



American Council for an Energy-Efficient Economy

ROLE OF ENERGY EFFICIENCY IN CLIMATE POLICY

May 2008

Efficiency has enormous potential to reduce greenhouse gas emissions. Provisions to tap this resource must be central to climate policy to get the needed reductions, and to get them as quickly and cheaply as possible. In recent decades, efficiency has done more to meet growing demand for services

delivered by energy than all new supply solutions combined (see Figure 1), and has done so without producing any greenhouse gas emissions.

Yet we have used only a fraction of efficiency's potential. Figure 2 shows many of the technologies available to reduce greenhouse gas emissions, plotting abatement potential against full-life costs. It displays in particular the large contribution that could be made by efficiency technologies whose lifetime energy savings in dollars exceed their upfront costs.

Figure 1. U.S. Energy Use in Relation to GDP

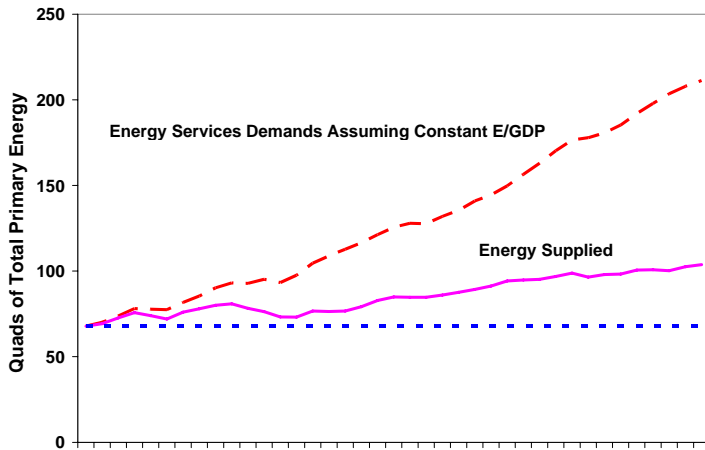
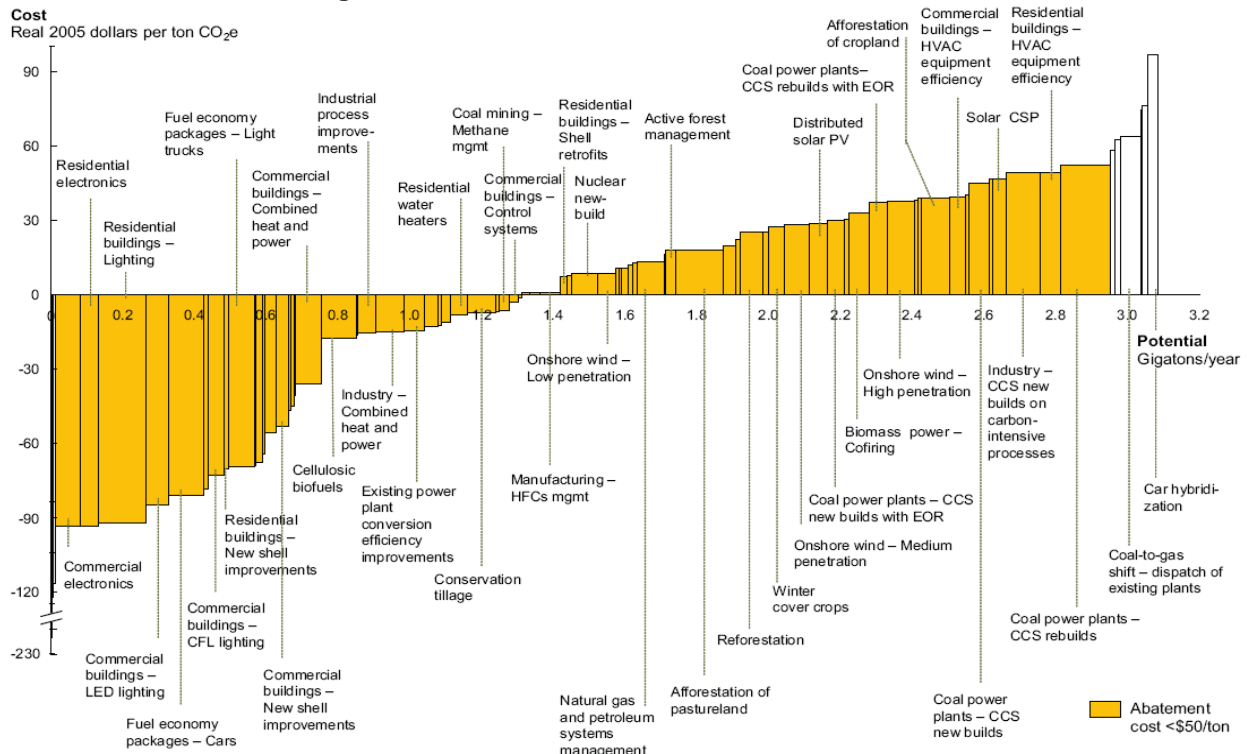
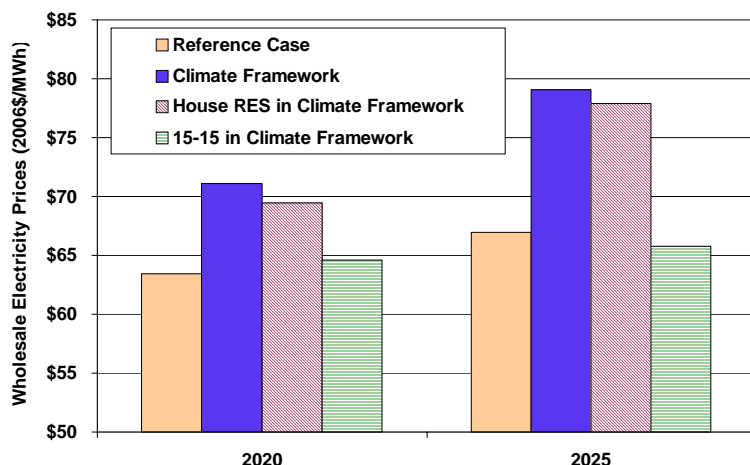


