



Santa Barbara SCHOOL DISTRICTS

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Date: September 1, 2009
To: Dr. J. Brian Sarvis, Superintendent
From: David J. Hetyonk, Director of Facilities and Operations
Subject: Report on Sustainability Initiatives

September 22, 2009 Conference Item *(Time Required: 10 minutes)*

Recent sustainability efforts started with energy efficient upgrades during Measure I-98 and Measure V renovation and construction projects. During the design of these projects, district project managers worked closely with architects to be as green and efficient as possible. Examples include:

- Replacement of boilers for hot water with more energy efficient models.
- New gas fired high efficiency heating units.
- Replace steam heating systems with hydronic system incorporating high efficiency boilers and reusing radiators.
- Replacement of lighting systems with energy efficient fixtures.
- Installation of low volume restroom fixtures for water savings.
- Installation of lighting motion sensors to reduce power consumption
- Installation of automatic flush valves for water savings.
- Investigation of co-generation in conjunction with pool equipment upgrades.
- Connection of new mechanical units to the districts energy management system.

Current sustainability efforts include:

- Purchasing low mercury fluorescent lamps to reduce the amount of mercury that goes into landfills.
- Working with the City and County of Santa Barbara to increase re-cycling efforts.
- Inclusion of a line of green chemicals on the districts custodial bid and encouraging sites in their use.
- Converting many district forms to the electronic format and posting them on the district intranet site.
- The purchase and installation of Hydropoint irrigation controllers at numerous sites. These controllers use real time weather data to control the amount of irrigation. They can be remotely monitored and save water by eliminating over irrigation. A fuel savings is also realized with a reduction in vehicle trips to adjust the sprinkler time.

Future sustainability efforts include:

Adams Elementary School Cesar Chavez Charter School Cleveland Elementary School Franklin Elementary School Harding Elementary School	McKinley Elementary School Monroe Elementary School Open Alternative School Peabody Charter School	Roosevelt Elementary School Santa Barbara Charter School Santa Barbara Community Academy Washington Elementary School	Goleta Valley Junior High School La Colina Junior High School La Cumbre Junior High School Santa Barbara Junior High School	Dos Pueblos High School La Cuesta Continuation High School San Marcos High School Santa Barbara High School Home School Santa Barbara
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As a result of Williams Settlement inspections, it has come to the attention of the district office that many classrooms contain portable air conditioners, heaters, refrigerators, microwave ovens, coffee pots, electric water coolers, etc. Future discussions about these items may lead to a request for board policy concerning classroom energy use.

The design for the Dos Pueblos High School Engineering Academy includes efficient lighting systems, efficient mechanical systems, recycled content for interior finishes, water saving plumbing fixtures and waterless urinals, skylights, additional building insulation, and an effective roofing material. A photovoltaic layout study for the roof has been done but funding for the equipment is not yet identified.

The design for the kitchen at Santa Barbara High School includes solar hot water as well as high efficient lighting systems.


The attached correspondence from Carl Mayrose, secondary project manager, outlines where we are on photovoltaics.

Attachment(s)?	<input checked="" type="checkbox"/>	Yes (if so, please attach)	<input type="checkbox"/>	No	<input type="checkbox"/>	<i>Powerpoint</i>	<input type="checkbox"/>	<i>Overhead</i>	<input type="checkbox"/>	<i>Consultant</i>
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MEMORANDUM

To: David Hetyonk, Director of Facilities & Operations

From: Carl Mayrose, Project Manager 

Subject: Sustainability Update: Photovoltaics

Date: September 1, 2009

HISTORY

School districts throughout the state and the country have been taking advantage of various programs supporting the installation of solar panels/photovoltaic systems (PV's). In most cases, the programs allow Districts to install PV's at low or no cost to the Districts. A common instrument for a no cost installation is the **Power Purchase Agreement (PPA)**.

Power Purchase Agreements

In a PPA the District enters into a contract with an **Energy Service Supply Company (ESSCO)**. The ESSCO designs, installs, and maintains the PV system and sells the electricity produced back to the District at market or below market value. The duration of a PPA contract is typically 15-20 years. At the end of the contract the District owns the equipment. All improvements associated with the PV installation, such as roof repairs, conduit runs, etc., and all design and permitting costs—such as DSA approval—are included in the agreement.

