Sources

1. Compared with manual (non-automated) controls, up to 60% lighting energy savings is possible on projects that utilize all of the lighting control strategies (occupancy sensing, high-end trim, personal control and daylight harvesting). Actual energy savings may vary, depending on prior occupant usage, among other factors.
9. Lutron study based on reduction in heating (base 60°F) and cooling (base 55°F) degree days with a 2°F thermostat setback and 60% space un-occupancy. EnergyPlus modeling simulations were conducted and predicted similar savings.
Energi TriPak is a family of wireless energy-saving products featuring Radio Powr Savr™ sensors, Pico® controls and PowPak®/Maestro Wireless® load controllers. These components, when combined:

- save up to 60% of lighting electricity usage
- increase occupant comfort and productivity
- control virtually all loads
- reduce installation and programming costs

Lighting consumes more electricity in commercial buildings than anything else—about 38% a year. Lutron solutions can save up to 60% or more of that lighting energy.

Lighting typically accounts for 38% of electricity usage in new construction and retrofit commercial applications, which include spaces such as classrooms and offices. These applications benefit from Energi TriPak energy savings through strategies like automatic occupancy/vacancy sensing and daylight harvesting.

Studies show that proper lighting is beneficial to space occupants. By providing task-appropriate lighting and individual lighting control, Energi TriPak improves comfort and occupant satisfaction, resulting in increased productivity.

Energi TriPak requires no additional wiring. The components communicate wirelessly via Lutron’s reliable Clear Connect® Radio Frequency (RF) technology. In addition, simple button press programming eliminates the need for factory commissioning.

Sources located on back cover.

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What is Energi TriPak?

Energi TriPak consists of transmitting devices that send out RF commands to the load controllers. The load controllers receive the RF command and perform the appropriate action based on the information received.

Transmitting devices

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</table>
| Hand-held             | Tabletop lamp      
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Benefits

**Easy to install and program**
- All points of control are wireless for simple installation with no new wiring
- Simple button programming for all devices

**Saves energy and money**
Simply incorporate the following energy-saving control strategies:
- Personal dimming control
- Occupancy/vacancy sensing
- Daylight harvesting
- High-end trim
- Plug load control
- HVAC integration

**Cost-effective**
- No commissioning required
- Overall labor costs reduced due to wireless communication—no additional wiring

**Meets codes and standards**
Provides the opportunity to meet the following codes and standards:
- LEED NC 2009
- ASHRAE Energy Code 90.1-2010
- IECC (International Energy Conservation Code)
- ASHRAE Green Standard 189.1-2011
- IgCC (International Green Construction Code)
- CEC Title 24 (California Energy Commission)
Energy-saving control strategies

**Personal dimming control**
Gives occupants the ability to set the light levels.

**Potential lighting energy savings:** 10-20%

**Occupancy/vacancy sensing**
Turns lights on when occupants are in a space and dims lights to a low level or turns lights off when they vacate the space.

**Potential lighting energy savings:** 20-60%

**Daylight harvesting**
Dims electric light when daylight is available to light the space.

**Potential lighting energy savings:** 25-60%

**High-end trim**
Sets the maximum light level based on customer requirements in each space.

**Potential lighting energy savings:** 10-30%

**Plug load control**
Automatically turns off loads after occupants leave a space.

**Potential controlled loads savings:** 15-50%

**HVAC integration**
Controls heating, ventilation, and air conditioning systems through contact closure.

**Potential HVAC savings:** 5-15%

Meets codes and standards

**LEED NC 2009**
Can contribute to:
• SS Credit 8 Light Pollution Reduction (1 point)
• EA Prerequisite 2 Minimum Energy Performance
• EA Credit 1 Optimize Energy Performance (up to 19 points)
• IEQ Controllability of Systems: Lighting (1 point)
• IEQ Daylight and Views: Daylight (1 point)
• Innovation in Design (up to 5 points)
• RP Credit 1 Regional Priority (up to 4 points)

**ASHRAE Energy Code 90.1-2010**
• Automatic Receptacle Control (8.4.2)
• Automatic Lighting Shut-off (9.4.1.1)
• Space Control (9.4.1.2)
• Automatic Daylight Controls (9.4.1.4 and 9.4.1.5)
• Additional Controls, Stairwell Lighting (9.4.1.6 g)

**IECC 2012 (International Energy Conservation Code)**
• Interior Lighting Controls (C405.2.1.1)
• Light Reduction Controls (C405.2.1.2)
• Occupancy Sensors (C405.2.2.2)
• Automatic Daylighting (C405.2.2.3.2)
• Multi-level Lighting Controls (C405.2.2.3.3)

**ASHRAE Green Standard 189.1-2011**
• Occupancy Sensor Controls with Multi-level Switching or Dimming (7.4.6.2)
• Occupancy Sensors (7.4.6.4)

**IgCC Public Version 2 (International Green Construction Code)**
• Interior Light Reduction Controls (609.3)
• Automatic Daylight Controls (609.5)
• Plug-load Controls (609.6)

**CEC Title 24 2008 (California Energy Commission)**
• Area Controls (131 a)
• Multi-level Lighting Controls (131 b)
• Daylight Areas (131 c)
• Shut-off Controls (131 d)
In public spaces, such as bathrooms, lighting is often on even when the space is unoccupied. Automatic lighting control with occupancy sensing is an ideal energy-saving lighting solution.

Energy-saving strategies

Occupancy sensing

Potential lighting energy savings: 50%
Providing personal lighting control in a private office application helps improve occupant comfort.

