN activation requests from customers beginning in January 15, 2013 -- 5,000 before June 30, 2013; 25,000 before December 31, 2013, 200,000 before December 31, 2014 and an unlimited number thereafter (Ordering Paragraph 1, p. 28).
- to collaborate with each other and third parties and relevant standards-related organizations, to develop (1) a common set of reasonable requirements and testing processes for validating interoperability between utility smart meters and commercially available HAN devices for the purpose of monitoring real-time electricity usage; and (2) a set of reasonable requirements to be satisfied by a HAN device supplier for its device to be eligible for interoperability testing (E-4527, p. 28-29).
- to publish, by February 1, 2013, on their websites a list of at least 5 commercially-available HAN devices validated for interoperability, with updates within 6 months (E-4527, p. 29); and
- to collaborate with each other and third parties to provide basic education to customers about the HAN function, its potential applications and benefits, potential interoperability risks associated with HAN devices not subjected to validation tests and the respective responsibilities of the utility, HAN device supplier and customer (E-4527, p. 30).

Customer Data Access to Interval Data through Utility: Pursuant to D 11-07-056, Ordering Paragraphs 8-9, the Commission ordered the IOUs to provide third parties with customer data upon consent in D 13-09-025 dated September 19th, 2013. The decision allowed PG&E and SCE to recover up to $19.4 million and $9.1 million from ratepayers, respectively. The Commission affirmed that the price to customers (and third parties) of this service should be zero; ordered that eligibility criteria of third parties and technical operation of the web service should be made consistent amongst all the IOUs; outlined a dispute resolution process in which the Commission, and not a utility, has the sole power to revoke a third party's access in case of an alleged breach;

and affirmed that utilities have no liability for a third party's breach, provided that the utility follows the Commission's rules and has not acted "recklessly."

"Customer data" includes electricity consumption data, generally at hourly resolution for residential and 15-minute for commercial and industrial. In a somewhat vaguely-defined "phase two" of Customer Data Access, PG&E and SDG&E stated their intention to add (i) natural gas data and (ii) pricing data to the files transmitted to authorized third parties. The data format and communication protocol standard to be followed is the Energy Services Provider Interface (ESPI) as ratified by the North American Energy Standards Board (NAESB).

The decision affirmed simple and straightforward eligibility criteria for third parties. To receive customer energy data, a third party must (i) demonstrate technical capability to interact with the IOUs' servers, (ii) provide contact information and a federal tax identification number in order to unify the registration system state-wide, and (iii) not be present on the Commission's list of banned third parties.

Data quality was only mentioned briefly in D 13-09-025; the IOUs are required to notify third parties whether customer usage and pricing data is, or is not, revenue quality. "Revenue quality" is generally understood to mean the usage readings that are used to generate bills. Data become "revenue quality" after the validating, editing and estimation (VEE) process.

Unfortunately, the Commission's lack of specificity regarding data quality, and the IOUs' resulting "advice letters" documenting their ESPI implementation, led to protests by Mission:data and its members. The IOUs explained that backhauled data from the previous day are not necessarily revenue quality right away, but rather bills must first be generated in order for data to be deemed revenue quality. The problem for third parties was that settlement of demand response or ancillary services with the Independent System Operator (ISO) require revenue-quality data. If the IOUs did not provide revenue-quality data through ESPI, then an entire class of services that save ratepayers money and that were originally envisioned as consumers of data through ESPI would be jeopardized.

The issue of revenue quality has yet to be definitively resolved by the Commission, but the IOUs have filed their responses to the protest. We would like to draw the ICC's attention to PG&E's amended advice letter dated August 14th, 2014, in which PG&E (i) pledges to use the "Quality of Reading" (QoR) flag in the ESPI specification, with a QoR value of 19 to mean "revenue quality"; (ii) will transmit any data updates automatically to authorized parties; and (iii) affirms that third parties can request historical data multiple times (in order to get the highest-quality data possible) at no charge. In particular, we would draw the ICC's attention to Attachment 2 of PG&E's amended advice letter, because it contains a succinct, thoughtful and technically workable description of how data quality should be tagged for customers of different types. (Mission:data helped broker this technological compromise by connecting the CPUC with experts from the Department of Energy and the National Institutes of Standards and Technology (NIST) who, among others, are leading the standards development process of ESPI 2.0.)

