Lutron government solutions
Smart lighting control
The Lutron Advantage – Innovation, Quality/Reliability and Service. Our first principle is Take Care of the Customer with Superior Goods and Services, and we are committed to that promise at every stage of your project.

**Innovation**

Lutron has been an innovator in the lighting control industry for more than 50 years, and we are committed to meeting the needs of an evolving market with —

- New products that save energy without sacrificing performance
- Continued leadership and expertise in the control of new, efficient light sources
- Advances in wireless control solutions to help reduce installation costs, enhance flexibility and deliver better ROI

**World-Class Quality/Reliability**

Lutron products work as expected to deliver greater value to the customer

- High performance design is built into every product – from our components to our technologies, Lutron ensures superior, reliable, long-term performance
- Every product we make is rigorously tested, and field returns are analyzed to ensure continuous evaluation and improvement

**Global Service and Support**

We offer support from initial design through the life of the products

- 24/7 live support by Lutron technical professionals and engineers
- Around the clock and around the globe – Lutron Field Service engineering teams have the capability to provide the services you need, every step of the way
- We give you access to the knowledge you need online, at Lutron, or at the customer site
Visit a Lutron Experience Center

Come see how lighting control can transform a space, save energy, integrate with other building systems, and enhance safety and security. Many of our Centers are equipped with full training facilities, and we hold periodic training sessions for our customers.

The Lutron Washington, DC Experience and Training Center is convenient to many government offices—
455 Massachusetts Avenue NW, Suite 770
Washington, DC 20001
202.624.5700
dcexperience@lutron.com

Additional Lutron Experience Centers:
- Coopersburg, PA
- Plantation, FL
- Irvine, CA
- New York, NY
- Toronto, Canada
How Lutron fits into the project process

New Construction Design/Build Projects

From initial design through facility management, Lutron’s specification and service teams help with project design, budget, drawing, estimates, quotes, submittals, and service. Whatever you need, we are there to help.

<table>
<thead>
<tr>
<th>Project Stage</th>
<th>How Lutron Can Help</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Initial concept</strong></td>
<td>• Help define project scope&lt;br&gt;• Energy proposals (including budgets and ROI estimates)&lt;br&gt;• Budget proposals (including lighting budget per square foot)</td>
</tr>
<tr>
<td><strong>Preliminary design</strong></td>
<td>• One-line diagrams&lt;br&gt;• CSI specifications&lt;br&gt;• Define Sequence of Operations (SoO)</td>
</tr>
<tr>
<td><strong>- Schematic design</strong></td>
<td></td>
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<tr>
<td><strong>- Design development</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Final design</strong></td>
<td>• Project specific one-line diagrams&lt;br&gt;• Actual budget pricing&lt;br&gt;• Project specific CSI specifications</td>
</tr>
<tr>
<td><strong>Ongoing project management</strong></td>
<td>• Project take-offs&lt;br&gt;• Submittal process (include original submittal, resubmittal, as-built, and as-installed)&lt;br&gt;• Startup&lt;br&gt;• Enhanced warranty options available to ensure client satisfaction for the life of the project</td>
</tr>
<tr>
<td><strong>Installation, startup, and post-occupancy support</strong></td>
<td>• Perform startup (as defined by contract)&lt;br&gt;• Sensor programming and layout service (optional)&lt;br&gt;• Provide installation-team training, as well as end-user training where requested&lt;br&gt;• System optimization service (optional)&lt;br&gt;• Provide after-market Technology Support Plan (optional)&lt;br&gt;• 24/7 technical support</td>
</tr>
</tbody>
</table>
Energy Retrofit or Performance Contracts

How Does Lutron Fit into the Process?

Whether your project is a funded energy retrofit, an energy-saving performance contract (ESPC), or a utility driven program (UESC or Direct Install), Lutron works with your team every step of the way to ensure the lighting controls perform as expected when they are installed, and for the life of the project.

