

Solar Tour of Michigan

Solar energy works in Michigan providing electricity and heating for homes, schools, churches, colleges, and parks. Solar technologies include photovoltaic systems that convert sunlight into electricity, solar hot water systems that heat water for swimming pools and buildings, and solar space heating systems that provide heat for buildings. In addition, passive solar designs provide heat for buildings and daylighting strategies use sunlight to minimize the need for electricity to run lights.

This solar tour of Michigan will take you from Southeast Michigan to the Upper Peninsula and show you the variety of solar applications that are possible. The tour only includes a small fraction of the solar systems that are providing clean energy for Michigan citizens.

Uni-Solar Manufacturing Auburn Hills



We begin the tour where photovoltaic systems are manufactured. United Solar Ovonic has a 30 megawatt, continuous web, roll-to-roll thin film solar cell production plant in Auburn Hills. This machine is 300' long - the size of a football field! This will enable United Solar Ovonic's annual production capacity to increase from 5 million watts to more than 30 million watts.

Oakland University Rochester



In the spring of 2003, Oakland University installed a 10 kW photovoltaic demonstration project on the new student apartment complex at 4000 Meadowbrook Drive. The system uses 550 building integrated PV shingles manufactured by Uni-Solar. This was one of the first 10 kW solar demonstration projects that received funding from the Energy Office.

Upland Hills Ecological Awareness Center, Oxford



Nestled in a beautiful wooded setting, this unique earth-sheltered Center is surrounded by hundreds of acres of land in Northern Oakland County. Built as an example of "doing more with less", the Center features a wind generator, solar hot water (1st photo), solar space heating (2nd photo), and many energy efficiency measures. The Center has guided group tours by appointment, as well as many other programs and activities that promote a responsible relationship with the natural world. An energy tour can be expanded to include such activities as a tour of the grounds...the medicine wheel...or the viewing of current videos on energy and sustainability-related issues. Call 248/693-1021 or contact the Center by E-mail (uheac@igc.org)... to arrange a tour for yourself or your group. A map is at www.uheac.org/contact.html

St. Elizabeth Catholic Church Wyandotte



St. Elizabeth Catholic Church received a \$4,990 Energy Office Grant in October 2001 to demonstrate a solar hot water system. Father Charles Morris purchased solar hot water collectors 4' x 8', a solar control module, and an 82 gallon storage tank from Mechanical Energy Systems for \$4,985 installed. St. Elizabeth had already installed a 480 watt photovoltaic system and a 403 watt wind generator. To arrange a tour call 734/284-7727.

City Material Recovery Facility Ann Arbor



The City of Ann Arbor received a \$5,000 Community Energy Project Grant from the Energy Office for a photovoltaic demonstration. The solar fountain was constructed in June 1999. The solar fountain is powered by four 64 watt Uni-Solar photovoltaic panels. The panels are mounted on a Zomeworks passive solar tracker. The tracker allows the solar panels to be pointed at the sun throughout the day, maximizing solar input. The electricity from the photovoltaic system powers a Sunmotor floating solar pump. The pump is attached to a pipe with a standard hose fitting. A brass hose nozzle provides an adjustable fountain spray. The fountain is located at the south end of a large holding pond near the access road to the City's Material Recovery Center.

Urban Options East Lansing



The Urban Options Energy & Environmental Demonstration House has a 2 kW Uni-Solar shingle system. The solar shingles were installed in 1997. Monitoring indicates that Urban Options uses 2,976 kWh/year. The solar shingles provided 1,574 kWh (53%) and the local utility provided 1,402 kWh (47%). Urban Options has guided tours every Thursday evening from 6:00-8:00 p.m. and the first Saturday of the month from 10:00 a.m. to 2:00 p.m., or you can arrange another time for a tour by calling (517) 337-0422. www.urbanoptions.org

**Michigan State University
East Lansing**



Michigan State University has a 10 kW photovoltaic system at the Pavilion on the south side of campus. The Pavilion is used for a variety of events and shows. The PV system has been installed on the south facing wall. This was one of the first 10 kW solar demonstration projects that received funding from the Energy Office.

