

# MTBE Phaseout Update - Costs, Supply, Logistics & Key Challenges



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# Introduction

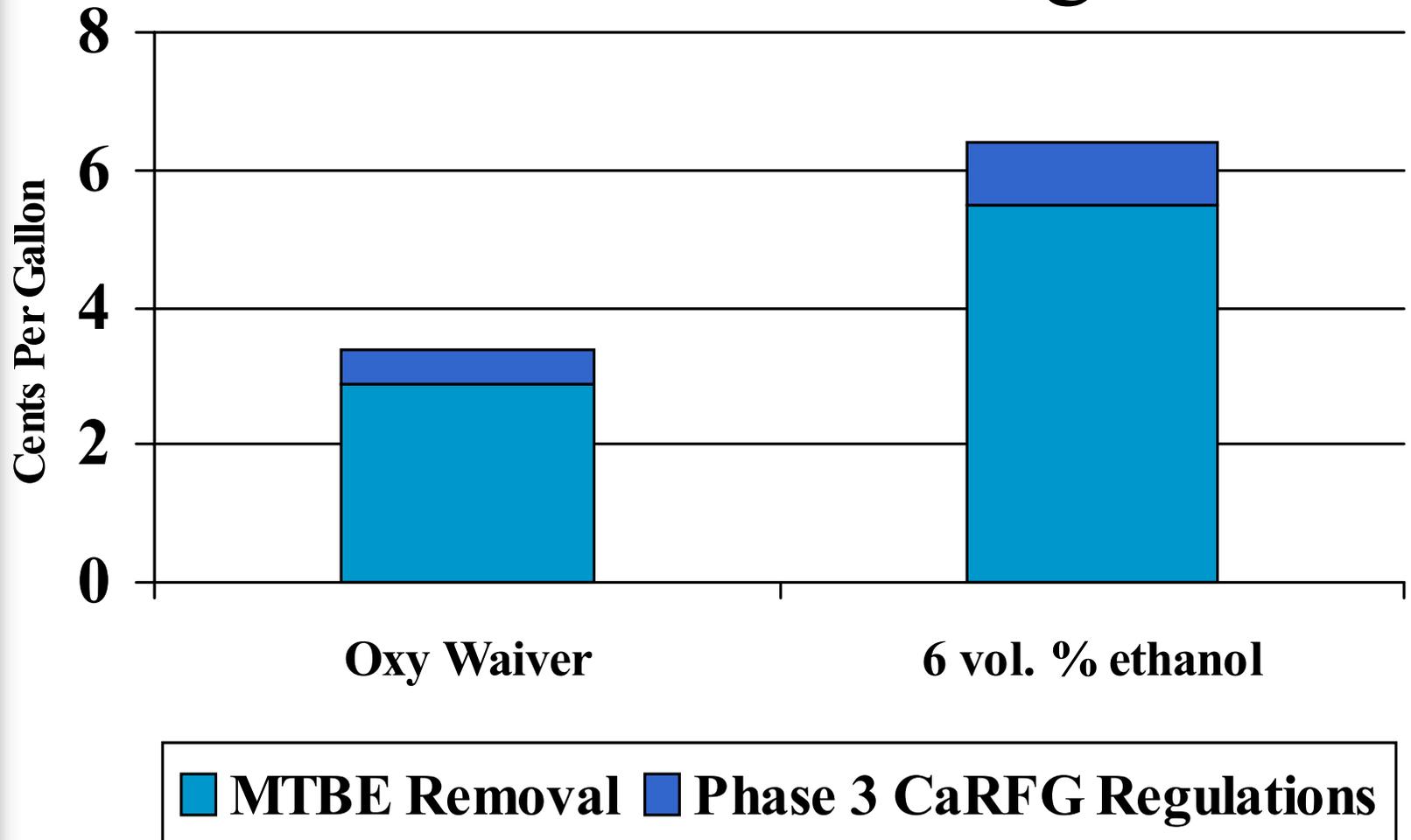
- Cost Impacts
- Supply Concerns
- Ethanol Logistics
- Key Challenges



