

STATE OF NEW HAMPSHIRE  
BEFORE THE  
PUBLIC UTILITIES COMMISSION

Docket No. DE 24-XXX

Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty  
Annual Retail Rate Adjustments

DIRECT TESTIMONY

OF

CHRISTOPHER M. D. GREEN

March 27, 2024



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1 **I. INTRODUCTION AND QUALIFICATIONS**

2 **Q. Please state your full name, business address, position, and responsibilities.**

3 A. My name is Christopher M. D. Green, and my business address is 602 South Joplin  
4 Avenue, Joplin, Missouri, 64801. I am the Manager of Energy Market Operations as part  
5 of the centralized Energy Support Services Department for Liberty Utilities Service Corp.  
6 (“LUSC”), which provides services to Liberty Utilities (Granite State Electric) Corp.  
7 d/b/a Liberty (“Liberty,” or “the Company”). Part of my responsibilities are to oversee  
8 the procurement of power for Energy Service for Liberty as well as the procurement of  
9 Renewable Energy Certificates (“RECs”).

10 **Q. Please describe your educational background.**

11 A. I graduated from Northwest Missouri State University in 2011 with a Bachelor of Science  
12 in Financial Management. I also received a Master of Business Administration from  
13 Northwest Missouri State University in 2012.

14 **Q. What is your professional background?**

15 A. In March 2015, I was hired into the LUSC energy trading group that operates in the  
16 Southwest Power Pool, Inc. (“SPP”). During my tenure I have held various positions  
17 with primary responsibilities including budgeting company transmission costs,  
18 overseeing the LUSC REC (Renewable Energy Credit) portfolio, managing SPP hedging  
19 mechanism impacts, generation and load forecasting, fuel and purchased power reporting,  
20 and work with the integrated resource planning (“IRP”) process. In my current role, my

1 primary responsibility has been for the Granite State Default Service program as well as  
2 adhering to the New Hampshire Public Utilities Electric Renewable Portfolio Standard.

3 **Q. Have you previously testified before the New Hampshire Public Utilities**  
4 **Commission (“Commission”)?**

5 A. Yes. I’ve testified before the Commission in multiple Default Service hearings.

6 **Q. Have you testified before any other state regulatory agencies?**

7 A. No.

8 **II. PURPOSE OF TESTIMONY**

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

10 A. My testimony addresses the estimated 2024 transmission expenses for Liberty. First, I  
11 will summarize the various transmission services provided to Liberty and describe how  
12 Liberty pays for those services. Second, I will provide testimony supporting the forecast  
13 of transmission expenses that Liberty expects to incur in 2024. As described more fully  
14 in Section IV of my testimony, the Company forecasts an increase of \$2,749,141 in  
15 prospective transmission expenses for calendar year 2024 as compared to the forecast  
16 provided for the calendar year 2023 in Docket No. DE 23-037.<sup>1</sup>

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1 The forecast for calendar year 2023 was \$28,038,128. The actual amount for 2023 was \$28,237,327.

1 **III. SUMMARY OF TRANSMISSION SERVICES PROVIDED TO LIBERTY**

2 **Q. Please summarize what transmission services Liberty receives from ISO New**  
3 **England Inc. (the “ISO” or “ISO-NE”) under rate schedules approved by the**  
4 **Federal Energy Regulatory Commission (“FERC”).**

5 A. Liberty receives transmission services under the ISO New England Inc. Transmission,  
6 Markets, and Services Tariff (“ISO Tariff”) as follows:

- 7 1. Section II (Schedules 1, 2, 9, 16, and 17) of the ISO Tariff provides for Regional  
8 Network Service (“RNS”);
- 9 2. Section IV.A – ISO Funding Mechanisms provides for the recovery of ISO’s  
10 Administrative Services; and
- 11 3. Section II, Schedule 21 of the ISO Tariff provides for Local Network Service  
12 (“LNS”) from the New England Power Company (“NEP”).

13 **Q. Please describe further the types of transmission services that are billed to Liberty**  
14 **under the ISO Tariff.**

15 A. New England’s transmission rates utilize a highway/local pricing structure. That is,  
16 Liberty receives regional transmission service over “highway” transmission facilities  
17 under Section II of the ISO Tariff (also known as RNS) and receives local transmission  
18 service over local transmission facilities under Schedule 21 of the ISO Tariff (also known  
19 as LNS). Additionally, a number of administrative services are provided by ISO-NE  
20 under Section IV.A of the ISO Tariff.

