



# Overview, Background, Methodologies and Outlook – Terminals & Retail Infrastructure

Joint Transportation and IEPR Committee Workshop  
Transportation Fuel Infrastructure Issues

Sacramento, California

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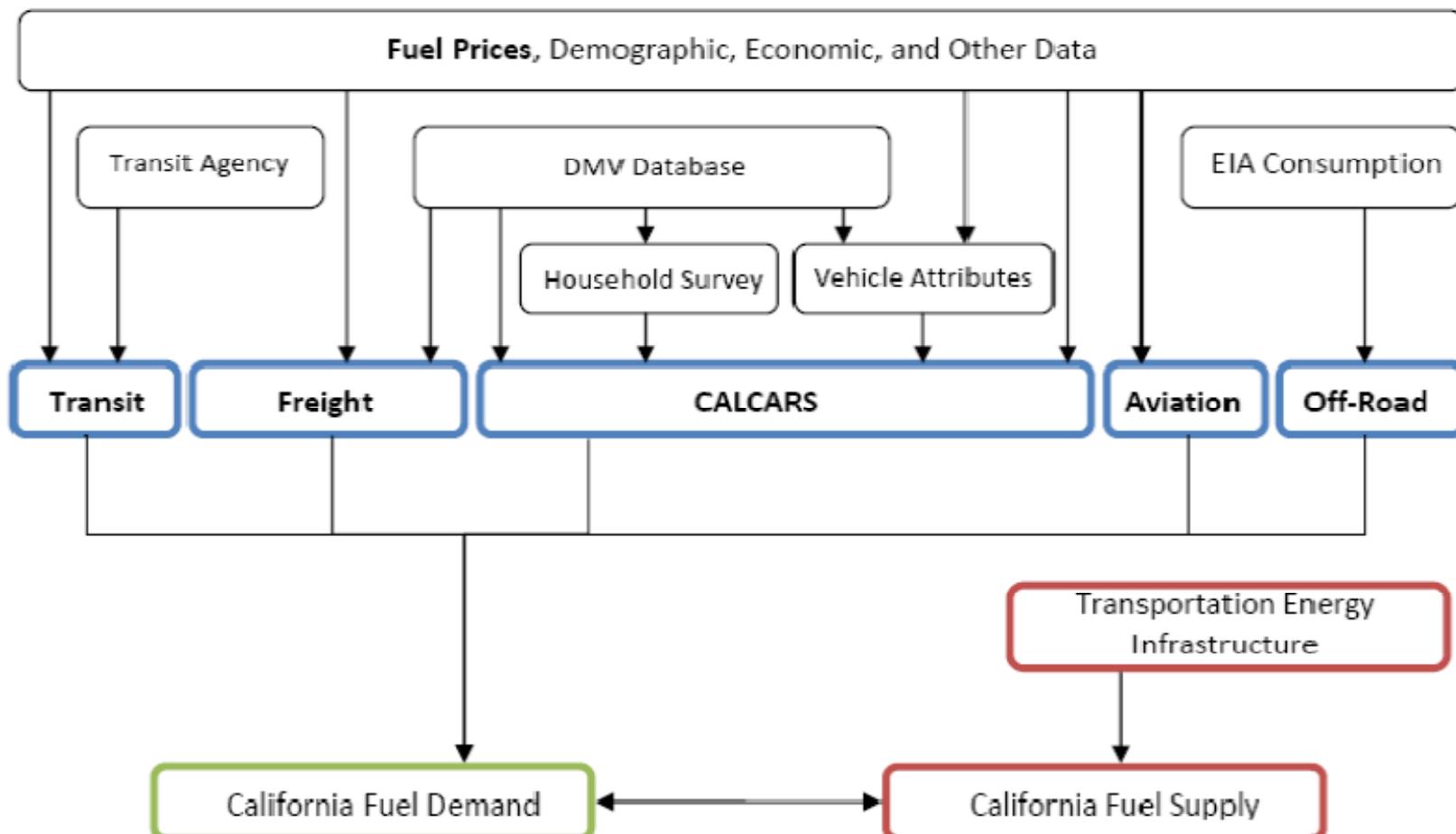


## Purpose of Workshop

- Identify trends and emerging issues that may create challenges to keeping California supplied with adequate levels of transportation fuels to meet a growing and increasingly diversified portfolio of choices
- The magnitude and pace of expanded use of renewable fuels may stress the existing distribution infrastructure
- Are demand trends shifting such that new types of infrastructure will be required?
- How much will new regulations and policies increase the use of renewable fuels?
- What can and should be done to increase chances of success?

