Lighting and Shade Control Solutions

For Government Applications

LUTRON

Lutron History of Innovation

As a young physicist, Lutron founder, Joel Spira, recognized that a device designed for secret radars could be adapted to control electrical power. His experimentations led to the first wallbox-sized device for dimming an ordinary light bulb — a technology that saved energy and enhanced people's lives.

The impact of that dimmer changed the lighting industry, so much so that the company's early inventions — including the first solid-state electronic dimmer invented by Joel Spira — are now part of the permanent collection at the Smithsonian's National Museum of American History in Washington, DC.

Nearly 60 years later, Lutron Electronics is still a family owned and operated company.

Lutron — The global leader in innovative, smart, energy-saving, lighting control solutions for government applications.

"Notebook A" contains more than 100 pages of drawings, documentation, testing results, and photographs.

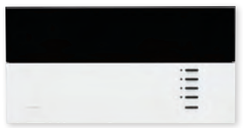
A few Lutron firsts

1963

The **Capri electronic dimmer** is manufactured and marketed by Lutron.

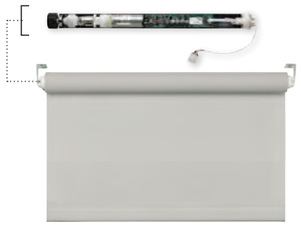
1974

Hi-lume is the world's first electronic, solid-state fluorescent dimming ballast.



1987

GRAFIK Eye is the first customizable dimming system for different light sources — controls every light in a single room.



2003

Lutron introduces the ultra-quiet **Sivoia QED** system, for automatic control of roller shades.

2006

Quantum Lighting Management System and **EcoSystem** digitally addressable dimming ballasts offer smart, centralized lighting control.

2011

Energi TriPak family of radio frequency solutions features sensors, controls, dimmers, switches, and power modules.

2015

Vive simple, scalable, radio-frequency control for retrofit or new construction, standalone or networked capability.

2020

Athena dynamic lighting control features the LED+ universal phase control dimmer — control all load types from a single system.

Lutron Government Team

How we support you

Government projects demand a specific level of vigilance and support. Lutron offers a dedicated sales and service team, in your region or area, to support government projects of any size, and in any location (CONUS and OCONUS).

CUI/
SBU

Dedicated support team

US Support team located at our PA corporate headquarters (NIST 800-171 systems in place).

Expertise with federal agency design guide

- UFC 3-530-01
- GSA P100
- OBO Design Guide
- VA Design Guide

Achieve project goals

We are committed to helping you meet federal agency design requirements.

BAA/
TAA

Product support

Lutron proudly offers thousands of lighting control solutions that comply with BAA and TAA provisions on all your projects.

System sales engineers

Available where you are to provide advanced support.

24/7

Technical support

Taking care of the customer is Lutron's guiding principle.

Our US-based Technical Support Team is available 24 hours a day, 7 days a week.

Energy Efficiency and Smart Building Management

Ronald Reagan Federal Building and United States Courthouse, Santa Ana, California

Energy standards

Lutron lighting control solutions help meet government energy standards, provide demand reduction for microgrids, and deliver tools to simplify and enhance smart building management.

The federal government prioritizes actions that benefit taxpayers and the environment by reducing waste, cutting cost, and enhancing the resilience of federal infrastructure and operations.

Lutron lighting control systems can save up to

60%

in lighting energy use

source lutron.com/references

Lighting consumes a significant percentage of building energy.

Lutron lighting control solutions can make important contributions to lower lighting energy use.

Annual reductions

Helps deliver mandated annual reductions in building energy use.

Sustainable design

Contribute to energy efficiency and sustainable design requirements in new construction and major renovations.

Energy management

Monitor and track energy management activities to reduce cost, reduce greenhouse gas emissions, and improve building performance.

Resiliency, Demand Reduction and Microgrid Design


Fort Irwin, California

The right lighting control

Lighting impacts every space in a facility, and the right control solutions not only support and simplify every day building use, but can enhance the ability to withstand, recover, and adjust in the face of operational challenges.

Dimming reduces energy use

Dimming also enhances microgrid design by boosting the ability to supply necessary power and keep essential building areas operational in emergency situations.

Preset lighting scenarios

To support emergency planning, program lighting to react to a variety of crisis situations.

Light management systems

Enable centralized control of lighting management; custom programming and reporting enhances efficiency and sustainability.

