The Future of Climate Change Policy

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The Global Climate Policy Challenge

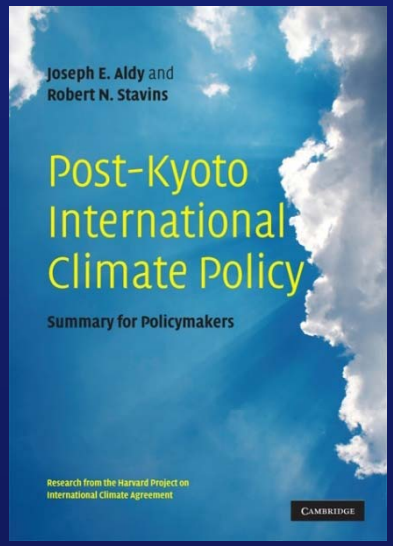
- Kyoto Protocol came into force in February 2005, with first commitment period, 2008-2012
- Even if the United States had participated, the Protocol's direct effects on climate change would be very small to non-existent
- Science and economics point to need for a credible *international* approach
- Climate change is a classic global commons problem — so it calls for international (although not necessarily global) cooperation

Can the Kyoto Protocol Provide the Way Forward?

- The Kyoto Protocol has been criticized because:
  - The costs are much greater than need be, due to exclusion of most countries, including key emerging economies – China, India, Brazil, Korea, South Africa, Mexico (conservative estimate: costs are four times cost-effective level)
  - The Protocol will generate *trivial* climate benefits, and *fails* to provide any long-term solution
  - Short-term targets are excessively ambitious for some countries
  - So, the Kyoto Protocol is "*too little, too fast*"
- Whether the Kyoto Protocol was a good first step or a bad first step, a next step is needed …..

Searching for the Path Forward for Post-2012

- The Harvard Project on International Climate Agreements
- Mission: To help identify key design elements of a scientifically sound, economically rational, and politically pragmatic post-2012 international policy architecture for global climate change
- Drawing upon research & ideas from leading thinkers around the world from:
  - Academia (economics, political science, law, international relations)
  - Private industry
  - NGOs
  - Governments
- 35 research initiatives in Australia, China, Europe, India, Japan, and the United States



Placing International Climate Negotiations in Perspective

- Cliché about baseball season applies to international climate change policy: it's a marathon, not a sprint
  - Scientifically: stock, not flow environmental problem
  - Economically: cost-effective path is gradual ramp-up in target severity (to avoid unnecessary capital-stock obsolescence)
  - Economically: technological change is key, hence long-term price signals
  - Administratively: creation of durable international institutions is essential
- International climate negotiations will be an ongoing process – much like trade talks – not a single task with a clear end-point.
- Bottom-Line: sensible goal for Copenhagen (December 2009) was progress on sound foundation for meaningful long-term action, not some notion of immediate "success"

What happened in Copenhagen?

- Organizational failure (47,000 advance credentials – capacity of 15,000)
- Political grandstanding & lack of consensus
- But last-minute, direct negotiations among key national leaders
  - Leaders of United States, China, India, Brazil, and South Africa
  - Virtually unprecedented in international negotiations
  - Saved COP-15 from complete collapse
  - Produced a significant political framework, the Copenhagen Accord
- Accord addresses two of the key deficiencies of Kyoto Protocol:
  - (1) expands coalition of meaningful commitments to include all major emitters
  - (2) extends time-frame of action
- But U.S. domestic climate policy is crucial …

Major Options for Climate Policy in the United States

- **Federal Policy**
  - Pricing Instruments
    - Cap-and-Trade
    - Carbon Taxes
  - Other Instruments
    - Regulation Under the Clean Air Act
    - Energy Policies Not Targeted Exclusively at Climate Change
    - Public Nuisance Litigation
    - NIMBY and Other Interventions to Block Permits
- **Sub-National Policy**
  - Regional, State, & Local Policies
  - National Linkage of Sub-National Policies

