California Low Carbon Transportation Fuel Initiative

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SMUD / SMAQMD

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Why Does Climate Change Matter?

- Global climate change is real – warming already underway
- Global warming poses a serious threat to the economic well-being, public health, natural resources, and environment of California
- Global warming will have detrimental effects on many of California’s largest industries
- California, in its long standing tradition of environmental stewardship, has positioned itself at the forefront of climate protection efforts

Climate Impacts

Over the Past 100 Years:

- 0.7 ^{o}F higher temperatures
- 3-8 inch sea level rise
- 12% spring run-off decrease
- Snowmelt and spring blooms advanced 1-3 weeks (since 1975)

Source: Cal/EPA Environmental Indicators Report (2002)

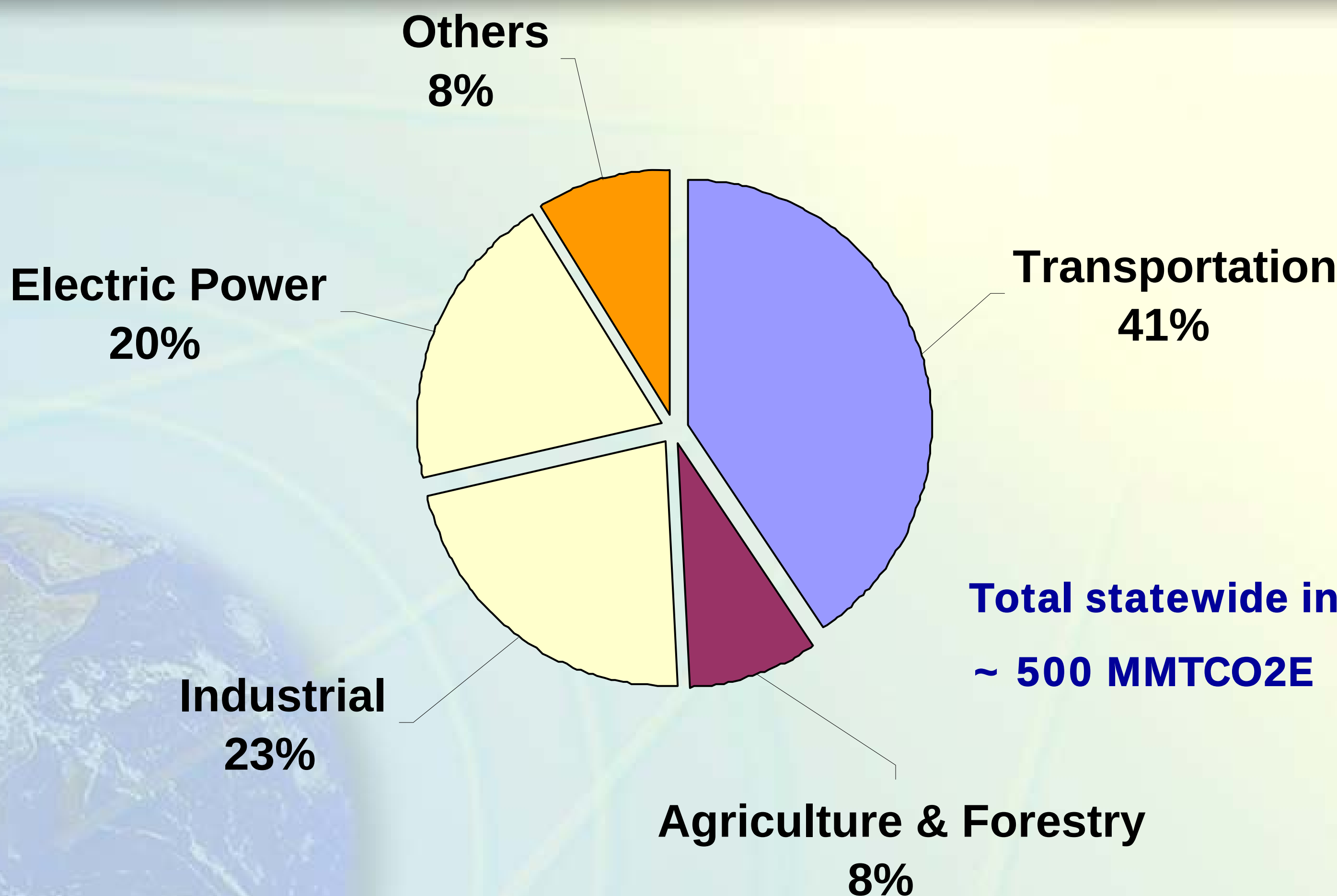
AB 32: Global Warming Solutions Act of 2006

- AB 32 signed Sept 2006
- Requires California to reduce GHG emissions to 1990 levels by 2020
- Reductions anticipated: 174 MMTCO2E
- Requires list of “early actions” by June 2007, with actions enforceable by 2010.

