

# ENERGY STAR<sup>®</sup> Residential Water Heaters: Industry Guidelines

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## Purpose

The guidelines provide water heater manufacturers with direction for engaging in and fulfilling an ENERGY STAR partnership.

## Criteria

### **Product Classes**

The ENERGY STAR residential water heater program's product classes are based on the U.S. Department of Energy's (DOE) residential product classes defined in Title 10, Code of Federal Regulations, Chapter 2, Part 430, Subpart B, Appendix E.

<b>ENERGY STAR Residential Water Heater Product Classes</b>		
<b>Storage</b>	<b>Gas-fired</b>	A nominal input of 75,000 BTU/hour or less and a rated storage volume from 20 to 100 gallons.
	<b>Heat Pump</b>	A maximum current rating of 24 amperes, voltage no greater than 250 volts, and a transfer of thermal energy from one temperature to a higher temperature level for the purpose of heating water. Unit's heat pump must be integrated into the storage tank so it is one stand-alone unit.
<b>Tankless</b>	<b>Gas-fired</b>	A nominal input of over 50,000 BTU/hour up to 200,000 BTU/hour and a rated storage volume of 2 gallons or less.
<b>Solar</b>	<b>Gas or Electric</b>	OG-300 rating from the SRCC. Auxiliary water heater must conform to the DOE residential product classes.

### **Technology-Specific Criteria**

Electric, gas and solar water heaters are each categorically unique in relation to the efficiency they can achieve heating water. Thus, each residential water heater technology has its own unique set of criteria. Certain technologies have criteria that are exclusive.

ENERGY STAR Criteria	Energy Factor	First-Hour Rating	Warranty	Safety
GAS STORAGE (ENDING 8/31/2010)	EF $\geq$ 0.62	FHR $\geq$ 67 gallons per hour	Warranty $\geq$ 6 years on tank and parts	ANSI Z21.10.1/CSA 4.1
GAS STORAGE (BEGINNING 9/1/2010)	EF $\geq$ 0.67	FHR $\geq$ 67 gallons per hour	Warranty $\geq$ 6 years on tank and parts	ANSI Z21.10.1/CSA 4.1

ENERGY STAR Criteria	Energy Factor	Gallons-Per-Minute	Warranty	Safety
WHOLE-HOME GAS TANKLESS	EF $\geq$ 0.82	GPM $\geq$ 2.5 over a 77°F rise	Warranty $\geq$ 10 years on heat exchanger and 5 years on parts	ANSI Z21.10.1/CSA 4.1 or ANSI Z21.10.3/CSA 4.3, depending on burner size

ENERGY STAR Criteria	Energy Factor	First-Hour Rating	Warranty	Safety
GAS CONDENSING	EF $\geq$ 0.8	FHR $\geq$ 67 gallons per hour	Warranty $\geq$ 8 years on tank and parts	ANSI Z21.10.1/CSA 4.1

ENERGY STAR Criteria	Energy Factor	First-Hour Rating	Warranty	Safety
HEAT PUMP WATER HEATER	EF $\geq$ 2.0	FHR $\geq$ 50 gallons per hour	Warranty $\geq$ 6 years on tank and parts	UL 174 and UL 1995

ENERGY STAR Criteria	Solar Fraction	Warranty	Safety
SOLAR WATER HEATER	SF $\geq$ 0.5	Warranty $\geq$ 10 years on solar collector, 6 years on storage tank, 2 years on controls and 1 year for piping and parts.	OG-300 Certification from the SRCC

### Testing

Water heater manufacturers must self-test their equipment in an accredited facility according to the DOE test procedure defined in Title 10, Code of Federal Regulations, Chapter 11, Part 430, Subpart B or in accordance with OG-300 rating conditions modeled by the Solar Rating and Certification Corporation (SRCC).

### *Recovery Efficiency Calculation*

For thermostatically-controlled water heaters that do not completely recover or do not undergo a recovery cycle prior to the start of the second draw of the simulated-use test, the recovery efficiency shall be determined as specified in Section 11.2 of ASHRAE 118.2.

### Effective Date

The effective date of the criteria is January 1, 2009. A manufacturer has one year after signing the Partnership Agreement to ensure that the ENERGY STAR label appears directly on at least one ENERGY STAR qualified water heater model.

