Quantum Vue™ software

Quantum® Total Light Management™

Architectural Lighting Control, Shading, and Energy-Saving Solutions

LUTRON®

save energy with Lutron™ ®

What is Total Light Management™?

Total Light Management is the control of electric light and daylight to improve occupant comfort and productivity, simplify building maintenance and operations, create beautiful and functional lighting environments, and save considerable amounts of money and energy.

What is Quantum®?

Quantum is a lighting control and energy management system that provides Total Light Management by tying the most complete line of lighting controls, motorized window shades, digital ballasts and LED drivers, and sensors together under one software umbrella. Quantum is ideal for new construction or retrofit applications and can easily scale from a single area to a building, or to a campus with many buildings.

Quantum features

Quantum delivers Total Light Management through:

Architectural lighting control

- 1% dimming and switching of all load types
- Scene and zone control
- Partitioning
- Sequencing
- Hand-held light level tuning
- Conditional programming
- A/V integration
- DMX control and stage board integration

Intelligent, automated shading

- Hyperion™ solar-adaptive shading
- Automated shading
- Preset shade positions
- Integrated light/shade scenes
- Cloudy day and shadow compensation
- Automatic glare/brightness override
- Timeclock control

Flexibility

- Wired and wireless controls
- Wired and wireless sensors
- Digitally addressable system devices
- Flexible IT implementation
- Emergency lighting control and UL924 compliance

Energy-saving features

- High-end trim
- Occupancy/vacancy sensing
- Daylight harvesting
- Personal dimming control
- Controllable window shades
- Scheduling
- Plug load control
- HVAC integration
- Demand Response ready
- Fully customizable loadshed

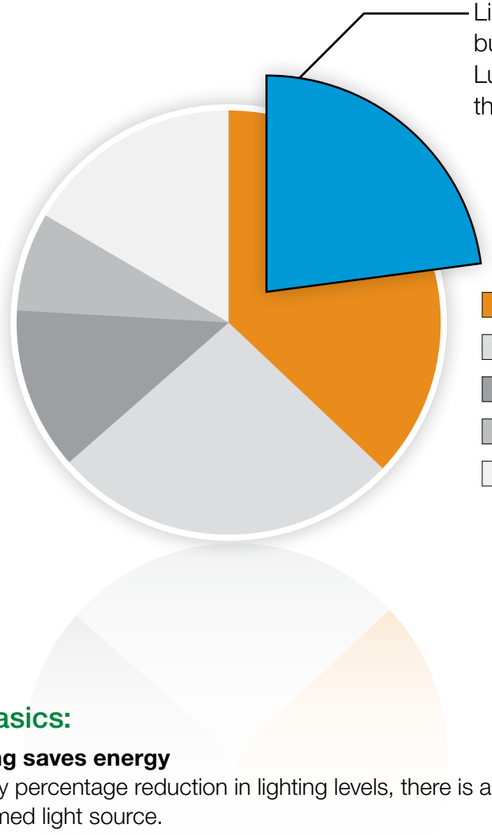
Management software

- Central control and monitoring
- Graphical floorplan view
- Web-based management tool
- Designed for mobile and desktop
- Dynamic building dashboard
- Remote access
- Reporting and trending
- Email alerts
- System health and diagnostics
- Reconfiguration and reprogramming
- User and tenant management
- iPad®-based control and scene setting
- Web-based personal control
- GreenGlance® energy dashboard
- BACnet integration
- Software Maintenance Agreements

The benefits of Quantum®

Total Light Management™ can save more electricity than any other building system.

Because lighting uses more electricity than any other building system, lighting and shading control gives building owners and facility managers the power to save more electricity than any other control technology at their disposal.[1,2]



Lighting consumes more electricity in commercial buildings than anything else—about 38%[2] a year. Lutron solutions can save up to 60%[1] or more of that lighting energy.

Annual electricity use[2]

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

The basics:

Dimming saves energy
For every percentage reduction in lighting levels, there is a nearly equal reduction in the energy usage of the dimmed light source.

Sensors reduce lighting electricity
Lutron occupancy/vacancy sensors use innovative XCT™ sensing technology to detect fine motion. Sensors turn lights on when a space is occupied and off or dim them when it is vacant.

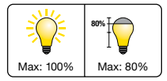
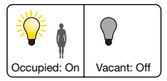
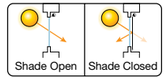
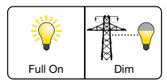
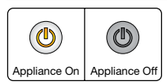
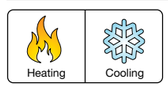
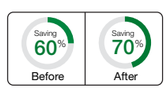
Daylight sensors continually measure ambient daylight and adjust lighting levels to reduce unnecessary electric lighting and provide even illumination throughout the space.

Radio window sensors allow automated shades to open and close depending on available natural light in order to maximize daylight harvesting, allowing lights to be dimmed or turned off for substantial parts of the day.

Combine lighting control strategies to maximize efficiency

When dimming is used in combination with Lutron sensors the system can deliver lighting energy savings up to 60%.[1] Add automated shading for a solution that enhances savings from daylight harvesting and provides additional savings from a reduction in cooling energy.

Energy-saving lighting control strategies

		Potential savings
	**High-end trim** sets the maximum light level based on customer requirements in each space.	10–30% Lighting[3]
	**Occupancy/vacancy sensing** turns lights on when occupants are in a space and off when they vacate the space.	20–60% Lighting[4]
	**Daylight harvesting** dims electric lights when daylight is available to light the space.	25–60% Lighting[5]
	**Personal dimming control** gives occupants the ability to set the light level.	10–20% Lighting[6]
	**Automated window shading** adjusts shades to reduce glare and solar heat gain.	10–20% Cooling[7]
	**Scheduling** provides pre-programmed changes in light levels based on time of day.	10–20% Lighting[8]
	**Demand response** automatically reduces lighting loads during peak electricity usage times.	30–50% Peak Period[9]
	**Plug load control** automatically turns off loads after occupants leave a space.	15–50% Controlled Loads[10]
	**HVAC integration** controls heating, ventilation, and air conditioning systems through contact closure, or BACnet protocol.	5–15% HVAC[11]
	**System Optimization Service** from Lutron identifies important lighting control adjustments to save additional energy and create a more productive work environment on an ongoing basis.	Variable

 Sources on back cover.

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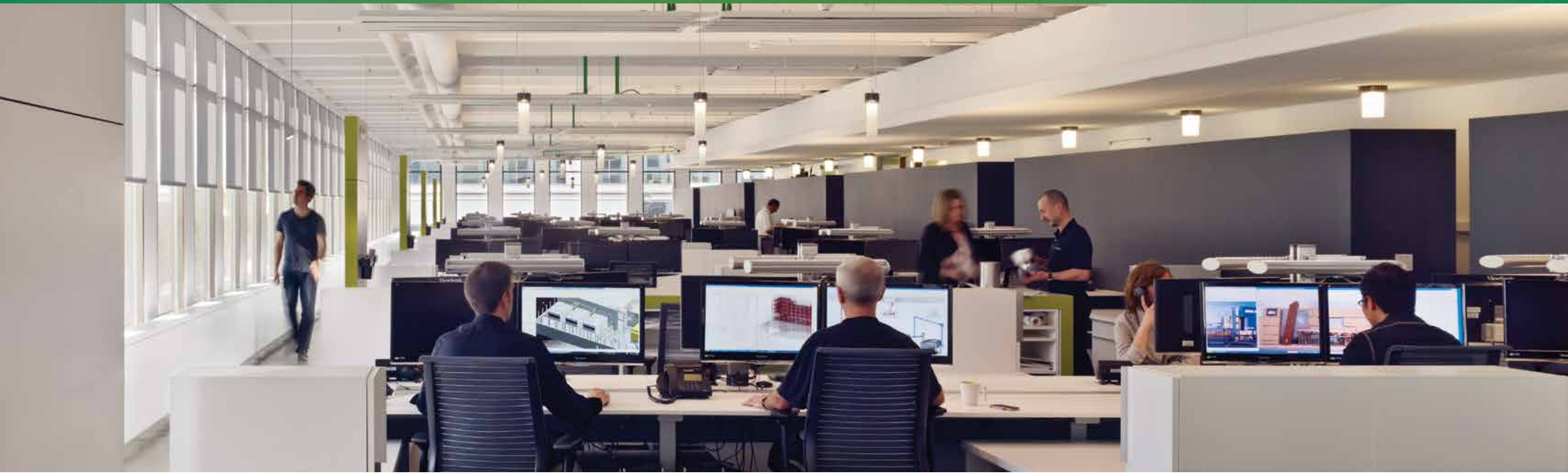


Increase comfort and productivity

People are more comfortable and more productive when they are working in the right light for the task at hand. Personal lighting controls allow occupants to tune the light to just the right setting while intelligent automated shading solutions help preserve views, eliminate glare, and reduce heat gain.

Create a more flexible space

All aspects of the system are digital, so you can easily reconfigure lighting and shading zones without rewiring, making a space adaptable to high churn rates.

As the needs of a space change, you can also easily move and reprogram wireless sensors and controls right from the software without needing to call an electrician.

Simplify operations and reduce maintenance costs

Quantum's management control software simplifies ongoing building operations and reduces maintenance costs. Reports and alerts can identify energy abnormalities and bring attention to maintenance issues or system health problems. These alerts can identify the exact location and nature of a problem, so they can be quickly addressed.

Enhanced warranties can provide extensive support coverage and include onsite preventive maintenance visits from a Lutron Services Representative.

Create the right light

Create beautiful and functional lighting environments for any space with continuous, flicker-free dimming of any load type down to 0.1% and motorized shading.

Meet codes and standards

Quantum provides the opportunity to help meet today's building codes and standards, including:

- LEED
- ASHRAE Energy Code 90.1
- ASHRAE Green Building Code 189.1
- IECC (International Energy Conservation Code)
- IgCC (International Green Construction Code)
- CEC Title 24 (California Energy Commission)
- CHPS (Collaborative for High Performance Schools)

Highlight your corporate commitment to sustainability

Nothing speaks to sustainability more than proven energy savings. Lutron solutions give building owners and facility managers the power to save more electricity than any other control technology at their disposal.[1] Quantum's energy dashboard helps you demonstrate those savings to employees and customers.

Sources on back cover.

Applications

Quantum® systems have been installed in thousands of customer sites — and the installed base is continuing to expand. Here are a few of the major market segments currently taking advantage of Quantum solutions.

Commercial office buildings

In a commercial office building, light control can contribute enormously to saving energy. In addition, light control can help contribute to occupant productivity. Hyperion® solar-adaptive shading automatically adjusts Lutron Sivoia® QS shades throughout the day in response to the changing position of the sun. This eliminates glare and reduces heat gain while maintaining external views and saving energy.

College campuses and K–12 schools

Central control and BMS integration are important for college campuses to simplify operations and maintenance. Quantum provides centralized management software with reporting and alerting capabilities to identify energy anomalies and maintenance issues. Quantum also has native BACnet for seamless integration with BMS systems.

