



IPRO 338

Web Site to Support Electrical Contractors for LEED Projects

<http://cresthill.rice.iit.edu/egtec>

Mission Statement

To create a website that would provide ECA contractors with consolidated product descriptions of the most efficient and least expensive resources available to obtain the various levels of LEED certification.

LEED CERTIFICATION



Leadership in Energy and Environmental Design



United States Green Building Council



Non-profit organization working to make green buildings accessible to everyone



Leadership in Energy and Environmental Design



Encourage adoption of sustainable green building development practices



Different levels of certification based on points earned through various building practices



Certified 26-32 points



Silver 33-38 points



Gold 39-51 points



Platinum 52-69 points

HVAC LEED Points Example



Energy and Atmosphere



Certified 26-32 points



Silver 33-38 points



Indoor Environmental Quality



IAQ 30% higher ventilation rates than those set by ASHRAE 62.1-2004 (1 points)



IAQ management plan



during construction (1 point)



Before occupancy (1 point)



High level of thermal and ventilation control (1 point)



Thermal comfort



Meet ASHRAE standard 55-2004 (1 point)



Permanent monitoring system and process for corrective action (1 point)



Project Problems



The U.S. government wants more buildings certified as green technology.



Developers cannot find all the viable resources in one searchable location.



Developers unable to compare various resource pricing creating disincentive to pursuit Green Certification.

Our Goals



To create a user-friendly website



Provide data on green electrical products with LEED certification facts.



Complete an industry resource list with current contact information.



Pass on a fully operational website to ECA for utilization of its members.



Launch NECA student organization to have a communication link between IIT and the ECA

Methodology



Establish timetable



Establish goals



Organize teams



Survey ECA



Compile information



Update website



Transfer control of website to ECA

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Green Link

User:
Pass:

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Home	Find Products	Manufacturers	LEED Ratings	Grants	Research
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Find Lead Rated Products by Category
Find Products by LEED Rating
Find Lead Product Manufacturers
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Helping Electrical Contractors Locate LEED Point Eligible Rated Products

Welcome to Green Link, your resource for green products and information from every corner of the electrical construction world, provided by the Electrical Contractors' Association of City of Chicago. You can learn about how LEED certification affects you as an electrical contractor and what products will help you make your project green. You can become informed about this new and growing part of the building industry and get the knowledge you need to stay competitive in the marketplace.

Resources

The purpose of this website is to host a user-friendly online database of green technologies information for the Electrical Contractors Association of City of Chicago. This website provides data on green electrical products with cut sheets, pricing and distributor information, return on investment projections, and LEED certification facts. The use of this website should help create a well informed transition from industry standard electrical products, to green alternative products, as well as cut down on miscommunication between architects and electrical contractors.

LEED Rated Product Search
Search
Search by

Your LEED Project Planner

You have no products saved.

Common Links

- [USGBC](#)
- [NAED](#)
- [CCGT](#)

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Facts and Figures



Buildings are one of the heaviest consumers of natural resources and account for a significant portion of the greenhouse gas emissions that affect climate change.



LEED and USGBC work to greatly reduce the consumption percentage by each green certified building



The overall green building market is likely to more than double from today's \$36-49 billion to \$96-140 billion by 2013 (Source: McGraw Hill Construction (2009))



The green building products market is projected to be worth \$30-\$40 billion annually by 2010 (Source: Green Building Alliance (2006)).



Every business day, \$464 million worth of construction registers with LEED.

Benefits



Improve the health and productivity of occupants



Reduce life-cycle energy and operating costs



Set example for world community of environmentally friendly construction.



Reduce contribution to overall pollution



Eligible for government grants



Lighting



Adaptive Lighting Controls



Task Lights



Alternatives to Incandescent



Daylight Dimming



Reduction of Light Pollution

Power Distribution

Example Products and how they help



APOGEE unit conditioner controller: This improves building rating by having efficiency maximization



APOGEE insight report scheduling option, insight base software; Aids in the organization of materials which ultimately leads to more efficiency