Pricing Instruments

- **Cap-and-Trade**
  - Merits
    - Cost-effective – short and long term
    - Allowance allocation can be used to build constituency
    - Significant experience
    - Can be linked internationally
  - Concerns
    - Uncertain costs
    - Fears of market manipulation
    - Politically demonized (as “cap-and-tax”)
  - Pending Design Issues
    - Scope, ambition, point of regulation, allocation, offsets, cost-containment mechanisms, international competition protection, regulatory oversight

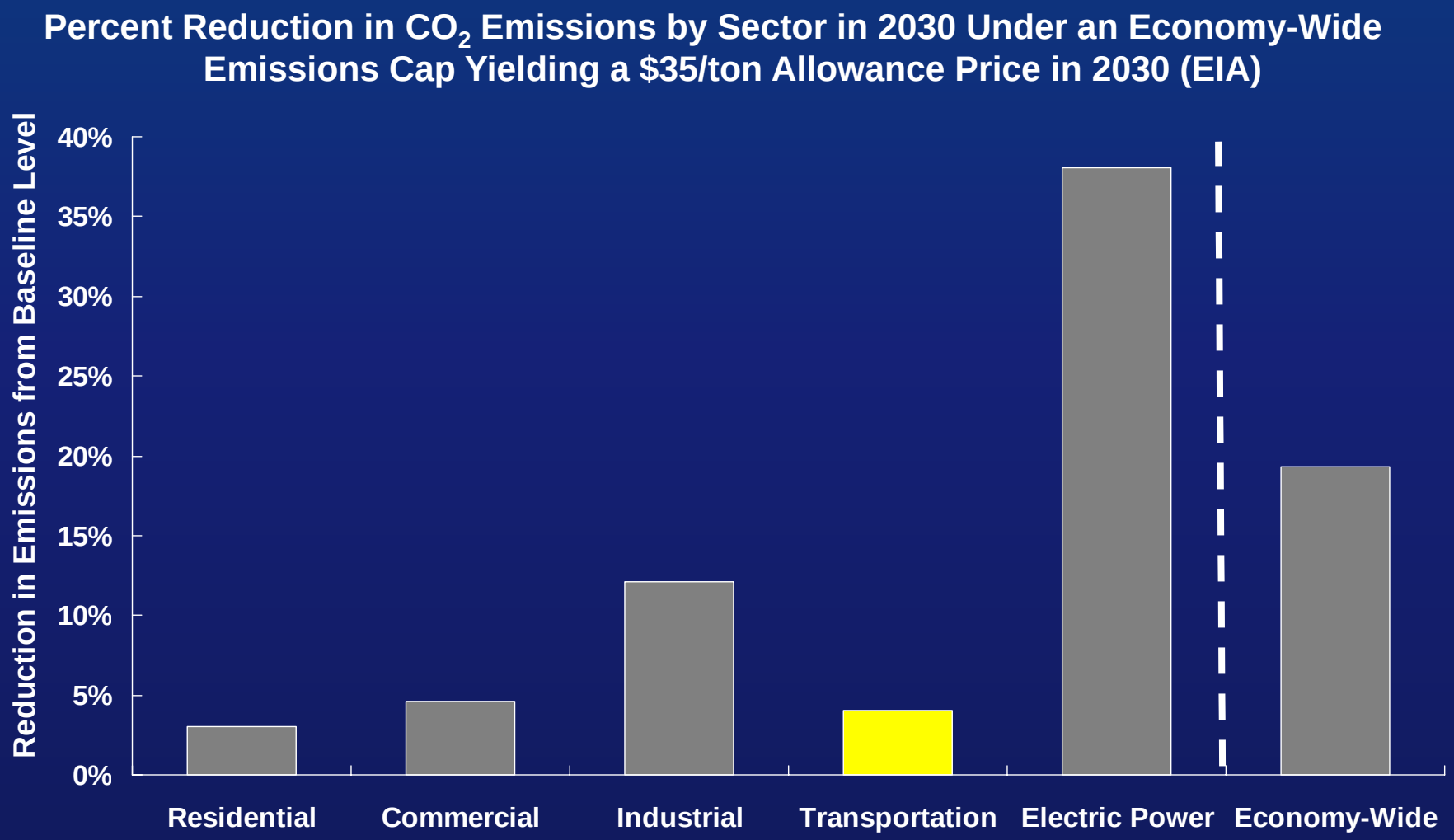
Cap-and-Trade (continued)