In addition, the GreenGlance® dashboard provides students, staff, and visitors with real-time energy savings, which helps promote the school's commitment to sustainability.

Hospitality public areas

Being able to create the right light in public areas such as lobbies, ballrooms, and meeting rooms is key to an outstanding guest experience. With Quantum, it's easy to customize the light in individual areas for specific events or times of day. Features such as partitioning and zone reconfiguration also come in handy to automatically update the lighting controls based on how rooms are set up.

Healthcare buildings

How comfortable a patient feels in his hospital room can help ease his stress while he's recovering. A room designed with customized lighting and shade control provides patients with a soothing place to heal.

Intuitive lighting controls also contribute to staff productivity. From full light for reading charts and dispensing medications, to dimmed light for working on computers, proper lighting can relieve job stress, improve performance, and reduce medical errors.

Stadiums and convention centers

In large venues such as stadiums and convention centers, which often host multiple events at one time or throughout a day, central control is extremely important. Having remotely accessible central management software allows you to log in to the system from anywhere in the world to control lights and shades and troubleshoot problems quickly.

Restaurants and retail spaces

A tailored lighting control solution allows a restaurant to skillfully execute the combination of food, service, décor, and atmosphere into an unforgettable dining experience.

In order to deliver that experience, a restaurant's manager needs to be able to conveniently adjust lights and shades. With the Quantum app for the iPad®, he can control, monitor, and adjust lights and shades with a simple interface, to seamlessly alter the atmosphere any time, from anywhere.

Quantum® components

Quantum provides Total Light Management™ by tying the most complete line of lighting controls, window shades, digital ballasts and LED drivers, and sensors together under one system and software umbrella. Many of the system components are available in both wired and wireless options. Here the key components.

LED Drivers & Fluorescent Ballasts

Hi-lume® 1% EcoSystem® LED drivers

5-series EcoSystem LED drivers

H-Series 10% EcoSystem fluorescent ballasts

Hi-lume Premier 0.1% LED drivers

Sensors

Wireless

Radio Powr Savr™ occupancy/vacancy sensor

Radio Powr Savr daylight sensor

Radio Window sensor

Wired

Occupancy/vacancy sensor

Daylight sensor

Controls

Wired

Palladiom™

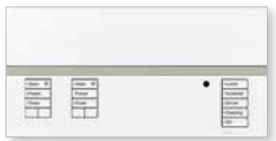
GRAFIK T™

seeTouch® QS keypad

Wired Pico®

QS Signature Series™

QS Architrave™



GRAFIK Eye® QS

Wireless

Pico wireless controls

Shades

Sivoia® QS roller shades

Sivoia QS skylight shades

Sivoia QS drapery

Quantum Hubs/Power Panels

Quantum hubs

QS smart panel power supply

Energi Savr Node™ (EcoSystem, 0–10V Switching)

Architectural dimming and switching panels (GP, XP, LP)

Quantum Software

Quantum Vue facility management software

GreenGlance® energy dashboard

Q-Control+ app

Personna® PC web-based personal control software

How the components connect together

Key

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

Quantum Vue™ on client PC

Green-Glance®, on client PC and LCD display

Personna® PC personal control software

iPad® with Q-Control+ app

Building Ethernet network

Internet

Quantum Vue on client PC/Laptop

Q-Manager™ server

To BMS by others (BACnet IP)

Quantum hub

GP/LP dimming panels

XP switching panels

Conference room

GRAFIK Eye® QS Wireless with EcoSystem

Pico wireless control

Radio Powr Savr wireless occupancy sensor

Radio Powr Savr wireless daylight sensor

QS smart panel power supply

Sivoia® QS roller shades

RS232/Ethernet interface

To non-Lutron devices:

- touchscreens
- A/V equipment
- HVAC equipment

Hi-lume 1% EcoSystem LED drivers

Hi-lume 1% EcoSystem LED drivers

Interior office

Hi-Lume® 1% EcoSystem® LED drivers

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

Palladiom™ keypad

To XP switching panel loads:

- exterior lighting
- non-dim ballasts (hallways, bathrooms, stairwells)

seeTouch QS keypad

Open office area

5-Series EcoSystem LED driver

QS smart panel power supply

Energi Savr Node™ with EcoSystem

QS sensor module

Radio Powr Savr wireless occupancy sensor

Radio Window sensor

Sivoia QS roller shades with Hyperion® solar adaptive shading

Palladiom™ Keypad

Pico wireless control

Radio Powr Savr wireless daylight sensor

PowPak® CCO*

To non-Lutron devices:

- HVAC equipment

Hallways, restrooms, stairwells, exterior lighting

Energi Savr Node with Softswitch®

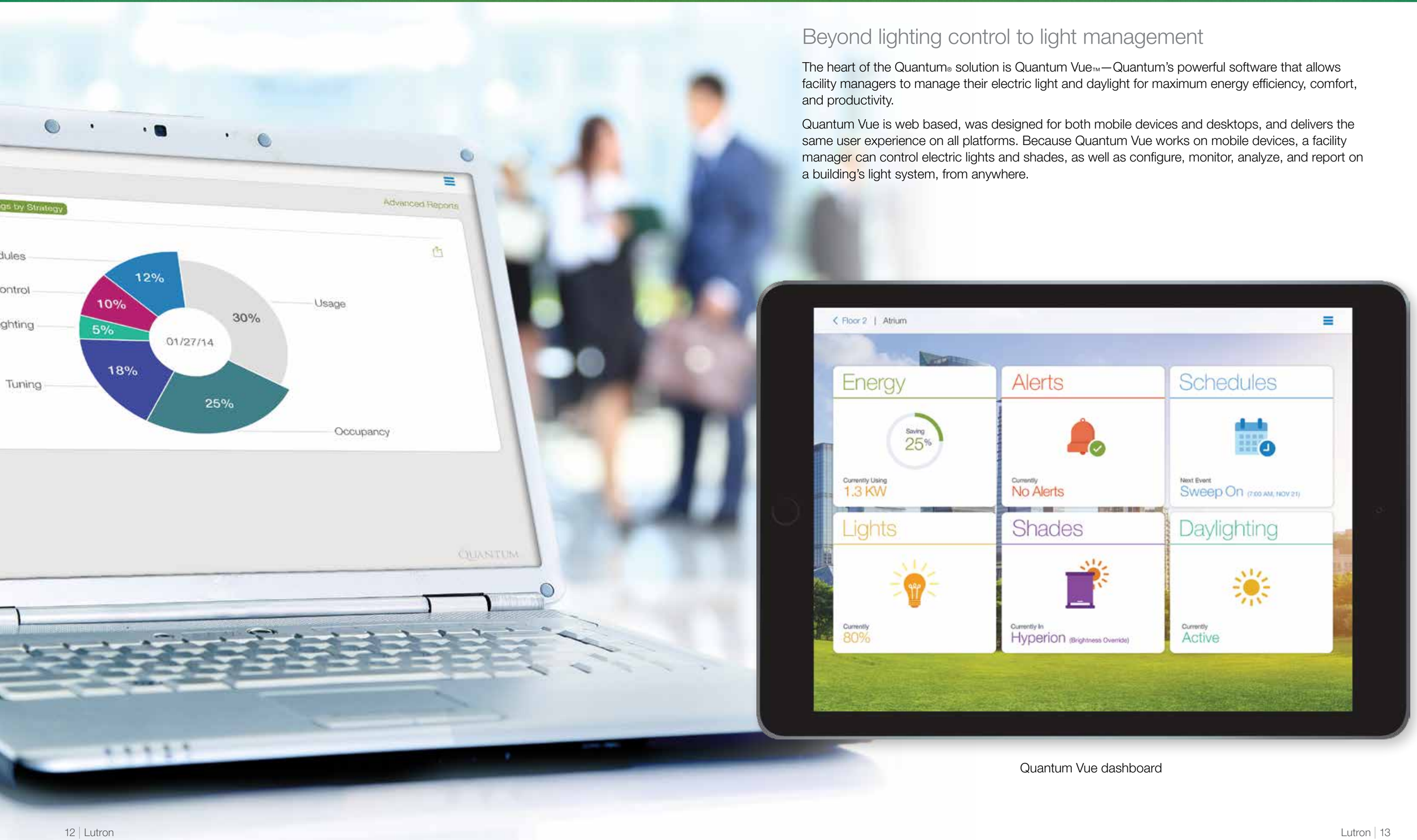
Switched lighting loads

*Cannot be activated from Quantum software.

Beyond lighting control to light management

The heart of the Quantum® solution is Quantum Vue™—Quantum's powerful software that allows facility managers to manage their electric light and daylight for maximum energy efficiency, comfort, and productivity.

Quantum Vue is web based, was designed for both mobile devices and desktops, and delivers the same user experience on all platforms. Because Quantum Vue works on mobile devices, a facility manager can control electric lights and shades, as well as configure, monitor, analyze, and report on a building's light system, from anywhere.

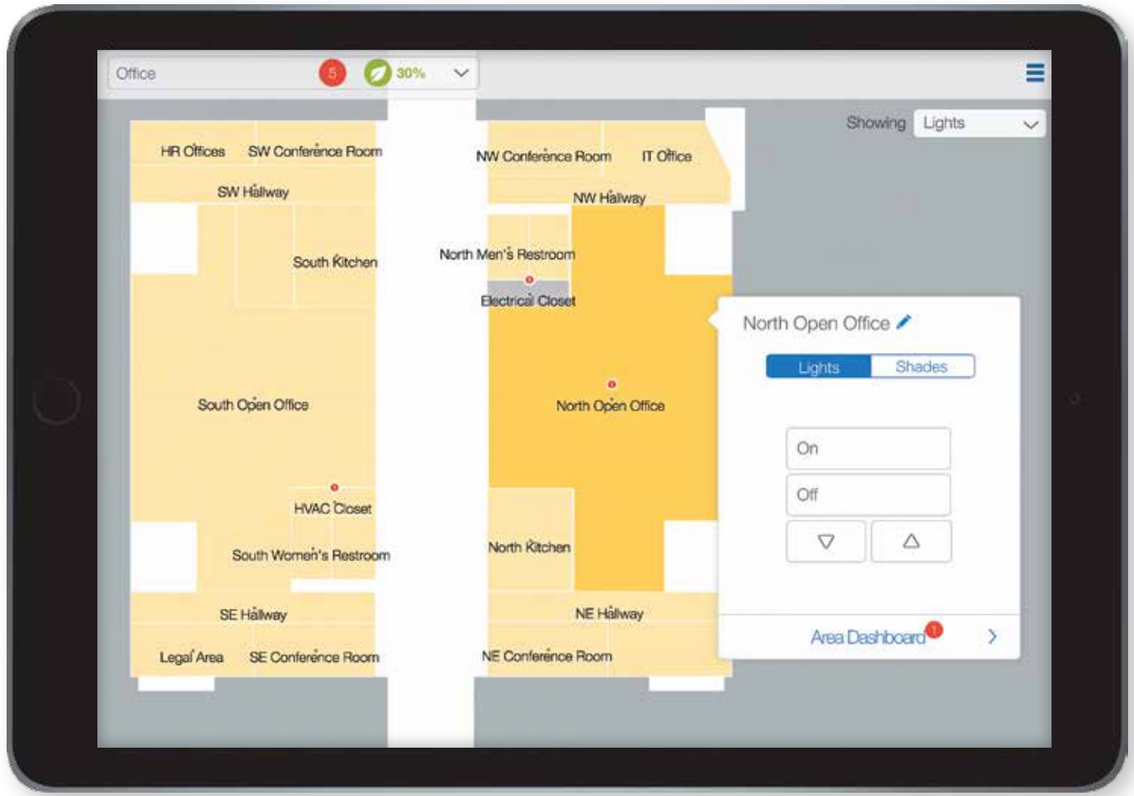


Quantum Vue dashboard

Monitor and adjust lighting and shades remotely from a graphical floorplan

Quantum Vue® lets any user easily navigate through a visual floor plan of the building. Quickly manage multiple areas, troubleshoot issues and monitor building performance from anywhere.

