



Creating a Cap and Trade Program to Reduce Greenhouse Gas Emissions

Creation of a greenhouse gas cap and trade program is being discussed across the country as a way to address climate change. This paper outlines some of the basics of cap and trade.

What is a Cap and Trade program?

A cap and trade program is a way to reduce pollution using market forces to achieve cost-effective environmental protection.

The basics of cap and trade are straightforward:

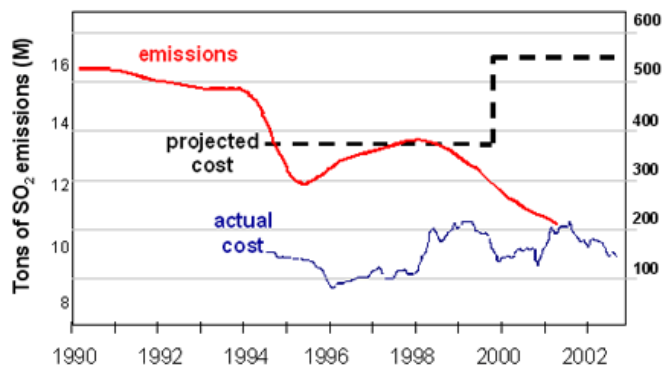
- The government sets the **cap** on air pollutant emissions. The cap can be phased in and lowered over time, as needed, to achieve the reduction outcomes needed.
- Companies then buy and sell -- **trade** -- credit that allows them to emit a particular pollutant. In some cases, companies will buy credits to cover the amount of emissions they have, and in other cases, the company will reduce its emissions. Some companies will reduce emissions below their amount of credit and sell the extra credits, offsetting any costs they incurred to make the reductions.

Does cap and trade work?

As part of the Clean Air Act Amendments of 1990, a cap and trade program was designed, tested, and proven as a successful tool for controlling Acid Rain (Sulfur dioxide) air pollution. The Economist magazine called the Acid Rain cap and trade program “probably the greatest green success story of the past decade”. (July 6, 2002)

Outcomes of the Acid Rain cap and trade program included:

- The expected market price for SO₂ allowances \$579-\$1,935 per ton of SO₂; the actual market price as of January 2003 was \$150 per ton.
- In the 1990s, the U.S. acid rain cap and trade program **achieved 100% compliance in reducing sulfur dioxide emissions**. In fact, power plants participating in the program reduced SO₂ emissions 22% - 7.3 million tons - below mandated levels.
- Before the launch of the program, cost estimates had ranged from \$3-\$25 billion per year. After the first two years of the program, the costs were around \$0.8 billion per year. The long-term costs of the program are expected to be around \$1.0-\$1.4 billion per year, far below early projections



Why does cap and trade work?

Cap and trade programs turn pollution reductions into marketable assets. By giving pollution reductions a value in the market place, cap and trade promotes technological and process innovations that reduce pollution down to or beyond required levels. New ideas become bankable. And these new ideas don't have to be new technologies. UPS estimated it has saved about 28 million drive miles, or about 3 million gallons of gasoline and an estimated 31,000 metric tons of carbon dioxide by eliminating left hand turns in many of its routes.

What are the elements of a cap and trade program?

A mandatory emissions cap. This is the limit on the total tons of emissions that can be emitted. It provides the standard by which environmental progress is measured, and it gives the units of pollutants traded market value. If the cap didn't result in real reductions, the pollutant would not have any market value.

A number of allowances equal to the cap. Government can allocate the credits to emitters in a number of ways, but the total number of allowances needs to equal the cap to make the program work. Emitters can then buy and sell allowances to meet their needs, so long as they have allowances equal to their emissions when government checks compliance. In the case of a carbon dioxide cap and trade program, each allowance (or credit) gives the owner of the allowance the right to emit one ton of carbon in a given year.

Accurate measurement and reporting. At the end of each compliance period (e.g. 3 years), each source must hold a number of allowances equal to its tons of emissions for that period. Measurement and reporting of the emissions must be transparent and accurate.

Appropriate enforcement. To ensure confidence in the market so that carbon has value and innovation occurs to reduce carbon, the cap must be real. All elements of the program – ensuring emissions do not exceed the cap, that sources have sufficient allocations to cover their emissions, that reporting is accurate – must be backed up by appropriate enforcement mechanisms.

How is cap and trade different from a tax?

Cap and trade sets the limit for emissions and lets the market work out the costs of hitting that limit. A tax sets a price for emissions and lets the market work out how much of a reduction in emissions will happen. Both can work if designed and implemented properly, but the challenges are different. A tax provides price stability for those who will pay it, but the environmental benefit is not assured because emissions will not fall if people are willing to pay higher costs. Taxes at the rate needed to send the price signal needed to reduce carbon and spur reduction innovations are difficult to put in place and adjust over time. Cap and trade provides certainty of environmental performance but the costs are uncertain and will vary over time. It may be easier to put in place but more challenging to implement.

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