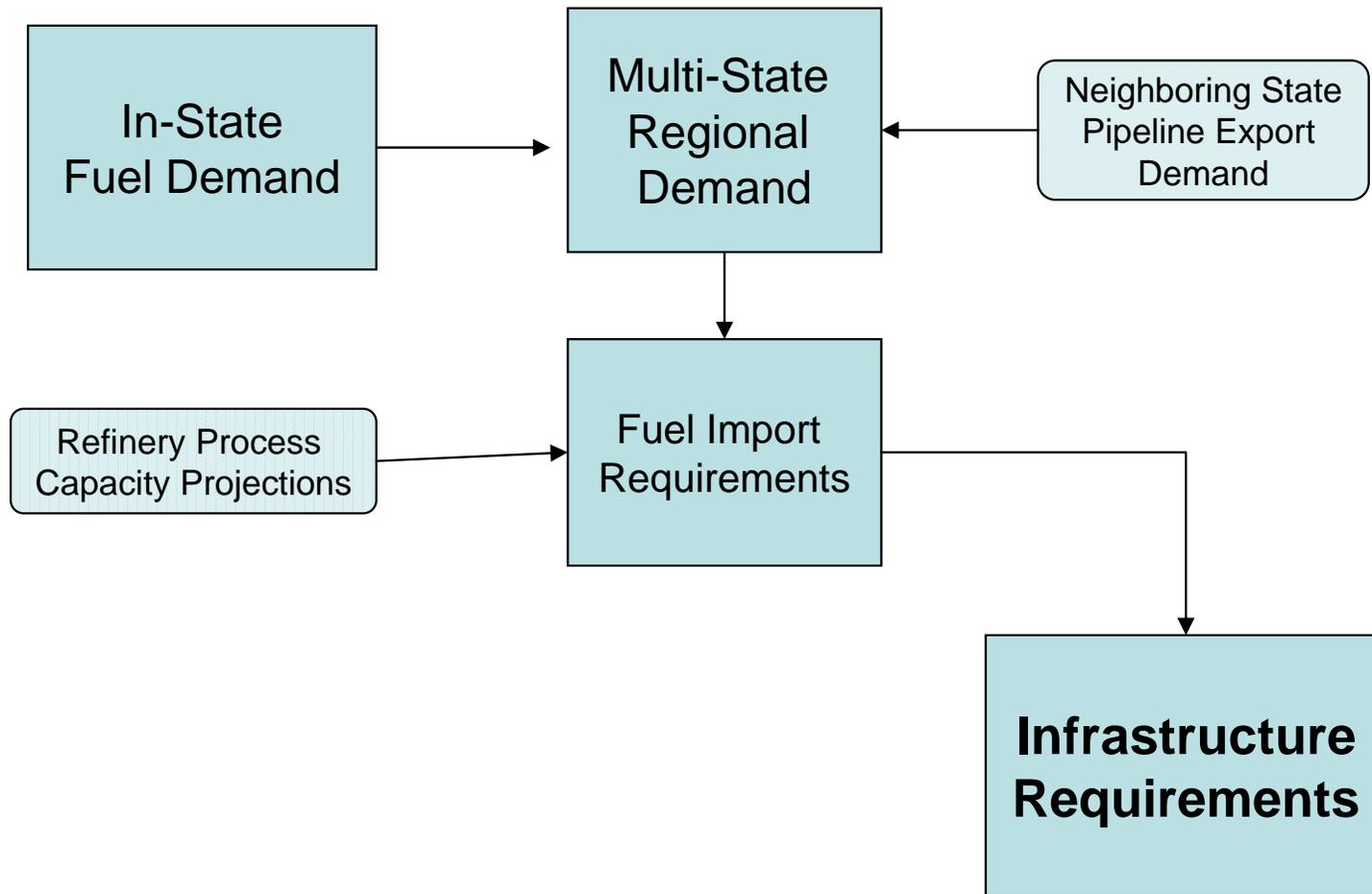


# Integration of Prices, Demand & Supply





# Fuel Import Forecast - Methodology



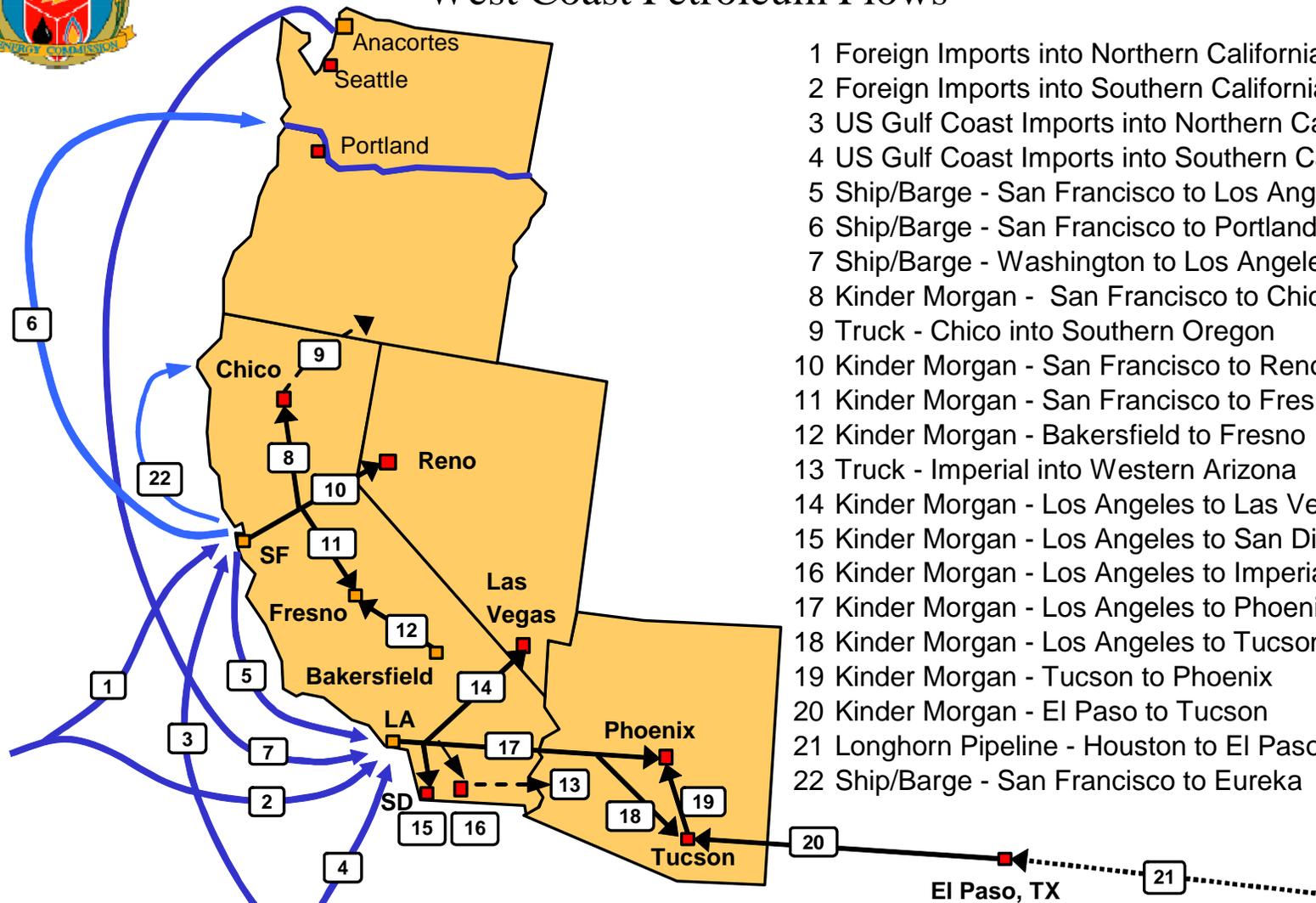


## Infrastructure & Demand Integration

- Transportation fuel demand forecast
  - Gasoline, diesel, jet fuel, and renewable fuels
- Demand will be met by combination of
  - California production
    - Crude oil refineries
    - Biorefineries
  - Imports of blend components and transportation fuel
  - Less exports to neighboring states & other regions
- Adequate infrastructure is necessary to ensure supplies will be sufficient to meet state's demand



