



Colorado State University

Fort Collins, Colorado

Buildings

SCHOOL

Colorado State University, public 4-year, 25,000 students, Fort Collins, Colorado

ABSTRACT

The Student Recreation Center at Colorado State University has undergone a complete renovation. A 70,000 square foot expansion has been added to the original 100,000 square foot facility (for a total of 170,000 sf). By incorporating many sustainable features in the construction and daily operation of this building, the Student Recreation Center is anticipated to earn a LEED Gold rating. Amazingly, despite an addition of 70,000 square feet, the cost of energy for this new building is expected to be no more than before the addition and renovation.

GOALS AND OUTCOMES

Goals

The addition to the Student Recreation Center was designed with energy efficiency taking top priority. Intended to be a LEED Gold building, stringent energy reductions were incorporated in the construction plans. By pursuing sustainable construction and design, Colorado State University reinforces its commitment to attaining carbon neutrality by 2050. Furthermore, the building's main occupants, students, can see the successful operation of a green building first hand.

Accomplishments and Outcomes

Both the remodeled portion of the Student Recreation Center, as well as the newly constructed annex of the building were intended to use far less energy. The building was designed using water efficient fixtures like low flow sink faucets, low flush toilets, and low flow showerheads. These efficient fixtures lead to 40% reduction in water usage over baseline standards. Also, a new regenerative pool filter will save 250,000 gallons of water annually. In the landscaping and irrigation of this building, 100% of the water used is non-potable. Drought resistant plants surround the building and can survive without much irrigation. This saves the building even more water.

The Student Recreation Center, with the application of several heat mitigation techniques, reduces the "heat island effect". The heat island effect is a temperature phenomenon in which heat-absorbing buildings release heat absorbed from sunlight into the surrounding atmosphere. By using white roofing materials, the building avoids absorbing overhead sunlight. In addition, minimal amount of asphalt were used in the landscaping around the Student Recreation Center and its surround sidewalks.

With the use of high performance glass, insulation, proper solar orientation, and shading techniques, the building has seen an overall 21% reduction in energy use. Newly installed boilers and chillers are ultra-high efficient and can operate at efficiencies of 99% but never less than 92%. Overall, the new Student



Recreational Center is far more efficient than before the remodel and new construction despite an additional 70,000 square feet.

Challenges and Responses

The Student Recreational Center did not close while construction in progress. With as many as 10,000 users a day, the Recreation Center did not want to permanently close. Instead, construction was scheduled around occupant use. This slowed construction; however, students would have been outraged if the Recreation Center had been closed for a long duration of time. It was challenging for contractors and construction workers to remodel a building still in use as well as construct a new wing. Eventually, the dust settled and students were presented with a beautiful, fully functional, and environmentally conscientious building. It was worth the wait.

Campus Climate Action: Your School's Carbon Footprint

With the integration of energy saving equipment and technology, the new Recreation Center saves 21% energy overall. This reduction not only decreases the University's overall carbon footprint but also serves as a model for other buildings considering an energy efficient remodel.

Commentary and Reflection

Because the project involved such a significant remodel in addition to the new space, the LEED NC rating system was used to track the building's green performance. The newly expanded and upgraded building is projected to earn a LEED Gold rating.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

The staff of the Recreation Center provided significant leadership on this project. From the beginning, they understood that the students who occupy this building would judge the team for the performance- not only the performance of the building as a beautiful and fun place to work out, but as a model of how buildings can be both aesthetic and efficient

Funding and Resources

This building was funded from a bond that will be repaid through student fees. All students pay a recreation fee and therefore get to use the facility at no additional cost. Additional funding comes from selling memberships to the center to faculty and staff at the university.

Education and Community Outreach

The university has used the recreation center as part of the showcase of green buildings on campus. Tours are provided to a variety of audiences including attendees at the AASHE conference in Denver in 2010. The building also showcases its green features in informational signs and placards.

CONTACT INFORMATION

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MORE ABOUT YOUR SCHOOL

Campus Sustainability History

National Wildlife Federation • Campus Ecology • 2011

Colorado State University is internationally known for its green initiatives and clean-energy research including alternative fuels, clean engines, photovoltaics, "smart" grid technology, wind engineering, water resources, and satellite-based atmospheric monitoring and tracking systems. It's also known as a "green" university for its sustainability efforts on campus and abroad. With the construction of seven LEED Gold buildings within the last five years, Colorado State University is proving to be a proponent of green campuses.

Image credit: Colorado State University