

# Prospects for GHG Reductions in the U.S.

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# The US: A Flurry of Activity

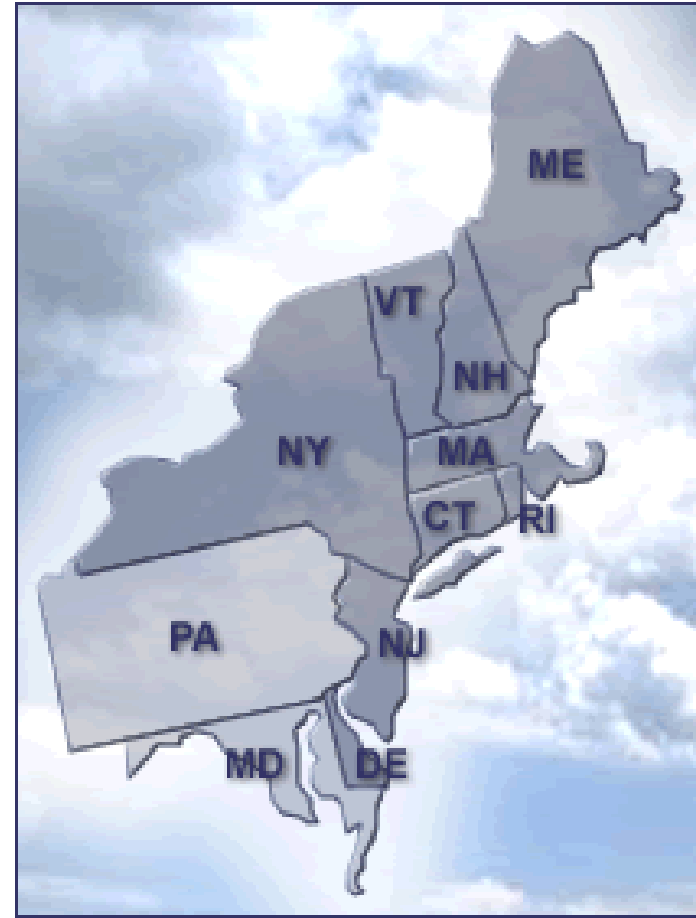
- California
- RGGI
- US Congress
- US Climate Action Partnership

# California

- AB 1493 – regulating CO2 from cars
- AB 32 – regulating statewide emissions
- Efforts also underway to form regional compact to limit emissions
- EO S-01-07 – low carbon fuel standard
- Legal challenges:
  - Authority to regulate vehicles
  - Authority to address imported electricity

# Regional GHG Initiative (RGGI)

- Regional cap and trade program proposed by former Governor Pataki
- To begin in 2009
- Nine states in New England and Mid-Atlantic have joined (2007: MA back in; RI will likely follow; MD to join)
- Minimum 25% auction required; Five states plan 100% auction.