# Cost Impacts

- Gasoline Production Costs
- Price Spikes
- Highway Revenue

# Impacts of MTBE Removal and Phase 3 CaRFG - Average Cost





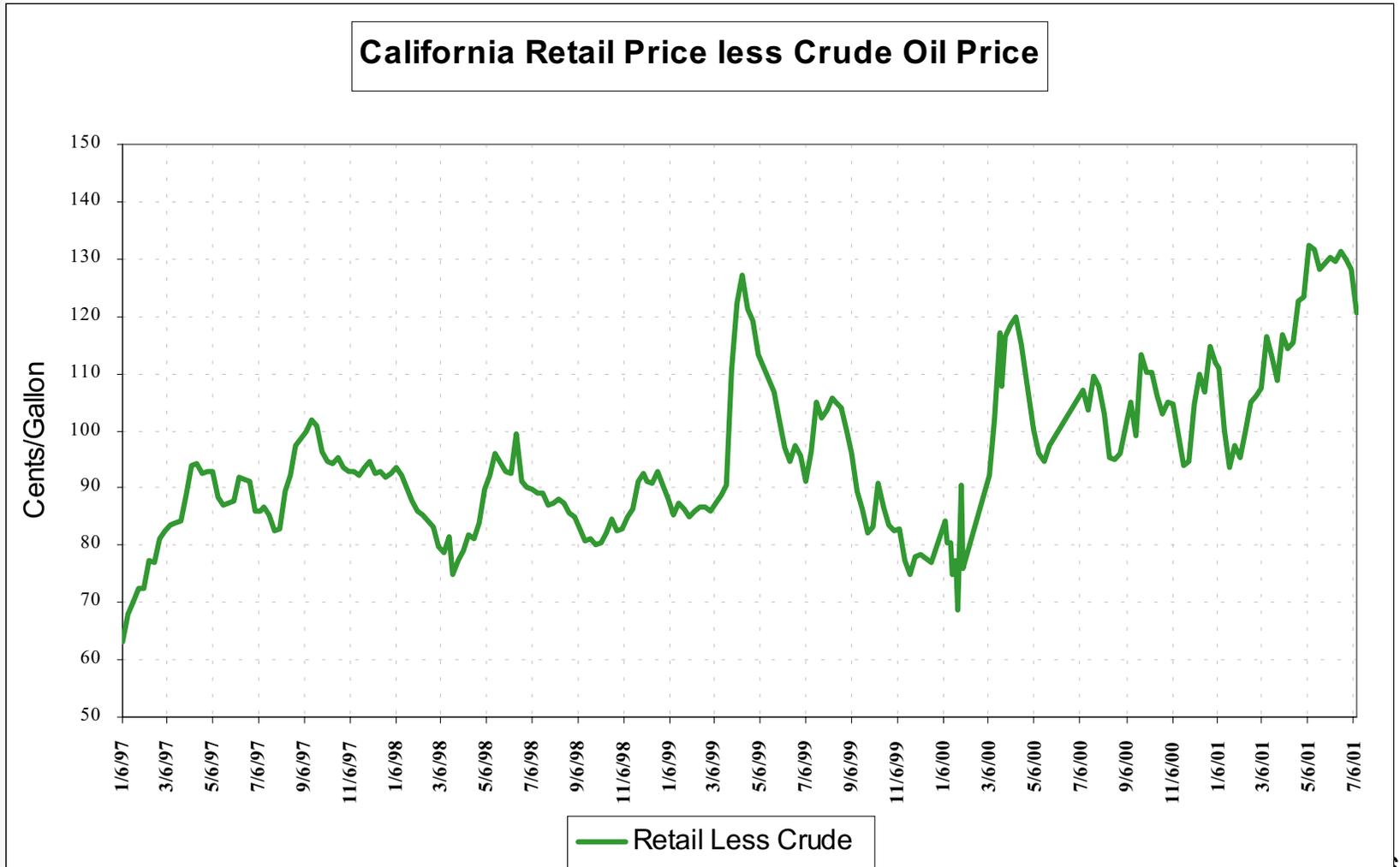
# Cost Impacts - Gasoline

## Production Costs

### ■ Comparison

- Failure to issue waiver will cost California consumers at least *an additional* 3 cents per gallon or \$475 million per year
- Increased costs are due to higher operating costs, more expensive ethanol, additional refinery investments, and lower fuel economy.

# Cost Impacts - Price Spikes





# Cost Impacts - Price Spikes

## ■ California Has Experienced Multiple Price Spikes

- “Time & Distance” to next alternative source of supply outside the State is 2 to 4 weeks - duration of most events is 4 to 8 weeks
- Over the last several years, price spikes have ranged from 10 to 50 cents per gallon
- Most price spikes are due to major unplanned refinery production problems
- California would still experience price spikes if specifications were less stringent



