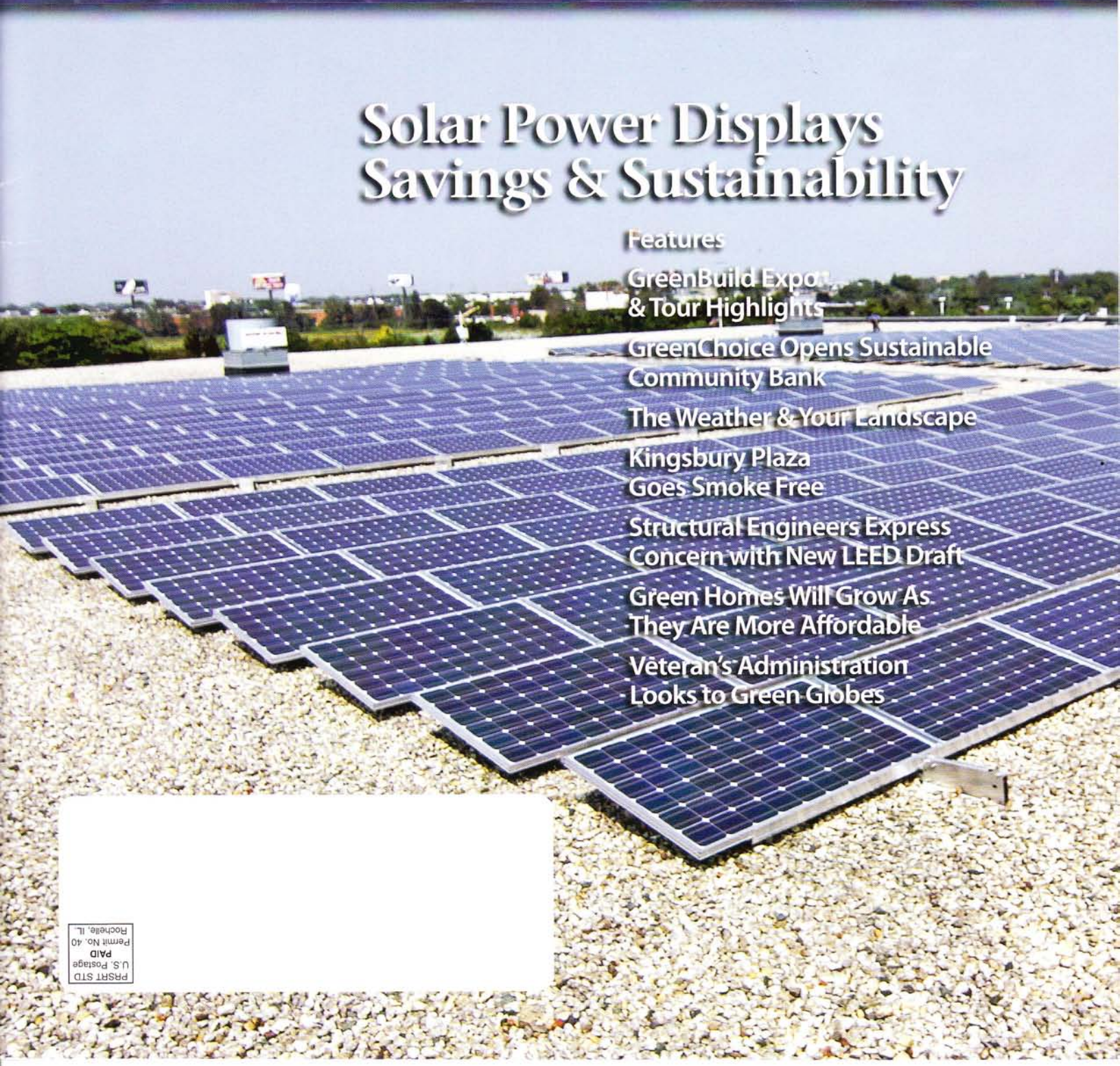
Chicagoland
Buildings & Environments
SPRING 2011



Solar Power Displays Savings & Sustainability

Features

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Solar Power Displays Savings & Sustainability

Another Chicagoland area company has taken a solid sustainable step by harnessing the power of the sun to provide electricity for its business.

United Displaycraft of Des Plaines, a prominent manufacturer of retail displays and in-store fixtures, now has a 650 panel solar photovoltaic (PV) system on its roof. It was designed and installed by Solar Service Inc. of Niles. "United Displaycraft has turned to solar power to generate green electricity and take advantage of government incentives (described more fully below) that make great economic sense, "said Brandon Leavitt, founder and president of Solar Service. This 153 kilowatt (the maximum amount of energy that can be generated at one given time) solar electric system is reportedly the largest non-publicly held commercial PV layout in Illinois. The installation took 10 weeks and began operation on August 30, 2010.

Solar Panel Price Reduction

Originally the intent was to install 525 solar panels and then between the time of planning and execution of the placement of the modules the cost of the panels diminished. "During the course of the grant (federal/state) processing, the cost of the solar panels decreased in price three times," explained Rich Carrigan, President of United Displaycraft. "By the time we were ready to purchase the panels, we were able to buy 650 for the same cost of 525 at the (previous) higher price."

Weather's Impact

The maintenance free panels, which come with a 25 year limited warranty, will hold up exceedingly well under the extreme and variable weather conditions experienced in the Midwest but many factors affect how long they will actually function as intended. "There are panels currently in use that were produced over 40 years ago that are still generating energy," said Carrigan. Produced by Sharp, a U.S. manufacturer at its two facilities in California and Tennessee, "they are the most durable and cost-effective modules on the market and (have) proven extremely durable in our climate."

