This document summarizes the lighting and receptacle control requirements for commercial buildings. It is for information purposes only. It is not meant to replace your state’s or local jurisdiction’s official energy code. Please refer to your local building energy code or authority having jurisdiction for your precise requirements. Only the authority having jurisdiction can guarantee code compliance.

Table of Contents
IECC 2012

Introduction
Solutions Overview .......................... 2
Summary of Code Requirements .......... 4
Daylight Zone Requirements ............... 5
Suggested Code Compliant Solutions ..... 6
How to Use this Guide ..................... 8
Vive Local Solutions | Layout ............ 10

Applications

Atrium
New Construction (Dimming 0-10V) ...... 12

Break Room
New Construction (Switching) ............ 14
Recommended (Dimming 0-10V) .......... 16

Classroom
New Construction (Switching) .......... 18
Recommended (Fixture Control) ........ 20

Conference Room
New Construction (Switching) .......... 22
Recommended (Fixture Control) ........ 24

Egress Corridor
New Construction (Switching) .......... 26
Recommended (Dimming 0-10V) .......... 28

Open Office
New Construction (Switching) .......... 30
Recommended (Fixture Control) ........ 32

Private Office
New Construction (Switching) .......... 34
Recommended (Dimming 0-10V) .......... 36

Restroom (Multi-Stall)
New Construction (Switching) .......... 38

Egress Stairwell
New Construction (Fixture Control) .... 40
Recommended (Fixture Control) ........ 42
Energy-saving lighting control strategies

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Potential savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-end trim/tuning</td>
<td>10–30% Lighting</td>
</tr>
<tr>
<td>Occupancy/vacancy sensing</td>
<td>20–60% Lighting</td>
</tr>
<tr>
<td>Daylight harvesting</td>
<td>25–60% Lighting</td>
</tr>
<tr>
<td>Personal dimming control</td>
<td>10–20% Lighting</td>
</tr>
<tr>
<td>Controllable window shading</td>
<td>10–20% Cooling</td>
</tr>
<tr>
<td>Scheduling</td>
<td>10–20% Lighting</td>
</tr>
<tr>
<td>Demand response</td>
<td>30–50% During peak period</td>
</tr>
<tr>
<td>Plug load control</td>
<td>15–50% of Controlled loads</td>
</tr>
<tr>
<td>HVAC integration</td>
<td>5–15% HVAC</td>
</tr>
</tbody>
</table>

*Go to lutron.com/references for more information.

Codes can sometimes be complicated and difficult to navigate. This commercial application guide provides examples of how Lutron products can be used to meet or exceed code requirements. This guide focuses on Vive and Vive compatible solutions, but our other control systems offer similar features.

Lutron Product Capabilities: Commercial Applications

<table>
<thead>
<tr>
<th>Strategy for code/standard compliance</th>
<th>Vive</th>
<th>Vive with wireless hub*</th>
<th>Energi Savr Node</th>
<th>Quantum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupancy sensing</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Multi-level lighting control</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Daylight harvesting</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Receptacle control</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Timeclock</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Demand response</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Energy monitoring</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>BACnet integration</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

To learn more about these products and their specifications, go to lutron.com/catalogs
The requirements listed below are summarized for simplicity and may have other exceptions that were omitted.

### Minimum control type

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching</td>
<td>C405.2.1.1</td>
</tr>
<tr>
<td>Multi-level or dimming¹</td>
<td>C405.2.1.2</td>
</tr>
</tbody>
</table>

### Local Control

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching</td>
<td>C405.2.1.1</td>
</tr>
<tr>
<td>Multi-level or dimming¹</td>
<td>C405.2.1.2</td>
</tr>
</tbody>
</table>

### Timeclock²

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior &amp; parking garages: Scheduled control, based on time-of-day, turns lighting ON or OFF based on typical occupancy. Occupancy sensors also comply as an alternate to using a timeclock.</td>
<td>C405.2.2.1 C405.2.4</td>
</tr>
<tr>
<td>Exterior: Scheduled control, based on time-of-day and sunrise/sunset (requires astronomical timeclock), turns lighting ON or OFF based on typical occupancy and daylight.</td>
<td>C405.2.2.2</td>
</tr>
</tbody>
</table>

