STATE OF NEW HAMPSHIRE
BEFORE THE
PUBLIC UTILITIES COMMISSION

Docket No. DE 16-383

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities
Distribution Service Rate Case

REBUTTAL TESTIMONY

OF

HEATHER M. TEBBETTS

AND

JAMES D. SIMPSON

February 3, 2017

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1   **I.**   **INTRODUCTION AND QUALIFICATIONS**

2   **Q.**   **Please state your names and business addresses.**

3   A.   My name is Heather Tebbetts. My business address is 15 Buttrick Road, Londonderry,

4   NH 03053.

5   A.   My name is James Simpson. My business address is 293 Boston Post Road West, Suite

6   500, Marlborough, Massachusetts 01752.

7   **Q.**   **By whom are you employed and in what capacity?**

8   A.   (HMT) I am employed by Liberty Utilities Service Corp. ("Liberty") as Utility Analyst;

9   Rates & Regulatory. I am responsible for providing rate-related services for Liberty

10   Utilities (Granite State Electric) Corp. ("Granite State" or the "Company").

11   A.   (JDS) I am a Senior Vice President with Concentric Energy Advisors.

12   **Q.**   **On whose behalf are you testifying today?**

13   A.   We are testifying on behalf of Granite State.

14   **Q.**   **Have you previously submitted testimony in this proceeding?**

15   A.   Yes. We submitted joint prefiled testimony as part of the Company's April 29, 2016,

16   filing for an increase in distribution rates. Our professional backgrounds and

17   qualifications are contained in the prior testimony.

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1 **II.** **PURPOSE OF TESTIMONY AND OVERVIEW OF REBUTTAL TESTIMONY**

2 **Q.** **What is the purpose of your testimony?**

3 A. The purpose of our rebuttal testimony is to respond to several criticisms and

4 recommendations that are addressed in the Direct Testimony of Leszek Stachow,

5 Assistant Director, NHPUC Electric Division ("Staff"), filed December 16, 2016, and the

6 Direct Prefiled Testimony of Scott J. Rubin on behalf of the Office of the Consumer

7 Advocate ("OCA"), filed December 16, 2016, related to the Company's (1) proposed

8 rates and rate design and (2) marginal cost study and results. Our silence on any issues

9 addressed by Mr. Stachow or Mr. Rubin should not be construed as agreement with their

10 comments or recommendations on any of these issues.

11 **Q.** **Please provide an overview of your rebuttal testimony.**

12 A. We will address Staff and OCA comments and recommendations related to the

13 Company's marginal cost study and rate design proposals, which generally can be

14 grouped into the following categories:

15 • Criticisms of methodologies and approaches that were used to prepare the Company's
16 marginal cost study, which are addressed by Mr. Simpson;
17 • Recommendations for (a) allocating the allowed revenue requirement in this
18 proceeding to rate classes; (b) studies and analyses to be required in future Company
19 rate cases; and (c) the design of Rate D rates for distribution service and controlled
20 (interruptible) service to separately-metered water heaters, which are addressed by
21 both witnesses.

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1 **Q.** **How is the remainder of your rebuttal testimony organized?**

2 A. In Sections III and IV, below, for each of the categories and themes listed above, we will

3 first provide summaries of Staff and OCA comments and criticisms followed by our

4 responses, with supporting analyses.

5 **III.** **MARGINAL COST STUDY**

6 **Q.** **Please summarize the Company's Marginal Cost Study.**

7 A. The company's Marginal Cost Study ("MCS"), which is contained in Attachments

8 JDS/MCS-1 through JDS/MCS-10, was prepared by Concentric Energy Advisors

9 ("Concentric") using approaches and methodologies that are consistent with well-

10 established Commission precedent for electric marginal cost studies. Using the same

11 approaches and methodologies, Concentric has filed 12 marginal cost studies since 2006

12 and is currently preparing another two marginal cost studies to be filed in the spring or

13 summer of 2017.

14 To prepare the Company's marginal cost study, Concentric used detailed analyses of

15 Company data[1] to estimate (1) the additional capacity-related distribution plant costs and

16 (2) the additional Operations and Maintenance ("O&M") costs that would be caused by

17 an increment to peak demand. Concentric also calculated (3) the additional general plant-

18 related costs associated with the additions to capacity-related distribution plant, and (4)

19 the additional Administrative and General ("A&G") expenses associated with the

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[1] The Company provided Concentric with (a) distribution plant and general plant balances by account from 1997 to the present, and (b) distribution, customer, customer accounting; A&G; and Materials and Supplies and Prepayments Expenses, for the period 1997 to the present. The Company also provided customer count, consumption (kWh) and demand (kW) data.

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1   additional O&M expenses. Concentric also calculated additional factors to account for

2   the effects of bad debt and working capital on marginal costs.

3   For many of the marginal cost components, Concentric used regression analyses[2] to

4   estimate the relationship between specific measures of costs and "Cost Driver" variables.

5   Because the estimates of several of the cost components prepared for this version of the

6   marginal cost study ("Regression MCS") were unusually large and not in line with the

7   Company's total embedded cost to serve, nor with the estimated marginal costs of other,

8   similarly-situated electric distribution companies, Concentric also calculated average unit

9   costs for the most recent three years ("Average Unit MCS"). As explained in detail in

10   Section III.C, the Company used the Average Unit MCS results to design the proposed

11   rates in this proceeding.

12 **Q.**   **How is the remainder of Section III, Marginal Cost Study, organized?**

13 A.   In Sections III.A, and III.B, I will respond to the comments and criticisms made by Mr.

14   Stachow and Mr. Rubin, respectively, that are directed at the methodology that

15   Concentric used in preparing the marginal cost study. In addition, in Section III.C, I will

16   respond to recommendations made by Mr. Stachow or Mr. Rubin concerning (1) the

17   allocation of the total revenue requirement in this proceeding to rate classes, and (2) cost

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[2]   Regression analyses were used to estimate the statistical relationship between normalized peak demand and the following types of growth-related distribution plant addition costs: (1) capacity-related primary distribution plant additions, (2) capacity-related secondary distribution plant additions, and (3) capacity-related line transformer plant additions. Regression analyses were also used to estimate the statistical relationship between normalized peak demand and the following types of capacity-related distribution operations and maintenance expense: (1) primary operations expense, (2) secondary operations expense, (3) line transformers operations expense, (4) primary maintenance expense, (5) secondary maintenance expense, and (6) line transformers maintenance expense. Lastly, regression analyses were used to calculate loading factors to account for (a) plant-related A&G expense; (b) non-plant-related A&G expense; (c) M&S and prepayments; and (d) general plant.

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1   studies and diagnostic analyses that should be provided in the Company's next rate case

2   filing.

3   **A.   Staff Comments and Criticisms of Concentric's Marginal Cost Study**

4   **Q.   Please summarize Staff's comments and criticisms of the Company's marginal cost**

5   **study ("MCS").**

6   A.   Mr. Stachow's comments and criticisms are primarily related to additional analyses that,

7   in his opinion, Concentric could have prepared in support of the marginal cost study.