Ability to load shed

Load shed is critical to effective microgrid design– reduce peak electrical load, especially in the face of brownout or blackout conditions, and offer tailored demand response programs.

Resiliency

Lighting can respond quickly in emergency scenarios, and automatically return to pre-programmed status once the event is over.

Energy-efficient lighting makes the smart grid smarter

Lighting control is one of the simplest and most predictable demand response solutions because reduced light levels deliver immediate reductions in electricity use.

Updating building lighting infrastructure makes it easier to integrate a microgrid without the need for significant additional investment.

Advanced Lighting Technologies

United States Supreme Court Building, Washington, DC

Designing with dynamic light

In certain applications, such as training facilities, VIP guest quarters, or high-level briefing rooms, dynamic lighting technology can support presentation requirements, enhance a connection to the outdoors, or support high-performance lighting specifications. Lutron dynamic light technologies cover it all.

Warm dimming

Warm color tones reminiscent of incandescent light, and offering dimming to 1.0% light.

Tunable white

Lighting that mimics natural daylight, even as it changes over the course of a day, and enhances connection to the outdoors.

Color changing

The ability to provide full-spectrum color is a differentiator in areas such as high-performance federal buildings.

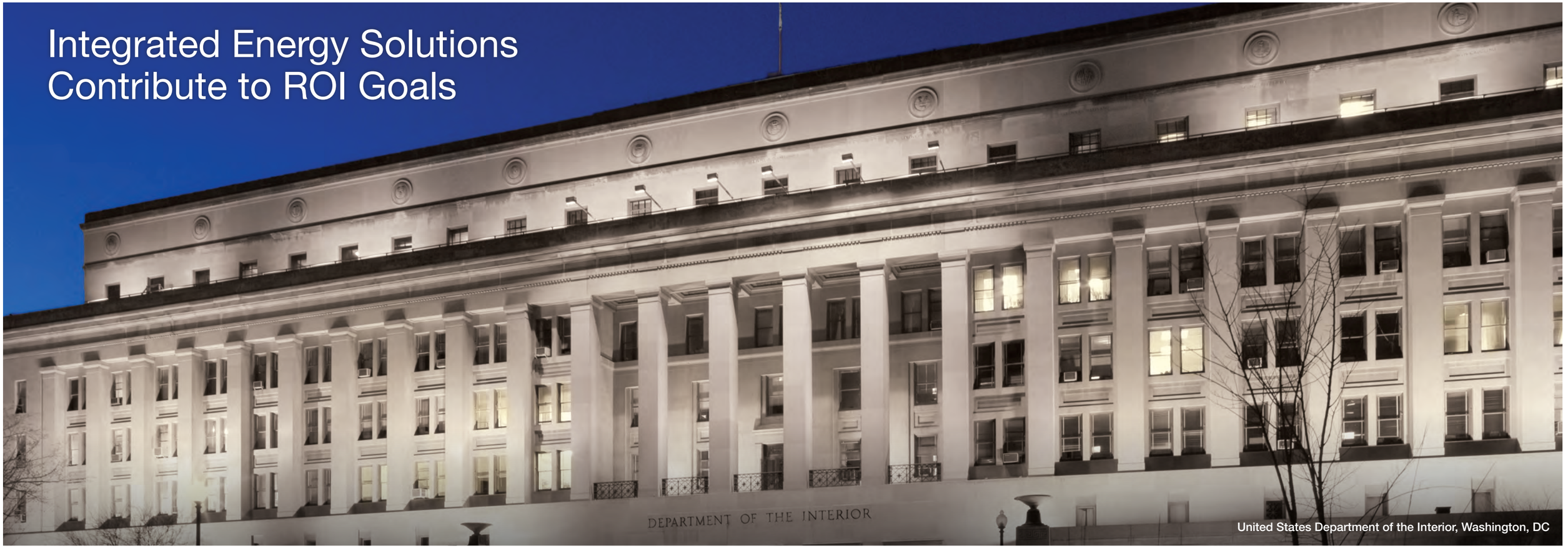
Shading solutions

Lutron shading offers simple wiring and a common communications language. Combine shading and lighting solutions to achieve more human centric spaces, and total light control for critical spaces.

