

THE STATE OF NEW HAMPSHIRE
BEFORE THE
NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

TESTIMONY OF EDWARD A. DAVIS

PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
D/B/A EVERSOURCE ENERGY

PROPOSED RESIDENTIAL TIME-OF-DAY RATE

Docket No. DE 21-XXX

1 **INTRODUCTION**

2 **Q. Mr. Davis, please state your name, business address and position.**

3 A. My name is Edward A. Davis. My business address is 107 Selden Street, Berlin, CT
4 06037. My position is Director, Rates at Eversource Energy Service Company and in that
5 position I provide rate and tariff related services to the operating companies of
6 Eversource Energy including Public Service Company of New Hampshire d/b/a
7 Eversource Energy (“Eversource” or “the Company”).

8 **Q. Have you previously testified before the New Hampshire Public Utilities**
9 **Commission?**

10 A. Yes. I have on many occasions testified before the New Hampshire Public Utilities
11 Commission (“Commission”) on behalf of Eversource, and at the state utility

1 commissions in Connecticut and Massachusetts on behalf of other Eversource Energy
2 affiliates on rate related matters.

3 **Q. Please describe your educational background and professional experience.**

4 A. I hold a Bachelor of Science degree in Electrical Engineering from the University of
5 Hartford and Master of Business Administration from the University of Connecticut. I
6 joined Northeast Utilities, now Eversource Energy, in 1979 and have held various
7 positions in the areas of consumer economics, engineering and operations, wholesale and
8 retail marketing and rate design, regulation and administration.

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

10 A. The purpose of my testimony is to propose, for review and approval by the Commission,
11 an amendment to the Company's optional time-of-day (TOD) tariff for its residential
12 customers. This proposal has been developed and is being filed pursuant to the
13 Settlement Agreement in Docket No. DE 19-057, the Company's Permanent Distribution
14 Rates case approved by Commission Order 26,433.

15 **Q. How is your testimony organized?**

16 A. Section I of this testimony provides an Introduction, while Section II provides a summary
17 of the Company's proposed new Residential TOD rate, tariff amendments and associated
18 bill impacts. Section III discusses the design of proposed rate; Section IV discusses
19 tariff and customer rate options and provides bill comparisons associated with
20 introduction of the new rate; Section V discusses technical requirements and the process

1 for implementing and transitioning customers to the proposed new rate; and Section V
2 provides the conclusion.

3 **II. SUMMARY OF PROPOSED RATE AND TARIFF AMENDMENTS**

4 **Q. Please summarize the Company's proposed new Residential TOD rate and**
5 **associated Tariff amendments.**

6 A. In this filing the Company proposes an amendment to its Tariff to revise its Residential
7 TOD rate, changing the duration and pricing of its current time varying rates offered
8 under Rate R-OTOD, from a 13-hour peak period (7 a.m. to 8 p.m.) to a new seven-hour
9 peak period (12 Noon to 7 p.m.), during non-holiday weekdays. Please refer to Table 1,
10 below for the new peak/off-peak division of rates.

Customer Charge		\$32.08 per month
Distribution		
	On-Peak	2.800¢ per kWh
	Off-Peak	2.310¢ per kWh
Transmission		
	On-Peak	7.400¢ per kWh
	Off-Peak	1.650¢ per kWh
Stranded Cost Recovery		
	All hours	1.238¢ per kWh
System Benefits Charge		
	All hours	0.743¢ per kWh
Energy Service		
	All hours	6.627¢ per kWh
TOD Periods		
On-Peak: 12:00 Noon to 7:00 pm weekdays, excluding holidays		
Off-Peak: All Other Hours		

11

1 Pursuant to the requirements of Puc 1605.02, the Company is filing proposed new tariff
2 pages reflecting the proposed amended rate, (“R-OTOD-2”), as provided in Attachment
3 EAD-1 (clean) and Attachment EAD-2 (redlined). The Company requests Commission
4 review and approval of this amended rate and the proposed new pages in order to put the
5 new rate into effect, provide the basis for the Company to inform customers of this new
6 R-OTOD-2 rate option, and to work with current Rate R-OTOD customers to transfer
7 service to the new rate. Once the proposed rate is approved along with the new tariff
8 pages, the Company will review its full tariff and amend pages throughout accordingly to
9 reflect the newly-approved rate and submit those amended pages as a separate tariff
10 compliance filing.

11 **Q. Why is Eversource proposing this new rate?**

12 A. Under the Company’s Settlement Agreement in DE 19-057, Eversource agreed to
13 propose amendments to its tariff, revising its optional Residential TOD rate, Rate R-
14 OTOD, to have a peak period with a duration of no greater than eight hours¹. Should the
15 Commission approve the new rate R-OTOD-2, the Company asks that the Commission
16 provide a sufficient period of time between its approval and the implementation date
17 replacing the existing R-OTOD so that the Company may transition its current R-OTOD
18 customers either to the new rate R-OTOD-2, or to residential Rate R. The efforts and

¹ Docket No. DE 19-057, Settlement Agreement, Section 14.6: Within six months of the Commission’s approval of this Settlement Agreement, the Company shall propose amendments to its tariff to revise its optional time-of-day rate for residential customers. Such proposal shall include, but not be limited to, a two-period rate structure consisting of peak and off-peak periods, with a peak period lasting no more than eight hours. PSNH shall collaborate with interested members of the Settling Parties and other stakeholders in developing the proposal. https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-057/LETTERS-MEMOS-TARIFFS/19-057_2020-10-09_EVERSOURCE_SETTLEMENT_AGREEMENT.PDF

1 steps of such a transition are discussed below in the next response, and later in Section V
2 – Implementation.