## **Future Criteria Revisions**

ENERGY STAR reserves the right to change the criteria should technological and/or market changes affect its usefulness to consumers, industry, or the environment. Keeping with current policy, industry/stakeholder discussions will impact revisions to the criteria.

## **Definitions**

- *Energy Factor (EF)*: Energy Factor is the ratio of useful energy output from the water heater to the total amount of energy delivered to the water heater. EF is determined by the DOE test procedure, Code of Federal Regulations, Title 10, Section 430.
- *Solar Fraction (SF)*: Solar Fraction is the energy delivered by the system divided by the electrical or gas energy put into the system. SF is determined by the rating conditions and model outlined in the OG-300 standard developed by the Solar Rating and Certification Corporation (SRCC).
- *First-Hour Rating (FHR)*: FHR is the amount of hot water in gallons a storage water heater can supply per hour (starting with a tank full of hot water).
- *Gallons per Minute (GPM)*: GPM is the amount of hot water (in gallons) a tankless water heater can supply per minute over a 77°F rise.
- *Manufacturer Limited Warranty*: Manufacturer limited warranty is an assurance by the partner that purchased system equipment and components are warranted for a certain required period-of-time, depending on the technology. The partner is to comply with the warranty requirements as standard for all ENERGY STAR qualified models of a given technology. ENERGY STAR can request the partner to submit warranty documentation at any time. The exact terms of the limited warranty, given the minimum requirements, shall be determined by the partner. Any use of the term “sealed system” refers to both tank and parts.

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## **Partnership**

Water heater manufacturers who wish to earn the ENERGY STAR label for their products must first become an ENERGY STAR residential water heater partner. It's the responsibility of manufacturers to review the [Partner Commitments](#) to understand the roles and responsibilities of a water heater manufacturer partner prior to committing to the program.

## **New Partners**

Water heater manufacturers who are not currently ENERGY STAR partners need to download the ENERGY STAR Manufacturer Partnership Agreement Packet, available on the [Manufacturers: Join](#) page or by submitting an e-mail request to [partnership@energystar.gov](mailto:partnership@energystar.gov).

The Partnership Agreement Packet file is a fillable PDF, so information can be entered electronically. Manufacturers should complete the following:

1. Enter organization information on pages three and five.
2. Enter organization's contact information on page seven.
3. Check the authorization box on page five of the Partnership Agreement.
4. Check the Residential Water Heaters box on page six of the Commitment Form.
5. Date the Commitment Form on page six.

Once manufacturers have completed the Partnership Agreement Packet, they should save their changes and e-mail the file to [partnership@energystar.gov](mailto:partnership@energystar.gov) for processing.

After the completed Partnership Agreement Packet is received, a welcome e-mail will soon follow. All contacts denoted as primary will receive credentials for logo access. Finally, a signed copy of the agreement will be returned to the partner.

### **Existing Partners**

Existing ENERGY STAR partners may expand their partnership to include the ENERGY STAR residential water heater program by filling out a new Commitment Form. ENERGY STAR Commitment Forms are available on the [Manufacturers: Join](#) page or by submitting an e-mail request to [partnership@energystar.gov](mailto:partnership@energystar.gov).

Once manufacturers have updated their Commitment Form, they should save and send it electronically to [partnership@energystar.gov](mailto:partnership@energystar.gov) for processing.

After the completed Commitment Form is received, a welcome e-mail will soon follow. Primary contacts will receive credentials for logo access via e-mail if they do not already have them.

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### **Product Submission**

Partners will submit qualified models via product submission form templates. Each submission form is specific to its technology. The forms are posted on the [Qualified Product Information](#) page and are also made available by the partner's program contact.

Partners are to add their model data to the submission form(s), save and send electronically to their program contact for database entry. Once entered, qualified models will appear on the ENERGY STAR website in the Qualified Product List for each specific water heating technology.

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## **Logo Usage**

Once the partnership agreement is received, the manufacturer's organization and contact information is entered into an online database. All partner contacts denoted as primary will receive web credentials for online access to logos. Logos are made available at: <http://www.energystar.gov/logos>. Primary contacts will also receive all e-mail updates concerning the ENERGY STAR residential water heater program.

Partners are to follow the [ENERGY STAR Logo-Use Guidelines](#).

