The Future of U.S. National Climate Policy and Implications for Sub-National Programs

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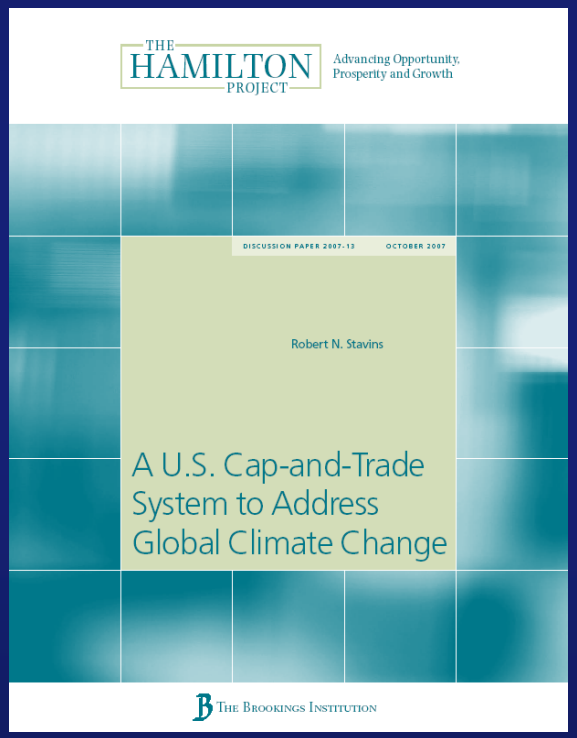
How will the Federal cap-and-trade system interact with state or other sub-national systems?

- To examine interactions, it helps to specify the design of the Federal system and the design of any sub-national systems. Key design issues include:
  - Point of regulation (upstream/downstream)
  - Trajectory and scope of caps
  - Cost-containment mechanisms
  - Allowance allocation method
  - Linkage with systems in other countries
  - Border adjustments



Two Factors Drive Nature of Interaction between Federal and State System

- The relative stringency of the two programs (for sources in the state)
- The degree of overlap in coverage (scope of sources) between the Federal and state systems
- Two Important cases:
  - Programs with perfectly overlapping coverage
  - Programs with imperfectly overlapping coverage

Programs with Perfectly Overlapping Coverage

- State Program **More** Stringent than Federal Program
  - A state program is more stringent than Federal program if it requires reductions from sources within the state greater than would be achieved under Federal program alone.
  - Sources must surrender both state and Federal allowances, and so set sum of allowances prices equal to their marginal abatement cost
  - Result: Sum of state and Federal allowance prices equals what would have been allowance price in state program on its own
  - Result: Additional emissions reduction in state are offset by fewer reductions in other states
  - Result: No reduction of national emissions beyond Federal cap
  - Result: Higher costs on in-state sources, lower costs elsewhere
  - Result: Marginal costs not equalized nationally, national costs are greater than under Federal program alone; i.e., not cost-effective

Programs with Perfectly Overlapping Coverage (continued)

- State Program **Less** Stringent than Federal Program
  - A state program is less stringent than Federal program if it would result in smaller reductions from sources within the state than would be achieved under Federal program alone.
  - Result: Federal allowance price is sufficiently high to cause sources in the state to reduce emissions below the state cap
  - Result: Equilibrium price of state allowances is zero
  - Result: State program is irrelevant, national program is cost-effective
  - Result: However, if state program places constraints on trading, then costs increase in the state, and national program will not be cost-effective

Programs with Imperfectly Overlapping Coverage

- In this case, nature of interaction depends – again -- on which program is more stringent for sources covered by both programs,
  - But it also depends on which program is more comprehensive (greater scope of coverage) of state sources.
- If Federal program is more comprehensive (i.e., includes all the sources in the state program), then results are same as with perfectly overlapping coverage.
  - But if the state program is more comprehensive, then results are ambiguous and depend on other factors.

Other Design Features: Freely Allocated versus Auctioned Allowances

- In general, method of distributing allowances does not affect a source's decisions regarding output or emissions.
  - So, it does not affect abatement costs.
- The effect of freely allocating allowances is distributional: the scarcity value is transferred from governments to sources.
  - So, allocation decisions do affect overall net costs of compliance with program,
  - But have no effect on the interaction of state and Federal programs.
  - This still holds if one program auctions and one freely allocates or both use a mix.
  - (But exceptions for case of regulated industries.)