Figure 2. Greenhouse Gas Abatement Cost Curve



Source: McKinsey analysis

Figure 3. Wholesale Electricity Prices in Various Scenarios



Source: ACEEE

Note: "House RES" is the combined energy efficiency and renewable energy portfolio standard passed by the House of Representatives in late 2007. "15-15" is a 15% energy efficiency and 15% renewable energy requirement in 2025 with interim targets in earlier years.

Energy efficiency saves money, not only by reducing consumption, but also by changing the demand-supply balance, thereby bringing down energy prices. In fact, in the context of climate policy, efficiency may serve to offset the higher energy prices resulting from a cap-and-trade system (see Figure 3).

Thus taking advantage of efficiency opportunities can go a long way towards meeting greenhouse gas emissions reduction targets and can do so at net savings to the economy. Many efficiency resources can be tapped quickly, another crucial feature of their contribution to addressing climate change. For all these reasons, efficiency should be the centerpiece of U.S. climate policy.

PRINCIPLES FOR EFFECTIVELY INCLUDING ENERGY EFFICIENCY IN CLIMATE POLICY

The inclusion of specific energy efficiency policies in climate legislation is essential to realizing efficiency's potential to reduce emissions. Utility energy efficiency targets, appliance and vehicle standards, building codes, and land use planning inducements should all be among the basic elements of any federal climate bill today.

A cap-and-trade program alone cannot substitute for these policies. Given the low price elasticity of the demand for energy, price increases resulting from a carbon cap will have very little effect on energy consumption. This inelasticity follows from persistent market barriers to efficiency, notably the principal-agent problem (wherein homebuilders, landlords, and other agents fail to make efficiency investments on behalf of the ultimate energy bill payers) and information costs (wherein efficiency-purchase decisions are too small to support the economic analysis needed to make the optimal choice). Furthermore, covered sources in cap-and-trade programs as proposed in current legislation are energy producers, who have little ability or incentive to promote end-use energy efficiency directly. For example, fuel producers and importers, who are the covered sources in the transportation sector, do not influence the fuel economy of vehicles or how much motorists drive.

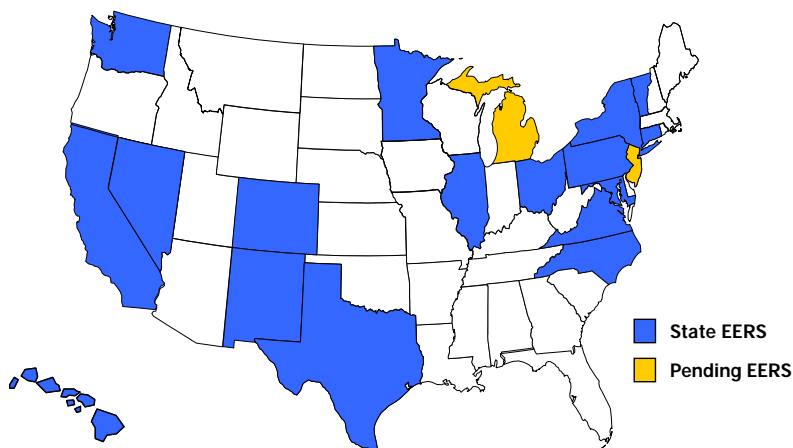
Nonetheless, a cap-and-trade program can be designed to yield substantial efficiency improvements, through strategic allocation of carbon allowances or auction revenues. In general terms, this means investing in targeted programs to overcome market barriers to efficiency, or using allowances to incentivize state or municipal adoption of codes and standards. If chosen properly, these allocations would lead to cost-effective emissions reductions, in addition to delivering the broader economic benefits discussed above.

