

Western States Petroleum Association

California Energy Commission Joint Integrated Energy Policy Report and Transportation Committee Workshop



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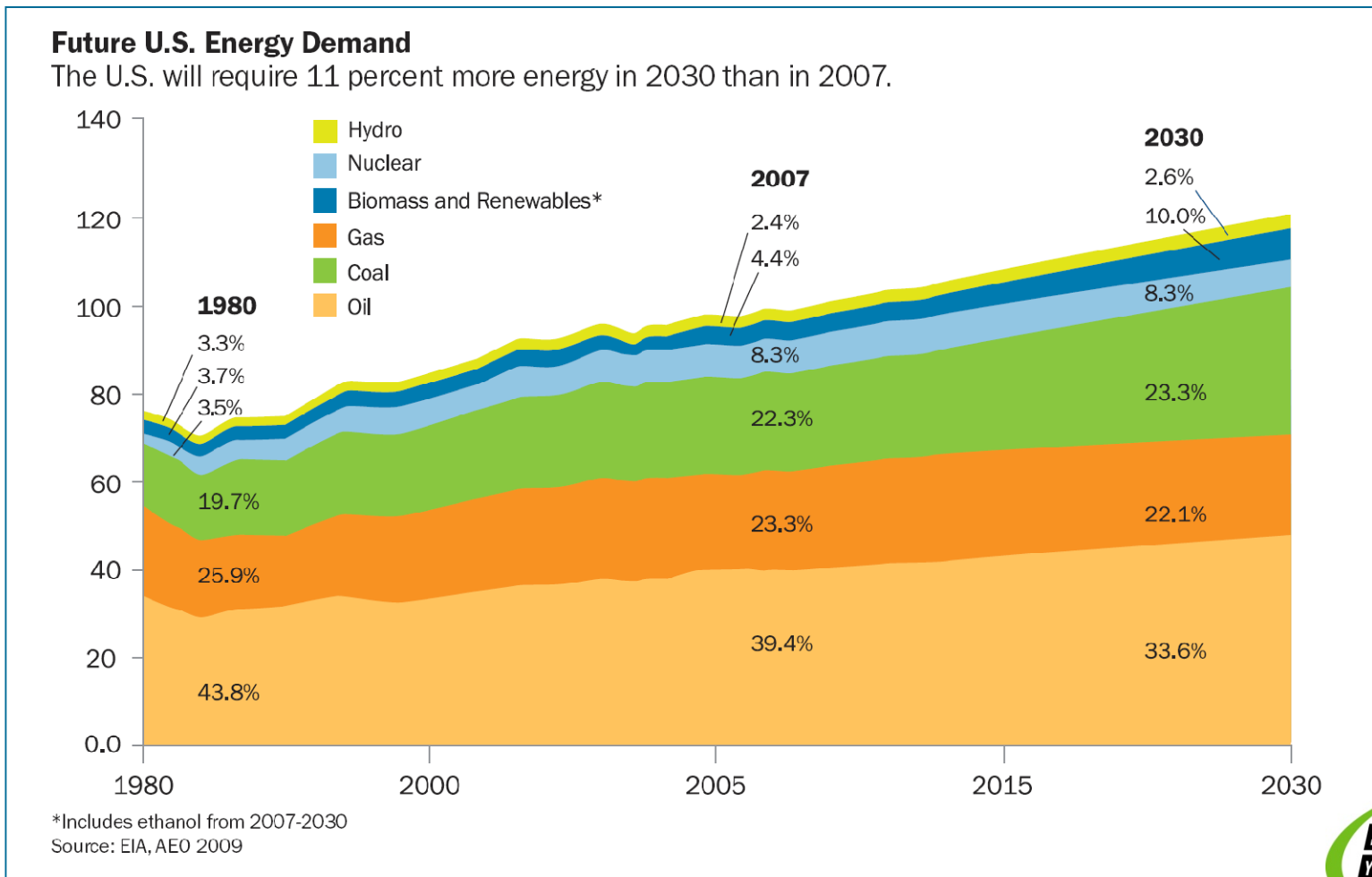
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Transportation Fuels Infrastructure Issues
Joe Sparano
Western States Petroleum Association
April 14, 2009