<table>
<thead>
<tr>
<th>Project Stage</th>
<th>How Lutron Can Help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Request for Proposal (RFP)/ Identification of project opportunity</td>
<td>• Analysis of potential lighting control and HVAC integration opportunities</td>
</tr>
<tr>
<td></td>
<td>• RFP development (if applicable)</td>
</tr>
<tr>
<td>Preliminary assessment</td>
<td>• Walk site with client and contractor to identify challenges/opportunities</td>
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<tr>
<td></td>
<td>• Perform lighting energy (LEAPS) analysis</td>
</tr>
<tr>
<td></td>
<td>• Budget pricing (good/better/best options)</td>
</tr>
<tr>
<td>Contractor selection</td>
<td>• Review good/better/best options</td>
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<td></td>
<td>• Upgrade or value-engineer lighting control system based on client needs</td>
</tr>
<tr>
<td>Project awarded/Investment Grade Audit (IGA) performed</td>
<td>• Training/site walk with audit team</td>
</tr>
<tr>
<td></td>
<td>• Energi Advisor audit tool</td>
</tr>
<tr>
<td></td>
<td>• Generate complete BOM with design/build energy team</td>
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<tr>
<td></td>
<td>• Sensor layout and design service (optional)</td>
</tr>
<tr>
<td></td>
<td>• Data logging service (optional)</td>
</tr>
<tr>
<td>Installation, startup, and post-occupancy support</td>
<td>• Perform startup (as defined by contract)</td>
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<tr>
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<td>• Provide after-market Technology Support Plan (optional)</td>
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<td></td>
<td>• 24/7 technical support</td>
</tr>
</tbody>
</table>
Maximize energy savings

Meet energy reduction mandates
Lutron solutions can save lighting and HVAC energy

Annual electricity use in commercial buildings*

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

Annual electricity use*

- Lighting: 38%
- HVAC: 29%
- Refrigeration: 12%
- Office Equipment: 7%
- Other: 14%

Federal government facilities must achieve a 30% total energy reduction from their 2003 baseline by 2015, according to Executive Order 13423.

Savings of up to 23% of building electricity can be achieved with Lutron solutions alone.*

*Go to www.lutron.com/references for more information.
About energy savings

Lighting consumes nearly 38% of the electricity used in a commercial building*. By using automatic dimming control, light level tuning and Lutron occupancy and daylight sensors, a lighting control system can deliver lighting energy savings up to 60 percent.*

Enhanced strategies like controllable window shading offer even greater energy savings, an opportunity to reduce energy from HVAC use, and even the ability to analyze and adjust lighting control to maximize efficiencies.

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

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Potential savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>High-end trim</td>
<td>10–30% Lighting*</td>
</tr>
<tr>
<td>Max. 100%</td>
<td></td>
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<tr>
<td>Max. 80%</td>
<td></td>
</tr>
<tr>
<td>Occupancy/vacancy sensing</td>
<td>20–60% Lighting*</td>
</tr>
<tr>
<td>Auto On</td>
<td></td>
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<tr>
<td>Auto Off</td>
<td></td>
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<tr>
<td>Daylight harvesting</td>
<td>25–60% Lighting*</td>
</tr>
<tr>
<td>Full On</td>
<td></td>
</tr>
<tr>
<td>Dim</td>
<td></td>
</tr>
<tr>
<td>Personal dimming control</td>
<td>10–30% Lighting*</td>
</tr>
<tr>
<td>Full On</td>
<td></td>
</tr>
<tr>
<td>Dim</td>
<td></td>
</tr>
<tr>
<td>Controllable window shading</td>
<td>10–20% Cooling*</td>
</tr>
<tr>
<td>Shade Open</td>
<td></td>
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<tr>
<td>Shade Closed</td>
<td></td>
</tr>
<tr>
<td>Scheduling</td>
<td>10–20% Lighting*</td>
</tr>
<tr>
<td>7am: Dim</td>
<td></td>
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<tr>
<td>7pm: Off</td>
<td></td>
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<tr>
<td>Demand response</td>
<td>30–50% Peak Lighting*</td>
</tr>
<tr>
<td>Full On</td>
<td></td>
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<tr>
<td>Dim</td>
<td></td>
</tr>
<tr>
<td>Plug load control</td>
<td>15–50% Non-Electronic*</td>
</tr>
<tr>
<td>Appliance On</td>
<td></td>
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<tr>
<td>Appliance Off</td>
<td></td>
</tr>
<tr>
<td>HVAC integration</td>
<td>5–15% HVAC*</td>
</tr>
<tr>
<td>Heating</td>
<td></td>
</tr>
<tr>
<td>Cooling</td>
<td></td>
</tr>
</tbody>
</table>

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Appliance On: Appliance Off
Heating: Cooling

Non-Electronic = HVAC

Peak Lighting = HVAC

Electronic = HVAC

Scheduling provides pre-programmed changes in light levels based on time of day.

Demand response automatically reduces lighting loads as required to improve critical load stability.

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

HVAC integration controls heating, ventilation, and air conditioning systems through contact closure, or BACnet protocol.
The federal government is taking a leadership role in driving energy policy.

