



780 N. Commercial Street  
P.O. Box 330  
Manchester, NH 03105-0330

**Jessica Chiavara**  
Counsel  
Cell: 315-313-3264  
jessica.chiavara@eversource.com

August 17, 2020

Debra A. Howland  
Executive Director  
New Hampshire Public Utilities Commission  
21 S. Fruit Street, Suite 10  
Concord, NH 03301

**Re: Docket No. DE 19-197 Statewide Multi-Use Online Energy Data Platform:  
Public Service Company of New Hampshire d/b/a Eversource Energy; Unitil Energy  
Systems, Inc. and Northern Utilities, Inc., Joint Testimony Submission**

Director Howland:

Please accept for filing the joint testimony of Public Service Company of New Hampshire d/b/a Eversource Energy (“Eversource”); and Unitil Energy Systems, Inc. and Northern Utilities, Inc. (together “Unitil”), in docket DE 19-197.

If any questions arise, please do not hesitate to contact me by email or on my cell phone.

Regards,

Jessica A. Chiavara  
Counsel, Eversource Energy  
o/b/o Eversource and Unitil

Attachment  
cc: service list

**THE STATE OF NEW HAMPSHIRE**  
**BEFORE THE**  
**NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION**  
**JOINT PREPARED TESTIMONY FOR POSSIBLE OPTIONS FOR A STATEWIDE**  
**ENERGY DATA PLATFORM**  
**THOMAS BELAIR, RILEY HASTINGS, AND DENNIS MOORE FOR EVERSOURCE**  
**JUSTIN EISFELLER, KIMBERLY HOOD AND JEREMY HAYNES FOR UNITIL**

**Docket No. DE 19-197**

**August 12, 2020**

---

1 **Q. Mr. Belair, please state your name, business address, and position.**

2 A. My name is Tom Belair, I work at 73 West Brook Street in Manchester New  
3 Hampshire. I am manager of energy efficiency services for Public Service Company of  
4 New Hampshire, d/b/a Eversource Energy (“Eversource”)

5 **Q. Have you previously testified before the Commission?**

6 A. Yes, I have testified in several of the CORE NH Energy Efficiency proceedings before  
7 the NHPUC.

8 **Q. Please describe your educational and professional experience.**

9 A. I have a Bachelor of Arts degree in Mathematics from Saint Anselm College. I have  
10 worked at Eversource for 38 years, developing Information Technology systems,  
11 modifying customer and supplier computer systems during Customer Choice and  
12 Deregulation, and designing and implementing Energy Efficiency programs in New  
13 Hampshire.

14 **Q. Ms. Hastings, please state your name, business address, and position.**

15 A. My name is Riley Hastings, I work at 247 Station Drive in Westwood Massachusetts. I  
16 am a lead analyst doing strategic data management for the energy efficiency group at  
17 Eversource Energy (“Eversource”).

18 **Q. Have you previously testified before the Commission?**

19 A. No, but I have testified before the Massachusetts commission on energy efficiency  
20 dockets.

1 **Q. Please describe your educational and professional experience.**

2 A. I have a Bachelor of Arts degree in economics from Colgate University. I have worked  
3 as a consultant to the Environmental Protection Agency and then in the energy efficiency  
4 field as an evaluation consultant and now in the energy efficiency group at Eversource.

5 **Q. Mr. Moore, please state your name, business address, and position.**

6 A. My name is Dennis Moore, I work at 107 Selden Street in Berlin, Connecticut. I am the  
7 Director of IT Enterprise Business Solutions at Eversource Energy.

8 **Q. Have you previously testified before the Commission?**

9 A. No, I have not.

10 **Q. Please describe your educational and professional experience.**

11 A. I have a Bachelor of Science degree in Mathematics from the University of  
12 Connecticut. I have worked at Eversource for 22 years developing, implementing and  
13 maintaining enterprise business solutions. Prior to that I worked as a Manager of  
14 Resource Planning and Economic Analysis at Yankee Gas Services Company.

15 **Q. Mr. Eisfeller, please state your name, position and your responsibilities.**

16 A. Justin Eisfeller. I am the Vice President, Information Technology at Unitil Service Corp.  
17 (“USC”), which provides centralized utility management services to Unitil Corporation’s  
18 subsidiary companies including Unitil Energy Systems, Inc. and Northern Utilities, Inc.  
19 As VP, Information Technology, I am responsible for Unitil’s information technology  
20 infrastructure, software development, cyber security and software systems support. I have  
21 previously held the positions of Manager of Distribution Engineering, Director of  
22 Engineering and Director of Energy Measurement and Control at USC.

23 **Q. Please describe your business and educational background.**

24 A. I received my Bachelor of Science Degree in Electrical Engineering (Power Option) from  
25 Northeastern University in 1990 and my Master of Business Administration from the

1 University of New Hampshire in 2005. I joined USC in 2002 as Manager of Distribution  
2 Engineering and was promoted in 2004 to the position of Director of Engineering with  
3 responsibilities for distribution engineering, planning, transmission and substation  
4 engineering, system protection and control, computer aided design, and geographic  
5 information systems. In 2008, I assumed responsibilities of Director, EM&C and in 2017  
6 I was promoted to VP, Information Technology, my current position.

7 **Q. Do you have any licenses or certifications that qualify you to speak to issues related**  
8 **to information technology or project management?**

9 A. Yes. I have been a registered Professional Engineer in the State of New Hampshire since  
10 1996; received my Project Management Professional certificate in 2005; and received my  
11 Information Technology Infrastructure Library Foundation Certificate in IT Service  
12 Management in 2018.

13 **Q. Have you previously testified before Commission or any other Regulatory agencies?**

14 A. Yes, I have testified before the New Hampshire Public Utilities Commission,  
15 Massachusetts Department Public Utilities, and the Maine Public Utilities Commission  
16 on previous occasions regarding a variety of technical issues.

17 **Q. Mr. Haynes, please state your name, business address, and position.**

18 A. My name is Jeremy Haynes and I am the Director of Information Technology,  
19 Application Development for Unitil Service Corp. ("USC"), which provides centralized  
20 utility management services to Unitil Corporation's subsidiary companies including  
21 Unitil Energy Systems, Inc. and Northern Utilities, Inc.

22 **Q. Have you previously testified before the Commission?**

23 A. No, I have not previously testified.

1 **Q. Please describe your educational and professional experience.**

2 A. I have a Master's Degree in Business Administration from the University of New  
3 Hampshire, as well as a Bachelor of Science in CiS from Post University. I joined the  
4 Unitil Information Technology department in January 2013 where I have personnel and  
5 technological responsibility for all aspects of the design, creation, delivery and support  
6 for Unitil's internal line of business applications and database systems. In total, I have  
7 nearly 25 years of professional experience with increasing levels of hands on technical  
8 and managerial responsibility covering a wide range of varied vertical domains, in  
9 addition to the Electric and Gas utility industry which has been my focus for the past 7  
10 plus years.

11 **Q. Ms. Hood, please state your name, business address, and position.**

12 A. My name is Kimberly Hood, I am Manager of Cyber Security and Compliance for Unitil  
13 Service Corp. ("USC"), which provides centralized utility management services to Unitil  
14 Corporation's subsidiary companies including Unitil Energy Systems, Inc. and Northern  
15 Utilities, Inc.

16 **Q. Have you previously testified before the Commission?**

17 A. No, I have not previously testified.

18 **Q. Please describe your educational and professional experience.**

19 A. I have 30 years of experience in a variety of information systems roles, including both  
20 programming and infrastructure. I have a BS in Computer Science from Oklahoma  
21 Christian University and a Master's Certificate in Cyber Security with a concentration in  
22 Power Systems from Worcester Polytechnic Institute. I joined Unitil in September of  
23 2012 where I am the Manager of Cyber Security and Compliance. I am responsible for  
24 cyber security policies and procedures, security awareness training, threat and  
25 vulnerability management, vendor security posture assessment, Industrial Control System  
26 (ICS) and SCADA infrastructure protection at electric substations and natural gas plants

1 and leading the Cyber Incident Response Team (CIRT). I manage both internal and  
2 external audits and assessments including SOX, NERC-CIP, PCI, C2M2/NIST  
3 Framework, and penetration testing. In addition, I am a member of the American Gas  
4 Association (AGA) Cyber Security Strategy Task Force, the Edison Electric Institute  
5 (EEI) Security Committee, and InfraGard NH and Boston.

6 **Q. On whose behalf are all of you testifying?**

7 A. We are testifying on behalf of Eversource and Unitil (collectively, Eversource and Unitil  
8 are “the Utilities”). Granite State Electric Company and EnergyNorth Natural Gas  
9 (jointly d/b/a “Liberty Utilities”) are not parties to this testimony.

10 **Q. What is the purpose of your joint testimony?**

11 A. The purpose of this testimony is to present what the Utilities see as viable possibilities for  
12 fulfilling the objectives of this docket, and by extension RSA 378:50-54 (the “Data  
13 Platform Law”), and to describe the associated levels of effort, costs, and implications of  
14 the options presented. The Data Platform Law became law following the passage of  
15 Senate Bill 284 (“SB 284”) from the 2019 legislative session on September 17, 2019.  
16 The New Hampshire General Court found in SB 284 that:

17 *Access to granular energy data is a foundational element for moving New*  
18 *Hampshire's electric and natural gas systems to a more efficient paradigm in*  
19 *which empowering consumers is a critical element. By enabling the aggregation*  
20 *and anonymization of community-level energy data and requiring a consent-*  
21 *driven process for access to or sharing of customer-level energy usage data, the*  
22 *state can open the door to innovative business applications that will save*  
23 *customers money, allow them to make better and more creative use of the*  
24 *electricity grid as well as other utility services, and facilitate municipal and*  
25 *county aggregation programs authorized by RSA 53-E. Such a program of robust*  
26 *data is also likely to be useful in local planning, conducting market research,*  
27 *fostering increased awareness of energy consumption patterns, and the adoption*  
28 *of more efficient and sustainable energy use. . .<sup>1</sup>*

---

<sup>1</sup> [http://gencourt.state.nh.us/bill\\_Status/billText.aspx?sy=2019&id=1077&txtFormat=html](http://gencourt.state.nh.us/bill_Status/billText.aspx?sy=2019&id=1077&txtFormat=html)

1 With these findings in mind, the Commission directed the utilities to explore the  
2 possibilities for a statewide online energy data platform that would allow utilities,  
3 customers and distributed energy market participants to access and share customer energy  
4 usage data to further the energy policy goals stated above.<sup>2</sup>

5 **Q. What have Eversource and Unitil done in this docket leading up to your testimony?**

6 A. The Commission opened Docket No. DE 19-197 on December 13, 2019 pursuant RSA  
7 378:51 to determine the following during an adjudicative proceeding: (1) the governance,  
8 development, implementation, change management, and versioning of the energy data  
9 platform; (2) standards for data accuracy, retention, availability, privacy, and security,  
10 including the integrity and uniformity of the logical data model; and (3) financial security  
11 standards or other mechanisms to assure third-party compliance with privacy standards.<sup>3</sup>  
12 Given these requirements for constructing a data platform in addition to the size and  
13 complexity of the project itself, cost implications are a primary consideration on whether  
14 to act, and if so, how to build a statewide platform to best serve New Hampshire. This is  
15 why the data platform law also directs the Commission to “defer the implementation of  
16 the statewide, multi-use, online energy data platform... if it determines that the cost of  
17 such platform to be recovered from customers is unreasonable and not in the public  
18 interest.”<sup>4</sup>

19 Several stakeholder technical sessions have been held since February, with robust  
20 participation and discussion throughout. The Utilities have been active participants  
21 during all of these meetings, offering feedback, industry expertise and insight to use cases  
22 as presented by the parties. The Utilities also provided presentations during technical  
23 sessions to facilitate and advance the dialogue among the parties as to possible viable  
24 options for creating a New Hampshire data platform with an aim towards functionality in

---

<sup>2</sup> December 13, 2019 NH PUC DE 19-197 Order of Notice [https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-197/ORDERS/19-197\\_2019-12-13\\_OON.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-197/ORDERS/19-197_2019-12-13_OON.PDF) at 1.

<sup>3</sup> *Id.*

<sup>4</sup> NH RSA 378:51, III

1 furthering modern energy policy while keeping costs in check. Following these robust  
2 exchanges of information, this testimony offers options for the Commission's  
3 consideration—should the Commission find that the cost is reasonable and a statewide  
4 data platform is in the public interest—that create a platform that meets the policy  
5 objectives and statutory requirements of RSA 378:51-54 with a focus on useful, secure,  
6 and cost-effective data platform possibilities for New Hampshire customers and energy  
7 market participants.

