280 Melrose Street Providence, RI 02907 Phone 401-784-4263



April 5, 2024

VIA ELECTRONIC MAIL

Luly E. Massaro, Commission Clerk Rhode Island Public Utilities Commission 89 Jefferson Boulevard Warwick, RI 02888

RE: Docket No. 24-06-EE – The Narragansett Electric Company's d/b/a Rhode Island Energy's System Reliability Procurement Investment Proposal for Electric Demand Response 2024-2026 - ConnectedSolutions Joint Reply Testimony

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a Rhode Island Energy (the "Company"), enclosed please find Rhode Island Energy's joint reply testimony in the above-referenced matter.

Thank you for your attention to this filing. If you have any questions, please contact me at 401-784-4263.

Sincerely,

Ched m

Andrew S. Marcaccio

Enclosures

cc: Docket No. 24-06-EE Service List

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI JOINT REPLY TESTIMONY

JOINT REPLY TESTIMONY

OF

CARRIE GILL,

LADO KURDGELASHVILI,

AND

RYAN CONSTABLE

April 5, 2024

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI JOINT REPLY TESTIMONY

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1	I.	Introduction of Witnesses
2		<u>Carrie Gill</u>
3	Q.	Dr. Gill, please state your name and business address.
4	A.	My name is Carrie Gill. My business address is 280 Melrose Street, Providence, Rhode
5		Island 02907.
6		
7	Q.	Have you previously submitted testimony in this proceeding?
8	A.	Yes. On February 8, 2024, I was part of a panel that filed joint pre-filed direct testimony
9		on behalf of The Narragansett Electric Company d/b/a Rhode Island Energy ("Rhode
10		Island Energy" or the "Company") in support of the Company's proposed System
11		Reliability Procurement ("SRP") Investment Proposal for its Electric Demand Response
12		program, branded "ConnectedSolutions," for 2024-2026.
13		
14		Lado Kurdgelashvili
15	Q.	Dr. Kurdgelashvili, please state your name and business address.
16	A.	My name is Lado Kurdgelashvili. My business address is 280 Melrose Street,
17		Providence, Rhode Island, 02907.
18		

1	Q.	Have you previously submitted testimony in this proceeding?
2	A.	Yes. On February 8, 2024, I was part of a panel that filed joint pre-filed direct testimony
3		on behalf of the Company in support of the Company's ConnectedSolutions proposal.
4		
5		<u>Ryan Constable</u>
6	Q.	Mr. Constable, please state your name and business address.
7	A.	My name is Ryan Constable. My business address is 280 Melrose Street, Providence,
8		Rhode Island 02907.
9		
10	Q.	Mr. Constable, by whom are you employed and in what position?
11	A.	I am employed by Rhode Island Energy as an Engineering Manager in the Distribution
12		Planning and Asset Management Department. In my position, I am responsible for
13		planning and oversight of projects and programs that ensure a safe and reliable electric
14		distribution system.
15		
16	Q.	Mr. Constable, please describe your educational background and professional
17		experience.
18	A.	I received a Bachelor of Science degree in Electric Power Engineering from Rensselaer
19		Polytechnic Institute in Troy, New York, in 1993 and a Certificate of Industrial
20		Management and Power Engineering from Worcester Polytechnic Institute in Worcester,

1	Massachusetts, in 2000. I am a Registered Professional Engineer in Massachusetts,
2	number 41632. I worked at National Grid Service Company ("NGSC") from 1994 to
3	2000 and again from 2010 to May 24, 2022, after which time I joined Rhode Island
4	Energy in my current position. I have held various positions of increasing responsibility
5	in the area of Distribution Planning. From 1994 to 1998, I was a Project Engineer
6	responsible for the design and maintenance of the electric infrastructure serving
7	commercial and residential customers in southeastern Massachusetts. During the period
8	from 1998 to 2000, I was a Planning Engineer conducting long-range electric system
9	studies. From 2010 to 2011, I worked as a Principal Engineer in the Utility of the Future
10	department developing the Worcester Smart Energy Solution Pilot. In 2011, I became the
11	Manager of Distribution Planning and Asset Management – New England, directing a
12	ten-person team to conduct annual planning activities, perform long-range planning
13	studies, and develop regulatory filings. In 2017, I became the Acting Director of that
14	department.
15	
16	From 2000 to 2010, I worked for three independent transmission development
17	companies, TransEnergie U.S., Cross Sound Cable Company, and Brookfield Renewable
18	Power.

