Climate Change & Low Carbon Fuel Standard

MSTRS

March 28, 2007
Arlington, VA

Latest IPCC* Report

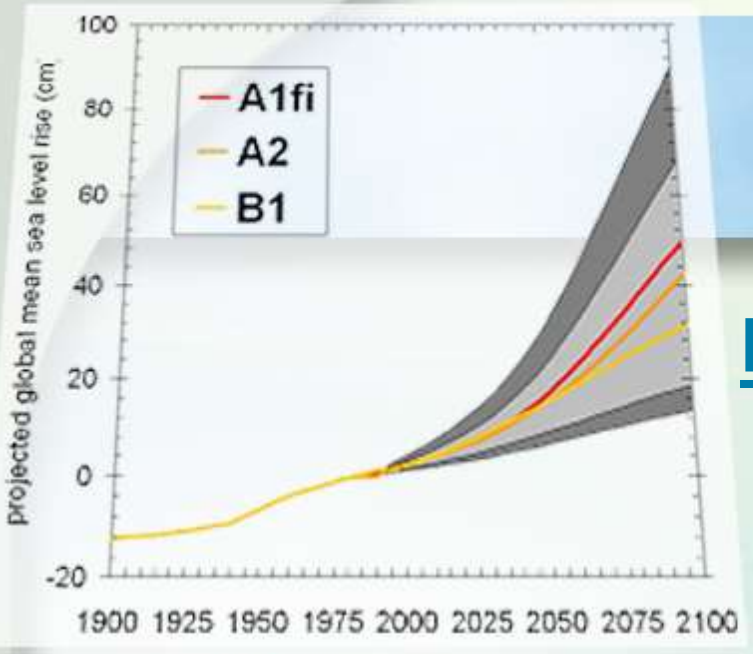
- Climate changing faster than expected
- Action needed to prevent worst impacts

3 more reports coming:

April: Impacts, Adaptation, Vulnerability
May: Emission Mitigation Options
December: Synthesis Report

**UN Intergovernmental Panel on Climate Change*

Climate Impacts



Projected California Impacts

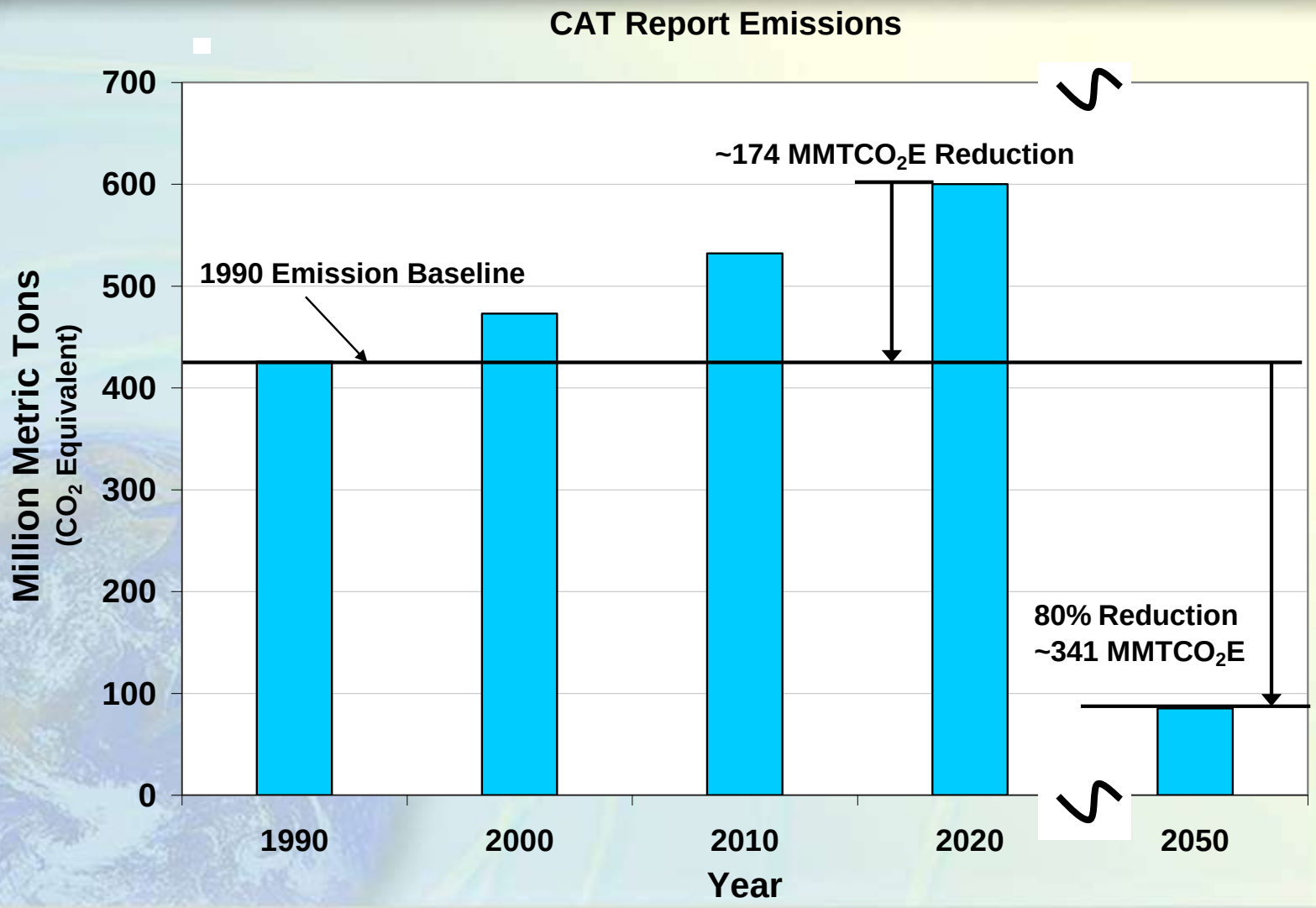
- 75% loss in snow pack
- 1-2 foot sea level rise
- 70 more extreme heat days/year
- 80% more ‘likely ozone’ days
- 55% more large forest fires
- Twice the drought years

