



**The Evolution and Anatomy of Recent  
Climate Change Bills in the U.S. Senate:  
*Critique and Recommendations***

***Presented to:  
National Association of  
Regulatory Utility Commissions  
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# Discussion Today

- **Goals**
  - **Familiarize NARUC members with structure, development and remaining issues in climate legislation**
  - **Suggest alternative ways to think about provisions in upcoming climate change legislation**
  - **Provide recommendations for next bill**



# Discussion Today

- Outline
  - Premise
  - Cross-cutting conclusions
  - Background and history
  - Structural analysis
  - Conclusions and recommendations



# Discussion Today

- Premise for analysis
  - “Naïve” policy analysis
  - Whatever goals Congress chooses should be pursued as efficiently as possible
  - Congress must make political compromises, but should understand the implications
  - We can learn about the design of a future bill by understanding structure of past attempts



# Crosscutting Conclusions

- Congress can learn as evidenced by developments in ...
  - Upstream vs. downstream choice
  - Choices in mechanisms for protection of low-income families
  - Introduction of deficit reduction fund
  - Protocol for offsets
  - Introduction of more gradual phase-in of targets
- Utility regulatory commissions may need to check their instincts and rethink how to play in this arena
  - Preserving regulatory price signals versus low electricity prices
  - Allocation versus auction
- There may be creative options for dealing with “unassailable” political constraints



## Major Climate Change Bills in U.S. Senate

- S. 1766: Low Carbon Economy Act  
*Bingaman-Specter Bill*
- S. 2191: America's Climate Security Act  
*Lieberman-Warner Bill*
- S. 3036: America's Climate Security Act  
*Manager's Amendment*



## Timeline for Senate bills in 110<sup>th</sup> Congress

- **July 11, 2007** – S. 1766: Bingaman-Specter bill introduced
- **October 18, 2007** – S. 2191: Lieberman-Warner bill introduced
- **May 20, 2008** – S.2191 reported by Senate EPW; S.3036 introduced.
- Manager's Amendment proposed as substitute incorporating Senator Boxer's amendments to S.3036
- About 150 amendments were proposed to the legislation
- **June 4, 2008** – Motion was made for Cloture
- **June 6, 2008** – Cloture vote of 48 – 36 (16 not voting); needed 60 votes to end debate



## **Discussion of Anatomy and Evolution**

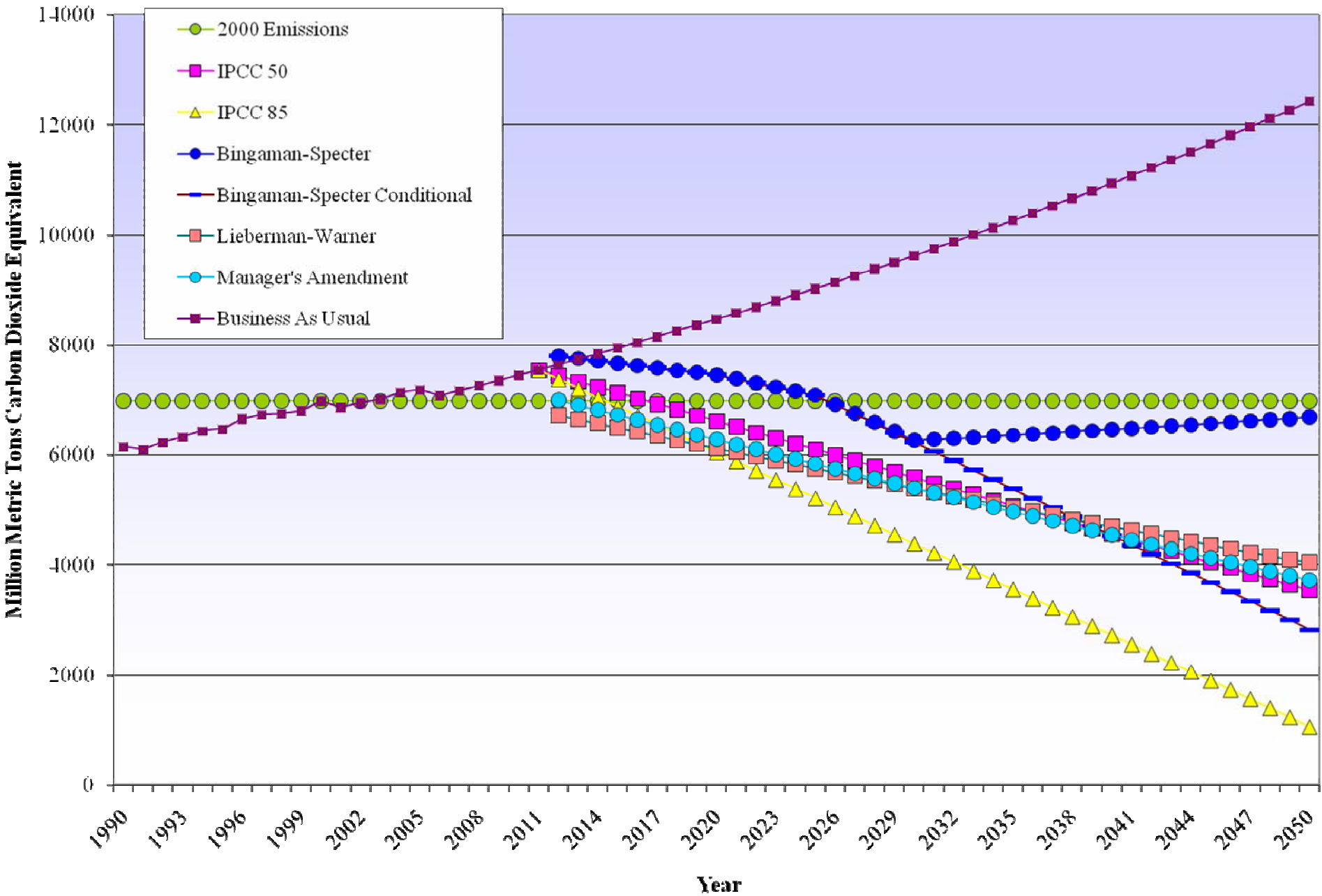
- Emissions Reduction Targets
- Point and Scope of Regulation
- Cost Containment Mechanisms
- Activities Outside the Cap
- Distribution of Allowances and Auction Revenues
- Strategic Approach