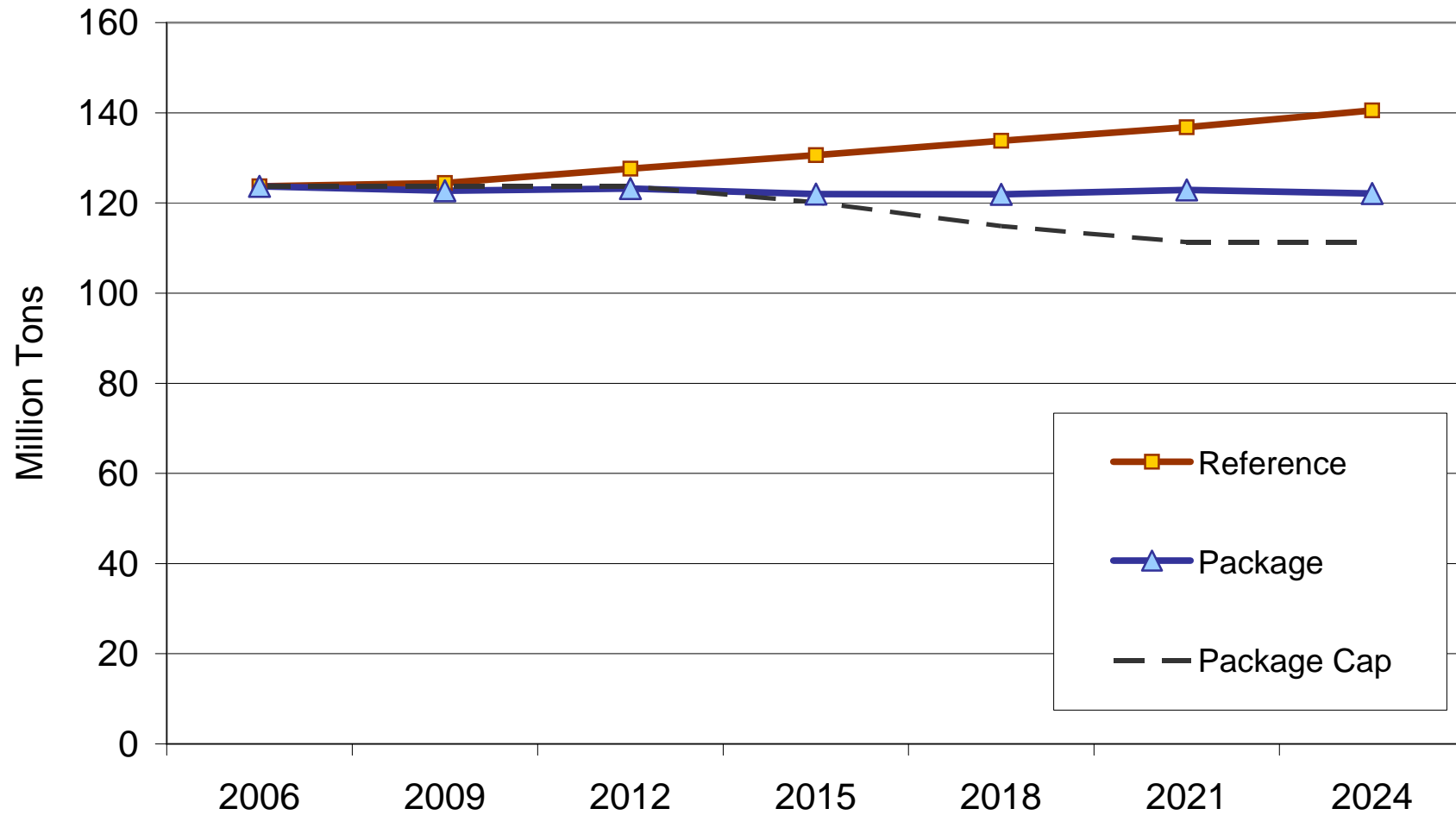


# RGGI Model Rule

- Stabilization 2010-2015; 10% decline 2016-2020.
- State budgets set as function of emissions, consumption, population, potential linkage, and new source provisions.
- Recommend 20% of state budgets for public benefits; 5% to regional fund
- Apply to units above 25 MW
- 3-year compliance period with banking
- Offsets up to 50% of obligation; initial focus on in-region landfill gas, afforestation, SF6, and end-use projects.

***MOU: Commitment to initiate rulemaking, address offsets, linkages, and coordinated tracking.***

# RGGI Cap



# Climate Change Proposals in Congress

- 109<sup>th</sup>: 2005-2006
    - S 150 (Jeffords), S 730 (Leahy), HR 1451 (Waxman), S 2724 (Carper), HR 1873 (Bass), S 1151 (McCain), HR 759 (Gilchrest), HR 2828 (Inslee), SA 868 (Bingaman), HR 5049 (Udall), Feinstein draft, S 3698 (Jeffords), HR 5642 (Waxman), S 4039 (Kerry)
    - Sense of Senate Resolution
  - 110<sup>th</sup>: 2007-2008
    - Senate: Bingaman/Specter; Sanders/Boxer; Feinstein/Carper; McCain/Lieberman; Kerry/Snowe
    - House: Several possible, including carbon tax (Stark)
- Additional proposals on auto efficiency, renewable portfolio standards, R&D also expected**