1	Q.	Have you previously testified before the Rhode Island Public Utilities Commission
2		("PUC" or "Commission")?
3	А.	Yes. I have previously testified before the PUC in support of the Company's Electric
4		Infrastructure, Safety, and Reliability ("ISR") Plan for fiscal year ("FY") 2025 in
5		Docket No. 23-48-EL, FY 2024 electric ISR plan in Docket No. 23-48, FY 2023 electric
6		ISR plan in Docket No. 5209, FY 2022 electric ISR plan in Docket No. 5098, and the
7		Company's FY 2020 and FY 2023 electric ISR reconciliation filings. I have also
8		participated in technical sessions as part of Docket No. 23-34-EL regarding electric ISR
9		budget and planning processes.
10		
11	II.	Purpose and Organization
12	Q.	Did you review the pre-filed direct testimony submitted by Dr. William F. Watson on
13		behalf of the Rhode Island Division of Public Utilities and Carriers ("Division"), Mr.
14		Samual C. Ross on behalf of the Rhode Island Energy Efficiency and Resource
15		Management Council ("Council"), and Mr. Rob Windle on behalf of Enerwise
16		Global Technologies, LLC d/b/a CPower ("CPower")?
17	A.	Yes.
18		

1	Q.	Did you review the comment letter submitted by the Rhode Island Office of Energy
2		Resources ("OER")?
3	А.	Yes.
4		
5	Q.	Could you summarize your reply to the above-referenced testimony and comment
6		letter?
7	A.	Yes. Each party has offered important perspectives about the design and validity of
8		ConnectedSolutions, and the Company thanks the parties for their continued engagement.
9		The testimony of the parties showcases the range of lenses through which an electric
10		demand response program may be designed, and the various objectives such a program
11		may serve. Although all parties are trying to achieve value, there is a clear divide about
12		what constitutes value and how to ensure that value is shared appropriately. Below are a
13		couple examples from the parties' testimony that illustrate this divide.
14		
15		The first example is regarding the guarantee of future incentive streams. On one end of
16		the spectrum, CPower advocates for a definitive guarantee of incentive rates through a
17		2-year commitment letter and a 5-year incentive rate lock; they recommend "the
18		Commission should direct RIE to provide a five-year rate lock, without caveat, in the
19		Commitment Letter that it provides to battery customers" (P9 at 19-20). On the other end
20		of the spectrum, the Division cites uncertainty about value streams in 2024 and future

1	years to advocate disallowance of any expansion of the program, recommending the
2	Commission "[pull] back the reins on the Company's overall proposed 3-year program
3	expansion to clear up some of the uncertainties" (P19 at 23-24).
4	
5	The second example showcases a divide in how the same principle can lead to different
6	recommendations. The Division and CPower are both in consensus about the
7	fundamental objective of achieving economic value: "bill savings should be a primary
8	objective of a demand response program" (Division P7 at 11) and "a customer will make
9	the decision to invest in energy storage only if the value streams from that investment
10	outweigh the costs" (CPower P8 at 13-15). The divide occurs because the Division relies
11	on value to ratepayers (recommendations "are intended to protect the ratepayer"
12	P6 at 8) and CPower is looking at value more broadly including its own storage business
13	(to "build CPower's storage business" P3 at 4-5); both are valid and respectable. The
14	Company emphasizes that its focus is on its customer base, and its proposal lies in the
15	middle ground between the Division's and CPower's recommendations.
16	
17	Despite these apparent ranges in recommendations and perspectives, all parties are clear
18	in their support for electric demand response.
19	

1	Q.	How is your testimony organized?
2	А.	The testimony is organized such that each section responds to a party. In Section III, the
3		Company responds to the Council. In Section IV, the Company responds to CPower. In
4		Section V, the Company responds to OER. In Section VI, the Company responds to the
5		Division. The conclusion is in Section VII.
6		
7	III.	<u>Response to the Council</u>
8	Q.	What issues does the Council raise in their testimony?
9	A.	The Council raises an issue with the Company's compliance with Least Cost Procurement
10		("LCP") Standards, Section 6.3.G, which states "The distribution company shall submit
11		any draft SRP Proposal to the Council and the Division of Public Utilities and Carriers
12		for their review six weeks prior to filing the SRP Proposal with the PUC." The Council
13		asserts that the Company did not comply with this requirement because the draft SRP
14		Proposal was incomplete and was not provided six weeks prior to the February 8, 2024,
15		filing date.
16		
17	Q.	What is the Company's interpretation of 6.3.G.?
18	A.	The Company's interpretation of this requirement is that it is an iterative process,
19		meaning a "draft" proposal must be submitted at least six weeks prior to filing the SRP
20		Proposal with the PUC. The draft may be (and is expected to be) revised and refined
21		during the six weeks leading up to filing with the PUC. The Company believes the six-

1		week clock starts when the first draft SRP Proposal is provided to Council and does not
2		restart with each update or amendment to the draft.
3		
4	Q.	Based on the Company's interpretation, did it comply with 6.3.G?
5	A.	Yes, the Company complied with this requirement because it provided its first draft SRP
6		Proposal to the Council and the Division on November 9, 2023, which was 13 weeks
7		prior to the filing date. More detail about the Company's circulation of its draft
8		versions of SRP Proposals is contained in Schedule 3 of the Company's
9		ConnectedSolutions Proposal dated February 8, 2024.
10		
11	IV.	Response to CPower
12	Q.	What issues does CPower raise?
13	A.	CPower advocates for increasing the proposed annual incentive cap and providing an
14		unqualified guarantee of performance compensation over a five-year term.
15		
16	Q.	Has the Company discussed these issues with CPower?
17	A.	Yes, the Company held multiple discussions with CPower in October through January.
18		More details about CPower's comments and the Company's responses are included in
19		Schedule 3 of the Company's ConnectedSolutions Proposal dated February 8, 2024.
20		

