

Leviton Lighting Management Systems Products Ready to Achieve LEED Points

In recent years, the US Green Building Council has established the LEED™ (Leadership in Energy and Environmental Design) program as a primary driving force behind the Green Building Movement. LEED is a voluntary, consensus-based national standard developed by the USGBC. Since its inception in 2000, over 1,400 projects in the U.S. have used LEED as a basis for defining a green building.

There are five credit categories to meet the system's framework of comprehensive green-building goals. There are four levels of compliance: Certified 26-32 points, Silver 33-38 points, Gold 39-51 points, and Platinum 52-69 points. While lighting is currently a relatively small component of the LEED system, it can nevertheless be instrumental in achieving at least 8 and as many as 22 points within the framework of the system.

The system is comprised of several sections. This paper will look at the lighting components and how Leviton Lighting Management Systems Division products can help achieve compliance points. The following is a section by section review.

Section SS: Sustainable Sites

Credit 8: Light Pollution Reduction: 1 Point

Eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environments.

Lighting controls do not directly apply to this credit. Further assistance in achieving this credit can be found at www.darksky.org.

Section EA: Energy & Atmosphere

Prerequisite 1: Fundamental Building Systems Commissioning: Required

Verify and ensure that fundamental building elements are designed, installed, and calibrated to operate as intended.

Lighting controls, like all other building systems, must be commissioned properly in order to function properly. Commissioning starts with the project concept and continues through occupancy.

LEVITON OFFERS SEVERAL METHODS OF MEETING THIS REQUIRED PREREQUISITE:

- Through Leviton's proprietary Dollars & Sensors Software, a plan for recommended sensor placement and the estimated savings are documented.
- Leviton's engineers can help lay out the lighting control solutions in plan and with a bill of material which can be included in the verification documentation for this prerequisite.
- "Adaptive Technology" circuitry enables the sensor to adjust to unique occupancy patterns, thus providing automatic calibration.
- Centura, Z-MAX, EZ-MAX and the new miniZ have network interface capabilities to provide system calibration and energy savings verification documentation.

Leviton Lighting Control Division

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Prerequisite 2: Minimum Energy Performance: Required

Establish the minimum level of energy efficiency for the base building and systems.

All buildings being submitted for LEED certification must meet their local energy code requirements or the provisions of ASHRAE/IESNA 90.1 1999, whichever is more stringent.

Check with your local authority having jurisdiction for applicable energy codes. Usually the city or county permit issuing department will provide this information.

Leviton Lighting Management products are compliant with all energy code requirements.

Credit 1: Optimize Energy Performance: 1-10 Points

Achieve increasing levels of energy performance above the prerequisite standard to reduce environmental impacts associated with excessive energy use.

Surpassing the energy requirements of ASHRAE/IESNA 90.1-1999 by 15%-60% will result in the granting of 1-10 additional points. Remember that this energy credit is based on the whole building energy use, not just the lighting. Reductions in lighting energy and load shaping can have profound impacts on the building energy usage and may result in design considerations for the HVAC system (reduced lighting loads may increase heating requirements in colder climates). The net benefit is positive in most cases as it typically costs less to heat than to cool a building.

Leviton Lighting Management Systems can achieve improved energy performance with the following:

STAND ALONE:

- Occupancy Sensors – a complete line of infrared, ultrasonic and multi-technology are available with “Adaptive Technology” circuitry to adjust to unique occupancy patterns. Sensors can be stand alone or combined into a complete energy management system. Savings have been shown to be in the 15%-46% range per studies performed by Midwest Energy Efficiency Alliance and Lighting Research Center at Rensselaer Polytechnic Institute.
- Timers – are an inexpensive alternative to occupancy sensors. Their ease of use and the fact that they can be programmed to switch on and off at the same times each day make them ideal for any number of applications including: electric motors, exhaust fans, closets, storage, pool/spa filters and more.
- EZ-MAX – up to 4 zones with (4) 2-pole relays of automatic switched control of lighting and other loads. Provides programmable timed switching and sweep control.

INTEGRATED SYSTEMS:

- Z-MAX Relay Panels – offer complex, whole building or single zone automatic switched control of lighting and other loads using stand alone or network-ready models. Z-MAX is compatible with occupancy sensors, daylight harvesting photocells, digital and low-voltage controllers, and load shedding programs. It offers telephone and modem interface and is suitable for HVAC system interface.
- miniZ Intelligent Daylight Management System – combines occupancy sensing, daylight harvesting and flexible lighting control functions with a single, easily installed package. Featuring Ladderless Commissioning™ with Autocal™ automatic photocell calibration, it has simplified daylight harvesting with full range 0-10V dimming and network capabilities. Daylight harvesting has shown energy savings of 35% according to the Midwest Energy Efficiency Alliance.
- Centura – offers a modular fluorescent lighting control system that can incorporate daylight harvesting, occupancy sensors, and an interface for load shedding programs and time clock systems. It includes an HVAC low-voltage relay and programmable time clock.
- A-2000 Dimmer Cabinets – provide affordable and reliable dimming of any type of lighting and can be integrated seamlessly with preset control systems, building automation systems, time clocks, photocell controls, and other networks.