# Discussion of Anatomy and Evolution

- **Emissions Reduction Targets**
- Point and Scope of Regulation
- Cost Containment Mechanisms
- Activities Outside the Cap
- Distribution of Allowances & Auction Revenues
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# Emissions Targets for the U.S. Senate Climate Change Bills





## Impact of Base Year and Domain

<b>This Analysis</b>	<b>Another Summary</b>
<p><b>Manager's Amendment</b></p> <p><b>47%</b></p> <p><b>Emission Reductions by 2050</b></p> <p><i>Base Year: 2000</i> <i>Coverage: Economy</i></p>	<p><b>Manager's Amendment</b></p> <p><b>71%</b></p> <p><b>Emission Reductions by 2050</b></p> <p><i>Base Year: 2007</i> <i>Coverage: Capped Sectors</i></p>

## Leader vs. Follower Strategy

<b>Leader</b>	<b>Follower</b>
<p data-bbox="428 539 999 588"><b>Lieberman-Warner Bill</b></p> <ul data-bbox="428 616 999 745" style="list-style-type: none"><li data-bbox="428 616 999 665">• 17% decrease by 2025</li><li data-bbox="428 694 999 742">• 46% decrease by 2050</li></ul> <p data-bbox="428 845 1018 893"><b>Manager's Amendment</b></p> <ul data-bbox="428 922 999 1051" style="list-style-type: none"><li data-bbox="428 922 999 971">• 16% decrease by 2025</li><li data-bbox="428 999 999 1048">• 47% decrease by 2050</li></ul>	<p data-bbox="1111 539 1683 588"><b>Bingaman-Specter Bill</b></p> <ul data-bbox="1111 616 1759 1159" style="list-style-type: none"><li data-bbox="1111 616 1606 665">• 1% increase by 2025</li><li data-bbox="1111 694 1626 742">• 10% decrease by 2030</li><li data-bbox="1111 756 1759 856">• 4% increase by 2050 without further action</li><li data-bbox="1111 885 1721 1159">• 59% decrease by 2050 if 5 major trading partners (China, Mexico, Canada, Japan, and Germany) take “comparable” action</li></ul>

**\*All percentages are relative to 2000 levels**



## Relation to Clean Air Act

- Neither S. 1766 or S. 2191 mention CAA
- Manager's Amendment requires the President to submit a report to Congress that reports "any direct regulation of carbon-dioxide emissions that has occurred or may occur under § 1751 of the Clean Air Act."
- Language of the bill needs to explicitly state this comprehensive national bill will supersede CAA on climate change.



## **Emissions Reductions Targets Recommendations**

- Language of the bill needs to explicitly state this comprehensive national bill will supersede CAA on climate change and greenhouse gas emissions.
- Clarify base year (e.g., 2000 or 2006) and scope (economy wide or capped sectors) when forecasting percent reductions

Evidence of learning?



## **Discussion of Anatomy and Evolution**

- Emissions Reduction Targets
- **Point and Scope of Regulation**
- Cost Containment Mechanisms
- Activities Outside the Cap
- Distribution of Allowances & Auction Revenues
- Strategic Approach



## Point and Scope of Regulation

- ***Downstream***– regulate businesses or individuals that emit carbon dioxide emissions (i.e. automobile owners, factories, universities)
- ***Upstream***– regulate businesses that produce emitting fuels and substances (i.e. natural gas processors, coal mines, petroleum refineries)

## ***Point and Scope of Regulation***

<b>Energy Source</b>	<b>Direction of Regulation</b>		
	<i><b>Lieberman-Warner S. 2191</b></i>	<i><b>Bingaman-Specter S. 1766</b></i>	<i><b>Manager's Amendment S. 3036</b></i>
<i><b>Coal</b></i>	Downstream	Downstream	Downstream
<i><b>Natural Gas</b></i>	Downstream	Upstream	Upstream
<i><b>Oil</b></i>	Upstream – transportation fuel; Downstream – industrial	Upstream	Upstream
<i><b>Nonfuel chemicals</b></i>	Upstream	Upstream	Upstream
<i><b>% Emissions Regulated</b></i>	<b>80 percent</b>	<b>85 percent</b>	<b>84 percent</b>
<i><b>% Emissions Excluded</b></i>	<b>20 percent</b>	<b>15 percent</b>	<b>16 percent</b>



## Why Regulate Upstream with CO<sub>2</sub>?

- **Measurement costs** are lower because carbon content of fossil fuels is an excellent proxy for emissions of carbon dioxide.
- **Program cost** is lower because there are fewer entities to regulate (*around 2,000 entities instead of as many as 380,000 industrial sources plus millions of small emitters*)
- **Emissions coverage** is better because we can regulate up to 85 percent of emitters (*versus about 50 percent if we target larger downstream sources*)



## **Point and Scope of Regulations Recommendations**

- For fossil fuels, direct controls to upstream producers, especially for petroleum and natural gas
- Cover as much of economy as administratively feasible

Evidence of learning?



