

# Cap and Trade for Greenhouse Gas Reductions: Legislation and Issues

2008 National Conference of Regions:  
Understanding National Climate Change  
Strategies and the Policy Implications for Regional  
Councils and MPOs

Brent Yacobucci  
Specialist in Energy and Environmental Policy  
Congressional Research Service

February 4, 2008

# About CRS

- Nonpartisan, analytical, research and reference arm of the Library of Congress
- Work directly for Members, Committees, and Staff on a confidential basis
- Goals of confidentiality, responsiveness, timeliness, and objectivity
- That having been said...
  - The opinions presented are not those of the United States Congress or of the Congressional Research Service

February 4, 2008

# Outline of Presentation

- Basics of Cap and Trade
  - Key Concepts
- 110<sup>th</sup> Congress Legislation
- Potential Effects on Regions

# Basics of Cap and Trade

February 4, 2008

# What Are the Main Approaches?

- Carbon Tax: Generally conceived as a levy on fossil fuels based on carbon content
- Cap-and-Trade: Imposes a ceiling (cap) on total annual emissions and establishes a market in allowances between emitters
- Hybrid Program: Allows emitters to choose between meeting requirements of a cap-and-trade program or paying a set price (safety valve price) to the government

# What Are the Main Approaches?

## Basic Terms

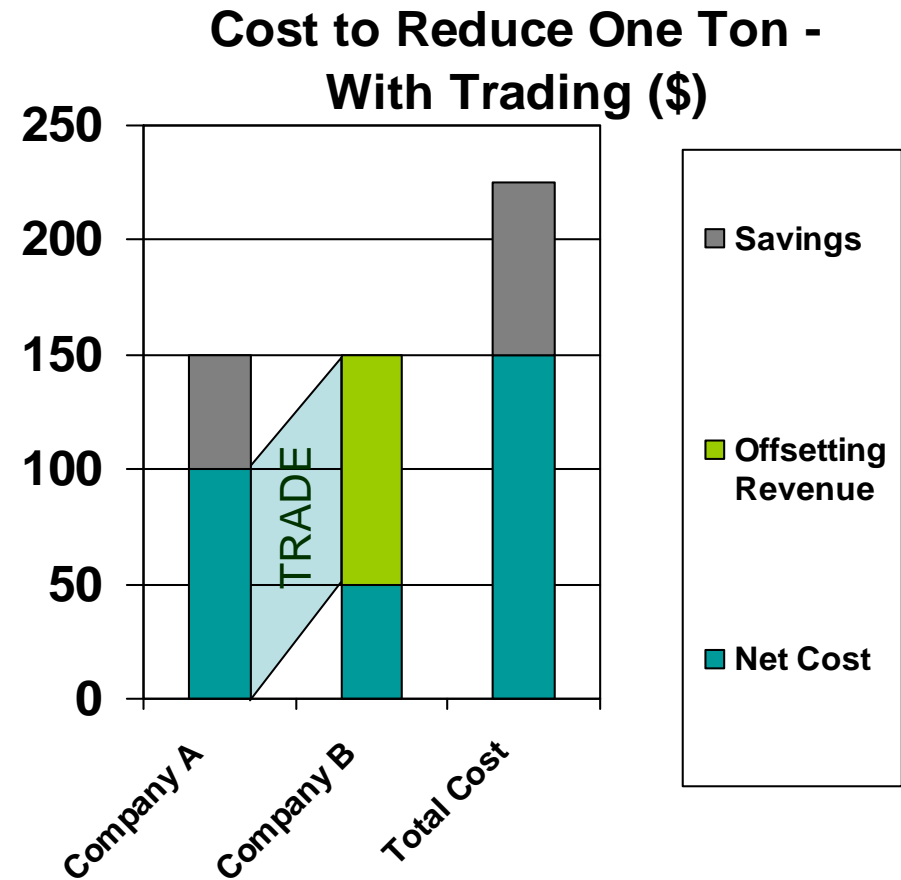
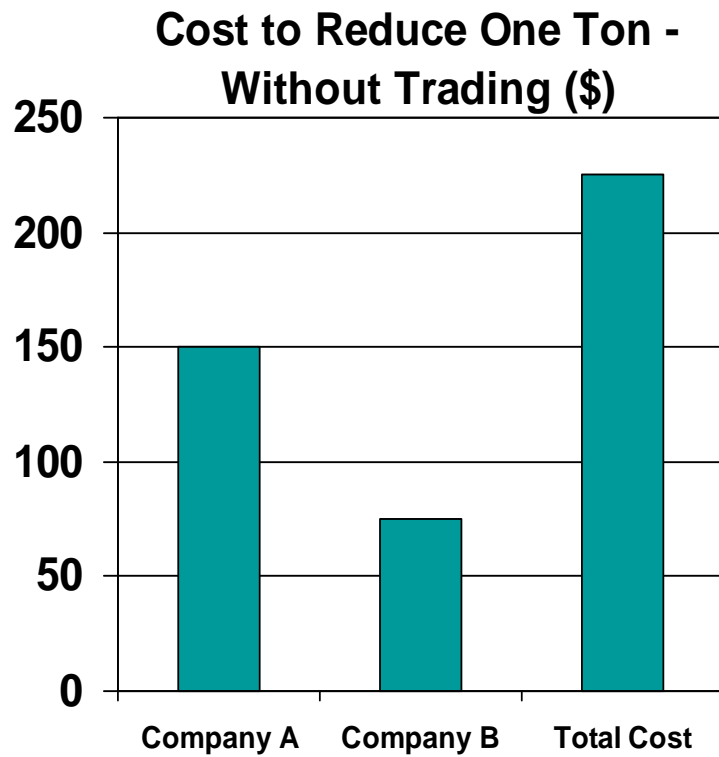
- An **emissions cap** can be based on historic data, economic data, intensity, or other criteria. It may be imposed on an entity, sector, or economy-wide basis
- An **allowance (or “credit”)** is a limited authorization by the government to emit one metric ton of CO<sub>2</sub>e. Generally, **banking** for future use is allowed
- An **offset** generally refers to emissions credits achieved by activities not directly related to the emissions of an affected source. These include sequestration activities, reductions from entities not covered by the program, and credits obtained from international activities

