

OUTDOOR NETWORKED LIGHTING SYSTEM WORKSHEET

January 1, 2019 through December 31, 2019

ComEd® Energy Efficiency Program offers networked lighting system incentives for intelligent lighting control systems that optimize the performance of a network of efficient light fixtures and sensors. Networked lighting systems have three components:

- High-efficiency fixtures and sensors tied to a central control system
- A central control system that can be accessed from a computer or mobile device, show real-time status of the lighting system and generate detailed reports about the system's performance. Control strategies such as occupancy sensors, dimming and zone control are selected by the user and programmed into the control system.
- A minimum two (2) week post-installation measurement and verification period, in which energy data is captured to verify reductions in usage (optional).

Networked lighting system incentives may be used to replace an existing lighting system or to install a new system where none exists. Incentives also are available for customers that wish to install an intelligent control system for use with existing fixtures. Incentives are available through two options, as shown below.

Option One

- **NEW** LED fixtures and retrofits @ \$0.60 watt reduced
- **NEW** lighting control system @ \$0.25 watt controlled

Optional

- Measurement & verification @ \$0.15 kWh saved above target

Option Two

- **NEW** lighting control system, measurement & verification @ \$0.10 kWh saved above baseline
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Directions: Please save a copy of this form to your computer by selecting "File/Save As" before entering text and numbers. Then fill in your information electronically and select "Save." Note that this form requires Adobe Reader® version 11.0 to function properly. Download the most recent version of Adobe Acrobat Reader DC® at <http://get.adobe.com/reader>.

A pre-approval application is required; review instructions on the standard and custom incentives pre-approval and final application form. Wait for pre-approval before starting your project.

All lighting projects are expected to comply with the Illuminating Engineering Society of North America (IESNA) recommended lighting levels or the local code.

Option One - Networked Lighting System with New, High-Efficiency Fixtures and Control System

To receive the incentives available under Option One, the following requirements must be met, in addition to all measure-specific specifications:

1. Option one incentives are applicable only to new high-efficiency LED fixtures which must meet the specifications below. All other fixtures not meeting the specifications may be eligible for Option Two incentives.
2. A majority of total new system wattage must meet the fixture specifications detailed below.
3. IECC 2015 lighting power densities should be used to determine baseline conditions for projects where there is no existing lighting system.
4. A minimum two (2) week post-installation measurement and verification (M&V) period is only required to receive the \$0.15 kWh M&V bonus. Please see specifications for M&V requirements.

Section I:

LED Fixtures

\$0.60 per watt reduced

Installation of a new lighting system containing LED fixtures.

(Note: This measure does not apply to channel signs, open signs or refrigerated display case lighting).

LED Retrofits

\$0.60 per watt reduced

Installation of a retrofit lighting system containing LEDs.

(Note: This measure does not apply to channel signs, open signs, LED screw-based replacement for HID lamps or refrigerated display case lighting).

Specifications and Eligible Equipment

1. Fixtures must be installed with a control system that meets the specifications listed on page 8 in the worksheet to be eligible for this incentive.
1. Manufacturer's specifications for new fixtures must accompany pre-approval and final applications.
1. Fixtures must be on the DesignLights™ Consortium (DLC) Qualified Products List available at <http://www.designlights.org>
2. Linear types A and B LED tubes are not eligible for standard incentives but may be eligible for instant discounts from participating distributors; visit ComEd.com/InstantDiscounts for details.

Customer Name:

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Section I: Watt Reduction Worksheet for New LED Fixtures and Retrofits Replacing an Existing Lighting System

Use this worksheet to calculate the incentives. (See example below)

TYPE OF EQUIPMENT TO BE REPLACED	QUANTITY OF EQUIPMENT TO BE REPLACED	WATTAGE OF EQUIPMENT TO BE REPLACED	TYPE OF NEW FIXTURE TO BE INSTALLED (MODEL NUMBER)	QUANTITY OF NEW EQUIPMENT	WATTAGE OF NEW EQUIPMENT	DIFFERENCE (OLD WATTAGE MINUS NEW)
example: 2-lamp 4-ft T12	100	72	example: LED ARV2- 12/480/8CPT4	120	44	1,920
Total wattage reduction						
LED Fixtures and Retrofits (per watt reduced)						\$0.60
SECTION I INCENTIVE SUBTOTAL						\$

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Section 2:

Control System

\$0.25 per watt controlled

Installation of a new control system with new or existing fixtures that meet applicable fixture specifications. Control system must apply at least one control strategy

Specifications

1. Manufacturer's specifications must accompany pre-approval and final applications.
2. The control system must be new and meet the following criteria:
 - System must meet requirements below
 - System must control new or existing LED fixtures that meet the applicable specifications set forth in Section 1 – Fixtures on this worksheet
 - System must have a graphical user interface that is accessible from a computer and/or mobile device
 - System must have network interoperability (e.g., BACNet MS/TP, Zigbee, etc.)
 - To receive M&V bonus, system must have the ability to generate reports that show details such as energy consumption, demand, fixture on/off time, fixture light level (percentage), etc.
 - System must have the ability to show the “real-time” status of the light fixtures (e.g., on/off, dimmed, etc.)
 - All installed sensors must be tied to the central control system
3. The installed control system must apply at least one control strategy. The following is a list of suggested control strategies.

Please check all control strategies being implemented.