## **Discussion of Anatomy and Evolution**

- Emissions Reduction Targets
- Point and Scope of Regulation
- **Cost Containment Mechanisms**
- Activities Outside the Cap
- Distribution of Allowances & Auction Revenues
- Strategic Approach



# Cost Containment Mechanisms

- Allowance trading
- Banking
- Borrowing
- Price cap/floor
- Agency discretionary intervention

## ***Cost-Containment Mechanisms***

### **Lieberman-Warner (S. 2191)**

- **Trading**
- **Borrowing up to 15 percent of emissions** up to 5 years from use year; repayment at 1.1 times “the number of years beginning after the use year and before the source year”
- **Unlimited banking**

### **Bingaman-Specter (S. 1766)**

- **Trading**
- **No borrowing provision**
- **Unlimited banking**
- **“Technology Accelerator Payment”** of \$12/metric ton CO<sub>2</sub> equivalent in 2012 (5 percent increase each year)

# ***Cost-Containment Mechanisms***

## ***Manager's Amendment***

### ***(S. 3036)***

- |   |   |
|---|---|
| <ul style="list-style-type: none"><li>• <b>Trading</b></li><li>• <b>Borrowing up to 15 percent of emissions</b> up to 5 years from use year; repayment at 10 percent compound interest</li><li>• <b>Unlimited Banking</b></li></ul> | <ul style="list-style-type: none"><li>• <b>Emergency “off ramps”</b><br/>Increase allowance borrowing<br/>Adjust repayment period<br/>Relaxed constraints on international allowances/offsets</li><li>• <b>Cost containment auctions</b><br/>Minimum price of \$22 per allowance<br/>Maximum price of \$30 per allowance<br/>Price increases by 5 percent/year after 2012</li><li>• <b>Minimum reserve price</b> for Regular Auctions of \$10 in 2012 (increases by 5 percent/year)</li></ul> |
|---|---|



## Cost Containment Recommendations

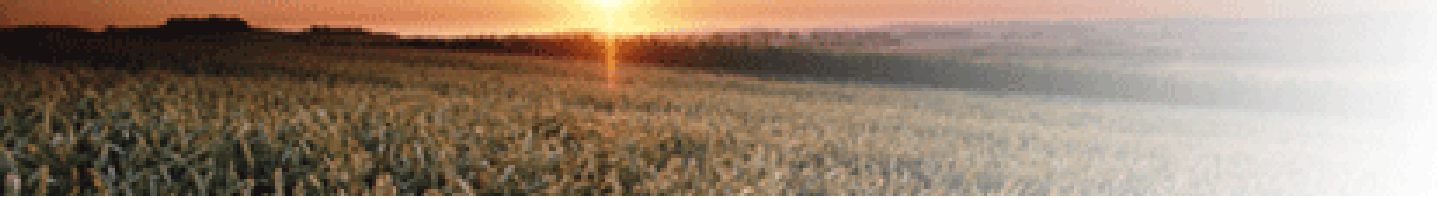
- Use price floor for regular auctions
- Protect borrowing program against bankruptcy risks
- Do not put upper limit on cost-containment auction price. Auction *de novo* each year
- Find mechanism for credible commitment to cost containment deductions from 2030 – 2050 allowances

Evidence of learning?



## Discussion of Anatomy and Evolution

- Emissions Reduction Targets
- Point and Scope of Regulation
- Cost Containment Mechanisms
- **Activities Outside the Cap**
- Distribution of Allowances & Auction Revenues
- Strategic Approach



## Activities Outside the Cap

- **On-Budget vs. Off-Budget**  
(using existing allowances vs. creating new)
- **Input-Based vs. Output-Based**  
(activity-based vs. measured results)

# *Activities Outside the Cap*

<b>Activity</b>	<b>Accounting Method</b>		
	<i>Lieberman-Warner S. 2191</i>	<i>Bingaman- Specter S. 1766</i>	<i>Manager's Amendment S. 3036</i>
<b>Domestic Offsets</b>	<b>Off Budget</b> (15 percent)	<b>Off Budget</b> (Unlimited)	<b>Off Budget</b> (15 percent)
<b>Int'l Offsets</b>	<b>NA</b>	<b>Off Budget</b> (10%)	<b>Off Budget</b> (5%; Carry Over)
<b>Int'l Market Allowances</b>	<b>Off Budget</b> (15%)	<b>Off Budget</b> (Unlimited)	<b>Off Budget</b> (Unlimited)
<b>Early Action</b>	<b>On Budget</b> (1-5%; 2012-2016)	<b>On Budget</b> (1%; 2012-2020)	<b>On Budget</b> (1-5%; 2012-2025)
<b>CCS Bonuses</b>	<b>On and Off Budget</b> (4% plus 3.9 B bonus)	<b>On Budget</b> (8%)	<b>On Budget</b> (1-4%; Kick Start)
<b>Ag and Forestry</b>	<b>On Budget</b> (5%)	<b>On Budget</b> (5%)	<b>On Budget</b> (4.25 – 4.5%)
<b>Int'l Forest Projects</b>	<b>On Budget</b> (3%)	<b>NA</b>	<b>On Budget</b> (1%; Carry over)



## Activities Outside the Cap Recommendations

- Protect the emissions cap from erosion
  - Assuring integrity of systems via rigorous measurement standards...*reproducible*, not just verifiable
  - Rewarding from on-budget allowances
- Placing percentage limits on offsets and other activities outside the cap on program as a whole not individual entities

Evidence of learning?



