

CALIFORNIA ENERGY
COMMISSION

2005 GASOLINE PRICE MOVEMENTS IN CALIFORNIA

STAFF REPORT

NOVEMBER 2005
CEC-600-2005-035



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Table of Contents

Executive Summary	1
Recent Changes in California Gasoline Prices	3
Factors Influencing California Gasoline Prices	5
Government Agency Responses and Actions	5
Options for State Action.....	6
Introduction	8
Section 1: Fuel Price Changes in California.....	10
Section 2: U.S. Events Influencing Fuel Prices	16
Decreased Crude Oil Production from the Gulf of Mexico	16
Temporary Closure of Gulf Coast Refineries.....	19
Refining Capacity	20
Impacts in Other Regions	21
Section 3: Government Agency Responses, Impacts, and Ongoing Activities.....	22
International Agency Responses and Impacts.....	22
Federal Agency Responses and Impacts	23
Other States Responses and Impacts	24
California Agency Responses and Impacts	24
Section 4: Factors Influencing California Fuel Prices	25
NYMEX Futures Prices and the Link to California Market	26
California Refinery Operations.....	27
Imports and Exports	32
Consumer Demand for Gasoline	33
California and U.S. Retail Prices	34
Section 5: Staff Findings	37
Section 6: Options for State Action	38

Executive Summary

In the summer of 2005, the average retail gasoline price in California increased steadily from a low of \$2.33 per gallon on June 13 to an all-time high of \$3.06 on September 5.¹ A dramatic peak occurred at the end of August when the average price of gasoline jumped more than 28 cents in a single week. Prices also rose during this time period throughout the United States.

The recent rise in gasoline prices has placed a financial strain on many Californians. This report was prepared in response to concerns about possible price gouging and anti-competitive behavior in the petroleum industry in the wake of Hurricanes Katrina and Rita. This report addresses those concerns by providing data, analysis and findings. It also offers specific recommendations for possible state actions and future research activities to help protect consumers against potential future gasoline price spikes.

This report examines factors inside and outside of California that contributed to the recent run-up in prices. The factors examined include: the influence of Hurricanes Katrina and Rita on California fuel prices, crude oil prices, and the link between the New York Mercantile Exchange (NYMEX) and California wholesale prices; refinery and pipeline operations; availability of imports; and the role of interstate and overseas exports. In addition, details of changes in the components of California's supply and market from July through November are compared with historical information for the California market.

It is broadly recognized that diesel, jet fuel, and natural gas prices also increased. But the wholesale price increases for diesel and jet fuel during the Hurricane Katrina price spike were lesser in magnitude, compared to gasoline. For this reason, the report does not contain an associated analysis for diesel and jet fuel.

Hurricane Katrina hit land in Louisiana on August 29, 2005. The large number of oil rigs in its path resulted in a shutdown of 26 percent of the total U.S. crude oil production. Refinery and pipeline outages severely curtailed the supply and delivery of finished gasoline throughout many regions of the U.S. While refiners were restarting their facilities and crude oil production was resuming in the Gulf of Mexico, Hurricane Rita hit the Gulf Coast on September 24. The impact from this new storm exacerbated the tight supply situation for petroleum products in the United States.

The Energy Information Administration (EIA) states in the November 2005 Short-Term Energy Outlook, "Hurricane Katrina and Rita damaged, set adrift, or sunk 192 oil and natural gas drilling rigs and producing platforms, the most significant blow to the U.S. petroleum and natural gas industries in recent memory."² The EIA does not anticipate a recovery of this infrastructure until after the second quarter of 2006.

¹ Energy Information Administration weekly average California regular reformulated retail gasoline prices. http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/mogas_history.html

² Energy Information Administration/Short-Term Energy Outlook – November 2005, <http://www.eia.doe.gov/emeu/steo/pub/contents.html>

Refinery capacity, however, is expected to be fully restored by the end of February, 2006.

As a result of these natural disasters, gasoline prices rose throughout the country, including California. Because the California refining and pipeline infrastructure is relatively isolated from the rest of the U.S., more detailed analysis is needed to understand the connection between California gasoline prices and those in other regions of the U.S.

Our analysis of events leads to 10 findings:

- The inter-relationship between California wholesale prices and the NYMEX prices appears to be the primary driver for the recent price spike in California.
- Recent crude oil price changes did not significantly impact the retail price spike of gasoline in California during late August and early September.
- The temporary shortfall of supply created by Hurricane Katrina was an important factor responsible for the recent spike in California wholesale gasoline prices between August 29 and September 10.
- A 45 percent increase in pipeline exports of gasoline from California to Arizona and Nevada during the four weeks following Hurricane Katrina contributed to a tightening of the California market.
- California refinery production declined during the last week of August and the first two weeks of September. These declines were partially due to unplanned outages and decreased imports into the state. Inventories remained flat through this time period. For example, a power outage in Southern California on September 12, 2005, resulted in the shutdown of three refineries, which may have contributed to a temporary increase in wholesale prices from September 13 to September 15, 2005.
- Relatively rapid actions undertaken by international, federal, and state agencies, including the early switch to winter-blend gasoline formula, helped ease supply shortfalls of crude oil and refined petroleum products. These actions resulted in additional supply to augment the market and were largely responsible for a subsequent rapid decrease in wholesale prices throughout the United States, including California.
- Retail prices, especially for gasoline, are expected to continue declining if these wholesale price decreases are sustained and production capacity returns to normal operation.
- The recurrence of a strong hurricane landfall along the Gulf Coast would adversely impact crude oil, natural gas, and transportation fuel prices in a similar manner unless actions are taken to protect against it.

