Going Solar Yields Long-Term Economical, Educational Benefit$

BY BRIAN VON MOOS

From initiating basic recycling programs to establishing intricate, community-wide plans for ongoing environmental sustainability, more and more public and private schools across the country are making the socially responsible decision to go green. What's more, beyond being the "right thing to do," these initiatives yield far-reaching, long-term educational, financial and societal benefits to students, faculty, parents and the community at large. Take solar power, for example. The U.S. Department of Energy estimates that in 2006 alone, schools nationwide spent about $8.3 billion on energy. This creates a tremendous opportunity for schools to incorporate solar or other forms of renewable energy into their budgets, especially considering that schools spent about $53 billion on construction in 2007—the largest construction segment in the U.S.—according to the Council of Educational Facility Planners International.

Knowing Your Options

Going solar is no easy decision. It is a long-term investment with a potentially substantial up-front cost. While some schools have enough capital in reserve, can raise bond money, or can solicit sufficient donations, many schools rely on creative financial programs to make a solar energy system economically feasible. For example, there are many specific grants, state and local rebates, and other programs available to help schools pay for renewable energy systems.

What's more, unique financing options—most notably power purchase agreements (PPAs)—have emerged to even eliminate the cost of installing a solar electric power system. Under a PPA, a third-party company will pay for the installation of the system and then sell the clean power it produces to the school at a reduced rate. Instead of paying the local utility for electricity, the school ends up paying the PPA provider and realizes cost savings instantly. When the PPA contract is up, the school has the option to make a one-time payment to own the system outright at its fair market value (similar to an automobile lease). This option is becoming more and more popular for schools, enabling them to significantly reduce their monthly energy bills without incurring the up-front cost.

Borrego Solar Systems has helped many public and private institutions work through the economic, construction and education factors associated with going solar. For example, in 2006, Borrego Solar installed a 30-kW solar power system at the Top of the World elementary school in Laguna Beach, California. Thanks to the California Energy Commission's "Solar Schools Program," Top of the World saved 75 percent on the initial installation cost. The system saves the school more than $8,000 annually on electricity bills.

Another example is Marin County Day School (MCDS), a 540-student K-8 private school in Corte Madera, California. MCDS was able to raise enough funds through donations to own its 112-kW solar system outright. It will produce more than 13,000 kW hours of clean electricity every month, enough to power 14 homes. Over the 30-year life of the system, MCDS expects to save more than $2 million in energy costs—a clear indicator of the long-term financial benefits of renewable energy.

The Societal and Educational Benefits of Going Solar

In addition to reducing energy costs, solar can serve as the cornerstone of larger green initiatives that benefit the community. For example, the Head-Royce School in Oakland, California, went solar to truly embrace green thinking as part of its overall culture. (Head-Royce is an independent, co-educational K-12 college preparatory school with approximately 800 students.) The school

Head-Royce School in Oakland, California.

Top of the World Elementary School in Laguna Beach, California.

is committed to being green. Its mission states: "Aware of the significant environmental challenges we face in the 21st century, our school strives to be a leader in demonstrating how to establish a more sustainable way of living. As part of its green schools initiative, Head-Royce is committed to providing a healthy environment for students and staff while promoting ecological sustainability."

In 2006, the school began a community-wide initiative to help develop Head-Royce as a model green school. Head-Royce formed a Green Council made up of student representatives, faculty and staff to demonstrate how to establish a more sustainable way of living, focusing on four broad areas: sustainable resources, nutritional food, an ecological curriculum and a healthy environment. In early 2008, the council and the school completed one of the major initiatives of its overall green program: the installation of a 73-kW solar electric power system.

Beyond the tremendous cost savings and societal benefits, going solar can add a unique element to the education process. Schools such as Top of the World, MCDS and Head-Royce have all incorporated lessons about renewable energy, using their own solar energy systems as teaching tools. Borrego Solar worked with Real Curriculum Inc. to create primary, intermediate and secondary solar curriculum lesson plans to be incorporated into the classroom. The K-12 California state-approved curriculum teaches our next generation of students the importance of sustainability and the science behind the solar system their schools are using.

The core tool is the system itself, and specifically a real-time monitoring technology that displays the data it produces. Science teachers at lower grade levels can use this information—along with small solar modules, wires, light-sockets and other materials—for a hands-on lesson about how solar power works. At the higher grade levels, the physics and technology involved allow teachers to amend their lessons throughout the year, and plant the seed of an additional potential career path in an emerging market.

In addition, the educational component goes beyond simply learning about solar and can actually serve as potential career training. For example, Borrego Solar has partnered with several high schools, community colleges and career and technical education institutions to teach a targeted course to educate students on both the basics of solar energy to the more advanced specificities of the technologies and installation procedures. The culmination of these courses is the construction of a working photovoltaic solar energy system.

Looking Ahead

Thanks to more advanced technologies, construction techniques and financing opportunities, it is easier than ever before for schools to incorporate renewable energy into their forward-thinking environmental sustainability plans. Head-Royce School, MCDS and Top of the World are just a few examples, but with support from the administration, parents and community at large, any school can enjoy the short- and long-term benefits of making solar part of its overall green initiatives. Not only do solar systems reduce energy costs and lessen a school's carbon footprint, they can be integrated into the curriculum to help students understand environmental sustainability challenges and available solutions. More advanced, hands-on education can help build the "green-collar" workforce that will emerge as one of the largest employment segments in the nation as the U.S. moves toward energy independence. T

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