## Activities Outside the Cap Recommendations

- Carefully evaluate integrity of other nations' programs before accepting their allowances
- Revisit CCS bonuses
  - Eliminate? Substitute research and development funding
  - Applied to captured or avoided emissions?

Evidence of learning?



## Discussion of Anatomy and Evolution

- Emissions Reduction Targets
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- Cost Containment Mechanisms
- Activities Outside the Cap
- **Distribution of Allowances & Auction Revenues**
- Strategic Approach



## Distribution of Allowances and Auction Revenue

- **Direct Allocation** – give away allowances through grandfathering or other allocation scheme
- **Auction with Earmarking** – allowances sold to highest bidder, revenue directed to predetermined uses
- **Auction for Revenue Raising** - allowances sold to highest bidder, revenue directed to general public finance purpose such as tax rebate, deficit reduction or debt repayment.

## *Strategies for Distributing Allowances*

<b>Given Away</b>	<b>Auctioned</b>	
<b>Direct Allocation</b>	<b>Earmarking</b>	<b>Revenue Raising</b>
	<b>Pre-committed</b>	<b>General Purpose</b>
<b>Allowances are given directly to specified entities.</b>	<b>Federal government sells the allowances at auction and the revenues are directed to specific uses, programs, or entities.</b>	<b>Federal or state governments sell the allowances to contribute to general fund or other public finance purpose such as debt, deficit or tax reductions.</b>

## ***Distribution and Auction of Allowances: Gross Scheme***

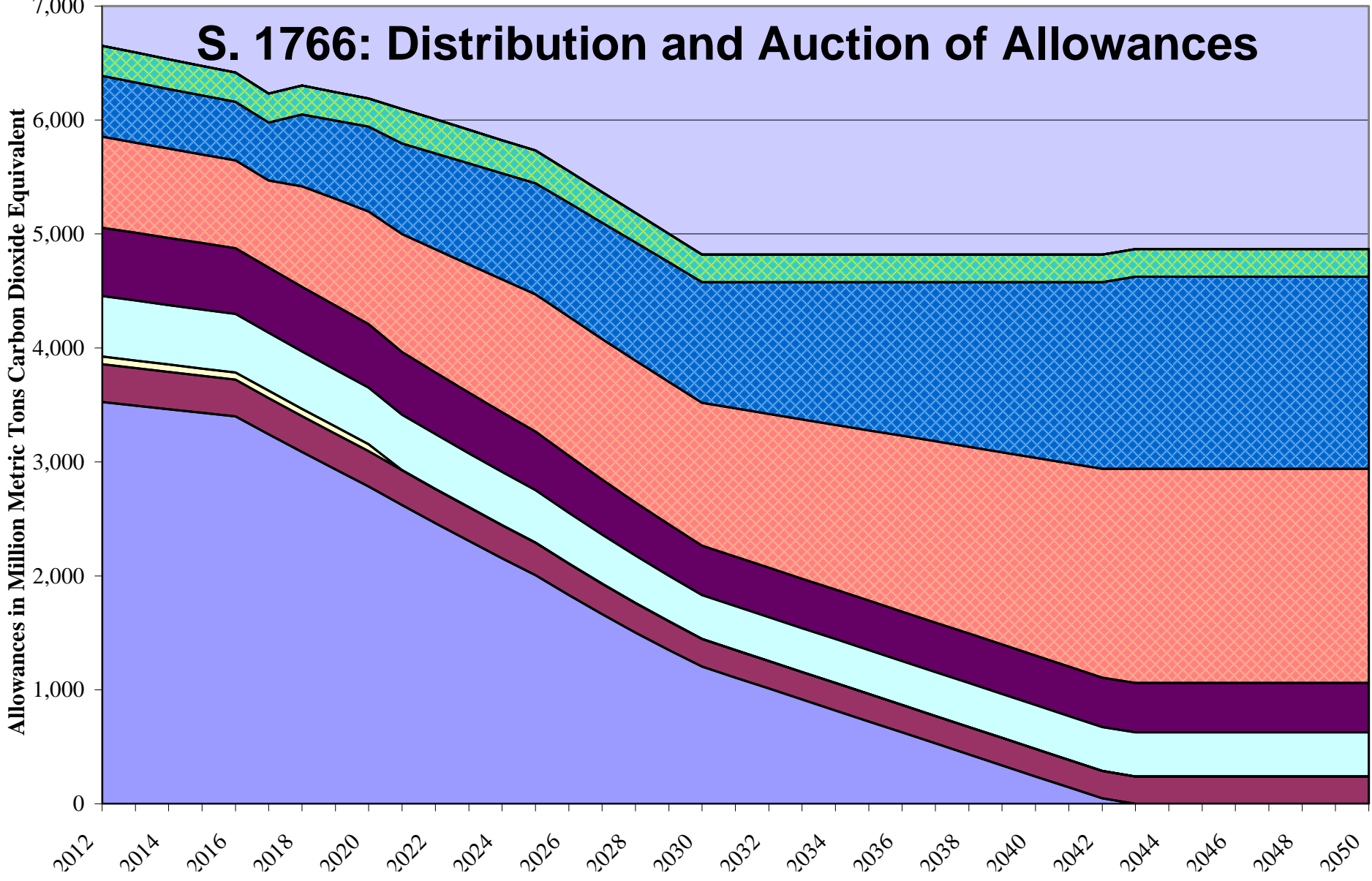
<b><i>Lieberman-Warner (S. 2191)</i></b>	<b><i>Bingaman-Specter (S. 1766)</i></b>	<b><i>Manager's Amendment (S. 3036)</i></b>
<p><b>2012</b> 50% Industry 27% Other Programs 23% Auction</p>	<p><b>2012</b> 53% Industry 23% Other Programs 24% Auction</p>	<p><b>2012</b> 44.5% Industry 31% Other Programs 24.5% Auction</p>
<p><b>2030</b> 22% Industry 21% Other Programs 57% Auction</p>	<p><b>2030</b> 25% Industry 22% Other Programs 53% Auction</p>	<p><b>2030</b> 19% Industry 31.5% Other Programs 49.5% Auction</p>
<p><b>2050</b> 10% Industry 17% Other Programs 73% Auction</p>	<p><b>2050</b> 0% Industry 20% Other Programs 80% Auction</p>	<p><b>2050</b> 13.5% Industry 27.75% Other Programs 58.75% Auction</p>



