

**Staff Analysis of the  
Solar Master Plan  
Proposed by KyotoUSA**

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**Chief Business Officer**

**AUSD Board Meeting, 9 September 2014**

# Background

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Spring 2014, Community Action for a Sustainable Alameda (CASA) and KyotoUSA approached AUSD with a draft Solar Master Plan (SMP) for review.

The District was involved with the Facilities Master Plan and that was the focus.

As the Facilities Master Plan was concluding, CASA presented the request to include the proposed Solar Master Plan into the Facilities Master Plan.

# Background

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The Board requested District staff to review the SMP and return with an analysis.

Staff met with Tom Kelly of KyotoUSA to review the SMP.

District staff is presenting the analysis and recommendation for the SMP.

# Analysis

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The SMP gives the District “a meaningful estimation of the cost of the solar projects, their potential location, estimated amount of electricity the systems can generate, and an estimate of the savings that can be achieved by generating your own electricity.”

- Tom Kelly, KyotoUSA

# Analysis

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For the purposes of the analysis, the installation of all proposed solar panels at all sites listed is assumed and the proposed energy production is fully realized.

# Analysis - Pricing

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The SMP uses a price quote from SunPower for the solar panels.

According to Tom Kelly, SunPower prices “are the highest in the industry,” as they are still the most efficient panels. AUSD should not expect to pay more than what is presented.

# Analysis - Pricing

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The following 15 sites were used as potential sites for a solar solution in the SMP:

- Elementary Schools: Bay Farm, Earhart, Edison, Franklin, Haight, Lum, Maya Lin, Otis, Paden, Ruby Bridges
- Middle Schools: Lincoln and Wood
- High Schools : Alameda and Encinal
- Charter School: Academy of Alameda (Chipman)

# Analysis - Pricing

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## The 15 sites:

2013 Annual Consumption (kWh) 4,932,634

2013 Annual Cost \$704,136

## Panels on Rooftops & Canopies at all 15 sites:

kWh production at all sites projected at 4,883,766

Estimated system cost at \$15,245,026



# Analysis – Pricing - Response

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The cost to install the \$15,245,026 solar system will require to pull the same amount from a potential general obligation bond measure. The blended funding option will require using the savings to make payments on the debt.

Measure I Implementation Plan has earmarked \$89.5M for elementary and middle schools and charter schools, and the remaining \$90M bonding authority has been set aside for a high school solution. The \$15.245M for a solar system would decrease the funds for the elementary and middle schools and charter schools to approximately \$74.3M.

# Analysis – Cost Savings

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The cost to install the components of the SMP as presented is \$15,245,026.

The cost of the performance guarantee is approximately \$228,162.

The cost of issuance for a bond is estimated at \$309,000.

Combined, the total cost to install all panels is \$15,782,188.

# Analysis – Cost Savings

The SMP assumptions include “an annual panel degradation rate of 0.5% and an annual electricity cost increase of 3%.”

| Year               | Savings      | Operations/Maintenance Contract | Net Energy Savings |
|--------------------|--------------|---------------------------------|--------------------|
| 1                  | \$725,288    | (\$78,223)                      | \$647,065          |
| 10                 | \$904,593    | (\$102,063)                     | \$802,530          |
| 20                 | \$1,156,262  | (\$137,165)                     | \$1,019,098        |
|                    |              |                                 |                    |
| Total All 20 Years | \$18,499,286 | (\$2,101,884)                   | \$16,397,402       |

Over the 20 years, the savings to the General Fund is estimated at \$16,397,402.

# Analysis – Cost Savings – Response

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The assumptions in the SMP call for the panel degradation rate of 0.5% annually. The panels will begin to decline in production in year one.

The cost savings should be adjusted to include any other estimated costs to be associated with the installation of the solar solution, such as structural analysis and remediation, geotechnical/soils investigations, and inspectors.

# Analysis – Cost Savings – Response

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The SMP calls for rooftop and canopies for the solar panels to set upon.

Some of the canopies are placed on playgrounds in locations that would not be appropriate for the use of space.

The change in scope would reduce the planned installations and therefore reduce the planned energy output and consequently the estimated energy savings to the General Fund.