1	Q.	Does the Company wish to make any changes to its proposal because of CPower's
2		recommendations?
3	A.	No.
4		
5	V.	Response to OER
6	Q.	What issues does OER raise in their comment letter?
7	A.	OER raises two issues. First, OER points out that no A-60 customers (residential low-
8		income customers) have used the HEAT Loan to finance a battery energy storage system,
9		purports that this data indicates a shortcoming of HEAT Loan marketing, and
10		recommends the Company develop a targeted marketing plan to promote the use of the
11		HEAT Loan for batteries to A-60 customers. Second, OER raises the issue of timing of
12		proposed incentive level changes and the annual incentive cap, recommending the
13		Company delay these changes.
14		
15	Q.	What is the Company's reply to OER's first issue?
16	A.	The Company conducts robust education and awareness campaigns about its HEAT Loan,
17		and is open to suggestions for enhancing those communications. The objective of these
18		communications is to educate. The Company does not provide advice to customers as to
19		whether they should enter into a financing arrangement or how to prioritize financing for

20 eligible measures.

1	Q.	What is the Company's reply to OER's second issue?
2	A.	The Company has been discussing its proposed changes in the public realm since
3		November. Following limited developer participation at the Council's November 16,
4		2023, meeting, the Company requested OER include notification through its solar
5		stakeholder distribution list, which OER did on December 1, 2023. This communication
6		successfully resulted in substantial turnout and public comment at the Council's
7		January 25, 2024, meeting – evidence that the developer community acknowledged
8		pending changes.
9		
10		The Company understands the desire to set favorable market conditions for the growing
11		energy storage market sector in Rhode Island, but it is imperative to balance this policy
12		objective with due consideration to all customers from whom program funding is
13		sourced. At this time, the Company thinks maintaining 2023 incentive levels and
14		delaying implementation of the incentive cap would place an unacceptable cost burden on
15		its customers not just in 2024 but for the proposed five-to-seven years during which those
16		higher incentive levels are in place for those participants. Consistent with OER's
17		statement that "Where that capacity is unable to fully support a sustainable market for
18		these technologies, it is vital to recognize those gaps and prioritize supplemental
19		programming OER and other agencies may be in a position to offer so that the benefits of
20		the energy transition are available and accessible to all customers," the Company readily

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1		accepts and encourages non-customer funding to layer onto its incentives and stands
2		ready to be a collaborative partner in bringing those resources to bear.
3		
4	Q.	Does the Company wish to make any revisions to its proposal following OER's
5		feedback?
6	A.	No, the Company does not have any revisions to its proposal.
7		
8	VI.	Response to the Division
9	Q.	What issues does the Division raise in their testimony?
10	A.	The Division raises numerous issues. The Company believes that the issues stem from a
11		skepticism of the value created through electric demand response. Instead of addressing
12		the specific issues, the Company discusses how the Division and other stakeholders can
13		be reasonably assured that the proposed program will create value for customers.
14		
15	Q.	Please summarize this issue.
16	A.	The crux of the issue is how the Company can assure itself and other stakeholders that it
17		is creating positive value through ConnectedSolutions. The Division rightfully
18		demonstrates skepticism and risk aversion throughout its testimony by identifying
19		specific instances in which the Company's valuation of regional coincident peak
20		reduction may be imprecise, unmeasurable, or for which a plausible alternative may be

1		available. The Company appreciates the Division's diligence and risk aversion because
2		the Company has the same concerns; one of the Company's responsibilities is to create
3		value for its customers, so we need to be convinced that the value is there. This
4		testimony does not rebut or reply to each of the Division's specific concerns or
5		recommendations regarding the Company's valuation methodology; all of the Division's
6		concerns and recommendations are valid. The act of modeling – choosing a specific
7		methodology by which one describes the world in which an action results in some
8		consequence – does not have one right solution; the concerns and recommendations
9		raised by the Division do not invalidate the Company's own methodology, assumptions,
10		or results. In any model, there may be a number of reasonable methodologies, a range of
11		plausible assumptions, and subsequent variation in results. This testimony discusses
12		these choices and provides sensitivity analyses responsive to the Division's
13		recommendations, with the objective of collaborating to achieve mutual understanding
14		about the likely value of electric demand response.
15		
16	Q.	How would you model the value created by an electric demand response program in
17		such a way as to measure the actual outcome?
18	А.	In this case, the Company cannot predict the exact value to customers. This is because

20 the state of the world in which it does not. Therefore, the comparison of two actual

the Company can never see the state of the world in which it reduces peak demand and

