

Solar energy quickly becoming viable option

More businesses and homes make the investment

March 19, 2010

In a world driven by **technology**, capitalizing on natural energy provided by the sun seems almost too easy, too basic, too archaic.

But with soaring **energy** costs and a growing concern over the environment, an increasing number of businesses and homeowners are relying more on green energy such as solar heating and natural concepts like daylighting.

And why not? The sun doesn't send out utility bills. Once systems are installed to maximize the penetration of its rays, long-term **savings** are eventually realized and the environment isn't compromised.

"At today's utility rates, you just wonder what the price of electricity will be in seven or eight years," said Mark Hanson, the director of sustainable services for Hoffman LLC in Appleton. "If you are buying power from the electric company, the price is going to go up, up, up. People are starting to realize that it's a good idea to maybe start providing some of our own energy on-site."

Reducing energy costs

Daylighting is the architectural practice of placing windows or other openings and reflective surfaces at optimum spots in a building to draw in natural light and illuminate buildings. As a result, the need

for artificial (electric) lighting is reduced and lower energy bills are realized.

The daylighting concept has such economical and ecological value that an increasing number of developers are incorporating it into modern buildings.

In a typical building, artificial lighting accounts for between 25 percent and 40 percent of **energy consumption**.

Planners now are designing buildings with fewer electric lights and incorporating devices such as skylights to redirect and optimize daylight penetration in the office space.

Energy conservation isn't the only benefit of daylighting. Studies have shown that natural light seems to improve a person's well-being and increases productivity in the work place.

"It just makes logical, common sense," said Theresa Lehman, the director of sustainable services for Town of Menasha-based Miron Construction. "When your lights aren't on or you don't have as many of them on, you're not consuming as much energy. People are becoming more open to it because it makes financial sense. The price of energy is certainly going to drive that trend."

Even in the chilly Midwest, daylighting and solar heating **systems** are green energy practices that are catching on because they reduce heating and cooling costs along with greenhouse gas emissions.

Solar heating harnesses the power of the sun to provide solar thermal energy for solar hot water, solar space heating and solar pool heaters.

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Growing usage

The efficiency and reliability of solar heating systems has increased dramatically in recent years, making them attractive options for both commercial businesses and residential owners.

The Department of Energy and its partners are working to design more cost-effective solar heating systems and to improve the durability of materials uses in them. As a result, solar heating systems are becoming more accessible to the average consumer and helping lower utility bills, while the nation reduces its consumption of fossil fuels.

There are two basic types of solar heating: active, which uses sun radiation to heat water either directly or indirectly with the help of a thermodynamic collector; and passive, which doesn't require electrical or mechanical equipment and relies on the design and structure of the house to collect, store and distribute solar heat.

Solar energy became popular in the 1970s and 1980s before fading, but is starting to gain momentum due primarily to high-energy costs, ecological concerns and advancements in solar heating technology. The installation of extensive solar energy systems in buildings is often initially more expensive than traditional heating and cooling methods, but **energy savings** are eventually realized without posing harm to the environment.

"Solar certainly is a growing trend," said Jim Rossmeissl, the senior executive vice president of Boldt Construction in Appleton. "Reducing carbon footprint and just reducing energy consumption are key reasons why.

"With all the new types of mechanical systems for solar, you might pay a bit more for the system in terms of initial cost, but over the lifetime of the system and in many cases well before the end of the lifetime of the system, payback is experienced and the owner saves money."

Another reason for trend toward solar and other green energy concepts is that government and utility companies are making it more affordable to purchase systems. For example, the U.S. Energy Policy Act implemented a 30 percent tax **credit** for consumers who install solar watering heating

systems.

Lehman said plenty of grants and rebates are available to help cover costs of alternative energy systems.

"People are finding out they can afford it in their initial capital budget," she said. "And if they can't fully fund it at this point, they're at least setting themselves up (in terms of building design) where they will have that option in the future. Technology is improving constantly and competitiveness is starting to driving the price down."

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