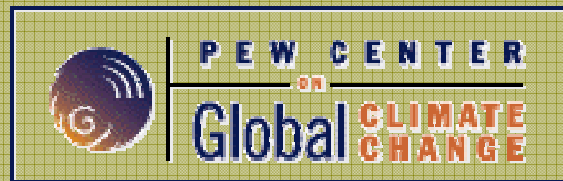


# Greenhouse Gas Cap-and-Trade Program: Options for Emissions Allowance Allocations



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# What is Cap-and-Trade?



- The government sets an overall cap on emissions
- The government issues/auctions allowances up to this cap (tradable rights to emit one ton of GHGs)
- Each regulated entity must surrender enough allowances to match its emissions for each compliance period
- Flexibility: As long as allowances match emissions, firms can select means; allows firms to minimize costs

# Allowance Distribution



- Allocation is primarily a distributional question—it does not affect overall environmental benefits or costs of meeting program targets
- However, if auction proceeds are used to reduce distortionary taxes, a net economic gain to society could be realized
- Either auction proceeds or allowances can be:
  - Used to achieve program goals such as maintaining competitiveness, supporting technology investment, reducing impacts of the transition to regulated firms and affected consumers, etc.
  - Distributed to folks other than covered entities such as consumers, workers, companies not covered by the program, etc (point of allocation can differ from point of regulation)
- Allowances can be kept separate from other forms of revenue

# Options for Allowance Distribution



- **Free Allocation—allowances given to affected entities**
  - Key questions
    - What metric should be used in allocating emission allowances?
    - What timeframe should be used in allocating allowances?
    - Should only the regulated entities receive allowances?
- **Auction—entities bid to purchase allowances**
  - Key questions
    - How much to auction and how?
    - What is the appropriate use of funds generated?
- **Hybrid of free allocation and auction**
  - Key questions
    - How much of each and on what basis?

- EU ETS
  - For learning phase (2005-07) most allowances allocated for free based on historic emissions (up to 5% auction)
  - For second phase EU member states will be able to auction up to 10 percent of allowances
  - For third phase, maybe more for the electricity sector
- US Acid Rain Program
  - Most allowances allocated for free
  - 3% auctioned each year for price discovery but proceeds returned to covered sources; didn't raise revenue
  - Allocation based on both historic fuel input and environmental performance benchmarks

- Eastern NO<sub>x</sub> program
  - All allowances allocated to states based on historic emissions, states determine allocation to regulated entities
  - Allocation varied by state; based on historic fuel input or output, environmental performance benchmarks
- RGGI
  - States jointly committed to use at least 25% of allowances for public benefit (auction)
  - Several RGGI states plan to auction 100% of allowances
  - In process of designing a regional auction

# Allocation—What Metric Should Be Used?



<b><u>Options</u></b>	<b><u>Implications for Affected Entities</u></b>
Historic Emissions	<ul style="list-style-type: none"><li>•Leaves every emitter “whole”</li><li>•Smaller reward for cleaner plants</li><li>•Potential “windfall” if allocation level is too high</li></ul>
Fuel or other input	<ul style="list-style-type: none"><li>•Easy to measure</li><li>•Rewards less efficient plants</li></ul>
Product output (Market share)	<ul style="list-style-type: none"><li>•Rewards more efficient plants</li><li>•Easy to measure for certain sectors, cumbersome for others</li><li>•Potential “windfall” if allowances given to non-emitting sources</li></ul>
Benchmark (Standard factor based on emission rate multiplied by output or input)	<ul style="list-style-type: none"><li>•Rewards more efficient and lower-emitting plants</li><li>•Flexible—can adjust factor to make easier or harder on various categories of emitters</li><li>•Cumbersome to address variety of outputs produced</li></ul>

# Allocation—What Basis Should Be Used?



<b><u>Options</u></b>	<b><u>Implications for Affected Entities</u></b>
Single year	<ul style="list-style-type: none"> <li>• Easy to calculate</li> <li>• Any one year will be unfair to someone</li> <li>• Benefits entity with relatively high emissions in that year if allocation is based on emissions or fuel input</li> <li>• Benefits good performers against benchmark that year if allocation is based on a benchmark</li> </ul>
Average of multiple years	<ul style="list-style-type: none"> <li>• Evens out unusually high or low years—less chance of picking a good or bad year for any one emitter</li> <li>• Missing data may be difficult to address</li> <li>• If future years are used, may be incentive to increase emissions if period includes future years</li> <li>• Benefits entities with relatively high emissions or relatively good performance in those years</li> </ul>
Maximum over a period	<ul style="list-style-type: none"> <li>• Adjusts for different companies/sectors peaking at different times</li> <li>• Does not reward early reducers</li> <li>• If future years are used, may be incentive to increase emissions if period includes future years</li> <li>• Benefits entities reducing emissions at beginning of time period</li> </ul>

