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

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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 GHG Cap and Trade Systems
- Congressional Cap and Trade Legislation in the 110th Legislative Session
- Likely Approach of the Obama Administration and the new Congress

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Fundamentals

- What are GHGs?
  - Primary GHGs of concern: carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), sulfur hexafluoride (SF_6), hydrofluorocarbons (HFC), and perfluorocarbons (PFC)
  - CO_2 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

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Fundamentals

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

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Reducing GHGs Through Taxes

- Rationale:
  - Costs of global warming from GHGs not reflected in the market price of GHG-based goods
  - Provides an incentive to reduce emissions
- Would generate revenue
- Can be implemented quickly
  - Policymakers must decide who pays it
- May have less support than cap and trade because of political opposition to new taxes

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Taxes versus Cap and Trade

- Taxes
  - sends market signal to reduce carbon consumption
  - can be implemented more quickly than a cap and trade program
  - transparent
- Cap and Trade
  - sends market signal to reduce carbon consumption
  - cap and trade should result in certainty of emission reductions in a given time period; a GHG tax cannot predict the total amount of emissions abatement
  - more politically palatable
  - can link to other cap and trade systems, such as the European Union
  - Political pressure to reverse course probably less likely for cap and trade than for taxes

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Reducing GHGs Through Cap and Trade

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- 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
- Allowances ensure emission reductions
- Each emitter can design its own compliance strategy (reduce emissions, buy allowances, buy offset credits)
- Must have sufficient allowances at end of compliance period to cover all emissions in that period
- Further flexibility provided through offsets, banking, borrowing

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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
- Trading of allowances takes place

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What Emissions are Covered?

- Just CO_2?
- All GHGs?

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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%)

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What is the Emissions Reduction Timetable?

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

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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

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Cost Containment Mechanisms

- Offsets
  - Offsets are reductions in CO_2 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
    - No leakage
    - Benefits: Can substantially reduce overall cost of lowering emissions; provides environmental benefits
    - Disadvantage: Some argue that offsets lower the cost of compliance too much and result in slower transition to a low-carbon economy

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Other Cost Containment Measures

- Borrowing
- Banking
- Safety Valves
- Linkage

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How are Allowances Allocated?

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

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GHG Cap and Trade Systems

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

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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
- Covers just CO_2 and only certain economic sectors
- Allowances are free
- Goals met through trading and other mechanisms, such as the Clean Development Mechanism (CDM)

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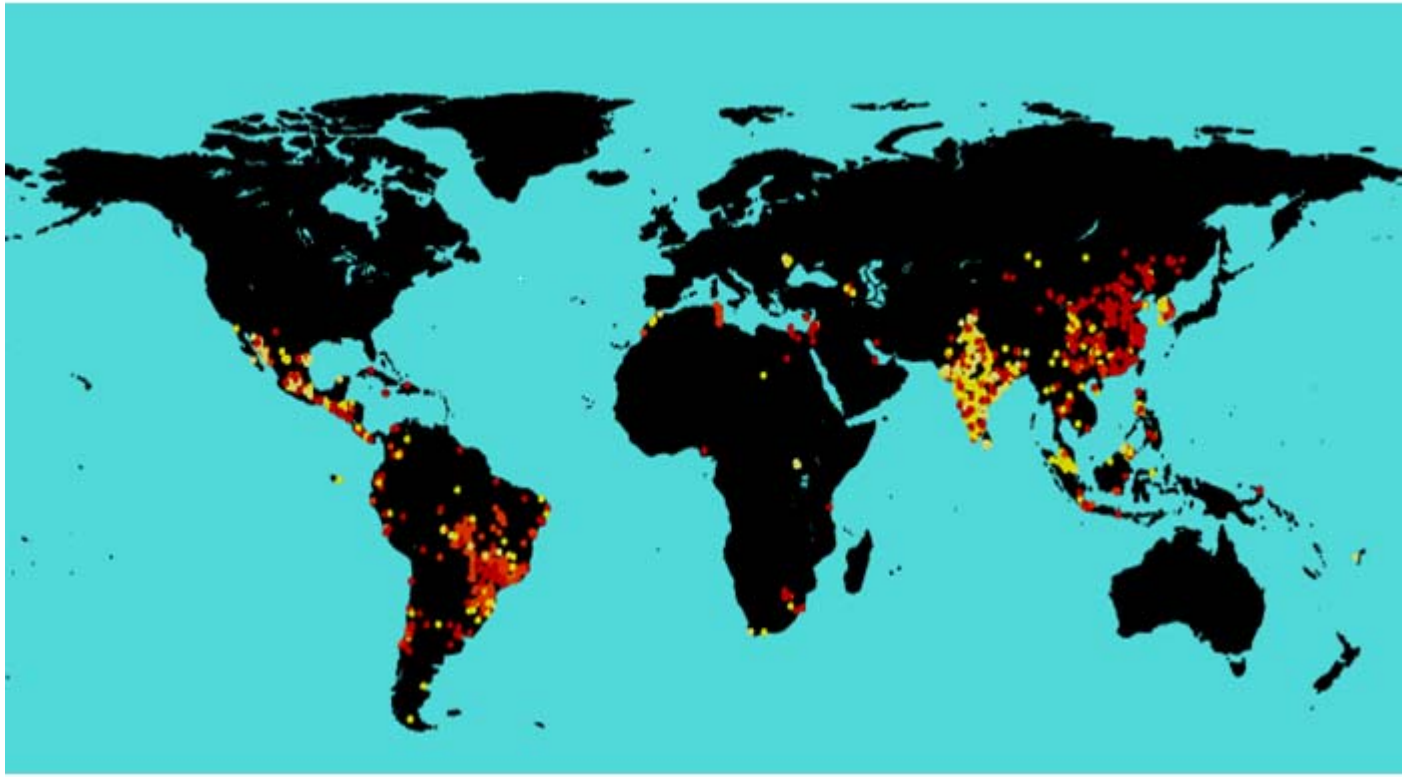
Location of CDM Projects



