

The oversized foam blocks in the children's area, designed by Arne Quinze for Quinze & Intelligent Design, are perfect for stacking. This little hideaway,



Bright Light, Big Savings

A clever remodel lets the sun shine in

Kent and Phyllis Snyder had long yearned for a home with outstanding southern exposure: something they could transform into a passive solar dream that would make the most of the sun's heat and light year-round. Though most Portland homes enjoy some exposure to the fleeting valley sun, finding one with the perfect placement required patience—and a compass. “Whenever we saw a house for sale that we liked, we’d pull out the compass first,” Kent recalls. “Most of them just weren’t quite right.”

But in 1999 they found a modest Southwest Portland ranch home, built in 1951 on

the uphill side of the street and with enough elevation to catch even the lowest angle of the winter sun. After living within the home's existing walls for a few years, the Snyders hired architect and passive solar guru Greg Acker to tackle their remodel. Acker's team retrofitted the home's squinting front façade into a dramatic, wide-eyed sun space—the centerpiece of a striking eco-home that also harvests and filters rainwater and whose interior was finished using only nontoxic paints and materials.

The new functionality of the home's 14-foot-tall, 200-square-foot sunroom shines

in the winter, largely due to the row of glass doors that isolate it from the rest of the house on cold, cloudy days while still letting daylight through. On clear winter days, when the sunroom really cooks (easily hitting 85 degrees), the glass doors can be opened to allow the heat captured by the concrete-and-tile floors to radiate into the living room and kitchen, usually warming those rooms until well after sunset. And to ensure that none of the sunroom's energy is wasted, a thermostat-activated fan mounted in the wall draws hot air to the rear of the house through ducting.

In the summer, overheating isn't an is-



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sue thanks to a cooling blanket of silvervein creeper vines growing on a steel-cable trellis. The vines hold onto their lush foliage and white flowers (a favorite of local bees) until the first frost. The sunroom's high and low operable windows also keep temperatures down by circulating air through the space. These are the touches Acker credits with allowing the house to reach its full passive solar potential. "Designing a good sunroom is a balancing act," he says. "Get it wrong and you're always going to be too hot or too cold. But get it right, and it will be the most pleasant space in the house." ■

LET IN THE LIGHT

Want to tackle your own passive solar remodel? Local architect and passive-solar expert Greg Acker of Sienna Architecture recommends these steps:

Assess Your Solar Exposure

There's no better tool than your own eyes. Observe the sun's movement through the seasons, particularly where it hits your house on the solstices of December 21 (lowest angle) and June 21 (highest angle). You'll reap the most light and heat if your home has good, unobstructed southern exposure, but the east side of the house can also be useful for capturing morning sun (you should generally avoid large improvements—like a sunroom—on the west side of a house, where the summer temperatures are likely to rise too high). Pick up David Johnston's *Green Remodeling* (\$19, powells.com) for a comprehensive guide.

Plan Your Improvements

Hiring a designer familiar with passive solar design is a wise choice for large improvements, but there are off-the-shelf options available as well. Oregon companies like Westview Products (westviewproducts.com) will install and customize quality prefab passive solar additions, from grand conservatories to small corner-window arrangements. Keep in mind that you'll need to add materials to store the warmth—called thermal mass—that you're collecting. Tile and concrete floors or walls are the lowest-maintenance options, but water tubes also can be used to store and radiate heat. Skylights are generally net energy losers because they leak heat in the winter—Solatubes (solutube.com) are better options for natural light.

Learn Your Financing Options

There are a variety of tax incentives available for both passive solar and active solar improvements; these can cover up to 50 percent of the systems' cost. (Active solar uses electrical or mechanical systems like photovoltaic panels and solar hot-water heating.) Oregon's Department of Energy (DOE) offers a \$1,500 state tax credit for passive solar improvements like new windows, sunrooms, and floor materials that store heat, and a state tax credit of up to \$1,500 for active solar installations (oregon.gov/ENERGY). The US Department of Energy offers a federal tax credit on active solar installations for 30 percent of the system's cost. Finally, the Energy Trust of Oregon offers cash incentives of up to \$10,000 for active solar installations (energytrust.org/solar/residential/index.html).