- Based on a review of all the information available to the Energy Commission, including the information gathered on its Web site, the Energy Commission found no evidence indicating a widespread or lengthy pattern of retail price increases significantly beyond the magnitude of wholesale price increases.

Recent Changes in California Gasoline Prices

Preliminary findings indicate that even though California refineries were not directly impacted by the passage of hurricanes in the Gulf Coast, the large temporary imbalance of fuel supply for the nation resulted in significant wholesale price increases throughout the United States. These rapid price increases led to an elevation in the value of gasoline contracts traded on the NYMEX.³ California wholesale (spot pipeline⁴) prices use the NYMEX futures contracts for gasoline as a type of “benchmark.” California’s wholesale prices increased in tandem with the NYMEX futures prices. The NYMEX future prices appear to have had the strongest influence on the recent price spike in California due to the strong correlation between NYMEX gasoline futures and California’s spot market. However, all factors relevant to the retail price of gasoline in California must be examined to gain a comprehensive view of the dynamics in place in the late summer of 2005.

The price of crude oil represents the first cost associated with the retail price of gasoline in the pass-through flow from input to refining to the distribution and sale of gasoline at the pump. California has three primary sources of crude oil. In 2004, 21.7 percent of California’s total yearly crude oil inputs came from the Alaska North Slope (ANS), 36.4 percent came from foreign imports, and 41.9 percent was obtained locally.

ANS is typically used as a benchmark for crude oil prices in California. A comparison of ANS crude oil prices with wholesale gasoline prices during late August and early September shows that the cost of crude oil did not comprise as large a portion of the total price of retail gasoline during this time period compared to the previous year. The ANS crude oil price on September 1, 2005, was 58 percent of the wholesale spot price. As a comparison, ANS crude oil comprised 72 percent of the wholesale cost of gasoline one year earlier.

A real or perceived loss of supply to the market can have an immediate and substantial impact on retail prices. Therefore, refinery production and inventories have been examined from July through September. California refinery production declined during the last week of August and the first two weeks of September. This was partially due to unplanned refinery outages and decreased imports into the state. Inventories, on the other hand, were relatively flat during this time period. Rapid declines in inventory relative to seasonal averages show a significant

³ The division of the New York Mercantile Exchange dealing in crude oil, gasoline, heating oil and platinum options and futures.

⁴ The spot pipeline price of gasoline is the price paid for the immediate delivery of high volumes of products (25,000 to 300,000 barrels).

correlation with price spikes. Production is not as well correlated. A decline in production seen in late July resulted from a fire in a major crude oil refinery unit. Another significant refinery outage occurred on August 24, 2005. While the refinery outage in late August may have influenced prices, production and inventory levels are not considered to be the primary factor of the gasoline price spike seen from August 23 to September 9, 2005.

Another factor influencing changes in the price of gasoline in California is the quantity of fuel imports into the state. Some cargoes of gasoline that would normally have been available for use in California were diverted to other destinations in the East and Southeast United States.

The export of products out of the state can produce tightness in the market in California. This, in turn, will influence gasoline prices. An examination of pipeline exports to Arizona and Nevada reveals a 45 percent increase in exports during the four weeks following the landfall of Hurricane Katrina. Marine, rail, and truck exports are more difficult to ascertain due to lack of data availability and delays in reporting.

A decline in retail gasoline prices began during the week of September 12, 2005. Actions taken by international, federal, and state agencies to augment crude oil supplies and facilitate imports and production preceded the decrease in the retail price of gasoline throughout the country, including California.

It should be noted that as the initial wholesale price spike was abating, a power outage in Southern California resulted in the temporary shutdown of three refineries. Their loss of production, mainly of gasoline, may have been a contributing factor to a resurgence of the wholesale (spot pipeline) prices between September 13 and 15, 2005. Resumption of normal production from these facilities, the early transition to winter-blend gasoline, and other actions taken by international, federal, and state agencies helped to minimize supply shortfalls of crude oil and finished petroleum products. These actions have coincided with a subsequent drop in wholesale gasoline (and retail) prices for California consumers. The decline in retail gasoline prices in California, however, was not as rapid as the national average.

Shortly following Hurricane Katrina's passage through the Southeast United States, instances of price gouging were reported by the media. In some cases, retail gasoline stations charged in excess of \$5 per gallon. Most of these incidents occurred in states closest to the impacted region of the country, but some reports of extremely high retail gasoline prices occurred at great distances from the Gulf Coast.

For California, the Energy Commission established a Web-based consumer complaint form to enable consumers to quickly report instances of extremely high retail fuel prices. That information was forwarded to the California Attorney General's Office, the agency with the legal authority to investigate and prosecute any cases involving price gouging. The California Attorney General's Office continues to review information regarding possible incidents of price-gouging related to individual retail stations in California.