# Cost Impacts - Price Spikes

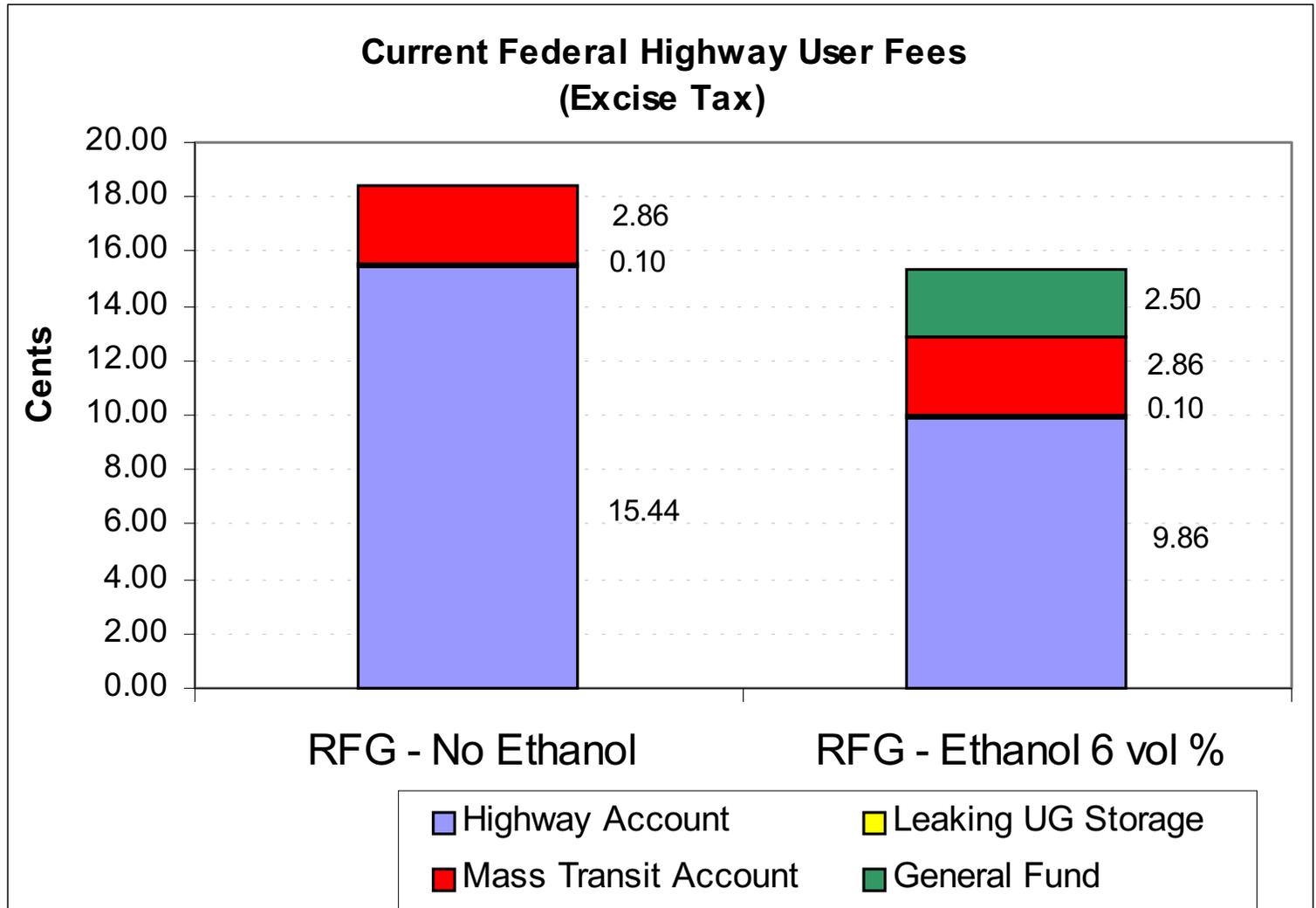
- Mandate To Use Ethanol Will Reduce Flexibility For California's Fuel Industry
- Adequate Supplies Of Ethanol And Gasoline Blending Components A Concern
- Several Logistical Issues Remain Unresolved
- Frequency And Magnitude Of Price Spikes Could Increase



