Solar for Independent School Districts

NCTCOG Webinar

May 6, 2016

Presented by: Pari Kasotia

Deputy Director

The SOLAR FOUNDATION

RESEARCH & EDUCATION TO ADVANCE SOLAR ENERGY

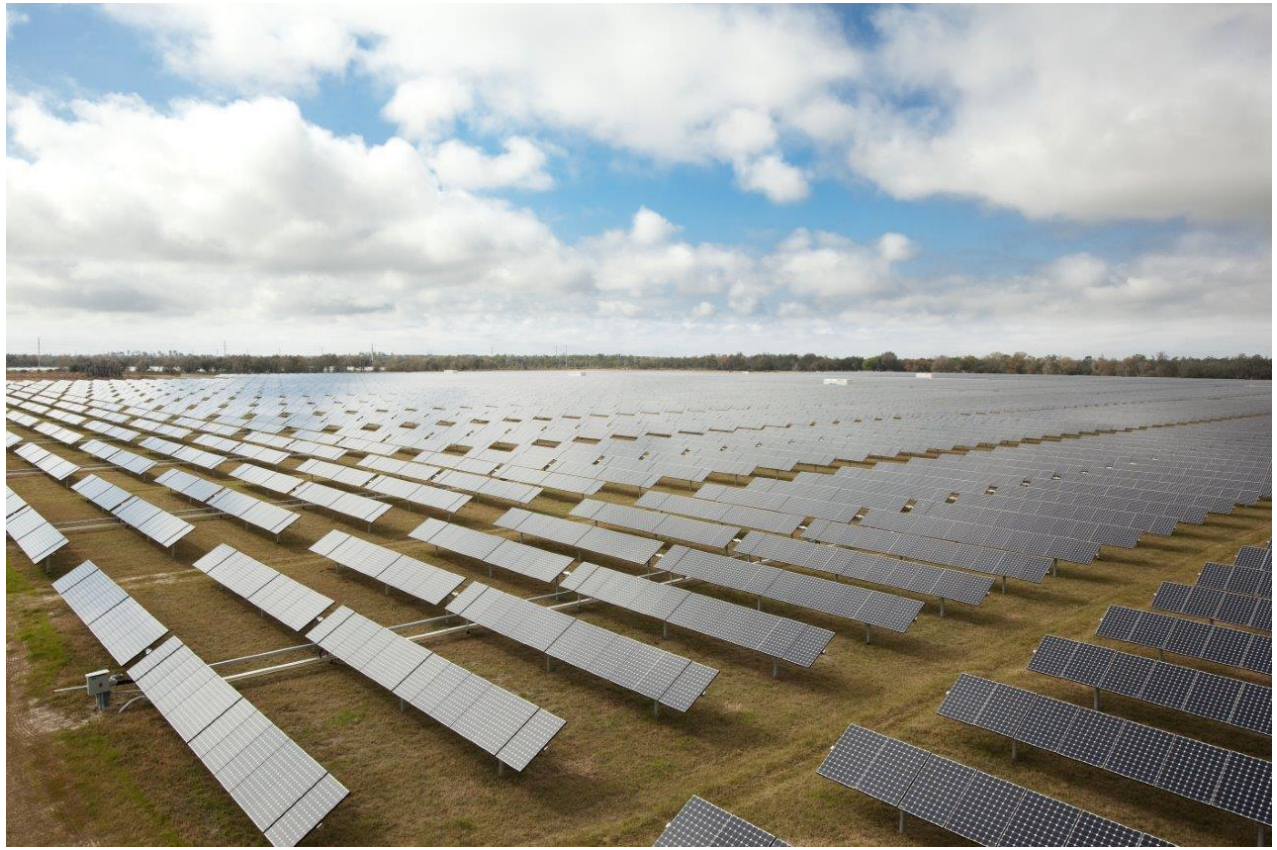
The Solar Foundation

The Solar Foundation (TSF) is a 501(c)(3) nonprofit whose mission is to increase understanding of solar energy through strategic research and education that transform markets.

www.thesolarfoundation.org

Core Programs

- Solar Jobs Census
- Market Transformation
  - Reducing solar barriers in communities (SPARC)
  - CivicPace
- Solar Workforce Development
- Solar Schools