# Senate Bills on climate change in the 110<sup>th</sup> Congress

- All five proposals involve cap and trade on domestic emissions
- Four adopt economy-wide approach; one focuses on electric sector
- Reduction targets vary widely
- All provide for emissions banking, one provides for limited borrowing, one provides for a 'safety valve'
- Offset provisions vary widely
- Some auctioning of allowances in all proposals
- All involve some type of advanced technology program
- One proposal links future action to progress in other nations
- Versions of two of the bills have previously been subject to Senate vote



# Five Recent Senate Bills: Similarities

- All call for mandatory emission caps
- All mandate or recommend market-based cap and trade permit system
- All allow banking
- All address six GHGs
- All contain provisions to accelerate research, development and deployment of climate-friendly technologies

# Five Recent Senate Bills: Differences

- Scope of the regulatory program
- Point of regulation
- Concentration goals
- Emissions targets
- Expected costs to reach target
- Efforts to limit uncertainty about costs
- Permit allocation
- Other key features

# Scope

- Four bills are economy-wide
- Feinstein/Carper only regulates electric sector emissions (one third of total)

# Point of Regulation

- Feinstein/Carper: electric generators (downstream)
- McCain/Lieberman: electric generators, other large downstream sources, including petroleum refiners and importers. Other smaller sources not covered.
- Bingaman/Specter: upstream
- Kerry/Snowe and Sanders/Boxer: leave to discretion of US EPA

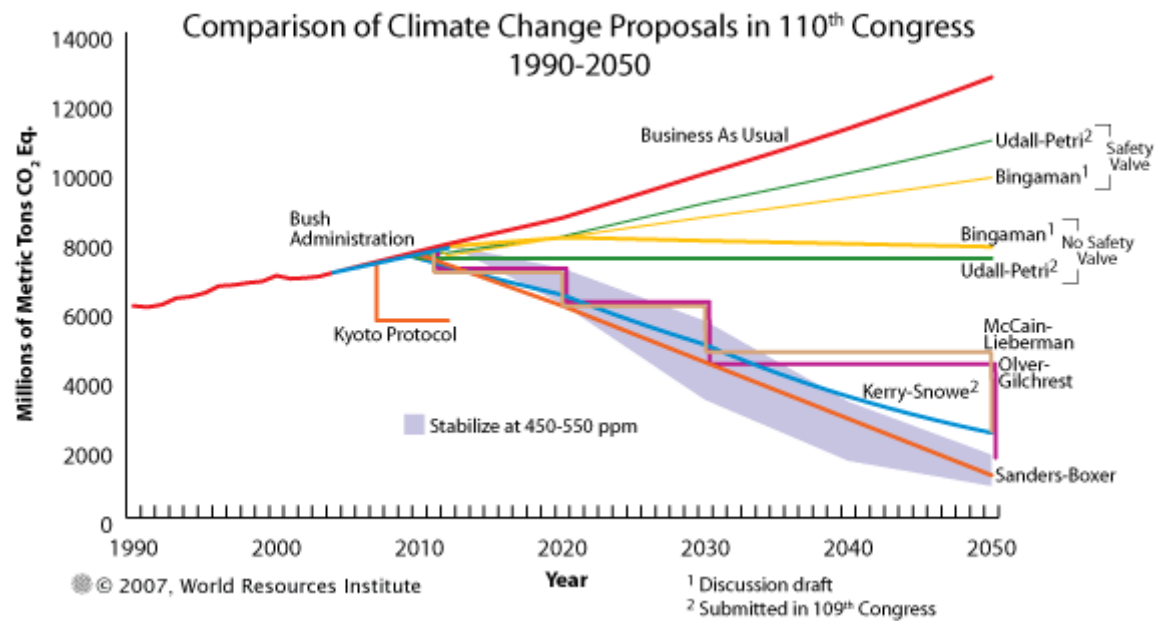
# Concentration Goals

- Kerry/Snowe: long term goal of 450ppm CO<sub>2</sub>e
- Sanders/Boxer: long term goal slightly above 430ppm CO<sub>2</sub>e
- Both call for US reductions of about 60% below BAU by 2030, although they do not specify assumed actions by other nations
- Other bills: no specific long term goals