1		customer electric bills to see how they differ between a world in which
2		ConnectedSolutions is offered and a world in which it does not is impossible. The best
3		practice is to construct a counterfactual – a model of the state of the world we do not see.
4		In this case, the Company sees the state of the world in which it offers
5		ConnectedSolutions and, therefore, achieves some level of regional coincident peak
6		demand reduction, and constructs the counterfactual of no ConnectedSolutions, holding
7		all else equal. The counterfactual is constructed by modeling through which the
8		Company specifically estimates the cost required to serve additional regional coincident
9		peak load.
10		
11	Q.	What are the choices the Company can make when doing this modeling?
12	A.	Assuming general agreement with the categories of value included in this modeling, the
13		
		Company can look at each category and use data, assumptions, and methodologies
14		Company can look at each category and use data, assumptions, and methodologies specific to that category. The Division offers a number of alternative plausible modeling
14 15		
		specific to that category. The Division offers a number of alternative plausible modeling
15	Q.	specific to that category. The Division offers a number of alternative plausible modeling
15 16	Q. A.	specific to that category. The Division offers a number of alternative plausible modeling options across a number of categories.
15 16 17	-	<pre>specific to that category. The Division offers a number of alternative plausible modeling options across a number of categories. Has the Company performed sensitivity analyses using the Division's alternatives?</pre>

1		of regional co-incident peak load, and it shows results by track (Residential and Small
2		Business versus Commercial and Industrial) and in total. The Company finds that all
3		such permutations result in benefit-cost ratios greater than 1.0, meaning that in all
4		models, the benefits of offering ConnectedSolutions as proposed exceed the costs.
5		
6	Q.	Is the Company concerned that these sensitivity analyses result in different benefit-
7		cost ratios?
8	A.	No, not at all. The intent of conducting sensitivity analyses is to understand the extent to
9		which different plausible assumptions and methodologies influence the result. In this
10		case, the Company wants to know whether benefits are likely to exceed costs if the actual
11		value is different from what was modeled. For example, consider a scenario in which the
12		model sets inflation at 2% and the results show that the program is cost-effective. In this
13		scenario, let's say actual inflation ends up being 3%. If this difference in inflation rate
14		renders the program to not be cost-effective anymore, then cost-effectiveness is sensitive
15		to the inflation rate. This is a scenario in which the Company would want to conduct
16		further modeling to understand the specific inflation rate in which the program becomes
17		not cost-effective and then ask whether that inflation rate is likely or not likely to occur.
18		In summary, it is perfectly okay – expected even – for results to change across sensitivity
19		analyses; this does not threaten the validity of the modeling. What the Company looks
20		for is whether the results are no longer in the realm of favorable outcomes – in this case,

1		the Company is primarily concerned with whether the benefit-cost ratio is less than 1.0 in
2		any sensitivity analysis.
3		
4	Q.	What is the Company's conclusion from conducting these sensitivity analyses?
5	A.	The Company concludes that its proposal is likely ¹ to be cost-effective, resulting in net
6		value for customers. The results of the sensitivity analyses show net-benefit in all
7		instances, which affirms the Company's assertion that its proposal is cost-effective and in
8		compliance with LCP Standards.
9		
10	Q.	What if the Company were to use the most conservative assumptions from all
11		sensitivity analyses?
12	A.	Though mixing and matching assumptions may not hold adequate real-world meaning for
13		interpretation of results, the Company did conduct this sensitivity analysis and found that
14		the benefit-cost ratio is less than 1.0 in 2024 and greater than 1.0 in 2025 and 2026 within
15		this sensitivity analysis. These results are included in Appendix 1 of this Testimony as
16		scenario 6.
17		

¹ The Company uses the word "likely" throughout this testimony intentionally to convey a level of responsibility and limitation in that no one can be 100% certain of future events or results but does not intend for "likely" to indicate a specific numerical probability. Rather, "likely" is the Company's way of saying it has enough of a reasonable expectation of net value to defend its proposal as filed: this is a qualitative description and not a quantitative one. That the Company admits its predictive limitations and does not assign a quantitative value does not undermine the rigor of the Company's analysis or its decision making.

1	Q.	Does this result cause concern or invalidate the Company's assertion that its
2		proposal is cost-effective?
3	А.	No. This result suggests that 2024 cost-effectiveness may be a product of prior years'
4		program design, and that the Company's current proposal is pushing the cost-
5		effectiveness of ConnectedSolutions in the right direction, as demonstrated by the
6		increasing trend in benefit-cost ratios across the three-year period. In fact, even when
7		using these most conservative values, the assertion that the Company's proposal is likely
8		to result in net value for customers over the three-year period is affirmed.
9		
10	Q.	Could you provide additional insight about the Avoided Energy Supply Costs Study
10 11	Q.	Could you provide additional insight about the Avoided Energy Supply Costs Study ("AESC")?
	Q. A.	
11		("AESC")?
11 12		("AESC")? The AESC is a regional effort that is led by states, with stakeholder and utility subject
11 12 13		("AESC")? The AESC is a regional effort that is led by states, with stakeholder and utility subject matter expert participants, and led by the consultant agency Synapse Energy Economics. ²
11 12 13 14		("AESC")? The AESC is a regional effort that is led by states, with stakeholder and utility subject matter expert participants, and led by the consultant agency Synapse Energy Economics. ² As indicated on its website, "Synapse's staff of 40+ includes experts in energy and
11 12 13 14 15		("AESC")? The AESC is a regional effort that is led by states, with stakeholder and utility subject matter expert participants, and led by the consultant agency Synapse Energy Economics. ² As indicated on its website, "Synapse's staff of 40+ includes experts in energy and environmental economics, resource planning, electricity dispatch and economic

² The AESC website, which contains all study materials, is available here: <u>https://www.synapse-energy.com/avoided-energy-supply-costs-new-england-aesc</u>.