# Cost Impacts - Price Spikes

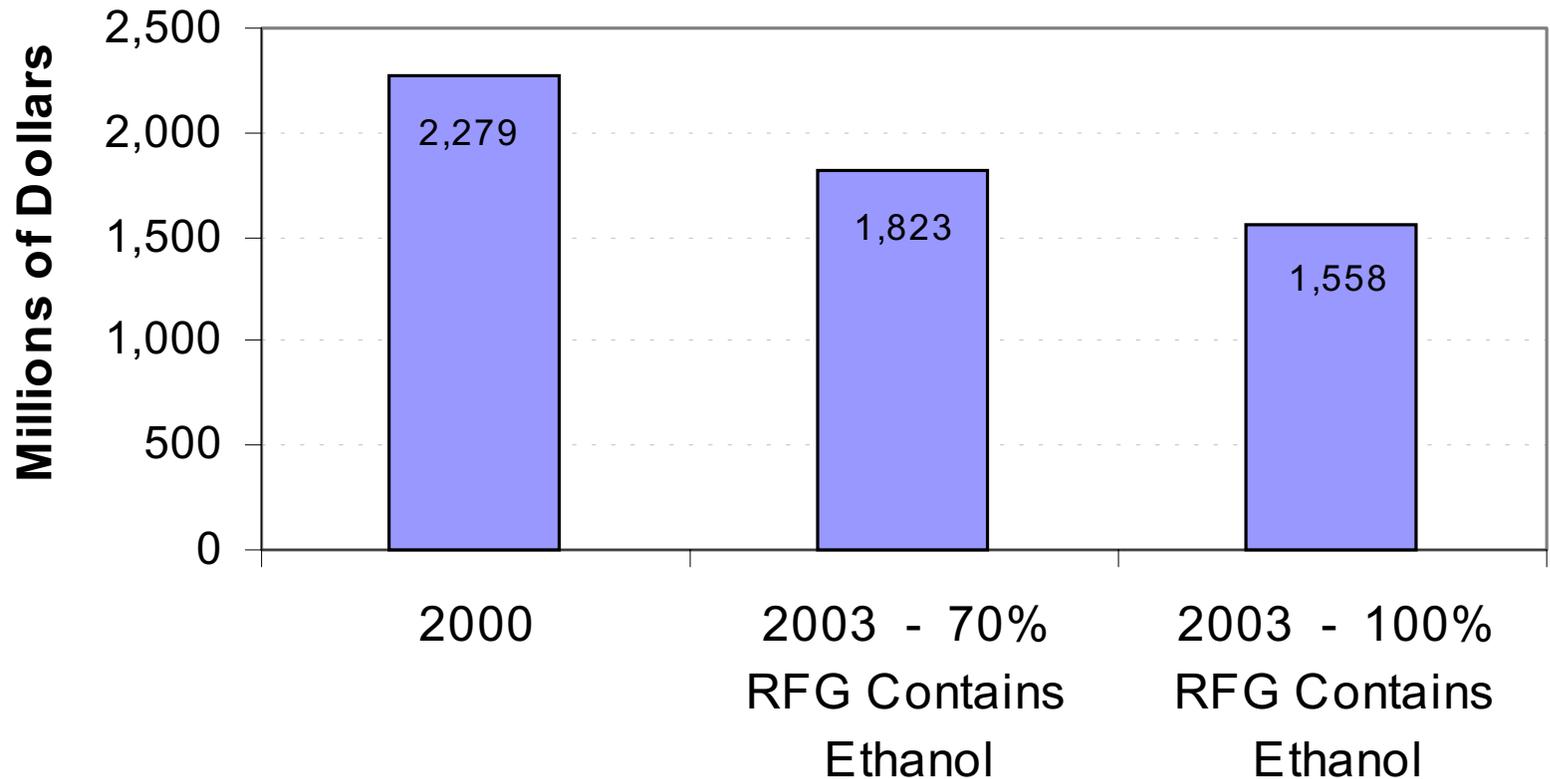
- Ultimate Pump Price To Consumers Could Be Significantly Greater Than The Projected Production Cost Increases Of An MTBE Phaseout - Up To *An Additional* \$660 Million Per Month
- The Legislature Has Directed The Energy Commission To Determine The Feasibility Of Constructing And Operating A Petroleum Product Reserve To Minimize The Impacts Of Price Spikes On California's Consumers<sup>9</sup>

# Cost Impacts - Highway Funds



# Cost Impacts - Highway Funds

**Estimated Federal Highway Account  
Receipts From California Gasoline Sales**





# Cost Impacts - Highway Funds

## ■ Transportation Funds

- California's use of ethanol alone will divert \$456 million to \$721 million per year from the Highway Account
- Estimated loss to Highway Account would be even greater if anticipated ethanol concentration were higher than 6 vol %
- Increased US gasoline demand insufficient to make up for this revenue loss
- After surplus is depleted, less transportation money could be available to California and other states that use ethanol<sup>12</sup>



# Supply Concerns

- Gasoline Demand
- Refinery Production
- Gasoline Supply & Imports
- Ethanol Availability



# Supply Concerns - Gasoline Demand

## ■ California Gasoline Demand

- Demand will continue to grow due to population increases and rising vehicle miles traveled
- Taxable sales of gasoline accounted for over 14.8 billion gallons in 2000
- Demand will be about 15.8 billion gallons per year by 2003 or a little more than 43 million gallons per day - 6.8 percent greater than 2000



# Supply Concerns - Refinery Production

## ■ California Gasoline Production

- California refiners produce the majority of the State's gasoline
- State is net importer of gasoline during the summer months
- Production capacity is expected to decline slightly by about 5 percent in 2003 due to MTBE phaseout



