

# Sun + Room

Emily and Doug Boleyn are hardly recent converts to the green way of life. As the commercial solar program manager with Energy Trust of Oregon, Doug knows his way around harvesting the sun's power, and for 35 years, the couple put that knowledge into action in a solar home they built in the 1970s. But yearning for new challenges, the Boleyns decided to build a modern house that would be even more energy efficient than their previous home.

"We wanted to prove to ourselves that we could do it with a 2,500-square-foot design, with lots of windows and light, and still meet the highest standards," Emily says.

Working with builders at Cellar Ridge Custom Homes and designer Matthew Daby, the Boleyns made plans to build a LEED Platinum house in Happy Valley, Ore., that would also meet Earth Advantage, Oregon High Performance Home, and ENERGY STAR standards. "These certifications are indicators that we have done the best we can do," says Doug, who keeps a log of daily energy use.

The bar for the new home was set high even before the builder broke ground. The plans called for a generous complement of windows, which not only helped heat the home with natural light, but also capitalized on great views of Mount Hood.

Builders began by constructing a tightly sealed envelope, its 8-inch-thick offset stud walls packed snugly with a new kind of blown-in fiberglass insulation. Low VOC sealants around areas prone to air loss—such as plumbing and

electrical entry points—improve energy retention. Solar tubes convey natural light into the home's interior, and specially designed windows—employed for the first time in an Oregon home—maximize passive solar heating and cooling while minimizing drafts. "We have to go outside to know whether it's windy," Doug attests.

Tied to this focus on energy conservation was a passion for using energy efficiently. "In our previous home, we used a fourth to a third as much energy as a typical home," Doug explains. "With this home, our goal was

**'What surprised me is how comfortable this home is.'**

to use half of that." With Oregon's first photovoltaic thermal (PVT) system, the home not only generates electricity through rooftop solar panels, but also captures heat trapped under the panels and uses it to keep the home and its water warm.

"What surprised me most is how comfortable this home is because of the PVT system," Emily says. "On sunny days we're taking the excess heat from behind the collectors and using it to heat the house. It's just wonderful."

Because of the home's energy efficiency and how it locks in heat, the house produces more energy than it uses for 4 months of the year. That energy is credited to the Boleyns' account, helping the house to pay for itself. Besides, as Doug notes, "It's fun to watch the meter go backward."

## GREEN FEATURES

### Onsite Rainwater Storage

This involves the conservation of water by harvesting rainwater and using it for irrigation.

### Ductless Heat Pump System (Mini-Split)

This system improves the overall energy efficiency of the home by eliminating air loss associated with ducted systems. It also uses zonal heating and cooling.

### Tankless Gas Water Heater

This feature uses 45–60% less energy than required by the current federal standards. Efficiencies achieved result from a combination of more efficient burners and the lack of standby losses that occur in tank water heaters.

### Solar Water Heating System

This system converts the sun's

energy into about 60% of the energy required for domestic hot water needs.

### Heat Recovery (HRV) or Energy Recovery (ERV) Ventilator

This system provides superior air quality and conserves energy by transferring 75% of the heat from outgoing, stale indoor air to the fresh, incoming outdoor air.



FROM TOP: The house is oriented to make the best use of natural light and heat; water is warmed with the aid of heat trapped under the roof's solar panels and piped inside; the kitchen features ENERGY STAR appliances.







"We wanted interesting architecture, vaulted ceilings, and a spacious open feel of a home," Emily Boleyn says of her house in Happy Valley, Ore.



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