

New Hampshire Energy Efficiency Calculation of Lost Base Revenue For Measures installed beginning in 2019

Report Issued by the NH Lost Base Revenue Working Group, Docket No. ##-###.
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I. Introduction / Executive Summary

- A. Summarize Docket
- B. PUC Order – what is required of the Working Group?
- C. Parties included in the WG
- D. Summarize contents of this filing
- E. High Level Conclusions

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II.

III. Glossary of Terms

1. **Annual Energy Savings:** The reduction in electricity use (kWh) or in fossil fuel use (therms/MMBtus) associated with energy efficiency activities in a given year.
2. **Average Distribution Rates:**
3. **Billing Determinants:** Customer data used for billing purposes during a specified period of time, including but not limited to number of customers, kWh usage, and kW or kVA usage by rate class.
4. **Coincidence Factor:** The ratio of the average hourly demand during a specified period of time of electrical equipment or consumers to the sum of their individual maximum demands (or connected loads) within the same period. Can be expressed as a numerical value or as a percentage.
5. **Coincident Demand:** The demand of a device, circuit, or building that occurs at the same time as the peak demand of a utility's system load or at the same time as some other peak of interest. Examples of peak demand include:
 - (1) Demand coincident with a utility system peak load
 - (2) Demand coincident with ISO/RTO summer or winter peak, or according to performance hours defined by wholesale capacity markets
 - (3) Demand coincident with high electricity demand days.
6. **Coincidental Peak Load:** Two or more peak loads that occur at the same time.
7. **Confidence:** An indication of how close, expressed as a probability, the true value of the quantity in question is within a specified distance to the estimate of the value. Confidence is the likelihood that the evaluation has captured the true value of a variable within a certain estimated range.
8. **Connected Load (kW):** The total electric power-consuming rating of all devices (as lamps or motors) connected to a distribution system.
9. **Degradation:** The extent to which the unit energy consumption (UEC) of equipment increases as it ages. See Persistence.
10. **Degradation Factor:** Refers to changes in energy usage of a high efficiency measure or practice relative to a standard efficiency measure or practice due to technical and/or behavioral changes over a period of time.

11. **Demand (electric):** Demand usually refers to the amount of electric energy used by a customer or piece of equipment at a specific time, expressed in kilowatts (kW equals kWh/h).
12. **Demand Savings:** The reduction in electric or gas demand from a baseline to the demand associated with the higher-efficiency equipment or installation. This term is usually applied to billing demand to calculate cost savings or peak demand for equipment sizing purposes.
13. **Demand Ratchet:** This is the minimum billing demand based upon a given percentage of the actual demand use, recorded during the last eleven months of demand history.
14. **Distribution Rates:** Per unit costs necessary to recover the costs associated with an electric distribution system.
15. **Distribution System:** That part of the electric system that delivers electric energy to consumers.
16. **End-Use:** The specific purpose for which electricity is consumed (i.e. heating, cooling, cooking, etc.).
17. **EPRI:** Electric Power Research Institute
18. **Equipment Life:** The number of years that a measure is installed and will operate until failure
19. **Expired kW:** kW associated with measures that have been retired from service. The retirement could be due to equipment age, renovation/removal, breakage, etc.
20. **Annual Hours of Use:** The number of hours a system or unit of equipment is in use (i.e. "on") during a year.
21. **In-Service Rate:** The percentage of measures incented by an efficiency program that are installed and operating. The in-service rate is calculated by dividing the number of measures installed and operating by the number of measures incented by an efficiency program in a defined period of time.
22. **Kilowatt (kW):** The electrical unit of power equal to 1,000 watts.
23. **Kilowatt-Hour (kWh):** The basic unit of electric energy equal to one kilowatt of power supplied to or taken from an electric circuit for one hour.

