

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

Docket No. DE 17-136

New Hampshire Electric and Gas Utilities
Statewide Energy Efficiency Plan 2019 Update

TESTIMONY OF

MADELEINE MINEAU

**ON BEHALF OF
NEW HAMPSHIRE SUSTAINABLE ENERGY ASSOCIATION**

November 2, 2018

1 **Q1. Please state your name, the organization you work for, your position and business**
2 **address.**

3 A1. Madeleine Mineau, Executive Director of the New Hampshire Sustainable Energy
4 Association (NHSEA). The physical address is 14 Dixon Avenue, Concord NH 03301.

5
6 **Q2. Please describe NHSEA and your qualifications.**

7 A2. NHSEA was established in 2003 and is a statewide non-profit, member-based organization.
8 NHSEA's mission is to strengthen New Hampshire's economy and conserve natural resources by
9 promoting a transition to clean, efficient, and renewable energy. NHSEA engages in advocacy,
10 policy, education, and technical assistance on issues of sustainable energy and energy efficiency.
11 NHSEA also operates sub-organizations and working groups including the NH Clean Tech
12 Council, Drive Electric NH, and Local Energy Solutions.

13 My qualifications include a Bachelor's degree in Environmental Science and
14 Environmental Policy and a PhD in Biology (Ecology). Prior to starting my position at NHSEA
15 August 1st 2018, I was employed by the City of Nashua where I managed two small hydropower
16 facilities and was the point person for the City on issues related to renewable energy, energy
17 efficiency, and sustainability. I was also Co-President of Granite State Hydropower Association
18 (GSHA). I represented both the City and GSHA as interveners in DE 16-576, Development of
19 New Alternative Net Metering Tariffs and/or Other Regulatory Mechanisms and Tariffs for
20 Customer-Generators.

21

22

1 **Q3. Have you previously testified before the New Hampshire Public Utilities Commission**
2 **or other regulatory bodies?**

3 A3. No.

4

5 **Q4. What is the purpose of your testimony?**

6 A4. My testimony is broken into two sections:

- 7 1. General input on the 2019 update to the NH Statewide Energy Efficiency Plan
- 8 2. Explanation of energy efficiency opportunities and challenges related to LED streetlight
9 service offerings

10

11 **1. GENERAL INPUT ON THE 2019 UPDATE TO THE NH STATEWIDE ENERGY**
12 **EFFICIENCY PLAN**

13 **Q5. What do you think are positive aspects of the proposed 2019 plan update?**

14 A5. NHSEA is pleased to see the use of carry-forward funds to expand or create on-bill
15 financing programs. We think that on-bill financing is an important incentive for all types of
16 customers and especially important to make possible participation of low and moderate income
17 customers in the NH Saves programs.

18 We are also encouraged to see that the NH utilities will explore feasibility of offering a
19 package of energy saving measures for customers who do not meet the Home Heating Index
20 (HHI) criteria.¹ Though HHI can work well in many instances to identify buildings that are in
21 need of weatherization, there are several instances where HHI may not be representative of the

¹ New Hampshire Statewide Energy Efficiency Plan 2019 Update. Bates 000020. Retrieved from:
https://www.puc.nh.gov/Regulatory/Docketbk/2017/17-136/LETTERS-MEMOS-TARIFFS/17-136_2018-09-14_EVERSOURCE_UPDATED_EE_PLAN.PDF

1 need or opportunity for energy savings. For example, to limit cost some residents may under heat
2 their homes and as a result fail to meet the HHI threshold requirement. We urge the utilities to
3 identify and implement alternatives to qualifying customers using alternative methods to the HHI
4 in an expeditious manner.