Factors Influencing California Gasoline Prices

The petroleum industry infrastructure in California influences the retail price of gasoline in the state. In contrast to other regions in the U.S., California's refining and distribution system is relatively self-contained. California currently has 15 refineries that produce transportation fuels that meet the state's standards and 6 smaller refineries that produce diesel, jet fuel, and asphalt products.⁵ For much of the year, California refineries run at or near capacity levels. This is particularly true during the high-demand summer months. In addition, the pipelines in the state are used to export rather than import fuel. In 1997, California transitioned from a net exporter of finished product to a net importer. This increases California's dependence on and vulnerabilities to external markets.

Along with physical infrastructure influences, market structures also contribute to price changes and to price variability within the state. California has a large amount of vertical integration of markets, where refiners own and control most aspects of market delivery and sales of gasoline. In many parts of the U.S., particularly in the Midwest and the South, large volume "hypermarkets" have gained a significant market share of the retail sale of gasoline. These "hypermarkets" have thrived due to markets where the price of unbranded wholesale gasoline is typically lower than that of branded gasoline. Shortly following Hurricane Katrina, the price of unbranded wholesale gasoline rose by as much as 33 cents more than the branded wholesale price. Periods where the unbranded wholesale price is higher than the branded wholesale price are referred to as an inversion in the market. If prolonged and frequent inversions occur, high volume retailers could be driven out of business. The extent to which this contributes to elevated retail prices needs further investigation.

Government Agency Responses and Actions

Government agencies at the international, national, and state levels were quick to respond to the temporary petroleum supply problems resulting from Hurricane Katrina.

Actions taken to mitigate the temporary loss of crude oil, refinery production, and finished product distribution include:

- The International Energy Administration (IEA) authorized the release of nearly 60 million barrels of petroleum from inventory held by their 26 member countries (39 million barrels of crude oil, 11 million barrels of gasoline and 10 million barrels of distillates).

⁵ California Energy Commission, <http://www.energy.ca.gov/oil/refineries.html>

- The Bush Administration authorized the release of crude oil from the nation's Strategic Petroleum Reserve (SPR). On September 26, 64 million barrels had been authorized for release from IEA inventories and the SPR.
- The Bush Administration temporarily waived the Jones Act rules which limit marine traffic between U.S. ports to U.S. flagged ships.
- The U.S. Environmental Protection Agency (U.S. EPA) waived certain fuel specifications for all 50 states in an effort to quickly expand the availability of gasoline and diesel fuel.
- The California Air Resources Board (CARB) submitted a proposal to the California Office of Administrative Law (OAL) to transition early to winter gasoline blending. This proposal was approved by the OAL on September 12, 2005.
- The Energy Commission provided updates for the Governor's Office and the public through the weekly publication of the Petroleum Watch.
- The Energy Commission added fuel savings tips for consumers on the state Web site: "Flex your power at the pump."

While the wholesale price impacts associated with Hurricanes Katrina and Rita and the subsequent government agency responses are reflected in the various pricing charts provided in this report, the longer-lasting impacts on petroleum production in the Gulf of Mexico and refinery operations along the Gulf Coast have not been fully quantified. Significant crude oil production capacity remains off-line, and three refineries in the Gulf are not due to be on-line until early next year.

Options for State Action

Near- and long-term options to improve California's ability to respond to petroleum supply and price situations include:

- Continuing efforts to streamline permitting and expansion projects for the petroleum infrastructure.
- Implementing revisions to the Petroleum Industry Information Reporting Act to provide more detailed data on product movements, sales volumes, and prices.
- Establishing a public goods charge on refinery products to conduct research and activities to reduce our dependence on petroleum fuels

- Conducting a meeting with West Coast states' energy representatives to ensure that rapid and efficient steps are defined in the issuing of emergency waivers of fuel regulations.
- Investigating and making recommendations on increasing the use of contract fuel purchases for public agencies, private fleets, and consumers, to reduce the impact of fuel price spikes.
- Expanding outreach and public information programs at the Energy Commission.
- Working with the Board of Equalization to obtain more timely and detailed fuel demand data.
- Securing disaggregated retail price data to perform analysis of regional, zonal, and branding price differences in the state.
- Performing a comprehensive economic analysis on the relationship between California wholesale prices and the NYMEX.
- Developing a dynamic system model to analyze the socio-economic impacts of changes in the transportation fuel sector.

Introduction

Weekly average California retail gasoline prices increased 72 cents per gallon from mid-June to early September 2005. This price increase can be partially attributed to unplanned refinery outages and national events. A dramatic 29-cent increase in the retail price of gasoline occurred between August 29 and September 5, 2005. Since the price of crude oil remained relatively flat over this week, other factors are responsible for pushing California retail gasoline prices to record heights.