24. **Maximum Demand Savings (kW):** The difference in the connected load wattage of the baseline or standard equipment versus the connected load wattage of the high efficiency equipment. See Connected Load.
25. **Maximum Demand Factor (MDF):** The ratio of the maximum demand during an assigned period upon an electric-power system to the load actually connected during that time usually expressed in percent. The demand factor is always less than or equal to one.
26. **Measure Life:** The length of time that a measure is expected to be functional. Measure Life is a function of equipment life (see Equipment Life) and measure persistence (see Measure Persistence).
27. **Net-to-Gross Ratio (NTG):** A factor representing net program savings divided by gross program savings that is applied to gross program impacts to convert them into net program load impacts. The factor itself may be made up of a variety of factors that create differences between gross and net savings, commonly including free riders and spillover. In New Hampshire, the NTG ratio is assumed to be 1.0, per the New Hampshire Energy Efficiency Working Group Report, 1999.¹
28. **Peak Demand:** The maximum level of demand used during a specified period. The peak periods most commonly identified are annual and seasonal (summer and winter).
29. **Persistence / Measure Persistence:** The duration of an energy consuming measure, taking into account business turnover, early retirement of installed equipment, and other reasons measures might be removed or discontinued.
30. **Persistence / Savings Persistence Rate:** Percentage of first year energy or demand savings expected to persist over the life of the installed energy efficiency equipment; developed by conducting surveys of installed equipment several years after installation to determine presence and operational capability of the equipment.
31. **Precision:** The indication of the closeness of agreement among repeated measurements of the same physical quantity. It is also used to represent the degree to which an estimated result in social science (e.g. energy savings) would be replicated with repeated studies.

¹ As the report states, “although Group members agree that program designs should attempt to minimize free-riders, the Group concluded that the methodological challenges and associated costs of accurately assessing free-riders no longer justifies the effort required to net these out of cost-effectiveness analyses.” The same report allowed inclusion of spillover, but to date the utilities have not measured spillover or included it in the cost-effectiveness test. See [https://www.puc.nh.gov/Electric/96-150%20%20NH%20Energy%20Efficiency%20Working%20Group%20Final%20Report%20\(1999\).pdf](https://www.puc.nh.gov/Electric/96-150%20%20NH%20Energy%20Efficiency%20Working%20Group%20Final%20Report%20(1999).pdf)

32. **Realization Rate:** The term is used in several contexts in the development of reported program savings. The primary applications include the ratio of project tracking system savings data (e.g. initial estimates of project savings) to savings:

- (1) adjusted for data errors,
- (2) that incorporate evaluated or verified results of the tracked savings, and
- (3) that account for free ridership and/or spillover.

33. **Sector:** Division of customer classes served by the NH Saves programs.

34. **Tariff:** the schedule of rates, charges and terms and conditions under which a regulated and tariffed service is provided to customers, filed by a utility and either approved by the commission or effective by operation of law.

35.

IV. Derivation of kW Savings

A. Verbiage: kW Demand Savings:

- (1) Description of kW Template

B. Sample Model: kW Derivation Template

C. Customer Peak Demand vs ISO New England Coincidence Peak

- (1) Customer Load Shape
- (2) Monthly Peak Hours
- (3) EPRI End-use Coincidence Factors
- (4) Derivation of "Coincident" Customer Demand Savings

V.

VI. **Derivation of Average Distribution Rates (ADR)**

1. Description: How is ADR calculated
2. Discuss Billing Determinants used in the ADR calculation (i.e.: vintage)
3. Summarize ADR schedules (attached in Appendix X).

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VII. Understanding C&I Tariffs, particularly application of “ratchets”

1. All there is to know about tariffs
2. Application of Ratchets:
 - (1) Eversource’s Response: For Eversource, only LG customers are potentially impacted by a ratchet. Please refer to page 67 of Eversource’s Tariff No. 9 for how demand is billed for these customers.
 - (2) Unitil’s Response: For Unitil, only its G1 class (customers with average use equal or in excess of 200 kVA and generally greater than or equal to 100,000 kWh each month) includes a ratchet provision. G1 customers are billed the highest of a) current month's peak 15 min. kVA or b) 80% of previous 11 month's peak 15 min. kVA.
 - (3) Liberty’s Response: For Liberty, its G-1 and G-2 rates have ratchets applied in accordance with the tariff, pages 98 and 101 of Liberty’s Tariff No. 20.

VIII.

IX. Appendices

A. Templates

- (1) The “one-pager”
- (2) Sample LBR calcs?
- (3) Sample ADR calcs? For what year?

B. Supporting Schedules

- (1) Filled out one-pager
- (2) Ratchet support analyses
- (3) Sample ADR calculations?? (I’m not sure where this goes)

C. Sources

- (1) Etc....