BEFORE THE NEW HAMPSHIRE
PUBLIC UTILITIES COMMISSION

DOCKET NO. DE 19-197

DEVELOPMENT OF A STATEWIDE, MULTI-USE ONLINE ENERGY DATA
PLATFORM

DIRECT TESTIMONY OF
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ON BEHALF OF UTILITYAPI, INC

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I.   INTRODUCTION

Q. PLEASE STATE YOUR NAME, TITLE, BUSINESS ADDRESS AND PROFESSIONAL BACKGROUND.

My name is Devin Hampton. I am the Chief Executive Officer of UtilityAPI, Inc. My business address is 1212 Broadway Floor 16, Oakland, CA 94612.

I joined UtilityAPI in 2017 because I was drawn to the company's mission of fighting climate change by providing private and secure data exchange systems to utilities and energy service providers. During my time at the company, UtilityAPI has led the market in providing the best in class data exchange platforms. We have also actively engaged in data sharing standards and policy by participating in over 10 public utility commission workshops across the U.S. detailing best practices in states such as California, Hawaii, New York, Arkansas, Virginia, and Maryland.

Prior to UtilityAPI, I held several positions working on policy and market transition in both the public and private sectors. I worked as a consultant for clean energy startups and investors and was appointed by President Barack Obama to several roles in his Administration, including Chief of Staff at the U.S. Trade and Development Agency and multiple leadership positions at the U.S. Department of Energy. I also worked in local politics in Washington State. I hold a B.A. degree from the University of Washington and have been recognized by the Atlantic Council as an Emerging Leader in Environment and Energy Policy.

Q. PLEASE PROVIDE UTILITYAPI'S BACKGROUND.

UtilityAPI is a software company that accelerates the deployment and monitoring of distributed energy resources (DERs) and energy efficiency technologies. Our web-based software allows DERs to efficiently request and receive their customer's energy usage, account, and billing information from utilities across the country. By standardizing and automating data flows, we significantly reduce the time and energy that DERs spend evaluating a customer's site for rooftop solar or monitoring ongoing performance after a DER technology is installed.

UtilityAPI's customers include DER providers, such as rooftop solar and energy efficiency firms, as well as utilities, who are increasingly required to provide customer data in standardized application programming interfaces (APIs). We are an active participant in the Green Button Alliance, where we serve on the board of directors and are involved in the OpenADE Working Group, which writes and maintains the Green Button standards.

UtilityAPI has extensive technical experience in developing, hosting and administering Green Button-based platforms for thousands of users. We have contributed hundreds of hours testing Green Button Connect My Data (GBC) implementations for Pacific Gas & Electric (PG&E), Southern California Edison (SCE), San Diego Gas & Electric (SDG&E), and Commonwealth Edison (ComEd). UtilityAPI is committed to supporting GBC and its surrounding ecosystem of DERs by providing technical assistance, hosting and other services to help meet the security and functionality requirements codified in the GBC standard as it evolves over time. In order to ensure that all work meets GBC certification standards, we maintain an internal mirror of the OpenESPI Test Suite used to certify Green Button implementations. UtilityAPI also built and maintains standards compliant GBC platforms for Silicon Valley Clean Energy, a Consumer Choice Aggregator located in California, Fort Collins Utilities in Colorado, and will launch a compliant GBC platform for National Grid (New York) in the spring of 2021.

Additionally, our staff is trusted by regulators and utilities to provide technical expertise for building compliant data exchange systems. We helped write the technical protocols that are currently being implemented in markets across the country. For example, following our technical recommendations, the California Public Utilities Commission (CPUC) issued a resolution (E-4868, August 2017) that requires the state's investor-owned utilities to implement improvements to their data-sharing websites for demand response providers. We have also written the Quality Assurance (QA) test suite for the GBC implementation at Pacific Gas & Electric (PG&E).

Q. WHY IS UTILITYAPI INTERESTED IN NEW HAMPSHIRE'S PLATFORM?

As a software company providing services to DERs, utilities, and efficiency firms across the country, UtilityAPIseveral customers with operations in New Hampshire (NH). We expect to be a primary user of the NH data platform that results from this docket, particularly for DERs that do not have and/or want the ability to develop their own software in-house.

Additionally, we want to improve the GBC standard over time because that helps support long-term clean energy objectives. UtilityAPI is an active participant in the Green Button Alliance, where we serve on the board of directors and technical working groups in order to enhance the Green Button standard. We have extensive technical experience in hosting and administering Green Button-based platforms for thousands of users. SB 284 requires that the state-wide data-sharing platform contemplated in the current docket must, if implemented, comply with standards outlined by the Green Button Alliance.

II.   CYBERSECURITY AND THE GREEN BUTTON STANDARD

Q. HOW IS GBC SECURE?

Green Button Connect builds on internet security best practices that many industries use for secure electronic communication and consent processes.

First, all connections between the utility customer, the utility, and third parties are encrypted using Transport Layer Security (TLS), commonly known when used in web browsers as "https" (e.g. the green lock in the address bar). This communication encryption protocol is widely considered to be the best secure means of communicating over the internet, offering both message confidentiality and message integrity.