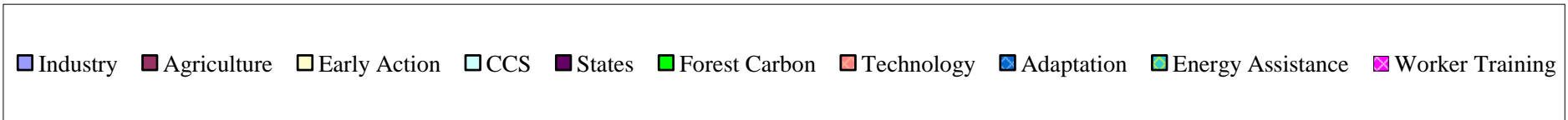
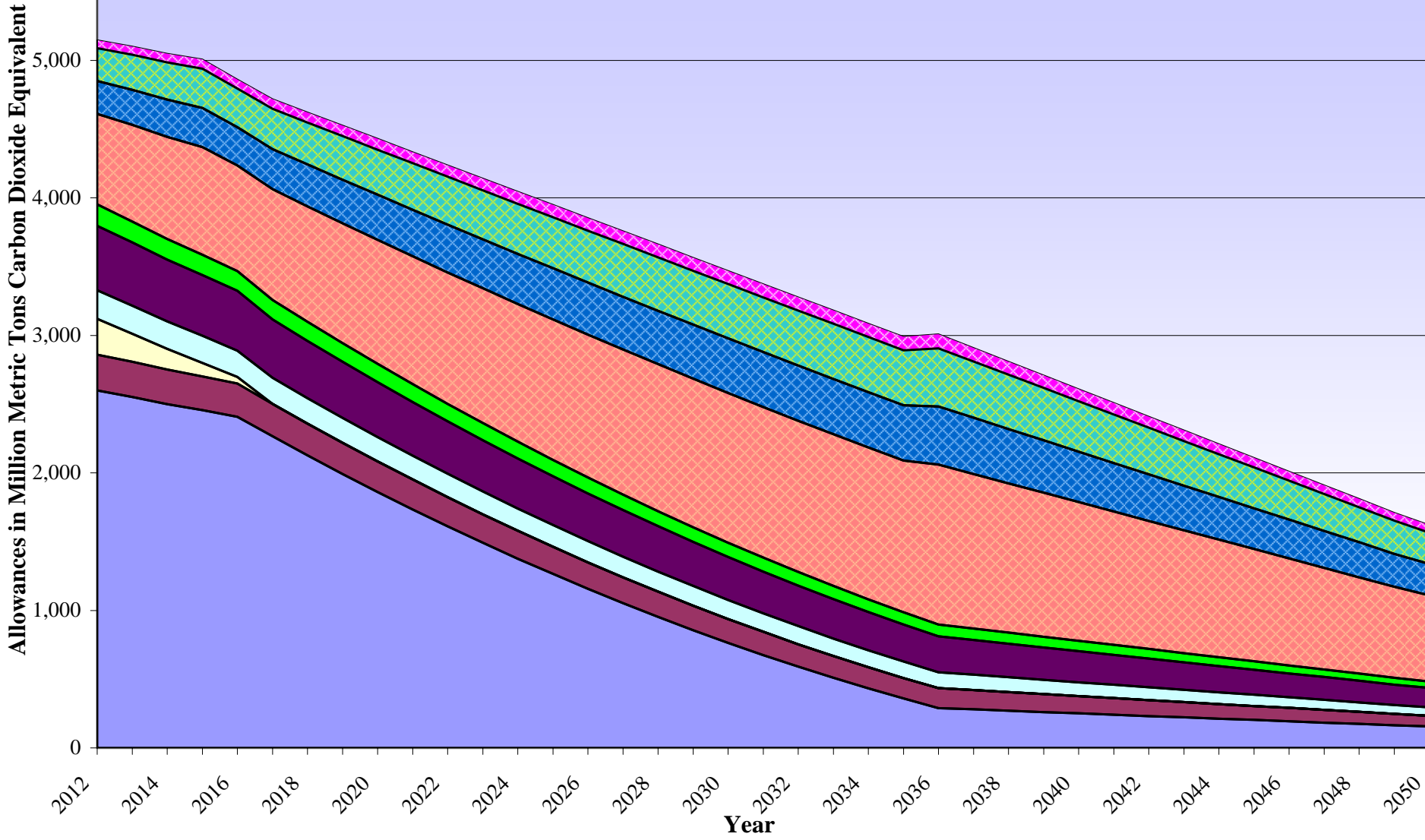
## **Distribution of Allowances and Auction Revenue**

