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Attachment SJR-1: Curriculum Vitae of Scott J. Rubin

Attachment SJR-2: Liberty response to OCA 1-90

Attachment SJR-3: Company Proposed Bill Impacts on Rate D Customers

**Attachment SJR-4: OCA Proposed Bill Impacts on Rate D Customers Under Company
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**Attachment SJR-5: Proof of Revenues for OCA Rate Design Under Company Proposed
Revenue Requirement**

1 **Introduction**

2 **Q. Please state your name and business address.**

3 A. My name is Scott J. Rubin. My business address is 333 Oak Lane, Bloomsburg, PA.

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

5 A. I am an independent consultant and an attorney. My practice is limited to matters
6 affecting the public utility industry.

7 **Q. What is the purpose of your testimony in this case?**

8 A. I have been asked by the New Hampshire Office of the Consumer Advocate (“OCA”) to
9 review the cost-of-service study and rate design proposal filed by Liberty Utilities Corp.
10 (“Liberty” or “Company”) in this case.

11 **Q. What are your qualifications to provide this testimony in this case?**

12 A. I have testified as an expert witness before utility commissions or courts in the District of
13 Columbia, the province of Nova Scotia, and the states of Alaska, Arizona, California,
14 Connecticut, Delaware, Kentucky, Illinois, Maine, Maryland, Mississippi, New
15 Hampshire, New Jersey, New York, Ohio, Pennsylvania, and West Virginia. I also have
16 testified as an expert witness before federal, state, and local legislative committees. I also
17 have served as a consultant to the staffs of three state utility commissions, as well as to
18 several national utility trade associations, and state and local governments throughout the
19 country. Prior to establishing my own consulting and law practice, I was employed by
20 the Pennsylvania Office of Consumer Advocate from 1983 through January 1994 in
21 increasingly responsible positions. From 1990 until I left state government, I was one of

1 two senior attorneys in that Office. Among my other responsibilities in that position, I
2 had a major role in setting its policy positions on water and electric matters. In addition,
3 I was responsible for supervising the technical staff of that Office. I also testified as an
4 expert witness for that Office on rate design and cost of service issues.

5 Throughout my career, I developed substantial expertise in matters relating to the
6 economic regulation of public utilities. I have published articles, contributed to books,
7 written speeches, and delivered numerous presentations, on both the national and state
8 level, relating to regulatory issues. I have attended numerous continuing education
9 courses involving the utility industry. I also have participated as a faculty member in
10 utility-related educational programs for the Institute for Public Utilities at Michigan State
11 University, the American Water Works Association, and the Pennsylvania Bar Institute.
12 Attachment SJR-1 to this testimony is my curriculum vitae.

13 **Q. Have you published any papers on the topic of electric utility rate design?**

14 A. Yes, in November 2015 I published a paper entitled "Moving Toward Demand-Based
15 Residential Rates" in *The Electricity Journal*.

16 **Q. Do you have any recent experience that is particularly relevant to the issues in this
17 case?**

18 A. Yes, I do. In the past three years, I have testified on rate design, cost allocation, and/or
19 tariff issues in rate cases involving the following electric utilities: Ameren Illinois,
20 Chugach Electric (Alaska), Commonwealth Edison (Illinois), Entergy Mississippi,
21 Massachusetts Electric, Municipal Light & Power (Alaska), Ohio Edison, Pike County

1 Light & Power (Pennsylvania), Potomac Electric Power (District of Columbia), United
2 Illuminating (Connecticut), Unitil (New Hampshire), and UNS Electric (Arizona).

3 **Overview and Summary**

4 **Q. Please provide an overview of your analyses, conclusions, and the focus of your**
5 **testimony.**

6 A. My testimony begins with a review of the Company's marginal cost-of-service study
7 ("MCOSS"). As I explain below, I conclude that the MCOSS is not a reliable measure of
8 the cost of providing service to different types of customers and cannot be used to
9 estimate the cost to serve each customer class. The Company did not prepare an
10 accounting (or embedded) cost-of-service study. Thus, there is no reliable evidence in
11 this case that can be used to estimate the cost to serve each customer class.
12 Consequently, I recommend that any permanent rate increase authorized in this case
13 should be allocated among the customer classes by increasing each class's existing
14 revenues by an equal percentage.