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Credit 3: Additional Commissioning: 1 Point

Verify and ensure that fundamental building elements are designed, installed, and calibrated to operate as intended.

This credit requires the use of an independent commissioning authority (3rd party) to review the design prior to the construction documents (CD) phase of design, review CD's, implement commissioning strategies, and train building operators in system use.

Leviton Lighting Management Systems group can support these activities with documentation of system design, product literature, and field start-up and training.

Credit 5: Measurement and Verification: 1 Point

Provide for the ongoing accountability and optimization of building energy and water consumption performance over time.

This credit requires implementation of a plan to verify building performance over time. Once again, lighting is a key component of this credit.

Leviton Light Logger is a valuable tool to meet this credit. When used with the Dollars and Sensor program, it will provide documentation of occupancy use for reporting. Soon to come is the "Tenant Billing" feature for the Z-MAX product. This will provide reporting on energy, occupancy and demand use for equipment controlled by the Z-MAX system.

Section MR: Materials & Resources

Credit 5.1: Regional Materials: 20% Manufactured Regionally: 1 Point

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the regional economy and reducing the environmental impacts resulting from transportation.

Lighting has a minor role in this credit, but may prove helpful in some circumstances.

Leviton's regional locations may afford credit for products supplied within the required distance.

Section EQ: Indoor Environmental Quality

Credit 6.1: Controllability of Systems: Perimeter Spaces: 1 Point

Provide a high level of thermal, ventilation, and lighting systems control by individual occupants or specific groups in multi-occupant spaces (i.e. classrooms or conference rooms) to promote the productivity, comfort and well-being of building occupants.

Increasing personal control of lighting in commercial spaces can lead to higher levels of personal satisfaction and productivity while saving more energy. Provide at least one lighting control zone per 200 square feet for all regularly occupied areas within 15 feet of perimeter walls. While it is not required for this credit, the strong preference for control should be dimming rather than switching.

Leviton's Z-MAX, EZ-MAX, miniZ, Centura, Timers, and Occupancy Sensors provide the appropriate zoning capabilities to meet this credit.

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Credit 6.2: Controllability of Systems: Non-Perimeter Spaces: 1 Point

Provide a high level of thermal, ventilation, and lighting systems control by individual occupants or specific groups in multi-occupant spaces (i.e. classrooms or conference rooms) to promote the productivity, comfort and well-being of building occupants.

Increasing personal control of lighting in commercial spaces can lead to higher levels of personal satisfaction and productivity while saving more energy. Provide individual lighting controls for at least 50% of the occupants in non-perimeter, regularly occupied areas. The same preference for dimming applies.

Leviton's Z-MAX, EZ-MAX, miniZ, Centura, Timers, and Occupancy Sensors provide the appropriate zoning capabilities to meet this credit.

Credit 8.1: Daylight and Views: Daylight 75% of Spaces: 1 Point

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

Research shows us that people are happier, healthier, and more productive when they have "good" access to natural daylight and view windows. For this credit, 75% of all critical visual task occupied space must achieve a Daylight Factor of 2%. For more information on achieving "good" daylighting go to: www.daylighting.org.

LEVITON OFFERS THE FOLLOWING TO ACHIEVE THIS CREDIT:

- miniZ is the newest Leviton product to provide daylight harvesting in an inexpensive, simple system. It is an excellent solution for up to (2) 20A circuits and 3 zones. Models are available to operate as simple switching or 0-10V dimming. It is work capable with time clock, load shedding and occupancy sensor functions.
- Centura offers individual-zone daylighting control with full integration features.
- Occupancy Sensors provide ambient light sensing that keeps lights off if sufficient daylight is available in the space.
- Z-MAX and EZ-MAX offer photocell control for multi-zone switching.

Credit 8.2: Daylight and Views: Daylight 75% of Spaces: 1 Point

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building.

For this credit, occupants in 90% of all regularly occupied spaces must have a direct line of sight to vision glazing. For more information on achieving "good" daylighting go to: www.daylighting.org.

No Leviton products are directly involved with this credit. An opportunity does exist to integrate window shade functions into any of the daylighting control products. Window shades can be reactive to direct glare or sunlight issues during the peak solar times for that building.

Section ID: Innovation & Design Process

Credit 1: Innovation in Design: 1-4 Points

To provide design teams and projects the opportunity to be awarded points for exceptional performance above the requirements set by the LEED Green Building Rating System and/or innovative performance in Green Building categories not specifically addressed by the LEED Green Building Rating System.

Incorporating the Leviton Lighting Management Systems' full potential of energy management, daylight harvesting, load demand and occupant satisfaction into the project should create opportunity to achieve these credits.

Summary

Leviton has the products and systems to maximize LEED points for most projects.

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