8   Although Mr. Stachow acknowledges that the use of average unit costs as an alternative

9   to marginal costs derived from a regression analysis may not be wrong,[3] he believes that

10   Concentric should have provided further support for the decision to use the Average unit

11   MCS. Specifically, Mr. Stachow states that Concentric's use of three-year average unit

12   costs rather than five-year average unit costs to estimate marginal cost components "…

13   suggests a level of possible subjectivity …."[4] (Stachow Testimony, Bates 12, lines 7, 8)

14   Also, Mr. Stachow claims that if Concentric had performed more rigorous diagnostic

15   analysis of the regression results, the reasons that several components of the Regression

16   MCS were unusually large would be better understood, which would have provided the

17   Commission with greater confidence in the results of the marginal cost study. Mr.

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[3]   Mr. Stachow cites the NARUC Electric Utility Cost Allocation Manual, January, 1992, at page 127: "It is still common for analysts to use some variation of a projected embedded methodology for these elements, rather than a strictly marginal approach."

[4]   In response to data request GSEC 1-119, Mr. Stachow added the following clarification concerning the level of subjectivity that was suggested to him: "Armed with three sets of cost data, the company witness could increase or decrease marginal cost revenues for each class by the same proportion to conform the allocation to the ratemaking revenue requirement. The witness elected to increase the marginal costs findings via equi-proportional adjustments without explaining why he believed this to be the most rigorous outcome."

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1   Stachow goes on to recommend that in future proceedings, the Company should be

2   required to rigorously analyze any regression equations that are determined to provide

3   inappropriate estimates of marginal cost components. (Stachow Testimony, Bates 14,

4   lines 1 to 11)

5   Lastly, Mr. Stachow recommends that the Regression MCS[5] should be used to allocate

6   the total allowed distribution revenue requirement in this proceeding to rate classes.

7   (Stachow Testimony, Bates 15, lines 1 to 4)

8   **Q.   Do you agree with Mr. Stachow's assertion that Concentric's use of three-year**

9   **average costs as opposed to five-year average costs to estimate marginal cost**

10 **components is inappropriately subjective?**

11 A.   No, I do not. There was no subjectivity in Concentric's decision to use three-year average

12   costs to estimate several components of the marginal cost study. As explained in

13   Simpson Testimony (Bate 544, lines 3-6), the marginal cost estimates based on average

14   unit costs for the most recent three years were prepared and used in the filed Average unit

15   MCS (Attachments JDS/MCS-1 through JDS/MCS-10) because the marginal costs that

16   were estimated by regression analyses were unusually large and not in line with the

17   Company's total embedded cost to serve, which is a violation of a general expectation of

18   economic theory that a natural monopoly will have marginal costs less than average

19   costs.[6]

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[5]   The Regression MSC allocation percents are provided in Attachment Staff 12-20, line 6.
[6]   In addition to violating the expectation that utility marginal costs will be less than average costs, Concentric also
      determined that the large equi-proportional adjustment to the Company total marginal costs based on regression
      coefficients would obscure the marginal cost price signals of the regression based marginal costs.

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1   The following response to Staff 5-44 also clearly demonstrates that the decision to use

2   three year unit average costs, rather than five year unit average costs, to estimate certain

3   marginal cost components was based on a careful review and analysis of the marginal

4   cost estimates, and was not at all subjective:

5   I determined that the three-year average was most reflective
6   of the Company's current cost levels, and a reasonable
7   estimate of the marginal cost of distribution capacity-related
8   plant additions attributed to growth. *I compared the three-*
9   *year and five-year averages for primary distribution plant*
10   *additions, secondary distribution plant additions, and line*
11   *transformer plant additions per MW so that I could (a)*
12   *identify cost categories with significant differences between*
13   *the three-year and five-year averages, and (b) review the*
14   *costs by year in that cost category to determine if the three-*
15   *year average or five-year average more reasonably*
16   *represented the Company's current cost levels.* Based on this
17   comparison and analysis, I determined that the three-year
18   average unit cost was more reflective of the Company's
19   current cost levels than the "five-year average unit cost.
20   (Emphasis added) (Response to Staff 5-44)

21   In addition, the response to Staff 12-19 explains in detail that Concentric determined that

22   Average Unit MCS should be used rather that Regression MCS or the five year average

23   unit marginal costs based entirely on comparisons of the component estimates:

24   To determine that marginal cost estimates based on three-
25   year average unit costs for primary, secondary, and line
26   transformer plant was more reflective of the Company's
27   current cost levels than either five-year average unit costs or
28   regression coefficient estimates, I compared the values of the
29   three approaches to estimating marginal costs that I had
30   developed. The comparative analysis that I considered is
31   summarized in Attachment Staff 12-19. (Response to Staff
32   12-19)

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1   That is, there was no subjectivity to Concentric's decision-making process; the revenue

2   requirement allocations that would result from the three approaches to calculate several

3   components of marginal cost (regression coefficients, three year unit average costs, and

4   five year unit average costs) did not factor into Concentric's decision to determine that

5   marginal cost estimates should be based on the Average Unit MCS. Rather, Concentric

6   based its decision entirely on methodological considerations, as described above. In fact,

7   when Concentric made the decision to use the Average Unit MCS, Concentric had not

8   calculated the revenue requirement allocations that would result from all three

9   approaches.[7]

10   **B.   OCA Comments and Criticisms on Concentric's Marginal Cost Study**

11   **Q.   Please summarize the OCA's comments and criticisms of the Company's marginal**

12   **cost study ("MCS").**

13   A.   Mr. Rubin claims that the estimates of the Company's marginal costs that are based on

14   three year average unit costs do not represent the cost of serving customers. Mr. Rubin

15   also asserts that there may not be a relationship between the estimated three year average

16   unit cost and either customer demand or any other reliable measure to which a marginal

17   cost might be applied. (Rubin testimony, Bates 6, line 15 to Bates 7, line 3)

18   Mr. Rubin also asserts that Concentric's marginal cost estimates greatly understate the

19   estimated marginal cost of serving an additional kW of demand because Concentric

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[7]   Of course, following appropriate rate design practices, when Concentric made the decision to use the Average Unit MCS, Concentric did compare the rate class allocations based on the Average Unit MCS to the test year distribution revenue percents by rate class to ensure that the marginal cost allocations to rate classes would not violate the rate design principles of gradualism and continuity of rates.

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1   estimated the marginal cost of demand-related investments that are installed relatively

2   close to the customers as a cost per kW of system coincident peak demand ("CP"). As a

3   specific illustration of this point, Mr. Rubin provides additional detail on the marginal

4   cost of line transformers.[8] Mr. Rubin believes that Concentric's estimates of the marginal

5   cost of line transformers, expressed as a cost per kW of coincident peak demand

6   understates the actual marginal cost of line transformers, which Mr. Rubin asserts should

7   be estimated based on the current installed capacity of a line transformer, per kVA of

8   rated capacity. (Rubin testimony, Bates 7, line 4 to Bates 8, line 8)

9   Mr. Rubin states that Concentric's estimates of other marginal cost components are

10   similarly understated because these components are also based on coincident peak

11   demand, although, according to Mr. Rubin, most components of the distribution system

12   are related to class or individual customer peak demands. (Rubin testimony, Bates 8,

13   lines 8 to 11)

14   Lastly, based on his assertion that Concentric's MCS does not provide a reliable estimate

15   of the marginal cost to serve customers, Mr. Rubin recommends that total allowed

16   distribution revenue requirement in this proceeding should be allocated to rate classes by

17   increasing each class's pro forma revenues by the same percentage. (Rubin testimony,

18   Bates 9, lines 3 to 5)

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[8]   Concentric's estimate of the marginal cost of line transformers, per unit of coincident peak demand, is shown in Attachment JDS/MCS-1, Page 3.