Other Design Features: Offsets, Banking, and Borrowing

- Effects of offsets, banking, and borrowing in the Federal or state program are essentially to make the Federal or state program more or less stringent at a particular point in time,
    - and in this way, they affect interaction of the two systems.
- And banking and borrowing will tend to stabilize the relationship between the two programs,
    - Because they establish floors and ceilings on allowance prices.

Federal Preemption

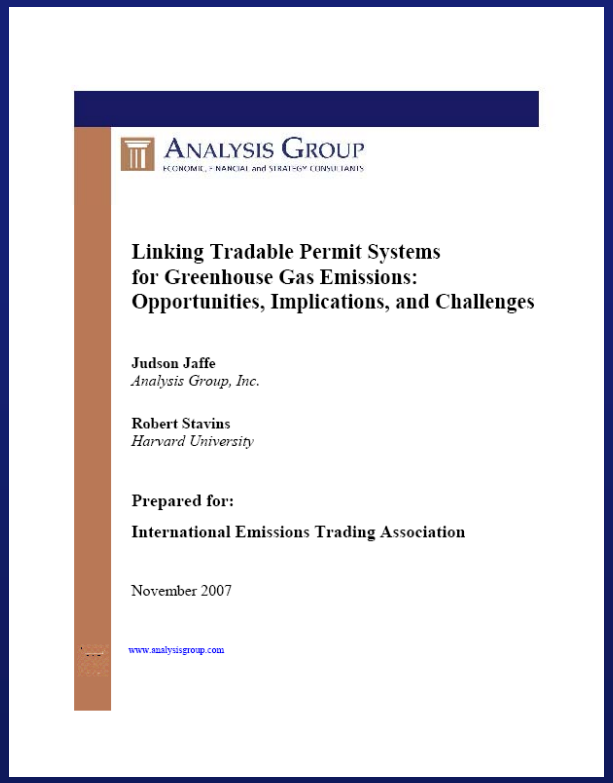
- Federal preemption of a pre-existing state program (though potentially desirable) creates transition issues,
  - If Federal program does not recognize state allowances, value of existing (banked) state program allowances will decrease to zero
  - Can occur before Federal program in place, due to expectations; emissions will increase
  - This can be addressed by permitting state allowances to be exchanged for Federal allowances
- But once preempted state program expires,
  - Single Federal allowance price drives emissions reductions nationally
  - Cost-effectiveness is achieved
  - Distributional implications of overlapping state and Federal programs are eliminated

One Other Route Forward: Carve-Out

- A new Federal cap-and-trade program could permit states to opt out if they implement (maintain) a state program at least as stringent
  - Result: Different allowance prices in some states and in Federal system; marginal abatement costs not equated; not cost-effective
- Not clear why states would want to opt out:
  - High-cost states better off in national system to lower their costs
  - Low-abatement-cost states can be net sellers of Federal allowances
  - And Federal program provides larger, more liquid allowance market, with less price volatility
- But some states or regions may still prefer this route,
  - So, can there be a carve-out provision in a Federal cap-and-trade program, and still achieve nationwide cost-effectiveness?

Can a Federal Cap-and-Trade System with Carve-Out be Cost-Effective?

- A (partial) way out of the problem: Linkage
- Linkage – mutual recognition of allowances -- among Federal and state/regional systems can lead to:
  - single allowance price
  - equal marginal abatement costs
  - cost-effectiveness
- But linkage can also raise potential issues – such as propagation of cost-containment mechanisms -- but that's a topic for some other IETA session (and paper)!



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Linking Tradable Permit Systems for Greenhouse Gas Emissions: Opportunities, Implications, and Challenges

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Prepared for:

International Emissions Trading Association

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www.analysisgroup.com

What is the bottom line?

- *Depends* on various elements of design of Federal and state systems
- But the *simplest, cleanest way* to avoid *unnecessary costs* and other problems is for …
- State systems to become part of Federal system
- State and regional leaders rightly take great pride in their state and regional systems, but they may soon accomplish their greatest achievement:
    - Helping to bring about a meaningful national climate policy
    - Declare victory!
    - And keep your eyes on the prize: *not* a specific system, *but* reducing the risk of *global* climate change

For More Information

Harvard Project on International Climate Agreements

www.belfercenter.org/climate

Proposal for a U.S. Cap-and-Trade System

www.brookings.edu/papers/2007/10climate_stavins.aspx

Analysis of Opportunities & Challenges of Linkage

www.ieta.org/ieta/www/pages/getfile.php?docID=2733

The Harvard Environmental Economics Program

www.hks.harvard.edu/m-rcbg/heep/

www.stavins.com