Energy Independence and Security Act of 2007 (EISA)
• Signed into law on December 7, 2007 to move the United States toward greater energy independence and security.
• Increases the production of clean, renewable fuels, and the efficiency of products, buildings, and vehicles to improve the energy performance of the Federal Government.
• Set a new, energy efficient standard for light bulbs based on lumen output/wattage used.

Executive Order 13423 (Signed by President Bush on January 24, 2007)
• Reduce building energy intensity 3% per year annually through 2015.
• Achieve 30% total reduction from 2003 baseline by 2015.
• All new construction, major renovation, or repair and alteration are to comply with the GSA Guiding Principles.

Executive Order 135142 (Signed by President Obama on October 5, 2009)
• Ensures all new federal buildings, entering the design phase in 2020 or later, are designed to achieve zero net energy by 2030.
• Ensures at least 15% of existing agency buildings and leases (above 5,000 gross square feet) meet the Guiding Principles by fiscal year 2015, and that the agency makes annual progress towards 100% compliance across its building inventory.

GSA Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings
This is a set of established criteria for federal agencies that have committed to “federal leadership in the design, construction, and operation of High-Performance and Sustainable Buildings.” Critical elements of the programs are listed below.

New construction and major renovations – Energy efficiency
• Reduce energy budget by 30% compared with ASHRAE 90.1-2007; in major renovation, reduce by 30% below pre-renovation 2003 baseline.
• Ensure major replacements of installed equipment, renovation or expansion of existing space employ the most energy-efficient designs, systems, equipment, and controls when lifecycle-cost effective.
• Design buildings with a focus on daylighting integrated with fluorescent dimming for electricity reduction.

Existing buildings – Energy efficiency
• 20% increase in efficiency is mandatory in existing building stock.
• Mandatory use of advanced lighting controls.
• Occupancy/vacancy controls required.
• Provide occupant controlled lighting.

*Go to www.lutron.com/references for more information.
Lutron solutions can help comply with energy codes and design standards. ASHRAE Standard 90.1-2010 includes code requirements for new construction and retrofit (lighting alterations). These are the areas in which Lutron can most adeptly contribute to achieving the standard. Some highlights include

- 9.4.1.2 Area Control
- 9.4.1.2b Occupancy Sensor Control
- 9.4.1.1 Automatic Lighting Shutoff (required in new construction)
- 9.4.1.4 Daylight Control
- 9.4.1.6g Additional Controls: Stairwell lighting

USGBC LEED® standards
Lutron lighting control solutions as part of ASHRAE 90.1 (2010) can now help contribute toward 46 out of 110 possible points in LEED NC, CS, or S. GSA is committed to having its new construction projects meet a minimum certification of LEED Gold.

U.S. Government policies on sustainable design
Each branch of the military, as well as virtually every government department, is committed to achieving sustainability goals in line with GSA Guiding Principles.

Presidential Memorandum – Implementation of Energy Savings Projects and Performance-Based Contracting for Energy Savings (Signed by President Obama on December 2, 2011)
The Federal Government is committing to entering into a minimum of $2 billion in performance-based contracts in Federal building energy efficiency within 24 months from the date of this memorandum.

Green Globes
Green Globes is an online building assessment tool that evaluates and rates the environmental performance of new and existing buildings. It is used by the federal government and in the private sector. Lighting control can contribute points in several categories including Energy, Indoor Environment, and Project Management.

DOD UFC 3-530-01
The Department of Defense has incorporated many lighting control recommendations in the 2013 Unified Facility Criteria 3-530-01 for lighting and lighting control, and continues to update this document.
Reduce installation costs

Retrofit projects

Lutron light controls make retrofits easy with quick-install, cost-effective solutions. Wireless sensors and controls require no new wiring, save time and money, and reduce installation and maintenance costs.

**Clear Connect® RF technology**

Patented Clear Connect RF technology ensures seamless communication between Lutron system components. Lutron RF products and systems operate on a quiet frequency band that is essentially free of interference from other networks. A dedicated network ensures communication between system devices is reliably delivered, and group commands ensure a smooth, simultaneous system response. Clear Connect is used in all next-generation Lutron RF systems.

Lutron RF technology is approved and operating in many DOD and civilian government facilities.

Deep energy retrofit projects

In order to help government facilities meet the energy reduction mandates defined in Executive Order 13423, and the even more aggressive goals of zero-net energy for all new government buildings, Lutron frequently works with ESCOs throughout the country to analyze projects and propose appropriate light control solutions that will help guarantee energy-savings results.

Wireless light control systems that can be easily installed in retrofit projects can help reduce lighting electricity use by up to 60%.* They can reduce overall building electricity use by up to 23%,* which can get buildings halfway to their deep energy retrofit goals.

