



Colorado State University

Fort Collins, Colorado

Buildings

SCHOOL

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

ABSTRACT

A 60,000 square foot Research Innovation Center located on Colorado State's Foothills Campus has earned Gold certification from the U. S. Green Building Council's (USGBC) LEED program. The Research Innovation Center, or RIC building, was constructed in 2010. The facility includes several Biosafety Level 2 labs supporting infectious disease research. Much of the building is leased space used by independent entrepreneurs and researchers. The building also hosts a 7700 square foot vivarium operated by CSU's Lab Animal Research department.

GOALS AND OUTCOMES

Goals

Biosafety level 2 labs are normally very energy intensive facilities, demanding large amount of both electricity and water. As a LEED Gold building, RIC was designed to support state of the art laboratory research while using resources wisely.

Accomplishments and Outcomes

The design of the RIC building incorporates solutions that increase energy performance of the building while lowering operating costs by 42 percent. Low flow faucets and toilets reduced the building's water use by 38 percent while the planting of native species cut irrigation water consumption by 90%. Low emitting carpets and paints were used in the building to ensure a high standard of indoor air quality. Additionally, the RIC building hosts a 54 kilowatt solar array onsite which provides approximately 6% of the electrical load of the building. 830 tons of construction waste generated by this project was either recycled or repurposed.

The RIC building exemplifies the duality of Colorado State University. Laboratory research and environmental responsibility are equally important at CSU and the RIC building demonstrates how to balance the two in design and construction.

Challenges and Responses

The RIC building is located on the CSU Foothills Campus. Because this campus is tucked up against the foothills of the Rocky Mountains, it is in a high wind zone. Design wind speed is 115 mph. This provided a challenge to the design team in many areas. The panels and racking of the solar system had to be designed to withstand these wind speeds. Unfortunately, the entry door to the building was not capable of sustaining this level of winds and has been damaged twice in high winds. The entryway is being redesigned to take into account the shape of the building and the interaction with these winds.

The quality of the building envelope has also been challenging since the inception of the building. There were

some details overlooked during the construction of the envelope that has led to lags in performance. The designer and the contractor are working very closely together to resolve such issues. In the meantime, this problem has highlighted the importance of including the building envelope in the scope of the commissioning effort. Never again will those details be overlooked.

Campus Climate Action: Your School's Carbon Footprint

Annually, the solar array at the RIC buildings offsets 57,000 kg of carbon dioxide.

Commentary and Reflection

The problems encountered with the building envelope have highlighted the importance of including the building envelope in the scope of the commissioning. However, the end result of the building shows the possibility of a balance among energy efficiency and laboratory research.

ENGAGEMENT AND SUPPORT

Leaders and Supporters

To construct the RIC building, CSU partnered with The FWA Group, a leading architectural firm with an office in Fort Collins. CSU worked closely with The FWA Group's architects to design not only an aesthetically pleasing but also energy efficient laboratory. The USGBC certified the building LEED Gold in July of 2011.

Funding and Resources

Located on the Infectious Disease Research Center on Colorado State's Foothills Campus, the Research Innovation Center was funded by \$52 million worth of bonds.

Education and Community Outreach

The Research Innovation Center has many signs and accessible information regarding the green features of the building. The occupants of the building have been informed of the features as well.

Additionally, Colorado State University conducts tours of the photovoltaic arrays on campus. The 54 kW solar system at the RIC building is showcased in such tours.

CONTACT INFORMATION

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MORE ABOUT YOUR SCHOOL

Campus Sustainability History

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.