1	electricity and natural gas markets." (Specific qualifications available here:
2	https://www.synapse-energy.com/about/meet-team). The AESC Study was sponsored by
3	a group of electric and gas utilities and other efficiency program administrators (together,
4	referred to as program administrators). The study sponsors, along with other parties
5	(including representatives from state governments, consumer advocacy organizations,
6	and environmental advocacy organizations and their consultants) formed a Study Group
7	to oversee the design and production of the analysis and report. The participants in the
8	Study Group are listed below:

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Study sponsors for the AESC 2024 Study include:

- Avangrid (Berkshire Gas Company, United Illuminating, Southern Connecticut Gas, and Connecticut Natural Gas)
- Cape Light Compact
- Efficiency Maine
- Eversource (Connecticut Light and Power, NSTAR Electric and Gas Company, Western Massachusetts Electric Company, Public Service Company of New Hampshire, Yankee Gas, and Columbia Gas of Massachusetts)
- Liberty Utilities
- National Grid USA
- New Hampshire Electric Co-op
- PPL Electric Services (Rhode Island Energy)
- Unitil (Fitchburg Gas and Electric Light Company, Unitil Energy Systems, Inc. and Northern Utilities)
- Vermont Energy Investment Corporation/Efficiency Vermont on behalf of Vermont Department of Public Service

Other parties represented in the Study Group include:

- Acadia Center
- Burlington Electric Department
- Connecticut Department of Energy and Environmental Protection
- Connecticut Energy Efficiency Board
- Maine Public Utilities Commission
- Massachusetts Energy Efficiency Advisory Council
- Massachusetts Department of Public Utilities
- Massachusetts Department of Energy Resources
- Massachusetts Department of Environmental Protection
- Massachusetts Attorney General
- Massachusetts Low-Income Energy Affordability Network (LEAN)
- New Hampshire Office of Consumer Advocate
- New Hampshire Department of Environmental Services
- New Hampshire Department of Energy
- Rhode Island Division of Public Utilities and Carriers
- Rhode Island Office of Energy Resources
- Vermont Department of Public Service
- Vermont Gas

2 After developing the scope for the study, the study sponsors selected Synapse Energy

3 Economics (Synapse) as the lead contractor of the study. The process is thorough and

well vetted; states and utilities rely on the results of the AESC.³ It is reasonable for the 1 2 Company to use this work in its own analysis and to inform its methodology. 3 4 Q. The Division identified the Company's valuation of avoided distribution 5 infrastructure cost as the largest component of value and the component with the 6 most uncertainty. What additional analyses has the Company conducted regarding 7 avoided distribution infrastructure cost? 8 The Company appreciates the Division's diligence. The Company itself scrutinized this A. 9 category in developing its proposal. Avoided distribution infrastructure cost is a difficult 10 value category to estimate. In an ideal world, the counterfactual would be constructed by 11 conducting counterfactual detailed area studies and resulting system plans, like annual 12 infrastructure, safety, and reliability plans. The Company would then be able to compare 13 both sets of plans to parse out the difference in proposed spending with and without 14 ConnectedSolutions. However, it is not practical to conduct two parallel sets of planning 15 analyses. Therefore, the Company must choose an alternative way to model the 16 counterfactual. In the proposal, the Company relies on a method that it has used in prior 17 dockets that is consistent with the recommendations described in the AESC. However,

³ Some recent examples include the 2022-2024 Massachusetts Joint State Wide Electric and Gas Three-Year Energy Efficiency Plan (MA DPU Dockets 21-120 – 21-129), the Connecticut 2022-2024 Conservation & Load Management Plan (<u>https://portal.ct.gov/DEEP/Energy/Conservation-and-Load-Management/Conservation-and-Load-Management</u>), the Efficiency Maine Triennial Plan for Fiscal Years 2023-2025 (MPUC Case 2021-00380), and the 2024-2026 New Hampshire Statewide Efficiency Plan (NH PUC Docket DE 23-068).

