

Reducing Greenhouse Gas Emissions Through Market Mechanisms: Carbon Taxes and Carbon Trading

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Outline of Topics Covered

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Outline of Topics Covered

- Fundamentals Regarding Greenhouse Gases (GHGs)
- Reducing GHGs Through Taxes
- Reducing GHGs Through Cap and Trade
- Key Design Elements of a Cap and Trade System
- Existing and Developing GHG Cap and Trade Systems
- Congressional Cap and Trade Legislation – Last Session (110th) and Current Session (111th)
- Likely Approaches of the Obama Administration and Congress
- Recommendations

Fundamentals

- What are GHGs?
 - Primary GHGs of concern: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), sulfur hexafluoride (SF₆), hydrofluorocarbons (HFC), and perfluorocarbons (PFC)
 - CO₂ is the measuring standard and predominant GHG
 - GHGs differ significantly in potency
 - The science: global reductions of 50% to 85% by 2050, in comparison to 2000 emission levels, are needed to avoid the most significant climate changes*

*Intergovernmental Panel on Climate Change, Fourth Assessment Report

Fundamentals

- Three Principal Approaches to Reducing GHGs
 - Command and Control
 - Taxes
 - Cap and Trade

Reducing GHG Through Taxes

Pros:

- Provides an incentive to reduce emissions
- Can be implemented quickly
 - Policymakers must decide who pays for it
- Would generate revenue
 - Policymakers must decide what to do with it
- Transparent

Cons:

- A GHG tax is not designed to achieve a specific reduction in emissions
- Not politically appealing
- Cannot link to other GHG reduction programs
- GHG tax can be repealed easily

Reducing GHGs Through Cap and Trade

- Cap is an emissions ceiling for covered entities; emissions set at a certain level (measured in tons)
- Sources within the program receive an allowance to emit up to a certain amount
- At end of compliance period, emitter must hold sufficient allowances to cover its emissions
- Each emitter can design its own compliance strategy (reduce emissions, buy allowances, buy offset credits)
- Further flexibility provided through offsets, banking, borrowing
- Cap decreases progressively, which reduces emissions

Cap and Trade: Numerous Design Elements

- What emissions are covered?
- What is the emission reduction timetable?
- Which sectors of the economy are covered?
- What is the point of regulation (i.e. who must obtain the allowance)?
- How are allowances going to be distributed?
- Cost containment mechanisms

What Emissions are Covered?

- Just CO₂?
- All GHGs?

What Sectors of the Economy are Covered?

- Electricity Generation (34% of U.S. GHG emissions in 2005)
- Transportation (28%)
- Industrial (19%)
- Commercial (6%)
- Residential (5%)
- Agricultural (8%)

What is the Emissions Reduction Timetable?

- Short-term goals
- Long-term goals
- Policy considerations

Point of Regulation (Who must hold the allowance?)

- Upstream: Where, or close to where, carbon first enters the economy (i.e. well)
- Downstream: Where carbon is emitted, such as smoke stacks
- Key: The point of regulation determines who must hold the allowance

Cost Containment Mechanisms

- Offsets
 - Offsets are reductions in GHGs that are not covered by an emission reduction requirement
 - Must be an emission reduction that otherwise would not have occurred but for the offset project
 - Must be measurable and permanent
 - Benefits: reduces GHG emissions and can substantially reduce an emitter's overall costs of lowering emissions
 - However: some argue that offsets result in slower transition to a low-carbon economy

Other Cost Containment Measures

- Borrowing
- Banking
- Safety Valves
- Linkage

How are Allowances Allocated?