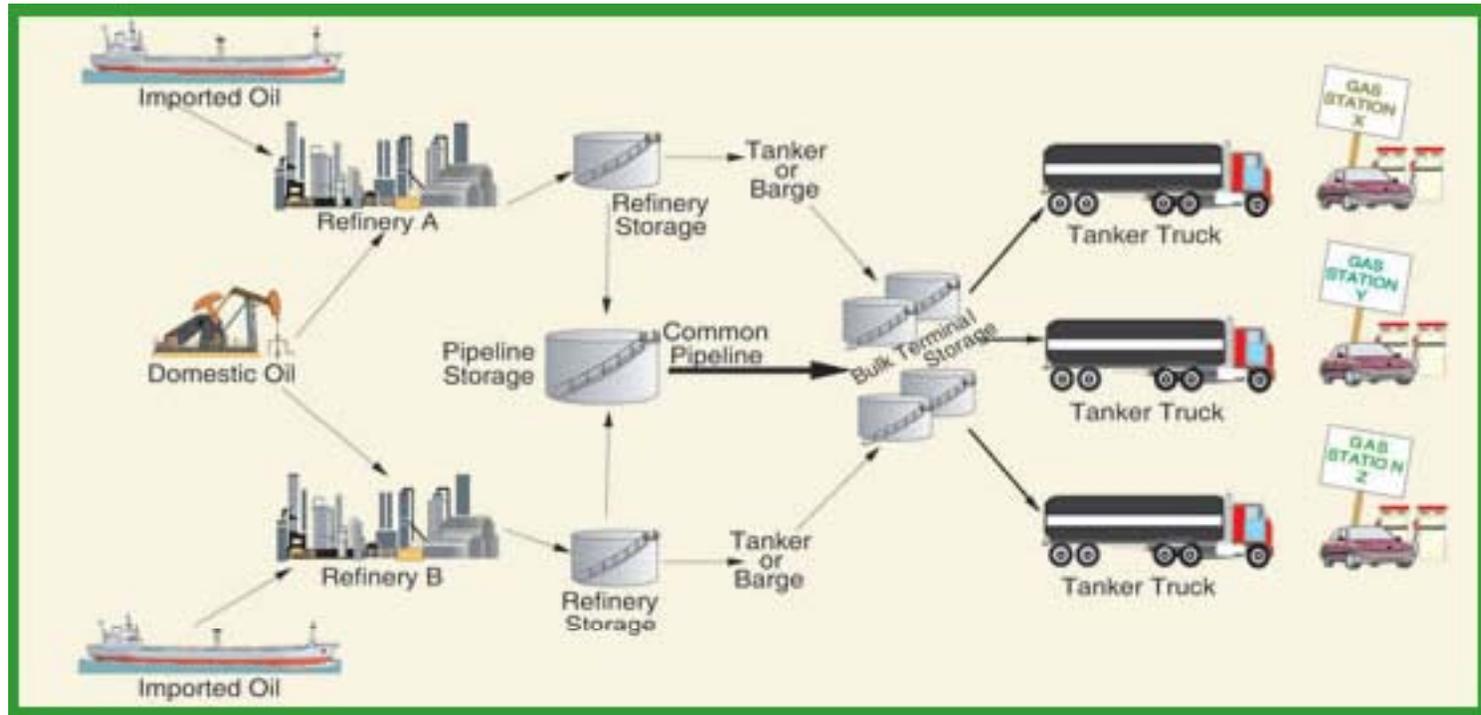
## West Coast Petroleum Flows



- 1 Foreign Imports into Northern California
- 2 Foreign Imports into Southern California
- 3 US Gulf Coast Imports into Northern California
- 4 US Gulf Coast Imports into Southern California
- 5 Ship/Barge - San Francisco to Los Angeles
- 6 Ship/Barge - San Francisco to Portland
- 7 Ship/Barge - Washington to Los Angeles
- 8 Kinder Morgan - San Francisco to Chico
- 9 Truck - Chico into Southern Oregon
- 10 Kinder Morgan - San Francisco to Reno
- 11 Kinder Morgan - San Francisco to Fresno
- 12 Kinder Morgan - Bakersfield to Fresno
- 13 Truck - Imperial into Western Arizona
- 14 Kinder Morgan - Los Angeles to Las Vegas
- 15 Kinder Morgan - Los Angeles to San Diego
- 16 Kinder Morgan - Los Angeles to Imperial
- 17 Kinder Morgan - Los Angeles to Phoenix
- 18 Kinder Morgan - Los Angeles to Tucson
- 19 Kinder Morgan - Tucson to Phoenix
- 20 Kinder Morgan - El Paso to Tucson
- 21 Longhorn Pipeline - Houston to El Paso
- 22 Ship/Barge - San Francisco to Eureka



