



NORTHEAST SUSTAINABLE ENERGY ASSOCIATION

SOLAR HOT WATER SYSTEMS



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NEED EXPERT HELP? Go To The SUSTAINABLE GREEN PAGES

NESEA's SUSTAINABLE GREEN PAGES is the Northeastern USA's best green business directory. It includes hundreds of energy experts offering sustainable living and commercial energy solutions in over 30 specialties. Go to NESEA.ORG and find the right expert to realize your green goals, or look for the SUSTAINABLE GREEN PAGES in the fall issue of NESEA's NORTHEAST SUN Magazine.

NESEA.ORG

SOLAR WATER HEATING

Solar hot water systems are a cost-effective way to generate hot water for your home or business using proven technology. A typical residential solar water heating system reduces the need for conventional water heating by about two-thirds.

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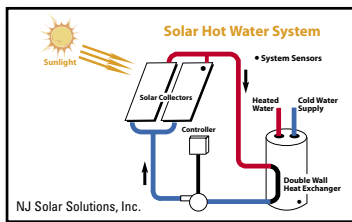
The two most frequently used solar collectors in the Northeast are:

- **Flat-Plate Collectors:** These are insulated, weatherproofed boxes that contain a dark heat-absorber plate under a glass or plastic cover. This is by far the most common collector used.
- **Evacuated-Tube Collectors:** These feature parallel rows of transparent glass tubes. Each tube contains a glass outer tube and an inner metal tube attached to a fin. The fin's coating absorbs solar energy and the overall design inhibits radiative heat loss. Evacuated-tube collectors are more efficient than flat-plate collectors in cloudy or colder conditions.
- **Other Designs:** In addition, there are other system designs that are used less frequently but may be applicable to your situation. Ask your local installer about these other options.

HOW IT WORKS

Most solar water heating systems for buildings have two main parts: (1) one or more solar collectors and (2) a well-insulated storage tank. Solar water heating systems almost always require a conventional water heater backup system for cloudy days and times of increased demand.

ACTIVE AND PASSIVE SYSTEMS



The fluid in the system is circulated in two general ways: In active systems, pumps are used. In passive systems, thermal convection circulates the fluid. Passive solar water heating systems are typically less expensive than active systems, but they're usually not as efficient. However, passive systems can be more reliable and may last longer.

COMMERCIAL SYSTEMS

Commercial solar hot water systems are basically the same as those used for homes except that the thermal storage tank, heat exchanger, and piping are larger. The most common applications include apartment buildings, senior citizen residences, hotels, car washes, restaurants, recreation centers and hospitals.



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SERVING THE NORTHEAST
Based in Greenfield, Massachusetts, NESEA's territory includes 10 Northeastern states: Connecticut, Delaware, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island and Vermont.

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See nesea.org
to find a local
chapter near you

NESEA

For over three decades, NESEA and its chapters have served as a source of inspiration and an exceptional resource for the leaders of a sustainable energy future. We urge you to join us as a NESEA member.

NESEA is a membership organization dedicated to the widespread acceptance and use of sustainable energy in the Northeast. At its core, NESEA is a multi-disciplinary group of practitioners committed to whole systems thinking as the central framework for addressing energy issues. Joined by consumer advocates, these practitioners have worked effectively to pioneer energy-efficient buildings and clean energy solutions, to share their knowledge and to recognize innovation.

THE ECONOMICS OF A SOLAR WATER HEATER

Solar water heating systems usually cost more to purchase and install than conventional water heating systems. However, a good, well-insulated solar water heater will save you money in the long run.

On average, if you install a residential solar water heater, your water heating bills should drop 50–80%. Also, because the sun is free, you're protected from future fuel shortages and price hikes.

If you're building a new home or refinancing, the economics are even more attractive. Including the price of a solar water heater in a new 30-year mortgage usually amounts to between \$13 and \$20 per month. The federal income tax deduction for mortgage interest attributable to the solar system reduces that by about \$3–\$5 per month. So if your fuel savings is more than \$15 per month, the solar investment is profitable immediately. On a monthly basis, you're saving more than you're paying.

SELECTING A SOLAR WATER HEATER SYSTEM

Work with a local solar installer to determine the best system for you. You will find a list of solar domestic hot water system installers in NESEA's SUSTAINABLE GREEN PAGES directory on-line at NESEA.ORG or in the fall issue of NESEA's NORTHEAST SUN Magazine.

NESEA CHAPTERS

Your NESEA membership automatically includes local chapter affiliation:

- Boston Area Solar Energy Association
- Building for Social Responsibility (VT)
- Cape & Islands Renewable Energy Collaborative
- Central Jersey Sustainable Energy Association
- GreenHome NYC
- Maine Solar Energy Association
- New Hampshire Sustainable Energy Association
- Philadelphia Solar Energy Association
- Rhode Island Solar Energy Association
- Solar Energy Association of Connecticut
- Springfield Area Sustainable Energy Association (MA)
- Sustainable Delaware
- UMASS Lowell Solar Energy Association
- Western New York Sustainable Energy Association

**Interested in starting a NESEA chapter?
Call us! 413-774-6051**

DONATIONS

Help advance our mission through your financial support of NESEA. Our 501(c)3 non-profit status makes your gift tax deductible. Contact our office at 413-774-6051 or at NESEA.ORG.

This brochure was written by NESEA members and the US DOE Office of Energy Efficiency and Renewable Energy.

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NESEA is the largest regional chapter of the American Solar Energy Society (ASES).