Food Industry Environmental Council

Global Climate Change and Its Impact on U.S. Policy

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Overview

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- What are the primary GHG regulatory requirements today?
  - Kyoto Protocol
  - European Union Emission Trading System
  - Regional Greenhouse Gas Initiative
  - Voluntary U.S. Markets
- Emerging U.S. Policy
  - Development of US EPA Policies
  - Development of US Legislative Proposals
- Areas to impact to food industry
  - Food price impacts from biofuels
  - Food price impacts from transportation cost increases
  - Regulation of refrigerants
  - Cap & trade market profit potentials

Kyoto Protocol to UNFCCC

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- Commits parties to an average 10% reduction below 1990 levels of CO_2e in the 2008-2012 compliance period
- Entered into force February 2005
- Country-specific emission allowances, deposited in state registries
- Allows for emission trading of assigned amount units, removal units, emission reduction units, and certified emission reduction units
- Country targets are met by trading, joint implementation, and clean development mechanisms
- United Nation's Kyoto Protocol webpage is at http://unfccc.int

European Trading System

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- Developed after United States, Russia, and Australia signaled they would not ratify Kyoto
- Overall reduction target of 8% below 1990 CO_2e in EU member states
- First trading period from 2005-2007, second trading period mirrors Kyoto's from 2008-2012
- Covers only utility and carbon-intensive industrial sectors
- Each state prepares a national allocation plan, which is approved by the EU Commission
- Community Independent Transaction Log links all ETS countries together for trading purposes
- ETS Linking Directive allows Kyoto emission credits to be used in the ETS program

Regional Greenhouse Gas Initiative

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- Goal to reduce GHG emissions by 10% below 1990 levels by 2018 through caps on electric utility emissions
- Connecticut, Maine, New Hampshire, New Jersey, New York, Vermont, Massachusetts, and Maryland
- First compliance period begins January 2009, with three-year average compliance periods with declining caps
- Safety Valve Trigger Event moves the compliance period to four years if allowance prices exceed $10/ton (inflation plus 2.5% adjusted)
- Offset projects in afforestation, landfill methane recovery, sulfur hexafluoride mitigation, and agricultural methane capture create credits
- Credit use is limited to 3.3% of emissions for allowance prices under $7, 5% of emissions for allowance prices over $7, and 10% for prices over $10, with international credits allowable if prices are over $10 (all prices are CPI plus 2.5% adjusted)
- Early reduction credits are available from improving CO_2 emission rates, or reducing generating utilization.

AB32 (California Global Warming Solutions Act)

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- Goal is to lower statewide GHG emissions from stationary sources to 1990 levels by 2020, commencing in 2012
- California Air Resources Board is agency responsible for implementation of details—carbon tax, emission limits, cap-and-trade are under consideration, with an emphasis on cap-and-trade
- Calls for discrete early reduction efforts by 2010, and more aggressive actions starting in 2012
- Additionality, local market impacts, Clean Air Act impacts, linkages, and leakage are all addressed in legislation, though implementing details are still to be announced
- California PUC implemented a GHG emissions performance standard applicable to long-term power purchase agreements (leakage issue)
- Gov. Schwarzenegger signed a low carbon fuel standard that is pending a request for waiver from EPA

New Jersey Global Warming Response Act

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- Goal is to lower statewide GHG emissions from stationary sources to 1990 levels by 2020, and 80% below 2006 levels by 2050.
- NJDEP is agency responsible for implementation of details
- Multi-sector emission monitoring and baseline setting underway in 2009
- Requires electric utilities to disclose carbon footprint to customers, as well as impacts of criteria pollutants
- Authorizes the NJBPU to create an emissions portfolio standard for in-state sources, as well as an out-of-state standard to minimize “leakage”

US EPA Climate Policy

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- **Reductions in emission intensity**. Goal to reduce intensity by 18 percent from 2002 to 2012.
- **Public-private partnerships to reduce GHGs**. Energy efficiency, renewable energy, methane and other non-CO_2 reductions, agricultural practices, and other efforts.
- **Climate change technology program**. Multi-agency Climate Change Technology Program ("CCTP").
- **Climate change science program**. Investigate natural and human-induced changes in the Earth's global environmental system; monitor, understand and predict global change; and provide a sound scientific basis for national and international decision-making.
- **International cooperation**. UNFCCC; IPCC; Asia Pacific Partnership on Clean Development and Climate.
- **Mobile source CO_2 regulation**. A result of *Massachusetts v. EPA*.

