BEST PRACTICES 2011

Cal Poly San Luis Obispo
Poly Canyon Village

Poly Canyon Village was the largest construction project in the history of the CSU system at the time of its construction. After earning LEED Gold certification for an outstanding commitment to sustainable design, it also became CSU's biggest LEED certified project.

Award Category

Overall Sustainable Design

Green Features

Brownfield remediation and riparian habitat restoration

90% of construction waste diverted

No mechanical cooling in apartments

Radiant ceiling heating

30% reduction in water consumption

Permanent irrigation eliminated for 60% of landscaped areas

Covered bike storage for over 50% of residents

Annual Energy and Cost Savings

42.7% greater energy efficiency than ASHRAE Std. 90.1-1999

4.75 MWh

$475,000

Size

822,600 ft^2

2670 beds

Cost

$300 million

Completion Date

August 2009

Cal Poly is making significant progress towards housing 3000 additional students on campus, a core goal of its 2001 master plan. Poly Canyon Village, completed in 2009, is a student housing community comprised of nine residential buildings, 618 apartment units, and two multilevel parking structures. With 2670 beds, the project increases the total on-campus resident population to over a third of total student enrollment. By creating new residential communities such as Poly Canyon Village, the college aims to lessen its impact on housing resources in the City of San Luis Obispo, as well as reduce traffic and greenhouse gas emissions resulting from student commuting.

Retail village and central plaza. Image: Cal Poly.

Poly Canyon Village is designed as an autonomous community that provides students with convenient access to key amenities and services. In addition to enriching the residential experience, locating amenities on site is a primary strategy for reducing negative impacts from vehicular travel. A coffee shop, grocery market, sandwich shop, mail center, dry cleaner, ATM and swimming pool are available to residents in the Village Plaza. Study rooms and a conference center are provided to support academic activities.

Two main thoroughfares for pedestrian and bicycle traffic were created to facilitate carless transportation to and from the project. These paths connect Poly Canyon Village to a major regional transit hub and the campus instructional core. To further encourage students forgo cars, the parking structures have roughly 30 percent fewer spaces than residents, and covered bicycle storage is provided for over 50 percent of total residents.

Development of the thirty-acre site provided Cal Poly with an opportunity to remediate ecologically impacted areas. Previous use by the College of Agriculture had negatively affected the site soil and the adjacent Brizzolara Creek, requiring remediation efforts for roughly an acre of brownfield land. Additionally, habitat restoration activities were performed on a four-acre riparian zone to re-establish the environmentally significant ecosystem and promote migration by native steelhead trout.

The added housing will reduce greenhouse gas emissions from commuting by 2.4 million pounds per year.

Great care was taken to preserve and enhance the integrity of the site and reduce operational costs and impacts. At the suggestion of the design-build team, the number of buildings in the project was reduced and the height was increased to five stories. This change reduced the overall development footprint, allowing for additional open space while still providing the required bed count. The modification also lowered utility infrastructure costs and will provide operational energy savings by reducing the area of exposed envelope.

Energy models estimate that the project's

2011

BEST PRACTICES

Additional Awards

LEED-NC Gold

Contacts

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Project Team

Design-Builder:
Clark Design/Build of California, Inc.

Architect: Niles Bolton Associates

Civil Engineer:
Cannon Associates

Structural Engineer:
Nabih Yousef & Associates

MEPF & Telecom Engineers:
Flack + Kurtz, Inc.

Landscape: Wallace Roberts Todd, Inc.

More Information

www.housing.calpoly.edu/pcv_sustainability/index.html

www.cannoncorp.us/oth_projects_schools.php

efficient design will reduce costs by nearly 43 percent, compared to ASHRAE Standard 90.1-1999. Two central plants with high-efficiency gas boilers provide hot water for space heating and domestic hot water. A 500-kW natural gas fired cogeneration system generates electricity and provides waste heat to supplement one of the boiler plants.

Pedestrian path and landscaping. Image: Cal Poly.

Residential units are heated by hot water radiant ceiling panels. The project team selected ceiling panels to avoid a common problem in which radiators located beneath windows are blocked by furniture, impeding airflow and obstructing maintenance activities.

Due to the project's mild climate, low summer occupancy, and energy conservation goals, the project team made a strategic decision to eliminate mechanical cooling in the residential units. Ventilation and cooling is provided exclusively via natural ventilation through operable windows. Only administrative and retail spaces are mechanically conditioned, and are served by high-efficiency packaged air conditioning units with either variable air volume or variable refrigerant volume control.

The project uses a high proportion of environmentally preferable materials. Regional materials including concrete, steel, and metal stud trusses were selected to reduce greenhouse gas emissions from transportation and to support local economies. Nearly a quarter of total building materials are both sourced and manufactured within 500 miles of the campus. The project team also worked to reduce the impact of resource extraction and processing by using materials with recycled content, including doors, gypsum wall board, steel decking, and composite wood cabinetry. Recycled content materials comprise about 16 percent of the total building materials.

A bioswale constructed through the center of the project collects 80 to 90 percent of the sediment and pollutants from stormwater.

Several strategies were implemented to create a sustainable site and protect the local ecology. Landscaping with drought tolerant and native species supports local insect and bird populations, and only 40 percent of planted areas require a permanent irrigation system. Nearly all surface water runoff is diverted to Drumm Reservoir, where it becomes irrigation water, virtually eliminating the environmental impact of storm events to the site and nearby creek.

LESSONS LEARNED

Cal Poly successfully used a project delivery method termed the "bridging method," which is based on a design-build arrangement. In this process, Cal Poly worked with an architectural firm to significantly complete design development. The campus then put the project out to bid and awarded a design-build contract for the construction documents and construction phase. Using the bridging method allowed Cal Poly to have greater control over the project design, shorten the construction schedule, and reduce the final overall cost. The campus recommends that other colleges also explore the benefits of bridging for delivering high-performance facilities.

Best Practices case studies are coordinated by the Green Building Research Center, at the University of California, Berkeley.

The Best Practices Competition showcases successful projects on UC and CSU campuses to assist campuses in achieving energy efficiency and sustainability goals. Funding for *Best Practices* is provided by the UC/CSU/IOU Energy Efficiency Partnership.