

# ***California's Energy Future: Key Drivers and Issues in a Global Context***



***California Clean Energy Roundtable  
San Diego, California  
December 6-8, 2006***

***James D. Boyd,  
Commissioner and Vice Chair  
California Energy Commission***

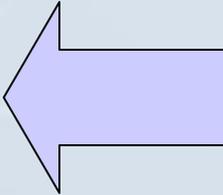
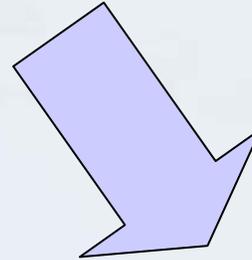
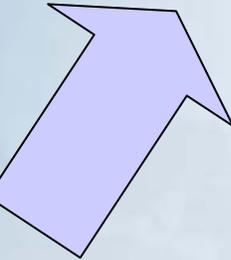
# Presentation Outline

- **California Context: A Nation State**
- **Electricity, Natural Gas and Petroleum**
- **Rising world oil prices**
- **California oil production and imports**
- **Growing demand for transportation fuels**
- **Policy context for low carbon fuels**
- **Key policy drivers**

**Economy**



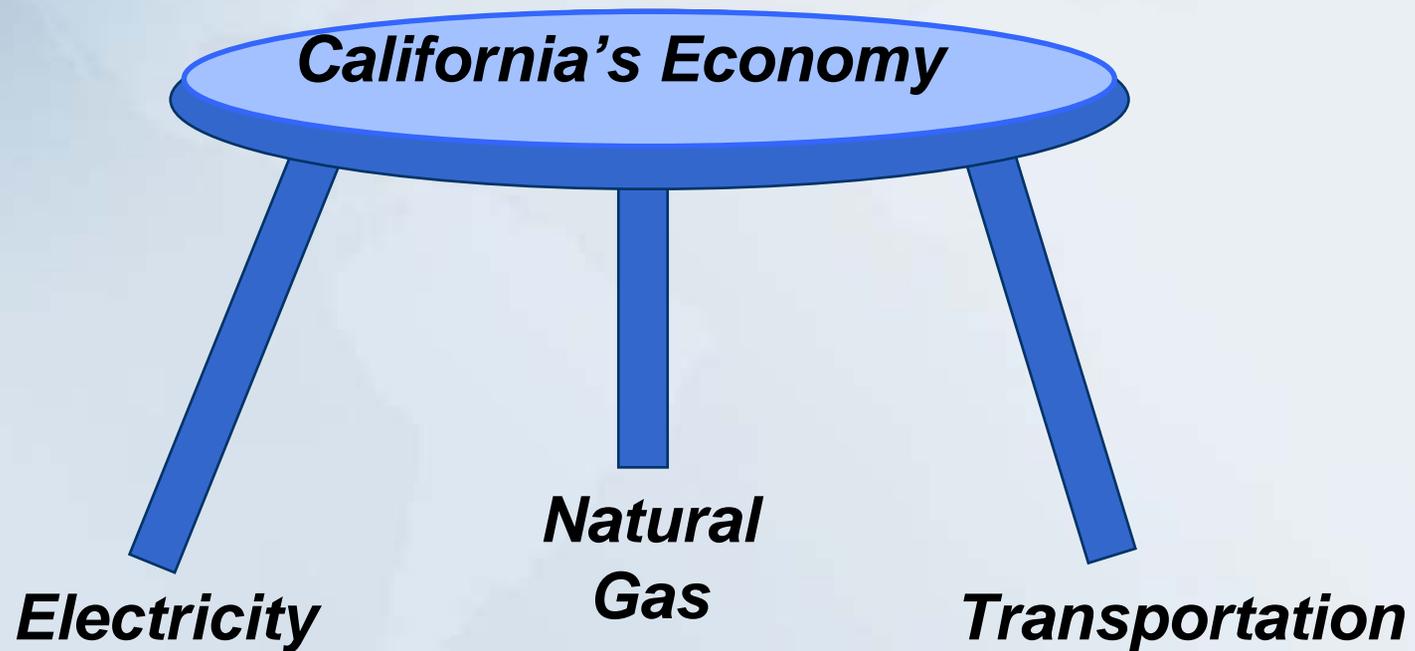
**Energy**



**Society**

**Environment**

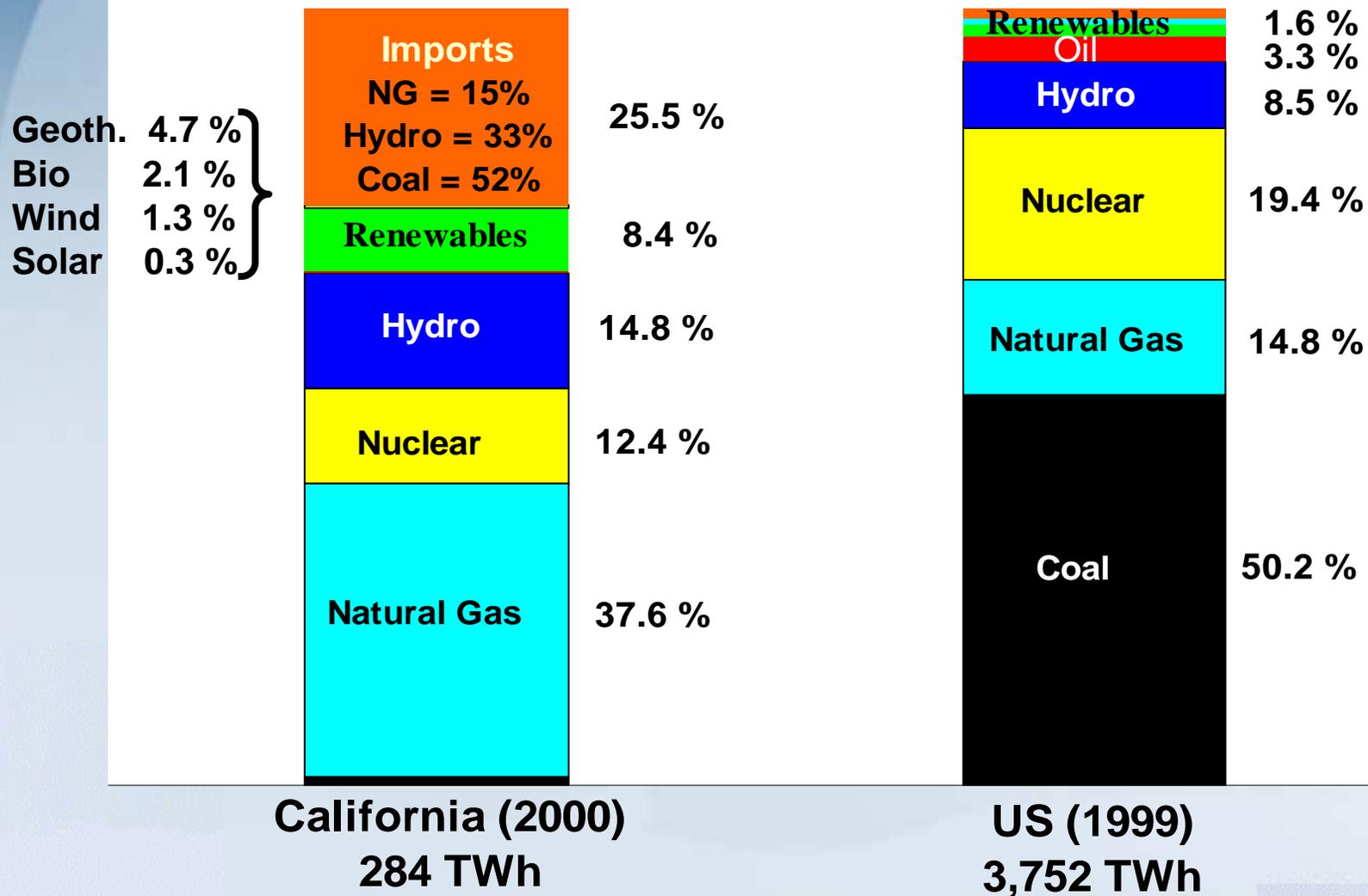
# Three-Legged Energy Stool



# The Nation-State of California

- 5th largest economy in the world