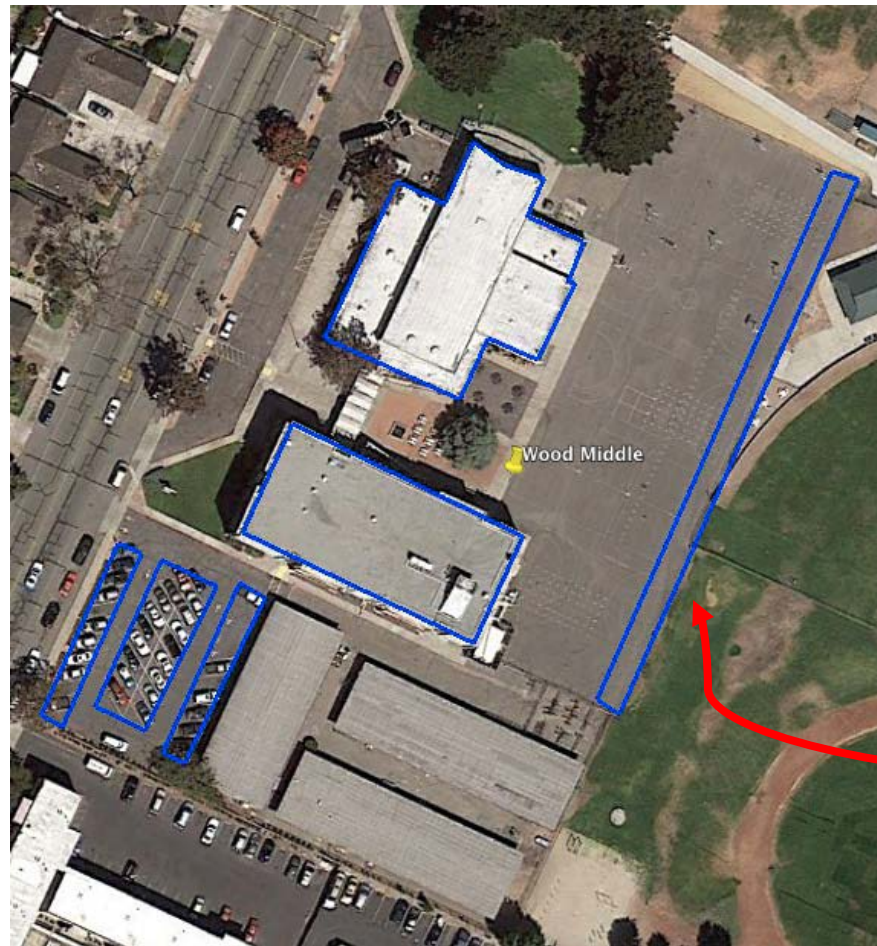
# Analysis – Cost Savings – Response

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School districts enter projects not knowing with certainty of which projects will be built where, but they “do enter a process that allows them to make good choices about where projects get sited and when it doesn’t make sense to do so.”

Tom Kelly, KyotoUSA

# Analysis – Cost Savings – Response



The Wood MS shade canopy for solar panels bisects the asphalt play space and the grass playfield.

# Analysis – Cost Savings – Response

The Lincoln MS shade canopy for solar panels bisects the asphalt play space and the grass playfield.





# Analysis – Facilities

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The proposed SMP places solar panels on many rooftops and installs panels on top of many parking lot/walkway canopies to be constructed.

# Analysis – Facilities - Response

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The rooftops of many of the AUSD buildings will require a structural assessment to conclude if the current structures can support a solar panel system.

The rough estimate for a full structural assessment in AUSD is approximately \$100,000.

The cost of the assessment can be reduced if the targeted rooftops are selected prior to any assessment. The risk is a selected rooftop that fails the assessment will require another rooftop to be assessed to meet the targeted energy output.

