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## Cut That Power Bill

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# University of Dayton, Ohio (url: <http://www.udayton.edu/index.php>)



## Cut That Power Bill

**10.30.2007 | Energy and Environment, Research** If you're thinking about installing a skylight, University of Dayton researchers say it should occupy 1 to 6 percent of a building's floor area to optimize energy savings.

A perfectly sized skylight can save a half a penny to 25 cents, per square foot of floor space, in a year. That's up to \$25,000 in a 100,000-square foot facility.

Pete Kleinhenz, a UD mechanical engineering graduate student, said a skylight that's too big allows too much heat to escape a room in the winter and lets in too much heat in the summer.

"The increased costs from larger heating and cooling loads can outweigh the savings from having a skylight," Kleinhenz said.

Skylights that are too small don't allow enough light into a room to reduce electric lighting usage, according to Kleinhenz. Properly sized skylights save energy by reducing interior lighting costs.

Kleinhenz, graduate Rizwan Syed and Kelly Kisson, a mechanical and aerospace engineering professor, presented their findings at this year's American Council for Energy Efficient Economy conference in White Plains, N.Y. Syed now works as an energy consultant in Cincinnati.

Kleinhenz said the group did this study to settle arguments between proponents and critics of skylights.

The researchers used standard heat transfer formulas and natural daylight simulation software to measure data. They focused on industrial buildings with standard 30-foot ceilings during a typical year in Dayton, Ohio.

Kleinhenz said they can adjust their software for any city and to account for variations in building exposure to the sun, ceiling height and use of energy-efficient lights. Their formula also can apply to the proper sizing of windows for single-family homes.

"This is a benefit for new construction or for companies who want to quantify savings," Kleinhenz said. "Consumers also can use this formula to make lighting modifications."

Kleinhenz works for Kisson in UD's award-winning Industrial Assessment Center. The U.S. Department of Energy funds this and other centers nationwide that conduct energy audits for companies near the centers. The Department of Energy named it the top center in 2003. Ohio Gov. Ted Strickland gave the center an award for energy excellence last year. During the past five years, UD's clients report saving an average of \$100,000 per year.