3 **Q. Please summarize the impacts to customers of these proposed changes.**

4 A. The proposed new Rate R-TOD-2 is intended to update the TOD characteristics and
5 pricing of current Rate R-OTOD. As generally indicated above, a process of customer
6 education and outreach will be needed to inform customers of the impacts of the revised
7 rate, and to support the transition from Rate R-OTOD to either R-OTOD-2 or Rate R.
8 There are currently approximately 45 residential customers who receive service under R-
9 OTOD. Charges under the new Rate R-OTOD-2 are generally expected to be lower than
10 those under the existing Rate R-OTOD, assuming no variation from customers' historic
11 usage. Further changes or shifting of usage between the new TOD periods may result in
12 a bill decrease or increase, depending on customers' total usage and proportion of peak
13 and off-peak energy consumption. As with current Rate R-OTOD, customers may elect
14 to switch to the Company's regular power and light rate, Rate R. Further review and
15 discussion of rate options and bill impacts associated with the introduction of proposed
16 Rate R-TOD-2 is provided in Section IV.

17 **III. Rate Design**

18 **Q. Please discuss the basis for the design of the proposed Rate R-OTOD-2.**

19 A. The Company has designed the proposed rate under Rate R-TOD-2 to include a new,
20 year-round seven-hour peak period, from 12 noon to 7 p.m. weekdays, excluding
21 holidays, which is more cost-reflective than the current year-round 13-hour peak period.

1 Consistent with current meter and billing system capabilities, the Company has
2 developed cost-based, time-differentiated rates for this new peak period for the
3 distribution and transmission components of service. Since an important objective of any
4 time of use rates is to reflect efficient price signals by time of day, the Company relied on
5 a marginal cost analysis to determine the appropriate peak and off-peak kWh price
6 differentials. In particular, the Company's rate R-OTOD-2 design was informed by the
7 results of the Company's Distribution Marginal Cost of Service ("MCS") study, in
8 particular hourly marginal distribution substation costs, as well as a transmission
9 marginal cost analysis, conducted by the same MCS consultant under Docket No. DE 19-
10 057.

11 **Q. Please describe how the Rate R-OTOD-2 charges were developed for the proposed**
12 **peak and off-peak periods.**

13 **A.** The proposed Rate R-OTOD-2 maintains the current customer charge of rate R-OTOD,
14 which is \$32.08/month. The Company's proposed rate design is revenue-neutral with the
15 residential distribution and transmission rates approved by the Commission (Rate R).
16 This means that the residual class revenue requirement after maintaining the customer
17 charge at that level, needs to be collected through TOD kWh charges. The Company's
18 design applies the distribution and transmission peak to off-peak marginal cost
19 differentials to set the peak and off-peak distribution and transmission TOD rates,
20 ensuring that the rate provides the class revenue target for the average residential
21 customer profile. The detailed rate design for proposed Rate R-OTOD-2 is provided in
22 Attachment EAD-5. The pricing resulting from this design is summarized in Table 1 of

1 Section II, shown in the proposed tariff amendments (Attachments EAD-1 and EAD-2)
2 and applied in the bill comparisons discussed in Section IV.

3 **Q. Did you consider alternative peak periods other than the proposed seven-hour**
4 **period?**

5 A. Yes. A range of peak period durations (e.g., eight hours, seven hours, six hours, and five
6 hours) were considered, and the seven-hour period from noon to 7 p.m. was selected as it
7 provided the strongest alignment with the probability of peak, or marginal cost variation
8 across hours on average across all months of the year. This period analysis looked at the
9 combined hourly distribution and transmission service costs at a system level.

10 **IV. CUSTOMER BILL IMPACTS AND RATE OPTIONS**

11 **Q. What rate options do customers have with respect to proposed tariff amendments?**

12 A. A current Rate R-OTOD customer could be placed on either the new Rate R-OTOD-2, or
13 could choose to take service under Rate R. While a small number of customers are
14 currently enrolled under Rate R-OTOD, each will need sufficient time and information to
15 evaluate the impacts of switching to either rate option. Additionally, the new Rate R-
16 OTOD-2 will be available to Rate R customers interested in a TOD rate option. A
17 change from the current rate R-OTOD to either of the other rate options is expected to
18 require a meter change.

