



California and Western Region Energy Sector GHG Reductions

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World's Largest GHG Emitters

	2000 Emissions (Mt CO2)	Per Capita Emissions
1. USA.....	5,661.....	19
2. China.....	2,795.....	02
3. Russia.....	1,437.....	10
4. Japan.....	1,186.....	09
5. India.....	1,073.....	01
6. Germany.....	787.....	10
7. UK.....	569.....	09
8. Canada.....	437.....	13
9. California.....	430.....	12
10. Italy.....	429.....	07
11. South Korea.....	428.....	09
12. Mexico.....	425.....	04



Sources: Courtesy of CalEPA
 Research conducted by Oak Ridge National Lab & The Tellus Institute





California Global Warming Solutions Act of 2006 (AB 32)

- **2010:** emissions at 2000 levels*
 - **2020:** emissions at 1990 levels
 - **2050:** emissions 80% below 1990 levels*
- Covers all major emitters, to be defined by California Air Resources Board (CARB).
 - Covers all major greenhouse gases (GHGs).





AB 32 Context

- AB32 requires:
 - Reduce statewide GHG emissions to 1990 levels by 2020
 - CARB to determine 1990 level by 1/1/2008
 - **CARB to develop scoping plan to meet target by end of 2008**
 - Early Actions identified by 6/30/2007 and in place by 1/1/2010
 - Complete program in place by 1/1/2012
- Joint Public Utilities Commission and Energy Commission (CPUC and CEC) proceeding to make recommendations to CARB on policies for electricity and natural gas sectors
 - For scoping plan purposes
- Joint CPUC/CEC decisions to convey recommendations
 - March 2008– Resolve threshold issues
 - August 2008– Comprehensive recommendations





