



SITES



WATER



ENERGY



MATERIALS



INDOOR
QUALITY



POLICY &
OPERATIONS

The Cost of Building High Performance Schools

An Elementary School Cost Comparison

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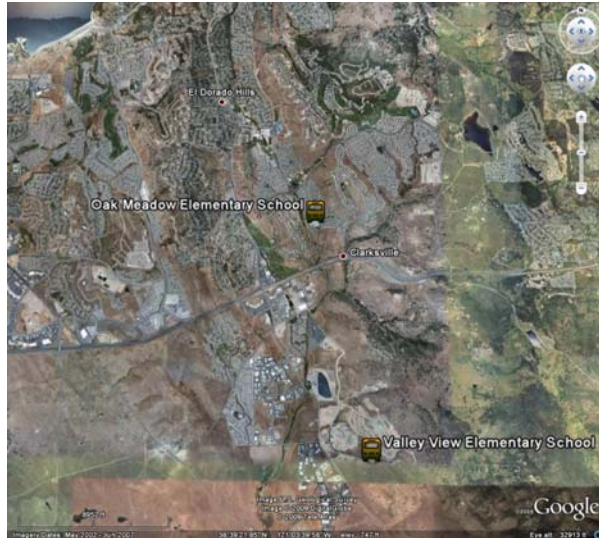
POLICY &
OPERATIONS

- Case Study: Construction Cost Comparison between Oak Meadow Elementary School and Valley View Elementary School
- High Performance School Planning Costs for Valley View Elementary School
- High Performance Funding Summary for Valley View Elementary School and Percentage of Costs Covered
- Operational Cost Savings
- Funding Opportunities

LOCATION/CLIMATE



- 38 deg. N latitude
- Sierra Nevada Foothills
- Prior ranch land
- Cooling load governs



Oak Meadow Elementary School

Buckeye Union School District



ANOVA
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Valley View Elementary School

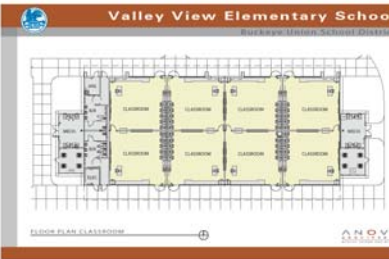
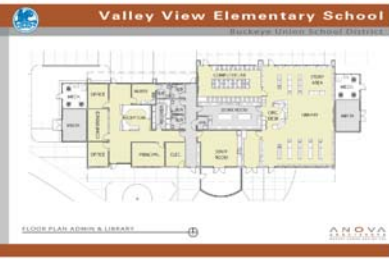
Buckeye Union School District

