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December 5, 2025

Ms. Stephanie De La Rosa
Clerk
State of Rhode Island
Public Utilities Commission
89 Jefferson Boulevard
Warwick, RI 02888

RE: Docket 25-19-EL – In re: The Narragansett Electric Company d/b/a Rhode Island Energy’s Proposed Green Button Connect, Home Area Network, and Grid Edge Computing Plans

Dear Ms. De La Rosa:

Enclosed please find an original and nine copies of the following:

1. Mission:data Coalition’s Direct Testimony.

Please note that an electronic copy of this filing has been provided to the service list. Thank you for your attention to this matter.

Sincerely,



Joseph A. Keough, Jr.

Enclosures

cc: Service List (via electronic mail)

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

**In Re: Proposed Green Button
Connect, Home Area Network
And Grid Edge Computing)
)
)**

Docket No. 25-19-EL

MISSION:DATA COALITION

DIRECT TESTIMONY

Date Filed: December 5, 2025

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

In Re: Proposed Green Button)
Connect, Home Area Network)
And Grid Edge Computing)

Docket No. 25-19-EL

MISSION:DATA COALITION DIRECT TESTIMONY
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4. Certificate Of Service.

TAB 1

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

In Re: Proposed Green Button
Connect, Home Area Network
And Grid Edge Computing)
)
)
)

Docket No. 25-19-EL

DIRECT TESTIMONY OF MICHAEL MURRAY

**ON BEHALF OF
MISSION:DATA COALITION**

Date Filed: December 5, 2025

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I. QUALIFICATIONS

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Q. Please state your name, title and business address of your employer and role at the organization.

A. My name is Michael E. Murray. I am President of the Mission:data Coalition (“Mission:data”). My business address is 1752 NW Market Street #1513, Seattle, WA 98107.

Q. On whose behalf are you filing this testimony?

A. I am filing this testimony on behalf of Mission:data, an intervenor in this case.

Q. What is Mission:data coalition?

A. Mission:data is national, non-profit coalition supported by over 20 technology companies that deliver consumer-focused, data-enabled energy savings for homes and businesses. An exciting new industry uses advanced software tools to analyze customer energy information – in particular, information generated by Advanced Metering Functionality (“AMF”) – to deliver benefits to both consumers and utilities, and these companies are focused on bringing energy efficiency solutions to a national market. To realize that objective, Mission:data advocates nationwide for empowering consumers with “data portability” – that is, the ability for consumers to easily share or “port” their energy-related information from utilities to energy management companies of their choice. Mission:data also works with industry and policymakers to ensure technological consistency from state to state so that innovative solutions for energy management can achieve scale.

Q. Please briefly describe your educational background and your relevant professional experience.

A. I co-founded Mission:data in 2013 and have led our efforts to intervene at public utility commissions in 14 states as well as the District of Columbia on issues of advanced meters, data privacy and the benefits of electronic access to energy usage data.

1 I began my career in 2004 as co-founder and CEO of Lucid, an energy
2 management software company for commercial buildings, where I grew the
3 company from zero to over 40 employees and raised \$10 million in venture
4 capital. Lucid offered a cloud-based service that analyzes real-time meter data
5 from thousands of commercial buildings across North America to support energy
6 efficiency. Lucid's customers included over 350 organizations such as Google,
7 Yahoo!, and eight of the eight Ivy League universities and others. I hold two U.S.
8 patents relating to energy data collection, sharing and analysis, #8,176,095 and
9 #8,375,068. I earned a B.A. with highest honors from Oberlin College in 2004.

10
11 **Q. Have you ever testified in proceedings before the Rhode Island Public**
12 **Utilities Commission or the Division Of Public Utilities And Carriers?**

13 A. Yes, I testified in 22-49-EL regarding advanced metering functionality ("AMF"),
14 the antecedent to this proceeding.

15
16 **Q. Have you testified in regulatory proceedings of other states' Public Utility**
17 **Commissions?**

18 A. Yes. I have sponsored testimony before utility regulators in numerous states,
19 including California, Colorado, Georgia, New Hampshire, New York, North
20 Carolina, Ohio, Pennsylvania and Texas.

21
22 **II. OVERVIEW AND SUMMARY**

23 **Q. What is the purpose of your direct testimony?**

24 A. The purpose of my direct testimony is to recommend a corrective course of
25 action for Rhode Island Energy's ("RI Energy or the "Company") Green Button
26 Connect ("GBC"), Home Area Network ("HAN") and grid edge intelligence
27 offerings filed in this proceeding. The Company's proposal is deeply flawed and
28 will shortchange customers, who are entitled to receive the maximum benefits
29 from AMF. Unfortunately, the evidence I present validates my concerns in Docket
30 No. 22-49-EL that additional Commission oversight is needed over GBC and
31 HAN. While the Commission approved AMF and AMF deployment is underway, it

1 is not too late for the Commission to require specific remedial actions so that
2 customers have full control over their data without arbitrary restrictions,
3 dysfunctional technology or unnecessary hindrance by the Company.
4

5 **Q. Please describe how your testimony is organized.**

6 A. My testimony is organized as follows:

7 Section II provides a summary of the purpose of this testimony along with my
8 recommendations;

- 9 • Section III(B) addresses Green Button Connect;
- 10 • Section III(C) addresses the Home Area Network;
- 11 • Section III(D) addresses grid edge computing;
- 12 • Section III(D) addresses privacy issues;
- 13 • Section III(E) addresses reporting recommendations; and
- 14 • Section IV contains my conclusion.

15
16 **Q. Please summarize your recommendations.**

17 A. First, regarding Green Button Connect, I recommend that the Commission order
18 RI Energy to make remedial changes to GBC due to the fatal flaws we identified
19 with its Kentucky affiliate's GBC platform. If my recommended changes are not
20 successfully completed within six months, then the Commission should require
21 the issuance of a competitive solicitation for GBC to replace the current platform
22 altogether. The remedial changes include, but are not limited to, providing a
23 working customer authorization pathway; providing a complete data set suitable
24 for meeting the requirements of aggregations of distributed resources
25 participating in ISO New England ("ISO-NE") wholesale markets; ensuring
26 minimum user experience requirements; and achieving periodic certification of RI
27 Energy's "live" GBC platform in production. I also recommend that the
28 Commission establish, in a contested proceeding, the terms and conditions for
29 GBC data recipients in Rhode Island, including, but not limited to, how RI Energy
30 evaluates data recipients to become eligible.

1 Second, regarding the HAN capabilities of advanced meters, I recommend that
2 the Commission order RI Energy to end the *de facto* exclusive relationship with
3 Sense by opening the meters' Wi-Fi capabilities to any other Wi-Fi device maker
4 on an open, non-discriminatory basis ("Local Real-Time Access"). To realize this
5 benefit for consumers, RI Energy would develop, or procure from its vendor(s), a
6 meter-based application that connects to standards-compliant Wi-Fi devices
7 selected by the customer and provides real-time, 1-second kilowatt/kilowatt-hour
8 readings, enabling devices such as electric vehicle ("EV") chargers or water
9 heaters to modulate their usage and save customers money. I also recommend
10 that the Commission prohibit the Company and its vendor(s) from imposing terms
11 or conditions on device makers, including, but not limited to, device pre-
12 screening, device testing, financial or other contractual requirements.

13
14 Third, regarding grid edge computing, I recommend that the Commission order
15 RI Energy to file within six months an implementation plan for Direct Data Upload
16 ("DDU"), as described in the accompanying testimony of Mr. Brian Walsh, in a
17 contested proceeding. DDU shall be provided at no cost to either customers or
18 customer-authorized third parties. DDU will enable customers to take maximum
19 advantage of AMF for their direct benefit by removing the need to install or
20 connect a Wi-Fi device on their premise. In addition, given the incipient state of
21 the meter-based App Store, the Commission should expressly disavow any
22 approval of, or supervision over, the Company's App Store at this time, including
23 its terms, fees, functionality or operations, in order to unambiguously remove a
24 shield of immunity against the nation's antitrust laws.

25
26 My complete recommendations are provided in Attachment MEM-1.

27
28 **Q. Is Mission: data sponsoring the testimony of other witnesses in this case?**

29 A. Yes, we are sponsoring the testimony of Messrs. Daniel Roesler and Brian
30 Walsh. The topics they address are below.

- 1 ● Mr. Roesler addresses Green Button Connect, specifically LG&E’s certification
- 2 and standards compliance problems;
- 3 ● Mr. Walsh addresses the feasibility and cybersecurity aspects of DDU.

4 **III. DISCUSSION**

5 **A. INTRODUCTION AND BACKGROUND**

6 **Q. What is Green Button Connect?**

7 A. Green Button Connect (“GBC”) is a North American technical standard for
8 exchanging energy usage, billing, account, and other customer information with
9 customer-authorized third parties. With GBC, a utility hosts an automated web
10 service through which developers of energy management software can, with
11 customer authorization, automatically and securely retrieve meter data in their
12 software. GBC is also known by its technical name, the Energy Services Provider
13 Interface, published by the North American Energy Standards Board.

14

15 **Q. What was RI Energy’s original plan for GBC?**

16 A. In Docket No. 22-49-EL, RI Energy proposed to spend \$664,000 on GBC through
17 September 2026¹ and stated that “AMF will animate the market for third-party
18 products and services by enabling customers to share energy usage information
19 with authorized entities.”² However, the proposal had only scant details. As I
20 noted in testimony at the time, the Company could not define what specific data
21 types or functions would be provided.³ The Company had not conducted any
22 formal interviews, research or surveys of third parties to inform their GBC
23 proposal, and neither had the Company established any quantitative measures of
24 success.⁴

25

26

¹ 22-49-EL, discovery response to PUC 1-11.

² 22-49-EL, Testimony of Philip Walnock and Wanda Reder. AMF Book 1 at 55:8-9.

³ 22-49-EL, Testimony of Michael Murray for Mission:data Coalition at 12:9-16.

⁴ *Id.* at 13:16-14:2, 12:16-13:2.

1 **Q. What was your conclusion about RI Energy’s GBC proposal at that time?**

2 A. That RI Energy was ill-prepared to deliver a functioning GBC system, and that
3 without improvement and Commission oversight, the GBC platform will be an
4 unsuccessful and fruitless expenditure of ratepayer funds and administrative
5 effort.⁵

6

7 **Q. What is your view today on RI Energy’s GBC?**

8 A. Unfortunately, my predictions have been validated by several developments, as I
9 describe below. My recent experience attempting to use the non-functional GBC
10 platform from RI Energy’s Kentucky affiliate, LG&E, underscores the need for
11 proof that RI Energy’s GBC platform is working properly. The GBC certification
12 that the Company obtained in June of 2025 could very well be meaningless given
13 my experience with LG&E, which also has the same certification but does not
14 work.

15

16 In addition, the Company’s compliance filing and presentation at the October 29,
17 2025 technical session indicate numerous problems and shortfalls, such as an
18 insufficient data set that will prevent participation of demand response resources
19 at ISO New England, and a vaguely defined review process for data recipients
20 that could easily become discriminatory, unfair and anti-competitive. Without
21 decisive corrective action by the Commission, I fear that GBC will be a wasted
22 effort.

23

24 **Q. What did the Commission state regarding the scope of this proceeding?**

25 A. In its order in Docket No. 22-49-EL, the Commission ordered that the present
26 proceeding should consider GBC, HAN and grid edge computing “in a contested
27 proceeding.”⁶ This was located in a section of the Commission’s order called

⁵ *Id.* at 14:1-3.

⁶ Docket No. 22-49-EL. Open Meeting Motions and Votes on September 27, 2023 at 4.

1 “Accountability Requirements” and served as part of the basis of the
2 Commission’s approval of AMF.⁷

3
4 Further, the Commission’s December 2, 2025 Notice of Public Hearing further
5 stated “One of those accountability metrics pertained to **planning and**
6 **transparency** relating to customer-facing technologies, specifically addressing
7 functionalities provided by Green Button Connect (GBC), Home Area Network
8 (HAN), and Grid-Edge Computing...” (emphasis added).⁸

9
10 **Q. As compared with RI Energy’s AMF APPLICATION in 2022, how were its**
11 **plans for GBC updated or enhanced in this proceeding?**

12 A. RI Energy’s compliance filing in this proceeding offers virtually nothing of
13 substance to ratepayers beyond the vague plans that were defined in its AMF
14 plan. Regarding GBC, there were only two meaningful additions. First, the
15 compliance filing defines the supported data types,⁹ which were not described in
16 the AMF plan. However, as I describe below, the data types are wholly
17 inadequate because they fail to meet the needs of energy management services,
18 including aggregations of distributed resources participating at ISO New England.
19 Despite being ordered by the Commission to consider including “every customer
20 specific item on the bill,” natural gas data, and “any additional customer specific
21 data,”¹⁰ the Company did the bare minimum and simply copied its GBC
22 implementation from Kentucky without enhancement or consideration of Rhode
23 Island-specific goals or objectives.

24
25 Second, RI Energy has attained certification of its GBC. However, as described
26 in my testimony and further explained in the testimony of Mr. Daniel Roesler, that

⁷ *Id.* at 3.

⁸ Docket No. 25-19-EL. Public Utilities Commission, Notice of Public Hearing. December 2, 2025 at 1.

⁹ Rhode Island Energy. Advanced Metering Functionality Green Button Connect Plan, May 12, 2025 at 8-9.

¹⁰ Docket No. 22-49-EL. Public Utilities Commission, Open Meeting Motions and Votes, September 27, 2023 at 4.

1 certification could be hollow. The Commission should demand much more of RI
2 Energy than what it has proposed thus far.

3
4 **Q. As compared with RI Energy’s AMF APPLICATION in 2022, how were its**
5 **plans for HAN updated or enhanced in this proceeding?**

6 A. Similar to GBC, RI Energy offers nothing more to ratepayers regarding HAN
7 functionality. In fact, RI Energy offers even *less* functionality today than what was
8 discussed three years ago. In Docket No. 22-49-EL, the Company at least
9 entertained the idea that customers would have the right to choose which Wi-Fi
10 devices would connect to their meter.¹¹ Although the Company was non-
11 committal at the time, it was reasonable for the Commission to expect
12 compatibility with a greater number of Wi-Fi devices or applications, besides
13 merely Sense, after the Company had time to conduct further technical analysis.
14 For example, the Commission’s order in Docket No. 22-49-EL called for a HAN to
15 address the “version of bring-your-own-device that will be offered to customers,
16 and requirements, if any, on those devices.”¹² However, RI Energy disregarded
17 the Commission’s order and reiterated that only Sense would be offered –
18 effectively rejecting the idea of “bring-your-own-device” altogether.¹³ Indeed, in a
19 discovery response, the Company stated “The only application the Company
20 plans to implement during the AMF deployment is the Sense application...”¹⁴
21 While Sense may be a valuable application for many customers, its exclusivity
22 represents a move backwards, not forwards, from the original AMF plan in terms
23 of expanding customer choice.

24
25

¹¹ See, e.g., Docket No. 22-49-EL. MDC1-5(b), cited in Direct Testimony of Michael Murray, April 28, 2022 at 30 (“The details around the types of devices to be included have not been determined yet... The Company needs to conduct an analysis of the impacts of connecting a device by Wi-Fi, as well as the types of devices in the market, before it can specify the types if [sic] devices to include.”)

¹² AMF Order at 4.

¹³ Rhode Island Energy. Advanced Metering Functionality Home Area Network Plan at 1-6.

¹⁴ PUC 2-24 at 1.

1 **Q. As compared with RI Energy’s AMF APPLICATION in 2022, how were its**
2 **plans for Grid Edge Computing updated or enhanced in this proceeding?**

3 A. The plans for grid edge computing were not advanced at all. Despite being
4 ordered by the Commission to “file a Grid Edge Computing plan that presents a
5 framework or terms and conditions for each issue identified in Mission:data
6 Coalition’s Post-Hearing Statement section 3, parts (a) through (f),” the Company
7 did nothing of the sort. Instead, RI Energy’s “framework” is merely a restatement
8 of its AMF plan, with descriptions of edge computing hardware and theoretical
9 applications but nothing concrete or directly useful to ratepayers.¹⁵ The Company
10 admits that its own “framework” is largely meaningless because it has “no
11 established date” to implement any of it.¹⁶

12
13 **Q. What is your overall view of RI Energy’s GBC, HAN and Grid Edge**
14 **Computing plans?**

15 A. The Company has done little more than repeat its statements from 2022 –
16 statements which I noted at the time were vague, inadequate, and likely to result
17 in anti-competitive and exclusionary behavior that undermines energy
18 management technologies.¹⁷

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¹⁵ Rhode Island Energy. AMF Grid Edge Computing Plan at 2-8.

¹⁶ Rhode Island Energy. AMF Grid Edge Computing Plan at 2.

¹⁷ See, e.g., Docket No. 22-49-EL. Direct Testimony of Michael Murray at 12:9-14:3 (“RI Energy did not provide satisfactory answers to basic queries about GBC features and operations...”), 32:13-33:7 (“In states where BYOD has been abandoned, anti-competitive behaviors have been seen...”), 57:3-5 (“The Company’s posture toward customer data ownership indicate a discrepancy between the rich data the Company keeps for itself and the inferior data the Company provides to customer-authorized third parties”).

1 **B. GREEN BUTTON CONNECT**

2 **1. RECOMMENDATIONS**

3 **Q. What is your first recommendation for GBC?**

4 A. I recommend that the Commission order RI Energy to make remedial changes to
5 GBC. Specifically, the Commission should require: (i) a working customer
6 authorization pathway; (ii) providing a complete data set suitable for meeting the
7 requirements of aggregations of distributed resources participating in ISO New
8 England (“ISO-NE”) wholesale markets, among other use cases; (iii) ensuring
9 minimum user experience requirements; and (iv) achieving periodic certification
10 of RI Energy’s “live” GBC platform in production. Related to this
11 recommendation, if the improvements are not successfully completed within six
12 months, then the Commission should require the issuance of a competitive
13 solicitation for GBC to replace the current platform altogether.

14
15 **Q. Why is a working customer authorization pathway necessary?**

16 A. The Commission should not assume that GBC will actually work. The first step of
17 GBC is a customer granting his or her authorization. Since that step does not
18 work at LG&E, RI Energy’s Kentucky affiliate, the Commission should be specific
19 about the functionality that it expects to operate properly. Unfortunately, the GBC
20 certification obtained by LG&E does not accurately represent their system, as I
21 explain below.

22
23 **Q. What do you mean by a complete data set?**

24 A. I define a complete data set as the following information which meets the needs
25 of energy management firms, broadly defined, including aggregations of retail
26 customers that wish to participate in wholesale markets:

- 27 1. All usage data, collected at whatever interval on the meter, and, where
28 applicable to certain rate classes, kilo-volt-amps, kilo-volt-amperes-reactive,
29 power factor, and the like;
- 30 2. All customer-specific information including customer name, mailing address,
31 premise address, any contact information, payment history, account

1 number(s), bill PDFs and all information on bills including, but not limited to,
2 line item charges and charge descriptions, amounts billed, the rate or tariff
3 applicable to the account or meter, billing cycle dates, etc., going back 24
4 months;

5 3. Any information that might be necessary for participation in, or to determine
6 customer eligibility for, bill payment assistance, renewable energy, demand-
7 side management, load management, or energy efficiency programs,
8 including at ISO New England;

9 4. Data provided shall meet a “best available” standard, meaning that the data
10 shall be (i) applicable to the customer’s account who granted the
11 authorization, (ii) correct and accurate to the best of RI Energy’s knowledge at
12 the time of transmission; and (iii) transmitted in a timely manner after RI
13 Energy is made aware of any changes to the data. Each interval usage
14 reading shall make use of the “Reading Quality” flags in the GBC standard as
15 energy usage is processed by the Company’s systems.
16

17 **Q. What parts of a complete data set does ri energy say it will provide?**

18 A. The Company will provide only parts of (1) above – that is, kilowatt-hour readings
19 and reading dates. They will not provide billing determinants for commercial or
20 industrial customers, such as kilovolt-amperes or reactive power, nor will they
21 provide account numbers, addresses, bill PDFs, etc. RI Energy admits that the
22 data provided is identical to LG&E,¹⁸ despite Rhode Island having obvious
23 differences from Kentucky, such as being located in ISO New England and
24 having unique energy and carbon reduction targets.
25

26 **Q. Have incomplete data sets been a problem in other jurisdictions?**

27 A. Yes. In Docket No. 22-49-EL, my testimony described problems in California and
28 Illinois that caused expensive re-dos of their GBC platforms due to incomplete
29 data sets.¹⁹ In the California example, re-working GBC to meet new requirements

¹⁸ AMF Green Button Connect Plan at 4.

