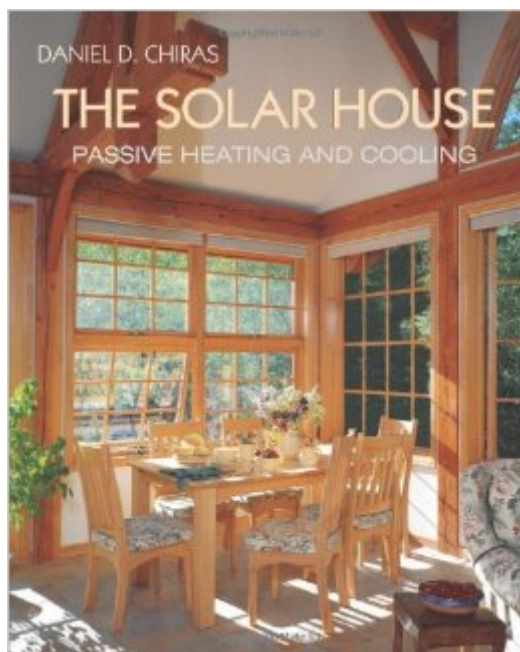


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# The Solar House: Passive Heating And Cooling



## Synopsis

Passive solar heating and passive cooling—approaches known as natural conditioning—provide comfort throughout the year by reducing, or eliminating, the need for fossil fuel. Yet while heat from sunlight and ventilation from breezes is free for the taking, few modern architects or builders really understand the principles involved. Now Dan Chiras, author of the popular book *The Natural House*, brings those principles up to date for a new generation of solar enthusiasts. The techniques required to heat and cool a building passively have been used for thousands of years. Early societies such as the Native American Anasazis and the ancient Greeks perfected designs that effectively exploited these natural processes. The Greeks considered anyone who didn't use passive solar to heat a home to be a barbarian! In the United States, passive solar architecture experienced a major resurgence of interest in the 1970s in response to crippling oil embargoes. With grand enthusiasm but with scant knowledge (and sometimes little common sense), architects and builders created a wide variety of solar homes. Some worked pretty well, but looked more like laboratories than houses. Others performed poorly, overheating in the summer because of excessive or misplaced windows and skylights, and growing chilly in the colder months because of insufficient thermal mass and insulation and poor siting. In *The Solar House*, Dan Chiras sets the record straight on the vast potential for passive heating and cooling. Acknowledging the good intentions of misguided solar designers in the past, he highlights certain egregious—and entirely avoidable—errors. More importantly, Chiras explains in methodical detail how today's home builders can succeed with solar designs. Now that energy efficiency measures including higher levels of insulation and multi-layered glazing have become standard, it is easier than ever before to create a comfortable and affordable passive solar house that will provide year-round comfort in any climate. Moreover, since modern building materials and airtight construction methods sometimes result in air-quality and even toxicity problems, Chiras explains state-of-the-art ventilation and filtering techniques that complement the ancient solar strategies of thermal mass and daylighting. Chiras also explains the new diagnostic aids available in printed worksheet or software formats, allowing readers to generate their own design schemes.

## Book Information

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## Customer Reviews

I have spent a lot of time researching passive solar designs using books from the library & information on the internet. A lot of books on solar designs are from the 70's & 80's and the designs lead to overheating of homes by overglazing (too many windows). Some of the more current books on solar design gave more vague information, and didn't thoroughly describe concepts and materials. This book has it all! Very good information on all the design elements, such as direction of home, foundation designs, window ratios, as well as recommendations for particular products. The book had in-depth information on all the available heating systems including solar heating, heat pumps, & radiant floor heating. At the end of the description for each heating system, there was a pro/con list that talked about the energy efficiency, cost, & performance of each heating system over others. There was a helpful chart on hot water heaters with payback periods for different fuels (solar, electric, gas, propane) so you could compare the costs associated with the fuel. In all of my research, this was the first such chart that really spelled out the benefits of certain fuels over others. The book was written in 2002, so it is very up-to-date with the most current products & concepts.

The Solar House: Passive Heating And Cooling by global environmental issues expert Daniel D. Chiras is an "user friendly" architectural guide to choosing and implementing an energy-efficient and environmentally friendly backup heating system, and thereby making any dwelling both cost-effective and naturally heated and/or air conditioned. Black-and-white sketches clearly illustrate the detailed walk-throughs about the basics of passive solar heating, passive cooling, assessing the performance of one's energy system and much more. An excellent guide for embracing ecology-friendly living, The Solar House is especially recommended as a do-it-yourself home reference for the non-specialist general reader with an interest in making their personal home as comfortable and environmentally friendly as possible.

At last -- a comprehensive, easy-to-read, well-illustrated solar house book, perfect for architectural students, build-it-yourselfers and masters of solar technology as well -- who will benefit from the many important lessons learned. My delight with the book began when I first saw its elegant cover. The more I read, the more I realized what a treasure it is. I was especially interested in the latest information on radiant floor heating, ground source heat pumps, and passive cooling. It makes me feel good to know that a book this full of information, yet so accessible, may result in significant reductions in the 44% of total household energy used for heating and cooling. Chiras combines several decades of personal experience with information from some of the best minds in the field. His stated goal of producing a comprehensive and accurate book is well met. Nice job -- get a copy!

The Solar House by Dan Chiras is a masterpiece. Chiras' inimitable style shows through on every page. Like his other books, the writing is clear and engaging. The book is well organized and full of useful information. It is an absolute delight to read. Most books on passive solar tend to ignore or give superficial treatment to several vital subjects, for example, passive cooling, region-specific design, indoor air quality, and back-up heating systems. And many books still propagate some pretty bad designs. Not this one! The Solar House covers passive solar design and construction in great detail, drawing on modern science and architecture, yet is easy to read and understand. Not only will you find just about everything you need to know about designing an energy-efficient solar home, you will learn about common mistakes still being made by some designers -- and ways to avoid them! It could save you a fortune on construction and heating and cooling costs. This book is useful to architects and owner-builders. Even if you have read other books on the subject, you owe it to yourself to add this book to your library. It's worth its weight in gold.

I highly recommend 'The Solar House' to anyone with an interest in passive solar design. The book is a great primer on the subject giving well informed information on many aspects of solar design. The author does just what I hoped he would... dispelling many of the myths associated with passive solar design. He shares practical experience on what works and what doesn't in the real world for warm and cold climates. This makes an excellent first book to read on the subject. For those who have read others, this is a great source of updated knowledge and a complement to any collection. It is by far the most comprehensive and useful book on solar design that I have seen on the market.

Whether you intend to act as the general contractor or leave everything to somebody else, this book

is an excellent resource for how to get it right when incorporating passive solar features into a house. From site selection to plan orientation and proper glazing placement and thermal storage, The Solar House illustrates what works and what doesn't. Don't buy land or build a new house or sun space without reading it first!

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