Digital control vs. 0-10V (analog) control

Your choice of control protocol has a dramatic impact on the design, installation and life-cycle costs of your projects. Digital control offers higher performance, easier wiring, and easier rezoning.
lutron.com/tseriesguide

Integrated Energy Solutions Contribute to ROI Goals



United States Department of the Interior, Washington, DC

Working with ESCOs on ESPCs

To help government facilities meet energy reduction goals, Lutron is the ESCO industry leader for lighting controls developed in Energy Saving Performance Contracts (ESPCs).

Lutron will analyze ESPC/UESC projects and propose lighting control solutions that help guarantee energy saving results, meet ROI requirements, current government energy code, as well as federal agency design standards.

Retrofits

Lutron controls make retrofits easy and can help reduce lighting electricity usage by up to 60% to move buildings closer to deep energy retrofit goals.

Quick-install, cost-effective solutions save time and money by reducing both installation and maintenance costs.

The Lutron Clear Connect RF (434 MHz) communications protocol is used successfully throughout the federal government and military installations.

GOOD

Maestro in-wall sensor (switches and dimmers).

BETTER

Standalone dimming controls with occupancy and daylight sensors.

BEST

Vive: simple, scalable, networked RF system.

Good—Better—Best options suited to the budget, energy saving, and performance goals of each project.

Lighting is Essential in Every Building Space

American Embassy — London, England.

Our team is here to help

Lutron can assist you in completing Risk Management Framework (RMF) paperwork to support RMF-approved designs. We look forward to working with you to help design and implement the best lighting control solution for your project.

Design-build (DB) support

Budgetary scope letters can be provided for your DB project meeting the government SOW requirements. Typical system one-lines can also be created to help keep your DB project moving.

New construction

New construction and major renovation projects provide greater opportunity for building management system integration that supports energy efficiency, improved comfort, and sustainable building standards such as LEED.

Occupant satisfaction

Lighting control strategies can contribute to significant energy savings and higher-performance buildings.

We help you integrate these solutions into building operations in ways that enhance the overall environment while being seamless to the people in the space.

BAA/ TAA Compliant

Lutron offers a complete line of wired and radio frequency product solutions that can meet the following:

BAA-US Country of Origin *or*

TAA-Trade Agreement Act Country of Origin requirements.

Visit **www.lutron.com/baa** for our most up-to-date list.

Start-To-Finish Support

In addition to a complete services and support team, Lutron offers tools to simplify design and specification.

National Air and Space Museum, Chantilly, Virginia

Project management

Our government team is here for you from initial concept through post-occupancy and beyond.

We can help you design the right lighting control system for your project, commission the installation to meet the approved sequence-of-operations, and help optimize your system over time.

Field service/ tech support

Lutron offers comprehensive service and support from initial design through implementation and final occupancy.

Lutron's first principle is: Take Care of the Customer with Superior Goods and Services. We are committed to that principle 24 hours a day, 7 days a week.

Self-service design software

Lutron software tools make projects simpler—

QuEst-D quick estimating and design software provides code-compliant solutions with just basic project information.

Designer+ tool simplifies system design, and generates comprehensive system documentation (e.g. BOM, one-line diagrams, and SoO).

LED Control Center of Excellence

Your comprehensive source for all things LED. From the Lutron LED compatibility tool to fixture selection and design, Lutron is committed to LED excellence and superior performance.

We offer up-to-date, online information in an easy-to-use, plain-language format. As LED technology continues to change, the Center of Excellence will keep you up-to-date.

lutron.com/compatibility

Codes and standards

Lutron helps you meet the DOE Federal Energy Management Program (FEMP) energy efficiency standards for federal buildings, as required under the Energy Conservation & Production Act (ECPA), (42 USC 6834 & 6835).