SPECIFIC POLICY RECOMMENDATIONS FOR THE CURRENT LEGISLATIVE DISCUSSION

With regard to the climate legislation currently under consideration, ACEEE makes the following policy recommendations.

Utility Sector Policies: Some 17 states (see Figure 4) and three European Union nations have instituted *energy efficiency resource standards* (EERS), which set numerical energy savings targets for utilities to meet through customer efficiency investments, combined heat and power, and other efficiency measures. A federal climate change bill should include a federal EERS that would start with modest savings and ramp-up over approximately 5 years to 1% savings per year, in order to establish a national floor, which states would be free to exceed.

Figure 4. States with Energy Efficiency Resource Standards



As an alternative or complement to a federal EERS, emissions allowances could be allocated to the utilities and states that operate efficiency programs, based on the energy the programs save. Allowances could then be sold by utilities and states to fund future year programs. In the first few years, some allowances could be allocated by energy sales, in order to provide a source of funding to start programs; but after a few years, allocations should be based strictly on results achieved.

Building Codes: New construction markets are among the most severely affected by market barriers, as builders are not motivated to invest the extra design time and capital to optimize energy efficiency for a building's lifecycle. A climate bill should award allowances to states based on energy savings from building codes, relative to a defined base (e.g., average construction practices in 2008). The Administrator would establish criteria for estimating savings, based on the stringency of the code, and the results of periodic sample surveys conducted by states on how closely new buildings conform to code requirements. In the early years, allowances could be given to states based strictly on code adoption.

Appliance and Vehicle Efficiency Standards: These have been very effective in the U.S. and should continue to be upgraded and expanded. The Lieberman-Warner bill includes several equipment standards, but most of these were also included in the Energy Independence and Security Act of 2007. An updated set of efficiency standards should be inserted into the bill.*

Policies to Reduce Vehicle Miles Traveled: Without measures to reduce vehicle miles traveled, climate policy will fall short of achieving the greenhouse gas reductions needed from the transportation sector. This remains true taking into account the Low-Carbon Fuel Standard in the Lieberman-Warner bill requiring a 10% reduction in fuels' carbon content, as well as the CAFE standards enacted in the Energy Independence and Security Act of 2007. As in the power sector, states should be required to set and meet targets for reductions in transportation energy demand. In a cap-and-trade program, states achieving reductions in vehicle miles per capita should receive allocations to fund programs to

* ACEEE plans to work with industry to develop an updated set of efficiency standards by the end of 2008.

promote mixed-use infill or transit-oriented development and incentives for pay-as-you-drive insurance, parking cash-out, or car-sharing programs. Because land use planning is largely a local function, states should be required to pass through a large percentage of their allocations to local government for the purpose of updating rules for development, such as zoning codes, parking requirements, site review procedures, and street design standards.

Low-Income Weatherization: Low-income consumers pay a much higher portion of their income on energy than higher-income consumers, and these consumers have been hit particularly hard by recent energy price increases. Any price increases due to climate change legislation will also disproportionately affect low-income households. We support allocating a significant number of allowances to states to fund a large expansion of the Weatherization Assistance Program and other low-income energy efficiency programs. These allocations should be “front-ended” in the early years of the climate change program, in order to weatherize as many homes as possible in the initial years of the program. Such front-loading will help to cushion low-income households from longer-term changes in energy markets. We believe that allowances allocated to assist low-income customers should emphasize energy efficiency investments, since these reduce energy use and costs for many years, unlike fuel assistance funds, which only help pay bills for a single year.

Research and Development: In order to meet long-term emissions targets, many new efficient and low-carbon technologies will need to be developed. Lieberman-Warner allocates a substantial number of emissions allowances to be auctioned off to support a variety of R&D activities. We support allocating a significant number of allowances to fund R&D that can unlock new ways to reduce energy use and greenhouse gas emissions. Allowances should go only to research and dissemination of technologies that can reduce greenhouse gas emissions, including new energy efficiency technologies.

Innovative National Energy Efficiency Programs: While we believe that the vast majority of energy efficiency efforts will be implemented by states, local governments and utilities, a mechanism should be established to allow innovative national-level efficiency efforts, based on competitive procurements. Potential participants in such procurements could be equipment manufacturers, large national retailers, energy service companies, and large national property owners and managers. National programs would need to cover many states and be designed so that incentives provided for national level savings do not overlap with savings that receive incentives at the state or utility level.