

An Update on EPA Climate-related Activities



James W. Yarbrough
Blue Skyways Collaborative Annual Meeting
October 31, 2008

Yarbrough.james@epa.gov



If you can keep your head amidst all of this confusion, you just don't understand the situation.

- Lord Nelson, at the Battle of Trafalgar, 1805

Regulatory and Non-regulatory

- Energy Independence and Security Act (EISA)/Energy Policy Act of 2005 (EPAAct 2005)
- Underground injection control (UIC) Geologic Sequestration – published in Federal Register (FR) July 15, 2008
- GHG Advanced Notice of Proposed Rulemaking (ANPR) – published in FR July 30, 2008
- National Greenhouse Gas Reporting Rule
- Proposed national legislation
- EPA National Water Program Strategy
- Partnership programs
- EPA Regional plans

Energy Independence and Security Act – December 2007

■ **Improve Vehicle Fuel Economy – Title I**

- increases the fuel economy standards for cars and trucks to 35 miles per gallon in 2020 for new cars and trucks.
- also encourages the domestic development and production of advanced technology vehicles and the next generation of vehicle batteries and plug-in hybrid vehicles and requires the reduction of petroleum consumption and greenhouse gas emissions for the federal fleet.

■ **Production of Biofuels – Title II**

- increases the Renewable Fuels Standard, which sets annual requirements for the amount of renewable fuels produced and used in motor vehicles, from the 7.5 billion gallons by 2012 goal under EPCA 2005
- the expanded renewable fuels standard (RFS) requires 9 billion gallons of renewable fuels in 2008 and progressively increases to a 36 billion gallon requirement by 2022.
- beginning in 2016, an increasing portion of renewable fuels must be advanced biofuels, such as cellulosic ethanol, starting at 3 billion gallons in 2016 and increasing to 21 billion gallons in 2022.
- August 7, 2008: EPA denied Texas Governor Perry's waiver request