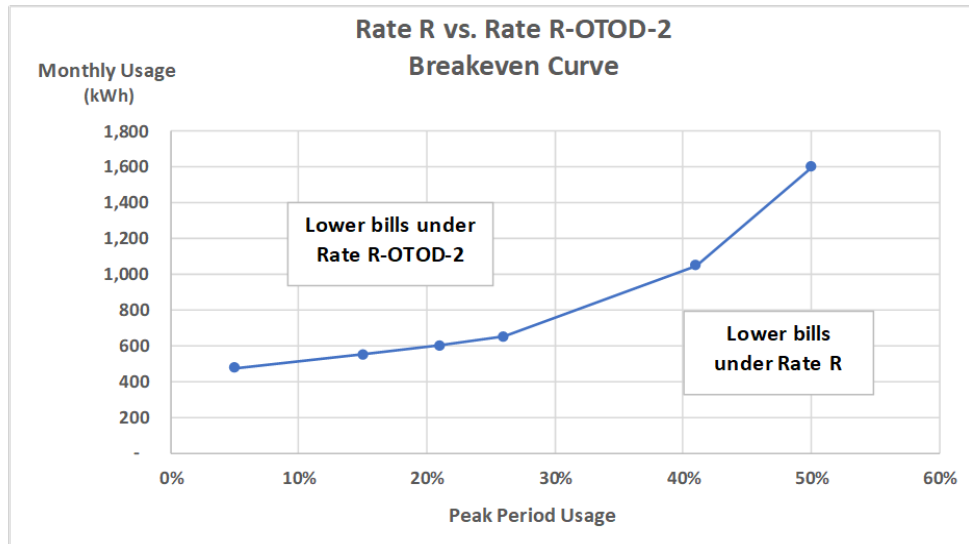
19 **Q. Please discuss customer bill impacts associated with the Company's proposal.**

20 A. The Company has prepared several sets of comparisons of bills at varying levels of usage
21 for customers who move from the current Rate R-OTOD to the proposed amended Rate

1 R-OTOD-2, or switch between the proposed Rate R-OTOD-2 and the regular power and
2 light rate, Rate R. While all residential customers will have access to historic total
3 monthly usage and current residential TOD customers will have historic billed peak and
4 off-peak usage based on current TOD periods, many will need to determine their usage
5 under the proposed new TOD periods. Further, customers may want to understand
6 impacts of changing total usage, shifting load between periods, etc. To facilitate these
7 comparisons, the Company has prepared an additional “break even” bill comparison that
8 shows differences in charges between Rate R and Rate R-OTOD-2, and can be used to
9 evaluate the charges under Rate R and under Rate R-OTOD-2 across a range of monthly
10 and proportionate peak period usage levels. Attachments EAD-3 and EAD-4 provide
11 these comparisons.

12 Page 1 of Attachment EAD-3 provides a summary of current Rate R-OTOD vs. proposed
13 Rate R-OTOD-2 across a range of total and percentage peak usage levels while page 2 of
14 Attachment EAD-3 compares Rate R vs. proposed Rate R-OTOD-2 across these ranges,
15 highlighting the “break-even” points between rates at these various usage levels. The
16 chart on the following page provides a graphical depiction of these break-even points for
17 various proportions of on-peak percent usage relative to total customer’s monthly usage.
18 Each break-even point indicates the usage above and below which customer bills are
19 lower on each rate, i.e. before any response to the new peak/off-peak price differentials.
20 These points further indicate where customer bills would be lower on the proposed R-

1 OTOD-2 rate if for the same total usage, the customer reduced its share of on-peak usage
 2 by shifting load to the off-peak period, and/or reducing overall peak load.



Breakeven kWh	
On-Peak %	kWh
5%	475
15%	550
21%	600
26%	650
41%	1,050
50%	1,600

3
 4 Attachment EAD-4, page 1 compares Rate R-OTOD-2 customer bills at various usage
 5 levels using the residential (Rate R) class average proportion of peak usage, which is
 6 41% for the 13-hour peak period of Rate R-OTOD and 24% for the seven-hour peak
 7 period. At these relative peak usage levels, current Rate R-OTOD customers will see a
 8 reduction to their total bills by moving to Rate R-OTOD-2 across all usage levels. The
 9 bill for a customer using 650 kWh total at these class average peak percentages would be
 10 lower by \$23.24, or 15.8% under the proposed R-OTOD-2 rate. The actual level of bill

1 reduction will vary by individual customers based on their proportion of peak to total
2 usage in a given month. However, as shown in Attachment EAD-3, page 1, customers
3 would generally see a lower bill across a range of peak usage percentages under proposed
4 Rate R-OTOD-2, compared with current Rate R-OTOD.

5 In contrast, a comparison of bills under Rate R versus proposed Rate R-OTOD-2
6 provides a different set of outcomes. Depending on the percent of peak period usage,
7 customers at higher usage levels will tend to have lower bills under the proposed Rate R-
8 OTOD-2, while lower usage customers may see lower bills under Rate R. Attachment
9 EAD-4, page 2 shows that, at the class average peak usage of 41%, customers with usage
10 at or above 650 kWh (the approximate “break-even point” for this peak percentage level)
11 would see a lower bill under proposed Rate R-OTOD-2 compared with Rate R. The
12 previously presented break-even curve provides similar comparisons across a broader
13 cross section of peak usage percentages and usage levels.

14 The understanding of a customer’s historic or expected future peak usage under the
15 proposed seven-hour peak period can be used to evaluate the most beneficial rate for a
16 given customer. Despite historic levels, customers who can respond to these new price
17 signals and shift usage relative to such levels may be able to achieve further bill savings
18 and thereby benefit under the Company’s proposed R-OTOD-2 rate.

1 **V. IMPLEMENTATION**

2 **Q. Please discuss customer outreach and requirements for implementing the proposed**
3 **new TOD rate.**

4 A. In determining the appropriate rate to switch to, the Company plans to inform and work
5 with customers to understand and evaluate the impacts and options available to them. A
6 meter change may be required for current rate R-OTOD customers who switch to the
7 either Rate R-OTOD-2 or Rate R, and for customers who switch from Rate R to Rate R-
8 OTOD-2.