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Putting future energy demand into perspective



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Putting future energy demand into perspective

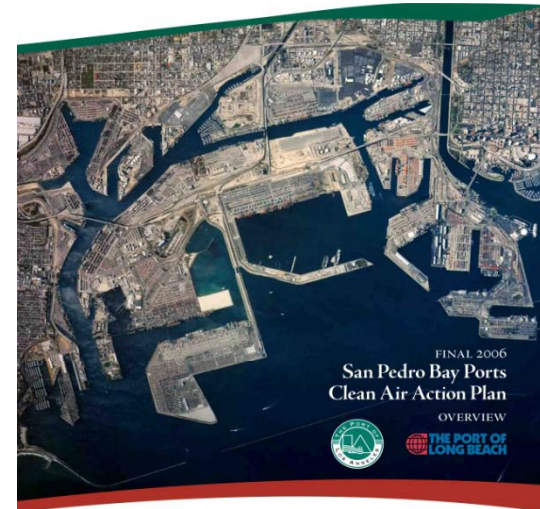
Consumption	2007		2030		% Change
	Quads	% Share	Quads	% Share	
Liquid Fuels and Other Petroleum	40.75	40.0%	41.56	36.7%	2.0%
Petroleum Derived Fuels	40.14	39.4%	38.11	33.6%	-5.1%
Ethanol and Biodiesel	0.61	0.6%	3.45	3.0%	465.6%
Natural Gas	23.70	23.3%	25.08	22.1%	5.8%
Coal	22.74	22.3%	26.41	23.3%	16.1%
Nuclear Power	8.41	8.3%	9.44	8.3%	12.2%
Hydropower	2.46	2.4%	2.97	2.6%	20.7%
Other Biomass and Renewables*	3.85	3.8%	7.9	7.0%	105.2%
Total	101.92	100.0%	113.35	100%	11.2%
Oil and Gas	64.45	63.2%	66.64	58.8%	3.4%
Oil, Gas and Coal	87.19	85.5%	93.05	82.1%	6.7%

*Other includes .23 quad Btu of non-biogenic municipal solid waste and net electricity imports. Also includes biodiesel, biomass and green liquids from liquid fuels and other petroleum.

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Infrastructure and transportation fuel supply

- Demand for transportation fuels has been outpacing supply
- Future energy needs will be addressed through imports
- California already dependent on waterborne deliveries; marine infrastructure is a critical chokepoint
- CEC indicates California petroleum infrastructure at capacity
- Local and regional congestion and air quality programs will influence future energy supplies
- Permitting issues also impact future energy infrastructure and supplies