Roofing Integrity

The panel installation did not affect the integrity of the bitumen roof system and the manufacturer of the roof materials still stands behind this membrane covering, according to Leavitt. An innovative solar mounting arrangement protects the underlying roof through attachment to the roof's metal substructure at 80 points distributed over the bitumen covering. "The mounting only weighs about 3 pounds per square foot and is wind loaded to code to withstand up to 90 mile per hour winds," said Leavitt. "In this way the solar installation actually flows with the roof's own pitches, allowing for unimpeded drainage." Because of the care exercised in the installation and the appropriate flashing around the points of attachment, the roof warranty was not voided.

Energy Savings & System Operation

The savings in operation has exceeded expectations through the end of October. "We only have 2 full months of data (as of the end of October) to look at so far but to this point we are beating our projections by roughly 23 percent," said Carrigan.

The manner in which the system operates is relatively uncomplicated and is completely automatic, Leavitt explained. Sunlight streams onto the solar PV modules, which then transform the sunlight into clean, renewable electricity. Each module/panel consists of several cells connected by wire in a series. When sunlight falls on the modules, electrons embedded in the cells become agitated and generate electric current, which is carried via more wires into two devices called inverters located in the facility. The inverters change the current from direct to alternating and from there the juice is delivered to the building's main electrical panels. It is used to imme-

diately satisfy the businesses electric demands.

Electricity Generated

The roof top system has been estimated to meet 12.5 percent of United Displaycraft's electrical needs, which amounts to approximately 170,000 KWH annually or about one and one-half of one month of the building's total electric bill. "We know that it will consistently provide an average of 12 percent of the facility power and already on some sunny and clear days we have witnessed production above that level," said Carrigan. It will enable the company to reduce its electricity from the ComEd grid during peak times as it draws its power from its own apparatus. This will allow the grid to meet the needs of other customers during those peak times of demand. The PV system will also be wired into United Displaycraft's transformers so that any excess electricity generated by the solar supply source can be directed into the grid to serve the needs of the rest of the power consuming community.

Commitment to Sustainability

The solar installation is just part of United Displaycraft's commitment to sustainability. "In today's global climate of rising costs and growing awareness of how we all impact the ecosystem, being green is more than an environmentally sound business philosophy, it's an economic and socially responsible necessity," said Carrigan. (More on the breadth of UD's conservation effort below) The decision to generate solar electricity at its own location was influenced by customers of United Displaycraft who are very concerned about sustainability, he explained. "That's the main reason we started our Green Team."

Financing for Green Project

However, the solar power system was not a go when it was first evaluated. Installation was determined to be financially unfeasible with an estimated pay back period of about 17 years. A shorter recovery of capital cost outlay was necessary before United Displaycraft could commit to the project.

A new financing arrangement was eventually worked out with several governmental entities providing grants and credits, which reduced the cost recovery time to five years. "We are able to achieve this aggressive payback goal through an innovative finance model and hope other Illinois companies will emulate it," said Carrigan.

Government Grants & Credits

The finance model has four aspects involving both state and federal participation. It includes a 30 percent solar grant from the American Recovery & Reinvestment Act's Community Renewal Energy Program, which was passed through the State of Illinois Department of Commerce and Economic Opportunity; a 30 percent federal tax credit through the U.S. Department of Energy, which is available for all solar installations; the actual saving achieved by using the company's own electrical system and the sale of Solar Renewable Energy Credits that are marketable "It's a combination of all of these forces," explained Carrigan. "Now our payback has gotten down into a feasible range where many other business owners will become interested in their own solar project."

The Solar Credits or carbon offsets generated by United Displaycraft in its use of the sun's power are available for purchase by

other companies that are unable to reduce their carbon output or decide not to. They, "can either install these systems (e.g., wind or solar) or they can chose to purchase the rights of the carbon-offsets from other companies such as United Displaycraft," said Leavitt.

Green Model

Carrigan reiterated that his Company can serve as a model for others. "We're doing something green in putting these solar panels on our roof," and we have," proven so far that it works and is viable," he said. The more viable it is the more companies will want to do it."

Carbon Dioxide Reduction

There clearly are environmental benefits to such a solar PV system of this kind. It, "will provide annual carbon dioxide reduction of 122 tons," said Carrigan, which is the approximate equivalent of planting more than 61 acres of trees each year to ingest a comparable amount of the gas. Additionally, the solar set up will displace about 700 tons of nitric oxide as well as 1800 tons of acid rain each year in the full functioning mode of the system.

Economic Impact & Performance

The economy of the State of Illinois will also realize an advantage in terms of more work opportunities. "The grant money (from the stimulus package) was successful in creating six permanent jobs and the retention of five others," said Leavitt.

A deck monitoring internet site will permit the public and management team at United Displaycraft to acquire real time data about the solar array's performance. A dedicated weather station put in place as part of the solar system will provide live input that will be captured and analyzed by software that is part of the monitoring equipment. A live readout of the energy being created will be displayed through easy to read icons at the website.

Green Inititatives

Carrigan believes that for a business to be environmentally conscious is not a conflict of purpose. "I've been trying to prove that to people in a variety of ways," he said. The company has been in the forefront of the effort to go green with a number of other initiatives besides the solar installation. United Displaycraft:

- recycles all office paper, cardboard, linerboard, pallets, wood components and plastic packaging, so far preventing 350 tons of material being dumped in a landfill.
- installed motion sensors for warehouse and office lighting reducing electrical consumption for this need by 50 percent.
- implemented a water recycling program to cool down manufacturing equipment and reduced water consumption by 800,000 cubic feet annually.
- installed 9 new waterless urinals, saving an estimated 225,000 gallons of water annually.

"The company has been examining ways to reduce waster, recycle and conserve energy for several years now," said Carrigan. "United Displaycraft and its Green Team are no strangers to green initiatives."