Ethanol Use in California’s Gasoline: Policy Drivers and Challenges

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Topics

• Background
• California’s Request for Oxygen Waiver
• Ethanol Demand Scenarios
• Policy Drivers for Use of Ethanol
• Challenges and Opportunities
• California Ethanol Information
Background

- California phased out MTBE use by 1/01/04
- Ethanol is the only oxygenate approved for use in California gasoline
- California produces less than 10 million gallons of ethanol each year
- California is now the largest ethanol consuming state in the nation
  - Demand will approach one billion gallons in 2004
California’s Request to U.S. EPA for a Minimum 2% Oxygen Content Waiver

• On January 29, 2004, Governor Schwarzenegger asks U.S. EPA to grant waiver stating:

  “...the oxygen requirement limits the ability of fuel producers to use the most cost-effective mix of gasoline blends and, as a result, greatly increases fuel costs borne by California motorists.”
Governor states:

- "I recognize the benefit of one aspect of the Clean Air Act (CAA) oxygen requirement — the dramatically increased use of ethanol. However, due to the ban on MTBE use, there will be a very large ethanol market in California even without the CAA oxygen mandate."

- "California is also considering various mechanisms to spur in-state ethanol production so that our citizens and our economy benefit directly from the State's increased use of ethanol as a gasoline blending component."
Policy Drivers

1) California Environmental Policy Council determines ethanol as acceptable substitute for MTBE (2000)

2) Federal law requires minimum 2 percent by weight oxygen content in all reformulated gasoline (RFG) regions

3) Federal winter oxygenated fuels program to reduce carbon monoxide emissions in the South Coast Air Basin and parts of Imperial County

4) California RFG regulations permit discretionary use, but federal mandate applies to 80% of gasoline sold in California

5) Ethanol, as a renewable fuel, helps reduce greenhouse gas emissions

6) Ethanol’s role in displacing petroleum use
Policy Drivers and Energy Commission Recommendations

1) Reduce demand for on-road gasoline and diesel 15 percent below the 2003 level by 2020 and maintain that level for the foreseeable future.

2) Increase the use of non-petroleum fuels to 20 percent by 2020 and 30 percent by 2030.
Recommended Goals and Impact on Fuel Use

Gasoline and Diesel Fuel Use

Ethanol Fuel Use

Fischer-Tropsch Fuel Use

Hydrogen Fuel Use

Extrapolated Demand

Goal = 15% below 2003 by 2020 (excludes ethanol for oxygenates)
Uncertainties and Challenges Facing Ethanol Use in California

• Federal Energy Legislation???
• Outcome of California’s request for oxygen waiver
• Future California fuel specifications under consideration
  – Sulfur reductions from 20 parts per million (ppm) to 5ppm
  – Oxygen (% weight) reduced from 2% to 0
  – Reid Vapor Pressure from 7.0 psi to 6.5 psi
• Role of higher use of ethanol-blended gasoline on increased emissions of volatile organic compounds.
  – Results of study for Air Resources Board forthcoming on permeation effects of ethanol through hoses and fuel system components
  – Impacts may be real and significant
Opportunities for Greater Use of Ethanol in California

• Growing transportation fuel market
• Large agricultural sources as well as cellulosic wastes and residues for making ethanol
• E-10 blends
• E-85 market
• Fuel Cell applications
• Ethanol/Diesel blends
For More Information about Ethanol

• California Energy Commission’s Website at:
  – www.energy.ca.gov/ethanol
  – www.energy.ca.gov/pier/renew/ethanol

• Energy Commission Reports:
  – Ethanol Fuel Incentives Applied in the U.S. – Reviewed from California’s Perspective (1/04)
  – Ethanol Supply Outlook for California (10/03)
  – U.S. Ethanol Industry Production Capacity Outlook (8/01)
  – Costs and Benefits of a Biomass-to-Ethanol Production Industry in California (3/01)
  – Evaluation of Biomass-to-Ethanol Fuel Potential in California (12/99)