- Pan and zoom feature dynamically adjusts the details presented based on zoom level.
- View alerts, lighting status, occupancy, or energy usage.



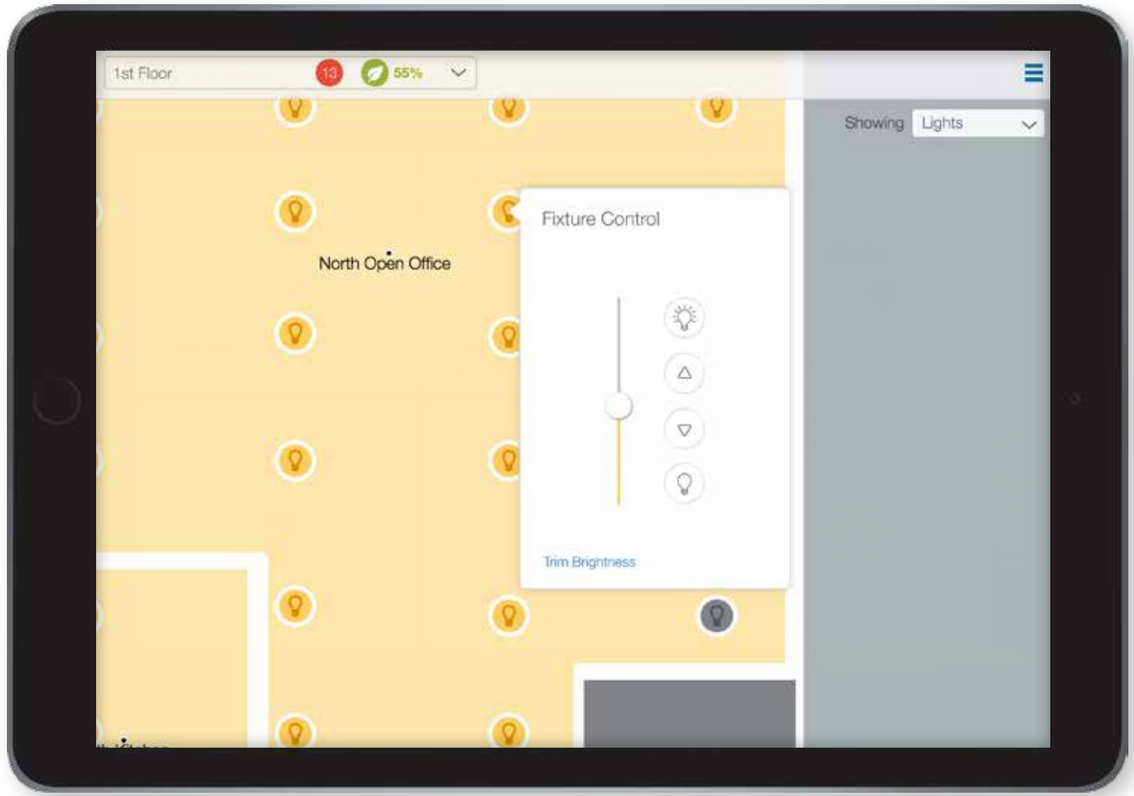
Quantum Vue – Operate your building from a graphical floorplan

Graphical floorplan

Deliver personalized lighting

Monitor and control individual fixtures, even in shared spaces, for increased occupant comfort and productivity.

- Trim the brightness level for individual fixtures to meet occupant preferences.
- Identify and resolve issues quickly and efficiently with more granular light control and monitoring.
- Individual fixture control is available for fixtures with Lutron EcoSystem™ or DALI.

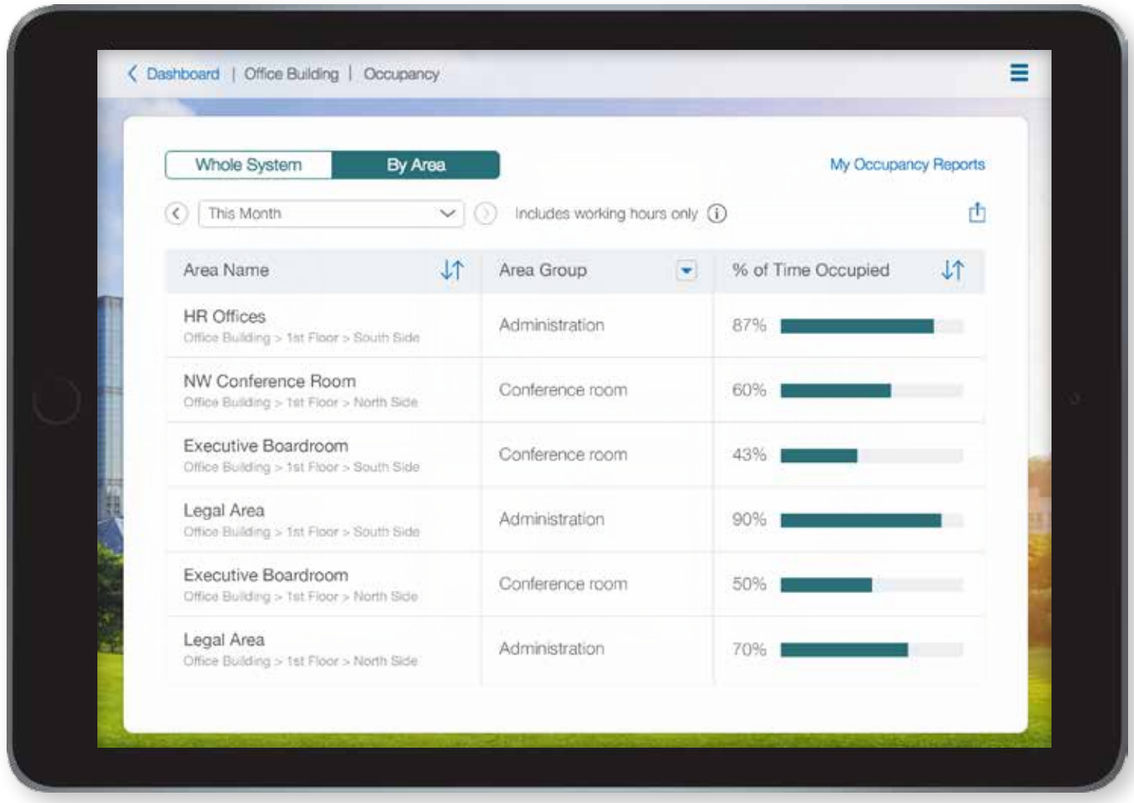


Quantum Vue—provides granular control

Optimize building real estate usage

Use Quantum® occupancy sensor historic and live data to provide reports on space utilization for the entire building or for a particular area.

- Track how often spaces are utilized.
- Make better, more informed, and faster decisions on re-purposing under-utilized spaces and planning for adding more real estate.
- Decrease facilities' carbon footprints/improve corporate sustainability goals by reducing unused/ under-utilized real estate.



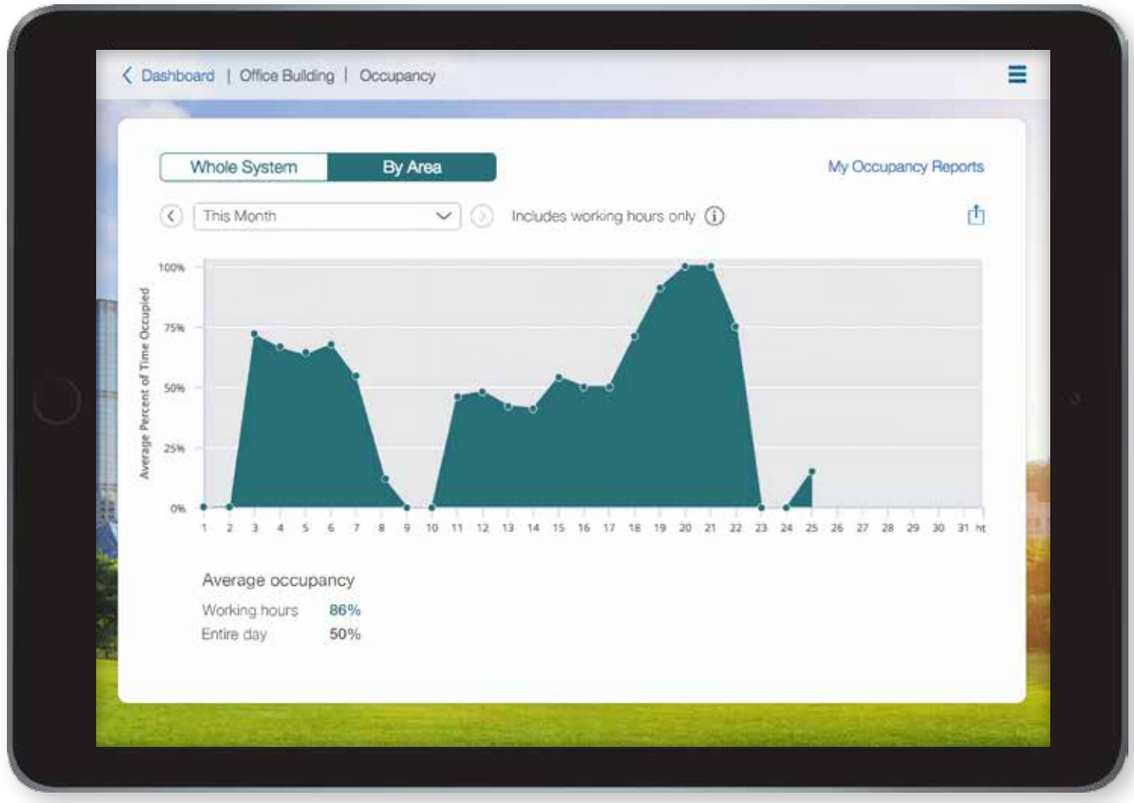
Quantum Vue—Space utilization reports by area

Improve occupational efficiency

Adjust building operations (e.g. cleaning schedules) based on when spaces are unoccupied to avoid disrupting occupants. Conducting building operations when spaces are empty also improves maintenance crew efficiency.

