

Going Green at SAS: Environmental Initiatives Mean Financial Savings

By William Scarborough

Each year as we near Earth Day on 22 April, the Singapore American School (SAS) community celebrates our many environmental initiatives. We in the finance office especially enjoy this celebration, not only because these projects are good for the earth, but because they complement our academic courses and help us to improve our financial efficiency.

Our most prominent recent environmental improvement was the launch of our one-megawatt, 3,356-panel solar photovoltaic system. The array of solar panels covers one-third of our available roof space, and earned us the 2013 Solar Pioneer Award, given by the Singapore government to innovators in the solar energy scene.

Positioned on the elementary school rooftops, the solar panels

the renegotiation of our contract. It can take up to 500 kilograms of food waste per day (which exceeds what we produce) and subject it to microbes similar to those found in the human digestive system. It then filters and treats the results to produce sewer-ready wastewater; no solid waste is produced.

This saves the company the cost of collecting, transporting, and disposing of this waste, and the savings are passed on to its clients. Like the solar array, the Eco-Wiz is used as a teaching tool. Eventually we hope to use the wastewater for our grounds-keeping needs, thus keeping it out of the sewage system and lowering our water costs.

A 2014 initiative by seventh-grade scientists has reduced the use of paper towels throughout the school. A class project led students to gather data on paper towel use in SAS bathrooms, and

efficient chillers. Air-con efficiency is one of the main metrics used in Green Mark building ratings (Singapore's equivalent of LEED in North America), and we are pleased that SAS has achieved a Gold certification. The many trees and "green walls" around campus help to shade and cool their areas, take in some of the carbon dioxide we produce, and release oxygen through photosynthesis. Our largest green wall was installed with a

grant from the Singapore National Parks Board; the plants help to keep the stairwell comfortable, and its sky-lit design allows us avoid using electricity for daytime lighting.

Our experiences with environmental initiatives have shown that with local partnerships, community engagement, and creative thinking, environmental stewardship, learning, and financial savings can go hand in hand. We are

proud that SAS is a leader in this area, and we commend all our students and staff members who not only care deeply about the earth, but work to make positive changes occur. ●

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Students enjoy the cool green spaces outside the middle school cafeteria (photo: SAS).

are used as a "living laboratory" for students to learn about clean energy. Third graders, for example, viewed them as part of their "Matter and Energy" unit, and AP Environmental Science students learned about the planning and logistics involved in the project.

Moving forward, we plan to set up a comprehensive, student-friendly monitoring system to measure weather, pollution, and other variables related to the panels' efficiency. The solar panels have not only reduced our carbon footprint by ten percent but are also proving a positive addition financially.

Through a unique partnership with a local solar leasing company, we purchase the power produced at a preferential rate, while the company owns and maintains the array. There was no cost to SAS for the panels or installation, and we have already seen our electricity costs fall. We project a savings of \$1.4 million over the twenty years of the contract.

Another school initiative is our "Eco-Wiz" food digester, which reduces our reliance on incineration and landfills. This machine was provided to us by our waste management company, as part of

then to design a presentation encouraging the "shake and fold" method of hand-drying. These ambitious students presented their challenge to every class from preschool to middle school and every science class in the high school.

If we all use just one paper towel each time we wash our hands, they estimate we will cut our paper towel consumption by more than half. Their stress on the first and most important element of the "reduce, reuse, recycle" slogan is already resulting in tangible savings.

In Singapore's hot climate, we are always looking for ways to lessen the energy we use for air-conditioning. Our most ambitious effort in this direction involved transforming our middle school cafeteria from an air-conditioned, indoor area to an open-air space cooled by a giant overhead fan. This renovation saves us around \$200 in electricity every school day, or \$40,000 per year. Students, staff and parents have commented that the cafeteria is quieter and more pleasant now, with its breezes, plants, and airy feel.

To use energy more efficiently where air-conditioning is necessary, we overhauled our least ef-



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