- **Do politics call for design or name change for cap-and-trade?**
  - A s**ectoral** approach?
    - Cap-and-trade for electricity sector only?
      - *Less* environmental achievement, and *not* cost-effective
      - *But* could be *politically-feasible* path to a *better future policy*
  - A **populist** approach
    - 100% auction, with revenue returned to "the people"
    - Name change: "cap-and-dividend"
    - CLEAR Act (Senators Cantwell & Collins)
    - Merits: appearance of fairness, appeals to populist mood
    - Concerns: modest achievements, cost, political infeasibility?

Carbon Taxes

- Similar in Design to Upstream Cap-and-Trade
- Some real interest (mainly academics) and some phony interest
- Merits (compared with cap-and-trade)
  - Cost uncertainty eliminated (but no emissions cap)
    - Note: cost uncertainty in C-a-T reduced/eliminated w/price collar
  - Generates revenue (like auctioned allowances)
  - (Perceived to be) Simple
- Concerns
  - Potentially more costly to regulated sector
  - Lack of benign mechanism for building political constituency leads to requests for exemptions, and hence less ambitious policy
  - Challenges to linking internationally (for cost containment)
  - Political infeasibility: Washington opposition is to "carbon pricing"

Cost-Effective Economy-Wide Climate Policy Achieves Very Different Reductions from Different Sectors



Anticipated Economic Impacts of U.S. Climate Policy

- **Combining results** from: International Energy Agency (*World Energy Outlook 2009*); U.S. Energy Information Administration (*HR 2454 Analysis*, 2009); Peterson Institute (*American Power Act Analysis*, 2010); and Stavins (*Hamilton Project Analysis*, 2007)
- **Cumulative cost**, 2012-2030 – 0.3% to 0.9% of GDP
- **Oil market** impacts relatively small
  - ➢ Essentially a **tax on coal**: coal price increases **280%** relative to BAU (2030)
    - Coal → natural gas, then nuclear & renewables for electricity generation
    - **Impact on gasoline price:** increase of **9%** (35¢/gal) relative to BAU (2030)
    - **Gasoline demand**: 5% fall below BAU by 2030
  - ➢ **Electricity sector** accounts for **80%-90%** of emissions reductions
    - Impacts on transportation sector & oil/heating relatively small (cost-effective)
  - ➢ **Oil imports: 9% decrease** below BAU by 2030
- But *much more costly* if other *non-carbon-pricing options* are pursued ….

Regulation under the Clean Air Act

- **U.S. Supreme Court decision, EPA endangerment finding**
  - Mobile source standards
  - Stationary sources (January 1, 2011, with or without tailoring rule)
  - Merits
    - Effective in some sectors
    - Inducement for Congress to take action with better approach?
  - Concerns
    - Accomplishes *relatively* little at *relatively* high cost
    - Will it force hand of Congress? A credible threat or counter-productive?
    - Preemption? (Murkowski resolution, Rockefeller bill, others?)

Regulation under the Clean Air Act (continued)

- **Air pollution policies for correlated pollutants**
  - SO_x, NO_x, and Hg – 3P legislation
  - Would this shut inefficient coal plants (w/o any CO_2 requirements)?