DOE and EPA actively monitor proper use of the ENERGY STAR name and marks. The following explains the general course of action for addressing mark violations.

1. Anyone who misuses the marks will be contacted in writing or by telephone.
2. A reasonable amount of time will be given to correct the error(s) per DOE or EPA's discretion. The time frame will be dependent upon the medium in which the violation appeared and the severity of the violation.
3. Follow-up will be conducted to ensure that the error(s) has been corrected. Failure to make the required changes may result in termination of a stakeholder's participation in ENERGY STAR and/or legal action.

Partners are encouraged to correspond with their program contact if they would like a review of their logo usage in promotional materials.

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## **Web Linking Policy**

ENERGY STAR water heater partners are listed in the Manufacturer List on the right navigation bar of the water heater pages. Partners may have a link to their website in the Manufacturer List. However, they must first follow the [Web Linking Policy](#), which calls for:

1. The display of the ENERGY STAR partnership logo on the manufacturer's website.
2. A reciprocal link to the ENERGY STAR website ([www.energystar.gov](http://www.energystar.gov) or [www.energystar.gov/waterheaters](http://www.energystar.gov/waterheaters)), and
3. A brief description of the organization's participation in ENERGY STAR. For example, "ABC is a manufacturer of ENERGY STAR qualified water heaters".

Once a partner is in compliance with the Web Linking Policy, its primary contact should email his or her program contact to activate the link.

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## **Shipment Data**

ENERGY STAR water heater partners are required to provide unit shipment data to DOE as a part of their partnership commitments. Shipment data is used to determine the market penetration of ENERGY STAR qualified water heaters. Partners must submit the number of qualified units shipped by technology type as well as the number of overall water heater shipments. Additionally, DOE prefers to have shipment data according to the technology's efficiency metric (EF or SF), state shipped and market segment.

Partners are to submit the data for each calendar year to DOE's contractor, preferably in electronic format, no later than the end of the month of March. Partners can provide the data directly or through a third party, assuming the third party can meet DOE's needs. DOE will use the data only for program evaluation purposes and data will be closely controlled. All data and related information will be masked to protect the confidentiality of the partners.

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## **Awards**

Each year, DOE and the Environmental Protection Agency (EPA) honor organizations that have made outstanding contributions to protecting the environment through energy efficiency. ENERGY STAR award winners are recognized for their leadership, accomplishments, and commitment to the ENERGY STAR program.

### **Partner of the Year - Product Manufacturer**

This award recognizes ENERGY STAR partners who manufacture qualified products and have furthered the goals of ENERGY STAR through their active participation.

Applications are evaluated in two categories:

1. Product Qualification Efforts:
  - a. Number of ENERGY STAR qualified models/units.
  - b. Percentage of product line that is ENERGY STAR qualified.
  - c. Percentage of total sales or shipments from ENERGY STAR qualified products.
  - d. Availability of information concerning new ENERGY STAR products qualified or in development.
  - e. Innovation in product design for energy efficiency.
2. Accomplishments - Description of the partner's activities and accomplishments to support ENERGY STAR's objective to reduce greenhouse gas emissions through superior energy efficiency using the following channels:
  - a. Labeling efforts.

- b. Sales force and employee training.
- c. Sales and marketing, including co-marketing activities with retailers and/or utility/state efficiency program sponsors to demonstrate ENERGY STAR qualified products in exhibits, presentations, and other gatherings, and leadership of or participation in promotions.
- d. Consumer/end-user education, including community outreach activities, advertising, public relations efforts, and special events or promotions.
- e. Other efforts across ENERGY STAR that have been incorporated into company practices, such as participation or leadership in discussions of new or revised ENERGY STAR criteria, participation in the development of data tools, commitment to organization-wide facility energy improvements, procurement of energy-efficient and/or ENERGY STAR qualified products, participation in ENERGY STAR campaigns, and giving preference to ENERGY STAR labeled buildings when leasing space.

Partners who have been awarded the Partner of the Year distinction for multiple years and gone above and beyond the criteria needed to qualify for recognition are honored with the award for Sustained Excellence for Product Manufacturing.

Applications are made available on the [ENERGY STAR Awards](#) page or in a partner's My ENERGY STAR Account when the process re-opens each calendar year.

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