Texas. Texas has made the determination that consumers own their own energy usage data[5]. It has established a common web portal, Smart Meter Texas, that allows consumers across the state a consistent, simple method to access their own energy usage data. Real-time data is available through the Home Area Network interface. The state activated backhaul data access, which is made available in 15-minute increments the following day, effective earlier this month. The data available for the customer's direct download are in Green Button/ESPI format, but the data provided to authorized third parties are in Comma-Separated Values (CSV) format, which is not ESPI-compliant.) With respect to some of the data provided regarding Texas, we thank and acknowledge Doug Lewin at the South-Central Partnership for Energy Efficiency as a Resource.

Texas PUC Substantive Rule 25.130(g) establishes requirements for advanced metering systems in Texas. The list of requirements is extensive but includes:

- the capability to provide direct, real-time access to customer usage data to the customer and the customer's retail electric provider. The initial requirement for interval data, delivered on a day-after basis, was 1 hour, with a goal of 15-minute interval by 2010. This objective has been realized.
- open standards and protocols that comply with nationally recognized non-proprietary standards,
- 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;
- the ability to upgrade these minimum capabilities as technology advances and, in the electric utility's determination, become economically feasible.

Utilities may apply for a waiver from these and other conditions in regions where they determine them to be uneconomic.

With respect to customer data access specifically, PUC rule 25.130(j) requires that

- 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.
- The requirement to provide access to the data begins when the electric utility has installed 2,000 advanced meters for residential and non-residential customers.
- An electric utility shall use industry standards and methods for providing secure customer and REP access to the meter data. The electric utility shall have an independent security

[5] Texas PUC, Order Adopting New §25.130 And Amendments to §§25.121, 25.123, 25.311, And 25.346 As Approved at the May 10, 2007 Open Meeting.

audit of the mechanism for customer and REP access to meter data conducted within one year of initiating such access and promptly report the results to the commission.

- A customer may authorize its data to be available to an entity other than its REP.

Rate cases in connection with utility applications for approval of their advanced metering deployment plans establish specific requirements. Utility costs typically include advanced meters, costs of communications technologies, costs of back-office systems, utility share of the costs of the common web portal (designed for 15 minute settlement) and data repository, operation and maintenance, customer education costs and costs of in-home energy monitors for low-income consumers, among other things (e.g. Texas PUC, Order re: AEP Texas's Request for Approval of Advanced Metering System Deployment Plan and Request for AMS Surcharges, PUC Docket No. 36928, 2009, p. 7).

Colorado. Beginning last year, the Colorado PUC sought to amend the rules set forth in Code of Colorado Regulations 723-3, section 3026, governing access to and privacy of customer information in the possession of utilities in order to protect ratepayer privacy while allowing local governments and energy efficiency firms to have access to a customer's meter data upon informed consent. The amended rules, affecting both electric and gas utilities, require that customer data be maintained as strictly confidential and that customer data can only be used by the utility "as necessary to provide regulated utility services."

Section 3026(d) states that, "As part of basic utility service, a utility shall provide access to the customer's standard customer data in electronic machine-readable form, without additional charge, to the customer or to any third-party recipient to whom the customer has authorized disclosure of the customer's customer data. Such access shall conform to nationally recognized open standards and best practices. The utility shall provide access in a manner that ensures adequate protections for the utility's system security and the continued privacy of the customer data during transmission." Section 3026 also affirms customers' rights to transmit their data to anyone of their choosing. And similar to California's privacy ruling, it also states that utilities shall have no liability for a third party's breach of customer data, provided that the utility receives the customer's consent and transmits the data securely.

As part of amending the electric and gas utility rules, Colorado had to address its outdated, paper-based consent form. Notable changes include: (i) web-based consent with the same information as the paper form was approved; (ii) eliminating the requirement that third parties must have a Colorado address for service of process; and (iii) a checkbox indicating how long in the future the consent is valid, either 12 months, 24 months or indefinitely.