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1 **Q. Do you agree with Mr. Rubin's assertion that the estimates of the Company's**

2 **marginal costs that are based on three year average unit costs do not represent the**

3 **cost of serving customers?**

4 A. No, I do not. As indicated by a selected sample of excerpts from testimony and responses

5 to information requests, I have stated throughout this proceeding that multiple year

6 average unit costs are reasonable, appropriate, and well-accepted estimates of the

7 marginal costs to serve customers:

8 "… (A)verage costs are used in marginal cost studies;
9 average unit costs are also appropriate, if carefully prepared.
10 (Simpson Marginal Cost testimony, Bates 540, Lines 8-10)

11 "It is a common and well-accepted practice to use average
12 unit costs instead of the results from regression analyses
13 when the regression equation coefficients do not provide
14 reasonable marginal cost estimates." (Response to OCA 1-
15 100) [A table was also included in this response with lists
16 of marginal cost components that were estimated by average
17 unit costs in studies filed by National Grid - New Hampshire
18 (Docket No. DG 10-017) and Liberty Utilities (EnergyNorth
19 Natural Gas) Corp (Docket No. DG 14-180).]

20 "More generally, it is a common practice in marginal cost
21 studies filed in Massachusetts rate cases to estimate marginal
22 costs using average unit costs, when reasonable and reliable
23 estimates cannot be obtained from regression equations."
24 (Response to Staff 5-36.)

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1   **Q.**   **Do you agree with Mr. Rubin's assertion that Concentric's estimates of marginal**

2   **cost components are understated because these components are based on coincident**

3   **peak demand, even though most components of the distribution system are related**

4   **to class or individual customer peak demands?**

5   A.   No. I do not agree that Concentric's estimates of marginal cost components that are

6   based on coincident peak demand are understated. In fact, Concentric's marginal cost

7   estimates are appropriate because: (a) the relationship between the Company's coincident

8   peak demand and plant and expense data is supported by Concentric's statistical analysis,

9   and (b) estimating marginal costs base on an assumed relationship between coincident

10   peak demand and plant and expense data is accepted practice for marginal cost studies.

11   In addition, Mr. Rubin's assertion that marginal cost estimates based on non-coincident

12   demands will be greater than marginal cost estimates based on coincident peak demand is

13   not correct.

14   **Q.**   **Please explain your statement that Concentric's estimates of marginal cost**

15   **components based on coincident peak demand are appropriate because the**

16   **relationship between the Company's coincident peak demand and plant and**

17   **expense data is supported by Concentric's statistical analysis.**

18   A.   Contrary to Mr. Rubin's assertion, there is a strong relationship between coincident peak

19   demand and these categories of distribution plant, operations expense, or maintenance

20   expense. Each of the nine regression equations that are shown in Attachments JDS/MCS-

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1   1, and JDS/MCS-4 have statistically significant relationships[9] between the coincident

2   peak variable and categories of distribution plant, operations expense, or maintenance

3   expense. The statistical tests for each of the regression equations[10] demonstrate that: (1)

4   there is a strong statistical relationship between coincident peak demand and each

5   estimated category of distribution plant, operations expense, or maintenance expense; and

6   (2) each of the nine regression equations explains changes in the distribution plant,

7   operations expense, or maintenance expense data.[11]

8   If coincident peak demand was not an appropriate explanatory variable in these

9   equations, the demand coefficients would not be statistically significant, and / or the

10   explanatory power – the adjusted R squared measure – would not be as close to 1.0 as the

11   equations in Attachments JDS/MCS-1, and JDS/MCS-4.

12   **Q.   Please explain your statement that estimating marginal cost components based on**

13   **coincident peak demand is common practice.**

14   A.   In addition to the marginal cost studies that Concentric has prepared for electric

15   distribution companies,[12] I have identified the following marginal cost studies that also

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9   The statistical significance of the relationships between the dependent variable and each independent variable is indicated in the "Significance" column in the pages of Attachments JDS/MCS-1, and JDS/MCS-4. For example, referring to Attachment JDS/MCS-1, page 3, line 9, the coefficient for Normalized Peak Rolling 2 Year Average, which measures the change in the Coincident Peak demand variable and Line Transformers Plant Additions adjusted to 2015 prices, is statistically different from zero with a probability of 99.45% (1-.0055).

10   Although the Company did not use the results of the Regression MCS to design rates because several of the regression-based cost estimates were unusually large (see, Section III, above), nonetheless, the statistical tests prepared for each regression equations can be used to address questions related to the existence of a relationship between an independent variable and the dependent variable.

11   The explanatory power of a regression equation, referred to as the "goodness of fit" is typically measured by the R squared or adjusted R squared measure.

12   Western Massachusetts Electric Company, D.P.U. 10-55 (2010), Exhibit JDS-1-1; Eversource Energy D.P.U. 17-05 (2017), Exhibit ES-MCOS-2 Schedule MCOS-1; Liberty Utilities (Granite State Electric) Corp, (2016).

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1   used coincident peak demand to measure marginal cost components: (a) National Grid

2   Massachusetts, D.P.U. 15-155;[13] (b) Unitil Energy Systems, Docket No. DE 10-055;[14]

3   and (c) Granite State Electric Company, Docket No. DE 13-063.[15] Although this list is

4   not exhaustive, it does indicate that it is common practice to use coincident peak demand

5   to estimate capacity related marginal costs in New Hampshire and Massachusetts.

6 **Q.   Please explain why Mr. Rubin's assertion is not correct that marginal cost estimates**

7   **based on non-coincident demands will be greater than marginal cost estimates based**

8   **on coincident peak demand.**

9 A.   Mr. Rubin claims that the marginal cost of serving an additional kW of demand is greatly

10   under-estimated if line transformer costs are assumed to be related to CP demand, rather

11   than class or individual customer peak demands. Mr. Rubin also asserts that Concentric's

12   estimates of other components are similarly understated.

13   However, Mr. Rubin's assertion that the estimated line transformer plant marginal cost

14   would be greater if line transformer costs were assumed to be related to class or

15   individual customer peak demands is contrary to basic principles of statistics and

16   mathematics. Because total class or individual customer peak demand is always greater

17   than actual coincident peak demand, if Concentric could obtain appropriate non-

18   coincident peak demand data[16] to re-estimate the three-year unit average marginal line

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[13]   D.P.U. 15-155, (2015) Exhibit NG-HSG-5, Exhibit NG-HSG-5.
[14]   Docket No. DE 10-055, (2010) Schedule PMN-2, Table 2, Page 1 of 4.
[15]   Docket No. DE 13-063, (2013) Schedule HSG-3A, Page 1 of 1.
[16]   In this context, "appropriate" means (a) available for 15 to 20 years, and (b) adjusted to design conditions that represent demand in extreme weather. Non-coincident peak demand data that satisfies these requirements is not available from the Company.

