

AB32: The California Global Warming Solutions Act

Glass Manufacturing Introductory Meeting

California Environmental Protection Agency

Air Resources Board



May 19, 2008

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Meeting Agenda

- **Welcome/Introduction**
- **Overview: AB 32
Implementation Status**
- **Glass Manufacturing**
- **Strategy and Technology Assessment**
 - Potential Strategies for GHG Reductions
 - Potential Technologies
- **Next Steps and Open Discussion**

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AB 32: The California Global Warming Solutions Act of 2006

Overview: AB 32 Implementation Status

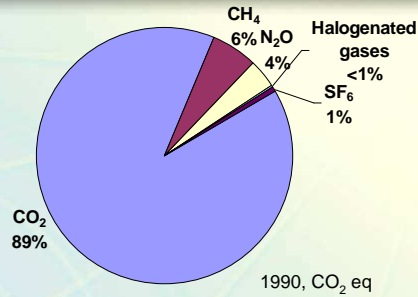
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What Is AB 32?

- Assembly Bill 32 sets in statute 2020 target
- ARB to monitor/regulate GHG sources
- Air Resources Board lead, but:
 - Cal/EPA and Climate Action Team continue coordinating statewide climate policy
 - Other agency authorities preserved

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California GHG Emissions



CO₂, N₂O



CO₂, CH₄, N₂O



CO₂



CO₂



HFCs

ARB, "California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit" (2007), www.arb.ca.gov/cc/ccci/inventory/1990_level.htm

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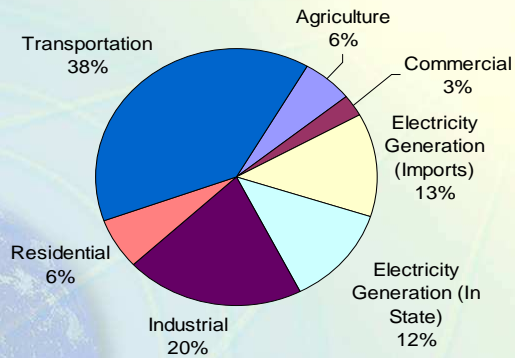
Sectors

- Agriculture
- Forests
- Business/Industry
 - Cement
 - Semiconductor Manufacturing
 - Oil and Gas/Refining
 - General Combustion
 - Other
- Energy (Electricity/Natural Gas)
- Water
- Transportation
 - Land Use/VMT
 - Vehicles
 - Fuels
- High GWP Gases
- Recycling and Waste Management
- State Gov't
 - Green buildings
 - State fleet

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California GHG Emissions

2004 Emissions (480 MMT CO₂E)

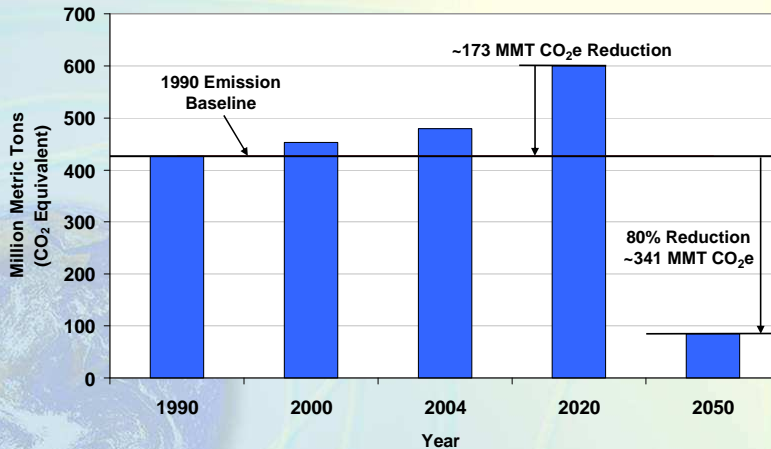


(Cement Sector approximately 9% of Industrial emissions)