- Free Allocation
 - Typically based on entities' historical emissions
- Auction
 - Generates revenue
 - Policymakers must decide where the revenue goes

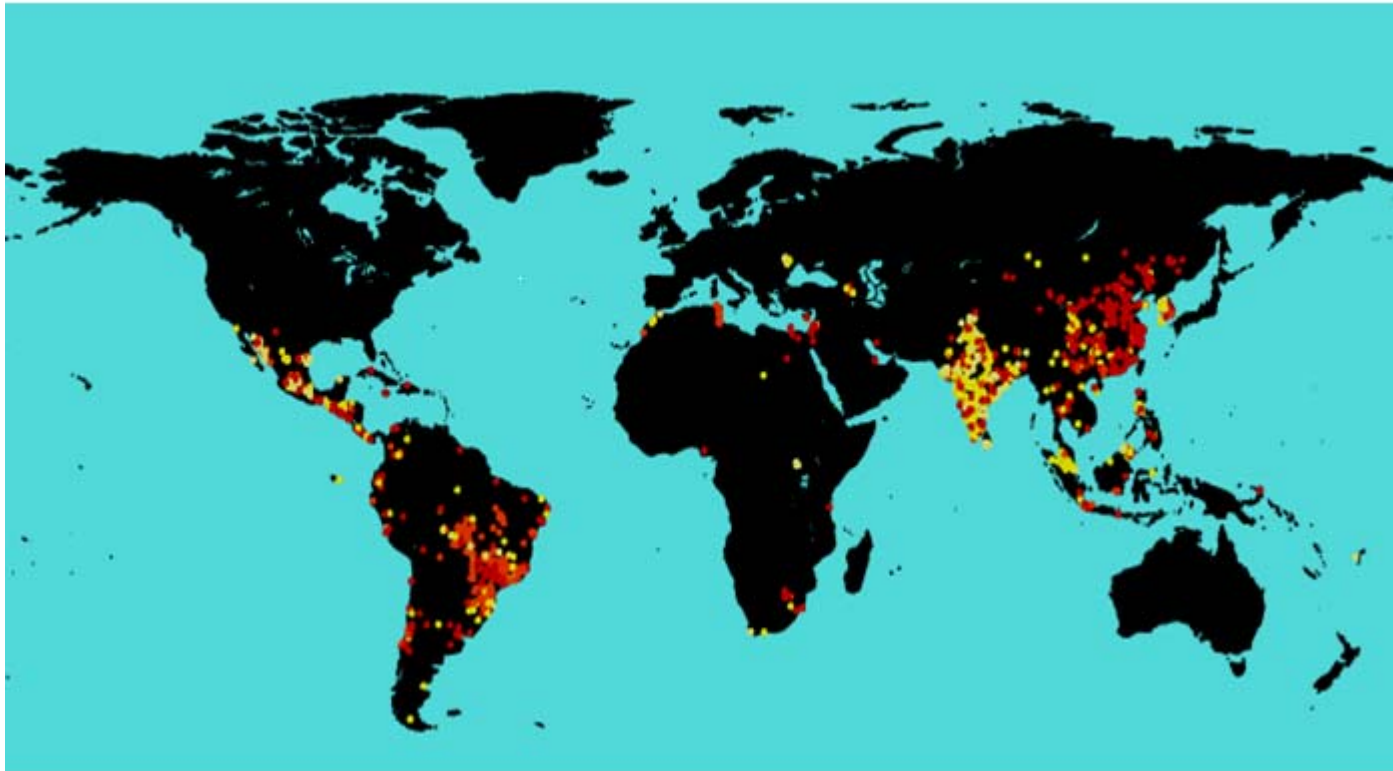
GHG Cap and Trade Systems

- European Union
- Regional Greenhouse Gas Initiative (RGGI)
- Western Climate Initiative (WCI)
- Midwestern Accord

European Union's Emission Trading System

- Program used to comply with the Kyoto Protocol
- Agreed to in 2001, and trading began in 2005
- 1st period: 2005-2007 considered a trial
- 2nd period: 2008-2012
- Narrow in scope (covers just CO₂ and only certain economic sectors)
- Allowances are free
- Goals met through trading and other mechanisms, such as the Clean Development Mechanism (CDM)

