



CELEBRATING
20 YEARS OF
ENERGY STAR



Product Retrospective: Clothes Washers

The promise was there, but the market was not. In the late 1990s, efficient horizontal-axis clothes washers, now known as “front loaders,” were estimated to use 40 percent of the energy and 60 percent of the water of a conventional washing machine. They were gaining in popularity in Europe but represented just two percent of the U.S. market, despite their introduction by several major manufacturers.¹ It took the small community of Bern, Kansas, population 210, to make resource-efficient clothes washers part of the national landscape.

Bern was chosen to participate in a cooperative venture between the U.S. Department of Energy (DOE) and Maytag Appliances to validate the performance and consumer acceptability of front-loading washing machines in a real-world setting. The town was selected because of its small size, community water supply issues, and participant willingness and enthusiasm. In exchange for participating, residents would receive Neptune horizontal-axis washing machines, courtesy of Maytag, that they could keep.²

A primary goal of the study was to collect data that would be helpful in moving the clothes-washer market toward higher efficiency options, with the ENERGY STAR program as a likely vehicle for market transformation. The study lasted five months and included rigorous pre- and post-wash measurements on load size, water use, energy use and cleaning satisfaction. It found that participating households used, on average, 38 percent less water and 58 percent less energy with the front loader. Across load weight, temperature settings and detergent and other additive choices, participants found the cleaning performance of the front-loading washers to be generally superior to that of their original machines, irrespective of age.³ DOE had the data it needed to launch development of an ENERGY STAR specification.

DOE, ENERGY STAR partners and other stakeholders agreed to an initial technology-neutral specification with an Energy Factor (EF) of 2.50, more than 100 percent better than the federal minimum energy conservation standard.⁴

Major manufacturers, including Maytag, Frigidaire and Miele, were quick to introduce qualifying products. Other manufacturers followed suit with a range of conventional and front-loading products that met the ENERGY STAR specification. Then it was time to tackle other market barriers: lack of awareness of efficient clothes washers and their performance benefits among consumers, and higher initial cost.

ENERGY STAR state and utility partners began educating their customers about the opportunity to save energy. They often coupled education with rebates for ENERGY STAR qualified clothes washers, to help reduce the initial cost difference between qualified and standard washers. The Consortium for Energy Efficiency, California investor-owned utilities, Northeast Energy Efficiency Partnerships and Northwest Energy Efficiency Alliance (NEEA) were particularly active in rallying utilities to align education and incentives to spread the word. For example, NEEA's ENERGY STAR Grimiest Soccer Team Contest invited 15,000 youth soccer coaches to submit photos of their

Some washers
clean more than just
clothes.

ENERGY STAR® labeled clothes washers use about 50 percent less water and energy than conventional washers. And less energy means burning less fossil fuels that contribute to smog, acid rain, and global climate change. Finally there's a washer that does more than clean clothes — it helps protect the environment. Look for the ENERGY STAR label.