9 **Q. When does the Company request to make the proposed Rate R-OTOD-2 effective?**

10 A. The Company requests that the Commission upon review and approval of the proposed
11 rate R-OTOD-2, use its discretion in determining an appropriate implementation date
12 considering steps the Company must take to provide the information customers should
13 receive prior to or concurrent with their rate changing. Billing under Rate R-OTOD-2,
14 assuming approval of the same structure as proposed, will begin preparation to be
15 implemented upon Commission approval, noting that billing for individual customers
16 will require customer outreach to inform and support the decision of which rate to move
17 to, and a change of meter consistent with the timing of that decision.

18 **Q. How will customers evaluate the impacts and opportunities presented by proposed**
19 **R-TOD-2?**

20 A. The Company will work with customers to help them understand the new structure and
21 determine availability of meter data or other information that can be used to evaluate their

1 peak and off-peak usage under proposed Rate R-OTOD-2. Comparative information
2 similar to that provided in Attachments EAD-3 and EAD-4, updated to reflect prevailing
3 rates, will be available for customers to evaluate the appropriate rate to switch to. The
4 Company would work first with current R-OTOD customers to support customer
5 decisions and switching to inform them first about the newly-approved rate.

6 **IV. CONCLUSION**

7 **Q. Please summarize your testimony and Eversource's proposal for a new Residential**
8 **TOD rate.**

9 A. Eversource is pleased to provide a new residential, TOD revenue-neutral distribution and
10 transmission rate offering based on estimates of marginal costs using existing metering
11 and billing capabilities to implement such offering. The Company will implement this
12 rate should the Commission approve it and once it orders a date for implementation. The
13 new R-OTOD-2 offering is expected to result in immediate bill savings for many existing
14 residential R-OTOD customers and provides a new opportunity for residential customers
15 who can take advantage of TOD rates.

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

17 A. Yes.

Public Service Company of New Hampshire
d/b/a Eversource Energy
Docket No. DE 21-XXX
Attachment EAD-1
June 15, 2021
Original Page 47A
Rate R-OTOD 2

NHPUC NO. 10 - ELECTRICITY DELIVERY
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
DBA EVERSOURCE ENERGY

RESIDENTIAL TIME-OF-DAY
DELIVERY SERVICE RATE R-OTOD 2

AVAILABILITY

Subject to the Terms and Conditions of the Tariff of which it is a part, this rate is for Delivery Service in individual urban, rural and farm residences and apartments. Service under this rate is available at the Customer's option to those Customers who have completed a written Application for Service and signed a Service Agreement and who receive all of their Delivery Service requirements hereunder, except that outdoor area lighting is available under Outdoor Lighting Delivery Service Rate OL.

This rate is not applicable to commercial purposes except as specified hereafter. Multiple use of service within the residence through one meter shall be billed in accordance with the predominant use of the demand. When wired for connection to the same meter, service under this rate shall include the residence and connecting and adjacent buildings used exclusively for noncommercial purposes.

The use of single-phase motors of 3 H.P. rating or less is permitted under this rate provided such use does not interfere with the quality of service rendered to other Customers. Upon written application to the Company, the use of larger motors may be authorized where existing distribution facilities permit.

LIMITATIONS ON AVAILABILITY

The availability of this rate to particular Customers is contingent upon the availability of time-of-use meters and personnel to administer the rate, all as determined by the Company.

Because the Company's distribution system and Customer service facilities have a limited electrical capacity, large and/or intermittent and irregular electrical loads can result in the overloading and damaging of said facilities and can adversely affect the quality of service to other Customers of the Company. Therefore, service under this rate shall not be available where, in the Company's judgment, sufficient distribution system capacity and Customer service facilities do not exist in order to supply the electrical requirements of the applicant unless the Service Agreement provides for a suitable cash payment or a satisfactory revenue guarantee to the Company, or both. Further, in the event that a Customer receiving service under this rate shall propose to materially increase the amount of Delivery Service required, the Customer shall give the Company prior written notice of this fact, thereby allowing the Company to ascertain whether sufficient distribution system capacity and Customer service facilities exist to serve the proposed increased requirement. Where the capacity or facilities do not exist, the Customer will not make the proposed increase until the Service Agreement shall be amended to provide for a suitable cash payment or a satisfactory revenue guarantee to the Company, or both.

Issued: June 15, 2021

Issued by: /s/ Joseph A. Purington
Joseph A. Purington

Effective:

Title: President, NH Electric Operations

NHPUC NO. 10 - ELECTRICITY DELIVERY
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
DBA EVERSOURCE ENERGY

Original Page 47B
Rate R-OTOD 2

SERVICE AGREEMENT

The term of the Service Agreement shall be one year and shall continue thereafter until canceled by one month's notice to the Company by the Customer. The Customer will not be permitted to change from this rate to any other rate until the Customer has taken service under this rate for at least twelve months. However, upon payment by the Customer of a suitable termination charge, the Company may, at its option, waive this provision where a substantial hardship to the Customer would otherwise result.

CHARACTER OF SERVICE

Service supplied under this rate will be single-phase, 60 hertz, alternating current, normally three-wire at a nominal voltage of 120/240 volts.