- Population growth: 1980-2000: 1.9%, 2000-2020: 1.4% projected
- Population – expected to grow from 36 million now to 45 million by 2025
- Vehicle Miles Traveled: 1980-2000 increased 3.3% per year
- 5th largest consumer of energy in the world
- 2nd largest consumer of gasoline and diesel in the world – only the US consumes more
- Approximately 26 million registered vehicles
- \$150 million for gasoline and diesel spent daily

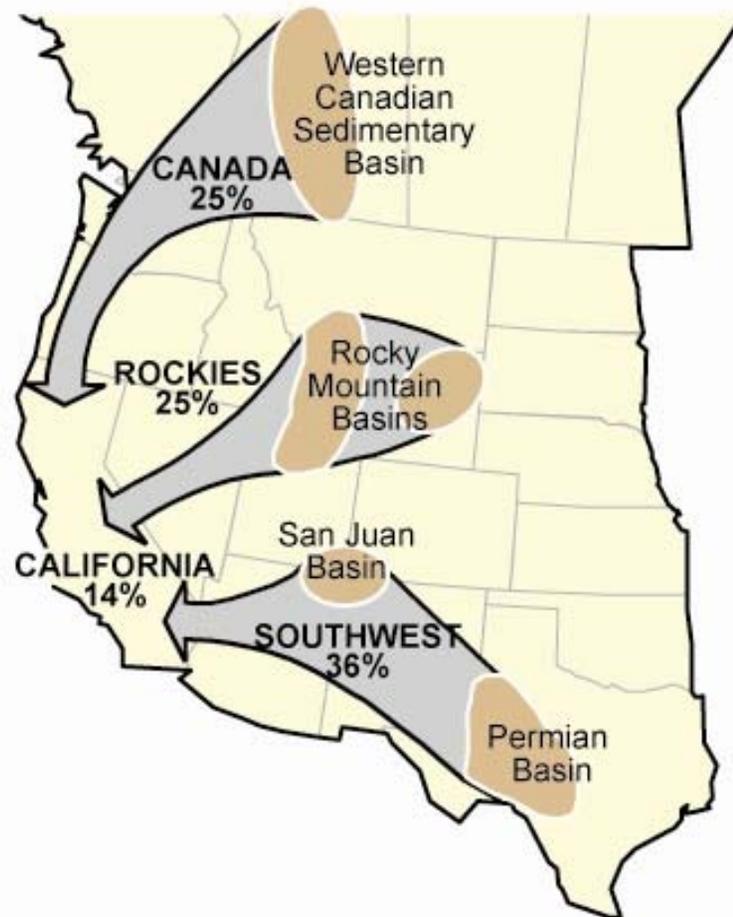
# California versus US Electricity Supply



# California's Natural Gas Situation

- California imports 87% of its natural gas
- U.S. and Canadian sources expected to decline in the future
- California demand expected to grow
- LNG provides another source of natural gas
- Delivery of gas from a west coast terminal could hedge against supply/price problems in rest of country (e.g., hurricanes)

