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INFORMATION TECHNOLOGY FOR EH&S MANAGEMENT

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Landmark 2008 Energy Legislation: A Perspective on Cap and Trade

July 16/17, 2008

***Marco Island,
Florida***



Agenda

- A Federal Perspective on Cap and Trade
- Florida Energy Legislation and Cap and Trade Details
- Program Design Considerations



S.3036 – Lieberman-Warner Climate Security Act

■ Emission Targets

- ◆ Between 2005 and 2012: 5,775 million metric tons of CO₂ equivalent, the estimated levels during 2005
- ◆ Between 2012 and 2020: Further reductions of ~2 percent per year should result in a 19% reduction below current levels
- ◆ Between 2012 and 2050: Emissions should be reduced by 71% by 2050

■ Status

- ◆ Markup by committee on December 5, 2007, approved by an 11 to 8 vote in committee
- ◆ Recently adjusted the bill to be “deficit neutral”
- ◆ Failed to reach cloture on June 6, 2008
- ◆ Will be reintroduced likely in next congressional session



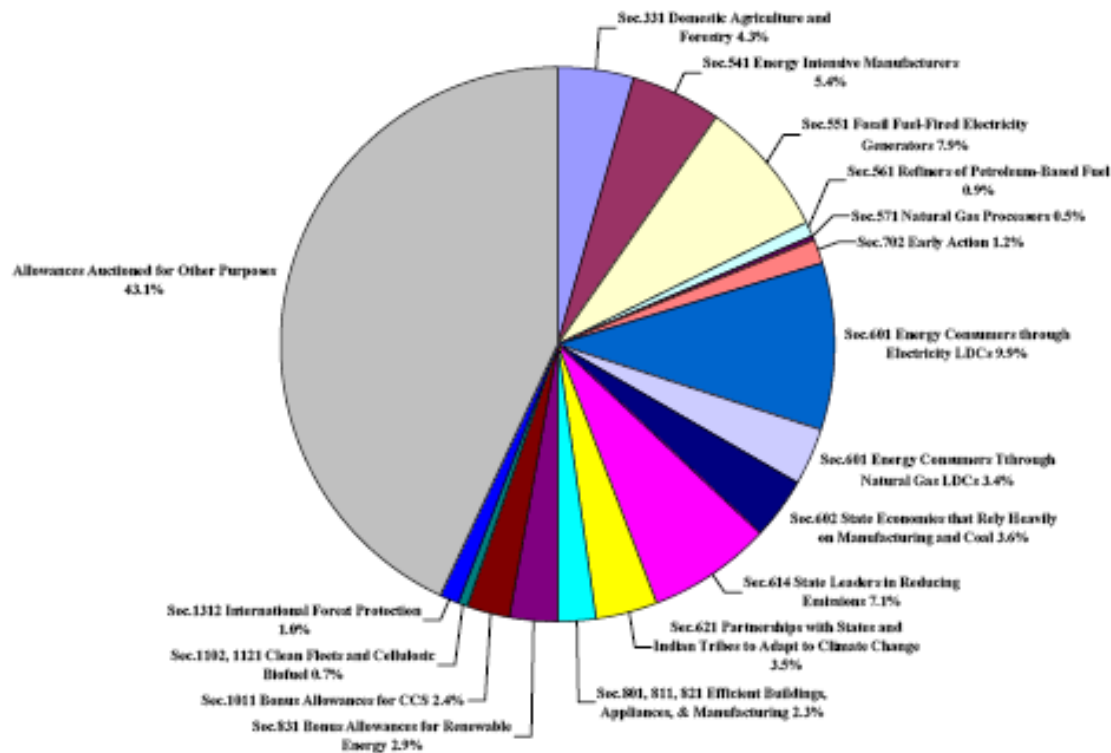
S.3036 – Lieberman-Warner Climate Security Act