8 **Q. Do your companies have any general concerns pertaining to the subject matter**  
9 **being discussed in your testimony?**

10 A. While the goal is to fulfill the intent and purpose of the Data Platform Law, the Utilities  
11 are equally mindful of our customers' privacy, security, and cost issues along with the  
12 legal obligations that must be met in designing and operating such a platform. These are  
13 all necessary conditions to fulfilling the utility role in the Data Platform Law, and so we  
14 consider them with equal weight. RSA 378:52 states, in relevant part, "the utilities shall:  
15 I. Design and operate the energy data platform to provide opportunities for utilities, their  
16 customers, and third parties to access the online energy data platform and to participate in  
17 data sharing. II. Require, as a condition of accessing the online energy data platform, that  
18 a third party complete a qualification and registration process to ensure that any customer  
19 data downloaded from the platform remains in a safe, secure environment according to  
20 data privacy standards established by the commission. III. Administer the online energy  
21 data platform in a manner consistent with RSA 363:38." These critical considerations are  
22 reflected throughout the Utilities' recommendations to the Commission, as neither  
23 security nor privacy can be compromised by the creation or operation of a statewide data  
24 platform.

1 **Q. What data-sharing offerings do the Utilities already provide to New Hampshire**  
2 **customers and entities such as community aggregators?**

3 A. Before discussing if and how to design and build a statewide data platform, it is important  
4 to know how energy data is already being used and shared in New Hampshire, and the  
5 options the Utilities are currently offering customers to provide context to better inform  
6 the recommendations and proposals that the Commission is to consider. In addition to  
7 standard bill mailings or .pdf documents, the Utilities have a variety of data sharing  
8 systems that enable customer access for viewing, downloading, and sharing energy usage  
9 and interval data. Downloaded information is available in several formats, including  
10 Comma Separated Values (.csv) and/or eXtensible Markup Language (.xml). This  
11 downloadable information can be imported into various programs and applications by the  
12 customer, or the customers' vendor, for all manner of analysis.

13 Further, customers have options on how they choose to access their data. The Utilities  
14 have websites that provide access to data as well as applications that interpret and display  
15 data in a way that gives customers insight into controlling their energy usage. Between  
16 Eversource and Unitil, customers can access monthly, daily, and interval energy usage  
17 data via several web-based media and may have that data presented in a number of ways,  
18 and in several standard formats such as those previously mentioned.

19 Additionally, customers may authorize their Competitive Electric Power Supplier  
20 ("CEPS") or other service provider to access their monthly, daily, and interval data.  
21 Approved CEPSs can download current customer usage, demand data, and interval data  
22 along with 12 months of historical information via Electronic Data Interchange ("EDI").  
23 This information is provided in a variety of standard industry formats. There are data  
24 offerings for municipal and county entities, as well as approved representatives of  
25 municipal aggregation efforts. Upon request by an appropriate city or town official, the  
26 Utilities provide aggregated and anonymized usage data for all customers in that  
27 municipality by customer class. Likewise, upon request the Utilities provide reports of

1 anonymized data in .csv or spreadsheet formats to approved municipal representatives for  
2 the purpose of future municipal aggregation.

3 Data services provided by Utilities are evolving along with the technology that captures  
4 the data and customer energy usage. This is particularly true for interval data. Currently,  
5 Eversource offers a software tool—Energy Profiler Online (“EPO”)—that provides  
6 interval data with online load analysis, reporting, graphing, and download capabilities.  
7 Customers and customer-authorized third parties pay to access this data by using this  
8 software. The company is currently looking into the option of retrieving data from EPO  
9 using Green Button Connect (“GBC”), an excellent example of the versatility and  
10 interoperability of already-existing data services. Unitil’s customer engagement platform  
11 provides daily interval data with the inherent capability to offer hourly data to all  
12 customers with ongoing deployment of interval-based meters. Today, a limited number  
13 of Unitil customers have meters with 15-minute interval capability. As more Unitil  
14 customers get this capability, the company plans to deploy this functionality more  
15 broadly to accommodate such expansion.

16 If a customer chooses to do so, both Eversource and Unitil electric customers may elect  
17 to have direct interval data access. The Utilities offer tariff-based interval service to all  
18 customers and authorized parties. This service requires a specific meter installation  
19 which provides direct access to interval data (load pulse output). This interface is  
20 inherently secure since access is not through corporate systems and originates from an  
21 analog source. This service provides customers or their third-party energy partner with  
22 direct, real-time access to meters and energy use data for analysis or troubleshooting.  
23 Customers may choose direct interval data access in order to have access to their energy  
24 data in real-time and make contemporaneous decisions about usage. A limited number of  
25 customers have chosen to utilize this service at this time.

1 Data is currently provided in files and reports directly from Utility information systems,  
2 via automated file transfer mechanisms, to internal and external consumers. These  
3 include files sent from Customer Information System (“CIS”) to suppliers via EDI  
4 transfers, Green Button Download My Data, and others. At Eversource, EPO receives  
5 interval data in a variety of file formats. Users access the online application with a user-id  
6 and password for load analysis and data download. Vendor registration and customer  
7 authorization is conducted manually by the utility. There is a fee for this software and file  
8 transfer services, as defined in the relevant tariff<sup>5</sup> for example, as part of load pulse  
9 output or extended metering services.

10 The following lists some specific examples of the Utilities’ data offerings:

- 11 • Monthly usage data in tabular format or in a bar chart (Eversource and Unitil).
- 12 • Daily usage data in tabular format or bar chart (Unitil).
- 13 • Usage data via mobile application (Eversource).
- 14 • “Green Button Download My Data”: instant access to download usage data  
15 via CSV or XML format for up to 13 months. (Eversource and Unitil). Unitil  
16 also provides daily usage data via this application.
- 17 • Data usage emailed to the customer by visiting the utility website or by calling  
18 customer service operations (Eversource and Unitil).
- 19 • Tailored customer energy analysis to a subset of gas and electric customers  
20 comparing individual usage to nearby or regional customer usage (Unitil and  
21 Eversource).

22 **Q. What experiences do the Utilities have to inform incremental cost-benefit analyses**  
23 **to provide additional data usage sharing services?**

24 A. To date, there has been limited discussion regarding quantitative benefits from enhanced  
25 utility data sharing offerings. In an attempt to address this lack of dialog while

---

<sup>5</sup> See Eversource’s current tariff, pg 34: [https://www.eversource.com/content/docs/default-source/rates-tariffs/electric-delivery-service-tariff-nh.pdf?sfvrsn=7fb7f062\\_62](https://www.eversource.com/content/docs/default-source/rates-tariffs/electric-delivery-service-tariff-nh.pdf?sfvrsn=7fb7f062_62)

1 maintaining a collaborative perspective to enable stakeholder use cases, the Utilities are  
2 offering a suite of possible data platform options for the Commission to consider in this  
3 testimony. To facilitate future use cases and development, the Utilities' methodology  
4 behind these options will enable iterative, incremental and enhanced functionality as  
5 customer needs demand. This approach provides flexibility to measure usefulness  
6 coupled to currently unknown needs over time. The Utilities do not recommend building  
7 out a perceived full architecture without an assessment of how and how often the  
8 platform will be used by customers and third parties alike.

9 There is a consistent trend with the data offerings that raises questions as to the value of  
10 investing in a data platform. Today, customers may download, and otherwise use their  
11 energy usage data for a variety of reasons. But to date, very few customers have  
12 leveraged these options. Eversource's IT department's findings show in 2019, fewer than  
13 0.1% of Eversource customers downloaded their energy usage data. While it is clear that  
14 this docket seeks to enable expanded uses for energy usage data designed for additional  
15 user types, the uses and users discussed above have significant overlap with this docket's  
16 objectives. The Utilities believe the limited engagement with current data service  
17 offerings should be taken into account when deciding the size and scope of a statewide  
18 data platform for New Hampshire. Alternatively, the Utilities understand that automating  
19 the transfer of energy data might spur more use. The actual use of customer energy data  
20 will of course be taken into consideration in the benefits when determining the cost  
21 effectiveness of implementing any solution. If the platform is utilized, it should be  
22 because the benefits of such a platform are clearly defined and demonstrated to provide  
23 meaningful value to a sizeable number of customers.

24 **Q. How do the current utility offerings in New Hampshire compare with other**  
25 **jurisdictions?**

26 A. For comparison and context, the Utilities have collected information on efforts in five  
27 jurisdictions that either have been raised by parties to this docket as examples (California,

1 Texas, and New York) or are jurisdictions where the Utilities also operate (Massachusetts  
 2 and Connecticut). These varied examples provide comparative context which can in turn  
 3 inform the development of data sharing in New Hampshire.

#### 4 **California:**

5 In response to a 2014 order by the California Public Utilities Commission, the three  
 6 Investor-Owned Utilities (IOUs) in California: Pacific Gas and Electric (PG&E), San  
 7 Diego Gas & Electric (SDG&E), and Southern California Edison (SCE) developed  
 8 platforms where customers could share data with third parties.<sup>6</sup> The California utilities  
 9 have smart interval meters and the infrastructure to store interval data for all customers.  
 10 Each of the IOUs provided access to their customers' energy usage data using a common  
 11 standard, specifically the GBC standard. Each utility has their own vetting and  
 12 onboarding processes and testing/rules for third parties. Third-party software providers  
 13 decide which utilities (and utility customers) they want to work with.

14 GBC allows customers to send their electric and gas utility energy use data directly to  
 15 third-party software applications via an Application Programming Interface ("API"). An

Customer Type	Category	Application Type
<input type="checkbox"/> Commercial & Industrial	<input type="checkbox"/> Benchmarking	<input type="checkbox"/> Desktop Application
<input type="checkbox"/> Residential	<input type="checkbox"/> Building Analysis	<input type="checkbox"/> Email based analysis
	<input type="checkbox"/> Competition	<input type="checkbox"/> Mobile Device (Android)
	<input type="checkbox"/> Demand Management	<input type="checkbox"/> Mobile Device (iOS)
	<input type="checkbox"/> Distributed Energy Resource	<input type="checkbox"/> RESTful API
	<input type="checkbox"/> Electric Vehicles	<input type="checkbox"/> Web-based
	<input type="checkbox"/> Energy Management	
	<input type="checkbox"/> Environmental	
	<input type="checkbox"/> Gas	
	<input type="checkbox"/> Offers and Rewards	
	<input type="checkbox"/> Solar	
	<input type="checkbox"/> Survey	

Select any filter and click on Search to see results

**FIGURE 1: SDG&E'S THIRD-PARTY SOFTWARE FILTERING TOOL, HIGHLIGHTING TYPES OF THIRD-PARTY SOFTWARE PROVIDERS.**

<sup>6</sup> CPUC Decision 14-05-016 "Decision Adopting Rules To Provide Access To Energy Usage And Usage-Related Data While Protecting Privacy Of Personal Data" (May 1, 2014).

1 API is simply software that allows two different applications to talk to each other. The  
2 following is San Diego Gas & Electric's filtering tool for customers to help them select  
3 services and third-parties who provide these selected services.<sup>7</sup> Figure 1 has been  
4 included to show the types of vendors and services that the Utilities anticipate being  
5 interested in being authorized to access customer energy data in New Hampshire.  
6 According to SDG&E's website, the energy use data includes up to 13 months of smart  
7 meter energy usage data, for every hour (Residential) or 15 minutes (Business) of every  
8 day.<sup>8</sup> Electricity energy usage data is available through both Green Button options:  
9 Download My Data and Connect My Data.

10 **Texas:**

11 The Smart Meter Texas (SMT) portal was deployed in 2008 when the state deployed  
12 what were described as advanced meters, for that time. The portal enables consumers to  
13 download and access their smart meter data. SMT hosts a website which stores daily,  
14 monthly and 15-minute interval energy data recorded by smart meters, providing secure  
15 data access to customers, Retail Electric Providers ("REP"s), and Competitive Services  
16 Providers ("CSP"s; third parties) including through Green Button. One of the goals of  
17 SMT is to enable customers to better manage their energy consumption to lower their  
18 monthly electric bills and benefit from new products and services offered by REPs and  
19 CSPs.

20 SMT represents a joint venture between the four IOUs contract to a third party for the  
21 development and operation of the platform based on their share of customers. In 2016,  
22 73,000 residential and business customers out of 7.15 million<sup>9</sup> (one percent of customers)  
23 were registered on the SMT website to access their data, many of which are associated  
24 with a state-mandated program for low income participants, or more expensive on-site

---

<sup>7</sup> <https://www.sdge.com/businesses/pay-bill/green-button>

<sup>8</sup> <https://www.sdge.com/green-button>

<sup>9</sup> <https://www.saveonenergy.com/learning-center/post/how-reliable-are-texas-largest-utilities/>

1 solar installations. Texas designed meter data networks specifically intended to facilitate  
2 data analysis and management services.<sup>10</sup>

3 The Electric Reliability Council of Texas (ERCOT) is networked to track customer  
4 supply services, and notifies utilities when customers select a retail electric provider (i.e.,  
5 Reliant), allowing data on SMT to be shared with the electric provider without separate  
6 customer authorization. The SMT budget for 2020 was reported to exceed nine million  
7 dollars, nearly all of which is devoted to ongoing maintenance of the system.<sup>11</sup>

8 **New York:**

9 In April 2018, the New York State Public Service Commission (PSC) issued the *Order*  
10 *Adopting the Utility Energy Registry* in CASE 17-M-0315. The Order requires utilities  
11 under PSC regulation to develop and report community energy use data to the Utility  
12 Energy Registry (UER). The UER is a database platform managed by the New York  
13 State Energy Research and Development Authority (NYSERDA) that provides  
14 streamlined public access to aggregated, community-scale, utility-reported energy data.  
15 The UER does not contain private data, addresses, names, or individual account  
16 information.

