

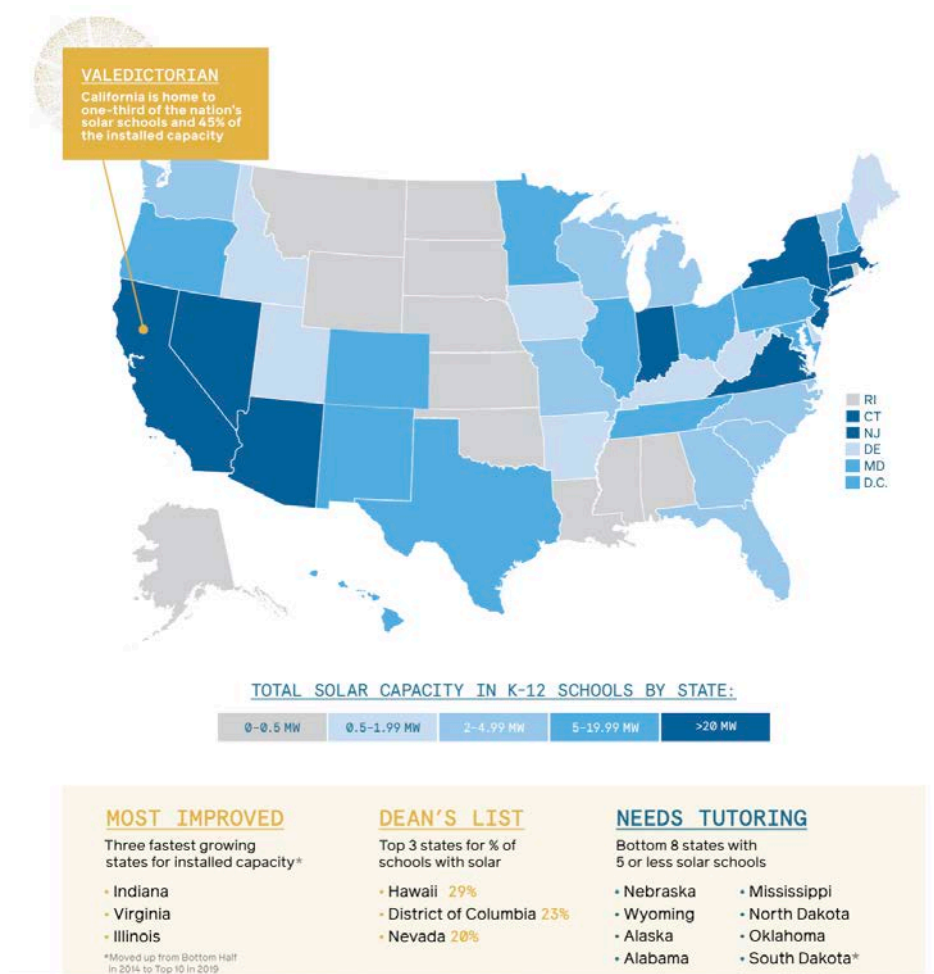
Solar schools are cool

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LUMOS

The Impact of Solar

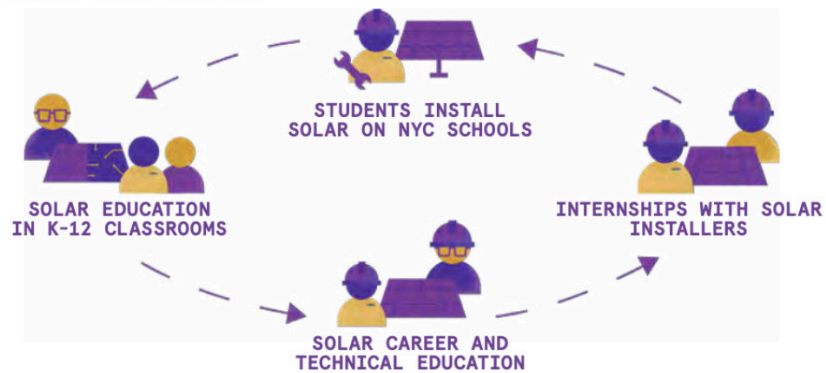
Solar power energizes not just school facilities, but also students and the community at large. Community solar provides homeowners, renters, and businesses equal access to the economic and environmental benefits of solar energy generation regardless of the physical attributes or ownership of their home or business. Community solar expands access to solar for all, including in particular low-to-moderate income customers most impacted by a lack of access, all while building a stronger, distributed, and more resilient electric grid. These projects can mean everything from serving as a Microgrid for Food Security like the Josefina Leon Zayas High School in the remote mountains of Puerto Rico to providing as a safe haven in times of crisis, an electrified shelter where community members can gather, charge cell phones, contact loved ones and perhaps get a hot meal. Pathways for achieving net zero targets in higher education must contribute to decarbonization and must also be just, fair and equitable in ways that are meaningful to overburdened and BIPOC (black, indigenous and people of color) communities. The most effective climate solutions center on diverse communities, advancing racial, economic, and environmental justice while solving clean energy challenges (Henriques da Silva, 2022).