New construction projects

For new construction and major building renovation, Lutron solutions combine energy-saving strategies to deliver the most efficient system for your project.

Lutron solutions integrate flawlessly with third-party building management systems, ensuring superb building performance. A variety of service and support plans are available to keep your system performing at the highest levels.

*Go to www.lutron.com/references for more information.
Retrofit projects

Government procurements routinely require the use of products manufactured in the United States.

In addition to products manufactured in the United States, select government procurements may permit the use of products manufactured in a Trade Agreements Act (TAA) designated country. Lutron has solutions to meet both Buy American Act (BAA) and TAA projects.

**BAA Compliant Solutions**

For a list of BAA-compliant solutions, please visit www.lutron.com/BAA or e-mail baa@lutron.com.

**TAA Compliant Solutions**

For more information on Lutron TAA-compliant solutions, e-mail taa@lutron.com.

Please contact Lutron or your authorized Lutron distributor for assistance with product selection.

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**Quantum passes GSA PBS IT security remediation process**

In November 2011, the Lutron Quantum® Total Light Management™ solution (see page 30) passed the GSA Public Building Services (PBS) IT security remediation process. Quantum is now certified as a solution that can be safely and securely integrated into any GSA building IT network. The system also meets Federal Information Security Management Act (FISMA) Standards.
Improve microgrid reliability in any situation

Lighting control systems, when properly planned and implemented, not only reduce overall demand on a microgrid, they can help ensure that the right lights have power at the right time.

Lighting controls improve microgrid efficiency

Lighting control systems, can significantly enhance flexibility within a microgrid. Integrated dimming control and tailored demand response programming allows the facility to reduce lighting energy use on demand, leading to greater confidence in the microgrid’s ability to supply necessary power and keep essential buildings or areas operational and running during natural disasters, military operations, and other emergency situations.
Funding microgrids

Funding an entire microgrid all at once is a challenge in today’s budgetary environment. A successful strategy involves a disciplined approach over time. A variety of funding vehicles help finance work at an installation, and pieces of the microgrid can be included with each upgrade. Once enough pieces are in place, the funding required to tie it all together can be more easily obtained.

Because lighting control not only contributes to grid reliability, but also saves money during normal operation, it can play a key role in funding portions of a microgrid infrastructure. For example, lighting control retrofits can be accomplished using an Energy Savings Performance Contract (ESPC), a Utility Energy Savings Performance Contract (UESC), or can even qualify for DOD Energy Conservation Investment Program (ECIP) funds.

Scene controls can be programmed to respond during specific emergency scenarios, and lighting levels can be activated at the touch of a button, or as an automatic response.

*Go to www.lutron.com/references for more information.*
Lutron lighting and shade controls save energy, enhance comfort and productivity and offer building occupants the opportunity to adjust lights to suit the tasks at hand.

These examples show how control solutions can be used in any space, and can easily accommodate both retrofit and new construction.
The following products are commonly used in government facilities to save energy, enhance building performance, and improve the comfort and functionality of each space. For additional information, typical space layouts, common bills-of-materials, and energy code information, go to www.lutron.com/appguides.

Stand-alone solutions and sensors

Maestro® occupancy/vacancy sensing switch – provides energy savings by ensuring lights are off when room is unoccupied. See page: 22

Maestro occupancy sensing dimmer – provides energy savings by enabling personal dimming control, and ensuring lights are off when room is unoccupied.

Maestro C·L® dimmer – allows personal dimming of incandescent, halogen, LED and CFL loads up to 150 Watts. See page: 28

Passive Infrared Sensors (PIR) – Measure infrared light from objects in the sensor’s field of view. See page: 22

Dual Tech Sensors – Use both infrared and ultrasonic technology to detect occupancy – ideal in areas where very fine motion activities are common. See page: 22

Dual-circuit Sensor switch – Combines two switches with an in-wall, passive infrared (PIR) occupancy or partial-on sensor.
Radio Powr Savr™ wireless ceiling-mounted occupancy/vacancy sensor – provides energy savings by ensuring light levels are reduced, or lights are turned off, when a space is unoccupied.
See pages: 21, 23, 24, 25, 26, 28

Radio Powr Savr wall-mounted occupancy/vacancy sensor – provides energy savings by ensuring light levels are reduced, or lights are turned off, when a space is unoccupied.
See pages: 20, 27

Radio Powr Savr wireless daylight sensor – communicates with dimming or switching controls to increase energy savings by automatically turning off or reducing electric light levels when daylight is sufficient.
See pages: 24, 25, 26, 27
Dimming/switching controls