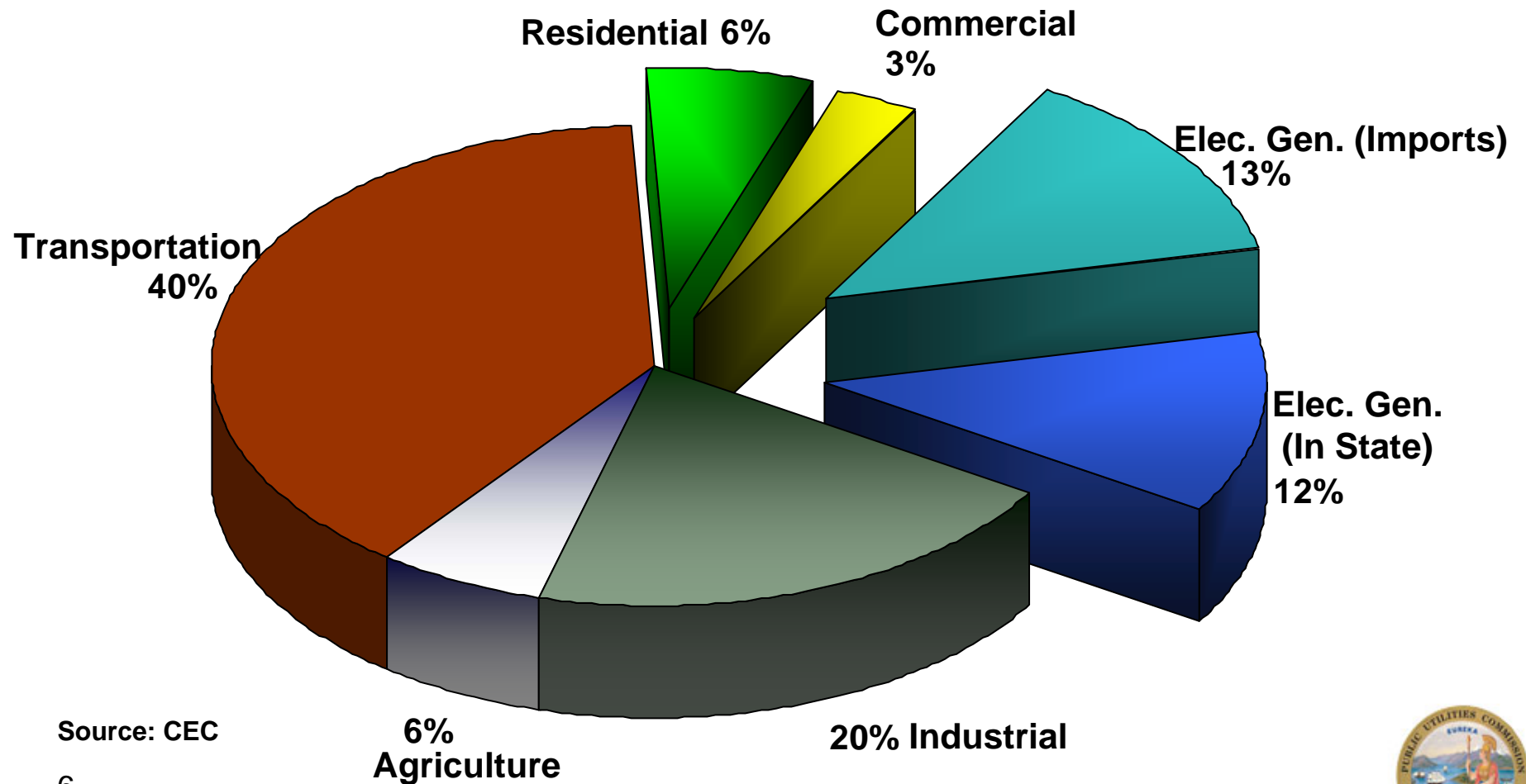
AB 32 Timetable

Item	Date
Signed into law	Sept. 2006
Early action measures identified	Jun. 30, 2007
Mandatory reporting regulations	Jan. 1, 2008
Emissions inventory finalized	Jan. 1, 2008
Adoption of scoping plan	Jan. 1, 2009
