

Solar School – Escondido Elementary

Escondido Elementary School in the Palo Alto Unified District (PAUSD) starts each day the same as many other schools. The staff and teachers arrive and lights, computers, coffee pots, and other electrical appliances are turned on. Students arrive for the day and fill up the classrooms. But as the sun climbs into the sky one thing is very different, the electric meter recording



the power used by the school begins to slow down instead of speeding up as more electrical loads are turned on. This is not your ordinary school. It is host to a small power plant generating electricity from the sun.

In February 2006 Escondido Elementary School community celebrated the startup of its own 20,000 watt photovoltaic (PV) solar electric power generating system. Converting sunlight directly into electricity, it is estimated that the system will provide 16% of the school's electric power needs, a savings of \$6,000 per year in electric bills. In addition, this system has become a great educational tool for teaching the students in the school district about solar energy.

The PV system operates by using photovoltaic panels to convert sunlight to direct current electricity. This direct current (DC) power is converted to the 120 volt alternating current (AC) power needed to operate the school's electrical system using an AC inverter. The power from the AC inverter will power the electrical loads in the school and if

the amount of power the system is generating is greater than the load available in the school the excess is sent out to the electric utility company (PG&E), actually running the school's electric meter backward and creating a credit with the utility. The system is monitored and the output is displayed both through an internet website and a flat screen display in the window of the principal's office for everyone to see and follow. The output can be seen at the website www.salasobrien.com which links the Fat Spaniel web-based monitoring system. Click on the link to Escondido School.

The school chose this project in part due to the higher cost of electricity they were paying compared to other schools in the district. The system was originally estimated to cost \$247,000, which was significantly reduced by a \$128,000 rebate from the California Energy

Commission for photovoltaic power generation, leaving the school district with a \$119,000 to pay. The Sustainable Schools Committee chaired by local environmentalist, Walt Hays, and made up of school district staff, City of Palo Alto Utilities, Salas O'Brien Engineers, parents, teachers, Board

and community members, persuaded the school district to build the system. To further encourage the school district, the Sustainable Schools Committee agreed to raise money to fund the system. A generous matching grant from the Morgan Family Foundation and \$25,000 raised through community donations allowed the Sustainable

Schools Committee to meet their fund raising goals.

Palo Alto Green, a partnership program between three Phases Energy and the City of Palo Alto Utilities, that supports renewable power use in the City of Palo Alto, agreed to offer renewable energy credit for energy produced by the school. This credit will pay the school district \$2,000 every year for the next five years the system operates in exchange for particular publishing rights to the system.

The system was built by Eco-Energies (now Renewable Energy Concepts, Inc.) and designed by Salas O'Brien Engineers, Inc., the school district's energy consultant.

The PAUSD is also piloting an "energy patrol" program to help involve the students with the awareness of energy and resources that the school is consuming and the changes in

