



Center for
Clean Air Policy
Dialogue. Insight. Solutions.

Cap & Trade Policy

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About the Center for Clean Air Policy (CCAP)

- Based in Washington, D.C. and Brussels, Belgium
- Committed to advancing pragmatic and cost-effective climate and air quality policy through analysis, dialogue, and education
- Involved in designing and analyzing climate programs in California, New York, Connecticut, Maine and in key developing countries (China, India, Brazil, Mexico)
- Helped design the E.U. CO₂ emissions trading program
- Running multi-stakeholder dialogues in the U.S. the E.U. and with 30 key countries negotiating the global climate regime after the Kyoto agreement expires in 2012 to find practical climate policy solutions

CCAP's Role in U.S. Climate Policy

Climate Policy Initiative Overview

- A collaborative dialogue with leading companies, states and environmental organizations on a new national U.S. climate policy.
- Initiative provides an off-the-record forum for the necessary discussions to advance a comprehensive national climate policy solution.

Goals of the Initiative:

- 1) Educate key industry and government officials on the scope of the climate problem; and
- 2) Develop a set of pragmatic near-term and longer-term mitigation and adaptation solutions for climate change in the United States.

Outcome:

The analytical work and policy ideas developed can be used by participants to craft an effective and politically viable national climate strategy.

Goals of Today's Briefing

- Help you understand the key features of a Cap and Trade Program
- Help you understand why those features matter
- Begin to help you understand how the features interact and how those interactions affect both policy and politics.
- Shed light on what kinds of arguments you will hear in favor of one approach or another

Overview of Presentation

- The basics of cap and trade
- Overview of cap options
 - » Where to regulate? Upstream, downstream or both (hybrid)?
- What are offsets and why are they significant?
- Options for allocating a cap to emission sources
 - » Auction or free?
 - » Impacts -- economy-wide costs, avoiding windfall profits, and who wins and who loses
- Methods to control prices -- escape valve and other options
- European Union's recent trading experience
- Conclusions