US Congressional Proposals

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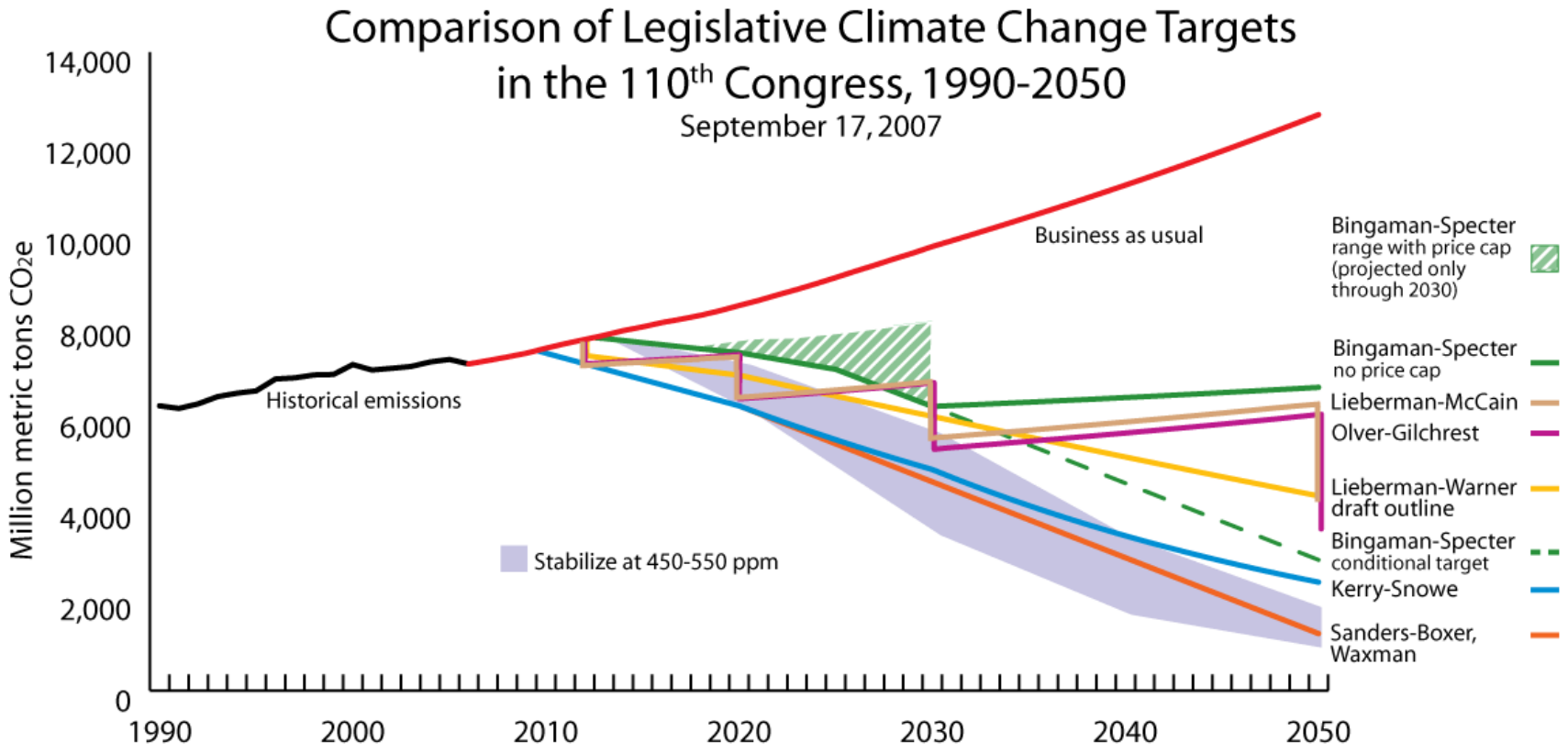

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For a full discussion of underlying methodology, assumptions and references, please see http://www.wri.org/usclimatetargets. WRI does not endorse any of these bills. This analysis is for comparative purposes only. Data post-2030 may be derived from extrapolation of EIA projections.

Background Assumptions

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- EPA published an analysis of S.280 (Lieberman/McCain) on July 24, 2007 (www.**epa**.gov/climatechange/downloads/s280fullbrief.pdf)
- EIA published its own analysis on August 6, 2007 (www.eia.doe.gov/oiaf/servicerpt/csia/index.html)
- Compared to a "business as usual" reference case, S.280 would:
  - Reduce U.S. GHG emissions by 25% in 2030 (3% lower than 2000)
  - Reduce U.S. GHG emissions by 44% in 2050 (5% lower than 1990)
  - Cost between $660 billion and $2.1 trillion through 2030
  - Cost between $1.6 and $5.2 trillion through 2050.
  - Reduce global CO_2e concentrations from 718 to 695 ppm by 2095 (without action by developing economies)
  - Reduce global CO_2e concentrations from 506 to 481 ppm by 2095 (with action by developing economies) v. "tipping point" of 400-450 ppm