### Occupancy sensor

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Automatic control turns lighting ON upon occupancy or OFF after a vacancy of 30 minutes or less.</td>
<td>C405.2.2.2</td>
</tr>
</tbody>
</table>

### Full ON

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to maximum lighting power.</td>
<td>C405.2.2.2</td>
</tr>
</tbody>
</table>

### Partial ON

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to 50% or less of maximum lighting power.</td>
<td>C405.2.2.2</td>
</tr>
</tbody>
</table>

### Full OFF

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>When initiated by a timeclock or occupancy sensor, lighting is automatically turned OFF.</td>
<td>C405.2.2.2</td>
</tr>
</tbody>
</table>

### Partial OFF

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>When initiated by a timeclock or occupancy sensor, lighting is automatically reduced by at least 50% of maximum lighting power. In some spaces, partial OFF is permitted but it is not a code requirement.</td>
<td>C405.2.1</td>
</tr>
</tbody>
</table>

### Daylight responsive control¹

<table>
<thead>
<tr>
<th>Description</th>
<th>Code provision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior: Manual or automatic control of sidelight and skylight daylight zones is required. When using automatic control, there must be at least two levels between ON and OFF. See the “Daylight Zone Requirements” for more information. Exterior: A photosensor can be used as an alternate to the dawn/dusk operation of an astronomical timeclock.</td>
<td>C202 C405.2.2.3 C405.2.4</td>
</tr>
</tbody>
</table>

### Daylight Zone Requirements

**Daylight Zone Requirements:** Fixtures in primary side-light or skylight zones must be controlled by a daylight sensor in spaces greater than 10,000 sq. ft. or having greater than 30% window-to-wall ratio. All other daylit spaces only require a separate manual control for daylight zones.

**Daylight Exceptions:** Daylight control is not required for daylight zones enclosed by walls or ceiling height partitions containing two or fewer luminaires.

---

¹ When multi-level lighting control and/or daylight responsive control is required, Lutron recommends using continuous dimming to allow for smooth light level adjustment and maximize energy savings.

² Lutron recommends using occupancy sensors to achieve automatic on/off requirements in place of a timeclock to maximize energy savings and optimize user experience.

³ Manual ON is always permitted for interior applications. Provide manual ON control when no automatic ON is indicated.
The compliant solutions listed below are suggested based on total installed cost, simplicity of design, and basic functional needs for the space. These solutions do not represent the only compliant options to meet lighting and receptacle control requirements. Applications in this guide will illustrate these solutions and/or alternative solutions for advanced functionality. ASHRAE 90.1 2010 can also be used as a compliance option in meeting IECC 2012 requirements.

### Suggested Code Compliant Solutions

<table>
<thead>
<tr>
<th>Local Control</th>
<th>Atrium</th>
<th>Break Room</th>
<th>Classroom, Lecture Hall, Training Room</th>
<th>Conference, Multi-purpose Room</th>
<th>Egress Corridor</th>
<th>Lobby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Switching</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multi-level or dimming</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Timeclock</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupancy sensor</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial ON</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Partial OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daylight responsive control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Automatic Control

<table>
<thead>
<tr>
<th>Open Office (&gt;300 sq. ft.)</th>
<th>Private Office (&lt;300 sq. ft.)</th>
<th>Restroom</th>
<th>Egress Stairwell</th>
<th>Storage Room</th>
<th>Facade/Landscape</th>
<th>Parking Garage (Not Roof)</th>
<th>Other Exterior</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Diagram key:**
- **= New construction**
- **= Lighting retrofit**
- **= New construction and retrofit**

