

# Energy efficiency standards for appliances should include upstream costs

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The U.S. Department of Energy should consider gradually changing its system of setting appliance energy-efficiency standards to a full-fuel-cycle measurement, which takes into account both the energy used to operate an appliance, as well as upstream energy costs -- energy consumed in producing and distributing fuels from coal, oil, and natural gas, and energy lost in generating and delivering electric power. This change would offer consumers more complete information on household energy consumption and its environmental impacts, says a new congressionally mandated report from the National Research Council.

Currently, DOE sets appliance efficiency standards using primarily "site" (or point-of-use) measurements, which reflect only the energy consumed to operate the appliance. Site measurements allow consumers to compare energy efficiency among appliances, but offer no information about other energy costs involved. For example, site measurements may indicate that, in the home, an electric water heater operates with 90 percent efficiency while a natural gas water heater operates with 65 percent efficiency. Full-fuel-cycle measurements would also take into account the upstream [energy costs](#) that are involved in providing either electricity or natural gas. Energy losses in the generation, transmission, and distribution of electricity can be as high as 70 percent to 75 percent, whereas losses incurred in the distribution of natural gas are only about 10 percent. Therefore, using full-fuel-cycle measurements, the [natural gas](#) water heater may be considered the more energy-efficient appliance.

According to the report, site measurements are appropriate when setting standards for appliances in the same class -- based on fuel type, technology, and capacity -- that use only one type of fuel. When considering appliances that use multiple fuel types (e.g., a heating system with a gas furnace and an electric fan) or comparing appliances that perform the same function (e.g., space cooling or water heating) but use different types of fuel, the full-fuel-cycle measurement would provide a more complete picture of [energy consumption](#).

Debate over this issue has been long-standing and was seen in the committee that wrote the report. The majority of the committee endorsed a gradual switch to full-fuel-cycle measurements as a way to provide more information to consumers and explicitly show the impact of energy use on the environment. However, two committee members dissented and instead felt that DOE should continue to use primarily site measures when setting energy-efficiency standards. According to these dissenting opinions, transitioning to a full-fuel-cycle measurement would not necessarily help consumers reduce their energy consumption -- the goal of the appliance efficiency program -- and would inevitably favor one fuel, which is a matter of national [energy](#) policy, not the appliance efficiency program.

Source: National Academy of Sciences ([news](#) : [web](#))

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