# California Sources of Natural Gas



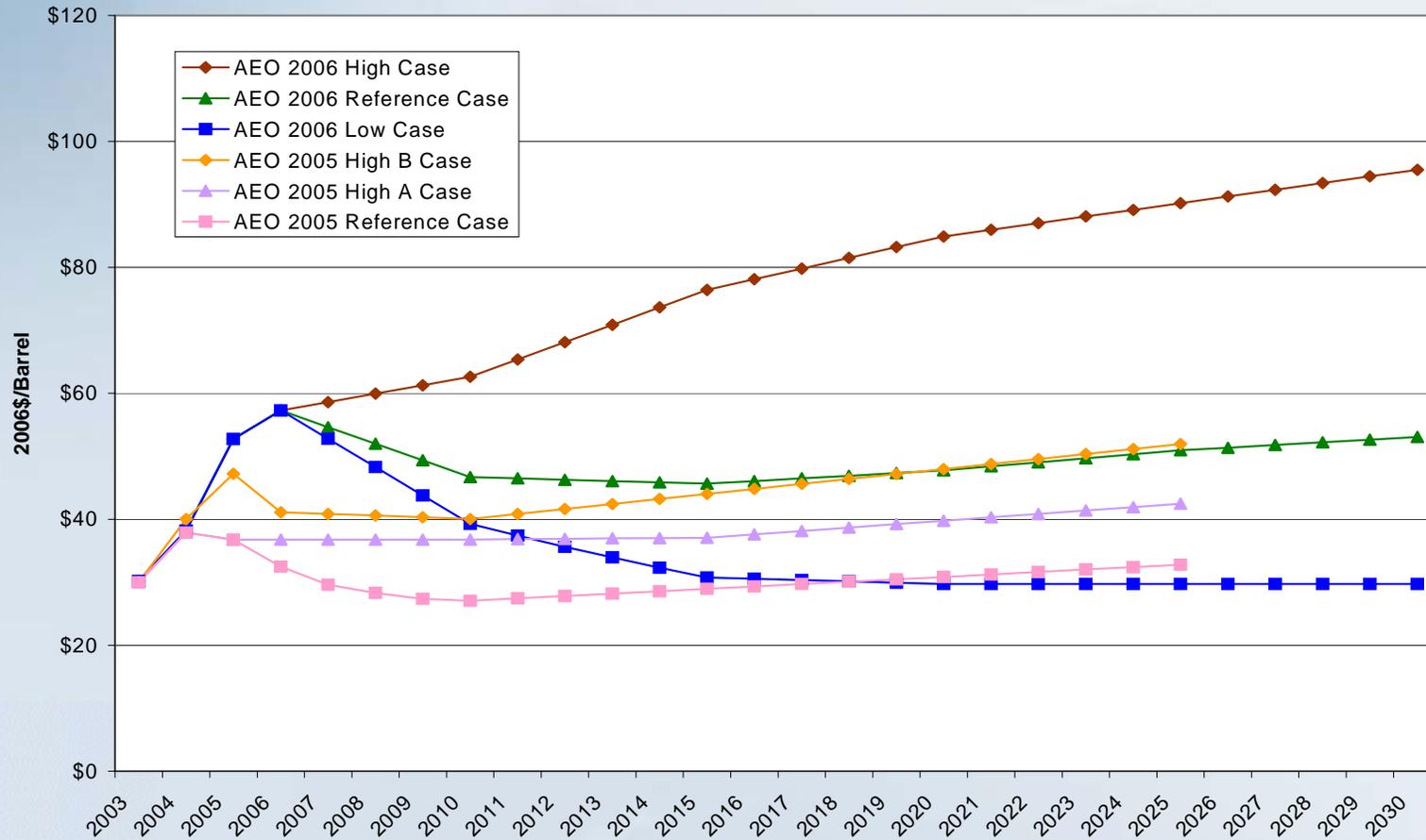
# California's Natural Gas Outlook (Good News)

- Current reliability supply outlook appears good.
- Recent infrastructure improvements are helping.
- Current natural gas storage inventories good.
- Broad public energy dialogue more focused on natural gas issues.
- California has aggressive energy efficiency and renewable programs.
- California natural gas research and development program is helping.
- Greater natural gas use has helped “clear the air.”

