



# Smart Energy Design Assistance Center

SMART ENERGY DESIGN Assistance Center

Newsletter Vol. 4, No. 10, October 2008

www.sedac.org

## SEDAC

The Smart Energy Design Assistance Center (SEDAC) provides advice and analyses enabling private and public facilities in the State of Illinois to increase their economic viability through the efficient use of energy resources. SEDAC is sponsored by the Illinois Department of Commerce and Economic Opportunity and provides valuable services at no cost to for-profit businesses and public facilities. SEDAC is managed by the University of Illinois at Urbana-Champaign and supported by the 360 Energy Group.

(Hyperlinks are shown in green)

## EDUCATION

October 10, 11:45 AM - 1 PM:

SEDAC Lunch and Learn

Illinois Sustainable Technology Center, Champaign. [Directions](#).

Waiting list, call 1-800-214-7954

### TOPIC: The Practical Aspects of Lighting Upgrades for Energy Efficiency Projects

Michael J. Stanch will present practical ideas for lighting upgrades under the Illinois Energy Efficiency Portfolio Standard programs administered by IL DCEO, ComEd and Ameren. Topics to be covered include effective lighting upgrade strategies, perils and pitfalls of poorly planned upgrades, budgeting for lighting upgrades and other practical ideas that will help make your lighting upgrade project a painless and fruitful process. There will be plenty of time allowed for questions and answers. Anybody interested in pursuing a lighting upgrade project is welcome to attend.

## NEWS

### Choosing Energy Efficient Windows

With the advent of advanced glazing systems, selection of an appropriate window has become far more complex than it used to be. It is important to remember that although windows are highly desirable elements of the building envelope, they can impact the energy consumption of a building significantly.

When selecting a window we would like to “tune” the window to the particular location it will be installed. “Tuning” involves controlling which wavelengths of energy we want to allow through the window and which ones we want to block. The solar spectrum includes ultraviolet (UV), visible and infrared (IR) electromagnetic waves. With application of Low-E films and tints, we can “tune” what amount of UV, visible and IR energy will be allowed to transfer through the glazed surfaces. By “tuning” windows we can appreciably enhance the energy performance of a building envelope.

Some important issues to consider when selecting windows are:

- NFRC rating (see right) – [The National Fenestration Rating Council](#) certifies the energy performance of windows and allows for easy comparison between window products.
- U-factor – The ability of the window assembly (meaning both the window and the frame) to transmit heat is expressed by its U-factor. The lower the U-factor, the less heat it will transfer. Look for a whole unit U-factor of 0.33 or less, which equates to an insulation R-value of 3. This will require windows be at least double pane with a Low-E coating.
- Low-E – Low emissivity coatings refer to a transparent metallic oxide coating that is applied to the glass that reflects long-wave IR heat energy while allowing shorter wavelength visible light through. In heating climates, like northern Illinois, it is preferable to have the Low-E surface on the outer surface of the inner pane. In cooling climates, like southern Illinois, it is preferable to have the Low-E surface on the inner surface of the outer pane. Additionally, there are different degrees of Low-E coatings.
- Gas fill – filling the space between the panes of glass with a low-conductance gas such as argon or krypton can further increase the energy efficiency of a window. Argon is less expensive than krypton and is typically used in windows with 1/2” space between the glass panes. Krypton is used for thinner gaps.
- V<sub>t</sub> – Visible light transmittance is expressed as a number between 0 (opaque) and 1 (the amount of light that would pass through an open hole in the wall). To most people, V<sub>t</sub> values above 60% look clear. High V<sub>t</sub> allows more natural daylight to enter thus reducing the need for artificial light along perimeter spaces.

