



CASE STUDY: Solar on Darlington Community Schools

PROJECT SUMMARY:

The Darlington Solar Education Project was established in late 2014 to explore renewable energy opportunities for the Darlington Community Schools. It was initiated by a group of students, community leaders, school board members, and staff to serve as a think tank for creating a 21st century learning environment across the District. The project's objectives were to explore options for electricity savings and stabilizing energy costs, provide educational value for students and the community, decrease the district's carbon footprint, and become a leading example of responsible energy use for schools across Wisconsin.

The District contracted with Hoffman Planning, Design & Construction, Inc. to assist with attaining these objectives, and worked with Madison Solar Consulting to help with the PV project's feasibility analysis and grant writing. The District won a Focus on Energy Grant for \$63,000. To support the project, the school board teamed with a group of "green-minded" community investors. The investors, who are now co-owners of the project with the school district, secured a USDA grant for \$61,000 that assisted with funding for the project. The District and investors created an LLC that manages the solar PV system until the school takes 100% ownership of the system. Until that time, the District is a member of the board that manages the system. The PV system includes a performance guarantee.

SunVest Solar, teaming with Current Electric, began the installation process in November 2015. By January 2016, the installation of a 156-kW solar photovoltaic (PV) system was complete. As part of the project, a solar module was displayed, allowing students to see and touch a panel. The system is expected to generate approximately 200,000 kWh of electricity per year, or about 19% of the District's use, annually saving the District about \$12,500 in usage charges (kWh) and roughly \$3,250 in demand charges (kW).

In December 2015, representatives of Hoffman Planning, Design & Construction, Inc. and Madison Solar Consulting gave a presentation to the student body and staff describing the system, how it works, how it is more economical than utilizing fossil fuels, and potential career opportunities in renewable energy. Darlington's district website also features a live monitor link (<http://darlington.egaug.es/5D813/kiosk2.html>) displaying the system's real-time production. Public kiosks are also set up in each building for students, staff, and community members for live energy production monitoring. Many of Darlington's teachers use resources and data from the system within their ongoing curricula. Darlington's solar investment has and will continue to serve as an educational platform for students, teachers, and the community to learn about solar and renewable energy.



"Darlington's solar investment serves as an educational platform for students, teachers, and the community to learn about solar and renewable energy."

– Darlington School District



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SYSTEM AT A GLANCE:

- **Commissioned:** January 2016
- **System Size:** 156 kW DC
- **Ownership Structure:** Co-ownership by DCSD and green-minded community investors using an LLC
- **Actual Year 1 Performance:** 181,834 kWh
- **Solar Installer:** SunVest Solar with Current Electric
- **Total Billed System Cost:** \$387,170 including extended warranty
- **Cash Grants, Rebates, Incentives:** \$63,000 Focus on Energy; \$61,000 USDA
- **Cost/Watt:** \$2.48 including extended warranty
- **Lifetime LCOE** = \$.0441/kWh
- **Year 1 Annual Electric Savings:** \$12,639
- **30-Year Electric Savings:** \$612,461
- **30-Year Cash Flow:** \$154,993
- **30-Year IRR:** 7.8%
- **Array Tilt and Azimuth:** 8-12 degrees; 180 degrees
- **Racking:** UniRac
- **Modules:** 504 Canadian Solar 310 Watt
- **Inverters:** 6 Fronius Symo Inverters
- **Monitoring:** eGauge

ENVIRONMENTAL BENEFITS

In its first year, this 156 kW DC system offset eCO₂ emissions equivalent to:



**The Electrical Usage
of 23.4 Homes**



**323,857 Miles Driven by an
Average Passenger Vehicle**



**142,430 Pounds of
Coal Burned**



ABOUT DARLINGTON SCHOOLS

Darlington Schools serves the Darlington community, a rural town of about 2,800, nestled in the southwest corner of the nation's Dairy State, along the beautiful Pecatonica River. The Elementary/Middle School and

Darlington High School are both located together on the top of Center Hill Road in Darlington.

PROJECT CONTACT

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"Many of our teachers are using solar PV system information and data within their ongoing curricula."

– Cale Jackson, District Administrator



Learn more and access resources at:
midwestrenew.org/solar-on-schools