Energy-saving strategies

- Occupancy/vacancy sensing
- Daylight harvesting
- Plug load control

Potential lighting energy savings: 45%

Radio Powr Savr™ daylight sensor communicates with load controllers to turn lights on or off based on amount of daylight available.

Radio Powr Savr™ ceiling-mount occupancy/vacancy sensor communicates with load controllers to turn lights on or off based on occupancy.

PowPak® plug-in appliance module turns phantom loads on or off in response to wireless sensors and controls (located under desk).

Pico® wireless control allows manual control of loads; place on desk top or mount to wall.

Maestro Wireless switch provides manual control and switches lighting loads in response to wireless sensors and controls.

Maestro Wireless tabletop lamp dimmer provides manual control and dims table lamps in response to wireless sensors and controls.

Energi TriPak® application: Private office

Potential lighting energy savings: 45%
A best-practice classroom combines energy efficiency with a high-quality learning environment. Classroom lighting plays a particularly critical role because of the direct relationship between good lighting and student performance.10

**Energy-saving strategies**

- Personal dimming control
- Occupancy/vacancy sensing
- Daylight harvesting
- High-end trim
- HVAC integration

**Potential lighting energy savings:**

60%
How to design a system

Define your space

Use the following steps to plan and design an ideal energy-saving solution based on the use of the space and the needs of its occupants.

**Step 1** Is occupancy/vacancy sensing required?
Select the style of the Radio Powr Savr™ occupancy/vacancy sensor based on mounting and coverage requirements .......................... pg. 14

**Step 2** Is daylight harvesting required?
Select the Radio Powr Savr daylight sensor ........................................ pg. 15

**Step 3** Is control of overhead lighting required?

a. Select the control(s) required based on style and load capacity . . . pgs. 16-19
b. Select the stairwell fixture with PowPak stairwell controller for stairwell applications ................................................... pg. 20

**Step 4** Is control of task lighting required?
Select the style of plug-in device required ............................... pg. 21

**Step 5** Is control of plug loads required?
Select the style of plug load controller required ......................... pg. 22

**Step 6** Is third-party equipment integration required?
Select the PowPak contact closure output module ..................... pg. 24

**Step 7** Are personal or additional points of control required?

a. Select the style of the Pico® wireless control required .............. pg. 25
b. Select accessories for Pico wireless control ..................... pg. 26

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Lutron Clear Connect® Wireless Signal Sent
Lutron Clear Connect® Wireless Signal Received
**Step 1** Occupancy/vacancy sensor selection

Radio Powr Savr™ wireless occupancy/vacancy sensors

**Design statement:** Specify a wireless occupancy/vacancy or vacancy-only sensor to turn lights on and/or off based on the space occupancy.

**Features**
- Available in ceiling-mount, wall-mount, corner-mount and hallway options
- Lutron XCT™ signal processing technology greatly enhances the performance of passive infrared (PIR) sensors, enabling them to detect minor motions that other sensors could not previously detect
- Utilizes Lutron reliable Clear Connect® RF technology to communicate wirelessly with wireless load controllers (wallbox controls, remote-mount modules, fixtures and/or plug-in devices)
- RF range: 60 ft (18 m) line of sight, or 30 ft (9 m) through walls
- Vacancy model available to meet CA Title 24 requirements
- 10-year battery life

**Benefits**
- Front-accessible buttons make set up easy
- Sensors have simple test modes to verify ideal locations during installation

**Models**

**Sensors**
- LRF2-OCR2B-P-WH — ceiling-mount occupancy/vacancy sensor
- LRF2-OWLB-P-WH — wall-mount occupancy/vacancy sensor
- LRF2-OKLB-P-WH — corner-mount occupancy/vacancy sensor
- LRF2-OHLB-P-WH — hallway occupancy/vacancy sensor

**Accessories**
- L-CMDPRKIT — ceiling-mount sensor lens masking kit
- L-CRMK-WH — ceiling-mount sensor recess-mounting bracket
- WGOMNI-CPN3688 — wire guard for ceiling-mount sensor
- WGWS-CPN3688 — wire guard for wall-mount and hallway sensors
- STI-9618-CPN3688 — wire guard for corner-mount sensor

*Vacancy-only models available

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**Step 2** Daylight sensor selection

Radio Powr Savr™ wireless daylight sensor

**Design statement:** Specify a wireless daylight sensor to dim or switch zones of light in response to available daylight.

**Features**
- Utilizes Lutron reliable Clear Connect RF technology to communicate wirelessly with wireless load controllers (wallbox controls, remote-mount modules, and/or plug-in devices); a load controller can communicate with only one daylight sensor
- RF range: 60 ft (18 m) line of sight, or 30 ft (9 m) through walls
- Features Lutron reliable proportional daylight open loop control
- Has a light range 0–107,000 Lux (0–10,000 fc) and a photopic response that matches the human eye
- Designed to give a linear response to changes in viewed light level
- 1 sensor is capable of switching and continuous dimming of multiple zones
- 10-year battery life

**Benefits**
- Simple calibration
- Multiple ceiling-mount methods available for different ceiling materials
- Front accessible test buttons make set up easy

**Models**
- LRF2-DCRB-WH — daylight sensor
Step 3a Overhead light control selection

PowPak® relay module

**Design statement:** The PowPak relay module is designed for spaces where local control is not currently available, but is required.