■ **Miscellaneous, other provisions**

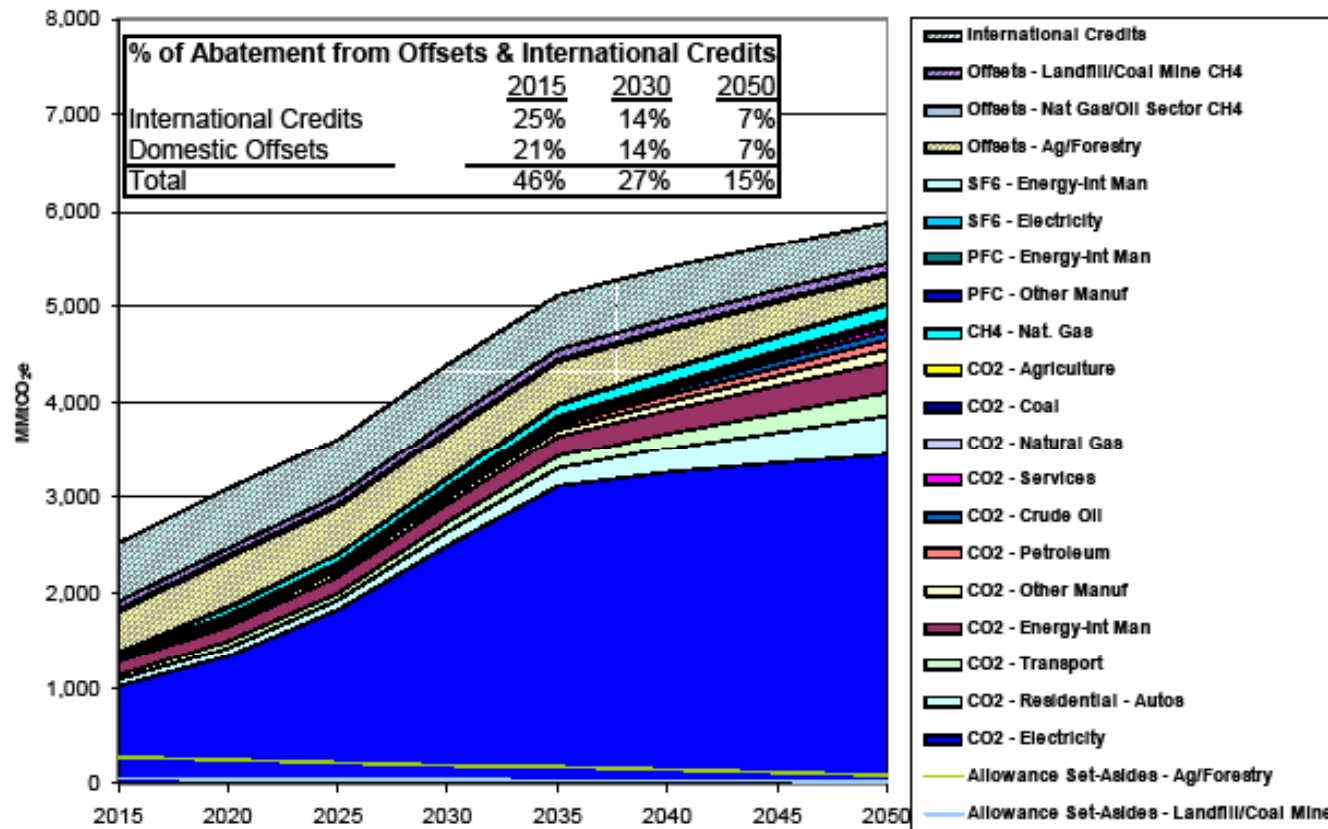
Geologic Sequestration of CO₂

- **On July 15, 2008, EPA proposed a rule under the Safe Water Drinking Act for underground injection of CO₂ for long-term storage or geologic sequestration.**
- **What are some major provisions?**
- Geologic site characterization to ensure that GS wells are appropriately sited;
- Requirements to construct wells with injectate-compatible materials and in a manner that prevents fluid movement into unintended zones;
- Periodic re-evaluation of the area of review around the injection well to incorporate monitoring and operational data and verify that the CO₂ is moving as predicted within the subsurface;
- Testing of the mechanical integrity of the injection well, ground water monitoring, and tracking of the location of the injected CO₂ to ensure protection of underground sources of drinking water;
- Extended post-injection monitoring and site care to track the location of the injected CO₂ and monitor subsurface pressures; and
- Financial responsibility requirements to assure that funds will be available for well plugging, site care, closure, and emergency and remedial response.



Results: Scenario 2 - S. 2191

Sources of GHG Abatement (ADAGE)



- S. 2191 allows offsets and international credits to each make up 15% of the total allowance submissions requirement.

- The quantity of offsets and international credits allowed decreases as allowance submissions decrease.

- Since the quantity of offsets allowed is decreasing over time and the quantity of abatement is increasing over time, offsets make up a large fraction of abatement in the early years of the policy, and their contribution to total abatement decreases over time.

Advanced Notice of Proposed Rulemaking (ANPR)

- Conclusion of EPA: The Clean Air Act is not the tool with which to deal with global greenhouse gases.
- Notable similarity of opinions by U.S. Departments of Agriculture, Commerce, Energy, and Transportation, Council of Economic Advisers, Office of Science and Technology Policy, Council on Environmental Quality

Major topics covered in ANPR

- Overall issues of GHGs and controls
- Clean Air Act as a tool
- Endangerment issues
- Mobile sources
- Stationary sources

National Greenhouse Gas Reporting Rule

- Drafting rules – proposal was due September 2008, final June 2009; EPA is discussing section 1605(b) with DOE
- Major issues:
 - Who reports – facility or corporation?
 - Data flow -- upstream reporters or direct emitters or hybrid approach?
 - Threshold emissions for reporting – 1,000 t/y CO₂-e? 100,000 t/y CO₂-e?
 - Method – direct measurement or calculations?
 - Frequency of reporting?
 - Verification – industry, EPA, State, third-party?

Policy Comparison: Lieberman-Warner (S. 2191) – Bingaman-Specter (S. 1766) – Lieberman-McCain (S. 280)

Some Major Provisions

- Coverage of US GHG Emissions (based on 2005 GHG inventory)
 - S. 280: ~73%
 - S. 1766: ~83%
 - S. 2191: ~87%
- Cap rate of decline
 - S. 280: Step down decrease every 10 years
 - S. 1766: Annual decrease
 - S. 2191: Annual decrease
- Safety valve
 - S. 280: no safety valve
 - S. 1766: \$12/ton of CO₂e in 2012 rising at a real rate of 5%
 - S. 2191: no safety valve
- Use of offsets
 - S. 280: 30% of compliance from domestic offsets and international credits
 - S. 1766: Unlimited specified domestic offsets can be used to meet the emission cap level
 - Specified offset project categories include CH₄ from landfills, coal mines, and animal waste, and SF₆ from electric power systems
 - The President can implement an international offset program, allowing not more than 10% of compliance to be met through this program
 - S. 2191: 15% of compliance from domestic offsets; and 15% of compliance from international credits