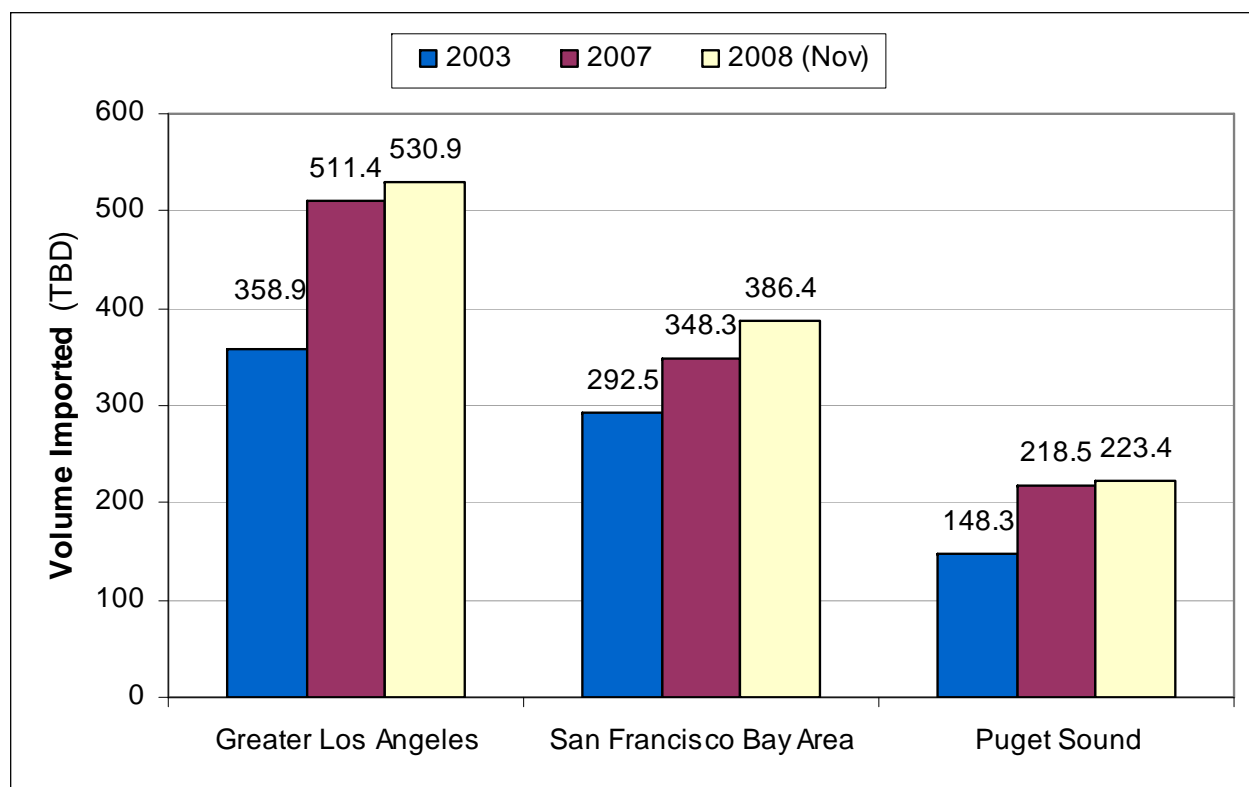


California Environmental Protection Agency
Air Resources Board
Prepared with the participation and cooperation of the staff of the US Environmental Protection Agency,
California Air Resources Board and the South Coast Air Quality Management District



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Marine deliveries of foreign crude increasing



Note: volumes do not include ANS marine deliveries to West Coast. In 2007 all ANS production was shipped to the U.S. West Coast except for volumes to meet Alaska finished product demand (estimated at about 120 TBD). ICF estimates about 600 TBD ANS supply in 2007 to California and Washington ports.