# California's Natural Gas Outlook (Bad News)

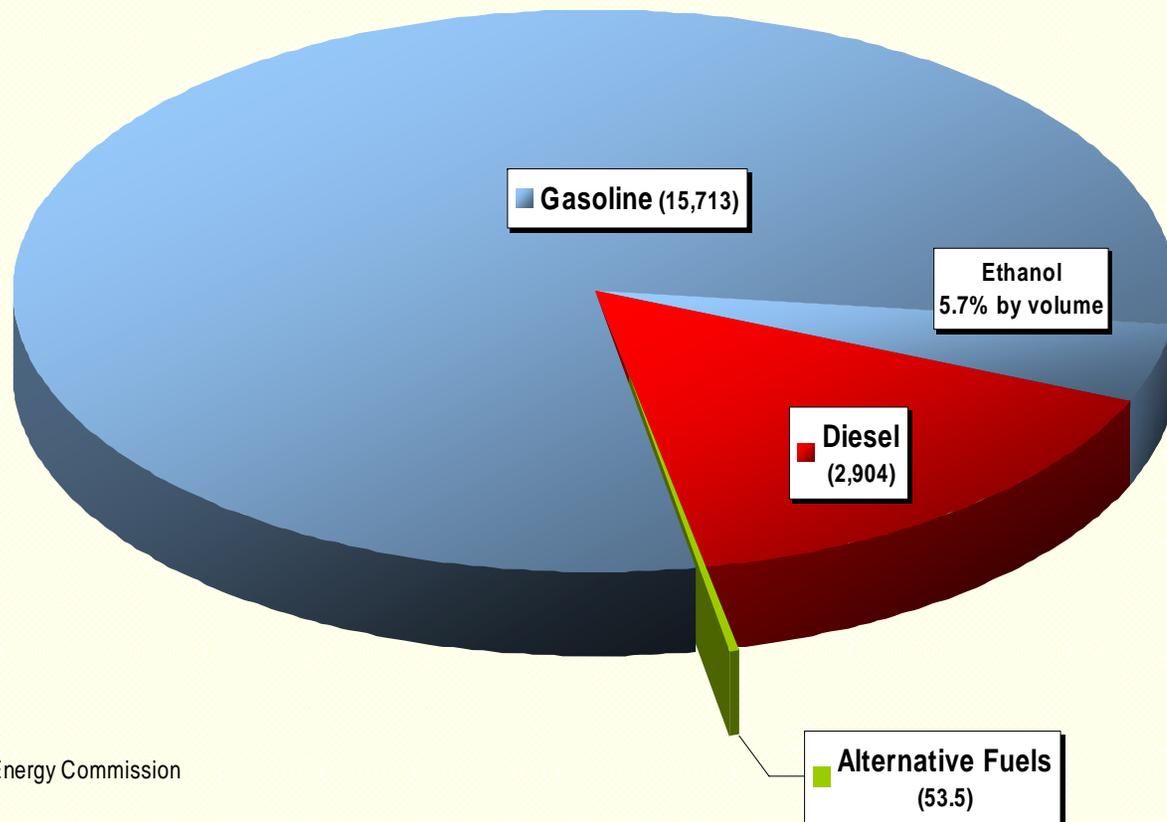
- Natural gas prices have been higher in the past two years than before.
- Natural gas is the dominant fuel for power plants (up to 50% of generation).
- California imports 87% of its natural gas.
- California is at the end of the pipeline.
- California competes with all other major U.S. markets for natural gas.
- The U.S. long-term supply/demand balance outlook is pessimistic.

# World Oil Price Forecasts



# California's Petroleum and Alternative Fuels Demand

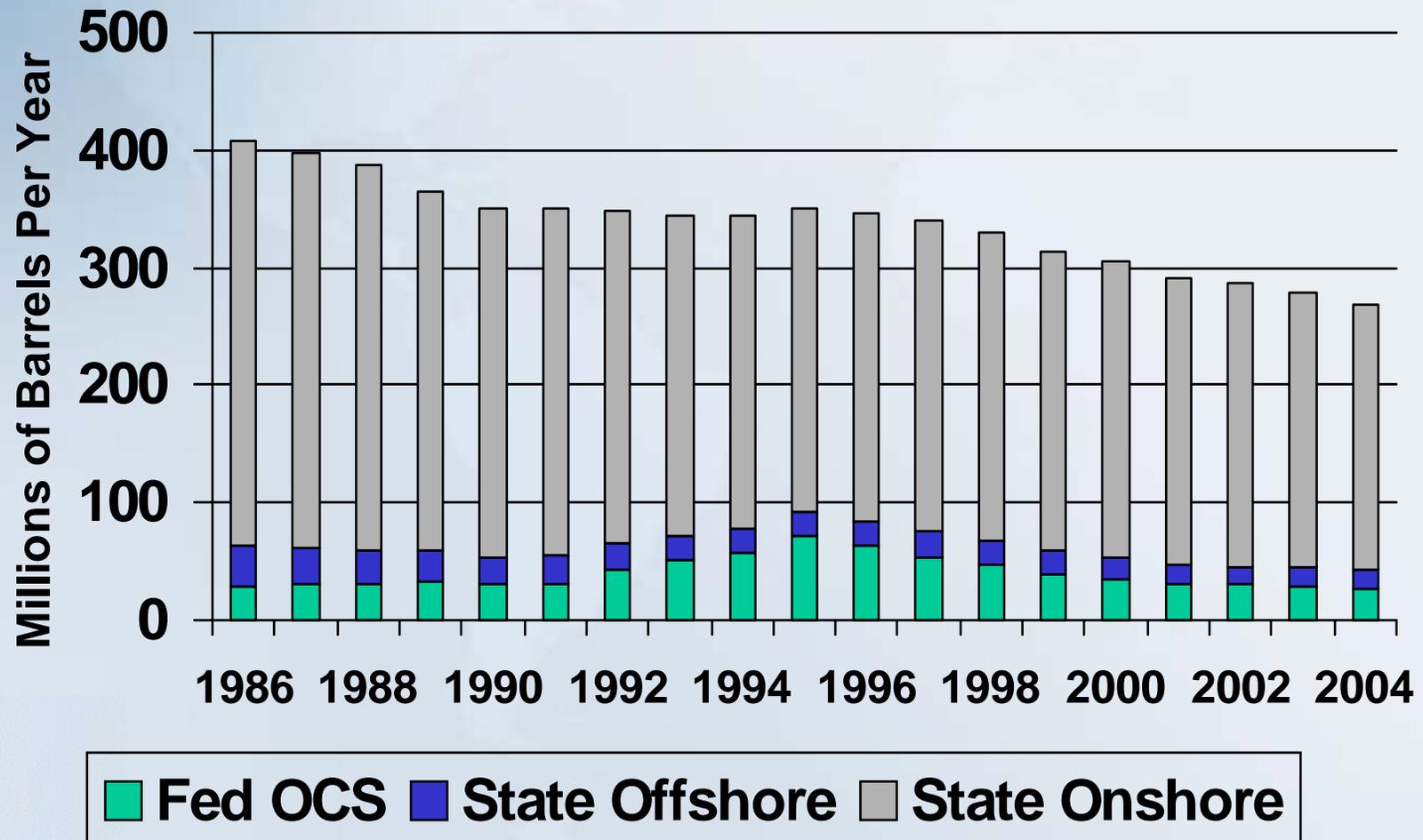
California Petroleum and Alternative Fuel Demand - 2005  
(millions of gallons)