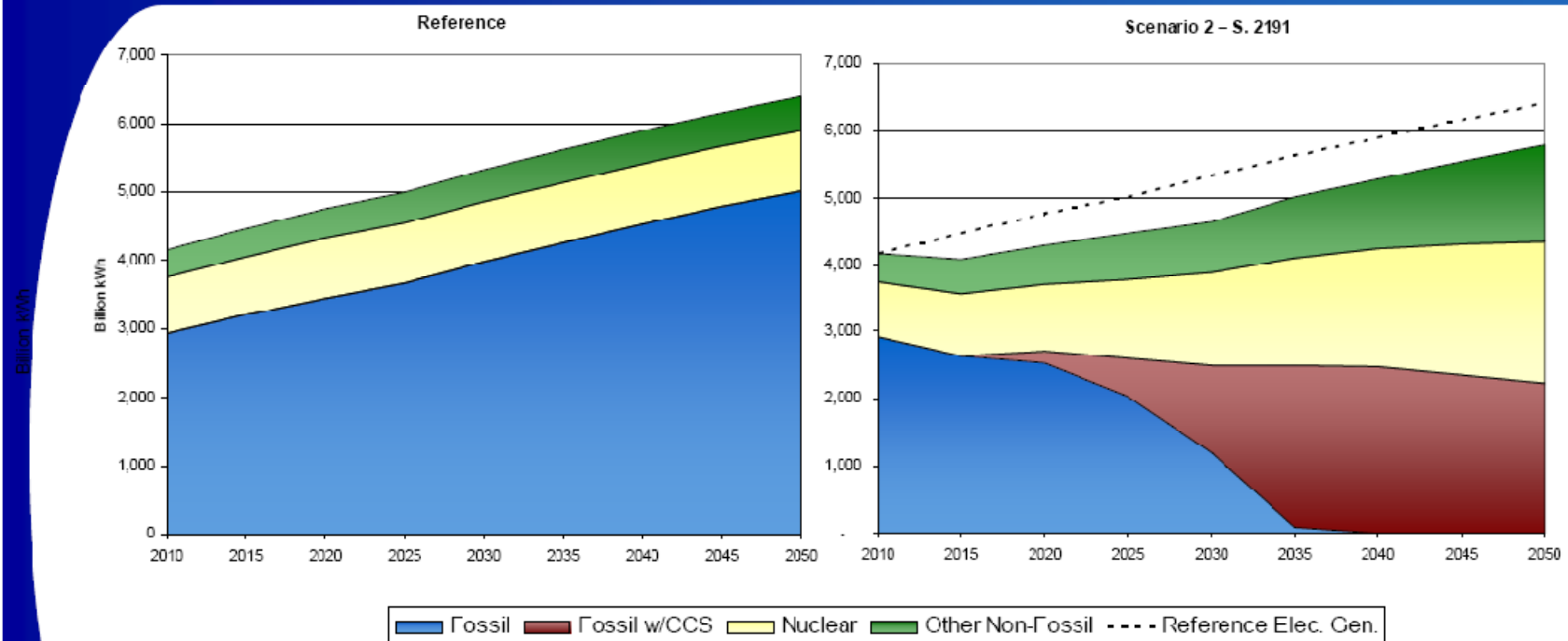
October 2008 House Energy and Commerce Committee "Discussion Draft" (Dingell-Boucher)

- Legislation would amend the CAA and the Federal Power Act (carbon market would be supervised by FERC)
- Cap and trade would cover 88% of US GHG emissions
- Base year: 2005; -6% by 2020; -44% by 2030; -80% by 2050
- Upstream and downstream caps
- EPA to establish emissions standards for sources < 25,000 t/y C-eq
- Establishes performance standards for new coal-fired EGUs, requiring CCS within a set timeframe
- Offsets allowed (5% initially up to 35% by 2024)
- 4 options for allocating allowances, varying from free to various costs
- "Allowance value" would be invested in energy efficiency, clean technologies, adaptation and international programs, rebates to consumers
- Unless Congress changes it, all allowances beginning in 2026 would be auctioned
- Would establish State Energy Efficiency Development (SEED) funds and allocate allowances to these funds (for individuals and businesses)
- Would increase building ee standards by 30% by 2010 and 50% by 2020
- Would give bonus allowances for CCS, to renewable energy sources, and for clean transportation sources



Results: Scenario 1 – Reference; Scenario 2 – S. 2191

U.S. Electricity Generation, mid-term results (ADAGE)



- Under S. 2191, both nuclear and renewable electricity generation expands above the reference levels.
- In addition, CCS deployment on fossil-fuel generation begins after 2015. By 2030, 175 GW of new CCS capacity is projected to be built, which is the equivalent of 318 CCS units of 550 MW each. By 2050, 299 GW of new CCS capacity is projected to be built, which is the equivalent of 543 CCS units 550 MW each.
- By 2035, almost all fossil electricity generation is capturing and storing CO₂ emissions. (Note that because ADAGE does not represent peak versus base load generation requirements, the use of CCS technology on almost all fossil fuel generation by 2035 may be overly optimistic).