5

6 **Q6. Do you have any other recommendations for improvements on how customers are**
7 **identified, targetted, or qualified to participate in NH Saves energy efficiency improvement**
8 **programs?**

9 A6. I think there should be a more concerted effort to target customers and properties that would
10 benefit the most from participating in the energy efficiency improvement programs. For
11 example, the utilities should consider actively promoting energy efficiency programs with on-bill
12 financing option to customers who receive heating fuel assistance. Considering the long waits for
13 weatherization assistance through the Community Assistance Programs, there is clearly unmet
14 demand for weatherization improvements and the utility run programs should aim to address this
15 need as much as possible.

16

17 **2. EXPLANATION OF ENERGY EFFICIENCY OPPORTUNITIES AND**
18 **CHALLENGES RELATED TO STREETLIGHT SERVICE OFFERINGS**

19

20 **Q7. Please explain how NHSEA came to develop a particular interest in the issue of LED**
21 **streetlight conversions.**

22 A7. Over the course of 2018, municipal staff and officials representing thirteen municipalities
23 have approach NHSEA seeking technical assistance regarding the implementation of LED

1 streetlight conversions. These municipalities are Atkinson, Boscawen, Concord, Exeter,
2 Hampton Falls, Kensington, Plaistow, Stratham, for which Unital Corporation provides
3 streetlight service, and Enfield, Hanover, Lebanon, Plainfield, and Salem, for which Liberty
4 Utilities provides streetlight service. In response to being engaged by representatives from these
5 cities and towns, NHSEA sought to understand the barriers delaying or preventing the
6 implementation LED streetlight conversions in these towns.

7

8 **Q8. Please describe the current barriers preventing or delaying LED streetlight**
9 **conversions.**

10 A8. Barriers to LED streetlight conversions differ by utility. In the case of Eversource, barriers
11 appear to be low. More than 40 municipalities served by Eversource have converted their
12 streetlights to LED, including all of the larger cities (Dover, Keene, Manchester, Nashua,
13 Portsmouth, Rochester, etc.). Seventy-five per cent of all Eversource streetlights have been
14 converted to LED. By comparison, only 2% of Liberty’s streetlights have been converted to LED
15 and 0% of Unital’s streetlights have been converted to LED.²

16 In 2013 Eversource negotiated a revised LED streetlight tariff with the City of
17 Manchester. Since that time, Eversource appears to have developed a streamlined process for
18 incentivizing, financing, and generally facilitating conversions, which are often accompanied by
19 payback periods of less than three years. For smaller towns, lack of municipal staff capacity, or
20 alternative capacity in the form of volunteer Energy Committees, to allocate resources towards
21 conversions may remain a barrier. However, we note that several municipalities in Eversource
22 territory would have wanted to incorporate smart controls and benefit from energy savings that

² DE 17-136 Joint Utilities Responses to OCA Set 2, OCA 2-018, OCA 2-019.

1 these controls can provide and this opportunity has not been made possible by any of the
2 utilitties.

3

4

Streetlight Conversions in Unitil Service Territory

5

6 **Q9. Please describe the barriers to LED streetlight conversions in Unitil service territory.**

7 A9. In the case of Unitil, there are a number of barriers to LED streetlight conversions, the first
8 being the design of the OL tariff, and the second being the cost the town must pay the utility for
9 the stranded costs of legacy fixtures being converted to LED.

10

11 **Q10. Is the cost of the light fixture, or its value depreciated over time, a barrier to LED**
12 **streetlight conversions?**

13 A10. No. Unitil allows for customer contributed fixtures, meaning the customer would purchase
14 fixtures outright from a third party and then transfer ownership to Unitil. Unitil does not
15 depreciate any value of customer contributed fixtures nor charge the customer for the value of
16 the fixture. Fixtures can be purchased and installed from the competitive market for a relatively
17 low all in cost of between \$200 and \$300 each.