1           **A. Explanation of ISO Tariff Services, Rates, and Charges**

2   **Q. Please explain the services provided to Liberty under the ISO Tariff.**

3   A. Section II of the ISO Tariff provides access over New England’s looped transmission  
4   facilities, more commonly known as Pool Transmission Facilities (“PTF”) or bulk  
5   transmission facilities. In addition, the ISO Tariff provides for Ancillary Services (Black  
6   Start, Reactive Power, Scheduling, System Control, and Dispatch Services and IROL  
7   Critical Facility costs) as described more fully later in this testimony.

8   **Q. How are the costs for RNS recovered?**

9   A. The ISO Tariff’s RNS Rate (“RNS Rate”) (Section II - Schedule 9 of the ISO Tariff)  
10   recovers the RNS costs and is determined annually based on an aggregation of the  
11   transmission revenue requirements of each of the Participating Transmission Owners  
12   (“PTO”) in New England, calculated in accordance with a FERC-approved formula in a  
13   single, “postage stamp” rate in New England. FERC opened Docket No. EL16-19 to  
14   investigate the reasonableness of the formula rates and protocols used to develop both  
15   RNS and LNS. A Settlement Agreement was reached and filed with FERC on June 15,  
16   2020 (FERC Docket No. ER20-2054) resolving all issues regarding the RNS and LNS  
17   formula rates.

18   **Q. Please describe the ISO-NE System Restoration and Planning Service, Reactive  
19   Supply and Voltage Control, Scheduling, System Control, and Dispatch Services**

1           **and Interconnection Reliability Operating Limits (IROL)-Critical Infrastructure**  
2           **Protection (CIP) costs that are included in the ISO Tariff.**

3    A.    ISO-NE System Restoration and Planning Service (Section II - Schedule 16 of the ISO  
4           Tariff), also known as Black Start Service, is necessary to ensure the continued reliable  
5           operation of the New England transmission system. This service allows for the ISO to  
6           pay generators who have the capability of supplying load and the ability to re-start  
7           without an outside electrical supply to re-energize the transmission system following a  
8           system-wide blackout.

9           Reactive Supply and Voltage Control (Section II - Schedule 2 of the ISO Tariff), also  
10          known as Reactive Power Service, is necessary to maintain transmission voltages within  
11          acceptable limits on the ISO-NE transmission system and allows for the payment to  
12          generators or other facilities that have the capability to produce or absorb reactive power.

13          Scheduling, System Control, and Dispatch Service (“Scheduling & Dispatch Service”)  
14          consists of the services required to schedule the movement of power through, out of,  
15          within, or into the ISO-NE Control Area over the PTF and to maintain System Control.  
16          Scheduling & Dispatch Service also provides for the recovery of certain charges that  
17          reflect expenses incurred in the operation of satellite dispatch centers.

18          Lastly, a new service was added in October 2022 (OATT Schedule 17 - IROL-CIP) to  
19          recover the costs of facilities used to comply with NERC Critical Infrastructure  
20          Protection requirements.

1 **Q. How are the ISO-NE charges for Black Start and Reactive Power assessed to**  
2 **Liberty?**

3 A. ISO-NE assesses charges for Black Start and Reactive Power Services to Liberty each  
4 month based on Liberty's proportionate share of its network load to ISO-NE's total  
5 network load.

6 **Q. How are the charges for Scheduling & Dispatch Service assessed to Liberty?**

7 A. Charges for Scheduling & Dispatch Service are assessed to Liberty through three  
8 separately charged tariffed services.

9 The first charge is for the expenses incurred by ISO-NE in providing these services and is  
10 recovered under Schedule 1 of Section IV.A of the ISO Tariff. These costs are allocated  
11 to Liberty each month based on an annually filed FERC-approved fixed rate times  
12 Liberty's monthly Network Load.

13 The second charge is for the costs incurred by the individual transmission owners in  
14 providing Scheduling & Dispatch Service over PTF facilities, including the costs of  
15 operating local control centers, and are recovered under Section II, Schedule 1 of the ISO  
16 Tariff. These costs are allocated to Liberty each month based on a formula rate that is  
17 determined each year based on the prior year's costs incurred times Liberty's monthly  
18 Network Load.

19 The final charge is for the cost of Scheduling & Dispatch Service for transmission service  
20 over transmission facilities other than PTF that are charged under Schedule 21 of the ISO



1 Tariff. Thus, the three types of Scheduling & Dispatch costs are similar but are charged  
2 to Liberty through three different tariff mechanisms.