1. All retrofits altering more than 50% of the luminaires, or 10% with alterations to controls and/or circuits, must comply with all new construction requirements.
2. Manual ON is always permitted for interior applications. Provide manual ON control when no automatic ON is indicated.
3. Not a code requirement. Lutron recommends this solution for spaces designated as a path of egress.
4. For areas not designated as a path of egress, the occupancy sensor must turn lights to full OFF.
5. Timeclock ensures the lights are on when typically occupied. Occupancy sensor controls lights when typically unoccupied.
How to Use this Guide

This application guide is designed to help specifiers and contractors understand codes and Lutron controls in a simple manner. Each of the pages will lay out different spaces, the corresponding lighting control products and the way the system is setup in the space.

For Specifiers
Use this application guide for design suggestions, the way the system operates and to specify the relevant products for each space.

For Contractors
Use this application guide to understand how the system is installed, the way the system must operate and to order the correct products for each application.

This guide offers up to three solutions per space type.
- The Retrofit Solutions are simple and inexpensive solutions, generally suited for a basic retrofit.
- The New Construction Solutions are value driven, generally best suited for new construction.
- The Recommended Solutions have advanced functionality for greater comfort and energy savings.

Learn more about the products used in the space.
Learn what energy savings you achieve over manual shut-off.
Learn what strategies are implemented in the space.
Learn about the products visible in the space and the different options available for these.
Understand how the space functions with the installed system.
Understand how the products are laid out in the space.

Visible System Components

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switches to turn on and turn off general, white-board lighting, and perimeter daylight zone.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

- Manual On Auto Off
- Occupancy/Vacancy
- Full On Dim
- Personal Dimming
- High-end Trim/Tuning

Lighting Energy Savings*

45%

* Go to lutron.com/references for more information.
This is a high-level overview of the local solutions layout. For individual room requirements refer to the detailed room type solutions in this guide. A single PowPak module can control a single or multiple fixtures. The products shown here are representative of local solutions. Multiple product options are available to meet the needs of the space.

Vive wireless hub*  
- Central control, management, and monitoring of Vive devices via web browser  
- Supports astronomic and time-of-day events  
- Two contact closure inputs for 3rd party integration such as Automatic Demand Response  
- WiFi access for easy commissioning  
- Control up to 10,000 sq. ft. with a single hub  
- Optional BACnet integration

* Go to lutron.com/vive for complete compatibility and design details

Vive wireless hub Features:

- Occupancy sensor
- Pico wireless remote control
- Daylight sensor
Visible System Components

Control Functionality

When Occupied:
- Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.
- Manual: Occupant selects scenes to set desired light levels for all lights.
- Timeclock:
  - Timeclock turns lights on to 50% light level during normally occupied hours. Maximum light level is set to 80%.
  - Timeclock turns lights off during normally unoccupied hours.

Control Strategies

Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

Code Notes: Requirements specified for 20-40 ft. atriums. Go to lutron.com/vive for complete compatibility and design details. This solution requires 0-10V enabled ballasts and drivers by others.
**Visible System Components**

Maestro vacancy sensing switch

---

**Control Functionality**

**Occupant Enters:**
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

**When Occupied:**
Manual: Occupant uses wall switch to turn all lights off.

**Occupant Exits:**
All lights automatically turn off 15 minutes after all occupants exit.

---

**Control Strategies**

**Occupancy/Vacancy**

---

**Lighting Energy Savings**

30%

* Maestro MS-VPS6M2 is not compatible with Vive wireless hub.

