



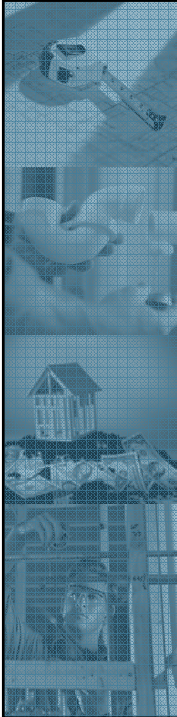
CALIFORNIA'S
COALITION
for ADEQUATE
SCHOOL HOUSINGSM

www.cashnet.org

C.A.S.H. WORKSHOP
“How to Design and Construct Modernization Projects”

MAKING MODERNIZATION PROJECTS GREEN

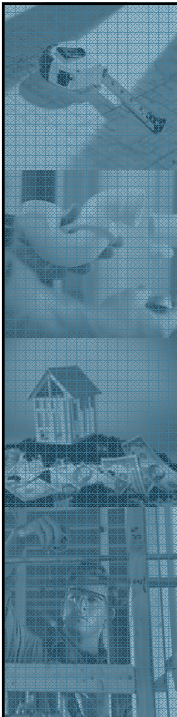
DENNIS DUNSTON
Architect



Making Modernization Projects Green

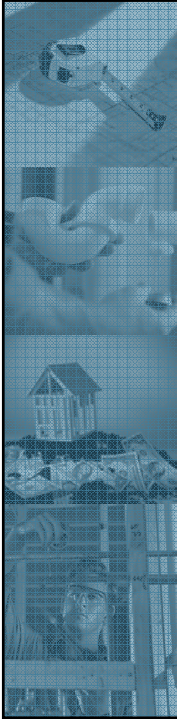
Dennis L. Dunston, AIA, REFP,
LEED AP

C.A.S.H. Workshop
March 25, 2008



The Greening of America

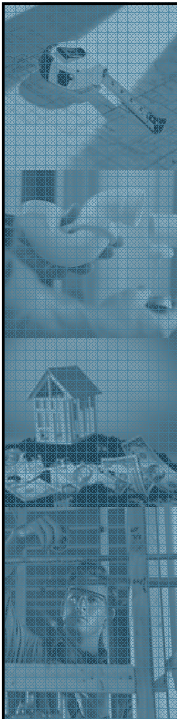
- Global warming
- Trends to **Green**
- HPSG Program
- Grid neutral initiative
- Carbon neutral initiatives



High Performance

vs.

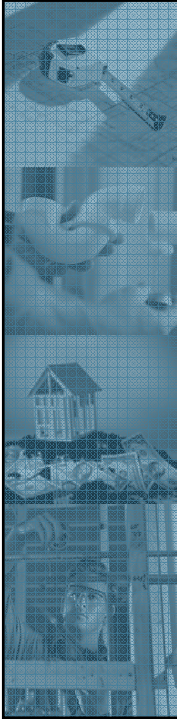
State Funding



Budget Priorities

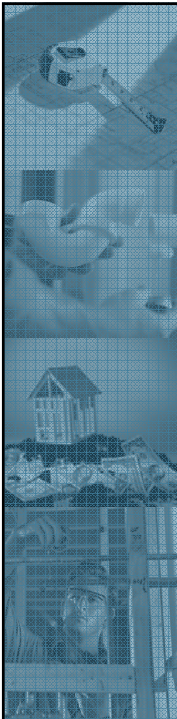
- Educational needs
- High Performance goals
- First costs
- Reduction in operating costs
- Improving the learning environment





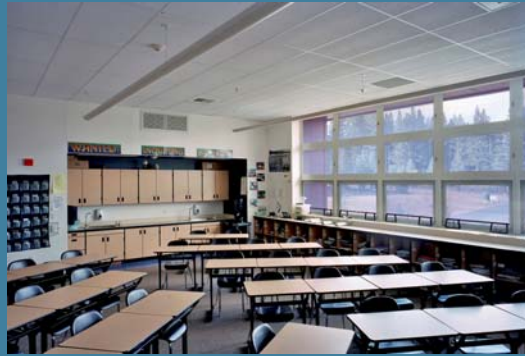
Project Planning

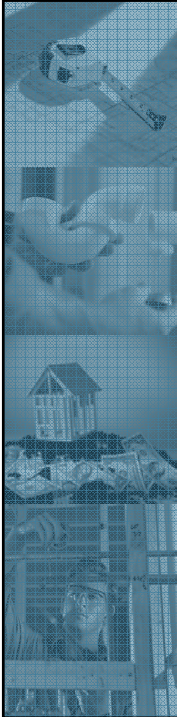
- Set High Performance goals early
- Look for “low hanging fruit”
- Incorporate elements regardless of funding
- Look for multiple funding sources
- Monitor design and construction