3 **Q. How are the charges for Interconnection Reliability Operating Limits (IROL)-**  
4 **Critical Infrastructure Protection (CIP, collectively IROL-CIP) assessed to Liberty?**

5 A. Charges for IROL-CIP are allocated pro rata to each transmission customer that receives  
6 either regional network service (RNS) or through or out service (TOUT).

7 **Q. What additional administrative services and/or charges flow through to Liberty**  
8 **under Section IV.A of the ISO Tariff?**

9 A. Liberty also incurs charges pursuant to Section IV.A, Schedule 5 of the ISO Tariff.  
10 Schedule 5 provides for the collection of the New England States Committee on  
11 Electricity's ("NESCOE") annual budget. NESCOE is the "not-for-profit entity that  
12 represents the collective perspective of the six New England Governors in regional  
13 electricity matters and advances the New England states' common interest in the  
14 provision of electricity to consumers at the lowest possible prices over the long-term,  
15 consistent with maintaining reliable service and environmental quality." *See*  
16 [www.nescoe.com](http://www.nescoe.com).

17 **Q. How are the ISO Tariff Administrative Services charges assessed?**

18 A. ISO-NE assesses the charges in Section IV.A based upon stated rates pursuant to the ISO  
19 Tariff. These stated rates are adjusted annually when ISO-NE files a revised budget and  
20 cost allocation proposal to become effective January 1 each year. Liberty is charged the

1 stated rate for these services as part of ISO-NE's monthly billing process, based on its  
2 Network Load for Section IV.A Schedule 1 and Schedule 5 charges.

3 **B. Explanation of Schedule 21 NEP Tariff Services, Charges, and Credits**

4 **Q. What services are provided to Liberty under Schedule 21 of the ISO Tariff?**

5 A. Schedule 21 governs the service that NEP provides to Liberty over its local, non-highway  
6 transmission facilities, considered non-PTF facilities ("Non-PTF"). The service provided  
7 over the Non-PTF is referred to as Local Network Services ("LNS"). NEP posted fixed  
8 LNS annual rates effective January 1, 2024, in compliance with FERC's approval of the  
9 Settlement Offer in Docket ER20-2054, as mentioned above. These fixed 2024 rates will  
10 be trued-up to NEP's actual costs in June 2025 and would be included in the LNS rates  
11 effective January 1, 2026. NEP also provides metering, transformation, and certain  
12 ancillary services to Liberty to the extent such services are required by Liberty and not  
13 otherwise provided under the ISO Tariff.

14 **Q. Please explain the metering and transformation services provided by NEP.**

15 A. NEP separately surcharges the appropriate customers for these services. NEP provides  
16 metering service when a customer uses NEP-owned meter equipment to measure the  
17 delivery of transmission service. NEP provides transformation service when a customer  
18 uses NEP-owned transformation facilities to step down voltages from 69 kV or greater to  
19 a distribution voltage.

1 **Q. Are there any other transmission services for which NEP assesses charges to**  
2 **Liberty?**

3 A. Yes. Liberty relies on the specific distribution facilities of NEP's affiliate, Massachusetts  
4 Electric Company ("Mass Electric"), which provides for NEP's use of such facilities  
5 pursuant to the Integrated Facilities provision of NEP's FERC Electric Tariff No. 1  
6 service agreement with Mass Electric. NEP, in turn, uses these specific distribution  
7 facilities to provide transmission service to Liberty. Therefore, Liberty is also subject to  
8 a Specific Distribution Surcharge for its use of these facilities.

9 **Q. What is the credit in Schedule 21 charges that NEP provides to Liberty in its**  
10 **monthly invoice?**

11 A. As a result of National Grid's sale of Liberty in 2012, NEP (a National Grid affiliate)  
12 uses certain distribution facilities of Liberty to provide service to generation customers of  
13 NEP. An Integrated Facilities Supplement to Schedule 21 of the ISO Tariff provides  
14 Liberty with a credit in exchange for NEP's continued use of Liberty's facilities to serve  
15 NEP's generation customers.