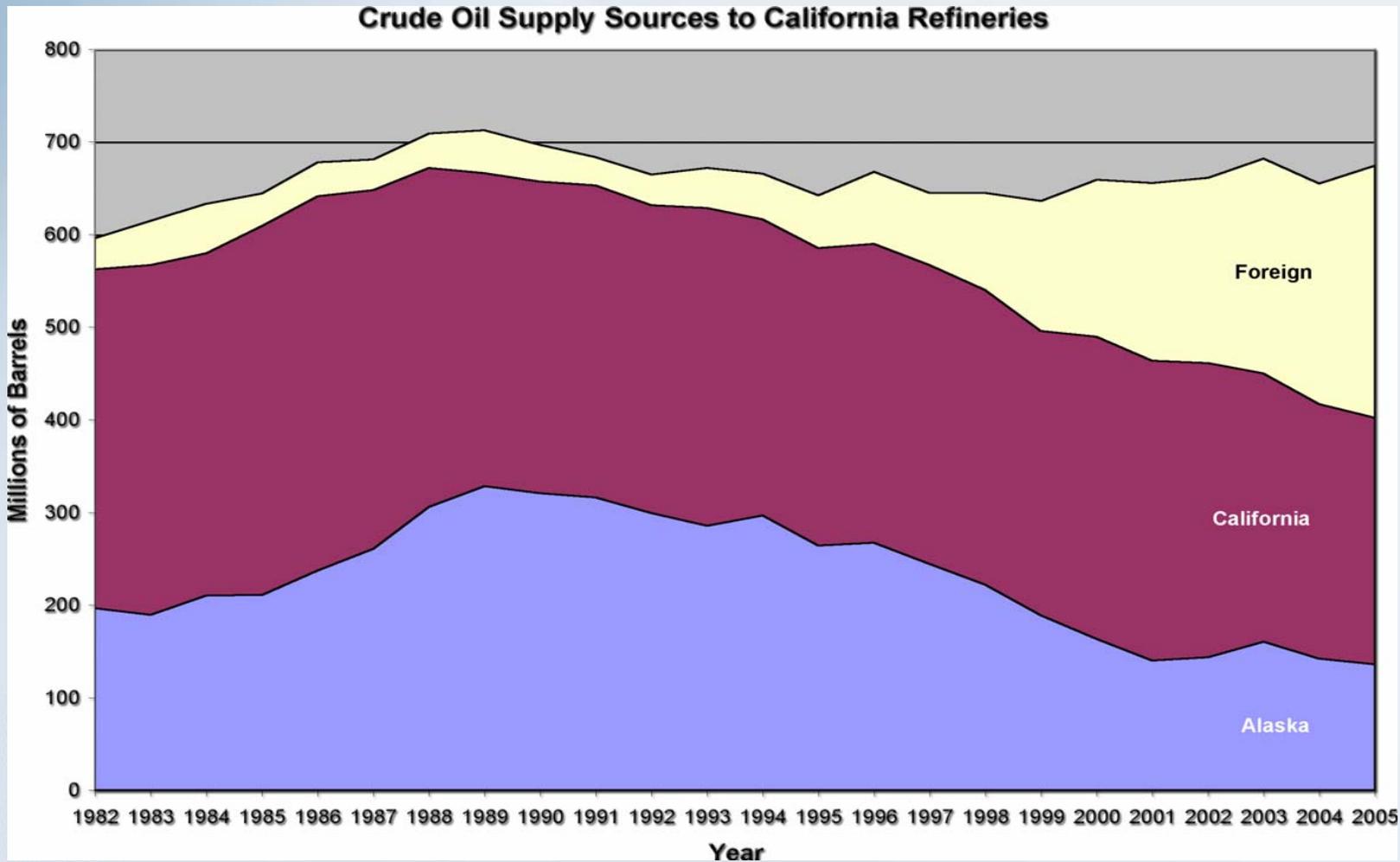
Source: California Energy Commission

# California Oil Production Decline

1986-2004

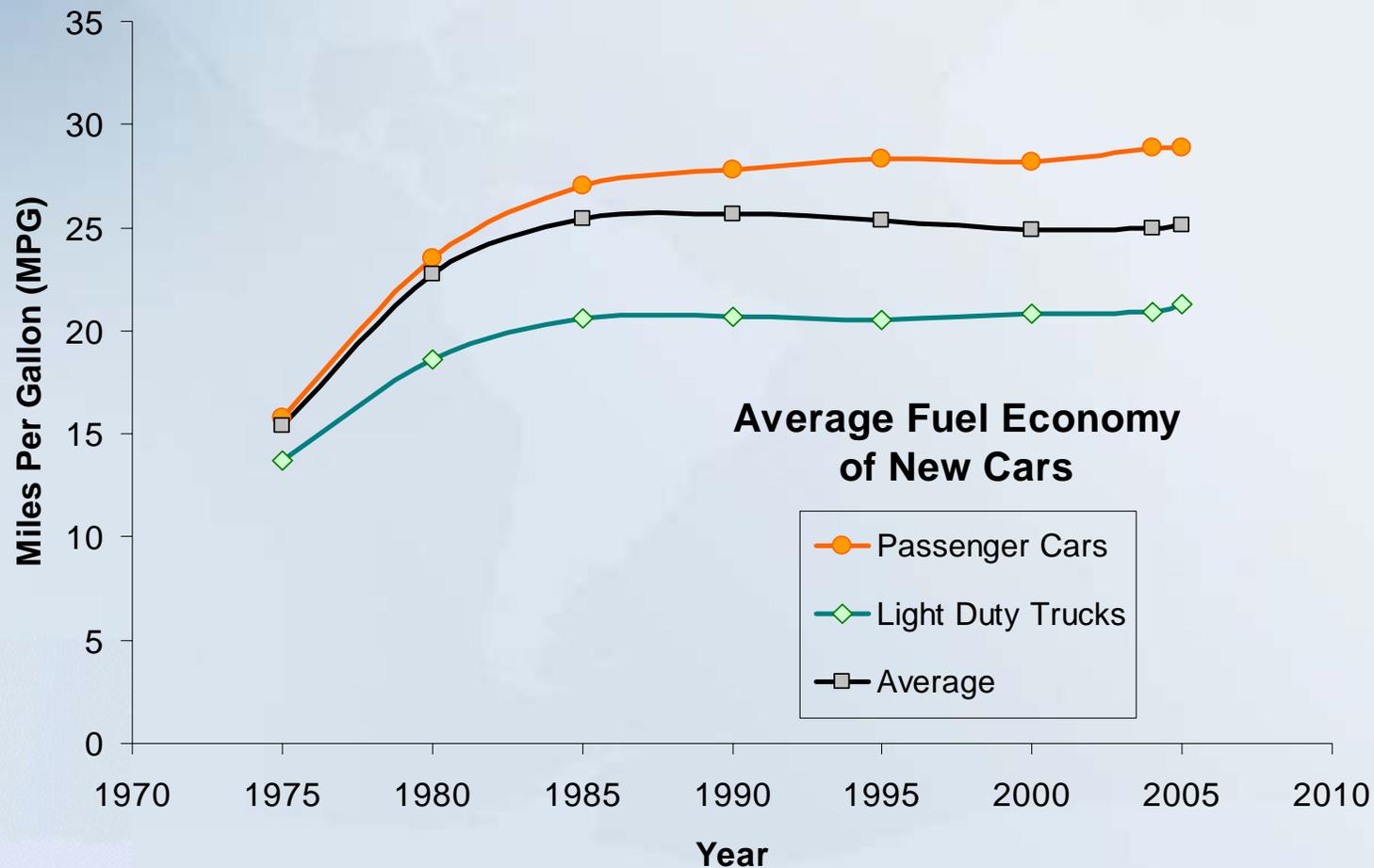


# Foreign Crude Oil Imports to California Grow as Instate