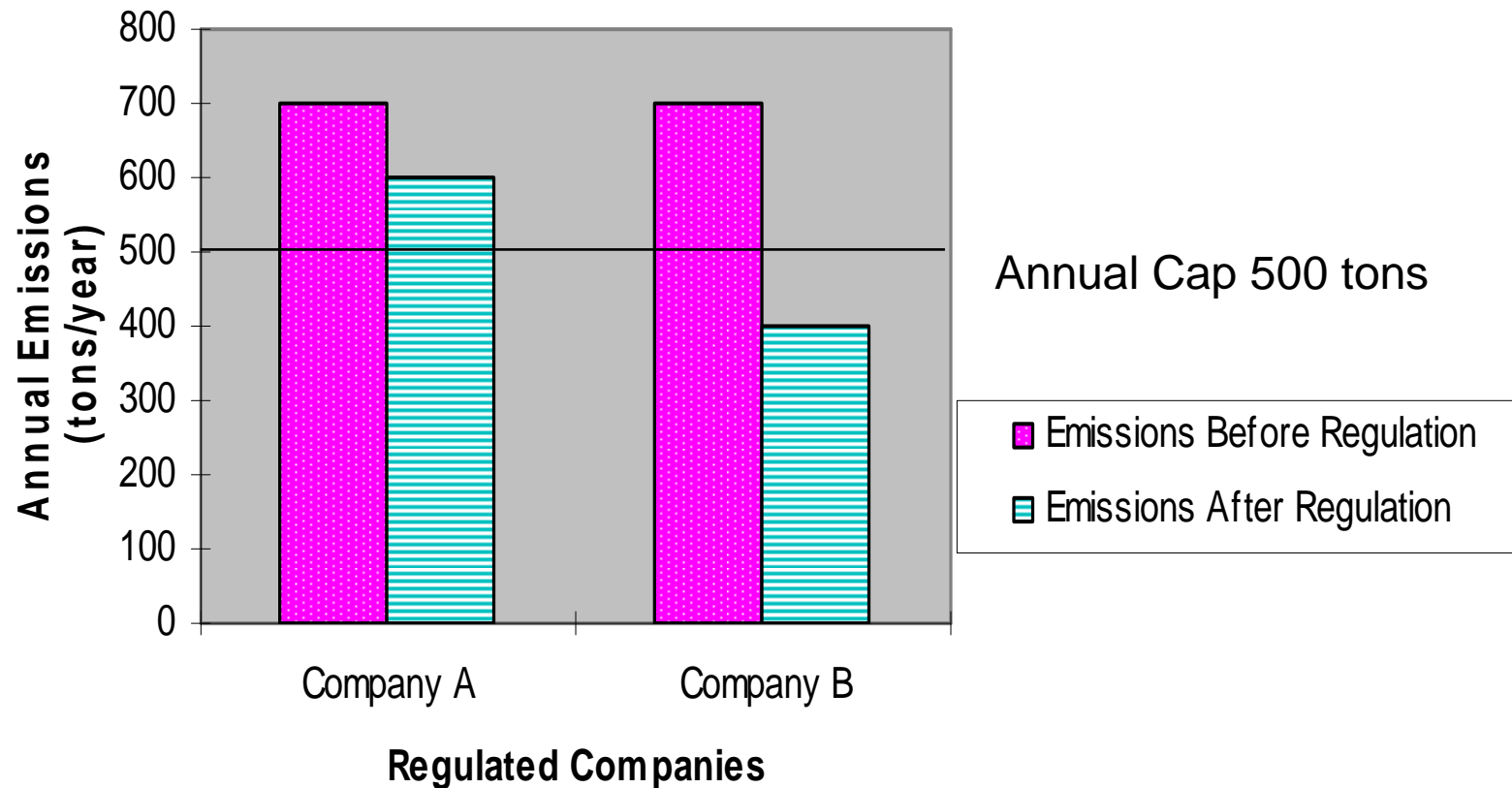
Take Home Messages

- Many trading options are possible and have been tested in various settings
 - » Acid Rain trading under the Clean Air Act is the model of success
- Trading programs solve some problems but usually need to be linked with other policies to be most effective and address market imperfections and barriers
- Companies will get emissions allowances for free or by buying them at auction. The value of these allowances is significant (the low end is \$50 billion/year).

Take Home Messages

- Who receives those allowances or auction revenues is key to passing a bill
- It only requires a small portion of allowances to hold shareholders of energy companies harmless from economic losses
- The remaining allowances are available for a wide variety of other purposes including:
 - » Transition assistance for communities and workers;
 - » Incentives for advancing near commercial & advanced step-change technologies;
 - » Low income assistance; and
 - » Incentives for automakers or transit.

Simple Cap & Trade Schematic



How Does Cap & Trade Work?

- At the end of the compliance period (usually a year), the company must have allowances equal to its emissions during that year.
- If the company has insufficient allowances, it receives an automatic financial penalty and it must make up for the shortfall the following year.
 - The penalty is usually set much higher than the prevailing market price of allowances.
 - There has never been a penalty in the Acid Rain Program because there has been 100% compliance.

Cap & Trade: Where to Regulate?

Upstream Approach

Upstream Approach:

- » Cap is on primary fossil fuel distributors (e.g., oil refiners; gas well-head; coal mine)
- » Allowances based on GHG emissions embodied in fuels sold
- » Sends a pure price signal to all fossil fuel consumers

Pros:

- » Wide Coverage: price signal reaches virtually all fossil fuel use and GHG emissions; including consumers like you and me
- » Administrative Feasibility: fewer industries and regulated entities reduce the cost of reporting and data verification

Cons:

- » Insufficient incentive: price signal alone may not create sufficient incentives for technology change or efficiency (e.g., a cap at the coal mine is not as strong an incentive to a power plant as a cap directly on the power plant)

Cap & Trade: Where to Regulate?

Downstream Approach

Downstream Approach:

- » Cap is on fuel users
 - Could include large point sources all the way down to individual consumers
- » Allowances could be based on actual GHG emissions or amount of fuel used
- » Most of the time when you hear a reference to downstream, it is mid-stream -- large point sources such as utilities, steel mills, etc. – not individual consumers

Cap & Trade: Where to Regulate?

Downstream Approach

- **Pros:**

- » Could spur greater technical innovation: companies may take greater steps to reduce emissions when faced with more direct regulation than with price changes
- » Greater political feasibility: easier to pass legislation covering large point sources rather than an economy-wide bill
- » Greater familiarity: almost all existing trading programs have been a downstream model.