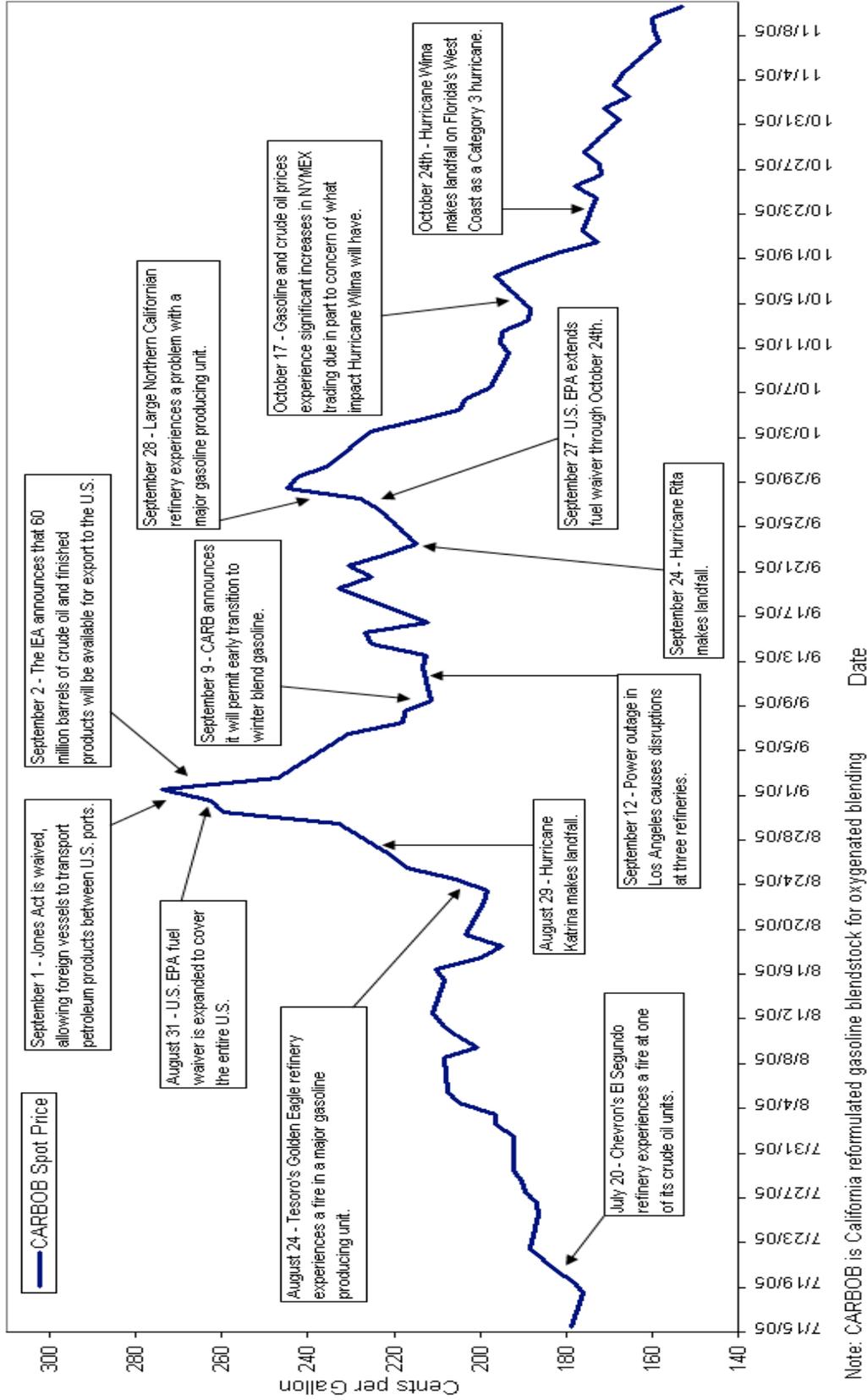
The most notable event that occurred during the summer of 2005 was the destruction and loss of crude oil and refining production in the Gulf Coast due to Hurricanes Katrina and Rita. Over 26 percent of crude oil production in the U.S., 1.4 million barrels per day, was initially curtailed due to Hurricane Katrina. As of November 9, 2005, two refineries remain off-line due to Hurricane Katrina. The landfall of Hurricane Rita on September 24 along the Texas-Louisiana border initially forced the closure of over 5 million barrels per day of refinery capacity, about 30 percent of U.S. capacity. As of November 9, one refinery remains offline due to Hurricane Rita. The total refinery capacity off-line as of November 9 was around 804,000 barrels per day, about 5 percent of the total U.S. refining capacity. These events had a profound impact on wholesale gasoline prices throughout the country. In addition, several refinery outages in the state may have contributed to price increases in California.

Figure 1 illustrates some of the major events that occurred since July 1 charted against California wholesale gasoline (CARBOB) prices.⁶ The sequence of events in **Figure 1** illustrates some contributing factors to recent gasoline price changes in the state. The most relevant factors influencing recent gasoline price changes in California include: crude oil prices, the link between NYMEX and California wholesale prices, refinery and pipeline operations, availability of imports, and interstate and overseas exports.

⁶ CARBOB, California reformulated gasoline blendstock for oxygenated blending, is the base gasoline used in the state that is blended with ethanol prior to being delivered to service stations.

