

**National Grid's Lighting Incentive and
Eligibility Requirements Manual**
for Massachusetts, Rhode Island and Nantucket Customers

2009 Design 2000*plus* Program

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National Grid's Lighting Incentive and Eligibility Requirements Manual

2009 Design 2000_{plus} Program

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II. Incentive Program Selection: Design 2000*plus* vs Energy Initiative

The Design 2000*plus* incentive program is applicable for new construction or major renovation projects.

Alternately, use the Energy Initiative incentive program for an existing lighting system that is being upgraded to improve efficiency.

III. Program Terminology

Measure Codes

The term “Measure Codes” refers to National Grid’s unique system of identifying fixture and control types that qualify for incentives. These lighting fixture upgrades and control options are classified by Measure Codes and are assigned based on fixture and control types as well as specifications. In most cases, the same fixture and control types that qualify for incentives under the Design 2000*plus* Program will also appear in the Energy Initiative manual.

Note that in some cases the specifications for a light fixture in the Design 2000*plus* Program may be stricter than the specifications for the same Measure Code in the Energy Initiatives Program.

Minimum Watts Controlled Requirement

Minimum Watts Controlled is a requirement common to all lighting occupancy sensor and automatic dimming control measures in both the Design 2000*plus* and Energy Initiative Programs. This requirement establishes a minimum quantity of lighting system wattage, the combination of lamp and ballast input, that must be connected to a control device in order to qualify for an incentive. In the case where multiple controls fitting the same Measure Code are being installed, the connected wattage to some of the controls may be less than the minimum required, provided that they satisfy the requirement as a group.

High Performance T-8 Fluorescent Lighting

High Performance T-8 lighting systems incorporate improvements to lamp and ballast technologies that deliver the same light levels as a “standard” 32W T-8 system while saving energy and improving lamp life. Longer lamp life naturally results in lower maintenance costs over time.


High Performance T-8 lamps and ballasts provide more lumens than standard 32W T8 systems. As such, it might be possible to specify a lower ballast factor ballast, savings even more energy,

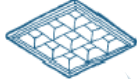
High Performance T-8 lamps are defined as a 4 ft 32 watt straight (not U-bent) T-8 lamp rated at 3100 initial lumens, greater than 94% lumen maintenance factor and with a CRI (color rendering index) of 85 or greater.

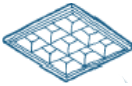
As with any lighting system replacement, the buyer should make sure that a new systems deliver the appropriate light to the space.

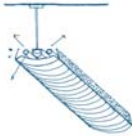
Since July 1, 2006, National Grid has required that all fixtures that are specified with 4ft, 32 watt straight tube T-8 lamps and ballasts must meet the High Performance T-8 specification developed by the Consortium for Energy Efficiency. This requirement applies to Measure Codes 10, 30, 31, 33, 34, 41, 41T, 42, 42T, 43, 56, and 57. Specifications for lamps and ballasts and a list of eligible lamps and ballasts can be found at www.cce1.org. 4ft straight tube 32W T8 lamps and ballasts must meet the Consortium for Energy Efficiency’s High Performance T8 specification. Fixtures using T-5 and long tube compact fluorescent lamps are eligible for select measures codes as described herein.


IV. Design 2000_{plus} Eligibility Requirements for Lighting Product Incentives


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| Program: Design 2000_{plus} |  |
| Measure Code: 10 | |
| Device Description: Any new fluorescent fixture with T8 lamps and electronic ballast | |
| Incentive: \$10/fixture | |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Recessed or surface mounted fixture with parabolic louver or prismatic lens | |
| Eligibility Criteria: Each fixture is composed of a ballast and 1,2,3 or 4 lamps. Only one incentive may be counted per fixture. Multiple fixtures served by a single ballast are only eligible for one incentive. Example: 3 fixtures served by one ballast are eligible for one incentive. Customers with an average demand of 50 kW or greater or chain/national accounts customers in the retail trade operating 5 or more facilities in the Companies' service territories are not eligible. All customers are eligible for eight foot T8 electronic ballast incentives. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org.</i> | |
| Special Requirements: Must be a new fixture. | |
| Example of Qualify Product: | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, and 64 | |
| Fixture Alternatives: | |
| <ul style="list-style-type: none"> • Higher efficiency: Measure Code 30 • Lower energy/better quality light: Measure Code 33 • Higher efficiency: High Performance T-8 | |