GHG limits and reduction measures adopted in regulation	Jan. 1, 2011
GHG limits become operative	Jan. 1, 2012





California's 2004 GHG Emissions (480 MMTCO₂E)



Source: CEC

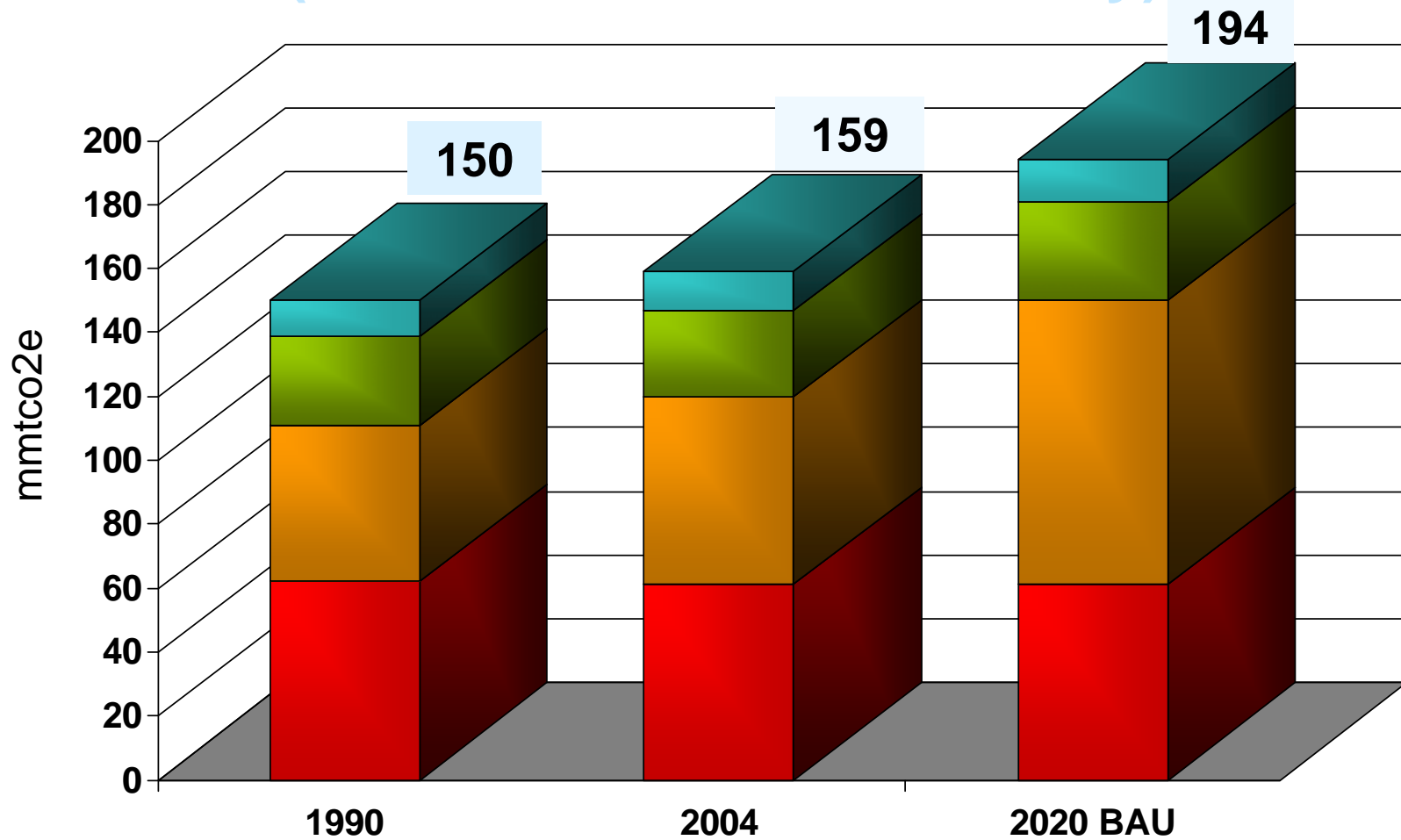
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CARB 2007