17 The PSC has addressed GBC implementation in the 2016 Distributed System  
18 Implementation Plan (DISP) Guidance Order<sup>12</sup> and the 2018 Accelerated Energy  
19 Efficiency (“EE”) Order<sup>13</sup>. Currently, two New York utilities have fully adopted GBC,  
20 and those utilities have had three third parties register for access to the data, with ten  
21 more in the process of registration. ConEd reported that, from the time period between

---

<sup>10</sup> <https://eepartnership.org/wp-content/uploads/2016/10/Meter-Data-Access-Report-FINAL.pdf>

<sup>11</sup> [http://interchange.puc.texas.gov/Documents/49730\\_2\\_1050709.PDF](http://interchange.puc.texas.gov/Documents/49730_2_1050709.PDF)

<sup>12</sup> Case 14-M-0101, *Order Adopting Distributed System Implementation Plan Guidance* (issued April 20, 2016) (DSIP Guidance Order).

<sup>13</sup> Case 18-M-0084, *In the Matter of a Comprehensive Energy Efficiency Initiative, Order Adopting Accelerated Energy Efficiency Targets* (Issued December 13, 2018) (Accelerated EE Order).

1 April to October 2019, only 362 of its customers had shared data via GBC. New York  
2 also ordered a pilot data platform be implemented with the assistance of a third party.<sup>14</sup> A  
3 utility was selected for being able to test many of the desired data sharing functionalities,  
4 but data was limited to a subset of items to reduce complexity and streamline  
5 development and testing. Currently over 20 DER industry participants are registered  
6 users of the pilot. Users are actively providing feedback so that the utility and third-party  
7 contractors operating the platform can make adjustments as necessary.

8 The PSC, along with efforts from NYSEERDA, is currently exploring the possibility of a  
9 different modality of data sharing via an Integrated Energy Data Resource. Delegating  
10 the inquiry to NYSEERDA, and the information on the volume and variety of information  
11 NYSEERDA has deemed necessary for a proper assessment of viability, indicate that this  
12 is a complex project.<sup>15</sup> The probability that this project will be implemented is unknown  
13 at this time.

#### 14 **Massachusetts:**

15 The Mass Save Data (“MSD”) website<sup>16</sup> is jointly sponsored by all Massachusetts EE  
16 Program Administrators (“PA”s).<sup>17</sup> MSD provides uploaded EE performance data but has  
17 been applied to provide monthly usage data by sector (residential and commercial) and  
18 town. The MSD website also includes monthly usage data by town, and has been used  
19 by towns to track their progress toward greenhouse gas emission reduction goals.<sup>18</sup>  
20 Currently, electric MWh and gas therms usage data is uploaded on an annual basis during

---

<sup>14</sup> Case 18-E-0130, *In the Matter of Energy Storage Deployment Program, Order Establishing Energy Storage Goal and Deployment Policy* (issued December 13, 2018) (Storage Deployment Order).

<sup>15</sup> To assess viability, NYSEERDA put out an RFI on the following: Program Management; Development of the IEDR Architecture; Development and Integration of IEDR Detailed Designs and Specifications; Deployment and Integration of Components and Services; Testing and Commissioning the IEDR’s Capabilities; System Administration; and System Operations for 5 Years After Completion of Commissioning.

<sup>16</sup> <https://www.masssavedata.com/public/home>

<sup>17</sup> The Massachusetts program administrators include: Eversource, Unitil, Liberty, National Grid, Cape Light Compact, Berkshire Gas, and Columbia Gas of Massachusetts.

<sup>18</sup> <https://www.masssavedata.com/Public/GeographicSavings?view=C>

1 the subsequent year. Recently the Metropolitan Area Planning Council released a tool  
2 that guides communities in inventorying their greenhouse gas emissions and refers  
3 communities to use MSD to acquire usage data to further the efforts to reduce greenhouse  
4 gases.<sup>19</sup> Aggregated usage data by town is shown on the website. To protect customer  
5 privacy, residential data is only shown when it represents a minimum of 100 households.  
6 Commercial data is shown when there is a minimum of 15 accounts and no single  
7 account represents more than 15 percent of the total usage.

8 As a privacy protection the Massachusetts Department of Public Utilities set forth  
9 aggregation standards used by the PAs.<sup>20</sup> The standards call for the PAs to aggregate  
10 data, including combining geographic areas, until the minimum aggregation level is  
11 achieved. Additionally, PAs have legal and contractual obligations to protect customer  
12 data and privacy. The Massachusetts PAs have spent approximately \$600,000 since 2013  
13 on the development, enhancement, and maintenance of the MSD website which includes  
14 energy efficiency performance data in addition to the usage data by town. This does not  
15 include PA staff time and other costs to collect, compile, and upload the data to the  
16 website.

17 **Connecticut:**

18 Connecticut has an energy efficiency performance dashboard where the most recent  
19 annual usage (currently 2019) data is shown by sector (households and businesses) and  
20 town.<sup>21</sup> The data is shown as electric (kWh) and natural gas usage (ccf). The  
21 Connecticut dashboard cost less than \$200,000 for the original design build and the  
22 annual maintenance is approximately \$80,000. These statewide costs are shared among  
23 the utilities that operate in the State. This does not include staff time and other costs to  
24 collect, compile, and upload the data to the website.

---

<sup>19</sup> <https://www.mapc.org/planning101/community-ghg-assessment/>

<sup>20</sup> See D.P.U. 14-141, at 6-7.

<sup>21</sup> <https://www.ctenergydashboard.com/Login.aspx>

1 **Q. Do the Utilities have a proposed framework for a data platform, or options for**  
2 **functionality that would satisfy the objective of the Data Platform Law in New**  
3 **Hampshire?**

4 A. Yes. RSA 378:50-54 provides clear direction on several foundational components of the  
5 online energy data platform, and the Utilities have worked to ensure that these items are  
6 incorporated into the proposed design presented as part of the “straw proposal”. Two of  
7 these foundational components are at the core of this proposal as required by the enabling  
8 statute: (1) suitability for Green Button Alliance approval, and (2) the creation of and  
9 adherence to a “logical data model”. The Utilities recognize that there are numerous  
10 functional use cases of value to interested parties that warrant consideration for inclusion  
11 in options for platform design. Development of the unique functionality necessary to  
12 support the specific data and output for all desired outcomes would require an enormous  
13 and potentially unrealistic level of up-front design and requirements gathering, likely  
14 necessitating a traditional “Waterfall” style software development lifecycle. “Waterfall”  
15 projects – where project activities occur in linear, sequential phases – by their nature  
16 traditionally incur a much longer time-to-launch trajectory with all of the accompanying  
17 cost and obsolescence risks that can follow. In an attempt to avoid this, the Utilities  
18 propose an “enabling platform” that securely provides a core set of customer energy  
19 usage and billing data points in a standardized data format. The Utilities refer to this  
20 architecture as a “Virtual Energy Data Platform”, the structure of which is depicted in  
21 Figure 2.

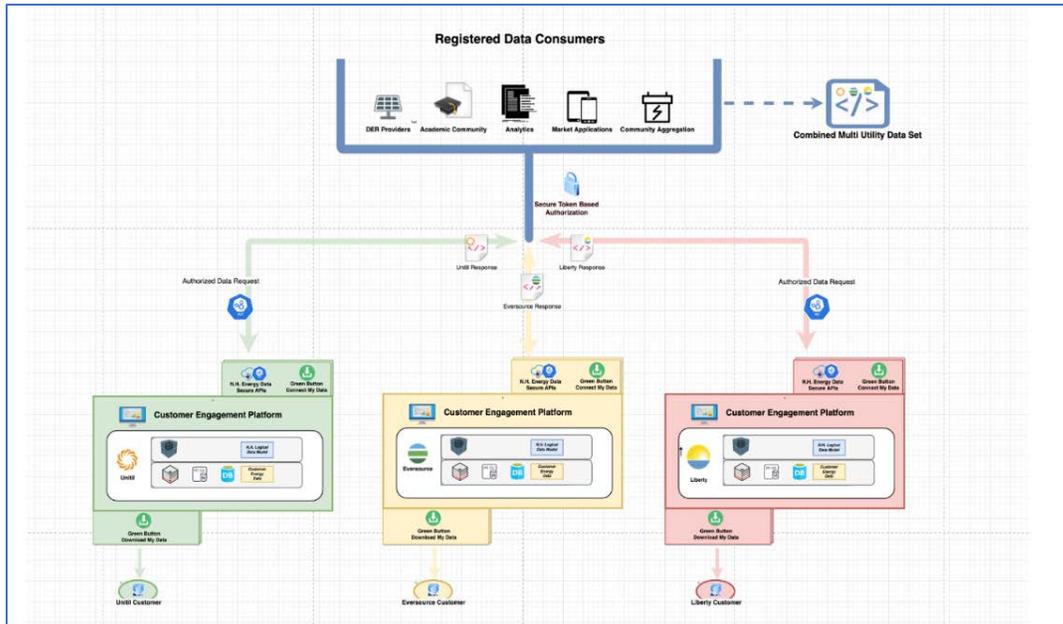


FIGURE 2: VIRTUAL ENERGY DATA PLATFORM

1 The Utilities are proposing an Agile implementation approach along with a modular  
 2 architecture that is well suited for this type of iterative methodology. The process will be  
 3 based on a collaborative platform backlog that will be prioritized by the stakeholder  
 4 group to ensure that the highest value items are being worked and delivered at any given  
 5 time. Employing an Agile approach will allow for the enabling platform functionality and  
 6 functional enhancements to be delivered incrementally as cost-benefit justification  
 7 warrants. Doing so, enables a more contemporaneous stakeholder feedback loop and  
 8 helps to avoid imprudent spending and technological and functional obsolescence. The  
 9 architecture proposed by the Utilities is well suited for this type of iterative cost-benefit  
 10 driven methodology.

11 **Q.** *Why do the Utilities prefer a decentralized design as opposed to a central database?*

12 **A.** In the Utilities' assessment a virtual platform is superior to a centralized data warehouse.  
 13 Recognizing that a single, centralized, physical data warehouse exists as one of many  
 14 possible architectural models for such a platform, the Utilities believe that a modular, and

1 primarily decentralized, design will allow for maximum cost/benefit justified flexibility  
2 while minimizing many of the data security, privacy, and governance complexities and  
3 risks which come from a centralized database. Protecting the privacy, integrity and  
4 security of customers' data is a paramount concern for the Utilities. Furthermore, the  
5 most significant implementation costs will result from the work supporting the utility  
6 back-end integrations and the extraction and translation of the utility-specific data and  
7 data stores. This work must be completed whether the platform is decentralized as  
8 proposed, or through the use of a centralized database architecture. Therefore, it is  
9 reasonable and appropriate to adopt the platform that will deliver the most value from this  
10 effort.

11 The virtual platform model is designed to be extensible in an effort to provide the greatest  
12 level of cost mitigation and flexibility. Recognizing the need for cost prudence subject to  
13 Commission determination pursuant RSA 378:51, III, and demonstrating the modularity  
14 of the architecture, the Utilities are proposing three potential options for the "starting  
15 point" of the platform. Each option presented has successively more functionality. Based  
16 on the outcome of the appropriate cost-benefit analysis, the Commission should choose  
17 the most prudent configuration for the platform representing the "minimum viable  
18 product" at such time. In the future, if incremental cost justification and customer usage  
19 goals are met, the decision may be made to expand and extend functionality.

20 **Q. Are there any overall issues and value to consider before comparing the different**  
21 **options proposed by the Utilities?**

22 A. Yes. All three of the proposed platform configuration options contain the following core  
23 components that would be shared across the state's utilities:

- 24 • Logical Data Model
- 25 • Single Customer Data Download via Green Button standards
- 26 • Single Customer Data Sharing via Green Button standards
- 27 • Aggregate Customer Data Download

1        Logical Data Model<sup>22</sup>

2        Regardless of the ultimate format of a platform, each of the NH gas and electric utilities  
3        will have unique challenges associated with the process of mining and combining  
4        customer energy data from individual, disparate systems to the platform. Numerous  
5        technical and non-technical hurdles exist with retrieving and processing the data  
6        necessary to support the platform. For example, these data may exist in various vendor  
7        relational database systems, they may exist in flat or unstructured data files, or even in  
8        legacy mainframe systems. All of these scenarios will require the utilities' IT  
9        departments to implement data extraction and parsing systems (the "extract" portion of  
10       the traditional ETL, or extract, transform and load model), representing a complex and  
11       non-trivial exercise.

12       After each utility has completed all of the work necessary to identify and extract the  
13       required data from internal systems, a second challenge unique to each company arises:  
14       combining all of the data as the result of these "extraction" efforts into a single, cohesive,  
15       data set that can be interpreted and processed by third-parties (the "transform" portion of  
16       the ETL model). Without complex standardization and coordination across the utilities,  
17       this would be a near impossibility. The introduction of a "Logical Data Model" attempts  
18       to solve some of these problems.