15 The second section of my testimony discusses some of the specific residential rate
16 discounts that are offered by the Company. As I explain below, the Company offers
17 discounts for customer load control (such as a water-heating rate and interruptible rates),
18 but the Company lacks the equipment and other capabilities to actually control customer
19 load. Thus, customers on these discounted rates are receiving exactly the same type of
20 service as other residential customers, but they are paying lower rates. This is the very
21 definition of undue discrimination that is barred pursuant to RSA 387:10. I recommend,
22 therefore, that these special load-control discounts be eliminated immediately.

1 The final portion of my testimony reviews the Company's proposed rate design
2 for the residential (Rate D) customer class. The Company has proposed increasing the
3 customer charge based on the flawed results of the MCOSS and eliminating the inclining
4 block rate structure of existing rates. I find that this proposal results in unreasonable and
5 highly disparate impacts on customers' bills, with annual increases ranging from 3% to
6 more than 30%. With an overall proposed increase of 15%, bill impacts of this
7 magnitude are not reasonable. I recommend a different rate design that eliminates the
8 extreme impacts of the Company's proposal and is fair to all residential customers.

9 **Review of Marginal Cost-of-Service Study ("MCOSS")**

10 **Q. Please summarize your review of the Company's MCOSS.**

11 A. In most instances, the Company's attempts to find a long-term relationship between
12 system costs and metrics such as demand or the number of customers found that there
13 was not a statistically valid relationship. Thus, the results presented in the MCOSS
14 primarily measure the average cost of providing various components of electric service
15 between 2013 and 2015. While the average cost might be of some academic interest, it
16 does not represent the cost of serving customers (those costs are based on investments
17 made by the Company over many decades) and it does not mean that there is any
18 relationship between that cost and either customer demand or any other reliable measure
19 to which a marginal cost might be applied.

20 Moreover, the MCOSS uses only a single measure of customer demand, the
21 system coincident peak ("CP"). While the CP is important for sizing certain types of
22 facilities, such as generation equipment and transmission lines (neither of which is part of

1 the cost of service in this case), the CP is not relevant to determining the size or cost of
2 demand-related investments closer to the customer, such as substation equipment,
3 primary and secondary lines, and line transformers.

4 **Q. Can you provide a specific illustration of this deficiency in the Company's MCOSS?**

5 A. Yes. The MCOSS concludes that line transformers cost an average of \$68,983 per
6 megawatt ("MW"), or \$68.93 per kilowatt ("kW") of CP demand. Liberty Attachment
7 JDS/MCS-1, p. 3 (Bates 0557), line 26. Line transformers reduce the voltage from
8 primary voltage to secondary voltage, so that electricity can be used by normal household
9 appliances and other equipment. Line transformers are neither sized nor purchased based
10 on CP demand. Line transformers are sized to serve the expected maximum load of the
11 specific customers who will be connected to the transformer.

12 **Q. What is the effect on the MCOSS of assuming that line transformer costs are related**
13 **to CP demand?**

14 A. The effect is to greatly under-estimate the marginal cost of serving an additional kW of
15 demand. This, in turn, inflates the percentage of costs that are customer-related. In
16 particular, the Company's analysis estimates that the marginal capital cost for a line
17 transformer to serve an additional kW of demand is \$68.98. Liberty Attachment
18 JDS/MCS-8, p. 1 (Gates 0596), line 2 (cost per MW divided by 1,000). In fact, though,
19 the capital cost per kW (or per kVA which is how line transformers are rated) of line
20 transformers is four to five times greater than this cost. I recently reviewed very detailed
21 line transformer cost data for another electric utility in New England, United Illuminating
22 in Connecticut. The following table shows the cost per kVA of pole-mounted line

1 transformers installed in 2015 of the three sizes typically used in residential
2 neighborhoods and small business districts.

