COMMERCIAL LIGHTING CONTROLS

IECC 2021

Design to meet code compliance with Lutron

USD List prices effective July 10, 2022

LUTRON

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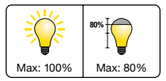
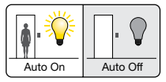
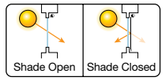
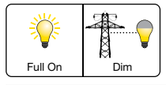
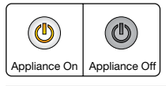
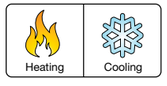
IECC 2021

Introduction

Applications

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 (AHJ) for your precise requirements. Only the AHJ can guarantee code compliance.

Energy-saving lighting control strategies

Strategy	Potential savings
 **High-end trim/tuning** sets the maximum light level based on customer requirements in each space.*	10–30% Lighting
 **Occupancy/vacancy sensing** turns lights on when occupants are in a space and off when they vacate the space.*	20–60% Lighting
 **Daylight harvesting** dims electric lights when daylight is available to light the space.*	25–60% Lighting
 **Dimming control** gives occupants the ability to set the light level.*	10–20% Lighting
 **Controllable window shading** moves shades to reduce glare and solar heat gain.*	10–20% Cooling
 **Scheduling** provides scheduled changes in light levels based on the time of day.*	10–20% Lighting
 **Demand response** automatically reduces lighting loads during peak electricity usage times.*	30–50% During peak period
 **Plug load control** automatically turns off loads after occupants leave a space.*	15–50% of Controlled loads
 **HVAC integration** controls heating, ventilation, and air conditioning systems through a contact closure.*	5–15% HVAC

*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

Strategies for code/standards compliance	Local Solutions: Wallbox	Local Solutions: Vive wireless	Local Solutions: Vive with wireless hub*	Guestroom Solutions: Code-compliant guestroom solutions
Occupancy sensing	◉	◉	◉	◉
Multi-level lighting control	◉	◉	◉	◉
Daylight harvesting		◉	◉	
Receptacle control		◉	◉	◉
Timeclock			◉	◉
Demand response†			◉	
Energy monitoring			◉	
BACnet integration			◉	◉

To learn more about these products and their specifications, go to **lutron.com/catalogs.**

* For the latest information on products compatible with the Vive wireless hub go to lutron.com/vive.
† Automated Demand Response capability requires signal from a third-party device.

Summary of Requirements for Lighting and Receptacle Controls

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Code requirement summary

		Minimum control type	Description	Code provision
Manual Control[1]		Switch	Lighting shall be capable of turning ON and OFF. There shall be at least one manual device for control of the lighting within a space. See code for spaces that allow remote location of control.	C405.2.5
		Dimmer or scene control	Lighting shall be capable of being reduced by at least 50% of maximum lighting power. There shall be at least one manual control device for light reduction within a space. See code for spaces that allow remote location of control. Automatic daylight control may be used instead of manual control.	C405.2.2.2
Automatic ON/OFF Control[1]		Timeclock	**Interior:** 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. **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.	C405.2.6.2 C405.2.6.3 C405.2.6.4
		Occupancy sensor	Automatic control turns lighting ON upon occupancy or OFF after a vacancy of 20 minutes or less.	C405.2.1
	Settings	Full ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to maximum lighting power.	C405.2.1.1 Exception
		Partial ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to 50% or less of maximum lighting power.	C405.2.1
		Manual ON	Lighting is turned ON manually by an occupant.	C405.2.1.1
		Full OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically turned OFF.	C405.2.1
		Partial OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically reduced by at least 50% of maximum lighting power (30% for parking garages). Automatic full OFF also complies.	C405.2, Exception C405.2.6.3
Other[1]		Daylight responsive control	**Interior:** A sensor which adjusts lighting in response to available daylight is required for sidelight and skylight zones. Some spaces, including offices and classrooms require dimming. See the “Daylight Zone Requirements” diagrams for more information. **Exterior:** A photosensor can be used as an alternate to the dawn/dusk peration of an astronomical timeclock.	C405.2.3 C405.2.6.1
		Receptacle control	Receptacle control is required in classrooms, conference rooms, break rooms, open offices and private offices.	N/A
		Demand response	Demand response is not required by this energy code.	N/A

For areas being used as a path of egress or fixtures being used for emergency, verify compliance with your local AHJ.
Acceptance (functional) testing is required for all new construction applications to ensure that control hardware and software are calibrated, programmed and functioning properly (Code provision C408.3).

Enhanced Digital Lighting Controls is one compliance path of the Additional Efficiency Package requirement (Section C406).

1 Luminaire level lighting controls (LLLC) can be can be used as an alternate compliance path. See Section C405.2 for more information.

Daylight Zone Requirements

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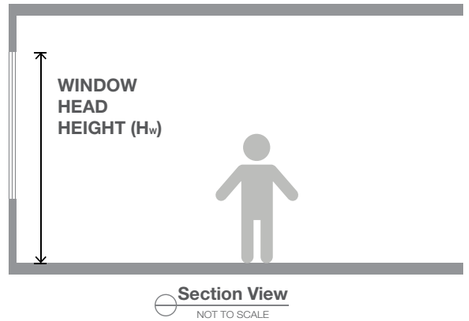
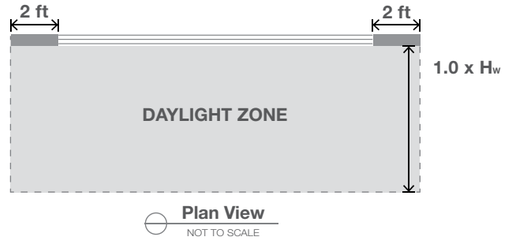
Daylight Zone Requirements:
Sidelighted daylight zones must be controlled separately from toplighted zones. North, South, East, and West zones must also be controlled separately.

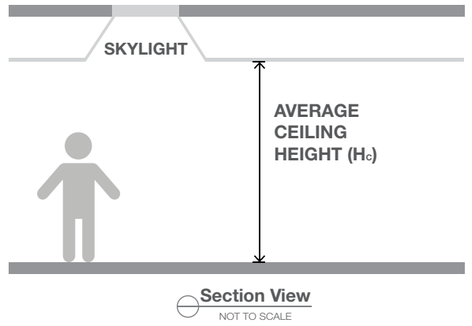
Daylight Exceptions:
Daylight control is not required when the total lighting power of a daylight zone is 150 W or less, or when the total glazing area is 24 sq. ft. or less. Other exceptions exist, based on space type, window area, neighboring obstructions, and glass transmittance.

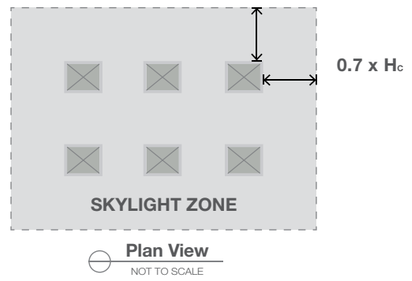
Sidelighting (Window)





Toplighting (Skylight)





Suggested Code-Compliant Solutions

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The compliant solutions listed below are suggested based on total installed cost, simplicity of design, and basic functional needs for the space. These solutions represent one of multiple compliant options to meet lighting and receptacle control requirements. ASHRAE 90.1-2019 can also be used as a compliance option in meeting IECC 2021 requirements. Applications in this guide will illustrate these solutions and/or alternate solutions for advanced functionality.

