

My Attached Solar Greenhouse

by Doug Kalmer

My attached greenhouse is 8'x18', and built onto the south side of my solar heated home. I built both in the mid 80s for little money. The greenhouse initially cost me about \$300 to build, but it was single-glazed then.

I started out by pouring a footer, and laying up 6" blocks, which I then externally covered with 2" of foam board, topping it off with an 8" treated sill plate. I had found some 46"x76" tempered sliding glass door replacement windows for \$15 each, so I framed the south wall up with 2x4's to fit them. I initially used corrugated fiberglass for the roof, which lasted about 10 years. Then I replaced it with twi-wall polycarbonate (double-glazed plastic roofing), which is more costly, but lasts longer, insulates and transmits light better.

Pea gravel covers the floor over the soil, with a scrounged brick pathway, and 4 black 55 gallon drums of water provide additional thermal mass. The drums support benches and line the house wall. I put in a planting bed and shelving for plants, and my wife found out she liked growing plants so much, she started a commercial greenhouse business.

The attached greenhouse serves to start plants in January, then in February we transfer them to the 22'x48' freestanding greenhouse. The attached greenhouse also is an airlock in the winter, as it covers an entrance door, which we open in sunny cold weather to help heat the house. I also installed an exhaust fan thru the adjoining wall, which I wired to a window air conditioner thermostat, so it can come on at about 85°F greenhouse temperature to blow warm air into the house, which is useful when we are not home.

The adjoining wall also has a window with a lower vent space below it. When we are not going to be home during sunny cold weather, I remove the insulated cover to the vent, so air can be returned to the greenhouse from the house. The vent has a 4 mil plastic flap on the greenhouse side to prevent reverse flow. Large screened vents in both east and west ends allow for warm weather ventilation, and in summer I cover the roof with 60% shade cloth, to keep it cooler.

The greenhouse provides heat, acts as an airlock, and provides a place to grow food and house plants. It helps us earn a living by providing a place to start plants to sell; it is a great place to hang out in sunny cold weather; the dogs sleep there in cold weather; and we keep firewood dry and handy there in the winter. All in all, we really like it. Attached greenhouses are easily added to any south wall, so many homeowners can gain these benefits for themselves at little cost and effort.

Editor's Note: An "attached solar greenhouse" is used both to grow plants and to heat the building it is attached to. When built onto the south side of a home and

incorporating thermal storage devices such as masonry floor and/or water barrels, the structure should not only require very little supplemental heat in the winter, but can supply surplus heat for the home. The structure will need shading and adequate ventilation in the summer.

Doug Kalmer designed and built his own passive solar, earth sheltered home over 20 years ago, and assembled several different solar hot water systems. This article has been provided courtesy of the Green Living Journal, a project of the Center for Holistic Ecology and the Cumberland Green Bioregional Council.