**Features**
- General purpose switch (all lighting loads; motor loads; receptacles)
- Receives input from up to 9 Pico® wireless controls, 6 Radio Powr Savr® occupancy/vacancy sensors, and 1 Radio Powr Savr® daylight sensor via Lutron reliable Clear Connect® RF technology
- Model available with a dry contact closure output for integration with third-party equipment; contact closure output provides occupancy status
- 16 A model features patented Softswitch® technology that extends relay life to 1,000,000 cycles
- 120/277 V~ input

**Benefits**
- Save energy with the addition of occupancy sensing, daylight harvesting and personal control without the need for additional wires
- Button press programming to associate the module with the Radio Powr Savr sensors and Pico wireless controls

**Mounting**
- Mounts through a 1/2” NPT trade-size knock-out to a junction box or to a fixture. Can also be mounted inside of a standard 4” x 4” junction box

**Models**
- RMJ-SR-DV-B—5 A lighting loads (1/6 HP @ 120 V~ or 1/3 HP @ 277 V~ motor loads)
- RMJ-SRCC01-DV-B—5 A lighting loads (1/6 HP @ 120 V~ or 1/3 HP @ 277 V~ motor loads) with (1) contact closure output
- RMJ-16R-DV-B—16 A lighting loads (1/2 HP @ 120 V~ or 1 1/2 HP @ 277 V~ motor loads, 15 A 120 V~ receptacles)
- RMJ-16RCC01-DV-B—16 A lighting loads (1/2 HP @ 120 V~ or 1 1/2 HP @ 277 V~ motor loads, 15 A 120 V~ receptacles) with (1) contact closure output

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PowPak® dimming module with EcoSystem®

**Design statement:** Specify the PowPak dimming module with EcoSystem for the application that requires dimming of fluorescent and LED fixtures and simple reconfiguration of lighting zones.

**Features**
- Controls up to 32 EcoSystem, EcoSystem H-Series or Hi-lume® 3D ballasts, or Hi-lume® A-Series LED drivers*
- Receives input from up to 9 Pico® wireless controls, 6 Radio Powr Savr® occupancy/vacancy sensors, and 1 Radio Powr Savr® daylight sensor via Lutron reliable Clear Connect® RF technology
- Lutron EcoSystem technology facilitates individual ballast addressing, connection of multiple control devices, and control of ballasts individually or in groups
- 120/277 V~ input

**Benefits**
- Enables simple reconfiguration of the space, without having to move a single wire
- Dimming saves money and energy—for every percentage reduction in lighting level, there is nearly equal reduction in the energy usage of the dimmed light source
- Additional savings can be achieved through occupancy sensing, daylight harvesting, high-end trim and personal dimming control without the need for additional wires
- Button-press programming means no commissioning required

**Mounting**
- Mounts through a 1/2” NPT trade-size knock-out to a junction box or to a fixture. Can also be mounted inside of a standard 4” x 4” junction box

**Models**
- RMJ-ECO32-DV-B—controls up to 32 EcoSystem, EcoSystem H-Series or Hi-lume® 3D ballasts, or Hi-lume® A-Series LED drivers

* For more information on EcoSystem, EcoSystem H-Series and Hi-lume® 3D ballasts, and Hi-lume® A-Series LED drivers, please visit www.lutron.com.

Dimming ballasts require rapid start sockets. For more information, see Lutron App Note #122.

Lamp Socket Wiring Tester available to easily troubleshoot ballast wiring issues; see page 37 for ordering information and pricing.
Maestro Wireless® switch

**Design statement:** Specify a Maestro Wireless switch for applications in which a local switch already exists.

**Features**
- Digital on/off tap switch
- Utilizes Lutron reliable Clear Connect® RF technology to communicate wirelessly with up to 9 transmitting devices (Radio Powr Savr™ sensors and/or Pico® wireless controls)
- Models available to control up to 8 A of lighting load
- Controls always operate locally, do not require system control
- Available in 27 finishes to complement any décor

**Benefits**
- Save energy with the addition of occupancy sensing and daylight harvesting without the need for additional wires
- Button press programming to associate the control with Radio Powr Savr sensors and Pico wireless controls

**Mounting**
- Requires a 1-gang U.S. wallbox. 3 1⁄2” (89 mm) deep recommended, 2 1⁄4” (57 mm) deep minimum

**Models**
- MRF2-8S-DV-XX—8 A lighting, 3 A fan (1/10 HP motor, 120 V only), spec grade, 120–277 V, no neutral
- MRF2-6ANS-XX—6 A lighting, 3 A fan (1/10 HP motor), 120 V
- MRF2-8ANS-120-XX—8 A lighting, 5.8 A fan (1/4 HP motor), spec grade, 120 V

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)

Maestro Wireless® dimmer

**Design statement:** Select a Maestro Wireless dimmer for applications in which a local switch already exists and dimming is required.

**Features**
- Digital dimmer with LEDs that indicate light level
- Incorporates advanced features such as fade on/fade off, long fade off, and rapid full on
- Utilizes Lutron reliable Clear Connect RF technology to communicate wirelessly with up to 9 transmitting devices (Radio Powr Savr sensors and/or Pico wireless controls)

**Benefits**
- Dimming saves money and energy—for every percentage reduction in lighting level, there is nearly equal reduction in the energy usage of the dimmed light source
- Ability to set high-end trim based on customer requirements
- Button-press programming to associate the control with Radio Powr Savr sensors and Pico wireless controls

**Mounting**
- Requires a 1-gang U.S. wallbox. 3 1⁄2” (89 mm) deep recommended, 2 1⁄4” (57 mm) deep minimum

**Models**
- MRF2-600M-XX—600 W incandescent/halogen, 120 V
- MRF2-6MLV-XX—600 W/600 VA incandescent/halogen/MLV, 120 V
- MRF2-6ND-120-XX—600 W/600 VA incandescent/halogen/MLV, spec grade, neutral wire, 120 V
- MRF2-10D-120-XX—1000 W/1000 VA incandescent/halogen/MLV, spec grade, 120–277 V
- MRF2-F6AN-DV-XX—6 A, 3-wire fluorescent, spec grade, 120–277 V
- MRF2-6ELV-120-XX—600 W ELV, 120 V

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)
Maestro Wireless® tabletop lamp dimmer and PowPak plug-in dimming module

Design statement: Both the tabletop lamp dimmer and the plug-in dimming module provide control of task lighting and the ability for remote control. Use the tabletop dimmer to provide personal lamp control. Select the plug-in module if you wish to conceal the controller.