Figure 1

**Events Affecting California Wholesale Gasoline Prices
(CARBOB Spot Prices)**

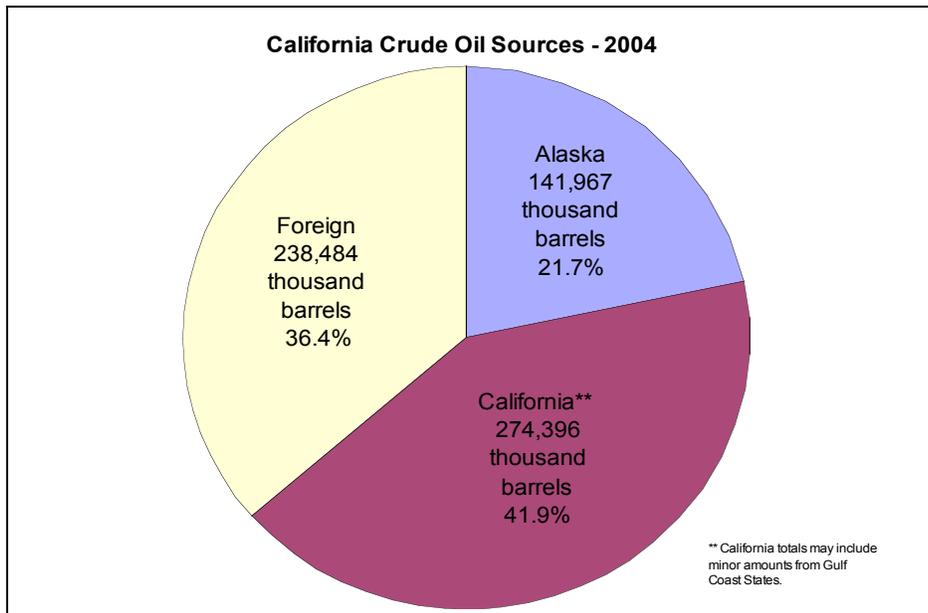


Source: Oil Price Information Service

Section 1: Fuel Price Changes in California

Crude oil is the first cost component of the retail price of gasoline. California has three primary sources of crude oil. In 2004, California imported 21.7 percent of total yearly crude inputs from the Alaska North Slope (ANS), imported 36.4 percent from foreign imports, and obtained 41.9 percent locally .

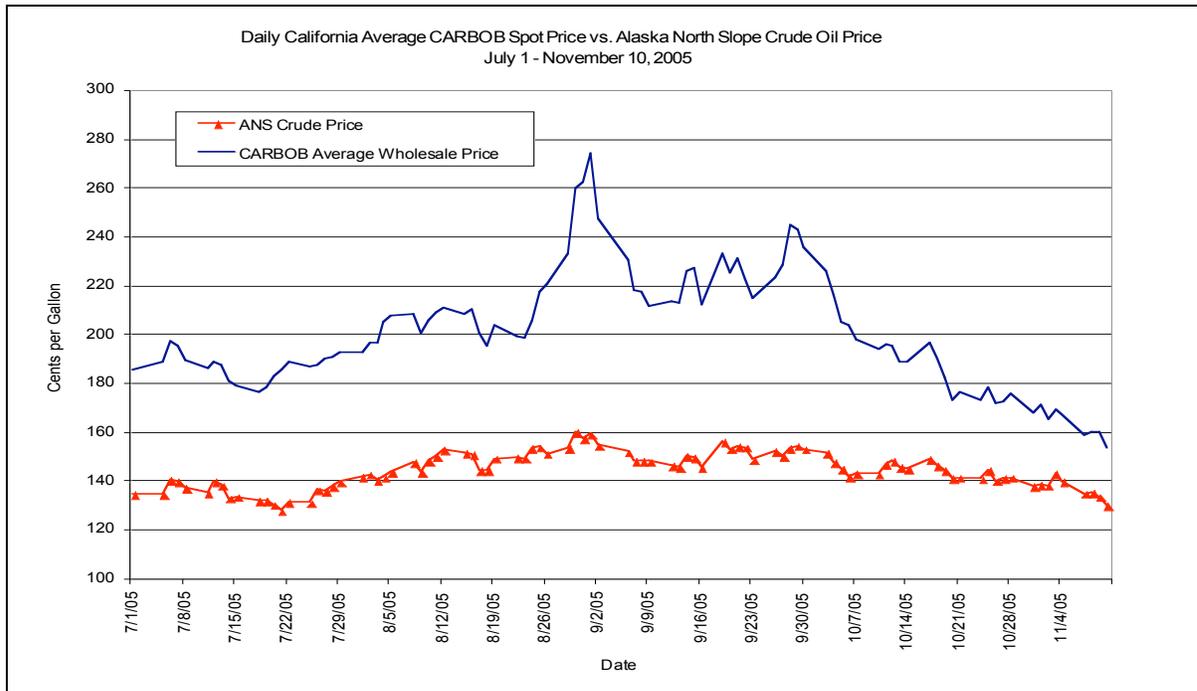
Figure 2



Although a large percentage of crude oil used in the production of transportation fuels in the state is produced in California, the market price of crude oil dictates the economics of production. The decision to refine or sell crude oil is dictated by the market price that oil producers would receive on world markets. Therefore, the ANS crude oil price is used as the benchmark for price analysis in this report.