¹⁹ Docket No. 22-49-EL. Direct Testimony of Michael Murray, at 14:11-15:12.

1 cost an additional \$12 million.²⁰ Swift action by the Commission to require a
2 complete data set, before GBC is released in Rhode Island, could avoid
3 significant unnecessary costs.
4

5 **Q. Have incomplete data sets been problematic for wholesale power markets?**

6 A. Yes, incomplete data sets have led to disputes at the Federal Energy Regulatory
7 Commission (“FERC”) and will become more urgent as FERC Order 2222 is
8 implemented. Recently, Mission:data and Voltus, Inc., a leading virtual power
9 plant firm, filed a complaint against PJM Interconnection, LLC (“PJM”) at FERC.²¹
10 The thrust of the complaint is that PJM’s tariff obligates market participants to
11 provide certain customer data, but utilities do not make such data available. This
12 results in tremendous load flexibility sitting on the sidelines, particularly
13 aggregations of residential customers. The complaint documents the inadequate
14 data-provision practices of electric utilities such as Exelon, Public Service Electric
15 & Gas (“PSEG”), AEP Ohio and Duquesne Light and argues that the information
16 required by PJM is not electronically accessible from these utilities. Notably, the
17 inaccessible data is not merely meter readings; it also includes capacity loss
18 factor, energy loss factor, transmission zone, premise address and peak load
19 contribution. This information is specific to each customer and the utility has
20 exclusive custody of this information. Although the requirements of ISO New
21 England are slightly different from PJM, the same underlying policy failure exists
22 in Rhode Island because the Commission has not yet required a complete data
23 set as part of GBC.
24

25 **Q. Can FERC resolve the problem of incomplete data sets in Rhode Island?**

26 A. I am not a lawyer, but I do not believe so. Historically, FERC has interpreted the
27 Federal Power Act to give state commissions exclusive authority over metering

²⁰ California Public Utilities Commission. Resolution E-4868. Issued August 25, 2017. Available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K746/194746364.PDF>.

²¹ Complaint, Voltus, Inc. and Mission:data v. PJM Interconnection, L.L.C., FERC No. EL26-4, https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20251008-5177.

1 and questions of retail customer access to and control over information about
2 them. I would not recommend the Commission wait for FERC to address this
3 matter.

4
5 **Q. Are you saying the Commission is the only regulator that can ensure**
6 **aggregations of distributed resources can meaningfully participate at ISO**
7 **New England?**

8 A. Yes. The Commission should require RI Energy to go beyond merely providing
9 kilowatt-hour information via GBC. ISO New England requires account number,
10 premise address, utility bill PDF, demand response aggregation zone and load
11 zone for each home or business that is part of an aggregation.²² The
12 Commission should affirmatively require RI Energy to provide this information via
13 GBC, as the lack of this information will result in the *de facto* elimination of large
14 numbers of customers, particularly residential and small commercial customers,
15 from wholesale market participation. Such an outcome would be unfair and
16 discriminatory, and would undermine the state's affordability and climate goals.

17
18 **Q. Why should the Commission explicitly order the “best available” data**
19 **standard as you describe?**

20 A. Because failure to do so will likely lead to RI Energy disclaiming all warranties of
21 accuracy for the data they provide, putting demand response resources and
22 other firms in an impossible situation of simultaneously being liable for the
23 accuracy of such information in downstream economic transactions, such as
24 demand response settlements, but being unable to ensure its accuracy. This is
25 known as a “garbage in, garbage out” type of problem: If the input data cannot be
26 trusted, then every activity one might undertake based upon such energy data
27 (e.g., receive capacity payments, execute energy efficiency retrofits, etc.) is
28 undermined.

²² See, e.g., ISO New England. Customer and Asset Management System (CAMS) User Guide for Demand Asset and Demand Resource Maintenance. May 5, 2025, v3.0 at 4. https://www.iso-ne.com/static-assets/documents/support/user_guides/cams_da_dr_maint_ug.pdf.

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Q. What minimum user experience requirements should the Commission require and why?

A. The table below outlines what the Commission should require regarding user experience requirements and the accompanying rationale.

<u>User experience requirement</u>	<u>Rationale</u>
1. The authorization web page shall be a single page	Some utilities have implemented 10+ step authorization processes that are designed to frustrate customers and minimize data sharing
2. The authorization web page shall be completed by checking a box and clicking an “authorize” button	Simplicity is a best practice. For example, requiring customers to enter by hand every meter number prior to data sharing is unnecessarily onerous
3. The authorization page shall be optimized for mobile devices (i.e. zooming is not required, scrolling is minimized, no erratic behavior on smaller screen sizes)	A large percentage of all internet traffic is on mobile devices, so reaching customers “where they are” is important to usability
4. “Bulk” authorizations for multi-site commercial/industrial customers shall be supported, meaning that customers with multiple meters can easily share all of their accounts’ information with a single authorization	Customers with many meters can be burdened by repeated authorization steps. Often times, a large customer wants to share all of their accounts with an energy manager.
5. The authorization web page shall support third parties specifying the required data types needed for their application and a dynamic “purpose” statement	Sometimes an energy management firm might need energy usage data to provide a service, but other times they might need billing data. Rather than having a A best practice

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1 **Q. Have these user experience requirements been adopted in other**
2 **jurisdictions?**

3 A. Many have been, yes. California in 2017 adopted several of them,²³ as did Ohio
4 in 2021,²⁴ New Hampshire in 2022²⁵ and Colorado in 2025.²⁶ In Canada, the
5 Ontario Energy Board’s Green Button working group adopted user experience
6 requirements.²⁷

7
8 **Q. Why are these user experience requirements necessary?**

9 A. For two reasons. First, GBC certification is entirely silent on issues of the user
10 experience. It is possible to have an absolutely terrible user experience that
11 achieves certification. This means it is up to the Commission to specify what it
12 wants, since certification is not a useful reference in this regard. Second, a poor
13 user experience is a major lesson learned from other jurisdictions. In an absence
14 of Commission direction, a risk-averse utility is likely to erect a highly onerous
15 user experience for GBC that tests the customer’s resolve. Such unnecessary
16 hindrances diminishes the value of GBC and ensures only the most committed
17 and tech-savvy customers can avail themselves of energy management services.

18
19 **Q. What is your next GBC recommendation?**

20 A. The Commission should order annual certification of RI Energy’s “live” GBC
21 platform in production. This means that a “test” GBC or laboratory version of

²³ California Public Utilities Commission. [Resolution E-4868](https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K746/194746364.PDF). August 25, 2017. Available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K746/194746364.PDF>.

²⁴ Public Utilities Commission of Ohio. Case No. 18-1875-EL-GRD et al. Stipulation and Recommendation filed Oct 23, 2020 and approved June 6, 2021.

<https://dis.puc.state.oh.us/DocumentRecord.aspx?DocID=a67df48e-b382-44b6-b8e6-c4836002a024>

²⁵ New Hampshire Public Utilities Commission. Docket No. DE 19-197. Joint Settlement Agreement dated April 28, 2021 approved by Order No. 26,589 on March 2nd, 2022.

<https://www.puc.nh.gov/VirtualFileRoom/ShowDocument.aspx?DocumentId=88f6ce79-16df-4277-b256-8c8cbc881b76>

²⁶ Colorado Public Utilities Commission. Proceeding No. 24A-0547E. Commissioner oral discussion during November 5, 2025 open meeting; written order forthcoming. Available at

<https://www.youtube.com/watch?v=iOy25qhV8vk>, GBC discussion begins at 4:43:00.

²⁷ See, e.g., Ontario Energy Board Independent Working Group on Green Button Implementation. March 7, 2024. <https://www.oeb.ca/sites/default/files/GB-IWG-Meeting%20Agenda-presentation-Meeting%2035-240307.pdf>

1 GBC is not acceptable for testing; only the “live” platform actually in use should
2 be evaluated. The Commission should order this certification within six months.

3
4 **Q. Why is re-testing necessary?**

5 A. As explained both below and in Mr. Daniel Roesler’s testimony, the Commission
6 cannot rely on the validity of the certification the Company has achieved –
7 particularly because it was achieved in June of 2025, most likely on a test
8 system, since the production GBC platform does not yet exist. The cost of GBC
9 certification is only \$3,200,²⁸ and so annual re-certification is a modest
10 investment that gives the Commission some level of confidence that it is working
11 as intended. Of course, such confidence increases when the system that is
12 tested is the one actually used by real customers.

13
14 **Q. What else do you recommend within a six month deadline?**

15 A. All of the above GBC recommendations should be completed within six months.
16 If this is not achieved, then the Commission should order RI Energy to procure a
17 new GBC platform through a competitive solicitation.

18
19 **Q. Why is this necessary?**

20 A. Because, particularly with information technology investments, the Commission
21 is not guaranteed of getting the result it wants in six months’ time unless
22 oversight and review is mandated. Based on our experience with LG&E’s GBC,
23 described below, it is appropriate to be skeptical of claims that GBC is operating
24 to the Commission’s satisfaction.

25
26 **Q. What else should be part of the competitive solicitation?**

27 A. If the Company’s GBC cannot achieve the reasonable performance expectations
28 I have recommended and becomes an unsalvageable sunk cost, then it is

²⁸ Green Button Alliance, <https://www.greenbuttonalliance.org/testing>.

1 appropriate for RI Energy to consider participating in a regional data sharing
2 platform as part of its solicitation, and to report its findings to the Commission.
3

4 **Q. What is a regional data platform?**

5 A. Regional data platforms simplify the process for consumers to grant a data-
6 sharing authorization regardless of which utility serves them. Massachusetts²⁹,
7 New Hampshire³⁰ and Texas³¹ have policies establishing state-wide systems for
8 customers to share their energy usage and billing data with third parties through
9 a single application programming interface (“API”). For example, the
10 Massachusetts Grid Equity Act directs utilities to

11 ...jointly establish a centralized data repository to allow customers
12 and third parties, including competitive suppliers, access to
13 advanced metering data, including billing, interval usage and load
14 data, in near-real time for all customer classes.³²
15

16 In addition, Exelon Corporation, representing over 10 million electric meters
17 across multiple states, recently stated that it is pursuing an enterprise-wide GBC
18 platform.³³
19

20 **Q. What are the benefits to Rhode Island ratepayers of RI Energy participating
21 in a regional data platform such as Massachusetts’?**

22 A. There would be greater energy management choices for customers in Rhode
23 Island. Since software developers incur a cost for each unique GBC they
24 support, developers are more likely serve larger populations served by the same

²⁹ Massachusetts Grid Equity Act (2024) Chapter 239, Section 79.

<https://malegislature.gov/Laws/SessionLaws/Acts/2024/Chapter239>

³⁰ New Hampshire Public Utilities Commission. [Order No. 26,589](#). Docket No. DE 19-197. March 2, 2022.

³¹ Mary Zientara, Ben Rankin, Rick Wornat. [Understanding Smart Meter Texas](#). November 2, 2016.

Available at https://www.ercot.com/files/docs/2016/11/30/FINAL_Understanding_Smart_Meter_Texas.pdf.

³² Massachusetts Grid Equity Act (2024) Chapter 239, Section 79.

<https://malegislature.gov/Laws/SessionLaws/Acts/2024/Chapter239>

³³ Exelon presentation at Maryland Public Service Commission technical conference, Case No. 9778, December 3, 2025.

1 GBC platform. Also, the administration of third parties – registering them with the
2 platform, exchanging secure communications, and the like – would be
3 streamlined. A third party who has successfully registered in Massachusetts
4 could simply click a button to apply to register in Rhode Island, simplifying the
5 process for both third parties and RI Energy.

6
7 **Q. How would you address governance, cost allocation and other**
8 **administrative topics associated with a regional data platform?**

9 A. It is too early to say at this time. However, these are all topics that RI Energy
10 should include in its report to the Commission, should the efforts to reform their
11 existing GBC platform fail.

12
13 **Q. What is your final recommendation related to GBC?**

14 A. I recommend that the Commission establish, in a contested proceeding, the
15 terms and conditions for GBC data recipients in Rhode Island, including, but not
16 limited to, how RI Energy evaluates data recipients to become eligible.

17
18 **Q. Why is that necessary?**

19 A. If RI Energy is permitted to unilaterally change the terms for data recipients at
20 any time without review by the Commission, it would create severe business
21 uncertainty and chill investment in data-driven energy management solutions in
22 Rhode Island. While the Company proposed some terms and eligibility criteria
23 informally in the October 29, 2025 technical session,³⁴ the Commission must
24 referee such terms in order to address concerns that the Company could
25 discriminate against some GBC applicants over others; modify the terms
26 unilaterally; require GBC applicants to submit competitively sensitive information
27 about energy management tools so that RI Energy gets an unfair advantage; or
28 otherwise abuse their monopoly position.

³⁴ See, e.g., RI Energy presentation at 6. <https://ripuc.ri.gov/sites/g/files/xkgbur841/files/2025-11/25-19-EL-%20GBC%2C%20HAN%2C%20Grid%20Edge-Technical%20Session%2010-29-25%20%28PUC%2010-28-25%29.pdf>

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Q. Have other State Commissions established terms and conditions for GBC applicants?

A. Yes, it is fairly common. California and Illinois have tariffs governing GBC.³⁵

2. EVALUATION OF LG&E’S GREEN BUTTON CONNECT

Q. Why is LG&E’S Green Button Connect relevant to Rhode Island?

A. Because RI Energy is simply copying LG&E’s approach, using the same vendor. As the Company stated in its 2022 AMF benefit-cost analysis, “Pre-established PPL AMF contracts and relationships that can be leveraged by Rhode Island Energy will be executed through several sole-source contracts with such vendors to derive efficiency and scalability.”³⁶ The GBC vendor, Accelerated Innovations, is the same between LG&E and RI Energy. (Accelerated Innovations was acquired by VertexOne in 2024.)³⁷ According to the Company’s compliance filing that initiated this proceeding, “Once the functionality [GBC] is deployed, Rhode Island Energy customers with AMF meters will have the same GBC capabilities, data fields, and historical information that Kentucky electric customers have.”³⁸

Q. What experience do you have with LG&E’s Green Button Connect?

A. Beginning July 22nd, 2025, I, along with an employee under my supervision, attempted to register with and use LG&E’s GBC. To assist my investigation, I used the GBC client software from Screaming Power, Inc. to interface with LG&E on behalf of Mission:data.

³⁵ See, e.g., Pacific Gas & Electric Rule 25, https://www.pge.com/tariffs/assets/pdf/tariffbook/ELEC_RULES_25.pdf.
³⁶ Docket No. 22-49-EL. Advanced Metering Functionality Business Case and Attachments, Schedule PJW/WR-1 (Book 2 or 3), Rhode Island Energy at 97.
³⁷ https://www.einnews.com/pr_news/768896458/vertexone-acquires-accelerated-innovations-expanding-customer-engagement-solutions-for-the-energy-utility-industry
³⁸ Docket No 25-19-EL. Rhode Island Energy Advanced Metering Functionality Green Button Connect Plan, May 12, 2025 at 4.

1 **Q. Who is Screaming Power, Inc.?**

2 A. Screaming Power is a Toronto-based software company originally founded in
3 2002. The company specializes in electric utility digitization, energy consumer
4 engagement, data management, system integration, and Green Button services.
5

6 **Q. What is Screaming Power's experience with Green Button?**

7 A. Screaming Power has many years of experience with the Green Button standard.
8 The company offers software called "EZGB" for third parties to access utilities'
9 GBC implementations.³⁹ EZGB is now integrated with the GBC systems of
10 dozens of Ontario, Canada utilities, including Enbridge, Hydro One, and Alectra
11 serving over 9 million electric, natural gas, and water accounts. I understand that
12 Screaming Power's customers, such as large property owners, use EZGB to
13 centralize their energy data from across multiple utilities, thereby helping with
14 enterprise cost and energy management.
15

16 **Q. Have you used Screaming Power's GBC client software before?**

17 A. Yes, I have used it to connect with approximately ten electric and gas utilities in
18 Ontario, Canada, as well as with Xcel Energy in Colorado.
19

20 **Q. Is GBC in Canada different than GBC in the United States?**

21 A. No. The GBC standard itself is published by the North American Energy
22 Standards Board, which counts both American and Canadian utilities and
23 regulators as members. Ontario's regulation 633/21 requires the province's
24 electric and gas utilities to be independently certified to the GBC standard.⁴⁰ The
25 GBC standard's technical requirements are exactly the same in Canada and the
26 United States.
27
28

³⁹ <https://www.screamingpower.ca/ezgb-green-button-connector/>

⁴⁰ <https://www.ontario.ca/laws/regulation/r21633>

1 **Q. How would you characterize your experience with LG&E's Green Button**
2 **Connect?**

3 A. LG&E's GBC platform is non-functional. As detailed below, my attempts at using
4 it failed. LG&E technical support was unable to demonstrate how a customer
5 would grant their authorization. When pressed, LG&E technical support admitted
6 that GBC does not work.

7
8 **Q. What else about LG&E's GBC is problematic?**

9 A. LG&E's certificate was provided to the Kentucky Public Service Commission, but
10 the certificate does not mean that the actual GBC platform works for Kentucky
11 ratepayers. Unfortunately, the existence of a certificate alone does not guarantee
12 a successful GBC system. Mr. Daniel Roesler addresses this topic in his
13 testimony.

14
15 **Q. Could this be a problem for Rhode Island?**

16 A. Yes, absolutely. RI Energy stated in discovery that its GBC was certified by the
17 Green Button Alliance on June 27, 2025.⁴¹ However, it is not "live" yet, and so it
18 is impossible to know if the ultimate, as-deployed GBC platform behaves the
19 same way as the software which passed the certification tests in June of 2025. If
20 the Commission does not require RI Energy to get its "live" system re-certified,
21 then the Commission could discover that the GBC platform which cost \$664,000
22 is not actually functional.

23
24 **Q. Before you provide a timeline of your registration attempt with LG&E,**
25 **please describe what GBC onboarding consists of.**

26 A. Onboarding for any GBC system generally involves three steps: Registration,
27 which is exchanging contact information and technical information, including a
28 secure identification and password; application programming interface ("API")
29 integration, which means interacting with the utility's servers in an automated

⁴¹ Division 1-9.