Emissions (Natural Gas and Electricity)



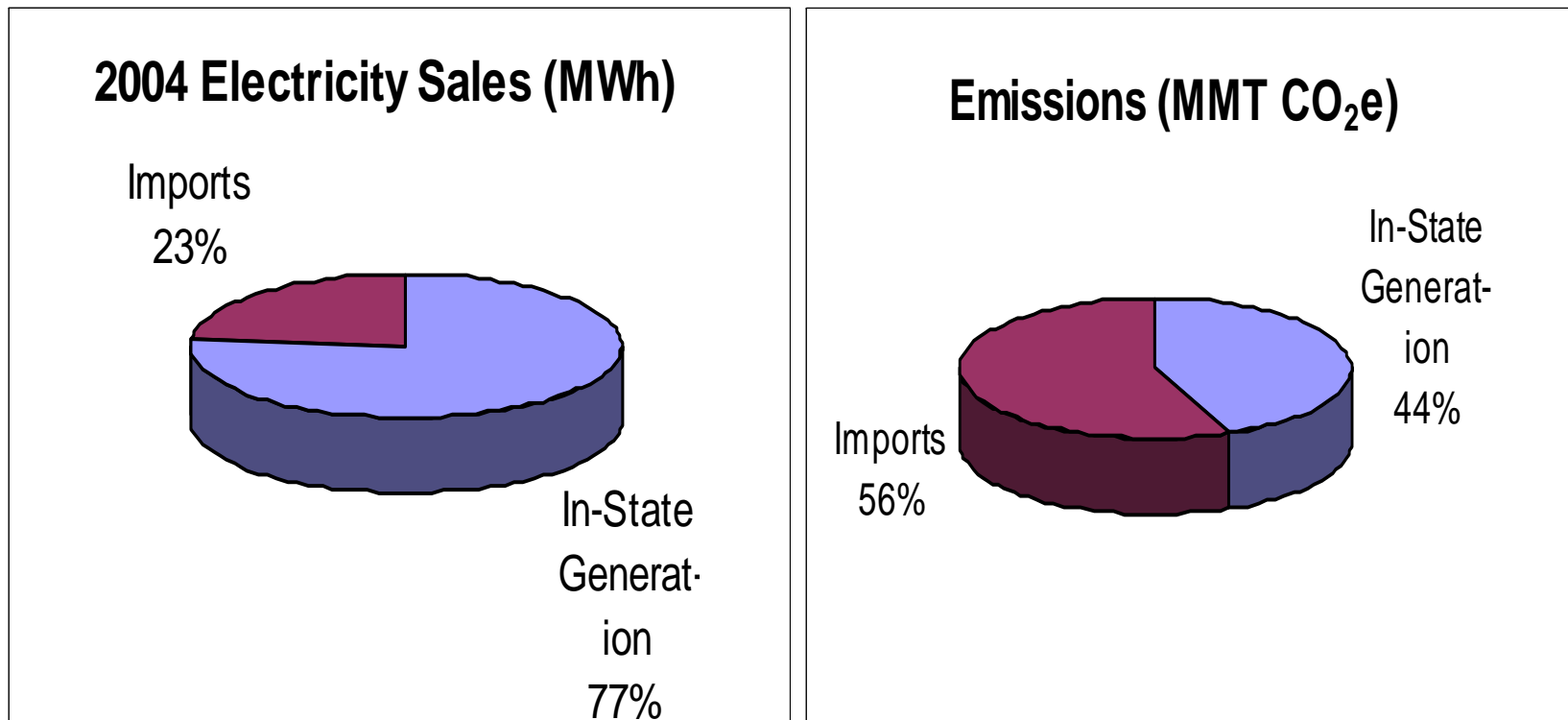
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■ Electricity Imports
 ■ Instate Electricity
 ■ Natural Gas Residential
 ■ Natural Gas Commercial