Crude oil is typically the most significant component of the wholesale price of gasoline. **Figure 3** shows both ANS crude oil prices and the average daily spot price of CARBOB (California reformulated gasoline blendstock for oxygenated blending) from July to November 2005.

Figure 3



Source: Oil Price Information Service for CARBOB; Wall Street Journal for ANS

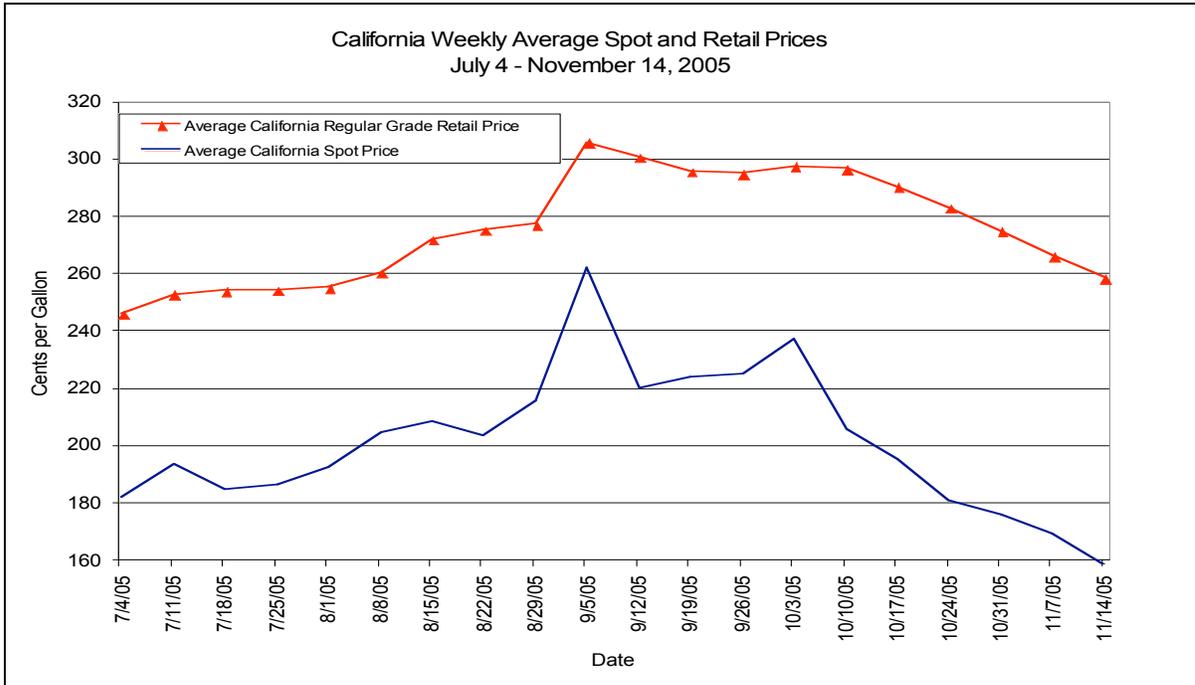
The difference between wholesale and crude oil prices gives an indication of refiner costs and profits. During the month of July, this difference in price was a relatively stable average of 52 cents per gallon. In August and early September, however, this price difference showed a rapid increase from 49 cents on August 23 to 115 cents on September 1.

The lack of correlation between crude oil and wholesale gasoline prices from August 23 to September 9 occurred during the period just prior to and two weeks following Hurricane Katrina.

The wholesale spot price shown in **Figure 3** represents the immediate high volume purchase price of gasoline on the market. The wholesale cost of gasoline for an individual retailer, however, typically depends on branding and contractual arrangements. The majority of gasoline sold in California is through branded retail outlets. Most of retail fueling stations operating in California are supplied by companies that are “vertically integrated,” with both upstream crude oil production activities and refining operations, and downstream retail operations. The distribution of gasoline to branded stations is directly controlled by the major refiners.

Figure 4 shows the weekly average California wholesale and retail prices from July 4 to November 14, 2005. Weekly wholesale prices were obtained from the daily values shown in **Figure 3**.