RATE PER MONTH

Customer Charge\$32.08 per month

Energy Charges:

Per Kilowatt-Hour

Distribution Charges:

On-Peak Hours (12:00 Noon to 7:00 p.m.)
weekdays excluding Holidays)2.800¢

Off-Peak Hours (all other hours)2.310¢

Regulatory Reconciliation Adjustment....0.000¢

Transmission Charges:

On-Peak Hours (12:00 Noon to 7:00 p.m.)
weekdays excluding Holidays) 7.400¢

Off-Peak Hours (all other hours) 1.650¢

Stranded Cost Recovery.....0.844¢

The On-Peak Hours shall be the hours after 12:00 Noon and before 7:00 p.m. weekdays excluding holidays as defined in this Tariff. The Off-Peak Hours shall be all hours not included in the On-Peak Hours.

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NHPUC NO. 10 - ELECTRICITY DELIVERY
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
DBA EVERSOURCE ENERGY

CAPACITY CHARGE

The Company's studies may show that, in order to more closely follow cost of service, it is necessary or desirable to utilize meters capable of measuring rate of taking of electric service in kilowatts. The Company may install such meters either for all Customers served under this rate or for only those Customers whose usage of electricity is uncharacteristic of this class. At any time, the Company may file a revision of the rate form and/or charges of this rate to provide for an appropriate capacity charge. After such revision of this rate, any Customer who is subject to higher billing under this rate will have the option of continuing to take service under this rate or to take service under any other rate of the Company's Tariff which may be available.

Public Service Company of New Hampshire
d/b/a Eversource Energy
Docket No. DE 21-XXX
Attachment EAD-2
June 15, 2021

NHPUC NO. 10 - ELECTRICITY DELIVERY
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
DBA EVERSOURCE ENERGY

Original Page 47A
Rate R-OTOD 2

RESIDENTIAL TIME-OF-DAY
DELIVERY SERVICE RATE R-OTOD 2

AVAILABILITY

Subject to the Terms and Conditions of the Tariff of which it is a part, this rate is for Delivery Service in individual urban, rural and farm residences and apartments. Service under this rate is available at the Customer's option to those Customers who have completed a written Application for Service and signed a Service Agreement and who receive all of their Delivery Service requirements hereunder, except that outdoor area lighting is available under Outdoor Lighting Delivery Service Rate OL.

This rate is not applicable to commercial purposes except as specified hereafter. Multiple use of service within the residence through one meter shall be billed in accordance with the predominant use of the demand. When wired for connection to the same meter, service under this rate shall include the residence and connecting and adjacent buildings used exclusively for noncommercial purposes.

The use of single-phase motors of 3 H.P. rating or less is permitted under this rate provided such use does not interfere with the quality of service rendered to other Customers. Upon written application to the Company, the use of larger motors may be authorized where existing distribution facilities permit.

LIMITATIONS ON AVAILABILITY

The availability of this rate to particular Customers is contingent upon the availability of time-of-use meters and personnel to administer the rate, all as determined by the Company.

Because the Company's distribution system and Customer service facilities have a limited electrical capacity, large and/or intermittent and irregular electrical loads can result in the overloading and damaging of said facilities and can adversely affect the quality of service to other Customers of the Company. Therefore, service under this rate shall not be available where, in the Company's judgment, sufficient distribution system capacity and Customer service facilities do not exist in order to supply the electrical requirements of the applicant unless the Service Agreement provides for a suitable cash payment or a satisfactory revenue guarantee to the Company, or both. Further, in the event that a Customer receiving service under this rate shall propose to materially increase the amount of Delivery Service required, the Customer shall give the Company prior written notice of this fact, thereby allowing the Company to ascertain whether sufficient distribution system capacity and Customer service facilities exist to serve the proposed increased requirement. Where the capacity or facilities do not exist, the Customer will not make the proposed increase until the Service Agreement shall be amended to provide for a suitable cash payment or a satisfactory revenue guarantee to the Company, or both.

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Effective: Title: President, NH Electric Operations

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PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE
DBA EVERSOURCE ENERGY

Original Page 47B
Rate R-OTOD 2

SERVICE AGREEMENT

The term of the Service Agreement shall be one year and shall continue thereafter until canceled by one month's notice to the Company by the Customer. The Customer will not be permitted to change from this rate to any other rate until the Customer has taken service under this rate for at least twelve months. However, upon payment by the Customer of a suitable termination charge, the Company may, at its option, waive this provision where a substantial hardship to the Customer would otherwise result.

CHARACTER OF SERVICE

Service supplied under this rate will be single-phase, 60 hertz, alternating current, normally three-wire at a nominal voltage of 120/240 volts.

RATE PER MONTH

Customer Charge\$32.08 per month

Energy Charges:
Per Kilowatt-Hour

Distribution Charges:

On-Peak Hours (12:00 Noon to 7:00 p.m.)
weekdays excluding Holidays)2.800¢

Off-Peak Hours (all other hours)2.310¢

Regulatory Reconciliation Adjustment....0.000¢

Transmission Charges:

On-Peak Hours (12:00 Noon to 7:00 p.m.)
weekdays excluding Holidays) 7.400¢

Off-Peak Hours (all other hours) 1.650¢

Stranded Cost Recovery.....0.844¢

The On-Peak Hours shall be the hours after 12:00 Noon and before 7:00 p.m. weekdays excluding holidays as defined in this Tariff. The Off-Peak Hours shall be all hours not included in the On-Peak Hours.