ARB, "California 1990 Greenhouse Gas Emissions Level and 2020 Emissions Limit" (2007), www.arb.ca.gov/cc/ccei/inventory/1990_level.htm

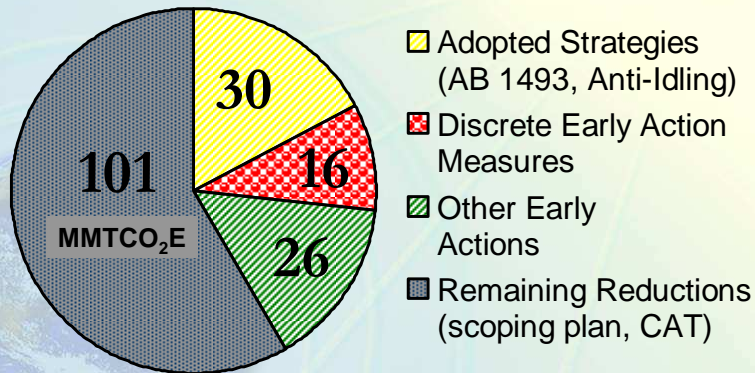
Magnitude of the Challenge

ARB Emissions Inventory



ARB 2020 Emission Reductions A Significant Fraction of the 2020 Target

(AT LEAST 72 of 173 MMTCO₂E)

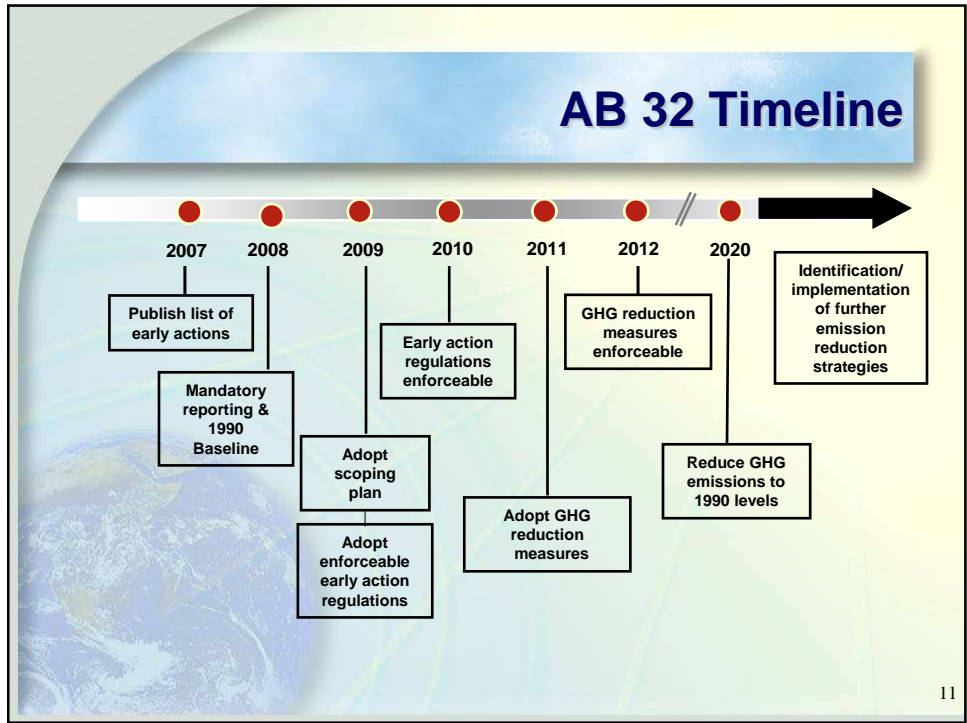


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Pathways to Reducing GHG Emissions

- Regulatory
 - Alternative Compliance Mechanisms
- Market-Based Mechanisms
 - Cap & trade
 - Offsets
- Other Alternative Mechanisms Incentives (e.g., voluntary actions, carbon fees, Incentives, etc.)

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What Is the Scoping Plan?