19       The model provides a common abstraction with agreed upon semantics for field names  
20       and data conventions, allowing the utilities to "speak the same language" with common  
21       terms and agreed upon units of measurement. The Energy Service Provider Interface  
22       (ESPI) data standard released and maintained by the North American Energy Standards  
23       Board (NAESB) is proposed to be used as the basis for the model. If data fields are

---

<sup>22</sup> Under RSA 378:51, The data platform is to allow for sharing of individual customer data consistent with the opt-in requirements for third-party access specified in RSA 363:38 and...adhere to a common statewide logical data model that defines the relationships among the various categories of data included in the platform.

1 required that are above and beyond what is offered in the ESPI model, the desired  
2 approach is to work with the governing body to extend the model, however the standard  
3 is already quite robust containing constructs for various energy usage components such  
4 as: Usage Points, Meter Readings, Intervals, Reading Types, etc.

5 The Utilities' proposed Logical Data Model will act as a "mapping layer" that sits on top  
6 of the native utility data sets. Because of this mapping layer, utilities would not need to  
7 make any changes to their existing back end systems to support this. However, it would  
8 still require a non-trivial data mapping exercise. Adherence to this logical data standard  
9 is a cornerstone of the "Virtual Energy Data Platform" as this is what allows multi-utility  
10 data to be combined by the API consumer.

11 Single Customer Data Download and Single Customer Data Sharing via Green Button  
12 standards

13 All proposed configurations of the Utilities' proposed Virtual Energy Data Platform  
14 specify the use of Green Button Download My Data to provide single customer energy  
15 usage data sets directly to the customer. The utilities would allow customers to download  
16 their own energy usage data directly from their customer engagement platforms using the  
17 Green Button Download My Data standard, and the platform Logical Data Model by  
18 design will support this capability. Note that the Green Button standard does not  
19 presently accommodate multi-customer aggregated data, and as a result, a different  
20 standardized file format will be employed for that data.

21 Green Button Download My Data allows access to energy usage data directly by a retail  
22 customer from the utilities' consumer-facing web portals, using a standard web browser.  
23 Vendors wishing to consume data in this format would need to code and create their own  
24 tools to read the downloaded files accessed via API. As an alternative, a helper style  
25 sheet can also be downloaded that allows the XML data to be transformed into a more  
26 "human readable" format. In addition, the platform can alternatively provide a

1           downloadable comma-separated values (CSV) file to support smaller third parties who do  
2           not have the technical capabilities to process a Green Button XML file.

### 3           Aggregate Customer Data Download

4           In addition to the individual customer level energy data discussed above, SB 284 also  
5           provides a purpose for the platform to facilitate access to aggregated data, stating that:  
6           “By enabling the aggregation and anonymization of community-level energy data and  
7           requiring a consent-driven process for access to or sharing of customer-level energy  
8           usage data, the state can open the door to innovative business applications that will save  
9           customers money as well as facilitate municipal and county aggregation programs  
10          authorized by RSA 53-E.”<sup>23</sup> In the data platform options provided below, varying  
11          degrees of utility-provided data aggregation tools are offered for consideration of value  
12          and usefulness.

13   **Q.    Can you explain the major functionality and design of each of the three options?**

14   **A.**    In the view of the Utilities, each of the three options presented below represent a possible  
15          viable product for the platform. Assuming a favorable outcome of any prospective  
16          incremental cost analysis, these options could also serve as a starting point for future  
17          enhancements and additions. By design, each of the options below builds on the prior in  
18          terms of functionality and relative ease of use while implementing the core platform  
19          components described above. The Utilities view Options 1, 2, and 3 as the successively  
20          enhanced solutions, and successively more expensive, tailored to address many of the use  
21          cases and user stories submitted during this docket process. The aim is to present  
22          incremental benefits that can be quantified such that the Commission is able to  
23          understand and ultimately select the solution offering the best value for customers. The  
24          platform options as presented allow for incremental development due to the flexibility  
25          and scalability of the approach.

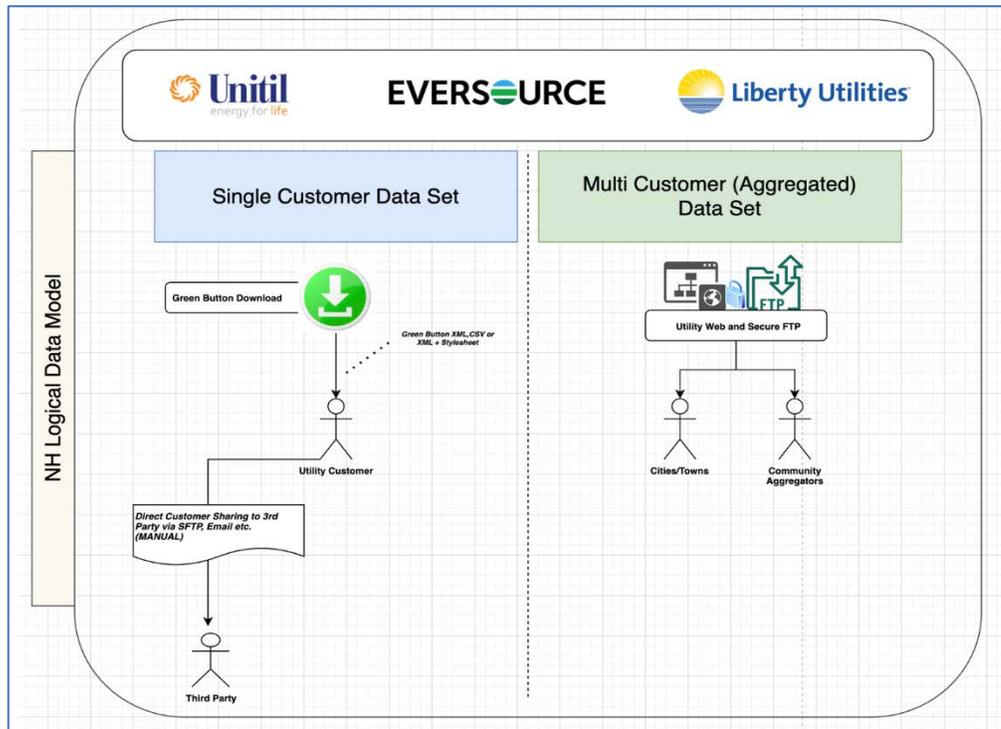
---

<sup>23</sup> [http://gencourt.state.nh.us/bill\\_status/billText.aspx?sy=2019&id=1077&txtFormat=html](http://gencourt.state.nh.us/bill_status/billText.aspx?sy=2019&id=1077&txtFormat=html)

1        Option 1 – Green Button Download My Data

2        This proposed option is an extension of the Green Button Download My Data option that  
3        already exists where customers can, with a few clicks, download a file of their usage that  
4        they may analyze or supply to others for analysis and use on the customer’s behalf. The  
5        addition of the logical data model to this existing function would allow data sets to be  
6        combined by either the customer or by a customer-authorized third party.

7        Customers interested in procuring their own usage information will download their data  
8        directly in XML format from each of their utilities using a web browser and the Green  
9        Button Download My Data feature. CSV file alternatives to the XML format are also  
10       provided in addition to one or more “stylesheets” that can be used to render the XML in a  
11       more “human-friendly” format. “Stylesheets” are similar to reports and provide a user-  
12       friendly output. Liberty Utilities endorses the three option designs, and so their logo has  
13       been included in figures depicting all three options solely for this limited purpose.



**FIGURE 3: OPTION 1 – GREEN BUTTON DOWNLOAD MY DATA**

1 The Option 1 platform does not provide any automated data sharing, however the  
 2 combination of the logical data model and the Green Button Download My Data  
 3 capabilities allow the customer to manually download, combine the data files  
 4 downloaded from other utilities (in the case of a multi-utility customer, for example), and  
 5 manually share that data with third parties of the customer's choosing through a variety  
 6 of potential means (including email, secure upload etc.)

7 Unlike the single customer use case, a standard output form for this aggregated data does  
 8 not exist which could make combining these data sets across multiple utilities  
 9 cumbersome without an alternative. With Option 1, the utilities would continue to use  
 10 their existing processes for generating aggregated data files but would agree to an Excel  
 11 format implemented across all participating utilities that could be easily combined for  
 12 multi-utility analysis, and also agree on a standardize means of transmitting this data.

1 While developing a meaningful cost estimate cannot reasonably happen until the scope of  
 2 the potential project has been defined, what is clear is that because this option would  
 3 represent only a relatively small expansion of the utilities' current offerings, it would be  
 4 the least costly to implement and would have the shortest development timeline.

### 5 Option 2 – Green Button: Download and Connect My Data

6 With Option 2, single customer data downloads are handled in the same manner as in  
 7 Option 1, leveraging the power of the logical data model and Green Button Download

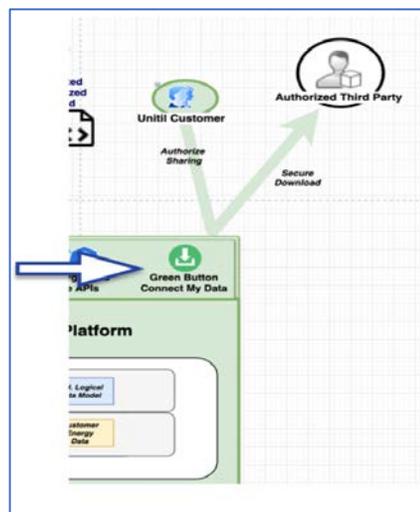


FIGURE 4: GREEN BUTTON CONNECT MY DATA

8 My Data as the means for accessing data. Where Option 2 differs from Option 1 is the  
 9 introduction of the GBC protocol for automated data sharing as well as the introduction  
 10 of the distributed “NH Utility Energy Data Sharing APIs” which are described in more  
 11 detail below. This option is the preferred option of the Utilities as the platform starting  
 12 point.

13 Single customer data download capability is implemented the same manner as Option 1  
 14 leveraging the Green Button Download My Data feature, but with simplified usability by

1 mitigating the manual sharing process. The use of GBC APIs will allow the Utilities to  
2 automate customer authorization and secure delivery of data directly to authorized third  
3 parties, adding ease of use and reducing complexity for customers.

4 GBC requires implementing multiple standards:

- 5 • NAESB REQ.21 Energy Services Provider Interface <sup>24</sup> and
- 6 • IETF OAuth 2.0 (RFC 6749 and RFC 6750).<sup>25</sup>

7 Using these standards will provide a retail customer with the ability to “authorize” a  
8 verified third party to access data provided by the utilities without any further interaction  
9 with the retail customer. The standards support the ability for the utilities to implement  
10 restricted access to these endpoints based on various screening and approval steps  
11 performed by the utilities for a given third party. Similar to data downloaded using the  
12 Green Button Download My Data standard, vendors would need to code and create their  
13 own tools to read the XML files access via the APIs. Helper style sheets can be provided  
14 to assist with rendering these XML data files into something that is more “human  
15 friendly”.

16 For aggregated or multi-customer data, in Option 2, each utility will expose a library of  
17 decentralized APIs allowing for automated retrieval and processing of multi-customer  
18 data by approved third-parties.

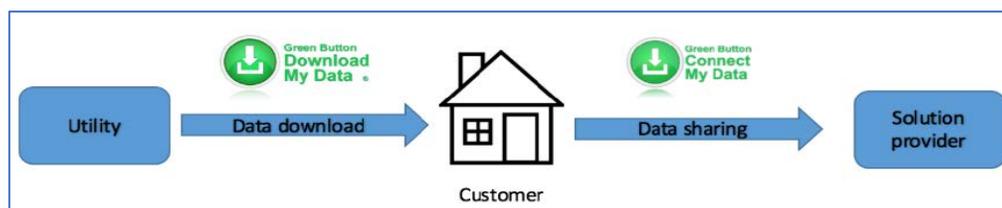


FIGURE 5: GREEN BUTTON DOWNLOAD AND CONNECT MY DATA OVERVIEW

<sup>24</sup> REQ.21 – Energy Services Provider Interface, NAESB 2010, [http://www.naesb.org/ESPI\\_Standards.asp](http://www.naesb.org/ESPI_Standards.asp)

<sup>25</sup> The OAuth 2.0 Authorization Framework, RFC 6749, <http://www.ietf.org/rfc/rfc6749.txt>

1 Each Utility will expose a standard set of REST<sup>26</sup> accessible APIs over Secure Socket  
2 Layer connections. The interface for these APIs, as well as the data formats returned will  
3 be exactly the same for each implementing utility and will provide standard interfaces for  
4 on-demand or scheduled energy data transfers to external requestors. Even though the  
5 back-end logic for extracting and transforming the data for each utility will be unique, the  
6 APIs will be programmed against the logical data model abstraction, ensuring simple  
7 combination of multiple Utility data sets irrespective of underlying differences in data  
8 storage, nomenclature and processing.

9 The APIs will implement standard token-based authentication and authorization similar  
10 to ISO-NE's API model and will return cleansed, validated and cryptographically secure  
11 data sets enabling the creation of any number of market applications and analyses.