- **Industry**
- **Agriculture and Forestry**
- **Early Action**
- **CCS**
- **Adaptation**
- **Technology**
- **Energy Assistance**
- **States**
- **Worker Training**
- **Climate Security Act Administration**
- **Deficit Reduction**

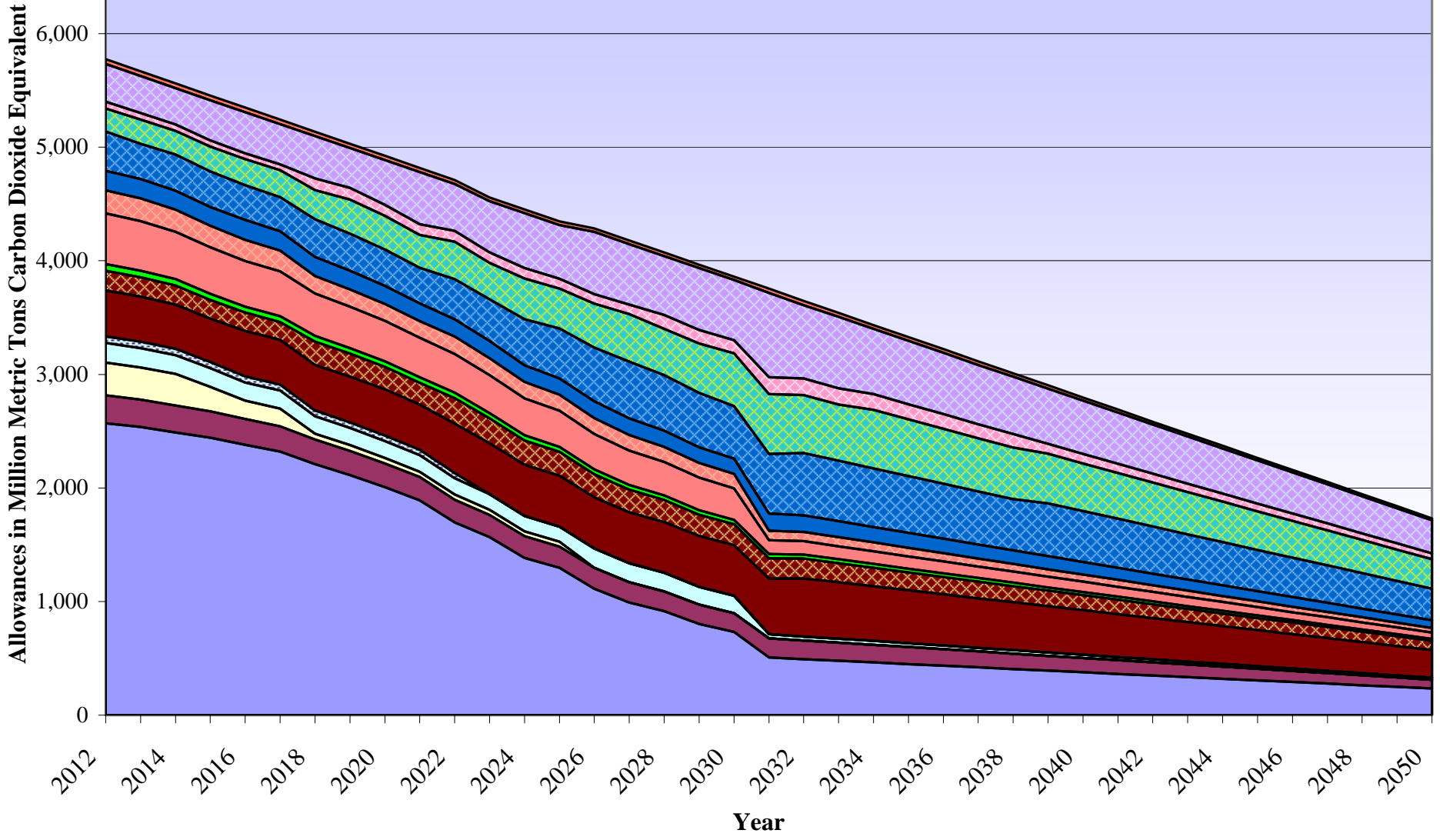
# S. 1766: Distribution and Auction of Allowances



# S. 2191: Distribution and Auction of Allowances



# S. 3036: Distribution and Auction of Allowances



- Industry
- Agriculture
- States Allocated
- States Auctioned
- Forest Carbon
- Technology Allocated
- Technology Auctioned
- Adaptation Allocated
- Adaptation Auctioned
- Energy Assistance
- Worker Training
- Deficit Reduction Fund
- Climate Security Act Fund
- Early Reduction
- CCS Allocated
- CCS Auctioned



## Technology

- Efficient Buildings Program
- Efficient Equipment and Appliances
- Efficient Manufacturing
- Renewable Energy
- Low and Zero Carbon
- Advanced Research
- Clean Technology Deployment
- Clean Commercial Fleets
- Advanced Vehicle Manufacturers
- Cellulosic Biofuel



