



PV in the Parks

Photovoltaic Systems in Michigan's National Parks

Sleeping Bear Dunes National Lakeshore - North Manitou Island

This PV/Diesel hybrid power system was designed and installed to provide reliable 120/240 single-phase power to the historic village on North Manitou Island of Sleeping Bear Dunes National Lakeshore. This 11 kW PV system and 288 kWh battery bank and 15 kVA inverter provides power for the staff residences and shop. The PV array provides essentially all the power required during the prime season, May through 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.



The island, at 45E N latitude in Northern Michigan, is occupied from May until early November. This hybrid system was designed by Currin Corporation in 1995, installed by the National Park Service in the summer of 1996, and was energized in September. It is the largest PV array in the northern Great Lakes region. It consists of three sections, each with 72 PV panels (see picture above).

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 was designed by Solar Works in Michigan using solar PV shingles manufactured by UniSolar of Troy, Michigan. Uni-Solar has developed a flexible Solar Shingle product, a thin-film solar cell in the form of a lightweight roofing shingle, which employ proprietary thin-film photovoltaics. This system supplies electricity to the cabin which is used as a seasonal residence (May - Sept) for the back country rangers. This system replaced a small generator which had to be started manually when electricity was needed. Now, the generator is only intended to be used when the battery bank is low.

The former Coast Guard AuSable Light Station is undergoing renovation and its major buildings are now opened to the general public. Commercial power is not readily available at the site since it is remotely located along the Lake Superior Shoreline. The Lakeshore is currently in the process of designing and installing a 4-kW PV array system to power the Light Station. Currin Corporation assisted with the design of the system. There are three groupings of 75 watt PV panels in the total PV array. The array has been placed in the woods out of sight of the Light Station in keeping with the historical nature of the location. One group of 12 PV panels is mounted high to ensure that it is not covered by snow during the winter when some solar power is required. The other two groups each have 24 PV panels. This system will provide electricity for the light station which will be used as a seasonal staff residence in addition to being open for public tours. It is also planned that the array will provide electricity during the winter months to supply dehumidification and heating systems. The historical building is subject to deterioration from the elements and Lake Superior and much care is being taken to help preserve the structure.

Over the last five years this Lakeshore has replaced all of its hand-pumps at its remote campsites with PV pumping systems. There are five systems currently in operation with one more slated to go on-line in the spring. These 120-W and 240-W PV arrays power the water pumping and disinfectant systems for the campgrounds. Currin Corporation helped with the design and installation of these systems. The solar electric panels are mounted on a pole located away from the well pump-house (see picture above). The system can provide 320 gallons of chlorinated water per day. The facility coordinator at the Lakeshore states “these systems work very well and we have been quite happy with them”.



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