

Daylighting

Energy costs escalating?

Is daylighting an option for you to save money?

By Richard Dix

Marketing Director

Anthony Roofing, a Tecta America Company

Property managers have seen their building's energy costs rise year after year. As economic times get tougher, there are increased pressures to reduce costs, especially during this period of financial downturn. Have you reviewed your building's energy costs lately? How much of your interior lighting makes up your energy costs? Is daylighting the answer to reducing your utility costs?

What is daylighting?

Traditional daylighting is the illumination of the interior of a building by natural means such as through windows or skylights.

Why should I consider daylighting now?

New daylighting systems have been developed that bring the sunlight inside and have a spectral distribution that replicates that of a specified daylight condition in the building. These new daylighting systems can help you save on your electricity bill by harvesting the natural light of the sun. They can reduce and even eliminate the need for electricity-powered lighting. Now that the price of electricity has risen, the payback is even greater and the return on investment occurs a lot sooner.

The amount of daylight you can harvest depends on the number of sunny days you have in your area. How much can you save? The National Oceanic and Atmospheric Administration (NOAA) National Data centers and the U.S. Department of Commerce ranks the major cities based on the annual percentage of possible sunshine. Based on 16 years of weather monitored, Chicago has sunshine on the average of 54 percent of the days a year.

How do these new daylighting systems work?

One manufacturer has specialized light pipes that are installed just as you would place a skylight on your building. These light pipes funnel natural light downward and a prism lens deflects and spreads the light to the interior. Inside the building, just below the base of one of these light pipes, a photocell is suspended measuring the incoming ambient light. This photocell is connected to a control panel. The control panel allows you to set a variable ambient lighting requirement for each of your designated zones. These skylights, installed with sensor integration, shut off the lights based on your pre-set requirements during daytime hours.

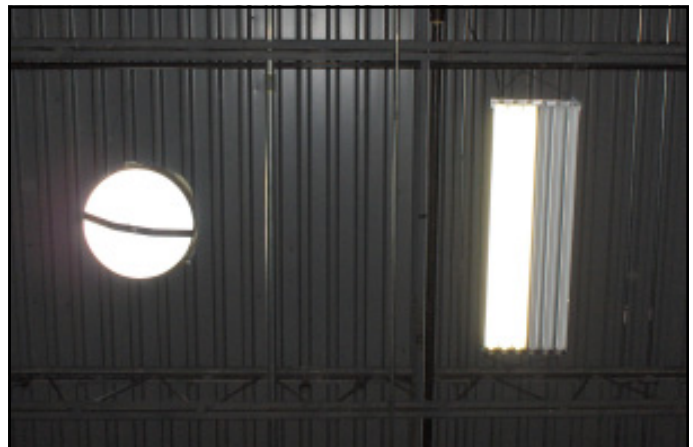
Note that sensor integrated systems may require an update of your interior light fixtures. However, a lighting fixture update

typically results in putting in place more energy-efficient lighting for your building, also saving you money. The energy-efficient fluorescent lighting fixtures that are installed with the light pipes are wired so that only three of the six bulbs may be on during marginal interior lighting based on your light requirement settings. Upgraded control panels for this manufacturer can also have timers built in that control whether or not your lights turn on based on your settings.

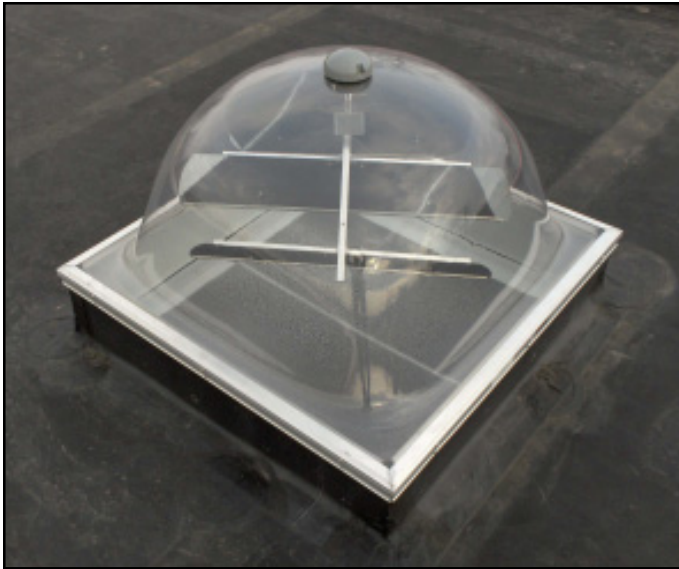
Another manufacturer makes a skylight that has mirrors suspended from the top that reflect an intensified light below. As the earth rotates, a motor driven by a photocell follows the sun and turns the mirrors to deflect additional daylight below. The increased light gain improvement by following the sun in the southern hemisphere depends on the latitude of your location. One manufacturer states that the Chicago area would have a 4.27 times increase of annual lighting hours versus conventional skylights. This manufacturer's daylighting design can also be integrated to turn off interior lighting during sunlit hours.

How much money in utilities will I save?

The amount you save depends on your lighting requirements and the hours of available natural daylight in your area. If the Chicago area has an average of 54 percent days of sunshine, you might then assume that you could reduce your interior lighting up to a little over 50 percent during your building's daytime operation. You can ask daylighting manufacturers and installers to conduct an energy savings calculation for your building. Some of these companies will meet with you, tour your facility, and provide this consultation for free.



Light pipes and fluorescent lighting.



Skylights that track the sun.

Additional incentives!

Depending on your utility plan, daylighting can reduce the number of peak demand days of your energy consumption billings.

ComEd offered a rebate plan in 2008 where these daylighting systems may have qualified for rebates dependent on the cost and on the rate of return on investment. If this program is again offered in 2009, you could potentially save additional money with ComEd's rebate incentives for these energy-efficiency lighting and daylighting installations.

The State of Illinois Treasurer's Office began a one-year pilot program that started in June of 2008 that secures below-market interest rates for borrowers who finance their purchase for installation of energy-efficient and renewable energy equipment at participating lenders. Projects can range from \$10,000 to \$10 million.

Finally, from a "green" perspective, you can save on energy consumption and do your part to reduce carbon emissions in the environment.

Richard Dix has worked at Anthony Roofing, a Tecta America Company, in sales and marketing for the past three years. Prior to joining Anthony Roofing he worked in the marketing research field as a sales account executive and in product management. If you would like to see the above installations discussed in this article, you may visit the Anthony Roofing warehouse which has these daylighting systems installed for your inspection. Richard may be reached at 630/898-4444.



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