

Managing Climate Change In California

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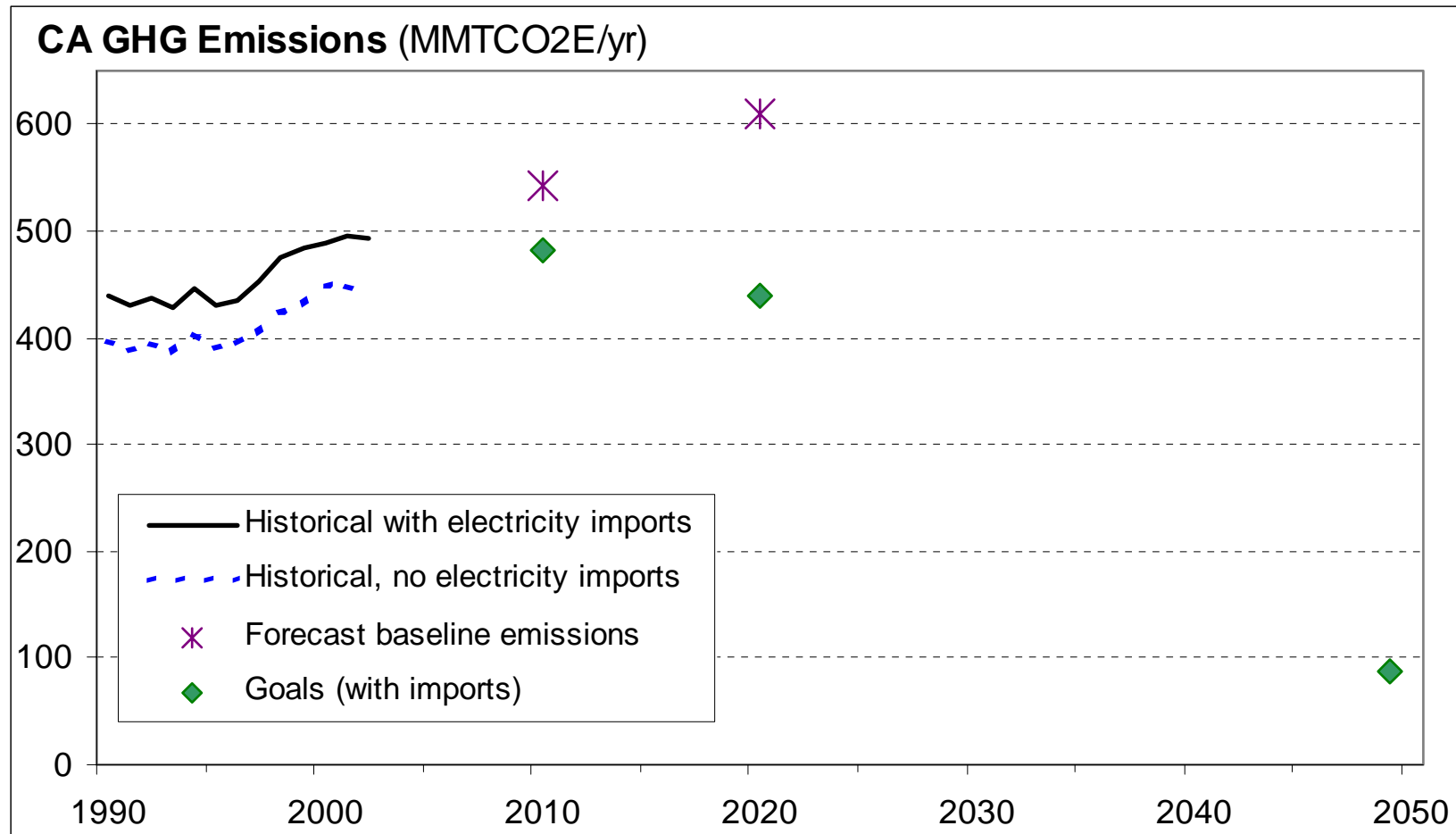
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California has set ambitious targets