Water Efficiency

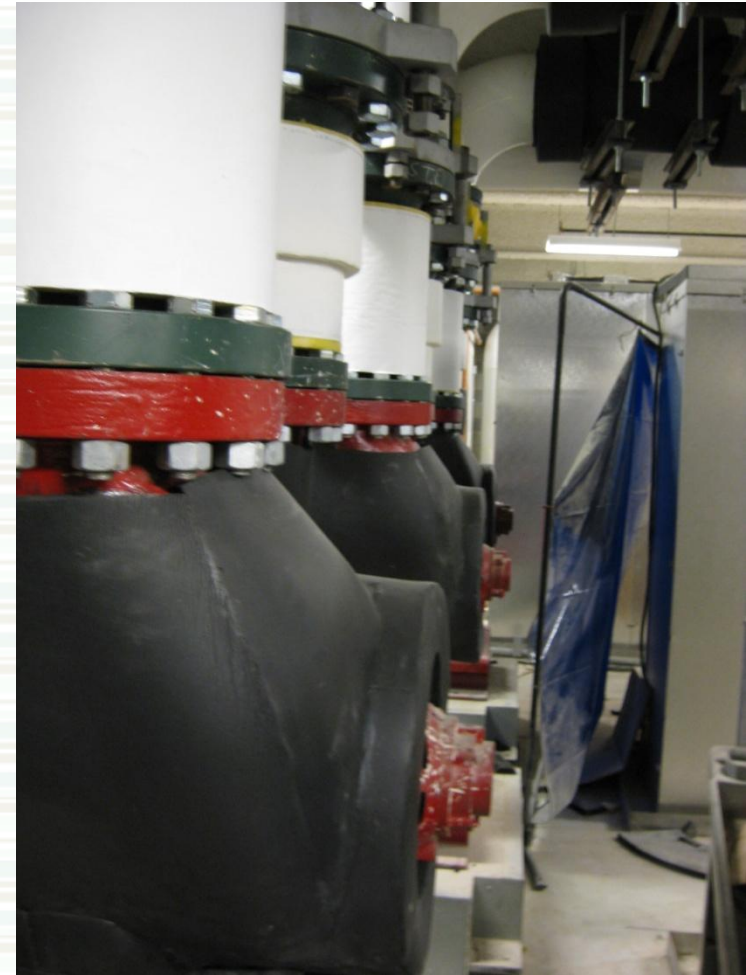


Solar-powered restroom products

Motion sensor faucet

Solar-powered water heater

Solar-powered water pump



HVAC Requirements

"Heating, Ventilating, and Air Conditioning"

The systems used in green technology must meet the standards as established by the ASHRAE/IESNA Standards 90.1-2004 or the local energy code, whichever is more stringent



Refrigerant must not be CFC based.



Indoor air quality (IAQ) must meet standards set by ASHRAE Standard 62-2004



Obstacles



Determining scope of work



Pricing and ROI



IPRO deliverables vs. project progress



Communication with product suppliers

Ethics

To facilitate environmental stewardship by providing a resource to help the members of ECA (Electrical Contractors Association) meet LEED (Leadership in Energy and Environmental Design) and USGBC (United States Green Building Council) standards.



Methodology



LEED research



Product Research



Vendor Contact



Industry Contacts



Working Website and Database



NECA Student Chapter



Website Walkthrough

The Home Page features the ECA logo (Electrical Contractors Association of Chicago) and the title "Green Link". It includes a login section with fields for "User:" and "Pass:" and a "Login" button. A navigation bar contains links: Home, Find Products, Manufacturers, LEED Ratings, Grants, and Research. The main content area is titled "Helping Electrical Contractors Locate LEED Point Eligible Rated Products" and includes a welcome message, a search bar, and a "Go" button. A sidebar on the left lists: Find Lead Rated Products by Category, Find Products by LEED Rating, Find Lead Product Manufacturers, Project Plan, Team Info, and Contact. A "Resources" section describes the website's purpose. A "Common Links" section lists USGBC, NAED, and CCGI. The footer mentions the website was developed by IPRO 338 research group at the Illinois Institute of Technology.

Green Link

User:
Pass:

Don't have an account? [Register](#)

Home Find Products Manufacturers LEED Ratings Grants Research

Find Lead Rated Products by Category

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Home Page

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Find Lead Rated Products by Category

Find Products by LEED Rating

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Products

Find Green Products

Click on a product name to view details.
Click on Product Name, Category, or LEED Points to sort table.