12 Vendors and third parties will need to request and receive an API access token in order to  
13 request data from the APIs. The API access tokens can be crafted to allow and deny  
14 access to specific granular data and data types. Once authorized, vendors and third-parties  
15 can automate analytics and combining of data using the APIs and programmatic means.  
16 Figure 6 depicting Option 2 shows how single customer energy data downloads would  
17 work using both Green Button Download and Connect My Data as well as how a multi-  
18 customer (aggregated) energy use would work in a town, for example, that has areas  
19 served by three utilities.

---

<sup>26</sup> "RESTful Web services: The basics", IBM Developer Works,  
<https://www.ibm.com/developerworks/webservices/library/ws-restful/>

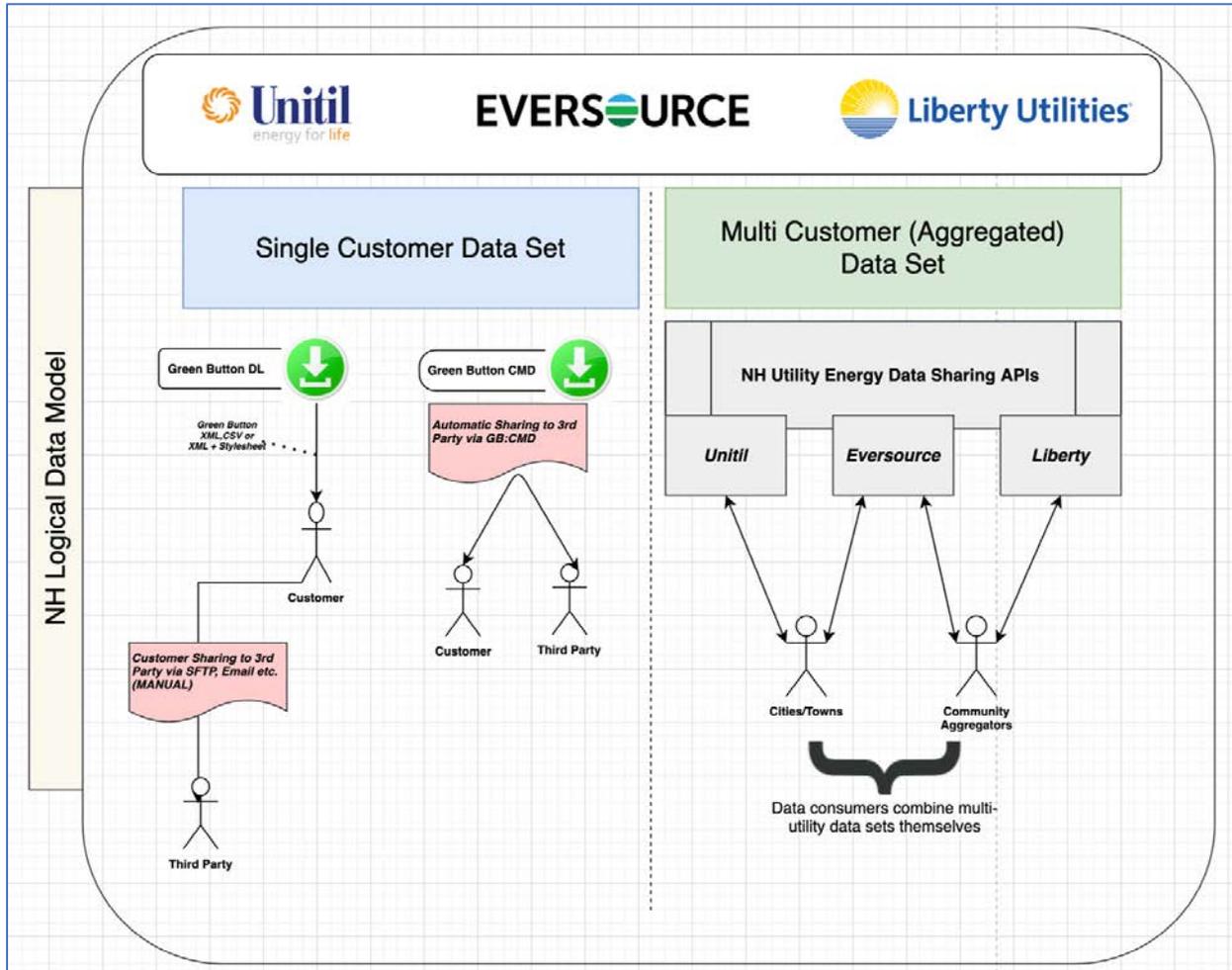


FIGURE 6: OPTION 2 – GREEN BUTTON DOWNLOAD AND CONNECT MY DATA

1 Option 2 would entail additional costs beyond those of Option 1 to modify and prepare  
 2 utility systems to successfully and seamlessly make use of the GBC protocols and  
 3 processes, and additional incremental ongoing maintenance costs would exist with this  
 4 option. Ultimately, any proposed platform will need to pass the Commission’s cost-  
 5 benefit analysis; in the Utilities’ judgment, the proposed Option 2 offers the greatest  
 6 likelihood for a cost-beneficial outcome for customers, while still allowing room for later  
 7 enhancements should they be warranted and justified.

1        Option 3 - Green Button: Download and Connect My Data plus Aggregation

2        All of the core features described in Options 1 and 2 are present in Option 3. In this  
3        version of the platform, the data retrieval process is streamlined and additional features in  
4        the areas of data representation and presentation have been enabled. In particular, Option  
5        3 has been designed to enable pre-assembly of utility data to simplify aggregation and  
6        data combinations described in Options 1 and 2. The additional development and  
7        management required of these convenience features increases the cost and scope of the  
8        platform; substantially, the Commission must weigh whether the significant incremental  
9        costs are justified by such enhanced functionality.

10       Virtual Data Mart - Aggregation and Brokering

11       The decentralized API model introduced in Option 2 enables many of the desired  
12       platform use cases described by stakeholders during our technical discovery sessions, but  
13       not without some additional work by the consumers of the data. For example, as depicted  
14       in Option 2, to retrieve and build an aggregated data set across all participating utilities,  
15       the consumer is required to make multiple API calls (one to each participating utility end-  
16       point) and combine the data themselves.

17       The Utilities recognize that although technically feasible, this may not represent the ideal  
18       user experience, and have designed the platform to be purpose built to allow for an  
19       “aggregation” endpoint or an “API of APIs”. Doing so introduces an additional,  
20       centralized, API gateway allowing for authorized consumers to make a single call to a  
21       centrally exposed statewide API that, assuming the appropriate access tokens are in place,  
22       would broker calls behind the scenes to each of the individual utility APIs and aggregate  
23       the data based on to be defined industry aggregation standards, to deliver the combined  
24       multi-utility data set seamlessly. Thus, the same data and data sets would be made  
25       available to the customer as in Option 2, but that information would be provided through  
26       a single interface rather than through interactions with each utility. For individual  
27       residential customers, the incremental benefit would likely be minimal. However, to

1 entities like commercial customers with locations in the territories of multiple utilities,  
2 the added convenience would likely be more valuable.

### 3 Virtual Data Mart - Centralized Web Portal

4 The API architecture proposed would also readily facilitate the creation of a centralized  
5 Web Portal that provides combined and aggregated data by municipality should the  
6 incremental cost/benefit analysis justify this work. This web portal could provide  
7 formatted reporting, stylesheets, templates and other user-friendly ways to consume  
8 aggregated data and would utilize the aggregation service and the decentralized APIs  
9 provided by the virtual platform.

### 10 Virtual Data Mart – System and Third-Party Data

11 As depicted below in Figure 7, Option 3 also introduces the ability for viewing limited  
12 forms of system level data from the utilities and provides that data via the Virtual Data  
13 Mart. The specific types of system data offered will ultimately be determined by security  
14 considerations and the outcome of other Commission proceedings, such as the ongoing  
15 Grid Modernization docket. The Utilities acknowledge that a  
16 variety of approaches exist to solve this problem, each accompanied by unique  
17 challenges, complexities, and costs considerations. A full cost-benefit analysis must be  
18 performed to determine the value and desirability of this functionality before committing  
19 to an overly complex (and potentially expensive) solution.

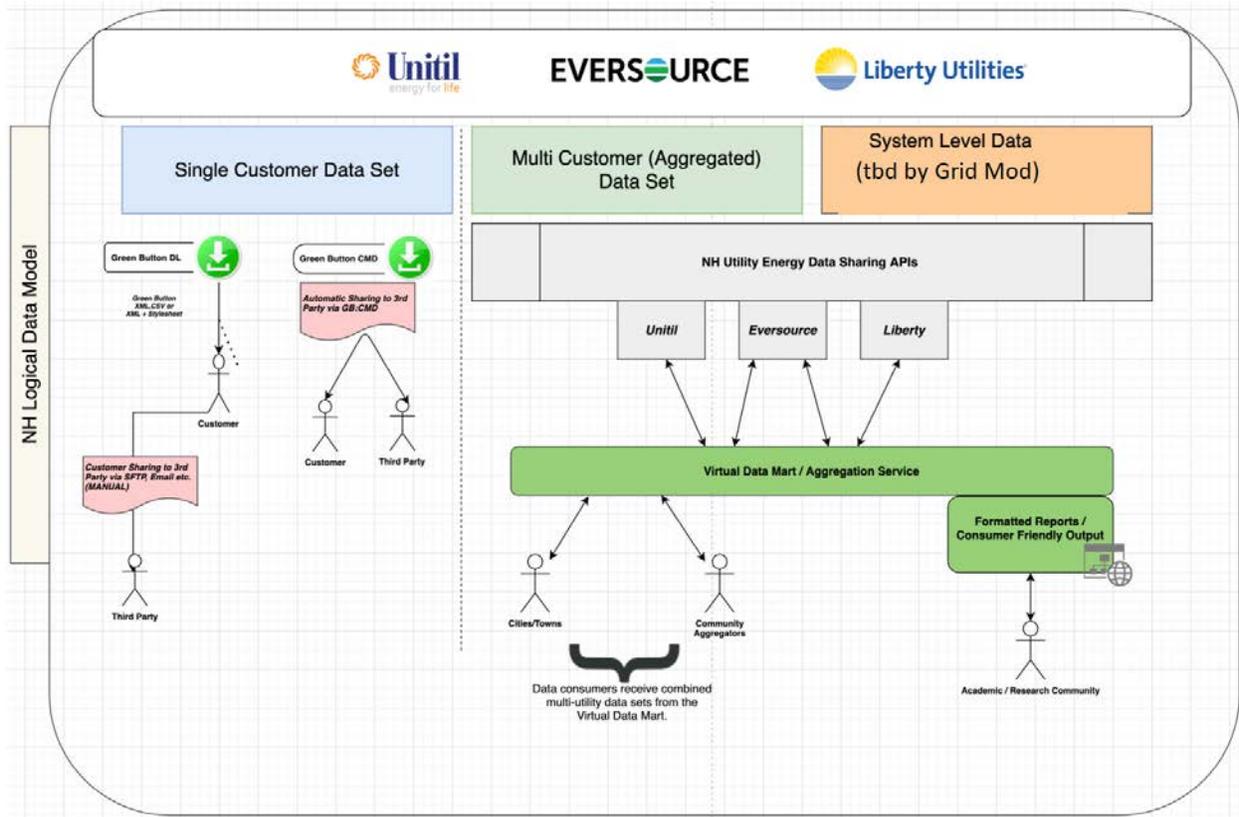


FIGURE 7: OPTION 3 – GREEN BUTTON DOWNLOAD AND CONNECT PLUS AGGREGATION WITH DATA MART FEATURE

- 1 The three proposed Options and their main functional components can be compared in
- 2 the table below.

**Platform Functionality Summary**

	Customer Download	Customer Sharing	Aggregate Data	Reporting / Queries
<i>Option 1</i>	Green Button: Download My Data	Manual	CSV from Website and/or File Transfer Protocol (FTP)	N/A
<i>Option 2</i>	Green Button: Download My Data	Green Button: Connect My Data	Multiple API calls and consumer aggregation	N/A
<i>Option 3</i>	Green Button: Download My Data	Green Button: Connect My Data	Single API call Platform does aggregation	Enabled by Virtual Data Warehouse

1 **Q. What data is proposed for sharing via the platform by the Utilities to meet the**  
2 **statutory requirements of the Data Platform Law?**

3 A. RSA 378:51 mandates that the data platform be built with a “common base of energy  
4 data for use in a wide range of applications and business uses.” It also dictates that,  
5 where applicable, “specific and well-documented standards” will be used in the design  
6 and implementation. The utility logical data model will be built using the NAESB ESPI  
7 (North American Energy Standards Board Energy Services Provider Interface) data  
8 standard. This standard format contains schema for both broad energy usage data as well  
9 as information about the retail customers themselves. The purpose of the NAESB ESPI  
10 standard (REQ.21) is to create a standardized process and interface for the exchange of a  
11 retail customer’s energy usage information between their designated data custodian (i.e.  
12 Distribution Company) and an authorized third-party service provider.

13 Providing a consistent method for the authorization of third-party access to retail  
14 consumers’ usage information and a standardized interface for the exchange of that  
15 information will support the development of innovative products that will allow  
16 customers to better understand their energy usage and make informed decisions about  
17 their usage. The NAESB ESPI standard provides business practices, use cases, models  
18 and an XML schema that describe the mechanisms by which the orchestrated exchange  
19 of energy usage information may be enabled. The NAESB standards development effort  
20 was conducted with the support of the National Institute of Standards & Technology  
21 (NIST) and the Smart Grid Interoperability Panel (SGIP) and serves as an extension of  
22 the NAESB Energy Usage Information Model developed at the request of NIST and the  
23 SGIP.