Features
- Digital dimmer for use with incandescent/halogen table and floor lamps up to 300W
- Configure dimming module to switch non-dimmable lighting loads
- Light levels can be fine-tuned to the desired light level
- Incorporates advanced features such as fade on/fade off, long fade off, and rapid full on
- Utilizes Lutron reliable Clear Connect® RF technology to communicate wirelessly with up to 9 transmitting devices (Radio Powr Savr sensors and/or Pico® wireless controls)
- Controls always operate locally, do not require system control
- Available in white or black
- Dimming module available in 1- or 3-receptacle models

Benefits
- Easy to install, requires no wires or tools
- Easily incorporate task lighting into lighting solution, while saving energy through dimming
- Button-press programming to associate the plug-in dimmer with the same Radio Powr Savr sensors and Pico wireless controls that control the overhead lighting

Models
- MRF2-3LD-XX — 300 W tabletop lamp dimmer, incandescent/halogen, 120 V
- MRF2-3PD-1-XX — 300 W plug-in dimming module, 1-receptacle, incandescent/halogen, 120 V
- MRF2-3PD-3-XX — 300 W plug-in dimming module, 3-receptacle, incandescent/halogen, 120 V

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)
**Energi TriPak® components**

### Step 5 Plug load control selection

#### PowPak® plug-in appliance module

**Design statement:** Specify a PowPak plug-in appliance module to directly control plug loads, such as computer monitors or printers.

**Features**
- Utilizes Lutron reliable Clear Connect® RF technology to communicate wirelessly with up to 9 transmitting devices (Radio Powr Savr™ occupancy/vacancy sensors and/or Pico® wireless controls)
- Control up to 15A of general purpose load (1/2 HP motor load); no minimum load required
- Patented Softswitch® technology extends relay life to 1,000,000 cycles
- Can be hidden discretely behind furniture
- Controls always operate locally, do not require system control
- Available in white or black, and 1- or 3-receptacle models

**Benefits**
- Save energy by switching off plug loads when space is unoccupied
- Button-press programming to associate the plug-in appliance module with the same Radio Powr Savr occupancy/vacancy sensors and Pico wireless controls that control the overhead lighting

**Models**
- MRF2-15APS-1-XX—15 A plug-in appliance module, 1-receptacle, 120 V~
- MRF2-15APS-3-XX—15 A plug-in appliance module, 3-receptacle, 120 V~

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)

#### PowPak relay module with Softswitch

**Design statement:** Specify a PowPak relay module with Softswitch to switch receptacles, controlling plug loads which consume energy when space is not in use.

**Features**
- 16 A general purpose switch for control of 15 A 120 V~ receptacles
- Receives input from up to 9 Pico wireless controls, 6 Radio Powr Savr occupancy/vacancy sensors, and 1 Radio Powr Savr daylight sensor via Lutron reliable Clear Connect RF technology
- Model available with a dry contact closure output for integration with third-party equipment; contact closure output provides occupancy status
- Patented Softswitch technology extends relay life to 1,000,000 cycles
- 120/277 V~ input

**Benefits**
- Save energy by switching off power to plug loads when space is unoccupied
- Button press programming to associate the module with the Radio Powr Savr sensors and Pico wireless controls

**Mounting**
- Mounts through a 1/2" NPT trade-size knock-out to a junction box or to a fixture. Can also be mounted inside of a standard 4" x 4" junction box

**Models**
- RMJ-16R-DV-B—16 A general purpose switch (15 A 120 V~ receptacles)
- RMJ-16RCC01-DV-B—16 A general purpose switch (15 A 120 V~ receptacles) with (1) contact closure output
Step 6 Third-party integration control selection

PowPak® contact closure output module

**Design statement:** A PowPak contact closure output module is designed for spaces where integration with third-party equipment through contact closures is desired.

### Features
- Single dry contact closure device
- Receives input from up to 9 Pico® wireless controls, 6 Radio Powr Savr® occupancy/vacancy sensors, and 1 Radio Powr Savr® daylight sensor via Lutron reliable Clear Connect® RF technology
- Voltage: 24 V AC/DC
- Maximum load of 1 A @ 24 VDC or 0.5 A @ 24 VAC; no minimum load required
- Maintained output type

### Benefits
- Button-press programming to associate the module with the Radio Powr Savr® sensors and Pico® wireless controls

### Mounting
- Screw tabs provided for surface mounting. Can also be mounted to a 1/2” NPT trade-size knock-out on a junction box

### Models
- RMJ-CCO1-24-B—(1) contact closure output

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Step 7a Wireless control selection

Pico® wireless controls

**Design statement:** Use a Pico wireless control anywhere in the space to control loads with a touch of a button.

### Features
- Utilizes Lutron reliable Clear Connect RF technology to communicate wirelessly with wireless load controllers (wallbox controls, remote-mount modules, and/or plug-in devices)
- RF range: 30 ft (9 m) through wall
- Available in multiple button configurations with options for preset and raise/lower buttons
- 10-year battery life