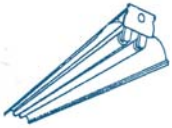
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|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 30 | |
| Device Description: High Efficiency 2 lamp Fluorescent Fixture - 2x2 or 2x4 | |
| Incentive: \$40/fixture | |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Recessed or surface mounted troffer fixture with parabolic louver, prismatic lens, or recessed indirect fixture. | |
| Eligibility Criteria: | |
| Overall fixture efficiency must exceed: | |
| <ul style="list-style-type: none"> - 83% for a prismatic lensed fixture with two T-8 or T-5 lamps; - 75% for 2x4 fixture with parabolic louver (2" to 3" deep cells) with two T-8 or T5 lamps; - 70% for 2x2 fixture with 2" to 3" deep parabolic louver (2" to 3" deep cells) with two T-8 or T5 lamps; - 70% for 2x4 recessed indirect fixture with two T-8 or T-5 lamps; - 70% for 2x2 recessed indirect fixture with two T-8, T-5, or T5HO lamps. Fixtures must be installed at a lighting power density 10% below current building codes. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org</i> | |
| Special Requirements: Each unit must consist of a new fixture | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, and 64 | |
| Fixture Alternatives: | |
| <ul style="list-style-type: none"> • Lower Cost: Measure Code 10 • Lower energy/better quality light: Measure Code 33 | |


| | |
|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 31 | |
| Device Description: High Efficiency 3 lamp Fluorescent Fixtures – 2x2 or 2x4 | |
| Incentive: \$20/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Recessed or surface mounted troffer fixture with parabolic louver, prismatic lens, or recessed indirect fixture. | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 83% for a prismatic lensed fixture with three T-8 or T-5 lamps; - 75% for 2x4 fixture with parabolic louver (2" to 3" deep cells) with three T-8 or T5 lamps; - 70% for 2x2 fixture with 2" to 3" deep parabolic louver (2" to 3" deep cells) with three T-8 or T5 lamps; - 70% for 2x4 recessed indirect fixture with three T-8 or T-5 lamps. - 70% for 2x2 recessed indirect fixture with three T-8, T-5, or T5HO lamps. Eligible fixtures are limited to 3-T8 lamps with a low power ballast factor < .80. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org</i> | |
| Special Requirements: Each unit must consist of a new fixture | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, and 64 | |
| Fixture Alternatives: <ul style="list-style-type: none"> • Lower Cost: Measure Code 10 • Lower energy/better quality light: Measure Code 34, 30 • Higher efficiency: High Performance T-8 | |

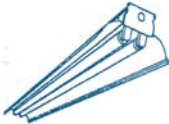
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|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 33 | |
| Device Description: High Efficiency Indirect Fluorescent Fixture | |
| Incentive: \$35/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Indirect suspended low glare fixtures | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 80% for a Indirect pendant fixture with two T-8 or T-5 lamps or one T-5HO lamp. Fixtures may have a downlight component of no greater than 45%. Fixtures with a downlight component must incorporate glare limiting louvers or a perforated cover shielding the lamps. Fixtures must be installed at a lighting power density 10% below current building codes. Ceiling finish must be white and unobstructed. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org</i> | |
| Special Requirements Each fixture shall be a 4-foot section containing not more than 2 lamps. | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: <ul style="list-style-type: none"> Lower Cost but not low glare system: Measure Code 30, 31 • Higher efficiency: High Performance T-8 | |

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|---|--|
| Program: Design 2000_{plus} |  |
| Measure Code: 34 | |
| Device Description: Advanced Recessed Fluorescent Fixtures- 1x4, 2x2, or 2x4 | |
| Incentive: \$40/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Advanced Recessed Fluorescent Fixtures | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 80% for 2x4 fixture with one or two T-8 or T-5 lamps, or one T-5HO lamp; - 80% for 2x2 fixture with one or two T-8, T-5, T-5HO lamps; - 80% for 1x4 fixture with one or two T-8 or T-5 lamps, or one T-5HO lamp; Fixtures must incorporate advanced glare reducing diffusers. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org</i> | |
| Special Requirements: Fixture offers direct light source through a glare reducing diffuser | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: Lower Cost but not low glare system: Measure Code 30, 31 • Higher efficiency: High Performance T-8 | |