**PowPak® dimming module with EcoSystem®** – dims lighting loads in response to wireless sensors and controls (mounted in ceiling).
See pages: 23, 24, 27
(additional modules for 0-10V control and switching control available)

**Pico® wireless controls** – provide tabletop, handheld, or wall-mounted control to adjust lights or shades from anywhere in the room (can also be mounted on a pedestal).
See pages: 21, 23, 24, 25, 26, 27

**Receptacle control with PowPak relay module** – Provides occupancy-based receptacle control to automatically reduce electricity use in unoccupied spaces. Control both 120V and 277V loads.
See pages: 26

**GRAFIK Eye® QS Wireless with EcoSystem®** – provides customizable preset lighting control with built-in timeclock that allows users to adjust the lights and shades for any task, and save energy at the touch of a button.
See page: 25

**Energi Savr Node™ with EcoSystem and QS sensor module** – allows for easy integration of sensors and EcoSystem H-Series digital ballasts. Communicates with wireless devices through the new QS sensor module to minimize wiring for easy installation.
See page: 21, 26, 29
**Receptacle control module** – receives commands from sensors or wireless controls to conveniently save energy by turning off phantom loads (devices that draw power even when turned off or idling); device located on the floor under the desk. See page: 26

**EcoSystem® H-Series digital dimming ballasts** – provide cost-effective digitally addressable 1% dimming that works with wired and wireless sensors and controls – ideal for any application, retrofit and new construction. See pages: 21, 26

**Hi-lume® A-Series LED driver** – offers smooth, continuous 1% dimming for virtually any LED fixture, whether it requires constant current or constant voltage. See page: 25

**5-Series LED driver** – offers smooth, continuous 5% low end dimming with digital EcoSystem control for many LED fixtures with constant current output to the LED.

**PowPak contact closure output module** – Integrates with HVAC system or other third-party equipment through contact closures, allowing equipment to respond to wireless commands. See pages: 21, 26

**Ballasts and drivers**
Shades

Sivoia® QS wired and wireless shades – adjust quietly to eliminate glare and reduce heating and cooling costs (blackout shades available for privacy or security needs). See pages: 25, 26, 29

Serena remote controlled shades – Motorized shades featuring ultra-efficient drive technology, a 3-5 year battery life, and remote control convenience (blackout shades available for privacy or security needs).
Fixtures

**Fluorescent**

**LED**

**Stairwell Fixture** – communicates with Lutron wireless occupancy sensor to automatically adjust light levels based on stairwell occupancy (vandal-resistant option available).

*See page: 20*

**Video Conference Fixture** –  
High-performance, controllable fluorescent and LED fixtures ensure compatibility between controls, ballast/driver, and fixture.

*See pages: 29*
Stairwell

Radio Powr Savr™ wireless occupancy/vacancy sensor

PowPak® stairwell fixture (fluorescent fixture available with emergency battery option)

Lighting Control Strategies

- Occupancy/Vacancy Sensing
- High-End Trim/Tuning

Lighting Energy Savings*

70%

*Go to www.lutron.com/references for more information.
Corridor/hallway: Dimming

Radio Powr Savr™
wireless occupancy/vacancy sensor

Pico® wireless control

Energi TriPak® with EcoSystem
(mounted above ceiling)

EcoSystem® enabled ballast/driver
(installed in each fixture)

Lighting Control Strategies

- Occupancy/Vacancy Sensing
- High-End Trim/Tuning

Lighting Energy Savings*

60%

*Go to www.lutron.com/references for more information.
Restroom: Single stall

Maestro® occupancy/vacancy sensing switch (PIR)

or

Maestro dual-technology sensor

Lighting Control Strategies

Occupancy/Vacancy Sensing

Lighting Energy Savings*

50%

*Go to www.lutron.com/references for more information.
Restroom: Multiple stalls

- **Radio Powr Savr™**
  - Wireless ceiling-mount occupancy/vacancy sensor

- **PowPak® Switching Module**
  - (installed above ceiling)

- **Pico® wireless control**
  - (mounted at entry)

**Lighting Control Strategies**

- Occupancy/Vacancy Sensing

**Lighting Energy Savings**

- 50%

*Go to www.lutron.com/references for more information.*
Private office: Dimming

Radio Powr Savr wireless occupancy/vacancy sensor

PowPak® dimming module with EcoSystem®
(installed above ceiling)

Radio Powr Savr™
wireless daylight sensor

EcoSystem® enabled ballast/driver
(installed in each fixture)

Pico® wireless controls

Lighting Control Strategies

- **Occupancy/Vacancy Sensing**
- **Personal Dimming**
- **High-End Trim/Tuning**
- **Daylight Harvesting**

