

Darlington Solar Education Project

The Darlington Solar Education Project was established in late 2014 to explore renewable energy possibilities for our district. It was initiated by a group of students, community leaders, school board members, and staff that served as a think tank for creating a 21st century learning environment across the district. The overall objectives of the project were to:

- explore options for electricity savings and stabilizing energy costs across the district,
- provide educational value for our students and community,
- decrease our carbon footprint, and
- become a leading example of responsible energy usage by school districts across the state.

The Darlington Community School District contracted with Hoffman Planning, Design & Construction, Inc. to assist us in attaining these objectives. We also worked with Madison Solar Consulting to help with grant writing. The district won a Focus on Energy Grant for \$63,000. The school board teamed with a group of “green-minded” community investors to support the project. The investors, who are now co-owners of the project, secured a USDA grant for \$61,000 that assisted with funding for the project. After much thought, we decided to pursue a solar solution that will ensure the responsible utilization of ecological, economic, and social resources. SunVest Solar, one of Wisconsin’s most experienced solar energy installation companies, based in Pewaukee, began the actual installation process in November 2015. SunVest partnered with Chuck Smith at Current Electric, who was the NABCEP¹ certified lead electrical contractor.

To ensure we have met the essential goal of providing educational value, Mark Hanson, Director of Sustainable Services at Hoffman Planning, Design & Construction, Inc. and Niels Wolter, Principal of Madison Solar Consulting, LLC gave a presentation for our student body and staff in December 2015. The primary purpose was to:

- describe the proposed solar energy system and present an overview of how it will work,
- answer general questions about solar energy and how it is more economical than utilizing fossil fuels, and
- discuss potential career opportunities in renewable energy.

A solar panel was set up for display which allowed students to actually see and touch a panel. As a follow-up, many of our teachers have plans to use resources and data from our system within their ongoing curricula.

Mr. Hanson and Mr. Wolter created an additional presentation for our community that is provided through a link on our website. Our district home page also features a live monitor link (kiosk) that allows anyone interested to view our real-time total solar production. This kiosk has four different categories that compare kilowatt hours produced: houses powered, trees grown, CO2 offset, and the actual renewable energy produced. All can be viewed by the day, week, month, year, or total production. (See <http://darlington.egaug.es/kiosk2.html>) We have also set up a public kiosk in each building for students, staff, and community members to monitor the energy production live. Our community is proud to display the largest solar project on a Wisconsin public school campus.

In January 2016, the district completed the installation of a 156 kW solar photovoltaic (PV) system on the roof of our elementary middle school building in Fall 2015. The system is expected to generate approximately 200,000 kWh of electricity per year, or about 19% of the entire district’s use. This multifaceted solution will also serve as an educational platform for students, teachers, and the community to learn about renewable energy, and particularly, about solar energy.

The new solar system will save both usage (kWh) and demand (kW) charges. The 156 kW system will generate about 200,000 kWh per year. The system will save the school district about \$12,500 in usage charges and roughly \$3,250 in demand charges, or about 20% of our current overall energy costs. It should operate for 40 years or more (its key component has a 25 year warranty). As electric rates increase over the next 40 years, the project’s savings will also increase. It is anticipated to reduce carbon dioxide emissions by over 400,000² pounds per year, which is the equivalent of what is absorbed by 149 acres of US forest in one year³. The electricity output would meet the power requirements of 18 average U.S. homes.

¹ National Association of Board Certified Energy Practitioners

² Alliant Energy’s Environment Report, page 20, includes their emission factor of 2,061 lbs. CO2 per MWh for 2013. Link http://www.alliantenergy.com/wcm/groups/wcm_internet/@int/@ae/documents/application/mdaw/mde5/~edisp/019893.pdf

³ Source <http://www.epa.gov/cleanenergy/energy-resources/calculator.html#results>