

Status of California's Plans for MTBE & the Federal Oxygenate Waiver Request



World Fuels Conference

San Antonio, TX

March 21, 2002

Gordon Schremp

California Energy Commission

gschremp@energy.state.ca.us



Introduction

- Background
- Elements of successful MTBE phaseout
- 1998 cost comparison
- Water issues
- Revised estimates – future scenario
- Federal oxygen waiver
- Closing remarks



Background

- MTBE used in gasoline since late 1970s
- Greater use during 1990s
 - Winter oxygenated fuels program in 1992
 - Reformulated Gasoline in 1995/1996
- Potential health concerns raised
- Suspected animal carcinogen
- MTBE detections in water wells
- Prediction that contamination rate would increase, raising costs dramatically
- Studies ordered by Legislature



Background - Late 1998

- University of California: Annual water remediation costs estimated at \$340 million to \$1.5 billion
 - Assumed current contamination rate to continue
 - Concluded that 60 to 340 *additional* public water wells would be contaminated in immediate future
- California Energy Commission: Increase in gasoline production cost only 2 - 3 cents per gallon with use of ethanol
 - Annual costs of \$300 to \$450 million
 - Cost estimated to decline if a waiver of federal minimum oxygenate requirement would be granted by US EPA



Background - 1999

- Executive Order issued by Governor Davis
 - Phases out use of MTBE by December 31, 2002
- Energy Commission determines that timetable to remove MTBE cannot be advanced
- ARB adopts Phase 3 RFG regulations
 - Ethanol only permissible oxygenate
 - Gasoline specifications changed
 - lowers sulfur from 40 to 20 ppm
 - lowers benzene from 1.0 to 0.8% by volume
 - aromatics limit increased from 30 to 35% by volume
 - distillation (T50 and T90) increased by 2 to 3° F
 - olefins unchanged



Background - 2001 & 2002

- US EPA denies request by California to receive waiver from the federal minimum oxygen requirement - June 12
 - 70 percent of State's gasoline must contain an oxygenate - increases to 80 % by 2003
 - Failure to issue waiver will cost California consumers at least *an additional* 3 cents per gallon or \$475 million per year
- California Air Resources Board sues US EPA to obtain waiver - August 13
- Governor Davis issues Exec. Order D-52-02
 - MTBE phaseout delayed until January 1, 2004



Elements Necessary for a Successful MTBE Phaseout

- Ethanol supplies must be adequate
- Ethanol logistics must be in place
- Refinery modifications must be completed
- Gasoline supply (imports) must be available
- Import infrastructure must be sufficient to accommodate anticipated increase in imports
- “Successful” means that transition to ethanol occurs without disruption to the market and minimal impact on consumers and the economy



Adequacy of Ethanol Supply

- California Ethanol Demand
 - California will require significant quantities of ethanol - 760 to 950 million gallons per year or nearly 2 to 3 million gallons per day by 2004
- Sources of additional ethanol supply
 - Midwest production capacity has been increasing
 - CBI ethanol volumes expected to grow
 - Brazil could be an important resource for ethanol supplies, but must pay an import tariff of 54 cpg
- Additional year delay will ensure adequate supplies of ethanol
 - Could also allow sufficient time for California biomass industry to develop



Logistics - Ethanol to California

■ Rail Movement

- If all of California's ethanol demand were supplied by train, between 1,200 and 3,500 rail cars would be required to continuously supply the State by 2004
 - Most ethanol plants able to load rail cars
 - Unit trains dedicated to ethanol shipments are the most economical and rapid means to move ethanol from Midwest to California
 - But there is currently no capability to handle these long lines of rail cars at California terminals
- ## ■ Additional year delay will provide adequate time to develop unit train capability



Logistics - Transportation of Pentanes

■ Rail Movement

- During the majority of the year, refiners are expected to export pentanes from California via rail - storage and chemical markets
- A portion of this volume may be shipped back to State during high Rvp season
- The number of rail cars that would be required to handle these types of shipments are comparable to that required to import ethanol from the Midwest
 - 1,200 to 3,500 additional rail cars
- Alternative uses of pentanes could reduce rail car logistics needs
 - Gasoline & blendstock exports, feedstock use