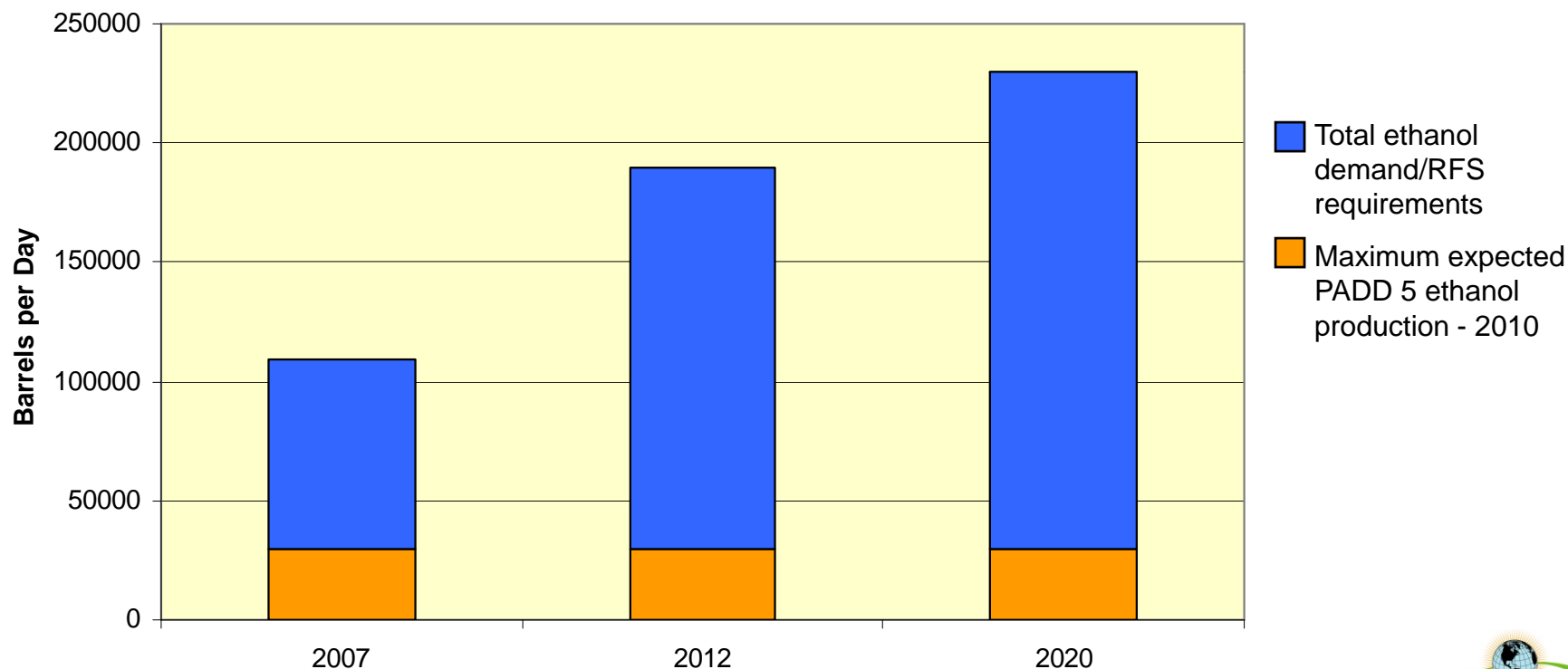
Source: ICF International, EIA AEO 2009



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Increased use of renewable & alternative fuels like ethanol requires major investments in new infrastructure

PADD 5 Ethanol Demand/Requirements



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The future will require multiple sources/strategies

- Despite recent drop in demand, U.S. needs to improve energy security by better utilizing domestic energy supplies
- We can develop energy safely and with environmental sensitivity
- We are addressing climate change; applying carbon capture and storage with enhanced oil recovery
- We must:
 - ✓ Add domestic supplies through greater access
 - ✓ Conserve energy and use it more efficiently
 - ✓ Develop alternative and renewable fuels and technologies
 - ✓ Address infrastructure constraints/backlog for conventional fuels
 - ✓ Invest now to accommodate growth in alternative fuels

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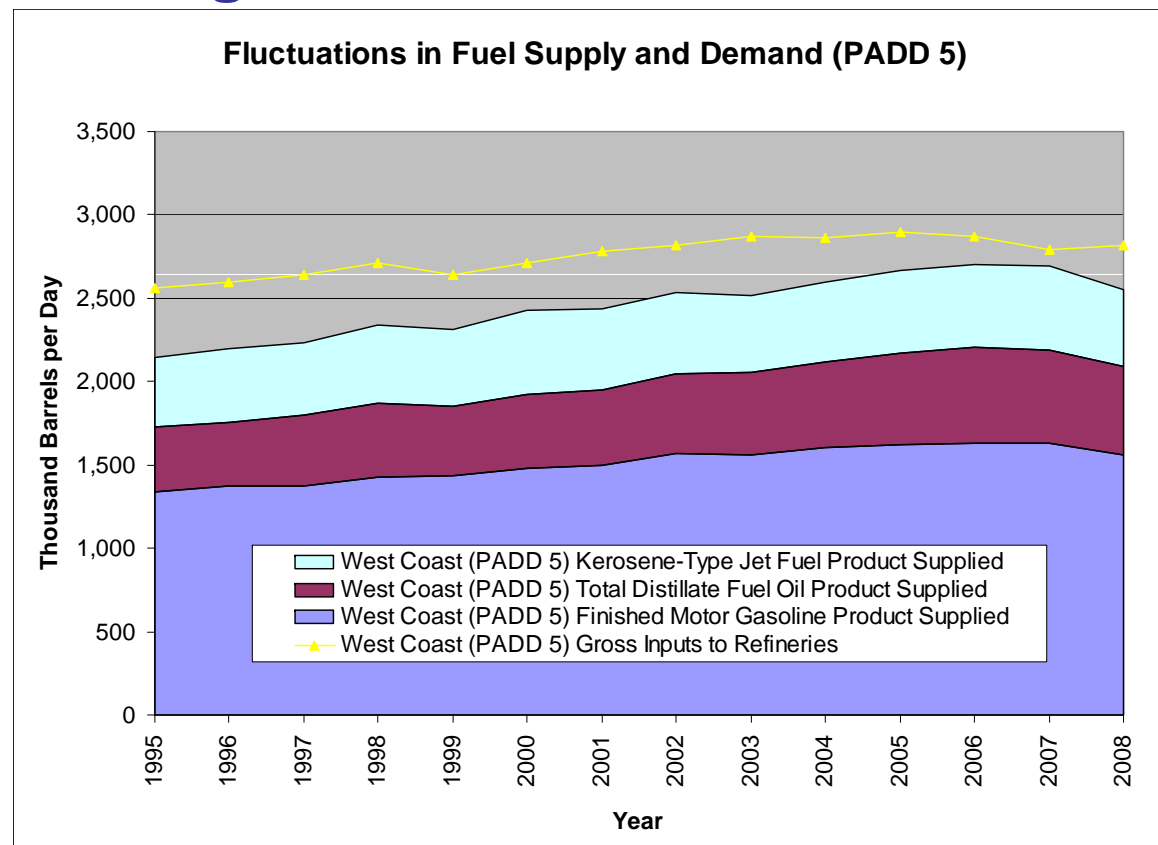


