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# Water district's work-in-progress building has myriad methods of maximizing efficiency of resources

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**By JANET ZIMMERMAN**
**The Press-Enterprise**

An Inland water district aiming to make its new offices ultra water thrifty went much further, turning it into a demonstration building to showcase the latest techniques for energy efficiency and use of sustainable materials.

The soon-to-be-completed Frontier Project by the Cucamonga Valley Water District includes a "green" roof with plants on top, a cooling tower and solar chimneys for natural ventilation, cisterns to collect rainwater, and outside shade from recycled redwood once used at a local winery.

"We wanted to put in anything and everything, to show there are a lot of options," said Kristeen Ramirez, spokeswoman for the Rancho Cucamonga utility. "There seems to be this notion that to go green you have to have a lot of money. But there's so many things people can do," including compact fluorescent light bulbs, energy-efficient appliances, solar power and water-thrifty toilets.

The $14 million Frontier Project goes well beyond what most people are doing at home, however. Fund-raising generated more than $9 million, and the rest is covered by ratepayers.

Construction is scheduled to finish early next month, and the grand opening is set for Nov. 7, Ramirez said.

The Frontier Project Foundation, a nonprofit that includes the district's board members and several other people, sought input from 25 to 30 industry experts who suggested ways to make the building most efficient. Their ideas go right down to the way the 14,000-square-foot building is oriented on the lot.

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**Stan Lim / The Press-Enterprise**
Construction on the Cucamonga Valley Water District's Frontier Project is to end early next month, with a grand opening in early November.

Among the features:

The building's entire northeast wall is made of glass to maximize natural light. There are few windows on the south and west, to reduce passive heating from the afternoon sun. The walls are made of Styrofoam forms filled with poured concrete for insulation.

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**Stan Lim / The Press-Enterprise**
Ernesto Gonzalez, with ASF Millworks and Design Inc., works on kitchen cabinets made out of bamboo at the Cucamonga Valley Water District's Frontier Project. The $14 million project included some $9 million generated through fundraising.

Though the building will contain traditional heating and air-conditioning systems, ventilation will come largely from two solar chimneys on each end and a cooling tower in the middle to circulate air through the space using natural convection.

The cooling tower harnesses air from the prevailing winds and cools it with water misters. The cool air is drawn into the space as air from the solar chimneys is heated and forced outside.

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This planter box is part of an energy efficient roof system to include plants that reduce heat gain and solar panels expected to generate up to 30 percent of the building's power.

A section of roof will be covered with native plants to reduce heat gain; it also will capture rainwater that will be channeled to an underground cistern. Green roofs, which include several layers of waterproofing and a root barrier, can reduce heating and cooling costs by 10 to 30 percent, according to Rand Engineering and Architecture in New York.

Rooftop photovoltaic panels will provide about 30 percent of the energy needed to power the building. Other

parts of the roof will be covered with a bright white membrane, known as a cool roof, to reflect the sun.

A large public meeting space and offices for 15 water district workers will have furniture and carpet with a high recycled-material content. The interior décor will include renewable materials such as bamboo.

A solar shading terrace on the outside of the building will be made from 30-foot-tall wine vats donated by the J. Filippi Winery in Rancho Cucamonga.

A demonstration kitchen will showcase the latest energy- and water-saving appliances.

The district will seek platinum certification for Leadership in Energy and Environmental Design, or LEED, which sets standards for environmentally sustainable building through the U.S. Green Building Council, said Jo Lynne Russo-Pereyra, vice president of the Frontier Project Foundation. Such a distinction can provide some tax benefits.

"When we started down this path, we did a market assessment to see if there are other projects like this. There's nothing that's LEED platinum and demonstration, where the public can see and feel products," she said.

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**Frontier Project**

Cucamonga Valley Water District's green building is under construction at 10440 Ashford St., Rancho Cucamonga. To "see" the building, visit www.frontierproject.com and click on "The Project" and webcam, or take the virtual tour.