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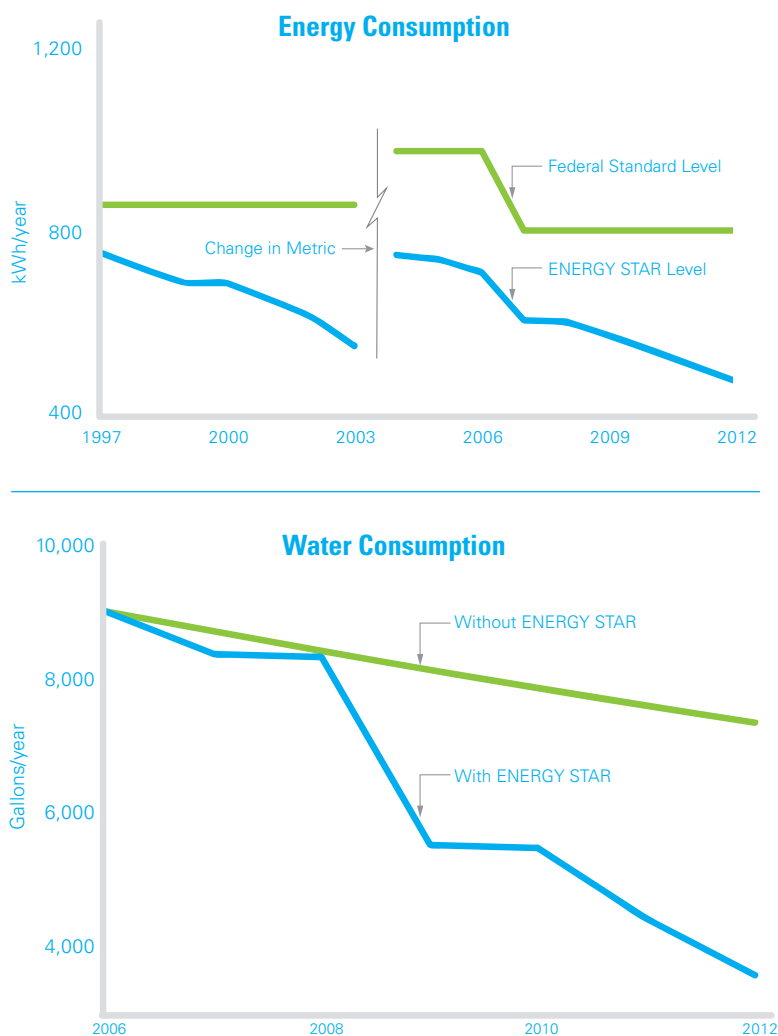
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teams at their grimmest. NEEA hosted high-profile clinics throughout the Northwest with U.S. Women's National Soccer Team celebrity Tiffeny Milbrett, challenging participants to "Get Dirty, Score Big, and Clean Up with ENERGY STAR."⁵

The Bern study pointed out the important link between energy and water savings—greater energy savings could be achieved in both drying and washing if the washing machine used less water and did a good job of wringing out excess water. In subsequent years, DOE introduced a water factor requirement and test procedure for clothes washers. ENERGY STAR criteria for clothes washers have been revised several times to respond to changing market conditions and to help ensure meaningful additional energy savings to consumers each time federal minimum efficiency standards change.

According to a national study by the U.S. Energy Information Agency, in 2009, 41 million households—36 percent of all U.S. households—had ENERGY STAR qualified clothes washers in their homes.⁶ Altogether, about 30 billion kilowatt-hours (kWh) and 110 trillion British thermal units (Btu) of energy have been saved, avoiding more than 25 million metric tons of greenhouse gas emissions.

The ENERGY STAR Difference: A Typical Clothes Washer*



Today, an ENERGY STAR clothes washer uses about 70 percent less energy and 75 percent less water than a standard washer used 20 years ago.
*3.46 cu ft., electric water heating, not including dryer energy.

ENDNOTES

¹ Tomlinson, J.J., and Rizzy, D.T. (1998). Bern Clotheswasher Final Report (ORNL/M-6382). Prepared by the Energy Division of Oak Ridge National Laboratory for the U.S. Department of Energy. p. 1.

² *Ibid.*, pp. 2-13.

³ *Ibid.*, pp. vii-viii.

⁴ The National Appliance Energy Conservation Act (NAECA) of 1987 established minimum efficiency standards for clothes washers. All clothes washers sold in the United States are required to meet the most current standard. **Source:** U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE). (2008). *History of Federal Appliance Standards*. Retrieved from http://www1.eere.energy.gov/buildings/appliance_standards/history.html.

⁵ Western Interstate Energy Board. (2001). Alliance's ENERGY STAR Resource-Efficient Clothes Washers (Horizontal Axis Washing Machines). Retrieved from <http://www.westgov.org/wieb/ap2forum/mar2001/horizwasher.htm>.

⁶ U.S. Energy Information Administration. (2011). *What's new in our home energy use?* From the Residential Energy Consumption Survey (RECS). Retrieved from <http://www.eia.gov/consumption/residential/reports/2009overview.cfm>.



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