

Climate Change -- An Introduction to the Challenges Of Change

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THE KYOTO PROTOCOL

- UNFCCC's third meeting in 1997 adopted the "Kyoto Protocol" requiring industrialized countries to reduce their global average GHG emissions by 5.2% below 1990 level during 2008-2012.
- The Kyoto Protocol established legally binding, "differentiated" emission limits for 38 countries.
- The Kyoto Protocol is in effect, and the U.S. is the only major developed country not honoring it.



2007 IPCC Report

- Human activities (fossil-fuel use, land-use changes, and agriculture) are contributing to observed increase in atmospheric concentrations of greenhouse gases.
- Warming of the climate system is unequivocal as evidenced by melting polar ice, rising sea level, changes in precipitation patterns, droughts, heat-waves, etc.
- The earth is warming and it is very likely due to the increased anthropogenic GHG concentrations.
- Continued GHG emissions at or above current rates would cause further warming later in this century.



National Developments

- On April 2, 2007, the Supreme Court ruled EPA must take action under the Clean Air Act regarding greenhouse gas emissions from motor vehicles
- Energy Independence and Security Act
- Congressional Line Item in the Consolidated Appropriations Act, 2008, Requires EPA to Develop GHG Reporting Program



Executive Mandates



- Policy Directives
 - Bush Administration’s “Twenty-in-Ten” Plan to reduce petroleum-based gasoline consumption by 20% in 10 years
 - 15% through renewable plus alternative fuels
 - 5% through vehicle efficiency improvements
 - May 14, 2007 Executive Order directing EPA to:
 - To develop regulations to respond to the Supreme Court’s decision
 - To use EPA’s existing authority under the CAA
 - To use the Twenty-in-Ten proposal as a framework
 - To work together with other Agencies



Timeline

2008

- EPA – Federal reporting program in development
- CA – Mandatory reporting began
- The Climate Registry – Reporting and verification protocols
- Western Climate Initiative – Finalization of program
- RGGI – Carbon allowance auction began in 2008
- Other States – Many programs in development of mandatory reporting rules

2009

- EPA – Reporting program in place
- CA – 1st mandatory reports due
- The Climate Registry – 1st verified voluntary reports are due
- WCI – Likely mandatory state reporting
- RGGI – Likely Cap and Trade begins
- Other States – Likely mandatory reporting in many states begins
- Obama Admin – Alternative Energy Economy; Green Energy Stimulus Plan; Green Bailout for Automakers; Green-Infrastructure; Tax Credits for renewables; Smart Grid; Mass transit?
- Congressional Bills on GHGs



State/Regional Climate Activities

- In the absence of federal legislation numerous states and cities have initiated climate-related action plans
 - California Legislation (AB 32)
 - Ten Northeastern States (RGGI)
 - Western Regional Climate Initiative (WCI)
 - Midwestern Governors GHG Accord



CA AB32 Global Warming Solutions Act of 2006



- Established annual mandatory reporting of GHG emissions for significant sources
- Sets emissions limits to cut the states GHG emissions to:
 - 2000 levels by 2010
 - 1990 levels by 2020
 - 80% below 1990 levels by 2050
- CA Air Resources Board is responsible for monitoring and regulating
- ARB may adopt a cap & trade system with associated limits on state's GHG sources from 2012 to 2020