# Allocation—Updating?



<b><u>Options</u></b>	<b><u>Implications for Affected Entities</u></b>
Updating	<ul style="list-style-type: none"><li>•Accommodates growth in production (including new entrants) potentially minimizing consumer prices in that sector</li><li>•Allows changes in markets, competition, plant closures, and new entrants to be considered and accommodated</li><li>•Benefits increases in emissions, if based on emissions</li><li>•Benefits increase in output and emissions, if based on output</li><li>•Benefits growing entities and potentially consumers</li></ul>
No updating	<ul style="list-style-type: none"><li>•Does not provide incentive to increase emissions</li><li>•Growing firms will struggle more to meet compliance obligations than non-growing firms</li><li>•Windfall to entities that have reduced production</li><li>•Requires set-aside for new entrants</li><li>•Benefits entities that have improved efficiency more than competitors and plants with decreasing production levels at beginning of time period</li></ul>

# Allocation—Who Should Receive Allowances?



<b><u>Options</u></b>	<b><u>Implications</u></b>
Emitters only	<ul style="list-style-type: none"> <li>•Consistent with goal of free allocation to address compliance costs</li> <li>•Benefits emitting facilities</li> </ul>
All product generators or producers	<ul style="list-style-type: none"> <li>•Benefits lower-emitting facilities, providing a subsidy for what may be an expensive, but cleaner, technology choice</li> <li>•Not all non-emitters are in need of additional subsidies as some pass on increased costs to the market in the form of higher prices</li> </ul>
Affected entities	<ul style="list-style-type: none"> <li>•Could allocate to affected entities, e.g. consumers or their proxies such as load serving entities</li> </ul>
State or federal government for funding public policy objectives (Allowances are subtracted from pool)	<ul style="list-style-type: none"> <li>•Can be used to help to alleviate electricity/product price impacts of program</li> <li>•Could provide source of funds for end-use efficiency and other public benefit programs</li> <li>•Additional administrative burden associated with distributing benefit to non-emitters (public)</li> <li>•Benefits public with expense borne by industry</li> <li>•May not pursue most cost-effective reductions or pick winning technologies</li> </ul>

# How Should Allowances Be Auctioned?



- What type of auction should be used?
  - Ascending-bid auction
  - Sealed-bid auction
- How frequently should the auction be held?
  - Big, infrequent auction could reduce transaction costs
  - Smaller, more frequent auctions can be more responsive to short-term price fluctuations and encourage participation from smaller firms

# Auction—How Should Funds Be Used?



- Options for use of funds generated (can mix or match)
  - Reduce existing taxes
  - Fund environmentally desirable programs and policy objectives (e.g., for technology, efficiency, R&D)
  - Minimize cost of cap-and-trade program on affected parties (e.g., firms, workers)
  - Mitigate the regressive impact of increased energy costs on low-income consumers
  - Assist with adaptation to climate change

# Additional Considerations



- Cap & trade program creates valuable new carbon commodity (up to \$100 billion/year)
- Decisions about allocation of allowances represent a large distributional/equity issue and result in competing claims
- Different abilities to pass costs through to customers influences how allocations affect different sectors
- There can be different allocation methods for different sectors and methods can change over time (e.g. allocation=>auction)
- Point of allocation and point of regulation do not need to be the same
- Many objectives can be met through either allocation or auction
- Allowance distribution presents both a challenge and an opportunity:
  - No allocation formula or methodology will satisfy everyone
  - Allocation itself can be used to compensate affected firms and to ease transition to a new program

# Key questions



- ✓ What percentage of allowances will be distributed using free allocation vs. auction? Should that percentage change over time?
- ✓ What metric should be used in allocating allowances in a given sector?
- ✓ What timeframe should be used in allocating allowances?
- ✓ Who should receive allowances?
- ✓ What type of auction should be employed?
- ✓ How should the funds generated through the auction be used?

# For More Information



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