- **Key pending question** regarding EPA's use of the Clean Air Act
  - May EPA (*legally*) create (CO_2) cap-and-trade or offset markets under existing Clean Air Act authority?
    - Probably. There is positive precedent (1970s emissions trading, 1980s lead phasedown, etc.); but there's also court decision on Bush CAIR rule.
  - But can EPA (*politically*) create *significant* CO_2 markets?
    - Less clear

Energy Policies (not targeted exclusively at climate change)

- **Possible components (standards & subsidies)**
  - National renewable electricity standard
  - Federal financing for "clean energy" projects
  - Energy efficiency measures
    - Building, appliance, & industrial efficiency standards
    - Home retrofit subsidies
    - Smart grid standards, subsidies, dynamic pricing, etc.
  - New federal electricity-transmission siting authority
- **Bottom Line**
  - Carbon-pricing is *necessary*, but *not sufficient*: so, some of these would *help*
  - *But* as substitute for carbon-pricing, these are *less effective* & *more costly*

Other Legal Mechanisms

- **Public Nuisance Litigation**
  - Lawsuits pursuing injunctive relief and/or damages
  - In flux – recent court decisions
- **Other Interventions**
  - Intended to block permits for new fossil energy investments
    - Power plants
    - Transmission lines
  - Some NIMBY, some strategic
- **With action delayed in Washington, attention is turning to the states …**

Sub-National Climate Policies

- Regional, state, & local policies continue to emerge
  - Regional Greenhouse Gas Initiative (RGGI)
  - California's Global Warming Solutions Act (AB 32)
  - Western Climate Initiative, and others
- Interactions with Federal policy
  - Some problematic (AB 32 & Federal cap-and-trade)
  - Some benign (RGGI becomes irrelevant; interaction with carbon tax)
- Question: Can there be sensible sub-national policies with an economy-wide Federal carbon-pricing policy in place?
  - Yes, other market failures not addressed by national "pricing" policy
    - Example: principal-agent problem re. energy-efficiency investments in renter-occupied properties → building codes

Sub-National Climate Policies (continued)

- But in the *absence* of meaningful Federal action, sub-national climate policies could become the *core* of *national action*
- Problems
  - Legal obstacles: possible preemption
  - Not national in scope
  - Not cost-effective (if there are different carbon shadow-prices)
- Is there a (*partial*) solution?
  - Yes, state & regional carbon markets can be linked
  - Linkage reduces costs, price volatility, leakage, and market power
  - Possible future for U.S. climate policy: linkage of state & regional cap-and-trade becomes the *de facto* post-2012 national climate policy

U.S. Political Timing:
A Challenge for the International Process

- Recession (and unemployment)
- Other domestic policy priorities: economic stimulus, health care, financial regulation, immigration reform, and the Gulf oil spill
- Public perceptions
- Congressional deliberation, difficult politics, and challenging numbers
- U.S. mid-term elections (November, 2010) work *against* bipartisanship, and make it more difficult to vote to raise energy prices
- So, COP-16 in Cancún in December will probably be *more enjoyable* than COP-15 in Copenhagen, but *not* necessarily *more productive*

