

THE STATE OF NEW HAMPSHIRE

BEFORE THE NEW HAMPSHIRE PUBLIC UTILITIES COMMISSION

PREFILED TESTIMONY OF CHARLES R. GOODWIN

Light Emitting Diode (LED) Option - Energy Efficient Outdoor Lighting Rate EOL

Docket No. DE 13-248

July 1, 2014

1 **I. Introduction**

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

3 A. My name is Charles R. Goodwin. I am Director of Rates and Forecasting for Northeast Utilities
4 Service Company, which provides centralized services to the Northeast Utilities (“NU”) operating
5 subsidiaries, including Public Service Company of New Hampshire (“PSNH” or “the Company”).
6 My business address is 107 Selden Street, Berlin, Connecticut.

7 **Q. Have you testified previously before the Commission?**

8 A. Yes, I have.

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

10 A. The purpose of my testimony is to describe the Company’s existing Rate EOL tariff, the
11 originally proposed changes to that tariff, and three modifications to the Company’s original
12 proposed Rate EOL tariff: a change in distribution pricing, establishment of a per-fixture per-
13 visit maintenance charge for light emitting diode (“LED”) fixtures, and a provision allowing
14 customers to hire an independent contractor to replace existing fixtures with LEDs. My
15 testimony will also describe the Settlement Agreement between PSNH and the City of
16 Manchester (“the City” or “Manchester”) filed in this docket, including one provision that would
17 impact all LED customers.

1 **II. Current Rate EOL**

2 **Q. Please provide a brief description of current Rate EOL.**

3 **A.** Rate EOL is a “delivery and maintenance” rate for energy-efficient, unmetered street lighting
4 service. It is available to federal, state, county, municipal or other governmental units,
5 departments or agencies. Customers who wish to transfer their service from Rate OL to Rate
6 EOL agree to convert all of their roadway and area lighting to either high pressure sodium
7 (“HPS”) or metal halide (“MH”) fixtures. Upon conversion from Rate OL to Rate EOL,
8 customers pay PSNH the remaining unexpired life of all existing fixtures and brackets, any
9 removal costs, and the installed cost of new HPS or MH fixtures and brackets placed in service.
10 Seven wattages of HPS fixtures and seven wattages of MH fixtures are offered. On each
11 individual light fixture, customers have the option of either “all-night” (4,345 hours of operation
12 per year) or “midnight” (2,005 hours of operation per year) service.

13 Since customers have paid the full cost of fixtures upfront, these fixtures are reflected on the
14 Company’s books at a zero value. There is no cost of service to the Company for these fixtures;
15 therefore, the monthly distribution rates on Rate EOL are lower than those on Rate OL. The
16 Company continues to own and maintain all fixtures on Rate EOL.

17 **Q. Please describe the current Rate EOL rate structure.**

18 **A.** The current tariff includes a distinct fixed “Monthly Distribution Rate” per fixture for each of the
19 14 types of fixtures that are offered. In addition to the per fixture charge, Transmission, Stranded
20 Cost Recovery, System Benefits, Electricity Consumption Tax and energy service charges are
21 billed on a per kWh basis. Since the service is unmetered, the tariff pages show the monthly kWh

1 per luminaire assumed for billing purposes. These kWh amounts are based on lamp wattages,
2 losses in the ballast, and the number of hours of darkness each month.

3 **III. Original Proposal**

4 **Q. Please describe the Company's August 2013 proposal for an LED option.**

5 A. My August 2013 testimony described in detail PSNH's reasons for proposing an LED option, the
6 benefits of LEDs, LED rating standards, criteria for Company acceptance of the LED fixtures
7 selected by the customer, the possibility of allowing under Rate EOL other energy efficient
8 lighting technologies which may emerge in the future, the proposed Distribution rate structure,
9 and the calculation of monthly kilowatt-hours to be used in billing Transmission, Stranded Cost
10 Recovery, System Benefits, Electricity Consumption Tax and energy service charges. Since that
11 testimony is part of the record in this docket, I will not repeat those details here. However, the
12 key features of the Company's original proposal were:

- 13 • Customers would be allowed to receive service utilizing any combination of HPS, MH, or
14 LED fixtures.
- 15 • Customers would furnish the LED fixtures. Customers would be responsible for selecting the
16 fixtures to be installed (subject to Company review and acceptance), conducting the bidding
17 process with a vendor, negotiating the warranty, purchasing the fixtures and accepting
18 delivery at a customer-owned facility.
- 19 • Customers would provide replacement fixtures to the Company when needed to replace
20 fixtures that fail or are damaged. The Company recommended that customers either maintain
21 a stock of replacement fixtures or reach agreement with their vendor for prompt delivery of
22 replacements.