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1   transformers costs,[17] the three year unit average cost calculated with non-coincident peak

2   demand would be less than the three year unit average cost calculated with coincident

3   peak demand.[18,19]

4   Also, although total class or individual customer peak demand is always greater than

5   actual coincident peak demand, Concentric used design coincident peak demand data in

6   the regression analyses and to calculate three year unit average costs, because distribution

7   systems are designed to meet design condition demand.[20] However, total class or

8   individual customer peak demand is not always greater than design coincident peak

9   demand. For example, the Company's 2015 design coincident peak demand and non-

10   coincident peak demand are within 0.2% of each other; the Company's design coincident

11   peak demand (used in the marginal cost study regressions) is 218,904 kW, and the non-

12   coincident peak demand (used to calculate demand-related marginal costs by class, as

13   shown in Attachment JDS/MCS-10, line 20) is 218,396. Thus, Mr. Rubin's concern that

14   the demand-related marginal costs are understated, because Concentric used coincident

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[17]   Attachment JDS/MCS-1 Bates 557, line 26.

[18]   Specifically, in calculating the two versions of three year unit average cost, the numerator (2013 – 2015 line transformer plant additions) would be identical and the denominator of the three year unit average cost calculated with 2013 – 2015 non-coincident peak demand would be greater than the denominator of the three year unit average cost calculated with coincident peak demand.

[19]   Also, the coefficient of the regression equation estimated with non-coincident demand would almost certainly be less than the coefficient of the regression equation estimated with coincident peak demand. Although it is highly likely that the non-coincident peak demand coefficient would be less than the coincident peak demand coefficient because the non-coincident demand would have higher values for all years used in the regression, it cannot be stated with absolute certainty that the regression equation estimated with non-coincident demand would be less. It would depend to some extent, on the year-to-year values of the dependent and independent variables.

[20]   As explained in the Response to Request No. Staff 12-17, "Granite State develops its distribution system plans based on actual and forecast normalized peak demand, not actual peak demand. … (T)he two methodologies that Concentric uses to estimate marginal costs capture Company responsiveness to year-to-year levels of normalized peak demand (rather than actual peak demand). <fn1> Further, Concentric's methodologies focus on capturing Company responsiveness to year-to-year levels of normalized peak demand in recent years. <fn1> The normalized peak demand is the Summer peak based on extreme weather (1-in-20 cooling degree days).

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1   peak demand rather than non-coincident peak demand, is apparently based on a

2   misunderstanding of the peak demand variable that Concentric used to calculate demand-

3   related marginal costs.

4   **Q.   Please comment on Mr. Rubin's assertion that the marginal cost of line**

5   **transformers should be estimated based on the current installed capacity of a line**

6   **transformer, per kVA of rated capacity.**

7   A.   Mr. Rubin's assertion is baseless and contrary to general standards and practices for

8   estimating electric marginal costs. Consistent with an economist's definition of marginal

9   cost, the marginal demand-related plant costs should measure the additional cost

10   (additions to plant) that an electric utility incurs in response to a small addition to

11   customer demand. Because all distribution assets are designed with excess capacity, a

12   properly measured marginal cost will reflect that a small increment of demand will

13   require replacement or upgrading to only a small portion of all distribution assets in a

14   category.

15   Applying this concept to line transformers, when demand increases by small increments

16   (for example, the small increments of demand that occur with year-to-year increases in

17   system-wide design demand), the system planners will respond to that increase in

18   demand by replacing or upgrading some line transformers. However, the increase in

19   demand will simply reduce the amount of excess capacity for the many line transformers

20   that are not replaced. Thus, conceptually, the marginal cost of line transformers is the

21   cost of the small number of line transformers that must be replaced or upgraded divided

22   by the system wide increase in demand.

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1   Mr. Rubin claims that the marginal cost of line transformers costs should be calculated as

2   the current installed cost of a line transformer, per kVA of rated capacity. However, Mr.

3   Rubin's estimate confuses marginal cost and installed cost; how line transformers are

4   sized is largely irrelevant to the determination of marginal capital costs for line

5   transformers. In effect, Mr. Rubin's estimated marginal transformer cost assumes that

6   increases in demand, which are spread throughout the distribution system, will require

7   that all line transformers be replaced or upgraded.

8   It is not surprising, then, that Mr. Rubin's estimated marginal transformer cost would be

9   four to five times greater than Concentric's estimated marginal line transformer cost – his

10   estimates significantly overstate the true marginal cost of line transformers.

11   **Q.   Are you aware of estimates of marginal capital costs for line transformers that are**

12   **prepared for other marginal cost studies?**

13   A.   Yes, I am. Although I did not perform an exhaustive search, I found two marginal cost

14   studies with line transformer costs calculated separately, using coincident peak demand

15   as the cost driver. I did not find any marginal cost studies with line transformer costs

16   calculated separately, using non-coincident peak demand as the cost driver.[21] The

17   following Table 1, below, provides relevant information for the two estimates that I

18   found, with Concentric's regression and three year unit average cost estimates added.

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[21]   Most of the marginal cost studies that I reviewed provided a combined estimate of marginal line transformer costs
and marginal distribution system costs, per kW or MW of coincident peak demand.

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1   **Table 1   Comparison of Marginal Line Transformer Cost Estimates**

	Marginal Cost	Coincident Peak Demand	Year of Study	Reference
Unitil Energy Systems	$95.38	336,809 kW	2010	Schedule PMN-2, page 1, Line 36, D.E. 10-055
Granite State Electric Company	$73.26	202,705 kW	2013	Schedule HSG-3A, Line 19, DE 13-063
Granite State Electric Company	$68.98	218,900 kW	2016	Attachment JDS/MCS-1 Page 3, Lines 26, 22
Granite State Electric Company	$64.83			

2   Table 1 indicates that the estimated marginal line transformer costs calculated for the

3   2010 UES and 2013 GSE marginal cost studies are very similar to the Concentric

4   regression coefficient and the three year unit average cost estimates, and thus very

5   different from Mr. Rubin's estimate.

6   **C.   Staff and OCA Recommendations for this Proceeding and the Company's**

7   **Next Rate Case**

8   **Q.   Please summarize the recommendations that Mr. Stachow and Mr. Rubin make**

9   **concerning the approach that should be taken to allocate the allowed revenue**

10   **requirement in this proceeding to rate classes.**

11   A.   Mr. Stachow and Mr. Rubin both recommend that the Company's unit average marginal

12   cost results should not be used to allocate the allowed revenue requirement in this

13   proceeding. However, their positions differ on the appropriate basis to allocate the

14   allowed revenue requirement. Mr. Stachow recommends that the Company's allowed

15   revenue requirement in this proceeding should be allocated to rate classes using the

16   results of the Regression MCS. Mr. Rubin recommends that the allowed revenue

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1   requirement in this rate case should be allocated among the customer classes by

2   increasing each class's pro forma revenues by the same percentage.

