Center on Budget and Policy Priorities

POLICY BASICS
Policies to Reduce Greenhouse Gas Emissions

- Both cap and trade and a carbon tax create incentives to conserve energy, improve energy efficiency, and adopt clean-energy technologies.

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Cap and trade and its close cousin a carbon tax are the approaches that most economists favor for reducing greenhouse gas emissions. These market-based approaches work by creating incentives for businesses and households to conserve energy, improve energy efficiency, and adopt clean-energy technologies — without prescribing the precise actions they should take. A market-based approach that "puts a price on carbon" is likely to be more cost-effective (i.e., achieve a given emissions target at a lower cost) than the traditional "command-and-control" approach of government regulation.

California and the several northeastern states forming the Regional Greenhouse Gas Initiative have each already implemented a regional cap-and-trade system. In addition, the European Union has operated a cap-and-trade system since 2005. The U.S. House passed a cap-and-trade bill in 2009 (the American Clean Energy and Security Act, known as Waxman-Markey after its sponsors), but the Senate did not.

In the absence of congressional action, the Environmental Protection Agency (EPA) has stepped in to regulate greenhouse gases in the electricity sector under the Clean Air Act. Its Clean Power Plan (CPP) sets state-by-state emissions reduction targets, and states are beginning to develop plans for doing so.

How Does Cap and Trade Work?

Under cap and trade, lawmakers establish a limit (or "cap") on the overall amount of greenhouse gases — mainly carbon dioxide from the burning of fossil fuels — that can be emitted each year. The cap might be relatively loose in the early years as the economy begins to adjust, but it ultimately must become very tight to achieve the emissions reductions scientists say are needed to control global warming.

To ensure compliance with the cap, the government would require the firms that the cap covers to hold government-issued permits (or "allowances") for those emissions. Lawmakers would decide which entities were responsible for which emissions. For example, they could assign accountability for the carbon dioxide that coal-powered electricity plants generate to the companies that own the power plants or to the coal mining operations that provide the coal. Similarly, they could assign accountability for the emissions that result from the burning of transportation fuels to oil refiners or to oil producers and importers.

The government could initially auction off emissions allowances to the highest bidder or allocate them for free, either to firms that need them or, as in the 2009 House bill, to entities that would then sell them to firms that need them and use the proceeds to fund various public purposes. Subsequent to the initial allocation, firms that can reduce their emissions cost-effectively could to sell excess allowances to

Policy Basics is a series of brief background reports on issues related to budgets, taxes, and government assistance programs.

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other firms that find it particularly expensive to reduce their emissions.

Regardless of how the allowances are initially allocated, they would end up with the firms that most need them. Competition for allowances would drive the price up sufficiently to bring the demand for allowances down to the available (capped) supply. The firms required to hold allowances would pass the cost of acquiring them on to their customers.

By "putting a price on carbon," cap and trade would encourage businesses and households to look for ways to cut their fossil-fuel energy costs. That would reduce the demand for fossil fuels without the government needing to decide how to achieve that reduction.

Differences Among Cap and Trade, Carbon Tax, and Regulatory Approach

Cap and trade and a carbon tax are alternative ways to use market incentives to reduce emissions. Cap and trade specifies the amount of allowable emissions, while leaving the cost of reducing emissions to that level to be determined in the marketplace. If analysts underestimate how difficult it will be for businesses and households to adapt to higher prices for carbon-based energy, the cost (and hence the price of allowances) will turn out to be higher than anticipated, and vice versa.

A carbon tax is the obverse of cap and trade: rather than fixing the amount of allowable emissions, it specifies their price. Firms covered by the cap would weigh the cost of reducing their emissions against the tax they would pay if they kept emitting at their present level. If analysts underestimate how costly it will be for businesses and households to reduce their emissions, the amount of emissions reduction will turn out to be smaller than anticipated, and vice versa.

Put another way, if reducing emissions proves harder than analysts expect, the result under cap and trade would be higher compliance costs and less production of other valued goods and services, while the result under a carbon tax would be less emissions reduction and greater risk of damage from global warming. Policymakers deciding between these two market-based approaches must weigh those potential outcomes.

A rigid EPA rulemaking approach that tells firms how much they need to reduce their emissions and prescribes how to do it would likely be far less cost-effective than a market-based approach because it would discourage technological innovation and provide no financial incentive for firms to reduce emissions below their required level. The CPP is not that rigid; it allows states to adopt carbon pricing policies if they wish. Not all states will do so, however, and the CPP covers only electricity, so it lacks the full scope for cost-effectiveness of a comprehensive carbon-pricing policy covering all emissions sources.

Economists recognize that "market failures" can inhibit cost-effective investments in energy efficiency or clean-energy alternatives even when there is a price on carbon. Government policies that effectively address these market failures, such as investments in research on new technologies, can bring down the cost of meeting an emissions cap (or increase the reductions achieved under a carbon tax).

Cap and trade specifies the *amount* of allowable emissions, while letting the market determine the cost of reducing them. A carbon tax, in contrast, specifies the *price* of allowable emissions.