- 1 • Customers already receiving service on Rate EOL who wished to take service under the LED
2 option would be responsible for the cost of removing any existing luminaires as well as the
3 installed cost of the LED luminaires placed into service under the LED service option.
- 4 • In addition to the costs described above, customers who wished to convert from Rate OL to
5 Rate EOL would pay PSNH the remaining unexpired life of all existing fixtures and brackets
6 in service.
- 7 • As it does for all other luminaires served under Rate EOL, PSNH would continue to provide
8 delivery service to, and own and maintain the LED luminaires.
- 9 • Customers would still elect either all-night service or midnight service on each individual
10 LED fixture.

11 **Q. What type of maintenance did the Company propose to provide for LEDs in the original**
12 **filing?**

13 A. PSNH proposed to:

- 14 • Correct voltage problems and replace photocells at no additional cost as part of the
15 maintenance service included in the rate.
- 16 • For problems unrelated to voltage and photocells, due to the integrated nature of LED
17 fixtures, the Company would remove the luminaire, return it to the customer, and
18 replace it with a new luminaire provided by the customer.
- 19 • Labor, associated overheads and any material needed to remove the old and install the
20 new luminaire would be billed to the customer.
- 21 • When an entire luminaire must be replaced as a result of vandalism, accident or any
22 other reason, the customer would pay the cost of removing the existing luminaire and
23 the cost of installing (labor, materials and overheads) the new luminaire.

1 **IV. Revisions to the August 2013 Proposal**

2 **Q. What changes is PSNH proposing to the distribution charges for LEDs?**

3 A. Following the December 10, 2013 hearing in this proceeding, PSNH worked with the City of
4 Manchester on negotiating a number of modifications to the Company's original Rate EOL LED
5 proposal. In addition to the revised LED proposal, these negotiations have resulted in the
6 Settlement Agreement that I will discuss later in this testimony. PSNH's LED rate proposal is
7 to decrease the fixed monthly distribution charge per fixture from \$8.50 to \$3.30 (\$4.25 minus
8 \$0.95 monthly maintenance cost per fixture) and to increase the proposed distribution rate per
9 watt from \$0.0139 to \$0.0500.

10 **Q. Please provide some examples of the potential bill savings under the revised LED pricing.**

11 A. The top half of Attachment 1 shows illustrative monthly savings per fixture that may be achieved
12 by converting an HPS or MH fixture currently billed on Rate EOL to an LED fixture. The
13 bottom half of the attachment shows savings that may be achieved by converting an HPS or MH
14 fixture currently billed on Rate OL to an LED fixture. These are illustrations only, since savings
15 will depend on the wattage of the LED replacement fixture selected by the customer. Savings
16 will also depend on the customer's energy service rate and any future rate changes. Since LEDs
17 produce a comparable light output at a lower wattage, billing kWh are expected to decrease
18 significantly. Savings under the LED option arise partly from the proposed distribution rate and
19 partly from the rate components which are billed on a per kWh basis.

1 **Q. What is the basis for these proposed rates?**

2 A. The Company's original fixed and variable LED rate was developed based on an analysis of
3 existing Rate EOL fixture charges versus wattage. That result provided very little savings for
4 smaller wattages (50 and 70 watts) that may convert to LED, and more significant savings for
5 larger wattages (400 and 1,000 watts). The vast majority of the existing Rate EOL fixtures fall in
6 the 50 and 70 watt range (about 29,000 out of a total of about 40,000 EOL fixtures). Very few of
7 the existing EOL fixtures fall in the 400 and 1,000 watt category (less than 1,000 out of the
8 40,000 total). With this result, the opportunity for significant LED conversions is likely severely
9 limited as the cost of investing additional capital in new LED technology will provide no or little
10 payback. The Company learned that this was the experience of the City, and thus what has led
11 PSNH and Manchester to seek an alternative LED pricing structure.