Filter Category

1 2 3 4 5 6 7 8 9 10 11 12 13 next->


Product Name	Category	Keywords	LEED points
Residential Thermal Energy Controller Add to LEED Project +	Power Distribution	Residential Thermal Energy Controller	EQc6.1
Enphase M175-24-240 Microinverter Add to LEED Project +	Power Distribution	solar, microinverter	EAc2
Solar Energy Unit 40-80kW Add to LEED Project +	Power Distribution	Solar Energy Unit	EAc1
Energy Commander Paralleling Switchgear Add to LEED Project +	Power Distribution	Energy Commander Paralleling Switchgear	EAc2
PD-100 Switchgear Add to LEED Project +	Power Distribution	PD-100 Switchgear	EAc2
Paralleling Switchgears Add to LEED Project +	Power Distribution	Paralleling Switchgears	EAc2
Genesis Standard Efficiency Series (horizontal or vertical)	HVAC		WEc3, EAp2, EAp3, MRc4.2

Common Links

- [USGBC](#)
- [NAED](#)
- [CCGI](#)

Products Page

Walkthrough Cont.


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Green Link

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Pass:

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[Home](#) | [Find Products](#) | [Manufacturers](#) | [LEED Ratings](#) | [Grants](#) | [Research](#)

Find Lead Rated Products by Category

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Products

Click on a product name to view details.
Click on Product Name, Category, or LEED Points to sort table.

Filter Category

Filter Category

HVAC


Lighting

Power Distribution

Water Efficiency


Submit

	Category	Keywords	LEED points
T8 Universal Start Fluorescent - COOPER LIGHTING	Lighting	Fluorescent	EAp3
Add to LEED Project			
U-Bent Rapid Start Fluorescent-Cooper Lighting	Lighting	Fluorescent	EAp3
Add to LEED Project			
T12 High Output Fluorescent-PHILIPS LAMPS	Lighting	Fluorescent	EAp3
Add to LEED Project			
T12 Slimline Instant Start Fluorescent-PHILIPS LAMPS	Lighting	Fluorescent	EAp3
Add to LEED Project			
T8 Rapid Start Fluorescent-PHILIPS LAMPS	Lighting	Fluorescent	EAp3
Add to LEED Project			
T8 Preheat Fluorescent-GE LAMPS	Lighting	Fluorescent	EAp3
Add to LEED Project			
T8 Preheat Fluorescent-ANGELO BROTHERS	Lighting	Fluorescent	EAp3
Add to LEED Project			




LEED Rated Product Search

Search by



Your LEED Project Planner

You have no products saved.



Common Links

- [USGBC](#)
- [NAED](#)
- [CCGT](#)

Select Products

Product Details

Name		LEED Credit	
T8 Rapid Start Fluorescent-SHAT-R-SHIELD		EAp3	
Category	Model#	Cost	%Recycled
Lighting	46536	14.31	
Description			
Straight Lamps: Lamp Type - Rapid Start Fluorescent; Watts - 32; Lamp Size T8; Base - Medium Bipin; Lamp Style - TL 80; Color Temperature - 3500K; Length (in) - 48; Avg Life (hrs) - 20000; Initial Lumens - 2950; CRI - 86; Package Quantity - 25; Manufacturer Series - ALTO (REG TM)			
Manufacturer		Power Usage	
SHAT-R-SHIELD		32 W Calculate RoI	
Notes			
Misc			Files
http://www.shattershield.com/index.html 116 Ryan Patrick Drive Salisbury, NC 28147 tel: US - (704) 633-2100 (800) 223-0853			

Photo:

Graph:



Lighting Example




Your LEED Project Planner

Product Name :
T8 Rapid Start Fluorescent-PHILIPS LAMPS

[Delete this product](#)

Walkthrough Cont. 2


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[Home](#) [Find Products](#) [Manufacturers](#) [LEED Ratings](#) [Grants](#) [Research](#)

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Manufacturers Manufacturers of Green Products
*Click on a manufacturers name to see more details.
Click on the name, city, or state headings to sort the table.*
1 2 3 next-->



Name	Contact	City	State
Cooper Lighting		Peachtree City	GA
PHILIPS LAMPS		Andover	MA
GE LAMPS		Chicago	IL
Westinghouse Lighting			
EIKO		Shawnee	KS
SHAT-R-SHIELD	Pete Givens	Salisbury	NC
PANASONIC INC		Secaucus	NJ
SYLVANIA LAMPS		Danvers	MD
SATCO		New York	NY
CROUSE HINDS		Syracuse	NY
DUALITE		Williamsburg	OH
LITHONIA LIGHTING		Conyers	GA
LUTRON		Coopersburg	PA
ADVANCE TRANSFORMER		Rosemont	IL
UNIVERSAL LIGHTING		Nashville	TN
LEVITON	Bob Freshman	Little Neck	NY
RAB		Northvale	NJ
PASS & SEYMOUR		Syracuse	NY
(HVAC) ClimateMaster, Inc.		Oklahoma City	OK
(HVAC) Luxaire		Norman	OK