* Go to lutron.com/references for more information.
Visible System Components

- **Pico**: wireless control
- **Radio Powr Savr**: wireless corner-mount vacancy sensor

Control Functionality

**Occupant Enters:**
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

**When Occupied:**
- Manual: Occupant uses wall dimmer to set desired light levels for all lights.

**Occupant Exits:**
All lights automatically turn off 15 minutes after all occupants exit.

Control Strategies

- **Occupancy/Vacancy**
- **High-end Trim/Tuning**

Control Strategies

**Occupancy/Vacancy**

- **Manual On Auto Off**:
  - **Max**: 100%
  - **Max**: 85%
  - 85%

**High-end Trim/Tuning**

- **Symbol**: Model Number Description Qty List Price Each
  - **RMJS-8T-DV-B**: PowPak dimming module with 0-10V 1 $150.00
  - **LRF2-VKLB-P-WH**: Radio Powr Savr wireless corner-mount vacancy sensor 1 $85.00
  - **PJ2-3BRL-GWH-L01**: Pico wireless 3-button with raise/lower control 1 $21.00
  - **PICO-WBX-ADAPT**: Pico wallbox adapter 1 $8.00

- **Lighting Energy Savings**: 45%
  - Go to lutron.com/references for more information.

Code Notes:
- For break rooms with daylight, include a 0-10V dimming module per zone and a daylight sensor.
- Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
- This solution requires 0-10V enabled ballasts and drivers by others.
Visible System Components

Pico wireless control
Radio Powr Savr wireless corner-mount vacancy sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switches to turn on and turn off general, white-board lighting, and perimeter daylight zone.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Personal Dimming

High-end Trim/Tuning

Symbol | Model Number | Description | Qty | List Price Each
--- | --- | --- | --- | ---
RMJS-16R-DV-B | PowPak switching module | 3 | $129.00
LRF2-VKLB-P-WH | Radio Powr Savr wireless corner-mount vacancy sensor | 1 | $85.00
PJ2-2B-GWH-L01 | Pico wireless 2-button control | 3 | $21.00
PICO-WBX-ADAPT | Pico wallbox adapter | 3 | $8.00

Lighting Energy Savings

45%

* Go to lutron.com/references for more information.

Code Notes: For non-daylight classrooms, all general lighting can be connected to a single switching module.
Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
Visible System Components

Pico wireless control

Pico wireless 4-button scene control

Integral fixture control with sensor

Control Functionality

Occupant Enters:
All lights automatically turn on to 50% light level. Occupant turns on lights to maximum light level manually. Maximum light level is set to 80%.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

Manual: Occupant selects scenes or uses dimmers to set desired light levels for all lights. Entry scene controller has 3 user-preferred presets and 1 all-off button.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Daylight Harvesting

Personal Dimming

High-end Trim/Tuning

Scene Control

Lighting Energy Savings*

65%

* Go to lutron.com/references for more information.

Symbol Model Number Description Qty List Price Each

Integral to fixture Integral fixture control with sensor 12 $70.00

PJ2-4B-GWH-L31 Pico wireless 4-button scene control 1 $39.00

PJ2-3BRL-GWH-L01 Pico wireless 3-button with raise/lower control 2 $21.00

PICO-WBX-ADAPT Pico wallbox adapter 3 $8.00

1. Fixture control comes pre-installed in fixture. Look for the Clear Connect Wireless symbol for fixtures containing this module. Go to lutron.com/findafixture for a complete list of compatible fixtures and drivers.

2. Fixture adder for the control module may vary.

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details. This solution requires digitally enabled ballasts and drivers by others.
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switch to turn all lights off.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

**Visible System Components**

**Control Functionality**

**Lighting Energy Savings**

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.

---

**Symbol** | **Model Number** | **Description** | **Qty** | **List Price Each**
---|---|---|---|---
RMJS-16R-DV-B | PowPak switching module | 1 | $129.00
LRF2-VKLB-P-WH | Radio Powr Savr wireless corner-mount vacancy sensor | 1 | $85.00
PJ2-2B-GWH-L01 | Pico wireless 2-button control | 2 | $21.00
PICO-WBX-ADAPT | Pico wallbox adapter | 2 | $8.00

* Go to lutron.com/references for more information.
Visible System Components

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

Manual: Occupant selects scenes to set desired light levels for all lights. Entry scene controller has 3 user-preferred presets and 1 all-off button.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Daylight Harvesting