1		using data from and methods recommended by the AESC is not the only reasonable
2		modeling approach.
3		
4	Q.	What other reasonable modeling approaches are there?
5	A.	There are likely many, but one such approach is a threshold analysis.
6		
7	Q.	What is a threshold analysis?
8	A.	In a threshold analysis, the investigator picks a parameter of interest and determines the
9		value for which the benefit-cost ratio is exactly 1.0. In this case, the parameter of interest
10		is avoided distribution infrastructure cost. The Company uses three sensitivity analyses:
11		(1) 2021 AESC and inflation and discount rates as filed, (2) 2024 AESC with 2.25%
12		inflation rate and 6.97% discount rate, and (3) 2024 AESC with 2.25% inflation rate and
13		6.50% discount rate. ⁴ The avoided distribution infrastructure costs required for all
14		benefit-cost ratios (by track and in total) to all be equal to or greater than 1.0 are
15		\$77.60/kW-year, \$112.20/kW-year, and \$111.10/kW-year, respectively. Results are
16		documented in Appendix 2 of this Testimony.
17		

⁴ 6.97% is the Company's weighted average cost of capital (WACC). 6.50% is the Company's after-tax WACC.

1	Q.	What do these results mean?
2	A.	These results mean that, in the most conservative case, the Company would need to
3		reasonably expect to pay an additional \$112 in distribution system infrastructure to serve
4		each kW-year of peak demand that is not otherwise reduced through demand response. If
5		the Company only expects to pay less than an additional \$112 in distribution system
6		infrastructure to serve each kW-year of peak demand, then the benefit-cost ratio would be
7		lower than 1.0. If the Company expects to pay more than \$112 in distribution system
8		infrastructure to serve each kW-year of peak demand, then the benefit-cost ratio would be
9		greater than 1.0.
10		
11	Q.	Is it reasonable to expect the incremental cost of distribution infrastructure required
11 12	Q.	Is it reasonable to expect the incremental cost of distribution infrastructure required to serve each kW-year of peak demand to cost \$112 or more?
	Q. A.	
12		to serve each kW-year of peak demand to cost \$112 or more?
12 13		to serve each kW-year of peak demand to cost \$112 or more? Yes. An alternative methodology can be considered in which we investigate whether the
12 13 14		to serve each kW-year of peak demand to cost \$112 or more? Yes. An alternative methodology can be considered in which we investigate whether the cost to serve an additional kW of peak demand is more or less than \$112 per kW
12 13 14 15		to serve each kW-year of peak demand to cost \$112 or more?Yes. An alternative methodology can be considered in which we investigate whether the cost to serve an additional kW of peak demand is more or less than \$112 per kW annually. In the Company's investigation, it constructed a system to serve a set amount
12 13 14 15 16		to serve each kW-year of peak demand to cost \$112 or more? Yes. An alternative methodology can be considered in which we investigate whether the cost to serve an additional kW of peak demand is more or less than \$112 per kW annually. In the Company's investigation, it constructed a system to serve a set amount of demand. This technique assumes all peak demand would be served by a single system.
12 13 14 15 16 17		to serve each kW-year of peak demand to cost \$112 or more? Yes. An alternative methodology can be considered in which we investigate whether the cost to serve an additional kW of peak demand is more or less than \$112 per kW annually. In the Company's investigation, it constructed a system to serve a set amount of demand. This technique assumes all peak demand would be served by a single system. This assumption is not realistic; in reality, ConnectedSolutions is a statewide program

1		some level of incremental investment and others would not, and the location of required
2		investment may change year-by-year. However, this single system assumption can be
3		used to gain some initial insight into whether the incremental cost of distribution
4		infrastructure is likely to be above or below this threshold.
5		
6		The Company's simple excel model is included as Appendix 3 of this Testimony. The
7		Company constructed a system to serve 55 MW of peak demand ⁵ and found that the
8		infrastructure cost plus the operations and maintenance over the assumed 30-year life of
9		the assets is \$161/kW-year. This initial investigation suggests that avoided distribution
10		cost is – at least in some instances and under some assumptions – likely to be greater than
11		the threshold, and therefore the proposal is likely to be cost-effective.
12		
13	Q.	Did the Company consider a scenario in which peak load would be served across the
14		entire distribution system?
15	A.	Yes. This scenario more closely aligns with the actual implementation of
16		ConnectedSolutions. In this counterfactual, the Company considers incremental peak
17		load to be spread across the distribution system, with some incremental peak load served
18		by feeders with loading capacity and other incremental peak load served by heavily
19		loaded feeders. The feeders with available loading capacity may not need any incremental

⁵ It is easier to model a system required to serve a larger load than a system required to serve a single kW.

1	investment to serve incremental peak load, up until the point at which the incremental
2	peak load exceeds their available loading capacity. The feeders that are already heavily
3	loaded would need immediate investment. This year-to-year incremental nature of the
4	problem renders it challenging to estimate costs using a bottom-up approach of
5	identifying potential investments and timing of those investments. As a thought
6	experiment, a scenario can be considered in which a subset of highly loaded feeders is
7	identified that require an upgrade to serve the incremental peak load. Three typical
8	alternatives were considered individually and then combined to find a blended \$/kW-year.
9	The alternatives considered were: 1) establishing and new feeder tie and reconfiguring
10	the highly loaded feeder; 2) installing a new feeder at an existing station; and 3) installing
11	a new station with a new feeder. Using similar parameters as the single system
12	investigation, the Company estimates a blended cost of \$114/kW-year. ⁶ This finding
13	furthers the Company's confidence that avoided distribution costs are at least \$112/kW-
14	year and the proposal is cost-effective.
15	

Q. Why wouldn't the existing system be able to absorb all incremental peak demand increase, with no incremental infrastructure or investment needed?