3   **Q.   Please comment on these recommendations.**

4   A.   Carefully following Commission precedent, the Company applied the equi-proportional

5   methodology to align class marginal costs derived from Concentric's unit average

6   marginal cost study with the requested revenue requirement to rate classes based on total

7   class marginal costs. And, as demonstrated in this rebuttal testimony, Concentric's unit

8   average marginal cost study also carefully followed Commission precedent. Further,

9   Concentric's marginal cost study was well-documented and transparent. Alternative

10   approaches to estimate marginal costs were also well-documented; Concentric explained

11   and justified its reliance on the unit average marginal cost study, rather than the two

12   alternative approaches. Thus, the Company and Concentric used approaches and made

13   decisions that were fully supported by the analysis that was prepared, and fully in

14   keeping with best practices for conducting statistical analyses and with Commission

15   precedent. Neither Mr. Rubin nor Mr. Stachow have offered any valid arguments for

16   rejecting Concentric's marginal cost study or the allocations of the allowed revenue

17   requirement to rate classes that was derived from the results of Concentric's marginal

18   cost study.

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1   **Q.**   **Please summarize the recommendations that Mr. Stachow and Mr. Rubin make**

2   **concerning studies and analyses that the Company should prepare for future rate**

3   **cases.**

4   A.   Mr. Stachow recommends that, in future rate cases, if the Company determines that the

5   results of regression analyses cannot be used to prepare a Regression MCS, the Company

6   should be required to prepare "rigorous diagnostic analysis" to demonstrate why the

7   regression analysis results are inappropriate.

8   Mr. Rubin recommends that the Company should be ordered to produce an allocated cost

9   study in its next base rate case.

10   **Q.**   **Please comment on Mr. Stachow's recommendation that diagnostic analysis should**

11   **be required in the Company's future rate cases.**

12   A.   Concentric determined that the Regression MCS should not be used to allocate the

13   allowed revenue requirement to rate classes because the total Company marginal cost was

14   significantly greater (215%) than the Company's requested distribution revenue

15   requirement. Concentric also determined that the total Company marginal cost was

16   significantly greater than the Company's requested distribution revenue requirement

17   because several of the key regression coefficients seemed to be unusually large.

18   Based on my review of Mr. Stachow's testimony and responses to data requests, I believe

19   that Mr. Stachow is recommending if the Company determines that in the future rate

20   cases that the Regression MCS could not be used to allocate the proposed revenue

21   requirement to classes, the purpose of the rigorous diagnostic analysis of the regression

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1   results that the Company must prepare would be to allow the Company to better

2   understand why key regression coefficients seemed to be unusually large. If my

3   understanding is correct, I strongly recommend that Mr. Stachow's recommendation be

4   rejected, because it is not possible to comply with Mr. Stachow's recommended

5   requirement. Simply stated, there are no diagnostic analyses that will explain why key

6   regression coefficients are unusually large, or small.

7   **Q.   Please explain your statement that it is not possible to comply with Mr. Stachow's**

8   **recommended requirement in more detail. Isn't there is a considerable body of**

9   **literature on regression diagnostics and the testing of linear regression assumptions?**

10   A.   Yes, there are many statistical tests that can be applied to regression equations. However,

11   these are generally tests of hypotheses to determine, for example, if (a) a coefficient

12   different from zero, (b) two coefficients are different from each other, (c) there is a

13   structural shift in the equation, or (d) standard assumptions for regressions are violated.[22]

14   None of Concentric's statisticians or applied mathematicians are aware of any statistical

15   test or analyses that would identify the reason or reasons that a coefficient is different

16   from a specified level.

17   I am familiar with other types of diagnostic analyses. For example, variance analysis,

18   which is a category of diagnostic analysis, can be used to identify reasons that sets of data

19   are different. Variance analysis can explain why data in one period is different from data

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[22]   For example, as explained in Simpson MCS testimony, Concentric routinely tests all regression equations for autocorrelation (Bates 542, lines 1 – 5), structural shifts, using a Chow test (Bates 542. Lines 6 – 14), the statistical significance of the coefficients (Bates 543, line 5), and the overall explanatory power of the regression equation, using a comparison of adjusted R squared values and F statistics.

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1   in other periods, or different from forecast values of that data. Although variance

2   analyses can be used to explain unusual levels of the dependent or independent variables

3   in a regression, variance analyses cannot be used to explain an unexpected value of a

4   regression coefficient. Although it may be possible to use variance analyses to explain

5   why the dependent variable or the independent variables were different in some periods,

6   it is not possible to use variance analyses to determine why a regression coefficient is

7   different from expected. The value of a regression coefficient is determined by the

8   interaction of the dependent and independent variables, which cannot be detected by

9   performing variance analyses on the dependent and independent variables.

10 **Q.** **Please comment on Mr. Rubin's recommendation that the Company should be**

11   **required to prepare an allocated cost study for its next rate case filing, and to use**

12   **the allocated cost study to determine rate class distribution revenue targets.**

13 A. In addition to Mr. Rubin's recommendation that the Company should be required to

14   prepare an allocated cost study for its next rate case filing, we also note that in the current

15   Unitil Energy Systems ("UES") rate case proceeding, DE 16-384, Unitil used the results

16   of an allocated cost study prepared by Unitil Witness H. Edwin Overcast to determine

17   class revenue targets. [23,24] My review of the testimony submitted in the UES rate case by

18   Mr. Stachow and Mr. Rubin did not identify any comments or recommendations by either

19   witness concerning UES's proposed approach for determining class revenue targets. I

20   therefore conclude that the Staff and the OCA may have concluded that the

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[23] UES's proposed class revenue targets also reflect the rate design principle of gradualism.
[24] Exhibit HEO-1, Bates 638, line 15 to Bates 686 line 8.

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1   Commission's decades-long precedent to use total class marginal costs to determine class

2   revenue targets should be discontinued, and that going forward, New Hampshire electric

3   and gas utilities should determine class revenue targets based on the results of an

4   allocated cost study.

5 **Q.** **Do you have any comments about marginal cost study methodologies, based on your**

6   **review of the UES rate case proceeding?**

7 A.   Yes, I do. In my review of the testimony submitted in the UES rate case by Mr. Stachow

8   and Mr. Rubin, I primarily concentrated on topics and issues related to the UES marginal

9   cost study and rate design, and especially on the use of regression analyses to estimate

10   components of marginal cost. However, I do not believe that Mr. Stachow's testimony

11   includes comments or criticisms of the methodology that was used to prepare the UES

12   MCS.

13   Mr. Rubin finds that UES's MCS is not a reliable measure of the cost of providing

14   service because, according to Mr. Rubin, Mr. Overcast could not find statistically valid

15   relationships between components of system costs and measures such as demand or the

16   number of customers, and therefore used the existing average costs of those components.

17   (Rubin testimony, DE 16-384, Bates 6, lines 13 – 19.)

18   Based on the record in this proceeding and my review of testimony and attachments

19   prepared by Mr. Overcast, Mr. Stachow, and Mr. Rubin in the UES rate case, DE 16-384,

20   I suggest that additional Commission guidance on requirements for the preparation of a

21   marginal cost study would greatly benefit the rate setting process in New Hampshire. If

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1   marginal cost studies are to continue to be used in determining class revenue targets, the

2   overall efficiency and effectiveness of rate cases could be enhanced if clarification was

3   provided for following issues:

4   (1) If regression analyses are the preferred methodology to estimate marginal costs, the

5   approaches that are appropriate to identify statistically valid relationships between

6   customer or distribution cost components and cost drivers should be understood.