# Analysis – Facilities - Response

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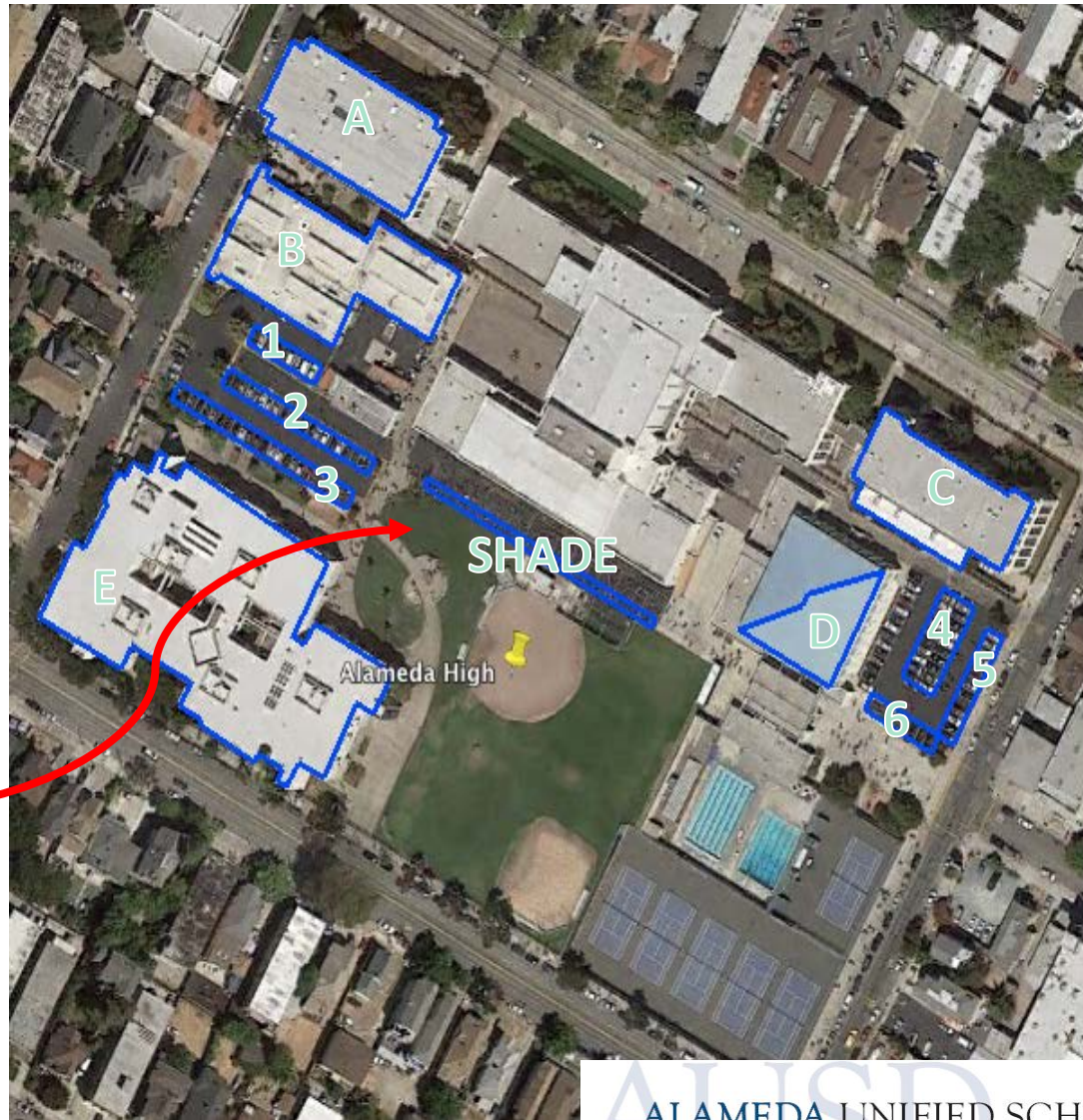
The \$15,245,026 cost of the full solar installation project does not include the cost of...

- Inspector of Record
- Structural assessment
- Structural remediation
- Geotechnical/Soils studies
- Operations & Maintenance

The SMP calls for installations that would require consideration and discussion prior to approval, such as Lincoln MS, Wood MS, and Alameda HS, with regards to location and roofing needs.

# Analysis – Cost Savings – Response

The Alameda HS shade canopy for solar panels is located on the main walkway where basketball goals are located.



# Analysis – Proposition 39 Funding

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The SMP states that Proposition 39 “will provide grants and low interest loans for energy projects, including solar.”

Proposition 39 funds “have not been taken into consideration” in the SMP.

# Analysis– Prop 39 Funding – Response

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Proposition 39 passed in 2012 provides resources to school districts to fund “eligible projects to improve energy efficiency and expand clean energy generation in schools.”

The focus of Prop 39 is energy efficiency.

The District has many sites with poor windows, poor lighting, poor mechanical systems, and poor insulation. Logic would state a better use of Prop 39 funds, or any funds, would be to improve the energy efficiency of the District’s facilities, therefore reducing the overall energy consumption.

# Summary

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The cost of the full solar installation is \$15,245,026 to reach 100% generation to cover the current electricity consumed.

There is a unknown added cost of other analyses needed and possible structural work.

Funding for the project would come from a possible bond, or a blended model of a bond and other types of source funding, such as California Energy Commission loans and Qualified Zone Academy Bond (QZAB).

# Summary

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Any facilities used for solar panels will require a certain amount of structural analysis with a cost unknown.

Prop 39 funds are more geared to energy efficiency.



# Staff Recommendation

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The proposed SMP is a planning document to be used to help guide AUSD in a possible future solar solution. Energy generation is a portion of an overall energy solution to the District's needs.

Staff proposes and requests additional time to review all aspects of energy consumption and efficiency in the District with the goal to return later this year with a comprehensive energy plan for AUSD and its sites.

# Questions

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