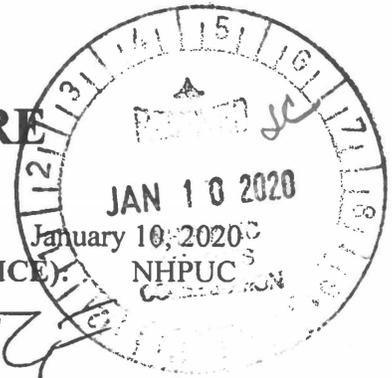


## STATE OF NEW HAMPSHIRE

Inter-Department Communication

DATE: January 10, 2020  
AT (OFFICE): NHPUC

FROM: Elizabeth R. Nixon, Analyst, Electric Division

SUBJECT: Recommendations Regarding Investigation of Electric Vehicle Rate Design Standards, Electric Vehicle Time of Day Rates for Residential and Commercial Customers

TO: Dianne Martin, Chairwoman  
Kathryn M. Bailey, Commissioner  
Michael S. Giaimo, Commissioner  
Debra A. Howland, Executive DirectorCC: Thomas C. Frantz, Director, Electric Division  
Brian D. Buckley, Staff Attorney

On August 11, 2018, SB 575-FN, a bill establishing requirements for, and restrictions on, electric vehicle charging stations, went into effect. SB 575-FN requires the Commission to determine, within two years of its effective date, whether certain rate design standards for electric companies and public service companies should be implemented for electric vehicle charging stations. It also requires the Commission to determine whether to implement electric vehicle time of day rates for residential and commercial customers.

Staff recommends the Commission open an investigation to examine those two issues and provides this memo to inform initial stakeholder comments on those issues.

### I. Rate Design Standards for Electric Vehicle Charging Stations

As a preliminary matter, the Staff notes the Commission's support for the rate design principles of "efficiency, equity, simplicity, continuity, and revenue sufficiency."<sup>1</sup> Staff also observes the following with regard to the rate design standards SB 575-FN directs the Commission to consider:

**Cost of Service:** Rates designed under the cost of service standard should, to the maximum extent practicable, reflect the cost of providing service to a particular customer class. The cost of service standard has been a foundational component of rate design in New Hampshire for decades.<sup>2</sup>

<sup>1</sup> Investigation into Grid Modernization, Order No. 25,877 at 7. (April 1, 2016)

<sup>2</sup> Re Pub. Serv. Co. of New Hampshire, Order No 20,504 at 285 (June 8, 1992). ("If we viewed rate design as a house, the important aspects of equity, continuity, simplicity, understandability, and revenue stability

**Prohibition of Declining Block Rates:** Declining block rates price successive blocks of electricity consumed by a particular customer class within a given billing cycle at per unit prices that decrease as usage increases. The price signal sent to customers by declining block rates does not encourage conservation and may be viewed as inconsistent with least cost planning objectives. Currently, declining block rates are not prohibited in New Hampshire. New Hampshire’s largest electric utility offers only declining block rates to its general service customer classes.<sup>3</sup>

**Time of Day Rates:** Time of day rates, sometimes referred to as time-of-use (“TOU”) or Time Varying Rate (“TVR”) structures, are designed to reflect the cost of providing service to a class of customer at different times of the day. TVR structures might be: (1) fixed, based on pre-determined time periods that align with electric system cost causation, typically divided into off-peak, mid-peak, on-peak, and/or critical peak periods and generally referred to as TOU rates; (2) variable, based on the real-time costs associated with the electric system, generally referred to as real-time pricing; or (3) some combination thereof, such as a TOU rate structure that includes either a peak time rebate or critical peak pricing. TVR structures may be offered on an opt-in basis, where a customer must affirmatively request service under time of day rates, or an opt-out basis, where time of day rates are the default for a particular class and a customer must affirmatively request not to take service under time of day rates.

The ability of a utility to offer TVR structures to a customer or customer class may be contingent on a utility’s capability to record, transmit, and bill for usage variances during certain time intervals. Based on existing metering and billing capabilities, the ability of New Hampshire electric utilities to offer TVR structures is not uniform. The table below summarizes the metering capabilities of New Hampshire’s regulated electric utilities as of March 2017.<sup>4</sup>

|                                 | Eversource |                     |                            |        |                      |       |
|---------------------------------|------------|---------------------|----------------------------|--------|----------------------|-------|
|                                 |            |                     | AMR & remotely read meters |        | Manually read meters |       |
|                                 | Liberty    | Unitil              | Residential                | C&I    | Residential          | C&I   |
| <b>Drive-by meter reading</b>   | 40,254     | All AMI             | 487,716                    | 77,563 | 0                    | 0     |
| <b>Time-of-use register</b>     | 1178       | All                 | 40                         | 0      | 1                    | 345   |
| <b>Reading of interval data</b> | 358        | 2170, but expanding | 1                          | 234    | 112                  | 1,815 |

are the attributes that make the house livable... The support - the foundation and the frame is the cost studies; particularly, it rests on the marginal cost of service study (MCOSS”).

