

The Ypsilanti Food Cooperative has been in the Mill Works Building since 1984. Originally a foundry for flour milling parts, the Mill Works building is in Depot Town, one of Ypsilanti's zoned historic districts. In 2004 the Food Cooperative was awarded a \$6,000 grant from the State of Michigan Department of Energy for promoting green building technologies. We implemented a small demonstration photovoltaic system consisting of four Sanyo 190 watt panels and a Sunny Boy 1100 watt inverter. The Cooperative also launched a renewable energy education program as part of this installation.



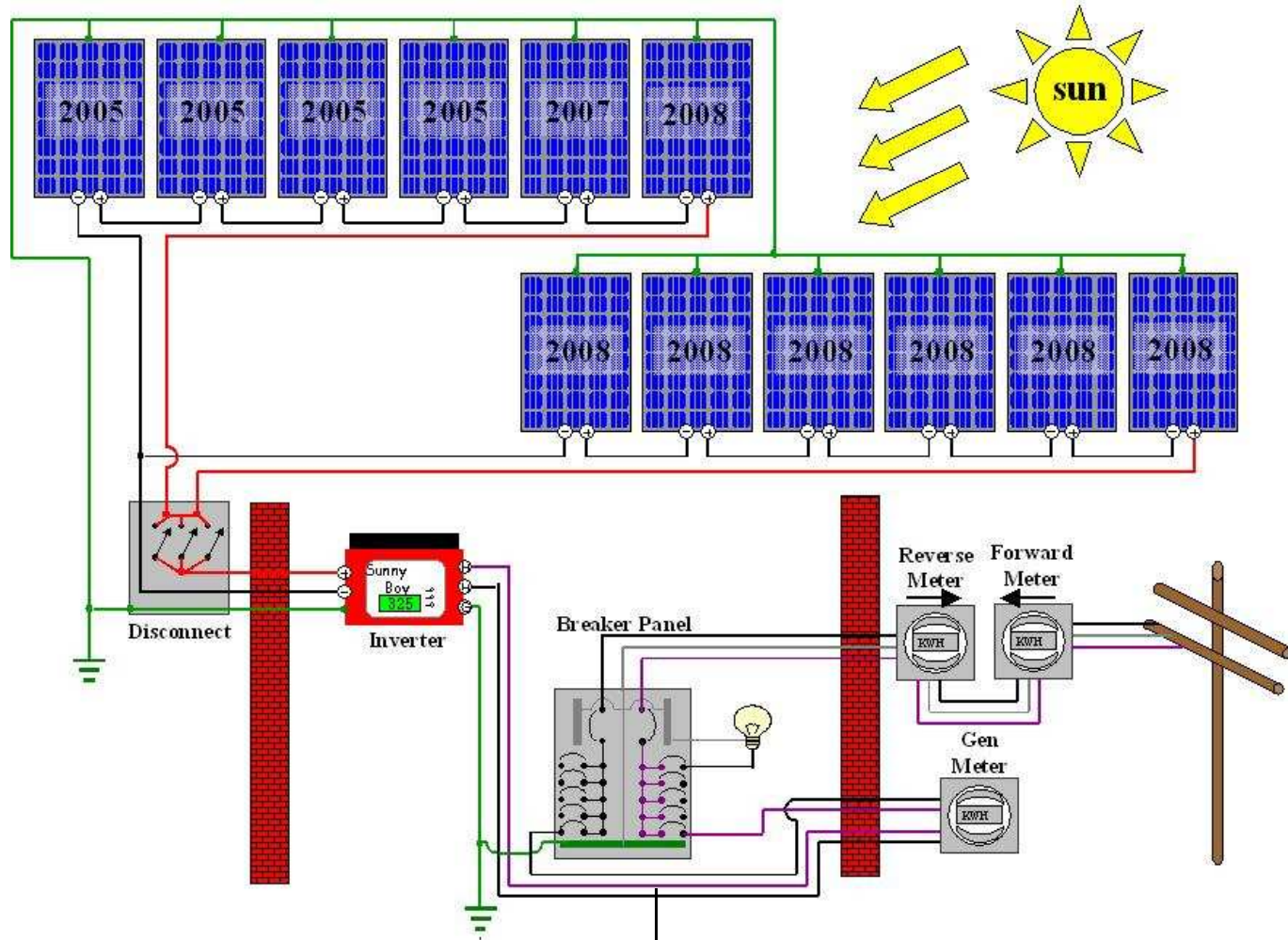
Donations and additional grants allowed the Cooperative to add an additional 190 watt Sanyo panel to the system and the installation of a net-metering system, such that we can bank excess power with DTE Energy and use the power later at no cost.