Lighting Energy Savings*

60%

*Go to www.lutron.com/references for more information.
Video conference/Conference room: Dimming

- Radio Powr Savr wireless occupancy/vacancy sensor
- Radio Powr Savr™ wireless daylight sensor
- Sivoia® QS Wireless shades
- EcoSystem® enabled ballast/driver (installed in each fixture)
- Pico® wireless controls
- GRAFIK Eye® QS Wireless with EcoSystem®

Lighting Control Strategies

- Occupancy/Vacancy Sensing
- Personal Control
- High-End Trim/Tuning
- Daylight Harvesting

Lighting Energy Savings*

60%

*Go to www.lutron.com/references for more information.
Open office: Dimming

Radio Powr Savr™ wireless occupancy/vacancy sensor
(number of sensors based on size of space)

Radio Powr Savr™ wireless daylight sensor

Sivoia® QS shades

Energi Savr Node dimming
(installed in ceiling or wall)

Pico® wireless controls

EcoSystem® enabled ballast/driver
(installed in each fixture)

Receptacle control module
(installed above ceiling or under floor)

Lighting Control Strategies

Occupancy/Vacancy Sensing

High-End Trim/Tuning

Daylight Harvesting

Plug Load Control

Lighting Energy Savings*

60%

*Go to www.lutron.com/references for more information.
Classroom/Training room: Dimming

Radio Powr Savr™ wireless daylight sensor

EcoSystem® enabled ballast/driver
(installed in each fixture)

Pico® wireless controls

PowPak® Dimming Module
(installed above ceiling)

Radio Powr Savr wireless occupancy/vacancy sensor

PowPak® wireless contact closure module
for HVAC setback
(installed above ceiling)

Lighting Control Strategies

- Occupancy/Vacancy Sensing
- Personal Control
- High-End Trim/Tuning
- Daylight Harvesting

Lighting Energy Savings*

65%

*Go to www.lutron.com/references for more information.
Living quarters

Radio Powr Savr wireless vacancy sensor

Maestro® C·L® dimmer

Lighting Control Strategies

- Occupancy/Vacancy Sensing
- Personal Control

Lighting Energy Savings*

50%

*Go to www.lutron.com/references for more information.
Warehouse: Dimming

High bay occupancy sensors
(installed in each fixture)

Energi Savr Node Dimming
(installed in ceiling or wall)

Dimmable high bay fixtures

Radio Powr Savr™
wireless daylight sensor

Lighting Control Strategies

Occupancy/Vacancy Sensing

High-End Trim/Tuning

Daylight Harvesting

Scheduling

Lighting Energy Savings*

50%

*Go to www.lutron.com/references for more information.
A Quantum® Total Light Management™ system enables convenient monitoring and control of all the lights and shades in a building. The new Lutron iPad® app provides an intuitive touchscreen interface.

### Interior office
- EcoSystem® H-Series ballasts
- Radio Powr Savr™ wireless occupancy sensor
- Pico® wireless control
- QS sensor module

### To GP/LP dimming panel loads:
- lobbies and atriums
- auditoriums
- training rooms
- cafeterias

### To XP switching panel loads:
- exterior lighting
- non-dim ballasts (hallways, bathrooms, stairwells)

#### Key
- QS link (RS485)
- Interprocessor Ethernet
- Power panel link (RS485)
- EcoSystem® loop
- Building Ethernet network
- Wireless Radio Frequency (RF) connection

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iPad® is a trademark of Apple Inc., registered in the U.S. and other countries.
Conference room

- Lutron EcoSystem H-Series ballast or LED driver
- Sivoia QS shades with Hyperion® solar adaptive shading
- SeeTouch QS keypad
- EcoSystem® enabled ballast/driver (installed in each fixture)
- Hi-lume® A-Series LED Driver
- RS232/Ethernet interface

To non-Lutron devices:
- touchscreens
- A/V equipment
- HVAC equipment

Open office area

- Lutron EcoSystem H-Series ballast or LED driver
- Radio Powr Savr wireless occupancy sensor
- Radio Powr Savr wireless daylight sensor
- Energi Savr Node™ with EcoSystem
- QS sensor module
- QWS sensor module
- Pico wireless control

To non-Lutron devices:
- touchscreens
- A/V equipment
- HVAC equipment

Hallways, Restrooms, Stairwells, Exterior Lighting

- Lutron EcoSystem® enabled ballast/driver (installed in each fixture)
- Radio Powr Savr wireless occupancy sensor
- Radio Powr Savr wireless daylight sensor
- Radio Shadow sensor
- Energi Savr Node™ with Softswitch®

To non-Lutron devices:
- HVAC equipment

Switched lighting loads
Lutron offers a wide variety of services to support our customers throughout preconstruction, startup, and post-occupancy for the life of their system.