Cost of Line Transformers in 2015 for United Illuminating (CT)			
Transformer size (kVA)	Number of transformers	Total cost of transformers	Cost per kVA
25	125	\$1,048,568	\$336
37.5	97	\$1,005,974	\$277
50	36	\$ 449,098	\$249
Total	258	\$2,503,640	\$292

3
4 In other words, the actual marginal capital cost for line transformers for Liberty is
5 likely to be in the range of \$250 to \$300 per kW, not the less than \$69 per kW used in the
6 MCOSS. Using class contribution to coincident peak demand rather than the actual cost
7 of line transformers for the capacity provided greatly understates the demand-related
8 costs incurred by Liberty to serve new customers. Similar problems exist throughout the
9 study because the study looks only at coincident peak demand, even though most
10 components of the distribution system are related to class or individual customer peak
11 demands.

12 **Q. What do you conclude about the usefulness of the MCOSS?**

13 A. I conclude that the MCOSS does not provide a reliable estimate of the marginal cost to
14 serve customers. The study's sole use of CP demand understates the marginal cost of
15 serving an additional kW of demand. Because total costs in the MCOSS are less than
16 Liberty's total costs, the results of the study are increased proportionately for demand-
17 related and customer-related costs. That is, what matters is the percentage of costs that
18 are demand-related or customer-related, not the actual dollar values developed in the

1 MCOSS. Thus, under-estimating demand-related costs necessarily over-estimates
2 customer-related costs in the study.

3 Further, those percentages bear little if any relationship to the actual embedded
4 costs of serving customers. An embedded (or accounting) study would be based on real-
5 world costs -- costs incurred by Liberty and its predecessor company over many decades
6 and that are still in service to customers.

7 Those differences in the vintage of equipment have real consequences to
8 customers. Service is less reliable as equipment ages and nears the end of its useful life.
9 Customers are served by a mix of newer and older facilities, they receive service
10 reliability that reflects that age, and they pay maintenance costs that reflect that age. So
11 too should they pay rates that reflect the various ages of the equipment that serves them.
12 Yet the nearly exclusive use of costs for the past three years, as the Company proposes,
13 completely ignores the age of equipment that is actually in service. In ratemaking, we
14 always talk about the "matching principle" which says that all elements of the cost of
15 service -- revenues, expenses, rate base, taxes, etc. -- should be measured at the same
16 point in time. The same is true with the calculation of rates: the rates should be
17 reflective of the facilities actually used to provide service at the same point in time -- not
18 some hypothetical equipment that could be installed today, because the resulting system
19 would have a very different cost structure and a different level of reliability than is
20 actually received by customers.

21 **Q. What do you recommend?**

1 A. I recommend that the Company's sole use of the MCOSS should be rejected. The
2 Company should be ordered to produce an embedded (or accounting) cost-of-service
3 study in its next base rate case. For this case, I recommend that any rate increase should
4 be allocated among the customer classes by increasing each class's pro forma revenues by
5 the same percentage.

6 Further, within the residential (Rate D) class, I recommend that the customer
7 charge and energy charges should be increased by an approximately equal percentage.
8 The MCOSS does not provide accurate information that can be used to determine if the
9 existing customer charge collects more or less than the Company's actual customer-
10 related costs.

11 **Eliminating Discriminatory Rate Options**

12 **Q. Does Liberty have any special rate options for residential customers?**

13 A. Yes. Liberty has discounted rates for residential customers who have load-control
14 equipment that is supposed to enable the Company to control customer water heaters or
15 interrupt service to other types of equipment for limited periods of time.

16 **Q. Do you have any concerns with these special rate options?**

17 A. I do not oppose rate discounts for interruptible or load-control services in theory. These
18 particular rates for residential customers, however, must be eliminated because the
19 Company does not have the equipment to actually control load or interrupt service. In
20 response to OCA 1-90 (Attachment SJR-2), the Company stated that the load control and
21 interruption capability was lost in 2002 when the previous owner converted to an

1 automated meter reading. Apparently, the Commission was never informed about this
2 loss of capability. The special rate discounts have remained in effect for more than 14
3 years even though Liberty and its predecessor have not had the physical ability to
4 interrupt service or control water-heating load for residential customers.