24 **Q. What kinds of energy usage could be provided for these options, and what purposes**  
25 **could they serve?**

26 A. The Utilities have leveraged the classifications used in the Green Button standard to  
27 organize Energy Usage Information (EUI) into three categories: (1) identification,

1 (2) summary information, and (3) measure component. Those three categories are  
2 described in more detail below. These classifications of data can represent residential or  
3 commercial energy usage independent of commodity. The audience for this data can be  
4 humans or machines. The origin of the EUI in the Utilities' systems is when a meter is  
5 read.

6 1. Identification – The source of the information including how it was required.

- 7 • Note that the Green Button standard dictates that identifiable information is  
8 stored separately from the energy usage info for privacy reasons.

9 2. Summary Information – This contains the summary of usage from the current period  
10 to date. Essentially, this is the level of detail available to customers through their  
11 energy bills.

12 3. Measure Component – These are the details of the actual minute-by-minute / hour-by-  
13 hour / day-by-day usage of energy.

- 14 • This component is designed so that it can represent any set of measurements  
15 from watt-hours (Wh) to watts (W) to volt-amp-reactive (VARs) to related  
16 measurements such as voltage and temperature.

17 **Q. How might the EUI data be used?**

18 A. See bullets below:

- 19 • When a customer participates in demand response, their EUI (including the cost  
20 component) is key feedback to the consumer of the direct consequences of their  
21 actions.
- 22 • When a customer is looking to conserve energy, the EUI is reference they might use  
23 for study/planning.

- 1 • Business with energy controls might use the EUI as feedback to minimize costs.

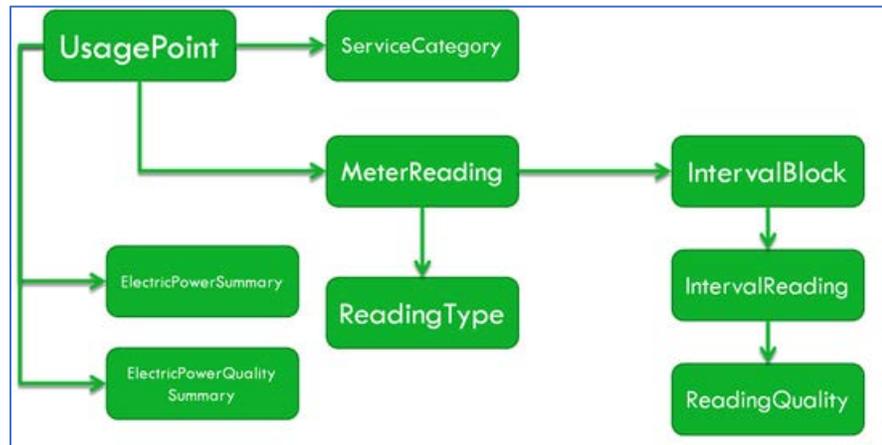


FIGURE 8: LOGICAL EXAMPLE OF THE ENERGY SERVICE PROVIDER (ESPI) MODEL FOR ENERGY USAGE INFORMATION (EUI)

2 The following specific examples below represent many of the types of New Hampshire  
 3 customer information that would be made available from the platform. A final list of  
 4 available data endpoints will be decided after an appropriate cost-benefit analysis has  
 5 been performed.

- 6 • Name  
 7 • Service Address  
 8 • Home Phone  
 9 • Mobile phone  
 10 • Email address  
 11 • Operating Company  
 12 • Billing Account Numbers  
 13 • Meter Numbers  
 14 • Requested by  
 15 • Requested Date

1 The following types of New Hampshire usage energy data would be made available in  
2 the platform:

- 3 • Account Number
- 4 • Read Date
- 5 • kW Demand (for non-residential)
- 6 • kVA (for largest customers)
- 7 • kWh Usage
- 8 • Number of days in the billing period
- 9 • kWh / Day
- 10 • Read Type

11 **Q. How will the platform provide a user-friendly interface and accommodate for users**  
12 **with disabilities?**

13 The Utilities agree that the platform should be user-friendly and accessible to people with  
14 disabilities, while still maintaining the security of Multi-Factor Authentication.

15 A user-friendly interface is important to the adoption and regular use of the platform.

16 User interface design focuses on anticipating what users might need to do and ensuring  
17 that the interface has elements that are easy to access, understand, and use to facilitate  
18 desired actions. Interface elements include, but are not limited to, input controls (buttons,  
19 text fields, checkboxes, radio buttons, dropdown lists), navigational components  
20 (breadcrumb, slider, search field), informational components (tooltips, icons, progress  
21 bar, notifications) and containers (accordions).

22 Best practice recommendations help guide the design and functionality of a website for  
23 accessibility and ease of use:

- 24 • Keep the interface simple with a common landing page for all utilities
- 25 • Create consistency and use common UI elements
- 26 • Be purposeful in page layout
- 27 • Strategically use color and texture

- 1       • Use typography to create hierarchy and clarity
- 2       • Make sure that the system communicates what’s happening
- 3       • Think about defaults that reduce the burden on the user

4       Web accessibility has become an important consideration for interface design and user  
5       experience testing and success. The Web Content Accessibility Guidelines (WCAG),  
6       published by the Worldwide Web Consortium (W3C), aim to provide a single shared  
7       standard for web content accessibility that meets the needs of individuals, organizations,  
8       and governments internationally. These documents explain how to make web content  
9       more accessible to people with disabilities. Web “content” generally refers to the  
10      information in a web page or web application, including natural information such as text,  
11      images, and sounds; and code or markup that defines structure, presentation, etc.<sup>27</sup> The  
12      Utilities aim to strike a balance between usability and security without increasing risk of  
13      inappropriate or malicious access.

14   **Q.    What data ownership and access structures will be followed within the data**  
15   **platform architecture?**

16   A.    The Utilities plan to follow the DataGuard framework<sup>28</sup> published by the US Department  
17   of Energy (DOE). Use of the Framework will ensure the protections of the system and  
18   customer understanding of the storage and use of the data. The DataGuard framework  
19   includes the following practices:

- 20      • Consumer Notice and Awareness
- 21      • Customer Consent
- 22      • Integrity and Security
- 23      • Customer Data Access and Participation, and
- 24      • Self-Enforcement Management and Redress

---

<sup>27</sup> WCAG 2.0 was published on 11 December 2008. WCAG 2.1 was published on 5 June 2018. All requirements (“success criteria”) from 2.0 are included in 2.1 and there are additional success criteria in 2.1 that are not in 2.0. The common data-sharing platform should target to achieve WCAG 2.1 AA success criteria, thereby offering an accessible solution that benefits all users.

<sup>28</sup> [https://www.smartgrid.gov/data\\_guard.html](https://www.smartgrid.gov/data_guard.html)

1 Customer data such as (but not limited to) usage data, customer address, or account  
2 number may be used in the aggregate or original form for this analysis, however the  
3 utilities will use the minimal amount of data necessary depending on the nature of the  
4 analysis. Where feasible, aggregated data or anonymized data will be used. The basic  
5 premise in data access is that the data is owned by the customer and the utilities are the  
6 custodians of the data. The customer must explicitly authorize the release of this data  
7 outside of the utilities, in accordance with their respective privacy policies, regulatory  
8 requirements, and laws. The customer has the right to know what data is collected and  
9 what it is used for by third parties. If customer data is found to be incorrect, then the  
10 customer has the ability to correct it. Operational data are developed and collected as  
11 part of managing the energy delivery systems. This data is modeled and analyzed to  
12 improve the resiliency of the energy delivery systems, is the property of the utilities and  
13 must be protected to ensure the reliability of the energy delivery systems.

14 **Q. What aspects of the design and functional elements proposed by the Utilities are**  
15 **certifiable by the Green Button Alliance?**

16 A. The monthly and interval energy data transactions that are part of the three options can  
17 become certified by Green Button Alliance (“GBA”), as the Data Platform law requires.  
18 Green Button Download My Data (Option 1) is currently operational today and would  
19 require that the Utilities add interval meter data. Green Button Connect My Data  
20 (Options 2 and 3) would need to be developed and be certified. Because there is no  
21 standard transaction to automate the transfer of aggregated town level data, or  
22 anonymized community customer level data, the Utilities have recommended alternative  
23 delivery mechanisms that would provide the data either via a web site or a secure FTP  
24 site. It may be possible for the Utilities to develop a standard format that could be  
25 reviewed and potentially certified by the Green Button Alliance in the future. RSA  
26 378:53. GBA conducts the testing and certification of the platform as they are the only  
27 organization offering a testing program for electricity, gas and water utilities. The GBA

1 would administer the test at a fixed cost and assist the Utilities in preparing the platform  
2 implementation for compliance on a time and materials basis. Green Button testing is  
3 done remotely against the utility servers and a testing mark is issued to denote  
4 compliance with the standard. By obtaining certification, the Utilities greatly increase the  
5 ability to deliver GBA-compatible solutions to the market.

6 The Utilities have engaged with GBA during the initial scoping design process of this  
7 docket and will work with them closely to ensure compliance of anything the Utilities are  
8 directed to design pursuant to this docket.

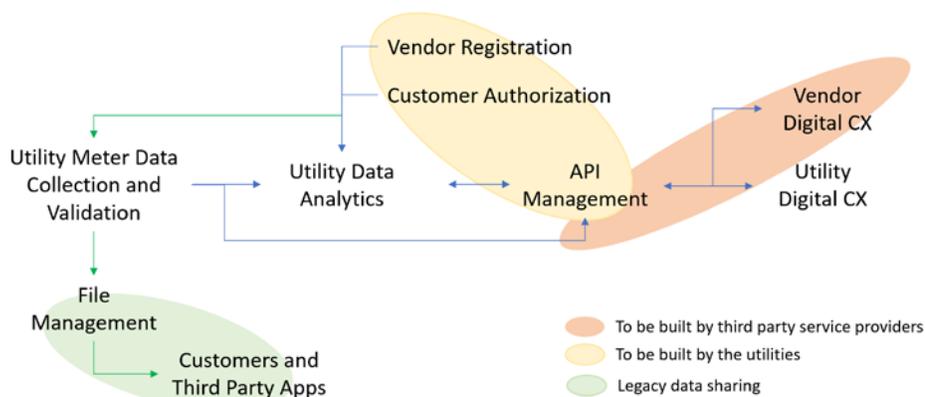
9 **Q. Are there comparable offerings like an “off the shelf” third-party systems that could**  
10 **provide similar functionality?**

11 A. No, it’s worth noting that no ready-made, “off the shelf” third-party products or services  
12 can do what the Utilities are proposing in this testimony, nor what is being asked of the  
13 utilities in this docket and in the Data Platform Law. This is primarily because the data  
14 being sought to populate the platform is contained in legacy utility-specific systems.  
15 Because of this, as noted previously, the vast majority of the work to be done, regardless  
16 of the design of the final data platform, is the process of getting data from the utilities to  
17 the platform. That work requires extensive labor-intensive efforts with multiple systems  
18 within each utility, no matter what process is used or what form the result takes.

19 To do this, rather than rely on an incomplete “off-the-shelf” product, utilities would build  
20 semi-automated capabilities to receive vendor registration information, process it, track  
21 it, and provide reporting. The same holds true for customer authorization. Utilities would  
22 model the data to the common format consistently across all the utilities and then build  
23 the ability to provide the data to the third-parties. Utilities would ensure that access to  
24 data is secured in a manner compliant with company policies, cyber security guidelines,  
25 Commission requirements, and all legal and regulatory mandates. Third parties will not  
26 need to customize, but simply build applications compatible with the common format.

1 **Q. How can the proposed data platform enable data flows to third-party systems?**

2 A. Figure 9 illustrates how the utilities and third-party service providers share data today  
3 with standards like Green Button. Utilities collect and validate meter data, which is then  
4 used for billing and a host of internal functions such as ISO-NE load settlement,  
5 transmission and distribution system planning, energy efficiency programs, and others.



**FIGURE 9: IT COMPONENTS ENABLING THIRD-PARTY ACCESS OF ENERGY DATA VIA THE VENDOR DIGITAL CUSTOMER EXPERIENCE (CX)**

6 For external use, Option 1 data would be transferred in files to customers and other utility  
7 industry players, as shown in the green bubble in the diagram above. In addition, these  
8 parties may have their own software that makes this data available to customers,  
9 suppliers, etc.

10 Both Eversource and Unitil plan to offer this data utilizing the Green Button Download  
11 My Data format.

12 With Option 2, the Utilities would provide data in the common Green Button format and  
13 expose it to registered and authorized third parties via API, leveraging the Green Button  
14 Connect My Data process. Any third party that has the Green Button standard built into  
15 their application would then be able to retrieve the data in an automated fashion, and

1 since all three utilities will offer the same standard, the third-party software can be  
2 developed to one format instead of multiple formats. Both the utilities and the third-  
3 parties have software development work to do in order to use the Green Button standard  
4 as depicted in Figure 9, where the yellow and orange bubbles overlap. In fact, it has been  
5 demonstrated in the course of this docket that this approach is advantageous with two  
6 third-party vendors. mPrest and Kevala Analytics, both provided presentations to the  
7 stakeholders of this docket showing compatibility with the Utilities' API designs, further  
8 reinforcing that applications and software could easily work with the options presented in  
9 this testimony. Anticipating future uses by the industry, market participants and  
10 customer needs, the Utilities provided three options that serve as an enabling platform for  
11 the development of external application software and services.