		Atrium	Classroom, Lecture Hall, Training Room	Conference, Break Room	Corridor[2]	Guestroom[3]	Lobby	Open Office (>300 sq. ft.)
Manual Control	Switch		⚙	⚙		⚙		
	Dimmer or scene control	⚙			⚙		⚙	⚙
Automatic ON/OFF Control	Timeclock	⚙						
	Occupancy sensor		⚙	⚙	⚙	⚙	⚙	⚙
Settings	Full ON				⚙		⚙	
	Partial ON	⚙						⚙
	Manual ON		⚙	⚙		⚙		
	Full OFF [9]	⚙	⚙	⚙		⚙	⚙	⚙
	Partial OFF				⚙ [7]			⚙
Other	Daylight responsive control	⚙ [8]	⚙ [8]	⚙ [8]	⚙ [8]		⚙ [8]	⚙ [8]
	Receptacle control		⚙	⚙				⚙

	Parking Garage[4]	Private Office (<300 sq. ft)	Restaurant/ Cafeteria, Retail	Restroom	Stairwell[2]	Storage Room	Warehouse Aisles, Library Stacks	Facade/ Landscape	Parking Lot/ Other Exterior[5]
Manual Control		⚙		⚙		⚙	⚙		
			⚙		⚙				
Automatic ON/OFF Control	⚙		⚙					⚙	⚙
	⚙	⚙		⚙	⚙	⚙	⚙		
Settings	⚙			⚙	⚙			⚙	⚙
	⚙		⚙					⚙	⚙
		⚙				⚙			
	⚙	⚙	⚙	⚙		⚙		⚙	⚙
	⚙ [6]				⚙ [7]		⚙	⚙	⚙
Other	⚙	⚙ [8]	⚙ [8]	⚙ [8]	⚙ [8]	⚙ [8]	⚙ [8]	⚙	⚙
		⚙							

Diagram key:

⚙ = New construction and retrofit[1]

1 All retrofits altering more than 10% of the luminaires, or retrofits that increase the installed lighting power must comply with all new construction requirements.

2 To comply with some life-safety code requirements for egress illumination, automatic full OFF is not suggested. For non-egress areas, the occupancy sensor should turn the lights to full OFF and a switching control may be used.

3 Automatic shutoff is required for all installed luminaires and switched receptacles.

4 Timeclock ensures the lights are on when typically occupied. Occupancy sensor controls lights when typically unoccupied.

5 Astronomical timeclock shall ensure all lights are off during daylight hours. Lights should be scheduled to Partial OFF during night hours. See section C405.2.6.3 for scheduling times.

6 Control zones are limited to 600 sq. ft. or less. Once a zone is vacant for 20 minutes, the occupancy sensor automatically reduces lighting in the zone by 80% of full light output or turns lighting OFF in the vacant zone.

7 Not a code requirement. Lutron recommends this solution for spaces designated as a path of egress.

8 These spaces require continuous daylight dimming to OFF.

9 Sensor(s) automatically turns lighting OFF in the entire space within 20 minutes of vacancy in the whole space.

How to Use this Guide

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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 for those spaces, and the way the system is set up in the space.

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

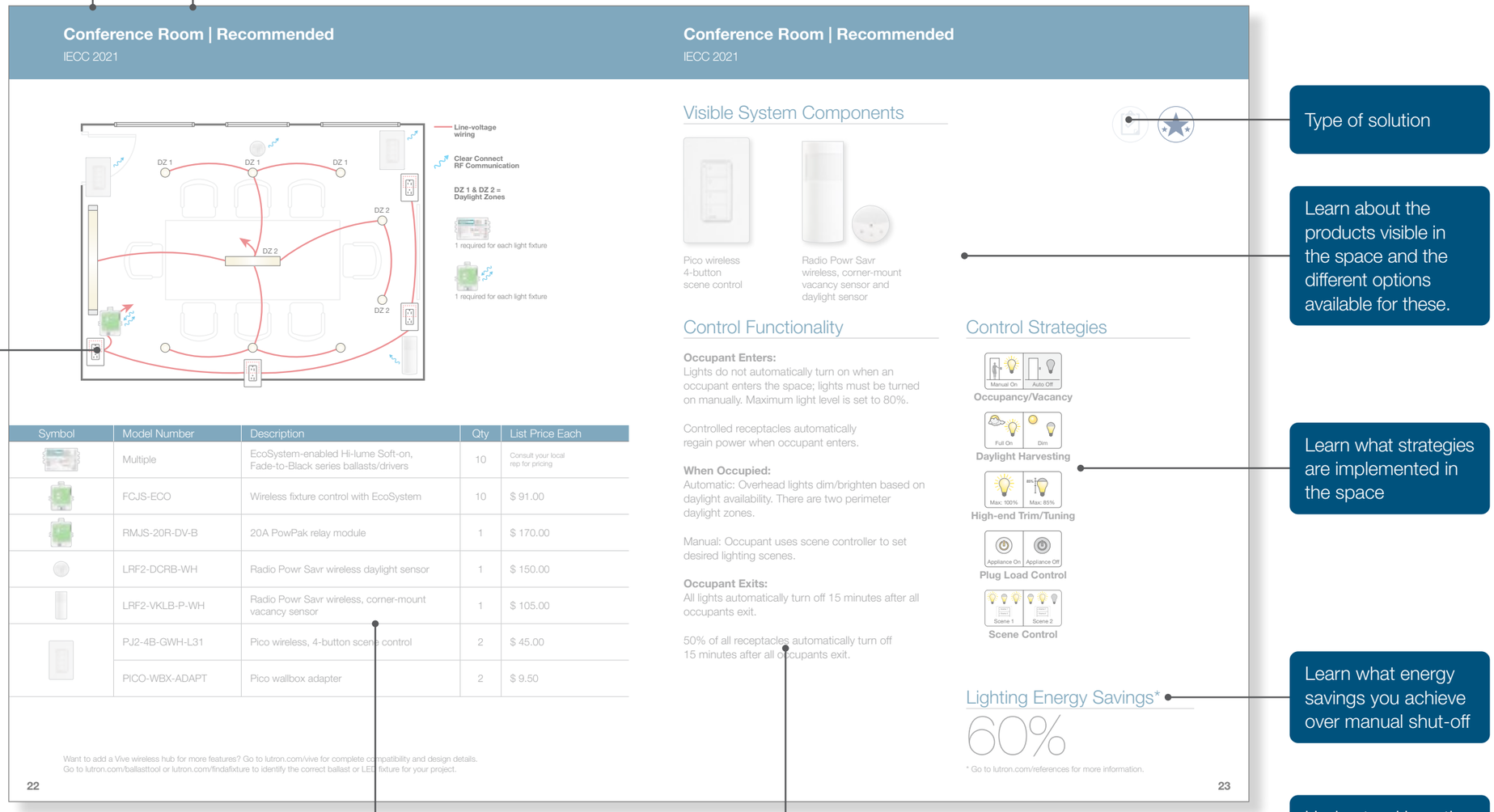
For Contractors
Use this application guide to understand how the system is installed, the way the system must operate, and to order the correct products for each application.