Personal Dimming

High-end Trim/Tuning

Scene Control

Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

Symbol | Model Number | Description | Qty | List Price Each
--- | --- | --- | --- | ---
| | | EcoSystem-enabled Hi-Lume soft-on, fade-to-black series ballasts/drivers | 12 | $ 67.00 - $ 81.00

| | FCJS-ECO | Wireless fixture control with EcoSystem | 12 | $ 75.00

| | LRF2-DCRB-WH | Radio Powr Savr wireless daylight sensor | 1 | $ 120.00

| | LRF2-VKLB-P-WH | Radio Powr Savr wireless corner-mount vacancy sensor | 1 | $ 85.00

| | PJ2-4B-GWH-L31 | Pico wireless 4-button scene control | 2 | $ 39.00

| | PICO-WBX-ADAPT | Pico wallbox adapter | 2 | $ 8.00

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
Visible System Components

Control Functionality

Occupant Enters:
All non-emergency lights automatically turn on to maximum light level.

When Occupied:
Manual: Occupant uses wall switch to turn all non-emergency lights off.

Occupant Exits:
All non-emergency lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Lighting Energy Savings*

40%

* Go to lutron.com/references for more information.

Symbol | Model Number | Description | Qty | List Price Each
--- | --- | --- | --- | ---
[ ] | RMJS-16R-DV-B | PowPak switching module | 1 | $129.00
[ ] | LRF2-OHLB-P-WH | Radio Powr Savr wireless hallway occupancy sensor | 1 | $85.00
[ ] | PJ2-2B-GWH-L01 | Pico wireless 2-button control | 2 | $21.00
[ ] | PICO-WBX-ADAPT | Pico wallbox adapter | 2 | $8.00

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
**Visible System Components**

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Model Number</th>
<th>Description</th>
<th>Qty</th>
<th>List Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RMJS-8T-DV-B</td>
<td>PowPak dimming module with 0-10V</td>
<td>1</td>
<td>$150.00</td>
</tr>
<tr>
<td></td>
<td>LRF2-OHLB-P-WH</td>
<td>Radio Powr Savr wireless hallway occupancy sensor</td>
<td>1</td>
<td>$85.00</td>
</tr>
<tr>
<td></td>
<td>PJJ2-3BRL-GWH-L01</td>
<td>Pico wireless 3-button with raise/lower control</td>
<td>2</td>
<td>$21.00</td>
</tr>
<tr>
<td></td>
<td>PICO-WBX-ADAPT</td>
<td>Pico wallbox adapter</td>
<td>2</td>
<td>$8.00</td>
</tr>
</tbody>
</table>

**Control Functionality**

**Occupant Enters:**
All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

**When Occupied:**
Manual: Occupant uses wall dimmer to set desired light levels for all lights. Manual control cannot fully shut off the lights. Minimum light level is set to 10%.

**Occupant Exits:**
All lights automatically go to minimum light level 15 minutes after all occupants exit.

**Emergency Mode:**
Lighting connected to emergency power turns on to full output.

**Control Strategies**

- **Auto On Partial Off**
  - Occupancy/Vacancy
    - Max: 100%
    - Max: 85%

- **High-end Trim/Tuning**

**Lighting Energy Savings**

60%

*Go to lutron.com/references for more information.

**Code Notes:**
- Verify that the egress fixtures go to full output upon loss of control signal. For projects that require UL 924 compliance, provide an automatic load control relay (ALCR) per load controller connected to emergency fixtures. Add a daylight sensor for corridors with daylight zones.
- Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
- This solution requires 0-10V enabled ballasts and drivers by others.
- For non-egress corridors, set the minimum light level to full off.
Visible System Components

Pico wireless control
Radio Powr Savr wireless ceiling-mount occupancy sensor

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switch to separately turn off general lighting and daylight zone.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Line-voltage wiring
Clear Connect RF Communication

Symbol | Model Number | Description | Qty | List Price Each
--- | --- | --- | --- | ---
| | | | |
RMJS-16R-DV-B | PowPak switching module | 2 | $129.00 |
LRF2-OGR2B-P-WH | Radio Powr Savr wireless ceiling-mount occupancy sensor | 4 | $85.00 |
PJ2-2B-GWH-L01 | Pico wireless 2-button control | 2 | $21.00 |
PICO-WBX-ADAPT | Pico wallbox adapter | 2 | $8.00 |

Lighting Energy Savings*

35%

* Go to lutron.com/references for more information.