Location of CDM Projects

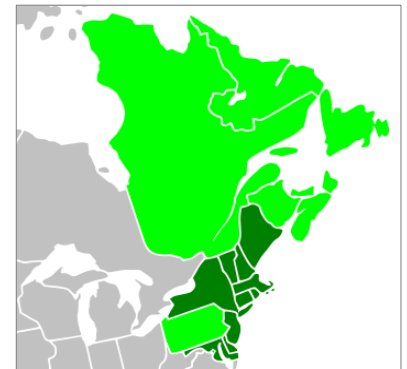


<http://cdm.unfccc.int/Projects/MapApp/index.html>

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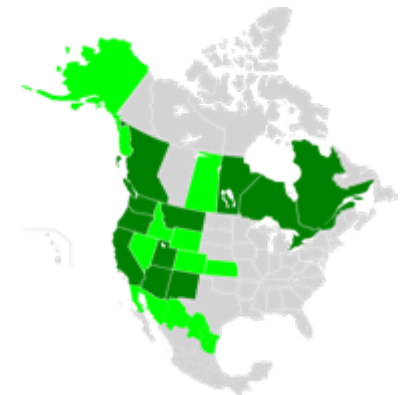
Regional Greenhouse Gas Initiative (RGGI)

- Mandatory, market-based program to cap CO₂ emissions from power generators
- Goal: reduce CO₂ emissions 10% below 2005 levels by 2018
- Ten Northeast and Mid-Atlantic states
- Applies just to CO₂ and just to power plants
- Auction revenue supports energy efficiency and renewable energy efforts
- Numerical limit on offsets; also allows banking
- www.rggi.org/home



Western Climate Initiative (WCI)

- Regional organization formed in February 2007, consisting of seven western states and four Canadian provinces
- Purpose: reduce GHGs 15% below 2005 levels by 2020 through a regional GHG cap and trade program
- Final design proposal released September 23, 2008
- All six GHGs
- Covers multiple industries
- Includes flexibility through offsets, banking
- Will begin in 2012
- www.westernclimateinitiative.org



California (AB 32)

- September 2006 California law requiring reduction in all six GHGs to 1990 levels by 2020
- Calif. is the ninth largest emitter of GHGs in the world
- Authority delegated to the Calif. Air Resources Board (CARB) to develop a roadmap, benchmarks and regulations; www.arb.ca.gov
- Scoping plan adopted in December 2008
- Reporting requirement now in place
- Regs to be developed by January 1, 2011
- Cap and trade to be a central component

Midwestern Accord

- November 2007: six Midwestern states and one Canadian province have agreed to establish regional GHG reduction targets
- Long-term target of 60 to 80% below current emissions levels
- Agreed to put in place a multi-sector cap and trade program
- Draft recommendations to be released soon
- www.midwesternaccord.org



Existing SO₂ Cap and Trade System

- 1990 Acid Rain Program; established under Title IV of the Clean Air Act
- Established a cap on SO₂ emissions; phased program
- Pollution reduction goals achieved at half the cost of traditional command and control regulation
- Since the 1990's, SO₂ emissions have dropped 42%
- Could be used as a model

