COMMERCIAL LIGHTING CONTROLS

NECB 2015

Design to meet code compliance with Lutron

LUTRON

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NECB 2015

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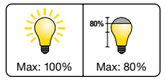
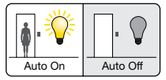
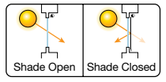
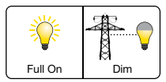
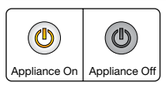
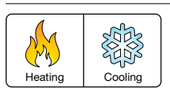
This document summarizes the lighting and receptacle control requirements for commercial buildings. It is for information purposes only. It is not meant to replace your state's or local jurisdiction's official energy code. The recommendations presented in this guide are based on the originally published code prior to addenda. 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	Wallbox	Vive	Vive with wireless hub*	Guestroom Solutions: Code-compliant guestroom solutions
	Local 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.
** Requires QS timeclock.
† Automated Demand Response capability requires signal from a third-party device.

Summary of Requirements for Interior Lighting Controls

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The requirements listed below are summarized for simplicity.

	Minimum control type		Description	Code provision
Manual Control	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.	4.2.2.1 (3-5)
	Dimmer or scene control		Lighting shall be capable of providing at least one level between 30% and 70% of full power, in addition to ON and OFF. Continuous dimming also complies. 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.	4.2.2.1 (9)
Automatic ON/OFF Control	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, turns lighting ON or OFF based on typical occupancy and daylight (requires astronomical timeclock).	4.2.2.1 (20-23) 4.2.4.1
	Occupancy sensor		Automatic control turns lighting ON upon occupancy or OFF after a vacancy of 20 minutes or less.	4.2.2.1 (16-17)
	Settings	Full ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to maximum lighting power.	4.2.2.1 (7)
		Partial ON	When initiated by a timeclock or occupancy sensor, lighting is automatically turned ON to 50% or less of maximum lighting power.	4.2.2.1 (8)
		Manual ON	Lighting is turned ON manually by an occupant.	4.2.2.1 (6)
		Full OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically turned OFF.	4.2.2.1 (18-19) 4.2.2.1 (20-23)
		Partial OFF	When initiated by a timeclock or occupancy sensor, lighting is automatically reduced by at least 50% of maximum lighting power (30% for enclosed parking garages and exterior). Automatic full OFF also complies.	4.2.4.1 (16-17)
Other	Daylight responsive control		**Interior:** A sensor which adjusts lighting in response to available daylight is required for sidelight and skylight zones. There must be at least two light levels between ON and OFF. See the “Daylight Zone Requirements” diagrams for more information. The perimeter 6.1 m. of parking garages with access to daylight must automatically reduce lighting power in response to daylight. **Exterior:** A photosensor can be used as an alternate to the dawn/dusk operation of an astronomical timeclock.	4.2.2.1 (10-15) 4.2.2.3 4.2.2.4 4.2.2.5 4.2.4.1
	Receptacle control		Receptacle control is not required by this energy code.	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.

Daylight Zone Requirements

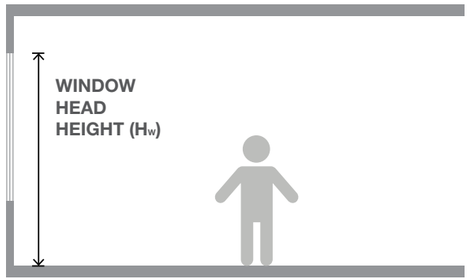
NECB 2015

Daylight zone requirements

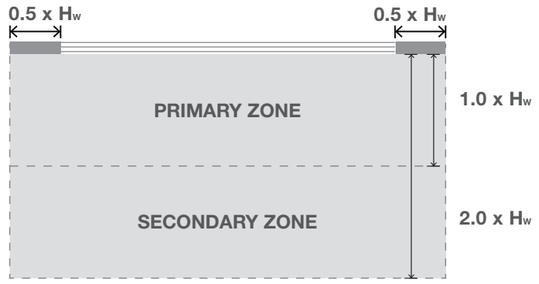
Daylight Zone Requirements:
Fixtures in the primary and secondary daylight zones must be independently controlled by zone. Sidelighted zones must be controlled separately from top-lighted zones.

Daylight Exceptions:
Daylight control is not required when the total lighting power of a daylight zone is less than 150 W or when the total glazing area is less than 2 sq. m.

Sidelighting (Window)

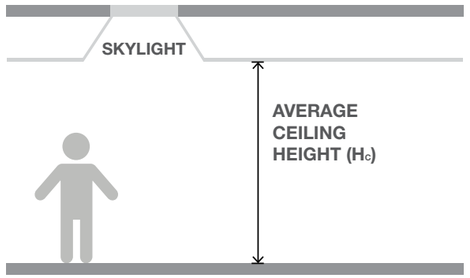


Section View
NOT TO SCALE

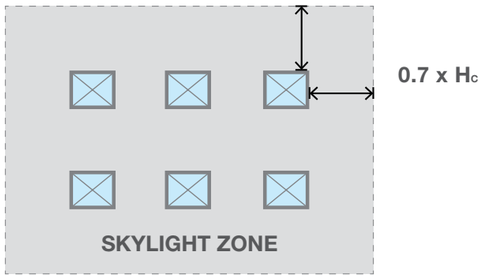


Plan View
NOT TO SCALE

Toplighting (Skylight)



Section View
NOT TO SCALE



Plan View
NOT TO SCALE

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. The recommendations presented in this guide are based on the originally published code prior to addenda. Please refer to your local building energy code or AHJ for your precise requirements. Only the AHJ can guarantee code compliance.