7   (2) There should be common understanding of (a) the range of estimated marginal

8   costs, prepared according to the preferred methodology, that is "acceptable" for use

9   in setting class revenue targets and designing rates and (b) alternative approaches

10   that may be used if the results of the preferred approach are not acceptable.

11   (3) There should be common understanding of the diagnostic analyses that will be

12   required, if acceptable marginal costs cannot be obtained through appropriate

13   application of the preferred methodology.

14   (4) The requirements for preparing and filing allocated cost studies and marginal cost

15   studies, and the use of the allocated and marginal cost studies should be clarified.

16   **IV.**   **RATE DESIGN**

17   **Q.**   **Please provide a summary of the Company's rate design proposals.**

18   A.   The following is a list of the Company's rate design proposals:

19   •   Customer charges to Rates D, D-10, G-3, T, and V were increased to a uniform $14.50
20   and customer charges to Rates G-1 and G-2 were increased by the overall proposed
21   increase in permanent distribution rates.
22   •   Demand charges and High Voltage Delivery Credits for Rates G-1 and G-2 were
23   increased by the proposed increase in permanent rates for that class.

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1   •   kWh rates and credits for Rates D and T controlled water heating service are proposed
2   to be phased out over two years. In this proceeding the credits and rate discounts would
3   be reduced by 50 percent, and eliminated in the Company's next base rate case.
4   •   The Rate D lifeline rate structure25 would be eliminated, to be replaced by a single flat
5   energy rate for all kWh consumed in a month.

6 **Q.**   **Please explain how the remainder of this section is organized.**

7 A.   First, we provide summaries of Mr. Stachow's and Mr. Rubin's rate design

8   recommendations and the arguments they make in support of their recommendations.

9   We then provide comments and responses to their recommendations. Because Mr.

10   Stachow and Mr. Rubin have similar recommendations concerning the Rate D rate

11   structure, we will comment on both recommendations together.

12 **Q.**   **Please summarize Mr. Stachow's recommendation related to rate design.**

13 A.   In addition to Mr. Stachow's recommendations on the allocation of the allowed revenue

14   requirement to rate classes, which are discussed in Section III.A, Mr. Stachow also

15   recommends that the Company should not immediately eliminate the currently effective

16   Domestic Rate D lifeline rate structure,[26] but rather the Company should phase out the

17   Rate D lifeline rate structure over a two-year period. Specifically, Mr. Stachow proposes

18   that the current discount for the first 250 kWh of consumption for low income users

19   should be reduced by 50 percent, and the new lower rate (apparently lower compared to

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[25]   The current Rate D charge for the first 250 kWh per month is lower than the charge for all consumption over 250 kWh).

[26]   As Mr. Stachow explains, "Under a provision dating back to the 1980's, utilities implemented lifeline rates for low usage customers through a lower cost block for the first 250 kWh of consumption a month." Testimony of Leszek Stachow, Bates 00016, lines 2 - 4.

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1   the Company's proposed rate) should be applied to all consumption beyond 250 kWh per

2   month.

3   Mr. Stachow argues that Staff "… remains concerned about the impact [of the

4   Company's proposal to eliminate the Rate D lifeline rate structure] on the most

5   vulnerable segment of customers." Stachow testimony, Bates 16, lines 20, 21.

6 **Q.** **Please summarize Mr. Rubin's recommendations related to rate design.**

7 A. In addition to Mr. Rubin's recommendations on the allocation of the allowed revenue

8   requirement to rate classes, which are discussed in Section III.B, Mr. Rubin also

9   recommends that (1) Rate D customer and energy charges should be increased by an

10   approximately equal percentage, (2) the currently effective Rate D lifeline rate structure

11   should be retained with the first (lifeline) block increased from 250 kWh to 750 kWh, and

12   (3) the credits for interruptible water heater service and the discounted rates for water-

13   heating and off-peak consumption should be eliminated immediately.

14 **Q.** **Please summarize the supporting arguments that Mr. Rubin provides for his**

15   **recommendations.**

16 A. Mr. Rubin argues that the Company's proposed Rate D customer charge and elimination

17   of the lifeline rate structure is unfair to lower-use customers. The proposal would force

18   lower-use customers to pay much higher than average rate increases.

19   Mr. Rubin argues that Rate D and T water heater rates and discounts should be eliminated

20   immediately because the Company does not have the equipment to control load or

21   interrupt service. Mr. Rubin contends that these customers are receiving the same type

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1   and character of service as all other residential customers, and therefore should be

2   charged the same rates.

3   **A. Rate D Rate Design**

4 **Q.   Do you have any preliminary comments concerning Mr. Rubin's discussions of Rate**

5   **D bill impacts?**

6 A.   Yes, for the following reasons, I believe that Mr. Rubin's Rate D bill impacts are

7   misleading or inaccurate.

8   First, Mr. Rubin expresses all bill impacts as percent increases in distribution rates or

9   revenues. However, it is well-accepted among rate design experts that percent increases

10   in distribution bills is not a meaningful way to assess the effect that increases in

11   distribution rates will have on customers. Because customers experience and respond to

12   changes in their total bills, not their distribution bills, it is best practice to prepare bill

13   impact analyses that reflect the effects of a proposed rate increase and the associated

14   changes in rate design, expressed as a percent change (and dollar change) in the total bill.

15   The total bill should include the cost of energy services charges and other tracking rates

16   as well as distribution rates.

17   Second, expressing all bill impacts as percent increases does not provide useful

18   information about annual or monthly bill impacts measured in dollars. However, it is

19   well accepted among rate design experts that it is important to consider annual or

20   monthly dollar increases together with percent increases, to fully reflect the impact on

21   customers of a proposed change in rates. For example, important context is provided for

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1   a bill increase of 23 percent if it is also known that the associated cost impact is (a)

2     $32.50 per year, or (b) $132 per year.

3   Third, because the billing data that Mr. Rubin used to prepare his analyses includes all

4   billed customers in the twelve month period, Mr. Rubin's analyses are distorted by the

5   customers in the billing database with less than twelve bills. For example, Mr. Rubin's

6   bill impact analyses undoubtedly include customers with bills exclusively in peak months

7   and customers with no bills in summer months. Also, Mr. Rubin's discussion of the

8   impact of his proposed Rate D rates includes descriptions of the impact of his proposal on

9   customers, grouped by annual usage.[27] Undoubtedly, some of the approximately 19,000

10   customers that Mr. Rubin states who never use more than 750 kWh per month are

11   customers with bills in off peak (i.e. non-summer) months only. The impact of Mr.

12   Rubin's proposed rates on customers such as this, with a complete twelve months of

13   billing data is unknown and unknowable.

14   For the analyses that we used to review the impacts of Mr. Stachow's and Mr. Rubin's

15   Rate D rate design proposals, we prepared a bill impact database that excluded any

16   customers that did not have twelve bills.

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[27] For example, "(A)bout one-half of residential customers (approximately 19,000 of the Company's 40,000 customers) never use more than 750 kWh per month" (Rubin testimony, Bates 17, lines 16 – 18), and "The average increase for these 5,000 customers [who never use more than 250 kWh in a month] under my proposal would be …" (Rubin testimony, Bates 18, lines 19, 20).