# Transportation Fuel Infrastructure



Source: Energy Information Administration

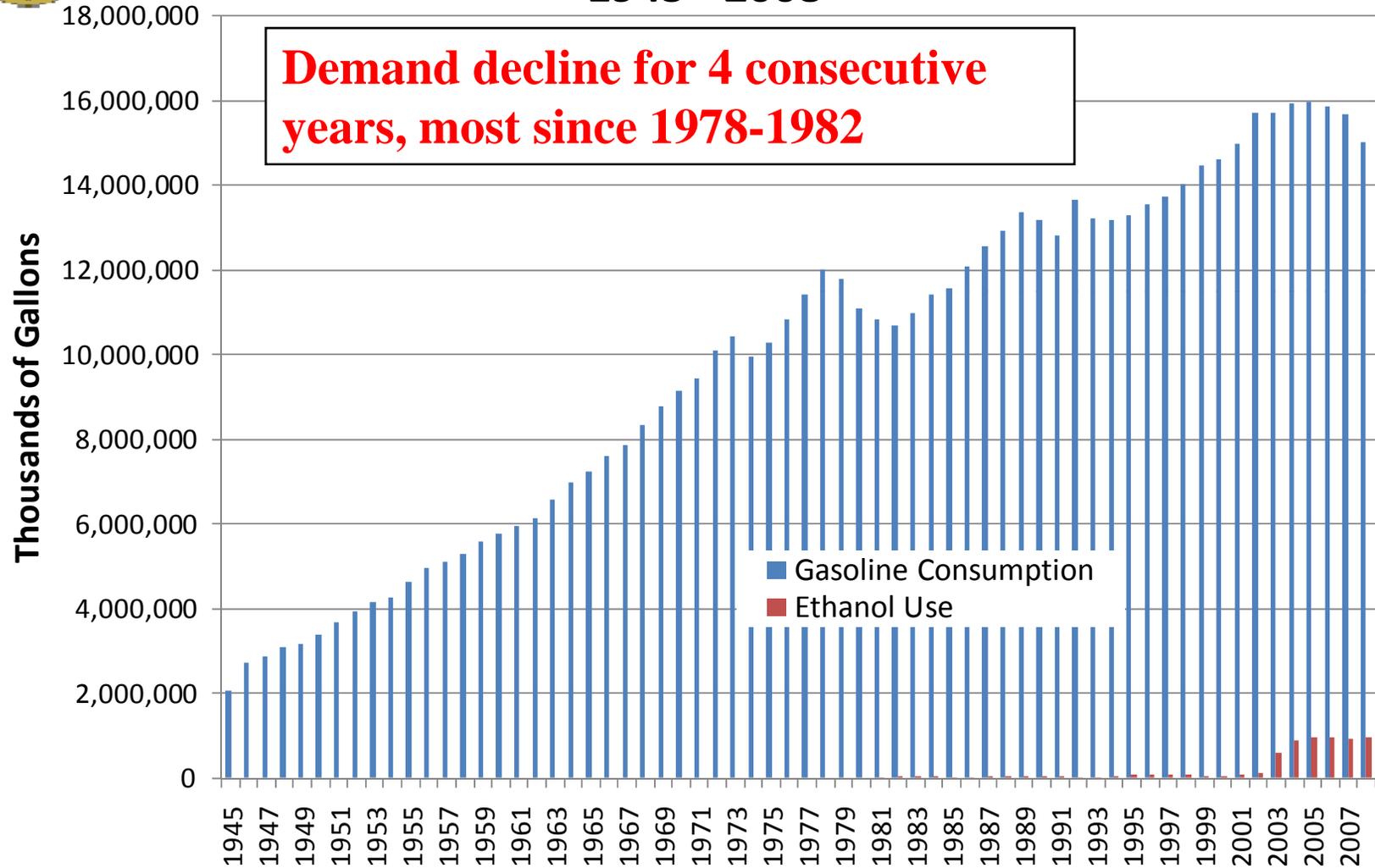


## Incremental Imports - Approach

- Additional imports of petroleum & renewable transportation fuels through the marine infrastructure in California will be influenced by the following primary factors:
  - Change in California fuel demand
  - Increased use of renewable fuels
  - Degree of increased California refinery output
  - Increased exports of transportation fuels to AZ and NV
- Identify potential issues that need to be addressed over the near and mid-term
- Craft recommendations to diminish likelihood of potential fuel supply problems



## California Gasoline & Ethanol Use 1945 - 2008



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## Marine Infrastructure Issues

- Status of Marine Oil Terminal Engineering and Maintenance Standards (MOTEMS) –
  - Where does the industry stand regarding compliance?
  - Will any facility operators decide to shut down their wharves?
  - What is the outlook for potential impacts, if any, on operations as companies upgrade their terminals?
- Petroleum fuel import infrastructure
  - What are the industry's expectations about refinery capacity expansions?
  - Will the existing or planned petroleum fuel import infrastructure be adequate for projected fuel import requirements?



## Marine Infrastructure Issues

- Renewable fuel import infrastructure
  - Will importers of renewable fuels be able to use existing marine terminals?
  - Or do they need marine berths with different characteristics (types and size of storage tanks) to help ensure an adequate capability to receive greater quantities of renewable fuels and feedstocks?
  - Are any such facilities planned or under construction?

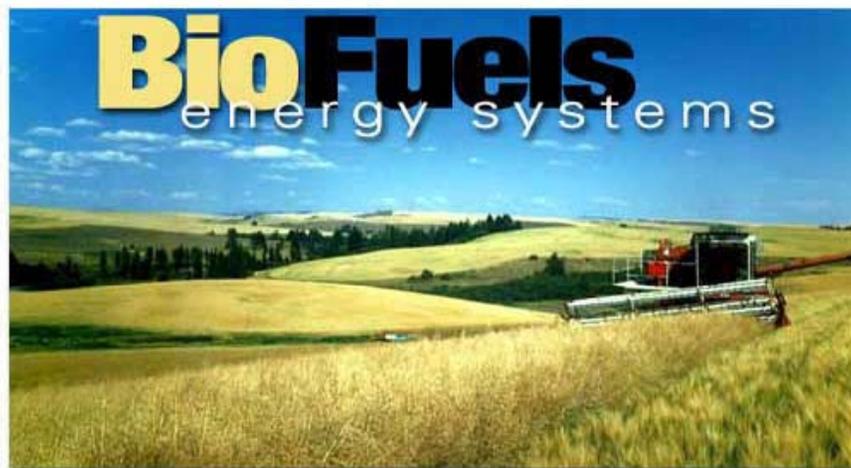


## Marine Infrastructure Speakers

- Joe Sparano - Western States Petroleum Association (WSPA)
- Tom O'Connor – ICF International
- Martin Eskijian - California State Lands Commission
- Robert Jagunich - Biofuels Logistics & Terminals
- Rahul Iyer - Prima Fuels

