

# Setting a Price for Carbon: Options for Climate Policy in the United States

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## Climate Policy Instruments in the Real World

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## Carbon Pricing

- **Why is there so much talk about carbon-pricing (in the real world)?**
  1. No other feasible approach can provide meaningful emissions reductions (such as 80% cut in national CO<sub>2</sub> emissions by 2050)
  2. Carbon pricing is the least costly approach in short term
    - Because emissions sources are numerous, and diverse in terms of abatement cost
      - Carbon-pricing provides incentives for reductions by all sources ...
      - ... in proportion to how costly the reductions are.
  3. Carbon pricing is the least costly approach in the long term
    - Because effective carbon pricing provides incentives for carbon-friendly technological change: invention, innovation, diffusion (& utilization)
  4. And it's a hot-button political issue: carbon pricing makes the costs somewhat or fully transparent (unlike conventional policy instruments)

## Two Principal Approaches to Carbon Pricing

- **Carbon Tax**
  - Directly places a price on *carbon* (or CO<sub>2</sub> emissions)
  - Quantities (of carbon and CO<sub>2</sub> emissions) adjust in response
- **Cap-and-Trade**
  - Quantities (of *carbon*) constrained by allowances, which can be traded
  - Price emerges indirectly from market for allowances
- **Symmetric policy instruments**
  - They have much in common
  - But some key differences
- **In keeping with the “real world” theme of this conference, I’ll start with cap-and-trade .....**

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## Cap-and-Trade

- **Merits**
  - Cost-effective – short and long term (like tax)
  - Allowance allocation can be used to build constituency
  - Experience with well-designed systems
    - Leaded gasoline phaseout (1980s) – saved \$250 million/year
    - SO<sub>2</sub> allowance trading (1995-) – saves \$1 billion/year (33%)
  - Can be linked internationally
- **Concerns**
  - Uncertain costs (contrast w/tax, but cost-containment mechanisms)
  - Fears of market manipulation
  - Politically demonized (as “cap-and-tax”)

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## Cap-and-Trade Design Issues

- The cap: scope, ambition, and timing
- Point of regulation (upstream, midstream, downstream)
- Allocation (auction or free, who gets free allowances?). Possible *criteria*:
  - Cost: auctioning *can* lower social cost *with very specific use of revenue*
  - Fairness: compensate regulated industry with free allocation (15% of allowances – in perpetuity – *on average* across all sectors)
  - Performance: use free allocation that builds political constituency (importance of the “independence property”)
  - A Populist Approach: 100% auction; revenue to “the people” (cap-and-dividend)
- Offsets (can lower costs, but raise additionality question)
- Cost-containment mechanisms: banking, borrowing, safety-valve, price collar
- Leakage & international competition (free allocation?, output-based updating allocation)
- Regulatory oversight

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## Carbon Taxes

- Similar in Design to Upstream Cap-and-Trade
- Some real interest (mainly academics) and some phony interest
- Merits (compared with Cap-and-Trade)
  - Cost uncertainty eliminated (but no emissions cap)
    - Note: cost uncertainty in C-a-T reduced/eliminated w/price collar
  - Generates revenue (like auctioned allowances)
  - (Perceived to be) Simple
- Concerns
  - Potentially more costly to regulated sector
  - Lack of benign mechanism for building political constituency leads to requests for exemptions, and hence less ambitious policy
  - Challenges to linking internationally (for cost containment)
  - Political infeasibility: political opposition is to “carbon pricing”

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## Carbon Taxes vs. Cap-and-Trade

- More similar than different
  - Either instrument can be designed to be somewhat equivalent to other
    - Auction allowances, and cap-and-trade looks like carbon tax (to regulated firms)
    - Refund tax revenues (in particular ways), and carbon tax can look like cap-and-trade
    - Hybrid instruments (e.g., price collar) contains elements of both
- Differences (in “the real world”)
  - Politics: cap-and-trade provides mechanism for building political support *without* driving up costs or reducing environmental performance
  - Linkage with policies in other jurisdictions easier with cap-and-trade
- But recent Washington opposition is to *any kind of carbon pricing*. So, what are the alternatives?