### Benefits
- Easily add a new and/or additional point of control without the need for new wires
- Easy configuration for use as a handheld control, car visor control, wall-mount control, or tabletop control with use of the optional pedestal

### Models
- PJ-3BRL-GXX-YYY—3-button with Raise/Lower
- PJ-2BRL-GXX-YYY—2-button with Raise/Lower
- PJ-3B-GXX-YYY—3-button
- PJ-2B-GXX-YYY—2-button

(XX in the model number represents color/finish code and YYY represents labeling options. Please visit www.lutron.com/Pico for more information.)
Step 7b Wireless control accessories selection

**Pico® wireless control accessories**

**Design statement:** Use accessories to enhance the flexibility of the Pico wireless control.

**Features**
- Pico wireless controls are designed to fit in the opening of a Claro® or Euro Pico faceplate
- Claro faceplates are available in finishes to complement the Pico wireless control
- European-style faceplates with adapters afford an architectural-style appearance and are available in both matte and metal finishes
- Tabletop pedestals are offered to support up to 4 Pico wireless controls and are available in white and black

**Benefits**
- Pico faceplate adapter and Euro Pico faceplate with adapter allow for easy installation of the Pico wireless control in a faceplate
- Tabletop pedestals help ensure that the Pico wireless control is always within reach

**Models**

**Wall-mount accessories**
- **PICO-FP-ADAPT**—Pico faceplate adapter for Claro faceplate
- **CW-1-XX**—Claro 1-gang faceplate
- **CW-2-XX**—Claro 2-gang faceplate
- **CW-3-XX**—Claro 3-gang faceplate
- **CW-4-XX**—Claro 4-gang faceplate
- **PFP-1-B-FXX-CPN5692**—Single Euro Pico faceplate with adapter
- **PFP-2-B-FXX-CPN5692**—Double Euro Pico faceplate with adapter

**Tabletop accessories**
- **L-PED1-XX**—Single pedestal
- **L-PED2-XX**—Double pedestal
- **L-PED3-XX**—Triple pedestal
- **L-PED4-XX**—Quadruple pedestal

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)

### Stairwell Retrofit Solution

The stairwell fixture with PowPak® stairwell controller communicates wirelessly with Radio Powr Savr™ occupancy/vacancy sensors. Based on the stairwell occupancy information received from the sensors, the PowPak stairwell controller automatically adjusts the light output. The occupied and unoccupied light levels are field adjustable to meet the project’s code requirements.

**How it works**

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**Unoccupied:** 10% light level

**Occupied:** 50% light level
How it works

Variable Air Volume (VAV) integration

In response to information received from a Radio Powr Savr™ occupancy/vacancy sensor, the PowPak® contact closure output module communicates room occupancy to the VAV terminal unit. By not heating or cooling an unoccupied room, the electricity consumed by the HVAC system can be reduced.

Plug load control by switching receptacles

Plug loads, such as task lighting, computer monitors, and printers, account for greater than 5% of commercial electricity usage. By utilizing the PowPak relay module with Softswitch® and a Radio Powr Savr occupancy/vacancy sensor to switch receptacles, energy savings can be obtained. The occupancy/vacancy sensor communicates room occupancy wirelessly to the relay module. Based on the occupancy status received, the relay module switches the power to the receptacles on or off, reducing the amount of energy consumed.
Maestro® occupancy sensing controls*

Design statement: Maestro occupancy sensing switches and dimmers are alternate energy-saving solutions for smaller spaces with unobstructed views.

Maestro occupancy sensing switch dimensions
- W: 2.83" (75 m)
- H: 4.61" (119 m)
- D: 1.125" (30 mm)

NEW Maestro occupancy sensing C-L dimmer dimensions
- W: 2.83" (75 m)
- H: 4.61" (119 m)
- D: 1.125" (30 mm)

Features
- Lutron XCT™ signal processing technology greatly enhances the performance of PIR sensors, enabling them to detect minor motions that other sensors could not previously detect
- 180° sensor field-of-view, must have unobstructed view
- Up to 30 ft x 30 ft major motion coverage and 20 ft x 20 ft minor motion coverage
- Adjustable timeout - 1, 5, 15, or 30 minutes
- High-low sensitivity adjustment
- Vacancy model available to meet CA Title 24 requirements
- Switch models feature ambient light detection
- Available in 27 colors to complement any décor

Benefits
- Save energy automatically with the simple addition of occupancy/vacancy sensing
- Easy to install, directly replaces an existing control with no new wiring required

Models**
Switch
- MS-OPS2-XX—2 A lighting, occupancy/vacancy, 120 V~
- MS-OPS5M-XX—5 A lighting, 3 A fan (1/10 HP motor), occupancy/vacancy, 120 V~
- MS-OPS6M2-DV-XX—6 A lighting, 3 A fan (1/10 HP motor, 120 V only), occupancy/vacancy, 120-277 V~
- MS-OPS6M2N-DV-XX—6 A lighting, 3 A fan (1/10 HP motor, 120 V only), occupancy/vacancy, neutral wire, 120-277 V~

Dimmer
- MSCL-OP153M-XX—600 W incandescent/halogen, 150 W dimmable CFL/LED, occupancy/vacancy, 120 V~

(XX in the model number represents color/finish code; please visit www.lutron.com for color choices.)