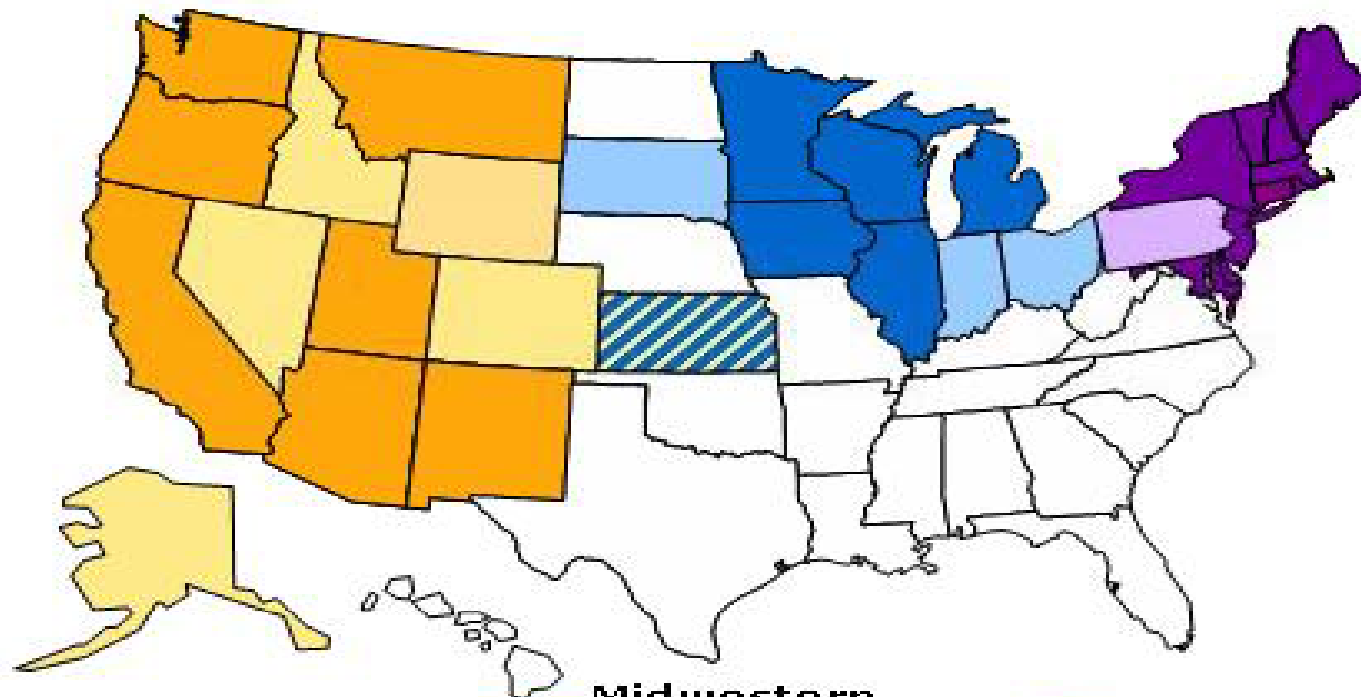


CA Mandatory Reporting under AB 32

- Began January 1, 2008
 - First reports due April 1 and June 1, 2009
- Rules
 - Mandatory facility level reporting; optional entity level reporting
 - CO₂, CH₄, N₂O, SF₆, PFCs, HFCs
- Who must report?
 - Electricity generators, marketers, retailers
 - Cement Plants
 - Petroleum refineries, hydrogen plants, cogeneration facilities
 - Any facility emitting >25,000 metric tonnes CO₂/year from stationary combustion



Regional Initiatives



- Western Climate Initiative
- Western Climate Initiative - Observer
- Midwestern Greenhouse Gas Reduction Accord
- Midwestern Greenhouse Gas Reduction Accord - Observer
- RGGI
- RGGI-Observer

pewclimate.org

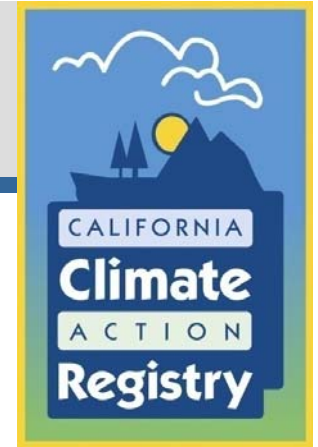


Voluntary Actions

	Public Report	Verification	Reduction Plan
California Climate Action Registry	✓	✓	
The Climate Registry	✓	✓	
Chicago Climate Exchange	✓	✓	✓
EPA Climate Leaders	✓		✓
DOE 1605(b)	✓		✓
Carbon Disclosure Project	✓		



California Climate Action Registry



- ✓ Began as a business initiative
- ✓ SB 1771 created non-profit voluntary GHG registry
- ✓ Operations began September 2001
- ✓ Program launched October 2002

~325 members

The California Registry provides leadership on climate change by developing and promoting credible, accurate, & consistent GHG reporting standards & tools for organizations to measure, monitor, third-party verify & reduce their GHG emissions.....



The Climate Registry



The Climate
Registry

- Tool to measure, track, verify, and publicly report GHG emissions, governed by state and tribal representatives
- Common measurement standards and reporting systems enables cooperation between states, lower costs, risk management, and high integrity
- CCAR will provide administrative and reporting infrastructure support
- Will begin accepting data in January 2009
- Reporting guidelines cover stationary combustion, mobile combustion, electricity usage, and refrigerants



Chicago Climate Exchange

- ✓ Launched in 2003 from MBA project
- ✓ Legally binding integrated trading system
- ✓ Three classes of membership - ~300 members

Goal:

To facilitate the transaction of GHG allowance trading with price transparency



EPA Climate Leaders

- ✓ Voluntary partnership
 - ✓ Launched Feb. 2002
- ~160 members



Goal:

establish GHG strategy and reduction goals



DOE 1605(b)