The SOLAR FOUNDATION™

Solar in Schools

- Financial and environmental benefits
- Long-term hedge against shifting utility rates
- Educational benefits especially for STEM fields

The SOLAR FOUNDATION™

National Solar Schools Census

- Most comprehensive national solar schools database
- As of 2014, there are **3,752 K-12 schools with solar installations**, meaning nearly 2.7 million students attend schools with solar energy systems.
- These systems have a combined capacity of 490 megawatts (MW), and generate roughly 642,000 megawatt-hours (MWh) of electricity each year.
- Solar potential remains largely untapped. **Of the 125,000 K-12 schools in the country, up to 72,000 schools (60%) can "go solar" cost-effectively**.

The SOLAR FOUNDATION™

National Solar Schools Census

The SOLAR FOUNDATION™

The Brian D. Robertson Memorial Solar Schools Fund (BDR Fund)

- The Brian D. Robertson Memorial Solar Schools Fund (“BDR Fund”) was established in 2012 in partnership with The Solar Foundation to honor the legacy of solar pioneer Brian Robertson by providing equipment donations from the solar industry to schools for solar demonstration(1-10kw).

- The mission of the BDR fund is to make solar a reality for students in K-12 schools across the nation to increase awareness and use of solar energy, and broaden access to solar education.

The SOLAR FOUNDATION™

The Brian D. Robertson Memorial Solar Schools Fund (BDR Fund)

- The fund has received donations from Canadian Solar and Trina Solar, and successfully signed large donation agreements with Enphase Energy and SunEdison.

- Systems supported by BDR Fund donations have provided solar energy education to 23,335 kids with 29,205 solar panels and 72 microinverters, donated by our industry partners.

- BDR Fund has partnered with other non-profits including Greenpeace, Foundation for Environmental Education and Solar Energy International to get the message of solar to students.

The SOLAR FOUNDATION™

The Brian D. Robertson Memorial Solar Schools Fund (BDR Fund)

- The Fund's largest solar installation to date is a 9 kW system installed on the roof of Coral Academy of Sciences in Henderson, NV. The project helps educate students at this STEM focused K-12 state sponsored tuition-free public charter school.

- BDR Fund currently has 28 school projects planned for the current and 2016-2017 school year.

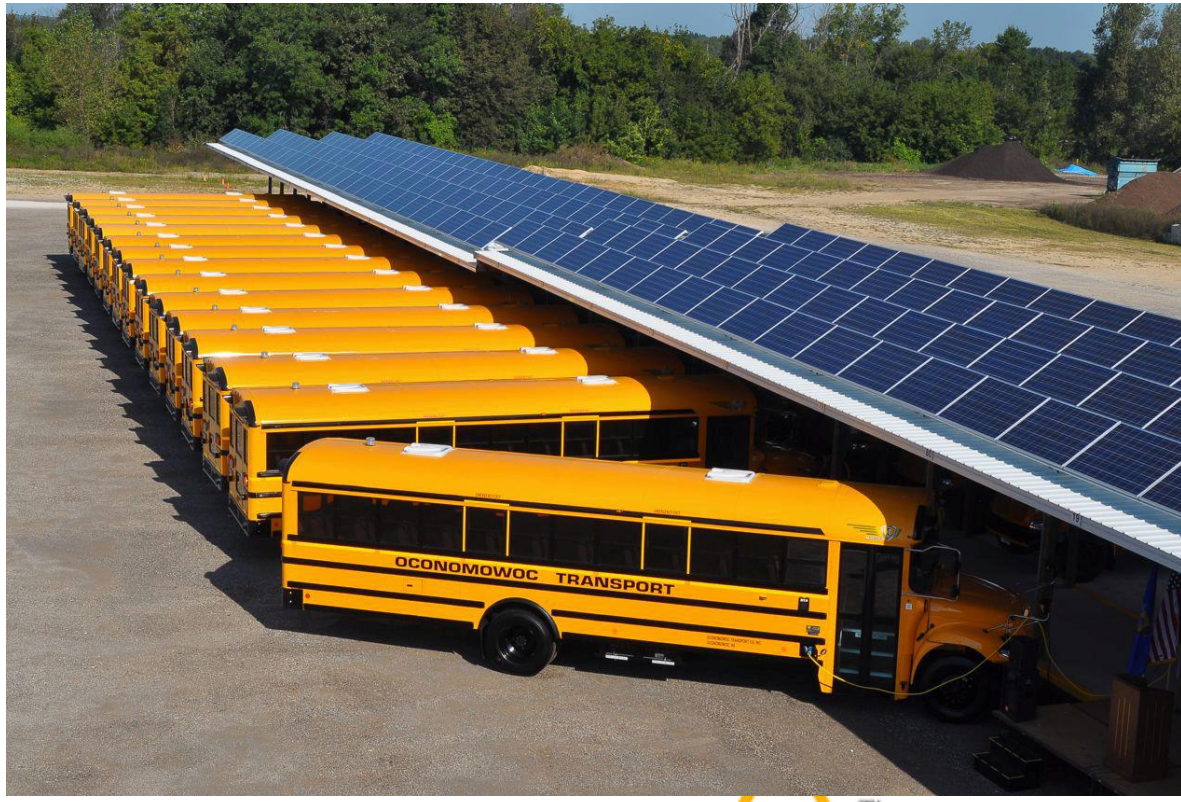
- BDR's Fund is developing a new program, Light Your Path, a curriculum which will point middle school student towards careers in the flourishing solar industry.