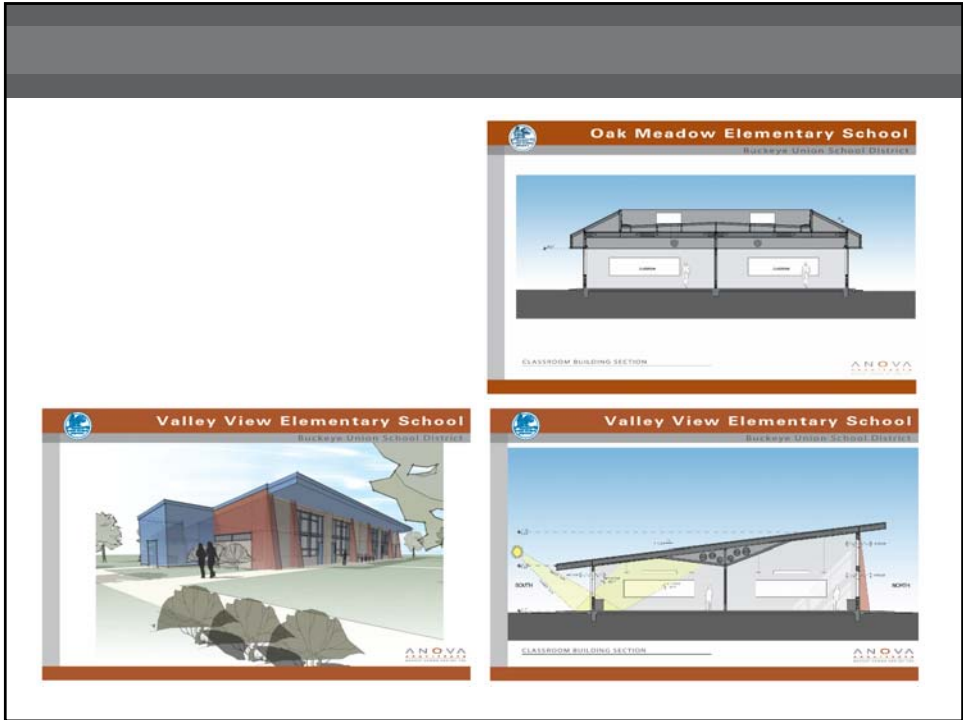


building	sq. footage
A admin/library	7,523
C classrooms	9,083
D classrooms	9,083
E classrooms/spec. ed	9,279
K kindergarten	4,538
M multi-purpose	9,073
TOTAL-	48,599

P future expansion
1 kindergarten play area
2 hard court
3 bus drop-off
4 parent drop-off
5 kindergarten drop-off
6 school parking (126 stalls)
7 fire & service access
8 turf play fields
9 outdoor dining
10 CSD park (5 acres)
11 CSD parking (36 stalls)

SITE PLAN







		SUSTAINABLE SITES				
		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
CHPS CREDIT	CREDIT DESCRIPTION		Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
SITE SELECTION						
SS1.0	Code Compliance: CDE/DTSC site approval (P)	(S)	-	-	-	\$ -
SS1.1	Environmentally Sensitive Land: Not sensitive	1	1			\$ -
SS1.3	Central Location: 50% students ≤ 1 mile	1	1			\$ -
SS1.4	Joint Use of Facilities: Multipurpose	1	1			\$ -
SS1.5	Joint Use of Parks	1	1			\$ -
TRANSPORTATION						
SS2.1	Public Transportation: Near 2 bus stops		1			\$ -
SS2.2	Bicycles: 5% bicycle racks, bike lane		1			\$ 6,200
Credit Subtotal		4	6	0	0	\$ 6,200
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

SUSTAINABLE SITES						
		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
CHPS CREDIT	CREDIT DESCRIPTION		Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
STORMWATER MANAGEMENT						
SS3.0	Construction Site Runoff Control (SWPPP) (P)	(S)	-	-	-	\$ -
OUTDOOR LIGHTING						
SS5.1	Light Pollution Reduction		1			\$ 25,088
SCHOOLS AS LEARNING TOOLS						
SS6.0	Educational Display (P)		-	-	-	\$ 3,600
SS6.1	Demonstration Areas		1			\$ 4,500
Credit Subtotal			2	0	0	\$ 33,188
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

WATER						
		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
CHPS CREDIT	CREDIT DESCRIPTION		Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
OUTDOOR SYSTEMS						
WE1.0	Create Water Use Budget (P)		-	-	-	\$ -
WE1.1	Reduce Potable Water for Landscaping	2	2			\$ -
INDOOR SYSTEMS						
WE2.2	Reduce Indoor Potable Water Use: 23.6%			1		\$ 4,816
Credit Subtotal		2	2	1	0	\$ 4,816
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

 ENERGY						
		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
CHPS CREDIT	CREDIT DESCRIPTION		Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
DISTRICT LEVEL CREDITS						
PO1.1	District CHPS resolution		1			\$ -
TRANSPORTATION						
PO2.1	Buses: Provide bus service	1	1			\$ -
Credit Subtotal		1	2	0	0	\$ -
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

 MATERIALS						
		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
CHPS CREDIT	CREDIT DESCRIPTION		Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
RECYCLING						
ME1.0	Storage and Collection of Recycling (P)		-	-	-	\$ 4,500
CONSTRUCTION WASTE MANAGEMENT						
ME2.0	Divert 50% of Construction Waste (P)		-	-	-	\$ 11,680
ME2.1	Divert 75% of Construction Waste		1			\$ 18,800
SUSTAINABLE MATERIALS						
ME4.1	Recycled Content: Insulation, structural steel, carpet, ceiling tiles, tackboard wallcovering, plastic toilet partitions, steel roofing, concrete fly ash			2		\$ 79,900
Credit Subtotal		0	1	2	0	\$ 114,880
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

