



# Bren Hall

□ □ □ □ □ □ rethinking energy

LEED™ Platinum Award



84,672 gross square feet



Opened April 2002

## o Natural Ventilation

Bren Hall was sited to take advantage of ocean breezes. Offices have operable windows and transoms, so no air conditioning is required. Heaters in the offices automatically shut off when windows are opened.

## o White Cap Roofing

To reduce "heat island" effect, Energy Star® roofing material was used to help keep the building cool.

## o Lighting Plan and Daylight Harvesting

Large windows are used throughout the building to reduce the need for electricity for lighting. The lighting plan incorporates energy-efficient fixtures and bulbs with daylighting controls for motion, heat, and ambient light.

## o Shared Chilled Water Loop

Bren Hall is connected to the new multi-building chilled water loop on campus to provide cost-effective cooling to the laboratory wing. The Bren chiller is able to take on a portion of the total campus load. The shared system saves as much as 85% run time on the chiller.

## o Low-Emission Boiler

An 85% efficient low-emission boiler is used in the building.

## o Photovoltaic System

A roof-integrated photovoltaic system of 240 42-watt solar panels generates 7-10% of the building's total power cleanly on site.

## o Phoenix Valves

As part of the variable air volume (VAV) system in the laboratory wing, the valves open and close based upon demand, ensuring efficient energy use. They ratchet down when the labs are unoccupied.

## o Lab Exhaust System

The lab exhaust system is comprised of three stacks that stage upon demand to reduce energy use.

## o Energy Monitoring

Additional metering is used to gather data on actual energy loads for wet labs, dry labs, and offices.





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## o Demolition Waste

Bren Hall was built on a parking lot. 100% of the demolition waste was recycled. Concrete curbing was reused as a base; asphalt was crushed and reused on site or elsewhere on campus. Small removed plants were mulched for use on campus. All native soil was retained and reused for the landscape plan.

## o Erosion Control

Desilting facilities were used during construction at each drainage outlet. Hay bales and silt fencing were used to mitigate erosion and for sediment control. After rainstorms, hay bales were replaced to remove silt and debris from drains.

## o Construction Waste Management

93.5% of the construction waste was recycled.

## o Landscaping and Plantings

The building and landscaping design create outdoor spaces for gathering. The use of native plants reduces the need for watering and prevents the introduction of invasive species.

## o Sustainable Harvesting

Many wood materials used in the building are "Smart Wood™"-certified, meeting environmental requirements such as watershed stability, biological conservation, sustained yield forestry, long-term forest management, and positive impact on local communities.

## o Recycled Materials

Bren Hall is made of more than 40% recycled content.

## o Environmentally Friendly Materials

All buildings in the building are free of asbestos, formaldehyde, and CFCs.

## o Carpool Parking

Carpool parking is located near the building to encourage less use of automobiles.

## o Bicycle Parking

A bike locker area and shower facilities facilitate faculty and staff biking to work.





# Bren Hall

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## o Architectural Design

The design of the entryways, fresh air intakes, and chemical storage areas contributes to the high quality of the indoor air.

## o Finish Materials

All products were required to meet stringent low volatile organic compound (VOC) criteria. Paints, adhesives, and finishes exceed the new 2005 South Coast Air Quality Standards.

## o Local Materials

To reduce transportation emissions, great effort was made to specify materials obtainable within a 350-mile radius.

## o Construction

Installation of products was sequenced to reduce the possibility of volatile organic compound (VOC) sinks within the building.

## o Variable Air Volume System

The air system uses variable frequency drives and is connected to a variable air volume (VAV) lab exhaust system, which is staged upon demand.

## o System Filtering

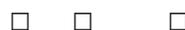
Prior to building occupation, all mechanical systems were run for an extended period at full capacity (a "bakeout"), then all air filters were changed.

## o Fresh Air Intakes

Fresh air intakes are located away from exhaust sources.

## o Air Monitoring System

A permanent air monitoring system routinely checks for carbon dioxide (CO<sub>2</sub>), carbon monoxide (CO), and particulates, and adjusts accordingly to maintain high indoor air quality.





# Bren Hall

rethinking water

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84,672 gross square feet



Opened April 2002

## o Fire Road

The fire road is made of permeable turf block (100% recycled plastics) with grass overlay to reduce runoff and divert water from the stormwater system.

## o Landscaping and Plantings

The landscaping uses native drought-tolerant plants and reclaimed water for irrigation.

## o Water-Conserving Coolers

The cooling tower has drift eliminators that minimize water loss due to evaporation and recapture the water for re-use in the system.

## o Low-Impact Bathrooms

Low-flow fixtures are used throughout the building.

Toilets on the first floor use reclaimed water.

Automatic flush valves are used on all toilets.

Automatic valves are used on all bathroom sinks.

Each of the 10 waterless urinals saves approximately 40,000 gallons of water per year.

## o Water Monitors

Ongoing water monitoring helps ensure the most efficient use of water.