Second, the customer consent process that is mandated in Green Button Connect is built on the Open Authorization 2.0 (OAuth 2.0) protocol, also widely used in many enterprise and consumer sectors for establishing user authorization and consent for third parties. For example, many enterprise financial software platforms use OAuth 2.0 to obtain authorized API tokens for accessing private customer financial data.

TLS and OAuth 2.0 are the security backbones of Green Button Connect, which ensure that the standard is fully aligned with modern internet cybersecurity best practices. Adopting these commonly-used standards also eliminates the need to independently reinvent the wheel for securing private customer utility data.

III.   PROPOSAL FOR INCLUDED DATA FIELDS

Q. WHAT DATA FIELDS INCLUDED IN THE GREEN BUTTON STANDARD SHOULD BE IMPLEMENTED IN THE NEW HAMPSHIRE STATEWIDE PLATFORM?

Data fields contained within the GBC standard can be broken down into two distinct buckets: Usage data and billing data.

Billing data is defined as information generally contained on bills and having to do with payments including, 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.

Our recommendation for billing data is that 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 defined as electric or natural gas usage in kilowatt-hours, cubic feet or therms, containing both "register reads," which represents 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.

Our recommendation is that 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.

Q. HOW IS THIS INFORMATION USED BY DERS AND WHAT CONSUMER BENEFITS WILL RESULT?

Billing and usage data can be used by DERs in several different contexts. Below are some of the many examples of how billing and usage data can be used and the benefits to consumers.

The first example is when a customer wishes to share his/her historic energy information (usage, cost/billing data, etc.) held by a utility with a Third Party (any non-utility entity such as

DER, CPA, non-profit, competitive supplier, etc.) in order to determine whether a certain service is a good fit for the customer. This includes, but is not limited to, sending energy information to (i) a rooftop solar provider for getting a price quote; (ii) a competitive supplier to receive a price estimate; or (iii) to a storage provider to determine the appropriate size of behind-the-meter battery storage. In this example, the benefit to consumers is the ability to receive quick and accurate quotes tailored to their individual energy consumption data. WIth a quote based on their actual energy use consumers will be empowered to make energy and money-saving decisions.

The second example is when a customer wishes to share his/her ongoing energy information such as usage, cost and billing information that is held by a utility with a Third Party such as any non-utility entity, in order to use a service, such as a DER. This includes, but is not limited to, monitoring of post-retrofit energy efficiency; gathering residential or commercial and industrial (C&I) usage data for demand response settlement and ongoing management; and verifying the performance of behind-the-meter battery storage over time. In this example, the benefit to consumers is the ability to receive ongoing updates to the performance of energy services. This is especially critical for savings guarantee contracts.

Q. HOW RETAIL CUSTOMER, UPDATED IN APRIL 2019, SUPPORTS THE ABOVE?

In the most recent major update to the Green Button standard, technically called the Open Energy Service Provider Interface (OpenESPI), the supported data fields and file formats were significantly expanded to include customer, account, and service details. This set of data fields is called the Retail Customer section of the Green Button standard and allows for the secure and standardized transfer of non-anonymous customer information with that customer's consent.

With Retail Customer data, an authorized Third Party recipient of customer data can match up various usage data feeds to the address/location, customer name, meter number, and other real-life customer details. Prior to the Retail Customer update, figuring out which usage data feeds matched which real-life customer locations and meters was not possible because usage data feeds did not contain any customer personally identifiable information (PII).

IV.   WHY USER EXPERIENCE IS CRITICAL

Q. PLEASE PROVIDE EXAMPLES FROM YOUR EXPERIENCE OF GOOD AND BAD USER EXPERIENCES.

Based on UtilityAPI's experience of providing over 1000 customers with data-sharing services, the two most important components of a good user experience are that it is (i) easy to understand and (ii) simple to use. Unfortunately, to date, most data sharing platforms have not prioritized a seamless and simple user experience, resulting in low adoption and utilization of data sharing by customers and third parties.

Poor user experiences can happen for both utility customers and Third Parties. For utility customers, a consent process that requires many mouse clicks or required fields to fill out contains complex language that many utility customers would not understand, or does not provide scope parsing so Third Parties can pre-select the authorization scope they need, will result in customers being confused or frustrated and not completing the consent process. For Third Parties, designing a registration and onboarding experience that is significantly time consuming (e.g. numerous emails back-and-forth), requires significant technical expertise and connectivity testing, or doesn't provide test or sandbox environments, will result in few Third Party companies making it through the registration and onboarding process. Additionally,

technical support experience for Third Parties is a critical user experience that if overlooked can result in depressed Third Party and thus customer engagement.

In order to improve on the user experience in California, UtilityAPI joined the California Public Utilities Commission (CPUC), third party demand response providers, and the state's investor-owned utilities to develop improvements to data sharing platforms as a part of the Consumer Data Access Committee (CDAC). With the main objective of improving security and customer ease-of-use, we wrote three technical solutions for secure data-sharing with customer authorization. These protocols, known as Solutions 1, 2, and 3, have defined the scope for authorizing third-party access to data. The CPUC adopted Solution 3 as the initial method to meet the objectives. Solution 3 dramatically improved the usability of Green Button Connect in California for demand response providers.