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## Options for Climate Policy in the United States

- **Federal Policy**
  - Pricing Instruments
    - Cap-and-Trade, Cap-and-Dividend
    - Carbon Taxes, *Subsidies*
  - Other Instruments
    - Regulation Under the Clean Air Act
    - Energy Policies Not Targeted Exclusively at Climate Change
    - Public Nuisance Litigation
    - NIMBY and Other Interventions to Block Permits
- **Sub-National Policy**
  - Regional, State, & Local Policies
  - National Linkage of Sub-National Policies

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## Subsidies

- **Climate-friendly subsidies**
  - Stimulus package subsidies (& tax credits) for renewables & efficiency upgrades -- \$80 billion
  - Biofuels?
- **Problematic subsidies**
  - US. fossil-fuel subsidies (& tax breaks) = \$8-10 billion/year (ELI)
  - Global fossil-fuel subsidies > \$550 billion/year (IEA)
  - G20 proposed/planned phase-out
- **Merits:** subsidies affect relative prices (like taxes), but more politically attractive; eliminating “bad” ones economically efficient
- **Concerns:** “good” subsidies go to infra-marginal units (costly); abatement subsidies encourage entry in emission-intensive sectors; removing fossil-fuel subsidies works against “energy security”

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## Regulation under the Clean Air Act

- **U.S. Supreme Court decision, EPA endangerment finding**
  - Mobile source standards
  - Stationary sources (January 1, 2011, with or without tailoring rule)
  - Merits
    - Effective in some sectors
    - Inducement for Congress to take action with better approach?
  - Concerns
    - Accomplishes *relatively* little at *relatively* high cost
    - Really force hand of Congress? A credible threat or counter-productive?
    - Preemption? (Murkowski resolution, Rockefeller bill, others?)

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## Regulation under the Clean Air Act (continued)

- **Air pollution policies for correlated pollutants**
  - SO<sub>x</sub>, NO<sub>x</sub>, and Hg – 3P legislation
  - Could shut inefficient coal plants (w/o any CO<sub>2</sub> requirements)
- **Key pending question** regarding EPA's use of the Clean Air Act
  - May EPA (*legally*) create (CO<sub>2</sub>) cap-and-trade or offset markets under existing Clean Air Act authority?
    - Probably. There is positive precedent (1970s emissions trading, 1980s lead phasedown, etc.); but there's also court decision on Bush CAIR rule.
  - But can EPA (*politically*) create *significant* CO<sub>2</sub> markets?
    - Less clear

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## Energy Policies (not targeted exclusively at climate change)

- **Possible components (variety of standards & subsidies)**
  - National renewable electricity standard
  - Federal financing for "clean energy" projects
  - Energy efficiency measures
    - Building, appliance, & industrial efficiency standards
    - Home retrofit subsidies
    - Smart grid standards, subsidies, dynamic pricing, etc.
  - New federal electricity-transmission siting authority
- **Bottom Line**
  - Some of these could help, because although carbon-pricing is *necessary*, it is *not sufficient* (other market failures can reduce effects of prices)
  - *But* as substitute for carbon-pricing, these are *less effective & more costly*

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## Other Legal Mechanisms

- **Public Nuisance Litigation**
  - Lawsuits pursuing injunctive relief and/or damages
  - In flux – recent court decisions
- **Other Interventions**
  - Intended to block permits for new fossil energy investments
    - Power plants
    - Transmission lines
  - Some NIMBY, some strategic

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## Sub-National Climate Policies

- Regional, state, & local policies continue to emerge
  - Regional Greenhouse Gas Initiative (RGGI)
  - California’s Global Warming Solutions Act (AB 32)
  - Western Climate Initiative, and others
- Interactions with Federal policy
  - Some problematic (AB 32 & Federal cap-and-trade)
  - Some benign (RGGI becomes irrelevant; interaction with carbon tax)
- Question: Can there be sensible sub-national policies with an economy-wide Federal carbon-pricing policy in place?
  - Yes, other market failures not addressed by national “pricing” policy
    - Example: principal-agent problem re. energy-efficiency investments in renter-occupied properties → building codes

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## **Sub-National Climate Policies** (continued)

- But in the *absence* of meaningful Federal action, sub-national climate policies could become the *core* of *national action*
- Problems
  - Legal obstacles: possible preemption
  - Not national in scope
  - Not cost-effective (if there are different carbon shadow-prices)
- Is there a (*partial*) solution?
  - Yes, state & regional carbon markets can be linked
  - Linkage reduces costs, price volatility, leakage, and market power
  - A possible future for U.S. climate policy: linkage of state & regional cap-and-trade becomes the *de facto* post-2012 national climate policy
- So, Sacramento may take the place of Washington as the center of national climate policy

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## **For More Information**

### **Harvard Project on International Climate Agreements**

[www.belfercenter.org/climate](http://www.belfercenter.org/climate)

### **Harvard Environmental Economics Program**

[www.hks.harvard.edu/m-rcbg/heap/](http://www.hks.harvard.edu/m-rcbg/heap/)

[www.stavins.com](http://www.stavins.com)