The Outlook for Ethanol Use in California Transportation Fuels – Policy Drivers, Challenges and Opportunities

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Topics

- Background
- MTBE out: Ethanol in
- Transportation Fuel Supply and Demand Outlook
- Policy Drivers
- Projected U. S. Ethanol Supply
- Projected California Ethanol Demand
- Uncertainties and Challenges
- California Ethanol Information
March 1999 Governor’s Executive Order bans MTBE use in California gasoline effective January 1, 2003

- Energy Commission to evaluate Biomass-to-Ethanol fuel potential in California
- Environmental review process for ethanol initiated

December 1999 Air Resources Board adopts California reformulated gasoline with ethanol.

- California Environmental Policy Council approves ethanol as a substitute for MTBE

March 2002 Governor delays MTBE ban to January 1, 2004
In 2002 Union 76 (ConocoPhillips) offered California reformulated gasoline with ethanol (CaRFG3).

Use of CaRFG2 (with MTBE) declined as refiners shifted production in late 2002 and 2003.

Over 60 terminals upgraded to store and blend ethanol into “CARBOB” at the rack.

CaRFG2 completely phased-out by all oil companies by January 1, 2004.
Transportation Fuel Supply and Demand

- Gasoline & Diesel Fuel
- High Demand Case @ 2.3 Percent Per Year
- Base Demand Case @ 1.5 Percent Per Year

Historical
Forecast
Supply from California Refineries

- 1996: 15.5 billion
- 1999: 16.5 billion
- 2002: 21.1 billion
- 2005: 24.7 billion
- 2008: 28.3 billion
- 2011: 31.9 billion
- 2014: 35.5 billion
- 2017: 39.1 billion
- 2020: 42.7 billion
- 2023: 46.3 billion

- 2002: 2.6 billion
- 2023: 9.2 billion

Billions of Gallons
Policy Drivers - Energy Commission
Transportation Fuel Goals

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

2. Increase the use of non-petroleum fuels to 20% by 2020 and 30% by 2030.

Opportunities for Greater Use of Biofuels in California

- Growing demand
- Adequate supplies of ethanol now
- Diverse agriculture sources and cellulosic wastes to make ethanol
- All gasoline vehicles capable of operating on E10
- Growing population of E-85 fuel flexible vehicles (FFVs)
- Ethanol/diesel blends
- Fuel cell applications
- Climate change benefits
Alternative Fuel Working Groups

- Public/Private Collaboratives established to identify barriers and propose actions to achieve IEPR non-petroleum fuel use goals
  - Ethanol
  - Biodiesel
  - Propane
  - Hydrogen/electric
  - Gas-to-Liquids (GTLs)
  - Natural gas
### End-of-Year US Ethanol Production Capacity

#### 2004 Survey Update

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Uncertainties and Challenges

- Federal Renewable Fuels Standard (RFS)?
- California’s request for waiver from Clean Air Act oxygen requirements (refinery flexibility)
- VOC permeation emissions from hoses and fuel system components in vehicles
- NOx emissions may increase above 6% ethanol
- E-85 availability for fleets and consumers
- Production of Fuel Flexible Vehicles (FFVs)
- Cost to commercialize biomass and biomass wastes-to-ethanol
For More Information

- California Energy Commission Websites 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)
  - 2002 Update of the U.S. Ethanol Industry Production Capacity Outlook Report (7/02)
  - U.S. Ethanol Industry Capacity Outlook (8/01)
  - Cost and Benefits of a Biomass-to-Ethanol Production Industry in California (3/01)
  - Evaluation of Biomass-to-Ethanol Fuel Potential in California (12/99)

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