The updates to Colorado's rule 3026 are still under consideration. We understand that parties have agreed to the changes addressing data access and the streamlining of the consent form and that the Commission's focus is currently on other outstanding issues.

Finally, it is worth mentioning that Washington, D.C.'s Pepco has voluntarily implemented ESPI for commercial and industrial customers without a commission order to do so. Due to the volume and variety of data requests to Pepco due to the District's energy benchmarking law (using ENERGY STAR Portfolio Manager) and the D.C. Government's own energy management efforts, among others, Pepco sought to streamline the process for customers. Pepco also pledged to implement ESPI for its residential customers once its web portal vendor, Aclara, makes such functionality available.[6]

2. To the best of your ability, please provide a comprehensive list of the uniform standards or national standards recommended for adoption by States that have been developed by non-governmental third parties.

a. Please describe their similarities and their differences when compared to the proposed Illinois Open Data Access Framework.

Green Button: Green Button "Download My Data" and "Connect My Data" are two elements of the Energy Services Provider Interface (ESPI) standard ratified by NAESB. As of December, 2013, there were 55 utilities nationwide who have committed to implement Green Button. The list of adopters is published at www.greenbuttondata.org.

Green Button Connect is far more useful to consumers. Download My Data requires the user to manually download a data file. Green Button Connect delivers machine-readable data automatically so software can continually monitor energy use without further effort by the consumer.

Comparison of Green Button with the Open Data Access Framework: If the ICC wishes to adopt the Framework's principles, Green Button readily emerges as the only widely-adopted, mature, national standard available today. However, it is important to recognize that the Framework represents *principles,* whereas Green Button is a data format and communications protocol. Green Button will help fulfill many, if not most, of the principles laid out in the Framework. Please see our analysis in the table below.

Open Data Access Framework element	**Mission:data response**
The customer is the principal owner of that customer's usage data and as such can and should receive usage data in as close to real-time as practicable.	Mission:data's view is that the critical issue is whether the consumer can access that data in an easy-to-use format to improve energy management and achieve savings. Green Button Connect (GBC) is well-suited to delivering backhauled data to customers' designees. In our

[6] See http://www.pepco.com/library/templates/Interior.aspx?Pageid=6442454157&id=6442455023

	experience with utilities in other states, those data are generally backhauled and made available via GBC once per day. It may be possible to provide data updates multiple times per day depending on the utilities' AMI networks, but generally speaking, real-time data is only truly available directly from the meter via the Home Area Network.
The customer has the ability to authorize the utility to share his/her usage data with third parties, and the customer can revoke that third party access at the customer's discretion.	GBC's authorization process meets this requirement perfectly.
The utility can and should be permitted to use and share customer usage data with contractual parties for the delivery of electric service, improvements to the delivery of electric service, and to implement energy efficiency, demand response, or energy management programs as approved by the Commission. The utility must allow access to third parties where the customer has authorized it.	No comment. GBC may or may not be ideal for meeting the utilities' internal business functions.
For the **format** and **methods** of provisioning a customer and his/her authorized third party with the customer's retail electric usage data, the utility shall follow standards and protocols developed through national, multi-stakeholder processes. However, a utility shall not be constrained by being the first utility to implement standards developed through such processes.	GBC meets this requirement perfectly. Technically known as the Energy Services Provider Interface (ESPI), ESPI was ratified by NAESB after a multi-year, multi-stakeholder effort involving utilities, software companies, device manufacturers, etc.
Usage Data: Information and statistics relating to a specific and identifiable retail customer's power (kW) and energy (kWh) use. Specific types of usage data include: *Interval Data*: Usage data collected and compiled for a particular interval of time, including but not limited to 1-hour usage increments, 30-minute usage increments, 15-minute usage increments, and 1-minute usage increments. Unless otherwise noted, "usage data" in the context of the Framework refers to interval data.	GBC is time-interval agnostic. It can accommodate any time interval, from 1-minute to monthly meter readings. It can also accommodate other commodities such as natural gas and water.
Summary Data: Interval usage data provided at an aggregated, monthly format.	The word "interval" appears to contradict the word "monthly." We don't know what meaning was intended here, but we will add that software applications can easily digest 15-minute interval data in GBC format and output simple monthly