Production Falls

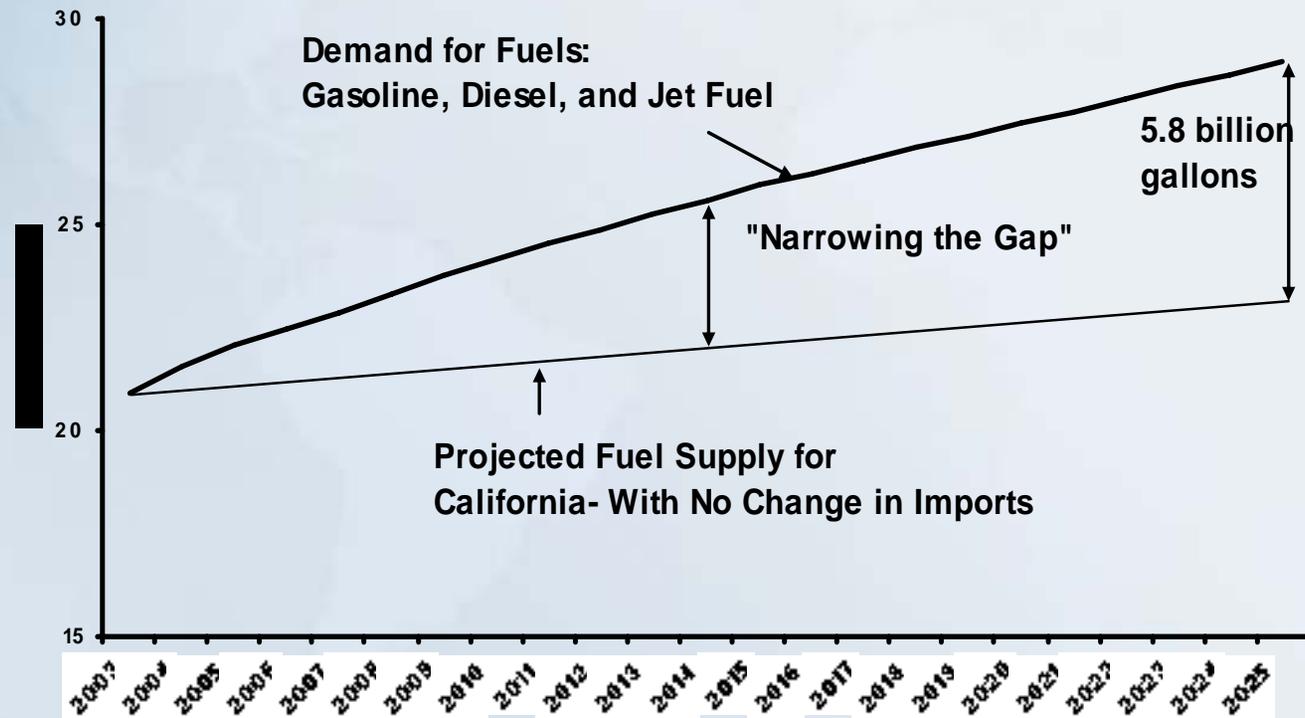


# Fuel Economy of California's New Vehicle Fleet

**Average fleet fuel economy remains static, largely due to increased sales of Sport Utility Vehicles and light trucks.**