Code Notes: For non-daylight open offices, all general lighting can be connected to a single switching module.
Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
Control Functionality

**Occupant Enters:**
Each individual light automatically turns on to maximum light level as occupant approaches fixture proximity. Maximum light level is set to 80%.

**When Occupied:**

- **Automatic:** Each individual overhead light dims/brightens based on local daylight availability.
- **Manual:** Occupant uses wall dimmer to set desired light levels for all lights.

**Occupant Exits:**
Each individual light automatically turns off 15 minutes after all occupants exit fixture proximity.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Visible System Components

- Pico wireless control
- Integral fixture control with sensor

Control Strategies

- **Auto On Auto Off**
- **Occupancy/Vacancy**
- **Full On Dim**
- **Daylight Harvesting**
- **High-end Trim/Tuning**

Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

Symbol | Model Number | Description | Qty | List Price Each
--- | --- | --- | --- | ---
| | Integral to fixture | Integral fixture control with sensor | 16 | $70.00²
| | PJ2-3BRL-GWH-L01 | Pico wireless 3-button with raise/lower control | 1 | $21.00
| | PICO-WBX-ADAPT | Pico wallbox adapter | 1 | $8.00

1. Fixture control comes pre-installed in fixture. Look for the Clear Connect Wireless symbol for fixtures containing this module. Go to lutron.com/findafixture for a complete list of compatible fixtures and drivers.
2. Fixture adder for the control module may vary.

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details. This solution requires digitally enabled ballasts and drivers by others.
Visible System Components

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually.

When Occupied:
Manual: Occupant uses wall switch to turn all lights off.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Lighting Energy Savings*

30%

* Go to lutron.com/references for more information.
Visible System Components

Control Functionality

Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

Manual: Occupant uses wall dimmer to set desired light levels for all lights.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Add a Vive wireless hub to enable simple setup and re-zoning, system monitoring, timeclock functionality, and advanced integration.

Control Strategies

Occupancy/Vacancy

Daylight Harvesting

Personal Dimming

High-end Trim/Tuning

Lighting Energy Savings*

60%

* Go to lutron.com/references for more information.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Model Number</th>
<th>Description</th>
<th>Qty</th>
<th>List Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FCJS-010</td>
<td>Wireless Fixture Control with 0-10V</td>
<td>2</td>
<td>$ 75.00</td>
</tr>
<tr>
<td></td>
<td>FC-SENSOR</td>
<td>PowPak Fixture Sensor</td>
<td>2</td>
<td>$ 35.00</td>
</tr>
<tr>
<td></td>
<td>PJ2-3BRL-GWH-L01</td>
<td>Pico wireless 3-button with raise/lower control</td>
<td>1</td>
<td>$ 21.00</td>
</tr>
<tr>
<td></td>
<td>PICO-WBX-ADAPT</td>
<td>Pico wallbox adapter</td>
<td>1</td>
<td>$ 8.00</td>
</tr>
</tbody>
</table>

FCJS models are capable of controlling up to 3 ballasts or drivers. Review the “Vive PowPak Fixture Controls” submittal document for more design details.

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.

This solution requires 0-10V enabled ballasts and drivers by others.
Visible System Components

Control Functionality

Occupant Enters:
All lights automatically turn on to maximum light level.

When Occupied:
Manual: Occupant uses wall switch to turn all lights off.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Control Strategies

Occupancy/Vacancy

Lighting Energy Savings*

50%  

* Go to lutron.com/references for more information.