# Supply Concerns - Refinery Production

- Production Impact Of Using Ethanol
  - Ethanol provides little supply benefit during the majority of the year
  - During the low Rvp season (8 months of the year), ethanol in and pentanes out
  - During the winter months, refiners can use butanes and pentanes to increase gasoline output



# Supply Concerns - Gasoline Supply and Imports

## ■ Balancing Out Supply - 2003

- Increasing gasoline demand combined with anticipated production decline means that California will be less self-sufficient
- California will continue to meet demand through increased imports, if the clean components can be obtained
- Alkylates are one of the key gasoline blending components that will be needed
- Availability and costs are concerns



# Supply Concerns - Gasoline Supply and Imports

- **Outside Sources Could Decline - 2003**
  - Not all refiners that currently supply the California market will be in a position to produce low volatility base gasoline
  - Import potential for gasoline used in ethanol blending (CARBOB) could drop

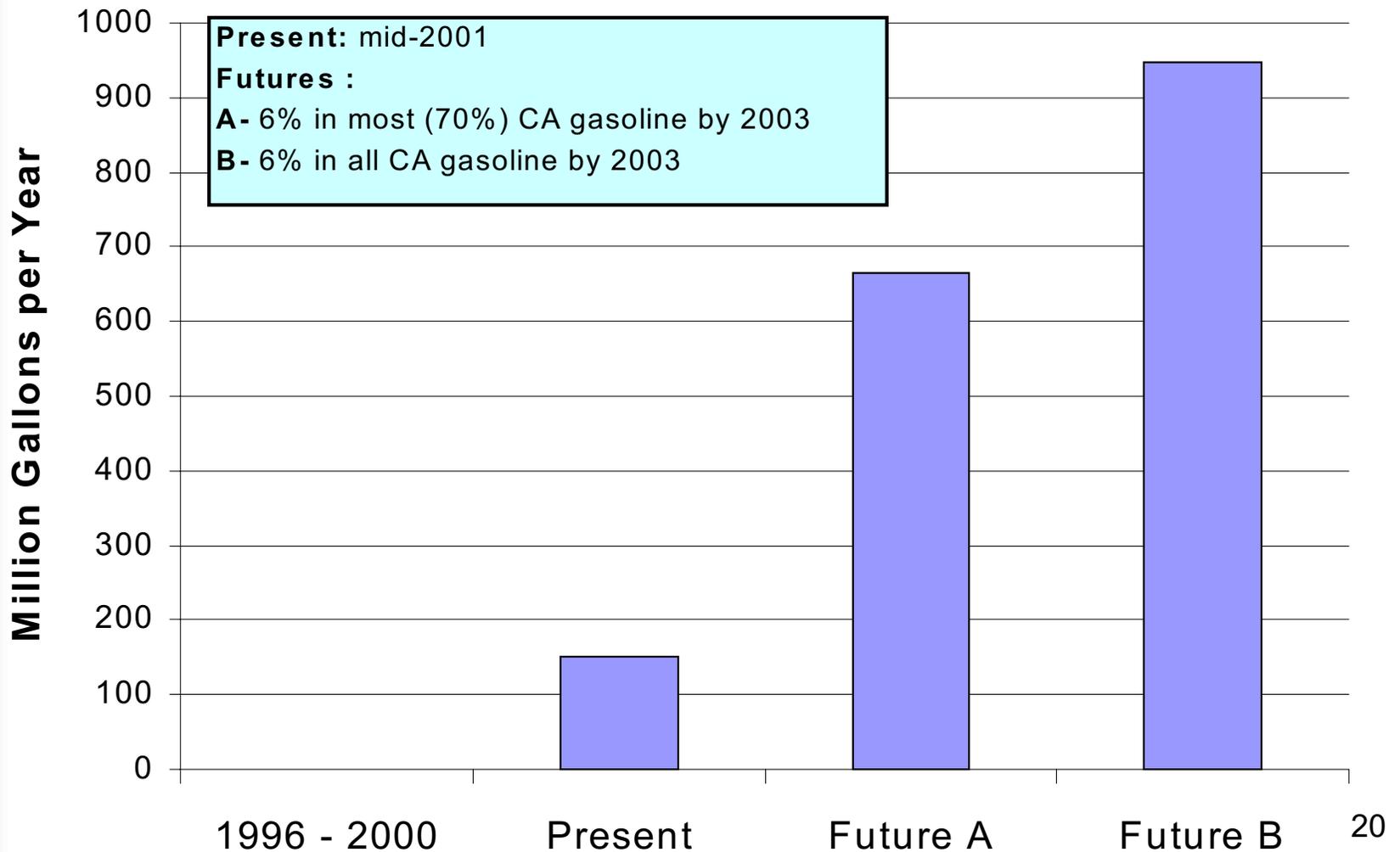


# Supply Concerns - Ethanol Availability

## ■ Ethanol Use In California

- Some ethanol in use now, but MTBE use will continue until 4th quarter of 2002
- Most refiners must complete modifications to facilities to be able to blend ethanol during the low volatility (Rvp) season
- Refiners expected to use about 6 percent ethanol by volume in 2003