For More Information

Harvard Project on International Climate Agreements

www.belfercenter.org/climate

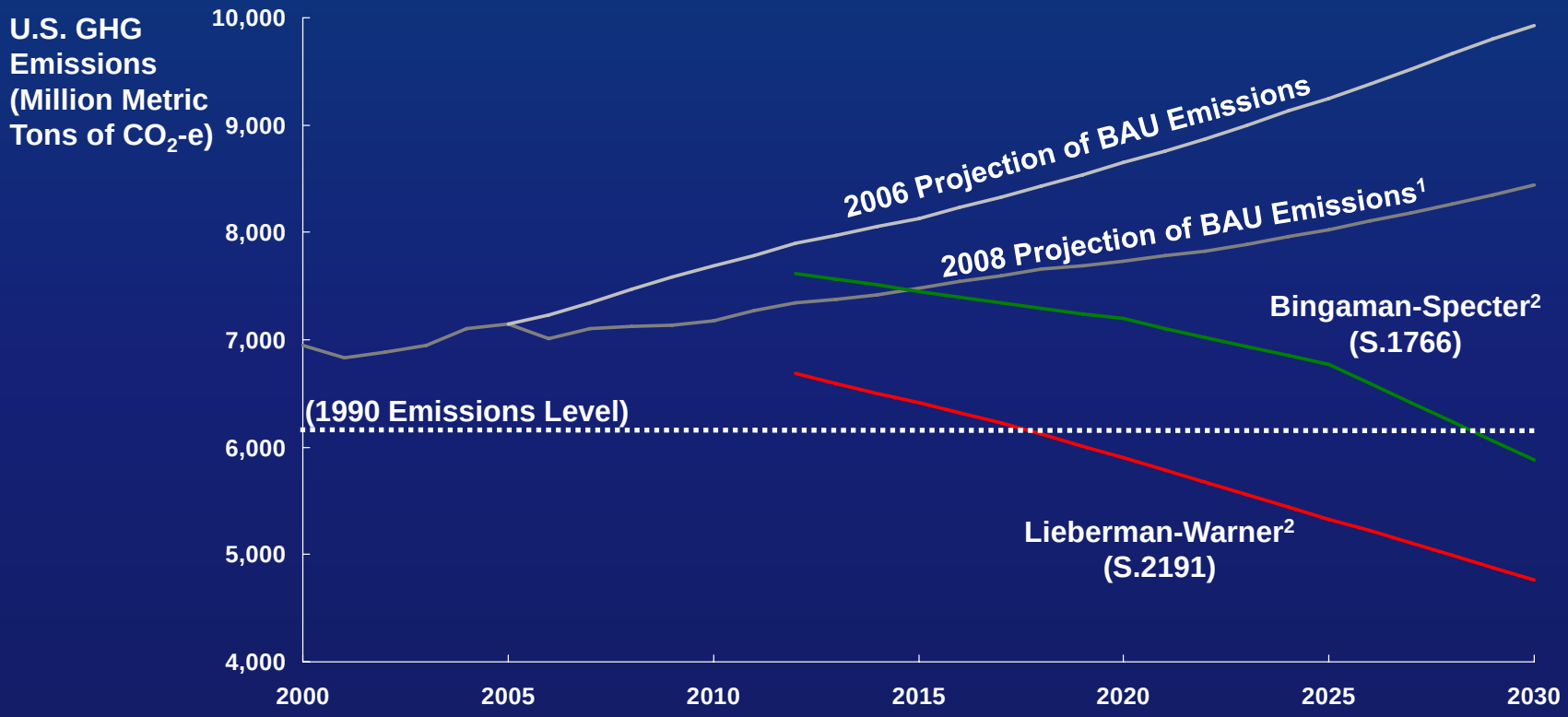
Harvard Environmental Economics Program

www.hks.harvard.edu/m-rcbg/heep/

www.stavins.com

Appendix

Two "Early" U.S. Cap-and-Trade Proposals *and* Dramatic BAU Changes

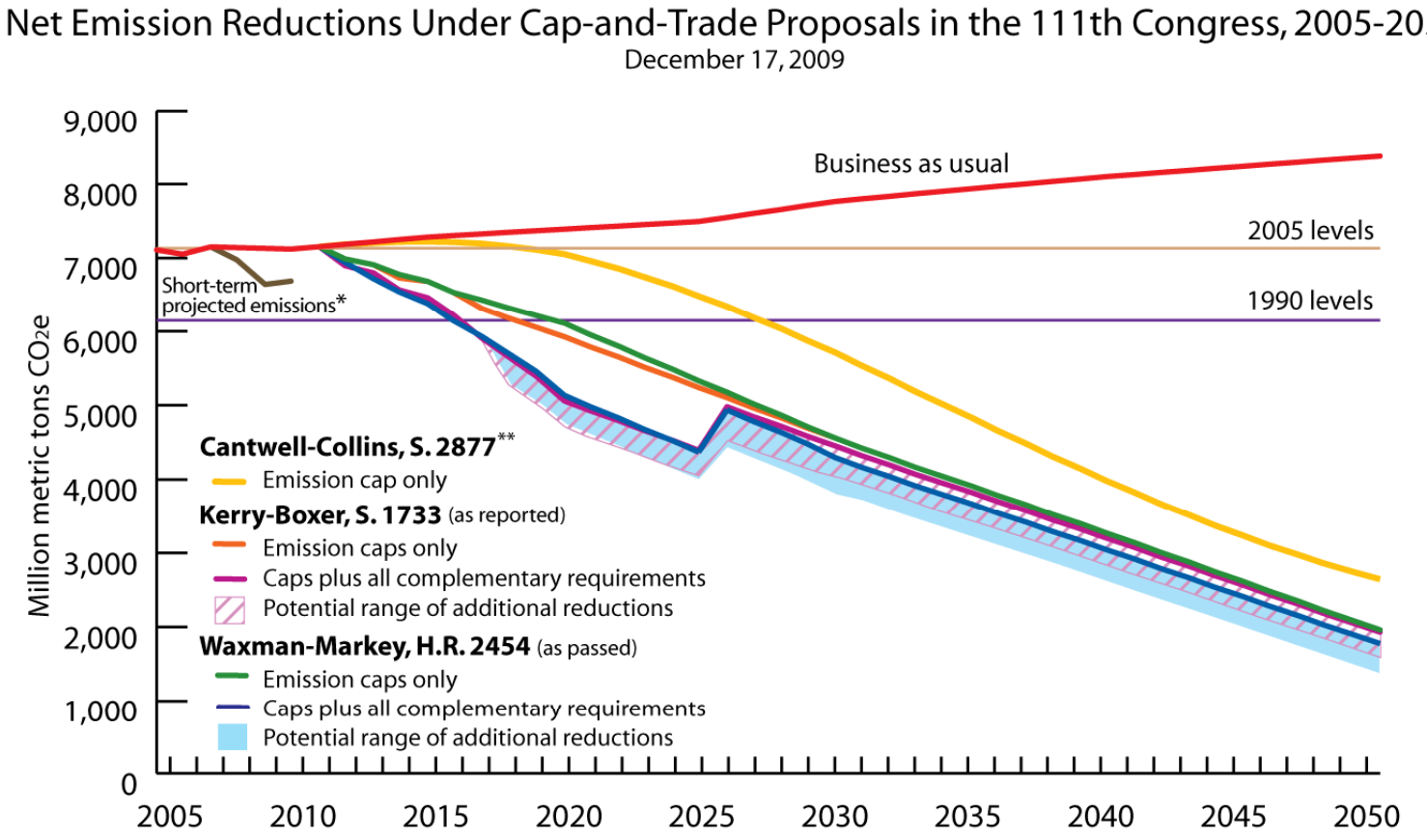


Notes:

1. Reduction in projected emissions relative to 2006 projection reflects impacts of higher fuel prices and impacts of the Energy Independence and Security Act of 2007 (including, for example, new fuel economy standards).
2. Lines reflect the level of emissions caps proposed by the legislation, together with business-as-usual growth in those emissions that would not fall under the cap proposed by the legislation.

Source: U.S. Department of Energy, Energy Information Administration

Three Recent Cap-and-Trade Proposals in Congress



For a full discussion of underlying methodology, assumptions and references, please see http://www.wri.org/usclimatetargets.

* "Business as usual" emission projections are from EPA's reference case for its analysis of the Waxman-Markey bill. "Short-term projected emissions" represent EIA's most recent estimates of emissions for 2008-2010.

** Cantwell-Collins sets economy-wide reduction targets beginning with a 20 percent reduction from 2005 levels by 2020. However, additional action by Congress would be required before these targets could be met. Reduction estimates do not include emissions above the cap that could occur due to the safety-valve.

Allowance Value Distribution under H.R. 2454