

**Table A: Lighting Systems Incentives** 

Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
10F*	<u>Fluorescent</u> Re-lamp and Re-ballast	\$10	T-5 lamps or CEE qualified New High Performance /Reduced Wattage (HP/RW) T-8. Each fixture is composed of an electronic ballast and up to 3 lamps. Only one incentive may be counted per fixture. Multiple fixtures served by a single ballast are only eligible for one incentive.	11	
10L	<u>LED</u> Linear Tubes	\$5 Per Tube	LED linear tubes**  Reference Commercial & Industrial Retrofit Instructions Eligibility Requirements 10,11,12,13 for additional guidance for the use of Code 10L  Your utility may require removal or replacement of existing ballast.  LED lamps are required to be listed by Design Lights Consortium	10 Per Tube	
20F*	Fluorescent High Efficiency Interior Fixtures & Retrofit Kits	\$20	1x4, 2x2 and 2x4  Prismatic Lensed Fixture  Overall fixture efficiency must be ≥:  • 83% for 2x4 with two T-8 or T-5 lamps  • 75% for 2x2 with two T-8 or T-5 lamps  Parabolic Louver Fixture  Overall fixture efficiency must be ≥:  • 80% for 2x4 or 2x2 (2" to 3" deep cells) with two T-8 or T5 lamps	27	
			Recessed Indirect/Direct Fixture  Overall fixture efficiency must be ≥:  • 75% for 2x4 with two T-8 or T-5 lamps;  70% for 2x2 with two T-8, T-5,		
20L	<u>LED</u> High Efficiency Interior Fixtures & Retrofit Kits	\$60	1x4, 2x2 and 2x4  Prismatic, Parabolic, Recessed Direct and Recessed Indirect fixtures  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org)	32	



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Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
21F*	Fluorescent High Efficiency Linear Indirect/Direct Pendant Fixtures	\$25	<ul> <li>Overall fixture efficiency must be ≥:</li> <li>80% for an indirect pendant fixture with two T8 or T5 lamps or one T5HO lamp. Fixtures may have a down-light component of no greater than 45%. Fixtures with a down-light component must incorporate glare limiting louvers or a perforated cover shielding the lamps. Ceiling finish must be white and unobstructed</li> </ul>	32	
21L	LED Linear Indirect or Indirect Pendant Fixtures	\$75	Fixtures may have a down-light component of no greater than 45%. Fixtures with a down-light component must incorporate glare limiting louvers or a perforated cover shielding the lamps. Ceiling finish must be white and unobstructed  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	32	
22F*	Fluorescent Advanced Recessed Fixtures	\$20	<ul> <li>Overall fixture efficiency must be ≥:</li> <li>80% for Slot, 1x4 advanced glare reducing diffuser fixture with one or two T8 or T5 lamps, or one T5HO lamp.</li> <li>80% for 2x2 advanced glare reducing diffuser fixture with one or two T8, T5 or T5HO lamps</li> <li>85% for 2x4 advanced glare reducing diffuser fixture with one or two T8 or T5 lamps, or one T5HO lamp.</li> </ul>	32	
22L	<u>LED</u> Advanced Recessed Fixtures	\$60	Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	32	



Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
30F*	Fluorescent Industrial/Commercial Fixtures	\$20	<ul> <li>4 ft. and 8ft. T5 or T8 Fixtures</li> <li>Overall fixture efficiency must be ≥:</li> <li>85% for Industrial Reflector fixture with one or two T-8 or T-5 lamps (up to 20% up-light);</li> <li>83% for Commercial Grade Wraparound fixture with one or two T-8 or T-5 lamps.</li> <li>Applies to fixtures installed at 16 feet or less above the floor. Only one incentive may be counted per fixture. Eight foot and multiple fixtures served by a single ballast are only eligible for one incentive.</li> </ul>	23	
30L	<u>LED</u> Industrial/Commercial Fixtures	\$60	4 ft. and 8ft. Fixtures  LED industrial/commercial strip or wrap fixtures. Applies to fixtures installed 16 feet or less above the floor. Only one incentive may be counted per fixture.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	32	
31F*	Fluorescent Clean Room Rated or Vapor Tight Fixtures	\$25	1x4 or 2x4  Overall fixture efficiency must be ≥ ::  -75% for Clean Room fluorescent fixture with up to three T-8 or T-5 lamps.  -70% for Vapor Tight fluorescent fixture with up to three T-8 or T-5 lamps.	27	
31L	<u>LED</u> Clean Room Rated or Vapor Tight Fixtures	\$75	1x4 or 2x4  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org)	32	



Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
32L	LED Stairwell Fixture with integral Occupancy sensor controls	\$75	To be eligible for incentives, fixtures must be installed in an 8,760 hour stairwell application with integral occupancy sensor control, setting lights to 50% output or less in control mode (not occupied). Not eligible for additional control incentive  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	27	
40F*	Fluorescent High and Low Bay High Intensity Fixtures	\$25	Minimum wattage is 96 watts. Fixture efficiency must be ≥ to 80%. Recommended mounting height > 16 feet above the floor. High Intensity Fluorescent fixtures incorporate a number of lamp technologies that include T-8, T-5, T-5HO  T8 fixtures must have high power ballast.	70	
40L	LED High and Low Bay High Intensity Fixtures & Retrofit Kits	\$125	Minimum wattage is 45 watts to 149 watts. Recommended mounting height is > 16 feet above the floor.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	95	
41L	LED High and Low Bay High Intensity Fixtures & Retrofit Kits	\$175	Minimum wattage is ≥ 150 watts. Recommended mounting height is > 16 feet above the floor.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	150	



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Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
50L	<u>LED</u> Down Light Fixtures & Retrofit Kits	\$25	Eligible LED Down Lights are required to be less than 25 watts and hardwired or GU-24 (pin) base. Screw Base LED Down Light Retrofit Kits are also eligible. Replacement lamps not eligible.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org)	14	
51L	<u>LED</u> Hardwired Track Heads or Mono-Point Directional Fixtures	\$25	LED track heads hardwired installations only, replacement lamps not eligible.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org).	30	
52L	LED Directional and Omni-directional Replacement Lamps	\$5	Eligible LED Integral replacement lamps with screw or pin base Lamps must operate a minimum of 2,000 hours annually.  Eligible lamps are required to be listed by Energy Star Pre-Qualified list For more information see www.energystar.gov)	10	
53L	<u>LED</u> Exit Fixtures	\$5	All materials and assembled units shall comply with all applicable codes and standards including (but not limited to) Federal/State/Local building, fire, and electrical codes, and may require designated egress lighting to comply with such codes. Exit sign retrofit kits are not eligible.	15	EXIT
60L	<u>LED</u> Cooler , Freezer, or Refrigerated 3' & 4' Fixture	\$40	Fixtures are required to be required to be listed by Design Lights Consortium  (for more information see www.designlights.org)	14	
61L	LED Cooler , Freezer, or Refrigerated 5' & 6' Fixture	\$55	Fixtures are required to be required to be listed by Design Lights Consortium  (for more information see www.designlights.org)	23	



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Product Code	Product Description	Per Fixture Incentive	Eligibility Criteria	Min Watts Saved	
70L	<u>LED</u> Garage & Canopy Fixtures & Retrofit Kits	\$75	LED Low Bay for Garages and Canopies 25-99 watts.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org).	60	www.ambargontecom
71L	<u>LED</u> Garage & Canopy Fixtures & Retrofit Kits	\$100	LED Low Bay for Garages and Canopies greater than 99 watts.  Fixtures are required to be listed by Design Lights Consortium (for more information see www.designlights.org).	100	aminora Loon
80L	LED Exterior Wall, Post, Ground, and Arm Mount Floods and Fixtures& Retrofit Kits	\$75	Wattage range is 25 watts to 99 watts  Must be automatically controlled to avoid daylight operation.  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org).	60	
81L	<u>LED</u> Exterior Wall, Post, Ground, and Arm Mount Floods and Fixtures & Retrofit Kits	\$100	Minimum wattage is 100 watts  Must be automatically controlled to avoid daylight operation.  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org).	100	
90L	<u>LED</u> Pole Mounted Parking, or Roadway Fixtures & Retrofit Kits	\$150	Wattage range is 45 watts to 149 watts  Must be automatically controlled to avoid daylight operation.  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org).	100	



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91L	LED Pole Mounted Parking, or Roadway Fixtures & Retrofit Kits	\$200	Minimum wattage is 150 watts  Must be automatically controlled to avoid daylight operation.  Fixtures are required to be listed by Design Lights Consortium  (for more information see www.designlights.org).	150	
99L	<u>LED</u> New Fixtures & Retrofit Kits	\$20	LED fixture categories not covered under other codes, or fixtures that do not meet minimum watt reduction in other codes.  Fixtures are required to be listed by Design Lights Consortium or ENERGY STAR.  Linear LED Tubes (T8 style) not eligible in code 99L	20	

\*Note: All T8 fluorescent fixtures must have High Performance T8 or Reduced Wattage (HP or RW) lamp & ballast systems or T5 lamp and ballast systems to be eligible for a fluorescent incentive (F\*). For detailed eligibility requirements and a list of qualifying High Performance T8 or Reduced Wattage (HP or RW) lamp & ballast systems, go to CEE's web site at <a href="https://www.cee1.org">www.cee1.org</a>.