- **Cons:**

- » Lack of coverage: likely to regulate only larger emitters, not buildings and vehicles
- » Greater transaction costs: larger number of sources creates higher costs

Cap & Trade: Where to Regulate?

Hybrid Approach

Hybrid Approach:

- » Combines caps on oil refiners and natural gas distributors (upstream) w/ caps on electric generators and major industrial sources (downstream)

Pros:

- » Best of both worlds by sending price signal to the whole economy with a workable number of regulated entities

Con:

- » Neither upstream or downstream approaches do well at reaching some sectors – transportation; buildings, or renewables
 - Trying to reduce gasoline use by capping refineries will not be effective in reducing transportation emissions because small increases in gasoline price do not seem to change behavior

Combining Policies and Measures with Cap & Trade

- Policies and Measures (PAMS) are laws and government standards (CAFÉ, appliance standards, etc)
- PAMS are needed because a price signal (whether from Cap & Trade or carbon tax) is insufficient to overcome barriers in some sectors:
 - » Vehicle efficiency
 - » Building efficiency
 - » Renewables
- Key is to choose PAMS where cost is in same range as cap & trade allowance price
 - » For example, CAFÉ (close to cost-effective) vs. cellulosic ethanol (not close to cost-effective at \$180/ton CO₂)

Combining Multiple Sectors into a Single Cap & Trade Program

- Including more sectors in a cap & trade system can lower trading system costs because they create more opportunities for the lowest cost reductions
- More sectors make it more likely to reach a global reduction target
- Some sectors don't lend themselves to having a cap
 - » Agriculture
 - » Landfill gas
- These sectors of the economy can be linked to trading system via regulations or as offsets

What is an offset?

- An offset is a project specific reduction in a sector not included in the basic cap and trade system
- Examples:
 - » No-till agriculture
 - » Planting trees
 - » Capturing landfill gas (methane a greenhouse gas)
 - » Buying reductions from projects in developing countries

Why are Offsets Important?

- Cost Reduction. Offsets lower the overall cost of meeting a cap by allowing sectors not covered by the cap (who can reduce emissions more cheaply) to sell their reductions to others whose cost of reductions is higher
 - » But offsets reduce costs only for companies under the cap
 - » And perversely, offsets may lead to those companies under the cap having to take on more stringent caps to meet overall global reduction goals.
- Politics. Allowing certain sectors to be a source of offsets rather than capped can be politically important to build support (agriculture and forestry)

Why are There Debates About the Role of Offsets?

- **Capped sources bear all the costs for reductions**
 - » **They become the bankers who pay for all reductions**
- This is why we are now seeing most sectors who were opposed to cap and trade now coming out saying they want an economy-wide program – they want all sectors to share the pain
- Once a sector becomes a source of offsets and gets paid for them, it's hard to get that sector to pay for reductions itself by accepting a cap

Approaches to Allowance Allocation

Key Policy Design Questions

- How much are allowances worth?
- What are the options for distributing allowances?
 - » Auction? or give away for free?
 - » If given for free, what's the basis for deciding how many allowances a company should get?
 - » Who gets the allowances? Fossil units only, or nuclear, renewables, hydro, and new units? What about others? workers needing transition assistance; advance technology; transit
- What are the societal economic costs and distributional impacts of these choices?
 - » What does it take to avoid windfall profits?
- Caveat: This cost discussion does not consider benefits of mitigating climate change.

Allowances vs. Auction Revenues

Creating Political Support

- Giving away allowances or auctioning them does not change how much global warming occurs, but it changes who pays for it.
- How do you ensure that allowances or revenue go where the government intends?
- How will the political dynamics of passing cap & trade be different if more committees, such as Ways & Means, share jurisdiction and have a say in where auction revenue goes?

What are Allowances Worth?

Annual Value in 2020 of CO2 Allowances
under Pending Bills

Proposed Legislation	Emissions Change from 1990	Expected Annual Revenue (in billions)
Bingaman	+ 14.7%	\$50
Boxer-Sanders	0.0%	\$110

What is an Auction?