12 In considering alternative LED rate structures, the Company was cognizant of the fact that the
13 other NU operating companies have street lighting rates that are significantly lower than PSNH's.
14 One major reason for the difference in the level of rates among NU's companies is the detailed
15 evaluation of cost of service and rate design that has occurred in both Connecticut and
16 Massachusetts in distribution rate cases. In contrast, the recent PSNH rate cases have evaluated
17 cost of service studies generally, but rate design has not been significantly modified or evaluated
18 relative to specific cost of service study detail. Rather, PSNH's distribution rates have generally
19 changed on some proportional basis across all rate classes. The Company fully expects that in its
20 next rate case, when both a marginal and embedded cost of service study will be filed, proposals
21 will be made to bring distribution rate design more in line with cost of service study results. This
22 would be PSNH's intent for all rate classes, including street lighting under Rates OL and EOL.

1 The modified proposed fixed and variable LED rate design is being proposed largely to reach a
2 level such that the opportunities to achieve a reasonable cost/benefit result exist for LED
3 conversions. In testing the new rate level for reasonableness, the Company reviewed the result
4 from two perspectives. One is that it has evaluated at a very high level what it anticipates the
5 future cost of service study will indicate for an appropriate fixed and variable Rate EOL street
6 lighting rate. In doing so, it has estimated the implicit fixed and variable rate levels for Rate EOL
7 type service for the other NU operating company rates. One key was to provide some reasonable
8 assurance that we do not set this Rate EOL LED proposal at a level that is likely to be below
9 where a future cost of service study may result. All of the other NU companies have implicit
10 fixed rates less than the proposed \$3.30 per month (in the \$1.00 per month range or lower). In
11 terms of the implicit rate per watt for other NU companies under a Rate EOL type service, they
12 are each in the \$0.01 range as compared to the proposed \$0.05 range in PSNH's revised proposal.
13 With this comparison, PSNH is confident that any future cost of service study, assuming it is
14 allocated using methodologies similar to that utilized and approved in both Massachusetts and
15 Connecticut, would not lead to Rate EOL LED rates in excess of those proposed herein.

16 The second perspective by which PSNH reviewed the reasonableness of its revised proposal was
17 across the spectrum of Rate EOL fixtures. When PSNH reduced the fixed component of the
18 proposed rate, it created greater opportunities for those smaller wattage fixtures, such as 50 and
19 70 watt, to convert to LED. However, as the fixed component was reduced, the variable per
20 wattage component needed to be increased. Increasing the variable component would not be
21 beneficial to the very largest wattage fixtures. PSNH attempted to strike a reasonable balance in
22 terms of creating potential benefits for the greatest proportion of Rate EOL fixtures, while still
23 ensuring some level of potential savings for all Rate EOL fixtures. As shown in the attached bill
24 comparisons, when evaluated from a total bill perspective, each current Rate EOL wattage level

1 would realize a bill savings if they convert to EOL technology under PSNH's proposal, and this
2 includes a significant percentage savings for even the 400 and 1,000 watt fixtures. It is important
3 to note that the revised proposal is not revenue neutral with the original LED proposal. That is,
4 the total rate and related revenue is significantly lower under the revised proposal than the
5 original proposal, which means that if all Rate EOL customers would convert to LED, the
6 Company would realize less revenue than under its original proposal. It is for this reason that
7 PSNH is not able to reduce both the fixed and variable components of the LED rate as compared
8 to its original proposal.

9 **Q. Please describe the new proposal for maintenance.**

10 A. The Company will continue to include maintenance costs for HPS and MH fixtures in the
11 monthly distribution rates per fixture, and will continue to provide maintenance for those fixtures
12 as it currently does. Under the revised LED option, PSNH has removed the estimated
13 maintenance cost of \$0.95 per fixture per month from the per fixture distribution rate. Instead,
14 the Company will charge for LED maintenance at a rate of \$95.00 per-fixture per-visit, plus the
15 cost of materials (e.g., a photoelectric control) and overhead charges on the materials. The
16 \$95.00 rate is based on the estimated cost, including overheads, to send one employee in a line
17 truck to inspect the location. This "unbundling" of LED maintenance costs will reduce
18 customers' monthly bills during the initial warranty period, and afterward assuming LED fixtures
19 perform to manufacturers' claims. Further, on December 4, 2013, the Staff submitted a
20 memorandum in this docket recommending, among other things, that the Company track its
21 actual costs relating to LED fixtures. Separating out the costs from the remainder of the rate will
22 allow the Company to more easily assess the costs of maintaining LED fixtures.