CA's Climate Change Program The Basic Pieces

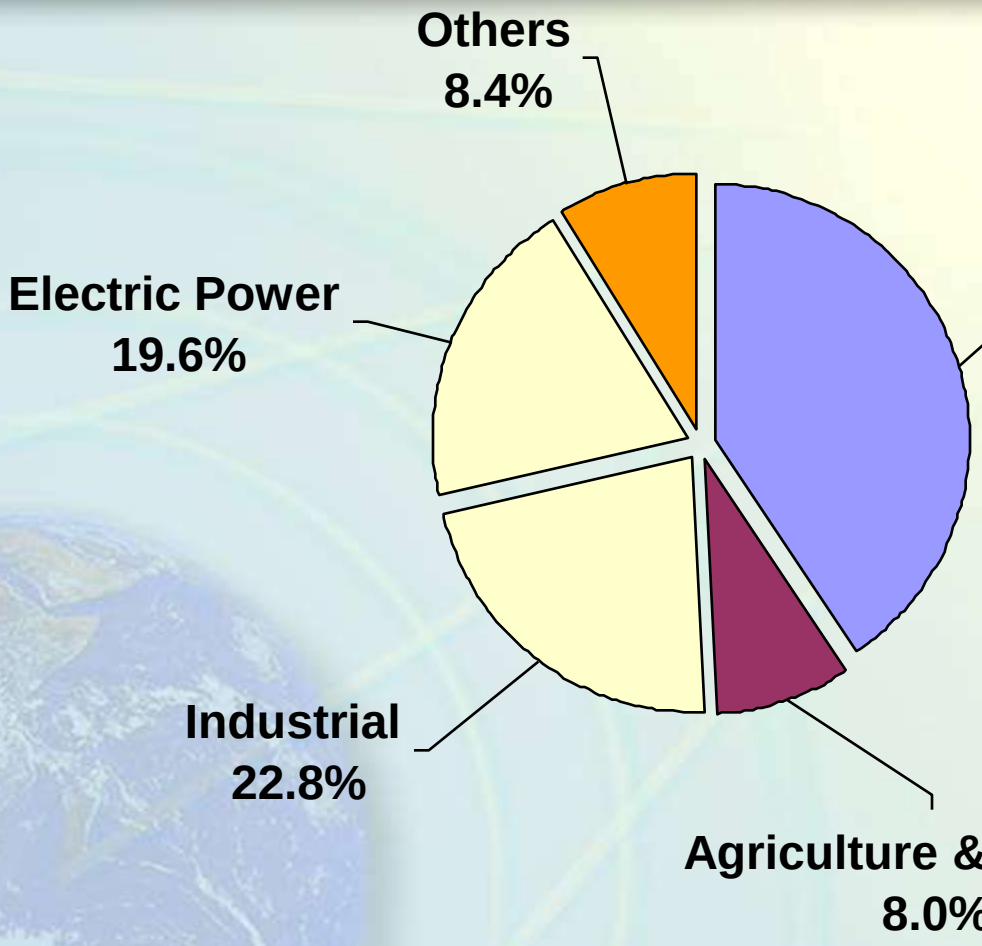
- **Governor set goals by Exec. Order**
  - 1990 levels by 2020
  - 80% below 1990 by 2050
- **Climate Action Plan 4/06**
  - Identifies how to meet 2020 goal
- **AB 32 – Global Warming Solutions Act 2006**
  - Adopts Gov.'s 2020 target
  - Mandatory reductions where appropriate
  - Allows market based measures (e.g. cap and trade)