\*\*Note: NHSaves and its sponsor utilities do not warrant or accept any liability whatsoever in respect of any LED 4ft or 2ft Linear Replacement Lamps that receive incentives through our energy efficiency programs. Customers are responsible for the proper modification and installation of LED 4ft and 2ft Linear Replacement Lamps in existing fixtures in accordance with manufacturer's instructions. Customers should be aware that this may void fixture warranty. Customers are responsible for proper labeling of all modified existing fixtures. It is the responsibility of the lighting installers to meet current Illuminating Engineering Society standards for light levels, light distribution, uniformity and lighting quality for all installations that use these prescriptive technologies.



Please note that only one incentive control strategy will be approved per fixture/area. Also consider using program start CEE qualified, parallel wired ballasts for all appropriate control product codes on T8 lighting to ensure longer lamp life over instant start ballasts.

**Table A-1: Lighting Control Incentives** 

Product Code	Product Description	Incentive	Eligibility Criteria	Min Controlled Wattage	
1	Remote Mounted Occupancy Sensor	\$50 per control	Comply with manufacturer's coverage recommendations. No manual "ON" overrides.	90 (total)	
2	Wall mounted Occupancy/Vacancy Sensors	\$20 per control	Occupancy Sensors must operate as Automatic On, and Automatic Off or Manual On and Off. Sensors are wall mounted devices only.  Not recommended in multi stall restrooms, locker rooms, stairwells or rooms of greater than 250 square feet.	45 (total)	
3	Daylight Dimming System  and/or  Occupancy Controlled Step-Dimming System	\$20 per fixture	Daylight: Must have continuous dimming or adjust to a minimum of 4 levels. Typical lamping is either a 28 or 32 watt T8 lamps. Step-Dimming: Ballast must be automatically controlled based on occupancy.  Power consumption in low mode must not exceed 60%.	45 (per fixture)	
4	Integral High Bay Fixture Occupancy Control Systems	\$20 per fixture	Fluorescent Ballast or LED Drivers must be automatically controlled based on occupancy. Systems with manual "ON" or override switches are not eligible. Occupancy sensors are integral (built into) or permanently attached to each fixture.	45 (per fixture)	
5	Photocell Sensors	\$20 per control	Photocell sensor for exterior lighting systems, or lighting circuit, that would otherwise operate on 24 operate on 24 hours a day, 7 days a week (8,760 hours annually)	30 (total)	



### Instructions for completing the Retrofit LIGHTING Incentive Worksheet

#### **General Note**

- 1. This application is for replacing existing lighting fixtures or systems with new higher efficiency lamps, ballast and lighting fixtures, systems and controls.
- 2. Cutsheets/specifications including photometric tables must be submitted and reviewed by the utility to verify compliance with technical requirements.
- 3. Proof of Purchase includes invoice(s) indicating the cost, type, manufacturer, model or part number, purchase date, and vendor of the efficient equipment are required for payment of incentives.
- 4. The incentive, in conjunction with all other sources of funding, cannot exceed the total project cost.
- 5. Project must be completed by the "Offer Valid Through" date on the front of the application to be eligible for incentive. After that date the preapproval is void and the business will need to contact their Utility to reapply for incentive pending funding availability.