Figure 4

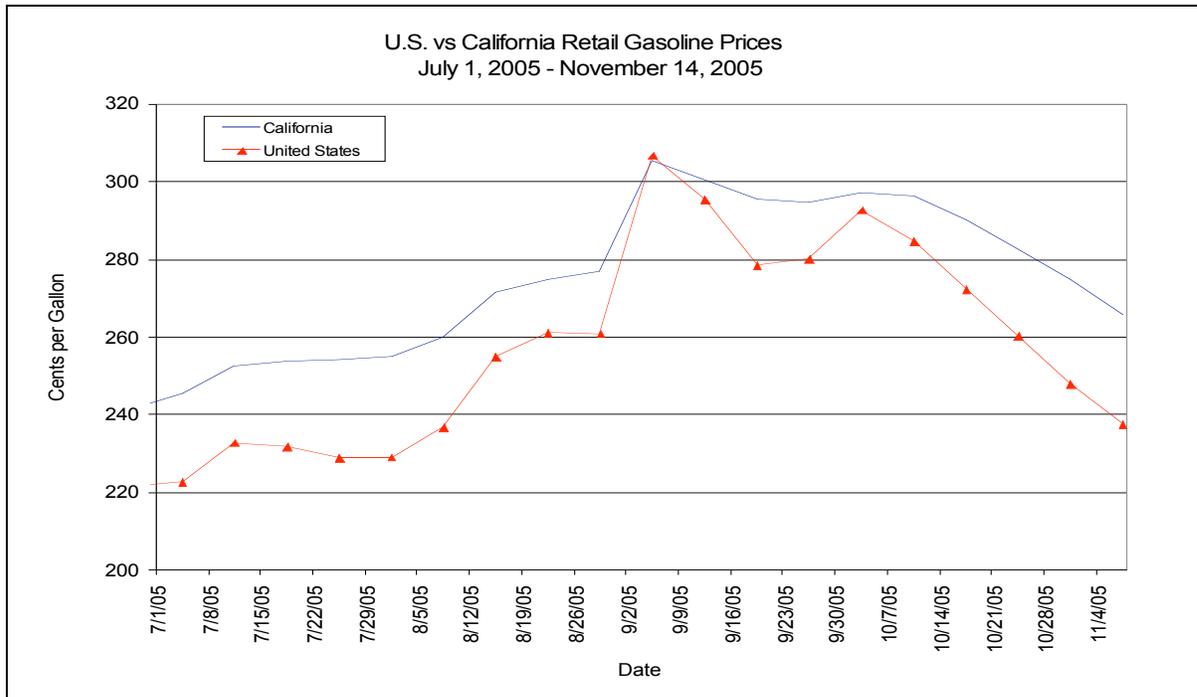


Source: Oil Price Information Service for CARBOB spot, Energy Information Administration for retail

The wholesale peak in prices from the weeks ending August 29 through September 12, 2005, resulted in a corresponding peak in retail prices. Retail prices, however, did not rise or fall as rapidly. The week ending September 5 saw an increase in the average weekly wholesale spot price of 46 cents, while retail prices rose by only 28 cents. Similarly, wholesale prices fell 42 cents per gallon while retail prices fell by only 4.5 cents per gallon during the week ending September 12, 2005.

Figure 5 shows the average weekly California and U.S. retail price from July 4 through November 14, 2005.

Figure 5



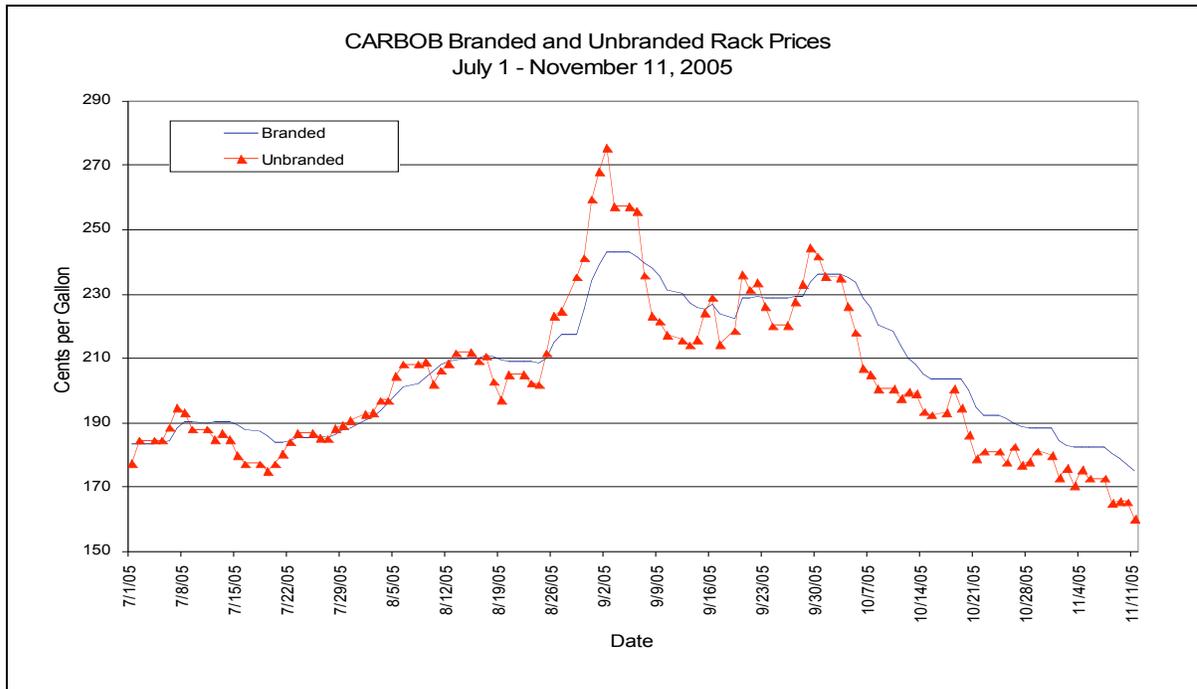
Source: Energy Information Administration

The rapid increase in California retail gasoline prices was in reaction to a wholesale price spike related to both the perceived and actual supply shortfalls created by the passage of Hurricane Katrina through the Southeast United States. For the week ending September 5, 2005, the weekly average U.S. gasoline price rose above that of California by 1.3 cents per gallon. The last time U.S retail gasoline prices exceeded the California average was June 2000. The retail gasoline prices in California, however, did not increase as rapidly as those of the U.S.