* Maestro occupancy/vacancy sensing switches and dimmers are not components of Energi TriPak® and cannot communicate with Radio Powr Savr™ sensor or Pico® wireless controls.
** Vacancy only models available

Storage room—switching, 1 zone
Sensor coverage diagrams

Ceiling-mount, 360°
Coverage varies by ceiling height

Wall-mount*, 180°
1,500 ft²—minor motion; 3,000 ft²—major motion

Corner-mount*, 90°
1,225 ft²—minor motion; 2,500 ft²—major motion

In-wall, 180°
400 ft²—minor motion; 900 ft²—major motion

Hallway*, long narrow field of view
Coverage varies by hallway width and length

Key:
- Minor motions
- Major motion

Ceiling-mount sensor coverage chart (for sensor mounted in center of room)

<table>
<thead>
<tr>
<th>Ceiling height</th>
<th>Maximum room dimensions for complete floor coverage</th>
<th>Radius of coverage at floor</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 ft (2.4 m)</td>
<td>18 x 18 ft (5.5 x 5.5 m)</td>
<td>13 ft (4.0 m)</td>
</tr>
<tr>
<td>9 ft (2.7 m)</td>
<td>20 x 20 ft (6.1 x 6.1 m)</td>
<td>14.5 ft (4.4 m)</td>
</tr>
<tr>
<td>10 ft (3.0 m)</td>
<td>22 x 22 ft (6.7 x 6.7 m)</td>
<td>16 ft (4.9 m)</td>
</tr>
<tr>
<td>12 ft (3.7 m)**</td>
<td>26 x 26 ft (7.9 x 7.9 m)</td>
<td>19 ft (5.8 m)</td>
</tr>
</tbody>
</table>

* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 and 8 ft (1.6 and 2.4 m).
** 12 ft (3.7 m) is the maximum mounting height allowed.

Hallway sensor maximum recommended length chart (sensor centered within hallway)

<table>
<thead>
<tr>
<th>Width of hallway</th>
<th>Length of hallway</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 ft (1.6 m) or less</td>
<td>50 ft (15.2 m)</td>
</tr>
<tr>
<td>8 ft (2.4 m)</td>
<td>100 ft (30.5 m)</td>
</tr>
<tr>
<td>10 ft (3.0 m) or more</td>
<td>150 ft (45.7 m)</td>
</tr>
</tbody>
</table>

* Sensor mounting shown at 7 ft (2.1 m). Mounting height should be between 6 and 8 ft (1.6 and 2.4 m).
### Model number Description List Price (US)

#### Maestro Wireless: switches
- **RMF2-6ANS-XX** 6A lighting, 3A fan (1/10 HP motor), 120V~ 88.00
- **RMF2-8ANS-120-XX** 8A lighting, 5.8A fan (1/4 HP motor), spec grade, 120V~ 120.00
- **RMF2-8S-DV-XX** 8A lighting, 3A fan (1/10 HP motor, 120V only), spec grade, 120–277V~, no neutral 150.00

#### Maestro Wireless dimmers
- **RMF2-600M-XX** 600W incandescent/halogen, 120V~ 88.00
- **RMF2-6MLV-XX** 600W/600 VA incandescent/halogen/MLV, 120V~ 100.00
- **RMF2-6ND-120-XX** 600W/600 VA incandescent/halogen/MLV, spec grade, neutral wire, 120V~ 130.00
- **RMF2-10D-120-XX** 1000W/1000 VA incandescent/halogen/MLV, spec grade, 120V~ 130.00
- **RMF2-F6AN-DV-XX** 6A lighting, 3-wire fluorescent, spec grade, 120–277V~ 180.00
- **RMF2-6ELV-120-XX** 600W ELV, 120V~ 189.00

#### Maestro Wireless tabletop lamp dimmer
- **RMF2-3LD-XX** 300W lamp dimmer, incandescent/halogen, 120V~ 130.00

#### PowPak: stairwell fixtures
- **FXSWXX14CP232U51SMXXWH** 4 ft, 2 lamp, T8 fluorescent, factory preset: 50% high-end, 10% low-end, 120–277V~ 390.00
- **FXSWXX14CP232U52SMXXWH** 4 ft, 2 lamp, T8 fluorescent, factory preset: 80% high-end, 20% low-end, 120–277V~ 390.00
- **FXSWXX12SLC1U51SMXXWH** 2 ft, 17W, 1500 lumens, 4000K LED, factory preset: 50% high-end, 10% low-end, 120–277V~ 500.00
- **FXSWXX12SLC1U52SMXXWH** 2 ft, 17W, 1500 lumens, 4000K LED, factory preset: 80% high-end, 20% low-end, 120–277V~ 500.00

#### PowPak relay module
- **RMU-SR-DV-B** 5A general purpose switch 89.00
- **RMU-SRCCO1-DV-B** 5A general purpose switch with (1) contact closure output 99.00
- **RMU-16R-DV-B** 16A general purpose switch 109.00
- **RMU-16RCCO1-DV-B** 16A general purpose switch with (1) contact closure output 119.00

#### Lutron Lutron® switches
**Partial list only, for complete list of available fixtures visit www.lutron.com/stairwellfixture.**

#### Lutron Lutron® dimmers
**Partial list only, for complete list of available fixtures visit www.lutron.com/stairwellfixture.**

#### PowPak dimming module with EcoSystem:
- **RMU-ECO32-DV-B** Controls up to 32 EcoSystem, EcoSystem H-Series or Hi-lume 3D ballasts, or Hi-lume A-Series LED drivers 170.00