## Advantages to Auctioning

- More consistent with polluter-pays principle
- Increased transparency
- Principled approach to allocation
- Reduces inevitable lobbying that occurs with grandfathering
- Better preserves price signals



## Why Avoid Earmarks?

- Forces climate change programs to compete with other important social programs
- Reduces technological lock-in
- Decreases administrative complexity
- Prevents blurring of price signal associated with energy assistance programs
- There are more efficient ways to help low-income families and electricity consumers



## Distribution of Allowances and Auction Revenue Recommendations

- Auction allowances and direct revenues through fiscal instruments
  - Tax, deficit, debt reduction (e.g., Obama's tax reduction for 95 percent of Americans)
  - Lump sum rebates, not price connected
  - Use of appropriations related funds
- Avoid mechanisms that dampen the price signal, so eschew:
  - Allocation to electric utilities in states with rate-making
  - Subsidies to low income energy consumers
  - Reserved allowances for new industry entrants

Evidence of learning?



## Distribution of Allowances and Auction Revenue Recommendations

- Address inter-state equity via allocation of auction revenue to states' general funds
- Minimize earmarks, and keep them short term to avoid programmatic and technological lock-in
- Eliminate CCS bonuses and early action credits
- Provide medium term support for technology development
  - Introduction of “Kick-Start program” to fund development
  - Tax credits for capital investment

Evidence of learning?



## Discussion of Anatomy and Evolution

- Emissions Reduction Targets
- Point and Scope of Regulation
- Cost Containment Mechanisms
- Activities Outside the Cap
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- **Strategic Approach**



## Strategic Approach

- General emphasis on mitigation rather than adaptation
- Stresses technological solutions rather than understanding and altering personal choices and lifestyles



## **Concluding Remarks**

- **Important Changes to S.3036 from Previous Bills**
  - Emissions Reduction Targets are more consistent with IPCC goals
  - Regulation is primarily upstream
  - Safety Valve better preserves environmental goals



## Concluding Remarks

- **Important Changes to S.3036 from Previous Bills**
  - Reduced level of bonus payments for CCS capture, but introduction of “Kick-Start program” to fund development
  - Introduced Deficit Reduction Fund
  - Reduced earmarking for technology development



## **Concluding Remarks**

- **Important Changes to S.3036 from Previous Bills**
  - Places stricter methodology requirements on offset projects to ensure credible reductions
  - Introduces additional adaptation programs