### Visible System Components

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Model Number</th>
<th>Description</th>
<th>Qty</th>
<th>List Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RMJS-16R-DV-B</td>
<td>PowPak switching module</td>
<td>1</td>
<td>$129.00</td>
</tr>
<tr>
<td></td>
<td>LRF2-OCR2B-P-WH</td>
<td>Radio Powr Savr wireless ceiling-mount occupancy sensor</td>
<td>2</td>
<td>$85.00</td>
</tr>
<tr>
<td></td>
<td>PJ2-2B-GWH-L01</td>
<td>Pico wireless 2-button control</td>
<td>1</td>
<td>$21.00</td>
</tr>
<tr>
<td></td>
<td>PICO-WBX-ADAPT</td>
<td>Pico wallbox adapter</td>
<td>1</td>
<td>$8.00</td>
</tr>
</tbody>
</table>

Add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.

---

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
Visible System Components

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Model Number</th>
<th>Description</th>
<th>Qty</th>
<th>List Price Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FXSWLX4H</td>
<td>Lutron 4 ft. stairwell LED fixture</td>
<td>2 (per floor)</td>
<td>$540.00</td>
</tr>
<tr>
<td></td>
<td>LRF2-OKLB-P-WH</td>
<td>Radio Powr Savr wireless corner-mount occupancy sensor</td>
<td>1 (per floor)</td>
<td>$85.00</td>
</tr>
</tbody>
</table>

Control Strategies

Occupancy/Vacancy

- **Occupant Enters:** All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

- **Occupant Exits:** All lights dim to minimum light level 15 minutes after all occupants exit. Minimum light level is set to 10%.

- **Emergency Mode:** Lighting connected to emergency power turns on to full output.

Lighting Energy Savings*

- **80%**

* Go to lutron.com/references for more information.

**Code Notes:** Verify that the egress fixtures go to full output upon loss of control signal. For projects that require UL 924 compliance, provide an automatic load control relay (ALCR) per load controller connected to emergency fixtures. Add a daylight sensor for stairwells with daylight zones.

Lutron Stairwell Fixture (FXSWLX44) is not currently compatible with Vive wireless hub. A new model number is coming soon that will include Vive compatibility. Go to lutron.com/vive for the latest compatibility details.
Visible System Components

Radio Power Savr wireless corner-mount occupancy sensor

Integral fixture control

Control Functionality

**Occupant Enters:** All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

**Occupant Exits:** All lights dim to minimum light level 15 minutes after all occupants exit. Minimum light level is set to 10%.

**Emergency Mode:** Lighting connected to emergency power turns on to full output.

Control Strategies

- **Occupancy/Vacancy**
  - Max: 100%
  - Max: 85%
- **High-end Trim/Tuning**

Lighting Energy Savings*

80%

* Go to lutron.com/references for more information.

**Code Notes:**
- Verify that the egress fixtures go to full output upon loss of control signal. For projects that require UL 924 compliance, provide an automatic load control relay (ALCR) per load controller connected to emergency fixtures. Add a daylight sensor for stairwells with daylight zones. This solution requires digitally enabled ballasts and drivers by others.
- For non-egress stairwells, set the minimum light level to full off.

---

A section of the floor is shown. A floor cross-section is shown. One fixture per landing is suggested.

1. Fixture control comes pre-installed in fixture. Look for the Clear Connect Wireless symbol for fixtures containing this module. Go to lutron.com/findafixture for a complete list of compatible fixtures and drivers.
2. Fixture adder for the control module may vary.

---

**Symbol** | **Model Number** | **Description** | **Qty** | **List Price Each**
--- | --- | --- | --- | ---
| | Integral to fixture | Integral fixture control | 2 (per floor) | $ 60.00² |
| | LRF2-OKLB-P-WH | Radio Power Savr wireless corner-mount occupancy sensor | 1 (per floor) | $ 85.00 |

1. Fixture control comes pre-installed in fixture. Look for the Clear Connect Wireless symbol for fixtures containing this module. Go to lutron.com/findafixture for a complete list of compatible fixtures and drivers.
2. Fixture adder for the control module may vary.