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.

Room type

Type of solution



Type of solution

Learn about the products visible in the space and the different options available for these.

Learn what strategies are implemented in the space

Learn what energy savings you achieve over manual shut-off

Understand how the products are laid out in the space

Learn more about the products used in the space

Understand how the space functions with the installed system

Prices subject to change without notice.

Vive Local Solutions Layout

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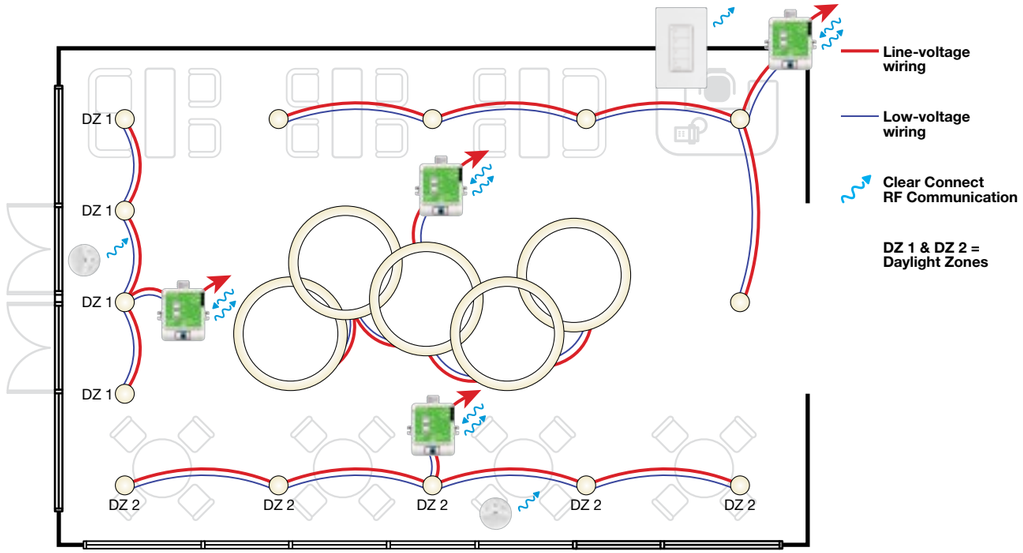
This is a high-level overview of the local solutions layout. For individual room requirements refer to the detailed room type solutions in this guide. A single PowPak module can control a single fixture or multiple fixtures. The products shown here are representative of local solutions. Multiple product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

- Vive wireless hub*
- PowPak module
- Occupancy sensor
- Pico wireless remote control
- Daylight sensor
- Vive wireless receptacle

Vive wireless hub features:

- Central control, management, and monitoring of Vive devices via web browser
- Supports astronomic and time-of-day events
- Two contact closure inputs for third-party integration such as Automatic Demand Response
- Wi-Fi 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.



Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	4	$ 180.00
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	2	$ 150.00
	PJ2-4B-GWH-L31	Pico wireless, 4-button scene control	1	$ 45.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50
	HJS-1-FM	Vive wireless hub	Shared	Consult your local rep for hub pricing and service options.

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.

Atrium | New Construction
IECC 2021

Visible System Components

Pico wireless, 4-button scene control

Radio Powr Savr wireless daylight sensor

Control Functionality

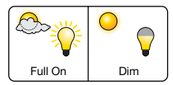
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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.

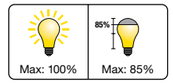
Timeclock:
Timeclock turns lights on to 50% light level during normally occupied hours. Maximum light level is set to 80%.

Timeclock turns lights off during normally unoccupied hours.

Control Strategies

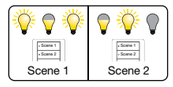


Daylight Harvesting



High-end Trim/Tuning

Scheduling

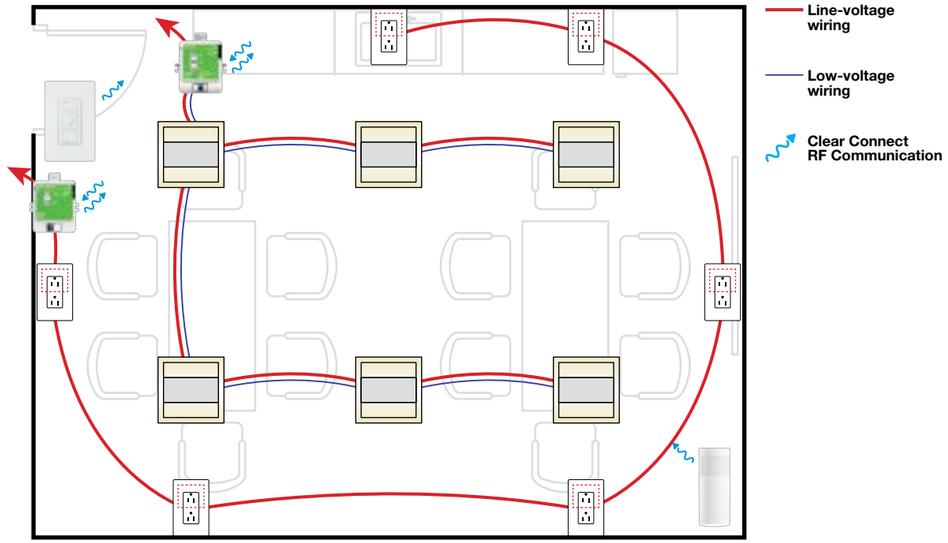


Scene Control

Lighting Energy Savings*

60%

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



Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	1	$ 180.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	1	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50

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.

Break Room | New Construction
IECC 2021

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%.

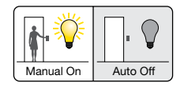
Controlled receptacles automatically regain power when occupant enters

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.

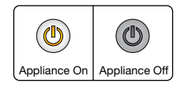
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

Control Strategies



Occupancy/Vacancy

High-end Trim/Tuning



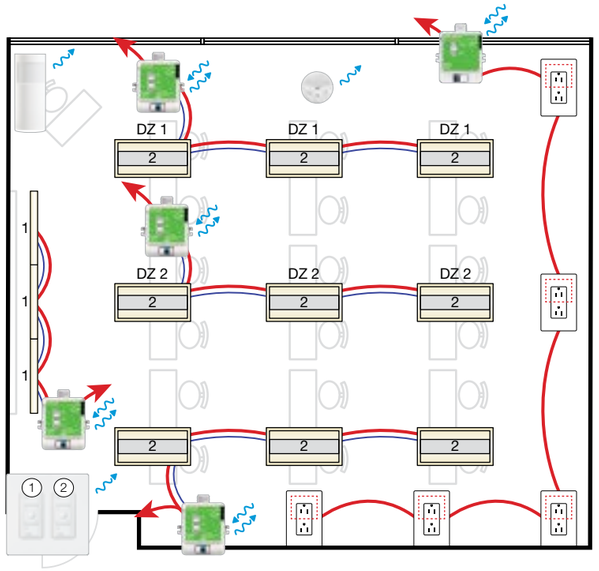
Plug Load Control

Dimming

Lighting Energy Savings*

45%

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



Line-voltage wiring

Low-voltage wiring

Clear Connect RF Communication

DZ 1 & DZ 2 = Daylight Zones

Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	4	$ 180.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	1	$ 150.00
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	1	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless 2-button control	2	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	2	$ 9.50

Code Notes: For non-daylight classrooms, all general lighting can be connected to a single 0-10V dimming module. 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.