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 of 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.

Suggested Code-Compliant Solutions

NECB 2015

Diagram key:

◉ = New construction[1]

		Atrium	Classroom, Lecture Hall, Training Room	Conference, Break Room	Corridor[2]	Guestroom[3]	Lobby[4]	Open Office (>250 sq. ft.)	Parking Garage[5]	Private Office (<250 sq. ft)	Restaurant/ Cafeteria, Retail	Restroom	Stairwell[2]	Storage Room	Warehouse and Library Stacks[4]	Facade/ Landscape	Other Exterior[6]
Manual Control	Switch					◉						◉		◉			
	Dimmer or scene control	◉	◉	◉	◉		◉	◉		◉	◉		◉		◉		
Automatic ON/OFF Control	Timeclock	◉					◉		◉		◉				◉	◉	◉
	Occupancy sensor		◉	◉	◉	◉	◉	◉	◉	◉		◉	◉	◉	◉		
	Settings: Full ON				◉		◉		◉			◉	◉			◉	◉
	Settings: Partial ON	◉						◉			◉				◉		
	Settings: Manual ON		◉	◉		◉				◉				◉			
	Settings: Full OFF	◉	◉	◉		◉	◉	◉		◉	◉	◉		◉	◉	◉	◉
	Settings: Partial OFF				◉		◉		◉				◉		◉		◉
Other	Daylight responsive control	◉	◉	◉	◉		◉	◉	◉	◉	◉	◉	◉	◉	◉		
	Receptacle control																
	Demand response																

1 The NECB 2015 does not contain any requirements for retrofits.

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 OFF is required for all luminaires and switched receptacles.

4 When typically occupied, the occupancy sensor provides partial OFF functionality. When typically unoccupied, the sensor provides full OFF functionality.

5 For entrances and exits, daylight responsive control is not required nor recommended, and the maximum light level is set to 50% at night.

6 Astronomical timeclock shall ensure all lights are off during daylight hours. Lights should be scheduled to partial OFF during night hours.

7 Not required for sidelight daylight zones in retail spaces.

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.

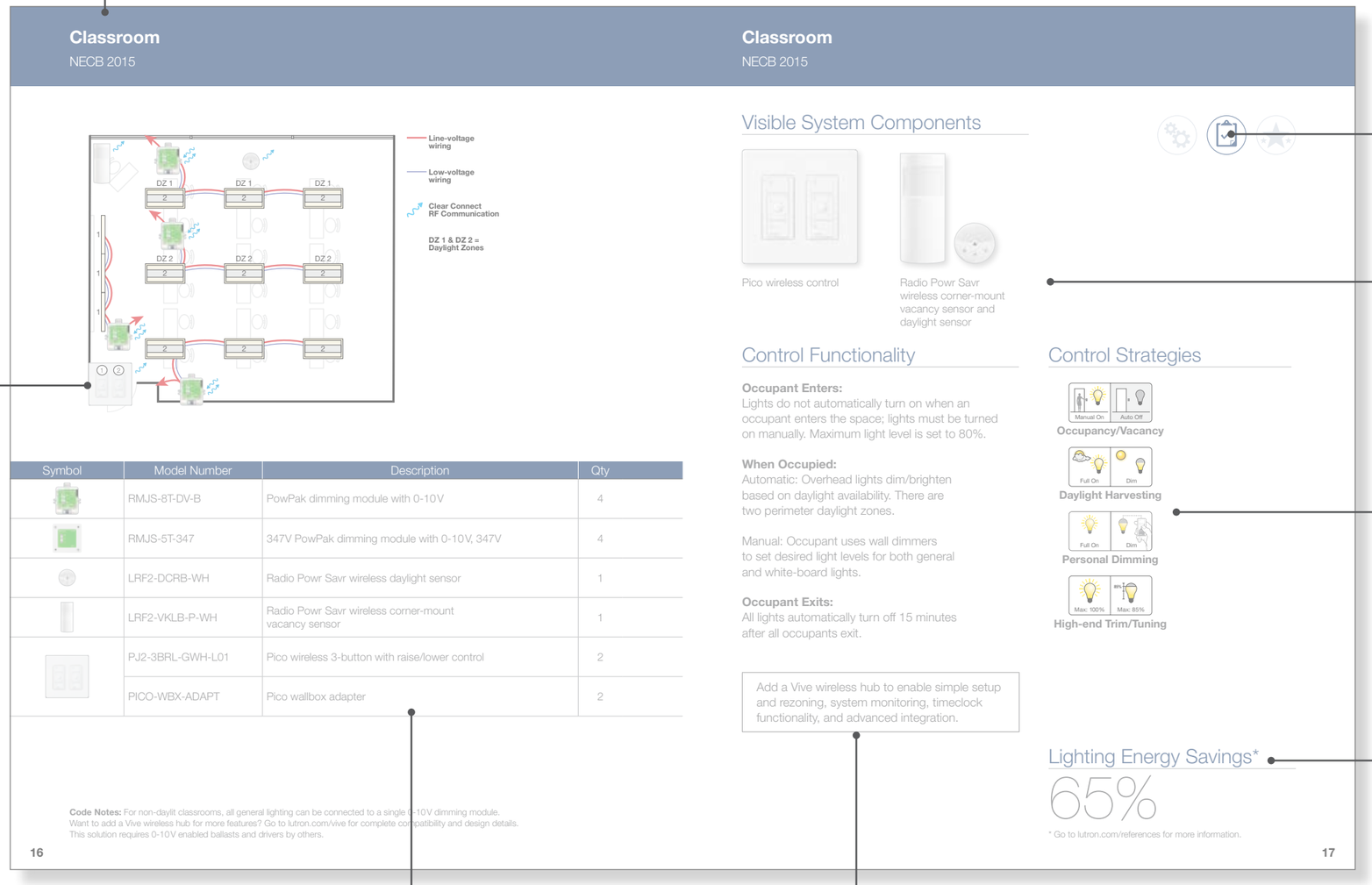
For Specifiers
Use this application guide for design suggestions, to understand the way the system operates and to specify the relevant products for each space.

