



CASE STUDY: Solar on Madison West High School

PROJECT SUMMARY:

In 2019 Madison Metropolitan School District (MMSD) passed a 100% renewable energy resolution similar to those passed in the cities of Madison and Fitchburg, Dane County, and other communities within the MMSD service area. With the support of the district's dedicated students, staff, and community, MMSD plans to double down on their commitments for renewable energy. MMSD's goal is to meet 50% of all operational energy needs with renewable energy by 2030, 75% by 2035, and 100% by 2040. Helping to jumpstart progress on this goal, on November 3rd 2020, Madison voters approved an operating and facilities referendum for the district, which included \$2 million specifically for environmental sustainability projects.

Madison West High School students and staff have been and continue to be passionately motivated to reduce West's carbon footprint. West High School's solar journey began as a student-led effort in 2017. From June 2017 through 2019, the West High Green Club raised over \$89,000 from staff, students, parents, community members, the Madison Community Foundation and other local foundations and businesses to support a West High solar installation. After completing a necessary roof replacement on West's flat gym room, MMSD went out to bid and awarded Westphal Electric the contract. Westphal

installed the 125.8 kW DC/95.4 kW AC system in the Summer of 2020 for a total cost of \$170,086. In addition to West Green Club's fundraising efforts, other significant funding sources included a Solar on Schools in-kind module grant of 50 kW and a \$20,000 grant from the Left Coast Fund's Solar Moonshot Program (solarmoonshot.org). The Solar Moonshot Program is managed by Hammond Climate Solutions. Tara Hammond, Founder and CEO of Hammond Climate Solutions says of the project, "We applaud the Madison West High Green Club students for their ambitious climate goals and dedication to making this solar project come to life."

The remaining balance was paid through existing operating budgets. The system is anticipated to produce 134,640 kWh/year, representing roughly 5.5% of the school's annual energy needs, saving the district \$13,861 annually and \$415,830 over the 30-year lifetime of the system. The system will additionally include a comprehensive monitoring system and kiosk which will help provide students opportunities to interact with the PV system in their Science, Technology, Engineering, Art & Math (STEAM) classes. MMSD aspires to be a district where all students and staff will eventually be able to work and study in a carbon-free setting and look forward to continuing to make progress on their own 100% renewable energy resolution.



Charles Hua (left) with West Green Club students. Photo courtesy of West Green Club.

"As one of the largest youth-led sustainability efforts in Wisconsin, this clean energy initiative [...] will provide students with hands-on learning opportunities in a growing clean energy job market, generate savings in electricity costs that will save taxpayers money, and reduce the school's carbon footprint."

- Charles Hua, West 2018 Alumni and former West Green Club President

PROJECT PARTNERS:





SYSTEM AT A GLANCE:

- **Commissioned:** September 2020
- **System Size:** 125.8 kW DC/95.4 kW AC
- **Expected Year 1 Performance:** 134,640 kWh
- **Racking:** Ballasted Racking System EcoFoot2+
- **Modules:** 340 PS-M72 370W (Bifacial)
- **Inverters:** Three Phase, SE100K 270/480
- **Monitoring:** eGauge EG4015
- **Solar Installer:** Westphal Electric
- **Cash Grants, Rebates, and Incentives:** \$20,000
- **Total Billed System Cost:** \$170,086
- **Cost/Watt (Excluding Cash Grants):** \$1.35
- **30-Year IRR:** 7.112%
- **Average Annual Savings:** \$13,861
- **30 Year Cashflow:** \$415,830

*Total Billed Cost excludes Solar on Schools 50 kW in-kind grant valued at \$20,000.



ABOUT MADISON METROPOLITAN SCHOOL DISTRICT:

The Madison Metropolitan School District is the second largest school district in Wisconsin and serves

over 27,000 students in 52 schools. The district covers approximately 74 square miles including all or part of the cities of Madison and Fitchburg, the villages of Maple Bluff and Shorewood Hills, and the towns of Blooming Grove, Burke and Madison.



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

West Green Club Members.
Photo Courtesy of West Green Club.



ENVIRONMENTAL BENEFITS:

In the first year the 125.8 kW DC system will offset CO₂ emissions equivalent to:



Electrical Usage of 16.1 Homes



236,218 Miles Driven by an Average Passenger Vehicle



104,893 Pounds of Coal Burned