Congressional Cap and Trade Legislation – 110th Congress

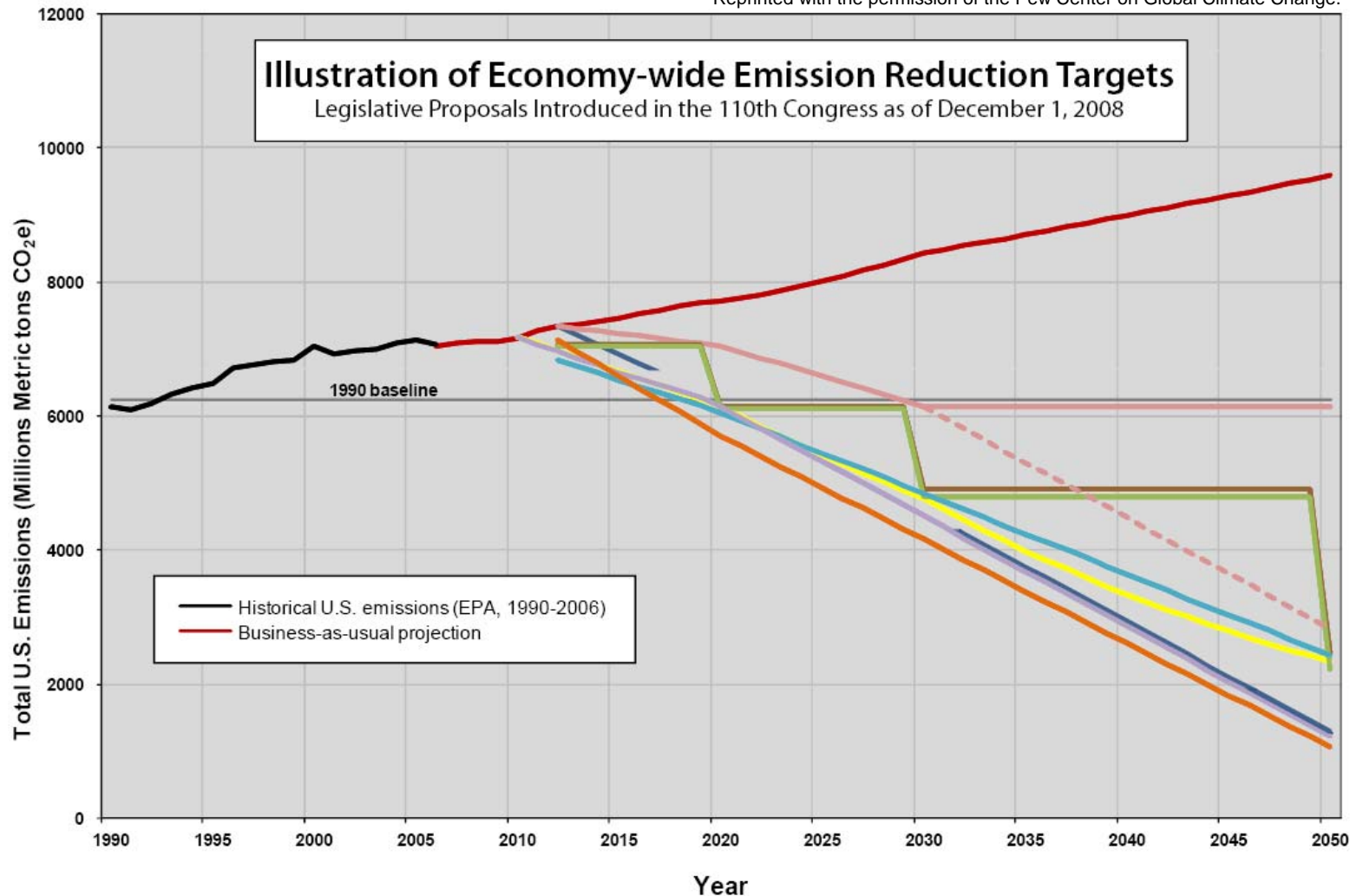
- 235 bills in the 110th Legislative Session on global climate change and GHG emissions
- Bipartisan effort
- Emissions Covered: most cover all GHGs, not just CO₂
- Offsets: generally allowed
- Applicability and Point of Regulation:
 - Typically, downstream for electric utilities; upstream for transportation fuels

Congressional Cap and Trade Legislation – 110th Congress

- Cap and Trade Timetables: Differ in target, baseline year, and near and long-term goals
 - Lieberman-Warner
 - 2% per yr. reduction from 2011-2020
 - 5% per yr. reduction from 2020-2050
 - To reach 80% below 1990 levels in 2050
 - Boucher-Dingell Discussion Draft (Oct. 7, 2008)
 - Covered emissions reduced 6% below 2005 levels by 2020
 - 44% below 2005 levels by 2030
 - 80% below 2005 levels by 2050