#### EcoSystem H-Series ballasts
- **EHDT832MU110** T8 linear, 32W, 1-lamp, 120-277V~, 1.0 ballast factor 79.00
- **EHDT832MU117** T8 linear, 32W, 1-lamp, 120-277V~, 1.17 ballast factor 79.00
- **EHDT832MU210** T8 linear, 32W, 2-lamp, 120-277V~, 1.0 ballast factor 79.00
- **EHDT832MU217** T8 linear, 32W, 2-lamp, 120-277V~, 1.17 ballast factor 79.00
- **EHDT828MU110** T5 linear, 28W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT828MU210** T5 linear, 28W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT854MU110** T5HO linear, 54W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT854MU210** T5HO linear, 54W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT817MU110** T8 linear, 17W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT817MU210** T8 linear, 17W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT825MU110** T8 linear, 25W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT825MU210** T8 linear, 25W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT814MU110** T5 linear, 14W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT814MU210** T5 linear, 14W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT821MU110** T5 linear, 21W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT821MU210** T5 linear, 21W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT824MU110** T5HO linear, 24W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT824MU210** T5HO linear, 24W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT839MU110** T5HO linear, 39W, 1-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT839MU210** T5HO linear, 39W, 2-lamp, 120-277V~, 1.0 ballast factor 89.00
- **EHDT832GU310** T8 linear, 32W, 3-lamp, 120-277V~, 1.0 ballast factor 129.00
- **EHDT832GU317** T8 linear, 32W, 3-lamp, 120-277V~, 1.17 ballast factor 129.00

#### PowPak contact closure output module
- **RMU-CCO1-24-B** (1) contact closure output 89.00

#### PowPak plug-in dimming module
- **MRF2-3PD-1-XX** 300W, 1-receptacle, incandescent/halogen, 120V~ 99.00
- **MRF2-3PD-3-XX** 300W, 3-receptacle, incandescent/halogen, 120V~ 99.00

#### PowPak plug-in appliance module
- **MRF2-15APS-1-XX** 15 A plug-in switch, 1-receptacle, 120V~ 99.00
- **MRF2-15APS-3-XX** 15 A plug-in switch, 3-receptacle, 120V~ 99.00

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* Price indicated for gloss finish products.
** Partial list only, for complete list of available fixtures visit www.lutron.com/stairwellfixture.
† Dimming ballasts require rapid start sockets. For more information, see Lutron App Note #122.
### Ordering Information

#### Radio Powr Savr® occupancy/vacancy sensors

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRF2-OCR2B-P-WH</td>
<td>Ceiling-mount, 360° field of view, occupancy/vacancy sensor</td>
<td>85.00</td>
</tr>
<tr>
<td>LRF2-OWLBP-WH</td>
<td>Wall-mount, 180° field of view, occupancy/vacancy sensor</td>
<td>85.00</td>
</tr>
<tr>
<td>LRF2-OKLB-P-WH</td>
<td>Corner-mount, 90° field of view, occupancy/vacancy sensor</td>
<td>85.00</td>
</tr>
<tr>
<td>LRF2-OHLBP-WH</td>
<td>Hallway, occupancy/vacancy sensor</td>
<td>85.00</td>
</tr>
</tbody>
</table>

#### Simple Energy Retrofit packages

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRF2-1S8A-1OC*</td>
<td>(1) Maestro Wireless® 8 A, no neutral switch, 120/277 V~, (1) Claro® 1-gang faceplate, (1) Radio Powr Savr wireless ceiling-mount occupancy/vacancy sensor</td>
<td>198.00</td>
</tr>
<tr>
<td>LRF2-1S8A-1OW</td>
<td>(1) Maestro Wireless® 8 A, no neutral switch, 120/277 V~, (1) Claro® 1-gang faceplate, (1) Radio Powr Savr wireless wall-mount occupancy/vacancy sensor</td>
<td>198.00</td>
</tr>
<tr>
<td>LRF2-1S8A-1OK</td>
<td>(1) Maestro Wireless® 8 A, no neutral switch, 120/277 V~, (1) Claro® 1-gang faceplate, (1) Radio Powr Savr wireless corner-mount occupancy/vacancy sensor</td>
<td>198.00</td>
</tr>
<tr>
<td>LRF2-1S8A-1OH</td>
<td>(1) Maestro Wireless® 8 A, no neutral switch, 120/277 V~, (1) Claro® 1-gang faceplate, (1) Radio Powr Savr wireless hallway occupancy/vacancy sensor</td>
<td>198.00</td>
</tr>
<tr>
<td>LRF2-2S8A-1OW</td>
<td>(2) Maestro Wireless® 8 A, no neutral switches, (1) Claro® 2-gang faceplate, (1) Radio Powr Savr wireless wall-mount occupancy/vacancy sensor</td>
<td>350.00</td>
</tr>
</tbody>
</table>

### Simple Energy Retrofit packages accessories

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-CMDPIRKIT</td>
<td>Ceiling-mount sensor lens masking kit</td>
<td>11.80</td>
</tr>
<tr>
<td>L-CRMK-WH</td>
<td>Ceiling-mount recess-mounting bracket</td>
<td>17.00</td>
</tr>
<tr>
<td>WGMNI-CPN3688</td>
<td>Wire guard for ceiling-mount sensor, white</td>
<td>80.00</td>
</tr>
<tr>
<td>WGWS-CPN3688</td>
<td>Wire guard for wall-mount and hallway sensors, white</td>
<td>80.00</td>
</tr>
<tr>
<td>STI-9618-CPN3688</td>
<td>Wire guard for corner-mount sensor, white</td>
<td>80.00</td>
</tr>
</tbody>
</table>