Classroom | New Construction
IECC 2021

Visible System Components

Pico wireless control

Radio Powr Savr wireless, corner-mount vacancy sensor and daylight 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%.

Controlled receptacles automatically regain power when occupant enters.

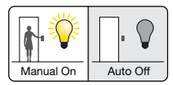
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

Manual: Occupant uses wall dimmers to set desired light levels for both general and white-board lights.

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

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

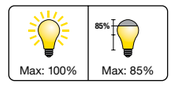
Control Strategies



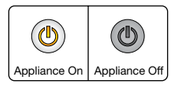
Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning

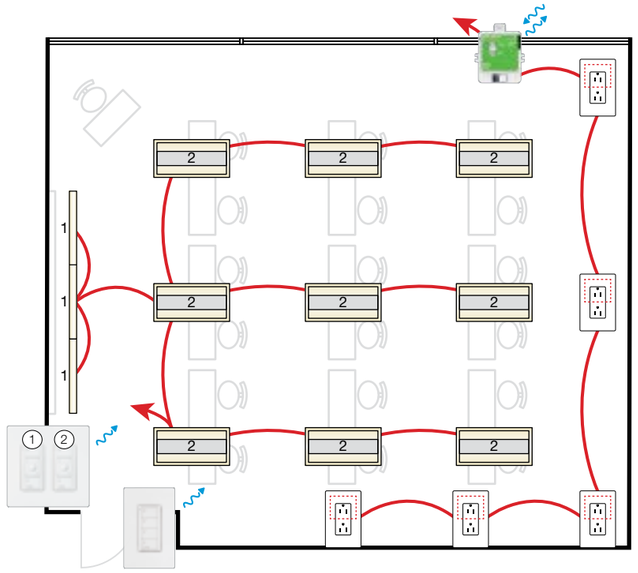


Plug Load Control

Lighting Energy Savings*

65%

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



Line-voltage wiring

Clear Connect RF Communication

1 integrated into each light fixture

Symbol	Model Number	Description	Qty	List Price Each
	Integral to fixture[1]	Integral fixture control with sensor	12	$ 78.00[2]
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	2	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	3	$ 9.50

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.

Classroom | Recommended
IECC 2021

Visible System Components

Pico wireless control

Pico wireless 4-button scene control

Integral fixture control with 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%.

Controlled receptacles automatically regain power when occupant enters.

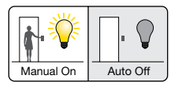
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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.

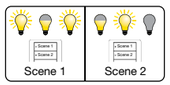
Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

Control Strategies



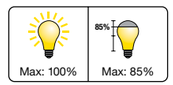
Occupancy/Vacancy



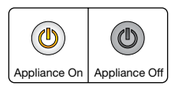
Scene Control

Daylight Harvesting

Dimming



High-end Trim/Tuning



Plug Load Control

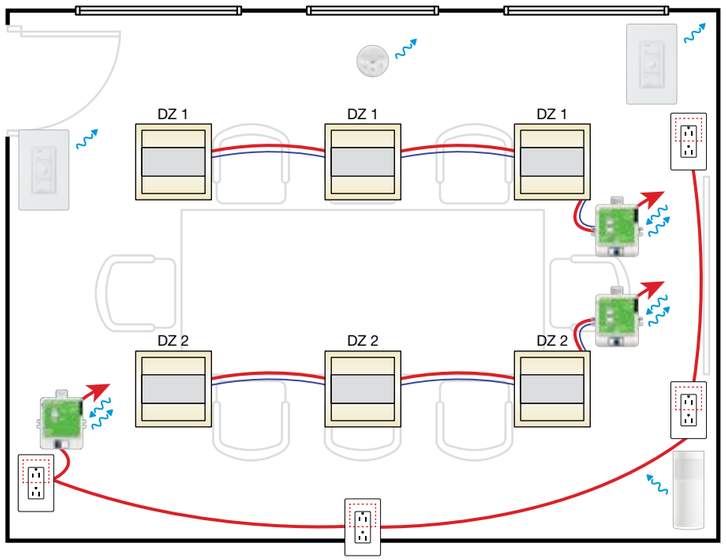
Lighting Energy Savings*

65%

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

Conference Room | New Construction

IECC 2021



Line-voltage wiring

Low-voltage wiring

Clear Connect RF Communication

DZ 1 & DZ 2 = Daylight Zones

Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	2	$ 180.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	1	$ 150.00
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	1	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless 2-button control	2	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	2	$ 9.50

Code Notes: For non-daylit conference rooms, all general lighting can be connected to a single 0-10V dimming module. 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.

Conference Room | New Construction

IECC 2021

Visible System Components

Pico
wireless control

Radio Powr Savr
wireless, corner-mount
vacancy sensor and
daylight 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%.

Controlled receptacles automatically regain power when occupant enters.

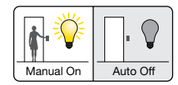
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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.

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

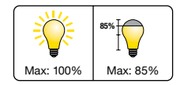
Control Strategies



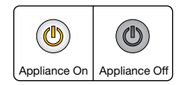
Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning



Plug Load Control

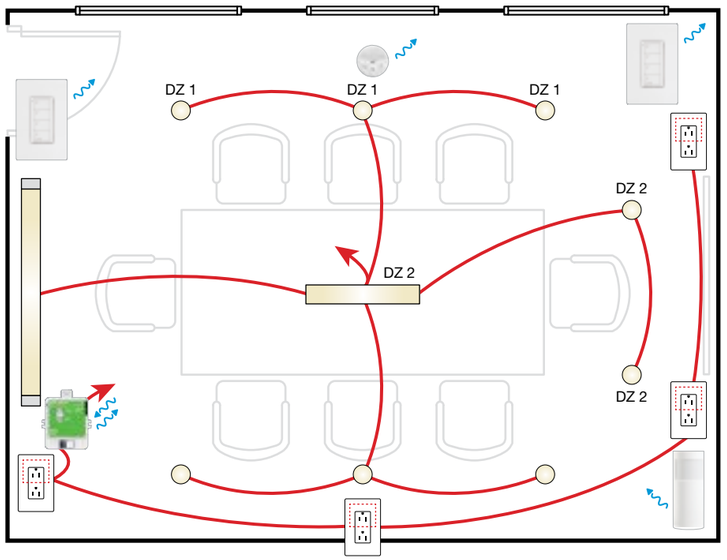
Lighting Energy Savings*

60%

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

Conference Room | Recommended

IECC 2021



Line-voltage wiring

Clear Connect RF Communication

DZ 1 & DZ 2 = Daylight Zones

1 required for each light fixture

1 required for each light fixture

Symbol	Model Number	Description	Qty	List Price Each
	Multiple	EcoSystem-enabled Hi-lume Soft-on, Fade-to-Black series ballasts/drivers	10	Consult your local rep for pricing
	FCJS-ECO	Wireless fixture control with EcoSystem	10	$ 91.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	1	$ 150.00
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	1	$ 105.00
	PJ2-4B-GWH-L31	Pico wireless, 4-button scene control	2	$ 45.00
	PICO-WBX-ADAPT	Pico wallbox adapter	2	$ 9.50

Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
Go to lutron.com/ballasttool or lutron.com/findafixture to identify the correct ballast or LED fixture for your project.