	totals for display to the consumer. That is a very simple process.
Billing Data: Usage data used for the purposes of generating a bill for electric service, including delivery/distribution and/or supply service.	Various data fields about billing are supported by ESPI. For example, billingPeriod, billLastPeriod, billToDate, currentBillingPeriodOverallConsumption, peakDemand, ratchetDemandPeriod, etc. See ESPI p24 for details.
Billing-Quality Data: Usage data reviewed and verified by an electric utility's internal quality assurance processes as sufficient for the purposes of billing a customer. • *Preliminary Data: Usage data that has not yet gone through billing system processes for quality assurance.*	The Quality Of Reading field in ESPI is an enumeration of various qualities: manually edited, estimated using a reference day, estimated using linear interpolation, raw, validated and used for billing, etc. For the complete enumeration see ESPI p.31. See also PG&E's amended advice letter, Attachment 2, dated Aug 14th, 2014. PG&E's ESPI implementation makes excellent use of the QualityOfReading flag.
Customers wishing to provide access to their usage data to a third party must affirmatively authorize the third party to gain access. The utility can request proof of such authorization from any third party seeking customer usage data, and can refuse to share customer usage data with any third party unable to provide such authorization.	Authorization can be made in several ways and any requirements should accommodate these methods. The most common methods of website authorization are as follows. The simplest example is one in which a user logs into his/her utility website and authenticates as his/her. Then s/he chooses a third party from a list of those registered with the utility, and clicks an "authorize" button. The second method is slightly more complex but achieves the same affirmative consent: a customer creates an account at a third party's website (s/he wants to use this third party's service). S/he fills out a form on the third party's website and clicks "submit"; she is redirected to the utility's website and asked for her username/password to establish her identity. Then she is redirected back to the third party's website, and the authorization is completed.
Term of authorization. *The default term of authorization should expire after 24 months unless otherwise specified in the terms of service agreement between the customer and authorized third party.*	Mission:data does not support establishing an arbitrary limitation on customer consent. Commissions in California and Colorado either do not establish a time limit for consent or provide the customer an option to provide consent for an indefinite term. Many energy efficiency business models require a multi-year commitment from a customer (particularly if energy savings are going to repay a capital investment). We recommend

	removing the 24-month limitation on consumer consent. As an alternative, the Commission can require that an annual notice be sent to customers so that customers have the opportunity to consider whether or not and how to withdraw consent should they desire to do so.
Authorization may be renewed automatically if a customer renews his/her service contract with a third party.	Unfortunately automatic renewal isn't technically possible. Three-party authorization schemes are somewhat complex in the field of network security and IT systems, and the crux of the problem has to do with the fact that the utility cannot establish an genuine identity of the customer when the data access request (or renewal request) originates from the third party. That is why, as explained above, the customer must enter his/her login and password credentials to authenticate *first*, and then the authorization to access data can be granted. Thus, automatic renewal is not possible, but a web-based re-authorization can be made as simple for the user as possible. As stated above, Mission:data prefers indefinite authorization until revoked by the customer.
A customer has the ability to de-authorize third party access to his/her usage data at any time; otherwise the utility shall deny third party access to usage data upon expiration of authorization.	GBC meets this requirement perfectly. De-authorization would be done through the utility's website.
Additionally, the utility may deny third party access to usage data upon notification of the termination of service between the customer and said third party, unless the customer has agreed to a term of authorization that extends beyond the provision of service in the terms of service agreement between the customer and authorized third party.	As explained above, this only works if the "notification of termination of service" comes from the customer via authentication with login credentials to the utility's website. A utility does not want to be in the middle of a customer/third party relationship, and we should strive to limit the utility's role in such relationship to the greatest extent possible. Service terms such as term length are between the third party and the customer only, and should not concern the utility.
Method of authorization. A customer's affirmative electronic signature is acceptable to a utility to indicate said customer's consent to third party access to usage data.	What is a "signature"? Students of security and cryptography will tell you that a signature is simply one method of establishing identity: that you are who you say you are. But the simplest method to establish the customer's identity is not with an electronic "signature" (which could mean dozens of different things to different people - a picture of your handwritten signature? an encrypted token on a flash drive?) but rather with