Electricity-Related Emissions: Imports

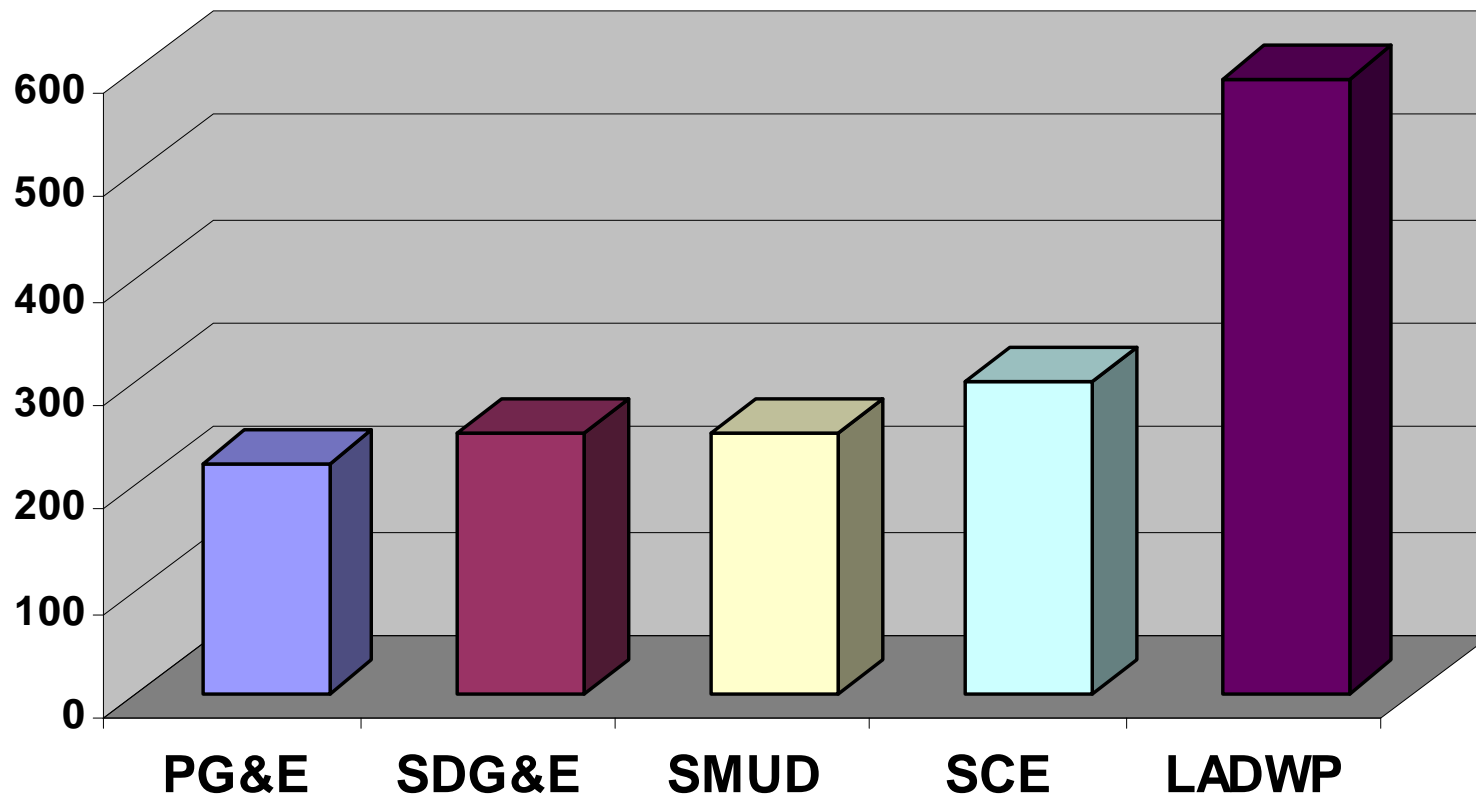


Source: CEC (for electricity sales); CARB (for emissions inventory)





Emissions Intensity (Tons CO₂e/GWh)





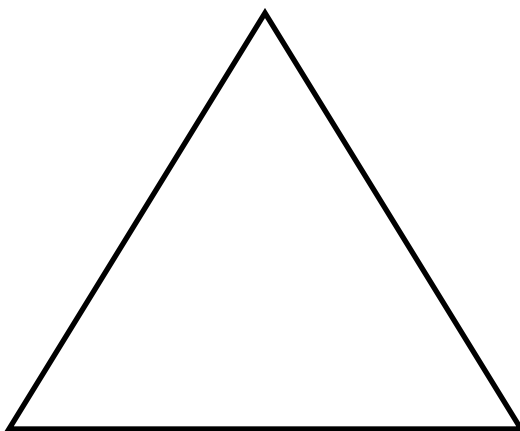
Options for reducing energy sector GHG emissions

Reduce Demand

- Energy efficiency
- Advanced metering/demand response
- Water conservation

Cleaner Supplies

- Loading Order
- Renewable Portfolio Std.
- CA Solar Initiative
- Emissions Performance Std.



New Technologies

- RD&D investments
- Standards





CPUC Programs: Energy Efficiency

- IOUs required by CPUC and POU's by AB2021 to invest in “cost-effective” energy efficiency
- CPUC has the most aggressive efficiency program in the nation
 - Spending \$2 billion between 2006-2008 to capture approximately 1500 MW of energy savings
- Conducting a statewide strategic planning initiative that includes the following strategies:
 - Goal of zero net energy homes by 2020
 - Zero net energy commercial buildings by 2030
- Required pilot programs to incorporate water conservation into energy efficiency programs
 - Water treatment and pumping accounts for almost 20% of electricity usage in California





CPUC Programs: Energy Generation

- Renewable generation
 - Renewable Portfolio Standard
 - 20% of retail sales to come from renewables by 2010
 - Energy Action Plan calls for evaluating 33% by 2020
 - California Solar Initiative to install 3000 MW of solar PV by 2017
 - Self Generation Incentive Program with incentives for installation of clean distributed generation such as fuel cells
- Conventional generation
 - Emissions Performance Standard (SB 1368)
 - Carbon capture and storage
 - CPUC expects to see proposals for demonstration projects utilizing advanced coal with sequestration within next 18 months





CPUC Programs: New Technologies

- Supporting research, development, demonstration, and deployment in the energy sectors
- In April approved California Institute for Climate Solutions
 - To facilitate applied research, deployment, and commercialization of technological solutions to climate change
- California Solar Initiative also supports \$50 million RD&D program for solar