- Instead of giving emissions allowances for free, the government sets an overall cap and allowances are sold to any emitter
- Emitters buy the number of allowances they think they need to cover their remaining emissions once they have reduced them
 - » They factor in the price of allowances relative to the price of reducing emissions themselves
- Can be set up like the treasury market with regular auctions and secondary markets for buying and selling allowances (such markets already exist)

Auction Pros and Cons

Pros:

- Simple administratively
- Rewards early actors because they do not need to buy as many allowances as they would have in the absence of their early reductions
 - » Eliminates the debate about rewarding or protecting early actors
- Treats all players the same – all emitters need to purchase allowances
- Least Economic Cost

Con:

- Proportionately greater impact on existing, higher emitting units

Auction v. Allocation

Minimizing Costs to the Economy and Avoiding Windfall Profits

CCAP hired Charles River Associates, a conservative economics shop, to look at the economic costs of different allocation options that reduce U.S. economy-wide emissions 7 percent below 1990 levels by 2010

The study found that:

- » The [cheapest option](#) (by 50 percent) to society is to auction allowances and use the auction revenue to reduce other taxes (income tax);
- » A [slightly more expensive](#) option is to use allowances or auction revenue to hold energy company shareholders harmless by giving them 9 percent of the allowances and using the rest to reduce other taxes; and
- » The [most expensive](#) option is to give (or grandfather) all the allowances to all the historical emitters.

Auction v. Allocation

Avoiding Windfall Profits and Minimizing Costs to the Economy

Key Conclusions:

- An auction is the cheapest way to do cap & trade if the auction revenues are used to reduce other taxes
- Giving all allowances or auction revenue to historical emitters creates windfall profits for these companies and overcompensates their shareholders for any losses they would face from a cap & trade program.
 - » The value of allowances could be worth more than the value of a power plant in a competitive electricity market

Mitigating Distributional Effects & Funding for Other Policies to Reduce Emissions

Key Conclusions:

- If companies receive only enough allowances or auction revenue to hold their shareholders harmless, the remaining allowances or auction revenue could be used for other important purposes such as:
 - » Assisting low income consumers to meet higher energy costs due to the carbon cap;
 - » Creating incentives for auto companies to produce cleaner cars, for investments in advanced technologies, or for investments in transit or building efficiency; and
 - » Reducing other taxes.

Do Others Agree?

- These findings have been reaffirmed by other recent studies:
 - » **Resources for the Future**, a Washington, D.C.-based environmental economics think tank
 - » **The Congressional Budget Office**
 - Contrary to what you may be hearing, CBO did not say poor people would be hurt by cap & trade, but rather that Congress can control the potential impact on the poor.

Options for Controlling Price Volatility & Encouraging Price Predictability

- Bingaman bill – escape valve caps price of allowances and total costs of the program
 - » If cost of reductions or price of allowances exceeds the escape valve price, company can pay the escape valve price instead of making the reductions
 - » If companies choose to pay the escape valve price, the emissions cap will be exceeded and the environmental goal missed
- Banking/Borrowing – allows companies to make reductions early or postpone reductions until capital stock is depreciated or new technologies are ready

Current EU State of Play

- EU trading program includes electricity, pulp and paper, steel, cement, petroleum refining (boilers only)
- GHG trading in member states began in January 2005
 - » National reduction targets based on Kyoto burden sharing agreement – collectively 8% below 1990 by 2012
 - » Covers more than 12,000 installations in 25 countries
 - » Futures contracts for allowances in Kyoto period are around \$20/ton CO₂
- Biggest issue has been European Commission (EC) approval of national plans for allocation (NAPs) to companies (nearly 100% free)
- EC rejected and toughened many NAPs for Kyoto period
- Industry concerned about competitiveness – electric companies have windfalls

Conclusions

- Many trading options are possible and have been tested in various settings
 - » Acid Rain trading under the Clean Air Act is the model of success
- Trading programs solve some problems but usually need to be linked with other policies to be most effective and address market imperfections and barriers
- Companies will get emissions allowances for free or by buying them at auction. The value of these allowances is significant (from \$50 to well over \$100 billion/year).

Conclusions

- The distribution of those allowances or auction revenue is key to passing a bill
- It only requires a small portion of allowances to hold shareholders of energy companies harmless from economic losses
- The remaining allowances are available for a wide variety of other purposes including:
 - » transition assistance for communities and workers,
 - » incentives for advancing near commercial & advanced step-change technologies,
 - » low income assistance,
 - » incentives for automakers or transit

Thank You

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