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



Classroom
NECB 2015

Symbol	Model Number	Description	Qty
	RMJS-8T-DV-B	PowPak dimming module with 0-10V	4
	RMJS-5T-347	347V PowPak dimming module with 0-10V, 347V	4
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	1
	LRF2-VKLB-P-WH	Radio Powr Savr wireless corner-mount vacancy sensor	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	2
	PICO-WBX-ADAPT	Pico wallbox adapter	2

Code Notes: For non-daylit 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.

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 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.

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

Control Strategies

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

16

17

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

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

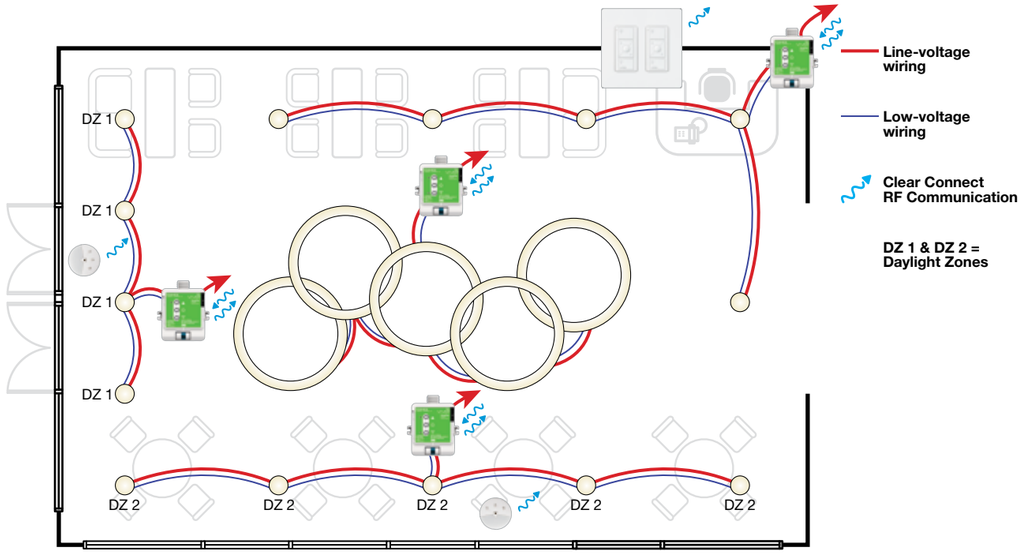
Pico wireless remote control

Daylight sensor

Vive wireless 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 and API integration

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



Symbol	Model Number	Description	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	4
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	4
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	2
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	1
	PICO-347WBX-ADAPT**	Pico wallplate adapter	347V	1
	HJS-1-FM	Vive wireless hub	N/A	Shared

* These products are for 120V applications.
** These products are for 347V applications.

Code Notes: Requirements specified for 6-12m 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
NECB 2015

Visible System Components

Pico wireless 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.

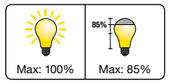
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

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.