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Public Service Company of New Hampshire
d/b/a Eversource Energy
Docket No. DE 21-XXX
Attachment EAD-2
June 15, 2021

NHPUC NO. 10 - ELECTRICITY DELIVERY Original Page 47C
PUBLIC SERVICE COMPANY OF NEW HAMPSHIRE Rate R-OTOD 2
DBA EVERSOURCE ENERGY

CAPACITY CHARGE

The Company's studies may show that, in order to more closely follow cost of service, it is necessary or desirable to utilize meters capable of measuring rate of taking of electric service in kilowatts. The Company may install such meters either for all Customers served under this rate or for only those Customers whose usage of electricity is uncharacteristic of this class. At any time, the Company may file a revision of the rate form and/or charges of this rate to provide for an appropriate capacity charge. After such revision of this rate, any Customer who is subject to higher billing under this rate will have the option of continuing to take service under this rate or to take service under any other rate of the Company's Tariff which may be available.

Public Service Company of New Hampshire
d/b/a Eversource Energy
Docket No. DE 21-XXX
Attachment EAD-3

Summary of Rate R OTOD versus Rate R OTOD 2

June 15, 2021
Page 1 of 2

USAGE	At 50% On-peak 50% Off-peak			At 41% On-peak 59% Off-peak			At 24% On-peak 76% Off-peak			At 21% On-peak 79% Off-peak			At 15% On-peak 85% Off-peak			At 5% On-peak 95% Off-peak		
ENERGY (kWh)	Rate R OTOD	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	
100	\$ 49.72	\$ 47.77	\$ (1.95)	\$ 47.21	\$ (2.51)	\$ 46.15	\$ (3.58)	\$ 45.96	\$ (3.76)	\$ 45.58	\$ (4.14)	\$ 44.96	\$ (4.76)					
200	67.36	63.46	(3.91)	62.33	(5.03)	60.21	(7.15)	59.84	(7.53)	59.09	(8.27)	57.84	(9.52)					
250	76.18	71.30	(4.88)	69.90	(6.29)	67.24	(8.94)	66.78	(9.41)	65.84	(10.34)	64.28	(11.90)					
300	85.00	79.14	(5.86)	77.46	(7.54)	74.28	(10.73)	73.72	(11.29)	72.59	(12.41)	70.72	(14.28)					
400	102.64	94.83	(7.81)	92.59	(10.06)	88.34	(14.30)	87.59	(15.05)	86.10	(16.55)	83.60	(19.04)					
475	115.88	106.60	(9.28)	103.93	(11.95)	98.89	(16.98)	98.00	(17.87)	96.22	(19.65)	93.26	(22.62)					
500	120.29	110.52	(9.77)	107.71	(12.57)	102.41	(17.88)	101.47	(18.81)	99.60	(20.69)	96.48	(23.81)					
550	129.11	118.36	(10.74)	115.28	(13.83)	109.44	(19.67)	108.41	(20.70)	106.35	(22.75)	102.92	(26.19)					
600	137.93	126.21	(11.72)	122.84	(15.09)	116.47	(21.45)	115.35	(22.58)	113.10	(24.82)	109.36	(28.57)					
650	146.75	134.05	(12.70)	130.40	(16.35)	123.51	(23.24)	122.29	(24.46)	119.86	(26.89)	115.80	(30.95)					
700	155.57	141.90	(13.67)	137.96	(17.60)	130.54	(25.03)	129.23	(26.34)	126.61	(28.96)	122.24	(33.33)					
750	164.39	149.74	(14.65)	145.53	(18.86)	137.57	(26.82)	136.17	(28.22)	133.36	(31.03)	128.68	(35.71)					
1000	208.49	188.96	(19.53)	183.34	(25.15)	172.74	(35.76)	170.86	(37.63)	167.12	(41.37)	160.88	(47.61)					
1050	217.31	196.80	(20.51)	190.91	(26.41)	179.77	(37.54)	177.80	(39.51)	173.87	(43.44)	167.32	(49.99)					
1600	296.70	267.40	(29.30)	258.98	(37.72)	243.06	(53.63)	240.26	(56.44)	234.64	(62.06)	225.28	(71.42)					
1500	314.34	283.09	(31.25)	274.10	(40.24)	257.13	(57.21)	254.13	(60.21)	248.14	(66.20)	238.16	(76.18)					
2000	384.90	345.84	(39.06)	334.61	(50.30)	313.39	(71.51)	309.65	(75.26)	302.16	(82.74)	289.68	(95.22)					
2500	473.11	424.28	(48.83)	410.24	(62.87)	383.72	(89.39)	379.04	(94.07)	369.68	(103.43)	354.08	(119.03)					
3000	561.32	502.72	(58.60)	485.87	(75.44)	454.05	(107.27)	448.43	(112.88)	437.20	(124.12)	418.48	(142.84)					
5000	914.14	816.48	(97.66)	788.40	(125.74)	735.36	(178.78)	726.00	(188.14)	707.28	(206.86)	676.08	(238.06)					
7500	1,355.17	1,208.68	(146.49)	1,166.56	(188.61)	1,087.00	(268.17)	1,072.96	(282.21)	1,044.88	(310.29)	998.08	(357.09)					