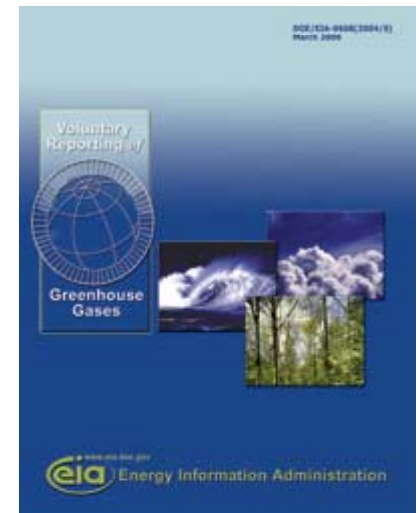
✓ Established by Energy Policy Act of 1992

✓ Voluntary

~200 reporters

Goal:

encourage voluntary reductions



Funding constraints – no public reports since 2004



Carbon Disclosure Project

- ✓ Started in 2000



- ✓ Registered Charity (UK) and 501(c)3

Goal:

facilitate dialogue for a rational response to climate change between shareholders and corporations

3,000 companies submitted information in 2007



Corporate Climate Change Drivers

- Business drivers
 - Increasing public perception about climate change issues
 - Shareholder resolutions & institutional investor concerns
 - Energy costs
- Opportunities
 - Increasing carbon market value
 - Alternative energy markets
 - Reducing operating costs through energy efficiency and gas recovery projects
- Regulatory drivers
 - Litigation on climate change
 - State regulatory actions
 - Regional cap and trade programs
 - Developing Federal legislation



CERES and WBCSD

- CERES
 - National network of investors and other groups working with companies to address sustainability challenges
- Investor Network on Climate Risk
 - Over 60 institutional investors with over \$4 trillion in assets
 - Purpose is to understand the investment risks and opportunities posed by climate change
- World Business Council for Sustainable Development
 - CEO-led, global association of some 200 companies dealing exclusively with business and sustainable development

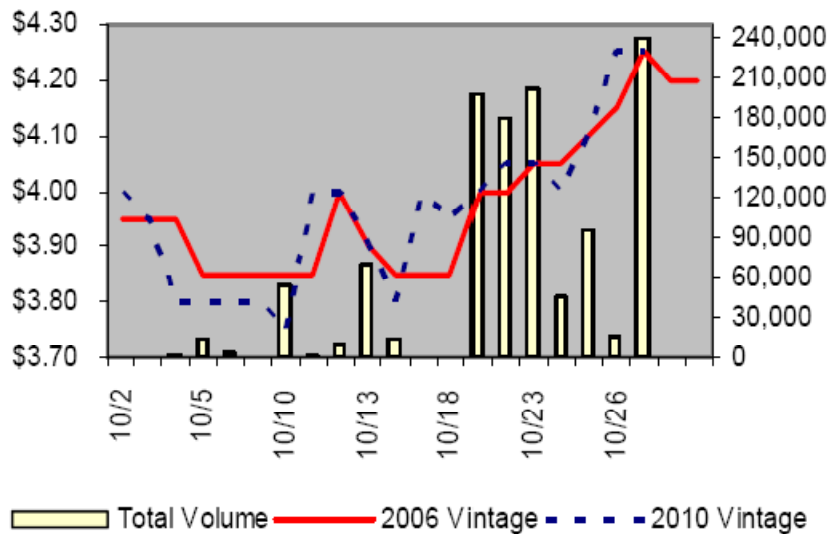


World Business Council for Sustainable Development



Greenhouse Gas Monetization

October Volume, 2006 & 2010 CCX CFI Prices
Price (US\$/metric ton), Volume (metric ton) *Figure 1*



- Chicago Climate Exchange
 - North America's only GHG registry, reduction, and trading system
 - Members set a baseline then reduce 1% per year
 - If targets are not met, Credits are purchased
- Voluntary Market
 - Voluntary Carbon Standard
 - Private brokers and trades
 - Risk that reductions are not recognizable when mandatory program(s) develop



Near-Term Options

- There are no silver bullets
- There are portfolio options currently available:
 - Improve Energy Efficiency (generation & end-use)
 - Increased use of Renewable Energy Technologies
 - Clean Coal Technologies Development (CCS)
 - Increased use of Nuclear Generation
 - Plug-in Hybrid Electric Vehicles



Summary

- Can We Stop Global Warming-Related Problems?
 - Stabilization/down-turn in GHGs may not be observed for generations
- For Now → Focus on Sustainable Development:
 - Companies are “greening” even without regulation
 - Improved energy efficiency
 - Reduced dependence on foreign energy
 - US GHG regulation is imminent
- You’ll learn a lot more about all of this from the network of speakers and participants this afternoon
- AWMA specialty conferences and ACE, Pubs, website