Logistics - Ethanol Within California

- MTBE is blended at refineries prior to shipment to terminals
- Ethanol will be blended with gasoline at terminals as tanker trucks are loaded
 - Referred to as “splash” blending
 - Not all of these modification are complete
 - In some cases, terminal work has not been initiated
 - Valero must complete and have approved an EIR for its terminal prior to ethanol blending
- Additional year delay will allow permit issues to be resolved and all terminal work to be completed



Refinery Modifications

■ Status of refiners

- Refiners at various stages of CEQA process, most seem on track, especially Southern California
- Two refiners in Bay Area have yet to obtain all of their “permits to construct”
- MTBE phaseout cannot be accomplished until ALL refinery work is completed

■ Additional year delay will allow permit issues for two Bay Area refiners to be resolved and modification work to be completed



California Gasoline Supplies

- Imports of gasoline and blending components are expected to increase following the phaseout of MTBE
 - Demand growing at an annual rate of 1.6 percent
 - Refinery gasoline production capability expected to decline by 5 %, primarily due to loss of MTBE
 - Imports of gasoline and blending components will need to increase 56 - 100 TBD to meet demand
- Import availability
 - Fewer foreign refiners will be able to produce Phase 3 RFG base gasoline for ethanol blending
 - California refiners will seek the cleanest blendstocks - scarce and expensive



California Gasoline Supplies

- Delay of MTBE phaseout will enable foreign refiners additional time to make modifications to be able to produce Phase 3 RFG
 - But only if California becomes a consistent importer at a strong premium to alternative markets
- Delay of MTBE phaseout may provide an opportunity for some California refiners to modify their production plans
 - But probably insufficient time to permit and construct additional projects



California Import Infrastructure

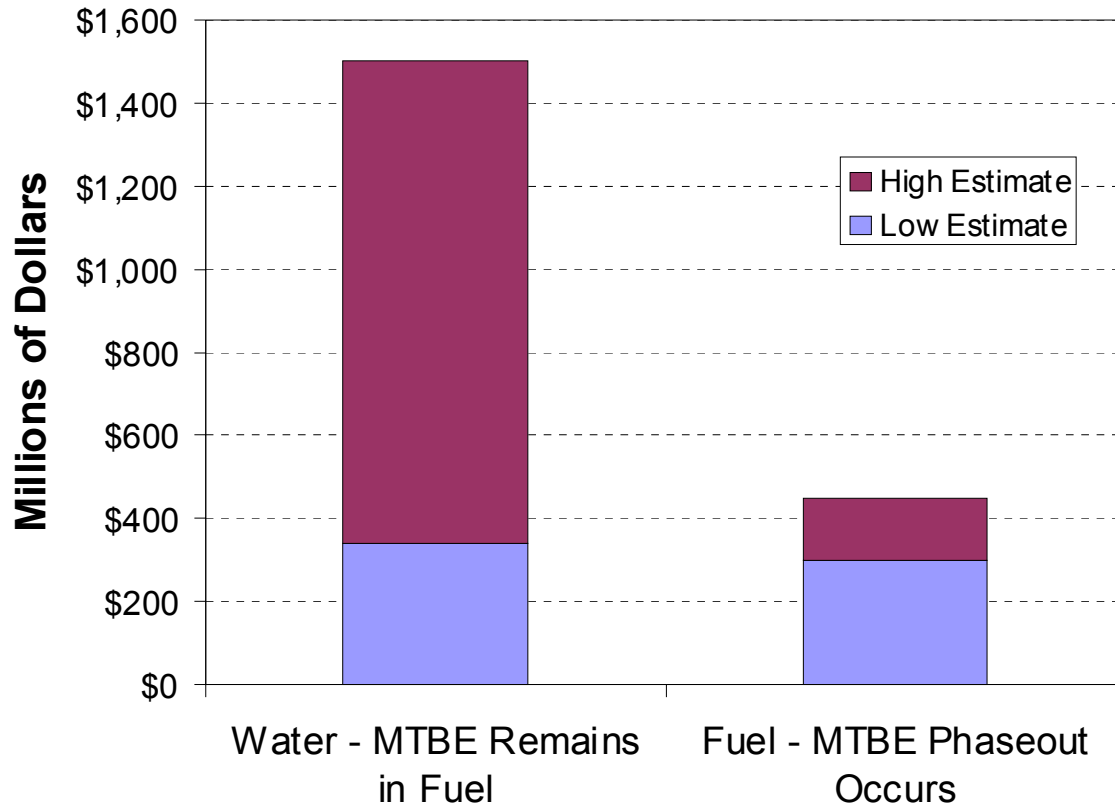
- Ability to import an additional 56 - 100 TBD of gasoline and blending components will strain the existing marine import infrastructure
 - Spot tankage difficult to obtain
 - Pressure by ports to remove tankage
 - Rule 1178 regulation will remove 10 % of product tank capacity from service over a period of 7 years in Southern California
 - Stillwater Associates Study identified this issue as greatest concern, concluding MTBE phaseout should be delayed 3 years to make modifications
- Will be a challenge to complete necessary modifications prior to January 1, 2004