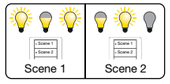
Control Strategies

Daylight Harvesting



High-end Trim/Tuning

Scheduling



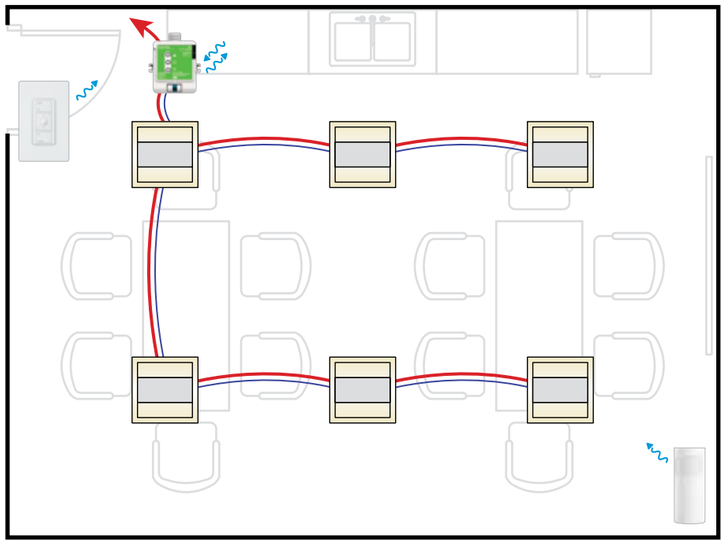
Scene Control

Dimming

Lighting Energy Savings*

60%

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



Symbol	Model Number	Description	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	1
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	1
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	N/A	1
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	1
	PICO-347WBX-ADAPT**	Pico wallplate adapter	347V	1

* These products are for 120V applications.
** These products are for 347V applications.

Code Notes: For break rooms with daylight, include a 0-10V dimming module per zone and a daylight sensor.

Break Room | New Construction
NECB 2015

Visible System Components

Pico
wireless control

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

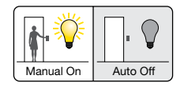
Control Functionality

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%.

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

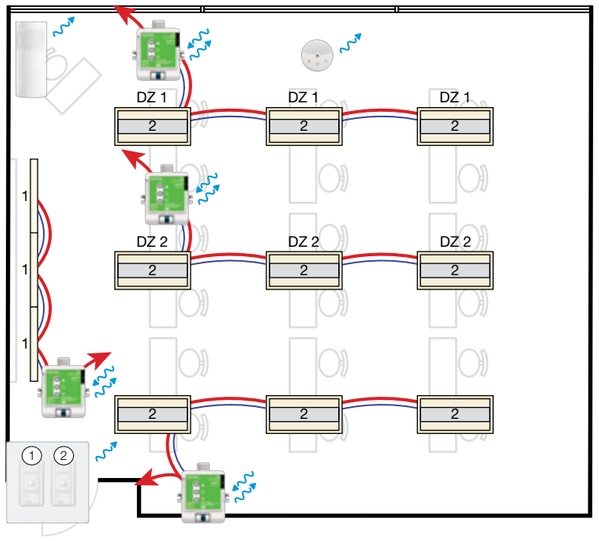
Daylight Harvesting

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	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	4
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	4
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	1
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	N/A	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	2
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	2
	PICO-347WBX-ADAPT**	Pico wallplate adapter	347V	1

* These products are for 120V applications.
** These products are for 347V applications.

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

Classroom | New Construction
NECB 2015

Visible System Components

Pico wireless control

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

Control Functionality

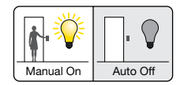
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

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.

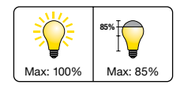
Control Strategies



Occupancy/Vacancy

Daylight Harvesting

Dimming

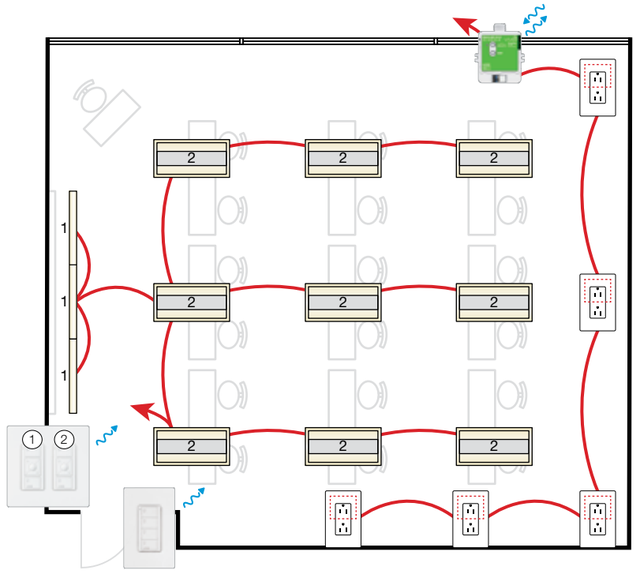


High-end Trim/Tuning

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	Voltage	Qty
	Integral to fixture[1]	Integral fixture control with sensor	N/A	12
	RMJS-20R-DV-B	20A PowPak relay module	N/A	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	2
	PICO-WBX-ADAPT	Pico wallbox adapter	120V/ 277V	3

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.