Emission Reduction Targets and Timetables – 110th Congress

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Congressional Cap and Trade Legislation – 110th Congress

- Allowance Allocation
 - Waxman (H.R. 1590, 110th Congress)
 - President to submit to Congress an allocation plan that includes auctions and free allocation of allowances
 - Boxer-Lieberman-Warner (S. 3036, 110th Congress)
 - Free allocation to various facilities, transitioning to first auctions in 2012
 - Dingell-Boucher Discussion Draft
 - 100% auction by 2026

January 2009

- U.S. Climate Action Partnership (U.S. CAP) called on Congress to address climate change threats
- U.S. CAP Blueprint for Legislative Action calls for a mandatory U.S. climate policy:
 - Adoption of an emission reduction target of 80% below 2005 levels by 2050
 - Market-driven approach that includes cap and trade, including offsets, banking, safety valves, eventual auctioning of all allowances, credit for early action
 - Integration of U.S. trading program with comparable international programs
 - <http://www.us-cap.org>

Winter 2009: Key Appointments and Congressional Leadership

- Secretary of Energy (Steven Chu)
- EPA Administrator (Lisa Jackson)
- White House Coordinator of Energy and Climate Policy (Carol Browner)
- White House Counsel on Environmental Quality (Nancy Sutley)
- Dept. of Agriculture Secretary (Thomas Vilsack)
- Chair, House Energy and Commerce Committee (Henry Waxman)
- Subcommittee Chair, Subcommittee on Energy and Environment (Edward Markey)
- Senate Environment and Public Works (Barbara Boxer)
- Senate Energy and Natural Resources (Jeff Bingaman)

February 26, 2009: The Obama Administration's Budget

“...the Administration will work ... to develop an economy-wide emissions reduction program to reduce greenhouse gas emissions approximately 14% below 2005 levels by 2020, and approximately 83% below 2005 levels by 2050.”

- To be implemented through a cap and trade system
- Allowances: 100% to be auctioned
- Proceeds:
 - fund clean energy investments totaling \$150 billion over 10 years, starting in FY 2012
 - \$19 million increase for EPA work to develop a GHG emission inventory

www.whitehouse.gov/omb/assets/fy2010_new_era/A_New_Era_of_Responsibility2.pdf

Feb.-March 2009: Congressional Cap and Trade Legislation

- House Energy and Commerce Committee
 - Pledged to pass a bill through Subcommittee and Committee by Memorial Day
 - Subcommittee on Energy and Environment: hearing on March 5 on the role of offsets in cap and trade legislation
 - Subcommittee on Energy and Air Quality: hearings on Feb. 24 and 26 on Complimentary Policies for Climate Legislation
- House Committee on Ways and Means
 - Hearing on Feb. 25 on the Scientific Objectives for Climate Change Legislation
- Senate Environment and Public Works
 - Press conference held on Feb. 3 by Senator Barbara Boxer to present global warming principles for legislation

Predictions

- There will be a new regulatory framework instituted for reducing GHGs
- Likely to be phased:
 - Energy efficiency measures/clean energy technologies
 - Legislation will be introduced and considered for a cap and trade program supported by the White House
 - Close coordination with RGGI and Western Climate Initiative
 - Passage: 2010 and not 2009
- Wild cards:
 - U.N. Climate Conference to take place in Copenhagen in December 2009 to establish a global climate agreement
 - EPA action

Some Recommendations

- Participate in the legislative process in order to understand how the legislation may impact your business and community
- Participate in the legislative process in order to benefit your business and community
- Use this knowledge in your business plans so that the value of your projects is maximized
- Research opportunities for offset partnerships