Analyze trends

Monitor occupant trends over time, eliminating the need for a third-party occupancy evaluation. Learn when employees are coming to work/what time of day occupancy is the highest.



Quantum Vue—Occupancy trends

Scheduling

Time-based control of facility lighting

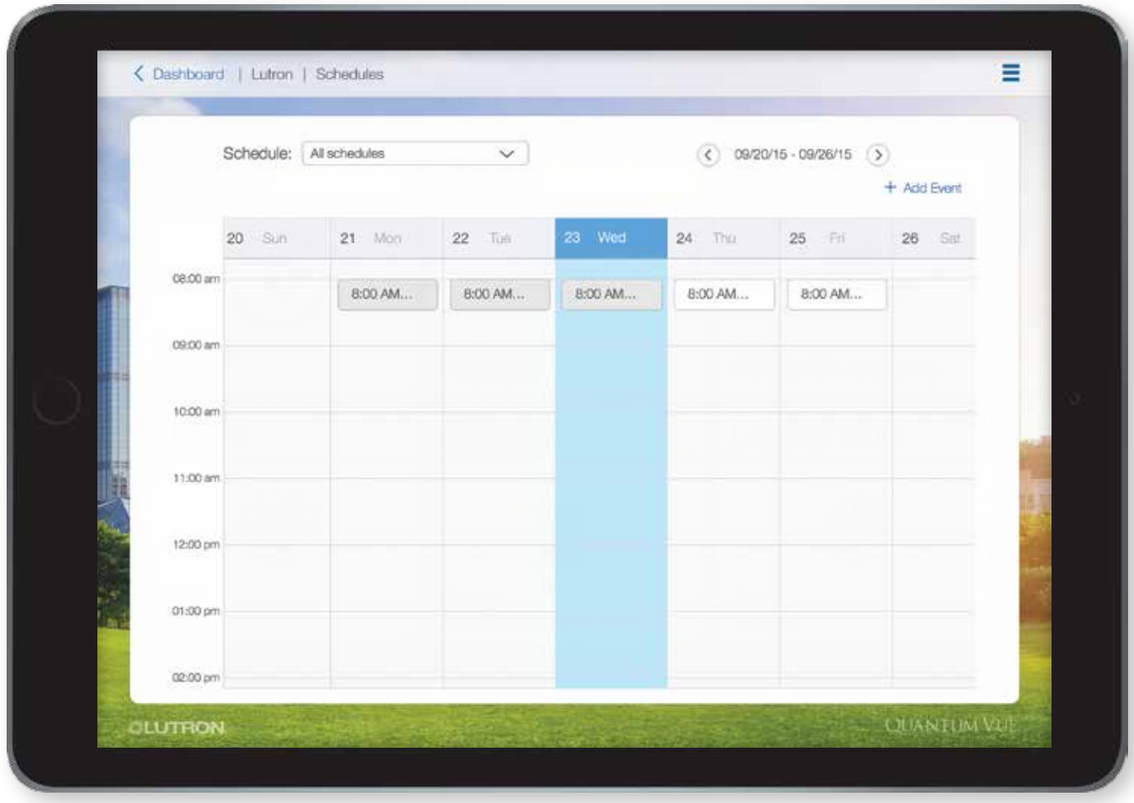
Quantum Vue™ software includes two types of time clocks:

- a time-of-day clock (e.g. 8 p.m. weeknights)
- an astronomic clock (e.g. sunrise and sunset)

Lights can automatically be set to a preset level or to turn on or off in certain spaces based on the time of day. Shades can automatically raise or lower in certain spaces at specific times.

Conditional programming can also allow controls to operate differently based on the time of the day. For example, occupancy sensors can be disabled during working hours, but re-enabled in non-working hours.

Quantum® allows for time-based control of all lighting and shades



Quantum Vue – Display today's schedule of events

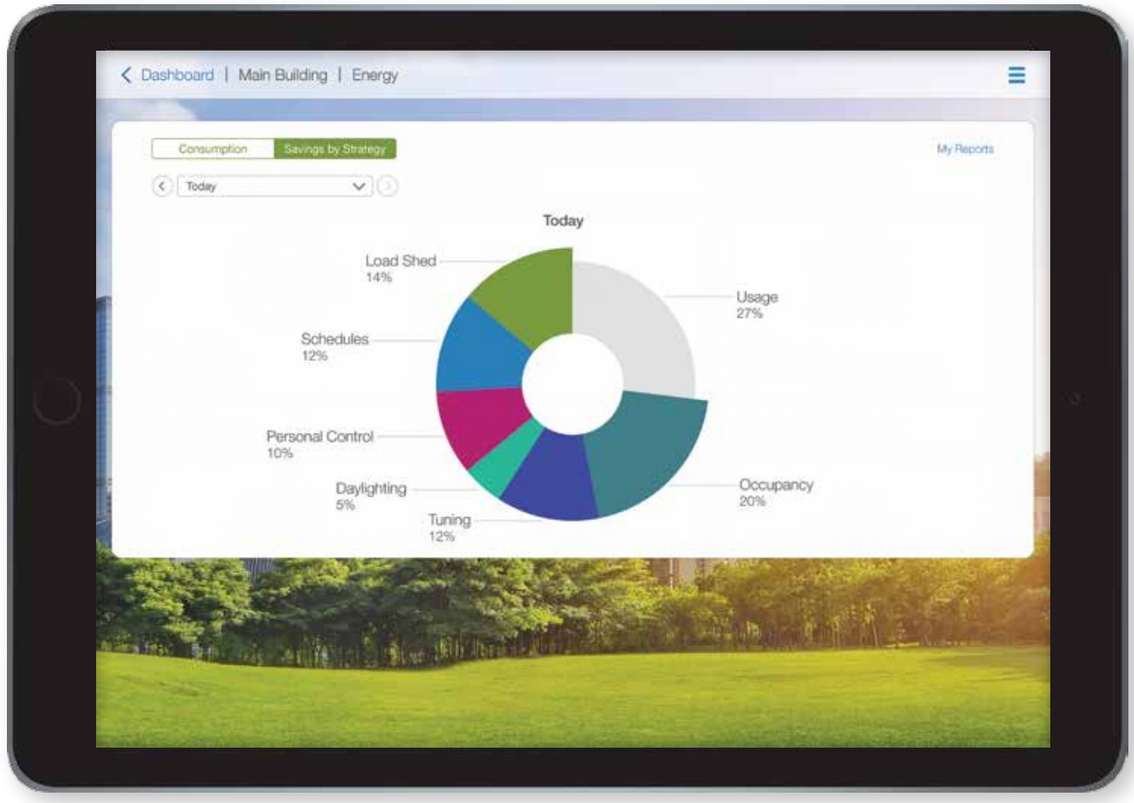
Reporting

Energy analysis, maintenance, and system health reports

Quantum Vue provides reports and diagnostics that allow facility managers to improve maintenance and operations, identify issues before they become problems, and monitor lighting energy consumption in the whole building or any part of the building.

The Lutron Quantum solution generates energy savings calculations based on system settings, an approach to energy monitoring that represents a significant cost savings over the installation of billable-grade energy monitoring equipment.

Reports include power or energy usage, system activity, and lamp failures



Quantum Vue – Energy usage reporting

Alerts

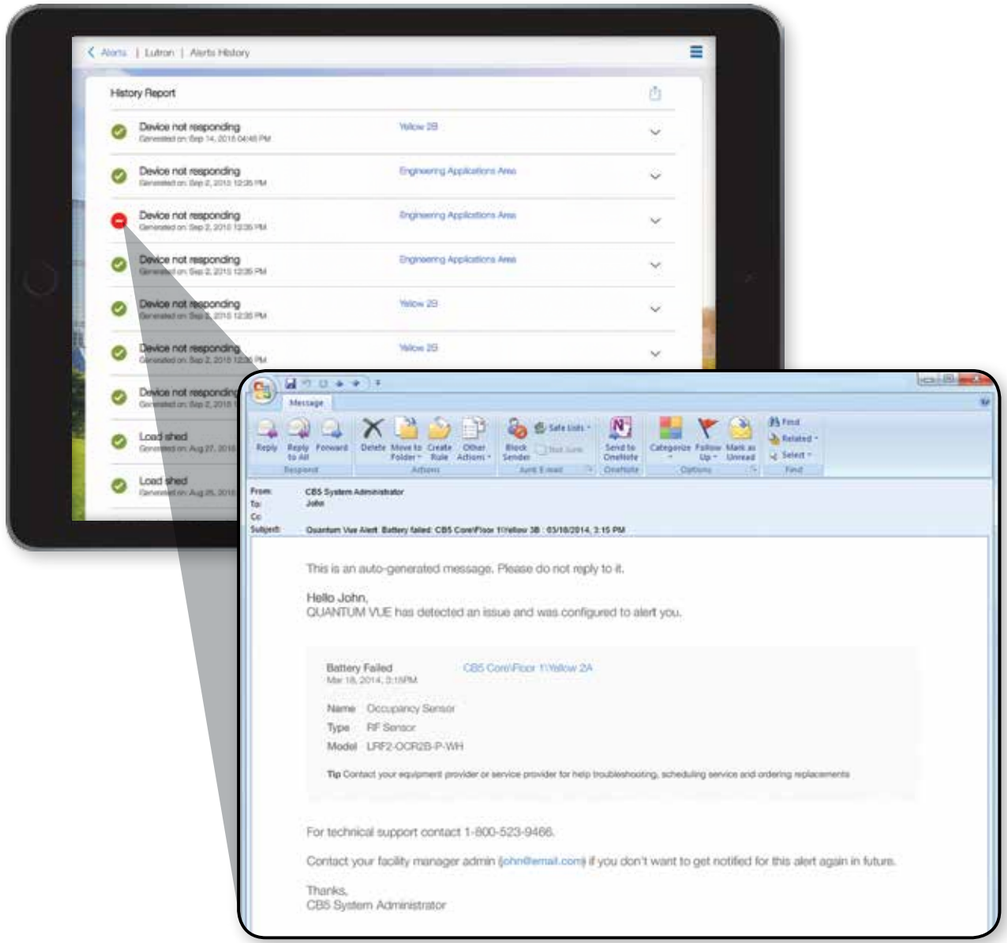
Raising awareness

Quantum® can monitor the system for certain events/triggers and raise awareness through on-screen alerts or through email messages. Emails can be used to integrate into more sophisticated work order management systems for acknowledgements or assignment to individuals.

Types of alerts

Alerts can cover a range of issues, one of the most important being issues with equipment. Improperly functioning equipment, such as a ballast, control, or sensor, as well as lamp outages in Lutron dimming ballasts, can all be set for an alert.

