

# Solar Thermal Power

**Solar thermal systems provide environmentally friendly heat for household water and space heating. The systems collect the sun's energy to heat either air or a fluid. The air or fluid then transfers solar heat to your home or water.**  
(adapted from NREL doc)



*"One of the most cost-effective ways to include renewable technologies into a building is by incorporating solar hot water. A typical residential solar water-heating system reduces the need for conventional water heating by about two-thirds. It minimizes the expense of electricity or fossil fuel to heat the water and reduces the associated environmental impacts."*

- Department of Energy, Energy Efficiency and Renewable Energy

Solar Heating Devices directly absorb the sun's radiation with specially-coated absorbers to heat air or water for use in a building. Solar water heaters can be used in large commercial applications (e.g. hotels or breweries) solar water heaters racked for commercial installation or in attractive, low-profile installations on residences anywhere in the United States.



Solar water heating devices are a relatively simple technology, with well-understood materials and manufacturing. Worldwide, they are extremely prevalent - anecdotally displacing approximately 6% of annual residential energy consumption in Israel, for instance. Solar heating devices could provide a simple, short-term means of reducing the United States' energy usage by several percentage points.

*The largest application of solar water heating to date is likely the 1 million gallon pool used for the 1996 Atlanta Olympics; using a 10,000 square foot solar heating system on this natatorium is estimated to be saving upwards of \$12,000 per year in avoided energy costs.*



## Why An 8-Year Extension of the Investment Tax Credit Is Necessary for Solar Thermal

**Growing a market.** Similar to other emerging technologies, the cost of Solar Thermal will continue to go down as the market grows. In the early stages of its reemergence, it is crucial that existing manufacturers and installation companies, as well as new entrants to the market, can rely on a long-term federal commitment.

**Environment.** Solar thermal is the easiest and most cost-effective way to use renewable energy to displace fossil fuels and their harmful emissions.



## The Technology Today

"Since the early 1970s, the efficiency and reliability of solar heating systems and collectors have increased greatly and costs have dropped.

Improvements to materials, a rating system for consumers, and more attractive designs have all helped to make systems more successful. Low-iron, tempered glass is now used instead of conventional glass for glazing. Improved insulation and durable selective coatings for absorbers have improved efficiency and helped to reduce life-cycle costs."

- U.S. Department of Energy,  
Energy Efficiency and Renewable Energy



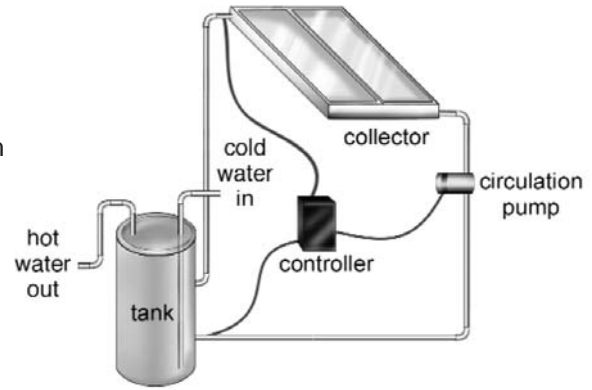
Solar Energy Industries Association (SEIA) is the national trade association of solar energy manufacturers, dealers, distributors, contractors, installers, architects, consultants, and marketers. We work to expand the use of solar technologies in the global marketplace.

805 15th Street, NW  
Suite 510  
Washington, DC 20005  
202.682.0556  
[www.seia.org](http://www.seia.org)

## Technology Snapshots

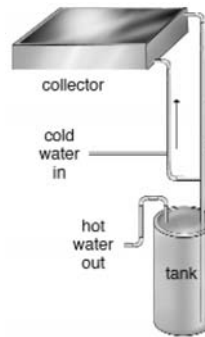
### Active Solar Water Heating

Active solar water heating systems can be either "open loop," in which the water to be heated flows directly through the rooftop collector, or "closed loop," in which the collector is filled with an antifreeze solution that passes through a heat exchanger mounted in or around your normal water heater. (Closed loop systems can be used anywhere in the US, even in freezing conditions, while open loop devices must be drained during freezing conditions.) During the day, in good weather, your water can be heated entirely by the sun! In any weather, the heating system can back up your existing heater, reducing overall energy costs.



### Passive Solar Water Heating

A "passive" system combines the solar collector and storage in one complete unit separate from the conventional gas or electric water heater storage tank. Passive system design requires no pumps or controls for operation as sunlight heats water all day. When hot water is used in the home, water from the passive solar storage tank is drawn into the conventional gas or electric water heater storage tank, thereby avoiding the need for electric or gas-fired heat to turn on. [EPA]



### A Note On Collectors

In most cases, a properly engineered solar air or water heating collector can provide an excellent return on investment for a homeowner or business, especially as natural gas and heating oil prices continue their volatility and rising price trends.



## Solar Rating and Certification Corporation

Recognizing the need for a uniform, national approach for rating and comparing solar equipment, SEIA and a national consortium of state energy offices and regulatory bodies joined together to lay the groundwork for such a program. In 1980, the Solar Rating and Certification Corporation (SRCC) was incorporated as a non-profit organization. Its primary purpose is the development and implementation of certification programs and national rating standards for solar energy equipment.

The SRCC label instills consumers with confidence that the technology is valid and that the products will perform in terms of energy and dollar savings. Solar equipment manufacturers benefit from SRCC certification and rating in three fundamental ways: the ability to have a product certified only once; national

recognition and/or reciprocity of the certification; and a reliable means for judging product durability and performance on a relative standard basis.

- Nonprofit, rates system performance in discrete geographical areas and certifies system designs
- Addresses system durability, reliability, safety and operation
- Provides assurance for state/utility programs
- Approximately 200 individual systems currently certified
- Large increase in applications in 2006, backlog
- SRCC certification required for residential ITC!

For more information on SRCC, visit [www.solar-rating.org](http://www.solar-rating.org)