Outlook for PADD 5 Supply, Demand and Infrastructure Based on 2009 EIA Annual Energy Outlook

Study Performed for WSPA

April 6, 2009

Refinery Input Levels have been Stable in PADD 5 since 2003 as Gasoline and Distillate Demands Rose through 2007...

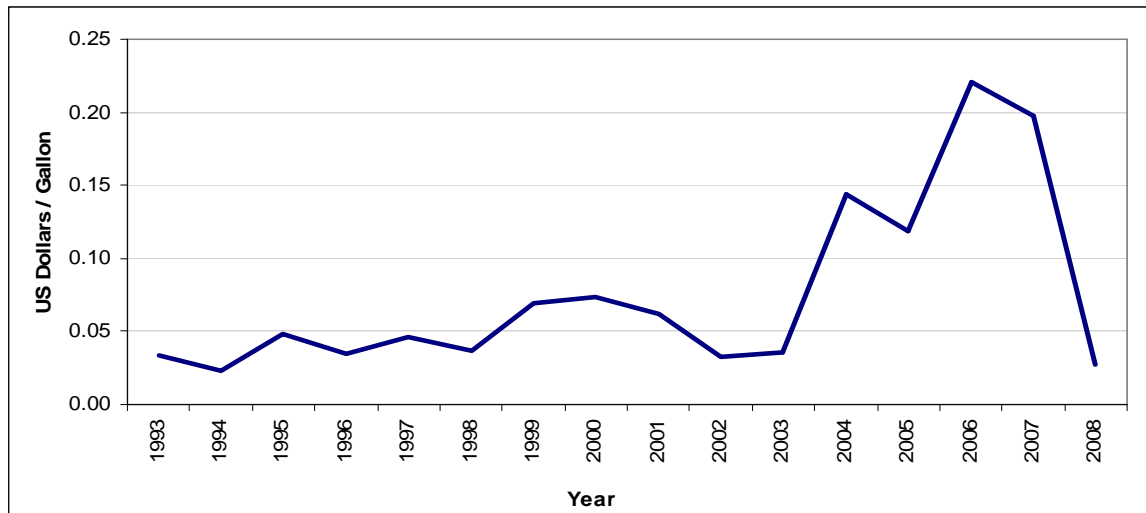
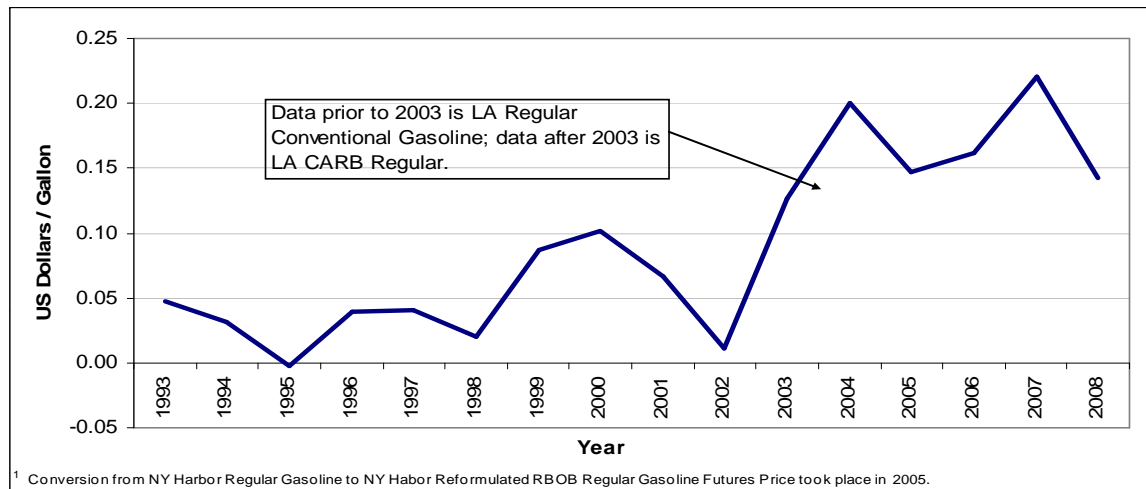