The SOLAR FOUNDATION™

National Solar Schools Consortium

- The Solar Foundation currently hosts and co-chairs the National Solar Schools Consortium.

- Purpose:
  - Coordinate member efforts to promote the use of solar in schools.
  - Aggregate and consolidate current and future solar resource development efforts.
  - Amplify its members' successes by acting as a unified voice for the growing national solar schools movement.



The SOLAR FOUNDATION™

Case Study: Milford High School (UT)

Milford High School installed a 20 kW PV system providing 20 percent of the total electricity used on campus. The engineering and technology students at the school took it upon themselves to research and apply for available renewable energy grants, eventually securing full funding for the array. Andy Swapp, an engineering and technology teacher, recognized the significant educational value in guiding students through the research and grant application process for his renewable energy class.

But another, unexpected educational opportunity arose during installation of the project. The 20 kW system was designed as a 10 kW fixed-mount array and a 10 kW tracker array in order to give students the opportunity to understand the impacts of each on system production. In contrast with the "tried and true" tracking systems currently commercially available, this tracking system was a previously untested technology from an inexperienced, non-solar specific vendor that eventually became inoperable. In searching for a resolution to the issue, students developed their own engineering solutions and shared them with the professional engineers tasked with fixing the system, who encouraged the students and gave insightful feedback.

The SOLAR FOUNDATION™

Case Study: Woodstock Union High School(VT)

At Woodstock Union High School in central Vermont, Jen Stainton, a science teacher, led the effort to install a 10 kW solar PV array and has helped incorporate the system into science and math lesson plans. Students have access to system performance data in order to understand how much electricity is being produced, the amount of carbon emissions offset by the system, and how much money has been saved.

The school has also incorporated a unit into its science classes designed to teach students about the physics of solar energy and how the technology compares with conventional sources of electricity. This unit incorporates lessons on system tilt angles and orientation and how changes in these variables affect system production, providing students with a real-world situation to further develop their math and science skills.

The SOLAR FOUNDATION™

Challenges for Schools to go Solar

- Financing still a challenge especially due to schools' tax-exempt status.
  - Schools utilize a mix of financing that ranges from bond measures, capital or operating budgets combined with other key forms of financial support, such as grants, loans, rebates, and SRECs as well as third-party financing.
- Successful procurement and completion of projects on time, within budget and with protection provisions such as ensuring roof integrity, system performance, operation and maintenance support.
- Understanding and complying with federal, state, and regulatory requirements such as ensuring compliance with planning and zoning regulations, permitting, inspection and interconnection processes etc.

The SOLAR FOUNDATION™

Contact

Pari Kasotia, PMP, CSM

Deputy Director

The Solar Foundation

202-846-7508

pkasotia@solarfound.org

www.thesolarfoundation.org

Follow us at