Cost Comparison - Fuel and Water

- 1998 original estimates - annual impacts
 - Water - Future remediation and replacement
 - UC Study findings
 - Assumes MTBE remains in gasoline
 - Fuel - Future price increase for gasoline
 - CEC Study findings - \$300 to \$450 MM ethanol case
 - No oxy waiver assumed
 - Did not include potential price spikes
 - Did not include potential highway revenue impact
 - Assumed outside supplies plentiful
 - Assumed no infrastructure constraints or issues
 - Assumes MTBE is phased out by end of 2003
- 1998 estimates indicated continued use of MTBE more costly than removal

Original Cost Estimates 1998



Sources: Water Cost 1998 UC Study; Fuel Cost 1998 CEC Study

World Fuels Conference - March 21, 2002
Gordon Schremp - California Energy Commission



Water Issues - Presence of MTBE

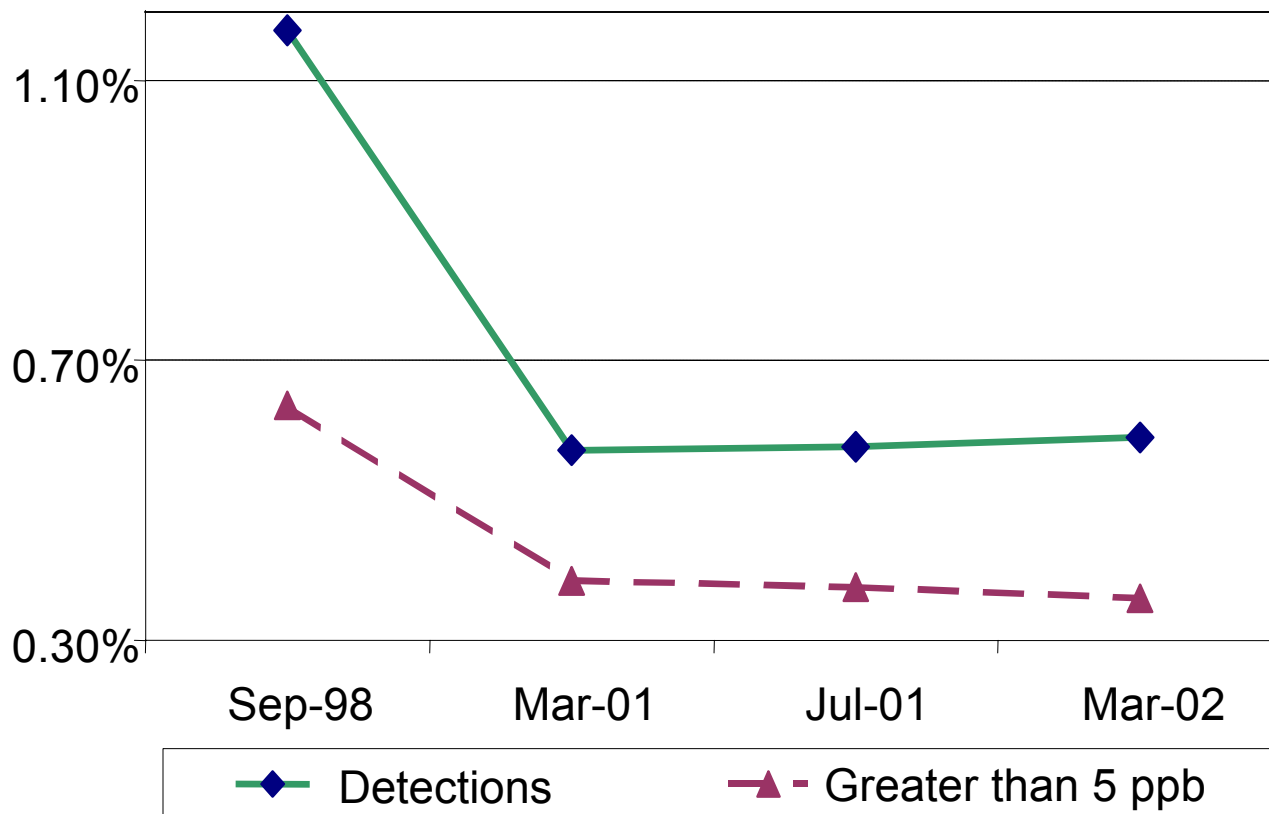
- March 2002 update
- 2,930 public water systems reporting, serving 92 percent of California
- 9,160 ground water sources sampled
- 33 locations >5ppb or 0.36%
 - 4 new wells over last year from 1,640 sites = 0.24%
- UST upgrade program of 1998 has reduced frequency of gasoline releases from tanks
- MTBE contamination rate has declined and appears to have stabilized for public water supply wells