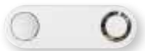
Want to add a Vive wireless hub for more features? Go to lutron.com/vive for complete compatibility and design details. This solution requires digitally enabled ballasts and drivers by others.

Classroom | Recommended
NECB 2015

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.

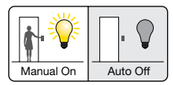
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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.

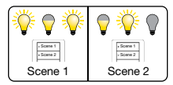
Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

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

Control Strategies



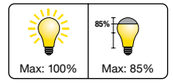
Occupancy/Vacancy



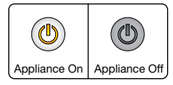
Scene Control

Daylight Harvesting

Dimming



High-end Trim/Tuning



Plug Load Control

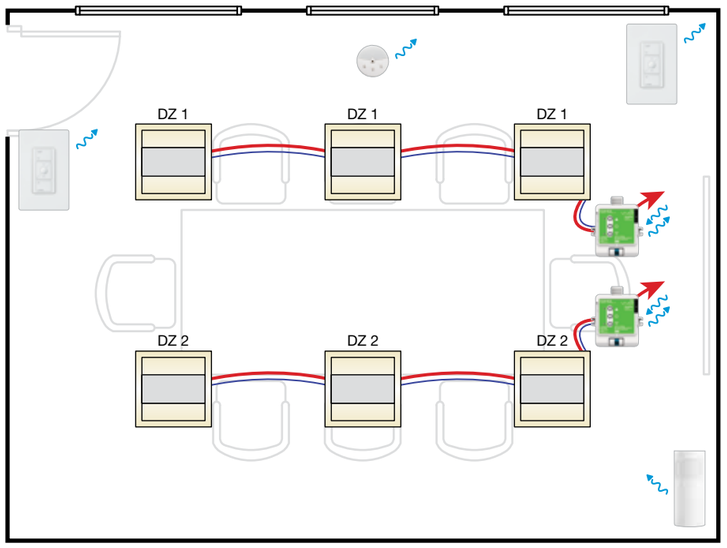
Lighting Energy Savings*

65%

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

Conference Room | New Construction

NECB 2015



Line-voltage wiring

Low-voltage wiring

Clear Connect RF Communication

DZ 1 & DZ 2 = Daylight Zones

Symbol	Model Number	Description	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	2
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	2
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	1
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	N/A	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	2
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	2
	PICO-347-WBX-ADAP**	Pico wallplate adapter	347V	2

* These products are for 120V applications.
** These products are for 347V applications.

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

Conference Room | New Construction

NECB 2015

Visible System Components

Pico
wireless control

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

Control Functionality

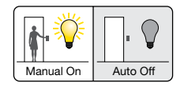
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

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.

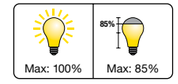
Control Strategies



Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning

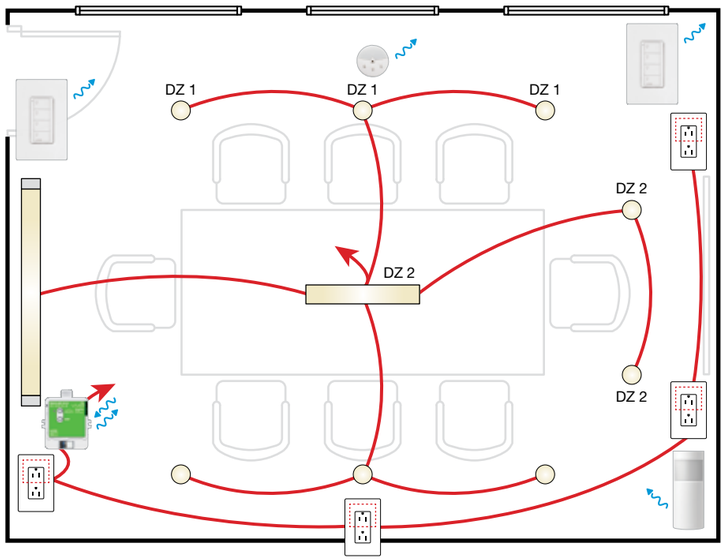
Lighting Energy Savings*

60%

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

Conference Room | Recommended

NECB 2015



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	Voltage	Qty
	Multiple	EcoSystem-enabled Hi-Lume Soft-on, Fade-to-Black series ballasts/drivers	120V/ 277V	10
	FCJS-ECO	Wireless fixture control with EcoSystem	N/A	10
	RMJS-20R-DV-B	20A PowPak relay module	N/A	1
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	1
	LRF2-VKLB-P-WH	Radio Powr Savr wireless, corner-mount vacancy sensor	N/A	1
	PJ2-4B-GWH-L31	Pico wireless 4-button scene control	N/A	2
	PICO-WBX-ADAPT	Pico wallbox adapter	120V/ 277V	2

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

NECB 2015

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.

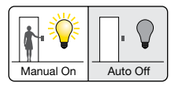
When Occupied:
Automatic: Overhead lights dim/brighten based on daylight availability. There are two perimeter daylight zones.