The solution, defined using an OAuth-based user experience, involved fewer clicks, an easier authorization process, and a mobile-device-friendly interface. This led to significant customer growth using these platforms, from 1,000 to 100,000 customers in approximately 18 months.

V. DATA DELIVERY WITHIN 90 SECONDS

Q. WHY IS "IN THE MOMENT" EXCHANGE IS IMPORTANT?

Beyond user experience, the timely delivery of data is also a crucial factor for robust data sharing. Many use cases for data sharing rely on "in the moment" exchange of the data, which we define as delivery within 90 seconds. Below are a few of the many examples of how "in the moment" data sharing is crucial for the third party and customer.

The first example is over the phone sales. Solar and energy efficiency vendors often use phone calls to educate a potential customer on the energy and cost savings of a project. With

"in the moment" data sharing, customers can authorize data sharing during those phone calls

allowing the vendor to provide a quick analysis to the customer and give them an immediate

price and energy savings quote. The same is true for websites. A solar modeling tool using "in

the moment" data can return a quote to a customer in real-time, allowing a customer to decide

to go solar in one visit to the website. When data delivery takes many days, customers and third

parties are not able to take advantage of consumer experiences available in all other modern

industries. While a customer can shop on Amazon and make "in the moment" decisions,

delayed energy data means the same customer must re-engage days or weeks later to decide

on energy saving solutions. Viewed in aggregate, the delays in energy data delivery amount to a

massive slow down for deploying energy and money saving projects.

Another example is a kiosk at a home improvement store. A customer is able to enter

information about themselves to the kiosk and authorize the data sharing. With "in the moment"

data sharing the kiosk can do a quick analysis and then let the customer know that the

upgrades they need for their home are available in aisle 3. With delayed data, the kiosk cannot

make recommendations in a timely manner for the customer while they are in the store.

Finally, "in the moment" data is crucial for measurement and verification of energy

upgrades. If timely data is available, it is a powerful tool for energy management providers to

receive regular updates and information on energy and cost savings. With delayed data energy

managers are much more likely to install sub meters or instill regular site visits to verify

operations. Both balloon the costs of services for the end customer.

VI.   IMPORTANT SERVICES FOR THIRD PARTIES

Q. WHAT NEGATIVE CONSEQUENCES HAVE OCCURRED WHEN SERVICES SUCH AS DOCUMENTATION, RESPONSIVE TECHNICAL SUPPORT, TEST ENVIRONMENT OR TRANSPARENT ONBOARDING PROCESSES WERE NOT AVAILABLE?

Because GBC requires that a Third Party company register with the data custodian (i.e., the utility) prior to being able to request data from utility customers, the time and resources it takes to become registered and onboarded are critical factors in the utilization of a GBC platform by Third Parties. If the registration process is opaque, lengthy, or not properly documented, Third Parties for which utility customers would otherwise be willing to authorize access will give up part-way through the registration, or not even attempt to become registered at all.

For Third Parties looking to integrate the GBC API into their software platforms, tools, apps, and websites, not having proper integration and API documentation along with a test environment has, in our experience, resulted in a significant increase in technical support requests, higher total development costs for Third Parties, and delayed launches for integrated products, if not outright abandonment of these new products.

Moreover, for Third Parties that are small, local businesses and do not have significant technical resources (e.g. no software engineering team on staff), unnecessarily difficult technical requirements and connectivity testing steps during the registration and onboarding process have effectively blocked many small businesses from getting through registration and participating in programs that require Green Button Connect data access.

VII.   PERFORMANCE STANDARDS

Q. WHAT PERFORMANCE STANDARDS SHOULD THE PLATFORM ACHIEVE, AND WHY?

For Green Button Connect, there are two major parts to focus on for performance standards. First, the consent process for utilities customers is a consumer-facing web portal that

needs to meet expectations for customers compared to similar portals (e.g. their bank website). In general, an uptime of 99.9% is expected in most modern web portal best practices.

Second, when a customer has granted authorization, the Third Party data transfer performance is critical in allowing the Third Party to get the authorized dataset and provide the analysis the customer is expecting. Fast, reliable initial data transfer within 90 seconds is the default expectation; however if occasionally things go wrong when authorizing/querying/collecting/formatting the data prior to transfer, an important performance factor for Third Parties is visibility into what kind of error has occurred if data transfer cannot take place. Disclosure of the type of error (e.g. OAuth redirect errors, proper HTTP response codes, etc.), documentation on how various errors are resolved, and prompt replies from technical support are all important to meeting performance expectations of Third Parties.

Third Parties understand that errors and downtime occasionally happen, but transparency about issues and good communication are critical to meeting performance expectations of the industry. The lack of reliability, lack of transparency and/or poor communication will result in Third Parties abandoning their registration with the platform.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

Yes, it does.