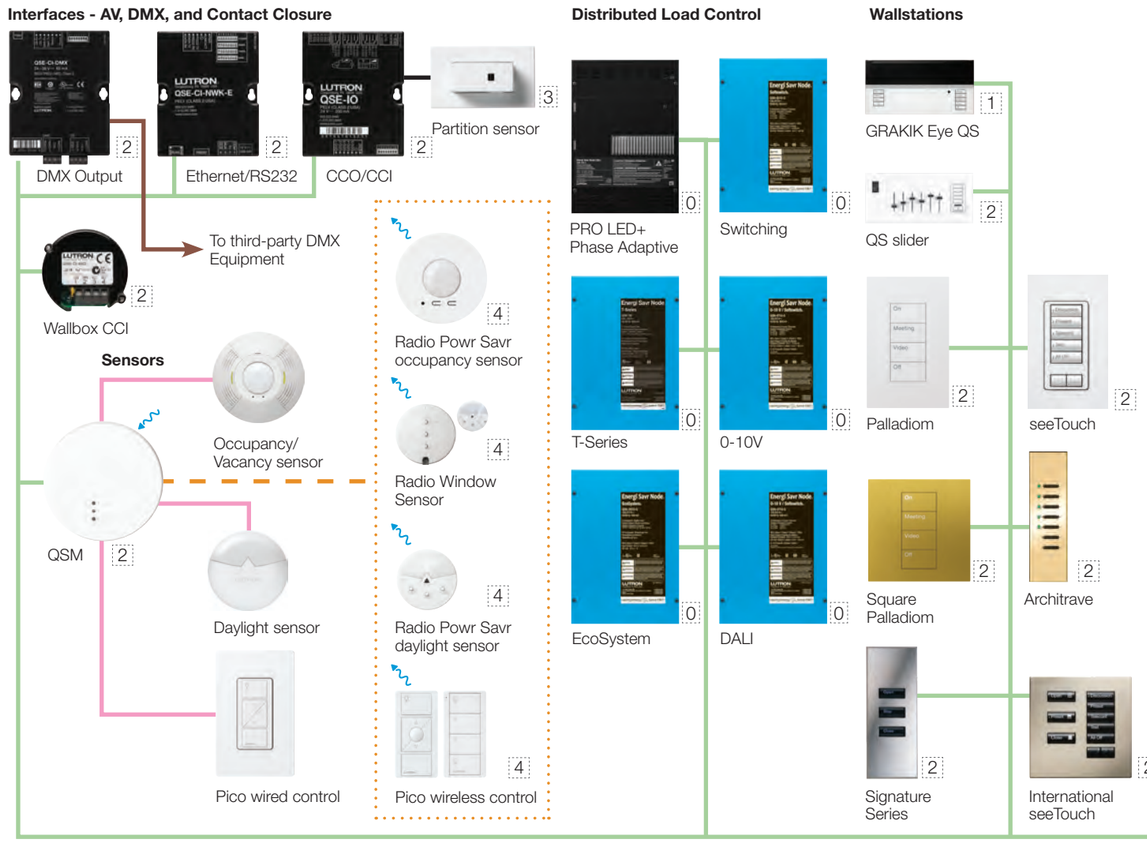
Current Standard: ANSI/ASHRAE/IES Standard 90.1-2013

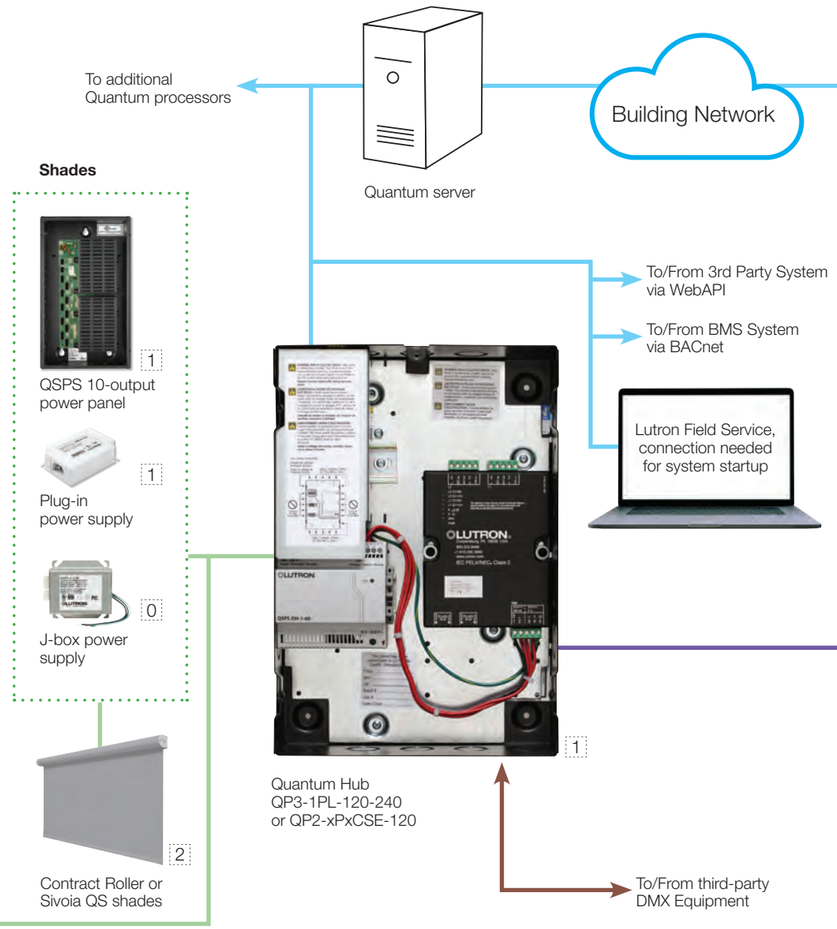
Find local energy code requirements at **lutron.com/energycodes**