18

19 **Q11. Why is the design of the OL tariff a barrier to LED streetlight conversions?**

20 A11. The design of the OL tariff is a barrier because the distribution charge it allocates to a light
21 fixture is largely unresponsive of the wattage of the fixture, and entirely unresponsive of the
22 volume of kilowatt-hours consumed by the fixture. (The OL tariff applies a \$0.00000 per

1 kilowatt-hour distribution charge to streetlight service.)³ The effect is that substantial reductions
2 in energy consumption result in *de minimis* reductions in cost for distribution. In other words, the
3 effective price per unit of energy (i.e., rate) increases substantially when switching to energy
4 efficient technology, to between \$1.00 and \$1.50 per kilowatt-hour. For example, in one
5 conversion proposal developed for the town of Plaistow by an NHSEA member, converting 454
6 fixtures to LED would reduce energy consumption by 73.5% and reduce total annual cost by
7 23.3%. Under the current tariff, Plaistow would pay approximately \$1.26 per kilowatt-hour of
8 energy consumed by each LED streetlight.

9

10 **Q12. If the OL tariff does not charge for distribution based upon volumetric consumption,**
11 **and is also largely unresponsive to wattage or demand of fixtures, what is the charge based**
12 **upon?**

13 A12. The cost to the municipality for LED streetlight service primarily consists of a fixed
14 customer charge in the amount of approximately \$13.13 per LED fixture per month. This charge
15 is actually only 56% of what Unitil's Allocative Cost of Service Study (ACCOS) finds to be the
16 customer cost component of streetlights, but Unitil has reconciled 44% of the customer
17 component cost to elsewhere in its rates.⁴

18

19 **Q13. What is a customer charge?**

³ Unitil Summary of Delivery Service Rates. Issued May 9, 2018.

⁴ NHPUC Docket No. DE-16-384. Attachment Overcast. Schedule HEO-5. LED Rate Design. Bates 000923-000926. Retrieved from: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-384/INITIAL%20FILING%20-%20PETITION/16-384_2016-04-29_UES_ATT_DTESTIMONY_H_OVERCAST.PDF

1 A13. A customer charge is a charge that varies with the number of customers served, and
2 collects only for those costs directly related to serving each individual customer, such as
3 metering, billing, service connections, and customer service.

4
5 **Q14. Are there metering, billing, service connection, and/or customer service costs**
6 **associated with OL service, and if so, are these costs collected via the \$13.13 customer**
7 **charge?**

8 A14. Streetlights are not metered, so there are no metering costs. Instead, the hours of streetlight
9 usage are calculated based upon monthly and annual hours of darkness. It is logical that billing
10 costs for streetlights would accrue on a per-account basis, not a per-fixture basis, because one
11 customer receives one bill for all of the streetlights provided to that account. The fact that bills
12 are determined by a one-time calculation based on monthly hours of darkness also presumably
13 diminishes billing costs relative to the cost of generating distinct bills based upon monthly
14 metered usage. It is logical to expect some customer service costs to be associated with
15 streetlights.

16
17 **Q15. What does the approximately \$13.13 fixed monthly customer charge in Unitil's OL**
18 **tariff charge for?**

19 A15. The main costs collected for via the \$13.13 fixed monthly customer charge for the fixed
20 costs of Unitil's distribution system, specifically Unitil's Primary and Secondary systems.⁵

21

⁵ NHPUC Docket No. DE-16-384. Attachment Overcast. Schedule HEO-5. LED Rate Design. Bates 000923-000926. Retrieved from: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-384/INITIAL%20FILING%20-%20PETITION/16-384_2016-04-29_UES_ATT_DTESTIMONY_H_OVERCAST.PDF

1 **Q16. Are there established ratemaking principles, such as economic efficiency or marginal**
2 **cost pricing, which would justify recovering distribution system costs with a fixed customer**
3 **charge?**

4 A16. No. It is neither economically efficient nor in line with marginal cost pricing principles to
5 recover distribution system costs using a fixed customer charge.⁶

6

7 **Q17. What are the arguments for and against the designing rates that primarily rely upon**
8 **fixed charges to collect revenue?**