# What Are the Main Approaches?

## Basic Terms

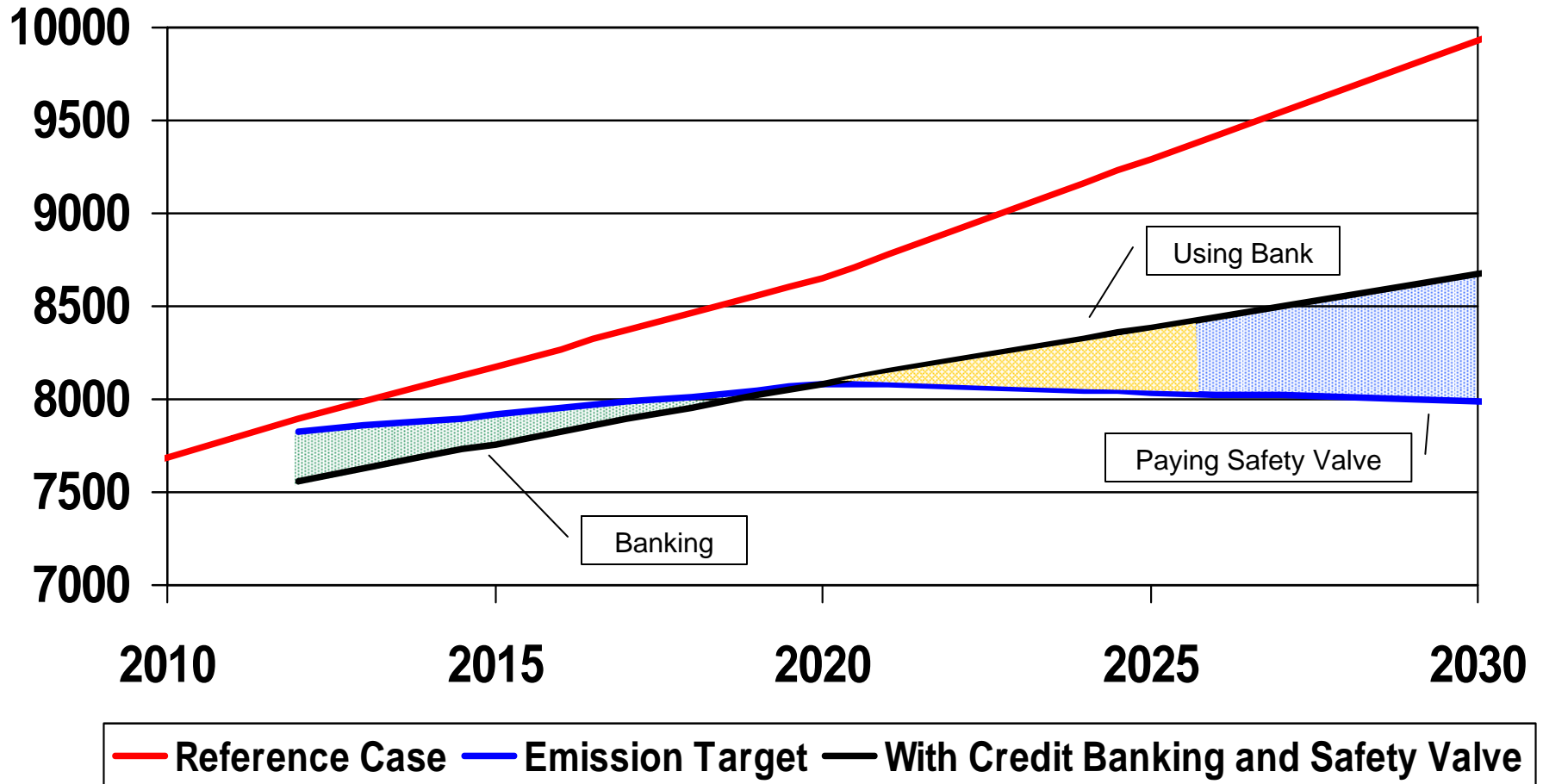
- **Safety valve** designed to prevent or respond to unacceptably high compliance costs generally by limiting the value of allowances
- **Upstream** versus **downstream** refers to the point in the economy the program is imposed
- **Coverage** refers to the breadth of economic sectors covered by a program
- **Revenue recycling** refers to how a program disposes of revenues received from auctions, penalties or a carbon tax