<table>
<thead>
<tr>
<th>Description</th>
<th>Retrofit</th>
<th>New Construction/ Renovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre-startup Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integration Meeting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensures seamless integration with onsite building management system or BACnet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sensor Design and Tuning*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutron confirms accurate sensor placement and configuration</td>
<td></td>
<td></td>
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<tr>
<td><strong>Startup Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Onsite Startup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutron Field Service Engineer (FSE) ensures proper system installation and set up</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telephone Startup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assist contractor via telephone on how to set up the lighting control system</td>
<td></td>
<td></td>
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<tr>
<td>After-hours Startup</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Startup is performed outside of normal business hours to avoid tenant disruption</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Post Startup Services</strong></td>
<td></td>
<td></td>
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<tr>
<td>System Performance Verification Documentation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enhanced documentation that details startup activities for commissioning agent</td>
<td></td>
<td></td>
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<tr>
<td>Real time scene and level tuning</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Discuss, adapt, or change any lighting per the direction of a lighting designer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>System Performance Verification Walkthrough</td>
<td></td>
<td></td>
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<tr>
<td>Lutron FSE performs building walkthrough with commissioning agent to demonstrate system functionality</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Maintenance Services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Training Visit</td>
<td></td>
<td></td>
</tr>
<tr>
<td>One visit, onsite personnel training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Software Maintenance Agreement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ensures Quantum® system compatibility with Microsoft® patches and web browsers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remote Diagnostics (available for configured systems)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enables Lutron to diagnose system issues without an onsite visit</td>
<td></td>
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</tr>
<tr>
<td>Remote Programming (available for configured systems)</td>
<td></td>
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</tr>
<tr>
<td>Allows for programming and tuning of your Lutron system without an on-site visit</td>
<td></td>
<td></td>
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<tr>
<td>Spare Parts Package</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fix small problems quickly with a stock of extra parts</td>
<td></td>
<td></td>
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<tr>
<td>System Optimization Visit</td>
<td></td>
<td></td>
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<tr>
<td>Evaluate system usage and discuss opportunities to increase efficiency and functionality</td>
<td></td>
<td></td>
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<tr>
<td>Software Upgrade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upgrade a Quantum system to the latest versions for enhanced system features</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lutron HQ Training</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two-day training by lighting experts in Coopersburg, PA</td>
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<td></td>
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<tr>
<td>Onsite Moves/Adds/ Changes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Implement changes per the direction of the facility manager</td>
<td></td>
<td></td>
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<tr>
<td><strong>Warranty Services</strong></td>
<td></td>
<td></td>
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<tr>
<td>Enhanced Warranties</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Include an initial 2-year full warranty, plus pro-rated parts coverage for years 3-8 of your warranty</td>
<td></td>
<td></td>
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<tr>
<td>Technology Support Plans</td>
<td></td>
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</tr>
<tr>
<td>Extend initial 2-year full warranty for up to 10 years after system purchase. Response time options available including annual preventative maintenance.</td>
<td></td>
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</tr>
</tbody>
</table>

*Radio Powr Savr™ wireless occupancy, daylight, and shadow sensors
Recent notable government projects

**GSA Projects**
- 50 United Nations Plaza
- Customer Care at USAFA
- EPA HQ Federal Triangle
- Everett McKinley Dirksen United States Courthouse
- Federal Center South
- Henry M. Jackson Federal Building
- Hammond Federal Courthouse
- John C. Kluczynski Federal Building
- Martin Luther King Federal Building
- Neal Smith Federal Building
- Ralph H. Metcalfe Federal Building
- San Diego Federal Courthouse
- San Francisco Federal Building
- William O. Lipinski Federal Building
- Thomas H. Foley Federal Courthouse
- Thomas P. O’Neill Federal Building
- United States Department of State
- United States District Courthouse-Northern District of Illinois

**Department of Defense Projects**
- Andrews Air Force Base
- Buckley Air Force Base
- Cannon Air Force Base
- Eglin Air Force Base
- Eielson Air Force Base
- Ft. Bragg
- Ft. Carson
- Ft. Hood
- Ft. Irwin
- Ft. Richardson
- Ft. Sam Houston
- Hickam Air Force Base
- Mountain Home Air Force Base
- Peterson Air Force Base
- Tyndall Air Force Base
- United States Air Force Academy
- United States Coast Guard at Buffalo
- United States Military Academy at West Point