Summary of Rate R versus Rate R OTOD 2

USAGE	At 50% On-peak 50% Off-peak			At 41% On-peak 59% Off-peak			At 24% On-peak 76% Off-peak			At 21% On-peak 79% Off-peak			At 15% On-peak 85% Off-peak			At 5% On-peak 95% Off-peak		
ENERGY (kWh)	RATE R	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	RATE R OTOD 2	Difference	
100	30.75	\$ 47.77	\$ 17.02	\$ 47.21	\$ 16.46	\$ 46.15	\$ 15.40	\$ 45.96	\$ 15.21	\$ 45.58	\$ 14.84	\$ 44.96	\$ 14.21					
200	47.69	63.46	15.77	62.33	14.65	60.21	12.53	59.84	12.15	59.09	11.40	57.84	10.15					
250	56.16	71.30	15.15	69.90	13.74	67.24	11.09	66.78	10.62	65.84	9.68	64.28	8.13					
300	64.62	79.14	14.52	77.46	12.84	74.28	9.65	73.72	9.09	72.59	7.97	70.72	6.10					
400	81.56	94.83	13.27	92.59	11.02	88.34	6.78	87.59	6.03	86.10	4.53	83.60	2.04					
475	94.27	106.60	12.33	103.93	9.66	98.89	4.63	98.00	3.74	96.22	1.96	\$ 93.26	(1.01)					
500	98.50	110.52	12.02	107.71	9.21	102.41	3.91	101.47	2.97	99.60	1.10	\$ 96.48	(2.02)					
550	106.97	118.36	11.40	115.28	8.31	109.44	2.47	108.41	1.44	106.35	(0.62)	\$ 102.92	(4.05)					
600	115.44	126.21	10.77	122.84	7.40	116.47	1.04	115.35	(0.09)	113.10	(2.33)	\$ 109.36	(6.08)					
650	123.91	134.05	10.15	130.40	6.49	123.51	(0.40)	122.29	(1.62)	119.86	(4.05)	\$ 115.80	(8.11)					
700	132.38	141.90	9.52	137.96	5.59	130.54	(1.84)	129.23	(3.15)	126.61	(5.77)	\$ 122.24	(10.14)					
750	140.85	149.74	8.90	145.53	4.68	137.57	(3.27)	136.17	(4.68)	133.36	(7.49)	\$ 128.68	(12.17)					
1000	183.19	188.96	5.77	183.34	0.15	172.74	(10.45)	170.86	(12.33)	167.12	(16.07)	\$ 160.88	(22.31)					
1050	191.66	196.80	5.15	190.91	(0.75)	179.77	(11.89)	177.80	(13.86)	173.87	(17.79)	\$ 167.32	(24.34)					
1600	267.88	267.40	(0.48)	258.98	(8.90)	243.06	(24.82)	240.26	(27.62)	234.64	(33.24)	\$ 225.28	(42.60)					
1500	284.82	283.09	(1.73)	274.10	(10.72)	257.13	(27.69)	254.13	(30.68)	248.14	(36.67)	\$ 238.16	(46.66)					
2000	352.57	345.84	(6.73)	334.61	(17.96)	313.39	(39.18)	309.65	(42.92)	302.16	(50.41)	\$ 289.68	(62.89)					
2500	437.26	424.28	(12.98)	410.24	(27.02)	383.72	(53.54)	379.04	(58.22)	369.68	(67.58)	\$ 354.08	(83.18)					
3000	521.95	502.72	(19.23)	485.87	(36.08)	454.05	(67.90)	448.43	(73.52)	437.20	(84.75)	\$ 418.48	(103.47)					
5000	860.71	816.48	(44.23)	788.40	(72.31)	735.36	(125.35)	726.00	(134.71)	707.28	(153.43)	\$ 676.08	(184.63)					
7500	1,284.16	1,208.68	(75.48)	1,166.56	(117.60)	1,087.00	(197.16)	1,072.96	(211.20)	1,044.88	(239.28)	\$ 998.08	(286.08)					

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Typical Bills by Rate Schedule
24% On-peak/76% Off-peak
Rate R-OTOD vs. Rate R-OTOD-2

(A)	(B)	(C)	(D) = (C) - (B)	(E) = (D) / (B)
USAGE	TOTAL MONTHLY BILL		BILL DIFFERENCE	
TOTAL ENERGY (kWh)	R-OTOD CURRENT	R-OTOD 2 PROPOSED	AMOUNT	PERCENT
100	\$ 49.72	\$ 46.15	\$ (3.58)	-7.19%
200	67.36	60.21	(7.15)	-10.62%
250	76.18	67.24	(8.94)	-11.73%
300	85.00	74.28	(10.73)	-12.62%
400	102.64	88.34	(14.30)	-13.93%
475	115.88	98.89	(16.98)	-14.66%
500	120.29	102.41	(17.88)	-14.86%
550	129.11	109.44	(19.67)	-15.23%
600	137.93	116.47	(21.45)	-15.55%
650	146.75	123.51	(23.24)	-15.84%
700	155.57	130.54	(25.03)	-16.09%
750	164.39	137.57	(26.82)	-16.31%
1,000	208.49	172.74	(35.76)	-17.15%
1,050	217.31	179.77	(37.54)	-17.28%
1,500	296.70	243.06	(53.63)	-18.08%
1,600	314.34	257.13	(57.21)	-18.20%
2,000	384.90	313.39	(71.51)	-18.58%
2,500	473.11	383.72	(89.39)	-18.89%
3,000	561.32	454.05	(107.27)	-19.11%
5,000	914.14	735.36	(178.78)	-19.56%
7,500	1,355.17	1,087.00	(268.17)	-19.79%