# Why Cap and Trade?



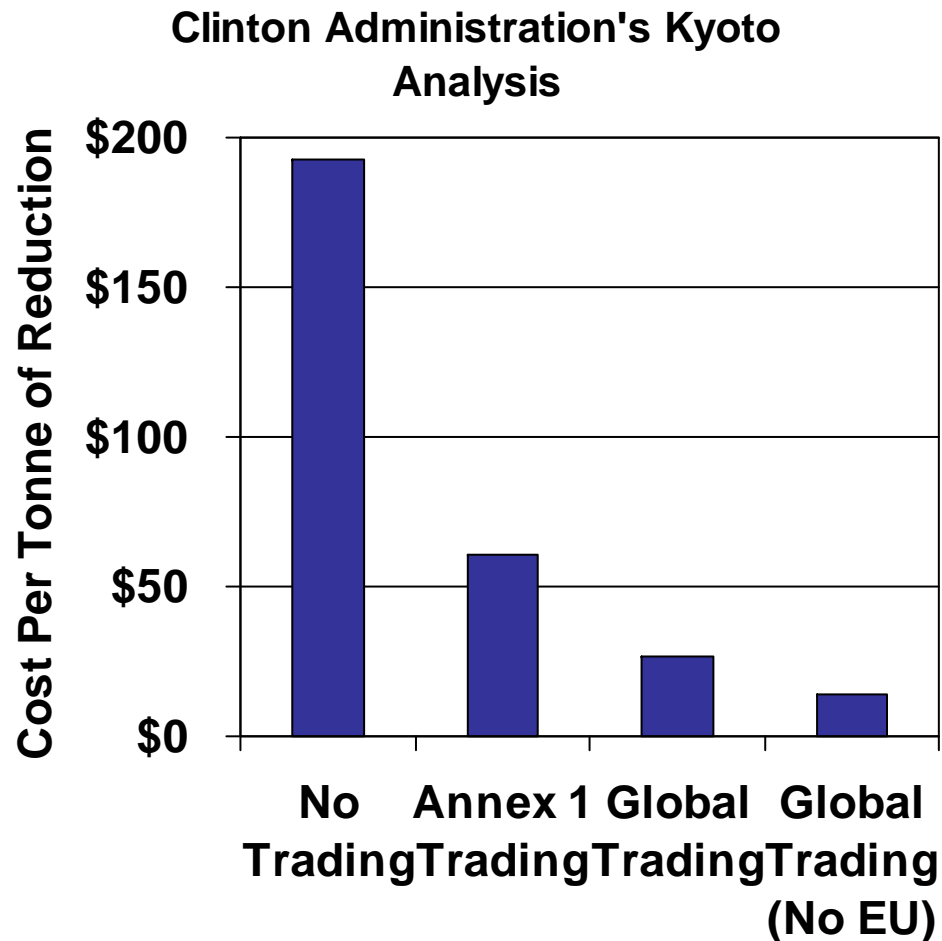
# Hybrid Approach

EIA Analysis of Proposed Hybrid Program (million metric tons CO<sub>2</sub>e)



February 4, 2008

# What Determines Costs?



- The Three Ts:
  - Tonnage Reduced
  - Time Frame
  - Techniques Allowed
- Flexibility to use offsets
  - International activities
  - Sequestration
  - Non-CO2 GHG reductions

# What Determines Costs? Tonnage Reduction Desired

- Tonnage Reduction Desired
  - Level suggested by environmental and/or economic data
  - Historic data or more economically sensitive baseline
  - Breadth of participation in program
  - Breadth of greenhouse gases included
  - Breadth of offsets permitted
  - *Carbon tax level or safety valve price*

# What Determines Costs? Timetable of Desired Reductions

- Dispute over timetable because of the delay between compliance costs and resulting benefits
  - Modest cuts early followed by steeper cuts later to allow an orderly economic transition
  - Strong, steady reductions because delay could be environmentally costly and because a strong price signal is needed for new technology development
- A set timetable versus a more flexible timetable based on economic or technology development criteria.

# What Determines Costs?

## Compliance Techniques Permitted

- Flexibility is the key to cost control under a market-based scheme
- Banking and Borrowing
- Degree to which offsets are permitted
- Auctions: Depends on purpose
  - Ensure liquidity of allowance market
  - Raise revenues for new technology, public benefit programs, or other purposes
  - As part (or all) of an allocation scheme
- Safety Valve

# 110<sup>th</sup> Congress Legislation

February 4, 2008

# Common Traits Among Bills

- Bills either mandate or permit a cap-and-trade program
- Bills place an absolute cap on GHG emissions from covered sources
- Most bills begin in the 2010-2012 time period with mandates extending to 2050
- Bills include all six greenhouse gases

# Common Traits Among Bills

- Bills have some provision for auctions, but sometimes for different purposes
- Bills permit banking of allowances
- Bills require a review of the bill's target adequacy, although sometimes by different entities
- Bills have the Environmental Protection Agency take the lead in establishing and administering the cap-and-trade program

# Summary – Senate Bills

	Coverage (% of U.S.)	2050 Reduction from 1990 levels by affected entities	Cap-and- Trade program
S. 280 (Lieberman-McCain)	70%-85%	60%	Yes
S. 309 (Sanders)	Up to 100%	80%	Permitted
S. 317 (Feinstein)	33%	Estimated at about 28%	Yes
S. 485 (Kerry)	Up to 100%	60%	Yes
S. 1766 (Bingaman-Specter)	70%-85%	Estimated at 4% in 2030 (no 2050 target)	Yes (with safety valve)
S. 2191 (Lieberman-Warner)	80%-90%	Estimated at 69%	Yes