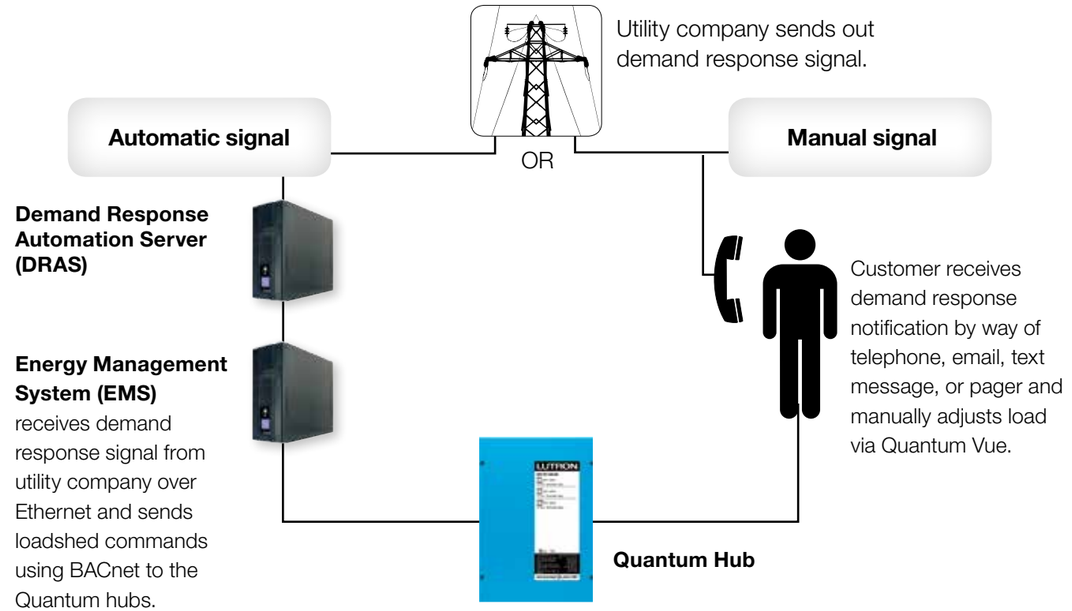
Alerts can also be triggered for low batteries in wireless sensors or controls. Lamp hour counters can trigger alerts for lamps nearing their end of life and the start of a loadshed event.

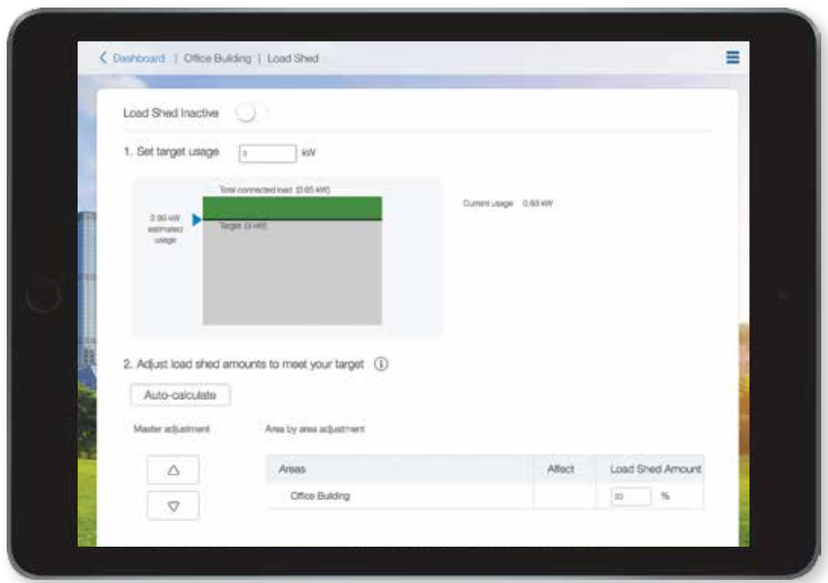


Quantum Vue® – Monitor your system for issues

Load shed

This feature allows facility managers to shed a percentage of the system's lighting output to reduce energy costs for their facility. This can result in lower electricity rates or rebates from utility companies and energy aggregators, who offer demand response programs. Quantum allows a facility manager to respond to load shed requests automatically, or at the touch of a button.





Quantum Vue – Configure load shed

Automated shade control

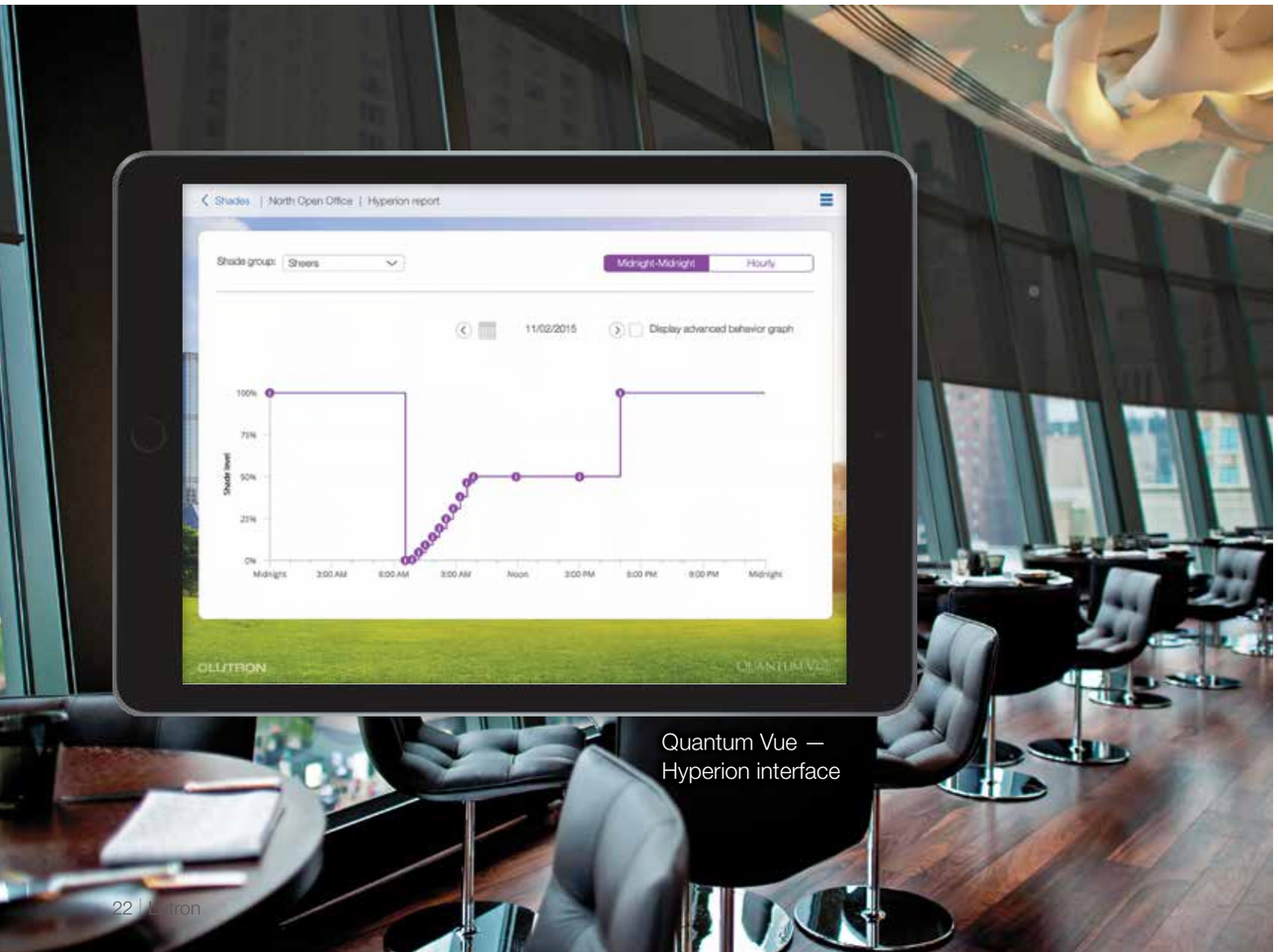
The Hyperion solar-adaptive shading system automatically adjusts Lutron Sivoia® QS roller shades in response to the changing position of the sun, reducing glare and heat gain, and saving energy.

The Radio Window sensor adds further functionality to Hyperion by taking into account variable conditions such as weather or shadows. The sensor detects levels of daylight and overrides the Hyperion default depending on conditions, ensuring shades are in the best position to diffuse sunlight.

By combining Hyperion's effective daylight management with Quantum, the amount of electric light used in a space can be lowered.

Quantum Vue® allows users to open/close shades, edit shade positions, configure Hyperion settings, and monitor shade movements.

Radio Window Sensor™



Quantum Vue — Hyperion interface

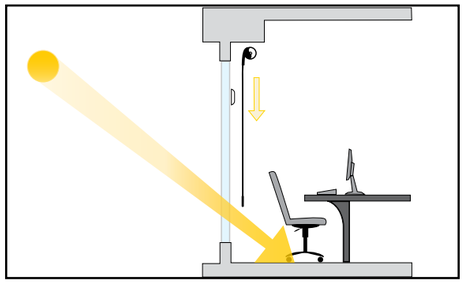
The Hyperion system is designed to increase comfort, productivity, and energy savings, while preserving views to the outside. Hyperion automated shades:

- maintain a glare-free environment to keep occupants comfortable
- are open more often to maximize views and daylight harvesting
- provide confidence that shades receiving direct sun are closed during peak cooling periods

Automated Shade Operation

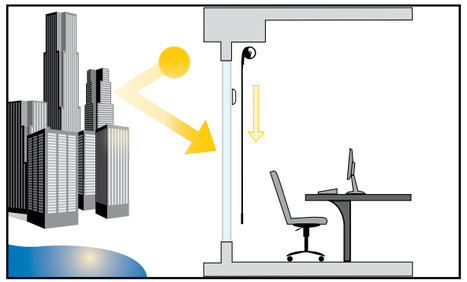
Your shades may be set up to adjust based on the following conditions:

Direct Sun: Shades lower to keep the sun's rays from penetrating your work area



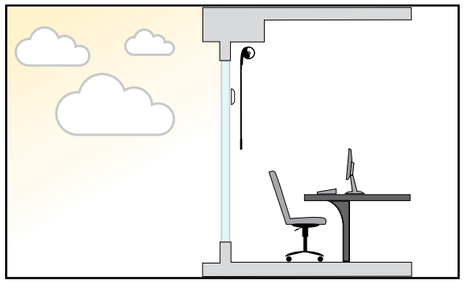
Shades lower to block direct sun

Reflected Sun: Shades close to block reflections from large surfaces



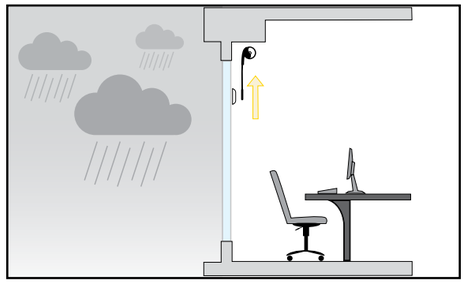
Shades close to block reflected glare

Bright Sky: Shades move to a predetermined position to minimize the contrast from the bright sky



Shades lower to reduce sky contrast

Overcast/Dark: Shades open to maximize views and available daylight when overcast or when in a shadow



Shades open to maximize view

Sources on back cover.