# Proposed Emission Reduction Targets for US

	<u>2020</u>	<u>2030</u>
• Sanders/Boxer	42.0%	63.0%
• Kerry/Snowe	42.0%	61.0%
• McCain/Lieberman	39.0%	59.0%
• Feinstein/Carper	25.0%	45.0%
• Bingaman/Specter	7.6%	21.9%

# Estimated range of emission reductions



# Costs

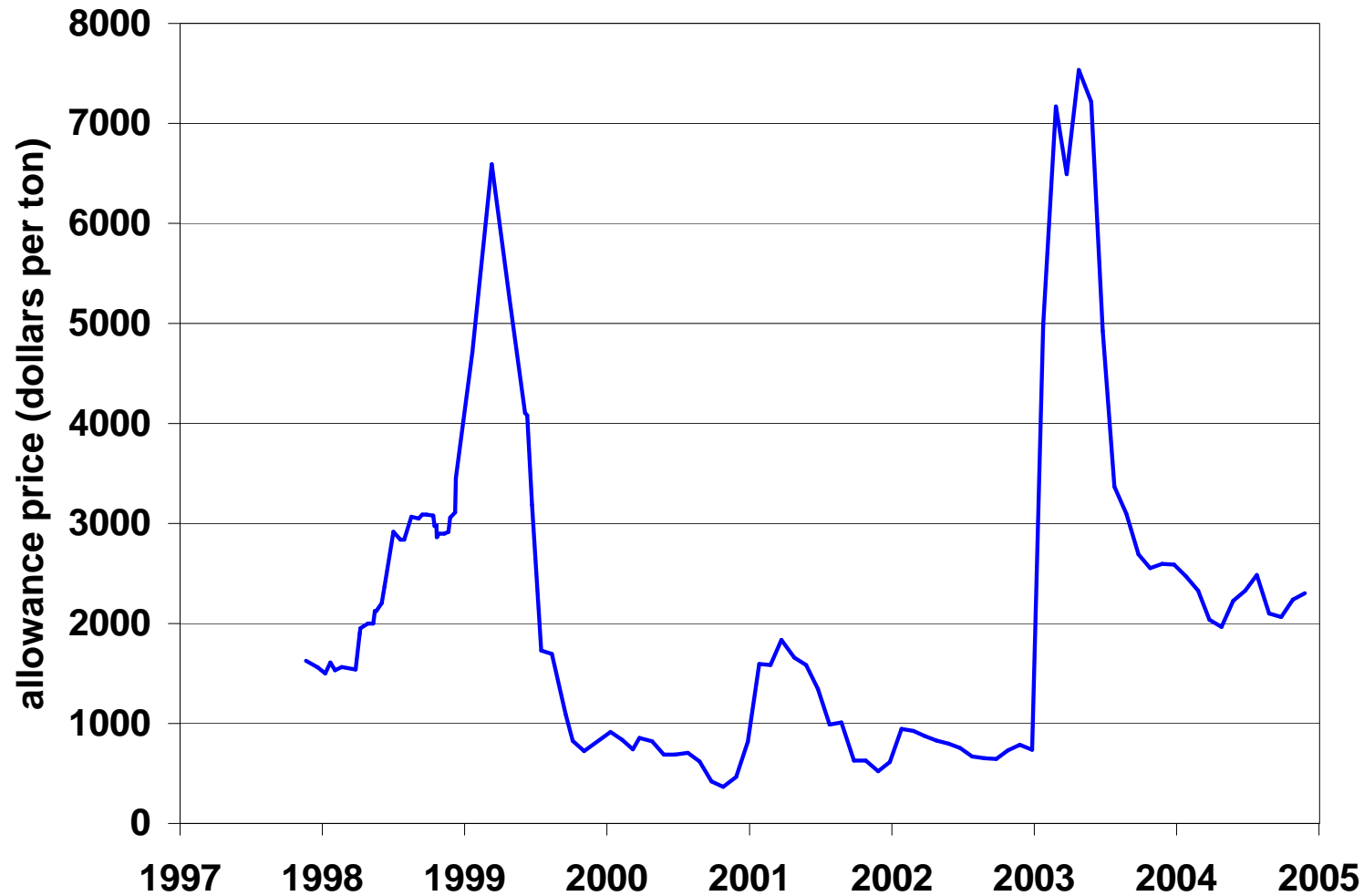
- Except for Bingaman/Specter, limited analysis so far
- Recently, US EIA estimated price of \$11/ton CO<sub>2</sub>e by 2025 for Bingaman/Specter, with emissions 10% below BAU
- Earlier EIA estimated McCain/Lieberman to cost \$45/ton CO<sub>2</sub>e by 2025, with emissions 22% below BAU
- EIA also estimated coal consumption declines 4x more in McCain/Lieberman
- Other bills likely more costly