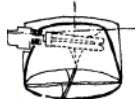
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|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 41 | |
| Device Description: 4 ft. Commercial/Industrial Fluorescent Fixtures | |
| Incentive: \$20/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Non recessed/Open Fixture | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 85% for Industrial Reflector fixture with one, two, or three T-8 or T-5 lamps; - 83% for Commercial Grade Wraparound fixture with one or two T-8 or T-5 lamps. Fixtures must be installed 16 feet from the floor or less. Up to 20% up-light as an integral fixture feature (typically slots) may be included but only in instances where white or light colored walls or ceilings exist. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.ceel.org.</i> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: • Lower Cost: Measure Code 10 • Tandem wired ballasts may result in more energy savings: Measure Code 41T • Higher Efficiency: High Performance T-8 | |


| | |
|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 41T | |
| Device Description: 4 ft. Commercial/Industrial Fluorescent Fixtures and Tandem Wired Ballasts | |
| Incentive: \$10/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Non recessed/Open Tandem-wired - Two fixtures, tandem wired = 2 units | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 85% for Industrial Reflector fixture with one, two, or three T-8 or T-5 lamps; - 83% for Commercial Grade Wraparound fixture with one or two T-8 or T-5 lamps. Fixtures must be installed 16 feet from the floor or less. Up to 20% up-light as an integral fixture feature (typically slots) may be included but only in instances where white or light colored walls or ceilings exist. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.cee1.org.</i> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: <ul style="list-style-type: none"> • Lower Cost: Measure Code 10 • Higher Efficiency: High Performance T-8 upgrade | |


| | |
|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 42 | |
| Device Description: 8 ft. Commercial/Industrial Fluorescent Fixtures | |
| Incentive: \$25/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Non recessed/Open Fixture | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 85% for Industrial Reflector fixture with one, two, or three T-8 or T-5 lamps; - 83% for Commercial Grade Wraparound fixture with one or two T-8 or T-5 lamps. Fixtures must be installed 16 feet from the floor or less. Up to 20% up-light as an integral fixture feature (typically slots) may be included but only in instances where white or light colored walls or ceilings exist. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.cee1.org.</i> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: <ul style="list-style-type: none"> • Lower Cost: Measure Code 10 • Higher efficiency: High Performance T-8 • Tandem wired ballasts may result in more energy savings: Measure Code 42T | |


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|--|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 42T | |
| Device Description: 8 ft. Commercial/Industrial Fluorescent Fixtures and Tandem Wired Ballasts | |
| Incentive: \$15/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: Non recessed/Open Tandem-wired - Two fixtures, tandem wired = 2 units | |
| Eligibility Criteria: Overall fixture efficiency must exceed: - 85% for Industrial Reflector fixture with one, two, or three T-8 or T-5 lamps; - 83% for Commercial Grade Wraparound fixture with one or two T-8 or T-5 lamps. Fixtures must be installed 16 feet from the floor or less. Up to 20% up-light as an integral fixture feature (typically slots) may be included but only in instances where white or light colored walls or ceilings exists. <i>All installations utilizing 32W 4ft T-8 straight tube lamps and ballasts must meet the Consortium for Energy Efficiency High Performance T-8 specification. For a list of eligible equipment, see www.cee1.org.</i> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: | |
| • Lower Cost: Measure Code 10 | • Higher efficiency: High Performance T-8 Upgrade |

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|--|--|
| Program: Design 2000_{plus} | |
| Measure Code: 43 | |
| Device Description: 4ft. High Lumen Fluorescent Vaportite Fixtures | |
| Incentive: \$40/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: High Lumen Fluorescent Vaportite Fixtures | |
| Eligibility Criteria: 4 ft. Vaportite fluorescent fixture with one or two T-8, T-5, T-8HO, T-5HO or 3-T8 lamps. To be eligible for incentives, fixtures must be installed in garage or warehouse applications only. | |
| Special Requirements: must be installed in garage or warehouse applications only | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Codes 61, 62, 63 and 64 | |
| Fixture Alternatives: | |


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|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 23 | |
| Device Description: Dimmable Compact Fluorescent Fixture | |
| Incentive: \$20/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: not applicable |
| Style: Dimmable Compact Fluorescent | |
| Eligibility Criteria: Ballasts must be dimmable. CFL ballasts must be < 33% THD. | |
| Special Requirements: All fixtures must have high power factor eligible electronic ballasts. | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Code 62 | |
| Fixture Alternatives: | |


| | |
|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 56 | |
| Device Description: High Intensity Fluorescent (HIF) Fixture | |
| Incentive: \$20/unit | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: New fluorescent fixtures for high and low bay applications (less than or equal to 219 W) | |
| Eligibility Criteria: <ul style="list-style-type: none"> • Installation height must be higher than 16 feet • Maximum wattage is 219 watts • Minimum wattage is 125 watts • Minimum fixture efficiency must exceed 80% <p><i>Distribution and athletic facilities are good applications. There are a number of manufacturers on the market incorporating lamp technologies that include T-8, T-5 (linear and “biax”) and compact fluorescent. Use of this fixture may introduce glare which might be undesirable in some applications</i></p> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Code 68 | |
| Fixture Alternatives: | |