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

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

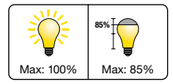
50% of all receptacles automatically turn off 15 minutes after all occupants exit.

Control Strategies

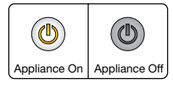


Occupancy/Vacancy

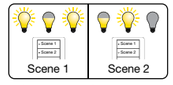
Daylight Harvesting



High-end Trim/Tuning



Plug Load Control



Scene Control

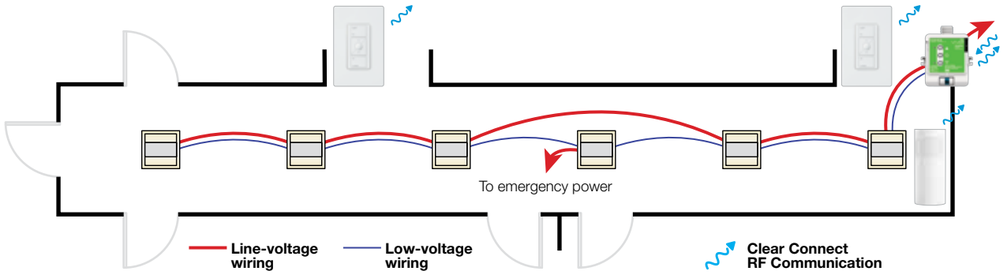
Lighting Energy Savings*

60%

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

Egress Corridor | New Construction

NECB 2015



Symbol	Model Number	Description	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	1
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	2
	LRF2-OHLB-P-WH	Radio Powr Savr wireless hallway occupancy sensor	N/A	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	2
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	2
	PICO-347-WBX-ADAP**	Pico wallplate adapter	347V	2

* These products are for 120V applications.
** These products are for 347V applications.

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

NECB 2015

Visible System Components

Pico
wireless control

Radio Powr Savr
wireless hallway
occupancy sensor

Control Functionality

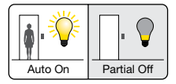
Occupant Enters:
All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

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%.

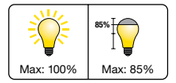
Occupant Exits:
All lights automatically go to minimum light level15 minutes after all occupants exit.

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

Control Strategies



Occupancy/Vacancy



High-end Trim/Tuning

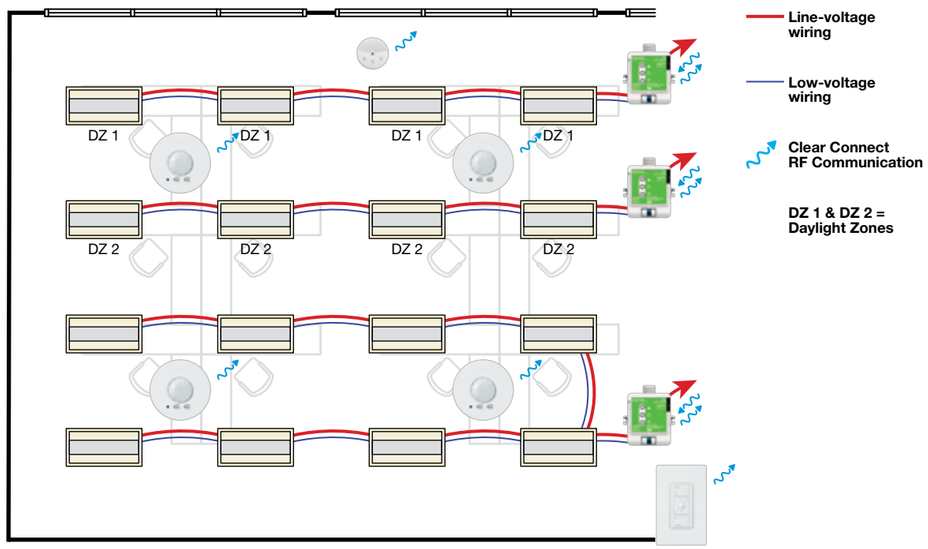
Dimming

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
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	3
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	3
	LRF2-DCRB-WH	Radio Powr Savr wireless daylight sensor	N/A	1
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	N/A	4
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	3
	PICO-347-WBX-ADAP**	Pico wallplate adapter	347V	3

* These products are for 120V applications.
** These products are for 347V applications.

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

Open Office | New Construction
NECB 2015

Visible System Components

Pico
wireless control

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

Control Functionality

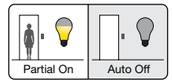
Occupant Enters:
All lights automatically turn on to 50% light level. Occupant turns lights on to maximum level manually. Maximum light level is set to 80%.

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.