Quantum System Architecture for 120/277 VAC

QS wired link

- 2,000 feet maximum wire length (consult technical specs for other applicable rules)
- Free-wire topology (star, daisy chain, home run, etc.)
- Standard Lutron 4 conductor cable*





Ethernet network

Software

Web-based Control and Monitoring

Quantum Vue

Panel link

Panels

1 LP/CCP

0 GP

0 XP

Quantum system limits

- 16 Quantum processors per subsystem
- 50 Subsystems (max)
- 100 QS devices per link
- 512 switchlegs† per link

† A switchleg is the smallest controllable point on any product - a single CCO, a zone of 0-10V, or a single digital address for a fixture.

Key - Wiring

- **QS wired link***
- **QSM Wired Sensor link**
- **Clear Connect - Type A link**
- **Ethernet link**
- **Panel link**
- **DMX link**

* Pin-out: pin 1 - common, pin 2 - VDC, pin 3 - MUX, pin 4 - MUX

GRX-CBL346S-500 (runs up to 500 ft) one pair 18AWG, one pair #18-22AWG twisted/shielded

GRX-CBL-46L (runs up to 2000 ft) one pair 12AWG, one pair #18-22AWG twisted/shielded

RS 485, 24 - 35 VDC powered

The wire gauge required for shade power conductors is dependent on shade size and number, wire run length, and power supply type being used. Consult technical specifications of shade equipment for details.

Key - Power

- 0 Line voltage 120/277 VAC
- 1 Line voltage 120 VAC
- 2 Low voltage 24-35 VDC
- 3 Low voltage 12-24 VDC
- 4 Battery powered

Vive System

Flexible RF controls and sensors
for simple, code-compliant design

Remotes

Occupancy and
daylight sensors

Or

Lighting controllers

Plug load controllers

Integrated fixture control and sensing

Add Vive hubs for centralized
control and integration (optional)