1 fashion to ensure that communications are established; and testing, using
2 sample accounts or real customer accounts to ensure that the whole process
3 works properly.
4

5 **Q. Before you provide a timeline of your registration attempt with LG&E,**
6 **please define what an “authorization URL” is.**

7 A. An authorization URL – technically, an “authorization request uniform resource
8 locator” (“URL”) – is the first step of the customer’s authorization process
9 according to the GBC standard. To understand an authorization URL, suppose a
10 residential customer is interested in accessing a service called Acme Energy for
11 identifying load flexibility opportunities that are tailored to his or her usage and bill
12 history. The customer is using Acme Energy’s website, which says “To begin
13 using our service, connect your LG&E Energy account here.” The link to LG&E’s
14 website, where the customer logs in and grants authorization, is called an
15 authorization URL. This is the very first step and is a required component of the
16 GBC standard. The authorization URL is discussed further in the testimony of Mr.
17 Daniel Roesler.
18

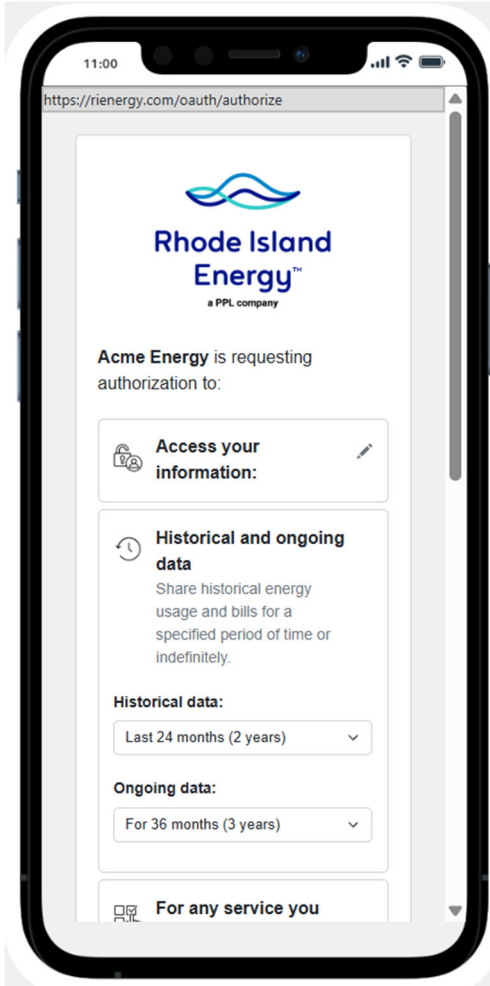
19 **Q. What is your overall assessment of the LG&E onboarding process?**

20 A. Onboarding could not be completed. While we were able to register, we were
21 unable to test basic functionality because a working authorization URL does not
22 exist. We also found LG&E’s technical support to be lacking, with staff not
23 understanding basic concepts of GBC. It appeared as though LG&E had never
24 onboarded a third party to GBC before our attempt. I conclude that LG&E is not
25 taking GBC seriously, despite being required by the Kentucky Public Service
26 Commission to provide GBC.⁴²
27

⁴² “The Commission finds that LG&E shall also be required to receive certification of its Green Button Connect My Data offering, to residential and non-residential customers alike. LG&E shall file with the Commission proof of its Green Button Connect My Data certification by June 30, 2023.” Kentucky Public Service Commission. Case No. 2020-00350, Order dated June 30, 2021 at 20.
https://psc.ky.gov/pscscf/2020%20Cases/2020-00350/20210630_PSC_ORDER.pdf

1 Soon after, we then received a response from the my.meter@lge-ku.com
2 with certain registration information.

- 3 • September 30, 2025: We used the authorization URL that was provided,
4 <https://mymeter.lge-ku.com/OAuthServer/authorize>, but it lacked any
5 information on how a customer would grant an authorization. The webpage
6 provided leads to the login page for MyMeter, which is for customers to view
7 their energy usage information, not to grant an authorization. Mission:data
8 reached out to LG&E to ask about this issue.
- 9 • October 1, 2025: We made our first attempt at having a customer authorize
10 Mission:data as a third party data recipient. We were unable to find a way to
11 grant an authorization, despite doing a Zoom screen-sharing session with an
12 LG&E customer logged into their account. The customer logged into
13 MyMeter, but there was no link or icon for them to authorize us through GBC.
14 We reached out to the LG&E team to help us understand the process and to
15 see technical documentation. We requested to schedule a call to go through
16 the process together and asked who an LG&E customer would contact for
17 support. LG&E responded by explaining how a customer would download
18 their data for a one-time share, but for ongoing, continuous sharing, they are
19 “still working through the process of configuring this option but the one-time
20 share should suffice in the meantime.”
- 21 • October 2, 2025: Mission:data shared a screenshot of what an authorization
22 URL is expected to look like. Mission:data asks what URL would lead to a
23 page like this, because the URL provided is not an authorization URL.



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- October 3, 2025: We share the authorization URL and parameters we are passing with LG&E’s support. Again we are redirected to the MyMeter login page, but when the customer successfully logs in, there is no way to grant an authorization.
- October 8, 2025: Having not received any response, Mission:data follows up requesting an update.
- October 10, 2025: MyMeter staff replies that the issue has been escalated.
- October 20, 2025: Having not received any updates, Mission:data follows up again.
- October 23, 2025: MyMeter staff informs us the issue has been escalated to director level.

- 1 • November 3, 2025: I had a Zoom call with a business in LG&E territory. The
2 purpose of the call was to walk through and document the process with them
3 of how they authorize Mission:data as a third party data recipient. No pathway
4 was found for a customer to authorize Mission:data as a GBC recipient.
- 5 • November 12, 2025: A response from support@mymeter.co stated, “Support
6 task #30328 has been created for our team to team to look into, and we’re
7 treating this as a priority. We’re reviewing what’s required to provide a
8 dedicated URL for the Green Button Connect registration form so we can
9 address these concerns and improve the process for third-party vendors.” We
10 replied the same day that the issue is with the lack of an authorization URL,
11 not a registration URL.
- 12 • November 17, 2025: MyMeter staff replied, “Together, we completed our
13 review of the enrollment issue you experienced with Green Button Connect
14 and believe we have a resolution. When the original application was
15 submitted, some of the required fields had not been completed. We believe
16 the application can now move cleanly through to authentication without
17 interruption. When you have a moment, please confirm whether you can
18 successfully connect to Green Button Connect or if you need any further
19 assistance.”
- 20 • November 18, 2025: We asked for the steps that a customer needs to take to
21 authorize GBC for us.
- 22 • November 19, 2025: We made another attempt to use the authorization URLs
23 that were provided, but using specific parameters particular to our
24 organization.⁴³ This did not work either.

25
26 As of December 1, 2025 this issue has not been resolved.

27

⁴³ The complete URL attempted was https://mymeter.lge-ku.com/OAuthServer/authorize?response_type=code&client_id=gbc_7&redirect_uri=https%3A%2F%2Fmissiondata.uenergyhub.org%2FcmdCallback&scope=FB=1_3_4_5_6_7_8_9_12_15_16_17_27_28_35_36_37_40_51_54_55_56_57_58_59_60_61;SubscriptionFrequency=Daily&state=68e0031e88c9897bd26417c4.

1 **Q. How does this experience compare to onboarding with other Utilities' GBC**
2 **platforms?**

3 A. It was similar to utilities that have an immature GBC platform, no documentation
4 and scant operating experience. Onboarding with some Canadian utilities – who
5 had recently spun up their GBC platform to meet regulatory requirements – was
6 often difficult, with errors, technical snafus and poor support, reflecting those
7 utilities' lack of experience or preparedness. This contrasts with utilities who have
8 a mature GBC platform in which onboarding can be completed in a single day.
9 Over four months have passed since we began onboarding with LG&E and there
10 is no indication that it will ever work properly.

11

12 **Q. Is the authorization URL functionality described in the Company's**
13 **compliance filing in this proceeding?**

14 A. Yes, although it is not referred to by that name. On page 7, Figure 4, the
15 Company's filing states, "Third-party vendor redirects customer to AMF Customer
16 Portal. Customer enters their credentials and authorizes the third-party."⁴⁴ That is
17 a reference to the authorization URL.

18

19 **Q. To confirm, are you saying that the authorization feature described in the**
20 **compliance filing is not operable at LG&E?**

21 A. Correct.

22

23 **C. HOME AREA NETWORK**

24 **Q. What are your recommendations regarding the Home Area Network?**

25 A. The Commission should order RI Energy within six months to support "Local
26 Real-Time" functionality so that customers can connect to their advanced meter
27 any Wi-Fi device that adheres to the technical standard known as IEEE2030.5
28 without fees, device testing requirements, or contractual restrictions imposed by
29 RI Energy. The Commission should require RI Energy to attain periodic

⁴⁴ RI Energy, Green Button Connect Plan at 7, Figure 4.

1 certification of compliance with the IEEE2030.5 standard. Local Real-Time
2 capability would end the *de facto* exclusive relationship with Sense and ensure
3 that the competitive marketplace, not RI Energy, determines which services will
4 best serve customers. Mr. Brian Walsh’s testimony establishes that Local Real-
5 Time functionality is both technically feasible given the Landis+Gyr Revelo
6 meters being deployed by RI Energy and does not introduce cybersecurity risks
7 to the Company.

8
9 **Q. Why is this recommendation necessary?**

10 A. Protecting the public from monopoly abuses is part of the regulatory process.
11 Under RI Energy’s current plan, Sense has *de facto* exclusivity in Rhode Island,
12 meaning that no other firm is allowed to use the Wi-Fi capabilities of the
13 advanced meter. Whatever the merits of Sense’s product, it is inappropriate for a
14 monopoly to “pick winners” in a competitive marketplace via exclusionary
15 conduct. Eliminating the exclusive relationship would ensure more choices for
16 consumers and eliminate the unfairness I have identified.

17
18 **Q. Are you saying that RI Energy should terminate its relationship with**
19 **Sense?**

20 A. No. I am saying that the use of Wi-Fi to communicate real-time meter data should
21 not be exclusive to Sense. Terminating exclusivity can be accomplished with a
22 meter-based application, procured by RI Energy, that serves real-time usage
23 data over Wi-Fi to any device on an open, non-discriminatory basis, as described
24 in Mr. Walsh’s testimony.

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1 **Q. Have other utilities offered HAN functionality to any wi-fi device as you**
2 **recommend?**

3 A. Yes. Xcel Energy in Colorado was required to offer IEEE2030.5 capability on an
4 open, non-discriminatory basis⁴⁵. Each meter supports communication with up to
5 16 in-home Wi-Fi devices simultaneously.⁴⁶

6
7 **Q. Do RI Energy affiliates in Kentucky and Pennsylvania provide open, non-**
8 **discriminatory real-time usage data to HAN devices?**

9 A. Yes. Although the technology is different in Kentucky and Pennsylvania – those
10 meters use ZigBee Smart Energy Profile rather than Wi-Fi – those utilities allow
11 consumers to connect any ZigBee-compliant device to their meter.⁴⁷ RI Energy
12 appears to be an outlier among other PPL utilities due to the exclusive
13 relationship with Sense.

14
15 **Q. What did the Company state regarding its exclusive relationship with**
16 **Sense?**

17 A. In discovery, the Company confirmed its *de facto* exclusive relationship, stating
18 “At this point, the Company is only offering the Sense application...”⁴⁸

19
20 **Q. Did the Company say it would consider wi-fi solutions other than Sense?**

21 A. The Company stated, “The Company will determine whether to put additional
22 applications on the meters on a case-by-case basis.”⁴⁹

23
24

⁴⁵ R22-0131. Colorado Public Utilities Commission, Attachment A (Settlement Agreement) at II(A)-(D), p. 11-13.

⁴⁶ Proceeding No. 23A-0471E. Colorado Public Utilities Commission. Hearing transcript at 183:20-21.

⁴⁷ See, e.g., Division 1-5 (“...customers must purchase, register and install devices that support Zigbee Smart Energy Profile 1.2b”); RI Energy Technical Session presentation, October 29, 2025 at 17.

⁴⁸ CLF1-12(f).

⁴⁹ *Id.*

1 **Q. Why is Commission action necessary if the Company will consider**
2 **additional wi-fi solutions in the future?**

3 A. Because RI Energy has a financial incentive to maintain exclusivity with Sense.
4 Sense is an unregulated affiliate of PPL's⁵⁰ and of Landis+Gyr's.⁵¹ In other
5 words, exclusive Wi-Fi access is a form of self-dealing. Commission oversight is
6 necessary to ensure that the Company's unregulated affiliates are exposed to
7 competitive pressures and do not extract unfair profits from RI Energy's captive
8 ratepayers.

9
10 **Q. What is another way that the Company's proposal for HAN is moving**
11 **backwards?**

12 A. In its AMF business case, RI Energy stated the HAN will provide "timely, granular
13 energy usage information for all customers classes."⁵² But during the October 29,
14 2025 technical session, the Company admitted that Sense does not currently
15 work for customers with rooftop solar. In addition, the Company admitted through
16 discovery that Sense does not support premises with multiple meters.⁵³ In other
17 words, we are witnessing in real-time how benefits of AMF are being gradually
18 stripped away from customers. An order from the Commission requiring RI
19 Energy to support Local Real-Time functionality for **all** advanced meters would
20 alleviate these concerns about backsliding.

21
22 **Q. Why should the Commission prohibit RI Energy from imposing fees, device**
23 **testing requirements, or contractual provisions on HAN device makers?**

24 A. Because a major lesson learned from HAN deployments in other states is that,
25 absent regulatory oversight, utilities will erect barriers in the form of fees, device

⁵⁰ PPL is a limited partner in Energy Impact Partners, a venture capital firm, which counts Sense as a portfolio company. <https://www.energyimpactpartners.com/our-partners/>.

⁵¹ Sense lists Landis+Gyr as an investor. <https://sense.com/about-us/>.

⁵² Docket No. 22-49-EL. RI Energy. Advanced Metering Functionality Business Case. Schedule PJW/WR-1 at 44.

⁵³ PUC Record Request No. 17.

1 testing requirements (which can be expensive), or terms and conditions that are
2 unfair, restrictive, and not approved by regulators, thereby constituting abuse
3 monopoly behavior. For example, some utilities have required that HAN devices
4 be tested before they can be used. San Diego Gas & Electric in California states
5 that its HAN device testing process is required: “SDG&E won’t be able to connect
6 devices that haven’t successfully passed testing, even if a customer purchased
7 the device.”⁵⁴ Without oversight, the Company could concoct an arduous testing
8 process that would deny solar installers the ability to provide certain real-time
9 information services to their customers, while Sense would avoid any such
10 testing process. Another example is First Energy in Pennsylvania which provides
11 a HAN connection form that states, “FirstEnergy Companies have the right to
12 disconnect any HAN-enabled device, without notice, in their sole discretion...”⁵⁵
13 Southern California Edison has a similar notice.⁵⁶ Unilateral termination of a HAN
14 service would have a chilling effect on energy innovation in Rhode Island
15 because companies would not be confident that their product or service would be
16 free from arbitrary interruption. Of course, Sense would most likely not be
17 exposed to such interruptions.

18
19 Finally, I note that my recommendation of non-discriminatory Local Real-Time
20 functionality is similar to telephone handsets and cable modems in the
21 telecommunications industry: any standards-compliant handset or cable modem
22 can be attached to the network, and the monopoly must honor that request.⁵⁷

⁵⁴ San Diego Gas and Electric. Home Area Network Device Capability Validation. Technical standards available at <https://www.sdge.com/residential/home-area-network-device-compatibility-validation>.

⁵⁵ First Energy Service Company. Request to Connect a Home Area Network (HAN) Device to Your Smart Meter. Form available at <https://www.firstenergycorp.com/content/dam/customer/get-help/files/oh-smart-meter/ProvisioningRequestForm.pdf>.

⁵⁶ Southern California Edison. Home and Business Area Network Device Registration Terms and Conditions. Available at <https://www.sce.com/tnc/device-registration>. (“SCE may decide, in its sole discretion and without advanced notice, to terminate the connection between your device(s) and the SCE meter”)

⁵⁷ See, Hush-A-Phone v. United States, 238 F.2d 266 (D.C. Cir. 1956); Federal Communications Commission Carterfone decision (13 F.C.C.2d 420); 47 U.S.C. § 629 (“The [Federal Communications] Commission shall...adopt regulations to assure the commercial availability, to consumers of multichannel video programming and other services offered over multichannel video programming systems, of converter boxes, interactive communications equipment, and other equipment used by consumers to

1 **Q. Finally, what is IEEE2030.5 certification?**

2 A. IEEE2030.5 certification involves running a product through various tests to
3 ensure it is compliant with all aspects of the IEEE2030.5 communication
4 specifications. Various testing firms can, for a fee, provide this testing and
5 certification service.

6

7 **Q. Why is IEEE2030.5 certification necessary in your view?**

8 A. My concern is that RI Energy could change their IEEE2030.5 software on
9 advanced meters in a major or minor fashion and the changes could significantly
10 disrupt the market. In addition, there may be bugs or defects that prevent the
11 meters from communicating properly over Wi-Fi, and certification is the only way
12 to identify those problems before customers get frustrated.

13

14 **Q. With local real-time access, what should RI Energy's obligations be with
15 regard to privacy?**

16 A. The Company's obligations should be to (i) ensure that meters only transmit data
17 to devices authorized by customers and that (ii) such communication are
18 securely encrypted. Beyond that, however, the Company should have no further
19 responsibility for what happens to the real-time usage data. In other words, if a
20 third-party data recipient has a subsequent data breach of some kind, that would
21 be unfortunate, but RI Energy should not be liable for the third party's data
22 misuse so long as RI Energy satisfied the two conditions I described.

23

24 **Q. Why is that reasonable?**

25 A. Because third party data recipients are not RI Energy's vendors. Such firms
26 operate in markets adjacent to and separate from the electric delivery monopoly.
27 If RI Energy were responsible for every act of a third party, then the monopoly
28 utility would be able to squelch innovation, pick winners, engage in self-dealing,

access multichannel video programming and other services offered over multichannel video programming systems, *from manufacturers, retailers, and other vendors not affiliated with any multichannel video programming distributor...*" (emphasis added)).

1 and discriminate against or favor some firms over others based upon RI Energy's
2 financial interests, not the merits of the innovative energy management service.
3 This would lead to distortion of the competitive market and unfair outcomes.
4

5 **Q. Is the delineation of responsibility for privacy that you describe applicable**
6 **to other data-sharing methods?**

7 A. Yes, it is applicable to GBC. It should not be RI Energy's responsibility to be the
8 "policeman" over GBC third parties. It appears that RI Energy implicitly agrees
9 with this premise as well. During the October 29, 2025 technical session, the
10 Company described its approval process for data recipients, showing that it
11 would review the data recipients' "intended scope and use of energy usage data,"
12 but the Company would not have a role in the ongoing monitoring of customer
13 data held by the recipient. I support that approach.
14

15 **D. GRID EDGE COMPUTING**

16 **Q. Please describe your recommendation regarding "Direct Data Upload."**

17 A. Within six months, the Commission should require RI Energy to file a plan for
18 implementing direct data upload ("DDU") in a contested proceeding. DDU
19 facilitates the transfer of real-time usage to the internet web address, or Uniform
20 Resource Locator ("URL"), of the customer's choice. RI Energy should support a
21 simple, customer-friendly authorization process on its customer web portal,
22 further described in the testimony of Mr. Brian Walsh. The Company's plan
23 should also propose how the customer's applicable rate can be provided via
24 DDU. Customer usage data will then be sent automatically every few seconds
25 from a customer's Wi-Fi-connected meter to whatever service the customer
26 wants.
27

28 **Q. What is the benefit to ratepayers of this recommendation?**

29 A. The primary benefit is that customers could access real-time energy
30 management services without first needing to purchase a dedicated HAN
31 hardware device. With older meter technologies, customers would need to

1 purchase a Zigbee-based HAN device, which costs approximately \$99. The
2 expense of the HAN device is a barrier to customer adoption, particularly for low-
3 and moderate-income customers. If RI Energy does not support direct upload,
4 customers would need to purchase a dedicated Wi-Fi HAN device to access
5 24x7 energy management services. Even if a Wi-Fi HAN device costs only \$35 –
6 such as a Raspberry Pi⁵⁸ – this expense is still an unnecessary barrier for
7 consumers to derive energy-saving value from their advanced meters.
8

9 **Q. Was RI Energy required to address DDU in this proceeding?**

10 A. Yes. The Commission required the Company to address “a framework or terms
11 and conditions for each issue identified in Mission:data Coalition’s Post-Hearing
12 Statement section 3, parts (a) through (f).”
13

14 **Q. What was Mission:data’s post-hearing statement Section 3 parts a through
15 f?**

16 A. The post-hearing statement reads as follows:

17 With respect to Grid Edge Computing, also known as Distributed
18 Intelligence, which includes an App Store on advanced meters, we
19 respectfully request that the Commission order the Company as follows:

20 a. The Company, acting by itself or via its vendor(s) in deploying AMF, is
21 prohibited from charging a commission fee on software applications to
22 either ratepayers or software developers.

23 b. The Company shall take no action that would limit or otherwise curtail a
24 Customer’s ownership rights over the disaggregation insights that are
25 generated by ratepayer-funded technology or software. Such insights shall
26 be equally available to customers and customer-authorized third parties.