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

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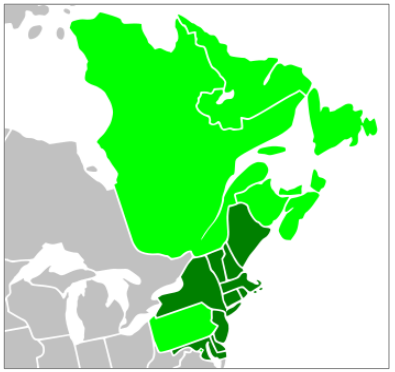
Regional Greenhouse Gas Initiative (RGGI)

- Mandatory, market-based program to cap CO_2 emissions from power generators
- Goal: reduce CO_2 emissions 10% below 2005 levels by 2018
- Ten Northeast and Mid-Atlantic states
- Applies just to CO_2 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



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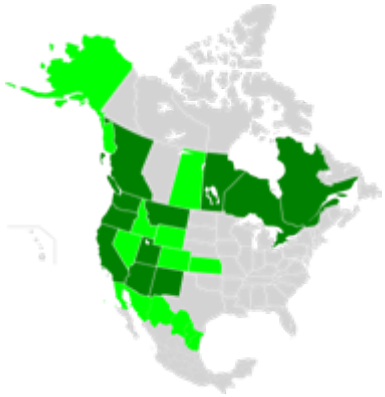
Western Climate Initiative

- 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



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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

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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

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Existing SO_2 Cap and Trade System

- 1990 Acid Rain Program; established under Title IV of the Clean Air Act
- Established a cap on SO_2 emissions; phased program
- Pollution reduction goals achieved at half the cost of traditional command and control regulation
- Since the 1990's, SO_2 emissions have dropped 42%
- Could be used as a model

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Congressional Cap and Trade Legislation – 110th Congress

- 235 bills in the 110th Legislative Session on global climate change and GHG emissions
- Bipartisan
- Key Committees:
  - House Energy and Commerce
  - Senate Environment and Public Works
  - Senate Energy and Natural Resources

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Congressional Cap and Trade Legislation – 110th Congress

- Emissions Covered: Most cover all GHGs, not just CO_2
- Cap and Timetables: Differ in target, baseline year, and near and long-term goals
  - Lieberman-Warner
    - Retains state authority to enact GHG caps and standards that are more stringent than federal standards
    - 2% per yr. reduction from 2011-2020
    - 5% per yr. reduction from 2020-2050
    - To reach 80% below 1990 levels in 2050

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Congressional Cap and Trade Legislation – 110th Congress

- McCain-Lieberman (S. 280)
  - 2004 level in 2012
  - 1990 level in 2020
  - Goal of 60% below 1990 levels in 2050
- Markey (H.R. 6186)
  - 2005 level in 2012
  - 85% below 2005 levels in 2020
  - 85% below 2005 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
  - Hydrofluorocarbons to be covered separately by amending the Clean Air Act

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Emission Reduction Targets and Timetables – 110th Congress