In 2008 the Cooperative put up \$4,000 in matching funds to win an additional grant for roughly \$36,000 from the State of Michigan's Department of Labor and Economic Development to more than double the number of panels on its current solar installation and to install a second system on the back wall of Ypsilanti's City Hall.

How Solar Power is Captured

As illustrated in the diagram below, sunlight penetrates the photovoltaic panels, which converts a portion of that light into electrical current. The panels are mounted at a fixed 38 degree angle to maximize annual solar collection at our location. This electrical current is direct current (DC) which is carried through a wire to a disconnect switch that can turn the system off for maintenance. The DC power is then routed to the Sunny Boy inverter, which converts DC electricity into standard, 110 volt, 60 cycle alternating current (AC) that we find in an ordinary wall outlet. The power is now ready to be used and is routed to the store's breaker panel for distribution to individual circuits.

Our solar installation is connected to the utility company under a *net-metering* program. This is a system of three utility meters which measure: power generated by the solar panels, energy that enters the building from DTE, and energy that is *exported* from the building back to the utility. DTE Energy reads these meters monthly and itemizes the information on our monthly bill. Any excess power generated gives us *credit* which is used when we need more power than we can produce. With our current 12 panel installation we export power daily during the sunny part of the day. Real-time energy graphs for this and other systems and can be found at SolarYpsi.org.

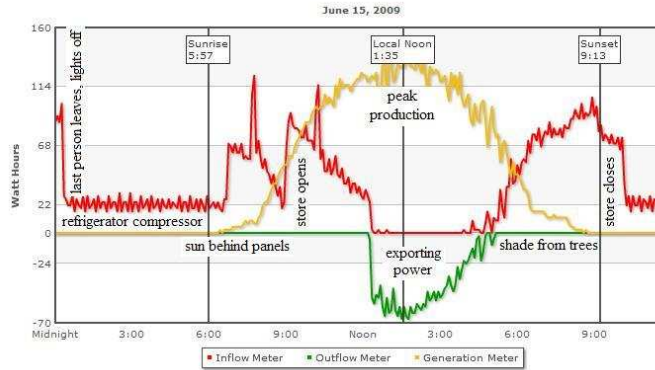




The picture above shows from right to left, the disconnect, the Sunny Boy inverter, and the electrical service panel. Power travels through the disconnect and enters the inverter, where it is converted from DC to AC power in sync with the utility company's power. From the inverter the power is routed to the electrical service panel where it's attached to a standard 20 amp, 240 volt breaker. Shown below are the three utility meters to measure the power coming in the store, exported out of the store and generated from the sun.



Graphs showing the power coming into the store (red), exported out (green), and generated from the sun (yellow) can be seen at SolarYpsi.org, then clicking on the Ypsilanti Food Coop link. The website also has photos of the installation and details about the project.

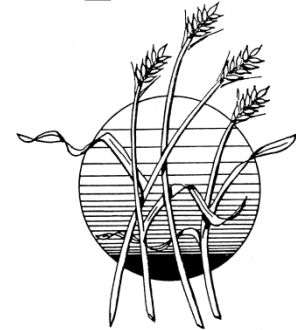


The solar installation at the Cooperative is unique in several ways. This is the first solar installation within the Ypsilanti Historic District. The City's Historic District Commission was required to approve the initial installation and both expansions. Having the panels on the top of a second story roof preserves the character of the building while adding renewable energy. The Cooperative is also one of the few DTE Energy customers that are connected via net-metering and the first commercial (D3) customer to have net-metering. We are also the first net-metering customer to use utility meters with a customer interface, so that we can read the meters directly.



Printed on 100% Recycled Paper From Niles, Michigan
 Printed at Standard Printing Ypsilanti, Michigan

Ypsilanti Food Cooperative



Solar Power

The Ypsilanti Food Co-op is a non profit community owned grocery store providing high quality foods and goods. The store installed a 760 watt photovoltaic system in 2005. After two expansion projects the system is now 2.3KW. Come visit and learn how it works.

Open Daily 9:00am to 9:00pm

312 North River Street
 Ypsilanti, Michigan 48198

734-483-1520

www.ypsifoodcoop.org