Source of data - California Department of Health Services

World Fuels Conference - March 21, 2002
Gordon Schremp - California Energy Commission

Presence of MTBE in Public Wells

Percent of Total Wells Sampled



Based on data from California Department of Health Services



Water Issues - Remediation

- 2,300 active cleanups at leaking UST sites with presence of MTBE
- “Average” cleanup cost difficult to quantify - few cases closed
- Closed cases are over \$130,000 per site, more than traditional USTs
- Other cases could be much more expensive
 - \$500 thousand to \$1 million per site
- MTBE phaseout does not affect existing contamination sites

Source: California State Water Resources Control Board

World Fuels Conference - March 21, 2002
Gordon Schremp - California Energy Commission



Water Issues - Continuing Concerns

- Single wall tanks remain a concern, less than 25 percent of operational sites
- Vapor releases through single wall tanks & components a potential concern
- Small leaks below detection rates go undetected, can result in contamination
- Even new and upgraded sites are sources of release - faulty components and improper installation
- Extension of BTEX plumes from ethanol still under study

Source: California State Water Resources Control Board



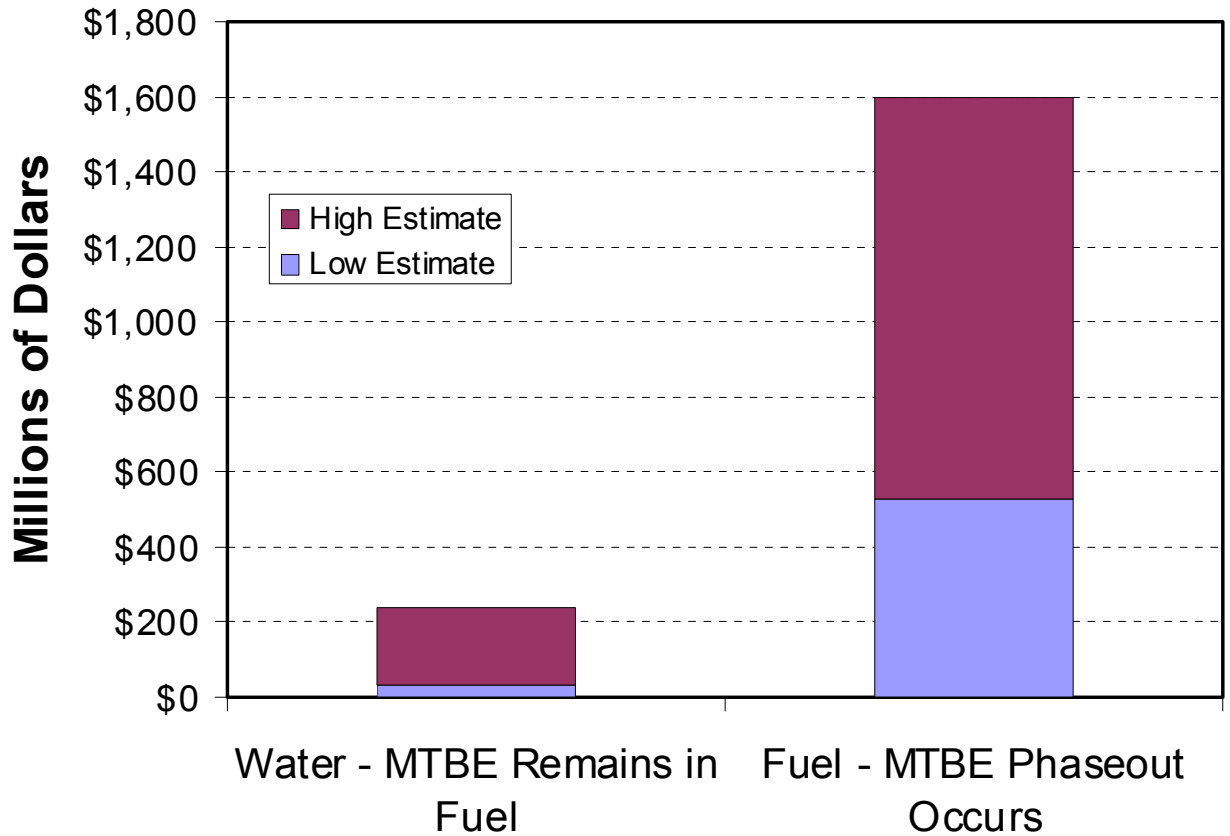
Cost Comparison - Fuel and Water

- Revised estimates – future scenario
 - Water - Future remediation and replacement
 - Low case hypothetical scenario as one example
 - 50 new UST cases @ \$500 thousand each
 - 5 new public water wells @ \$1 million each
 - High case hypothetical scenario as one example
 - 200 new UST cases @ \$1 million each
 - 20 new public water wells @ \$2 million each
 - Does not include potential MTBE vapor releases
 - Fuel - Future price increase for gasoline