# Supply Concerns - Ethanol Availability





# Supply Concerns - Ethanol Availability

## ■ California Ethanol Demand

- California will require significant quantities of ethanol
- Original demand estimate of 580 million gallons based on 1999 gasoline sales
- Revised demand calculated to be 660 to 950 million gallons per year or nearly 2 to 3 million gallons per day by 2003
- US production of ethanol last year totaled approximately 1.6 billion gallons

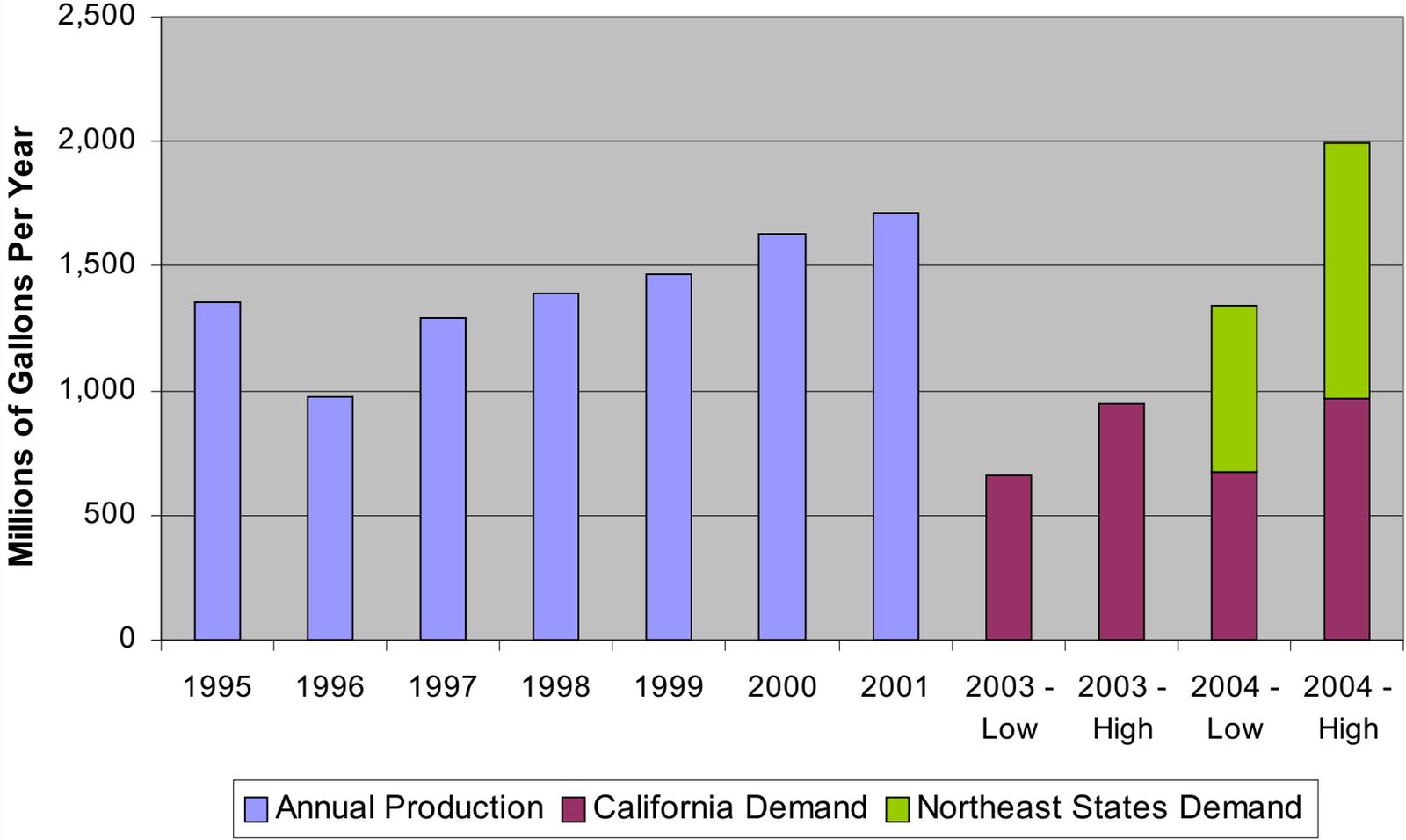


# Supply Concerns - Ethanol Availability

## ■ Additional Ethanol Demand

- Demand increases for ethanol could be even greater if other states decide to prohibit the use of MTBE
- Ethanol demand projections in the Northeast states are estimated to be in the same range as those of California
- Degree of success and timing of these efforts could impact the availability of ethanol supplies in California