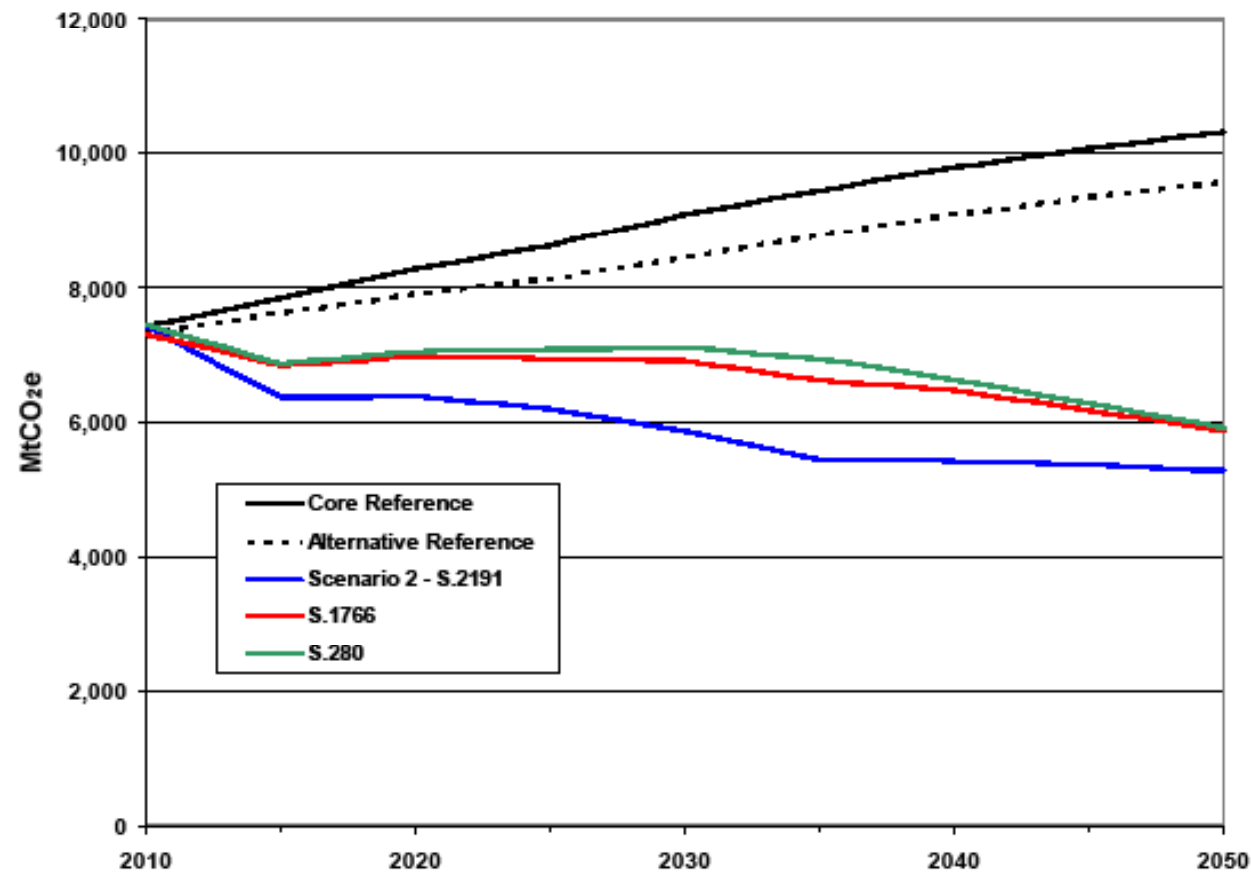
Note: Other non-fossil includes hydro, geothermal, wind, solar, biomass and municipal solid waste.



