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Doing Double Duty, the Sun Produces Delicious Apples and Power for Helene's Hilltop Orchard

Helene's Hilltop Orchard, located just outside of Merrill, Wisconsin, wasn't always renowned for its fresh apples and delectable bakery. Back in 1919, Helene's great grandmother, Anna Borchardt, established a dairy farm on the orchard's present-day location. In 1979, Helene and her husband Dave Pagoria made the complete transition to an apple orchard, and now specialize in homegrown apple varieties, pumpkins, and baked goods. As the business expanded to include nearly 20 acres of apple orchard, 10 acres of pumpkin patches, a corn maze, a barnyard play area, and a bakery, the Pagorias investigated ways to keep energy costs down. They first looked into wind power but found that the resource was not a feasible option for their farm. The Pagorias' desire to implement renewables at the orchard was not lost however. It only took a chance occurrence to steer the orchard in the right direction.

In early 2010, Dave heard a program on public radio about Germany's solar advances and was surprised to find the technology was working in a country with a more northern latitude than Wisconsin. The south-facing barn seemed a perfect place to install solar panels, and the Pagorias drew up plans for installing a photovoltaic (PV) system, which involved structuring an investment plan along with writing grant proposals, including one to Focus on Energy. The total cost the PV project and additional efficiency measures was \$87,319. Funding for this outlay came primarily from two federal incentives and a cash-back award from Focus on Energy. The Pagorias even received a "multiple projects" bonus incentive for the installation of a more efficient water heater and overhead lighting.



Solar Electric Specifications

- Panel Model: MAGE 180/5MJ
- Number of Panels: 74
- Capacity: 13.33 kW
- Average output: 16,600 kWh/yr
- Utility: Wisconsin Public Service
- Year of installation: 2010
- Manufacturer: MAGE Solar
- Installer: North Wind Renewable Energy of Stevens Point, WI
- Incentives:

Focus on Energy grant	\$19,750
and multi-project bonus	\$15,757
U.S. Treasury grant	\$17,775
USDA REAP grant	\$19,750
Total	\$73,032

Further Information:

The Country Today

“Orchard owners harvest energy with solar panels”

By Sara Bredesen - Nov. 2, 2011

http://www.thecountrytoday.com/frontpage/article_79556958-0564-11e1-9cfe-001cc4c002e0.html

Merrill Foto News

“New solar energy panels for Helene's Hilltop Orchard”

By Foto Staff - Sept. 22, 2010

<http://www.merrillfotonews.com/business/103559444.html>

U.S. Dept. of Agriculture

“Secretary Vilsack Releases Report Highlighting Obama Administration Accomplishments Supporting Renewable Energy”

March 20, 2012

<http://www.rurdev.usda.gov/STELPRD4015262.html>

With funding in place, the Pagorias selected Stevens Point-based North Wind Renewable Energy to install the PV array. Since its inception in 2007, North Wind has installed numerous renewable energy systems in central Wisconsin. Josh Stolzenburg, part-owner of North Wind, said: “There is a very real connection between agriculture and renewable energy. Both are rooted in respect for our natural resources and put into action by sustainable practices. Additionally, the Pagorias recognized the value of controlling future energy costs for Helene's. North Wind was glad to help Helene's put these ideas and values into practice.”

Completed in October 2010, the solar electric system that sits atop the roof of the apple orchard's sales and processing building has a total capacity of 13.33 kW. The 74 PV panels were manufactured by MAGE Solar, a German based PV manufacturer, with manufacturing facilities in Dublin, Georgia. The system generates electricity for a walk-in cooler and freezer, processing equipment, lights, fans and a separate apple storage building. Overall, Helene's Hilltop Orchard consumes approximately 24,000 kWh each year, while the system is estimated to produce 16,600 kWh annually. In its first year of operation, the PV array greatly surpassed its project goal and produced 17,520 kWh, or 73% of the electricity supplying Helene's Hilltop Orchard.

Dave and Helene are happy with the first year's savings from the PV array. “I think we have a real opportunity when we look at agriculture to utilize solar or wind for a long-term positive thing,” Dave Pagoria told visitors during an October 2011 tour of the farm. Speaking to the assembled visitors, USDA Undersecretary for Rural Development Dallas Tonsager said: “The solar project was a great example of how a small farm in a small community can contribute to reducing the country's carbon footprint and move closer to a locally driven economy.”

USDA's Rural Energy for America Program (REAP), which partially funded the project, provides loan guarantees and grants for renewable energy systems, energy efficiency improvements, feasibility studies, and energy audits. REAP's mission is to deliver programs that will support economic opportunities and foster growth in homeownership, business development, and technological infrastructures. In 2010, over 45 businesses and small producers across Wisconsin received approximately \$2.7 million in loans and grants through REAP. Since 2008, REAP funding has helped complete approximately 1,000 solar projects and more than 560 wind projects nationwide. For more information on USDA Rural Development programs visit USDA's web site at: <http://www.rurdev.usda.gov/Home.html>