# The Heart of the Problem



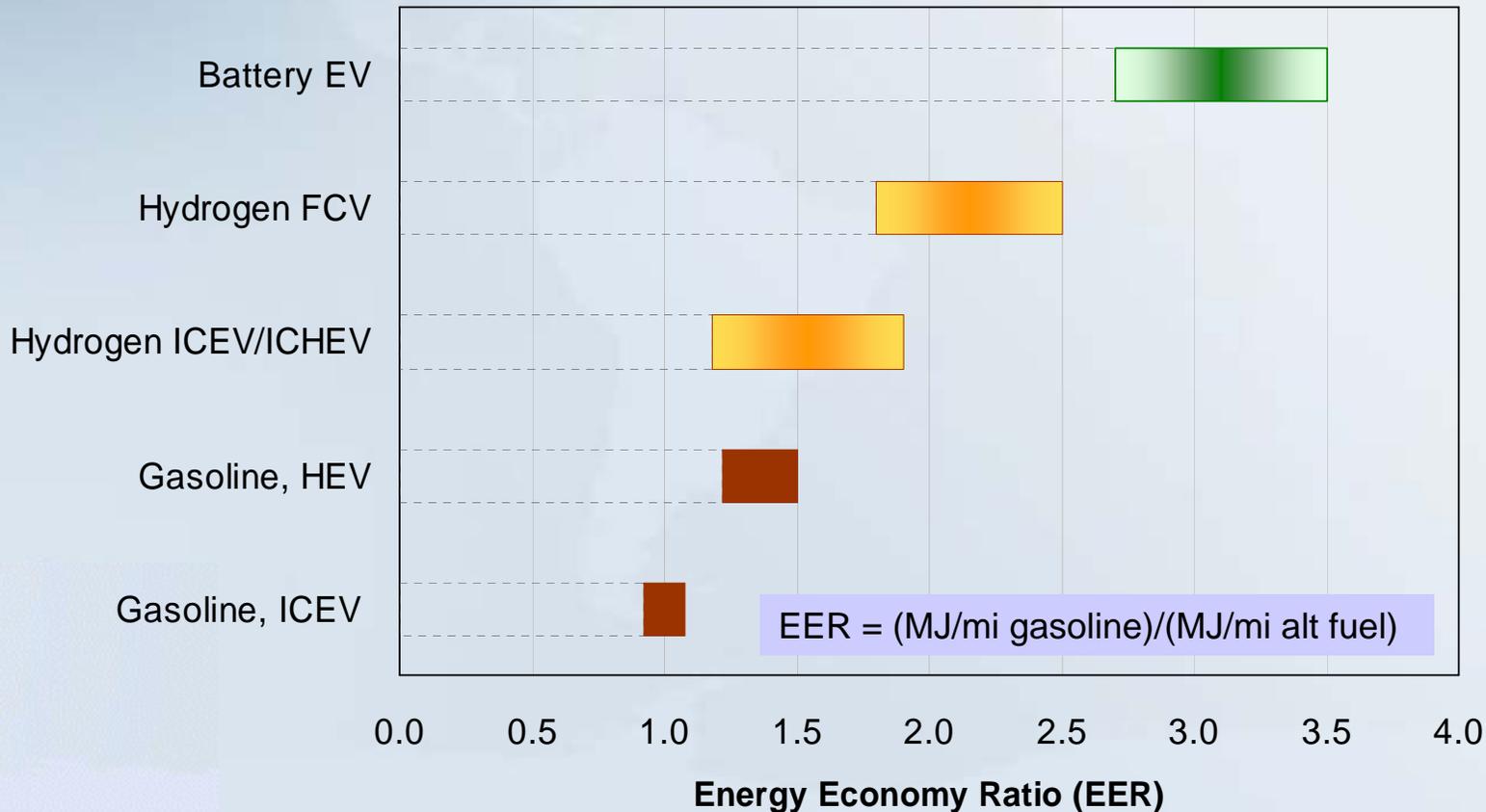
# Recommendations on Vehicle Fuel Economy

**California has advocated a number of specific policies and measures to improve vehicle fuel economy:**

1. Doubling federal Corporate Average Fuel Economy (CAFE) standards for light-duty and heavy-duty vehicles.
2. Amending federal fleet requirements to include hybrids and other super-efficient vehicles.
3. Establishing fuel economy standards for state and local government fleets.