**Great Lakes Renewable Energy
Association, Dimondale**



GLREA is a non-profit organization that was founded in 1991 to provide education to the public on renewable energy, energy efficiency, and sustainable development. The GLREA Energy Demonstration Center features an energy efficient renovation of a historic 1897 Civil War Memorial Hall. At the Center, you can view a dual mode solar water and air system and a photovoltaic system. For more information on visiting the Center, contact GLREA at 517-646-6269. www.glrea.org.



**Aquinas College
Grand Rapids**



The Jarecki Center at Aquinas College has a 10 kW Uni-Solar photovoltaic system attached to metal roofing shown on the left side of the photo. The solar electric system will produce about 14,400 kWh per year and avoid 23,564 lbs. of carbon dioxide, 122 lbs. of sulfur dioxide, and 63 lbs. of nitrogen oxide.

**Cityside Middle School
Zeeland**



GLREA received a \$5,000 grant from the Energy Office in October 2001 to demonstrate a 1 kW photovoltaic system. GLREA worked with the Zeeland school district who provided \$6,000 for the project that uses 64 watt Uni-Solar modules and a Sunny Boy inverter. The Sunny Boy control plus logger displays data on a computer station in the school technology lab and includes information on AC power, total hours of operation, temperature, solar insolation, and reduction of carbon dioxide. The data will be used as a teaching tool.

**Dr. Conrad Heins Home
Northwest Michigan**



Dr. Conrad Heins built the home to the left in northwest Michigan. Dr. Heins' passive solar home is well insulated and has a lot of south facing glass to capture solar heat during the heating season. His propane bills are less than \$100 per year. Dr. Heins also uses solar energy to heat most of his hot water for dishes and showers, and he uses photovoltaic panels to produce some of his electricity.

Sleeping Bear Dunes National Lakeshore, North Manitou Island



This PV/diesel hybrid power system provides power to the historic village on North Manitou Island. This 11 kW PV system provides essentially all the power required during the prime season, May-August. The diesel generators provide an increasing share of the power from September to early November as the solar resource decreases and the village load increases. This hybrid system was designed by Currin Corp. and installed by the National Park Service in the summer of 1996.

Laetz Home Traverse City



This passive solar home belongs to Bob and Sandy Laetz. This house was designed to capture and hold heat from the sun, which supplies about 85% of their home heating needs. Large windows on the south side of the house allow sunlight into the house, where it is absorbed by the floors and walls. In addition to capturing heat, all those windows eliminate the need to turn on electric lights during the day. The window system is also designed to provide summer ventilation.

**Pictured Rocks National
Lakeshore
Munising**



The Pictured Rocks Lakeshore uses PV systems for a variety of applications. The Lakeshore completed an installation of a 2 kW PV shingle system on its back country cabin in August 1998. This system replaced a small generator which had to be started manually when electricity was needed. A 4 kW PV system powers the former Coast Guard AuSable Light Station. Over the last five years this Lakeshore has replaced all of its hand pumps at its remote campsites with PV pumping systems. These 120 W and 240 W PV arrays power the water pumping and disinfectant systems for the campgrounds. The solar electric panels are mounted on a pole located away from the well pumphouse (see picture).

**Kindred Home
Hancock**



Our tour ends in Hancock with the Kindred home. This home, designed by Garfield Kindred and constructed by Dave Bach Construction, is one of five residences which received a Five Star Home Grant from the Energy Office in 1998. Not only is this home energy efficient, but it is an example of passive solar design strategies. The home was designed to make maximum use of the southern exposure with large windows located in the main living areas.



For More Information: Contact John Sarver at (517) 241-6280 or e-mail at jhsarve@michigan.gov

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