5 **Q. What does the Company recommend?**

6 A. The Company proposes to "reduce the credits and rate discounts in this proceeding by 50
7 percent." Direct Testimony of Tebbetts and Simpson, p. 13 (Bates 0213), lines 19-20.
8 They then propose to completely eliminate the discounts in the Company's next base rate
9 case. *Id.*, p. 13, line 20 to p. 14, line 1 (Bates 0213-0214).

10 **Q. Do you agree with the Company's proposal?**

11 A. No, I do not. The Company is physically unable to interrupt or control service to these
12 customers in any manner. This means that these customers are receiving exactly the
13 same type and character of service as all other residential customers. The customers have
14 not demonstrated any type of special need, and the customers are not providing the
15 system with any type of benefit. I am advised by counsel that RSA 378:10 prohibits any
16 utility from giving any "undue or unreasonable preference or advantage to any person ...
17 or subject any particular person or any particular description of service, to any undue or
18 unreasonable prejudice or disadvantage in any respect whatever." As such, in my expert
19 opinion, it would be an undue (that is, undeserved) and unreasonable preference to
20 continue allowing customers to receive a discounted rate for exactly the same service that
21 other residential customers receive.

22 **Q. Isn't that result unfair to the customers who have been receiving a lower rate?**

1 A. No, the result is not unfair. The customers on the lower rates have been receiving
2 unwarranted discounts for more than a dozen years. Those discounts are paid through
3 higher rates charged to other residential customers, even though all residential customers
4 are receiving the same type of service. I recognize that removing an unwarranted
5 discount will result in higher bills to customers who had been receiving the discount, but
6 that result is not unfair. The higher bills simply reflect reality: there is no basis for
7 providing any residential customers (other than qualified low-income customers) with a
8 rate that differs from any other residential customer. The Company lacks the ability to
9 interrupt service or control load, so it would be unreasonably preferential to charge a
10 select few customers a lower rate for a service that does not exist.

11 **Q. How many customers are affected by this change?**

12 A. In response to OCA 1-92, the Company provided a database of all residential bills issued
13 during the test year. From that database, I calculate that 184 customers received a
14 discount for interruptible service (rate code IC-1) at some time during the year. In
15 addition, I calculate that 288 customers paid the lower rates for controlled water heating
16 service (rate code D-06), and 606 customers paid lower rates for off-peak usage which is
17 predicated on water heater control.

18 **Q. How much of a rate preference do these customers receive under present
19 (permanent) rates?**

20 A. Under the existing permanent rates, interruptible customers receive a credit of \$6.91 per
21 month. During the test year, the total credit paid by the Company was \$11,377. Liberty

1 Attachment RATES-2, p. 4 (Bates 0224), line 64, last column. This would mean that
2 some of the 184 customers did not receive the credit in every month.

3 In addition, water-heating customers used a total of 816,103 kWh billed at a
4 reduced rate, or an average of approximately 236 kWh per month for each of the 288
5 customers on this rate. Liberty Attachment RATES-2, p. 1 (Bates 0221), line 19, last
6 column. The existing rate per kWh for this usage is 3.176¢, compared to the standard
7 residential rate of 4.784¢ per kWh for usage in excess of 250 kWh per month, or a
8 difference of 1.608¢ per kWh, or an average of \$3.79 per month per customer.¹

9 Finally, off-peak usage predicated on water heater control has 606 customers with
10 total consumption of 1,501,862 kWh annually, or an average of 207 kWh per month.
11 Liberty Attachment RATES-2, p. 1 (Bates 0221), line 36, last column. This would result
12 in a bill discount of approximately \$3.33 per month on average.

13 **Q. Do you consider the elimination of either of these discounts to be of such a**
14 **magnitude as to require some type of phase-in or transition plan, as the Company**
15 **proposes?**

16 **A.** No. A customer on the interruptible rate would lose a credit of \$6.91 per month. A
17 customer on the water-heating rates would lose a discount, on average, of less than \$4.00
18 per month. I do not consider the loss of either of these discounts to be of such a
19 magnitude that it would pose a hardship to the customers on those rates. Moreover, as I
20 explained above, because those discounts are being received for services the Company

¹ Some of the water heating usage would be billed in the first block, so the actual effect would be slightly less than \$3.79 per month.