27 c. No disaggregation software application on advanced meters will be
28 enabled unless (1) the Commission has granted prior authorization, or (2)
29 the customer has granted his or her consent to the Company.

⁵⁸ Raspberry Pi. Marketing materials and pricing available at
<https://www.raspberrypi.com/products/raspberry-pi-4-model-b/>.

1 d. The Company shall provide written notification to the Commission each
2 time the Company shares AMF-generated data, including energy usage or
3 disaggregation insights, with a law enforcement agency.

4 e. The Company, acting by itself or via its vendor(s) in deploying AMF,
5 shall provide customer-authorized third parties with access to the App
6 Store and related advanced meter functionality on an open and non-
7 discriminatory basis, allowing customers to choose to at least one
8 software application from a third party to be deployed onto their advanced
9 meter.

10 f. The Company is hereby notified that the Commission's oversight and
11 supervision over the Company's App Store is limited to the terms included
12 herein. The Commission's approval of AMF shall not be construed as
13 approval of any App Store policy, procedure or technology not explicitly
14 addressed herein.

15
16 **Q. Did RI Energy address each of these topics?**

17 A. Not in any meaningful way, no. The Company "passed the buck" to Landis+Gyr
18 on several key topics, such as commission fees for meter applications ("App
19 Publishers generally will agree to share a portion of revenues from purchased
20 applications with Landis+Gyr..."⁵⁹). RI Energy also presents inadequate
21 responses regarding (d), sharing of data with law enforcement agencies, and (e),
22 allowing customers to have at least one meter-based app deployed on their
23 meter. Overall, grid edge functionality is punted to the future, with RI Energy
24 stating "the Company is outlining the framework below as a potential future
25 state."⁶⁰

26
27 **Q. What else is notable about RI Energy's proposal?**

28 A. RI Energy offers no protection against abusive exploitation of app developers by
29 Landis+Gyr, stating only that:

30 The Company is willing to commit that it will use commercially reasonable
31 efforts to include terms in its agreements with its meter vendor that require

⁵⁹ RI Energy AMF Grid-Edge Computing Plan at 6.

⁶⁰ *Id.* at 2.

1 open and non-discriminatory terms for developing and installing third-party
2 applications on the AMF meters.⁶¹

3

4 **Q. Why is that notable in your view?**

5 A. Because the Company is protecting Landis+Gyr's unfettered ability to earn
6 monopoly profits off the backs of software developers. I think everyone would
7 agree that bringing software developers into the ecosystem to create applications
8 would serve ratepayers' interests; however, Landis+Gyr has acquired a 20-year
9 *de facto* monopoly on advanced metering in Rhode Island, and RI Energy is
10 promising nothing to address the risk of price-gouging except "reasonable efforts"
11 to adjust their contract with Landis+Gyr. This provides little comfort that the
12 ecosystem will develop in a manner beneficial to ratepayers.

13

14 **Q. Is the company's overall Grid Edge plan adequate in your view?**

15 A. No. The Company was evasive on substantive points such as commission fees
16 and customers' ability to load apps of their choice.

17

18 **Q. What is your recommendation to address these concerns?**

19 A. The Commission has a choice. Either it can rigorously oversee the "app store"
20 and demand specifics from the Company and referee the relationships between
21 Landis+Gyr and software developers, or the Commission can step back and
22 assert its non-supervision. At this phase, I recommend the latter. Given its
23 incipient and undeveloped state, the Commission should expressly disavow any
24 approval of, or supervision over, the Company's and Landis+Gyr's "app store,"
25 including its terms, fees, functionality or operations, in order to unambiguously
26 remove a shield of immunity against the nation's antitrust laws.

27

28

29

⁶¹ *Id.* at 6-7.

1 **Q. What are the Antitrust Laws?**

2 A. I am referring to the Sherman Antitrust Act (15 U.S.C. §§ 1–7) and the Federal
3 Trade Commission Act (15 U.S.C. §§ 41-58, as amended).

4

5 **Q. Is RI Energy immune from the Antitrust Laws?**

6 A. In many areas, yes. Although I am not a lawyer, my understanding is that *Parker*
7 *v. Brown* (1943) is generally credited with creating “state action” immunity for
8 government-sanctioned private monopolies. Later, under *California Retail Liquor*
9 *Dealers Association v. Midcal Aluminum* (1980), the U.S. Supreme Court
10 affirmed state action immunity but established a two-part test for such immunity:
11 (1) there must be a clearly articulated state policy to displace competition, and (2)
12 there must be “active supervision” by the state of the policy or activity. According
13 to these and other precedents, RI Energy’s immunity from antitrust law is not
14 infinite.

15

16 **Q. Has the State Of Rhode Island articulated a policy that RI Energy’s meter**
17 **vendor should have sole monopoly control over the Commission fees and**
18 **developer terms and conditions of the “app store” on advanced meters?**

19 A. No.

20

21 **Q. Does the Commission actively supervise RI Energy’s meter app store, its**
22 **commission fees or developer terms and conditions?**

23 A. No. This is the first proceeding in which the Commission has even considered
24 such topics. To my knowledge, the Commission has issued no orders to date
25 establishing the parameters of the meter app store.

26

27 **Q. By asking the Commission to make the declarations you recommend,**
28 **would the commission be asserting antitrust liability?**

29 A. No, not at all. Only the federal courts can determine antitrust liability.

30

31

1 **Q. So why is the declaration of non-supervision necessary in your view?**

2 A. Because otherwise the Commission may be inadvertently granting a broad
3 shield of immunity over behavior that it finds concerning and potentially harmful
4 to ratepayers and software developers. If the Commission is dissatisfied with the
5 status quo but is reluctant to begin fulsome oversight of the app store, including
6 meaningfully overseeing its functionality, business terms and commission fees,
7 then the next best choice is to eliminate any express or implied antitrust immunity
8 for the conduct concerning Landis+Gyr's exclusive right to set these terms. This
9 declaration would allow government enforcers or private plaintiffs to intervene if
10 warranted.

11

12 **F. PRIVACY**

13 **Q. What is your recommendation regarding privacy?**

14 A. The Commission should order RI Energy to ensure that no customer data
15 derived from advanced meters is transmitted to a law enforcement agency
16 without a valid court order.

17

18 **Q. What did the Company state regarding sharing customer energy data with
19 law enforcement agencies?**

20 A. The Company provides only one sentence: "Additionally, the Company's Privacy
21 Notice outlines the use and disclosure of personal information, which includes
22 law enforcement requests."⁶²

23

24 **Q. What does the Company's privacy policy state regarding sharing customer
25 energy data with law enforcement agencies?**

26 A. In the Company's "Other Uses and Disclosures" section of their privacy policy,
27 they state that information sharing will occur "To respond to a legally enforceable
28 subpoena, warrant, discovery demand, court order, or in support of other formal
29 legal processes" and "For other legal and contractual purposes."⁶³

⁶² *Id.* at 8.

⁶³ <https://www.rienergy.com/site/legal/privacy-notice>

1 **Q. What does Sense’s privacy policy state regarding sharing customer energy**
2 **data with law enforcement agencies?**

3 A. Sense states that it may disclose personal information “to comply with laws or to
4 respond to lawful requests and legal process.”⁶⁴

5
6 **Q. Are those protections adequate in your view?**

7 A. No, because they are privacy policies on RI Energy’s and Sense’s website,
8 respectively, meaning they can be changed unilaterally by each entity at any
9 time. There is also considerable leeway in the phrases “legal process” to share
10 sensitive energy information without a court order. For example, “administrative
11 warrants” have often been issued by executive agencies representing law
12 enforcement and could be interpreted as “legal process” even though such
13 administrative warrants have not been reviewed by a court. Finally, each
14 company may perceive a small risk in violating their privacy policy in order to
15 satisfy a law enforcement request under the assumption that the target
16 household is unlikely to discover the utility’s involvement in the first place.

17
18 **Q. Why does this matter?**

19 A. RI Energy is one of the first utilities in the country to use Sense, which generates
20 potentially very personal and sensitive profiles of how individuals use electricity in
21 their homes. Already, advanced meters *without* edge computing capability have
22 been targeted by dragnet surveillance programs that courts have recently found
23 to be illegal.⁶⁵ Revealing even more detailed information – that is, disaggregated
24 energy usage – without judicial review poses a threat to liberty and to the Fourth
25 Amendment of the United States Constitution. As a monopoly, RI Energy is a
26 target for state or federal law enforcement agencies to go on “fishing expeditions”
27 to see what information they can acquire easily. While RI Energy’s and Sense’s

⁶⁴ <https://sense.com/privacy/>

⁶⁵ See, e.g., *Asian American Liberation Network v. Sacramento Municipal Utility District*. Superior Court of California (2025). <https://www.eff.org/deeplinks/2025/11/victory-court-end-dragnet-electricity-surveillance-program-sacramento>

1 policies provide some protection against adverse outcomes as written, it would
2 be prudent for the Commission to explicitly prohibit the sharing of sensitive
3 disaggregation insights with law enforcement without due process. This “belt and
4 suspenders” approach would give consumers peace of mind that taking
5 advantage of new energy management tools does not involve sacrificing their
6 civil liberties.

7
8 **F. REPORTING**

9 **Q. Please explain what reporting you recommend.**

10 A. In order to ensure that data access methods are actually usable and functional
11 for customers, I recommend the Company be required to report annually on the
12 following:

- 13
- 14 1. Using an independent consultant, report on a random sample of at least fifteen
15 residential customers and at least ten non-residential customers in attempting to
16 share their data via GBC with a third-party service of the customer’s choosing.
17 Show the results, time elapsed, problems witnessed, interview summaries and
18 actions taken to mitigate issues.
 - 19 2. Using an independent consultant, report on a random sample of at least fifteen
20 residential customers and at least ten non-residential customers in attempting to
21 share their data via HAN with a device of their choosing. Show the results, time
22 elapsed, problems witnessed, interview summaries and actions taken to mitigate
23 issues.
 - 24 3. For Green Button Connect:
 - 25 a. GBC system availability (uptime), calculated on a monthly basis as the
26 number of minutes the GBC service is available for use and operating
27 correctly without a severe defect divided by the total number of minutes,
28 excluding scheduled maintenance windows
 - 29 b. Number and type of errors generated, if any

- 1 c. Number and type of issues raised by third parties and customers,
2 including severity, mean and max acknowledgment time, and mean and
3 max resolution time
4 d. Number and status of third parties going through administrative
5 onboarding
6 e. Number and status of third parties going through technical onboarding
7

8 **Q. Why do you propose these reporting metrics?**

9 A. Given my experience with LG&E, it is important that the Commission not assume
10 that data-sharing tools will work properly. This reporting would enhance
11 stakeholders' and the Commission's ability to understand how AMF is performing
12 from a customer's perspective and help identify anti-competitive behaviors or
13 technical defects. Moreover, GBC metrics are important because poor
14 performance with no reporting is a lesson learned from other jurisdictions. In
15 Texas, for instance, when third party access functionality was first released in
16 April, 2015, SMT inexplicably went offline for a period of two weeks, with no
17 accountability.⁶⁶ It was difficult for parties, and the regulator, to assess SMT's
18 uptime because, at the time, SMT's operators did not provide any metrics. The
19 Texas commission later approved monthly reporting metrics. In California, poor
20 performance and a lack of operational metrics led the commission to require the
21 state's utilities with GBC platforms to report ongoing performance on a publicly-
22 accessible website.⁶⁷ The California commission reasoned that "A webpage or
23 dashboard would allow the Commission, members of the public, and third-party
24 demand response providers to effectively monitor the performance" of the

⁶⁶ Mission:data Coalition. Comments in Response to Staff's Request for Comments Regarding the Smart Meter Texas Web Portal. Public Utility Commission of Texas, Docket No. 42786. April 1, 2016. Available at https://interchange.puc.texas.gov/Documents/42786_22_888088.PDF.

⁶⁷ California Public Utilities Commission. Resolution E-4868. Page 56. August 25, 2017. Available at <https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M194/K746/194746364.PDF>.

1 utilities' data-sharing platforms.⁶⁸ Without this information, it will be difficult for the
2 Commission to exercise meaningful regulatory oversight.

3
4 **IV. CONCLUSION**

5
6 **Q. What is your conclusion?**

7 A. The Commission has a unique opportunity to design the energy management
8 market for optimal outcomes in this proceeding by establishing reasonable
9 safeguards against abuses of monopoly power. A vibrant, competitive market for
10 certain data-dependent, behind-the-meter DERs will benefit consumers and
11 provide many choices for cost-effectively reducing utility bills, but only if the
12 Commission ensures fairness in information accessibility; requires RI Energy to
13 participate in regional data-sharing platforms; and safeguards the rights of
14 consumers to have meaningful abilities to access new energy management
15 services being developed by entrepreneurs and innovators – critically, new
16 technologies that are not available from RI Energy. Since ratepayers are
17 expected to pay for advanced meters, they should be entitled to the maximum
18 amount of benefits enabled by meters' new technologies.

19
20 **Q. Does this conclude your testimony?**

21 A. Yes, and I reserve the right to supplement this testimony based on receipt of
22 further information.

⁶⁸ Id.

Attachment MEM-1: Summary of Recommendations

Green Button Connect:

1. Complete data set:
 - a. All usage data, collected at whatever interval on the meter, and, where applicable to certain rate classes, kilo-volt-amps, kilo-volt-amperes-reactive, power factor, and the like;
 - b. All customer-specific information including customer name, mailing address, premise address, any contact information, payment history, account number(s), bill PDFs and all information on bills including, but not limited to, line item charges and charge descriptions, amounts billed, the rate or tariff applicable to the account or meter, billing cycle dates, etc., going back 24 months;
 - c. Any information that might be necessary for participation in, or to determine customer eligibility for, bill payment assistance, renewable energy, demand-side management, load management, or energy efficiency programs, including at ISO New England;
 - d. Data provided shall meet a “best available” standard, meaning that the data shall be (i) applicable to the customer’s account who granted the authorization, (ii) correct and accurate to the best of RI Energy’s knowledge at the time of transmission; and (iii) transmitted in a timely manner after RI Energy is made aware of any changes to the data. Each interval usage reading shall make use of the “Reading Quality” flags in the GBC standard as energy usage is processed by the Company’s systems.
2. User experience:
 - a. The authorization web page shall be a single page
 - b. The authorization web page shall be completed by checking a box and clicking an “authorize” button
 - c. The authorization page shall be optimized for mobile devices (i.e. zooming is not required, scrolling is minimized, no erratic behavior on smaller screen sizes)

- d. “Bulk” authorizations for multi-site commercial/industrial customers shall be supported, meaning that customers with multiple meters can easily share all of their accounts’ information with a single authorization
 - e. The authorization web page shall support third parties specifying the required data types needed for their application and a dynamic “purpose” statement
- 3. Certification: The Commission should order annual certification of RI Energy’s “live” GBC platform in production. This means that a “test” GBC or laboratory version of GBC is not acceptable for testing; only the “live” platform actually in use should be evaluated. The Commission should order this certification within six months.
- 4. Timeline:
 - a. All of the above GBC recommendations should be completed within six months. If this is not achieved, then the Commission should order RI Energy to procure a new GBC platform through a competitive solicitation.
 - b. If the Company’s GBC cannot achieve the reasonable performance expectations I have recommended and becomes an unsalvageable sunk cost, then it is appropriate for RI Energy to consider participating in a regional data sharing platform as part of its solicitation, and to report its findings to the Commission.
- 5. Terms and conditions: I recommend that the Commission establish, in a contested proceeding, the terms and conditions for GBC data recipients in Rhode Island, including, but not limited to, how RI Energy evaluates data recipients to become eligible.

Home Area Network

- 1. The Commission should order RI Energy within six months to support “Local Real-Time” functionality so that customers can connect to their advanced meter any Wi-Fi device that adheres to the technical standard known as IEEE2030.5 without fees, device testing requirements, or contractual restrictions imposed by

RI Energy. The Commission should require RI Energy to attain periodic certification of compliance with the IEEE2030.5 standard.

Grid Edge Computing

1. Within six months, the Commission should require RI Energy to file a plan for implementing direct data upload (“DDU”) in a contested proceeding. RI Energy should support a simple, customer-friendly authorization process on its customer web portal. The Company’s plan should also propose how the customer’s applicable rate can be provided via DDU.

Privacy

1. The Company’s obligations should be to (i) ensure that meters only transmit data to devices authorized by customers and that (ii) such communication are securely encrypted, but nothing beyond that.
2. The Commission should order RI Energy to ensure that no customer data derived from advanced meters is transmitted to a law enforcement agency without a valid court order.

TABULI 2

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

In Re: Proposed Green Button
Connect, Home Area Network
And Grid Edge Computing)
)
)
)

Docket No. 25-19-EL

**DIRECT TESTIMONY OF
DANIEL ROESLER**

**ON BEHALF OF
MISSION:DATA COALITION**

Date Filed: December 5, 2025

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1 **I. INTRODUCTION**

2

3 **Q. PLEASE STATE YOUR NAME, TITLE AND BUSINESS ADDRESS.**

4 A. My name is Daniel Roesler. I am the owner of Daniel Roesler LLC¹, an
5 independent energy data expert consulting and training company. My business
6 address is 7421 Burnet Rd #121, Austin, TX 78757.

7

8 **Q. ON WHOSE BEHALF ARE YOU TESTIFYING?**

9 A. Mission:data Coalition, an intervenor in this proceeding.

10

11 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND.**

12 A. I have a Bachelor of Science degree in Chemical Engineering from the University
13 of Texas at Austin.

14

15 **Q. WHO IS YOUR EMPLOYER?**

16 A. Daniel Roesler LLC is an independent expert consulting company, where I
17 provide energy data and technology consulting and training services to
18 organizations in the energy and technology sectors. At Daniel Roesler LLC, I
19 utilize my experience in the energy and technology sectors to provide energy
20 data education, insights, strategy, and analysis to organizations needing to
21 navigate the complex landscape of digitized energy data.

22

23 **Q. PLEASE BRIEFLY DESCRIBE YOUR RELEVANT PROFESSIONAL
24 EXPERIENCE.**

25 A. Prior to starting Daniel Roesler LLC, I was the Founder and Chief Technology
26 and Innovation Officer at UtilityAPI. I founded UtilityAPI in 2014, growing the
27 company over 11 years to become the leading technology company providing
28 energy data access services to the utility and energy service provider industries.

29

¹ Daniel Roesler LLC website - <https://danielroesler.com/>

1 During my tenure at UtilityAPI, we developed many digital integrations with
2 utilities, including deploying and certifying many Green Button Connect systems
3 across the United States and Canada. I also developed and patented² the
4 system architecture for UtilityAPI's secure authorization and data collection
5 systems. I also was responsible for UtilityAPI's SOC2 Type II security
6 compliance.

7
8 In addition to developing and deploying certified Green Button Connection
9 systems for utilities, I actively participated in the development of the Green
10 Button standards. I was the Vice-Chair on the board of the Green Button Alliance
11 ("GBA") from 2017-2024, as well as a major technical participant in the GBA's
12 technical working group, OpenADE. I have presented on Green Button technical
13 topics at multiple regulatory and industry conference events in the United States
14 and Canada.

15
16 I have contributed to multiple Green Button technical working groups organized
17 by regulators in California, New York, Illinois, New Hampshire, and Ontario,
18 Canada. For example, in California, I actively participated in the California Public
19 Utility Commission's ("CPUC") Customer Data Access Committee (CDAC),
20 where my proposal of technical and user experience requirements for upgrading
21 the Green Button Connect systems operated by California utilities was adopted
22 and mandated by the CPUC.

23
24 I also have extensive technical experience integrating third party apps into other
25 Green Button Connect systems not operated by UtilityAPI. I was an early beta
26 tester for the Green Button Connect systems deployed by Pacific Gas & Electric
27 ("PG&E"), Southern California Edison ("SCE"), San Diego Gas & Electric
28 ("SDG&E"), Commonwealth Edison ("ComEd"), and Consolidated Edison
29 ("ConEd"). I have also consulted with many energy service provider companies

² Patent 10664605 - Interface Coordination - <https://patents.justia.com/patent/10664605>

1 to help them develop their integrations with Green Button Connect systems
2 throughout the United States and Canada.