	Current RODOD Rate	Proposed RODOD 2 Rate	Difference
Customer Charge	\$ 32.08	\$ 32.08	\$ -
<u>Energy Charge On Peak kWh</u>			
Distribution	\$ 0.15015	\$ 0.02800	\$ (0.12215)
Transmission	0.03011	0.07400	0.04389
Stranded Cost Recovery Charge	0.01238	0.01238	-
System Benefits Charge	0.00743	0.00743	-
<u>Energy Service Charge</u>	<u>0.06627</u>	<u>0.06627</u>	<u>-</u>
Total per On Peak kWh	0.26634	0.18808	(0.07826)
<u>Energy Charge Off Peak kWh</u>			
Distribution	\$ 0.00818	\$ 0.02310	\$ 0.01492
Transmission	0.01966	0.01650	(0.00316)
Stranded Cost Recovery Charge	0.01238	0.01238	-
System Benefits Charge	0.00743	0.00743	-
<u>Energy Service Charge</u>	<u>0.06627</u>	<u>0.06627</u>	<u>-</u>
Total per Off Peak kWh	0.11392	0.12568	0.01176
% Sales On Peak	41%	24%	
% Sales Off Peak	59%	76%	

Note: Immaterial differences due to rounding.

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Typical Bills by Rate Schedule
24% On-peak/76% Off-peak
Rate R vs Rate R-OTOD 2

(A)	(B)	(C)	(D) = (C) - (B)	(E) = (D) / (B)
USAGE	TOTAL MONTHLY BILL		TOTAL BILL DIFFERENCE	
ENERGY	RATE R	RATE R-OTOD 2	AMOUNT	PERCENT
(kWh)	CURRENT	PROPOSED		
100	\$ 30.75	\$ 46.15	\$ 15.40	50.08%
200	47.69	60.21	12.53	26.27%
250	56.16	67.24	11.09	19.75%
300	64.62	74.28	9.65	14.94%
400	81.56	88.34	6.78	8.31%
475	94.27	98.89	4.63	4.91%
500	98.50	102.41	3.91	3.97%
550	106.97	109.44	2.47	2.31%
600	115.44	116.47	1.04	0.90%
650	123.91	123.51	-0.40	-0.32%
700	132.38	130.54	-1.84	-1.39%
750	140.85	137.57	-3.27	-2.32%
1,000	183.19	172.74	-10.45	-5.71%
1,050	191.66	179.77	-11.89	-6.20%
1,500	267.88	243.06	-24.82	-9.26%
1,600	284.82	257.13	-27.69	-9.72%
2,000	352.57	313.39	-39.18	-11.11%
2,500	437.26	383.72	-53.54	-12.24%
3,000	521.95	454.05	-67.90	-13.01%
5,000	860.71	735.36	-125.35	-14.56%
7,500	1284.16	1087.00	-197.16	-15.35%

	Rate R	Rate R-OTOD (see EAD-4, Page 1)
Customer Charge	\$ 13.81	
Distribution Charge per kWh	0.05116	
Transmission Charge per kWh	0.03011	
Energy Service Charge	0.06627	
Stranded Cost Recovery Charge	0.01441	
System Benefits Charge	0.00743	

Note: Immaterial differences due to rounding.

Optional Residential Time-of-Day Rate Design

Rate Design Revenue Requirements

Distribution		
	Total ¹	\$ 245,789,395
	Customer ²	<u>(169,679,589)</u>
	Volumetric ³	\$ 415,468,984
Transmission		\$ 94,695,072

Marginal Costs^{4,5}

	Peak	Off-Peak	MC Differential
	(\$/kWh)	(\$/kWh)	(\$/kWh)
Distribution (system level) ⁶	0.00469	0.00012	0.00457
Transmission	0.06156	0.00397	0.05759

TOD (Volumetric) Rate Design

Peak Period: 7 Hours (12 Noon - 7 pm)

kWh Usage	kWh Usage		
	Peak	Off-Peak	Total
	741,658,481	2,403,312,354	3,144,970,835
	24%	76%	

MC-based Rate Design

			Rate Design Revenue Target
Distribution	0.02769	0.02312	\$ 76,109,806
Transmission	0.07412	0.01653	\$ 94,695,072

Notes

¹ Total Rate R Revenue Requirement (approved by NH PUC in DE 19-057)

² Customer Charge Revenue (using approved Rate R-TOD customer charge)

³ Total distribution revenue target for time differentiated volumetric rate design

⁴ Best fit analysis to combine distribution and transmission marginal costs resulted in peak period of 12 Noon-7pm

⁵ Distribution marginal costs from marginal cost of service study in DE 19-057; transmission marginal costs from probability of peak analysis

⁶ Local distribution costs included in customer component

⁷ Total kWh x current transmission rate (\$.03011/kWh)