U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Saving Energy and Money with **Appliance and Equipment Standards** in the United States

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Overview

Appliance and equipment efficiency standards have served as one of the nation's most effective policies for improving energy efficiency and saving consumers energy and money. Today, the U.S. Department of Energy's (DOE's) Appliance and Equipment Standards Program (Standards Program) covers more than 60 products, representing about 90% of home energy use, 60% of commercial building energy use, and over 20% of industrial energy use.

Standards implemented since 1987 saved American consumers $63 billion on their utility bills in 2015 alone, and have helped the United States avoid emissions of 2.6 billion tons of carbon dioxide (CO_2), which is equivalent to the annual CO_2 emissions from nearly 543 million automobiles.

Since 2009, the Obama Administration has issued 40 new or updated appliance standards across more than 45 products, which are projected to save consumers over $540 billion off their utility bills through 2030.[1] The energy savings from these standards—43.8 quads by 2030—is more than the energy used by all U.S. buildings over one year.

Climate Action Plan

To build upon the energy and environmental savings delivered to American consumers, the Administration set a goal in the President's Climate Action Plan announced in June 2013. Efficiency standards for appliances, commercial equipment, and federal buildings set in the first and second terms combined will reduce carbon pollution by at least 3 billion metric tons cumulatively by 2030—equivalent to nearly one-half of the carbon pollution from the entire U.S. energy sector for one year—while continuing to cut families' energy bills.

Since June 2013, DOE has finalized efficiency standards for 21 products, including: residential boilers, electric motors, general service fluorescent lamps (GSFLs), commercial air cooled air conditioners and heat pumps, and furnace fans. With these standards, DOE is more than three-fourths of the way to achieving the Climate Action Plan's carbon reduction goal of 3 billion metric tons. The direct final rule for Commercial Air Cooled Air Conditioners and Heat Pumps and Commercial Warm Air Furnaces standards, which was issued by DOE in December 2015, will save more energy than any other standard issued by DOE to date. The rule is estimated to save businesses $167 billion on utility bills while reducing carbon pollution by 885 million metric tons.

Consumer Benefits

The Standards Program has driven remarkable gains in the energy efficiency of household appliances and equipment, resulting in large energy bill savings.[2] For example, today, the typical new refrigerator uses one-quarter the energy than in 1973—despite offering 20% more storage capacity and being available at half the retail cost. Since 1990, additional efficiency gains in household appliances include the following:

- New clothes washers use 70% less energy
- New dishwashers use more than 40% less energy
- New air conditioners use about 50% less energy
- New furnaces use about 10% less energy

All told, these efficiency gains translate into large dollar savings. While the more efficient products may cost more at the time of sale, consumers save through lower energy bills year after year, and are more than compensated for any higher initial product costs. Today, a typical household saves about $320 per year off their energy bills as a result of standards, and as people replace their

appliances with newer models, they can expect to save nearly $460 annually by 2030.

National Benefits

The Program is highly effective — achieving high bang-for-the-buck energy savings. The national energy efficiency standards completed to date are expected to save 70 quadrillion British thermal units (quads) of energy by 2020 and will amount to 132 quads through 2030.

The cumulative utility bill savings to consumers from these standards are estimated to be more than $1 trillion by 2020 and grow to nearly $2 trillion through 2030.[3]

The environmental benefits are substantial, as well. Annual carbon dioxide savings will reach 300 million tons by 2020, and will grow to 7.3 billion tons by 2030.

Manufacturer Benefits

Federal energy efficiency standards benefit manufacturers as well. They reduce the regulatory burden on appliance and equipment manufacturers by pre-empting a potential patchwork of state standards with a single federal standard. This regulatory streamlining enhances industry competitiveness, profitability, and helps to protect and create jobs.

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Further, efficiency standards can help lower the costs of innovative energy efficient technologies by facilitating their entry into the market and providing economies of scale. Plus, the test procedures that underlay standards enhance the ability to test the performance of newer technologies. The result is higher efficiency products that are more widely available and more affordable to own.

The Appliance and Equipment Standards Program

The Appliance and Equipment Standards Program is authorized by Congress through several statutes—with the earliest in 1975— in part due to manufacturer interest in national solutions to a patchwork of state-by-state standards, which increase manufacturer costs and therefore costs to consumers. These solutions result in energy bill savings for consumers as the least-efficient product models become ineligible for sale in the United States. Consumers can spend these savings on goods and services other than utility bills, spurring the economy and creating jobs. The Standards Program includes a number of interrelated efforts:

- Development of test procedures
- Development of standards
- Enforcement of the standards
- Partner with Federal Trade Commission on the well-known Energy Guide labels on appliances
- Technical support for the ENERGY STAR® program.

DOE works in an open, transparent manner with stakeholders on these efforts.

[1] *Represents undiscounted utility bill savings in $2015. The value accumulates all savings through 2030.*

[2] *Data in this section are based on shipment-weighted efficiency data from the Association of Home Appliance Manufacturers for home appliances and the Air-Conditioning, Heating, and Refrigeration Institute.*

[3] *Represents undiscounted utility bill savings in $2015. The values accumulate all savings through 2020 and 2030, respectively.*