- Executive Order S-3-05 GHG emission reduction targets

- 2010: maintain 2000 levels (~10% reduction from baseline)

- 2020: return to 1990 levels (~25% reduction from baseline) → **AB32**

- 2050: attain 80% below 1990 levels → **Climate stabilization**

Climate change strategy has three overarching goals

- 1. Deploy near-term technologies to cut emissions by ~25% by 2020**
- 2. Stimulate innovation & investment in new technologies needed to meet 2050 stabilization targets**
- 3. Contribute to related objectives**
 - Economic growth
 - Air quality
 - Affordable energy prices
 - Diversity of energy sources
 - etc.

California has developed a comprehensive, sectoral strategy to cut GHG emissions

- **Overall goals**

- Executive Order S-3-05 (2005)
- Global Warming Solutions Act 2006 (AB 32)
- Energy Action Plan (CEC and CPUC)
- Bioenergy Action Plan (CARB, CEC, CPUC, etc.)

- **Energy research portfolio**

- **Buildings and appliances**

- Energy efficiency standards (CEC)

- **Electricity other large sources**

- Carbon Adder (CPUC)
- Renewable portfolio standard for electricity (SB 107)
- GHG performance standard (CPUC and SB1368)
- GHG emissions cap (CPUC)
- Energy efficiency targets for utility companies (AB 2021)

- **Transportation**

- Vehicle GHG performance standard (AB 1493, CARB)
- Low Carbon Fuel Standard (LCFS Executive Order S-1-07, CARB, CEC, and others)
- Reduce vehicle usage

- **Other policies**



To ensure innovation across the economy, a sectoral approach is needed

- **Multiple market imperfections create the need for complements to economy-wide policies**
 - Inadequate R&D; Market power; Network effects; Infrastructure; High private discount rates, Differences in fuel-on-fuel competition, applicability of carbon capture and sequestration
- **Can be added to economy-wide cap and trade**
- **Example: Implications of a \$25/ton CO₂ price**
 - Nuclear + renewable electricity \$0.01/MWh
 - Integrated gasification combined cycle with carbon capture and storage (IGCC+CCS) \$02.50/MWh
 - Natural gas combined cycle (NGCC) \$12.50/MWh
 - Pulverized coal (PC) \$20.00/MWh

 - Gasoline \$0.22/gallon
 - Corn ethanol \$0.11 to \$0.23/gallon

Main provisions of California's AB32 Global Warming Solutions Act

- **GOAL Reduce CA GHG levels to 1990 levels by 2020**
- **Multi-agency effort: CARB is lead**
- **2012 cap on stationary sources**
 - Covers all GHGs and most emitting stationary sources
 - Market-based mechanisms recommended (preferred?)
- **Regulatory programs underway or to be developed**
 - Energy efficiency standards, Low Carbon Fuel Standard, blended cement, port and truckstop electrification, afforestation, manure management etc.
- **Early action plan**
- **Environmental justice considerations**
- **Governor can delay the deadline**
- **www.arb.ca.gov/cc/cc.htm**

AB32 Timeline (selected)

- **Sep 06** – AB32 passed and signed into law
- **Jan 07** - Form advisory committees, start public process, begin analysis for rulemaking
- **May/Sep 2007** – University of California Berkeley/Davis study of a Low Carbon Fuel Standard (LCFS)
- **July 2007** – CARB starts regulatory proceedings on early actions, including public workshops and notice and comment process
- **Jan 2008** – Economic and Technology Advancement Advisory Committee (ETAAC) report presented to CARB
- **July 2008** – CARB adopts mandatory reporting regulations
- **Jan 2009** – CARB adopts plan for achieving 2020 targets and completes regulatory proceedings for early actions
- **Jan 2010** – Early action regulations are enforceable
- **Jan 1, 2012** – All GHG regulations are legally enforceable



Thank You

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