	a login and password to a utility website. Mission:data supports simple, straightforward web-based tools, consistent with modern practices on the web, for granting authorization to third parties, such as the one described above.
A customer's non-electronic signature is not required to indicate to a utility that a third party has obtained customer authorization to access that customer's usage data. However, such non-electronic signature should be acceptable to the utility if the customer and third party determine it is more convenient/appropriate than alternative verbal or electronic methods. The same methods should be acceptable in the case of a customer's decision to de-authorize third party access to his/her usage data.	Mission:data agrees. The process of consent should be simple and convenient for consumers. This is a matter of internal utility business process and not relevant to the ESPI standard. If a utility documents that a customer phones the call center and requests de-authorization, the utility can and should manually de-authorize access per the customer's request. But that is a business process issue, not a technical one.
Authorization language. A customer wishing to authorize a utility to share his/her usage data with a third party should affirmatively agree to following authorization language using a customer electronic signature...	Mission:data supports a simple, concise acknowledgement such as the one provided.
Access without authorization. If a third party seeks access to customer usage data without customer authorization, the utility can only provide it as allowed by the "15/15 Rule" as adopted by the Commission in ICC Docket No. 13-0506.	No comment.
Types of Data. A customer and authorized third party should have access to the customer's usage data, including: **Interval Data**. Utilities should provide a customer's usage data in as short intervals as possible, with 15-minute intervals recommended, but never in intervals greater than 1-hour. This includes power (kW) and energy (kWh) at the designated intervals. During the deployment of AMI, utilities may record usage data in intervals of 1-hour; however, utilities must conduct and disclose a cost-benefit analysis every two years following the Commission's Final Order in Docket No. 14-0507 aimed at determining the most cost-effective method for storing data. Such an analysis should include the cost of recording	Mission:data notes that kW and kWh in a certain time interval represent the same information and are not two distinct measurements. Mission:data believes that the shortest intervals possible will provide great benefits to ratepayers. Disaggregation, efficiency measure identification, virtual audits, etc. require as granular information as possible. Furthermore, we would be highly skeptical of any claims that storing 15-minute data is any more costly than storing 1-hour data. Like transistor density, data storage has followed its own "Moore's Law" and is exponentially cheaper per terabyte than it was several years ago. "Big Data" backend storage mechanisms such as BigTable, Cassandra, Hadoop, etc. are used today

and storing interval data for 25%, 50%, and 100% of eligible customers at 1-hour, 30-minute, and 15-minutes and present the results of that analysis to the Illinois Commerce Commission. A utility may offer non-standard service which provides access to intervals of less than 1-hour at any time.	by businesses large and small for cost-effective data storage and retrieval.
Power Data. Utilities should provide any data relating to the customer's demand, power quality, availability, voltage, frequency, current, power factor, or other information generated by a meter and collected by the utility in the course of business.	If any Power Data are gathered by the meter, Mission:data supports it being made available to customers. Voltage, frequency, reactive power, current, and other variables are all supported by ESPI. See page 34.
Pricing Data. Utilities should provide any and all price and rate data at the time for which the customer is being charged that rate. For price and rate data that is known in advance (e.g. day-ahead wholesale market prices or time-of-use ("TOU") prices), price and rate data should be available to a customer and authorized third party for the duration of the price and rate data availability preceding the effective time.	Pricing data is a large and complex topic. We believe there are two avenues for providing pricing data effectively to customers and their designees. First, GBC supports cost data such that each unit of energy used in, say, a 15-minute period has an associated matching cost. The cost is an "all-in" cost, inclusive of fixed fees, taxes, etc. Of course, as-yet-unbilled interval usage may not have a cost associated with it until the end of the billing period is reached. GBC also includes a "tariffProfile" reference in which a URL to the approved tariff can be provided, to help third parties sort out which rate is being applied. The second avenue is better suited to dynamic, day-ahead prices or in situations where the rate is subject to change based on some condition. Whereas GBC reports costs from a historic period, day-ahead prices or other dynamic prices are intended to send a signal to the market about a future event, and as such GBC is not a suitable communications method for this purpose. We would recommend examining OpenADR as a possible standardized protocol for communicating wholesale market prices. One solution would be for retailers in Illinois to publish their day-ahead prices on a web server (using OpenADR or another standard) so that the authorized third party could use software to digest this price signal and notify the customer via text message or control appliances accordingly.
The utility must replace or update any preliminary data shared with customers and authorized third	GBC serves this purpose perfectly. For example of a best practice, see PG&E's amended advice letter, Attachment 2, mentioned above.