Filter by State :

all

GA
MA
IL
KS
NC
NJ
MD
NY
OH
PA
TN
NJ
OK
TX
MN
MO
CO
AR
WI
CA
WY

 **LEED Rated Product Search**
Search
Search by

 **Your LEED Project Planner**
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Manufacturer Details

Enter your address to calculate distance to manufacturer

Name		
LEVITON		
Contact	Phone	Request Leviton Literature
Bob Freshman	800.824.3005	http://www.leviton.com/OA_HTML/ibe/CCtpScdDspRte.jsp?section=13743&subsection=14652&minisite=10026
Address		
59-25 Little Neck Pkwy Little Neck, NY		
Website	Distance	
http://www.leviton.com/	Calculate Distance	
Product Overview		
Manufacturer of electrical wiring equipment, carrying an array of electrical accessories, entertainment, and power solutions		

Manufacturer Example

Manufacturers

Walkthrough Cont. 3

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What LEED credits matter to electrical contractors?

(Note: This webpage is based on a paper - "Sustainable Design for Electrical Engineers", by Richard Simpkins, PE, LEED AP, William Thomas, PE, LEED AP, and Michael Berning, PE, LEED AP, published in the April 2006 issue of E&M: Electrical Construction & Maintenance. While the article refers to the responsibilities of electrical engineers, not electrical contractors, the credits that matter to both groups are very similar.)

The electrical team (engineer & contractor) have a significant impact on the following credits:
(Click on the links for more info.)

Sustainable Sites

- SSc8 - [Light Pollution Reduction](#)

Energy and Atmosphere

- Eap1 - [Fundamental Commissioning of Building Systems](#)
- Eap2 - [Minimum Energy Performance](#)
- Eap3 - [Fundamental Refrigerant Management](#)
- Eac1 - [Optimize Energy Performance](#)
- Eac2 - [On-Site Renewable Energy](#)
- Eac4 - [Enhanced Refrigerant Management](#)
- Eac5 - [Measurement and Verification](#)

Materials and Resources

- WEC3 - [Water Use Reduction](#)
- MRC4.2 - [Recycled Content Materials and Regional Materials](#)

LEED Categories

Research

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Grants

Important to many green building projects are the financial incentives available for meeting various levels of green building codes. State and Federal governments offer many incentive programs for meeting LEED qualification goals. Below are links to some of the best listing of State and Federal grants on the web. Click on the left menu links for more information on each category.

Federal Incentives

- EPA funding opportunities
- DSIRE Federal incentive listing

Illinois Incentives

- DCEO - [Department of Commerce and Economic Opportunity](#)
- DSIRE [Illinois incentive listing](#)

Common Links

- USGBC
- NAED
- CCGT

Grants

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Research

New innovations in green construction are occurring constantly and it can certainly pay off to keep up on what research is going on and how it might apply to a project.

HVAC

- IPRO 338 Project Research
- Air Compressor Energy Savings
- Energy+ HVAC Equipment Testing
- Energy+ HVAC Component Testing
- Heat Recovery from Vapor Compression in AC
- Heating and Cooling Design
- HVAC Acoustical Application Guidelines
- Noise and Vibration Control for HVAC
- HVAC System Interoperability

Lighting

- IPRO 338 Project Research
- Daylighting Control
- Emerging Markets for Printed and OLED Lighting
- Positioning OLED Lighting for Success
- LED Drivers: The Power Behind LEDs
- Downtown Urban Lighting Design

Power Distribution

- Qualitative Analysis of Power Distribution Configs for Data Centers

Common Links

- USGBC
- NAED
- CCGT

Recommendations for Future Work



Give administrative control of website to ECA and allow them to upload product information



Expand list of vendors, manufacturers and products



Update website to account for the upcoming regional specific change in LEED standards



Add project plans as a resource for other contractors

Acknowledgements



The Electrical Contractors' Association of the City of Chicago. Specifically Mr. Tim Taylor who was a tremendous help throughout the semester.



Dr. Dan Tomal for being our IPRO advisor and helping survey/contact ECA for feedback



IPRO 338

Spring 2009

Questions?

<http://cresthill.rice.iit.edu/egtec>