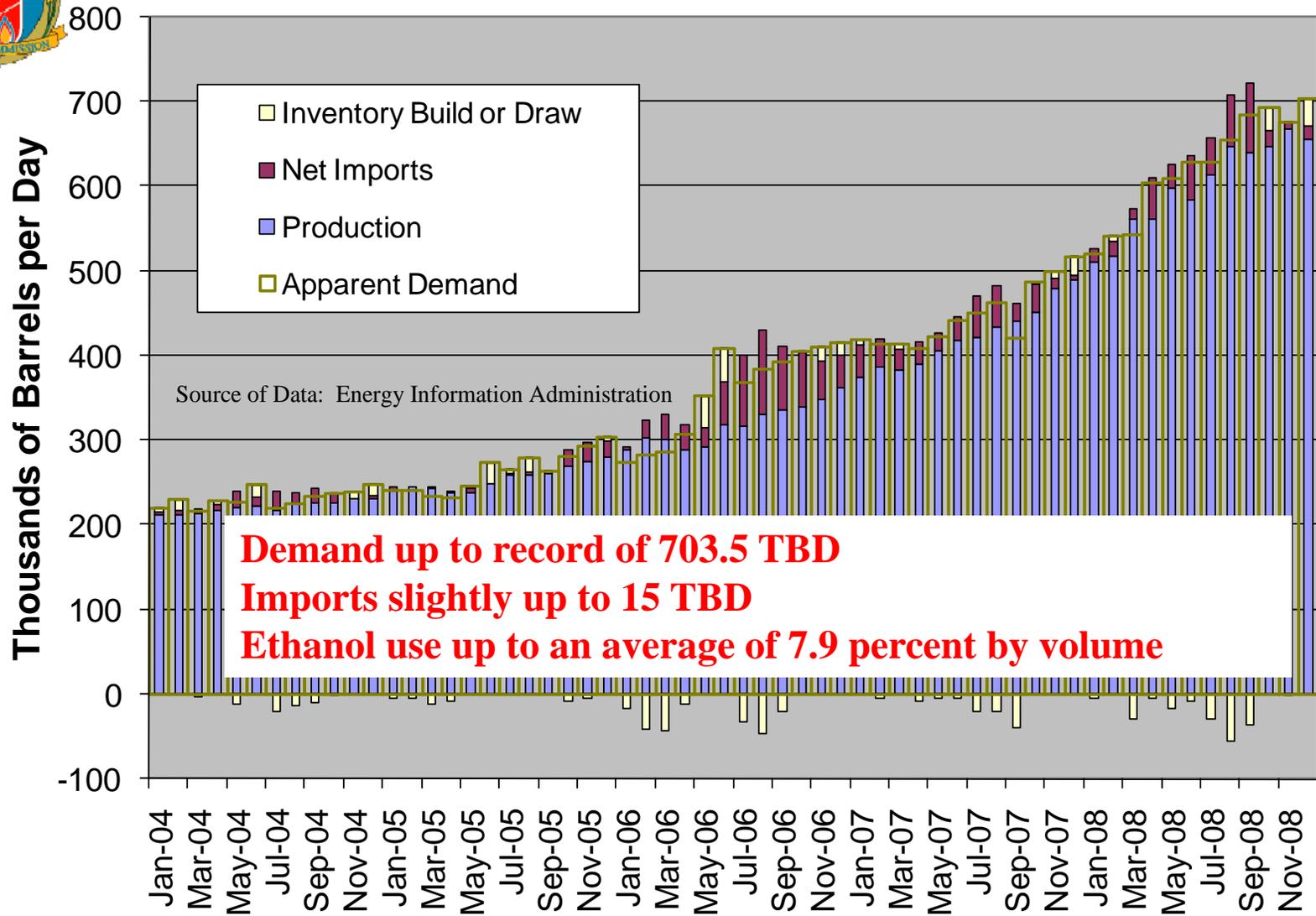


# Renewable Fuels Forecasting & Issues





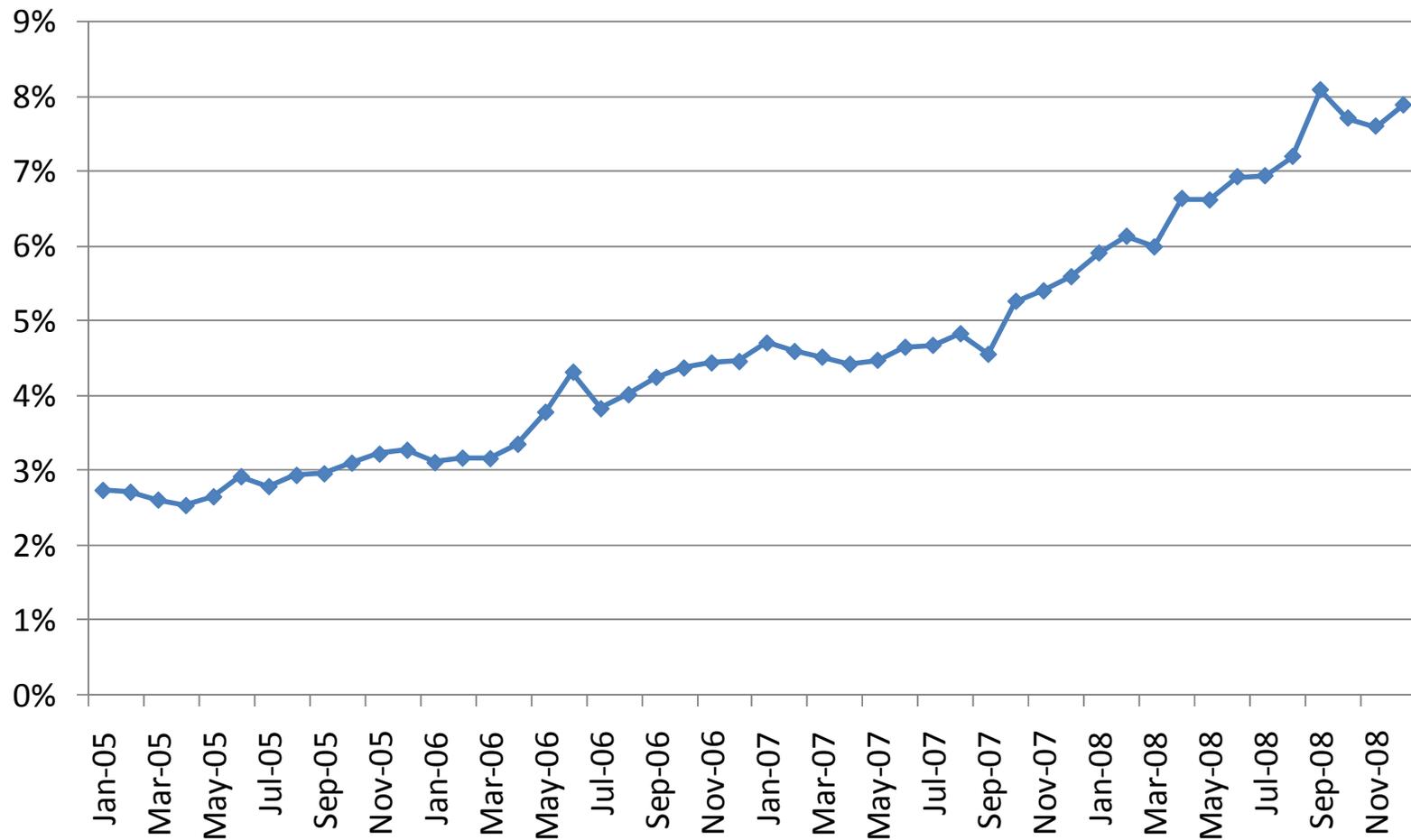
# U.S. Ethanol Supply & Demand





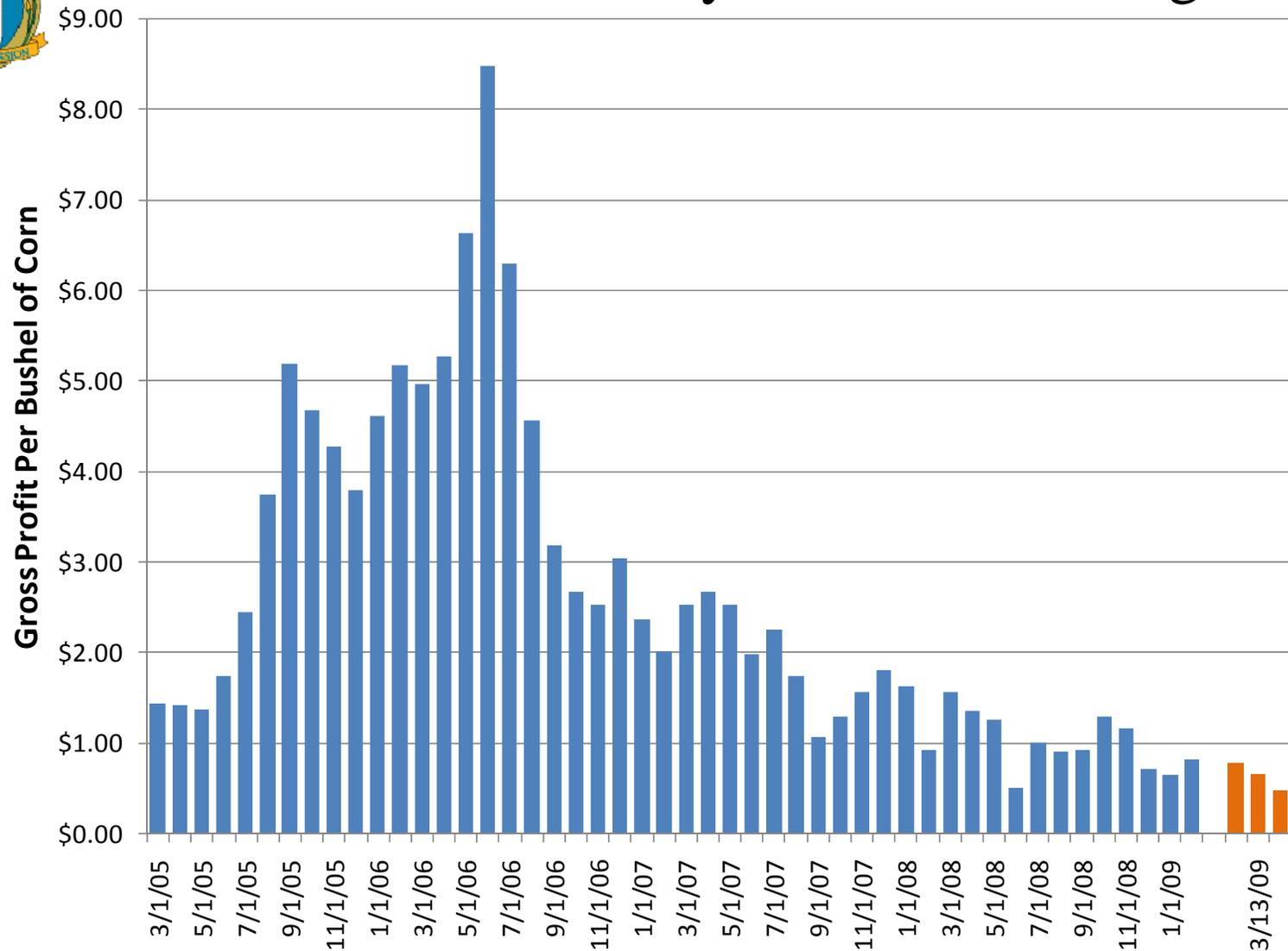
# Mandated Use of Renewable Fuel Increasing

## U.S. Ethanol Concentration in Finished Gasoline





# Ethanol Profitability Low & Declining



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## Renewable Fuels & Biorefinery Issues

- RFS2 outlook is assumed to be a baseline for renewable fuel use obligations in the nation and state - Will there be sufficient quantities of traditional and advanced forms of renewable fuel available to meet these blending obligations?
- The Low Carbon Fuel Standard being developed by the California Air Resources Board is expected to increase the use of renewable transportation fuels above the minimum levels required by the RFS – but how much more?
- Can and will ethanol concentration rise in gasoline above the current limit of 10 volume percent?
- What are the challenges from both a fuel & automotive perspective?
- Is a higher ethanol blend wall a reasonable expectation in CA?



