

the  
  
collaborative  
  
for high  
  
performance  
  
schools

## Exemplary CHPS Processes and Projects

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CASH - Not Just Another "Green" Workshop  
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### *How many* projects are out there?

- Over 30 CHPS Schools opened
- 10 demonstration schools
- Over 300 projects underway in 8 different states
- CHPS Criteria – Public, Private & Charter
  - New Schools
  - New Buildings
  - Major Mods
  - Existing Schools
  - Relocatables



CHPS- WA Lincoln Heights Elementary

## How can you ensure success?

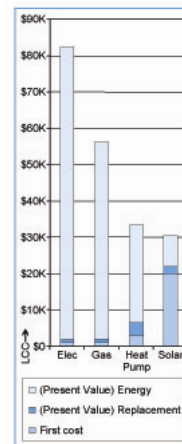
- Start early, choose your recognition path (CHPS Designed or Verified), and register your project.
- Use an integrated design team planning process. Don't forget to include occupants and the contractor.
- Expand the scope of the commissioning provider.
- Take advantage of incentive programs
  - Prop 1D / Savings By Design / CA Solar Initiative



Kenilworth Junior High School, Petaluma, CA

## How can you ensure success?

- CHPS Criteria
  - Choose low cost / high benefit strategies first!
  - Utilize life-cycle cost estimates to compare strategy benefits
    - Building Life-Cycle Cost (BLCC), developed by the National Institute of Standards and Technology (NIST). [http://www.eere.energy.gov/femp/information/download\\_blc.cfm](http://www.eere.energy.gov/femp/information/download_blc.cfm).
    - eVALUator is an easy-to-use Windows™-based program that calculates the lifecycle benefits of investments that improve building design. It analyzes the financial benefits from buildings that reduce energy cost, raise employee productivity, and enhance tenant satisfaction. [www.energydesignresources.com](http://www.energydesignresources.com).
    - DGS developed Life Cycle Cost Assessment Model. <http://www.green.ca.gov/LCCA/FactSheet.htm>



Water Heater Example

## How can you ensure success?

- **CHPS Criteria most often and easily achieved points**
  - Low Emitting Materials
  - Joint-Use of Facilities and Parks
  - Parking Minimization
  - Cool Roofs
  - Superior Energy Performance – Avg. 30% beyond T24
  - Energy Management System
  - Daylighting
  - Ducted Returns
  - C&D Recycling
  - Using the School as a Teaching Tool



*Kenilworth Junior High School, Petaluma, CA*

## How can you ensure success?

- **CHPS Criteria most difficult, high benefit strategies**
  - Enhanced Commissioning
  - Improved Acoustics
  - Renewable Energy
  - Stormwater Treatment



*Conley Caraballo, New Haven, CA*

## What does a high performance school look like?

### *Georgina Blach Intermediate School*

*Los Altos School District, Los Altos, CA  
450 students, Grades 7 & 8  
5 new buildings, 9 building modernizations  
Project design begun 9/97, completed 7/03*

#### *High Performance Features:*

- Light colored "cool" roof to reduce heat gain and increase roof life.
- Optimizing window glazing, size, location, exterior shades and light shelves to reduce glare and solar gains, and improve daylight distribution and visual comfort.
- Installing electric lights that reduce output when adequate daylight is available.
- Reduced lighting energy consumption by 50% through appropriate layout and efficient direct/indirect lighting fixtures.



## What does a high performance school look like?

### *Alder Creek Middle School*

*Tahoe Truckee Unified School District Truckee, CA  
1000 Students; 92,000 Square Feet  
Completed in Fall 2004*



#### *High Performance Features:*

- School exceeds Title 24 (2001) by 20%
- Geothermal ground source heat pump system to heat and cool building with a central boiler
- Stormwater controls and settling basins to promote ground water recharge
- Built into sloped site to minimize visual impact and maximize thermal energy properties of the earth
- The daylighting system uses a innovative integral inverted micro-blind system sandwiched between the window glazing layers.
- Building serves as a teaching tool. Part of the structure will be exposed such as the pipes for the ground source systems, so students can feel the pipes at different temperatures of the supply and return lines.



## What does a high performance school look like?

### Chartwell School

Seaside, CA  
Private School  
160 Students  
Completed Fall 2006

### High Performance Features:

- Exceeds Title 24 (2001) energy standards by 30% through daylight spaces, radiant heat and naturally ventilated spaces
- 30 Kw Photovoltaic system makes the school net zero.
- Materials and finishes were chosen that were rapidly renewable (bamboo flooring and cork wallcovering), low-emitting (carpet and paint), and with high recycled content (such as insulation, steel, rubber roofing, concrete and latex paint), were specified.
- Water was conserved to ensure lower operational costs and preservation of resources by selecting waterless urinals and high efficiency irrigation technology.
- The classrooms are also sound isolated with resilient channels and acoustic insulation to achieve 45dbA.



## What does a high performance school look like?



Before

### Loyola Elementary School

Los Altos School District Los Altos, CA  
Completed in Fall 2005  
First CHPS Major Modernization

### High Performance Features:

- Reused a 1948 School Building
- Earned Savings by Design and state grants for energy efficiency
- Clerestories were placed in each classroom with lighting controls and occupancy sensors and interlocks on the doors and windows connected with the HVAC
- The EMS System opens windows when air temperatures are appropriate.
- Reconfigured parking lots allow run-off to filter through the landscape.
- Impermeable surfaces were reduced by replacing asphalt with learning patios and plantings.



After

## What does a high performance school look like?



### *Monterey Ridge Elementary School*

*Poway Unified School District Poway, CA  
Completed in Fall 2006  
Green Apple Award – Honorable Mention*

#### *High Performance Features:*

- School generates 50 percent to 60 percent of its energy from solar panels.
- The photovoltaic array is not on the roof but is instead on one of the slopes adjacent to the school, which allowed for the placement of a larger number of panels.
- Estimated to reduce annual electrical costs by \$30,000 to \$40,000.
- Other high-performing features include an EMS system, high-efficiency irrigation system and a cool roof with reflective coatings.



## What does a high performance school look like?



### *Maywood Academy*

*Los Angeles Unified School District  
Maywood, CA  
Completed in Fall 2006  
1,499 Students; 140,000 Square Feet  
Green Apple Award – Honorable Mention  
Highest scoring CHPS public school*

#### *High Performance Features:*

- The school's energy performance is 30% better than Title 24.
- Located within walking distance for most students, near public transit, provides bike lanes and bike racks.
- Three-story building which minimizes footprints, most of which follow an east-west orientation.
- Daylighting was incorporated through light shelves, glazing and a daylight dimming system.
- Most spaces offer natural ventilation and the doors and windows have HVAC interconnects.
- Reclaimed water is used to irrigate the landscaping made up of native, drought-tolerant plants.
- An underground detention system reduces storm water run off.

## What does a high performance school look like?



### *Heroes Elementary School*

**Santa Ana Unified School District  
Completed in Fall 2007  
Green Apple Award – CHPS Project**

### *High Performance Features:*

- Impressive emphasis on materials selection and waste management.
- Used reused and recycled materials such as tires, windshield glass, newsprint, paint and glass beverage containers in the project.
- Project exceeded Title 24 by 23.8%.
- CA Integrated Waste Management Board Demonstration School
- 75% of construction waste was diverted from the waste stream.