Conference Room | Recommended

IECC 2021

Visible System Components

Pico wireless 4-button scene control

Radio Powr Savr wireless, corner-mount vacancy sensor and daylight 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%.

Controlled receptacles automatically regain power when occupant enters.

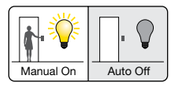
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

Manual: Occupant uses scene controller to set desired lighting scenes.

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

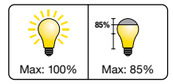
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

Control Strategies

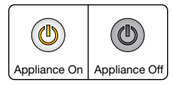


Occupancy/Vacancy

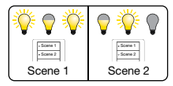
Daylight Harvesting



High-end Trim/Tuning



Plug Load Control



Scene Control

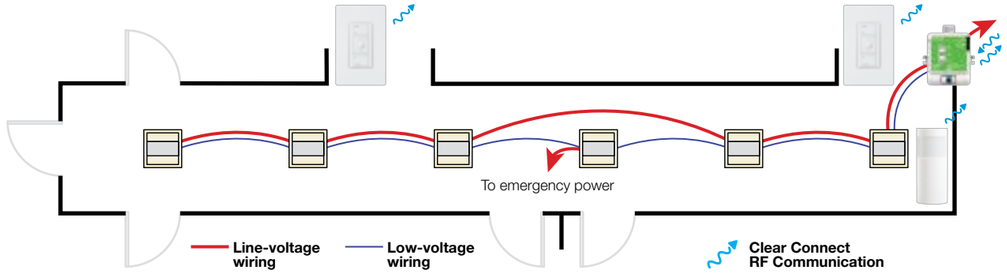
Lighting Energy Savings*

60%

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

Egress Corridor | New Construction

IECC 2021



Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	1	$ 180.00
	LRF2-OHLB-P-WH	Radio Powr Savr wireless, hallway occupancy sensor	1	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	2	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	2	$ 9.50

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.

Egress Corridor | New Construction

IECC 2021

Visible System Components

Pico
wireless control

Radio Powr Savr
wireless, hallway
occupancy sensor

Control Functionality

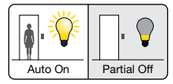
Occupant Enters:
All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

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.

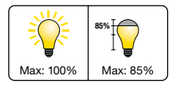
Emergency Mode:
Lighting connected to emergency power turns on to full output.

Control Strategies



Occupancy/Vacancy

Dimming



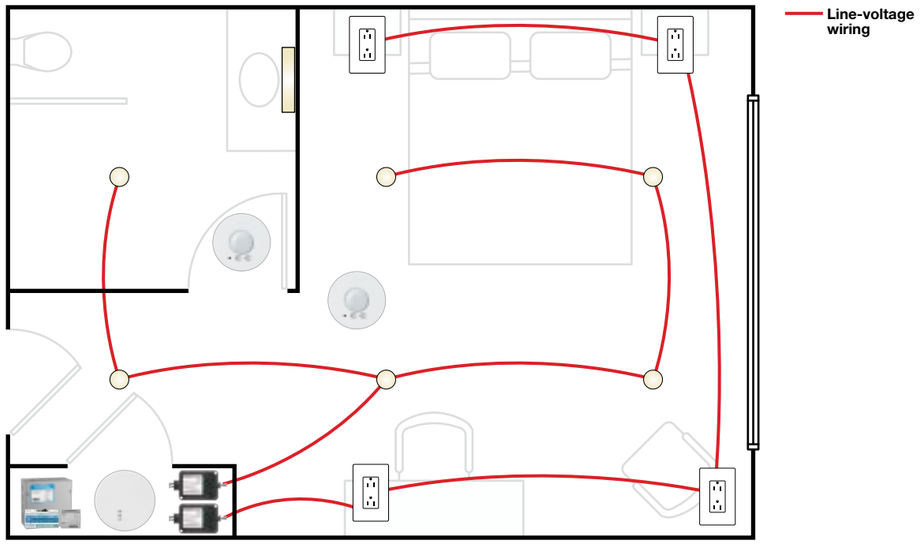
High-end Trim/Tuning

Lighting Energy Savings*

60%

Code Notes: For non-egress corridors, set the minimum light level to full off.

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



Symbol	Model Number	Description	Voltage	Qty	List Price Each
	CCGS-NA-2	Two-circuit Guestroom Package; includes all product listed below	N/A	1	$ 1,120.00
	LUT-8X8-ENC with MQSE-2S1-D and MQSPS-DH-1-30	Lutron-provided enclosure, switching load controller, myRoom power supply	120V	1	N/A
	QSM2-XW-C	QS sensor module	120V	1	N/A
	PP-DV	Relay power pack (lighting)	120V	1	N/A
	CU300HD-CPN6814	Relay power pack (receptacles)	120V	1	N/A
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless ceiling-mount occupancy sensor	N/A	2	N/A

Guestroom | Retrofit and New Construction
IECC 2021

Visible System Components

Radio Powr Savr
wireless, ceiling-mount
occupancy sensor

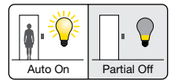
Control Functionality

Occupant Enters:
Controlled receptacles turn on and all lights will return to previous levels from when the room was vacated.

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

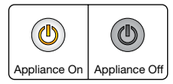
Occupant Exits:
All lights and controlled receptacles go off 15 minutes after all occupants exit.

