



Schools Go Solar!

Schools around the country are installing solar energy systems, and using them as teaching tools for their students. Schools are an excellent public location to showcase the benefits of solar energy. Not only do they educate our children, they also teach the entire community about the benefits of solar energy.

▲ Energize Minds for Solar Design!
The **SACRAMENTO MUNICIPAL UTILITY DISTRICT (SMUD)**, the city's publicly-owned electric utility, provides grants to educators and students for solar projects that help teach about solar technology and practical applications. **WILL ROGERS MIDDLE SCHOOL**, the first recipient of the SMUD grant, broke ground in June 2007 on a new 144-square-foot, solar-powered broadcasting studio. The students will educate classrooms across the country about solar technology and environmental sustainability through podcasts and live radio and television broadcasts.



▲ Students at O'HENRY MIDDLE SCHOOL in AUSTIN, TEXAS celebrate their new solar installation, made possible through Austin Energy's Solar for Schools Program. O'Henry is one of 14 Austin area solar schools participating in the program. Students can monitor the energy production from the solar installers via a dashboard Web site. The Texas Solar for Schools Program hopes to eventually install solar panels at every school in the state.

▲ A member in the front lobby of the BROOKLYN HIGH SCHOOL OF SCIENCE in NEW YORK CITY allows students and faculty to monitor the status of the school's rooftop solar array. The solar data collected by the students can be used in analysis activities in the classroom.

AMERICA CITIES



Cities Leading by Example

Over 100 cities are using solar energy to reduce their carbon footprint and save money. This is a win-win situation for the environment and the wallet. Solar energy is a clean, renewable energy source that can help reduce greenhouse gas emissions and combat climate change. Many cities are also using solar energy to power their public buildings and infrastructure. This is a great way to show the community that solar energy is a viable and practical energy source.

Take the Energy Revolution

Take the lead from these cities and make your own solar energy investment. Contact your local utility company for more information on solar energy programs and incentives. You can also visit www.solar.gov for more information on solar energy.



PHOTOVOLTAIC ORIENTATION

Photovoltaic (PV) panels usually generate the most electricity when they are pointed due south (in the northern hemisphere) on an unshaded roof surface. But PV panels can produce substantial electricity even if your roof faces a different direction. Panels can be mounted on racks, wall surfaces, garages, or poles.



Is it sunny ☀️ or cloudy ☁️?
The PV panel still produces electricity, even under cloudy conditions, or when not pointing directly at the sun.

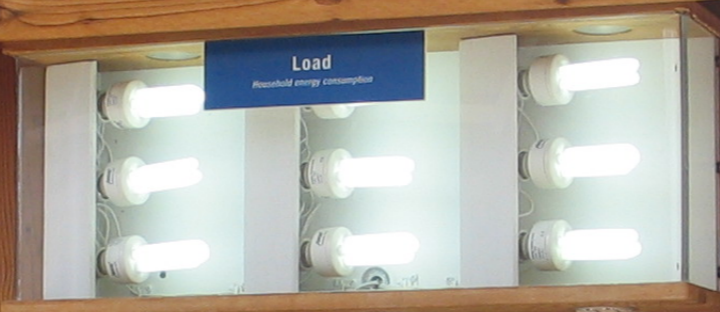
Rotate the table completely around.
What happens to the fountain? What does the power meter show?

Point the PV panel directly at the sun.
If it is sunny, point the PV panel directly at the sun by aligning the panel's shadow with the blue line. While watching the fountain or power meter, slowly turn away from the sun in either direction. What do you see?

Turn



PV Panels



Load
Household energy consumption

Power Grid



PV Disconnect



GRID-TIED PHOTOVOLTAICS

Photovoltaic (PV) panels convert sunlight into electricity. When paired with batteries, photovoltaics can be used to provide electricity for homes without access to power lines. In urban areas, PV panels like these can be tied to the electric grid so that no batteries are needed. In these "grid-tied" homes, electricity generated by the panels is either used immediately in your home or sent into the grid. Being tied to the grid also allows you to have the right amount of reliable electricity at night or when it is cloudy. And in some states, utilities will pay you for the excess electricity "sent back" to the power grid.

Is it sunny ☀️ or cloudy ☁️?
PV panels produce MORE electricity on a sunny day and LESS electricity on a cloudy day (or overcast in the day).

Read the meters.
The meters show where power comes from and where it goes. How much electricity is the PV system creating right now?

Press and hold the button to simulate nighttime.
At night, PV panels do not produce electricity; you use power from the grid. The system is automatic so you do not lose power.

Switch lights on and off to vary the load.
What do the meters show?



PV Power 321
Power Used 93
Grid Power 228
Power delivered to utility



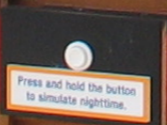
Meter
Measures power to and from the grid



Inverter



Switch lights on and off to vary the load.



Press and hold the button to simulate nighttime.



PV Power (AC)

Power from Grid (AC)

Power to Grid (AC)





ONE PLANET—OURS!

Sustainability for the 22nd Century

PHOTOVOLTAIC ORIENTATION

ENERGY

This station is designed to demonstrate the effect of solar panel orientation on energy production. It includes a solar panel mounted on a wooden frame, which can be tilted at different angles. A display board provides information about photovoltaic energy and the importance of orientation.

General Garden
The Garden
The Garden

YSCO

RYLA
RDG