16 **IV. ESTIMATE OF LIBERTY'S TRANSMISSION EXPENSES**

17 **Q. Was the forecast for Liberty's transmission and ISO expenses for 2024 prepared by**  
18 **you or under your supervision?**

19 A. Yes. I estimate the total transmission and ISO-NE expenses (including certain ancillary  
20 services) for 2024 to be approximately \$30,787,268, as shown in Schedule CMDG-1,

1 page 1 of 2. This equates to an increase of \$2,749,141 as compared to the forecast for  
2 2023 provided in Docket No. DE 23-037, as shown on Schedule CMDG-1, page 2 of 2.

3 **Q. How have the ISO Tariff charges for RNS shown on line 3 of Schedule CMDG-1**  
4 **been forecasted?**

5 A. I estimated the 2024 RNS charges by multiplying the posted RNS rate of \$154.35 per  
6 kW-year, effective January 1, 2024, by Liberty's monthly network load in 2023, as  
7 shown for each month in column 1 of Schedule CMDG-2 for a total of \$20,760,137 as  
8 shown in column 2 of Schedule CMDG-2. The posted 2024 RNS rate is an increase of  
9 approximately \$12.71 per kW-year from the rate that was effective on January 1, 2023,  
10 and that was estimated in Docket No. DE 23-037. The forecasted 2024 RNS costs are  
11 higher than last year's forecast by \$1,011,981 as shown in column 3, line 3 of Schedule  
12 CMDG-1, page 2 of 2.

13 The primary drivers of the estimated increase to the forecast are related to an 8.2%  
14 increase in the Schedule 9 RNS rate published by ISO-NE as well as a 23.1% increase to  
15 NEP Schedule 21 rate. These two increases account for \$2,536,390 or 92.3% of the 2024  
16 forecasted increase to transmission expense.

17 **Q. Schedule CMDG-1 also includes estimated ISO-NE charges for Black Start,**  
18 **Reactive Power, Scheduling and Dispatch and IROL-CIP. How were these costs**  
19 **forecasted?**

20 A. In estimating the expected costs of the ISO-NE charges, I used the same approach as in  
21 previous filings. The Black Start costs shown on line 5 of Schedule CMDG-1 were

1 derived in two steps. First, as shown in Section II of Schedule CMDG-3, I estimated the  
2 cost for Black Start Service by, as a starting point, summing Liberty's actual monthly  
3 ISO-NE Black Start expenses for 2023 (Line 5). I divided this estimate by Liberty's  
4 2023 Peak Load to calculate an estimated annual rate, as shown on line 7. I then  
5 calculated a monthly rate (annual rate divided by 12), as shown on line 8. To obtain the  
6 estimate of Black Start costs that would be charged to Liberty, as shown in column 4 of  
7 Schedule CMDG-2, I multiplied the monthly rate by Liberty's monthly network load, as  
8 shown for each month in column 1 of Schedule CMDG-2. Using this methodology, I  
9 estimate an allocation of \$235,477 for 2024 as shown on Schedule CMDG-1, Page 2,  
10 Column 2, Line 6. The forecast for IROL-CIP was created in a similar fashion as Black  
11 Start costs, primarily by relying on prior year actuals to create a rate. The only difference  
12 in methodology was to weight the \$-kw/month using the fourth quarter actuals.

13 **Q. How have you estimated Reactive Power costs for Liberty?**

14 A. I calculated the estimated Reactive Power costs for Liberty by using actual Liberty costs  
15 for 2022 as shown in Section I of Schedule CMDG-3. The annual rate was determined  
16 by dividing the total Reactive Power costs charged to Liberty (Line 1) by Liberty's peak  
17 2023 Network Load. The monthly rate (annual rate divided by 12) was then multiplied  
18 by Liberty's monthly network load, as shown in column 1 of Schedule CMDG-2, to  
19 determine the estimated charges for Reactive Power Service shown in column 5 of that  
20 same schedule. Using this methodology, I estimate an allocation of \$107,167 for 2024.

1 **Q. How did you forecast the Scheduling and Dispatch costs shown on line 4 of Schedule**  
2 **CMDG-1, page 1?**

3 A. My estimate is shown in column 3 of Schedule CMDG-2. This amount was derived by  
4 using the currently effective OATT Schedule 1 rate of \$1.95 per kW-year, divided by 12,  
5 and further multiplied by Liberty's estimated monthly network loads for 2024 as shown  
6 in column 1 of Schedule CMDG-2.