Control Strategies

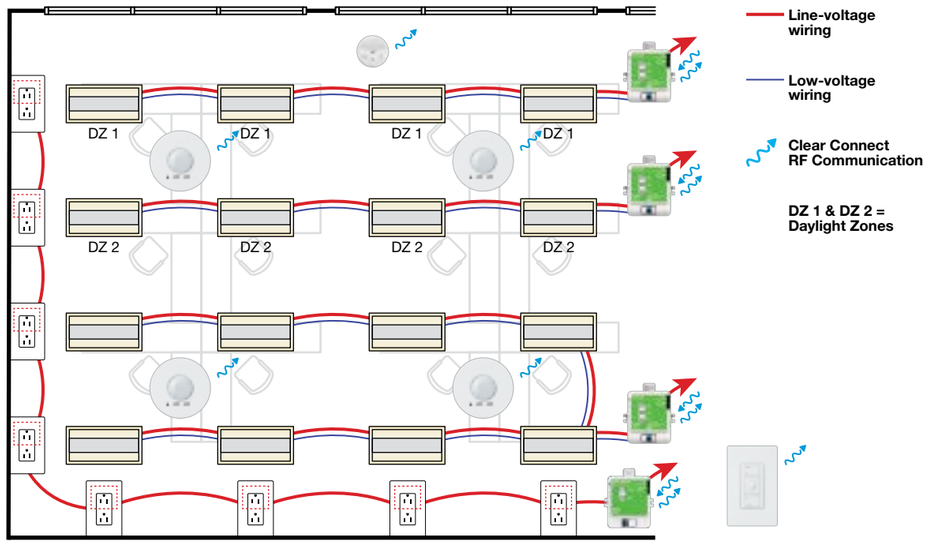


Occupancy/Vacancy

Dimming



Plug Load Control



Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10 V	3	$ 180.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	1	$ 150.00
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	4	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50

Code Notes: For non-daylit open offices, all general lighting can be connected to a single 0-10 V dimming module.
Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details.
This solution requires 0-10 V enabled ballasts and drivers by others.

Open Office | New Construction
IECC 2021

Visible System Components

Pico
wireless control

Radio Powr Savr wireless,
ceiling-mount occupancy sensor
and daylight sensor

Control Functionality

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

Controlled receptacles automatically regain power when occupant enters.

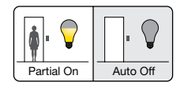
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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

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

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

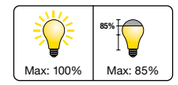
Control Strategies



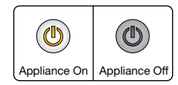
Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning



Plug Load Control

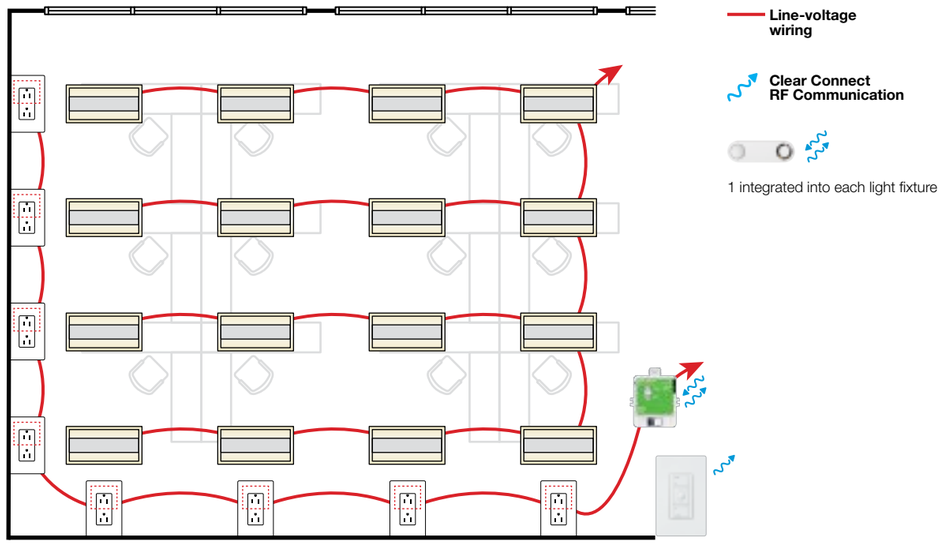
Lighting Energy Savings*

55%

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

Open Office | Recommended

IECC 2021



Symbol	Model Number	Description	Qty	List Price Each
	Internal to fixture[1]	Internal fixture control with sensor	16	$ 78.00[2]
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50

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.

Open Office | Recommended

IECC 2021

Visible System Components

Pico wireless control

Integral fixture control with sensor

Control Functionality

Occupant Enters:
Each individual light automatically turns on to 50% light level as occupant approaches fixture proximity. Maximum light level is set to 80%.

Controlled receptacles automatically regain power when occupant enters.

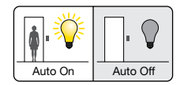
When Occupied:
Automatic: Each individual overhead light dims/brightens based on local daylight availability.

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.

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

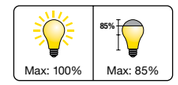
Control Strategies



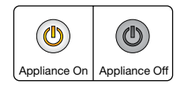
Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning

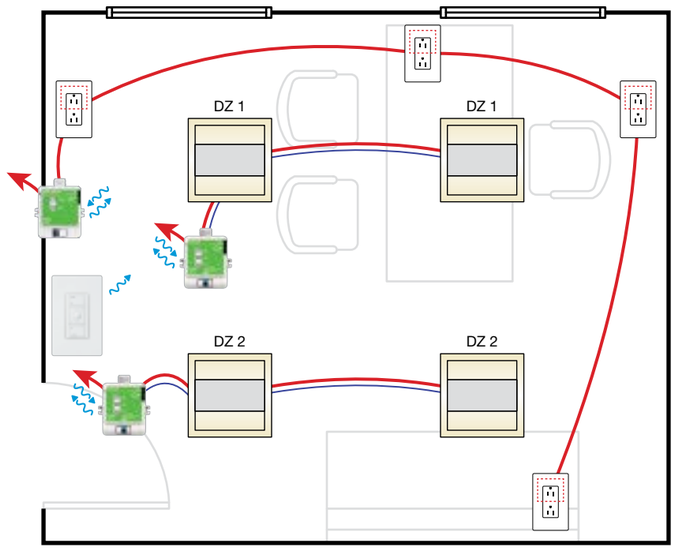


Plug Load Control

Lighting Energy Savings*

60%

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



Line-voltage wiring

Low-voltage wiring

Clear Connect RF Communication

DZ 1 & DZ 2 = Daylight Zones

1 required for each fixture control

Symbol	Model Number	Description	Qty	List Price Each
	FCJS-010	Wireless fixture control with 0-10V	2	$ 91.00
	RMJS-20R-DV-B	20A PowPak relay module	1	$ 170.00
	FC-SENSOR	PowPak fixture sensor	2	$ 40.50
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50

Code Notes: 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.

Private Office | New Construction
IECC 2021

Visible System Components

Pico
wireless control

PowPak
fixture 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%.

Controlled receptacles automatically regain power when occupant enters.

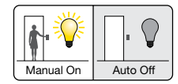
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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.

50% of all receptacles automatically turn off 15 minutes after all occupants exit.