Control and programming app

Q-Control+

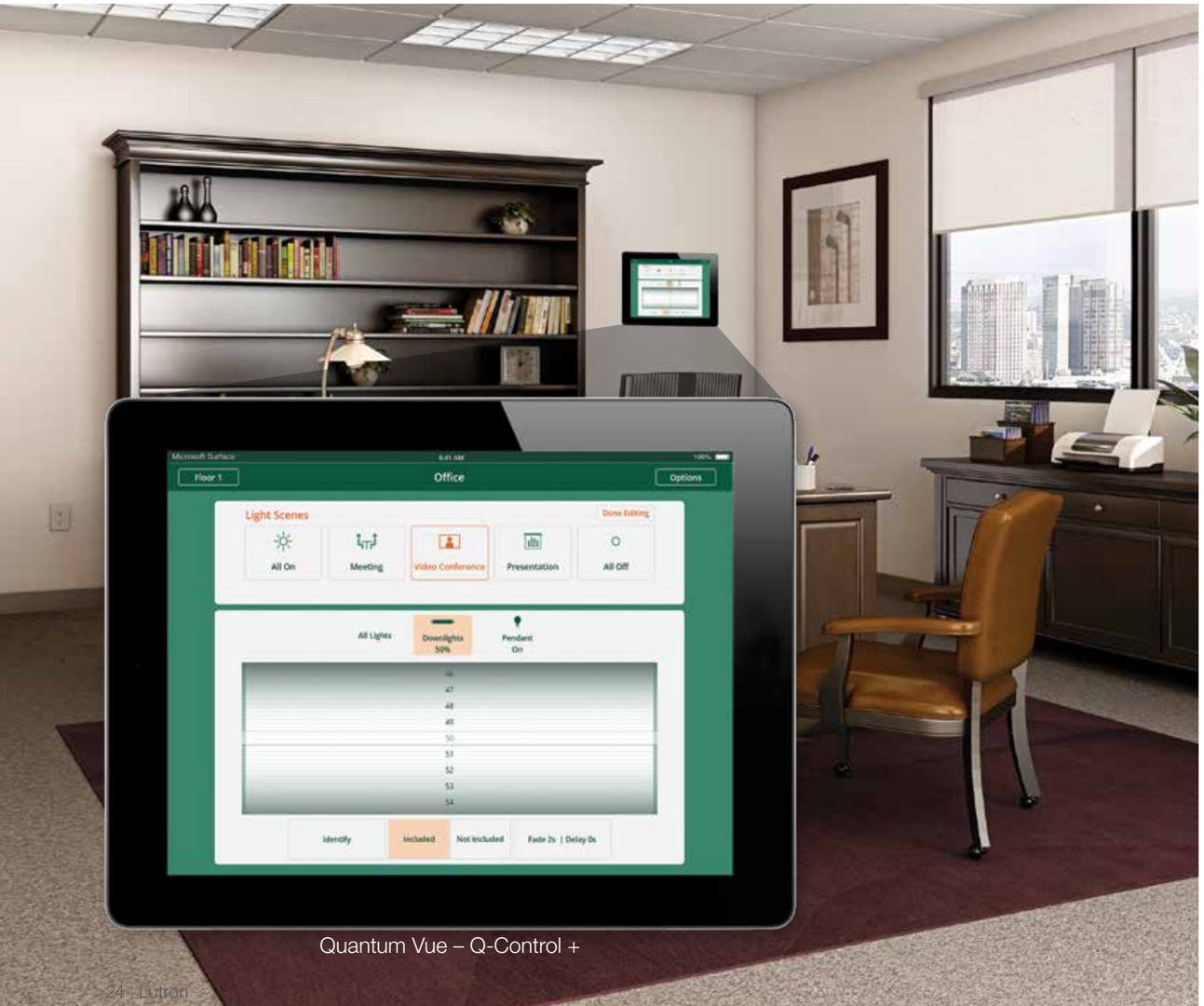
The Q-Control+ app provides a simple user interface for end-users, facility managers, and lighting designers to control and monitor the lights and shades from anywhere in the building.

Users can also quickly reprogram area scenes, zone levels, and shade presets while in a space.

Administrators can manage user accounts and restrict user access to only certain areas or functions depending on their specific roles.

Devices communicate with the Quantum® system via a wired ethernet connection or over the building's Wi-Fi network

The Q-Control+ app is available for iPad® and Windows 10 tablets and PCs.



Quantum Vue – Q-Control +

Personal control

Personna® PC personal web-based control software for Quantum®

Personna PC gives occupants control of their lights and shades from any device than can run a web browser. After logging in with a user name and password, the user can control lights and shades in his area using a virtual keypad, so there's no remote control to lose.

Users can also save preferred light levels and shade positions, which they can easily recall with the "favorite" button.

Personna PC software on networked computer or other internet device

Virtual seeTouch® keypad controls for lights (shown) or shades

Control lights by clicking on buttons

Personal Control — Pico® wireless remote—control from anywhere

Pico wireless remotes, which have a 10-year battery life, give each occupant the ability to adjust the light to suite the task at hand.

No wires—put it where it's most accessible

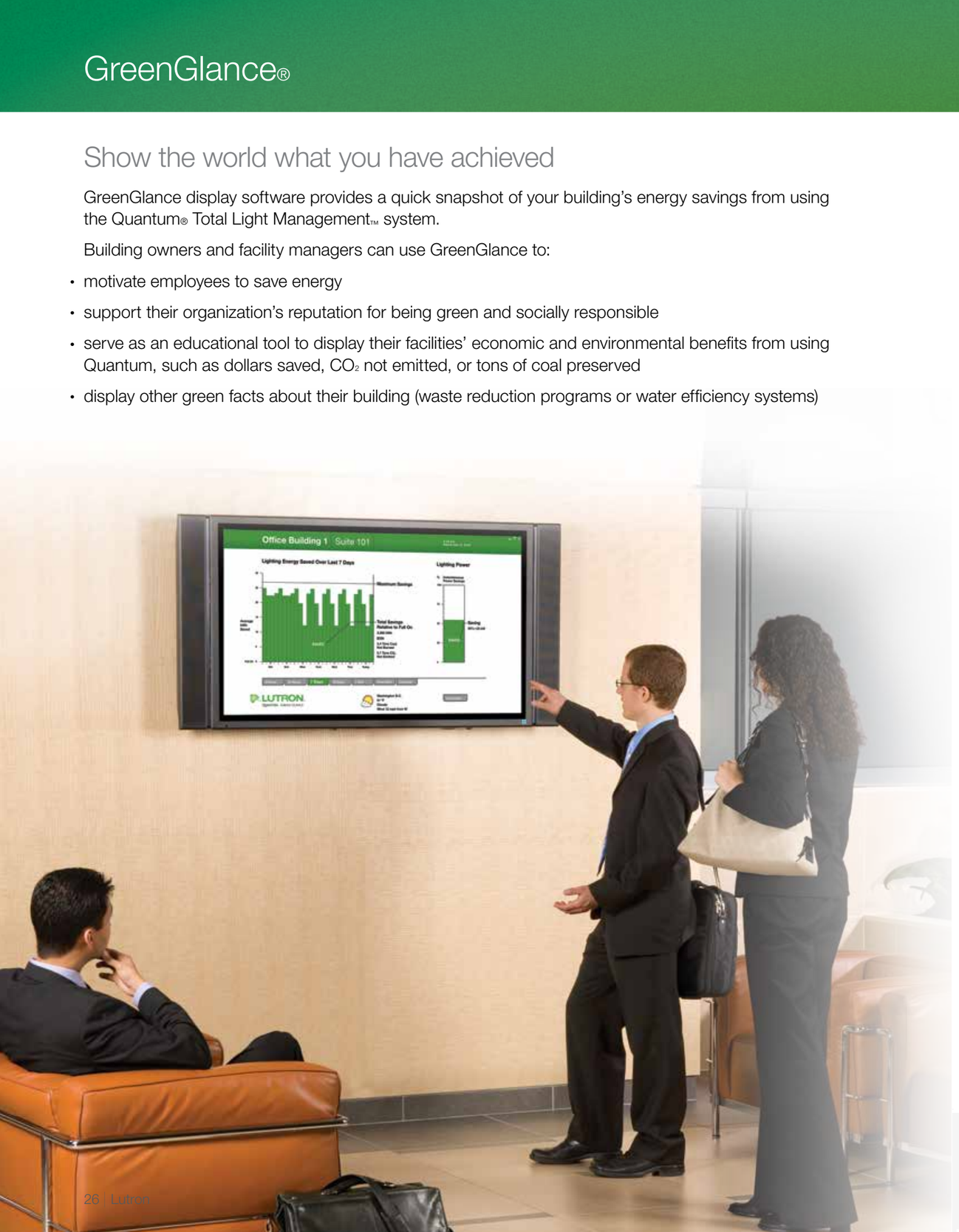
GreenGlance®

Show the world what you have achieved

GreenGlance display software provides a quick snapshot of your building's energy savings from using the Quantum® Total Light Management™ system.

Building owners and facility managers can use GreenGlance to:

- motivate employees to save energy
- support their organization's reputation for being green and socially responsible
- serve as an educational tool to display their facilities' economic and environmental benefits from using Quantum, such as dollars saved, CO_2 not emitted, or tons of coal preserved
- display other green facts about their building (waste reduction programs or water efficiency systems)



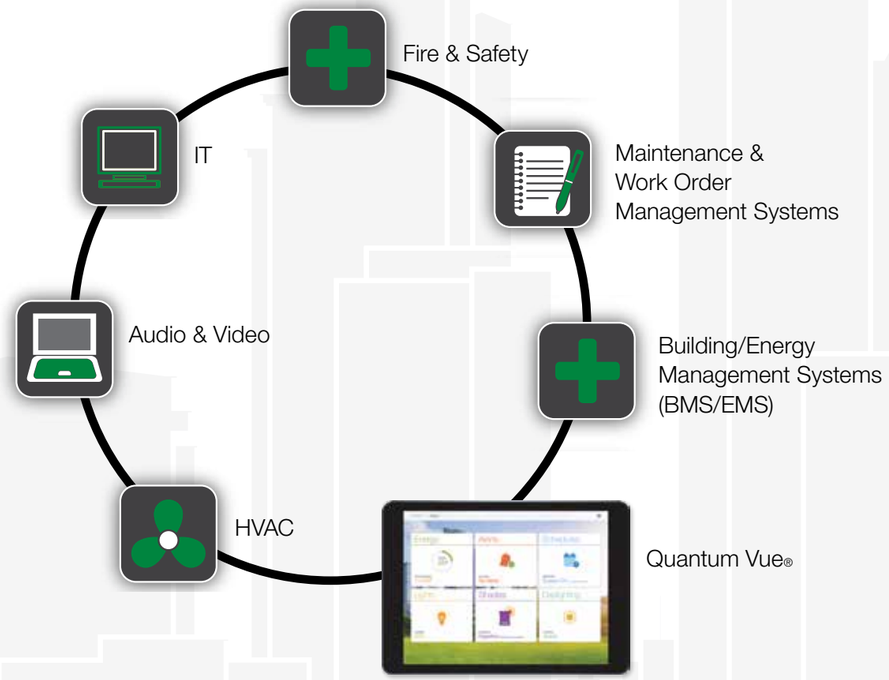
Seamless interoperability

Quantum can seamlessly and reliably integrate with many different building systems, including building management systems (BMS), security systems, and maintenance systems.