7 **Q. Have you included any Reliability Must Run ("RMR") contract charges to Liberty**  
8 **for 2024?**

9 A. No. Reliability Must Run Agreements guarantee payments to generators that are needed  
10 to ensure reliability. To obtain an agreement, a generator must receive verification from  
11 ISO-NE that it is needed for reliability and must demonstrate that it is unable to cover its  
12 operating costs with revenue from other sources. Liberty has not incurred any RMR  
13 contract charges as there have been no RMR contracts for the New Hampshire reliability  
14 region over the past year. Therefore, I have not forecasted any RMR contract costs for  
15 2024. ISO-NE did execute an RMR agreement with the Mystic generation resource  
16 retained for fuel security (Mystic COS). These costs are allocated to Real-Time load  
17 obligations and thus are not included in the cost of transmission service.

18 **Q. Can you please explain the forecast of the ISO-NE Administrative Charges shown**  
19 **on lines 8 and 9 of Schedule CMDG-1, page 1?**

20 A. Yes. Lines 8 and 9 include ISO-NE Administrative charges for Scheduling & Dispatch  
21 and NESCOE, respectively, and are derived in columns 8 and 9 on Schedule CMDG-2.

1 Line 8 on Schedule CMDG-1, page 1, shows the 2024 forecast of charges to Liberty  
2 under Schedule 1, Scheduling and Load Dispatch Administrative schedules through  
3 Section IV.A of the ISO Tariff. The estimate is based on the ISO Schedule 1 rate of  
4 \$0.26954 per kW-month effective January 1, 2024, multiplied by Liberty's forecasted  
5 monthly network load as shown in column 1 of Schedule CMDG-2.

6 Line 9 on page 1 of Schedule CMDG-1 shows the estimated 2024 NESCOE charges  
7 under Schedule 5 of Section IV.A of the ISO Tariff. I derived this amount by using the  
8 ISO Schedule 5 rate of \$0.00807 per kW-month effective January 1, 2024, multiplied by  
9 Liberty's forecasted monthly network load as shown in column 1 of Schedule CMDG-2.

10 **Q. What is the sub-total of transmission expenses attributable to charges from the ISO-**  
11 **NE?**

12 A. The sub-total of ISO-NE charges is \$21,831,264, which is the sum of lines 3 through 9 on  
13 Schedule CMDG-1, page 1.

14 **Q. Have you estimated the charges to Liberty under Schedule 21 of the ISO Tariff?**

15 A. Yes. Lines 1 and 2 of Schedule CMDG-1 show the forecasted charges from NEP  
16 pursuant to the LNS tariff. The total amount of estimated expenses is \$8,956,004, which  
17 represents an increase of \$1,550,331 in the total NEP estimated expenses to be incurred  
18 by Liberty in 2024 (see Schedule CMDG-1, page 2, lines 1 and 2) as compared to 2023.

19 As shown on Schedule CMDG-4, column 2, I estimated the LNS expenses based on  
20 NEP's posted LNS charge of \$55.89 per kW-year, divided by 12, and multiplied by  
21 Liberty's forecasted monthly network load as shown in column 1 of Schedule CMDG-4.

1 Load Dispatch Surcharge, Metering, transformation, specific distribution, and ancillary  
2 service charges are based on current rates and are assessed to Liberty based on a per  
3 meter and peak load basis, respectively. A maintenance service credit, as discussed  
4 previously, was also included in the estimate.

5 **V. EXPLANATION OF PRIMARY CHANGE FROM LAST YEAR'S FORECASTED**  
6 **EXPENSES**

7 **Q. What is the primary cause of the estimated increase in Liberty's 2023 transmission**  
8 **expenses?**

9 A. The estimated 2024 Liberty transmission and ISO-NE expenses of \$30,787,268 represent  
10 an increase of \$2,749,141 from the 2023 forecast of transmission expenses for Liberty.  
11 The increase as described earlier is primarily attributed to an increase to both the  
12 Schedule 9 LNS and NEP Schedule 21 rates effective January 1<sup>st</sup>, 2024.

13 **Q. What programs has Liberty implemented to help reduce transmission costs?**

14 A. In 2019 in Docket No. DE 17-189, Liberty received approval to implement a customer-  
15 sited behind-the-meter battery storage pilot program, which is intended to reduce peak  
16 loads. In Order No.26,784 (Mar. 15, 2023), addressing the practical conclusion of Phase  
17 1 of the pilot, the Commission found the program to have lowered transmission costs.  
18 Additionally, Liberty's energy efficiency programs continue to provide energy efficiency  
19 measures to its customers helping to reduce customers electric energy.

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

21 A. Yes.



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