



Vision for **Sustainability** in **Wine & Food Science**

*“The **LEED Platinum** Building *Design*”*

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Brewery, Winery and Food Processing Facility

Achieving the Vision

As the wine industry moves towards more sustainable practices, UC Davis will lead and support this movement. The design for the new winery is underway and construction begins in Spring 2009 with occupancy of the building in Summer 2010. UC Davis has the extraordinary opportunity to make its Winery, Brewery and Food Science building one of the highest performing buildings in the world under the US Green Building Council's LEED (Leadership in Energy and Environmental Design) certification process. This rigorous endeavor will serve to teach the next generation of growers and winemakers best technologies for sustainable practices.



Green Landscape - California Plant Garden

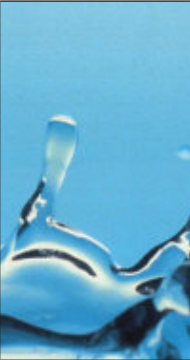


Sustainable site development begins with the analysis of fundamental processes and structures of soil. Remediation techniques to restore and replenish microbial ecology, and strengthen plant-microorganism relationships are needed to support native plantings.

The current site design incorporates key best practices in erosion control, restoration of habitat, light pollution and heat island mitigation. The addition of a California Garden will fully display the site's biological heritage - a research setting and an amenity for this science community.

Estimated Cost - \$ 50,000

Water - Rain Collection and Reuse



With current focus on global warming and energy consumption, our primary resource – water has received less attention. California will face severe water shortages by 2020.

Harvesting rainwater from the building roof, providing storage, filtration and reuse for building operations will substantially reduce the use of domestic water. This will avoid site erosion from peak flows and lessen the impact on local aquifers.

A scientific application of historic farming practices.

Estimated Cost - \$ 150,000

Water - Process Water Reuse



Water for cooling, production and cleaning in winemaking means upwards of 10 gallons of water will be used for every 1 gallon of wine produced. Capturing water from the winemaking process and treating it will create an opportunity for recycling water through the winemaking process and for use in vineyard irrigation. The application of membrane filtration technologies will enable cleaning water to be used up to 10 times. This uses less of a precious resource, reduces wastewater generation and can improve irrigation water quality.

Great water makes great wine.

Estimated Cost - \$ 575,000

Renewable Energy - Harness the Power of the Sun

The Winery, Brewery and Food Processing Facility is ideally oriented to harness energy from the sun. With the addition of photovoltaic panels we can provide upward of 17% of its energy use directly from the sun. These panels will transfer the sun's energy to the building electrical service. The system will even return power back to the grid when the building demand is low.

11,900 square feet of photovoltaic panels generating 115 kW of power will be housed on the roof.



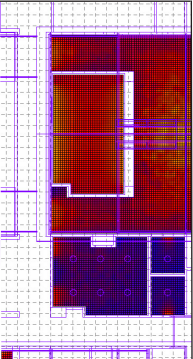
Estimated Cost - 17% - \$ 2.6 m

Energy Efficiency Enhancement

The building design includes a combination of energy saving systems that will reduce the annual energy consumption by 30% compared to the same building designed to a base case.

There are additional energy conservation measures (underground cooling loop, enhanced natural ventilation, LED lighting, etc.) that could further reduce energy use to almost 45%, decreasing the ecological impact of the building and creating a better tool to teach the next generation sustainable practice and technique.

Estimated Cost - 45% - \$ 500,000



Materials - Recycled and From Local Sources

By purchasing recycled and regionally manufactured products, this project will not only support the local economy but reduce the environmental impacts associated with material extraction, manufacturing, transportation and disposal. This green initiative will be implemented through a rigorous material selection process. It will ultimately influence every aspect of the building design from foundation and structural materials to interior finishes.

Utilizing the vast resources within a 500 mile radius of the site, the project will bolster a healthy local economy, divert waste from landfills and support local labor forces.

Estimated Cost - \$ 100,000



Carbon Dioxide Capture

Carbon Dioxide is a natural byproduct of winemaking and a concern for every winemaker. The current building design will duct the carbon dioxide to the outside of the building to ensure worker safety.

Adding a system to directly sequester carbon dioxide on site significantly reduces the impacts of winemaking on global warming. This revolutionary development will potentially change the future of winemaking and many other carbon dioxide intensive industries.

Estimated Cost - \$ 350,000