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|---|---|
| Program: Design 2000_{plus} |  |
| Measure Code: 57 | |
| Device Description: High Intensity Fluorescent (HIF) Fixture | |
| Incentive: \$40/unit | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: yes | Min. Watts Controlled: not applicable |
| Style: New higher wattage fluorescent fixtures for high and low bay applications (greater than 220W) | |
| Eligibility Criteria: <ul style="list-style-type: none"> • Installation height must be higher than 20 feet • Minimum wattage is 220 watts • Minimum fixture efficiency must exceed 80% <p><i>Distribution and athletic facilities are good applications. There are a number of manufacturers on the market incorporating lamp technologies that include T-8, T-5 (linear and “biax”) and compact fluorescent. Use of this fixture may introduce glare which might be undesirable in some application.</i></p> | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: See Measure Code 68 | |
| Fixture Alternatives: | |


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|---|---|
| Program: Energy Initiative |  |
| Measure Code: 80 | |
| Device Description: LED Downlight Fixtures | |
| Incentive: \$40/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: |
| Style: | |
| Eligibility Criteria: LED downlight fixtures must carry the ENERGY STAR label. This applies to hardwired fixtures only. | |
| Special Requirements: Each unit must include a new fixture hardwired or with GU24 base. | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Control Options: none | |
| Fixture Alternatives: | |


Controls


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|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 61 | |
| Measure Description: Remote-Mounted Occupancy Sensor | |
| Incentive: \$75/control | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 70 |
| Style: Ceiling or wall mounted sensor with relays | |
| Eligibility Criteria: Comply with manufacturer's coverage recommendations. Intended for ceiling mounted control. Due to changes in the state energy code, occupancy sensors may not be eligible for new construction or major renovation | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: Measure Code 10, 30, 31, 33, 34, 41, 41T, 42, 42T, and 23 | |
| Alternatives: | |


| | |
|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 62 | |
| Measure Description: Daylight Dimming System | |
| Incentive: \$40/ballast | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 150 |
| Style: Daylight Dimming System (DDS-FL) (per ballast, min 4 ballast per control) | |
| Eligibility Criteria: Minimum of 4 ballasts per control unit. Must have continuous dimming or adjust to a minimum of 4 levels. | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: Measure Code 10, 30, 31, 33, 34, 41, 41T, 42, 42T, and 23 | |
| Alternatives: | |

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|--|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 63 | |
| Measure Description: Occupancy Controlled High-Low System | |
| Incentive: \$40/ballast | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 150 |
| Style: Automated occupancy based fluorescent controls, (min 4 ballast per control) | |
| Eligibility Criteria: Ballast must be automatically controlled based on occupancy. Power consumption in low mode must not exceed 60%. Minimum of 4 fixtures controlled. | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: Measure Code 10, 30, 31, 33, 34, 41, 41T, 42, 42T, and 23 | |
| Alternatives: | |

| | |
|--|---|
| Program: Design 2000^{plus} |  |
| Design Code: 64 | |
| Measure Description: Wall Mounted Occupancy Sensor | |
| Incentive: \$25/control | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 28 |
| Style: Switchplate type occupancy sensor | |
| Eligibility Criteria: Not eligible if installed in restrooms, locker rooms, stairwells or rooms of greater than 250 square feet. Due to changes in the state energy code, occupancy sensors may not be eligible for new construction or major renovation. | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: Measure Code 10, 30, 31, 33, 34, 41, 41T, 42, and 42T | |
| Alternatives: | |

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|--|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 66 | |
| Measure Description: High-Low HID Control Systems | |
| Incentive: \$100/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 94 |
| Style: Occupancy Controlled High-Low System | |
| Eligibility Criteria: Ballasts must be automatically controlled based on occupancy. | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: | |
| Alternatives: | |