Vive hub

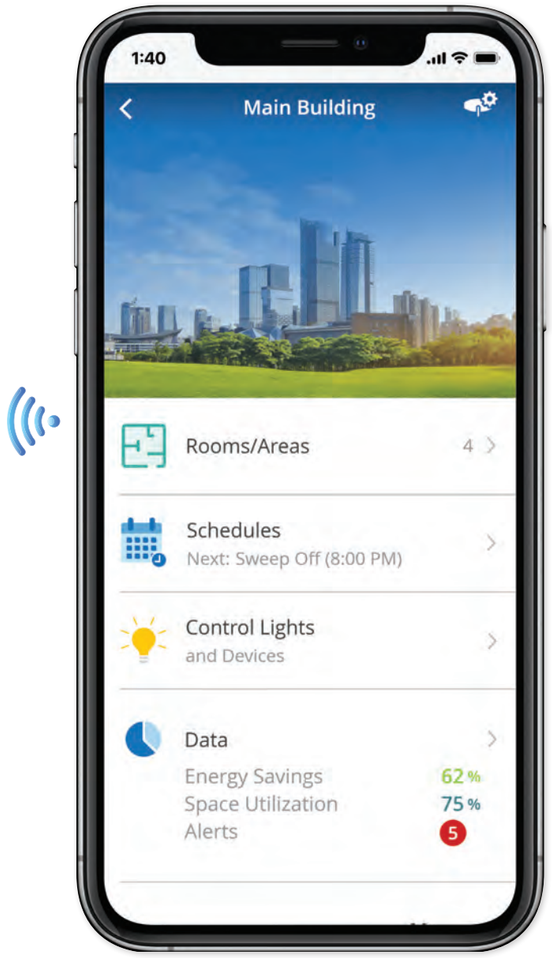
Wired/
Ethernet

Demand
response

BACnet
integration

API
integration

Simple-to-use software



Vive software

Communication protocols

Clear Connect Wireless — Communicate via RF to control components

Communicate via WiFi to smart devices

Communicate via wired Ethernet to Vive hub

Notable Projects

Civilian Agency Projects

- 50 United Nations Plaza
- EPA HQ Federal Triangle
- Everett McKinley Dirksen US Courthouse
- Federal Center South
- Food and Drug Administration (FDA)
- Henry M. Jackson Federal Building
- Hammond Federal Courthouse
- Juarez-Lincoln US Port of Entry
- Los Angeles US Courthouse
- NASA
- Ralph H. Metcalfe Federal Building
- Ronald Reagan Building and International Trade Center
- San Francisco Federal Building
- Smithsonian Museums
- Supreme Court
- Thomas P. O'Neill Federal Building
- USAID
- United States Coast Guard at Buffalo
- United States Department of Health and Human Services (HHS)
- United States Department of State
- United States Department of Treasury

DOD Projects

- Andrews Air Force Base
- Camp Lejeune
- Camp Pendleton
- Eglin Air Force Base
- Ft. Belvoir
- Ft. Bragg
- Ft. Carson
- Ft. Hood
- Ft. Irwin
- Hickam Air Force Base
- Hurlburt Field
- Langley Air Force Base
- Minot Air Force Base
- Naval Station Norfolk
- Naval Air Station Jacksonville
- Peterson Air Force Base
- Schriever Air Force Base
- Schofield Barracks
- United States Air Force Academy
- United States Military Academy at West Point

Veteran's Memorial Hospital
Seattle, Washington

Case study

Challenge
Design and install an energy-savings lighting retrofit, on a tight budget, for a 1950s-built hospital.

Solution
Lutron Vive radio frequency system that would meet energy requirements, and offer lower labor costs, reduced design time, and ability to meet budget and installation goals.

Results
The hospital met energy goals, and saved an additional 15% energy with high-end trim and LED fixtures. Ultra-reliable, interference-free Clear Connect technology ensures reliability without interference. Pico personal controls enable personal lighting for specific tasks.

Service and Support

Lutron offers a wide variety of services for all projects — new construction, renovation, or retrofit.

	Description	Retrofit	New Construction/ Renovation
Pre-start-up Services			
Integration Meeting	Ensures seamless integration with on-site building management system or BACnet		•
Sensor Design and Tuning*	Confirms accurate sensor placement and configuration	•	•
Start-up Services			
On-site Start-up	Three-visit service to ensure proper system installation and set up		•
Telephone Start-up	Assist facility representative via telephone on how to set up the lighting control system	•	
After-hours Start-up	Start-up is performed outside of normal business hours to avoid space disruption	•	
Post Start-up Services			
LEED Documentation	Details the start-up procedure to ensure LEED guidelines are met		•
Aim and Focus Meeting	Discuss, adapt, or change any lighting per the direction of a lighting designer		•
Building Walkthrough	Perform tasks per the request of the facility representative		•
Maintenance Services			
Training Visit	One day, on-site personnel training		•
Software Maintenance Agreements	Ensures Quantum system compatibility with Microsoft® patches		•
Remote Diagnostics	Enables Lutron to diagnose system issues without an on-site visit	•	•
Remote Programming	Allows for programming and tuning of your Lutron system without an on-site visit	•	•
Spare Parts Package	Fix small problems quickly with a stock of extra parts	•	•
System Optimization Visit	Evaluate system usage and discuss opportunities to increase efficiency and functionality	•	•
Software Upgrade Service	Upgrade select parts or your entire light control system for maximum efficiency		•
Lutron HQ Training	Two-day training by lighting experts in Coopersburg, PA		•
On-site Moves/Adds/ Changes	Implement changes per the direction of the facility manager	•	•
Warranty Services			
Enhanced Warranties	Include an initial 2-year full warranty, plus pro-rated parts coverage for years 2-8 of your warranty.		•
Technology Support Plans	Extend initial 2-year full warranty for up to 10 years after system purchase.		•

*Radio Powr Savr RF occupancy, daylight, and shadow sensors

www.lutron.com
Lutron Electronics Co., Inc., 7200 Suter Road, Coopersburg, PA 18036-1299

Customer Assistance
Online: lutron.com/help | Email: support@lutron.com | Phone: 1.844.LUTRON1 (588.7661) — includes 24/7 technical support

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