18 A. For small amounts of additional peak demand or on feeders with sufficient load capacity,
19 the system would be able to absorb incremental peak demand with no incremental

⁶ The Company considers this to be a conservative estimate.

1		infrastructure investment. However, this is not congruent with the scale of the program,
2		how the Company has conducted its peak load forecasts, or how the Company has
3		planned for future system investments based on that forecast. Year-over-year incremental
4		load growth will require investment to serve. Because ConnectedSolutions results in
5		peak demand reduction across the distribution system, it is appropriate to use a system
6		average to represent incremental distribution investment. There is zero probability that
7		system average distribution infrastructure costs would be \$0/kW-year if the Company
8		were to discontinue ConnectedSolutions.
9		
10	Q.	What does the Company conclude?
11	A.	Between the sensitivity analyses and threshold analysis, the Company is convinced that
12		its proposal is sufficiently likely to result in net value for customers.
13		
14	Q.	Is cost-effectiveness the only consideration?
15	A.	No. Cost-effectiveness is paramount; however, Least-Cost Procurement states that
16		activities must be "optimally cost-effective, reliable, prudent, and environmentally
17		responsible" (R.I. Gen. Laws §39-1-27.7(a)). The Company asserts that its proposal, as
18		filed, offers optimal balance of cost-effectiveness, reliability, prudency, and
19		environmental responsibility. It is apparent through the other testimony and comments
20		offered in this docket – both by intervenors and the public – that the Company's proposal

1		presents a balance within various viewpoints. The Company's proposal balances the
2		desire for long-term certainty with the transparency of needing to re-evaluate program
3		design to protect customers. The proposal balances the need to improve cost-
4		effectiveness through decreasing program costs with a more cautious approach that
5		tempers market disruptions. The proposal balances the acknowledgment of the value that
6		emerging large storage resources can provide with proper design mechanisms to support
7		budget management and future ratepayer burden. ConnectedSolutions is also
8		environmentally responsible because the program reduces the need for peaker power
9		plants that are usually fossil-fueled and generate emissions. Although parties and
10		stakeholders may raise issues with aspects of the Company's proposal, we are confident
11		that the Company's proposal strikes the optimal balance of LCP standards and will indeed
12		create value for customers.
13		
14	VII.	<u>Conclusion</u>
15	Q.	Does this conclude your testimony?

16 A. Yes, it does. Thank you.

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI APPENDICES PAGE 1 OF 9

1 Appendix 1: Sensitivity Analyses

2 **1. 2021 AESC as filed.**

3 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.15	1.31	1.43
(2)	Commercial & Industrial	1.27	1.34	1.35
(3)	Grand Total	1.19	1.29	1.34

4 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	275.53	283.22	290.69
(2)	Thermostats	263.47	270.97	278.32
(3)	The Rest	262.80	270.32	277.61

5 2. 2024 AESC.

6 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.07	1.41	1.76
(2)	Commercial & Industrial	1.18	1.44	1.68
(3)	Grand Total	1.11	1.39	1.67

7 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	251.87	311.83	392.36
(2)	Thermostats	240.42	300.27	380.44
(3)	The Rest	239.14	298.93	379.28

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI APPENDICES PAGE 2 OF 9

- 1 **3(a). 2021 AESC as filed but with Division's recommended inflation and discount.**
- 2 Assuming 2.25% inflation rate (based on AESC 2024) and RIE WACC of 6.97%
- 3 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.09	1.24	1.37
(2)	Commercial & Industrial	1.20	1.27	1.29
(3)	Grand Total	1.13	1.23	1.29

4 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	256.82	265.63	274.57
(2)	Thermostats	244.78	253.28	262.00
(3)	The Rest	244.09	252.61	261.26

- 5 3(b). 2021 AESC as filed but with Division's recommended inflation and discount.
- 6 Assuming 2.25% inflation rate (based on AESC 2024) and RIE after-tax WACC of 6.50%
- 7 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.10	1.25	1.37
(2)	Commercial & Industrial	1.21	1.28	1.30
(3)	Grand Total	1.13	1.24	1.29

8 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	258.71	267.62	276.64
(2)	Thermostats	246.67	255.27	264.07
(3)	The Rest	245.98	254.60	263.33

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI APPENDICES PAGE 3 OF 9

- 1 4(a). 2024 AESC but with Division's recommended inflation and discount.
- 2 Assuming 2.25% inflation rate (based on AESC 2024) and RIE WACC of 6.97%
- 3 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.03	1.35	1.71
(2)	Commercial & Industrial	1.14	1.38	1.63
(3)	Grand Total	1.07	1.34	1.62

4 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	240.58	295.77	374.51
(2)	Thermostats	229.13	284.11	362.38
(3)	The Rest	227.84	282.75	361.20

5 4(b). 2024 AESC but with Division's recommended inflation and discount.