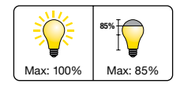
Control Strategies



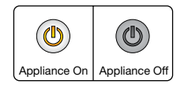
Occupancy/Vacancy

Daylight Harvesting

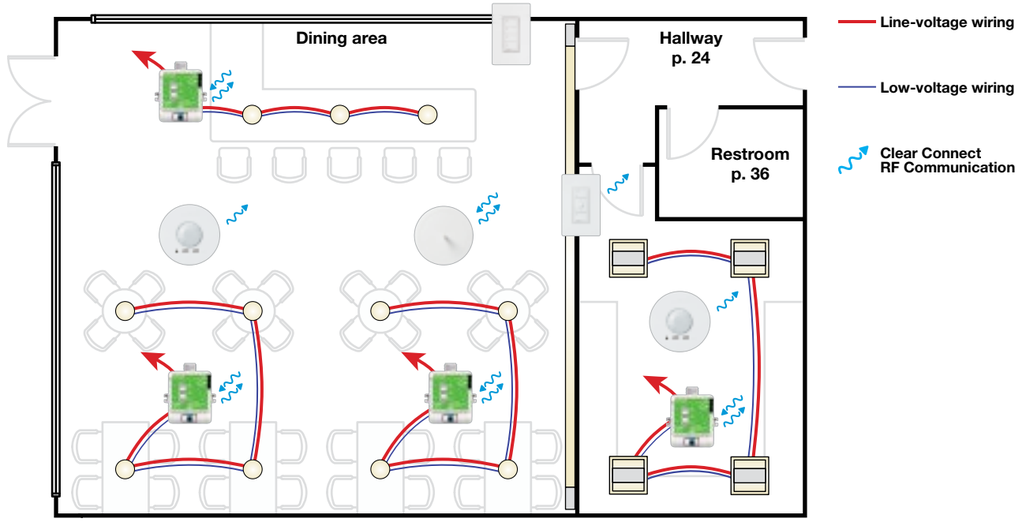
Dimming



High-end Trim/Tuning



Plug Load Control



Symbol	Model Number	Description	Voltage	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	120V/ 277V	4	$ 180.00
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	N/A	2	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	N/A	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	N/A	1	$ 9.50
	PJ2-4B-GWH-L31	Pico wireless, 4-button scene control	N/A	1	$ 45.00
	PICO-WBX-ADAPT	Pico wallbox adapter	N/A	1	$ 9.50
	HJS-0-FM	Vive wireless hub	N/A	Shared	Consult your local rep for hub pricing and service options.

Code Notes: Add a daylight sensor for restrooms with daylight zones.
Go to lutron.com/vive for complete compatibility and design details.
This solution requires 0-10V enabled ballasts and drivers by others.

Restaurant | Retrofit and New Construction
IECC 2021

Visible System Components

Pico
wireless controls

Radio Powr Savr
wireless, ceiling-mount
occupancy sensor

Vive wireless hub

Control Functionality

Prior to Business Opening:
Lights scheduled to automatically turn on in dining area prior to employee arrival.

Occupant Enters:
Lighting automatically turns on to at least 50% of full power in employee-only area. Remaining lighting must be turned on manually.

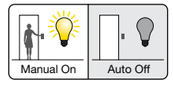
When Occupied:
Automatic: Lighting in dining area changes to different scenes for breakfast, lunch, and dinner.

Manual: Employees can use wall dimmers to adjust lighting as needed.

Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit the employee-only area.

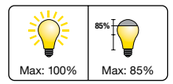
After Business Closing:
All lighting in dining area is scheduled to automatically turn off after business operations conclude.

Control Strategies



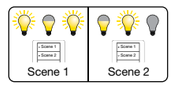
Occupancy/Vacancy

Dimming

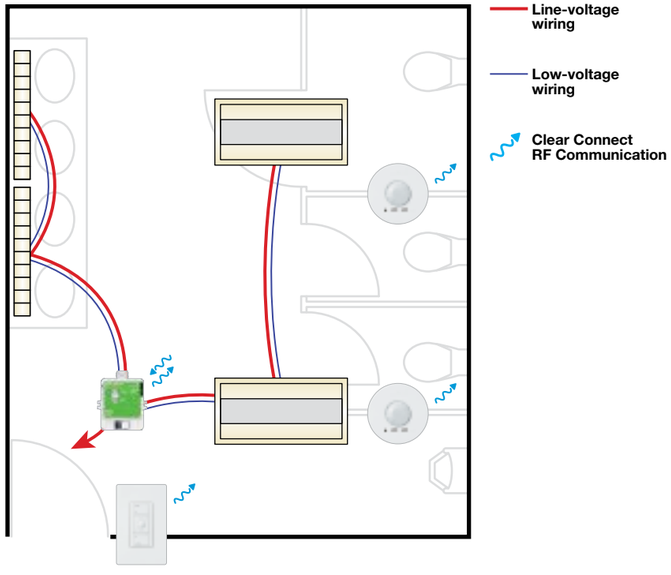


High-end Trim/Tuning

Scheduling



Scene Control



Symbol	Model Number	Description	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	1	$ 180.00
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	2	$ 105.00
	PJ2-3BRL-GWH-L01	Pico wireless, 3-button with raise/lower control	1	$ 27.00
	PICO-WBX-ADAPT	Pico wallbox adapter	1	$ 9.50

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.

Multi-Stall Restroom | New Construction
IECC 2021

Visible System Components

Pico
wireless control

Radio Powr Savr
wireless, ceiling-mount
occupancy sensor

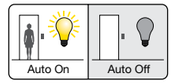
Control Functionality

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.

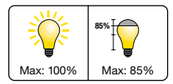
Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Control Strategies



Occupancy/Vacancy

Dimming

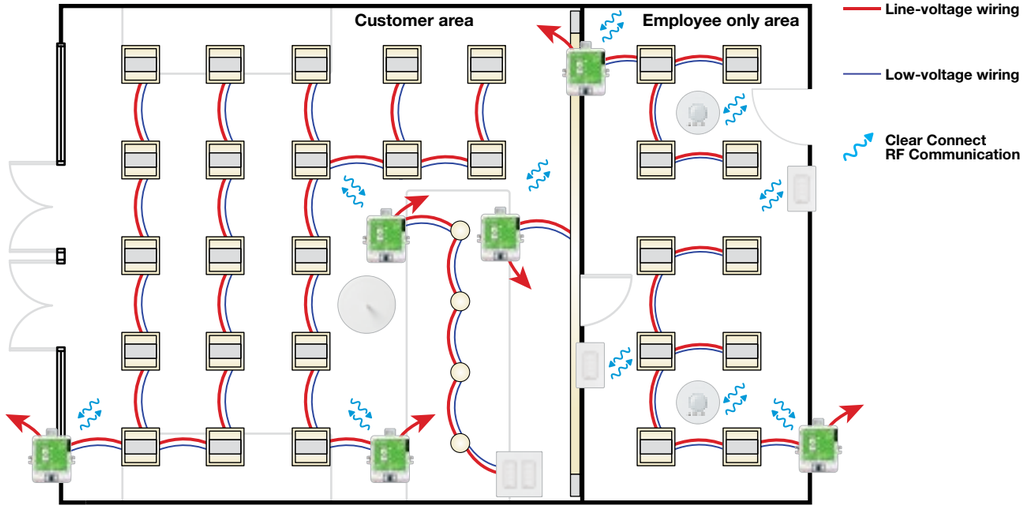


High-end Trim/Tuning

Lighting Energy Savings*

50%

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



Symbol	Model Number	Description	Voltage	Qty	List Price Each
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	120V/ 277V	6	$ 180.00
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	BATT	2	$ 105.00
	PJ2-4B-GWH-L31	Pico wireless, 4-button scene control	N/A	4	$ 45.00
	PICO-WBX-ADAPT	Pico wallbox adapter	N/A	4	$ 9.50
	HJS-0-FM	Vive wireless hub	N/A	Shared	Consult your local rep for hub pricing and service options.