Magnitude of the Challenge

California's GHG Emission Inventory



California's GHG Emissions (2002)



Total statewide inventory

~ 500 MMTCO2E

Source: March 2006 CAT Report, adapted from CEC, 2005

Potential Reductions by 2020

Vehicles and fuels	41 MMT	24%
Forestry	33 MMT	19%
Land Use/Transportation	27 MMT	16%
Energy Efficiency	21 MMT	12%
Other Utility Measures	19 MMT	11%
Renewable Portfolio Standard	14 MMT	8%
Waste Management	6 MMT	3%
Other, Miscellaneous	13 MMT	7%
TOTAL	**174 MMT**	**100%**

Source: 2006 Climate Action Team Report

Side Bar on State Costs

- Climate plan net positive for CA economy
- Huge savings from energy efficiency and vehicle GHG standards
- Remaining strategies priced at 0-$50/ton
  - However, cost of some measures *tbd*
  - Current global price $10-20/ton

Where We Are Now?

- Establishing emission inventory (1/08)
  - Baseline, reporting, verification
- Early actions, e.g. LCFS (list 6/07; adopt 1/10)
- Adopt grand plan (1/09)
  - Think globally
  - Adopt regs; market-based program (1/11)
- Multi-agency effort (CalEPA)
- 2020 just starting point for 2050

Low Carbon Fuel Standard

- Ordered by Governor - 1/07
- Carbon intensity standard for transportation fuel
  - Declining CO_2e emissions per BTU
- Reduce carbon intensity of fuel by 10% by 2020
  - Continue with eye to 2050
- Rule development underway
  - Target adoption end of 2008

What Does LCFS Mean?

- Performance standard
  - 7/07 report identifies roadmap of low carbon fuels
- 10% carbon intensity reduction means
  - 13 MMT/year reduction in CO_2e
  - 20% reduction in petroleum consumption
  - Renewable fuel market expands 3-5 times
  - Alternative fuel vehicles increase 20 times

Possible Low Carbon Fuels Now Through 2020[1]

- Ethanol (corn)
  - E6 now, may increase to E10 **(<1% ↓)**
  - E85 (20% FFVs, 50% E85 usage) **(~2% ↓)**
- Ethanol (cellulosic)
  - E85 (20% FFVs, 50% E85 usage) **(~7% ↓)**
- Electricity
  - Plug HEVs (10% PHEVs, 50% e^- usage **(~3% ↓)**

[1] Examples

Applicability

- Fuel supplier
  - Based on fuel sold
  - Implicit that barriers must be overcome
    - Availability of fuel and vehicles
    - Infrastructure (retail stations)
    - Price
- May apply to gasoline and diesel pool

Summary

- Climate effects are real, measurable
- California is uniquely vulnerable
- Most of world is already responding
- Opportunity to shape national policy
- Historical laboratory for innovation
- Ability to capitalize on best solutions
- Committed to meet goals