3
4 Beyond Green Button, I am the maintainer and primary author of multiple Linux
5 Foundation Energy (“LF Energy”) specifications that are part of the Connected
6 Data Specifications (“CDS”) working groups. These specifications are intended to
7 be the next generation framework for how utilities and other central grid entities
8 can provide secure connectivity to external energy customers and organizations.
9 I have presented at multiple North American and European industry conferences
10 on the work of the CDS.

11
12 Beyond the energy industry, I actively maintain multiple widely adopted open
13 source cybersecurity software libraries. For example, I wrote and actively
14 maintain the “acme-tiny” library³, a widely used transport layer security (“TLS”)
15 certificate-issuing command line tool that is distributed in the repositories of most
16 Linux operating systems. I have also discovered multiple browser security and
17 privacy issues, including finding a method to unmask the real Internet Protocol
18 (“IP”) address of a Virtual Private Network (“VPN”) user using WebRTC⁴, which
19 led to major updates to the WebRTC technical standards.

20
21 In summary, I have over a decade of deep technical experience and knowledge
22 of the Green Button standards, requirements, configurations, and on-the-ground
23 experience deploying Green Button systems at utilities that are used at scale. I
24 also have extensive experience in other energy data access methods,
25 cybersecurity best practices, software development, and technical architecture
26 and design.

³ Acme Tiny - <https://pypi.org/project/acme-tiny/>

⁴ WebRTC in Firefox and Chrome Reveals IPs Behind VPN - <https://news.softpedia.com/news/WebRTC-in-Firefox-and-Chrome-Reveals-IPs-Behind-VPN-471881.shtml>

1 **Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

2 A. The purpose of my testimony is to provide information to the Rhode Island Public
3 Utilities Commission regarding the following topics:

- 4 ● Green Button certification
- 5 ● Problems and issues with the Green Button Connect system currently
6 deployed by Louisville Gas & Electric (“LG&E”)
- 7 ● My experience with other utilities that have Green Button Connect platforms
- 8 ● Recommendations regarding Green Button certification for the Narragansett
9 Electric Company d/b/a Rhode Island Energy (the “Company” or “Rhode
10 Island Energy”).
- 11 ● User Acceptance Testing
- 12 ● Function Blocks for Green Button Connect systems
- 13 ● Recommendations regarding Function Blocks for the Company’s Green
14 Button Connect system
- 15 ● Issues regarding confidentiality of Green Button certification test reports

16
17 **II. GREEN BUTTON CERTIFICATION**

18 **Q. WHAT IS THE GREEN BUTTON ALLIANCE?**

19 A. The Green Button Alliance (“GBA”) is an international non-profit organization,
20 formed in 2015, that manages and raises awareness of the Green Button
21 standards. The GBA manages the technical working group, OpenADE, that
22 maintains and updates the Green Button standards. The GBA also offers
23 certification testing for utilities that have deployed Green Button functionality.
24 Members of the GBA include utilities, third parties, government agencies,
25 startups, and industry organizations.

26
27 **Q. WHAT IS GREEN BUTTON CONNECT CERTIFICATION?**

28 A. GBC certification is an independent test on a GBC deployment by a utility. The
29 certification test is performed by the technical staff of the GBA to verify that the
30 technical implementation meets the requirements of the Green Button standards.

1 Items such as data formats, Application Programming Interfaces (“APIs”), and
2 encryption requirements are verified during the certification tests.

3
4 It is important to note, however, that GBC certification tests are limited to only
5 verifying technical functionality within the scope of the Green Button standards,
6 and since Green Button standards are limited to only technical functionality,
7 items such as user experience, registration process, terms and conditions, the
8 adequacy of developer documentation, and technical support capabilities are not
9 reviewed as part of certification. Additionally, data accuracy is not verified by the
10 certification tests.

11
12 So utilities could deploy a Green Button implementation that can be certified, but
13 is effectively not available for use because of non-technical barriers, such as a
14 lack of developer documentation, insufficiently trained technical support,
15 confusing user interfaces, and inaccurate data.

16
17 **Q. HAVE YOU PERSONALLY TAKEN GREEN BUTTON CONNECT SOFTWARE**
18 **THROUGH THE CERTIFICATION PROCESS?**

19 A. Yes, I have personally taken UtilityAPI deployments of GBC software through the
20 GBA certification test more than ten times.

21
22 **Q. DID YOUR SOFTWARE PASS GREEN BUTTON CONNECT CERTIFICATION?**

23 A. Yes, UtilityAPI deployed the first certified GBC in the United States for Silicon
24 Valley Clean Energy (SVCE) in 2022⁵. In subsequent years, UtilityAPI obtained
25 GBC certification for deployments at many other utilities, including National Grid
26 (Upstate New York), Fort Collins Utilities (Colorado), Peninsula Clean Energy
27 (California), Consumers Energy (Michigan), Welland Hydro (Ontario), El Paso
28 Electric (Texas), SWEPCO (Louisiana), and Eversource (Massachusetts).

⁵ Green Button Alliance announcement about SVCE certification -
<https://www.greenbuttonalliance.org/news/svces-data-hive-first-to-receive-green-button-cmd-rc-certification>

1 **Q. WHAT VERSION OF THE GREEN BUTTON CONNECT STANDARD WAS**
2 **YOUR SOFTWARE CERTIFIED AGAINST?**

3 A. Green Button Connect My Data version 3.3 with Energy Usage and Retail
4 Customer Function Blocks.

5
6 **A. LG&E'S GREEN BUTTON CONNECT SYSTEM**

7 **Q. CAN YOU PLEASE EXPLAIN WHY LG&E'S GREEN BUTTON CONNECT**
8 **SYSTEM IS RELEVANT TO THIS DOCKET?**

9 A. As noted in the Company's May 12, 2025 filing: "PPL customers in Kentucky
10 have the option of utilizing Green Button Connect My Data. Once the functionality
11 is deployed, Rhode Island Energy customers with AMF meters will have the
12 same GBC capabilities, data fields, and historical information that Kentucky
13 electric customers have."⁶

14
15 **Q. PLEASE EXPLAIN YOUR EXPERIENCE WITH LG&E'S GREEN BUTTON**
16 **CONNECT SYSTEM.**

17 A. As described in Mr. Murray's testimony, Mission:data registered as a third party
18 with LG&E's GBC system and had multiple back-and-forth exchanges with LG&E
19 and their vendor. I reviewed LG&E's Green Button website, Mission:data's
20 exchanges with LG&E, and the LG&E certification. I also attempted several tests
21 to confirm if the registration details they provided to Mission:data worked as one
22 would expect from a certified GBC system.

23
24 **Q. WHAT WERE THE SPECIFIC FAILURES YOU WITNESSED?**

25 A. From my investigation I was able to confirm the deployed production environment
26 of LG&E's GBC system does not work as a certified GBC system should, and in
27 fact cannot be used at all by Mission:data's registered third party client to request
28 customer authorizations.

⁶ RI Energy AMF Green Button Connect Plan at 4.

1 The authorization process for customers in the GBC standard follows a widely
2 adopted internet standard called OAuth⁷, which is also used by many highly
3 sensitive industries such as finance and healthcare. A key part of the OAuth
4 authorization process is an authorization URL (called
5 “authorizationServerAuthorizationEndpoint” in the GBC standard) which the
6 customer uses to open the authorization approval page. This authorization URL
7 includes parameters such as the client identifier for the third party (“client_id”)
8 and what data is being requested (“scope string”).

9
10 In LG&E’s GBC system, however, the provided authorization URL does not
11 appear to be working. This means that any authorization request that
12 Mission:data sends to customers will fail, since the authorization URL is non-
13 functional.

14
15 Additionally, the scope string provided to Mission:data by LG&E, which denotes
16 what data fields an authorization URL is requesting, appears to be fixed and not
17 able to be modified in the authorization URL. This means that third parties cannot
18 limit what data they are requesting from users and can only request the pre-
19 registered scope that LG&E initially approved, which prevents third parties and
20 customers from limiting authorizations to only the data fields that are actually
21 needed. The ability to customize an authorization URL’s scope string is required
22 by both OAuth and the GBC standard, but in my experience is not verified by the
23 GBA during certification testing. So while a GBC system that does not allow
24 customized scope strings may be able to be certified by the GBA, the lack of this
25 functionality, in my experience, removes customers’ ability to tailor appropriate
26 levels of access to their data.

27
28
29

⁷ OAuth standard - <https://oauth.net/>

1 **Q. WHY WOULD A THIRD PARTY WANT TO LIMIT WHAT DATA THEY ARE**
2 **REQUESTING ON A PER-REQUEST BASIS?**

3 A. It is a privacy best practice to follow the principle of “data minimization,” which
4 means only requesting personal information that is necessary to achieve a
5 specific objective. In addition, sometimes serving different customer types with
6 different offerings – for example, a home energy management product and small
7 business energy management product – may have different information
8 requirements. Without the ability to direct residential customers to one request
9 form and small business customers to another, the third party will be forced to
10 ask indiscriminately for all the customer data they might ever need, rather than
11 tailoring each request.

12
13 **Q. WHAT DID YOU WITNESS REGARDING TECHNICAL SUPPORT?**

14 A. I observed while reviewing the exchange between Mission:data and LG&E’s
15 technical support that there doesn’t appear to be any documentation, test
16 environment, or user guide for how to integrate with the LG&E GBC system. The
17 LG&E technical support staff also appeared to be untrained in the technical
18 aspects of how GBC works, so when Mission:data asked questions about errors
19 they were getting, LG&E’s support staff were unsuccessful at helping resolve the
20 issues.

21
22 **Q. ARE THERE PARTS OF LG&E’S GBC SYSTEM THAT YOU WERE NOT**
23 **ABLE TO EVALUATE?**

24 A. Yes. Because the LG&E GBC system does not appear to have a working
25 authorization process, customer authorization cannot be obtained, so I was
26 unable to confirm if other aspects of the post-authorization functionality worked
27 as expected, such as data transfer, data formats, and data accuracy.

28
29
30

1 **Q. IN YOUR PROFESSIONAL OPINION, IS LG&E’S GREEN BUTTON CONNECT**
2 **SYSTEM USABLE?**

3 A. No. The LG&E GBC system is not usable in its current form. Not only does it
4 appear to fail to follow Green Button protocol requirements for the authorization
5 process, it also fails to provide documentation or knowledgeable technical
6 support that could lead to successfully troubleshooting the failing authorization
7 process.

8

9 **Q. DOES LG&E HAVE GREEN BUTTON CONNECT CERTIFICATION?**

10 A. Yes. A certificate dated June 8, 2023 was filed with the Kentucky Public Service
11 Commission.⁸

12

13 **Q. WOULD LG&E’S GREEN BUTTON CONNECT SYSTEM PASS THE**
14 **CERTIFICATION IF ADMINISTERED TODAY?**

15 A. Based on the behavior I observed while reviewing Mission:data’s registration, I
16 would not expect LG&E’s GBC system to pass GBA certification. GBC requires a
17 functioning authorization process for customers to consent to sharing data, and I
18 was not able to confirm that the LG&E GBC system has a working authorization
19 process.

20

21 **Q. WHAT EXPLAINS THE DISCREPANCY BETWEEN THE COMPANY’S**
22 **CERTIFICATION AND LG&E’S SYSTEM YOU EXAMINED?**

23 A. I do not know. There could be several explanations.

24

25 First, the Company could have certified a “staging” system before launching the
26 production system, so the system that was certified was not actually the live
27 production environment. I have seen other instances where a utility receives
28 certification for a GBC system with a URL such as “staging.utility.com”, which
29 clearly indicates a staging or test environment was used. The GBA allows this

⁸ [https://psc.ky.gov/pscecf/2020-00350/rick.lovekamp@lge-ku.com/06302023090741/Closed/02-LGE KU Green Button Certification.pdf](https://psc.ky.gov/pscecf/2020-00350/rick.lovekamp@lge-ku.com/06302023090741/Closed/02-LGE%20KU%20Green%20Button%20Certification.pdf)

1 kind of certification for GBC systems, so long as the utility is contractually bound
2 to ensure the certified environment is exactly the same as what will be launched
3 for production. However, sometimes there are unexpected differences between
4 environments, such as firewall configurations or URL changes that cause the
5 production system to fail where the certified staging system succeeded.

6
7 Second, there could have been changes to the GBC system's software between
8 the time when it was certified and the time when Mission:data attempted to
9 register and use the GBC system. The GBA contractually requires that software
10 changes be re-certified, but there is no enforcement mechanism since only the
11 utility or their vendor knows when those changes occur.

12
13 Third, there could be a setting on the utility's side that is preventing the
14 authorization process from functioning. I have experienced instances where GBC
15 systems have registered a third party, but not toggled them to "approved" mode
16 in the back-end configuration, so that specific third party registration remained
17 non-functional until they were toggled to "approved".

18
19 Unfortunately, without further documentation or knowledgeable technical support
20 from LG&E to help troubleshoot the issues with Mission:data's registration, I am
21 unable to narrow the explanations further.

22
23 **Q. WHAT DO YOU CONCLUDE REGARDING LG&E'S GREEN BUTTON**
24 **CERTIFICATION?**

25 A. Based on my experience reviewing Mission:data's registration with the LG&E
26 GBC system and my review of the technical presentation and responses from
27 questions, I conclude that there are several significant issues and discrepancies
28 in regards to the certification for the Company's GBC system.

1 **Q. DOES THAT CAUSE YOU ANY CONCERN REGARDING THE COMPANY'S**
2 **GREEN BUTTON CERTIFICATION FOR RHODE ISLAND?**

3 A. Yes. If, as the Company has stated, Rhode Island Energy customers with AMF
4 meters will have the same GBC capabilities, data fields, and historical
5 information that Kentucky electric customers have, then they are likely to
6 experience the same issues that customers in Kentucky face. As RI Energy has
7 acknowledged in response to Div. 1-4, LG&E's Green Button capabilities became
8 operational on June 30, 2023. Since that time, only 15 of 1,026,097 customers
9 with AMF meters have used Green Button Connect.

10

11 **Q. DO YOU HAVE ANY OTHER CONCERNS REGARDING THE GREEN**
12 **BUTTON CONNECT CERTIFICATION FOR RHODE ISLAND ENERGY?**

13 A. Yes. In my experience, certification is one of the last things you get before
14 launching a new GBC system. However, the Company's GBC system is stated
15 as having been certified in June 2025, but is not being launched until 2026. This
16 significant gap between certification and launch indicates that there is an
17 expectation of changes in the software between certification and launch. The
18 GBA requires that a GBC system be re-certified after changes, but that is usually
19 not enforced.

20

21 **B. EXPERIENCE WITH OTHER UTILITIES' GREEN BUTTON CONNECT**
22 **PLATFORMS**

23 **Q. WHAT EXPERIENCE DO YOU HAVE WITH OTHER UTILITIES' GREEN**
24 **BUTTON CONNECT PLATFORMS? HAVE YOU ACTED AS A THIRD PARTY**
25 **BEFORE?**

26 A. I have acted many times as both the implementer of Green Button Connect
27 systems, as well as acting many times as the third party integrating with other
28 implementations of GBC. For example, at UtilityAPI, I acted as the technical
29 contact when registering multiple of UtilityAPI's clients as third parties with the
30 GBC systems for Consolidated Edison ("ConEd"), Southern California Edison

1 ("SCE"), Pacific Gas & Electric ("PG&E), and San Diego Gas & Electric
2 ("SDG&E").
3

4 **Q. IN YOUR EXPERIENCE, WHAT LEADS TO A SUCCESSFUL INTEGRATION**
5 **WITH A UTILITY'S GREEN BUTTON CONNECT SYSTEM?**

6 A. In cases where I have acted as the third party registering with a utility's Green
7 Button Connect, the success of whether I was able to complete the integration
8 and successfully request customer data depended heavily on positive answers to
9 these questions:

- 10 1. Is the GBC system certified?
- 11 2. Is there complete documentation for how the utility's GBC is implemented?
- 12 3. Is there a trained and responsive utility technical support staff that is
13 knowledgeable about how GBC works at a technical level?
- 14 4. Are the third party registration requirements reasonably achievable?
- 15 5. Is there a test environment that can be used to confirm functionality is working
16 as expected?
- 17 6. Is the customer authorization user experience streamlined, functioning
18 correctly, and reliable?
- 19 7. Is the dataset provided in a timely manner, accurate, and sufficient for my use
20 case?

21
22 In my experience, utilities that fall short of meeting the above criteria will struggle
23 to convince third parties to use the GBC system, because third parties will not
24 see the GBC system as being a serious attempt at providing a GBC service, so
25 cannot be relied upon.
26

27 In situations where utilities have met the above questions, such as PG&E and
28 Consolidated Edison ("ConEd"), the utilities have seen their GBC systems being
29 adopted and used by third parties and customers.
30

1 **Q. ARE THERE ANY OTHER FACTORS THAT LEAD TO A UTILITY'S**
2 **SUCCESSFUL IMPLEMENTATION OF A GREEN BUTTON CONNECT**
3 **PLATFORM?**

4 A. Yes. The Function Blocks included in the platform are very important as I discuss
5 in more detail below.
6

7 **C. RECOMMENDATIONS FOR RHODE ISLAND ENERGY'S GREEN BUTTON**
8 **CERTIFICATION**

9 **Q. WHAT IS YOUR RECOMMENDATION REGARDING CERTIFICATION FOR**
10 **RHODE ISLAND ENERGY?**

11 A. To ensure a more accurate representation of the GBC platform that customers
12 would interact with, I recommend that the Commission require Rhode Island
13 Energy to provide annual proof of re-certification, to be based specifically on the
14 "live" GBC system that is used in production.
15

16 **Q. HOW MUCH DOES CERTIFICATION COST?**

17 A. \$3,200, according to the Green Button Alliance's website.⁹
18

19 **Q. WHAT ELSE DO YOU RECOMMEND?**

20 A. Green Button Alliance certification is a fantastic way to validate a Green Button
21 Connect system once it has been deployed. However, it is limited in its scope.
22 Certification only verifies technical capabilities, and as I have seen with LG&E's
23 GBC system, even those technical capabilities can end up not matching what is
24 experienced by real-world third parties.
25

26 Therefore, the best way to ensure GBC effectiveness for Rhode Island is to
27 conduct thorough end-to-end testing on the "live" system that is in production.
28 GBC software bugs can surface at any time, particularly in cases that are less
29 common or have not been tested, such as customers with multiple meters or
30 complex billing arrangements. Specific recommendations for testing customers

⁹ <https://www.greenbuttonalliance.org/testing>

1 with different circumstances using the Company’s “live” GBC platform are
2 detailed in Mr. Murray’s testimony.

3
4 **Q. WHAT DID THE COMPANY STATE REGARDING ONGOING**
5 **CERTIFICATION?**

6 A. In discovery, the Division asked “Will RIE’s GBC Plan obtain and maintain Green
7 Button Alliance certification?” The Company responded:
8 “The Company does not need to renew or reapply for this certification
9 unless there are any changes to the product that would affect certification
10 compliance, such as changes to the software, server, standards or
11 ownership.”¹⁰

12
13 **Q. DOES THIS ADDRESS YOUR CONCERN AND ELIMINATE THE NEED FOR**
14 **ANNUAL CERTIFICATION, AS YOU RECOMMEND?**

15 A. No. While it is true that the GBA requires applicants to notify them if changes to
16 their product have been made that would affect certification, the reality is that the
17 definition of “changes” is subjective. In my experience, few utilities volunteer this
18 information, so this is a largely unenforceable requirement. In addition, as I
19 described above, the Company had its GBC system certified in June, 2025, long
20 before the expected launch date, which indicates there may be changes to the
21 software before it is deployed to customers in 2026.

