



American Council for an Energy-Efficient Economy
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CRITIQUE OF THE CATO INSTITUTE STUDY
THE HIGH COSTS OF FEDERAL ENERGY EFFICIENCY STANDARDS FOR RESIDENTIAL APPLIANCES
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The CATO study *The High Costs of Federal Energy Efficiency Standards* was written by a long-standing critic of the appliance standards program and the author's bias is evident. More importantly, the paper contains several serious errors and also many half-truths. In this short paper, I elaborate on a few of these.

The CATO paper purports to demonstrate several conclusions. These conclusions, and a critique of these conclusions, are as follows.

CATO: Calculations by Lawrence Berkeley National Laboratory (LBNL) of the costs and benefits of standards rely on an underestimation of energy efficiency gains that would occur absent government mandates.

Response: CATO mostly relies on arguments about and limited analyses of 1960s through 1980s data, before federal standards took effect.¹ In the 1960s, efficiency improvements were driven fully by market forces—there were no standards. In the 1970s and 1980s, efficiency improvements were driven by a mix of market forces, utility energy efficiency programs, and standards in California and other leading states. The CATO study (and the Newell, Jaffe, and Stavins 1998 report that underlies it) ignores standards established by California and other states, despite the fact that according to CATO's data, refrigerator energy use declined 200 kWh/unit (nearly 20%) in 1987, the year a new California efficiency standard took effect. For other products, state standards (and the generally modest initial federal standards that primarily took effect in 1990) had a smaller effect. It is possible that for some of the early product standards, the LBNL analyses may have modestly overestimated benefits. However, much of the savings from standards is occurring from standards set in the 1990s. According to data on home appliance energy use from Table 2 in Sutherland's paper, appliance energy use was generally stagnant during the 1990s, not showing efficiency improvements in the absence of standards as Sutherland asserts. According to Sutherland's data, the years with significant changes in appliance efficiency include a drop in refrigerator energy use of 161 kWh (20%) in 1993, a drop in refrigerator energy use of 138 kWh (20%) in 2001, a drop in freezer energy use of 137 kWh (23%) in 1993, and more modest drops in room air conditioner energy use in 2000/2001 (a reduction of 25 kWh/unit) and freezer energy use in 2001 (a reduction of 34 kWh). All of these changes took place in the year standards took effect! Absent these

¹ The primary source for the CATO paper was a 1998 paper by Newell, Jaffe, and Stavins that analyzes data on room air conditioners over the 1958–1993 period, data on central air conditioners over the 1967–1988 period, and data on water heaters over the 1962–1993 period (Newell, Richard, Adam Jaffe, and Robert Stavins, 1998, *The Induced Innovation Hypothesis and Energy-Saving Technological Change*, Discussion Paper 98-12, Washington, D.C.: Resources for the Future).

standard-induced changes, efficiency was stagnant in the 1990s, hardly evidence that half of the efficiency gains attributable to standards are market induced as Sutherland claims but inadequately supports. Sutherland also ignores data for central air conditioners and furnaces that show large efficiency gains in 1992 when standards took effect (e.g., approximately 9% reductions in central air conditioner and furnace energy use), but otherwise efficiency levels have scarcely changed.

CATO: LBNL also uses an unrealistically low consumer discount rate to calculate the value of future energy savings.

Response: LBNL generally uses a real discount rate of 7%, which is based on the weighted average consumer cost of capital (e.g., a mix of savings, home equity loans, and credit card purchases). Sutherland recommends a discount rate of 21–28% based on empirical studies showing that these values are implicitly assumed by consumers when they make purchases. Arguments for use of implicit discount rates have been made by some economists and business interests for more than a decade and rest on the assumption that markets are functioning properly. However, perfect markets exist only in textbooks and thus use of implicit discount rates has been repeatedly rejected by DOE and the federal courts. As the Federal Court of Appeals said in a 1985 decision:

[T]he fact that consumers demand short payback periods was itself a major cause of the market failure that Congress hoped to correct. DOE cannot logically reject design options because consumers would not in the absence of standards buy appliances including those design options, when the entire point of a mandatory program was to change consumer behavior.²

The court then went on to reject DOE's use of a 10% discount rate, let alone a rate of more than 20% as Sutherland proposes.

CATO: Correction of these errors will actually lead to a conclusion that the program will cost consumers a net \$46–55 billion through 2050.

Response: This argument assumes that benefits are reduced by 50% relative to the LBNL estimates, that costs are not reduced at all, and that implicit discount rates of 21–28% are used. However, the assumption that benefits are reduced but costs are not reduced is an outright error. If Sutherland assumes that the market accounts for half of the benefit, the market will also account for half of the costs (if not more than half of the costs, since efficiency standards tend to make efficient products commodity products, driving down costs relative to the pre-standard marketplace³). As noted above, Sutherland's 50% discount on LBNL's calculated benefits is wishful thinking on his part, and the use of implicit discount rates is contrary to the law. Still, if we want to be extremely conservative, we could reduce the LBNL savings estimates by 20% (and also reduce costs by 20% as discussed above), and use a 14% real discount rate (double what DOE assumes and essentially assuming that all appliance purchases are paid by credit card and the credit card is never paid up), then we could figure that according to Sutherland's Table 3, the net present value of appliance standards is about

² 768 F.2d 1355, 247 U.S.App.D.C. 340, U.S. Court of Appeals, District of Columbia Circuit, 1985, "NRDC v. Herrington."

³ For a discussion of this issue, see Nadel, Steven, 2002, "Appliance and Equipment Efficiency Standards," *Annual Review of Energy* 27, Palo Alto, Calif.: Annual Reviews.

\$26 billion—a respectable outcome, particularly given the conservative assumptions used. Furthermore, if we're talking about correcting the LBNL analysis, recent studies have shown that the actual costs of standards have been significantly lower than what LBNL and DOE estimated when the standards were set,⁴ which increases net benefits significantly (e.g., if costs are overestimated by 50%, net benefits with the conservative assumptions discussed above increase to \$73 billion).

CATO: The program's costs are borne disproportionately by low-income households.

Response: This argument is predicated on the assumption that low-income households have higher discount rates than higher-income households. However, in making the claim that low-income households are hit particularly hard by the modestly higher costs of more efficient appliances, Sutherland ignores two critical points. First, the majority of low-income households rent, and hence it is often the landlords who purchase the appliances and not the tenants.⁵ Second, if low-income people buy appliances, they often buy on the used appliance market, where costs are reduced since equipment is partly depreciated. Given these factors, it is a rare low-income household who will be hurt by efficient appliances, but instead many gain because appliance standards reduce the cost of the more efficient appliances relative to having no standards, and eventually these more efficient appliances trickle down to even the poorest of households. As a result, most of the organizations that work with low-income households generally support strong appliance standards.⁶

⁴ See, for example, ACEEE, 2002, "ACEEE Comments on *Draft Engineering Analysis, Furnaces and Boilers Rulemaking*," submitted to DOE Oct. 14, Washington, D.C.: American Council for an Energy-Efficient Economy.

⁵ According to the 1995 American Housing Survey in the United States, 60% of households below the poverty line rent. U.S. Census Bureau, 1998, *Statistical Abstract of the U.S.: 1998*, Washington, D.C.: U.S. Government Printing Office.

⁶ See, for example Harak, Charles, 2001, "Letter of Sept. 6 to DOE re: Energy Efficiency Standards for Central Air Conditioners and Heat Pumps," Boston, Mass.: National Consumer Law Center.