

LEED and the Electrical Contractor

The U.S. Green Building Council's rating system is here to stay. Find out how an experienced design/build electrical contractor can significantly contribute to a LEED-certified project



Photo 1. Prefabricated “ready assembly” packages are assembled in the SASCO Electric prefabrication warehouse. This ensures that excess packaging never makes it to the jobsite.

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“**B**uild green. Everyone profits.” That’s the message touted by the U.S. Green Building Council to promote its LEED (Leadership in Energy and Environmental Design) Green Building Rating System, a consensus-based national standard for developing high-performance, sustainable buildings. The program was created by members of the Council, representing all segments of the building industry, to define “green building” by establishing a common standard of measurement.

Providing a framework for assessing building performance and meeting sustainability goals, LEED emphasizes strategies for sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. LEED recognizes achievements and promotes expertise in green building through a comprehensive system, offering project certification based on points (Table 1 on page C18), professional accreditation, training, and practical resources.

Although an owner can obtain most of the LEED points toward project certification through architectural, site selection, and mechanical/plumbing systems, anyone that’s been involved in a LEED-certified project before knows that the last handful of points can be very difficult and expensive to obtain — despite the fact that they’ve proven



Photo 2. These partially assembled conduit duct banks, prepared at the SASCO Electric prefabrication warehouse, not only reduce field installation time, but help cut down on excess packaging making its way on a LEED project site.

to be extremely cost-effective in the long run. As a result, compliance requires the creative design input from all design entities, including the electrical design/build contractor.

How can electrical contractors excel as a LEED participant? By being proactive. Not only must they possess engineering know-how and experience, but they also have to “walk the walk” in the field. Members of the electrical design and construction community can make a

alternate fuel refueling stations for 3% of the total vehicle capacity of the site. One method of complying with this requirement is to provide receptacles for charging battery-powered cars.

Sustainable Site, Credit #8—Light Pollution Reduction. The purpose of this point is to eradicate light trespass from the building and the site, enhance night sky access, and diminish development impacts on nighttime environ-

fixture selection and coordination and photometric analysis.

Energy & Atmosphere, Credit #1.1—Optimized Energy Performance.

The prerequisite for the Minimum Energy Performance category is to meet the minimum level of energy efficiency as specified in ASHRAE/IESNA 90.1 and/or the local energy codes — whichever is more stringent based — on a whole building simulation (Table 2 on page C18). The electrical design professional must work together with the mechanical designer to collaborate on complete building energy savings.

An experienced electrical design/build contractor must work closely with the serving electrical utility to turn the energy efficiencies inherent in LEED-certified projects into energy incentives. Electric utilities in the Seattle area, for example, offer incentives for efficient lighting systems that use less energy than allowed by the local energy code. The calculated energy incentives are based on the total kilowatt-hour savings compared to the baseline of the energy code requirements. These savings are often calculated over the first year that the building is occupied and paid directly to the building owner.

The building owner can receive

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difference in many ways that contribute to LEED credits, including the following areas. (This article is based on LEED, version 2.1, an administrative update to version 2.0.)

Sustainable Site, Credit #4.3—Alternative Transportation, Alternative Fuel Refueling Stations. The project electrical contractor must install

ments. The electrical designer is required to first provide lower light levels than those recommended by the Illuminating Engineering Society of North America (IESNA). In addition, a sophisticated photometric simulation with lighting analysis and modeling software is required to validate it. You can achieve this point with in house engineering expertise required to provide proper

additional incentives from using wall- or ceiling-mounted occupancy sensors when they are not specifically required by the local energy code. A good LEED designer will combine LEED energy performance points with utility energy savings.

Energy & Atmosphere, Credit #6—Green Power. The green power LEED point requires that the electricity used for your project must be generated from wind, solar, wave, geothermal, or biomass. A single point can be achieved by purchasing 50% of the building's power through green sources over a two-year contract. These utility contracts offer power at a premium over standard power contracts. A calculation of the expected energy use over a two-year period needs to be provided along with the premium kWh cost of the green power from the serving electric utility. The electrical

engineer can then provide a projected monthly cost premium required to obtain this point.

Green power can prove to be a cheap point when faced with other potential points during the end of the LEED process. In addition, the project can be promoted as utilizing green power, which may help to attract environmentally conscious tenants and/or customers.

Material & Resources, Credit #2.1—Construction Waste Management. Prefabrication procedures will limit the amount of construction personnel and waste in the field. This will not only limit the risk to the general contractor and owner's construction budget, but it can also help garner this point through reduced packaging waste at the project site.

During the design and planning phase,

many facets of a project are identified for specific delivery packages to be sent to the project as a "ready assembly" (**Photo 1** on page C14). These assemblies are built with all required supports, straps, and fittings and packaged in the warehouse. Complete units (rather than individual components) (**Photo 2** on page C16) can be installed in the field. Excess packaging stays in the warehouse, helping the entire team obtain the LEED construction waste management point.

Indoor Environmental Quality Category, Credit #6.1—"Controllability." As a prerequisite, lighting controls per the local energy code (or ASHRAE/IESNA 90.1-1999 — whichever is more stringent) are required as a minimum on all LEED projects. In addition, improved lighting control technologies can significantly contribute to this point.



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LEED Certification Categories and Associated Points	
LEED Certified	26-32 points
Silver Level	33-38 points
Gold Level	39-51 points
Platinum Level	52-69 points

Table 1. Project certification is based on a cumulative point system.

Optimized Energy Performance Scoring Chart		
New Buildings	Existing Buildings	Points
15%	5%	1
20%	10%	2
25%	15%	3
30%	20%	4
35%	25%	5
40%	30%	6
45%	35%	7
50%	40%	8
55%	45%	9
60%	50%	10

Table 2. The higher the building energy efficiency level, the more LEED points are awarded.

Typically, the basic energy code requirements incorporate the implementation of lighting control panels or occupancy sensors to turn off the lights during nonuse hours. You can use improved controls technologies to exceed the minimum required energy performance criteria. These enhanced lighting control systems include dimming ballasts and dimming controls, dual-technology occupancy sensors, photocells mounted in skylights, and sophisticated local controls, including digital addressable lighting interface (DALI).

Innovative & Design Process, Credit #2—LEED Accredited Professional. It's important to hire a design/build electrical contractor with an in-house LEED Accredited Professional. Just having this person on staff will provide a point toward project certification. In addition, the LEED Accredited Professional credential illustrates a broad knowledge of the complete building systems and construction procedures required for project certification. This credential also certifies that the design professional understands

the LEED point system and protocols required for project certification.

Innovative & Design Process, Credit #1.1—Innovative Design. The LEED process offers several points you can obtain through innovative design. This is where both design expertise and a strong history of LEED-certified projects can significantly contribute to a project. The beauty of this point is that there are no specifically required measures to achieve it. The design or product must substantially exceed LEED performance criteria. The designer must apply strategies not covered in the LEED handbook, such as life cycle cost analysis, community development and education of occupants. The right design or product can combine owner construction cost savings with resident/customer life cycle cost savings and with LEED points. **EC&M**

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