22
23 **D. USER ACCEPTANCE TESTING**

24 **Q. WHAT IS USER ACCEPTANCE TESTING?**

25 A. In software development, user acceptance testing (“UAT”) is the process by
26 which software features are evaluated from the perspective of the end user. UAT
27 is sometimes referred to as “end to end” testing because it tests a process from
28 start to finish, rather than evaluating individual components in isolation.

29

¹⁰ Division 1-9.

1 UAT can be performed by either internal staff or external users who agree to test
2 the system as an end user. Users testing the system during UAT must be
3 knowledgeable about how the system is intended to work so that they can
4 identify issues.

5
6 **Q. DID LG&E's GBC UNDERGO USER ACCEPTANCE TESTING?**

7 A. I do not know.

8
9 **Q. IF LG&E'S GBC HAD UNDERGONE USER ACCEPTANCE TESTING, WOULD
10 THE AUTHORIZATION URL PROBLEM HAVE BEEN IDENTIFIED?**

11 A. Yes. Since the authorization URL is the first step in the customer authorization
12 process, it is an obvious shortcoming that would have been identified by a user
13 knowledgeable in how the GBC authorization process works.

14
15 **Q. WHAT IS YOUR RECOMMENDATION REGARDING USER ACCEPTANCE
16 TESTING IN RHODE ISLAND?**

17 A. Mr. Murray outlines several recommendations, such as taking an assortment of
18 external users of different customer types through the GBC authorization
19 process. I support his recommendations because they would address the
20 shortfall in testing that I identified above.

21
22 **E. FUNCTION BLOCKS**

23 **Q. CAN YOU PLEASE EXPLAIN THE TYPES OF DATA FORMATS FOR GREEN
24 BUTTON CONNECT?**

25 A. Yes. The Green Button standard, starting with ESPI version 3.3, includes two
26 major data formats (called "schemas"). The first data format is for Energy Usage
27 information, such as interval kWh and usage summaries (e.g. billed kWh and
28 cost, etc.). The second data format is for "Retail Customer" information, such as
29 account numbers, meter numbers, service location addresses, and other
30 customer-related metadata.

1 There are two data formats because the Energy Usage data format is prohibited
2 from including customer-identifying information, such as meter number, account
3 number, addresses, etc. This information is intended to be included in the Retail
4 Customer data format, which can then be linked to the Energy Usage data, so
5 that third party companies receiving the data can associate customer accounts,
6 service locations, and meter numbers with interval and usage summary data.
7

8 **Q. WHAT IS A FUNCTION BLOCK?**

9 A. A Function Block (“FB”) is a defined piece of functionality that is defined in the
10 GBC standard¹¹. Some function blocks define the behavior of a GBC system, and
11 some function blocks define the format of data that is delivered by a GBC
12 system. For example, FB 10 defines how to format natural gas interval data that
13 is delivered to the user, and FB 31 defines how the user consent process must
14 use the OAuth authorization code flow.
15

16 **Q. WHAT IS THE RELATIONSHIP BETWEEN FUNCTION BLOCKS AND
17 CERTIFICATION?**

18 Utilities seeking certification select the specific Function Blocks for which they will
19 be tested and certified. Utilities are expected by the GBA to select and certify the
20 set of Function Blocks that most appropriately fits their desired use cases. The
21 minimum required set of Function Blocks is not intended to be a recommendation
22 for which Function Blocks to implement; it is just a minimum. Utilities are
23 expected to select the additional Function Blocks beyond the minimum that meet
24 their use cases’ needs.
25

26 **Q. WHAT IS THE RELATIONSHIP BETWEEN RETAIL CUSTOMER FUNCTION
27 BLOCKS AND ENERGY USAGE FUNCTION BLOCKS?**

28 A. The Green Button standard defines formats for both usage data and customer-
29 identifying information of these data formats as a series of “function blocks”

¹¹ Green Button Alliance: Usage Data and Retail Customer Function Blocks -
<https://www.greenbuttonalliance.org/cmd-function-blocks>

1 which can be tested during certification, if the utility chooses to implement them.
2 If a utility does not implement the Retail Customer function blocks as part of their
3 deployment, then only anonymous usage data can be shared via GBC.
4

5 **Q. DO YOU KNOW IF RHODE ISLAND ENERGY'S GREEN BUTTON CONNECT**
6 **SYSTEM WILL INCLUDE RETAIL CUSTOMER FUNCTION BLOCKS?**

7 A. It is my understanding that it will not. According to the Company's responses to
8 CLF's data requests, it will not: In response to CLF Data Request 1-5b, the
9 Company stated that the Rhode Island GBC system "...aligns with the scope that
10 the Company's Kentucky affiliates have implemented for Green Button Connect.
11 In addition, the Company's Green Button Connect vendor currently only has the
12 capability to share information that is part of the Energy Usage Information
13 schema."
14

15 **Q. IN YOUR EXPERIENCE, IS THIS A PROBLEM?**

16 A. Yes. In my experience, Green Button Connects that do not implement any Retail
17 Customer function blocks will not receive significant adoption by customers or
18 third parties because there is not sufficient customer metadata to accurately
19 identify shared Energy Usage data.
20

21 **Q. WHAT DATA TYPES ARE GOING TO BE SUPPORTED BY THE COMPANY'S**
22 **GREEN BUTTON CONNECT?**

23 A. According to the Company's October 29, 2025 Technical Session presentation, it
24 will include ten data types as set forth on slide 12 of the presentation:

- 25 1. Billed Monthly Electricity Usage (kWh)
- 26 2. Billed Monthly Electricity Usage (kWh) from prior year
- 27 3. Billing Meter Read
- 28 4. Meter Number
- 29 5. Billing Read Dates
- 30 6. Total Bill
- 31 7. Billed Electric Usage: Demand (kW)

1 8. 15-minute interval consumption (kWh)

2 9. Daily meter reads (kWh)

3 10. Daily consumption (kWh)

4
5 **Q. ARE THESE DATA TYPES SUFFICIENT IN YOUR VIEW?**

6 A. No. As noted above, GBCs that do not implement any Retail Customer function
7 blocks will not receive significant adoption by customers or third parties because
8 there is not sufficient customer metadata to accurately identify shared Energy
9 Usage data.

10
11 **Q. ARE THERE ANY OTHER ISSUES THAT RESULT FROM THIS LIMITED
12 NUMBER OF FUNCTION BLOCKS?**

13 A. Yes, if Rhode Island Energy's GBC system is intended to be used by
14 aggregations of distributed resources participating in ISO New England, the
15 current set of data types are insufficient. Omitted are retail customer details (FB
16 51-62), billing details (FB 15-16), bill statement PDFs (FB 71), and other
17 information such as load and aggregation nodes. Mr. Murray's testimony
18 addresses the value of these additional data types to ratepayers and to Rhode
19 Island's policy goals.

20
21 **Q. CAN THESE ADDITIONAL DATA TYPES BE SUPPORTED IN THE GREEN
22 BUTTON STANDARD?**

23 A. Yes. Version 3.3 of the standard – which is what RI Energy had certified – allows
24 certification for retail customer details (FB 51-62) and billing details (FB 15-16).
25 Load zones and demand response aggregation zones are also supported within
26 the version 3.3 XML schemas in the UsagePoint element.

27
28 Additionally, version 3.3 is also backwards compatible with providing bill
29 statement PDFs (FB 71), which is defined in version 4.0, so that GBC systems
30 that are certified to version 3.3. can support bill statement PDFs even if they are
31 only certified to Version 3.3.

1 **Q. WHAT DID RI ENERGY STATE REGARDING ITS LIMITATIONS OF**
2 **PROVIDING DATA VIA GREEN BUTTON CONNECT?**

3 A. In a discovery response, the Company stated:
4 "The Green Button Connect functionality only allows certain data fields to
5 be transferred via token to the third-party vendor. These data fields,
6 otherwise known as "function blocks" are specifically determined by the
7 Green Button Alliance." As part of the AMF project, the Company is
8 implementing function blocks that are part of the Energy Usage
9 Information schema.

10 Account number, premise address, a copy of the utility bill from the last
11 six months, and the customer's load zone and demand response
12 aggregation zone are not function blocks within the Energy Usage
13 Information schema; therefore, this information is not able to be
14 transmitted via Green Button Connect."¹²
15

16 **Q. DO YOU AGREE WITH THE COMPANY'S STATEMENT?**

17 A. No. The conclusion that "this information is not able to be transmitted via Green
18 Button Connect" is inaccurate. As I described above, retail customer details such
19 as account number, premise address, bill PDF, load zone, and demand response
20 aggregation zone are supported by Function Blocks and Green Button's XML
21 schemas. So it is not that the GBC standard lacks support for these data types,
22 but rather it is that the specific Function Blocks and data types chosen to be
23 implemented by the Company do not adequately meet the data needs of
24 intended use cases.
25

26 **Q. HAVE OTHER UTILITIES SUPPORTED ACCOUNT NUMBERS, PREMISE**
27 **ADDRESSES, BILL PDFS AND CERTAIN TRANSMISSION SYSTEM**
28 **GEOGRAPHIC INFORMATION IN GREEN BUTTON CONNECT?**

29 A. Yes. The GBC system implemented by Pacific Gas & Electric ("PG&E") in
30 California provides pricing and aggregation node values for demand response

¹² CLF 1-5(a), discovery response

1 participation in CAISO programs. GBC systems implemented by many utilities in
2 Ontario, Canada, support retail customer details and billing line item details and
3 have all been certified compatible with version 3.3 by the GBA.

4
5 Additionally, a Community Choice Aggregator (“CCA”), Peninsula Clean Energy
6 (“PCE”), has implemented support for bill statement PDFs in its certified GBC
7 system in California. I was involved in the deployment of the PCE GBC system
8 while working at UtilityAPI.

9
10 **Q. IN YOUR EXPERIENCE, WHAT IS LIKELY TO OCCUR IF THE COMPANY**
11 **DOES NOT PROVIDE A COMPLETE DATA SET VIA GREEN BUTTON**
12 **CONNECT?**

13 A. I anticipate there will be very little utilization of the GBC system by customers or
14 third parties. As noted above, LG&E’s Green Button capabilities became
15 operational on June 30, 2023. Since that time, only 15 of 1,026,097 customers
16 with AMF meters have used GBC.

17
18 **Q. HAS THE COMPANY EXPLAINED WHAT SPECIFIC FUNCTION BLOCKS IT**
19 **RECEIVED CERTIFICATION FOR?**

20 A. No, I have not seen specific explanations for which function blocks received
21 certifications, nor have I seen the certification documents issued by the Green
22 Button Alliance.

23
24 However, in the response to the Records Requests issued at PUC Technical
25 Session¹³, the response to Record Request No. 3 lists the function blocks not
26 included in certification. The list omits function blocks 01, 03, 04, 05, 13, 31, and
27 37, so perhaps this is the list of function blocks that were certified.

¹³ Docket No. 25-19-EL - Responses to Record Requests (2025-11-21)
<https://ripuc.ri.gov/sites/g/files/xkgbur841/files/2025-11/25-19-EL%20RIE%20Responses%20to%20RRs%20%2811-21-2025%29.pdf>

1 **Q. WHAT IS NOTABLE OR IRREGULAR ABOUT THE LIST OF SPECIFIC**
2 **FUNCTION BLOCKS EXCLUDED BY THE COMPANY?**

3 A. Interestingly, function block 39, which was included in the list of function blocks
4 that were not certified, is a required function block for certification by the GBA. I
5 do not know how this certification was achieved if this function block was not
6 included.

7
8 Additionally, in the presentation slides from the Technical Session¹⁴, on slide 12
9 there is mention of monthly usage, meter read, bill read dates, and total bill.
10 These are all data fields within the Usage Summary function blocks (15 and 16).
11 However, those function blocks are included in the list of function blocks that will
12 not be certified. So it is unclear whether these function blocks are implemented
13 and certified.

14
15 Additionally, on the same slide 12 from the Technical Session, it appears that
16 “Meter Number” will be shared as part of the dataset. Meter Number data fields
17 are not part of the Energy Usage data format, they are part of the Retail
18 Customer data format (function block 60). However, function block 60 is included
19 in the list of function blocks not certified by the GBA.

20
21 Additionally, on slide 13 from the Technical Session, there is mention that
22 generation and consumption interval values will be provided for solar customers.
23 This data type is covered by function blocks 7 (“Net Electricity Metering”) and 8
24 (“Forward and Reverse Electricity Metering”). However, those function blocks are
25 included in the list of function blocks that will not be certified. So it is unclear if
26 these data types are implemented or certified.

27

¹⁴ Docket No. 25-19-EL - Green Button Connect, Home Area Network and Grid-Edge Computing
Technical Session Presentation (2025-10-29) <https://ripuc.ri.gov/sites/g/files/xkgbur841/files/2025-11/25-19-EL-%20GBC%2C%20HAN%2C%20Grid%20Edge-Technical%20Session%2010-29-25%20%28PUC%2010-28-25%29.pdf>

1 The Green Button standard prohibits customer identifiable information from being
2 included in Energy Usage data formats. Personal identifiers, including Meter
3 Number, must be included in the Retail Customer data format. So I do not
4 understand how the Meter Number is being included in the Energy Usage data
5 format.
6

7 **F. RECOMMENDATIONS REGARDING FUNCTION BLOCKS FOR THE COMPANY'S**
8 **GREEN BUTTON CONNECT SYSTEM**

9 **Q. WHAT ARE YOUR RECOMMENDATIONS FOR THE FUNCTION BLOCKS**
10 **THAT SHOULD BE USE IN RHODE ISLAND ENERGY'S GREEN BUTTON**
11 **CONNECT SYSTEM?**

12 A. Based on the data types described in Mr. Murray's testimony, I recommend that
13 the Company be required to implement function blocks 01, 03, 04, 05, 06, 07, 08,
14 13, 15, 16, 31, 35, 37, 39, 40, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 64, 65, 67,
15 69, and 71. This includes Retail Customer Function Blocks.
16

17 **Q. CAN THE COMMISSION SIMPLY ORDER RI ENERGY TO SATISFY CERTAIN**
18 **FUNCTION BLOCKS, OR DOES THE COMMISSION NEED TO SPECIFY THE**
19 **DATA TYPES AS WELL?**

20 A. The Commission should do both: (1) order the inclusion of the data types
21 described in Mr. Murray's testimony and (2) order RI Energy to achieve annual
22 certification for Function Blocks 01, 03, 04, 05, 06, 07, 08, 13, 15, 16, 31, 35, 37,
23 39, 40, 51, 53, 54, 55, 56, 57, 58, 59, 60, 61, 64, 65, 67, 69, and 71. This is
24 necessary due to the limited technical scope of the certification process. Just
25 because a particular FB is certified does not mean a data type such as a bill PDF
26 or a load aggregation zone is included or accurate.
27

28 **G. ISSUES REGARDING CONFIDENTIALITY OF GREEN BUTTON CERTIFICATION**
29 **TEST REPORTS**

30 **Q. IN YOUR TESTIMONY ABOVE, YOU ADDRESSED ISSUES REGARDING**
31 **GREEN BUTTON CONNECT CERTIFICATION. ARE YOU AWARE THAT**

1 **MISSION:DATA REQUESTED COPY OF THE DETAILED TEST REPORT**
2 **THAT SHOWS THE RESULTS OF EACH FUNCTIONAL TEST CONDUCTED**
3 **AS PART OF THE CERTIFICATION?**

4 A. Yes, I am.

5
6 **Q. ARE YOU AWARE THAT RHODE ISLAND ENERGY CLAIMS THAT RHODE**
7 **ISLAND ENERGY CLAIMS THAT ANY SUCH REPORTS CONSTITUTES**
8 **“...confidential and competitively sensitive information belonging to third**
9 **parties, including testing protocols, that competitors, including**
10 **Mission:Data’s members, could use to their competitive advantage...”?**

11 A. Yes, I am.

12
13 **Q. DO YOU AGREE?**

14 A. No, I do not.

15
16 **Q. CAN YOU PLEASE ELABORATE?**

17 A. I have received many of these GBC certification test results reports for other
18 utility GBC systems. The intent of the GBA certification test report is to provide a
19 receipt of what GBC system was certified for which test steps. The report does
20 not contain competitively sensitive or proprietary information of the vendor or
21 utility’s GBC system. The report includes the setup information (domains and
22 URLs, test client credentials, scope string, etc.) and PASS/FAIL results for each
23 step of each function block test.

24
25 The setup information for the GBC system is information that is provided to third
26 parties who register, such as domains and URLs and scope strings, and the test
27 client credentials are only used by the GBA for the certification test and
28 invalidated after the test concludes. So the setup information only contains
29 information provided to third parties who register (domains, URLs, scopes) or
30 items not useful to anyone except the GBA tester (e.g., test client credentials).

1 The PASS/FAIL results for each step of the function block tests are merely the
2 list of steps for each function block listed in the GBA's test data sheet¹⁵, followed
3 by a PASS/FAIL. The list of certification test steps is public information, not a
4 competitively sensitive set of testing protocols, and all test results must be PASS
5 in order to complete certification.
6

7 **III. CONCLUSION**

8 **Q. PLEASE SUMMARIZE YOUR CONCLUSION.**

9 A. The Company states that it plans to deploy its Kentucky affiliate's GBC system in
10 Rhode Island. But my observation of the Company's affiliate in Kentucky reveals
11 a GBC system that does not function. Moreover, a certification was filed at the
12 Kentucky Commission that fundamentally misrepresents the GBC platform as it
13 exists today. A misleading certificate undermines faith in the certification process
14 because it does not portray the system used in production. If deployed to Rhode
15 Island today, I have very low confidence that the GBC system will be usable by
16 customers or third parties.
17

18 Given this reality, I would recommend that the Company be required to annually
19 certify with the GBA using the "live" production GBC system for Function Blocks
20 01, 03, 04, 05, 06, 07, 08, 13, 15, 16, 31, 35, 37, 39, 40, 51, 53, 54, 55, 56, 57,
21 58, 59, 60, 61, 64, 65, 67, 69, and 71. When coupled with user acceptance
22 testing and other recommendations detailed by Mr. Murray, such as providing a
23 complete data set to meet Rhode Island's use cases, my recommendations are
24 reasonable, feasible, and will help ensure that customers receive maximum
25 benefits from a working data-sharing system.
26

27 **Q. DOES THIS CONCLUDE YOUR TESTIMONY?**

28 A. Yes.

¹⁵ Green Button Alliance Test Data Sheet - <https://files.greenbuttonalliance.org/dc-cmd-test-data-sheet>

Daniel Roesler

daniel@danielroesler.com danielroesler.com [linkedin.com/in/daniel-roesler](https://www.linkedin.com/in/daniel-roesler)