parties with billing-quality data once billing-quality data for that customer is available. Once billing-quality usage data is available, the utility should provide access to the customer's monthly aggregate retail electric usage data that is used for billing purposes.	
Utilities will make available usage data for a customer's most recent billing period in summary form on customer bills. In addition, utilities will make available usage data electronically in the following forms: · Interval usage data will be provided in an industry-standard or web-standard machine-readable format (e.g. XML). · Summary usage data can be provided in a format intended to influence specific or general customer behavior (e.g. display of electricity usage during peak-time events such as may be found in home energy reports or other behavior-change programs). Both types of usage data will be provided including rate or price type for customers on dynamic or time-of-use rate plans (e.g. real-time pricing or peak-time savings programs).	GBC uses XML, which is machine-readable but also opens easily in Microsoft Excel and other spreadsheet programs. Green Button "Download My Data" lets customers download their data files directly to their computer in XML format.
Utilities should transfer retail electricity usage data using methods that facilitate ease of access and comport with industry standards, including but not limited to Energy Services Provider Interface ("ESPI"), or other standards-based electronic data exchange interfaces. For authorized third parties that do not require frequent exchange of data, the utility may maintain a separate process for providing bulk or aggregate customer-specific usage data to those third parties	Mission:data feels strongly that even "bulk" or infrequent data requests should be fulfilled using GBC. The value of standards, like for example the metric system or the width of railroads, is reduced transaction costs for both parties involved. The phrase "the utility may maintain a separate process…" seems to imply that a non-GBC data transfer method is acceptable. We strongly urge the Commission to reject that interpretation and insist on GBC compliance regardless of whether transmissions occur daily or on some other time interval.
Directly from the meter. Utilities should be able to provide usage data directly from a meter to devices within a customer's home capable of receiving usage data from a utility meter. Any and all usage data that is generated and transmitted by the meter should be in machine-readable formats.	Mission:data agrees. As a technical matter, Green Button as a data format is not suitable for "streaming" live data, but it is excellent at reporting consumption in time intervals that have already occurred, even if only 1 minute ago. The "streaming" of live data that may be the author's intention of this section is outlined not in GBC but in lower communication protocols down the stack,

