

Comments on Energy Star designations for Solar Thermal Water Heating Systems

Judy Kosovich, May 29 2007

My name is Judy Kosovich. I have long had an interest in energy and its effects on the environment. I am commenting in my capacity as the owner of a solar hot water system combined with a tankless gas hot water heater and as a consultant to the solar industry.

First, I would like to acknowledge DOE for its pivotal role in supporting development of solar thermal technologies in the 70's. When I learned that DOE was planning to apply Energy Star to solar thermal water heaters, my first reaction was "Great! Consumers rely on the Energy Star label to guide energy-saving purchases. This will help speed adoption." After having read the proposal and considered its possible ramifications, my reaction is quite different.

First, as a person who cares about the environment, my primary motivation for buying the solar thermal system and the tankless hot water heater was to reduce my fuel consumption. That I will someday recover my investment is nice, but that is not why I made these purchases. I think there are others like me. I think people look to Energy Star to save energy. They would probably care about your financial analysis, though it may not be the basis for their decision.

There are two ways to analyze the energy implications of a solar thermal water heating system. One way is as an independent energy collection system which, when combined with a PV-powered pump for circulation, requires no source of energy other than the sun. From a fossil fuel standpoint, any solar thermal system is therefore infinitely better than any Energy Star hot water heater. In reality, they are usually combined. So the other way to analyze the energy implications is as an energy collection system that leverages an ordinary hot water heater so that it greatly out-performs all conventional hot water heaters that have earned the Energy Star designation.

Two hypothetical analogies illustrate the point of giving solar thermal more deference.

- 1) After designating Energy Star lawnmowers powered by gasoline and electricity, DOE now turns to designating Energy Star push mowers.
- 2) After designating Energy Star clothes dryers, DOE now turns to designating Energy Star clotheslines.

Any clothesline or push mower saves far more fossil fuel than the competing Energy Star models, and so it is with solar thermal vs. natural gas or electric hot water heaters. Yes, I realize that my analogies are flawed because solar thermal is costly and clothesline and push mowers are not. The point is that we are dealing with very different products and if Energy Star must be applied in a certain way, maybe it should not be applied at all.

There are 2 additional points I would like to make.

1) The proposed criteria will limit Energy Star purchases to kits. Kits contain all the necessary components, but for best customer satisfaction, and sometimes for best performance, it is often better to custom-design each system. Some customers like the modern look of evacuated tubes, some prefer the unobtrusive glazed flat plate systems. Some don't need the extra efficiency. They have a large roof and wouldn't mind a little extra shading by more collectors. Some areas of the country have lots of cloudy days or very limited space and need evacuated tubes. In a situation where home-owner association rules called for unobtrusive collectors, glazed flat plate collectors trimmed in colors that match the roof may be required. Sub-optimal roof orientations or partial shading may dictate an extra collector compared to a kit.

2) Insolation and weather conditions vary greatly throughout the U.S. To make any Energy Star rating system meaningful, these variations would need to be taken into account. This will not be easy to do, nor easy to market.

There are some other aspects of solar thermal that deserve Energy Star attention, but in a way quite different than what DOE has proposed. The following are additional suggestions.

1) In order for a non-solar hot water heater of 50 gallons or more to have an Energy Star label, it should have an additional fitting on the tank so that it is solar-ready. In case fuel prices get higher or climate changes goals get more ambitious, retrofitting should be planned for.

2) All solar thermal collectors rated by the SRCC should be designated Energy Star and any system that uses such collectors should also be designated Energy Star. If DOE is going to apply the Energy Star label to solar thermal, then it should apply it to any system that does a decent job. They all do a much better job at saving fuel than conventional water heaters, how ever efficiently designed.

3) All PV-powered pumps for solar thermal systems would be designated Energy Star if they are guaranteed at least 10 years. It does not matter if the pump is efficient if it is completely solar powered.

Thank you for the opportunity to comment. Sincerely, Judy Kosovich (202) 257-9556