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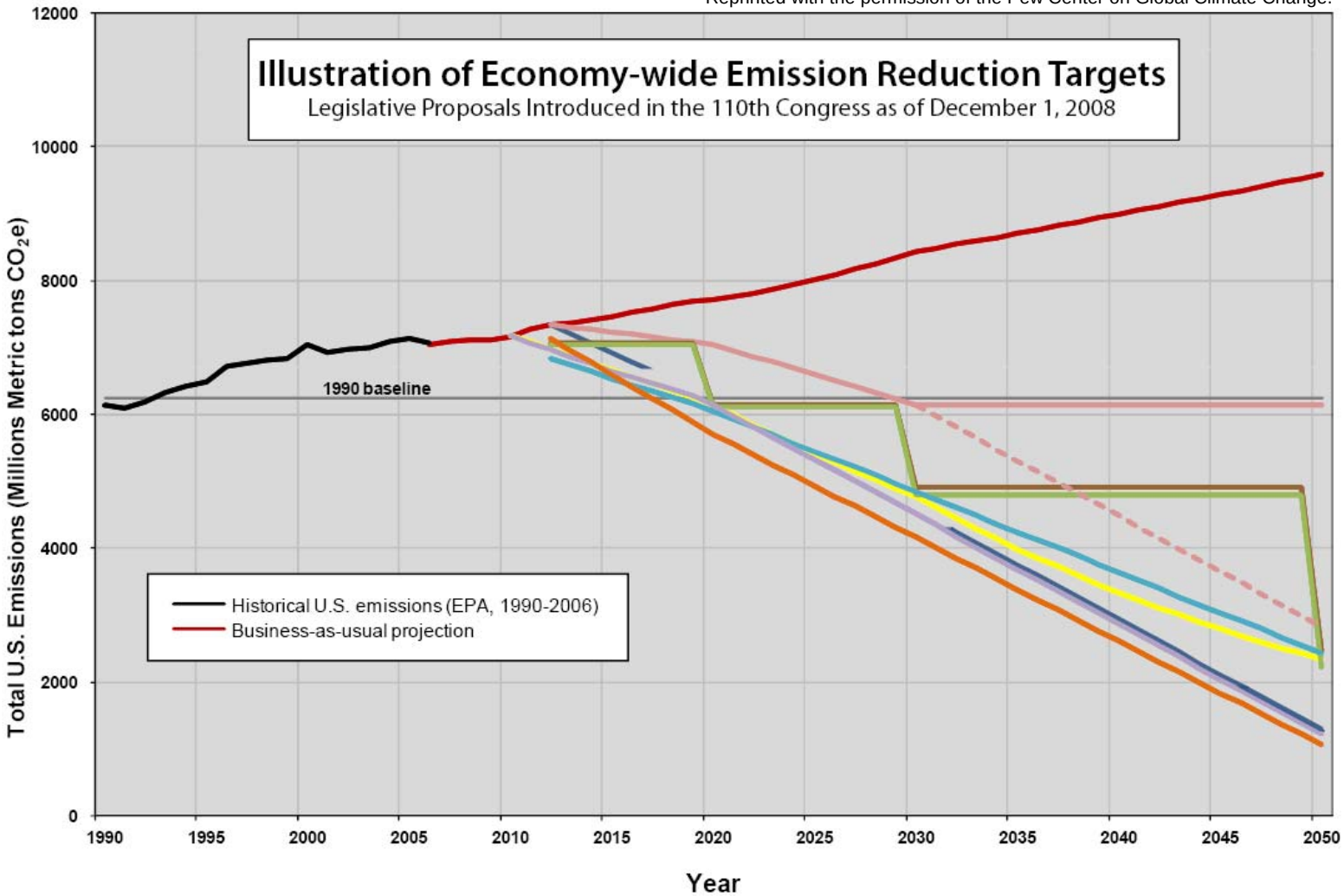

Congressional Cap and Trade Legislation – 110th Congress

- Offsets:
  - Bingaman-Specter (S. 1766, 110th Congress)
    - No limit on domestic offset use
    - Categories to be determined by regulation, but includes landfill methane use projects, municipal wastewater methane use projects, and more
  - Lieberman-Warner (S. 2191, 110th Congress)
    - Use limited to 15% of compliance obligation per year
    - Categories of offsets to be determined by regulation
  - Dingell-Boucher Discussion Draft
    - Increasing use of offsets, including domestic and international
  - Kerry-Snowe (S. 485)
    - Includes offsets generated from biological sequestration

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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
  - Obama-Biden campaign
    - 100% to be auctioned

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Congressional Cap and Trade Legislation – 110th Congress

- Applicability and Point of Regulation:
  - Generally, upstream for natural gas and petroleum; downstream for coal
  - Some have separate HFC cap

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Some Potential Approaches of the Obama Administration

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- EPA Regulations? CAA amendments? Preempt state and regional efforts?
- Campaign:
  - Implement an economy-wide cap-and-trade program to reduce greenhouse gas emissions 80% by 2050
  - Make the U.S. a leader on climate change
  - www.barackobama.com/pdf/issues/EnvironmentFactSheet.pdf
- Governors' Global Climate Summit on November 18:
  - Federal cap and trade system to reduce emissions to their 1990 levels by 2020 and reduce them another 80% by 2050
  - http://forcechange.com/2008/11/18/obamas-message-to-schwarzeneggers-governors-global-climate-summit/

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Key Appointments and Congressional Leadership

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- 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)

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Congressional Cap and Trade Legislation – 111th Congress

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- House Energy and Commerce Committee
  - Bill through Subcommittee and Committee by Memorial Day

- Senate Environment and Public Works
  - Senator Barbara Boxer's Feb. 3, 2009 press conference on global warming principles for legislation

*However, these are not the only Committees with jurisdiction and other Committees will be taking action.

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U.S. Climate Action Partnership Blueprint for Legislative Action

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- 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 values, eventual auctioning of all allowances, credit for early action
  - Integration of U.S. trading program with comparable international programs
  - http://www.us-cap.org/

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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: much more likely 2010 than 2009
- Wild cards:
  - U.N. Climate Conference to take place in Copenhagen in December 2009 to establish a global climate agreement
  - EPA action

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