- *This program will both allocate and auction allowances through a variety of methods.*
 - ◆ *Allocation = free emissions. Auction = not free emissions*
- **Cost-Containment Auctions** – from 2012 through 2027
 - ◆ Initial cost-containment auction price shall be no lower than \$22 and no higher than \$30
 - ◆ Cost-containment auction pool – 6,000,000,000 emissions allowances established for calendar years 2030 through 2050
 - ◆ Cost-containment auction limit – in general shall be limit on quantity of emission allowances to sell; limit in 2012 is 450,000,000 emission allowances
- **Regular Auctions** – regular, annual auctions that are not cost-containment auctions
 - ◆ Initial regular auction reserve price in 2012 is \$10
- **Early Action** -- from 2012 through 2025 (starting at 5% and leveling off at 1%/year) and in recognition of verified GHG emissions reductions, emission allowances will be distributed to owners and operators of *Covered Facilities* for actions taken after January 1, 1994 but before date of enactment
- **Free Allowance Allocations**
 - ◆ Sector dependent
 - ◆ Number of allowances for a facility will be determined by multiplying
 - Number of allowances available for distribution by
 - Facility's share of annual average of aggregate quantity of petroleum-based products produced or imported during the 3 calendar years preceding allowance distribution

Non-Auctioned Allowances (S. 3036)



S. 3036 Boxer-Lieberman-Warner Substitute Amendment
 Distribution of Allowances: Non-Auctioned Allowances Detail (Percent of total, 2012-2050)
 June 3, 2008



Note: Does not include cost-containment provisions

S.3036 – Lieberman-Warner (Boxer) Climate Security Act ACCF/NAM Cost Analysis (3/2008) – based on S. 2191

- American Council for Capital Formation (ACCF)/National Association of Manufacturers (NAM) specified model assumptions regarding likely availability of emission reduction technologies, new energy sources, and market mechanisms (offsets)
- CO₂ Allowance Price Projections (2007 \$/ton)

	2014	2020	2030
Low Cost Case	37	55	227
High Cost Case	38	64	271

- ◆ Assumes no allowance price cap and no banking
- ◆ Assumes purchase of relatively inexpensive offsets moderates allowance prices until ~2020

- Industrial Electricity Prices (cents/Kwh - % Change)

	2014	2020	2030
Low Cost Case	11	28	101
High Cost Case	12	34	128

S.3036 – Lieberman-Warner (Boxer) Climate Security Act

US EPA Cost Analysis (3/2008) – based on S. 2191

- CO₂ Allowance Price Projections (2005 \$/ton CO₂e)

	2015	2020	2030
S. 2191	29-40	37-51	61-83
S. 2191 w/Unlimited Offsets	11	15	24
S. 2191 w/ No Offsets	77	98	160

- Use of or limitations on domestic & international offsets has larger impact on prices than constraints on key technologies

- Electricity Price Projections (% Increase)

	2030	2050
S. 2191	44	26
S. 2191 w/growth constraints on nuclear, biomass, CCS	79	98

- Assumes cost of allowances can be partially passed onto consumers. Notes that if allowances are given directly to power companies, the cost of allowances could not be passed on to consumers in regulated electricity markets, so electricity price increases would be smaller.



S.3036 – Lieberman-Warner (Boxer) Climate Security Act EIA Analysis (4/30/2008) – based on S 2191

- Allowance prices range from \$30 to \$76 per metric ton CO₂e in 2020 and from \$61 to \$156 per metric ton CO₂e in 2030
- Coal prices projected to rise from 161 to 413 percent by 2020 and from 305 to 804 percent more by 2030
- The total revenue from auctions and sales ranges from \$113 to \$290 billion in 2020 and from \$326 to \$853 billion in 2030.
- Energy-intensive sectors, including food, paper, bulk chemicals, petroleum refining, glass, cement, steel and aluminum, show greater losses compared to the rest of the industrial sectors

Source: [http://www.eia.doe.gov/oiaf/servicerpt/s2191/pdf/sroiaf\(2008\)01.pdf](http://www.eia.doe.gov/oiaf/servicerpt/s2191/pdf/sroiaf(2008)01.pdf)



Energy and Commerce Committee White Papers

- Getting the Most Greenhouse Gas Reductions for Our Money (May 28, 2008)
- Appropriate Roles for Different Levels of Government (February 2008)
- Competitiveness Concerns/Engaging Developing Countries (January 2008)
- Scope of a Cap-and-Trade Program (October 2007)
- http://energycommerce.house.gov/Climate_Change/index.shtml