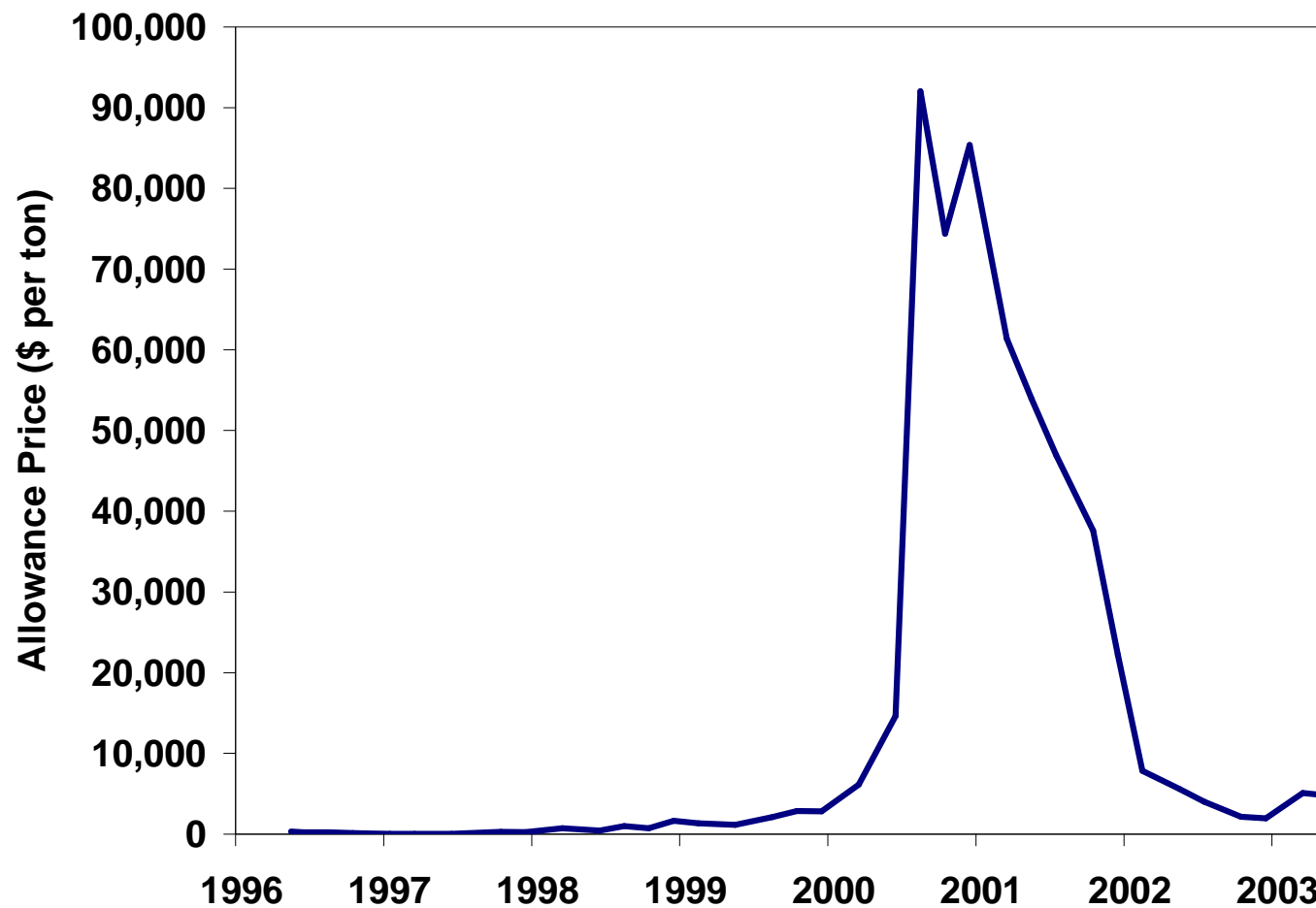
# Cost Uncertainty

- Four bills allow banking (Sanders/Boxer silent on the issue), likely creating floor price
- Bingaman/Specter has transparent safety valve (\$7/ton plus 5% real escalation)
- McCain/Lieberman allows borrowing up to 25% for 5 years with 10% interest charge

# NO<sub>x</sub> OTC Current Vintage Price



# NO<sub>x</sub> RECLAIM Market



# Permit Allocation

- Bingaman/Specter: initial auction of 10% , rising to 65%. Balance distributed gratis
- Feinstein/Carper: initial auction of 15%, rising to 100% in 2036. Balance gratis
- Other bills leave allocation to the discretion of the EPA Administrator (Sanders/Boxer), the President (Kerry/Snowe), or Secretary of Commerce and the EPA Administrator (McCain/Lieberman)

# Other Key Features

- All bills allow offsets for biological sequestration
- Bingaman/Specter and Feinstein/Carper allow broader offsets
- Bingaman/Specter, McCain/Lieberman, Feinstein/Carper allow int'l credits to meet US commitments
- Bingaman/Specter calls for periodic Senate review of progress by other nations prior to further steps
- Broad range of specificity about technology support
- Some contain additional regulatory provisions for auto fuel efficiency, renewable portfolio standards  
(Bingaman/Specter, Kerry/Snowe, Sanders/Boxer)