February 4, 2008

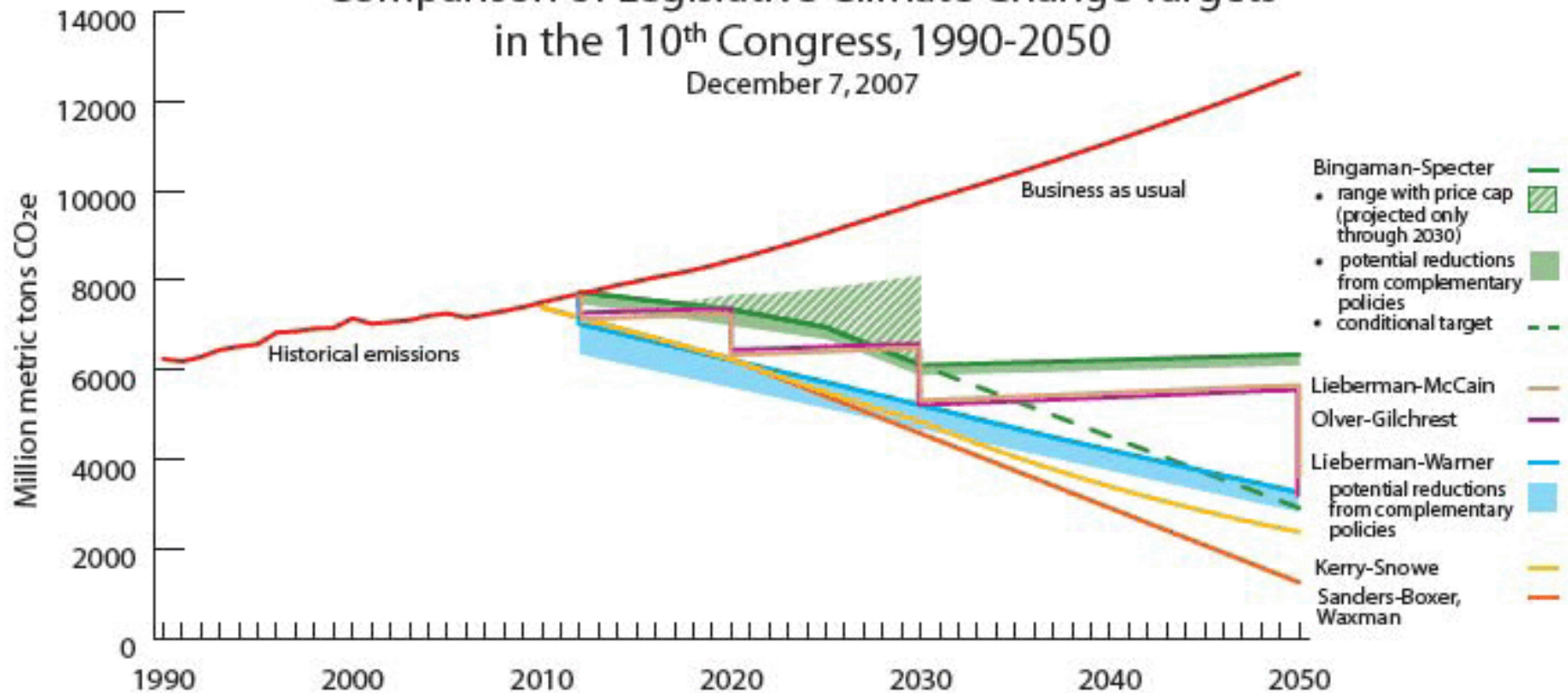
# Summary – House Bills


	Coverage (% of U.S.)	2050 Reduction from 1990 levels by affected entities	Cap-and-Trade program
H.R. 620 (Olver)	70-85%	70%	Yes
H.R. 1590 (Waxman)	Up to 100%	80%	Yes
H.R. 4226 (Gilchrest)	70-85%	70%	Yes

February 4, 2008

## Comparison of Legislative Climate Change Targets in the 110<sup>th</sup> Congress, 1990-2050

December 7, 2007



 WORLD RESOURCES INSTITUTE

For a full discussion of underlying methodology, assumptions and references, please see <http://www.wri.org/usclimatetargets>. WRI does not endorse any of these bills. This analysis is intended to fairly and accurately compare explicit carbon caps in Congressional climate proposals. Data post-2030 may be derived from extrapolation of EIA projections.