- Experience:** UtilityAPI, Inc., Oakland, CA and Austin, TX 2014 – 2025
Founder, Board Member, Chief Technology Officer (2014 – 2024), Chief Innovation Officer (2024 – 2025)
- Founded the utility data exchange platform that has grown to millions of dollars in revenue annually
 - Designed and developed much of the core product code that handles millions of secure data transactions per month
 - Patented the system architecture for secure utility data collection and processing (US10664605)
 - Led technical standards development and regulatory engagement as an expert in the field
 - Submitted, won, and completed multiple government grants to deploy the platform to new markets
 - Owned successfully obtaining SOC 2 Type II cybersecurity certification by external auditors for multiple years
 - Managed technical scoping and solution architecture for multiple multimillion-dollar projects with major utilities
 - Presented and participated in panels at many industry conferences and regulatory meetings as a technical expert
- TerraVerde Renewable Partners, LLC, Larkspur, CA 2013 – 2014
Project Development Engineer
- Managed commercial-scale solar construction projects for public schools and cities in California
 - Calculated technical and financial feasibility to determine what type and size of systems to install
 - Coordinate with clients and contractors on a daily basis to keep projects moving forward
 - Represent owner's interests while working with contractors before, during, and after construction
 - Programmed internal software tools to help the <10 person company determine feasibility more efficiently
- Fitocracy Inc., New York, NY 2011 – 2013
Chief Technology Officer
- Led technology division of major fitness application used in more than 100 countries
 - Scaled from 3,000 to over 1 million users and tens of millions of logged workouts in less than two years
 - Accepted into and completed 500 Startups accelerator program in Silicon Valley
 - Designed and implemented tracking and social software that handled thousands of concurrent users daily
 - Organized partnerships with Google, Arnold Schwarzenegger, Red Bull, and RHIT University
- Clean Air Engineering, Inc., Houston, TX 2008 – 2011
Project Manager and Engineer
- Advanced from field technician to project manager running six figure contracts in less than two years
 - Managed and wrote reports on flare testing projects using new prototype technology
 - Developed, tested, and patented a field spiking system for sulfuric acid testing (US8021617)
 - Presented advances and results in new technologies at multiple national conferences
 - Performed many complex field source emissions tests on tight schedules with small teams of technicians
- Education:** **Bachelor of Science, Chemical Engineering** 2008
Emphasis in Biochemical Engineering
The University of Texas at Austin
- Skills:**
- | | |
|--------------|--|
| Business | Technical project negotiation, specification, management, and execution. Meeting, negotiating, and presenting to government regulators and large corporations. Participation in international working groups for technical standards development. |
| Entrepreneur | Finding creative and innovative solutions to generate massive growth and effective product market fit. Extremely fast reaction and adaptation of live systems to meet demand. Accomplishing from-scratch projects on shoestring budgets. |
| Engineering | System Architecture, Cybersecurity Best Practices, Authorization and Authentication Protocols, Software Development, APIs, Infrastructure Monitoring and Analytics, Data Visualization, Process Logic Mapping and Control, Large Data Set Manipulation |
| Software | Python, JavaScript, HTML5/CSS, AWS, Relational Databases, Redis, Django, Git, Linux. Most major office suites, project management tools, bug trackers, and cloud services. Image and video editing. |
- Honors:**
- | | | |
|--|------------|-----------|
| Author and Maintainer, Connected Data Specification (CDS), Linux Foundation Energy | UtilityAPI | 2022–2025 |
| Vice-Chair, Board of Directors, Green Button Alliance | UtilityAPI | 2018–2023 |
| CPUC Customer Data Access Committee Solutions 1, 1b, 2, 3 architect | UtilityAPI | 2016–2017 |
| Commissioned 11.3 MW (51 sites) of public commercial solar installations in one year | TerraVerde | 2013–2014 |
| Published two reports with EPA on prototype flare testing technology | Clean Air | 2009–2010 |
| Eagle Scout | | |
- Activities:** Fitness – Trail running, Sailing, Cycling, Yoga
Volunteering – League of Women Voters, Voters Guide Editor, Voter Deputy Registrar
Open Source – Many popular cybersecurity, privacy, and web projects (github.com/diafygi)
Alumni – Pi Kappa Alpha Fraternity

TAB III 3

**STATE OF RHODE ISLAND
PUBLIC UTILITIES COMMISSION**

In Re: Proposed Green Button
Connect, Home Area Network
And Grid Edge Computing)
)
)
)

Docket No. 25-19-EL

DIRECT TESTIMONY OF BRIAN JAMES WALSH

**ON BEHALF OF
MISSION:DATA COALITION**

Date Filed: December 5, 2025

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I. **INTRODUCTION**

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

A. My name is Brian James Walsh. I am the Founder of Beacon, an independent consulting company My business address is 3627 Williamsburg Ct, Woodbury, MN 55129.

Q. ON WHOSE BEHALF ARE YOU FILING THIS DIRECT TESTIMONY?

A. I am submitting this testimony on behalf of Mission:data Coalition, an intervenor in this proceeding.

Q. WHO IS YOUR EMPLOYER?

A. Beacon Limited Liability Company (“Beacon”) is a technology and transformation consultancy company. Beacon assists organizations in modernizing operations, adopting agile practices, and advancing digital innovation. Beacon combines strategic advisory services with hands-on technical expertise to help enterprises transition from legacy systems to product-driven approaches. I am the founder of Beacon.

Q. PLEASE BRIEFLY DESCRIBE YOUR RELEVANT PROFESSIONAL EXPERIENCE.

A. Since 2004, I have held leadership and technical roles at organizations including Raytheon, IBM, Microsoft, Samsung, U.S. Bank, National Grid, and several start-up companies such as Bushel and Beacon. From 2021 to 2024, I served as Director and Head of AMI Systems at National Grid, where I oversaw smart meter software engineering and the deployment of energy management solutions serving approximately 20 million customers in New York and Massachusetts. In that role, I led an IT organization of more than 100 professionals and managed partnerships with leading technology providers.

Since 2024, I have also served as a board member of DTECH, contributing to curriculum development that promotes best practices in electric distribution technology worldwide. I am a Certified Information Systems Security Professional (CISSP) and a frequent speaker at technology leadership events hosted by Gartner, TechEx, GDS Group, Apex Assembly, CDM Media, and other organizations.

1 **Q. PLEASE BRIEFLY DESCRIBE YOUR EDUCATIONAL BACKGROUND.**

2 A. I earned a Master of Business Administration (MBA) in Management and Finance from
3 North Dakota State University in 2010, graduating with a 3.8 GPA. Prior, I completed a
4 Bachelor of Arts (BA) in Computer Science at the University of Jamestown in 2006,
5 where I achieved a 3.9 GPA. In addition, I pursued a certificate in Executive
6 Communication at Duke University's Fuqua School of Business from 2007-2009.
7

8 **Q. WHAT IS THE PURPOSE OF YOUR ANSWER TESTIMONY?**

9 A. The purpose of my testimony is to demonstrate the technical feasibility of customer data
10 access capabilities, enabling customers to have greater control over and insight into
11 their advanced meter data. I also evaluate the available methods of data access and
12 discuss the advantages and limitations of each.
13

14 **Q. HOW DOES YOUR TESTIMONY RELATE TO MICHAEL MURRAY'S TESTIMONY?**

15 A. Mr. Murray provides background on direct data upload ("DDU") in Rhode Island
16 advanced metering functionality ("AMF") proceedings, addresses customer benefits of
17 DDU, and evaluates the Company's proposal in this proceeding. My testimony
18 complements his by focusing specifically on the technical feasibility and cybersecurity
19 considerations associated with utilizing Wi-Fi capabilities on advanced meters.
20

21 **Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.**

22 A. Data access through two methods—direct data upload and direct download from a smart
23 meter to either an Internet-based or local device of the customer's choice—is technically
24 feasible, cost-effective, and presents minimal cybersecurity risk.
25

26 **II. DIRECT DATA UPLOAD**
27

28 **Q. PLEASE SUMMARIZE YOUR DIRECT DATA UPLOAD RECOMMENDATION.**

29 A. I recommend that the Commission direct Rhode Island Energy ("RI Energy" or "the
30 Company") to file, within six months, an implementation plan for Direct Data Upload
31 ("DDU") in a contested proceeding. DDU is technically feasible with RI Energy's
32 advanced metering technology and can be implemented without introducing material
33 cybersecurity risk.

1 **Q. WHAT IS YOUR PROFESSIONAL EXPERIENCE WITH THE MODEL OF ADVANCED**
2 **METER BEING DEPLOYED BY RI ENERGY?**

3 A. From 2021 to 2024, I served as system owner at National Grid for the Advanced
4 Metering Infrastructure (AMI) software platform supporting approximately five million
5 Landis+Gyr Revelo meters operating on the Gridstream network in New York and
6 Massachusetts. My responsibilities included building, operating, and maintaining the AMI
7 platform and overseeing deployment plans across multiple jurisdictions, including Rhode
8 Island, following regulatory approval.

9

10 **Q. ARE YOU CERTAIN THAT THE MODEL OF ADVANCED METER DEPLOYED BY**
11 **NATIONAL GRID IN NEW YORK AND MASSACHUSETTS IS THE SAME AS THE**
12 **ONE BEING DEPLOYED BY RI ENERGY TODAY?**

13 A. Yes. In February 2024, RI Energy announced its selection of Lands+Gyr Revelo meters
14 for statewide deployment.¹ Based on my direct experience with this model, I can confirm
15 that the meters being deployed in Rhode Island are essentially identical to those
16 deployed during my tenure at National Grid.

17

18 **Q. WHAT IS EMBEDDED LINUX?**

19 A. Embedded Linux is a lightweight, customized version of the Linux operating system
20 designed for resource-constrained devices such as smart meters, routers, or internet of
21 things (“IoT”) appliances. It provides stable hardware control, secure networking, and
22 support for application software such as meter data collection and encryption.
23 Embedded Linux is widely used in billions of devices globally and benefits from large
24 open-source support community.

25

26 **Q. PLEASE DEFINE “DIRECT DATA UPLOAD” FUNCTIONALITY.**

27 A. DDU is the capability for a smart meter to transmit usage data, and potentially other
28 information such as the customer’s rate, directly to a customer-designated cloud service
29 or endpoint, bypassing the utility’s portal and without needing a dedicated Wi-Fi device
30 on-site. DDU has these attributes:

- 31
 - **Customer configuration:** The customer specifies the destination Uniform Resource
32 Locator (“URL”) or endpoint address within the meter’s settings.

¹ <https://www.landisgyr.eu/news/rhode-island-energy-selects-landisgyr-to-deploy-advanced-smart-grid-technology/>

- 1 ● **Automatic transmission:** Once configured, the meter automatically “pushes” data at
2 defined intervals (e.g., every 15 minutes, hourly, or daily).
- 3 ● **Bypass of utility portal:** Unlike traditional models where data must first flow through the
4 utility’s systems, DDU enables direct, customer-controlled delivery. This reduces strain
5 on the utility’s networks and back-office systems.

6
7 **Q. WHAT ARE OTHER IMPORTANT BENEFITS OF DIRECT DATA UPLOAD?**

8 A. Key features include:

- 9 ● **Customer Control and Automation:** Customers can direct real-time usage data to
10 services of their choice, such as solar monitoring or demand response platforms.
- 11 ● **Security:** DDU supports endpoint whitelisting, credential-based access, and
12 encryption to protect privacy and reduce exposure to malicious actors.
- 13 ● **Scalability:** DDU avoids utility bottlenecks by transmitting data directly over the
14 customer’s internet network, enabling innovation by third-party providers without
15 burdening RI Energy’s systems.
- 16 ● **Revocability:** Customers retain the right to revoke or change endpoints at any time,
17 ensuring flexibility and consumer choice.

18
19 **Q. ARE YOU SAYING GREEN BUTTON CONNECT IS RENDERED UNNECESSARY IF
20 RI ENERGY OFFERS DIRECT DATA UPLOAD?**

21 A. No. Green Button Connect (GBC) remains important for historic usage data, account
22 information, billing records, and ISO New England participation. DDU complements GBC
23 by providing near-real-time data at one-second or similar intervals, offering more
24 detailed and actionable insights than traditional 15-minute or hourly data, which may be
25 delivered with some delay, such as 24 hours.

26
27 **Q. PLEASE EXPLAIN HOW DDU WOULD WORK.**

28 A. DDU allows the meter itself—rather than utility IT systems—to securely transmit usage
29 data directly to customer-authorized endpoints. The process includes:

- 30 1. **Customer Selection:** Customers choose a standards-compliant endpoint via RI
31 Energy’s website.
- 32 2. **Authorization:** The meter receives a scoped authorization token tied to a single
33 meter ID.

- 1 3. **Data Preparation:** The meter collects interval or real-time usage data, encrypts it,
2 and packages it securely. Each interval of usage data is assigned a timestamp.
- 3 4. **Authentication:** The meter validates the recipient using certificate-based or
4 token-based authentication.
- 5 5. **Transmission:** The meter pushes encrypted data at defined intervals via the
6 customer's home network.
- 7 6. **Customer Control:** Customers can revoke or modify authorizations at any time.

8
9 **Q. DOES DDU UTILIZE SECURE INTERNET PROTOCOLS?**

10 A. Yes. DDU employs widely used protocols such as HTTPS (Hypertext Transfer Protocol
11 Secure), TLS v1.3 (Transport Layer Security), SFTP (Secure Shell File Transfer
12 Protocol) and OAuth 2.0 (Open Authorization). Additional protocols such as SAML 2.0
13 (Security Assertion Markup Language) may be integrated to align with RI Energy's
14 identity management systems.

15
16 **Q. WHAT FORMAT FOR USAGE DATA SHOULD BE USED?**

17 A. JSON (JavaScript Object Notation) is preferred for modern APIs due to its efficiency and
18 compatibility. XML (eXtensible Markup Language) and CSV (Comma Separated Values)
19 are viable alternatives but less optimal due to their file size and lack of standardized
20 structure, respectively.

21
22 **Q. HOW SHOULD TIMESTAMPS BE FORMATTED?**

23 A. ISO 8601 should be required to ensure accuracy across time zones and daylight savings
24 transitions. When implemented properly by RI Energy, this ensures that the data
25 recipient can determine the proper time when energy consumption occurred.

26
27 **Q. WHAT TECHNICAL DOCUMENTATION SHOULD BE PUBLICLY AVAILABLE?**

28 A. RI Energy should publish clear technical documentation covering API specifications,
29 authentication methods, data schemas, and security protocols. Transparency ensures
30 predictability, ease of integration, and trust among customers and partners.

31
32 **Q. DOES PUBLISHING DOCUMENTATION CREATE CYBERSECURITY RISKS?**

33 A. No, provided sensitive credentials and internal vulnerabilities are excluded. Modern
34 cybersecurity relies on strong cryptography, not secrecy of system design.

1 **Q. PLEASE DESCRIBE THE DDU SOFTWARE APPLICATION ON THE METER.**

2 A. The DDU agent is a lightweight application running on the meter. It collects usage data,
3 timestamps it, encrypts it, authenticates with the customer's endpoint, and transmits it
4 securely. Communications occur over encrypted channels, with mutual authentication
5 available to further enhance security.
6

7 **Q. WHAT IS THE DIFFERENCE BETWEEN "PULL" AND "PUSH" MODELS?**

8 A. A "pull" model of communication is where the data recipient requests data from the
9 meter. This often requires complex customer router configurations. In contrast, in a
10 "push" model, the meter initiates data transfer to the authorized recipient at defined
11 intervals.
12

13 **Q. WHICH COMMUNICATION MODEL IS BETTER FOR DDU?**

14 A. The "push" model is recommended for DDU because it enhances security, reliability,
15 scalability, and operational simplicity.
16

17 **Q. WHAT WOULD THE CUSTOMER EXPERIENCE BE LIKE?**

18 A. Customers would authorize DDU through RI Energy's website following a familiar login
19 process. They could view or revoke authorizations at any time through their online
20 account. The process is designed to be simple, secure, and user-friendly, similar to
21 connecting apps to bank accounts or cloud services.
22

23 **Q. HOW SHOULD RI ENERGY AUTHENTICATE CUSTOMERS FOR DDU?**

24 A. RI Energy should leverage its existing authentication system used for online accounts,
25 integrated with OAuth 2.0 for secure authorization. There is no need to create a new
26 system of identity management simply for DDU.
27

28 **Q. WHAT IS OAUTH 2.0?**

29 A. OAuth 2.0, short for "open authorization," is a secure authorization process maintained
30 by the Internet Engineering Task Force.² It is widely used on the internet today by
31 companies including Google, Microsoft, Paypal, and many others
32

² <https://datatracker.ietf.org/doc/html/rfc6749#section-4.1.1>

1 **Q. PLEASE DESCRIBE THE SOFTWARE COMPONENTS REQUIRED FOR DDU.**

2 A. DDU requires the following components:

- 3 1. A meter-based DDU agent, as described above.
- 4 2. OAuth 2.0 integrated with RI Energy's existing identity management system.
- 5 3. Endpoint validation services (i.e., whitelisting).
- 6 4. Security and compliance monitoring.
- 7 5. Customer and third-party web portals for managing authorizations and integrations.

8
9 **Q. IS IT FEASIBLE FOR RI ENERGY TO BUILD ALL OF THESE COMPONENTS?**

10 A. Yes. In my experience at National Grid, each of these components represents a
11 standard, achievable information technology project. They can be implemented
12 effectively whether developed internally, through external vendor(s), or by combining
13 both approaches.

14
15 **Q. COULD DDU TRANSMIT OTHER TYPES OF DATA BEYOND USAGE?**

16 A. Yes. DDU could be extended to transmit voltage, power factor, frequency, reactive
17 power, or rate information, which would be valuable for certain commercial and industrial
18 customers.

19
20 **III. SECURITY**

21 **Q. WHAT IS SECURITY?**

22 A. Security refers to the practices, controls, and technologies that protect systems, data,
23 and users from unauthorized access, tampering, or harm. In the context of advanced
24 meters and DDU, security ensures that customer data, meter operations, and utility
25 networks remain protected from cyber threats while maintaining privacy and reliability.

26
27 **Q. WHAT ARE THE MAJOR SECURITY THREATS ASSOCIATED WITH LINUX-BASED
28 ADVANCED METERS?**

29 A. Linux-based advanced meters are robust digital devices, but like all connected systems
30 they can face risks if not properly secured. Potential threats include unauthorized
31 access, malware, physical tampering, network-based attacks, weak default
32 configurations, firmware update vulnerabilities, credential theft, and data privacy
33 exposure.

34

1 **Q. IS RI ENERGY MANAGING THOSE RISKS TODAY?**

2 A. Yes. RI Energy is actively managing cybersecurity risks associated with its Landis+Gyr
3 Revelo meters. These meters include edge computing capabilities, and the Company
4 has presumably implemented safeguards such as disabling remote access, deploying
5 periodic security updates, preventing malware, and isolating sensitive functions within
6 the meter's architecture.

7
8 **Q. ARE THESE RISK MITIGATION ACTIVITIES APPLICABLE ONLY TO DDU?**

9 A. No. These precautions are required regardless of whether DDU is implemented. They
10 form the baseline of secure meter operations and provide a strong foundation for
11 additional services such as DDU.

12
13 **Q. DOES DDU FUNCTIONALITY INCREASE SECURITY RISK?**

14 A. When properly implemented, no. DDU operates within the existing secure architecture of
15 advanced meters and RI Energy's AMF network. It does not require opening new ports
16 or enabling inbound network connections, and meter firmware remains isolated from
17 external networks.

18
19 **Q. WHAT ARE THE SECURITY THREATS SPECIFICALLY ASSOCIATED WITH DDU?**

20 A. DDU introduces a limited set of considerations, such as impersonating a valid endpoint,
21 compromising an authorization token, intercepting data in transit, unauthorized access to
22 system logs, or operational bugs. These risks are manageable with standard
23 cybersecurity controls.

24
25 **Q. HOW ARE THOSE SECURITY THREATS ADDRESSED?**

26 A. RI Energy can mitigate these risks through layered controls, including:
27

- 28 • **Endpoint Whitelisting and Certificates:** Ensuring data is transmitted only to
29 registered, authenticated endpoints. Certificates are used to authenticate the identity
30 of endpoints, ensuring data is delivered only to trusted, authorized systems.
- 31 • **Token Security:** Using cryptographically signed, meter-specific tokens that expire
32 and cannot be forged.
- 33 • **Encryption in Transit:** Protecting data with HTTPS/TLS and certificate-based
authentication.

- 1 ● **Log Protection:** Securing system logs with multi-factor authentication, intrusion
2 detection, and layered defenses.
- 3 ● **Rigorous Testing:** Subjecting the DDU agent to security and compliance reviews
4 prior to deployment. This process is mentioned in RI Energy’s grid edge computing
5 plan.³
- 6 ● **Bandwidth Safeguards:** Using push-model communication, batching, and
7 compression to minimize network load.

8

9 **Q. IS IT IMPORTANT THAT CUSTOMER DATA BE ENCRYPTED IN TRANSIT?**

10 A. Yes. Encryption in transit is essential to protect privacy, integrity, and regulatory
11 compliance. It prevents interception and aligns with NISTIR 7628 smart grid
12 cybersecurity guidelines.

13

14 **Q. HOW IS DDU SAFE FOR RHODE ISLAND CONSUMERS?**

15 A. DDU leverages existing protections such as encryption, endpoint authentication, OAuth
16 2.0 authorization, and revocable customer control. The risks are limited,
17 well-understood, and mitigated through standard practices. Customers retain control,
18 and auditing ensures transparency and compliance.