#### Radio Powr Savr daylight sensor

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>LRF2-DCRB-WH</td>
<td>Ceiling-mount daylight sensor</td>
<td>120.00</td>
</tr>
</tbody>
</table>

#### Pico® wireless controls

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PJ-3BRL-GWH-YYY</td>
<td>3-button with Raise/Lower, white only</td>
<td>25.00</td>
</tr>
<tr>
<td>PJ-3BRL-GWH-YYY</td>
<td>2-button with Raise/Lower, white only</td>
<td>25.00</td>
</tr>
<tr>
<td>PJ-3B-GWH-YYY</td>
<td>3-button, white only</td>
<td>25.00</td>
</tr>
<tr>
<td>PJ-2B-GWH-YYY</td>
<td>2-button, white only</td>
<td>25.00</td>
</tr>
<tr>
<td>PJ-3BRL-GXX-YYY</td>
<td>3-button with Raise/Lower</td>
<td>56.00</td>
</tr>
<tr>
<td>PJ-3BRL-GXX-YYY</td>
<td>2-button with Raise/Lower</td>
<td>56.00</td>
</tr>
<tr>
<td>PJ-3B-GXX-YYY</td>
<td>3-button</td>
<td>56.00</td>
</tr>
<tr>
<td>PJ-2B-GXX-YYY</td>
<td>2-button</td>
<td>56.00</td>
</tr>
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</table>

#### Pico accessories

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-PED1-XX</td>
<td>Pico wireless control single pedestal</td>
<td>15.00</td>
</tr>
<tr>
<td>L-PED2-XX</td>
<td>Pico wireless control double pedestal</td>
<td>30.00</td>
</tr>
<tr>
<td>L-PED3-XX</td>
<td>Pico wireless control triple pedestal</td>
<td>100.00</td>
</tr>
<tr>
<td>L-PED4-XX</td>
<td>Pico wireless control quadruple pedestal</td>
<td>120.00</td>
</tr>
<tr>
<td>PICO-FP-ADAPT</td>
<td>Pico wireless control faceplate adapter</td>
<td>8.00</td>
</tr>
<tr>
<td>PFP-1-B-FXX-CPN5692††</td>
<td>Single Euro Pico faceplate with adapter</td>
<td>40.00</td>
</tr>
<tr>
<td>PFP-2-B-FXX-CPN5692††</td>
<td>Double Euro Pico faceplate with adapter</td>
<td>44.00</td>
</tr>
</tbody>
</table>

#### Lamp Socket Wiring Tester

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>FDB-LSWT-T5/T8</td>
<td>600V, 100KHz, 0.125 A max, CAT III</td>
<td>180.00</td>
</tr>
</tbody>
</table>

#### Maestro® occupancy/vacancy sensing switches

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MS-OPS2-XX</td>
<td>2 A lighting, occupancy/vacancy sensing switch, 120 V~</td>
<td>29.00</td>
</tr>
<tr>
<td>MS-OPS6M-XX</td>
<td>5 A lighting, 3 A fan (1/10 HP motor), occupancy/vacancy sensing switch, 120 V~</td>
<td>41.00</td>
</tr>
<tr>
<td>MS-OPS6M2-DV-XX</td>
<td>6 A lighting, 3 A fan (1/10 HP motor, 120 V only), occupancy/vacancy sensing switch, 120-277 V~</td>
<td>49.00</td>
</tr>
<tr>
<td>MS-OPS6M2N-DV-XX</td>
<td>6 A lighting, 3 A fan (1/10 HP motor, 120 V only), occupancy/vacancy sensing switch, neutral wire, 120-277 V~</td>
<td>49.00</td>
</tr>
</tbody>
</table>

#### Maestro occupancy/vacancy sensing dimmers

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCL-OP153M-XX</td>
<td>600W incandescent/halogen, 150W dimmable CFL/LED, occupancy/vacancy sensing dimmer, 120 V~</td>
<td>54.00</td>
</tr>
</tbody>
</table>

#### Maestro Wireless/Maestro occupancy sensing control companion devices

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA-AS-XX</td>
<td>Multi-location companion switch, 120 V~</td>
<td>35.50</td>
</tr>
<tr>
<td>MA-AS-277-XX</td>
<td>Multi-location companion switch, 277 V~</td>
<td>44.00</td>
</tr>
<tr>
<td>MA-R-XX</td>
<td>Multi-location companion dimmer, 120 V~</td>
<td>27.50</td>
</tr>
<tr>
<td>MA-R-277-XX</td>
<td>Multi-location companion dimmer, 277 V~</td>
<td>44.00</td>
</tr>
</tbody>
</table>

#### Faceplates

<table>
<thead>
<tr>
<th>Model number</th>
<th>Description</th>
<th>List Price (US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW-1-XX</td>
<td>Claro® 1-gang faceplate</td>
<td>4.90</td>
</tr>
<tr>
<td>CW-2-XX</td>
<td>Claro 2-gang faceplate</td>
<td>9.80</td>
</tr>
<tr>
<td>CW-3-XX</td>
<td>Claro 3-gang faceplate</td>
<td>15.00</td>
</tr>
<tr>
<td>CW-4-XX</td>
<td>Claro 4-gang faceplate</td>
<td>20.00</td>
</tr>
</tbody>
</table>

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*Vacancy-only models available to meet California Title 24 section 119(j) requirements.

** Available in white only.

† Price indicated for light or power text/icon labeling only.

†† Price indicated for Arctic White and Midnight only, contact Lutron for additional color options and pricing.

‡ Price indicated for gloss finish only.