#### **Eligibility Requirements:**

- 1. The existing lighting should be in-place and operational at the time of pre-inspection.
- 2. Each lighting efficiency product must meet the efficiency and technical specifications found in Tables A and A-1. Fixture efficiency ratings can be found on fixture photometric reports. It is the total % lamp lumen output in the 0 to 90 degree range for direct fixtures and 0 to 180 degree range for direct/indirect found in the Zonal Lumen Summary.
- 3. Lighting efficiency requirements are intended to reduce the lighting system's energy demand and consumption while delivering quality lighting in accordance with IES recommended lighting guidelines.
- 4. Systems must operate on average 2,000 hours annually unless otherwise specified by the product code. Lighting project average must be at least 2,000 hours (total kWh/total kW).
- 5. Fixtures that do not meet the minimum required fixture efficiency may be eligible for code 10F incentive if they have approved HP/RW T8 lamps and ballast systems or T5 systems, or a 99L for LED fixtures not covered by another product code
- 6. Minimum watts for prescriptive control products is the average total watts controlled per controller.
- 7. The incentive offer is not valid unless signed and dated by the Utility Representative. The Customer accepts the Utilities incentive offer and agrees to the Terms and Conditions of the Utility by signing in the pre-approval offer block.
- 8. Projects need to be pre-approved prior to installation to be eligible for incentives.
- 9. Lighting not eligible for prescriptive incentives may be considered as a custom measure & must pass the utility's benefit cost test to be eligible for an incentive.
- 10. Each fixture type must meet the Minimum Watts Reduction listed in Table A. The Minimum Watts Reduction is the average savings per new fixture. This is the difference between the total existing fixture system watts and the total new replacement system fixture watts / quantity of new fixtures. Quantity of fixtures installed may be different than the quantity of fixtures removed as long as the average minimum watts reduction is met. For Product Code 10L, Linear LED Tube wattage must include the ballast power when a ballast is used to operate the LED tubes. When entering the new lamp wattage on the incentive worksheet, use the total fixture wattage, including ballast power, divided by the total number of LED tubes in the fixture.
- 11. DLC qualification requires documentation of safety certification. Installation instructions must be followed with care.
- 12. Some linear LED tubes may utilize either the existing or a new fluorescent ballast. It is essential to select a compatible LED tube and ballast combination. Failure to do so may damage system components, shorten product life or result in a hazardous condition. The age and condition of the existing ballast may also shorten system life.



13. Some linear LED tubes may bypass the existing fluorescent ballast. In some cases, line voltage is connected to an LED driver which in turn supplies power to the one or both LED tube holders. In other cases, the LED driver is integral to the LED tube and line voltage is supplied directly to one or both lamp holders. The presence of line voltage at the lamp holders may pose a hazardous condition. Fixtures should be labeled to identify this potentially hazardous condition.

#### **LED Specific Documentation Requirements**

LED fixtures and lamps must be listed on ENERGY STARS's (ES), Designlights Consortium (DLC) or the utilities' websites. For more information see the DLC's listing <a href="http://www.designlights.org/">http://www.designlights.org/</a> or ENERGY STAR's website: Bulbs: <a href="http://www.energystar.gov/productfinder/product/certified-light-bulbs/results">http://www.energystar.gov/productfinder/productfinde

\*\*Note: NHSaves and its sponsor utilities do not warrant or accept any liability whatsoever in respect of any LED 4ft or 2ft Linear Replacement Lamps that receive incentives through our energy efficiency programs. Customers are responsible for the proper modification and installation of LED 4ft and 2ft Linear Replacement Lamps in existing fixtures in accordance with manufacturer's instructions. Customers should be aware that this may void fixture warranty. Customers are responsible for proper labeling of all modified existing fixtures. It is the responsibility of the lighting installers to meet current Illuminating Engineering Society standards for light levels, light distribution, uniformity and lighting quality for all installations that use these prescriptive technologies.

### Fluorescent Ballasts and Installation Guidelines

For customers participating in New Hampshire's large business retrofit lighting incentive program, the following equipment specifications and installation guidelines are recommended. These guidelines are not requirements for receiving incentives, but have been compiled to help inform our customers so they achieve the energy savings calculated under our programs and maintain quality installations.

- 1. All linear fluorescent fixtures must have new High Performance/ Reduced Wattage (HP/RW) T8 lamps and new High Performance/ Reduced Wattage (HP/RW) ballasts as noted on CEE approved list, or new T5 lamps and ballasts.
- 2. Must meet all applicable current Federal and State efficiency standards.
- 3. Total harmonic distortion (THD) of 20% or less. THD is a measure of the distortion of an electrical wave form (sinusoidal wave) expressed as a percentage. Excessive THD may cause adverse effects to the electrical system and may interfere with electronic equipment.
- 4. UL Listed, National Electrical Code Section 410.
- 5. Power factor ≥ 90% (considered high power factor devices). Power factor is a measure of the effectiveness with which an electrical device converts voltamperes to watts.
- 6. Lamp Current Crest Factor (LCCF) is the ratio of peak lamp current to the RMS (average) lamp current. Lamp manufacturers require a LCCF of less than 1.70 in order to achieve full lamp life.
- 7. For outside or cold weather operation, ballasts with a 0 degree F rating should be used. Indoor operation ballast is typically rated for 50 degree F operation.
- 8. Ballast shall operate at a frequency above 40,000 Hz.
- 9. Ballast shall meet (FCC 47 CFR Part 18 Non-consumer) for EMI/RFI ensuring suitability for commercial and industrial installations.
- 10. Ballasts should be installed with the appropriate lamp size and number of lamps that the ballast was designed for to maintain the above specifications and project savings.