Source: EIA

- The narrowing “gap” between demand for products and refinery input, and product quality transitions, have put more stress on the supply-demand infrastructure.
- Demand increases of over 500 TBD (23%) occurred from 1995 to 2007 with virtually no change in PADD 5 infrastructure (terminal storage, pipelines, marine) and minimal refinery capacity growth.

- Higher prices and the recession have reduced total demand in 2008 by about 140 TBD clean products (5%)

These Trends Contribute Significantly to Higher Gasoline and Diesel Price Spreads vs. NYMEX over the Period



Source: EIA

- Changes in demand volumes and product quality requirements appear to have impacted PADD 5 markets
- The changes since 2003 are dramatic and have been sustained
- Collapse in diesel in 2008 stems from increased production & lower demands (stimulated diesel exports)

PADD 5 Dependence on Petroleum Imports Increases with AEO Assumptions

(TBD)

	Crude Oil	Motor Gasoline	Ethanol	Jet Fuel	Distillate Fuel	Residual Fuel	Total
Mode of Shipment							
Marine	1,023	107	3	115	34	35	1,317
Pipeline	126	135		6	28		295
Rail			69				69
2007 Non-PADD 5 Supply	1,149	242	72	121	62	35	1,681
2020 Non-PADD 5 Supply	1,478	35	170	108	67	71	1,929
2020 @ 1% higher demand	1,478	218	196	174	141	76	2,283