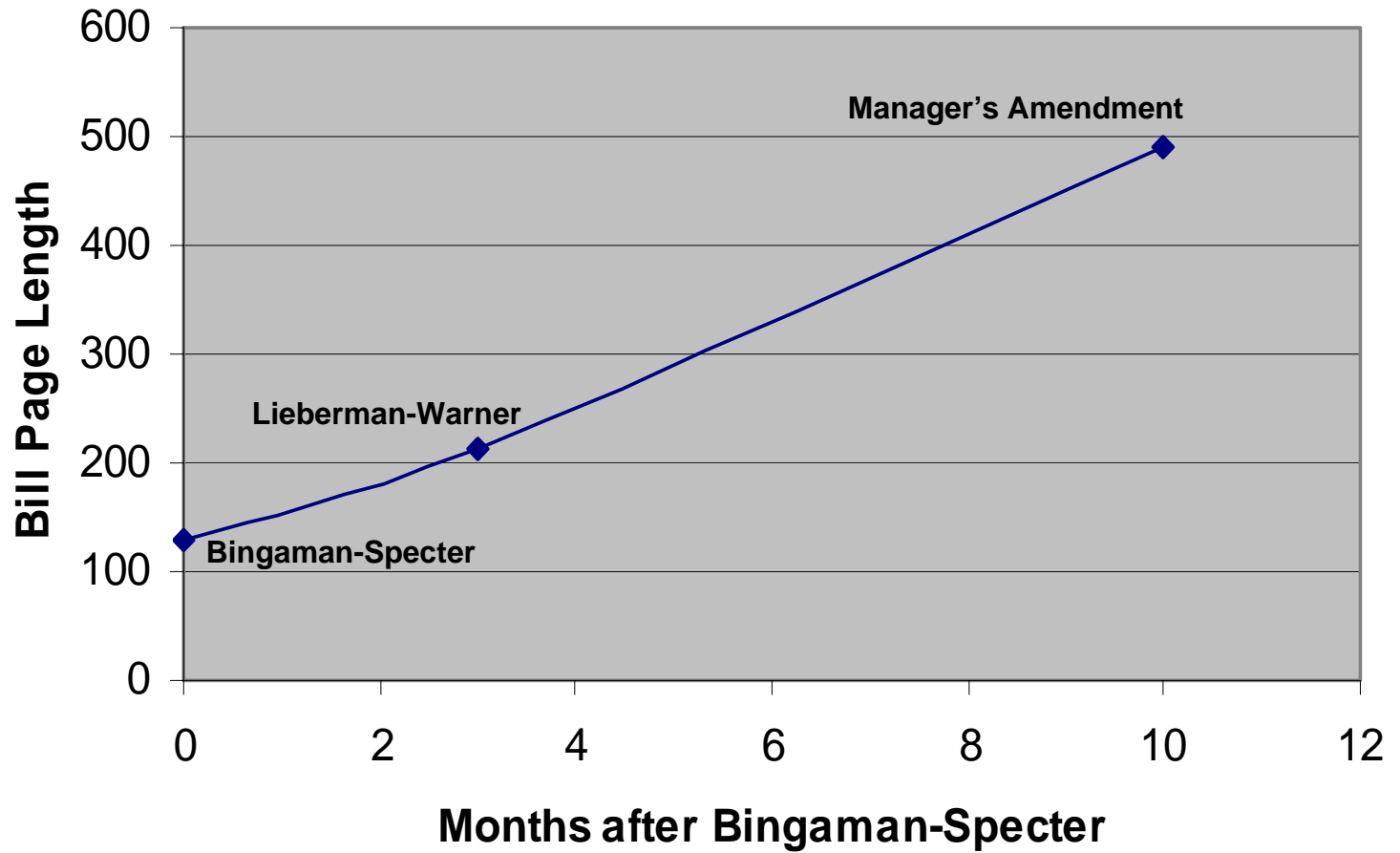
## Concluding Remarks

- **Remaining Issues**

- Lack of distinction between utilities subject to state ratemaking and those that are not
- Design of cost-containment measures
- Further development of offset estimation methods and extension to international offsets
- Extent of auction and use of revenues

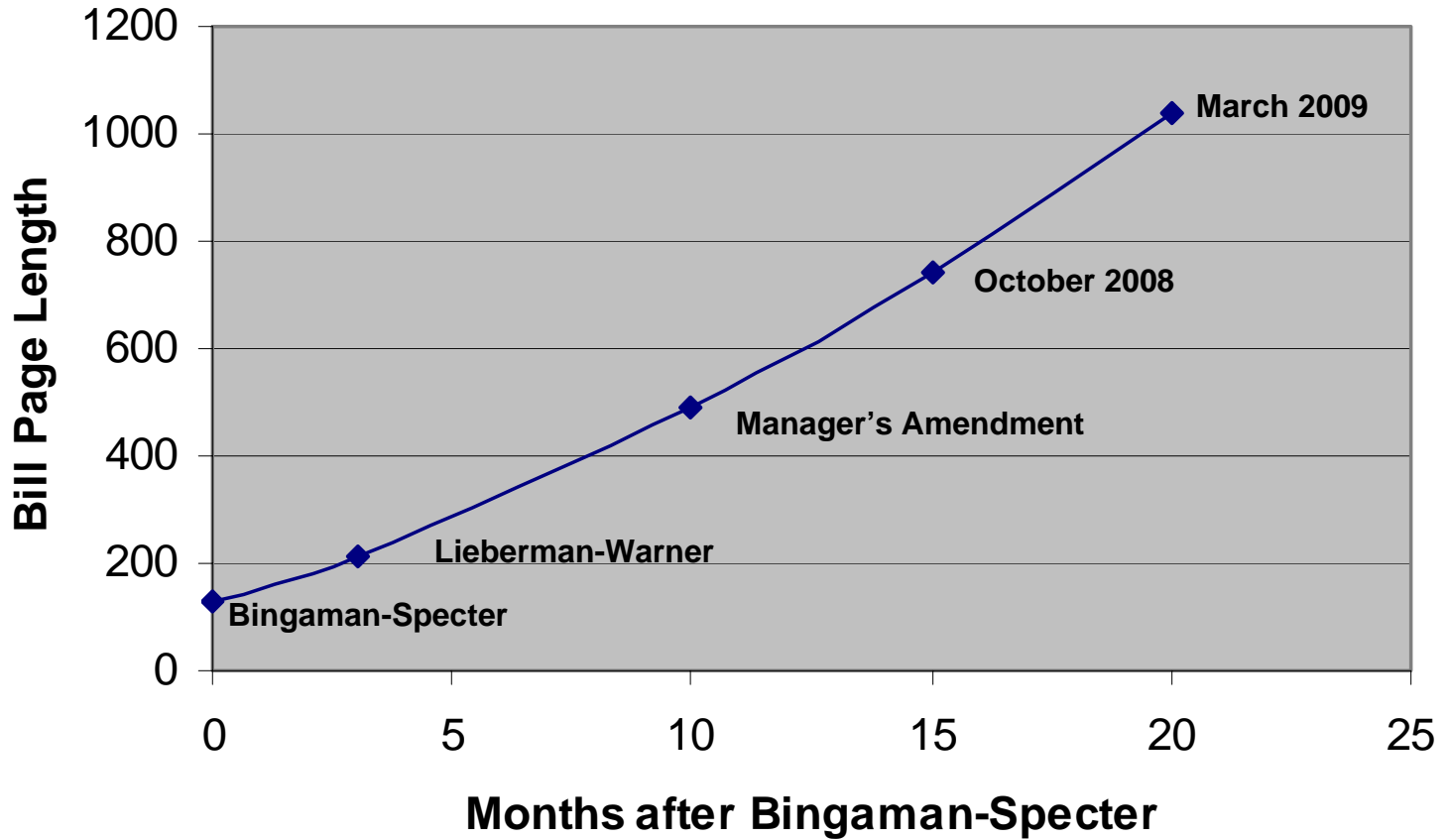


## Effect of Delaying Climate Bill





## Effect of Delaying Climate Bill





**Thanks!**

**Questions, comments or threats?**



## Estimating Emissions Levels - example

- 2006 CO<sub>2</sub>e emissions – 7,076 megatons per year
- Business as usual annual growth rate: 1.29 percent
- 2013 allowances for Lieberman-Warner are 5,104
- Sector coverage is 80 percent
- Anticipated emissions in 2013:

$$5,104 + [20 \text{ percent} \times [7,076 \times (1 + 0.0129)^7]]$$

$$\S 1201 + \% \text{ uncovered} \times \text{Business as Usual}$$