

FaxBack 8002

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

Sizing a Solar Water Heating System

Sizing your solar water heating system basically involves determining the total collector area and the storage volume you'll need to meet 90%–100% of your household's hot water needs during the summer. Solar system contractors use worksheets and computer programs to help determine system requirements and collector sizing.

Collector Area

Contractors usually follow a guideline of around 20 square feet (2 square meters) of collector area for each of the first two family members. For every additional person, add 8 square feet (0.7 square meters) if you live in the U.S. Sun Belt area or 12–14 square feet if you live in the northern United States.

Storage Volume

A small (50- to 60-gallon) storage tank is usually sufficient for one to two three people. A medium (80-gallon) storage tank works well for three to four people. A large tank is appropriate for four to six people.

For active systems, the size of the solar storage tank increases with the size of the collector—typically 1.5 gallons per square foot of collector. This helps prevent the system from overheating when the demand for hot water is low. In very warm, sunny climates, some experts suggest that the ratio should be increased to as much as 2 gallons of storage to 1 square foot of collector area.

Other Calculations

Additional calculations involved in sizing your solar water heating system will include the following:

- [Evaluation of your building site's solar resource](#)
- [Orientation and tilt of the solar collector.](#)

Related Information

- [Solar water heaters](#)
- [Reduce Your Hot Water Use for Energy Savings](#)

Learn More

Evaluation Tools

- [Solar Water Heating Project Model](#)
RETScreen International

Financing & Incentives

- [Find Federal Tax Credits for Energy Efficiency](#)
ENERGY STAR®

Product Information

- [Find ENERGY STAR® Solar Water Heaters](#)
ENERGY STAR
- [Solar Thermal Systems](#)
Florida Solar Energy Center
- [Certified Solar Collectors and Systems](#)
Solar Rating and Certification Corporation

Professional Services

- [Solar Energy Industries Association](#)

- [Find a Solar Pro](#)
Solar-Estimate.org

Related Links

- [Solar Water Heating System Installation](#)
Florida Solar Energy Center
- [Solar Water Heating System Installation Guidelines](#)
Solar Rating and Certification Corporation

Reading List

- *Heat Your Water with the Sun* ([PDF 603 KB](#)). (December 2003). DOE/GO-102003-1824. U.S. Department of Energy.
- *Simplified Sizing Procedures for Solar Domestic Hot Water Systems* ([PDF 383 KB](#)). (Revised April 1992). Florida Solar Energy Center. Specific procedures apply to Florida residents. However, it lists the types of measurements and calculations required to size a system.

[Energy Savers Home](#) | [EERE Home](#) | [U.S. Department of Energy](#)
[Webmaster](#) | [Web Site Policies](#) | [Security & Privacy](#) | [USA.gov](#)

Content Last Updated: February 24, 2009