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Also admitted in Massachusetts

September 21, 2022

VIA HAND DELIVERY & ELECTRONIC MAIL

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

**RE: Docket No. 22-20-NG - 2022 Annual Gas Cost Recovery Filing
Response to Division Data Request – Set 1**

Dear Ms. Massaro:

On behalf of The Narragansett Electric Company d/b/a Rhode Island Energy (“Rhode Island Energy” or the “Company”), I have enclosed the Company’s response to Request 1-18 (Supplemental) in the First Set of Data Requests issued by the Division of Public Utilities and Carriers in the above-referenced docket.

Thank you for your attention to this matter. If you have any questions, please contact me at (401) 709-3359.

Sincerely,



Steven J. Boyajian

Enclosure

cc: Docket 22-20-NG Service List

Certificate of Service

I hereby certify that a copy of the cover letter and any materials accompanying this certificate were 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.



Heidi J. Seddon

September 21, 2022

Date

**Docket No. 22-20-NG – The Narragansett Electric Co. d/b/a Rhode Island Energy – 2022
Annual Gas Cost Recovery Filing (GCR)
Service List as of 9/20/22**

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Division 1-18 - Supplemental

Request:

For the five coldest non-weekend/holiday days during the winter of 2021/2022, please provide an analysis that demonstrates that the design day forecast models relied upon and developed by the Company for the winter of 2021/22 produced a reasonable estimate of planning load on these five days. Include the regression equations and calculations supporting the analysis.

Original Response:

For each annual gas load forecast, the Company prepares regression analyses of its total daily throughput, total daily capacity-eligible FT-1 volumes, total daily capacity-exempt FT-1 volumes, and total daily non-firm volumes for the most recent April through March period as springboards for its daily customer requirements forecast. The segmented regression equations used are documented on pages 10-11 of the Company’s ‘Long-Range Resource and Requirements Plan Forecast Period 2022/23 to 2026/27’ submission as filed in Docket No. 22-06-NG. A copy of the referenced pages are provided as Attachment Division 1-18.

Since Sales and FT-2 customers are presently monthly metered, the Company does not have actual Sales and FT-2 daily volumes separately. It can infer the sum of its daily Sales plus FT-2 volumes by subtracting the total daily capacity-eligible FT-1 volumes, total daily capacity-exempt FT-1 volumes, plus total daily non-firm volumes from its total daily throughput.

In the tables below, the Company presents the five coldest non-weekend/non-holiday days of the 2021-22 winter, the observed HDD, and the backcasted versus actual volumes for the available customer groups. The backcasted values are predicted values based on the observed actual HDDs. The mean absolute percentage errors (MAPE) of the models are presented.

Table 1: Backcasted vs. Actual capacity-eligible FT-1 Volume (Dth)

	<u>HDD</u>	<u>Backcasted</u>	<u>Actual</u>	<u>Residual</u>	<u>Pct Error</u>
Tue 11 Jan 2022	51	18,284	18,127	-157	-0.9 %
Mon 14 Feb 2022	49	17,635	17,625	-10	-0.1 %
Fri 21 Jan 2022	47	16,589	17,262	673	3.9 %
Wed 26 Jan 2022	47	17,343	17,396	53	0.3 %
Mon 31 Jan 2022	46	17,773	17,119	-654	-3.8 %
				MAPE =	1.8 %

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Table 2: Backcasted vs. Actual capacity-exempt FT-1 Volume (Dth)

	<u>HDD</u>	<u>Backcasted</u>	<u>Actual</u>	<u>Residual</u>	<u>Pct Error</u>
Tue 11 Jan 2022	51	24,727	23,083	-1,644	-7.1 %
Mon 14 Feb 2022	49	23,991	24,393	402	1.6 %
Fri 21 Jan 2022	47	22,958	22,884	-74	-0.3 %
Wed 26 Jan 2022	47	23,771	23,659	-112	-0.5 %
Mon 31 Jan 2022	46	24,490	23,199	-1,291	<u>-5.6 %</u>
				MAPE =	3.0 %

Table 3: Backcasted vs. Actual Non-Firm Volume (Dth)

	<u>HDD</u>	<u>Backcasted</u>	<u>Actual</u>	<u>Residual</u>	<u>Pct Error</u>
Tue 11 Jan 2022	51	0	0	0	-
Mon 14 Feb 2022	49	498	0	-498	-
Fri 21 Jan 2022	47	654	0	-654	-
Wed 26 Jan 2022	47	897	0	-897	-
Mon 31 Jan 2022	46	521	6	-515	-
				MAPE =	(*)

*The Company's modeling reflects a cutoff of non-firm load by approximately 49 HDD but it can vary based on the prior day's HDD and actual operating circumstances.

Table 4: Backcasted vs. Actual Sales Plus FT-2 Volume (Dth)

	<u>HDD</u>	<u>Backcasted</u>	<u>Actual</u>	<u>Residual</u>	<u>Pct Error</u>
Tue 11 Jan 2022	51	279,603	285,570	5,967	2.1 %
Mon 14 Feb 2022	49	265,169	263,189	-1,980	-0.8 %
Fri 21 Jan 2022	47	255,559	263,496	7,937	3.0 %
Wed 26 Jan 2022	47	259,373	260,628	1,255	0.5 %
Mon 31 Jan 2022	46	270,342	252,910	-17,432	<u>-6.9 %</u>
				MAPE =	2.7 %

Supplemental Response:

As shown in Attachment Division 1-18 - Supplemental, the Company's predictive equations for its various customer groups are in the form:

Prepared by or under the supervision of: Theodore E. Poe, Jr.
(Pursuant to Transition Services Agreement)

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Sendout = Intercept Coefficient
+ Weekend Dummy Coefficient * Weekend Dummy Variable
+ Slope1 Coefficient * min (HDDt, Breakpoint HDD)
+ if(HDDt<=Breakpoint HDD) {0} else
 {(Slope1 Coefficient + Slope2 Coefficient) * (HDDt - Breakpoint HDD)}
+ Lagged Delta HDD Coefficient * (HDDt - average(HDDt-1, HDDt-2))

For each of the customer groups above, the applicable coefficients determined from the Company's analysis of the April 2021 – March 2022 time period are shown in Table 5 below:

Table 5

	Capacity-Eligible FT-1	Capacity-Exempt FT-1	Non-Firm	Sales plus FT-2
Intercept	6,373.658	12,104.790	4,875.544	30,919.88
Weekend Dummy	-679.172	-704.408	-318.915	-1,995.96
Slope1	56.080	43.103	-9.745	759.86
Slope2	212.239	243.348	-312.579	5,093.13
Lagged Delta HDD	-37.739	-54.354	37.762	-909.28
Breakpoint HDD	5.422	4.482	34.167	6.836

The Company is providing, in Excel spreadsheet form, as Attachment to DIV-1-18-Supplemental its four rate group comparisons of predicted vs. actual wholesale volumes (in Dth) for April 2021 – March 2022 showing the derivation of the values in Tables 1-4 above.

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Attachment Division 1-18 - Supplemental

Please see the Excel Worksheet of Attachment Division 1-18 - Supplemental