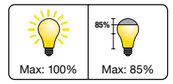
Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting



High-end Trim/Tuning

Dimming

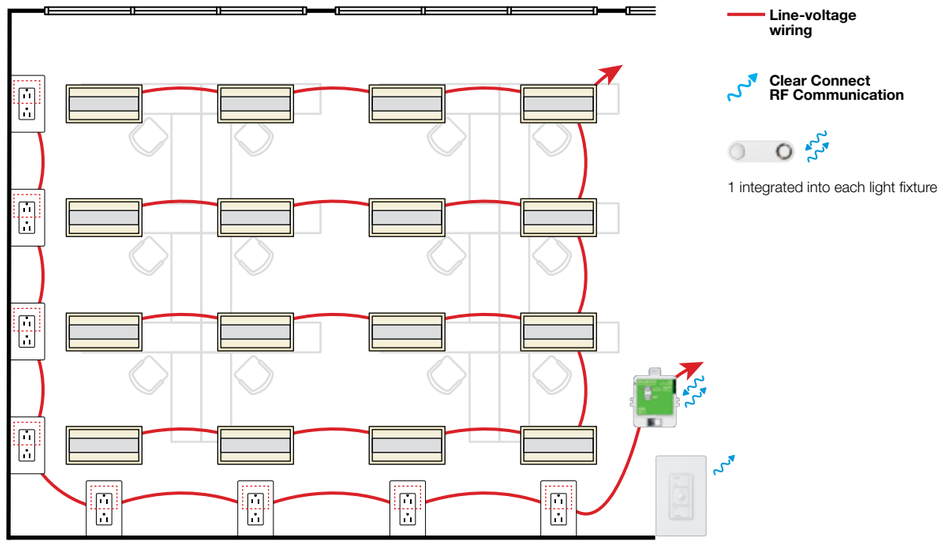
Lighting Energy Savings*

55%

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

Open Office | Recommended

NECB 2015



Line-voltage wiring

Clear Connect RF Communication

1 integrated into each light fixture

Symbol	Model Number	Description	Voltage	Qty
	Integral to fixture[1]	Integral fixture control with sensor	N/A	16
	RMJS-20R-DV-B*	20A PowPak relay module	120V/ 277V	1
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	1
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallbox adapter	N/A	1
	PICO-347WBX-ADAP**	347V wallbox adapter	347V	1

* These products are for 120V applications.
** These products are for 347V applications.

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.

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

NECB 2015

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.

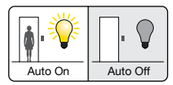
When Occupied:
Automatic: Each individual overhead light dims/ brightens based on local daylight availability.

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.

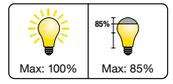
Control Strategies



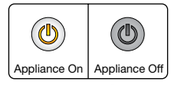
Occupancy/Vacancy

Daylight Harvesting

Dimming



High-end Trim/Tuning

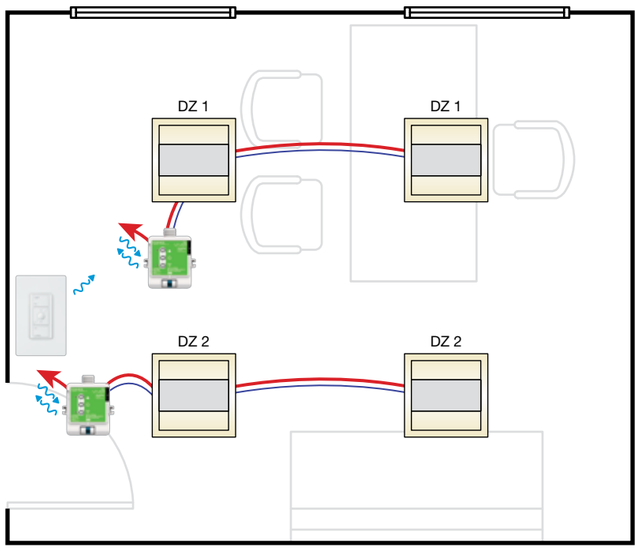


Plug Load Control

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	Voltage	Qty
	FCJS-010*	Wireless fixture control with 0-10V	120V/ 277V	2
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	1
	LRF2-OCR2B-P-WH**	Radio Powr Savr wireless, ceiling-mount occupancy sensor	N/A	1
	LRF2-DCRB-WH*	Radio Powr Savr wireless daylight sensor	N/A	1
	FC-SENSOR**	PowPak fixture sensor	N/A	2
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	1
	PICO-347-WBX-ADAP**	Pico wallplate adapter	347V	1

* These products are for 120V applications.
** These products are for 347V applications.

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.

Private Office | New Construction
NECB 2015

Visible System Components

Pico
wireless control

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

PowPak
fixture sensor

Control Functionality

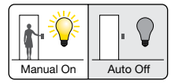
Occupant Enters:
Lights do not automatically turn on when an occupant enters the space; lights must be turned on manually. Maximum light level is set to 80%.

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.

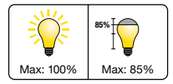
Occupant Exits:
All lights automatically turn off 15 minutes after all occupants exit.