9 A17. The argument in favor of designing rates based largely or entirely on fixed charges is that
10 it provides the utility with greater revenue certainty. However, this is only one of the several
11 functions rate design is meant to perform. Other functions, such as economic efficiency, equity
12 among rate classes and among utility service providers, and communication of accurate price
13 signals to inform and reward appropriate customer behavior, are not served by usage of fixed
14 charges. Fixed charges have a chilling effect on market innovation and customer ability to adopt
15 new technologies or otherwise align behavioral patterns to reduce personal and system-wide
16 costs. In thinking about rate design for a modern electric system, particularly in the midst of
17 surging innovation in the area of distributed energy resources (of which energy efficiency and
18 LED lighting are a component), rates should be designed to appropriately incorporate marginal
19 cost principles in such a way that leads to the greatest economic efficiency by empowering
20 market innovation and customer-side resources.

21

⁶ Lazar, J. and Gonzalez, W. (2015). Smart Rate Design for a Smart Future. Montpelier, VT: Regulatory Assistance Project. Retrieved from: <http://www.raponline.org/document/download/id/7680>

1 **Q18. Are there viable alternative approaches, other than using fixed charges, to designing**
2 **outdoor lighting tariffs?**

3 A18. Yes. In 2013, the NH Public Utilities Commission (PUC) approved a settlement agreement
4 in DE 13-248, in which the City of Manchester and Eversource negotiated a revised LED
5 streetlight tariff. The result of the settlement was a reduction in the fixed charge and an increase
6 in the variable charge for streetlight service, thus allowing prices to more appropriately comport
7 with the principles of economic efficiency and marginal cost pricing. Table 1 illustrates the
8 revision to the Eversource streetlight tariff as it charges for distribution service.⁷

9 Table 1 – Revision to Eversource LED Tariff (Distribution Charges)

	Fixed Cost / Fixture / Month	Variable Distribution Cost / Watt / Month
LED Rate as Originally Proposed	\$8.50	\$0.0139
Revised and Current LED Rate	\$3.37	\$0.0513

10
11 Since the tariff revision, 75% of Eversource streetlights have been converted to LED. By
12 comparison, Unitil has converted 0% of streetlights to LED and Liberty has converted 2% of
13 streetlights to LED. Eversource’s revised tariff seems to have played a central role in removing
14 barriers to LED streetlight conversions and has succeeded in catalyzing a number of conversions
15 across the state which result in cost savings more reasonably commensurate with energy savings,
16 while also providing Eversource with an appropriate opportunity to recover its costs.

17

⁷ NHPUC Docket No. DE 13-248. Order No. 25,701 Approving Rate EOL Tariff and Settlement Agreement. August 4, 2014. Retrieved from: <http://www.puc.state.nh.us/regulatory/Docketbk/2013/13-248/ORDERS/13-248%202014-08-04%20ORDER%20NO%2025-701.PDF>

1 **Q19. You named stranded costs of legacy fixtures as an additional barrier to LED**
2 **streetlight conversions. Please explain.**

3 A19. Customers converting streetlights to LED are required to pay the utility for the stranded
4 costs of legacy fixtures, also known as undepreciated asset value, also known as net book value.
5 This is an additional cost barrier communities face that is unrelated to the barriers associated
6 with the design of the OL tariff.

7
8 **Q20. Other than redesigning the OL tariff, are there other options for overcoming the**
9 **barriers to LED streetlight conversions?**

10 A20. Yes. Another option to overcoming the barriers to LED streetlight conversions is to reduce
11 more of the upfront cost of LED streetlights with rebates using System Benefit Charge (SBC)
12 monies.

13
14 **Q21. Do you recommend this approach as an appropriate solution?**

15 A21. Reducing the upfront cost of LED fixtures could provide a temporary solution and allow
16 for some municipalities to move forward with conversions sooner rather than later. However, in
17 the long run, this solution would not provide cost relief commensurate with the reduction in
18 usage, and customer's would still be paying disproportionately high effective rates per kilowatt-
19 hour of energy consumed by LED streetlights. It is not an economically efficient solution.