19

20 **Q. IS THERE A CONCERN ABOUT EXCESSIVE USE OF CUSTOMER INTERNET
21 BANDWIDTH?**

22 A. No. Usage data is lightweight—typically 1–5 kilobytes per transmission, far less than
23 common internet activities such as loading a webpage or photo. The bandwidth impact is
24 negligible.

25

26 **Q. IS THERE A CONCERN ABOUT DDU NEGATIVELY AFFECTING THE AMF
27 NETWORK?**

28 A. No. DDU bypasses utility servers, sending data directly from the meter to the customer’s
29 endpoint, using the customer’s internet connection. The only AMF traffic relates to agent
30 updates, endpoint configuration, and log monitoring. RI Energy retains control over
31 message priority and traffic limits, ensuring AMF network stability.

³ See, e.g., RI Energy AMF Grid-Edge Computing Plan at 5 (“App developers will need to meet the Company’s technical requirements and security requirements for an application to be loaded on the meter’s EIC.”), 7-8.

1 I also note that the Company further isolates software applications, such as a DDU
2 agent, from basic meter functions. The Company states, “Because these [three]
3 components are separated, it ensures the meter’s primary function is not disrupted and
4 ensures cybersecurity susceptibility is not created.”⁴

5
6 **Q. PLEASE DESCRIBE A HYPOTHETICAL CYBERSECURITY RISK POSED BY A**
7 **CUSTOMER-CHOSEN DATA RECIPIENT.**

8 A. If a malicious actor gained access to a customer’s RI Energy account—for example, by
9 impersonating a customer—they could redirect meter data to an unauthorized endpoint.

10
11 **Q. HOW IS THIS RISK ADDRESSED?**

12 A. Customers should be prohibited from entering arbitrary URLs. Only endpoints
13 pre-registered with RI Energy are available. In addition, even if a recipient’s endpoint
14 were compromised, it cannot send commands back to the meter or penetrate RI
15 Energy’s systems.

16
17 **Q. FROM A CYBERSECURITY PERSPECTIVE, WHAT IS RI ENERGY’S**
18 **RESPONSIBILITY REGARDING DATA RECIPIENTS?**

19 A. RI Energy is responsible for secure transmission—ensuring endpoint authentication and
20 encryption. Once data is delivered, responsibility shifts to the recipient for privacy
21 management. Mr. Murray’s testimony addresses this distinction.

22
23 **Q. HOW SHOULD RI ENERGY ENSURE SECURITY IN TRANSMISSION TO THIRD**
24 **PARTIES?**

25 A. RI Energy should require recipients to register, provide endpoint certificates, and
26 undergo brief functional validation tests. This includes HTTPS/TLS verification,
27 credential checks and connectivity testing. When combined with ongoing monitoring,
28 such measures ensure strong security without restricting customer choice, enabling
29 innovation while protecting utility systems.

30
31

⁴ *Id.* at 8.

IV. LOCAL REAL-TIME ACCESS

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Q. WHAT IS A SECURE, FLEXIBLE INTEGRATION PROGRAM?

A. A secure, flexible integration program is a structured approach for enterprises such as electric utilities that allows diverse systems and devices to connect with advanced meters while safeguarding sensitive information. It combines strong security controls—such as encryption, authentication, and compliance with regulatory standards—with modularity and scalability. This ensures device integrations can be tailored, expanded, or modified without disrupting meter operations, enabling innovation and customer choice while maintaining trust and resilience.

Q. WHAT IS A LOCAL REAL-TIME ACCESS APPLICATION?

A. A local real-time access (“LRA”) application is a software application running on the meter that enables a customer-authorized device to request real-time usage data directly from the meter over Wi-Fi. Unlike cloud-based systems, the LRA focuses on in-home or on-premise devices such as thermostats, electric vehicle (“EV”) chargers, or energy monitors. The LRA provides access to energy usage data in a portable and flexible manner, giving customers immediate information enabling the customers to make energy choices while ensuring privacy and data integrity.

Q. WHAT IS YOUR RECOMMENDATION FOR A LOCAL REAL-TIME ACCESS APPLICATION?

A. I recommend that the Commission require RI Energy to offer LRA on all advanced meters so that customers can connect any standards-compliant device to their meter and get real-time usage data. Within six months, RI Energy should be required to file their implementation plan in a contested proceeding. The communications standard should be IEEE2030.5, in order to be consistent with other AMF deployments across the country, unless RI Energy persuades the Commission that a different standard is in the public interest. RI Energy’s role should be limited to enforcing standards and verifying the meters’ compliance with minimum cybersecurity requirements, not approving business models or third parties’ strategies. RI Energy should publish a transparent compliance checklist for device manufacturers to self-certify against, ensuring no exclusivity, unnecessary fees, delays, or contractual constraints.

1 In addition, annual reporting to the Commission should be required, covering the number
2 of connected devices, onboarding timelines, security incidents, customer complaints,
3 and any denied devices with a justification.
4

5 This framework ensures fairness, transparency, and nondiscriminatory access while
6 maintaining strong security protections.
7

8 **Q. IS THE LOCAL REAL-TIME ACCESS APPLICATION DUPLICATIVE OF DDU?**

9 A. No. DDU and the LRA are distinct. DDU enables cloud-based data sharing, while the
10 LRA supports in-home devices directly. Each serves a different purpose and together
11 they expand customer choice.
12

13 **Q. WHY IS LRA A LOGICAL NEXT STEP TO PURSUE IN CONJUNCTION WITH DDU?**

14 A. Whereas DDU ensures that any cloud-based competitive service is supported, LRA
15 does the same thing but for local devices. LRA puts into practice the principle that any
16 standards-compliant device should be supported. It ensures:

- 17 • The utility cannot block device makers unreasonably.
 - 18 • The ecosystem remains open and competitive.
 - 19 • Customers retain full choice and control.
 - 20 • Cybersecurity requirements are objective and standards-based.
- 21

22 **Q. HOW IS THIS RECOMMENDATION DIFFERENT FROM SENSE?**

23 A. Currently, Sense is the only application using meter Wi-Fi for real-time data. This
24 arrangement may appear exclusive. My recommendation opens access to all
25 standards-compliant devices, focusing on raw kW/kWh data rather than proprietary
26 analytics, thereby expanding consumer choice and competition.
27

28 **Q. WHAT ARE THE KEY DIFFERENCES BETWEEN THIS RECOMMENDATION AND
29 SENSE?**

30 A. Sense provides disaggregation analytics through a proprietary algorithm on the meter.
31 LRA does not seek to reproduce or replace disaggregation analytics on the meter;
32 rather, it enables any compliant device to access raw real-time usage data. LRA ensures
33 that the Wi-Fi communications capability of the meters is accessible to a broader range
34 of energy management applications.

1 **Q. WHAT IS REQUIRED OF RI ENERGY TO IMPLEMENT THIS RECOMMENDATION?**

2 A. Implementation requires only a lightweight meter application, minor backend
3 adjustments for customer authorization and device management, and standard
4 cybersecurity protections. No changes to the AMI network or billing functions are
5 necessary.

6
7 **Q. IS LRA A “PULL” OR “PUSH” METHOD?**

8 A. Pull. Local devices would request data from the meter.

9
10 **Q. HOW ARE THE CYBERSECURITY CONCERNS REGARDING A “PULL” METHOD
11 ADDRESSED?**

12 A. Concerns are addressed through:

- 13 • Strong authentication and authorization tokens scoped to individual meters.
- 14 • TLS encryption for all communications.
- 15 • Standards-based protocols such as IEEE 2030.5 with certificate-based
16 authentication.
- 17 • Device validation, rate-limiting, and activity logging.
- 18 • Signed and verified meter firmware to prevent unauthorized software being loaded
19 onto meters.

20
21 **Q. WHY DO YOU BELIEVE THE “PULL” METHOD IS SECURE IN THIS APPLICATION?**

22 A. The pull method is secure because data moves only when explicitly requested by an
23 authorized device. Each request is authenticated, encrypted, and logged, minimizing
24 exposure and preserving system integrity.

25
26 **Q. WHAT STANDARD OF COMMUNICATION DO YOU RECOMMEND FOR WI-FI
27 DEVICES TO REQUEST REAL-TIME USAGE DATA?**

28 A. IEEE 2030.5-2018 is the appropriate standard.

29
30 **Q. WHY IS IEEE 2030.5-2018 RECOMMENDED?**

31 A. It is open, vendor-neutral, widely adopted, and designed for smart grid applications. It
32 supports secure, standards-based communication, fine-grained interval reporting, and
33 interoperability across devices.

34

1 **Q. WHAT BUILT-IN SECURITY FEATURES DOES IEEE 2030.5 PROVIDE?**

2 A. TLS encryption, certificate-based authentication, and scoped authorization. These
3 features protect customer data and ensure compliance with privacy regulations.
4

5 **Q. HOW IS IEEE 2030.5 SUPPORTED BY INDUSTRY ADOPTION?**

6 A. It is already implemented by utilities, vendors, and distributed energy resource (“DER”)
7 providers across the U.S.
8

9 **Q. IS THIS RECOMMENDATION TECHNICALLY FEASIBLE?**

10 A. Yes. Existing meter hardware and Wi-Fi interfaces are capable, data volumes are
11 minimal, and IEEE 2030.5 is mature and widely implemented. Relatively minor backend
12 updates are required.
13

14 **Q. HOW DOES WI-FI CONNECTIVITY LRA AND SUPPORT SECURE, FLEXIBLE
15 INTEGRATIONS?**

16 A. Wi-Fi is nearly ubiquitous in the home and business environments, with numerous EV
17 chargers and appliances supporting it. Wi-Fi also provides sufficient bandwidth for
18 one-second usage data. Rate-limiting and efficient protocols ensure stability, prevent
19 overload and enable a wide array of devices to become more “energy aware” over time.
20

21 **Q. DOES THIS RECOMMENDATION PRESENT ANY CYBERSECURITY RISKS?**

22 A. Risks are limited and manageable. They are confined to customer-chosen devices and
23 what might happen after the usage data is received by the device. This does not affect
24 utility systems or other customers. Standard safeguards mitigate the risk to utility
25 systems.
26

27 **Q. WHAT IS THE OVERALL CYBERSECURITY RISK ASSESSMENT OF THE LOCAL
28 REAL-TIME ACCESS APPLICATION?**

29 A. The cybersecurity risk is minimal. Access is local, customer-authorized, and enforced
30 through encryption, authentication, and standards-based protocols. Utility systems
31 remain isolated and under RI Energy’s control.
32

33 **Q: IN SUMMARY, WHAT ARE THE KEY DISTINCTIONS BETWEEN DDU AND LRA?**

34 A: The following table outlines the distinctions between DDU and LRA.

Feature	Direct Data Upload (DDU)	Local Real-Time Access (LRA)
Data type	Interval usage (kWh)	Real-time usage (kW/kWh, 1-sec granularity)
Connection	Remote endpoint over internet	Local device over Wi-Fi
Use case	Third-party apps, analytics, cloud services	Home devices, real-time energy management
Frequency	Limited by the cadence set by RI Energy, such as 5-10 seconds	True real-time (1-second)
Control	Customer authorizes remote endpoint	Customer controls local device connection

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V. CONCLUSION

Q. WHAT IS YOUR CONCLUSION?

A. Consumers benefit when they have timely, accurate, and secure access to their energy usage data. Such access enables informed decisions about energy consumption, cost management, participation in clean energy programs, and empowering choices. My intent in this testimony is to serve as an independent expert—working collaboratively with all stakeholders—to address the feasibility and security aspects associated with customer-directed data exchanges, particularly those that utilize the Wi-Fi features of Landis+Gyr Revelo meters.

A secure, flexible integration program—implemented through DDU and LRA or similar approaches based on open standards—can be feasibly deployed in a manner that is both technically sound and consumer-friendly. When accompanied by encryption, endpoint validation, and consent, customers retain effective control of their data while ensuring privacy and security.

DDU and LRA functionality empowers consumers to connect standards-compliant devices and cloud services, supports innovation and competition in the energy

1 technology marketplace, and aligns with regulatory objectives for transparency, fairness,
2 and consumer choice. The associated risks are limited and manageable through
3 established cybersecurity practices, including token-based authentication, certificate
4 validation, and secure software and firmware updates.

5

6 **Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?**

7 **A. Yes.**

Brian Walsh

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Woodbury, Minnesota

Transformation-focused technology executive with 20+ years leading enterprise-scale software, data, and AI initiatives across energy, banking, and Fortune 500 ecosystems. Proven record of mobilizing 1,000+ person organizations, directing \$150M+ budgets, and delivering industry-first platforms that drive customer growth, cost savings, and sustainability. Board member and keynote speaker recognized for shaping the future of digital transformation and energy technology.

CORE LEADERSHIP COMPETENCIES

- Infectious 360-degree people leadership
- Tenacious technical product vision, strategy & delivery
- Diligent budget focus, execution & benefits realization
- Incremental value delivery with market agility
- Calculated vendor selection & management
- Data-driven decision making

PROFESSIONAL EXPERIENCE

BEACON

REMOTE

FOUNDER / EXECUTIVE CONSULTANT

APR 2024 – PRESENT

- Partnering with Fortune 500 and rapid-growth companies to deliver transformation at scale – e.g. Exelon, Worldpay, Dayforce, Vaco, Apex, Kforce, Highspring, Archwell Health, CoreCivic, Jersey Electric, SAM.
- Lead large-scale business transformation and IT modernization initiatives for enterprise clients, spanning AI, data, and engineering strategy across distributed delivery teams, and cross-functional modernization.
- Directed **\$5M IT modernization** across a Fortune 500 client portfolio, aligning product, engineering, and data.
- Embedded **AI-powered quality gates** into open-beta, **+18% release stability in 6-months**, cut defects 33%.
- **Prevented \$10M+ in potential outages** and accelerating client ROI **500%** with “shift-left” and incremental delivery.
- Designed and implemented **enterprise-wide integration and data pipeline frameworks** that allowed clients to “do more with less,” setting a new benchmark for cost efficiency and scalability across multiple enterprise portfolios.

NATIONAL GRID

WALTHAM, MA

DIRECTOR, HEAD OF IOT SOFTWARE ENGINEERING

DEC 2021 – AUG 2024

- Built and led a 100+ person IoT software engineering organization with a **\$30M annual budget**, responsible for connecting **5M smart meters** across two states to **25+ enterprise systems** (ERP, CRM, data lake, customer apps) and **20M customers** via secure, real-time APIs and microservices.
- Delivered a **nationwide smart meter data integration platform** in 9 months – achieving **99.9% uptime**, enabling **15% energy cost savings** for customers, and reducing the carbon footprint **80%**.
- Built **AI-driven insights platform** processing **100M+ daily data points**, transforming energy usage data into personalized recommendations that improved customer engagement and sustainability scores.
- Transitioned legacy applications into **cloud-native, real-time edge computing** systems using Azure, Salesforce, and Oracle – improving reliability and developer velocity by 40%.
- Consistently delivered **99% of budget targets, 90% on-time delivery**, and **zero critical incidents** by establishing strong DevSecOps governance and real-time telemetry.
- Created the **first customer energy insights platform** leveraging LLM datasets that continually learn and adapt – redefining how utilities personalize data and setting a new industry standard for connected IoT systems.

U.S. BANK

MINNEAPOLIS, MN

VICE PRESIDENT (VP), DIGITAL ENGINEERING (CHIEF OF STAFF)

OCT 2018 – DEC 2021

- Chief of Staff to the EVP of Digital; led **1,000+ software engineers** and **10 directors** managing a **\$150M annual budget** across digital banking, mobile apps, and omnichannel experiences.
- Delivered **brand-new iPhone app in 9 months**, then **Android app at 10% cost**, establishing best-in-class experience.
- Grew digital banking organization from **\$45M/year to \$150M/year**, scaling from 100 to 1,000 staff and embedding agile product delivery across engineering and design teams.
- Increased mobile deposits **200%**, boosted CSAT **10 points**, deployed **AI Tier-1 support**, **cut call-center costs 10%**.
- Routinely ensured predictable delivery through portfolio governance, data-driven sprint management, and onshore/offshore optimization from 10% offshore to 85% offshore in 18 months.
- Co-led the **#1-rated mobile banking app in the U.S.** (iOS, Android, Web, Banker Tools), setting new standards for digital experience and earning internal recognition for execution excellence and “can-do” delivery leadership.

DIGITAL RIVER

MINNETONKA, MN

HEAD OF IT PMO, CIO CHIEF OF STAFF

NOV 2015 – OCT 2018

- Directed a **300-person global IT organization**, leading PMO, CIO operations, and transformation across eCommerce, cloud, and data for clients such as **Microsoft, Samsung, and McAfee**.
- Reduced IT costs **\$20M+ annual savings** through modernization and process reform while improving GTM **45%** standardizing agile practices, and product-based delivery across all technology functions.
- Led **internal PCI audit and fraud investigations** for 100+ global eCommerce clients, maintaining 99.9% uptime and full compliance through on-prem to AWS cloud migration.
- Revitalized employee engagement by relaunching the **Above & Beyond recognition program**, increasing retention **250%** while cutting award costs **40%**.
- Routinely drove measurable improvements in velocity, accountability, and team morale through data-driven decision-making and transparent delivery metrics.
- Program Manager leading the **Samsung Galaxy S8 direct-to-consumer (B2C) program**, modernizing a fragile monolithic eCommerce system into headless APIs – opening a new revenue channel and creating a repeatable Platform-as-a-Service (PAAS) model.

PRIOR EXPERIENCE

EXACT

BLOOMINGTON, MN

TECHNICAL PRODUCT MANAGER

OCT 2013 – DEC 2015

ENERGYPRINT

SAINT PAUL, MN

HEAD OF IT & PRODUCT

JUL 2011 – OCT 2013

BUSHEL

FARGO, ND

CO-FOUNDER

MAR 2011 – OCT 2013

MICROSOFT

FARGO, ND

TECHNICAL ACCOUNT MANAGER

JUN 2007 – MAR 2011

IBM

SOUTHBURY, CT

SOFTWARE ENGINEERING CONSULTANT

MAY 2006 – JUN 2007

RAYTHEON (RTX)

JAMESTOWN, ND

TECHNICAL SUPPORT ENGINEER

MAY 2004 – OCT 2005

EDUCATION

NORTH DAKOTA STATE UNIVERSITY, **MASTER OF BUSINESS ADMINISTRATION (MBA)**

DUKE UNIVERSITY, **FUQUA SCHOOL OF BUSINESS, EXECUTIVE COMMUNICATIONS (CERTIFICATE)**

UNIVERSITY OF JAMESTOWN, **BACHELOR OF ARTS (BA), COMPUTER SCIENCE, ECONOMICS**

TECHNICAL SKILLS

- **Programming Languages:** C#, Java, .NET, SQL, MySQL, Snowflake, Typescript, Node.js, Ruby on Rails, Python
- **Cloud Technologies:** Azure, Amazon Web Services (AWS), Google Public Cloud (GPC), Snowflake
- **Software Delivery & Security:** Agile, CISSP, ITIL, Kanban, Scrum, Scaled Agile Framework (SAFe) 6.0, PCI, PMP

CERTIFICATIONS

- Certified Info Systems Security Prof (CISSP), 2024
- Scaled Agile Framework (SAFe) 6.0 Agilist (SA), 2024
- Career Essentials in Generative AI (GenAI), 2023
- Pragmatic Marketing Certified – Level Two (PMC-II)
- Project Management Professional (PMP), PMI
- ITIL Foundation v3, EXIN

BOARD MEMBERSHIPS

- DistribuTECH (DTECH) Global Planning Board
- Keynote speaker for Evanta, GDS, Apex, TechEx, CDM
- Midwest Product Roundtable co-founder
- Data Leaders USA founding member

TABULETT 4

CERTIFICATION

I hereby certify that on December 5, 2025, I sent a copy of the within to all parties set forth on the attached Service List by electronic mail and copies to Stephanie De La Rosa, Commission Clerk, by electronic mail and regular mail.

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