Source: John Larsen, World Resources Institute

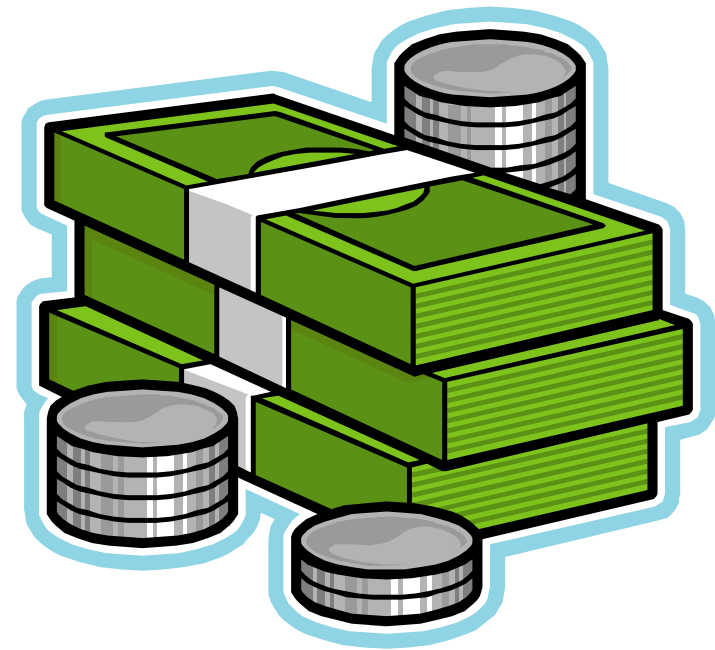
February 4, 2008

# Potential Effects on Regions

February 4, 2008

# Potential Effects on Regions

- It's all about money!

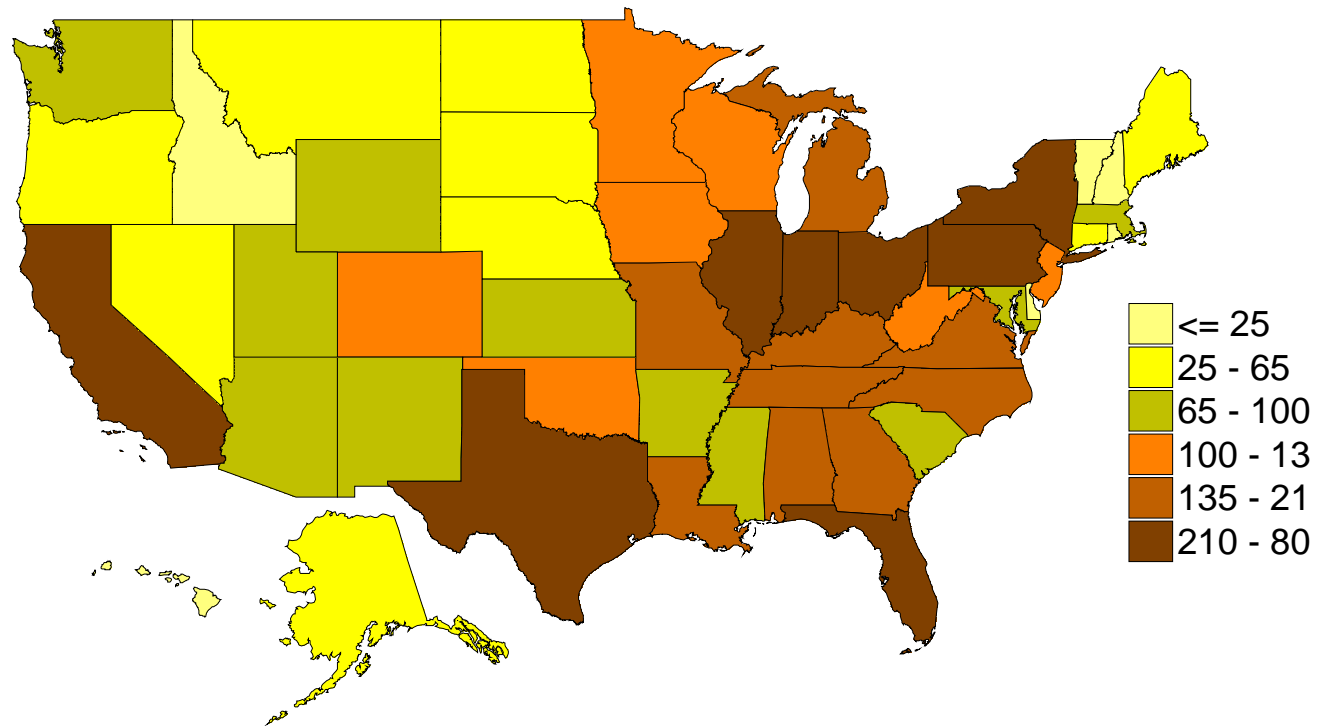


February 4, 2008

# Effects on Regions – Who Feels the Pain?

- Very much dependent on structure of cap and trade program, allocation of allowances
  - If based on historical emissions, more efficient producers may face higher costs
  - If based on economic output, more energy-intensive producers may face higher costs