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|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 67 | |
| Measure Description: Daylight Dimming HID Control Systems | |
| Incentive: \$100/fixture | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 94 |
| Style: Daylight Dimming System for HID type fixtures | |
| Eligibility Criteria: Systems with manual "ON" or override switches are not eligible | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: | |
| Alternatives: | |

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|---|---|
| Program: Design 2000^{plus} |  |
| Measure Code: 68 | |
| Measure Description: HIF Occupancy Control Systems | |
| Incentive: \$50/control | Min. Watts Saved: |
| High Performance T-8 Upgrade Eligible: no | Min. Watts Controlled: 47 |
| Style: ON/OFF or High/Low light level type Occupancy Control for High Bay Fluorescent Fixtures | |
| Eligibility Criteria: Ballasts must be automatically controlled based on occupancy. Systems with manual "ON" or override switches are not eligible. Sensors may be remote mounted or mounted on individual fixtures. | |
| Special Requirements: | |
| Example of Qualify Product: See Buyers Alliance Website (www.buyers-alliance.com) | |
| Alternatives and Enhancements | |
| Fixture Options: Measure Codes 56 and 57 | |
| Alternatives: | |

A Glossary of Terms

| | |
|--------------------------------|---|
| CRI | or COLOR RENDERING INDEX is a scale from 0 to 100 used as a guide to how 'true to life' colors appear under different light sources. Fluorescent lamps with a CRI greater than 80 provide the best color rendition. |
| CU | or COEFFICIENT OF UTILIZATION is the ratio of lumens from a luminaire (fixture) received on the work surfaces in a room to the lumens emitted by the fixture's lamps alone. The CU depends on the RCR of the room. |
| EFFICACY | is a measure of light efficiency in lumens per watt, indicating how much light a source produces for watts consumed. |
| EFFICIENCY | is the percentage of light (lumens) produced by lamps within a fixture that actually leaves the luminaire. |
| FOOT-CANDLE | is the standard industry measure of the amount of light or illuminance on a surface, defined as one lumen per square foot. Light levels of between 30 and 100 foot-candles are commonly found in commercial buildings. |
| GLARE | is a condition that occurs when a high-brightness source contrasts with a low-brightness background, making it difficult for the eyes to adjust. |
| LUMINOUS EFFICACY | is the total lumens emitted by a light source divided by the total lamp power input, expressed as lumens per watt. |
| LUMEN | is a measure of light output. A standard 3- lamp four-foot T8 fluorescent fixture produces about 8,000 lumens. |
| LUMINANCE | is the photometric brightness, or "measurable" brightness of a surface. It is usually measured in candelas per square meter, or sometimes in footlamberts (candelas per square foot). If an object in view is excessively bright or dark compared to the rest of the view, it can be distracting and even cause discomfort. A maximum luminance range is sometimes specified to prevent this type of visual discomfort. A range of 8:1 means that the brightest spot in view should be not more than eight times the luminance of the least bright point. |
| LUMINAIRE | A luminaire is a complete lighting fixture consisting of a lamp or lamps that emit the light, the parts that hold everything in place, and the surfaces that reflect and direct the light. |
| LDD | or LUMINAIRE DIRT DEPRECIATION is an adjustment factor that accounts for the fractional loss of task illuminance due to luminaire dirt accumulation. |
| LLD | or LAMP LUMEN DEPRECIATION is an adjustment factor that accounts for the fractional loss of lamp lumens at rated operating conditions that progressively occurs during lamp operation. |
| LIGHT DISTRIBUTION | refers to the way in which light is emitted from a luminaire (fixture); often classified as direct, semi-direct, diffuse, semi-indirect or indirect. |
| LIGHT SOURCE | refers to the lighting technology that is used in a specific luminaire, for instance compact fluorescent, fluorescent, incandescent, metal halide, parabolic incandescent, and tungsten halogen. |
| LLF | or LIGHT LOSS FACTOR is the product of all fractional lumen depreciations including LDD, LLD, and RSDD. |
| LPD | or LIGHTING POWER DENSITY is a measure of electrical power used to provide lighting to a space - expressed in watts per square foot (or watts per square meter). |
| QUALITY OF LIGHT | is a term used in the positive sense to describe lighting conditions which are favorable for performance, comfort, ease of seeing, safety and aesthetics for the specific visual task underway. |
| RCR | or ROOM CAVITY RATIO is a number relating the dimensions of an enclosed space (length, width, height) that affects the overall coefficient of Utilization of a luminaire within that specific space. |
| RECOMMENDED LIGHT LEVEL | is the horizontal footcandles range that is considered appropriate for the space or area. These values are generally taken from published IESNA data. |
| REFLECTANCE | is the ratio of light reflected from a surface to the light falling on the surface. |
| RSDD | or ROOM SURFACE DIRT DEPRECIATION is an adjustment factor that accounts for the fractional loss of task illumination due to dirt on room surfaces. |

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High Performance Savings and High Performance Incentives with High Performance T-8 Lighting



What is High Performance T-8 Lighting?