# U.S. Ethanol Production vs. California & NE States Demand



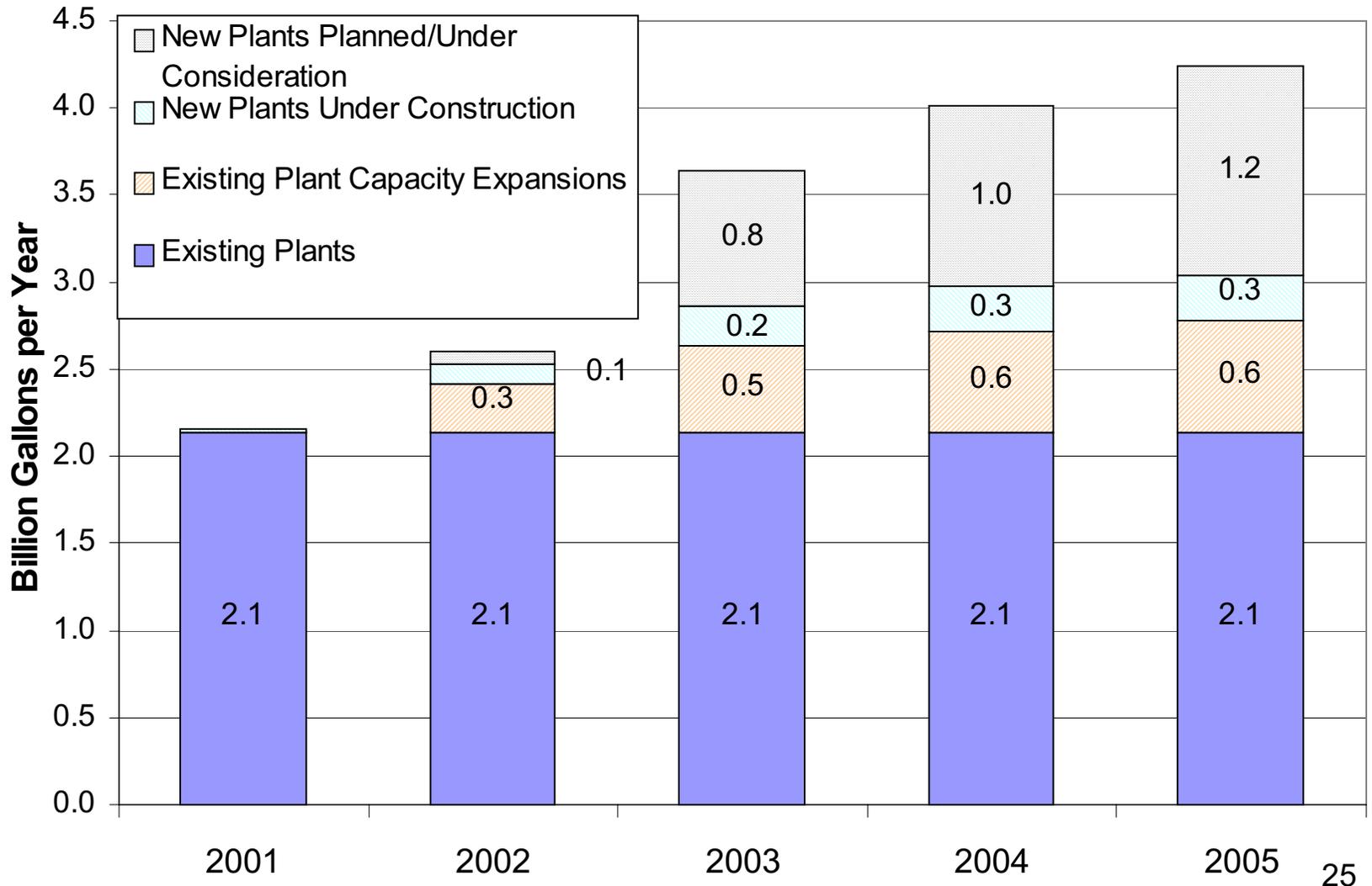


# Supply Concerns - Ethanol Availability

- Sources Of Additional Ethanol Supply
  - Expansion of ethanol production capacity must be significant and on line by the Fall of 2002
  - Ethanol from California biomass will not be available prior to 2004 - 2005
  - Brazil could be an important resource for ethanol supplies, but must pay an import tariff of 54 cents per gallon