12 **Q. What protections do the Utilities propose to protect from unauthorized disclosure**  
13 **the personally identifying information or personal information of customers?**

14 A. The Utilities recognize that data repositories storing customer data represent high-risk  
15 targets. Bad actors regularly work to steal customer information for economic gain and  
16 to support social engineering activities. The data platform is intended to contain various  
17 customer data which requires security controls to adequately protect the data. The  
18 controls proposed by the Utilities are consistent with controls currently in use. These  
19 controls are based on industry standards including the NIST Guidelines for Smart Grid  
20 Cyber Security, NISTIR 7628, and the DataGuard Energy Data Privacy Program,  
21 developed by the DOE. The platform must also ensure compliance with, at a minimum,  
22 the following state and federal mandated standards:

- 23 • Puc 300 Rules for Electric Service
- 24 • 18 CFR § 125.1 Preservation of Records of Public Utilities and Licensees
- 25 • 18 CFR § 125.3 Schedule of Records and Periods of Retention, and
- 26 • Consumer Data Breach Notification Law, RSA 359-C:19.

1 Understanding the threat landscape and risks helps to ensure the controls are  
2 appropriately designed. The following risk scenarios should be considered in designing  
3 data protection controls. These risks are the most significant but should not be  
4 considered all-inclusive until further information is available on the final design  
5 requirements, which could impact the threat landscape.

- 6 • Confidentiality of customer data could be compromised by unauthorized access to  
7 customer data, resulting in a data breach where the data could be sold on the Dark  
8 Web.
- 9 • Confidentiality of usage data could be compromised and used to target customers'  
10 privacy and allow an attacker to monitor behavior patterns.
- 11 • Integrity of customer data could be impacted by unauthorized access to customer  
12 data, resulting in decision-making based on invalid data.
- 13 • Unauthorized access to the data platform could result in a compromise and theft of  
14 user credentials, increasing the ability of an adversary to potentially access systems  
15 outside of the data platform and attack other energy system infrastructures.
- 16 • Third parties receiving data from the portal may not have sufficient data protection  
17 controls to ensure the risk of a compromise of customer data is minimized.
- 18 • Third-parties requesting data from the portal may be Foreign-Owned, Controlled, or  
19 Influenced (FOCI), resulting in data being provided to a nation state for purposes  
20 other than intended by the Commission or the Legislature. This situation could result  
21 in a violation of customer privacy or improve the likelihood of an attack on the power  
22 grid.<sup>29</sup>

23 While the Utilities understand that all risk cannot be eliminated, the utilities have a  
24 responsibility to ensure that customer and operational data are adequately protected,  
25 including when provided to a third party for legitimate business reasons. The Utilities  
26 plan to incorporate process and system controls into the platform, commensurate with the

---

<sup>29</sup> Reference the Presidential Executive Order 13920 issued May 1, 2020 titled "Securing the United States Bulk-Power System".

1 risk to customer privacy as well as critical infrastructure. The requirements are intended  
2 to ensure the Confidentiality, Integrity, and Availability (CIA) of the systems and data.  
3 Consistent with NIST Guidelines for Smart Grid Cyber Security, NISTIR 7628, the  
4 Utilities plan to implement a comprehensive cyber program to protect any actual data  
5 stored via the platform. These program requirements include implementing appropriate  
6 privacy impact assessments, appropriate access controls to the systems and data, security  
7 awareness training for non-utility staff that may support the portal, incident response  
8 procedures, media protection, supply chain, and appropriate system development and  
9 maintenance procedures and controls.

10 The following controls will be required for the platform. These controls are the key  
11 controls and others will likely be required as the system is designed:

- 12 • Access and Authentication Controls
- 13 • Configuration Management
- 14 • Encryption
- 15 • Logging and Monitoring
- 16 • Vulnerability Management

17 Another important step in reducing the risk of sharing Customer and Operational data is  
18 an assessment of the security posture of the third-parties that request data. The Utilities  
19 propose to adopt a common cyber security assessment process. Third-parties will  
20 complete the assessment and be certified to access data from all utilities, if appropriate.  
21 Third-parties will be reassessed annually or immediately following a change in their  
22 environment or a cyber incident. Third-parties will also be required to sign a Mutual  
23 Non-Disclosure Agreement (NDA) with the Utilities. This non-disclosure will address the  
24 requirements of the third party to protect and keep confidential customer energy use data,  
25 security and retention requirements. Additional NDAs from departments such as  
26 purchasing or IT may also be required, as appropriate.

- 1 The proposed common cyber security assessment would evaluate:
- 2 • Obligations of third-parties and contractual relationships;
  - 3 • Oversight of third-party certification/vetting and annual re-certification process;
  - 4 • Monitoring of third-parties for appropriate use of data;
  - 5 • Liability for third-party breach of privacy rules;
  - 6 • Protection of Customer Data and utility infrastructure from compromised third-
  - 7 parties;
  - 8 • Data breach notification to utilities, customers, the Commission and stakeholders;
  - 9 • Process for decertification, revoking data platform access, and third-party appeal
  - 10 process;
  - 11 • Creation of reference materials (links, training, communications, User Guides,
  - 12 Business Intelligence references)

13 **Q. Are utility-entities outside the three investor-owned utilities able to participate given**  
14 **the design options you recommend?**

15 A. The Utilities believe in a statewide energy data platform that could be expanded  
16 regionally depending on utilization and usefulness. The Utilities operate in multiple  
17 jurisdictions and have developed the platform to be simple, flexible, and scaled for other  
18 energy market participants in a variety of jurisdictions. Although any statewide data  
19 platform will be principally designed and fully operated by the utilities, the inherent  
20 standards being recommended could be adopted by other state utilities. Governance  
21 documentation, which will include platform standards, operational process  
22 documentation, FAQ's and use cases examples would serve as a guide for the NHEC or  
23 NH Municipal electric utilities considering adoption of the standard. The Utilities are  
24 open to the participation of the NHEC or NH Municipal electric utilities in the  
25 stakeholder process and would work with them should they express interest.

1 **Q. How will governance ensure the necessary cyber security and privacy protections**  
2 **for the data in the platform?**

3 A. As mentioned all throughout this testimony, security and privacy are top concerns for the  
4 Utilities with a possible data platform, and governance is a central factor in ensuring  
5 protections can be properly structured. The Utilities strongly recommend a thorough data  
6 governance framework to manage the data throughout its life cycle to comply with the  
7 security and privacy legal and regulatory requirements in place to protect customers and  
8 their data. Data governance includes the people, processes and technologies needed to  
9 guarantee understandable, correct, complete, trustworthy, secure and discoverable  
10 data. Data governance establishes the decision rights, stewardship, controls, and  
11 definitions for all data within the utilities' responsibility and mitigates the risk of  
12 inaccurate and unsecure data. Data governance encompasses: Policies and Standards,  
13 Information Quality, Privacy, Compliance, Security, Architecture and Integration.

14 Policies and standards are a crucial part of data governance. Policies must be developed  
15 to define the data governance structure, secure data access and usage, and to ensure data  
16 integrity for successful integration. Data stewardship ensures information quality. Data  
17 stewardship is a central element of managing data from a variety of sources and  
18 guaranteeing the quality of the data gathered, stored and used by the platform. Data  
19 stewardship requires documenting and enforcing rules around data collection, storage and  
20 use, and executing the policies and standards established by the data governance  
21 framework. Data stewardship ensures access to the right data by the right users at the  
22 right time based on whether information is private, public or sensitive data; and it also  
23 creates and implements processes and procedures for data collection, storage, use and  
24 security.

25 Privacy in the data governance framework refers to the use and governance of personal  
26 data and personally identifiable information. Privacy requires customer notice and  
27 consent, data de-identification guidelines (anonymization and aggregation procedures)

1 and a data sharing framework: from terms of service to cyber incident response plans.

2 Compliance with the data governance framework must be systematic and transparent to

3 ensure that all who operate and interact with the platform meet the relevant obligations

4 under applicable laws, regulations, best practices and standards, and contract terms.

5 Platform users that utilize and store customer data should be subject to external

6 assessment and audit for security management controls. The security component of the

7 governance framework focuses on protecting data from unauthorized access, including

8 intentional malicious attacks. Crucial to data security is development of a vulnerability

9 management program and regular penetration testing.

10 Architecture and integration in relation to data governance includes information,

11 metadata, storage, transport and system standards; it aims to achieve operational

12 efficiency by simplifying data integration architecture components such as data modeling

13 and APIs. Architecture and integration inform the data sharing platform roadmap.

14 Governance processes are required to identify, manage, audit, and disseminate all

15 information related to architecture management, contracts, and implementation, and to

16 ensure that all architecture artifacts and contracts, principles, and operational-level

17 agreements are monitored on an ongoing basis with clear auditability of all decisions

18 made.

19 **Q. What happens if there are glitches or problems arise with the platform itself that**  
20 **require immediate attention?**

21 A. Change Management provides procedures for bug-fixes and a defined process for

22 addressing emergency issues. The Utilities recommend a stage-gated Change

23 Management and approval process such as the one described in the Figure 10 below.

24 Stage-gating the process prevents changes from being made without proper review and

25 approval.

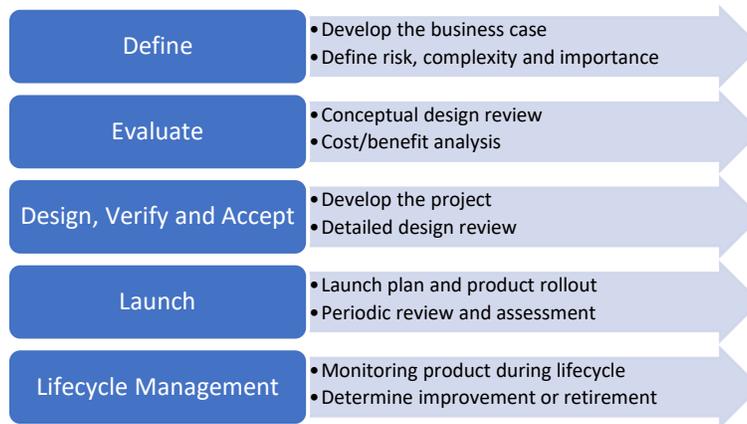


FIGURE 10: DATA PLATFORM CHANGE MANAGEMENT PROCESS

1 A change control review team, under the direction of the operations management  
 2 committee, would be formed from a cross-functional section of the utility implementation  
 3 teams and will be responsible to review, approve and communicate changes to the  
 4 technology, implementation approach and functional requirements for the platform.  
 5 Change management applied to platform software development entails using the industry  
 6 standard software development lifecycle and change control techniques to ensure the  
 7 integrity and traceability all software and database components.

8 **Q. Are there particular cyber security standards the Utilities recommend?**

9 A. The Utilities strongly recommend adopting the guidance given by the NIST  
 10 Cybersecurity Framework (CSF).<sup>30</sup> The CSF is the result of a collaborative effort  
 11 between the US government and private sector organizations to provide cybersecurity  
 12 best practices along with a framework for managing risk. Likely half of all U.S.  
 13 organizations will use this framework by the end of this year, including healthcare, retail,  
 14 financial services, and all sectors of critical national infrastructure.

15 The CSF is made up of five core functions that help organizations establish a  
 16 cybersecurity strategy and establishes the processes and controls necessary to manage

<sup>30</sup> <https://www.nist.gov/cyberframework>

1 and mitigate cyber risks. Based on this information, the framework profile assists  
2 organizations with identifying where cybersecurity must be improved upon, as well as  
3 how to prioritize those initiatives. The most recent version of the framework also includes  
4 updated recommendations surrounding authentication, cyber risk assessments, and  
5 vulnerability disclosures.

6 **Q. And what processes and protections specific to privacy and security of the data do**  
7 **you propose?**

8 A. Data privacy must represent a primary concern for any platform storing and transmitting  
9 private customer data. With this in mind, the Utilities suggest leveraging the protections  
10 recommended by the US DOE Data Privacy and the Smart Grid: A Voluntary Code of  
11 Conduct and the DataGuard Energy Data Privacy Program including Multifactor  
12 Authentication (“MFA”).<sup>31</sup> MFA reduces the risk of account takeovers and fraudulent  
13 transactions, the risk of system administrator account security breaches, and increases  
14 consumer confidence in the security of the platform. MFA is a security enhancement that  
15 allows a user to present several pieces of evidence when logging into an account. This  
16 evidence falls into three categories - something you know (e.g., password), something  
17 you have (e.g., smart card) and something you are (e.g., fingerprint). The presented  
18 evidence must come from at least two different categories to enhance security.  
19 Assuring the integrity, privacy and security of any customer data made available through  
20 the platform will require a well-informed, proactive approach and must be carefully  
21 considered through all phases of the planning and development process. It is also critical  
22 that all relevant Federal Energy Regulatory Commission (“FERC”) data and record  
23 retention requirements, such as 18 CFR § 125.1 (Preservation of Records of Public  
24 Utilities and Licensees) and 18 CFR § 125.3 (Schedule of records and periods of  
25 retention), are evaluated and incorporated into data platform planning discussions on data

---

<sup>31</sup> <https://www.energy.gov/oe/downloads/data-privacy-and-smart-grid-voluntary-code-conduct>

1 retention and archiving rules along with the record retention and disposal requirements  
2 from DataGuard.