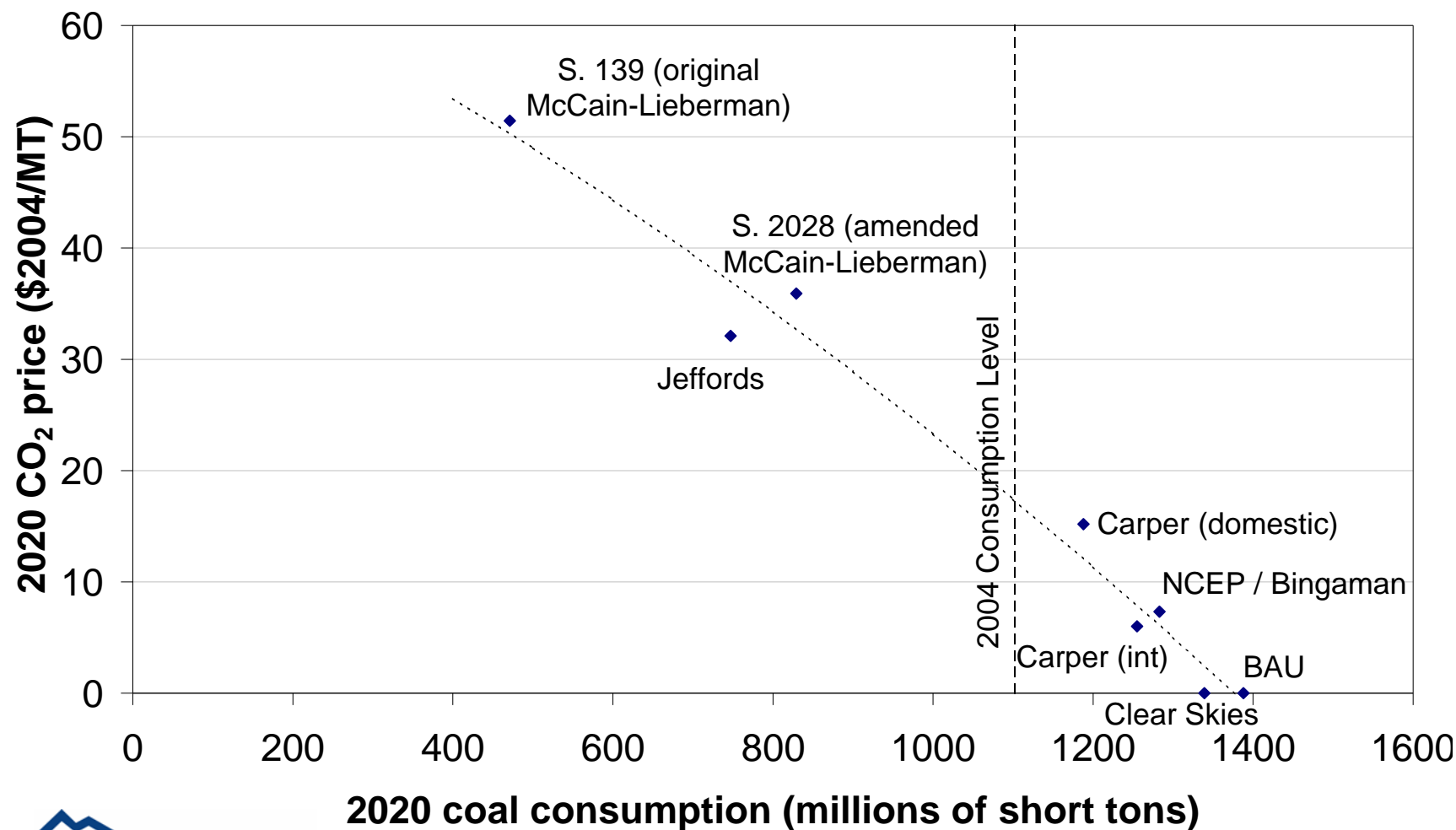
# More Details on Bingaman / Specter

- Target based on a 2.6% annual intensity decline (0.2% annual growth) starting in 2012; accelerates to 3.0% (0.2% decline) in 2022; implemented as absolute target.
- Safety valve at \$7/ton CO<sub>2</sub>; rises 5% per year above inflation.
- 10% auction (grows 65%) to support technology and adaptation programs: IGCC, biofuels, carbon-free energy.
- Congressional review every 5 years (adjust safety valve, target, allocation via expedited procedures).

# The role of coal

## 2020 Coal Consumption versus CO<sub>2</sub> Price

(select EIA analyses)



# US Climate Action Partnership

- Leading US business and environmental NGOs call for federal government ‘to quickly enact strong legislation to require significant reduction of GHGs’ (January 2007)
- Alcoa, BP America, Caterpillar Inc., Duke Energy, Dupont, Environmental Defense, General Electric, Lehman Brothers, NRDC, Pew Center, PG&E Corp., and others



# Adopt Six Principles

- Account for global dimensions of climate change
- Create incentives for technology innovation
- Be environmentally effective
- Create economic opportunity and advantage
- Be fair to sectors disproportionately impacted
- Reward early action

# Many details not agreed upon in US CAP proposal

- Scope
- Point of regulation
- Targets
- Cost control
- Allocation

# One International Comparison: Prices

- Europe: €15/tCO<sub>2</sub>
- Canada\*: C\$15/tCO<sub>2</sub>
- NZ\*: NZ\$15/tCO<sub>2</sub>
- Japan\*: ¥2,500-3,000 / tC tax (\$5-6 / tCO<sub>2</sub>)
- US\*: \$7/tCO<sub>2</sub>

Source: William Pizer, RFF

*\*proposed*

# Conclusions

- Considerable activity underway in US, well beyond voluntary programs
- State policies focus on emission reductions
- Federal policies add support for new technologies
- ‘Devil is in the details’ (targets, timetables, costs, cost containment, sector impacts, link to int’l system, etc.)
- Most observers believe the likelihood of final legislation prior to next Presidential election is less than 50%