The BACnet/IP protocol is the primary means of integration. BACnet is embedded or native in the Quantum processors, which means no external interfaces or gateways are required in order to communicate with other systems.

In addition to BACnet, Quantum also provides a variety of other means to communicate with different buildings systems including RS232, Ethernet TCP/IP, contact closures, Modbus TCP/IP, Open ADR, and XML Webservices.

For Quantum systems that integrate with third-party systems, a System and Network Integration Consultation (LSC-INT-VISIT) service from the Lutron Services Company will ensure integration protocol requirements are aligned between Lutron and all third-party vendors involved early in the project, avoiding potential future project delays. Work with your Lutron Sales Representative to include a System and Network Integration Consultation in your scope of work.



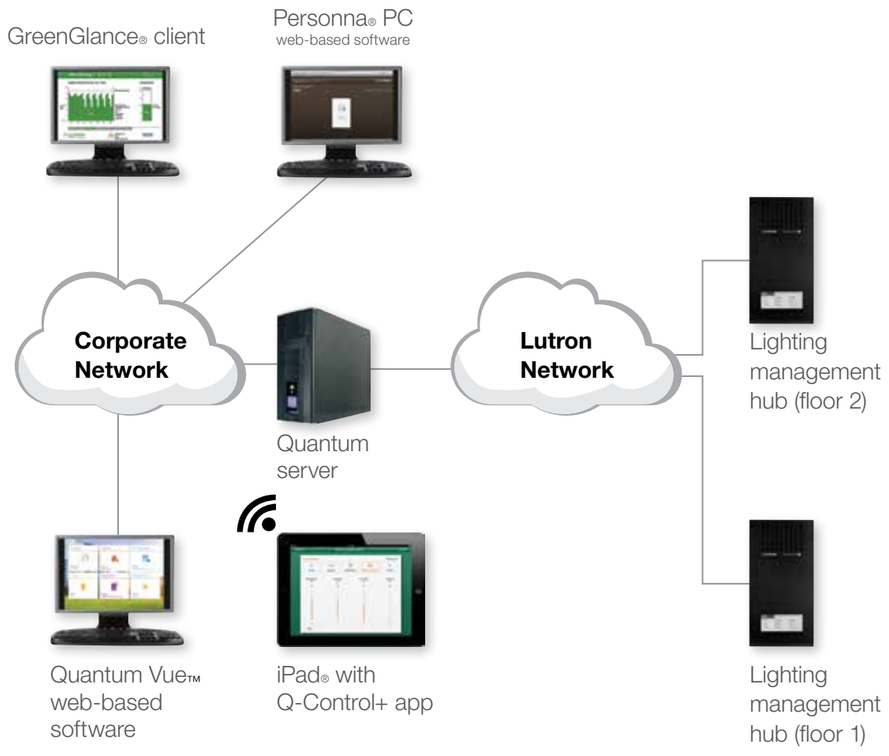
Flexible IT implementation

Quantum® can be implemented flexibly to address a variety of network configurations to suit the IT landscape in the building.

Option 1: Using a dedicated lighting control network

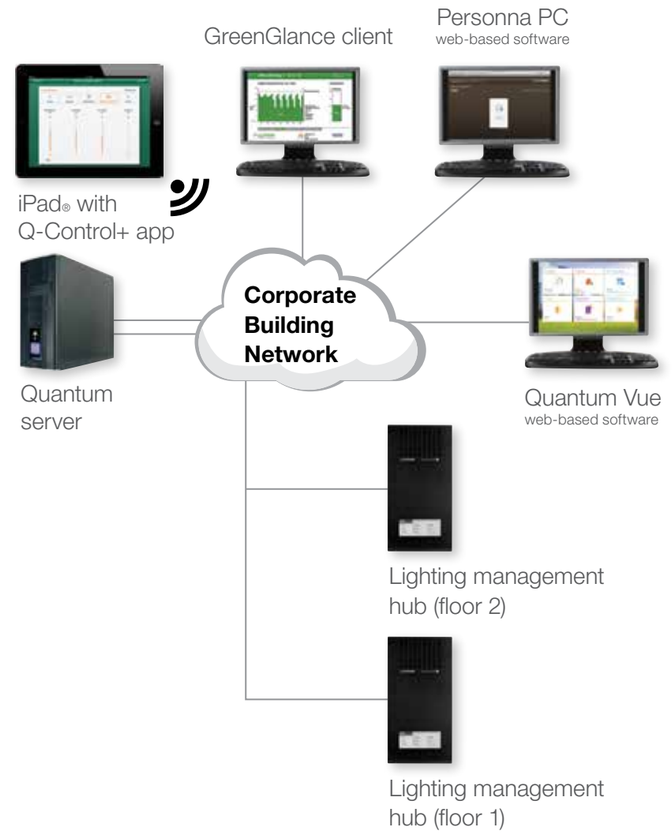
The Quantum lighting management hubs are connected to the Quantum server via a dedicated lighting control network. This provides the highest security.

For detailed network configuration information, have your IT administrator contact Lutron at **techapps@lutron.com.**



Option 2: Integrating with the Corporate Network

The Quantum lighting management hubs are connected to the Quantum server via the Corporate Building Network. When using this option, all routers/switches connecting the Quantum lighting management hubs and the Quantum server must be properly configured to allow messages to be passed between the hubs and the server.



Software Maintenance Agreement

Lutron is committed to providing flexible systems while ensuring your control systems operate efficiently. Like all building systems, Quantum relies on third party software such as web browsers and operating systems. These systems update frequently throughout the year; Lutron offers a Software Maintenance Agreement to eliminate the risks of down-time from those upgrades. A Software Maintenance Agreement will also extend the Lutron Software Warranty and provide no-charge license upgrades to take advantage of new software features (hardware and start-up labor not included).

Lutron Services

Meet project demands at each step of the project with service solutions

Ensure your project's scope of work is covered completely by specifying Lighting Control Services. The Lutron Services Company offers an array of service options and service types at each step of the project to:

- Protect the integrity of the design and achieve the project's vision
- Keep the project on schedule and on budget
- Achieve and surpass energy-saving requirements
- Protect the system and it's operational staff's investments over time

Onsite Services | Remote Services | Telephone Services | Training Services | Documentation Services

Visit lutron.com/services or contact your Lutron Services Representative for more information on services and for support in determining services that should be included in your project's scope of work and specification.

The stages of a project

Planning and Design Development Stage

Coordinate third-party integration requirements and let Lutron own the sensor replacement and calibration.

- System and Network Integration Consultation
- Sensor Layout and Tuning

Construction Stage

Get commissioning system verification and enhanced testing support to achieve the design vision.

- Onsite Startup
- After Hours Startup
- Onsite Scene and Level Tuning
- Onsite Performance-Verification Walk-through
- System Performance-Verification Documentation
- Title 24 Acceptance Test Visit

Operation and Maintenance Stage

Protect the lighting control assets with support plans and operational support service

- Customer Site Solution Training
- System Optimization Service
- Onsite and Remote Programming
- Commercial Systems Limited 2-Year Warranty
- Enhanced Warranties (Gold and Platinum)
- Software Maintenance Agreement

Renovation & Retrofit Stage

Allow end users to take advantage of technical advancements and new product innovation to enhance lighting control system performance with Replacement and Upgrade Services.

- Lutron Lighting Solution Assessments
- Retrofit Design Services
- Upgrade Planning Logistics
- Project Management Services

Proven Success—The New York Times Building

The New York Times Building, New York, NY, USA saves over $600,000 each year by managing light with Quantum®[13].

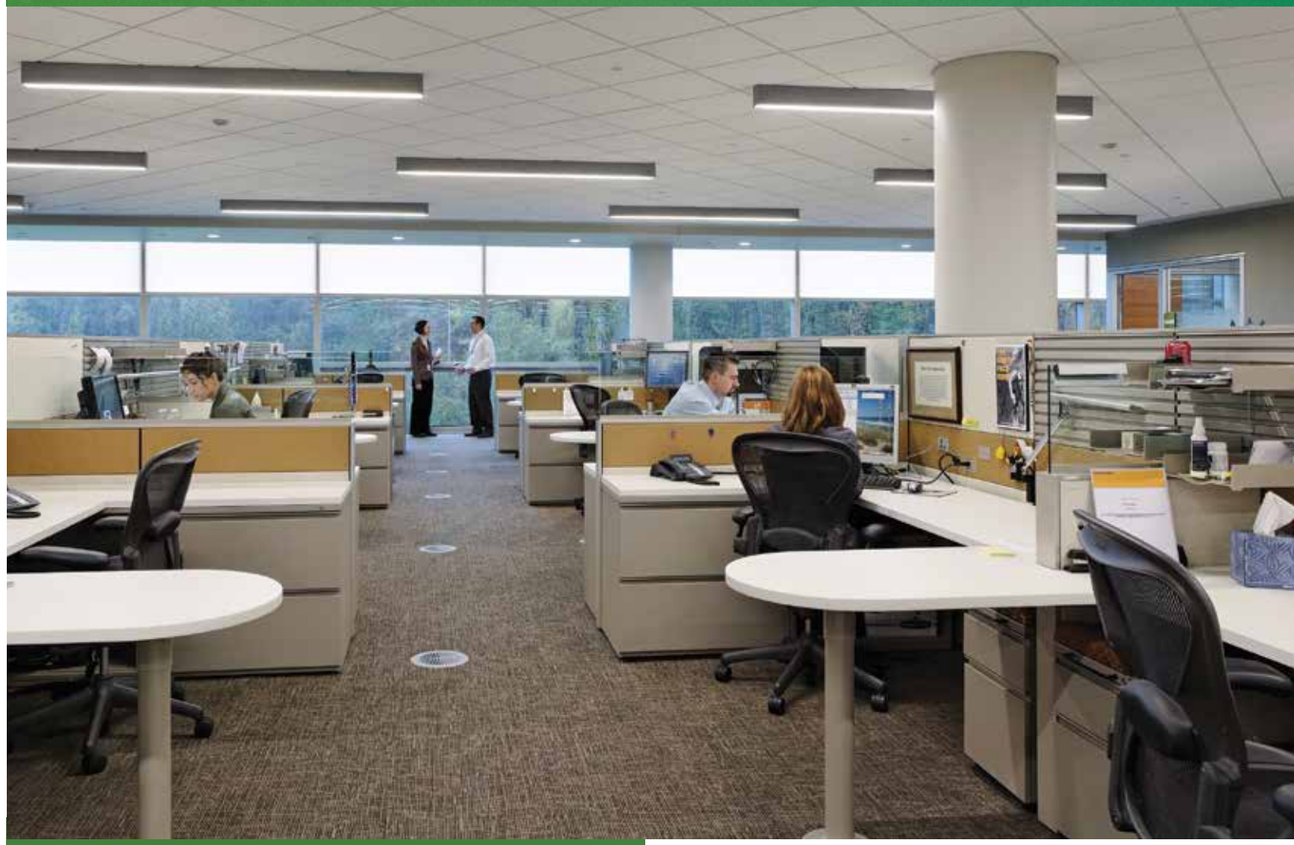
"We designed our building to use 1.28 watts per square foot of lighting power. With Quantum®, it's only using 0.396 — that's about 70% less."