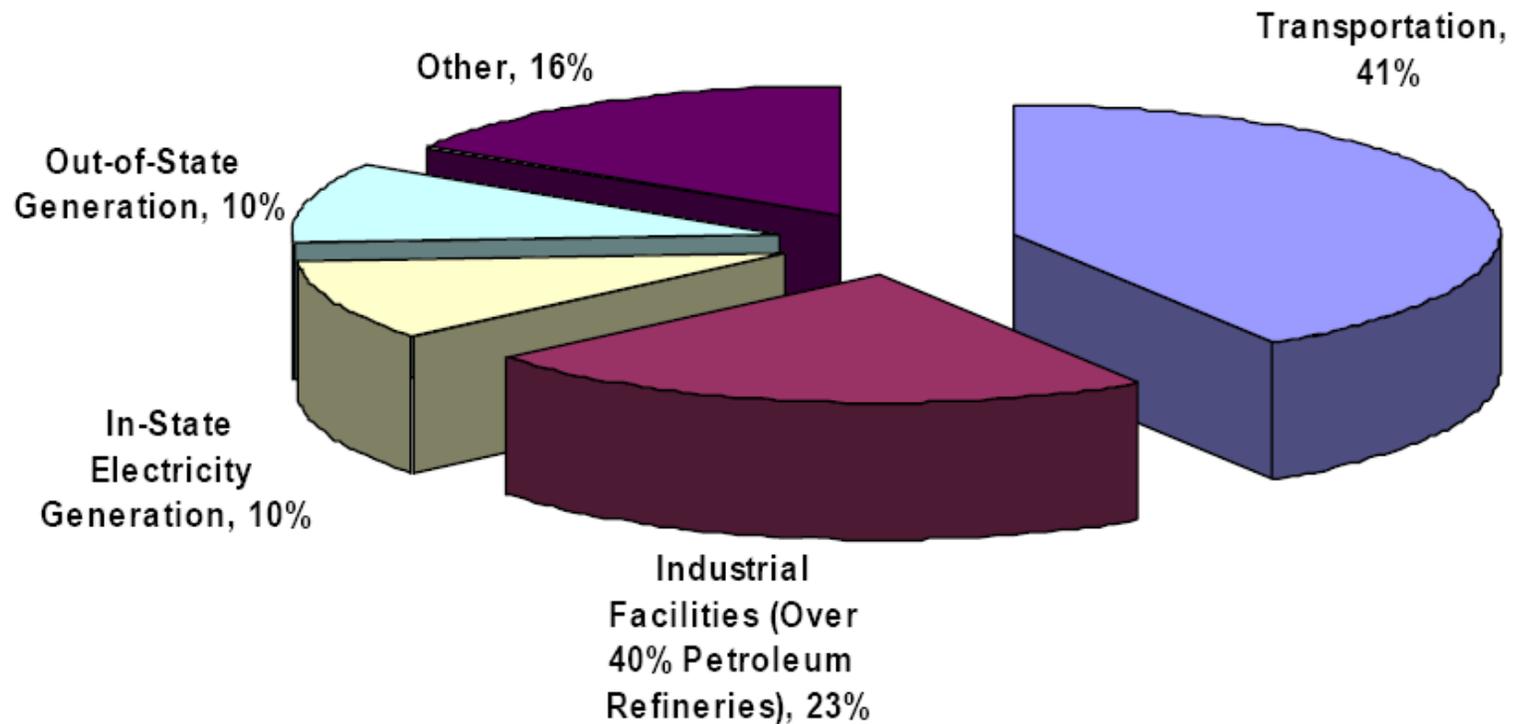
# Advancing Vehicle Technologies

Advanced vehicle technologies also have valuable fuel economy benefits, when compared to conventional vehicles.



# Transportation: the single largest source of greenhouse gases

**California's Greenhouse Gas Emissions**



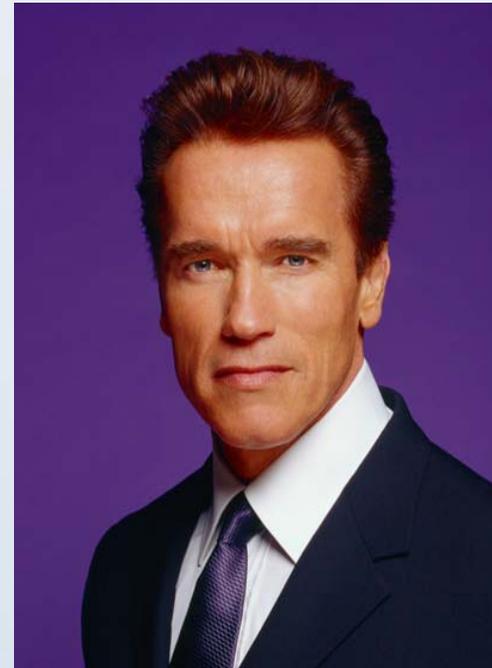
# Governor's Policy Statements

***“The debate is over. We know the science. We see the threat. And we know the time for action is now.”***

**Governor Schwarzenegger  
June 1, 2005**

**“It is critical that we do everything we can to reduce our dependence on petroleum based fuels. “**

**Governor Schwarzenegger  
April 25, 2006**



# Global Warming Solutions Act of 2006

**On September 27, 2006, the Governor signed Assembly Bill 32, the Global Warming Solutions Act of 2006.**

California's initiative to limit greenhouse gas emissions will favor low-carbon technologies, including the increased use of alternative fuels.

This landmark legislation, gives the California Air Resources Board new responsibilities to:

- Adopt regulations to achieve “maximum feasible and cost-effective GHG reductions”;
- Adopt market mechanisms, such as cap-and-trade programs;
- Establish mandatory reporting of GHG emissions by large emitting sectors and industries;
- Adopt a statewide greenhouse gas (GHG) emissions limit.

# Key Policy Drivers

1. Reducing California's petroleum dependence
2. Reducing greenhouse gas emissions through increased efficiency and use of low carbon fuels
3. Moderating transportation energy demand by improving vehicle fuel economy and other means
4. Advancing transportation and vehicle technologies