## Renewable Fuels & Biorefinery Issues

- What are some of the factors responsible for an economic downturn for ethanol and biodiesel facilities throughout California and the rest of the United States?
- Are the convergence of responsible factors temporary in nature?
- Is the biorefinery industry expected to recover economically?
- Will future expansion plans be deferred such that renewable fuel supplies will become scarce or is there plenty of spare production capacity to last several years?
- Does the poor economic climate potentially hinder the pace of commercial development for advanced biofuels?
- How can these recent trends be reversed?



## Renewable Fuels & Biorefinery Speakers

- John Braeutigam - Valero
- Jim Frusti - Chrysler, LLC
- Brooke Coleman - New Fuels Alliance
- Paul Argyropoulos - U.S. EPA Office of Transportation and Air Quality



# Lunch Break





## Distribution Terminal Infrastructure

- More than 50 distribution terminals in California are used to load tanker trucks that are primarily destined for a retail station
- All of these facilities are connected to a network of petroleum product pipelines that is usually the source of the transportation fuels delivered to these facilities
- Ethanol and biodiesel are normally delivered to these terminals via tanker truck, not the network of pipelines
- Increasing use of renewable fuels due to federal and state mandates will necessitate an expansion of the renewable handling capability for California's terminals



## Distribution Terminal Outlook & Issues

- How quickly the system adapts to these changing requirements will ultimately determine if any constraints may develop
- California Energy Commission survey of the distribution terminal operators is not yet completed
- Aggregated responses and staff assessment will be provided in May
- Industry is anticipated to move to higher ethanol blends as soon as January 2010 based on recent announcements and responses
- What other issues could potentially affect the ability of terminals to acquire, store, and distribute adequate supplies of petroleum and renewable fuels?



## Distribution Terminal Speakers

- Russ Kinzig - Kinder Morgan
- Ed Hahn - Kinder Morgan



## Renewable Vehicles & Retail Station Overview

- Over 10,000 locations throughout California that dispense about 20 billion gallons of transportation fuels each year
- Increased use of renewable and alternative fuels will require adequate development of the retail station infrastructure to help ensure sufficient distribution throughput capability
- However, fuel supply and vehicle populations are necessarily interrelated elements that must also be sufficient or potential problems could emerge
- There are a number of issues that need to be addressed at the retail distribution level



## Retail & Ethanol Fuel Issues

- If the ethanol blending limit cannot be increased in California, the RFS and LCFS regulations will probably require greatly expanded need for and use of E85
- Staff will calculate minimum annual ethanol use to determine timing of hitting the blend wall
- Higher use of ethanol in the form of E85 will require may more retail dispensers and flexible fuel vehicles – but there are no requirements for these higher levels
- Staff will estimate a range of FFV new vehicle sales that will be necessary to consume a sufficient quantity of E85 to meet federal and state mandates



## Retail & Biodiesel Fuel Issues

- Quality issues and concerns are actively being worked to achieve consensus and assurances that fuel will be compatible in the existing distribution and vehicle systems
- Biodiesel is able to mostly utilize the existing retail distribution structure
- Some questions may still need to be answered concerning biodiesel and underground storage tanks (USTs)
- These and other issues are an area of interest that will need to be addressed as part of the fuels transportation infrastructure analysis



## Retail & Gaseous Fuel Issues

- Compressed and liquefied natural gas capacity and throughput issues
- Aging of natural gas fleet fueling equipment
- Availability of propane supplies
- Fuel quality standards for fuel cell hydrogen
- Hydrogen storage, metering, dispensing, and related regulatory issues



## Electric Recharging Issues

- The geographic distribution of electric-drive vehicles may vary considerably
- What consequences might this have for distribution infrastructure requirements?
- How will the large-scale introduction of plug-in hybrids and full electric vehicles affect recharging infrastructure?
- What is needed to ensure that incremental vehicle electricity demand occurs off-peak?
- Who should pay?



## Other Issues Impacting Retail Station Availability

- What is the current status of the Enhanced Vapor Recovery (EVR) regulation?
- What portion of stations have not yet complied and are these outlets being forced to shut down?
- Are there some strategies being developed to help resolve this issue without a potential loss of fuel supplies for certain communities?
- Are there additional retail station compliance requirements that could result in a reduced number of outlets over the near-to mid-term period?



## Renewable Vehicles & Retail Station Speakers

- Jeff Stephens - Propel Biofuels
- Gary Castro - CDFEA, Division of Measurement Standards
- Allan Morrison - CDFEA, Division of Measurement Standards
- Mike Eaves - Clean Energy Fuels
- Chelsea Sexton - Lightning Rod Foundation
- Robert Graham - Southern California Edison
- Michael Coates – Mightycomm on behalf of Daimler AG
- John Mough - CDFEA, Division of Measurement Standards
- Jay McKeeman - CA Independent Oil Marketers Association (CIOMA)