	such as Zigbee Smart Energy Profile or HomePlug AV. Finally, the last sentence ("Any and all usage data that is generated and transmitted by the meter should be in machine-readable formats") is a truism. Unless, of course, human beings will someday be able to interpret radio waves….
Directly through the internet. The utility should deliver usage data through the internet in machine-readable formats using industry-standard interfaces and protocols. **Through a web portal.** Utilities may also provide summary usage data, including interval and power data, to customers and authorized third parties through web portals operated by utilities. **Through mobile applications.** Utilities may also provide billing and usage data to customers in timely downloadable, comprehensive, presented, and summary data forms through mobile applications operated by utilities.	Mission:data notes that all of these methods are identical, technically speaking. Websites and mobile devices use the internet.
The utility should deliver usage data to customers and authorized third parties in real-time to the extent practical.	Typically AMI networks are slow, low-bandwidth networks that will not allow multiple customers to simultaneously backhaul real-time data and provide it to third parties. We support this notion in general, but recognize the network design and communication protocols of the AMI system impose restrictions.
At a minimum, however, a utility shall provide interval usage data: Within one hour from the conclusion of an interval period when accessed directly from the internet or alternate communications network.	It is unclear what "directly from the internet" means. See comment above regarding AMI networks, which were never intended to handle large volumes of traffic that we're accustomed to with TCP/IP.
Within one minute if accessed directly from the meter.	Mission:data believes that real-time data from the meter should be the standard and not delayed by any period of time, even one minute. Most Zigbee-capable smart meters report usage every 8-10 seconds.
Utilities shall continually attempt to reduce latency in the delivery of interval data with the goal of sharing interval data with the customer and authorized third parties immediately following the close of the interval.	Mission:data agrees with this principle, but the Commission should understand that truly real-time access will only successfully occur by connecting to the meter directly at the premise, and backhauled data will always have some latencies.

Where there is a need for utility meter data management systems and billing systems to verify usage data for the purposes of customer billing, such processes should not limit customer access to preliminary data available from a meter as soon as it is available. Customers and authorized third parties should be able to gain timely access to both preliminary data and billing-quality data.	Mission:data strongly agrees. Again, we would reference PG&E's amended advice letter that handles the issue of data updates folowing validation, editing and estimation very well.
Data transmission to customers or authorized third parties must be done using industry-standard secure communications and encryption protocols for wireless or network communications (e.g. HTTPS).	Encryption is independent of the communications medium (wired or wireless). We would recommend the parties to this proceeding familiarize themselves with the basics of the TCP/IP stack for more information. Mission:data agrees, and GBC uses SSL/TSL over HTTP.
Customer-specific data stored by the utility should be secured against unauthorized access using industry-standard cyber security protections. Utilities may require that authorized third parties adhere to the same data security protections and restrictions on customer-specific data or personal customer information as the utility.	Mission:data vehemently objects to the idea that third parties should be subject to the same onerous security requirements as the utilities. The compliance costs alone of building IT systems comparable to the utilities' would cost millions of dollars and would undermine the essential purpose of the Open Data Access Framework, which is to give customers the freedom to choose innovative products or services, and to enable a vibrant marketplace of entrepreneurs and innovators. Maintaining symmetrical security standards between utilities and small businesses is an absurd notion. If taken down its logical path, we should then prohibit individuals from sharing their paper utility bills with their friends or family because those "third parties" do not have physical and network security precautions equal to the utility's. Why should electronic data receive differential treatment to hardcopy data when a customer has given affirmative authorization? Elsewhere in our response, Mission:data discusses the history and jurisdictional questions raised by the idea of Commission control over third parties acting as custodians of customer energy data. Suffice it to say here that, in lieu of no mandate regarding data security of third parties, we support the idea of a mandate to use commercially reasonably encryption and security procedures.

Customers and authorized third parties should incur no additional charge for the provision of customers' retail electric usage data in a timely, accessible manner described herein.	Mission:data strongly agrees. We would also ask the Commission to affirm that *all* data, including data updates due to billing processes, revenue quality data, and the like, should all be provided at no charge.

Real-time Data Through the HAN:

In California, the Commission did not recommend or require a particular standard for HAN enablement, instead defining the desired functionality and leaving it to the utilities to determine how to achieve that functionality. As a practical matter, HAN functionality is provided through use of ZigBee Smart Energy Profile standard in both California and Texas. We understand that utilities in both states generally use Smart Energy Profile 1.0 or 1.x. The California Commission requires that utilities attempt to connect consumer HAN devices that are SEP 1.x compliant.

Mission:data appreciates the opportunity to submit these responses to the Commissioners' data request and would be pleased to provide any further assistance that the Commission may require. Thank you for your consideration.

Dated: November 6, 2014

Respectfully submitted,

FOR THE MISSION:DATA COALITION, INC.

_____/s/_____

Jim Hawley

_____/s/_____

Cameron Brooks

_____/s/_____

Michael Murray