Advantages of Photovoltaics

The advantages to installing PV systems in schools include:

- long-term stable and predictable energy costs, possibly below current market rates
- secure, virtually uninterrupted power
- reduction of carbon footprint
- modeling of environmental responsibility
- supporting science and environmental curricula on school campuses
- providing opportunities for public outreach and partnering with other environmentally active City and business entities

Adams Elementary School
Cesar Chavez Charter School
Cleveland Elementary School
Franklin Elementary School
Harding Elementary School

McKinley Elementary School
Monroe Elementary School
Open Alternative School
Peabody Charter School

Roosevelt Elementary School
Santa Barbara Charter School
Santa Barbara Community Academy
Washington Elementary School

Goleta Valley Junior High School
La Colina Junior High School
La Cumbre Junior High School
Santa Barbara Junior High School

Dos Pueblos High School
La Cuesta Continuation High School
San Marcos High School
Santa Barbara High School
Home School Santa Barbara

Electricity Costs

In March of 2009 our year-to-date electricity bill was \$1,371,432. In May of this year Edison forecast an average 11% increase in rates for 2009-2010 (\$155,383) and an increase of 8% in 2010-2011 (\$122,145). Edison did not forecast beyond 2011 because of the potential effects of the volatility in natural gas costs.

Legislation

State legislation including Governor Schwarzenegger's Executive Order S-20-04, AB 32, and the California Green Building Standards Code address reduced electrical energy usage and sustainability in schools. AB 32 requires colleges and school districts by **2010** to ascertain the amount of carbon emissions from their buildings and begin efforts to offset those emissions.

ACTION

In June of this year Dr. Sarvis requested Facilities & Operations to evaluate District sites with the intention of selecting one location as a beta site for the installation of solar panels/photovoltaics (PV's).

Facilities reviewed the electrical energy usage at all District sites for the period of 04/08-03/09 and selected the three sites that used over 300kW. These three sites are Dos Pueblos (465.5kW), San Marcos (421.2kW), and Santa Barbara High School (384.5kW). The 300kW point was chosen because it is believed a higher capacity installation would result in a more favorable PPA for the District.

Staff visited each of the high schools several times and evaluated the following:

- roof space available for solar panels
- conditions of roofs
- orientation of roofs to sun path
- potential shading interference
- potential visibility of PV panels
- proximity of roof locations to load centers and meters
- ease of roof access for unauthorized personnel
- possible locations of ground-mounted PV arrays
- site administration input

Correspondent to the site visits Facilities has been gathering additional information on PV's in general, PV installations at other school districts, PPA's, funding, and other resources. Staff has consulted with other districts who have installed PV systems, Edison, the City of Santa Barbara, architects, and engineers. Staff has attended workshops and seminars sponsored by C.A.S.H., Edison, and the California Solar Initiative.

STATUS

All three high school sites have available roof space for PV's. DPHS has the most roof capacity at 165,000 square feet (the DP Engineering Academy would add another 8,000), SMHS is second with

71,850 (this could be increased by 33,000 with racking on the north-facing roofs), and SBHS is third with 69,000 square feet. (These square footages are rough estimates: useable area should be expected to vary.) Square footage estimates did not include relocatable buildings, roofs with Spanish tile, barrel roofs, roofs with a high ratio of equipment, or covered walkways. No analysis has been made of the structural capacity of the roofs to handle the additional loading of roof-mounted PV systems.

Based upon the estimated available square footage of the roofs and rule-of-thumb values for solar panels in Santa Barbara it is possible DPHS and SMHS could produce a significant portion of the electricity required for their campuses.

All three high school campuses as well as several junior high and elementary campuses have opportunities for shade structures for parking lots and other areas that could provide additional PV-generated power.

It might be possible for DPHS or SMHS to generate sufficient power to realize net metering energy credits for other schools in the District.

Next Steps

The Facilities team, including David Hetyonk, Carl Mayrose, David Weniger, Bruce Chavez, and Steve Vizzolini will meet to evaluate the data gathered at the three high schools.

The team will also consider the following:

- development of an RFP for an Energy Services Supply Company to enter a Power Purchase Agreement with the District
- application for a Bright Schools Program consultation grant
- development of District-wide electrical energy reduction programs

A recommendation of the beta site choice along with recommendations regarding the additional considerations will be made to Dr. Sarvis for review.