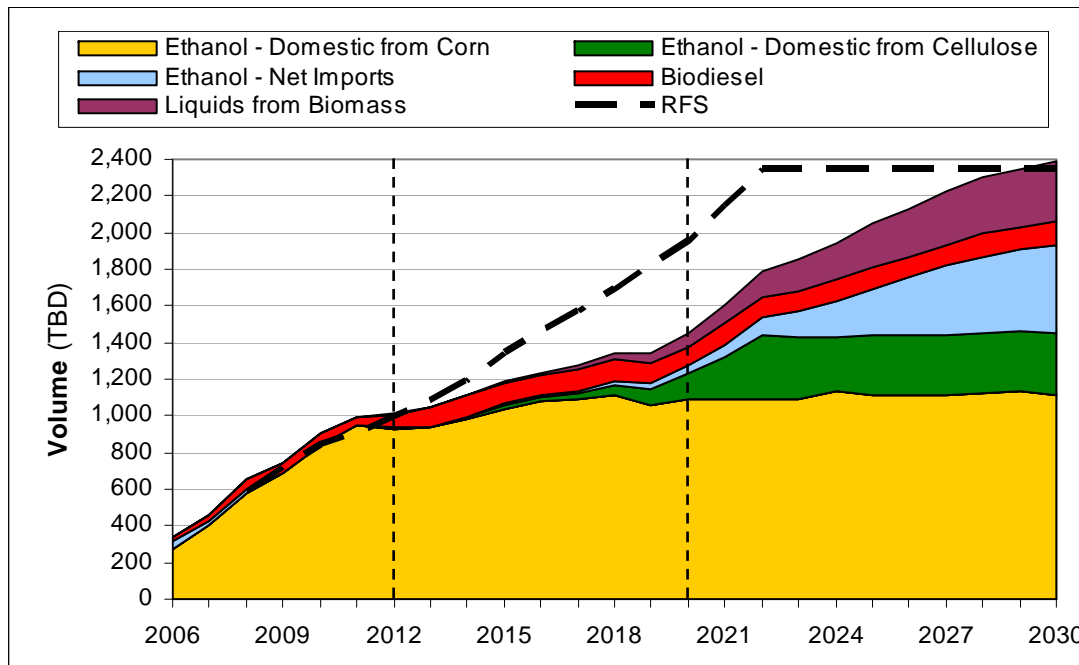
Source: EIA, ICF

- Refinery Utilization @90%; Ethanol averages 12.4% of total gasoline (incl E-85) supply; Gasoline and Jet demand growth flat to 2020; California crude production falls. No refinery capacity growth; 30 TBD PADD 5 Ethanol supply.
- PADD 5 states, in particular California, must be prepared to handle higher levels of ethanol transfers and imports, produce more in-region biofuel and other alternative supplies than forecast in this study, and deploy infrastructure to enable distribution of those products AND maintain/improve oil infrastructure.

Outlook Key Messages:

1. Movement toward decreased reliance on fossil fuels as evidenced in the 2009 AEO outlook and through additional emerging regulatory initiatives is likely to result in a shrinkage of the U.S. and PADD 5 refining industry (in fact this is an objective of the policies that have led to these initiatives).
2. The deployment of increased biofuels and alternative fuels (including electric/hybrid vehicles) in PADD 5 is highly contingent on a) development of new and more cost effective technologies to produce the alternative fuels; b) storage & distribution infrastructure; c) fueling infrastructure; d) vehicle technology & production and e) consumer investment in new vehicles & fuels. Failure to achieve *ANY* of these objectives will significantly jeopardize the required growth in petroleum alternatives. This may greatly increase the likelihood of fuel supply disruptions and price volatility as demands grow and refining capacity may not be available to meet the shortfall.
3. The multiple approaches to regulation (Federal, State, Regional, etc) has the potential to create significant distribution system conflicts in PADD 5 if regulations are not well coordinated and consistent. With the AEO forecast outlook indicating sustained requirements for product exogenous to PADD 5, policy inconsistencies in the region can exacerbate the supply situation during the transition to alternative fuel pathways.

AEO Forecasts that Biofuel Growth Lags the RFS through 2020



Source: EIA AEO 2009

- Cellulosic ethanol production is 30% of RFS cellulosic goal in 2012, and 20% in 2020 (See Appendix 2)
- Note that essentially all growth after 2022 is through ethanol imports and biomass liquids

The lag in second generation ethanol growth versus the RFS, and the flat production outlook for biodiesel reflect the fact that current technology and feedstock costs may not be adequate to accelerate supply of these commodities in the AEO timeframe (without new breakthroughs)

2020 Forecasted PADD 5 Product Balance

(TBD)

	Motor Gasoline	Jet Fuel	Distillate Fuel	Residual Fuel	Total
Supply					
Refinery Production	1,373	420	568	150	2,510
Imports		91	14	71	176
Net PADD Transfers	35	17	53		105
Ethanol / Biodiesel	200		14		213
Liquids from Biomass	5		6		11
Total Supply	1,612	528	655	221	3,016
<i>Non-PADD 5 Supply</i>	<i>13%</i>	<i>20%</i>	<i>10%</i>	<i>32%</i>	<i>15%</i>
Demand					
Consumption	1,609	512	622	178	2,921
Exports	4	15	33	43	95
Total Demand	1,612	528	655	221	3,016

Motor gasoline volumes include motor gasoline blending components.

Source: EIA