Proposed Water Heater Efficiency Standards Would Save Many Households More than $200 Each Year and Slash Climate Pollution

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New standards for home water heaters would shift sales away from outdated, inefficient technology. Beginning in 2029, models with the highest energy costs would no longer be sold.

Water heaters are the second-largest energy user in most homes. Yet most new models—whether electric or gas—use older, inefficient technology, contributing to large energy bills and greenhouse gas emissions.

Long-overdue Department of Energy (DOE) standards proposed in July would shift the market to modern technology. They would significantly reduce both overall costs for households and greenhouse gas emissions.

The standards set separate minimum efficiency levels for different types of water heaters, including electric tank water heaters and gas-fired tank water heaters (which each make up nearly half of new sales) as well as gas-fired instantaneous ("tankless") models. The proposed updates would strengthen the minimum efficiency level for each of these types, as well as less common ones, while ensuring that households save far more through reduced energy costs than any increase in purchase price.

SHIFTING ELECTRIC MODELS TO HEAT PUMPS

Most electric water heaters in the United States today use the same "electric resistance" technology that has been around for more than a century. Such models were widely commercialized beginning in the 1940s, but there's one problem: they use a lot of electricity. In fact, they draw about a quarter of a household's total electricity use, on average, according to federal data.

The proposed standards would shift most new electric tank models to a far more efficient technology: heat pump water heaters. These models can use less than half as much energy to heat the same amount of water to a given temperature.

A typical household buying a new electric tank model would save $238 on utility bills every year compared to one using an electric model today. Taking into account additional upfront costs, households would save more than $1,800 over the lifetime of the product thanks to the standards.

Heat pump water heaters are a proven technology. They have been used for decades and are the most popular type of electric water heater in Japan, and their sales are growing rapidly in parts of Europe. Yet many contractors in the United States still don't offer this super-efficient technology to customers.

Compared to electric resistance models, heat pump water heaters (also known as "hybrid water heaters") can deliver even more hot water over a short period of time. They generally include backup electric resistance elements to meet demand during periods of high use.

By mid-century, the standards would be cutting carbon dioxide emissions by an amount equivalent to those from 36 gas-fired power plants.

The proposed standards would maintain the existing efficiency levels for the smallest water heaters (35 gallons and below), including those designed for installation in small spaces, for which heat pump technology hasn't yet been introduced to the market.

Heat pump water heater purchasers would see their investment pay off in three years on average through dramatically reduced energy bills. And new tax incentives and rebates under the Inflation Reduction Act would let many households see even quicker payoffs.

CUTTING ENERGY WASTE IN GAS MODELS

Most of today's gas-fired water heaters similarly do not use the most efficient technologies. For gas-fired tank models, the proposed standards would reduce energy use by about 9% relative to models just meeting the current standards, saving consumers $19 annually. Manufacturers would be able to meet the standards by reducing heat losses up the flue when the water heater isn't firing. (DOE analysis found this to be the highest efficiency level for this product category that would ensure users save money overall.)

For gas tankless water heaters, the proposed standards would effectively require models to use condensing technology to capture more heat, saving about 13% of the energy used relative to the current standards and saving consumers $22 annually. More than half of new gas tankless water heaters sold already meet the proposed standard levels.

NEW STANDARDS LONG AWAITED

DOE hasn't updated residential water heater standards since 2010. By law, it was due to propose new standards (or determine that an update was not appropriate) by 2016. After a public comment period on the proposed rule, the department can prepare final standards. By law, the standards would take effect five years after DOE finalizes them.

The proposed standards are generally similar to recommendations submitted to DOE by a multi-stakeholder coalition of two of the largest water heater manufacturers (Bradford White and Rheem), energy efficiency organizations (American Council for an Energy-Efficient Economy, Appliance Standards Awareness Project, and Northwest Energy Efficiency Alliance), environmental advocates (Natural Resources Defense Council), and consumer advocates (Consumer Federation of America).

For more information, please contact Madeline Parker at mparker@standardsasap.org