#### Examples:

a. A two (2) lamp fixture should have a 2 lamp High Performance / Reduced Wattage (HP/RW) ballast installed, not a 3 lamp ballast. A three (3) lamp ballast can power 2 lamps; but will draw more energy, could have higher harmonic distortion, and may affect lamp life.



- b. HP/RW ballasts designed to power 4', 3' or 2' HP/RW T8's lamps are most efficient when powering the 4' HP/RW T8's. That ballast will use more energy and have higher harmonics when used with 3' or 2' lamps rather than a ballast designed specifically for 3' or 2' lamps.
- 11. Manufacturer should provide a minimum 3 year warranty, preferably a 5 year warranty. Some manufacturers will also provide a labor cost reimbursement for defective ballasts requiring replacement while under warranty.

\***Note**: All T8 fluorescent fixtures must have High Performance or Reduced Wattage (HP or RW) lamp & ballast systems or T5 lamp and ballast systems to be eligible for a fluorescent incentive (F\*). For detailed eligibility requirements & a list of qualifying HPT8 lamps and ballasts, go to CEE's web site at <a href="https://www.cee1.org">www.cee1.org</a>.

- Facility lighting must average 2,000 hours per year.
- 2 ft, 3ft and 4ft nonstandard linear T8 lamps including U bents when used in combination with CEE's High Performance/Reduced Wattage (HP/RW) T8 Ballast Specifications are considered HP/RW systems.
- 2ft and 3ft, T8 and T5 lamps must have a minimum efficacy of 75 mean lumens per watt, a CRI greater than 80 and an average rated life of 24,000 hours at 3 hours per start.
- 2ft reduced wattage biax lamps must have a minimum efficacy of 94 mean lumens per watt, a CRI greater than 80 and an average rated life of 20,000 hours at 3 hours per start. Ballasts must meet the CEE's High Performance T8 Ballast Specifications.

### **Existing Lighting Systems Inventory**

- 1. An inventory should be submitted documenting all existing fixtures to be replaced and the proposed fixtures that will be installed. For each fixture, note the lamp size, type, quantity, ballast type and hours of operation. Electronic spreadsheet copies of the Lighting System Inventory similar to the Lighting Worksheets are encouraged to facilitate the incentive application review. Existing and Proposed lighting types can be found in Table 1.
- 2. Complete the lighting and/or lighting controls incentive info found in Table A and A-1. Check to ensure all proposed products meet the criteria and minimum watts saved for products noted in Table A and A-1.
- 3. Fill out a separate line on the Retrofit Lighting Incentive Worksheet for each unique combination of Existing lighting type, Annual Hours of Operation, Product Code and lighting type. Both existing and high efficiency lighting types can be found in Table 1.
- 4. Fill out a separate line on the Lighting Controls Incentive Worksheet for each lighting control product including control description, quantity of fixtures controlled, number of watts controlled and hours of reduction for each device proposed, Refer to Table A-1.
- 5. Hours of operation are the estimated annual hours that the particular fixture(s) actually operates. Try to be as specific and accurate as possible. NOTE: Fixture operating hours are not necessarily the same as the facility operating hours.
- 6. Add the Lighting Total and the Control Total in the Grand Total box. The Incentive Total boxes cannot exceed the total equipment costs.

### **Pre-Installation**

- 1. A site inspection may be performed by a utility representative confirming the existing fixture information and quantities. Make sure to call your utility before starting the lighting project to determine if a site inspection is required.
- 2. The existing fixtures should be verified by lighting type and room/area, reference Lighting Worksheet and Table 1.



#### **Post-Installation**

#### Utility Representative must verify that:

- 1. The new energy efficient lighting fixtures, systems and controls types have been installed and are energized.
- 2. The lighting fixtures, systems and controls match the manufacturer's information represented on the incentive application. If any of the lighting fixtures, systems and controls have changed from what was approved for the initial incentive offer, the substituted lighting fixtures, systems and controls specifications must be resubmitted, reviewed to verify compliance with technical requirements and approved before an incentive is considered.
- 3. Proof of Purchase has been submitted. This includes invoice(s) indicating the fixture manufacturer, model, and number of lamps, ballast specifications (if applicable), fixture quantities, costs, purchase date, and vendor of the efficient equipment. Other forms of payment such as AIA Certificates of Payment may also be acceptable.
- 4. The Utility Representative & Customer have signed & dated the post installation inspection block on the incentive form.