By bringing solar technology to schools, students can gain real-world science and engineering skills, train for one of the fastest-growing occupations in the country (solar PV installer), and get equipped for a future that will be increasingly reliant on clean energy. A recent Jobs Census shows resilient, inclusive employment growth as Gen Z flocks to the U.S. solar industry. The U.S. Department of Labor even has a funded partnership to support apprenticeships - the Apprenticeships in Clean Energy (ACE) Network.



NYC SOLAR SCHOOLS EDUCATION PROGRAM GOES FULL CIRCLE



Solar Future Program provides classroom and hands-on solar learning to students of all ages with a huge focus on high school juniors and seniors. You can contact your local GRID office to find out what Solar Futures opportunities are available near you.

Teachers also bring solar to the classroom with a variety of lessons. For example, they might describe how to use solar energy production data in classroom lessons focused on data analysis and weather patterns. The NYC Solar Schools Education Program activities provide a platform for learning about climate change and renewable energy that tie to many topics in the existing curriculum. As one teacher explained, “Our school is moving our curricula towards project-based learning, and this is perfect for incorporating interdisciplinary learning and activities around topics like sustainability, renewable resources and climate change.”

Solar powers more than just campuses, bringing clear and sustainable benefits to students, curriculums, and communities



Making Sense of Solar for Schools

As of 2019 more than 7,332 schools in the U.S. have solar installations, meaning nearly 5.5 million students attend solar schools (THIRD EDITION | SEPTEMBER 2020 Brighter Future A STUDY ON SOLAR IN U.S. SCHOOLS). Educators, policy makers and students all agree that solar is more than welcome at school, providing clean, sustainable and affordable energy as well as career-focused, hands-on learning opportunities. Thanks to several government initiatives and grants as well as growing grassroots student-led movements, there is always a way for a school to afford solar. Solar is not a question of luxury for schools, but much more exigent, addressing a need which the D.O.E. ranks as the 2nd highest cost for many school districts after salaries.

The 2020 Brighter Future study also estimates that the amount of solar already powering schools is equivalent to the energy needs for more than 250,000 homes in the United States. On the other hand, the DOE estimates K-12 schools spend as much as \$8 billion per year on energy, and in higher education yearly energy costs add up to more than \$14 billion. There is a lot of power to be accessed with solar, and the savings are proportional. The 2019 peer reviewed article Solar PV as a mitigation strategy for the US education sector finds that “taking advantage of all viable space for solar panels could allow schools to meet up to 75 percent of their electricity needs and reduce the education sector’s carbon footprint by as much as 28 percent.”

The question is simply: where does the money come from?

There are several pathways and numerous resources for schools to consider when looking for their solar solutions. Clean Energy Tax Credits including the Investment Tax Credit and the Production Tax Credit, and tax credits for electric vehicles under the Commercial Clean Vehicle Credit and the Alternative Fuel Vehicle Refueling Property Credit, which includes electric vehicle charging equipment may apply to schools' solar projects directly. These credits can be applied to purchase electric school buses or other clean energy vehicles in addition to installation of solar panels on a school roof to provide electricity for school buildings. There are also "direct pay" provisions for tax-exempt entities like schools to receive tax-free cash payment for qualifying projects through The Inflation Reduction Act. What is more, these credits may be used in combination with other grants and loans. For example, a school district receives a tax-exempt grant in the amount of \$300,000 from a federal agency to purchase electric school buses. The buses cost \$400,000, and the district paid for it using a \$300,000 grant and \$100,000 of district funds. The school district's basis in the bus is \$400,000. The bus qualifies for the maximum section 45W credit, \$40,000. To list just a few, here are some ways schools can learn more about credits and grants they qualify for:

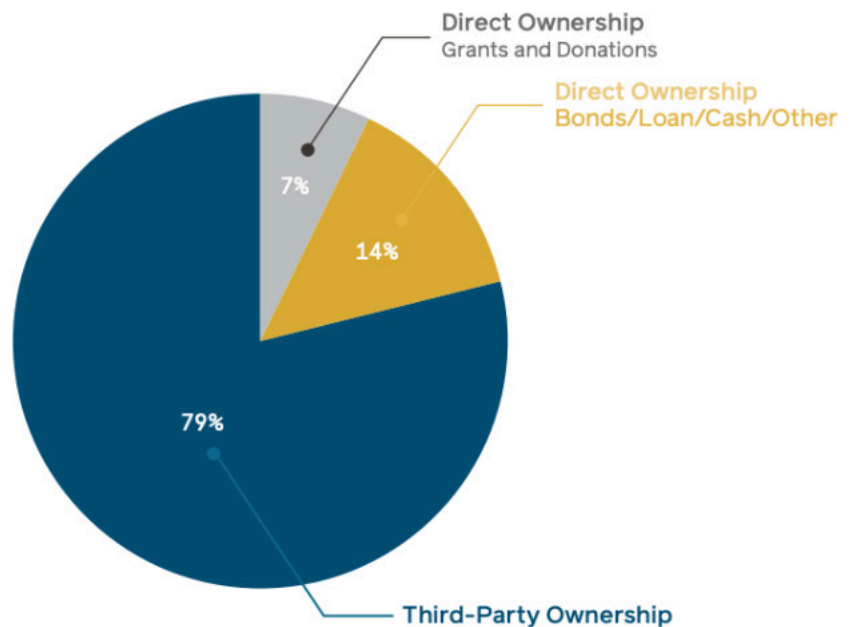
[SCHOOL ENERGY ASSESSMENT \(SEA\) FORM TOOL](#)

[QUICK BUILDING ASSESSMENT TOOL \(QBAT\)](#)

[Energy Justice Map](#)

79%
of the solar installed at schools was funded and owned by a third party, typically with no upfront cost to the schools.