- Describe how California will reduce GHG emission levels to 1990 levels by 2020
- Provide vision for low carbon future – 2050+
- Establish California's leadership on addressing climate change
- Maximize benefits to California
 - Criteria and toxic air pollutant co-benefits
 - Economic development (green technologies)

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How Will the Scoping Plan Be Developed?

- Identify maximum technologically feasible and cost-effective measures
- Assess possible mechanisms to achieve reductions
- Evaluate scenarios to achieve the 2020 limit
- ARB staff responsible for the Scoping Plan
 - ARB working closely with Cal/EPA and Climate Action Team Subgroups

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Tentative Scoping Plan Development Schedule

Nov 30, 2007	✓ Scoping Plan Kick-Off Workshop
Dec 6 & 7, 2007	✓ Board Hearing - 1990 Baseline, Mandatory Reporting
Dec 14, 2007	✓ Sector Summary Workshop
Jan 16, 2008	✓ Mechanisms Workshop
May 19, 2008	Scoping Plan Scenarios Workshop (Sac)
June 26, 2008	Draft Scoping Plan released
July 2008	Workshops on draft plan (Statewide)
Oct 2008	Final Staff Proposal released
Nov 20-21, 2008	Board Hearing - Scoping Plan

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Getting to 2050

- Scoping Plan must meet 2020 requirement
 - Also should address longer-term 2050 goal
- Scoping Plan measures should contribute to 2050 goal
- Some Scoping Plan strategies may have greater impacts after 2020

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Contacts

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- Climate Change website
 - www.arb.ca.gov/cc/cc.htm
- Program Design workshop
 - www.arb.ca.gov/cc/scopingplan/pgmdesign-sp/meetings/2008_Meeting_Schedule.pdf

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Glass Manufacturing



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Glass Manufacturing

- Glass manufacturing plants identified as a source of greenhouse gas (GHG) emissions
- It is a subsector of Business/Industry
- Opportunities to further reduce GHG emissions

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Glass Manufacturing Industry

- Composed of four segments
 - Container glass (bottles, jars, and other containers)
 - Fiberglass (insulations and textile/reinforcement fibers)
 - Flat or float glass (mostly residential and commercial construction and automotive industries)
 - Pressed or blown glass (specialty glass)

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GHG Emissions Inventory

- Greenhouse gas (GHG) emissions from three sources:
 - Natural gas - nearly all purchased fuels
 - Electricity – booster energy, lights, fans, pumps, compressed air systems, and forming equipment
 - Raw materials: soda ash and lime stone

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GHG Emissions Inventory (cont)

- AB 32 requires sources to meet 1990 GHG emissions levels by 2020
- Estimated GHG emissions:
 - in 1990 ~1.1 MMTCO₂e
 - in 2006 ~1.0 MMTCO₂e
- ARB believes GHG emissions can be reduced by 0.06 to 0.15 MMTCO₂e by 2020

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Current Regulations

- Federal regulations
- Local air district rules
- California Beverage Container Recycling and Litter Reduction Act (CA Beverage Container Recycling Program)
- Fiberglass Recycled Content Act of 1991

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Strategy and Technology Assessment



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Guiding Principles For Development of Emission Reduction Strategies

- Identify measures that result in lower greenhouse gas emissions
- Evaluate a variety of implementation and emission reduction strategies
- Maximize use of strategies that will result in multi-pollutant benefits
- Ensure no adverse localized impacts

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Potential Strategies

- Direct Regulation
- Voluntary Program
- Financial Incentive Programs
- Non-monetary Incentive Program
- Market Based Program

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Potential Technologies

- Maximize cullet use
- Optimize melting operation
 - Changes to existing furnaces
 - Furnace designs
 - Oxy-fuel furnaces
 - Batch and cullet preheating
- Optimize other operations

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Next Steps and Open Discussion



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Next Steps

- Form workgroup
- Glass manufacturing website - May
- First workgroup meeting - July
- Ongoing meetings/workshops - As required
- Technology Assessment - Winter 2009

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