# US Ethanol Production Outlook

@ End of Year (Preliminary Survey Results as of July 25, 2001)





# Supply Concerns - Ethanol Availability

- Outlook For Additional Ethanol Supply
  - Not all of the production capacity under discussion will be financed and constructed
  - Other projects that receive financing may not begin construction in time to provide additional supplies of ethanol for California by the end of 2002
  - New ethanol plants require 12 to 14 months to complete after construction begins, while some expansions of existing facilities can be completed in less time



# Supply Concerns - Ethanol Availability

- Survey does not reflect previously deferred construction decisions or any accelerated project schedules resulting from denial of California's request for waiver from the oxygen content requirement
- Survey does not yet include all new projects under discussion with major U.S. ethanol plant builders
- Expansion plans for several large facilities have not yet been disclosed to the Energy Commission



# Ethanol Logistics

- Movement Of Ethanol To California
- Ethanol Logistics Within The State
- Fungibility & Flexibility Issues



# Logistics - Ethanol to California

## ■ Marine Vessels

- Not all ethanol facilities have the capability to load barges
- Movement of barges along the Mississippi can be severely diminished during the winter months
- If all of California's ethanol demand were supplied by marine vessel, 5 to 7 ships would have to be dedicated to make between 45 and 65 combined trips per year by 2003



# Logistics - Ethanol to California

## ■ Marine Vessels

- Most waterborne ethanol deliveries will need US flagship vessels - Jones Act
- Shipping rates have increased and remain significantly higher than foreign vessels
- Availability of these vessels will deteriorate over the near term as older ships are retired and new construction is deferred
- It is unlikely that all of California's ethanol demand could be transported on marine vessels



# Logistics - Ethanol to California

## ■ Rail Movement

- Almost all ethanol plants are able to load rail cars
- Unit trains dedicated to ethanol shipments are the most economical and rapid means of transportation from the Midwest to California
- But there is currently no capability to handle these long lines of rail cars at California terminals



# Logistics - Ethanol to California

## ■ Rail Movement

- If all of California's ethanol demand were supplied by train, between 1,270 and 3,650 rail cars would be required to continuously supply the State by 2003
- Would be equivalent to between 60 and 87 rail cars per day
- Significant number of rail cars would have to be constructed over the next 16 months
- Adequate rail car availability and potential scheduling delays need to be addressed



# Logistics - Within California

## ■ Pipeline Movement

- Petroleum product pipelines will not be used to transport ethanol or blends
- Corrosion is primary concern
- A few dedicated pipelines will be used to transport ethanol short distances to tankage at distribution terminals from marine tankers

## ■ Marine Terminals

- Ability to handle greater varieties and volumes of imports is big concern
- Spare tankage already scarce



# Logistics - Within California

## ■ Terminals

- Ethanol will be blended into the gasoline when the tanker truck is loaded, not at the refinery
- Most terminals are unable to receive ethanol via railroad cars today
- Majority of terminals will receive ethanol from tanker trucks
- Truck traffic will increase in proximity to terminals



# Logistics - Fungibility

- Fungibility - Ability To Combine Different Types Of Gasoline
  - Today, gasoline containing MTBE can be mixed with oxygenate-free gasoline in the same storage tanks
  - 2003, this capability will be prohibited
  - Segregation storage tanks needs will grow
  - Adequacy of tankage at both marine terminals and pipeline terminals will be a concern



# Logistics - Flexibility

## ■ Flexibility

- The US EPA denial of a waiver from the Federal minimum oxygen requirement will reduce flexibility for refiners
- 2003, if there is a shortage of adequate ethanol supplies due to production or logistical problems, most refiners would not have the ability to switch to the production of gasoline without ethanol



# Logistics - Flexibility

## ■ Flexibility

- Today, refiners have the flexibility to increase the concentration of MTBE to ensure adequacy of supplies without logistical constraints
- 2003, this practice will be diminished or impractical with ethanol blends
- This anticipated reduction in flexibility can translate to higher prices at the pump due to a greater risk of price spikes



# Key Challenges To Overcome

## ■ Issues That Need To Be Resolved

- Will there be sufficient increase in ethanol production to meet California's needs?
- Will adequate numbers of marine vessels and rail cars be available?
- Will logistical modifications be complete by late 2002?
- Will refiners have their modifications completed on time to blend the new gasoline?



# Key Challenges To Overcome

## ■ Issues That Need To Be Resolved

- Will sufficient imports of gasoline be available to meet increasing demand and declining production?
- Will adequate financing become available and decisions to commit to construction be initiated far enough in advance of the phaseout deadline?

## ■ Answers To All Of These Questions Must Be “Yes” - If Not.....

- Adequacy of gasoline supplies for California could be questionable