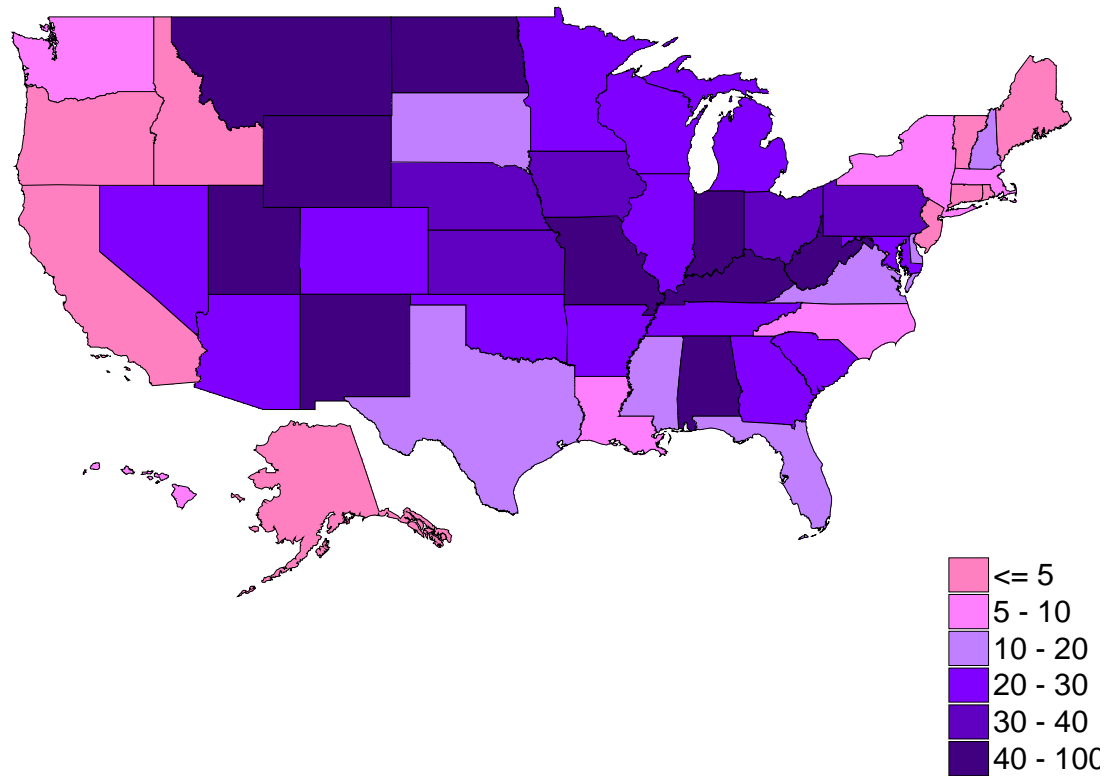
# Total Greenhouse Emissions 2003 (MMT CO<sub>2</sub> Equivalent)



February 4, 2008



# Coal as a Percentage of Total Energy Consumption



February 4, 2008

# Regional Government Effects

- Potential Revenue Losses
  - Lower business and personal income
    - Lower profitability
    - Loss of companies/industries
  - Lower transportation/transit funds if fuel use decreases
    - Highway Trust Fund tied to total fuel use – as fuel use decreases, so do HTF receipts

# Regional Government Effects (2)

## Potential Revenue Increases

- Higher income if region becomes net exporter of allowances
- Or if net exporter of technology
- Proceeds from government sale of allowances

# Regional Government Effects (3)

- Potential Non-Climate Environmental Effects – State Implementation Plans
  - Could be tradeoffs, depending on techniques used
    - Higher efficiency generally good, making SIP compliance easier
    - But some efficiency strategies lead to higher criteria pollutants, requiring offsets in SIP
- SIP process often dependent on decisions made by non-governmental actors (esp. consumers)

