

 **instant poll**

Where do you most often go for energy-related news?

- Internet
- E-newsletters
- Trade journals
- Other
- All of the above

votel 

current events

1/14/08:
BASE Summit 2008

1/31/08:
Solar Energy for the Home

2/19/08:
POWER-GEN Renewable Energy Conference

more events 

submit an event 

 **we're listening**

Have a news tip, question or comment?
Click 'feedback' to due us in.

feedback 



 **efficiency news - industrial**

 [SAVE THIS](#)  [EMAIL THIS](#)  [PRINT THIS](#)  [MOST POPULAR](#)

Daylighting thaws energy bills
by Mark Anderson - 2.28.07

Daylighting continues to take the nation's building industry by storm. Federal and state tax breaks, along with a surge in high-performance building certification systems, fused a classic design element into the modern building industry.

Incentives offered through the Energy Policy Act of 2005 allow tax breaks of 60 cents per square foot for new commercial lighting that reduces power use 50 percent beyond 2001 standards. At the same time, a series of benchmarks issued by the U.S. Green Building Council (USGBC) invite innovation based on performance standards for protecting the environment, which in many states, also gain tax credits. Further fueling the movement, a number of studies have repeatedly shown that daylit buildings save money and energy, create better working and learning environments, enhance well-being and coax retail shoppers into pulling out the plastic.

Yet even among the pros, daylighting, a concept that combines natural light sources with controlled electrical fixtures to produce energy-saving illumination with minimal heat and glare, is a moving target [see "[Guest Commentary: A case for commissioning](#)," *nwcurrent*, Jan. 2006].

"Even within the industry, there's not always agreement as to what it means," says Cathy Higgins, program director at the New Buildings Institute in White Salmon, Wash. "But the single highest commonly found attribute in green building is daylighting."

The beginnings of daylighting have been around for centuries — the Pantheon in ancient Rome linked skylighting with ventilation. But the recent confluence of climates change, energy conservation and rising fuel costs pushed the practice toward today's mainstream.

"I would say daylighting has come to the fore in the last five or 10 years," says Nathan Good, an architect based in Salem, Ore. "But correct daylighting is very difficult to do on commercial buildings. It's a simple concept, but to do it well is not easy. It's not just putting skylights on a building. And if you don't do it correctly, you can lose more energy than you save."

Examples of good daylighting design can save up to 75 percent of the energy used for lighting buildings, according to the U.S. Department of Energy. And because conventional lighting produces heat, daylighting can also lower cooling costs.

Light shelves and clerestory windows top the modern menu of variables that work in concert to spread natural light evenly throughout indoor space. But computerized controls, along with technical advances in raw materials and product design, have brought about advances in such components as shades and lenses to create a sophisticated array of possibilities. High-tech glass glazing lets in visible light without infrared rays, while window panes can be filled with gel that serves as insulation or fed with electricity that turns glass darker and lighter as a given day requires. New solar panels are actually embedded in glass to diffuse light and generate electricity.

"One of the keys is for architects to re-educate themselves every few years," Good says. "Now, for example, you can get insulated glass that gives you the ability to create these very thin silver coatings on the inside of the double pane. That's a completely different product than we had 10 years ago, and it's a big deal."

Even the skylights themselves evolved. A new breed tracks the sun with a photovoltaic cell.

"The solar tracker keeps light in the center of the room all day long," says Portland architect Greg Acker. "It's not an expensive skylight, and it runs without any power. At night it rotates back, and it doesn't take a lot of energy to turn."

Meanwhile, several peer-reviewed reports suggest that workers in daylit buildings are more productive, shoppers are inclined to spend with greater frequency, and schoolchildren are more susceptible to learning. A watershed study by the Heschong Mahone Group says daylighting for schoolchildren is more important than classroom size. The same study shows that stores with daylighting experienced a 40 percent increase in sales over those that didn't.

"Productivity is related to access to natural light," says Gabriel Dominek, project manager at Portland's Holst Architecture. "These studies are coming out, and people are paying more serious attention to them."

Many pay attention to USGBC's Leadership in Energy and Environmental Design (LEED) rating system, a benchmark for high-performance buildings. The system offers rankings of Certified, Silver, Gold and Platinum — which in some states can be linked to tax credits. The council issued its first set of standards in 2000. Since then, the council's membership has increased tenfold.

The Oregon Health and Science University's new 16-story Center for Health and Healing is pursuing a LEED Platinum rating, yet it was engineered on a conventional budget.

"The new OHSU building on the Portland waterfront has sun shades on the south side," Acker says. "The shades stick out about three feet and are made out of photovoltaic sheets. It's producing electricity while it's keeping heat out of the building."

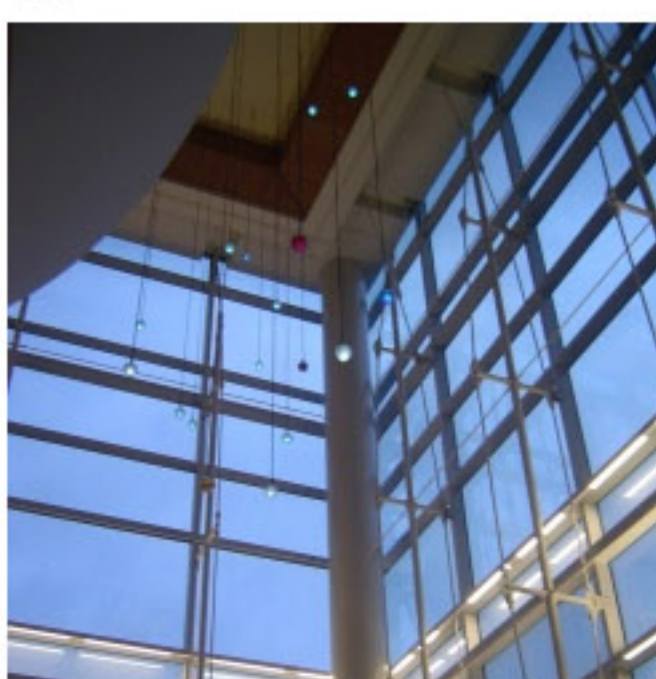
According to Good, the Norm Thompson headquarters in Hillsboro, Ore., is one of the first Northwest buildings to make full use of modern light shelves and electric lighting controls.

"That building was completed in 1996 and even today remains a great example," Good says. "Since then, there have been several buildings that have learned from that one and moved forward."

Many experts even suggest a more primal aspect of daylighting beyond saving energy, enhancing productivity and producing a natural source of light.

"If you daylight a building you're going to give the occupants some kind of connection to the outside," says Mike O'Brien, green building specialist with the Portland Office of Sustainable Development. "Seeing how the weather is changing and the seasons are changing is very important to people."

Adds Good: "Daylighting is one of the most important design concepts in the Northwest because we have so many days that are overcast. If there are humans occupying a building, it's crucial. It's part of our sanity."



Oregon Health and Science University's Center for Health and Healing

Related Links

- [District energy gains steam in Portland](#) [Read More >](#)
- [Regional leader takes efficiency award](#) [Read More >](#)
- [Savoring energy savings](#) [Read More >](#)

Seeing how the weather is changing and the seasons are changing is very important to people.

Mike O'Brien, Portland Office of Sustainable Development



A Heschong Mahone Group study showed daylighting for schoolchildren is more important than classroom size.



Nathan Good, architect

 [SAVE THIS](#)  [EMAIL THIS](#)  [PRINT THIS](#)  [MOST POPULAR](#)

Looking for local content? Choose your region:

Click on your state or choose from the drop down menu.

Region... 