High Performance T-8 fluorescent lighting is a new breed of lighting systems that is more efficient than the ordinary T-8 systems that it replaces. Both the lamps and ballasts used in High Performance T-8 systems have new features that enhance performance and are more energy efficient.

How does National Grid define a High Performance T-8 System?

National Grid has adopted the High Performance T-8 specification published by the Consortium for Energy Efficiency. This nationally recognized specification calls out standards for both lamps and ballasts.

Lamps

A high efficacy lamp (lumens per watt; a measure of lamp efficiency) that is rated at 32 nominal watts and 3100 initial lumens. High performance T-8 lamps are manufactured to last longer, have better color rendition and maintain light output over their rated life.

Ballasts

Ballasts have a higher Ballast Efficacy Factor (BEF) than similar ballasts. The BEF is a measure of ballast efficiency. The BEF recognizes the amount of light produced by a lamp, and the amount of energy it consumes varies according to the type of ballast used to drive it.

The Consortium for Energy Efficiency has developed a specification and a list of eligible lamps and ballasts. These can be found on CEE's web site at www.cee1.org.

How much can I save?

Savings vary depending on the number of lamps per ballast and the ballast model selected. Overall savings range from 5 % to 18% compared to standard T-8 lamps. Expect savings of 20% or more when replacing existing systems having a combination of T-12 lamps and energy efficient magnetic ballasts. The economics of upgrading to High Performance T-8 lamps are very favorable, for new fixture installations and retrofits of existing fixtures with T-12 lamps. It may even be cost effective to replace existing T-8 systems with High Performance T-8 systems.

Can I install High Performance T-8 lamps in my existing fixtures without changing the ballasts?

In order to qualify for an incentive from National Grid, both the lamp and the ballast must be changed to High Performance T-8.

Do other types of 4 foot T-8 lamps qualify as High Performance T-8's?

Yes, 4 foot 25 watt and 28 watt T-8 reduced wattage lamps are classified as High Performance T-8 lamps. The 30 watt reduced wattage T8 lamp is not classified as a High Performance lamp; however, the lighting systems using this lamp are also eligible for incentives from National Grid along with the 25 watt and 28 watt High Performance systems.

Am I locked into always buying from the same manufacturer?

All major lamp manufacturers and most ballast manufacturers can supply eligible High Performance T-8 products and most can be interchanged with specific lines of products by other manufacturers.

How does lamp life for High Performance T-8's compare?

Second to the energy savings, improved lamp life is the big benefit that comes from the High Performance T-8 product. This benefit is even more pronounced if the fixture is used with an occupancy sensor. More frequent starts have always significantly decreased the life of fluorescent lamps. Now, the new Programmed Rapid Start High Performance T-8 ballasts have overcome this drawback by "soft starting" the lamps. This improves the rated lamp life from 20,000 hours to as much as 30,000 hours with a potential for even greater impact on lamps that are control by occupancy sensors. Note that the Instant Start ballasts are available of High Performance T-8 lamps but they may not provide a similar benefit of longer lamp life when occupancy sensors are used.

Wouldn't T-5 lamps be a better alternative?

T-5 lamps are another efficient fluorescent lighting product but they can not be retrofitted into fixtures with existing T-12 or T-8 lamps. They also will not fit in four foot long recessed fixtures. T-5 lamps may be a better option for new installations of pendant mount fixtures. National Grid will gladly assist you with comparing alternatives.

I have heard that High Performance T-8 lamps cannot be used outside or in unheated buildings.

It is true that some High performance T-8 lamp/ballast combinations are recommended for spaces maintained at temperatures greater than 60° F but that is true for other fluorescent products. For any fluorescent lamp or ballast, the buyer should always follow the manufacturer's recommendations.

Where can High performance T-8 lamps and ballasts be purchased?

These are widely distributed through electric supply houses at this time. Customers installing them under National Grid's incentive programs are eligible to purchase them at special prices through the Buyer's Alliance Program. Ask your utility representative for details.

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