Background Assumptions

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- Compared to a “business as usual” reference case, S.280 would:
  - Require an increase in nuclear generation by 120-150% by 2030.
  - Biomass-fired generation grows by 245% by 2030, and wind generation increases 240% by 2030
  - EPA and MIT see carbon capture and sequestration as critical to success at ~70 $2006 per allowance, but EIA concludes CCS is uneconomical under its projection of allowance prices (<60 $2006)
  - Overall energy use decreases by 3% versus reference case by 2030
  - Coal generation falls from 58% (reference case) to 11-35% by 2030.
  - Natural gas prices increase 31% by 2030, and even more if nuclear and renewables are not widely deployed.
  - Main drivers of uncertainty and disparity between modeled outcomes is the existence of a robust global source of CO_2e offsets.

Background Assumptions—Generation by fuel (G-KWh)

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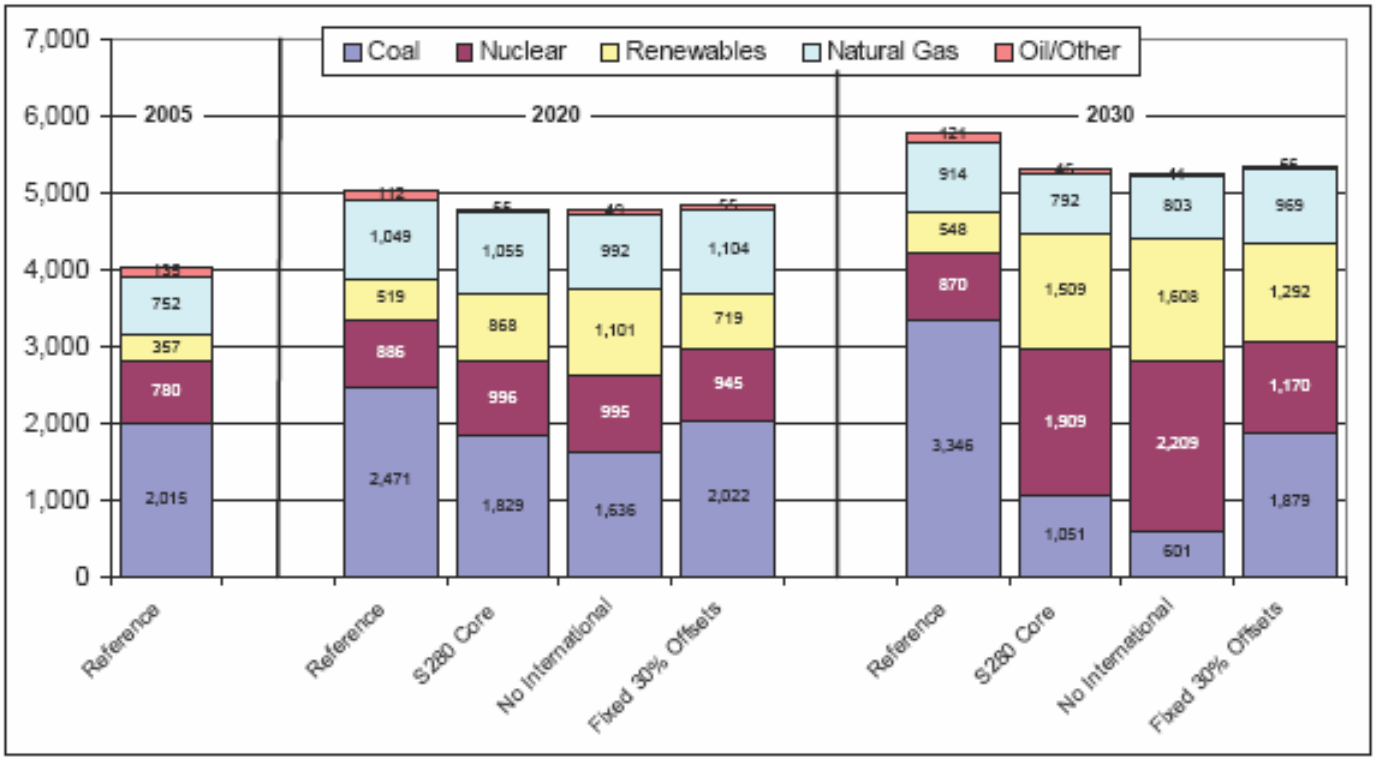

Sources: National Energy Modeling System runs S280BASE.D060107A, S280.D060107A, S280STRAW.D060207A, and S280NOINTL.D061507A.