20 Additionally, there are inherent tradeoffs in allocating scarce SBC funds.

21

22

1 **Q22. Please describe the barriers to LED streetlight conversions in Liberty Utilities’**
2 **service territory.**

3 A22. The main barrier to LED streetlight conversions in Liberty Utilities’ service territory is the
4 discrepancy between the company’s regulated cost to implement an LED streetlight conversion
5 and the competitive market cost of implementing an LED streetlight conversion. It costs Liberty
6 Utilities approximately three times as much to implement an LED streetlight conversion as it
7 costs an unregulated and competitive market actor.

8 Unlike Unitil, Liberty Utilities does not offer a customer contributed option for LED
9 streetlight conversions, meaning customers must procure their streetlight conversions through the
10 utility, rather than through a competitive market actor. Instead of a customer contributed option,
11 Liberty estimates its own total marginal cost of outdoor lighting, which encompasses the
12 company’s cost to install (including cost of equipment, line trucks, inventory, streetlight
13 materials, payroll, and lineworkers).⁸ Liberty’s average cost to purchase and install each LED
14 fixture is approximately \$790.⁹ From this cost, Liberty derives a fixed monthly charge, typically
15 between \$10.87 and \$17.22 (depending on fixture type and wattage), to each LED fixture to
16 recover the costs of the fixture and its installation. Because of the higher upfront costs of LED
17 fixtures as compared to legacy fixtures, the fixed charge for an LED fixture is higher than its
18 legacy counterpart, even in cases when wattage and consumption are reduced. For example, the
19 fixed monthly distribution rate for a 100 watt high pressure sodium is \$8.93, whereas the fixed

⁸ NHPUC Docket No. DE 16-383. Marginal Cost Testimony of James D. Simpson On Behalf of Liberty Utilities (Granite State Electric) Corp. d/b/a Liberty Utilities. Bates 0547. Retrieved from: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-383/INITIAL%20FILING%20-%20PETITION/16-383_2016-04-29_GSEC_DBA_LIBERTY_DTESTIMONY_JSIMPSON_MARGINAL_COST.PDF

⁹ NHPUC Docket No. DE 16-383. Liberty LED Corrections and Updates to 11/21/16 technical statements. Attachment RATES-10. Bates 0315R. Retrieved from: https://www.puc.nh.gov/Regulatory/Docketbk/2016/16-383/LETTERS-MEMOS-TARIFFS/16-383_2017-01-06_GSECLIBERTY_ATT_LED_CORRECTIONS_UPDATE.PDF

1 monthly distribution rate for a 30 watt LED is \$10.87. Like Unitil, Liberty applies a \$0.00000
2 per kilowatt-hour distribution charge to streetlights. Depending on the number of fixtures being
3 replace, and the amount of energy and cost savings obtained via reductions in energy supply, it is
4 feasible for an LED streetlight conversion under this tariff to result in higher annual streetlight
5 expenditures for municipalities.

6

7 **Q23. How might Liberty Utilities overcome this barrier to LED streetlight conversions?**

8 A23. If Liberty were to offer a customer contributed option for streetlights, i.e., allow customers
9 to procure streetlight conversions from the competitive market as Eversource and Unitil do, it
10 would greatly reduce the cost of the equipment, the installation, and the overall conversion.

11 Competitive market actors can deliver LED streetlight conversion projects at a price of between
12 \$200 and \$300 per fixture, which is significantly less expensive than Liberty's cost of
13 approximately \$790 per fixture converted.

14

15 **Q24. Do you have any final thoughts or recommendations for how to Commission should**
16 **proceed in addressing this issue?**

17 A24. We feel we have responsibility, on behalf of those municipalities who have come to us
18 seeking assistance in implementing LED streetlight conversions, to provide useful information to
19 the Commission about the issue. We feel it is the responsibility of the Commission to determine
20 the most appropriate solution to overcoming the barriers to LED streetlight conversions.