# Other Potential Regional Concerns

- Effects on industries, commerce, and agriculture
- Effects on water/resource quality and supply
- Effects on populations, especially low-income groups

# Regional Effects Even if no National Policy Enacted

- States and regions taking action on their own

States with Greenhouse Gas  
Emissions Targets

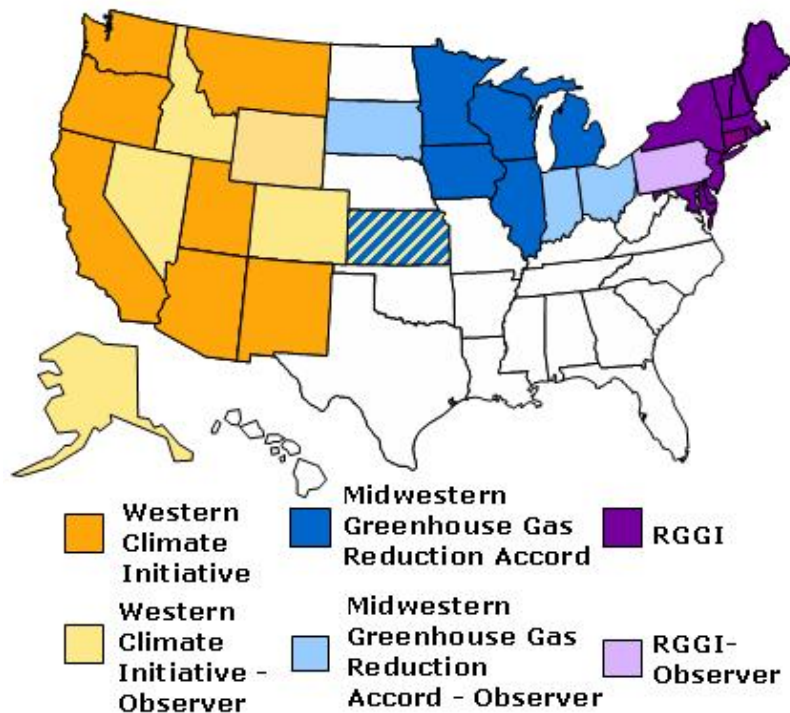


Source: Pew Center on Global Climate Change

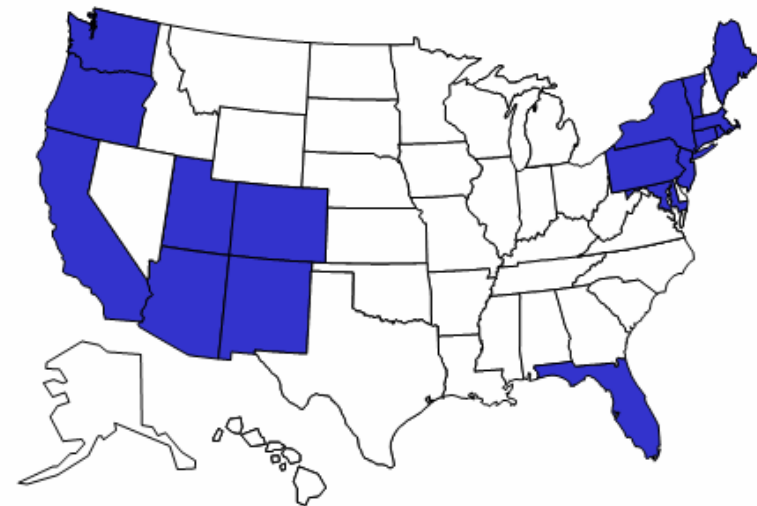
February 4, 2008

# Regional Effects Even if no National Policy Enacted

Regional Initiatives



States Poised to Adopt California's Vehicle Greenhouse Gas Standards



Source: Pew Center on Global Climate Change

February 4, 2008

# Conclusion

- Effects of cap and trade policies highly dependent on
  - Emission caps
  - Covered sectors and sources
  - Process for distributing allowances
  - Allowable offsets
  - Regional differences in energy supply, energy use, fuel mix