<sup>3</sup> New Hampshire Grid Modernization Working Group Report, Appendix B, Table B.7 (March 20, 2017). Available at: [http://www.puc.state.nh.us/Regulatory/Docketbk/2015/15-296/LETTERS-MEMOS-TARIFFS/15-296\\_2017-03-20\\_NH\\_GRID\\_MOD\\_GRP\\_APP\\_FINAL\\_RPT.PDF](http://www.puc.state.nh.us/Regulatory/Docketbk/2015/15-296/LETTERS-MEMOS-TARIFFS/15-296_2017-03-20_NH_GRID_MOD_GRP_APP_FINAL_RPT.PDF)

<sup>4</sup> *Id.*, at Table B.17 and B.7.

New Hampshire does not have a standard regarding the appropriateness of TVR structures. Eversource offers both residential and general service TOU rates for transmission and distribution service.<sup>5</sup> Liberty Utilities offers both residential and general service TOU rates for distribution only.<sup>6</sup> Both Eversource's and Liberty Utilities' TVR structures offer a two part TOU rate (on-peak and off-peak) with a peak period of approximately 13 hours on weekday non-holidays, and a price differential of approximately 1:10 between the two periods. Unitil does not offer a TVR structure at this time, but has proposed studying the impact of TVR structures.<sup>7</sup>

Liberty Utilities plans to offer a three part TOU rate (off-peak, mid-peak, and critical peak) for its battery storage pilot for energy, distribution, and transmission service which varies by season (summer and winter) and has an off-peak to critical peak pricing differential of approximately 6:1 in the summer, and 3:1 in the winter.<sup>8</sup> Liberty has also proposed use of that rate structure for residential electric vehicle charging.<sup>9</sup>

The table below summarizes the number of customers currently taking service under TOU rates for each regulated New Hampshire electric utility as of March 2017.<sup>10</sup>

|                           | <b>Eversource</b>  |                        | <b>Liberty</b> | <b>Unitil</b> |
|---------------------------|--------------------|------------------------|----------------|---------------|
|                           | <b>Residential</b> | <b>General Service</b> |                |               |
| <b>TOU Rate Customers</b> | 38                 | 159                    | 1,420          | 0             |
| <b>Total Customers</b>    | 426,614            | 75,656                 | 42,313         | 76,418        |

<sup>5</sup> Eversource Tariff for Electric Delivery Service, at 44-47, 54-56 (August 1, 2019). Available at: <https://www.puc.nh.gov/Regulatory/Tariffs/Eversource-PSNH%20Tariff%20No%209.pdf>

<sup>6</sup> Liberty Utilities Tariff for Electric Delivery Service, at 95-99 (July 1, 2019). Available at: <https://www.puc.nh.gov/Regulatory/Tariffs/Eversource-PSNH%20Tariff%20No%209.pdf>

<sup>7</sup> Unitil Energy Systems Inc., Petition for Approval of Proposed Time of Use Study (February 12, 2019). Available at: [https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-033/INITIAL%20FILING%20-%20PETITION/19-033\\_2019-02-13\\_UES\\_PETITION\\_APPROVAL\\_TIME\\_USE\\_STUDY\\_PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-033/INITIAL%20FILING%20-%20PETITION/19-033_2019-02-13_UES_PETITION_APPROVAL_TIME_USE_STUDY_PDF)

<sup>8</sup> Liberty Utilities Co., Order No. 26,209 at 21-22 (January 17, 2019). Available at: [http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-189/ORDERS/17-189\\_2019-01-17\\_ORDER\\_26209.PDF](http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-189/ORDERS/17-189_2019-01-17_ORDER_26209.PDF); See also, Technical Statement Regarding Time-of-Use (TOU) Model, (October 22, 2018). Available at: [http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-189/LETTERS-MEMOS-TARIFFS/17-189\\_2018-11-19\\_GSEC\\_TECH\\_STATEMENT\\_TOU.PDF](http://www.puc.state.nh.us/Regulatory/Docketbk/2017/17-189/LETTERS-MEMOS-TARIFFS/17-189_2018-11-19_GSEC_TECH_STATEMENT_TOU.PDF)