CUMULATIVE SOLAR CAPACITY INSTALLED ON K-12 SCHOOLS BY FINANCING TYPE

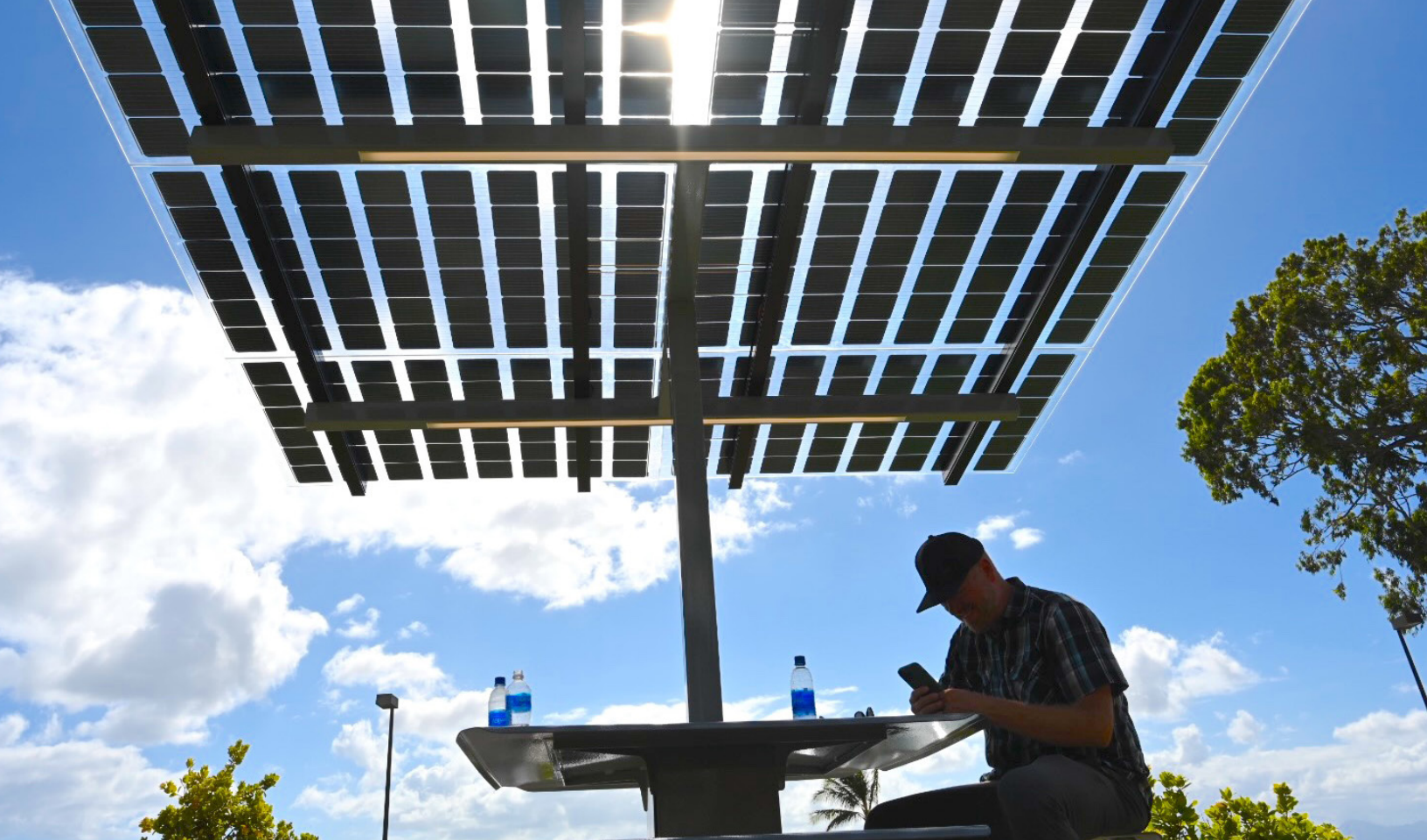


It is also well-worth remembering student-led grassroots movements to secure funding for solar projects at their schools. Organizations such as Student Energy have 59 chapters in 29 countries around the world, with nearly 3.5 thousand members. The Brighter Future study describes one story of students leading the charge to bring solar to their district:

Following a two-year student campaign, in August 2019 the Portland Maine school board approved a 3,500 kW offsite solar project that will provide 60% to 80% of the district's energy and save an estimated \$50,000 in energy costs per year. The story began in 2017 when students and staff at King Middle School proposed a solar installation at the school that required \$65,000 in funding, but the city questioned the costs and did not prioritize the project. However, the students didn't quit. Instead, they made their effort bigger, combining the district's three high schools into an organization called SolaRISE Portland. They marched in the streets, set up a Facebook page and raised money online. Soon they had \$25,000 from local businesses and other donors. They used some of this money to hire CES Inc. to facilitate the RFP process. The city and school district collaborated to broaden the scope of the project. Now the city will offset two-thirds of its energy burden with solar.

Whether it is through federal grants and programs, private financing, or grassroots student movements there is always a way to afford to bring solar to schools. Investing in solar means so many things for schools, from direct cost savings to strengthening communities, but is ultimately about being a part of the solution.





The Shade Solution - Getting the Most Bang for your Buck

Where you need shade the most is also where you produce the most solar energy. Instead of direct sunlight overheating people, concrete and asphalt, harnessing it to produce clean, renewable solar energy further maximizes the benefits of solar for schools. Approximately 5.5% of the developed land in the contiguous United States is covered by parking lots, and that percentage is even higher in urban areas where parking lots occupy over 20% of the land area. Covering parking lots in the United States with solar carports could significantly contribute to meeting the country's energy demand. If all suitable parking lots were covered with solar canopies, they could generate approximately 1,500 terawatt-hours (TWh) of electricity per year. This amount represents around 37.5% of the total electricity consumption in the United States, which was about 4,000 TWh in 2022 (Yale E360) (Environment America) (EnergySage).



For schools, solar shade structures mean it is possible to cut down energy demand by even more than the 75% the DOE estimates for rooftop solar alone. Using solar to create shade also introduces the potential for on-campus charging for electric buses and cars, and makes a campus more hospitable for staff and visitors parking and students utilizing outdoor study spaces. While up-front costs for solar shade structures are higher than for rooftop installations because of the need to install a structure, tax credits for both solar projects and EV infrastructure can be applied to such valuable projects.

Outdoor experiences promote the mental and physical health of people of all ages, and notably, at the K-12 level, contribute to better student engagement, learning, and healthier social interactions. Solar shade structures can easily be weather-proofed, allowing for them to be integrated, in a variety of different scales, to several applications at schools from outdoor classrooms to simple, shaded and powered tables.

When solar provides shade it brings clean energy to campus in a way that creates spaces, rather than taking them up.