Florida Energy and Climate Protection Act

- Climate Change Objective
 - ◆ Establish a market-based emissions abatement program, such as cap-and-trade, to address greenhouse gas emissions reductions
- Covered Sources
 - ◆ Major emitters – electric utilities regulated under Florida statute
 - ◆ Six greenhouse gases (GHG(s)) – CO₂, CH₄, N₂O, HFCs, PFCs, SF₆
 - ◆ Major emitters shall be required to use The Climate Registry (The Registry) for registration and reporting



Florida Energy and Climate Protection Act GHG Reporting/Cap and Trade

- DEP will establish the methodologies, reporting periods, and reporting systems used when major emitters report to The Registry
- DEP may require the use of quality-assured data from continuous emissions monitoring systems
- DEP may adopt rules for cap-and-trade program to reduce GHG emissions from major emitters
- DEP shall not adopt rules until after January 1, 2010 and any rules will not be effective until ratified by the Florida Legislature



Florida Energy and Climate Protection Act

Cap and Trade Design

- Statewide cap on GHG emissions from major emitters
- Method(s) for allocating cap among major emitters
- Methods, requirements, conditions for allowances and for issuing allowances
- Compliance schedule and process
- Schedule of allowances through 2050
- Process and infrastructure for transferring allowances
- Cost containment mechanisms, including but not limited to
 - ◆ Borrowing allowances from future time periods
 - ◆ Bank allowances in current year for use in future years
 - ◆ Purchase offsets from other entities that (i) generate verifiable emission reductions of unregulated GHG emissions, or (ii) generate verifiable emission reductions of regulated GHG emissions through voluntary practices that capture and store the GHG emissions that would otherwise be released



Florida Energy and Climate Protection Act

Cap and Trade Design

- For the cost containment mechanisms, DEP shall identify activities outside of the electric utility sector, including from other state, federal, or international activities, and conditions under which any emissions reductions can be used for compliance
- Safety valve or back-stop mechanism related to allowance prices
- Process to allow DEP to discourage “leakage”
- Provisions for emissions trading “trial run”
- Cost-effectiveness of cap-and-trade system in combination with other policies and measures in meeting statewide GHG emissions target



Florida Energy and Climate Protection Act Cap and Trade Design

- Minimizing burden on state in administering the program
- Minimizing program burden on entities covered under cap
- Electricity prices for consumers
- Benefits to state's economy of adopting early cap-and-trade program in context of possible federal climate change legislation and/or international agreements
- Benefits to state's economy from the creation and sale of emissions offsets from economic sectors outside of the emissions cap



Florida Energy and Climate Protection Act Cap and Trade Design

- Potential effects of “leakage” if economic activity relocates out of state
- Costs and benefits of cap-and-trade system to Florida economy
- How to moderate impacts of energy price increases on low-income consumers
- Consistency of program with other state and potential federal efforts
- Feasibility and cost-effectiveness of extending program as broadly as possible among emitting activities and sinks in Florida
- Evaluation of conditions under which Florida should consider linking its trading system with systems of other states or countries



Cap and Trade Program Discussion

- Data
 - ◆ Accurate statewide GHG inventory is crucial for setting a cap
 - ◆ Several years of baseline data for covered sources is also critical
- Coverage
 - ◆ Sector coverage – one versus multi sector? Utilities only?
- Timing
 - ◆ Phase-In?
- Allowances
 - ◆ Allocation versus auction
- Penalties/Compliance
 - ◆ Penalties for non compliance need to be sufficient to highly encourage compliance
 - ◆ Definitive compliance obligations
- Cost Containment
 - ◆ Cost containment elements are important, but realize the market forces of each one – banking, safety valve, price cap, etc.
 - ◆ Technology availability, lack of ability to compare to NO_x/SO₂ trading markets
- Ancillary Programs
 - ◆ RECs/RPS – ensure double counting does not occur
 - ◆ Offsets – geography, types of projects, linkages