		VALLEY VIEW ELEMENTARY SCHOOL				
CHPS CREDIT	CREDIT DESCRIPTION	Oak Meadow Elementary School	Relative Cost per Credit			Construction Cost for Credits for Credits
			Lower	Middle	Higher	
LIGHTING AND DAYLIGHTING						
EQ1.1	Daylighting (Classrooms) incl. photocells			4		\$ 97,200
EQ1.2	View Windows		1			\$ 7,818
EQ1.3	Electric Lighting: High quality and flexible				1	\$ 76,500
INDOOR AIR QUALITY						
EQ2.0	Minimum Requirements (P)		-	-	-	\$ 16,000
EQ2.2	Low Emitting Materials: Adhesives, sealants, carpets, paints, acoustical ceilings and wall panels			2		\$ 65,700
EQ2.4	Ducted Returns (S)	1	1			\$ -
EQ2.5	Filtration			1		\$ 38,700
Credit Subtotal		1	2	7	1	\$ 301,918
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

		VALLEY VIEW ELEMENTARY SCHOOL				
CHPS CREDIT	CREDIT DESCRIPTION	Oak Meadow Elementary School	Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
ACOUSTICS						
EQ3.0	Minimum Acoustical Performance (P)		-	-	-	\$ 39,100
EQ3.1	Improved Acoustical Performance			1		\$ 37,337
THERMAL COMFORT						
EQ4.0	ASHRAE 55 Code Compliance (P)		-	-	-	\$ -
EQ4.1	Controllability of Systems: Operable windows, HVAC classroom controls (S)	2	2			\$ -
Credit Subtotal		2	2	1	0	\$ 76,437
	Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
	Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			



POLICY AND OPERATIONS

CHPS CREDIT		CREDIT DESCRIPTION	Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
				Relative Cost per Credit			Construction Cost for Credits
				Lower	Middle	Higher	
DISTRICT LEVEL CREDITS							
PO1.1		District CHPS resolution		1			\$ -
TRANSPORTATION							
PO2.1		Buses: Provide bus service	1	1			\$ -
Credit Subtotal			1	2	0	0	\$ -
		Not eligible for HPS funding	(S)	Standard Practice (No Additional Cost)			
		Possible Cost offset by Construction Cost Savings	(P)	Prerequisite			

CONSTRUCTION COST SUMMARY



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INDOOR QUALITY



POLICY & OPERATIONS

CREDIT DESCRIPTION		Oak Meadow Elementary School	VALLEY VIEW ELEMENTARY SCHOOL			
			Relative Cost per Credit			Construction Cost for Credits
			Lower	Middle	Higher	
Sustainable Sites *	4	8	0	0	\$ 39,388	
Water	2	2	1	0	\$ 4,816	
Energy		6	1	0	\$ 152,430	
Materials	0	1	2	0	\$ 114,880	
Indoor Environmental Quality	3	4	8	1	\$ 378,355	
Policy and Operations **	1	2	0	0	\$ -	
TOTAL CREDITS	10	23	12	1	\$ 689,869	

TOTAL CHPS CREDITS (Anticipated):	36
Less Credits not eligible for HPS Funding	-3
TOTAL HPS CREDITS FOR PROP 1D FUNDING (Earned):	33