Policy Comparison:

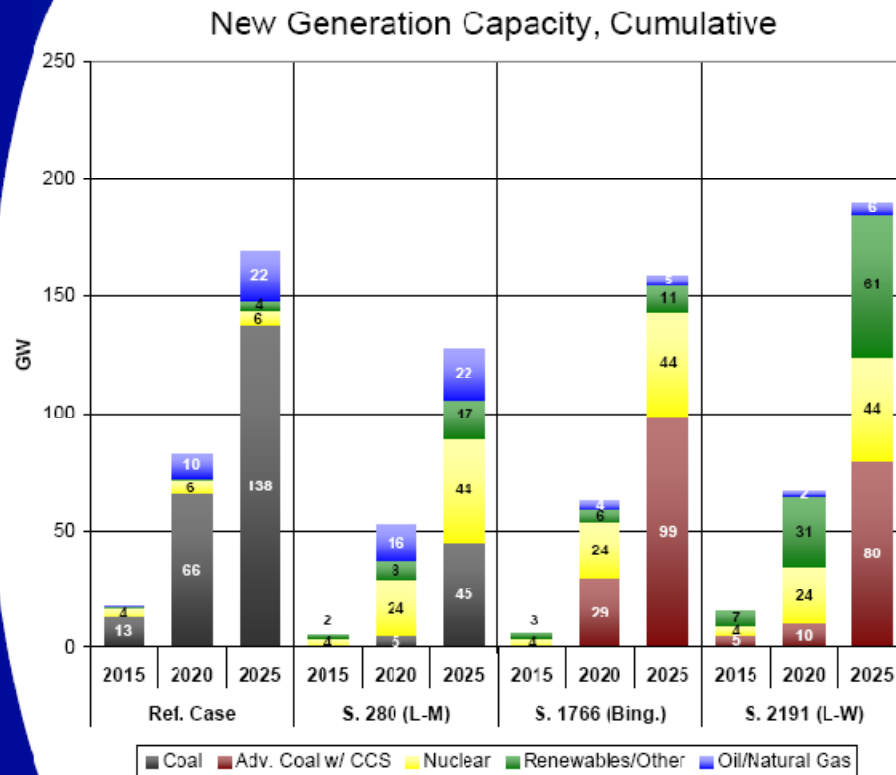
Lieberman-Warner (S. 2191) – Bingaman-Specter (S. 1766) – Lieberman-McCain (S. 280)

Total U.S. GHG Emissions (MtCO₂e) (ADAGE)





New Generation Capacity (IPM)



Note: New capacity additions less than 1 GW of capacity are not indicated.

- S. 2191 contains an allowance bonus provision, which is capped, for CO₂ emissions that are captured and sequestered, resulting in significant penetration of new coal capacity with CCS technology (S. 1766 has a similar provision).
 - Bonus allowances go unused in 2015 only, when there is a 5 GW constraint on new adv. coal with CCS (the bonus is used entirely in all years post-2015).
- In 2025, adv. coal with CCS is economic even without the bonus.
- S. 2191 also results in significant penetration of new nuclear and renewable capacity.
- More capacity is built under S. 2191 because a significant amount of the existing fossil fleet is not economic to operate and must be replaced.

New Capacity Limitations in IPM (Incremental/Cumulative)				
GW	2010	2015	2020	2025
Nuclear	N/A	4	20 / 24	20 / 44
Adv. Coal w/ CCS	N/A	5	70 / 75	70 / 145
Renewables (Cumulative Only)	4	24	44	64

EPA National Water Program Strategy: Response to Climate Change

- **This draft document represents the National Water Program's initial effort to identify:**
 - Potential impacts of climate change for clean water and drinking water programs
 - Define actions to respond to these impacts
- **Potential water impacts include:**
 - Increases in water pollution problems
 - More extreme water-related events
 - Changes to the availability of drinking water supplies
 - Waterbody boundary movement and displacement
 - Changing aquatic biology
 - Collective impacts on coastal areas

<http://www.epa.gov/water/climatechange/index.html>



Select EPA Partnerships





BLUE SKYWAYS
COLLABORATIVE



Regional plans and meetings

- 6 of 10 EPA Regions have a climate and/or clean energy plan
- Region 7 held a States Clean Energy-Climate meeting in December 2007
- Region 6 held such a meeting in August 2008
- Main emphases on partnering (States, Locals, Tribes, other federal agencies, NGOs, private sector) and lead-by-example

Some useful web sites

- <http://www.epa.gov/climatechange/index.html>
- <http://www.ipcc.ch/>
- <http://unfccc.int/2860.php>
- <http://www.pewclimate.org/>
- <http://www.iclei.org/index.php?id=800>
- <http://www.energystar.gov/>
- <http://www.edf.org/home.cfm>
- <http://www.rff.org/Pages/default.aspx>
- <http://www.ase.org/>