Another Coastal State (California) Private Sector Cap and Trade Input

- California Climate Coalition recently issued a report titled *California First—A Proposal To Accelerate Low-Carbon Technology Deployment and Bring California Into a Global Carbon Market,*’
- Participants included General Electric, American Honda Motor Co., Chevron USA, Reliant Energy, Shell Oil, Quantum Combustion, and Texas Syngas, Inc



Another Coastal State (California)

Private Sector Cap and Trade Input

- Innovative Technology Markets
 - ◆ Closed performance-based trading market
 - Trading only allowed within each industry-sector program (low carbon fuel standard, renewable portfolio standard, fuel economy) with one way trading into (but not out of) the broad open market
 - Compliance Options:
 1. Meet standards directly
 2. Averaging across CA assets
 3. Offsetting shortfall in corporate performance with surplus reductions from other entities in same sector
 4. Offsetting shortfall with Innovative Technology Credits



Another Coastal State (California)

Private Sector Cap and Trade Input

- Innovative Technology Markets (ctd)
 - ◆ Forward-Generated Innovative Technology Credits for California-serving projects based on state criteria
 - Demonstrate the project meets or outperforms carbon intensity standards for the applicable industry sector.
 - Projects may include the following:
 - ◆ Solar, wind, and other renewable energy technologies
 - ◆ Low carbon biomass (cellulosic ethanol, biofuels)
 - ◆ Advanced combustion techniques (IGCC, oxyfuel, supercritical diesel)
 - ◆ Carbon capture and sequestration
 - ◆ Advanced battery technologies
 - ◆ Energy efficiency projects
 - State agency would set qualifying performance thresholds, GHG emission reduction protocols, technology board review, performance milestones, penalties/rewards
 - Forward credit generation would provide risk hedge, increased certainty, and capital flow to project



Another Coastal State (California)

Private Sector Cap and Trade Input

- Mass Reduction –Based Open Market
 - ◆ An open market cap-and-trade program with a performance-based transition mechanism for certain sectors
 - ◆ Advocates that performance-based mechanism could be potentially linked more easily if federal program emerges
 - ◆ Three compliance periods: 2012-2014; 2015-2017; 2018-2020 with evaluation each period of whether to phase performance based sectors to full cap and trade (and whether overlaying federal program should be considered)
 - ◆ For open market cap and trade program, allocation with gradual transition to auction
 - ◆ Safety valve only if the program is not linked to other state, regional programs at the outset
 - ◆ Geographically broad and quantitatively unlimited offsets market that links to other carbon markets.



Developing Corporate Strategies in a Carbon-Constrained Environment



A Strategic Climate Approach

- Step 1. Understand the Landscape
 - ◆ Evaluate business plans and growth scenarios
 - ◆ Regulatory analysis
 - ◆ Benchmarking and competitive analysis
 - ◆ Comprehensive, documented and verifiable carbon footprint
 - ◆ Advocacy – help the regulators understand how you are different and your unique concerns
- Step 2. Develop a Mitigation Evaluation
 - ◆ Generate a suite of short and long-term reduction options and costs
 - Make reductions that make financial sense now
 - Evaluate technology changes, fuel-switches, energy efficiency initiatives, R&D strategy, use of market mechanisms (RECs, carbon offsets)
 - Rank feasibility, costs and impact over short, medium and long-term time spans – calculate NPV of projects with carbon, fuel, electricity escalations
 - ◆ Evaluate new product offerings for carbon constrained environment



A Strategic Climate Approach

- Step 3. Develop a Climate Change Management Plan
 - ◆ Define strategic objectives
 - ◆ Define reduction targets based on mitigation evaluation
 - ◆ Define your carbon portfolio options and goals for diversification/rebalancing
 - ◆ Call out key business or product constraints and opportunities
 - ◆ Evaluate how you will handle acquisitions and divestitures
- Step 4. Implement the Plan
 - ◆ There will be multiple pressure points in organization that will deal with climate change issues – involve everyone that is relevant
 - ◆ Align capital and personnel time required to meet goals
 - ◆ Invest in policy advocacy
- Step 5. Refine Strategy
 - ◆ Mitigation options and carbon costs will change over time
 - ◆ Your business may change over time
 - ◆ Adjust, refine, adapt



Questions?

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