The Magnitude of the Challenge
California's GHG Emission Inventory

Source: March 2006 Climate Action Team Report

California's Anthropogenic GHG Emissions 2002 (CO_2-equivalent)

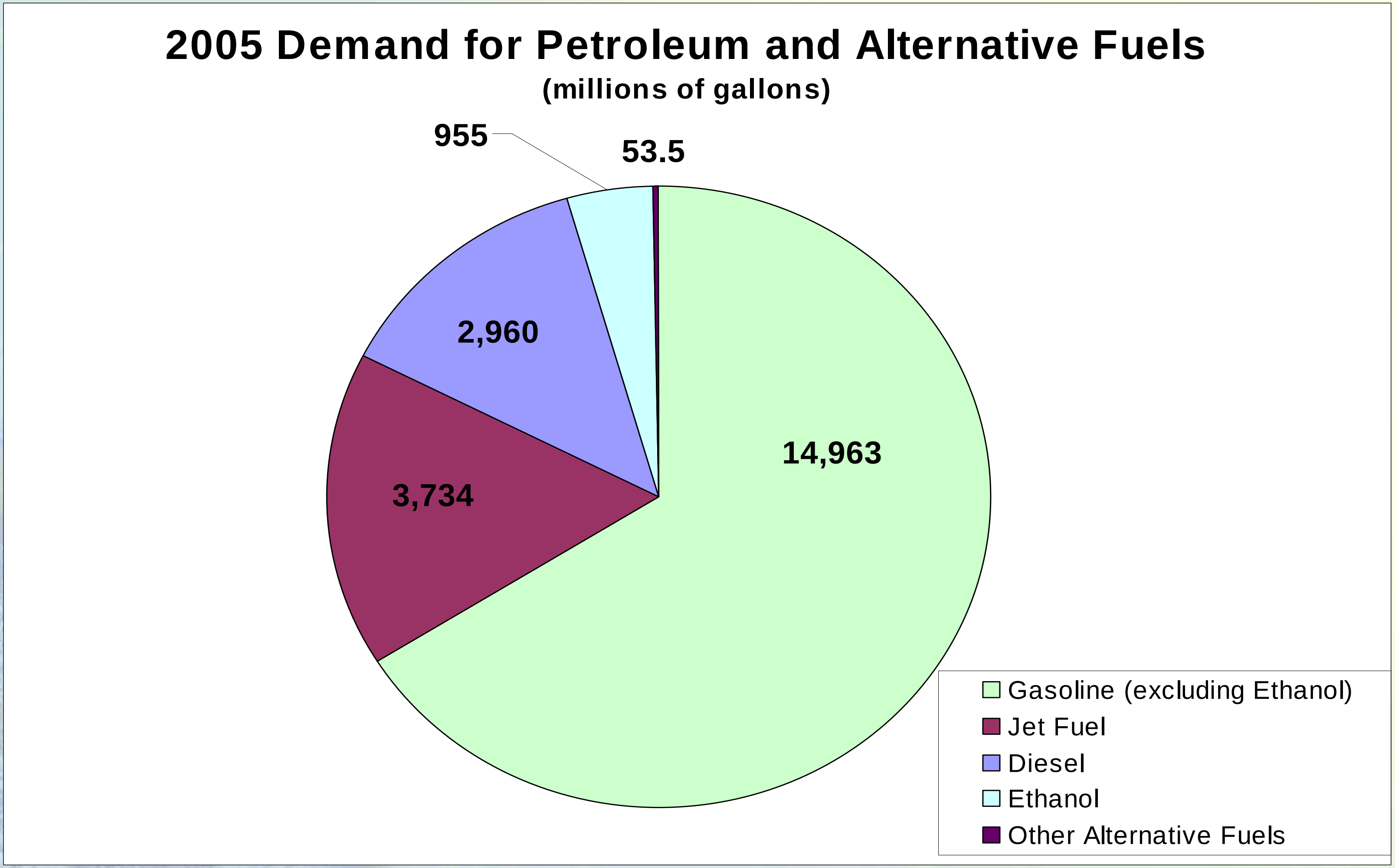


Total statewide inventory

~ 500 MMTCO2E

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

California relies on Petroleum for 96% of its Transportation Needs



The Governor's First-of-its-Kind Transportation Fuel Policy

- A Low Carbon Fuel Standard (LCFS) for transportation fuels sold in California

- An initial LCFS goal of reducing the carbon intensity of California's passenger vehicle fuels by at least 10 percent by 2020

The Low Carbon Fuel Standard

- Requires fuel providers to decrease carbon intensity of average annual fuel sales
- Standard measured on a lifecycle basis
- **Fuel-neutral:** Fuel providers will choose which fuels to sell and in what volumes
- **Performance-based:** allows averaging, banking and trading to achieve lowest cost and consumer-responsive solutions

Options for Compliance

Fuel providers will have different options by which to comply, including:

- Blending or sell increasing amounts of lower carbon fuels
- Using previously banked credits
- Purchasing credits from fuel providers who earned credits by exceeding the standard

Examples of Lower Carbon Fuels

- E10: increase ethanol blend from current E6 (6% ethanol, 94% gasoline)
- E85: high blend ethanol for flex fuel vehicles
- Low carbon cellulosic ethanol
- Hydrogen
- Electricity
- CNG, LPG
- Biogas
- Biodiesel

Benefits of LCFS for AB32

- 13.4 million metric tons of CO_2-equivalent reductions in direct emissions from vehicles
- Equivalent to removing 3 million cars from the road
- Less petroleum consumption: displace 20% of on-road gasoline consumption
- Expand renewable fuels market by 3 to 5 times
- Increase the number of alternative fuel and hybrid vehicles to 7 million (20 times current number)

Implementation Process

- Study by University of California, CEC, and ARB to be completed Spring 2007
- Study will be incorporated into CEC's AB1007 Report (Pavley, 2005)
- CEC will propose compliance schedule as part of AB1007 Report
- ARB to initiate regulatory proceedings to establish and implement the LCFS
- Anticipated adoption by late 2008