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1 **Q. Please address Mr. Rubin's claim that the first (lifeline) block of the Rate D rate**

2 **structure should be increased from 250 kWh to 750 kWh.**

3 A. Mr. Rubin claims that (1) the Company's current first block consisting of 250 kWh does

4 not make sense given today's usage patterns, and (2) setting the first block size at 750

5 kWh would make sense and would send customers a price signal that peak consumption

6 causes increased costs to the Company.

7 However, Mr. Rubin does not provide any evidence that the first block size of 750 kWh

8 sends customers any meaningful price signal concerning peak usage. Indeed, Mr. Rubin

9 states that about one half (19,000 / 40,000 or 47.5%) of residential customers never use

10 more than 750 kWh per month.[28] Therefore, any price signal concerning the cost of peak

11 consumption is lost on almost 50 percent of the Rate D customers. In fact, lifeline rate

12 structures do not provide effective price signals. Lifeline rate structures unambiguously

13 benefit lower use customers and disadvantage higher use customers. However, there is

14 no evidence that lower use customers are more deserving of the special treatment

15 provided by an inclining rate structure because:

16 (1) Low use customers use less electricity, but not necessarily because they are more

17 "conservation minded." Perhaps these lower use customers live in smaller

18 dwellings, own rather than rent so that they are incented to invest in energy

19 efficiency measures and equipment with long pay back periods, or spend more of

20 their time away from their residence, and

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[28] Using Concentric's billing database of customers with 12 bills, 44.2% of Rate D customers never use more than 750 kWh in any month.

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1   (2) Lifeline rate structures are not another form of assistance to low income customers.

2   Low use customers are equally likely to be low income customers or non-low

3   income customers, and high use customers are also as likely to be low income or

4   non-low income customers. To demonstrate this, we have prepared Attachment

5   HMT/JDS-1.

6 **Q.   Please explain Attachment HMT/JDS-1**

7 A.   For Attachment HMT/JDS-1, Page 1, we calculated the highest monthly consumption for

8   each Rate D customer with 12 bills, and counted the number of customers whose highest

9   monthly bill was in each of 51 "buckets."[29] The dashed red line shows the cumulative

10   percent of Rate D low income customers (on the vertical y-axis) with highest monthly

11   consumption that is less than the kWh value on the horizontal x-axis. The solid blue line

12   provides the same information for all non-low income Rate D customers. This chart

13   shows that 6.5 percent of low income customers and 6.3 percent of non-low income

14   customers never use more than 250 kWh, the current lifeline block size. This chart also

15   shows that 45.4 percent of low income customers and 44.1 percent of non-low income

16   customers never use more than Mr. Rubin's proposed 750 kWh lifeline block size.

17   Attachment HMT/JDS-1, Page 2 shows the cumulative percent of low income and non-

18   low income customers with annual use that is less than the kWh value on the x-axis.[30] As

19   a refinement to a statement made in the last answer, inclining rate structures (1) benefit

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[29]   For example, the first 10 "buckets" are: 50, 100, 150, 200, 250, 300, 350, 400, 450, 500 kWh.
[30]   The boxes provide the cumulative percent of customers that use less than 7,000 kWh and 15,000 kWh annually. The significance of 7,000 kWh is that the average annual consumption for all customers with 12 bills is approximately 7,000 kWh. The significance of 15,000 is to demonstrate the cumulative percent of customers with higher usage.

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1   non-low income as well as low income lower use customers, and (2) disadvantage non-

2   low income as well as low income higher use customers.

3   There is no support or justification for charging a higher rate for usage over 750 kWh (or

4   250 kWh), and we therefore conclude that Mr. Rubin's and Mr. Stachow's Rate D

5   inclining block rate proposals are unreasonable and unfair to higher-use customers.

6 **Q.**   **Have you prepared bill impact analyses for the Rate D rate designs proposed by Mr.**

7   **Stachow and Mr. Rubin?**

8 A.   Yes, we have prepared the following: (a) Attachment HMT/JDS-2 shows the impacts of

9   Mr. Stachow's proposed Rate D rate design on non-low income (Pages 1, 2) and low

10   income (Pages 3, 4) customers; (b) Attachment HMT/JDS-3 shows the impacts of Mr.

11   Rubin's proposed Rate D rate design on non-low income (Pages 1, 2) and low income

12   (Pages 3, 4) customers; and (c) Attachment HMT/JDS-4 shows the impacts of the

13   Company's proposed Rate D rate design on non-low income (Pages 1, 2) and low income

14   (Pages 3, 4) customers. The billing database of Rate D customers with 12 bills was used

15   to prepare the bill impact calculations for Rebuttal Attachments HMT/JDS-2, HMT/JDS-

16   3, and HMT/JDS-4.

17   To allow for a valid comparison of the three proposed Rate D rate designs that does not

18   also reflect Staff and OCA recommendations concerning the Rate D revenue target or

19   other rates and credits to Rate D customers, we designed all three sets of rates based on

20   (1) the Company's proposed Rate D revenue target ($19,501,580), and (2) the

21   Company's proposed interruptible credits and Farm and controlled water heating rates.

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1 To determine Rate D rates according to Mr. Stachow's recommendations, we reduced the

2 discount (relative to the average Rate D energy rate) for the first 250 kWh of

3 consumption by 50 percent and calculated the rate for all consumption over 250 kWh to

4 recover the remainder of the revenue target.[31] The calculated rates are shown in

5 Attachment HMT/JDS-2, page 1.

6 To determine Rate D rates according to Mr. Rubin's recommendations, we calculated the

7 customer charge at the class average increase in distribution revenues, and calculated

8 rates for Mr. Rubin's two energy blocks that recovered the remainder of the energy target

9 and that maintained the ration of the rates that Mr. Rubin designed. From the detailed

10 billing data, we calculated Rate D kWh consumption for Mr. Rubin's first block (the first

11 750 kWh, monthly) and second block. The calculated rates are shown in Attachment

12 HMT/JDS-3, page 1.

13 **Q.   Please summarize the differences in the bill impacts of the three rate designs.**

14 A.   Attachment HMT/JDS-5 summarizes the differences in the three proposed Rate D rate

15 designs. The charts on the left of the page provide bill impact analyses for non-low

16 income customers, and the charts on the right of the page provide the same information

17 for low income customers. The charts on the top of the page show the difference in

18 annual bills -- Staff compared to Company (solid blue) and OCA compared to Company

19 (dashed red). The blue and red boxes indicate the cross over points – the level of annual

20 kWh consumption at which the Company's rate design becomes more favorable to

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[31] The remainder of the Rate D revenue target is calculated as the total Rate D revenue target, less Rate D customer
charge revenues (at the Company's proposed customer charge rate) and the effect on revenues associated with the
Company's proposed interruptible credits, Farm credits, and interruptible/ controlled rates.

