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Designing High-Performance, Healthy Schools

Leadership in Energy and Environmental Design has become a household name in real estate, design and building circles. Another “best practices” program for school design, which is less widely used but gaining traction in the industry, is Collaborative for High Performance Schools (CHPS).

CHPS is a national movement to improve student performance and the entire educational experience by building the best possible schools. The goal of CHPS is to “fundamentally change the design, construction and operation of schools to: protect student and staff health, and enhance the learning environments of school children everywhere; conserve energy, water, and other natural resources and reduce waste, pollution, and environmental degradation.”

We have been working with CHPS for seven years and truly see the value in an alternative rating system that helps school districts and the project teams design, construct and operate high performance schools.

For the current versions of LEED (v4) and CHPS (2014) and applicable to the construction of new school buildings, there are several certification threshold levels available:

CHPS & LEED – What’s the Difference?

LEED most heavily prioritizes credits in the Energy category, whereas CHPS weights Indoor Environmental Quality Credits most heavily. LEED has a category for Regional Priority credits allowing the rating system to address geographically specific environmental priorities. The Location and Transportation related credits (2 each) for CHPS are contained within the Sites credit category, whereas LEED v4 breaks Location and Transportation into its own credit category with 8 credits. CHPS has an Operations and Metrics category, where LEED breaks out Operations and Maintenance into a separate certification altogether.

LEED v4 assigns the highest value to credits that reduce contribution of carbon emissions, whereas CHPS assigns the highest value to credits that enhance student health and well-being. Both rating systems are instrumental in ensuring that our designs are focused on environmental as well as student health.

CHPS in Colorado

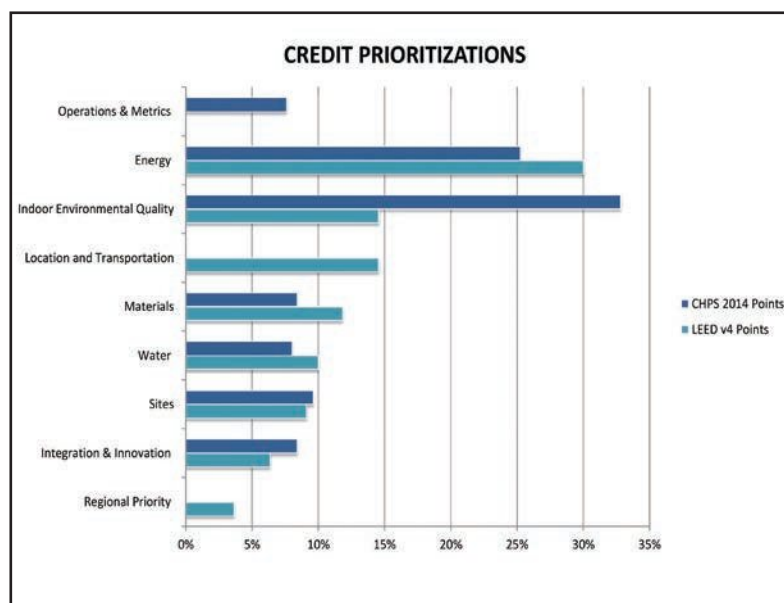
Colorado became the first state in the nation to adopt the US-CHPS criteria for healthy, high-performance schools, through an update to the Colorado High Performance Certification Program (HPCP).

CHPS Verified denotes a level of CHPS certification that combines a rigorous standard for the design and construction of healthy, green school buildings with a complete third-party review. Achieving CHPS Verified Leader status demonstrates that a school has met one of the most stringent standards for green school design.

Our firm designed the nation’s first CHPS Verified Leader certified school, Alta Vista Charter School (AVCS) in Lamar, which was completed in 2011.

We reduced energy consumption at AVCS by 50 percent with significant savings to this school, as compared to an average school. A high-performance envelope coupled with a geo-exchange ground source loop heating and cooling system helped achieve this savings. In addition, to lower operational costs the school has utilized exceptional daylighting strategies, which not only allows for lights to be turned off during the day and significant energy savings, but also helps create a healthy learning environment fostering increased student productivity and higher test scores. Rapidly renewable and recycled content materials were used throughout the building and during construction, and over 70 percent of the construction waste was recycled or reused within the community. Unique to CHPS, the team also employed the

CERTIFICATION LEVEL	% OF AVAILABLE POINTS EARNED
LEED Certified	36%
LEED Silver	45%
LEED Gold	55%
LEED Platinum	73%
CHPS Designed	guidelines followed, self-certification
CHPS Verified	guidelines followed, third party verification
CHPS Verified Leader	36%



Flex Energy Tool to consider energy strategies for the future.

More recently, we have been working with Adams 12 Five Star Schools on Anthem P-8, a new preschool through eighth-grade school under construction on a 13-acre site in Anthem Highlands, a planned community of approximately 2,600 residential units, located near state Highway 7 and Interstate 25 in Broomfield. The school is eventually expected to serve between 900 and 1,000 students and is slated to become the first school in the Denver metro area certified under the CHPS Verified Leader program.

During the design process, we used extensive energy and daylight modeling coupled with thermal analysis to improve the thermal performance of the building envelope based on the climate, orientation and internal building loads. Improvements in the thermal envelope were integrated into the design of the HVAC system to help reduce first costs and to reduce overall energy use, which is projected to be 30 percent less than if the building had been designed to code minimum. The window placement was balanced between access to views and daylight in the regularly occupied spaces.

As part of the CHPS facility, staff and occupant training credit, a room user guide was created to help teachers, staff and students understand how occupant behavior can impact energy savings and comfort through lighting and temperature controls.

We also paid particular attention to creating a walkable site and allowing for joint community use of the new school. This was part of the Crime Prevention Through Environmental Design Plan, a credit unique to the CHPS system, which focuses on



Anthem P-8 is a new preschool through eighth-grade school under construction on a 13-acre site in Anthem Highlands, a planned community of approximately 2,600 residential units, in Broomfield.

detering criminal behavior through site and building design and operations.

Regardless which third-party sustainability certification rating system you may be considering, pursuing either CHPS or LEED certification can ultimately result in lower operating cost and healthier spaces in which students can learn and thrive. \\\

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