Food Industry Impacts—Biofuels

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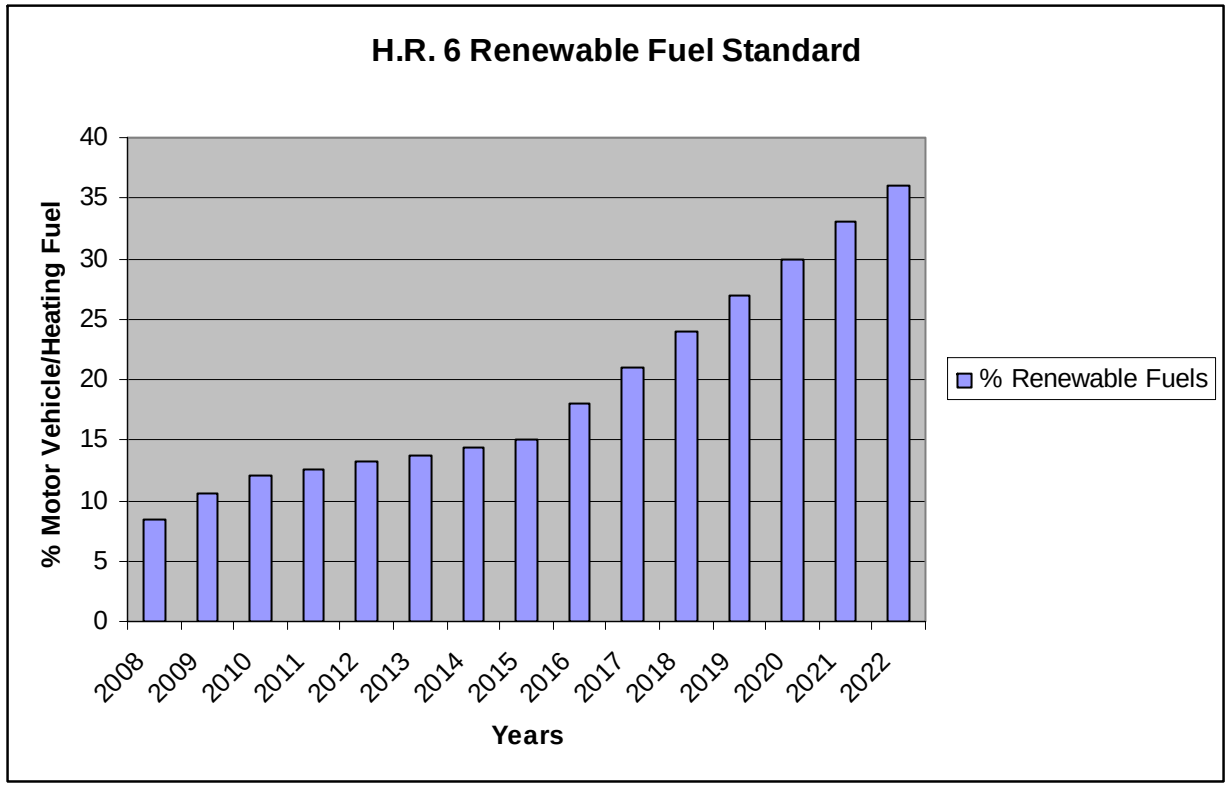
- Increased corn-based ethanol production will most likely continue to exert upward pressure on corn and other food prices as stable or rising corn prices displace other crops



Food Industry Impacts—Transportation

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- The House has just proposed an increased fuel economy bill that would significantly increase the cost of transportation by heavy-duty trucks and "work trucks."
  - Current EPA rules 2004/2007/2010 will increase vehicle costs by up to $8,000 per vehicle
  - This cost increase is driving more shippers towards rail, which has little, if any, excess capacity
  - The House bill calls on the National Academy of Sciences to evaluate, and the National Highway Transportation Safety Administration to undertake a first-of-its-kind rulemaking setting fuel economy standards for heavy-duty trucks and work trucks, most likely applying in model year 2014
  - The fuel economy standards will most likely dramatically increase the cost of these vehicles, and ignores the current market pressures from fuel prices towards feasible technologies

Food Industry Impacts—Others

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- Refrigerant uses
  - Hydrofluorocarbons are defined as greenhouse gases under international and domestic climate programs
  - California has an initiative to limit or eliminate the use of small-quantity containers of HFCs (primarily for automobile use)
  - Expect to see regulations beyond the Montreal Protocol regarding HFCs, potentially rendering refrigeration more expensive
- Profit opportunities
  - Cap and trade program winners and losers
  - Agricultural methane will be a large component of GHG control strategies in the near term, and industries with large methane emissions may have an opportunity to profit through cap-and-trade-driven controls

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