March 2008 CPUC/CEC Recommendations to CARB

- Mix of direct regulatory and market-based measures to address emissions from electricity and natural gas
- Coordination with (but not waiting for) Western Climate Initiative and Federal climate policy development
- All mechanisms adopted will require effective monitoring and enforcement





CPUC/CEC Recommendations: Direct Regulations

- Minimum levels of energy efficiency and renewable energy should be required of **all retail providers**
 - Includes investor-owned utilities, publicly-owned utilities, electric service providers, community choice aggregators
- Programs are foundation of AB 32 emissions reductions from energy sectors
- Consistent with State policy, retail providers to be required to go **beyond current 20% RPS requirement**





CPUC/CEC Recommendations: Cap-and-Trade

- Additional reductions can be achieved through electric sector participation in a **multi-sector cap and trade**
- **“First Deliverer” point of regulation**
 - Entity that first delivers electricity onto the grid in California
- **Some portion of allowances should be auctioned**
 - Avoids potential for windfall profits
 - Rewards early action
- **Majority of proceeds from auctions should be distributed for benefit of consumers**
- **Natural gas** not recommended for inclusion in cap-and-trade program for now, but may be included later
 - Fewer options to reduce emissions in this sector
 - Reporting protocols are still under development





Further analysis in process

- Completion of modeling of costs and benefits, to determine proper mix of emissions reductions from regulatory and market-based approaches
 - Initial results suggest that majority of emission reductions most likely to come from regulatory programs
- Implications for consumers of options for allowance distribution
 - Staff options paper issued and workshops held in April
- Options for regulation of emissions from Combined Heat and Power installations
- Recommendations for “flexible compliance” for electricity
- Final recommendations from CPUC/CEC anticipated in August 2008





Western Climate Initiative (WCI)

- Political agreement among 7 Governors of U.S. States and 3 Canadian Provinces:
 - Arizona, California, Montana, New Mexico, Oregon, Utah, Washington
 - British Columbia, Manitoba, Quebec
- Observers include 6 U.S. States, 2 Canadian Provinces, and 6 Mexican border states
 - Alaska, Colorado, Idaho, Kansas, Nevada, Wyoming
 - Ontario, Saskatchewan
 - Baja California, Chihuahua, Coahuila, Nuevo Leon, Sonora, Tamaulipas





Western Climate Initiative (WCI)

- Memorandum of Understanding (February 2007) includes three actions:
 - Joining a multi-state emissions registry
 - Setting a regional target (in concept; states still required to adopt separate laws to effectuate a binding cap)
 - Work together on designing rules for a regional cap-and-trade system
- Goal to reduce regional GHG emissions 15% below 2005 levels by 2020





WCI Timetable

Item	Date
Memorandum of Understanding	Feb. 2007
GHG reduction goal established	Aug. 2007
Work plan	Oct. 2007
Draft design recommendations	May 2008
Final design recommendations	Sept. 2008





WCI Draft Design: Scope

- Industrial and commercial sources
 - Electricity sector
 - Large stationary combustion sources
 - Industrial process and waste management emissions
 - Fossil fuel production and processing
- All six GHGs
 - carbon dioxide (CO₂); methane (CH₄); nitrous oxide (N₂O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF₆)
- Transportation fuels
- Residential and commercial fuel combustion
 - Individual jurisdictions may use alternative measures





WCI Draft Design: Electricity Sector

- Generator point of regulation
- Measures to reduce leakage
 - Possible transitional use of a “first deliverer” point of regulation
 - Complimentary policies





WCI Draft Design: Distribution of Allowances

- Each partner to have an allowance budget within the region-wide cap
 - Region-wide goal of 15% reduction from 2005 levels by 2020
- Allowance distribution by partners
 - Partner discretion on methods for distributing “free” allowances
- Allowance auctions
 - Minimum auction of 25-75% of allowances
 - Phased increase of auctioning
 - Allowance auctions to be region-wide





WCI Draft Design: Flexible Compliance

- Early reduction credits
 - Taken from within the cap
- Banking of allowances
 - Possible limitations to prevent market manipulation
- No borrowing
- 3-year compliance periods
- Limited quantities of high-quality offsets





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