Glenn Hughes, Director of Construction for The New York Times Company during design, installation, and commissioning of The New York Times Building

Green Facts

Buildings	1
Square Feet	over 600,000
Lighting Fixtures	over 15,000
Lighting Energy Savings	approximately 70%
Annual CO_2 Reduction metric tons	over 3,200

Proven Success—SAP America, Inc.



SAP America, Inc., Newtown Square, PA combined Quantum with Lutron Hyperion roller shades and has seen a dramatic reduction in energy use, and as a result, huge cost savings.

"SAP is about providing our staff with the best possible working conditions. We need to control the interior light with a system that would not block views, be distracting, or affect productivity. That's what Lutron delivered."

Brian Barrett, Project Manager for SAP

Green Facts

Buildings	1
Square Feet	218,000 sq. ft.
Certification	LEED Platinum standard

Proven Success—Lewiston Public Schools

Lewiston Public Schools, Lewiston, ME
An independent statewide report says Lutron lighting controls are delivering "considerable energy efficiency."

The school district in Lewiston, Maine aims to cut high energy costs and improve the learning environment with Quantum® Total Light Management™ and the EcoSystem® technology lighting control solution.

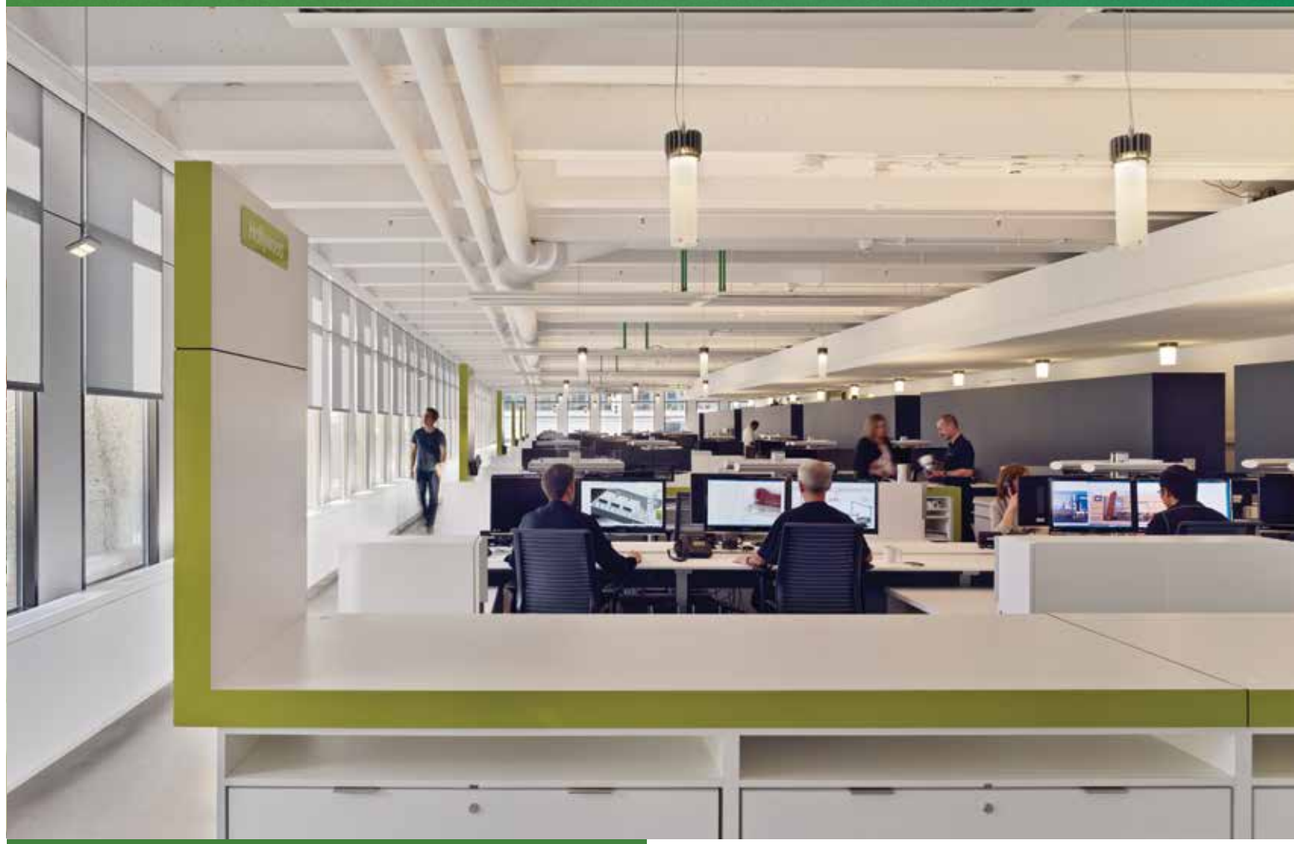
"The installation is an exceptional example of the level of savings that can be achieved by properly installing lighting controls."

Efficiency Maine, Report, April 11, 2008

Green Facts

Buildings	4
Raymond A. Geiger Elementary School	
New, high-performance	93,940 sq. ft.
Lighting energy savings	64,123 kWh/yr Approx. 61.6% reduction
Montello Elementary School	
Renovation	120,208 sq. ft.
Thomas J. McMahon Elementary School	
Renovation	56,704 sq. ft.
Farwell Elementary School	
New, high-performance	75,000 sq. ft.

Proven Success—Glumac



Glumac, Portland, OR
Lutron light control and Hyperion shading in Glumac's new office space had to manage both daylight and electric light to achieve three goals:

- Create an aesthetically pleasing design space
- Deliver adequate and proper lighting for the employees
- Set the standard for energy efficiency in building renovations

Glumac relied on Lutron retrofit solutions to ensure a cost effective, efficient total light management system that would meet those goals and contribute to LEED certification.

Green Facts

Floors	1
Square Feet	15,160 sq. ft. renovation
Certification	LEED Platinum pending

"My goal is to deliver comfort first, and make sure that the system saves energy too. Lutron helps me do both."

Carlos Inclan, Lighting Designer, Glumac

Our Company

LEED

A history of sustainability, innovation, and quality

At Lutron, sustainability is not new to us. Lutron is a company built on a belief in taking care of people: customers, employees, and the community. We are a proud member of the U.S. Green Building Council, administrator of LEED. And since 1961, we have been designing industry-leading technology that saves energy and reduces green house gas emissions.

We innovate in advance of emerging market needs and continually improve our quality, our delivery, and our value.

Lutron has registered over 2,000 patents worldwide and manufactures more than 15,000 products. For over 50 years, we have met and exceeded the highest standards of quality and service. Every one of our products is quality-tested before it leaves the factory.

Global service and support

You can count on a level of support unequaled anywhere in the industry or anywhere in the world. Lutron provides technical phone support. Lutron Field Service, made up of a global network of customer-focused field service engineers, provides world-class services that begin before your building is commissioned and continue throughout the life of your building.

Prestigious projects (left to right):

Musikschule Grünwald, Munich
Le Meridien, Tokyo
Chelsea Harbour, London
Royal Mirage Arabian Court, Dubai
Bank of China, Beijing
The White House, Washington, DC

Save energy on your next project

Call Lutron today at 1.888.588.7661 and you will be connected to a Lutron representative who will be able to provide you with a plan of action for your application.

WORLD HEADQUARTERS

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Sources

1 Compared with manual (non-automated) controls, up to 60% lighting energy savings is possible on projects that utilize all of the lighting control strategies (occupancy sensing, high-end trim, personal control and daylight harvesting). Actual energy savings may vary, depending on prior occupant usage, among other factors

2 Energy Information Administration, 2003 Commercial Buildings Energy Consumption Survey, released September 2008.

3 Williams A, et al. 2012. Lighting Controls in Commercial Buildings. Leukos. 8(3) pg 161–180.

4 VonNieda B, Maniccia D, & Tweed A. 2000. An analysis of the energy and cost savings potential of occupancy sensors for commercial lighting systems. Proceedings of the Illuminating Engineering Society. Paper #43.

5 Reinhart CF. 2002. Effects of interior design on the daylight availability in open plan offices. Study of the American Commission for an Energy Efficient Environment (ACE) Conference Proceedings. To achieve maximum lighting savings, automated shades are utilized.

6 Galasiu AD, et al. 2007. Energy saving lighting control systems for open-plan offices: A field study. Leukos. 4(1) pg 7–29.

7 Lutron commissioned study by Herrick Laboratories. University of Purdue. 2011.

8 Energy savings estimated based on 50% reduction of after-hours lighting energy waste. Source: VonNieda B, Maniccia D, & Tweed A. 2000. An analysis of the energy and cost savings potential of occupancy sensors for commercial lighting systems. Proceedings of the Illuminating Engineering Society. Paper #43.

9 Newsham GR & Birt B. 2010. Demand-responsive lighting: a field study. Leukos. 6(3) pg 203–225.

10 Eces. 2011 Commercial office plug load assessment. California Energy Commission PIER Program.

11 Lutron study based on reduction in heating (base 60°F) and cooling (base 55°F) degree days with a 2°F thermostat setback and 60% space un-occupancy. EnergyPlus modeling simulations were conducted and predicted similar savings.

12 Heschong Mahone Group, Inc., 2003. Windows and offices: A study of office workers performance and the indoor environment prepared for California Energy Commission.

13 The savings are based on actual lighting usage for the full year of 2009 (annual average lighting power of 0.396 watts per square foot) compared to the installed code-compliant lighting power of 1.28 watts per square foot. The dollars are calculated using a New York City commercial electricity rate of $0.18 per kWh (source: ConEdison). CO2 reduction is based on 1.9 pounds of CO2 prevented per kWh saved (source: Weighted average of fossil fuel energy sources from page 2 of a U.S. Department of Energy carbon dioxide emissions report in July 2000).

www.lutron.com

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Customer Service 1.888.LUTRON1 (1.888.588.7661)

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