1 cannot provide, the discounts are unreasonable. Allowing any form of discount to
2 continue would be unfair to the other residential customers who must pay higher rates to
3 cover the cost of those unwarranted discounts and credits.

4 **Q. What do you recommend?**

5 A. I recommend that the interruptible credit of \$6.91 per month and the discounted rates for
6 water-heating and off-peak consumption should be eliminated immediately. I will reflect
7 the elimination of these rates in my rate design, as discussed in the next section.

8 **Residential (Rate D) Rate Design**

9 **Q. What is your understanding of the Company's proposals for residential rate design?**

10 A. The Company's existing residential rates consist of a customer charge of \$11.79 per
11 month and several different rates per kWh, depending on the customer's characteristics
12 and consumption. Specifically, for most Rate D customers, there is a two-block rate,
13 consisting of a rate of 3.185¢ per kWh for the first 250 kWh per month and 4.784¢ per
14 kWh for usage in excess of 250 kWh per month. In addition, there are separate rates for
15 farm use (3.984¢ per kWh), as well as different rates for customers on interruptible or
16 controlled water-heating rates.

17 The Company proposes to increase revenues overall to the Rate D class by 17.7%.
18 To implement this revenue increase, the Company proposes to increase the customer
19 charge by 23% to \$14.50 per month. The Company also proposes to eliminate the
20 inclining block rate and to charge all kWh (except for farm use) a rate of 4.912¢ per kWh
21 (an increase of 54% for the first 250 kWh per month, and an increase of less than 3% for

1 usage in excess of 250 kWh). Farm use would be charged a rate of 4.363¢ per kWh (an
2 increase of 9.5%).

3 **Q. What effect would the Company's proposals have on residential customers?**

4 A. In order to respond to this question, I performed analyses using a data set provided by
5 Liberty that consists of all Rate D customers (except for customers on Rate D-10) for the
6 test year. The data set contains the details of each month's billing data to customers,
7 including consumption and any special rates for which the customer qualified (such as
8 farm use or a low-income discount). Based on my analysis of these data, I prepared
9 Attachment SJR-3.

10 The attachment shows, in graphical form, the effects of the Company's rate
11 proposals on customers' annual bills for distribution service. The annual impacts range
12 from increases of 3% to increases of more than 30%. While the average increase in class
13 revenues is 17.7%, the average increase in customers' bills would be 22%. Indeed, the
14 graph shows that only about 1/3 of customers would have increases that are less than or
15 equal to the class's average increase in revenues. This occurs because most of the benefit
16 of the Company's proposal (below-average increases) goes to the largest energy users. In
17 order to provide a large energy user with a below-average increase, it requires many
18 smaller energy users to pay above-average increases.

19 **Q. Can you illustrate this problem?**

20 A. Yes. The Company has about 5,000 customers who consistently keep their usage below
21 250 kWh per month. These low-use customers would receive an average increase of
22 29% under the Company's proposal -- almost two-thirds higher than the class-average

1 increase in revenues. In contrast, the Company has almost 1,400 customers whose usage
2 averages more than 1,500 kWh per month. These customers would receive average
3 increases of about 8%, or less than one-half of the class-average increase. In other words,
4 it takes multiple low-use customers paying very large percentage increases to make up
5 for the revenues lost by one high-use customer paying much less than the class-average
6 increase.

7 **Q. Is there any cost justification for the Company's proposal to shift revenues so**
8 **dramatically among residential customers?**

9 A. No. As I discussed above, the Company's MCOSS does not provide a reliable basis for
10 determining either inter-class revenue allocations or intra-class rate design. Moreover, as
11 I discuss below, there is no reason to impose such disparate bill impacts on customers in
12 order for the Company to collect its proposed rate increase (assuming, for the sake of
13 illustration, that its proposed revenue requirement is justified).

14 **Q. What do you conclude about the Company's proposed rate design?**

15 A. I conclude that Liberty's rate design proposal is unreasonable and unfair to lower-use
16 customers. The proposal would force lower-use customers to pay much higher than
17 average rate increases in order to provide below-average bill increases to the largest
18 residential customers. Many more customers would be burdened with large percentage
19 increases than would receive the benefit of the Company's proposal.