Control Strategies



Occupancy/Vacancy

Daylight Harvesting



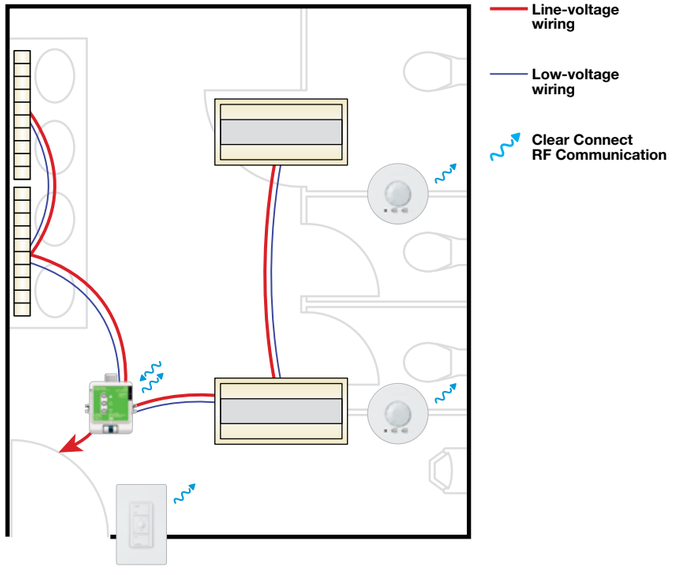
High-end Trim/Tuning

Dimming

Lighting Energy Savings*

60%

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



Symbol	Model Number	Description	Voltage	Qty
	RMJS-8T-DV-B*	PowPak dimming module with 0-10V	120V/ 277V	1
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	1
	LRF2-OCR2B-P-WH	Radio Powr Savr wireless, ceiling-mount occupancy sensor	N/A	2
	PJ2-3BRL-GWH-L01	Pico wireless 3-button with raise/lower control	N/A	1
	PICO-WBX-ADAPT*	Pico wallplate adapter	120V/ 277V	1
	PICO-347-WBX-ADAP**	Pico wallplate adapter	347V	1

* These products are for 120V applications.
** These products are for 347V applications.

Code Notes: Add a daylight sensor for restrooms with daylight zones.

Multi-Stall Restroom | New Construction
NECB 2015

Visible System Components

Pico
wireless control

Radio Powr Savr
wireless, ceiling-mount
occupancy sensor

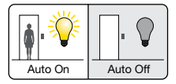
Control Functionality

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

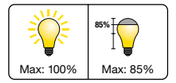
When Occupied:
Manual: Occupant uses wall dimmer to set desired light levels for all lights.

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

Control Strategies



Occupancy/Vacancy



High-end Trim/Tuning

Dimming

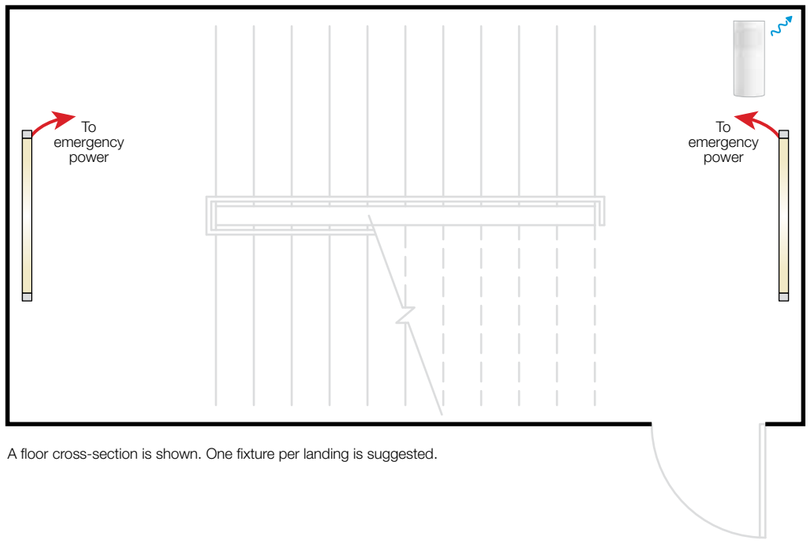
Lighting Energy Savings*

60%

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

Egress Stairwell | New Construction

NECB 2015



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	Voltage	Qty
	Integral to fixture[1]*	Integral fixture control	120V/ 277V	2 (per floor)
	RMJS-5T-347**	347V PowPak dimming module with 0-10V	347V	1 (per floor)
	LRF2-OKLB-P-WH**	Radio Powr Savr wireless, corner-mount occupancy sensor	N/A	1 (per floor)

* These products are for 120V applications.
** These products are for 347V applications.

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.

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 | New Construction

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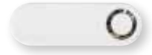
Visible System Components

Radio Powr Savr wireless, corner-mount occupancy sensor



Integral fixture control

Control Functionality

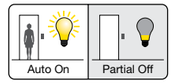
Occupant Enters:
All lights automatically turn on to maximum light level. Maximum light level is set to 80%.

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

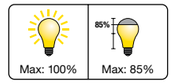
Occupant Exits:
All lights dim to minimum light level 15 minutes after all occupants exit. Minimum light level is set to 10%.

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

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