 - Low case hypothetical scenario as one example
 - Oxy waiver assumed - \$530 MM, no price spike
 - High case hypothetical scenario as one example
 - No oxy waiver assumed - \$1 billion ethanol case
 - Includes one price spike - \$600 MM

**Sources: Public water well & UST remediation cost data - SWRCB;
Frequency of new MTBE detects & fuel cost estimates - CEC**

World Fuels Conference - March 21, 2002
Gordon Schremp - California Energy Commission

Revised Estimate – Future Scenario



**Sources: Public water well & UST remediation cost data - SWRCB;
Frequency of new MTBE detects & fuel cost estimates - CEC**

World Fuels Conference - March 21, 2002
Gordon Schremp - California Energy Commission



Federal Oxygen Waiver

- Waiver of the federal minimum oxygen requirement remains an important issue to California
 - Lower ethanol demand and prices expected
 - No waiver will cost California motorists about \$475 million per year in higher fuel prices
 - Flexibility will also be beneficial during periods of time that ethanol supplies become temporarily constrained due to logistical difficulties
- Additional year delay will allow more time to resolve waiver request
 - Lawsuit or federal legislation



Closing Remarks

- California's concerns about adequacy of gasoline supplies and the phaseout of MTBE are not isolated
- The federal debate for a national phaseout of MTBE should include greater analysis and discussion of the impacts on gasoline supply and prices



Closing Remarks

- The “business as usual” approach to meeting California’s future demand cannot be continued
- Ways must be found to efficiently reduce transportation energy demand and increase the use of alternative fuels to help meet California’s transportation energy needs while maintaining a strong economy