* Schools as Learning Tools are not eligible for HPS Funding

** Policy and Operations Credits are not eligible for HPS Funding

CONSTRUCTION COST SUMMARY



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POLICY &
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CREDIT DESCRIPTION	Oak Meadow Elementary School	HIGH PERFORMANCE E.S. ADDITIONAL CREDITS				Total Cost for Credits
		Relative Cost per Credit				
		Lower	Middle	Higher		
Sustainable Sites *	4	11	1	2	\$ 7,800	
Water	2	1	4	0	\$ 146,600	
Energy		7	1	3	\$ 690,600	
Materials	0	2	0	0	\$ 66,300	
Indoor Environmental Quality	3	2	10	3	\$ 528,630	
Policy and Operations **	1	6	0	0	\$ -	
TOTAL CREDITS	10	29	16	8	\$ 1,439,930	
TOTAL CHPS CREDITS (Anticipated):		53				
Less Credits not eligible for HPS Funding		-7				
TOTAL HPS CREDITS FOR PROP 1D FUNDING (Earned):		46				
* Schools as Learning Tools are not eligible for HPS Funding						
** Policy and Operations Credits are not eligible for HPS Funding						

VALLEY VIEW ELEM. HPS COST SUMMARY

**CHPS ADDITIONAL COSTS FOR
PLANS AND FEES: 8.5%**

**CHPS ADDITIONAL
CONSTRUCTION COSTS: 3.5%**

FUNDING SUMMARY

ADDITIONAL COSTS FOR PLANS AND FEES	\$	95,000	
ADDITIONAL CONSTRUCTION COSTS	\$	689,869	
TOTAL COSTS	\$	784,869	
OPS HIGH PERFORMANCE FUNDING, PROP. 1D:			
2.3% OF BASE GRANT AMOUNT (EARNED)	\$	142,075	
PG&E SAVINGS BY DESIGN PROGRAM INCENTIVES (ESTIMATE)	\$	30,446	
TOTAL ADDITIONAL FUNDING	\$	172,521	
NET COST : 78% OF TOTAL COSTS	\$	612,348	

OPERATIONAL COST SAVINGS

- **ENERGY COST SAVINGS:**
 - Lighting
 - HVAC
 - Average 3 to 10 year Payback
 - District Energy Production (Photovoltaics, wind, solar hot water)
 - Photovoltaics Average 15 to 20 year payback

- **UTILITY FEE COST SAVINGS**
 - Water Fees
 - Sewer Fees
 - Stormwater System Fees

- **OTHER BENEFITS:**
 - Asthma / sick day reduction
 - Educational enrichment and performance
 - Teacher retention

PLANNING COSTS

- **INTEGRATED DESIGN PROCESS**
 - “Early” involvement of entire project team
 - Energy performance calculations (Title 24) at each phase
- **SPECIALTY CONSULTANTS OR STUDIES**
 - Acoustical engineer
 - Daylighting studies
 - Commissioning
 - Photovoltaics system design (or others depending on project sustainability goals)
 - Power purchase agreement contract review
- **SUSTAINABILITY PROGRAM COSTS**
 - HPS, CHPS, Savings by Design Program documentation by design team or consultant
 - CHPS Verified registration and review fees
 - DSA HPS review fee



FUNDING OPPORTUNITIES

- **PROPOSITION 1D HIGH PERFORMANCE SCHOOL FUNDING**
- **SAVINGS BY DESIGN PROGRAM INCENTIVES**
 - PACIFIC GAS & ELECTRIC COMPANY
 - SOUTHERN CALIFORNIA EDISON
 - SACRAMENTO MUNICIPAL UTILITY DISTRICT
 - SAN DIEGO GAS & ELECTRIC
- **SUPPLEMENTAL LOCAL UTILITY COMPANY GRANTS AND REBATES**
- **CALIFORNIA ENERGY COMMISSION BRIGHT SCHOOLS PROGRAM**
 - LOW INTEREST LOANS
 - TECHNICAL ASSISTANCE

FUNDING OPPORTUNITIES

- **POWER PURCHASE AGREEMENTS (ENERGY GENERATION)**
 - PHOTOVOLTAICS
 - SOLAR HOT WATER

- **AB 1470**
 - CALIFORNIA P.U.C.: POSSIBLE SOLAR WATER HEATING INCENTIVE PROGRAM

- **FOUNDATIONS AND GRANTS**
 - KRESGE FOUNDATION "GREEN BUILDING INITIATIVE" (deadline 5/29/09)
 - foundationcenter.org

- **BUSINESS PARTNERSHIPS / DEMONSTRATION PROJECTS**

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