<sup>9</sup> Tebbetts Testimony at II-239 (April 30, 2019). Available at: [http://www.puc.nh.gov/Regulatory/Docketbk/2019/19-064/INITIAL%20FILING%20-%20PETITION/19-064\\_2019-04-30\\_GSEC\\_DTESTIMONY\\_TEBBETTS\\_PERM\\_RATES.PDF](http://www.puc.nh.gov/Regulatory/Docketbk/2019/19-064/INITIAL%20FILING%20-%20PETITION/19-064_2019-04-30_GSEC_DTESTIMONY_TEBBETTS_PERM_RATES.PDF)

<sup>10</sup> *Supra*, at note 3, Table B.7.

**Seasonal Rates:** Seasonal rates are designed to reflect the cost of providing service to a class of customer during different seasons of the year. New Hampshire does not have a standard regarding the appropriateness of seasonal rate structures. The above-discussed Liberty Utilities battery storage pilot proposal is an example of a seasonal rate which changes twice a year, once on May 1 and again on November 1.

**Interruptible Rates:** Interruptible rates are designed to reflect the cost of providing service to a class of customers that permits its service to be interrupted during periods of peak electrical demand. New Hampshire does not have a standard regarding the appropriateness of interruptible rate structures. Eversource offers an interruptible rate to customers through its voluntary interruption program, which is available to customers taking service under the Primary General Service Delivery Rate GV, or the Large General Delivery Service Rate LG and Default Energy Service.<sup>11</sup> In Eversource's on-going rate case, it has proposed to discontinue this rate offering because the program "has not been implemented by Eversource in over ten years."<sup>12</sup> .

**Load Management Techniques:** Load management techniques are offerings of either an electric distribution utility or a third party where, through an agreement between the customer and the electric distribution utility, or the customer and a third party, the customer commits to reductions in load at times of peak electrical demand, typically in exchange for either annual or per-event compensation. The customer may be responsible for providing the load reductions or the utility/third party may actively manage the customers load by providing curtailment services.

New Hampshire does not have a standard regarding the appropriateness of load management techniques. Eversource and Unitil are currently piloting load management offerings for large commercial and industrial customers as a means of reducing the share of capacity and regional transmission costs allocated to New Hampshire ratepayers as part of the energy efficiency programs.<sup>13</sup> The pilot is funded through the system benefit charge, rather than base rates, and each company earns a performance incentive based on a percent of the spending associated with the pilots. Both Eversource and Unitil have proposed to expand these offerings, including to residential customers.<sup>14</sup> Liberty Utilities plans to offer load management through its battery storage pilot.<sup>15</sup>

**Demand Charges:** Demand charges are a rate structure component prevalent in the non-residential customer classes of electric distribution utilities that are intended to recover

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<sup>11</sup> *Supra*, at note 5, at 87-89 (August 1, 2019).

<sup>12</sup> Davis Testimony, Attachment EAD-3, Bates 2039. Available at: [https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-057/INITIAL%20FILING%20-%20PETITION/19-057\\_2019-05-28\\_EVERSOURCE\\_ATT\\_DTESTIMONY\\_DAVIS.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2019/19-057/INITIAL%20FILING%20-%20PETITION/19-057_2019-05-28_EVERSOURCE_ATT_DTESTIMONY_DAVIS.PDF)

<sup>13</sup> Pub. Serv. Co. of New Hampshire, Order No 26,232 at 6. (April 5, 2019). Available at: [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/ORDERS/17-136\\_2019-04-05\\_ORDER\\_26232.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/ORDERS/17-136_2019-04-05_ORDER_26232.PDF)

<sup>14</sup> New Hampshire Statewide Energy Efficiency Plan 2020 Update, at 30-33. (November 1, 2019). Available at: [https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/LETTERS-MEMOS-TARIFFS/17-136\\_2019-11-01\\_EVERSOURCE\\_UPDATED\\_EE\\_PLAN\\_REV.PDF](https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/LETTERS-MEMOS-TARIFFS/17-136_2019-11-01_EVERSOURCE_UPDATED_EE_PLAN_REV.PDF)

<sup>15</sup> *Supra*, at note 8.

costs associated with a customer's kilowatt (kW) or kilovolt-ampere (kVa) demand over a given period (e.g., 30-minute interval, hour interval, etc.). Demand charges are commonly based on an individual customer's maximum (or a certain percentage of maximum) kW or kVa demand during a given period, but may also be based on a customer's demand during transmission or distribution system peaks or on off-peak periods. New Hampshire's electric distribution utilities do not currently offer demand charges as a component of the residential rate structure, but demand charges are common for most commercial customer classes.

