



**Slideshow: Green Attitude**  
San Diego's High Performance Schools  
[Click here](#)



**Related Story**  
Reinventing Air Conditioning. [Click here.](#)



## The Business Case for Energy Efficiency San Diego's High Performance Schools

by Barbara Crane

In 1997, the San Diego Unified School District ([SDUSD](#)) adopted an ambitious program of energy efficiency (see [accompanying article](#)). It was a bold move that has saved the district at least \$75 million dollars in energy costs since 1997. The district took further "green" steps in 2003 by adopting Collaborative for High Performance Schools ([CHPS](#)) building standards.

CHPS maintains "scorecards," or lists of criteria that address energy and environmental design. Points are awarded for a wide array of environmentally friendly factors in six categories, such as providing a significant amount of natural daylight and ventilation, good acoustics, utilizing sustainable building materials, recycling construction waste and a host of others. Presently, new SDUSD schools are scoring in the range of 38-46 points, well above the basic CHPS certification level of 32 points.

Building schools to meet CHPS criteria became district policy after San Diego voters passed [Proposition MM](#), a taxpayer-funded bond measure in 1998. Proposition MM provided \$1.51 billion, of an estimated \$4 billion, necessary for modernization projects at 161 existing schools and construction of 12 new and 3 completely rebuilt schools. Of these 15 schools, 14 are CHPS certified (the first school, which opened in 2001, preceded the CHPS requirements). Twelve will have opened to students as of fall 2007; the remaining three are expected to open in 2008 through 2010.

"The district has had building standards since the mid 1970s that addressed... the use of durable, long lasting materials in our schools," says Jim Watts, SDUSD's director of architecture and planning. "In recent years, we've added requirements for buildings to be energy efficient and to exceed [Title 24](#). We already had a lot of CHPS criteria in our standards but these were not specifically articulated."

In 2005, SDUSD accepted a \$25,000 [California Energy Commission](#) grant award allowing the district to hire a consultant to review existing specifications and recommend changes so that CHPS criteria could be incorporated wherever possible.

Designing a school to meet CHPS requirements is not necessarily more expensive than a traditional school, says Stacy Strand, an architect with [HMC Architects](#), which designed [Cherokee Point Elementary School](#).

David Ruhnau, architect and partner with [Ruhnau Ruhnau Clarke](#), agrees. His

firm designed [Herbert Ibarra Elementary](#). Both schools are CHPS-certified and came on line in 2005. "We have found that our conventional school designs generally meet the minimum CHPS standards," Ruhnau says. "The question we face is more about the desire of the individual school district and whether they have the political/financial desire to reach for further sustainable measures."

For Cherokee Point, Strand investigated making use of the site's 20-foot grade difference to insulate and cool the buildings by using one side of the building to retain the earth. The retaining wall design had to be abandoned when construction costs proved too high. "The design/build process, which the district used for Cherokee Point Elementary, considers only first costs," Strand says. "We had a very tight budget exacerbated by the rapid increase in materials costs facing the construction industry at the time, which meant we couldn't incorporate the additional energy savings ideas that may have accrued from using lifecycle costing."

However, his firm found many ways to make the school energy efficient. They used light fixtures that minimized energy use, including efficient [T-8](#) lamps in all the classrooms and indirect lighting for student comfort. In larger spaces like the multipurpose room, they used [metal halide](#) fixtures. Another (literally) green feature: the design called for a large expanse of asphalt for the play area. The architects incorporated extensive landscaping in the middle of the play area to provide shade and relief to the students.

Located inland in an older neighborhood in southeast San Diego, Cherokee Point Elementary is near the boundary that delineates SDUSD schools approved for air conditioning from those that are not. "Our challenge was to come up with every idea we could to introduce natural ventilation to cool the buildings," Strand says. "On the second floor we raised the ceilings and provided operable windows to allow warmer air to escape from the top. We used large overhangs to the south and west to control heat gain. We also maximized the amount of insulation."

Staff at the district level are also working to reduce the new schools' energy profiles. Evan Leslie, SDUSD facilities system project engineer, has worked towards placing [central plants](#)—far more efficient than installing individual units for every classroom—in the new schools. Finding that the local design and contractor environment wasn't conducive to implementing central plants, he went to larger package units placed at strategic points on campus that can feed from three to ten or more classrooms. "A smaller package unit would have to be replaced in 10 to 15 years. A well-maintained larger system can last 30 years or more," says Leslie.

The school district received grants from [San Diego Gas & Electric](#) in a [Public Utilities Commission](#)-directed program to offer reimbursements for additional costs to make new construction greener. It also qualified for funds under Title 24 by exceeding energy efficiency minimums.

"Energy efficiency in the new schools paid for itself," Leslie says. "A lot of schools don't recognize the ability to recoup the costs of energy efficiency, because they don't apply a business model to the selection of options available to the district. If you look at the investment and savings carried over the years, you can make a very good case that the schools are not only energy efficient but also easier to maintain."

With the new schools nearly completed and Proposition MM dollars nearly spent, SDUSD is getting ready for its next capital program, which will pay for modernizing existing schools.

"We're now integrating CHPS requirements more specifically into our standards,"



Watts says. "At this point, our district is in a period of declining enrollment, so we'll be more heavily involved in retrofitting and modernization. We're going to look at how we can incorporate CHPS into our modernization efforts."



Copyright © 2006, Green Technology. All rights reserved.