- Occupancy sensors with timeout setting controls - Occupancy sensors are installed using passive infrared and/or ultrasonic technology. Sensors should have adjustable timeout settings.
- Dimming (continuous or step) – Fixtures dimmed to light levels less than 70%. Dimming settings are managed by the central control system.
- Daylight harvesting – Photocells are installed to control exterior fixtures; sensors should assess amount of ambient light and adjust fixtures to meet facility illumination requirement.
- Zone control – At least two (2) zones in a facility with different profiles.
- Scheduling – Lighting is managed based on shifts, operating hours, seasonal changes, etc.
- High-end trimming – Setting a maximum light allowance at less than 100 percent light output.
- User set preference/occupant profiles.
- Other (specify): _____

Please complete the watts controlled worksheet for new control system on the following page. If you need more room than what is available, you may attach a separate sheet.

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Section 3:

Energy Savings Documented through Measurement and Verification (M&V)

\$0.15 per kWh above target

Networked lighting system that achieves kWh savings above a calculated target kWh

Specifications

Additional incentives are available for verifying the kilowatt-hour (kWh) savings above the calculated target kWh through a trend report generated by the networked lighting control system. Please complete and submit this worksheet page with the M&V data file after the M&V has been collected.

1. Submit a detailed description of the existing lighting controls with the pre-approval application.
2. The required M&V data file must be provided and the information must be submitted according to the following requirements:
 - Minimum two (2) week period of M&V collection during normal facility operation, which does not include holiday breaks, facility shutdowns or other periods of non-standard operation; depending on the project, the ComEd Energy Efficiency Program team may request a longer M&V period
 - Minimum 15 minute kW interval readings or kWh averaged over a maximum of 1 hour is allowed
 - M&V should be provided in a .csv, .xlsx, or .xls file (pdf data files will not be accepted)

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A pre-approval application is required; review instructions on the standard and custom incentives pre-approval and final application form. Wait for pre-approval before starting your project.

Option Two - Lighting Control System on Existing or New Fixtures That Do Not Meet the Fixture Specifications in Option One

Use this section to apply for incentives for energy savings resulting from the installation of a control system on existing or new fixtures that do not meet the specifications for fixtures described in Option 1. Note that other ComEd Energy Efficiency Program standard incentives may be available for fixtures that do not meet the Option 1 fixture specifications; see the outdoor lighting incentives worksheet at ComEd.com/BizIncentives for lighting fixture replacement and retrofit incentives.

To receive the incentives available under Option 2, the following requirement must be met, in addition to all measure-specific specifications:

1. A minimum two (2) week post-installation measurement and verification (M&V) period is only required. See specifications for M&V below

Control System Specifications

1. Manufacturer's specifications must accompany pre-approval and final applications.
2. The control system must be new and meet the following criteria:
 - System must be DLC listed and meet requirements below
 - System must control existing lighting fixtures
 - System must have a graphical user interface that is accessible from a computer and/or mobile device
 - System must have network interoperability (e.g., BACNet MS/TP, Zigbee, etc.)
 - System must have the ability to generate reports that show details such as energy consumption, demand, fixture on/off time, fixture light level (percentage), etc.
 - System must have the ability to show the "real-time" status of the light fixtures (e.g., on/off, dimmed, etc.)
 - All installed sensors must be tied to the central control system
3. The installed control system must apply at least one control strategy. The following is a list of suggested control strategies.

Please check all control strategies being implemented.

- Occupancy sensors with timeout setting controls - Occupancy sensors are installed using passive infrared and/or ultrasonic technology. Sensors should have adjustable timeout settings.
- Dimming (continuous or step) – Fixtures dimmed to light levels less than 70%. Dimming settings are managed by the central control system.
- Daylight harvesting – Photocells are installed to control exterior fixtures; sensors should assess amount of ambient light and adjust fixtures to meet facility illumination requirement.
- Zone control – At least two (2) zones in a facility with different profiles.
- Scheduling – Lighting is managed based on shifts, operating hours, seasonal changes, etc.
- High-end trimming – Setting a maximum light allowance at less than 100 percent light output.
- User set preference/occupant profiles.
- Other (specify): _____

Please complete the tables on the following page. If you need more room than what is available, you may attach a separate sheet.

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Fixtures to be Controlled (Existing System)

TYPE / DESCRIPTION	(A) NUMBER OF FIXTURES	(B) WATTS PER FIXTURE	(C) ANNUAL HOURS OF OPERATION	(A x B x C/1000) TOTAL ANNUAL kWh
(D) TOTAL kWh OF EXISTING SYSTEM				

Proposed Lighting Control System

TYPE / DESCRIPTION	(A) NUMBER OF FIXTURES	(B) WATTS PER FIXTURE	(C) ANNUAL HOURS OF OPERATION	(A x B x C/1000) TOTAL ANNUAL kWh
(E) TOTAL kWh OF PROPOSED SYSTEM				

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Energy Savings Documented through Measurement and Verification (M&V)

\$0.10 per kWh

Energy savings resulting from installation of a control system on existing or new fixtures

Specifications

1. A M&V data file generated by the installed lighting control system must be provided and the information must be submitted according to the following requirements
 - Submit a detailed description of the existing lighting controls with the pre-approval application.
 - Minimum two (2) week period of M&V collection during normal facility operation, which does not include holiday breaks, facility shutdowns or other periods of non-standard operation; depending on the project, the ComEd Energy Efficiency Program team may request a longer M&V period
 - Minimum 15 minute kW interval readings or kWh averaged over a maximum of 1 hour is allowed
 - M&V should be provided in a .csv, .xlsx, or .xls file (pdf data files will not be accepted)
2. Submit M&V data file and any other supporting documentation with your final application for incentive.

Annual energy savings in kWh (D - E)	Incentive (\$0.10 per kWh)

Total Project Cost	Estimated annual energy savings (in dollars)	Payback Period (years)

GRAND TOTAL INCENTIVE REQUESTED

Incentive cannot exceed 100 percent of the incremental measure cost and 75 percent of the total project cost and must meet all program terms and conditions.