

Green + Solar

BUILDING OREGON

**A Comprehensive
Guide to Green
and Solar Building**

**Featuring the 2007
Oregon Green &
Solar Homes Tour**

**Commerical Green
Building Section**

**New Oregon
Laws Create Huge
Incentives for
Going Green**



PRINGLE CREEK COTTAGE

A Very Big Small House

By Christopher Dymond, Oregon Department of Energy



Blake Bilyeu, of Bilyeu Homes stands beside an educational display of the homes green features.

- 1 1/2" Plywood Sheathing
- 2 1" Foil-faced rigid insulation
- 3 House wrap
- 4 1/2" Vertical battens, 12" o.c.
- 5 Tape and flashing at all penetrations in the house wrap
- 6 Fiber cement lap siding

The Pringle Creek Cottage is the first model home built in the 32-acre Pringle Creek Community development located in Salem, Oregon, recently deemed the Green Land Development of the Year by the National Association of Home Builders. The sustainability features of the cottage itself qualify it for both the US Green Building Council's Leadership in Energy and Environmental Design (LEED) Platinum certification* and EnergyStar® Platinum certification. And with 103 green building points, the Pringle Creek Cottage has the highest LEED rating of any home built to date.

The two elements that distinguish the Pringle Creek Cottage are its efficient use of space (both inside and out) and its extremely low energy consumption.

A Small Footprint

The simplest way to reduce a home's environmental footprint is to reduce its size. This reduces the amount of materials needed and the energy required to heat, cool, light and run appliances. The Pringle Creek Cottage is a two-bedroom, two-bath

cottage with only 1,350 square feet of heated floor space. This compares to the 2,450 square feet in a typical Oregon home.

The cottage doesn't feel small, thanks largely to an open floor plan. Visual cues like long views, high ceilings, small component detail and excellent daylighting give the house a voluminous feeling. Substantial built in storage spaces and a short basement space also increased the home's effective size without increasing the size of its environmental footprint.

Energy Efficiency

Designed by Opsis Architecture and built by Bilyeu Homes, the Pringle Creek Cottage is one of few houses to date that is built efficient enough to qualify the builder for a \$2,000 federal tax credit for energy-efficient new homes. In addition, the home will be the first to qualify the builder for a \$3,000 state of Oregon Business Energy Tax Credit for efficiency and up to \$9,000 for the renewable energy features.

The Cottage is connected to a Ground Source Heat Pump (GSHP) water distribution system that extracts the ambient earth temperature water from an underground aquifer via an existing production well, and pumps the water to each lot via a supply and return piping system within the street right of way. This distribution system uses water borrowed and circulated through a GSHP where heat will be either extracted from the water in the heating mode, or rejected to the water in the cooling mode. After passing through the lot, the heat pump returns the water through a return piping system, where it either becomes available for irrigation use or it is returned to the aquifer via injection wells. This heat pump system is approximately 300 percent more efficient at delivering heat than an electric furnace. The heating system also incorporates an energy recovery ventilation system that is integrated with the bathroom fans. This ensures a balanced continuous ventilation and fresh air system

FEATURES AND TEAM

- 40 tube thermomax solar water heater
- 2050 watt solar electric array
- EnergyStar® Appliances
- Geothermal heat pump heating system
- Energy Recovery Ventilation System
- Rainscreen exterior walls
- All dimensional lumber is Forest Stewardship Council certified
- Local sourced hardwood floors and cabinetry
- EnergyStar® aluminum clad wood windows with Low-E glass
- 1700 gallon rainwater harvesting system

Owner/Developer

Sustainable Development, Inc.

Design Architecture

Opsis Architecture And Studio D

Structural Engineer

Catena Consulting Engineers

Interiors

Jessica Helgerson Interior Design

Energy Consultants

Oregon Department Of Energy

Builder

Bilyeu Homes

Framing

Spectra Construction

Eco-landscape

DeSantis Landscaping

KEY VENDORS

- Summers Solar Systems
- Lyons Heating and Cooling
- Jeld-Wen Window + Doors

** Leadership in Energy and Environmental Design (LEED) for Homes is a voluntary rating system from the US Green Building Council that promotes the design and construction of high performance "green" homes. The Green Building Council began the pilot test of LEED for Homes in August 2005. As of May 2007, more than 200 homes have been LEED certified.*



The beautiful home is capped with solar panels. Photo Credit: Visko Hatfield

that uses warm exhaust air to pre-heat the incoming air.

High Performance Exterior Envelope

The Forest Stewardship Council (FSC) certified 2x6 wood stud, 24 inch on center, advanced frame wall uses less lumber and allows for more dense pack cellulose insulation within the exterior wall cavity. In addition to the 1/2 inch FSC certified plywood, the exterior is wrapped with a 1 inch layer of rigid insulation to reduce heat loss and keep the exterior structure warm and dry. The exterior vented rain screen finish is comprised of a Tyvek house wrap with a 12 inch on center vertical strapping and +/- 1/2 inch battens that attach the fiber-cement lap siding.

Vented rain screens should be standard practice in locations with substantial rain. The small air gap between the insulation and the exterior cladding ensure that wind driven moisture can rapidly dry to the exterior. In addition, the natural ventilation keeps the wall cool during the summer substantially extending the life of paint and reducing air conditioning loads.



Through good design every room feels large and airy. Photo Credit: Visko Hatfield

Cottage Living

Imagine living in a home like this with an energy footprint 35 percent that of a typical, comparably-sized home. Energy costs would have to more than triple before you would pay as much as someone living in an average two bedroom new home. It is worth remembering that when we measure the environmental impact of a home, the single largest impact over the life of the home is its energy use.

For more information about Pringle Creek Community visit www.pringle-creek.com.