1 **Q. Please provide more detail on the revised proposal for LED maintenance and billing.**

2 A. When PSNH receives a report of a non-working fixture, the Company will diagnose and
3 correct any system voltage problems at no cost. A non-working photoelectric control will
4 be replaced in the field. If the voltage is correct and the photoelectric control is working
5 properly, the Company will remove the fixture, return it to the customer, and replace it with
6 a new fixture provided by the customer. Whether the Company replaces the photocell or
7 removes and replaces the fixture, the customer will be billed the \$95.00 per-fixture per-visit
8 fee. Additionally, any material and associated overheads needed to remove the old and
9 install the new photoelectric control or fixture will be billed to the customer. If an entire
10 luminaire must be replaced as a result of vandalism, accident or any other reason, the same
11 billing scenario will apply: the flat fee per-fixture, per-visit as well as material and
12 associated overhead costs will be billed to the customer.

13 **Q. Please describe the option for use of a private contractor.**

14 A. Our new proposal allows customers the choice of having either the Company or a private
15 contractor remove existing fixtures and install LED fixtures in their place. In either case,
16 the customer will be responsible for all of the labor costs. For safety reasons, the Company
17 will require private contractors to meet training, licensure, certification and insurance
18 standards described in the proposed tariff, and the Company must accept the contractor.
19 Contractors must work closely with the Company, providing a work plan for the
20 Company's approval. This new option may allow customers to save on installation costs
21 and to convert their fixtures more quickly.

1 **Q. Has PSNH prepared revised tariff pages?**

2 A. PSNH has black-lined the tariff pages from our original proposal and has included them as
3 Attachment 2.

4 **V. Settlement Agreement**

5 **Q. Please summarize the Settlement Agreement between PSNH and the City of Manchester.**

6 A. The Settlement Agreement acknowledges the amended EOL tariff and rate design for LEDs. It
7 permits the City of Manchester, on a pilot basis, to assume responsibility for maintenance for all
8 of its existing HPS and MH street lighting fixtures for a period of five (5) years. Because the City
9 will be responsible for maintenance of these fixtures, PSNH will provide the City with a credit for
10 the amount PSNH estimates as its maintenance cost, *i.e.*, \$.95 per month per fixture. The
11 Settlement Agreement also permits the City to contract with a third party for installation and
12 maintenance of LEDs. The Agreement also recognizes that the City's LED conversion plan is
13 estimated to be eligible for energy efficiency program funds (under the Company's Municipal
14 Program and Large Business Program) for a potential total incentive of \$400,000 over two years.

15 **Q. Earlier in your testimony you mentioned one other provision of the Settlement**
16 **Agreement that would impact all Rate EOL LED customers. Please describe that**
17 **provision.**

18 A. Section 2.1.2 of the Settlement Agreement provides that in any distribution rate case filed by
19 PSNH within the next five years, the Company will hold an overall increase to the Rate EOL
20 LED pricing to a change that does not exceed the overall authorized distribution rate increase.
21 For example, if PSNH files a rate case seeking a five percent total distribution increase, the LED
22 rate would be proposed to increase no greater than five percent. To the extent the Commission

1 authorized an overall distribution rate increase at a level other than that proposed by PSNH, the
2 Company would seek approval of rate design commensurate with the authorized increase such
3 that LED rates would not increase by a percentage greater than the overall approved distribution
4 increase. However, under Section 2.1.3 of the Settlement Agreement, neither the City nor any
5 other parties would be precluded from advocating for different LED rates, including cost-based
6 rates.

7 PSNH and the City of Manchester believe these provisions are a critical aspect of the Settlement
8 Agreement because it is important that some reasonable level of price certainty is provided to
9 customers as they evaluate and potentially commit to an LED conversion plan. It is logical that
10 as customers evaluate an investment in higher efficiency technology, the cost/benefit of that
11 investment will be a significant variable in the decision making process. Depending on the
12 number of LED fixture conversions, the investment can be quite significant in terms of the
13 financial and budgetary impacts to a municipality or other street lighting customer. To the extent
14 an economic rationale exists that makes investment in LED technology attractive, if LED rates
15 were to dramatically increase in the future, the merits of the original economic rationale could
16 potentially be negated. PSNH believes that customers would be much less likely to invest in
17 LED technology if the risk of an expected cost/benefit is completely unknown and subject to
18 material future change.

19 **V. Summary**

20 **Q. What is PSNH requesting of the Commission?**

21 A. PSNH requests Commission approval of its revised LED proposal, including the accompanying
22 Settlement Agreement reached with Manchester. PSNH requests an effective date for its revised

1 proposal at least 30 days after the date of the Commission's order so that the Company can
2 adequately prepare for roll-out of the LED program.

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

4 **A. Yes, it does.**