Daylighting

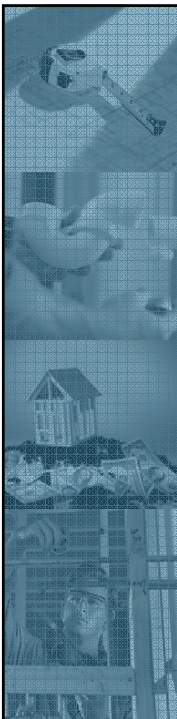
- Most cost effective
- Greatest life cycle cost savings
- Dependent on existing building configuration





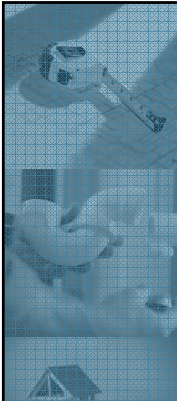
Mechanical

- High efficiency replacement units
- Natural ventilation
- Control systems
- EMS
- Alternative high performance systems



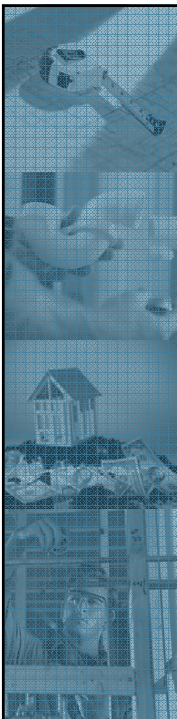
Plumbing

- Water conserving toilets
- Waterless urinals
- Reduces sewage conveyance
- Reduces potable water consumption



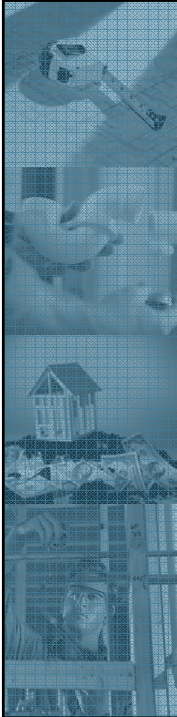
Electrical

- High performance lighting
- High efficiency equipment
 - Energy Star
- Lighting controls
 - Education first
 - Technology next



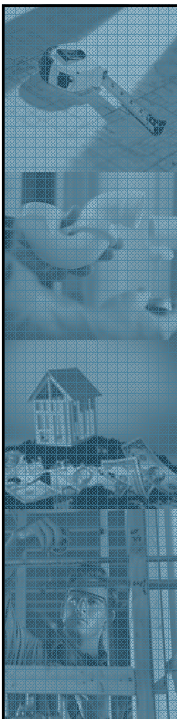
Other

- Cool roof systems
 - Energy
 - Reduces heat islands
- Use of recycled materials
 - Gypsum, concrete, steel
- Rapidly renewable materials
 - Wheatboard, bamboo



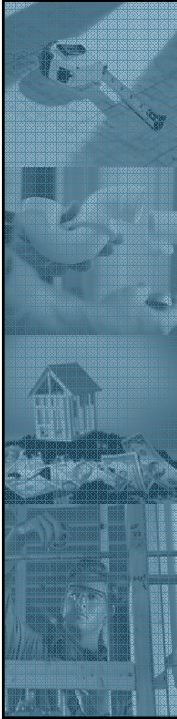
Grid Neutral

- Wind
- Geothermal
- Photovoltaics
 - PPA Purchasing Power Agreements



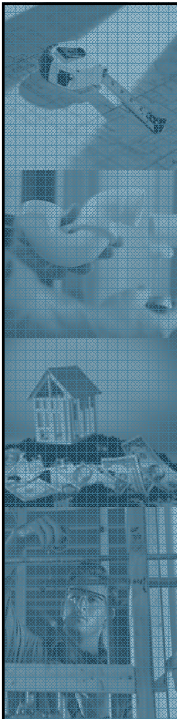
Indoor Environmental Quality

- Low emitting materials
- Acoustics
- Thermal comfort



Policy

- District commitment to green
- District commitment to environmental education
- Equipment performance
- Transportation
- Maintenance



Tools

- Collaborative for High Performance Schools (CHPS)– Best Practices Manual
- USGBC Leadership in Energy and Environmental Design (LEED)