20 **Q. Have you developed a residential rate design that alleviates these problems?**

1 A. Yes. I have developed a rate design for Rate D that alleviates these problems. First, I
2 reduced the class's revenue increase to the system-average increase of 15.0%, as I
3 described in the MCOSS section of my testimony.

4 Next, I increased both the customer charge and the farm use charge by that class
5 average increase of 15.0%. Without a valid cost study, it is not possible to determine
6 whether any particular rates or charges should be increased by more or less than the
7 average increase.

8 The next step in developing my rate design was to change the inclining block rate.
9 Having a rate block consisting of only 250 kWh per month does not seem to make much
10 sense given today's usage patterns. Low-income customers receive the benefit of rate
11 discounts for the first 750 kWh per month that they use, so I am not sure why 250 kWh
12 was chosen as a break point for the first usage block. In my opinion, it would be more
13 reasonable to have that first block consist of the first 750 kWh per month. This would be
14 consistent with the low-income discount and it also would send customers a price signal
15 that it's their peak consumption that causes increased costs to the Company (such as
16 larger transformers). Based on the Company's billing data, about one-half of residential
17 customers (approximately 19,000 of the Company's 40,000 customers) never use more
18 than 750 kWh per month, so they would not even see the increase in price. Larger users
19 and peak-season users, however, would see an increase in price, but the increase would
20 be more modest than exists under present rates.

21 **Q. What are the specific rates you propose to collect the Company's revenue**
22 **requirement from Rate D customers?**

1 A. My rate design proposal is designed to increase Rate D revenues by 15.0%. The specific
2 rates I recommend are a customer charge of \$13.55 per month (a 15% increase over the
3 existing charge), a rate for the first 750 kWh per month of 4.690¢ per kWh, and a rate for
4 usage in excess of 750 kWh per month of 5.502¢ per kWh. The rate for farm use would
5 be 4.582¢ per kWh (also a 15% increase over the existing rate).

6 **Q. What would be the impact of your rate design proposal on customers?**

7 A. Attachment SJR-4 shows the impact of my proposed rate design on residential customers.
8 (The graph also includes, in gray, the impact of the Company's proposal copied from
9 Attachment SJR-3.) This graph shows that about 50% of residential customers would
10 have an annual increase that is less than or equal to the average increase of 15%.
11 Increases above and below average are in a fairly tight range — especially compared to
12 the Company's proposal — with nearly all customers having annual increases in the
13 range of 10% to 25%. The highest percentage increases are for a few customers who
14 currently pay a discounted rate for water heating or interruptible service, even though the
15 Company is unable to provide those services as I discussed above.

16 **Q. What would be the effect of your proposal on the 5,000 customers who never use
17 more than 250 kWh in a month?**

18 A. These low-use customers still would see above-average increases under my proposal, but
19 the increases are much more reasonable than under the Company's proposal. The average
20 increase for these 5,000 customers under my proposal would be approximately 21%,
21 compared to more than 29% under the Company's proposal.

1 **Q. Does that mean that the high-use customers would not receive as much of a benefit**
2 **under your proposal?**

3 A. Yes. The approximately 1,400 highest-use customers would receive average increases of
4 approximately 13% under my proposed rate design, compared to 8% under the
5 Company's proposal. That is, the largest users would receive slightly below-average
6 increases, but nothing as extreme as the Company's proposal which had those customers
7 receiving increases that were less than one-half of the class-average increase.

8 **Q. What do you recommend?**

9 A. I recommend that the Commission adopt my proposed rate design, scaled back
10 proportionately for any change in the overall revenue requirement. For example, if the
11 Commission were to determine that the Company has justified a revenue requirement
12 increase of 5%, then the Rate D customer charge, farm use charge, and second block
13 (usage above 750 kWh per month) charges should each be increased by 5%. The block 1
14 charge would be calculated by taking remaining revenues required from the class and
15 dividing by the first block billing units. To facilitate these calculations, I am providing as
16 Attachment SJR-5 a proof of revenues showing the billing units I used and how the rates
17 I recommend collect revenues that produce a 15% increase in revenues from Rate D
18 customers

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

20 A. Yes, it does.