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# IEC Insights

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**SPECIAL  
ISSUE:**



## Green Energy

**FEATURED:**

Getting Green by Selling Green

*The Green Movement's Impact  
On Electrical Contractors*

Taking the LEED on Building Green

*Lighting Retrofits Before Time Runs Out*



Independent Electrical  
Contractors

**Innovation.  
Education.  
Success.**

# Growing Green: Electrical Systems Opportunities

By John White

**E**verywhere you look there is some tagline about “going green.” It’s on television, in newspapers and magazines. *Sports Illustrated* even had a “green edition” last March. For the electrical contracting industry, it’s much more tangible and may best be rephrased as “growing green.” Here’s why:

- The value of green building construction starts will exceed \$12 billion in 2008 and is projected to increase to \$60 billion by 2010. *Source: McGraw-Hill Construction Analytics, SmartMarket Trends Report 2008*
- Commercial Construction: Nearly 3.2 billion square feet of commercial building space are involved with the Leadership in Energy and Environmental Design (LEED) Green Building Rating System, and, each business day, \$464 million worth of construction registers with LEED. By 2010, approximately 10% of commercial construction starts are expected to be green. *Source: USGBC*
- Residential Construction: LEED for Homes rating system - network of home providers recently doubled to meet surging interest. 540 homes have been certified and nearly 13,000 projects are under development. *Source: USGBC*
- There are LEED® projects in all 50 states and 41 countries. (*Source: USGBC*)

Local, state and national efforts are underway and the evidence is clear – green means opportunity. This is an opportunity to improve the environment, to help your customers, and to grow your business.

Eaton Corporation has made a public commitment to the Business Roundtable to reduce worldwide greenhouse gas emissions (GHG) by 18% by 2012. We are measuring and reporting on our performance through Eaton’s Sustainability Report which, since 2006, has been part of Eaton Corporation’s Annual Report. As part of this effort, Eaton’s electrical group is implementing the Vision Project, whose goal is to design the energy efficient prototypical Eaton plant of the future and develop a template for reducing energy and waste streams at existing facilities.



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Tour this green building at [www.eaton.com/greenbuildings](http://www.eaton.com/greenbuildings)

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This is not only a strategic business initiative, it's the right thing to do. Beyond our business operations, this topic has evolved from a "movement" to a "market" for our customer and electrical contracting partners.

## The Role of Building Electrical Systems in LEED® Certification

Frequently asked questions from the electrical contracting business include, "How do electrical systems really play a role in this growing green building market?" The fact is that we make a big impact.

In an effort to demonstrate this impact, listed below are four of the five LEED® categories (water efficiency is not addressed) and the electrical system components that may contribute to earning credit points in those categories.

	Sustainable Sites (SS)	Energy and Atmosphere (EA)	Materials & Resources (MR)	Indoor Environment Quality (EQ)	Innovation & Design Process (ID)
<b>Save Energy</b>					
1 Pow-R-Command Lighting Controls	•	•		•	•
2 Uninterruptible Power Systems (UPS)	•	•			•
3 Variable Frequency Drives	•	•		•	
4 ENERGY STAR® and Harmonic Mitigating Transformers		•			
5 Power Xpert® Software and Meters		•			•
6 Energy Audits		•			
7 Power Factor Correction Capacitors and Filters		•			
8 Paralleling Switchgear		•			•
9 Automatic Transfer Switches		•			
<b>Protect the Environment</b>					
10 Integrated Facilities Systems (IFS)	•				
11 Medium Voltage Switchgear				•	
12 Refurbishing Services			•		
13 Circuit Breakers	•	•			
14 Integrated Power Assemblies	•	•			
15 Busway		•			
<b>Maximum Credits</b>	<b>2</b>	<b>15 + prerequisites</b>	<b>1</b>	<b>4 + prerequisites</b>	<b>5</b>

Figure 1: LEED® Credits Guide to Eaton Products and Services

**Sustainable Sites** – Opportunities exist to reduce building footprint by combining equipment into space saving electrical structures – the electrical room layout can be shrunk by much as 40%. And, of course, managing interior and exterior lighting (building façade, parking, etc.) reduces night-time lighting pollution and benefits neighboring properties.

**Energy and Atmosphere** – This is the area where the most opportunity exists. It also happens to offer the most LEED® credit points – up to 10 points and requires a mandatory 2 points be gained to qualify for Certification. Points in this category are typically gained according to energy efficiency as compared to ASHRAE 90.1-2004 via energy modeling done by the MEP Consultant and will require input from the electrical contractor. Here, opportunities come down to three primary categories – (1) energy efficient equipment (2) control and measurement of energy-consuming equipment and (3) on-site renewable energy. Examples include the installation of energy efficient lighting, lighting control, variable speed drives, power metering and sub-metering and switchgear equipment necessary to interconnect photovoltaics (typically installed by others).

**Materials & Resources** – The main credit point to be gained here is Construction Waste Management. This is an area where exceptional performance can be achieved providing an additional credit point under the Innovation & Design credit. Every contractor (including electrical) on a LEED® jobsite is typically required to make sure to divert waste from disposal. Use of electrical Integrated Facilities Systems may not necessarily contribute directly to a LEED® point here; however, it will reduce the overall amount of waste material and aid in managing labor costs since it is already fully wired for ease of installation, startup, and commissioning.

**Indoor Environmental Quality** – Controllability of Systems- Lighting Control is a tailor-made credit for the electrical contractor. Lighting is the single largest energy user in an office building at nearly 30% and lighting controls can turn lights off or turn them down through day-light harvesting capabilities. Other items for consideration are interconnection of variable frequency drives with the ventilation system contributing to the credit point for Controllability of Systems- Thermal Comfort.

**Innovation & Design Process** – This section of LEED® provides credit points for exceptional performance above the requirements set by the LEED-NC and/or innovative performance in Green Building categories not specifically addressed. For an electrical system or construction activities, additional points may be gained as mentioned earlier for Construction Waste Management or innovative product applications.

### INSIGHTS

John J. White is the energy management and environmental solutions manager within Eaton's Electrical Group.

## GETTING STARTED: Growing Green Training & Toolkit

Eaton is building a LEED® Silver addition to its Electrical Group headquarters in Pittsburgh and the general contractor has required the electrical contractor to participate and contribute to our LEED® related meetings. This is not unique given the number of green projects underway every day. If you haven't been asked about contributing to LEED® Certified buildings, then you may indeed be missing some opportunities to "grow green."

To "grow green," start with the basics with Eaton's free web-based training tool at [www.eaton.com/greenbuildings](http://www.eaton.com/greenbuildings). Eaton has developed this training application to introduce Green Building Basics where a viewer can interact with a 15-minute module and learn:

- Green and sustainability definitions
- Historic reference on the growth of the green building market
- LEED® overview and components
- Eaton's role in contributing to LEED® certified buildings

Eaton has developed a host of additional tools such as the LEED® Credits Guide to Eaton Products and Services that can help the electrical contracting community understand the green building market better and the key role that the building's electrical systems play, particularly as it pertains to the LEED® rating system.

Additional information pertaining to LEED® can be found at the USGBC Web site at [www.usgbc.org](http://www.usgbc.org). There are local organizations to tap into - nearly 70 USGBC Chapters across the U.S. provide regional or on-site training.