		<b>World's Best Window Co.</b>	
Millennium 2000®		Vinyl-Clad Wood Frame	
Double Glazing - Argon Fill - Low E		Product Type: Vertical Slider	
ENERGY PERFORMANCE RATINGS			
U-Factor (U.S./ft <sup>2</sup> ·h·°F)	Solar Heat Gain Coefficient		
<b>0.35</b>	<b>0.32</b>		
ADDITIONAL PERFORMANCE RATINGS			
Visible Transmittance	Air Leakage (U.S./ft <sup>3</sup> ·h)		
<b>0.51</b>	<b>0.2</b>		
Condensation Resistance	<b>51</b>		
	<b>—</b>		

...over



...more education

**Online Classes** are available through SEDAC and the Office of Continuing Education at UIUC:

**The Architecture of Sustainability:** 10 modules - individual or packaged.  
Module 1: 3 AIA LUs/CEUs, \$75.  
Modules 2-10: 1 AIA LU/CEU, \$50.  
Package of 10 modules: 12 AIA LUs/CEUs, \$450.

**Energy Basics for Small Business.**  
Module 1: The Language of Energy: 1 CEU, \$25.

**Online Registration is continuous at**  
[www.continuinged.uiuc.edu](http://www.continuinged.uiuc.edu)

## OTHER

**Green Institute at Heartland Community College, Normal**

**November 13 - April 30:** Building Operator Certification Level 1

**October 10 and November 8:** Basic Photovoltaics

**October 11:** Solar Domestic Hot Water Systems

**November 7:** Introduction to Wind Systems

## EVENTS

**October 18: Renewable Energy Fair,** Waubensee Community College.

**November 17-18: DCEO PEER Exchange** at Starved Rock.

**January 7-9, 2009: MEEA Midwest Energy Solutions Conference,** Chicago. Register now

**APPLY FOR SEDAC SERVICES ONLINE**



**Search for a SEDAC pre-qualified Energy Service Provider**

## NEWS

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- SHGC – Solar heat gain coefficient is the fraction of available solar heat that successfully passes through a window. In cold climates a high SHGC is desirable ( $SHGC \geq 0.55$ ) and in warm climates a low SHGC is desirable ( $SHGC \leq 0.40$ ).
- The coldest part of a multiple-glazed window is around its edges. The glazing perimeter is typically the weak spot in the thermal performance of windows. Look for “warm edge” spacers between the panes.
- Look for well insulated window frames and if aluminum, make sure it has a thermal break.

Other important issues to consider are orientation, size and shading of windows. These will be covered in an upcoming newsletter. Proper window selection is an important component to creating a high-performance building envelope. Windows have a profound impact on building energy usage and interior comfort conditions.



### USEFUL LINKS

[www.efficientwindows.org/](http://www.efficientwindows.org/)  
[www.energystar.gov/index.cfm?c=windows\\_doors.pr\\_windows](http://www.energystar.gov/index.cfm?c=windows_doors.pr_windows)  
[www.nfrc.org/](http://www.nfrc.org/)

## CHICAGO CLIMATE ACTION PLAN

In September 2008, the City of Chicago launched a new Web site [www.chicagoclimataction.org](http://www.chicagoclimataction.org) where individuals and businesses can learn about climate change, what they can do in their daily lives to reduce emissions, and what the City is doing to protect and preserve the environment.

## EEPS

Check the **Ameren Illinois Utilities**, **ComEd**, and **DCEO** Web sites often as the programs develop.

**AMEREN ILLINOIS UTILITIES**  
**Act On Energy Business Program**

**COMED Smart Ideas Business**  
**Energy Solutions Programs**

[www.ActOnEnergy.net](http://www.ActOnEnergy.net)

[www.comed.com](http://www.comed.com)

- Standard Business Incentives
- Custom Business Incentives

- Prescriptive Incentives
- Custom Incentives

**DCEO - [www.illinoisenergy.org](http://www.illinoisenergy.org)**

**Public Sector Electric Efficiency Programs**  
**Custom Incentive Program**  
**Retrocommissioning Program**

**Standard Incentive Program**  
**New Construction Program**

To participate in the *Smart Energy Design Assistance program*, contact us at: (800) 214-7954 or [info@SEDAC.org](mailto:info@SEDAC.org)  
Smart Energy Design Assistance Center, 1 East St. Mary's Road, Champaign, IL 61820

[www.sedac.org](http://www.sedac.org)