

Collaborative Laboratory Building Goes Platinum

August 2007

Sierra Nevada College and UC Davis announced that the U.S. Green Building Council (USGBC) has awarded a Leadership in Energy and Environmental Design (LEED) Platinum certification for the Tahoe Center for Environmental Sciences building. The building is the first building in Nevada to earn this recognition, one of five laboratories, and one of only 26 facilities in the world to have earned the highest tier of recognition possible for energy- and environmental-design excellence under the LEED program for New Construction (LEED-NC).

In order to achieve this recognition, the project design needed to achieve over 52 credits in 6 subject areas that include Sustainable Sites, Energy & Atmosphere, Water Efficiency, Materials & Resources, Indoor Environmental Quality, and Innovation & Design Process. TCES received 56 points, well above the amount needed.

Located in Incline Village, Nevada, the Tahoe Center is a 45,000-square-foot facility that houses Sierra Nevada College's science program (teaching laboratories and classrooms); UC Davis research laboratories (Tahoe Environmental Research Center) and public education center; and office space for the Desert Research Institute and University of Nevada, Reno's Academy for the Environment. All of these functions are focused on understanding and preserving the unique ecology of the Lake Tahoe watershed. Achieving Platinum certification not only shows congruence with that focus but proves that sustainable, energy-efficient design is possible even for complex, critical-use buildings such as laboratories.

"LEED Platinum certification is a major achievement for everyone involved," said project architect Todd Lankenau, principal and managing partner of Collaborative Design Studio, formerly Lundahl & Associates from Reno, Nevada.

Laboratory buildings typically use more than four times the amount of energy used by an office building of the same size. In addition, labs typically have major environmental impacts in other areas such as water use, exhaust emissions, material use, and waste disposal. In order to focus on improving the environmental performance of laboratories, a program named Labs 21 was formed as a joint project of the U.S. Environmental Protection Agency and the U.S. Department of Energy Labs. With the support of the conceptual framework promoted by Labs 21, the mechanical engineering firm of Rumsey Engineers developed a highly integrated and innovative design that provides safe and effective heating, ventilation, and air conditioning with extremely low-energy use. The energy efficiency of the mechanical system was complemented by a well-insulated building with high-performance windows, advanced lighting and lighting controls, and partial use of daylighting to offset the use of electric lighting. Lighting design was by David Nelson & Associates of Littleton, Colorado, and the project's electrical engineering firm was Integrated Design Associates of San Jose, California.

The result is a building that uses 60% less energy than a building of the same function, climate, and size designed to current code standards. These deep reductions in energy usage made it feasible to use photovoltaic roof panels to provide 10% of the building's annual energy demand and for the college to



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purchase renewable power from other sources to make up the remainder. There are future plans to add photovoltaic capacity to cover 20% of the building's demand.

Potable water use was reduced 65% through the use of drought-tolerant native plant species in landscaping, water-efficient plumbing fixtures, and the use of treated rainwater for toilets.

Sustainable site features include low-glare lighting, retention basins to slow down and treat storm water runoff, and reduced areas of site disturbance during construction.

The building design includes materials with high levels of recycled content as well as materials that come from local sources (reducing the environmental impacts of associated transportation). The concrete in the structural frame substituted 25% of the cement with fly ash, a by-product of coal combustion in power plants. In addition, over 85% of the construction waste was recycled.

In order to support the productivity, health, and well-being of the students, researchers, and others who use the building, special effort was made to increase occupant comfort by using materials with low or no emissions, providing a high level of individual control over lighting and cooling levels, and giving access to daylight and views of the outdoors.

"We envision the Tahoe Center for Environmental Sciences building as a blueprint for future projects," said Sierra Nevada College project manager and former trustee Jim Steinmann. Although the project was originally programmed and budgeted to be designed to a Silver level of certification (with potential for Gold), additional donor funding from Sierra Nevada College amounting to 7% of the original budget allowed additional systems and features to be included in the design in order to earn Platinum certification. Savings from energy-efficiency measures will likely pay for these additional systems and features within 15 years.

Wherever possible, these systems have been expressed rather than hidden to educate the public on the applications and benefits of green building. Tours of the green features of the building are available every Tuesday, Thursday, and Saturday at 11 a.m. and 3 p.m., with other appointments available upon request.

The building was constructed by Turner Construction, a Sacramento-based firm. "We were impressed by the elegant design of the facility and the synergies between all of the building systems," said Cliff Kunkel of Turner.

"This building demonstrates that with owner commitment and design ingenuity, we can provide beautiful, effective buildings that support the productivity and well-being of the students and researchers in the building with minimal impacts to the well-being of the environment," said Bill Starr, senior architect and university representative for UC Davis.

For more information about the Tahoe Center for Environmental Sciences building, go to www.sierranevada.edu or terc.ucdavis.edu, or call (775) 831-1314 or (775) 881-7566.

For more information about the design team, go to www.collaborativedesignstudio.com or call Collaborative Design Studio at (775) 348-7777.



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