## **II. Residential and Commercial Time of Day Rates for Electric Vehicle Charging**

In determining whether it is appropriate to implement electric vehicle time of day rates for residential and commercial customers, SB 575-FN directs the Commission to consider whether implementation would encourage energy conservation, optimal and efficient use of facilities and resources by an electric company, and equitable rates for electric customers.

Staff notes that RSA 378:10 requires that utility rates avoid “undue or unreasonable preference or advantage to any person or corporation, or to any locality, or to any particular description of service in any respect whatever.”<sup>16</sup> This directive to avoid undue discrimination requires rate treatment of electric vehicle supply equipment that, as a general rule, is consistent with treatment for other end uses within a given rate class under which electric vehicle charging equipment is provided service.

## **III. Comment Solicitation**

Staff recommends the Commission begin its investigation by soliciting stakeholder comment on the list of issues identified below. The Commission should encourage commenters to cite quantitative data and qualitative approaches from jurisdictions beyond New Hampshire while addressing the following issues in their comments:

### **Rate Design Standards for Electric Vehicle Charging Stations**

(1) **Definitions.** The proffered definitions within the above-described standards;

(2) **Current Offerings.** In their comments, the utilities should coordinate to provide in tabular form, for comparison purposes, a detailed summary of each tariff for each of the rate design standards listed above.

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<sup>16</sup> RSA 378:10; *see also*, James C. Bonbright, Principles of Public Utility Rates, at 369-385. (1961) Available at: <https://www.raonline.org/wp-content/uploads/2016/05/powellgoldstein-bonbright-principlesofpublicutilityrates-1960-10-10.pdf>

(3) **Alignment with Principles.** Alignment of the above-described standards with the Commission's rate design principles of efficiency, equity, simplicity, continuity, and revenue sufficiency;

(4) **Costs and Benefits.** Costs and benefits foreseeably associated with adopting any of the above-described standards.

### **Residential and Commercial Time of Day Rates for Electric Vehicle Charging**

(1) **Alignment with Principles.** Whether implementation of electric vehicle time of day rates for residential and commercial customers would align with the Commission's rate design principles of efficiency, equity, simplicity, continuity, and revenue sufficiency; and relatedly, whether such rates would encourage energy conservation, the optimal and efficient use of facilities and resources by an electric distribution company, and equitable rates for electric customers;

(2) **Distribution, Energy, and/or Transmission.** Whether electric vehicle time of day rates for residential and commercial customer should apply to distribution rates, transmission rates, and/or energy rates, and how benefits would accrue to ratepayers through an electric distribution utility for time-varying transmission and distribution rates.

(3) **Adequacy of Current and Proposed Rate Offerings.** Whether any of the existing or proposed electric distribution company rate offerings identified above adequately encourage electric vehicle charging in a manner which limits peak load growth, and if not, rate design which might limit peak load growth, as well as encourage conservation, optimal and efficient use of facilities and resources by the electric distribution company;

(4) **Metering, Communication, and Billing Costs.** Whether implementation of electric vehicle time of day rates for residential and commercial customers requires incremental ratepayer-funded investments in metering, communication, and/or billing systems, and if so, the magnitude of those investments;

(5) **Potential Load Factor Improvements.** Whether potential load factor improvements associated with flexible load requirements might offset incremental costs associated with time of day rate offerings for electric vehicle charging at residential and commercial premises;

(5) **Customer Engagement Strategies.** Customer engagement strategies that may supplement time of day rate offerings in a manner which limits costs associated with proliferation of electric vehicles on the distribution system (e.g. – targeted marketing of offerings to electric vehicle owners through load-based analysis or partnerships with manufacturers, dealerships, trade associations, or state government);

(6) **Venue.** The appropriate venue (e.g., during a rate case, during a state-wide docket for all utilities regarding electric vehicle charging rates, etc.) for proposal and approval of residential and/or commercial time of day rates for electric vehicle charging;

(7) **Role of the Utility.** The role of the utility in deployment of electric vehicle supply equipment, including, but not limited to identification of locations which might host electric charging stations without requiring distribution system upgrades and the utilities role in the ownership of and payment for the equipment associated with electric charging stations; and

(8) **Other.** Any other issues that relate to the deployment of electric vehicle supply equipment on residential or commercial premises and implementation of electric vehicle rates.