**Case study**

**NASA Propellants North Administrative and Maintenance Facility, Cape Canaveral, FL**

**Challenge**
Reduce dependence on non-renewable energy
Meet Executive Order mandates
Utilize light control to achieve significant energy savings

**Solution**
EcoSystem™ digitally addressable dimming ballasts
Pico™ wireless controls
Radio Powr Savr™ occupancy/vacancy and daylight sensors

**Results**
First NASA carbon-neutral facility
52% more efficient than typical commercial buildings
Achieved LEED Platinum status
Lutron is a charter member of the League of Green Embassies, an organization that promotes the use of domestic, energy-efficient technologies in embassies around the world, to reduce greenhouse gas emissions, demonstrate the capabilities of U.S. products in the world market, and increase exports of these products.

The League of Green Embassies’ “Greening of the Government” campaign is an integral part of the President’s National Export Initiative and involves the Department of Commerce, the Bureau of Overseas Building Operations (OBO) and more than 80 U.S. embassies around the world that are committed to achieving LEED Gold or Platinum status in the next 2 to 4 years.

The OBO’s primary mission is to provide secure, safe, and functional facilities that support the U.S. overseas staff in the achievement of U.S. foreign policy objectives. Its Guiding Principles work to ensure that embassy design and design-build processes are driven by common goals. Lutron light control solutions can help comply with many of these Guiding Principles, including:

• Purpose
• Design
• Safety and Security
• Sustainability
• Architectural and Engineering Professional Service
• Construction
• Operations and Maintenance
With product solutions in a broad range of voltages and frequencies, Lutron is uniquely able to support U.S. embassies, consulates, and military facilities around the world. A global company with product installations in more than 87 countries, Lutron can meet host-nation requirements and currently provides light control and energy-management solutions.

<table>
<thead>
<tr>
<th>Dimmers and controls</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ariadni®</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Credenza®</td>
<td></td>
<td>●</td>
<td>●</td>
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<tr>
<td>Diva®</td>
<td>●</td>
<td>●</td>
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</tr>
<tr>
<td>Maestro®</td>
<td>●</td>
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<tr>
<td>Maestro IR®</td>
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<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Maestro occupancy sensing dimmer or switch</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Maestro Wireless®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Nova T®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Pico® wireless control</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Rotary</td>
<td>●</td>
<td>●</td>
<td></td>
</tr>
<tr>
<td>Skylark®</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensors</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wired occupancy/vacancy and daylight sensors</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Radio Powr Savr™</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>wireless occupancy/vacancy and daylight sensors</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial light control systems</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energi TriPak®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>GRAFIK Eye® QS®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Energi Savr Node™</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Quantum®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ballasts and LED drivers</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>EcoSystem®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>EcoSystem H-Series</td>
<td></td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>Hi-lume®</td>
<td>●</td>
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<tr>
<td>Hi-lume 3D</td>
<td></td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>Hi-lume A-Series LED driver</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Residential light controls</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>RadioRA® 2</td>
<td>●</td>
<td></td>
<td>●</td>
</tr>
<tr>
<td>HomeWorks®</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>HomeWorks QS</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Shading solutions</th>
<th>100 V / 200 V</th>
<th>220 V – 240 V</th>
<th>110 V – 127 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sivoia® QS and Sivoia QS Wireless motorized shades</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
</tbody>
</table>

* BAA-compliant solutions (U.S. country of origin) available in this voltage. Contact your Lutron representative for assistance

- Not all models meet BAA requirements for each voltage. For more information, contact your Lutron government representative or email baa@lutron.com.
- All Lutron products meet CE standards except for: Hi-lume, Hi-lume 3D and EcoSystem.
- For products available for Mexico, 277 V, and 347 V, contact your Lutron representative.
- Ceiling and wall-mount only
- Radio frequency requirements vary in different countries and regions. Contact your Lutron representative for more information.
- Ceiling-mount only
“Improving energy efficiency and spending less on utility bills can help free up resources so that local governments can more effectively provide the public services that their constituents expect while still operating efficiently themselves.”

Dr. Ernest Moniz, Secretary of Energy
“Harnessing the Power of Data, Technology and Innovation for a Clean Energy Economy”

*There is no express or implied endorsement, by any governmental agent or agency, of Lutron products.

“Advances in technology are making it easier for consumers and businesses across the nation to better understand how they are using and saving energy. Empowering citizens with information about their energy usage can help them make smart choices that cut energy waste, cut down energy bills and preserve our environment.”

EnergyStar.gov

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