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1   customers. The charts at the bottom show the cumulative percent of customers that use

2   no more than the annual kWh indicated on the x-axis. The blue box on the left of the

3   page indicates that the 65.1% of non-low income customers that use no more than 8,500

4   kWh would be better off with the Staff rate design and the remaining 34.9% would be

5   better off with the Company's rate design. The red box on the left of the page indicates

6   that the 79.9% of non-low income customers that use no more than 11,000 kWh would be

7   better off with the Staff rate design and the remaining 20.1% would be better off with the

8   Company's rate design.

9 **Q.   What do you conclude from this analysis?**

10 A.   We conclude that the concern that the Staff and OCA have for the lower usage customers

11   is misplaced. Attachment HMT/JDS-5 compellingly demonstrates that higher use

12   customers will be significantly harmed if Mr. Stachow's or Mr. Rubin's rate designs were

13   to be implemented. It is especially concerning that the benefit to lower use customers of

14   Mr. Stachow's or Mr. Rubin's proposed rate design (compared to the Company's rate

15   design) is never more than $15 per year ($1.25 per month), but at least 12% of non-low

16   income customers and 10% of low income customers would receive annual bill increases

17   of at least $15. And, the annual bill impacts are greater for higher levels of consumption.

18   For example, specific to low income customers, 3 percent of low income customers

19   would receive annual bill increases of at least $30 with Mr. Stachow's rate design or $50

20   with Mr. Rubin's design.

21   From this analysis, we conclude that there is no justification for focusing on the impacts

22   to lower use customers. Higher use customers are no less deserving of concern because

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1   higher use low income customers are no less vulnerable than lower use customers. And,

2   it seems most likely that lower use customers will be less negatively impacted by the

3   additional annual cost of $5 to $15 from the Company's proposed rate design than higher

4   use customers will be impacted by the additional annual cost of $15 to $140 from Staff's

5   or OCA's rate design.

6   **Q.   Does Mr. Rubin address why the current rate design of Rate D consists of 250 kWh?**

7   A.   He does not. Mr. Rubin notes on Page 17, lines 10-12 that, "Low-income customers

8   receive the benefit of rate discounts for the first 750 kWh per month that they use, so I

9   am not sure why 250 kWh was chosen as a break point for the first usage block." He

10   notes that he finds it more reasonable to have the first block include 750 kWh, rather than

11   250 kWh.

12 **Q.   Has the low income discount always been applied to the first 750 kWh?**

13   A.   No, it has not. The original design of the low income discount program, the Electric

14   Assistance Program (EAP), was to provide benefits to income eligible customers by

15   providing a discount on their electric bill, based on tiers, and applying the discount to the

16   total kWh billed on a given month. There were six tiers ranging from 5% to 70%.

17   Starting in 2005, the number of customers applying for the discount exceeded the amount

18   of benefits the program was able to provide. The Legislature increased funding for EAP

19   in 2005 and in 2010 on a temporary basis. According to the EAP Advisory Board, EAP

20   would only be able to serve 28,100 customers, with a waiting list of 10,200.[32]

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[32]   Order No. 25,200 in Docket No. DE 10-192, page 3.

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1   The EAP Advisory Board recommended reducing the number of tiers from six to five and

2   reducing the income eligibility level. They also recommended capping the discount to the

3   first 700 kWh of a customer's bill. By making these changes, EAP could serve 33,800

4   with a waiting list of 2,500.

5   **Q.**   **What was the monthly average usage of an EAP participant when the Advisory**

6   **Board requested these changes?**

7   A.   The average participant's monthly usage was 588 kWh. The Board recognized that some

8   households will use more than 588 kWh per month, but that the discount would provide a

9   "small cushion" for those customers with higher usage. The Board also noted that the

10   funds under Low Income Home Energy Assistance Program in recent years were not

11   fully used, so those customers with higher usage due to electric heat still had the

12   opportunity to reduce their bills.[33]

13   **Q.**   **Did the Advisory Board encourage any other measures?**

14   A.   Yes. They encouraged conservation to allow the cap to extend the benefits.

15   **Q.**   **How long was the 700 kWh cap in place?**

16   A.   In 2013, the Advisory Board recommended that the Commission increase the number of

17   kWh the discount would apply to from 700 to 750 because there was a decline in EAP

18   enrollment in 2012.[34] With the decline in enrollment, the EAP fund balance grew larger

19   than $1,000,000.

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[33]   Order No. 25,500 in Docket No. DE 10-192, Page 3.
[34]   Order No. 25,544 in Docket No. DE 13-180, Page 1.

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1 **Q.** **Is there a statutory obligation to act when the fund balance is greater than**

2 **$1,000,000?**

3 A. Yes. Under RSA 374-F:4, VIII (c), the collection for the fund is to be suspended if the

4 fund is not expected to be substantially reduced over the coming 12 months. Rather than

5 suspend the fund, the Board requested to increase the amount of kWh to help reduce it to

6 under $1,000,000.

7 **Q.** **Considering the changes made to the EAP program over the last decade, does Mr.**

8 **Rubin's argument that the first block should be 750 kWh fit with the long term**

9 **goals of rate design?**

10 A. It does not. Mr. Rubin is looking at the program as it stands today, saying Residential

11 Rate D should have the same block. EAP is subject to change at any time, after a request

12 from the EAP Advisory Board and a subsequent Order from the Commission, so his

13 recommendation of this rate design is short-sighted.

14 **Q.** **Why does the Company's current Rate D rate structure have a lifeline block of 250**

15 **kWh?**

16 A. The Federal government passed the National Energy Act in 1978, which included the

17 Public Utilities Regulatory Policies Act (PURPA.) One of the purposes of PURPA was

18 to review rate design, specifically block rates. At the time, many utilities offered

19 declining block rates which provided customers with higher usage the incentive to use

20 more because the second and possibly third blocks had rates that were lower than the first

21 block. With the inception of PURPA, thoughts on rate design changed and the flat rate

22 and inverted rate structures were a way to force customers to use less electricity. With

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1   consideration that some customers may be low income customers, lifeline rates came

2   about by pricing the first block below the cost of production. The second block would be

3   priced above the cost of production to pay for the subsidy given in the first block,

4   primarily for lower-use customers. Those who are large electricity consumers pay for the

5   lifeline rate provided to the low-volume customers.

6 **Q.   Are there different rationales as to why lifeline rates are important?**

7 A.   Yes. If the rationale is to provide only low income customers with the lifeline rate, then

8   low-income customers should have their own rate class. Another rationale is that a block

9   of below-cost electricity allows customers to take service for essential needs, and this rate

10   would be applied to all residential customers, as is the case for Granite State Electric's

11   Rate D.

12   Critics of lifeline rates argue that lifestyle choices made by middle-to-upper income

13   electricity users result in lower electricity bills under lifeline rates. Those who own

14   vacation homes, eat out more often, and spend less time at home receive the benefit of the

15   lifeline rate because they are a low-volume, higher income customer, but receive a

16   below-cost rate.[35]

17 **Q.   Please reiterate why Liberty is requesting to end its lifeline rate.**

18 A.   The idea of pricing a kWh below cost came about prior to restructuring when utilities

19   were vertically integrated and were able to price supply at below cost. Today, utilities

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[35]   Michael Hennessy, The Evaluation of Lifeline Electricity Rates: Methods and Myths. Evaluation Review, Vol. 8 No. 3, June 1984 327-346, Sage Publications, Inc., 1984.

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1   purchase their power on the market and pass the price onto their customers. Pricing

2   below cost is not possible anymore. Creating flat rates which are designed to price each

3   kWh consumed equally, is more in line with how rates are designed in restructured

4   environment.

5   **Q.**   **Does this complete your testimony?**

6   A.   Yes, it does.

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