



Next Generation Green Schools Program

# Green School Operations Guide

## Sustainable Energy Use



According to the U.S. Department of Energy (DOE), American schools spend roughly \$6 billion each year on energy – or approximately \$110/student/year. For most school districts, energy use is the second highest operating expense. The DOE estimates schools can save 25% of these high costs through better building design and energy efficiency improvements. Schools can also go beyond energy conservation and install equipment to heat water and produce electricity using renewable energy on site.

### Energy Conservation and Efficiency

#### Buildings

- Conduct an energy audit, and involve students in the audit as a learning project. Contact your energy utility, an energy services company, or SEI (see *Partners*).
- Set thermostats at 68° Fahrenheit in the winter or 78° Fahrenheit in the summer.
- Make sure heating and cooling vents are open and not blocked by furniture or other objects.
- Install double pane windows and/or windows with a low-emission coating.
- Make sure your building systems (e.g., boilers, fans and pumps) are operating efficiently. Optimize efficiency through regular inspections and preventative maintenance.
- Plug holes and caulk windows to stop heat loss.
- Replace damaged doors and windows to reduce the need for heating and cooling in the building.
- Use power strips to plug in any device that either has a built-in clock (VCR, stereo) or a wall cube plug (computer speakers), and turn off the power strip when not in use. This eliminates “phantom loads,” or energy that’s used even when devices are turned off.
- Investigate variable speed drives for fans and pumps.
- When replacing appliances, purchase energy efficient models.

#### Lighting

- Turn off lights and machines when not in use.
- Open blinds to let in natural light, and turn on only the number of lights required.
- Replace standard incandescent bulbs with compact fluorescent bulbs.
- Consider high intensity discharge lights (e.g., high pressure sodium) instead of standard fluorescent lights for outdoor areas.
- Take advantage of natural light or daylighting, particularly when a school undergoes significant remodeling or when new structures are added.
- Replace incandescent bulbs in exit signs with a light-emitting diode (LED) or a compact fluorescent replacement kit.
- Convert to higher efficiency fluorescent lamps (T-8 instead of T-12) and electronic ballasts for most general lighting applications.
- Clean lights and fixtures every two years to keep light output high.
- Turn off the light in vending machines.
- Consider time clocks, occupancy sensors, and dimming controls to reduce lighting energy.

## Renewable Energy

- Solar Electric – Photovoltaic: Schools have many options when it comes to producing their own electricity from the sun. Options include:
  - Purchasing solar panels with the help of grants, rebates, and community support. The school then owns the system and the power it produces. Typically, solar panel systems pay for themselves in 10 to 15 years, and can last more than three times that long.
  - Have a solar company install panels at little or no cost using either a Solar Services Agreement (SSA), or a Power Purchase Agreement (PPA). The school provides the roof space, and then buys the electricity produced from the solar company at rates comparable or lower than their current rates.
- Solar Hot Water: Using the sun to heat water can save a lot of energy. Solar thermal systems can be used to heat swimming pools and meet the kitchen/cafeteria's demand for hot water.
- Wind: If your school is in a consistently windy location, generating electricity from a wind turbine may be an option. Enlist science classes to measure wind speeds over the course of a year to determine if a wind turbine is a viable option.

## Local Partners

GreenLight Solar, [www.greenlightsolar.com](http://www.greenlightsolar.com)

PG&E, [www.pge.com](http://www.pge.com)

Strategic Energy Innovations (SEI), [www.seiinc.org](http://www.seiinc.org)

## Resources

The Alliance to Save Energy's Green Schools Program

Empowering schools through energy efficiency.

<http://www.ase.org/section/program/greenschl/>

DOE's Energy Kids Page

Energy sections, puzzles, quizzes, games, Energy Ant field trips, activities, energy facts, historical time lines (on energy) and more combine to provide a valuable classroom resource.

<http://www.eia.doe.gov/kids/>

Energy Star for K-12 School Districts

ENERGY STAR provides tools and guidelines for energy management appropriate for school administrators; it provides product information and case studies of schools; lists of energy service providers for schools, energy design guidelines for high performance schools and press kits.

[http://www.energystar.gov/index.cfm?c=k12\\_schools.bus\\_schoolsk12](http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12)



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**MARIN COMMUNITY FOUNDATION**



**Marin Sanitary Service**  
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**Good Earth  
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