3 If developed, the platform should be designed following principles of reasonable high  
4 availability (understanding cost considerations) with appropriate business continuity and  
5 disaster recovery plans in place. The scope of these availability and continuity  
6 discussions is highly dependent on future implementation decisions and should be  
7 discussed further at that time.

8 **Q. How do you address the risk of accidental or malicious acts of third parties with**  
9 **access to the platform?**

10 A. Third-party risk is a significant risk which is impossible to completely eliminate, so this  
11 risk and the implications of an actual third-party data breach or other abuse of the  
12 platform should be carefully considered before endorsing a course of action for  
13 developing a data platform for New Hampshire. According to the Ponemon Institute's  
14 second annual *Data Risk in the Third-Party Ecosystem* study, which interviewed 625  
15 information security professionals across varied industries, 56% confirmed third parties  
16 led to some form of data breach.<sup>32</sup> Additionally, 42% noted that third parties led to  
17 misuse of sensitive data. If a third-party breach occurs that involves data shared from the  
18 data platform, the utilities could suffer significant reputational damage as a result of the  
19 incident. Crucially, customers could be at increased risk from criminals seeking to exploit  
20 a breach regardless of how the incident originated.

21 Third-party cyber risks arise out of vendor security vulnerabilities. Utilities control and  
22 secure their own environments but have limited visibility into the security measures taken  
23 by third parties. The third-party security assessment process described earlier in this  
24 testimony allows for review of a potential recipient of customer data for security

---

<sup>32</sup> [https://insidecybersecurity.com/sites/insidecybersecurity.com/files/documents/sep2017/cs2017\\_0340.pdf](https://insidecybersecurity.com/sites/insidecybersecurity.com/files/documents/sep2017/cs2017_0340.pdf)

1 weaknesses. While third-party business relationships rely on trust, this assessment  
2 process allows trust to be verified with action.

3 In addition, a third-party breach notification process must be implemented to protect the  
4 infrastructure of the data platform and the customer data it contains. If a third party  
5 experiences a breach or suspects a breach, they must notify all stakeholders immediately  
6 to initiate incident response, containment and mitigation of the attack. Third parties  
7 should be subject to the Vendor Assessment, third-party audit and relevant New  
8 Hampshire laws regarding breach notification and related customer protections. Utilities  
9 can develop a third-party cyber assessment to establish a baseline of the entity's cyber  
10 security posture; however, the utilities are unable to audit that posture in real time or have  
11 direct visibility into a third-party's processes and infrastructure. Because of this inherent  
12 limitation, we urge the Commission to include a process to ensure that customer  
13 protections are implemented and protections are in place to ensure a pre-access third-  
14 party assessment is conducted and that utilities can be held harmless for data once it is  
15 out of the utilities' possession.

16 **Q. Is there a role for stakeholder participation and input in the governance process**  
17 **proposed by the Utilities?**

18 A. Ongoing stakeholder input would be pivotal to the success of any data platform, as  
19 stakeholders represent the user experience and advocate for policy purposes of the  
20 platform, a salient factor in both design and maintenance. The Utilities  
21 propose two working groups to provide this valuable insight and to handle versioning and  
22 change management of the platform, as was discussed just previously in our  
23 testimony. One group would be focused on the overall use and objectives of the  
24 platform, while the other would handle operational and technical design elements to  
25 execute the objectives. The Utilities recommend these groups be named the Governance  
26 Working Group ("GWG") and the Operations Committee ("OC"), respectively.

1 The GWG would consist of a cross section of data platform stakeholders to provide a  
2 diversity of ideas and ensure the platform capabilities can provide ongoing value to state  
3 energy policies and initiatives and would make recommendations to the Commission on a  
4 semi-annual or annual basis that the Commission could consider for implementation.

5 The group could be comprised of the following: two representatives total from each  
6 utility involved with the data platform (a total of 6 representatives with the utilities with  
7 gas and electric operations being combined), three Commission-appointed stakeholder  
8 representatives for specified terms; two representatives from the Office of the Consumer  
9 Advocate; and up to three representatives from Commission Staff, as  
10 available. Recommendations will be made by general consensus, with dissenting  
11 opinions noted for consideration. Recommendations must have more than six  
12 representatives supporting it to be submitted to the Commission. The GWG should  
13 meet at least monthly for the first year after the platform is active, with less frequent  
14 meetings as appropriate thereafter.

15 The OC would consist of equal representatives of each utility and be responsible for  
16 drafting platform operation policy and procedures, technical design, scoping and pricing  
17 changes, change management, security management and recommendations on the  
18 feasibility and cost/benefit analysis of requests for enhancements or changes. The  
19 proposals of the OC would be submitted to the GWG should it want to add  
20 recommendations to OC proposals. Proposals of the OC would be submitted periodically  
21 or as needed to the Commission, but no more frequently than semi-annually.

22 **Q. What registration and qualifications should be required for users of the platform?**

23 A. In addition to the Data Platform Law's requirement for registration qualifications,<sup>33</sup> the  
24 Utilities believe that both registration and a qualification process is essential to preserve

---

<sup>33</sup> "[A]s 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." RSA 378:52.

1 the security standards that have already been discussed. The process the Utilities have  
2 developed allows the utilities to review and approve potential third-party participants  
3 before they are permitted to access any data to ensure proper stewardship of utility  
4 customer data.

5 To participate in the data platform, a prospective vendor or third party will need to be  
6 granted a cryptographically secure access token. These tokens will be crafted to provide  
7 time bound access to a specific set of data and the data access APIs will be developed to  
8 verify the tokens through an authorization layer, a process not unlike that being used by  
9 organizations such as ISO-NE.

10 The flexible nature of the proposed virtual platform architecture allows for vendor  
11 registration to be managed. On each utility's web platform, a new "vendor registration"  
12 form will be developed. Vendors complete a set of certification steps from this page and  
13 can also manage their existing authorizations. This includes the cyber security  
14 assessment discussed in detail earlier in this testimony. Once submitted, their application  
15 is reviewed, and when approved, the vendor is notified and they receive API access  
16 details.

17 As has already been mentioned, the Utilities have obligations to take all reasonable  
18 measures to ensure data integrity, privacy and security and therefore propose the  
19 following core tenants pertaining to the data available to third parties, and the  
20 authorization process. These conditions should inform the design, development and  
21 operation of the platform in a way that minimizes any risk of misuse of the data by third  
22 parties:

- 23 • Reasonable measures must be taken to ensure that customers are given notice about  
24 all agreed upon privacy-related policies and practices, as well as any changes to these  
25 policies and practices on an ongoing basis.
- 26 • The customer must control access to their own data.

- 1           • The customer will have access to their own data and the ability to actively participate  
2           in the sharing of their data.
- 3           • Customer data should be as accurate as reasonably possible and protected against  
4           unauthorized access.
- 5           • Customers must grant explicit rights to share their data with a requesting third party  
6           on a case-by-case basis.
- 7           • Customers must also be able to review existing sharing agreements and participate in  
8           the maintenance or termination of those agreements.
- 9           • APIs will be developed to support the customer authorization process.
- 10          • Each utility will offer, as part of their existing systems, a web interface for customers  
11          to perform data sharing authorization.

### 12          **Example of Customer Authorization**

13          We have provided a sample customer authorization to illustrate the affirmative action  
14          required of customers in order for their data to be shared. A customer logs into the utility's  
15          customer engagement portal using multi-factor authentication and, if eligible to participate in  
16          data sharing, is presented with a "Green Button Connect My Data" button. The customer is  
17          then presented with a form and the following steps (varying slightly by utility).

- 18          • Chooses an account to share as well as the meter(s) from which to share data.
- 19          • Review list of registered third parties and vendors that are authorized to request data  
20          from the platform.
- 21          • Select which third parties to authorize.
- 22          • Select the type of data to share (monthly energy usage, interval energy usage data,  
23          etc.)
- 24          • Indicate consented period for historical data allowed by this authorization
- 25          • View and manage prior authorizations.
- 26          • Once submitted, the selected third parties receive notification as well as a token  
27          granting them access to the data authorized by the customer.

- 1           • Data requests and responses made using the secure HTTPS protocol and  
2           authenticated via two-way certificate exchange.

3   **Q. How would the Utilities approach estimating cost for these project elements?**

4   A. As discussed above, the ultimate costs of any platform will depend on the level of  
5   complexity that is deemed to be desirable or necessary. Presently, the Utilities are not  
6   able to provide specific cost estimates because the scope of the work is not yet defined,  
7   and the scope, features, and elements of any non-utility proposals are entirely unknown.  
8   The Utilities recommend that the within this docket, the Commission evaluate the cost  
9   drivers and the benefits of the option they want explored and issue an order expressing a  
10   preference for a platform model to be evaluated for cost viability. The Commission may  
11   define the specific costs about which it is concerned. For example, the Commission may  
12   want information on the utilities' direct capital costs as well as incremental ongoing  
13   maintenance costs but may be less concerned with the costs associated with website  
14   enhancement or third-party verification and testing. With that information, the utilities  
15   could develop high-level, initial cost estimates and submit those for the Commission's  
16   evaluation. Those submissions would be subject to further refinement and analysis, but  
17   they would provide a basis to conduct a meaningful cost-benefit analysis. The Utilities  
18   could also competitively solicit bids to scope development of the platform components to  
19   determine accurate costs commensurate with the Commission's minimum viable product.  
20   Should the utilities be directed to add to the functionality of any given proposal, costs  
21   could likely increase exponentially; such costs may not be commensurate with the  
22   benefits. Analyses should be conducted prior to extending functionality of the platform.  
23   The process for developing estimates is iterative. The conceptual design and scoping  
24   requirements are developed to a level of detail that facilitate order-of-magnitude  
25   estimates by the developers. Standard costs are then added for project development  
26   resources, testing services, security requirements, architecture support, software  
27   licensing, and any hardware and data storage needs. Estimates also include training for  
28   the contact center representatives who will support customers and vendors on an ongoing

1 basis. The estimate will include ongoing annual maintenance and licensing costs, as well  
2 as new labor needed to support operations of the system. While the Utilities do not  
3 believe the volume of platform use will have an impact on the design options  
4 recommended in this testimony, the amount of use would add to the cost of managing the  
5 service, including registering vendors, procuring customer authorization, and providing  
6 ongoing contact support to the vendors and utility customers for this service. This would  
7 be the case no matter the design of the platform, and it is a cost factor to be considered in  
8 the ongoing maintenance cost of a statewide data platform. The development may be  
9 conducted internally, through managed contract services, third-party vendors, or a  
10 combination of these services. Depending on the expected magnitude of the work and  
11 available internal resources, each utility may opt to publish an RFP. Once testimony is  
12 completed, project scope and costs are updated and approved, before project work finally  
13 begins. The cost estimate proposal process typically takes three-months to complete.

14 **Q. What should the Commission consider for cost recovery options?**

15 A. As for cost recovery as contemplated under RSA 378:54, as the Commission is aware all  
16 electric and gas utilities in New Hampshire are at different points in the rate case cycle,  
17 or are in multi-year rate plans, and each utility may or may not have rate elements  
18 conducive to recovery of costs such as those for implementation of a data platform. Prior  
19 to the inclusion of platform design costs resulting from the energy data platform in  
20 distribution rates as part of a base rate case filing, the Utilities would propose that cost  
21 recovery is allowed as a stand-alone adder that would be outside of any alternative rate  
22 plan capital investment or revenue caps. Platform costs may include but are not limited  
23 to: design and software development, system integration, development of processes and  
24 procedures, contracting, project management, testing and quality assurance, system  
25 documentation, support prior to and during go live, vulnerability management,  
26 penetration testing, cyber and security assessments of vendors and platform users,  
27 customer and user support, etc.

1 If it is determined that more timely recovery is not permitted, the Utilities would propose  
2 to defer the cost of the investments to a regulatory asset to be recovered at the time of the  
3 Company's next rate case. The deferred cost should include at least the following  
4 components: depreciation on the asset, return on the asset, and O&M cost offset by  
5 potential third-party revenues. As described above, the Utilities expect the energy data  
6 platform to need modifications and updates. Recovery of these ongoing capital  
7 investments and O&M costs will also need to be considered and addressed by the  
8 Commission. The Data Platform Law directs the Commission must develop a  
9 methodology pursuant RSA 378:54, I to "impose reasonable charges to third parties for  
10 access to data" from the platform. Such uses may include but are not limited to  
11 marketing products and services, data aggregation, energy system research, etc.

12 **Q. Does this conclude your testimony?**

13 **A. Yes.**