6 Assuming 2.25% inflation rate (based on AESC 2024) and RIE after-tax WACC of 6.50%

7 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.04	1.36	1.71
(2)	Commercial & Industrial	1.14	1.39	1.63
(3)	Grand Total	1.07	1.34	1.62

8 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	241.63	297.50	376.79
(2)	Thermostats	230.18	285.84	364.66
(3)	The Rest	228.90	284.48	363.48

1 5(a). 2024 AESC with 2024 avoided distribution cost estimate (\$174), Division inflation and

2 **discount.**

3 Assuming 2.25% inflation rate (based on AESC 2024) and RIE WACC of 6.97%

4 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.22	1.53	1.87
(2)	Commercial & Industrial	1.34	1.57	1.79
(3)	Grand Total	1.26	1.52	1.78

5 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	294.58	350.99	430.97
(2)	Thermostats	283.13	339.32	418.84
(3)	The Rest	281.84	337.97	417.66

6 5(b). 2024 AESC with 2024 avoided distribution cost estimate (\$174), Division inflation and

7 **discount.**

8 Assuming 2.25% inflation rate (based on AESC 2024) and RIE after-tax WACC of 6.50%

9 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.22	1.54	1.88
(2)	Commercial & Industrial	1.34	1.57	1.80
(3)	Grand Total	1.26	1.52	1.79

10 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	295.63	352.72	433.25
(2)	Thermostats	284.18	341.06	421.12
(3)	The Rest	282.90	339.70	419.94

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI APPENDICES PAGE 5 OF 9

- 1 6. Most conservative values of all items (\$80 for avoided distribution, AESC 2024).
- 2 Assuming 2.25% inflation rate (based on AESC 2024) and RIE after-tax WACC of 6.50%

3 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	0.86	1.21	1.58
(2)	Commercial & Industrial	0.97	1.24	1.50
(3)	Grand Total	0.90	1.20	1.49

4 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	201.63	256.60	334.97
(2)	Thermostats	190.18	244.94	322.84
(3)	The Rest	188.90	243.58	321.66

THE NARRAGANSETT ELECTRIC COMPANY d/b/a RHODE ISLAND ENERGY RIPUC DOCKET NO. 24-06-EE IN RE: SYSTEM RELIABILITY PROCUREMENT ("SRP") INVESTMENT PROPOSAL FOR ELECTRIC DEMAND RESPONSE 2024-2026 WITNESSES: GILL, CONSTABLE, AND KURDGELASHVILI APPENDICES PAGE 6 OF 9

1 Appendix 2: Threshold Analysis

2 7. Using the avoided distribution cost numbers to get BCR =1 (AESC 2021, original discount rate and inflation).

4 Distribution Benefits = \$77.6/kW-year

5 Test Benefit / Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.00	1.15	1.26
(2)	Commercial & Industrial	1.11	1.18	1.19
(3)	Grand Total	1.04	1.13	1.18

6 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	233.13	240.26	247.14
(2)	Thermostats	221.07	228.00	234.78
(3)	The Rest	220.40	227.35	234.06

- 1 8(a). Using the avoided distribution cost numbers to get BCR =1 (2024 AESC and divisions
- 2 recommended inflation and discount).
- 3 Assuming 2.25% inflation rate (based on AESC 2024) and RIE WACC of 6.97%.
- 4 Avoided distribution = \$112.2/kW-year
- 5 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.00	1.32	1.68
(2)	Commercial & Industrial	1.11	1.36	1.60
(3)	Grand Total	1.04	1.31	1.59

6 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	232.73	287.75	366.31
(2)	Thermostats	221.28	276.09	354.18
(3)	The Rest	220.00	274.73	353.00

7 8(b). Using the avoided distribution cost numbers to get BCR =1 (2024 AESC and divisions

8 recommended inflation and discount).

- 9 Assuming 2.25% inflation rate (based on AESC 2024) and RIE after tax WACC of 6.50%.
- 10 Avoided distribution = \$111.1/kW-year
- 11 Benefit-Cost Ratios

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Residential & Small Business	1.00	1.33	1.68
(2)	Commercial & Industrial	1.11	1.36	1.61
(3)	Grand Total	1.04	1.31	1.60

12 Avoided Electric Bill Costs \$/kW-year

	(a)	(b)	(c)	(d)
		2024	2025	2026
(1)	Batteries	232.73	288.40	367.49
(2)	Thermostats	221.28	276.74	355.36
(3)	The Rest	220.00	275.38	354.18

1 Appendix 3: Bottom-up Cost to Serve Peak Load

2 Please see attached Excel file.

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate was electronically transmitted to the individuals listed below.

The paper copies of this filing are being hand delivered to the Rhode Island Public Utilities Commission and to the Rhode Island Division of Public Utilities and Carriers.

<u>April 5, 2024</u> Date

Joanne M. Scanlon

Docket No. 24-06-EE – Rhode Island Energy System Reliability Procurement ("SRP") Investment Proposal for Electric Demand Response 2024-2026 – ConnectedSolutions Service list 3/25/2024

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