Code Notes: This solution requires 0-10V enabled ballasts and drivers by others.
Go to lutron.com/vive for complete compatibility and design details.

Retail | Retrofit and New Construction
IECC 2021

Visible System Components

Pico
wireless controls

Radio Powr Savr
wireless, ceiling-mount
occupancy sensor

Vive wireless hub

Control Functionality

Prior to Business Opening:
Lights scheduled to automatically turn on in customer area prior to employee arrival.

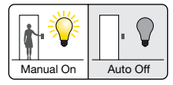
Occupant Enters:
Lighting automatically turns on in employee-only area to at least 50% of full power. Remaining lighting must be turned on manually.

When Occupied:
Employee uses wall dimmer to set desired light levels for all lights.

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

After Business Closing:
All lighting in customer area is scheduled to automatically turn off after business operations conclude.

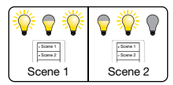
Control Strategies



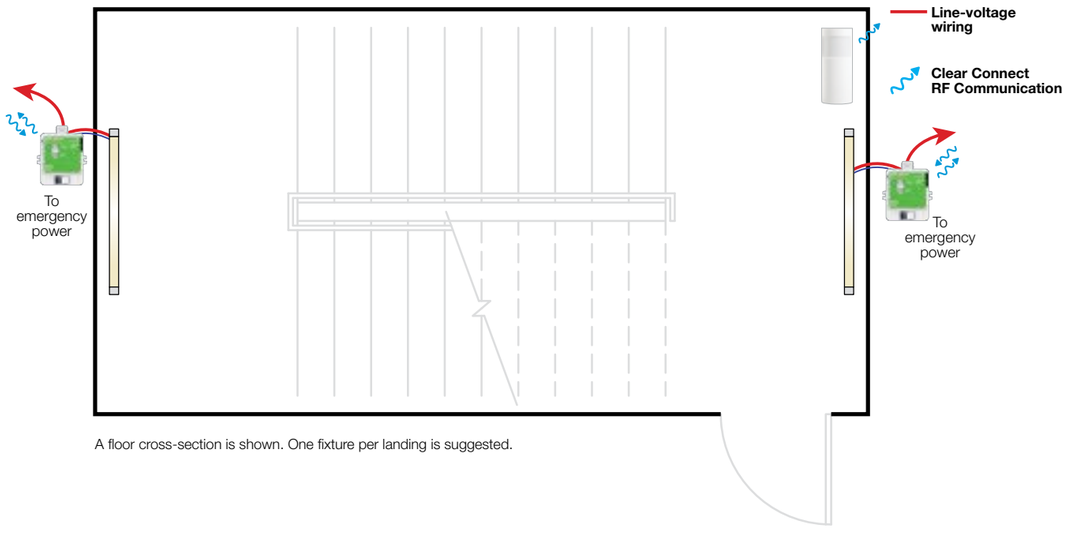
Occupancy/Vacancy

Dimming

Scheduling



Scene Control



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

Symbol	Model Number	Description	Qty	List Price Each
	FCJS-010	Wireless fixture control with 0-10 V	2	$ 91.00
	LRF2-OKLB-P-WH	Radio Powr Savr wireless, corner-mount occupancy sensor	1 (per floor)	$ 105.00

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 the Vive wireless hub. A new model number, that will include Vive compatibility, is coming soon. Go to lutron.com/vive for the latest compatibility details.

Egress Stairwell | New Construction
IECC 2021

Visible System Components

Radio Powr Savr
wireless, corner-mount
occupancy sensor

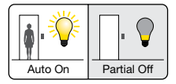
Control Functionality

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

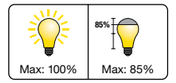
Occupant Exits:
All lights dim to minimum light level 15 minutes after all occupants exit. Minimum light level is set to 10%.

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

Control Strategies



Occupancy/Vacancy



High-end Trim/Tuning

Code Notes: For non-egress stairwells, see the recommended solution and set the minimum light level to full off.

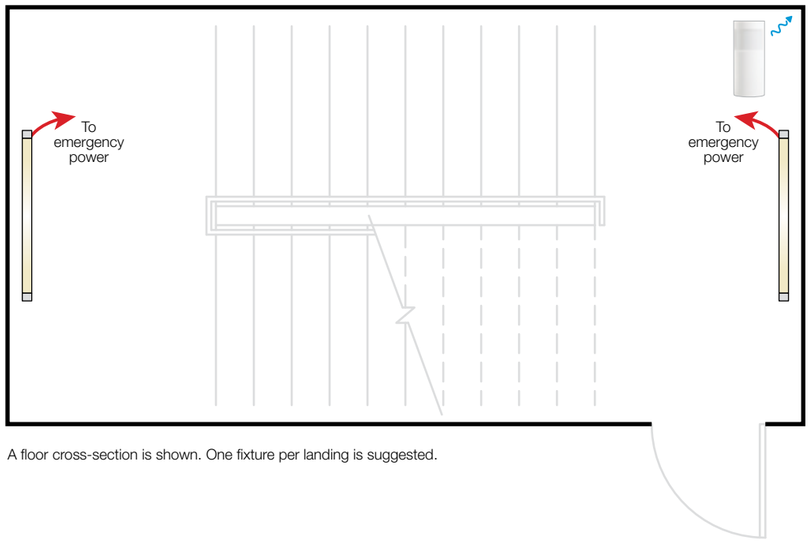
Lighting Energy Savings*

80%

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

Egress Stairwell | Recommended

IECC 2021



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

Line-voltage wiring

Clear Connect RF Communication

1 Integrated into each light fixture

Symbol	Model Number	Description	Qty	List Price Each
	Integral to fixture[1]	Integral fixture control	2 (per floor)	$ 67.00[2]
	LRF2-OKLB-P-WH	Radio Powr Savr wireless, corner-mount occupancy sensor	1 (per floor)	$ 105.00

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.

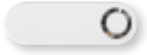
Code Notes: Verify that the egress fixtures go to full output upon loss of control signal. For projects that require UL 924 compliance, provide an automatic load control relay (ALCR) per load controller connected to emergency fixtures. Add a daylight sensor for stairwells with daylight zones. This solution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

Egress Stairwell | Recommended

IECC 2021

Visible System Components

Radio Powr Savr wireless, corner-mount occupancy sensor



Integral fixture control

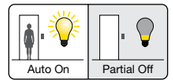
Control Functionality

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

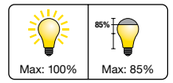
Occupant Exits:
All lights dim to minimum light level 15 minutes after all occupants exit. Minimum light level is set to 10%.

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

Control Strategies



Occupancy/Vacancy



High-end Trim/Tuning

Lighting Energy Savings*

80%

Code Notes: For non-egress stairwells, set the minimum light level to full off.

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

Notes

lutron.com
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