



*With 25,000 solar panels, Butte College in California became the first campus to produce more energy than it consumed in 2011.*

# On-Campus Solar Energy

## Moving Toward 100% Clean, Renewable Energy on Campus

*On-campus solar energy systems help America's colleges and universities to shift to 100 percent clean, renewable energy. Campuses across the U.S. are installing solar energy to save money, provide learning opportunities for students, and achieve their climate goals.*

### Solar Energy Is a Key Building Block of a Clean Energy Future

Pollution-free, virtually inexhaustible, safe and efficient, solar energy is a clean and renewable alternative to fossil fuels. Solar energy is so abundant that the U.S. could generate about 100 times as much electricity from solar power installations as the nation currently consumes each year. Solar energy is a key to helping our society shift away from today's energy system built on polluting fossil fuels.

### Campuses Are Benefiting from Solar Energy Opportunities

Many campuses have installed solar arrays in open spaces like rooftops and parking lots that are perfect for solar energy projects. Solar energy offers many opportunities for colleges and universities:

- **Cost-savings:** Solar installations dropped in price by 70 percent between 2010 and 2018, and solar energy is often cheaper than energy from fossil fuels.
- **Collaboration:** Solar energy projects provide learning and training opportunities for students.
- **Innovation:** Colleges and universities have played an important role in solar energy technology innovation ever since the University of Delaware established the world's first laboratory dedicated to photovoltaic research and development in 1972.
- **Leadership:** Leadership on clean solar energy can help colleges attract and retain talented people.

### Colleges and Universities Are Reducing Barriers to Solar Energy Use

College campuses are also uniquely suited to tackle the challenges associated with solar energy:

- **Research:** Colleges are researching and prototyping the next generation of solar cells. For instance, at Penn State researchers use inexpensive optics to concentrate sunlight onto super-efficient next generation solar cells. Students can help with these research activities.
- **Vocational Training:** Engineering programs can provide students with pre-professional learning opportunities in design, production and oversight of on-campus solar farms.
- **Proximity to Energy Demand:** Colleges can install solar energy on rooftops, in parking lots and on marginal land, close to where energy is used.
- **Storage:** Campuses have extra motivation to adopt storage to meet resilience and emergency preparedness goals and this storage can work in conjunction with adopting solar energy. For example, the University of California, Riverside, uses excess solar energy to charge electric vehicles, which serve as a source of energy storage.

Solar panels generate energy and provide shade above an Arizona State University parking lot.

## With 25,000 Solar Panels, Butte College Was the First Campus to Become “Grid Positive”

Butte College is a community college located on a beautiful campus of open spaces and grassy hills about 130 miles north-east of San Francisco, and has long demonstrated a commitment to environmental sustainability.

In 2011, Butte College became the nation’s first college campus to become “grid positive,” meaning that the college generated more electricity than it used, thanks to 25,000 solar panels installed since 2005. The project was funded in part by Clean Renewable Energy Bonds, low-interest loans that were made available through the American Recovery and Reinvestment Act until 2017. Butte College has since added several new buildings, but the solar panels still supply three-quarters of the growing campus’ energy needs and avert carbon dioxide emissions equivalent to those produced by more than 1,000 passenger vehicles.

Butte College made the most of a built environment that is perfect for clean energy projects. The college’s solar panels are built on rooftops, in open fields and on parking lot canopies and shade structures.

The project has also created educational and economic benefits for the school and the surrounding community. Butte College offers courses that allow students to assemble and disassemble solar panels as training for future clean energy jobs. The school’s solar energy project employed local people and vendors, and will save taxpayers and the college more than \$100 million over 30 years.



## Arizona State University is a Solar Energy Leader

In 2016, Arizona State University (ASU) had the most solar energy of any college nationwide, producing enough solar energy to meet nearly half of its peak daytime energy demand and avoid carbon dioxide emissions equivalent to the annual emissions of nearly 5,000 cars. ASU has deployed solar panels and solar heating systems at 89 locations on its four campuses and its research park as part of its Solarization Initiative. ASU also joined forces with a local utility to construct a 29 megawatt off-campus facility at Red Rock, Arizona – allowing ASU to source 30 percent of its overall electricity needs from clean, renewable energy.

One of the original universities to sign the American College and University Presidents’ Climate Commitment, ASU takes pride in its solar installations as a physical display of its commitment to renewable energy and carbon neutrality.

*This factsheet is one of an 11-piece series.  
For citations, and to read the other factsheets,  
please visit  
[EnvironmentAmericaCenter.org/Campus101](http://EnvironmentAmericaCenter.org/Campus101)*



## List of Resources

To start your campus’ push to go solar:

- The U.S. Department of Energy SunShot Initiative provides technical and financial assistance for solar energy projects: [energy.gov/eere/solar/sunshot-initiative](http://energy.gov/eere/solar/sunshot-initiative)
- The Solar University Network partners with students, university administrators and investors to create “shovel-ready” solar energy projects on college campuses: [www.solarendowment.org](http://www.solarendowment.org)
- The U.S. National Renewable Energy Laboratory provides expert analysis, solar screenings and implementation assistance, using its REopt model: [reopt.nrel.gov](http://reopt.nrel.gov)