Figure 6 shows the average branded and unbranded rack prices.⁷ Historically, the unbranded rack price has, on average, been lower than the branded rack price. Time periods where the unbranded rack price is higher than the branded rack price is referred to as an inversion in the market. A significant inversion occurred from August 26 to September 7, 2005.

⁷ Rack price is the direct sale price from the terminal, or rack, by the truck load (around 8000 gallons).

Figure 6



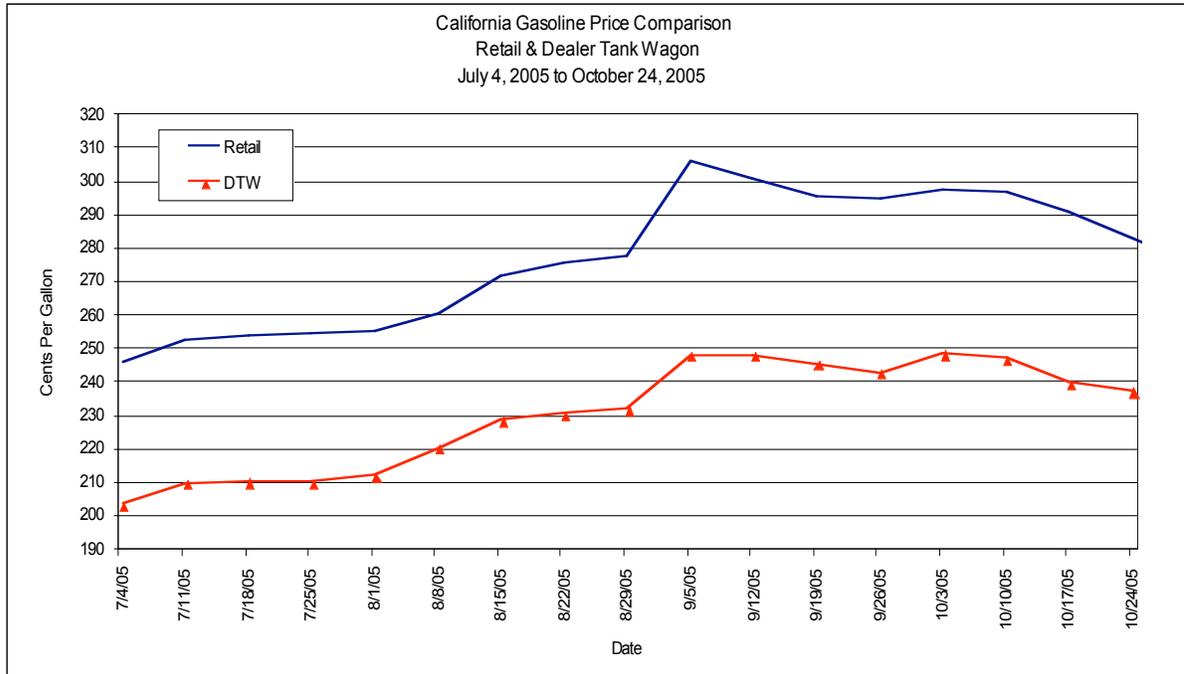
Source: Oil Price Information Service

Inversions usually coincide with tight market conditions. When production shortfalls occur due to unplanned refinery maintenance, the unbranded market is typically the first to experience wholesale price increases. Refiners try to maintain supplies to their own branded stations with supply contracts, leading to a reduction of supply available to the unbranded market. When the unbranded supply is constrained, unbranded retailers are forced to seek alternative sources. Branded retailers may also be given other incentives (volume discounts, temporary voluntary allowances⁸, signage upgrades, and other non-fuel discounts) to make up for the higher wholesale price being charged. For the unbranded retailer, there is no possibility for this type of cross subsidy unless they enter into a contractual arrangement with a major producer. This places a financial strain on high volume retailers and independent stations that rely on the unbranded market. A more extensive study of branded and unbranded retail prices is needed to more accurately quantify these marketing relationships.

The wholesale price of gasoline delivered to service stations is referred to as “dealer tank wagon.” **Figure 7** depicts the strong correlation between the average dealer tank wagon wholesale gasoline price in California and the average retail price during the initial price spike associated with Hurricane Katrina. Note that November dealer tank wagon prices are not yet available.

Figure 7

⁸ A temporary voluntary allowance (TVA) is a short-term rack discount given to branded retailers that can be rescinded at the discretion of the seller. www.opisnet.com.



Sources: California Energy Commission – PIIRA Data for DTW Prices and Energy Information Administration for Retail Prices

The degree to which vertical integration influences prices within the state is difficult to assess. Recent studies of the influence of vertical integration on price vary significantly. A 2003 report concluded that vertically integrated stations posted retail prices 5 to 15 cents per gallon lower than independent or leased stations, with all other factors being the same.⁹ Two other studies of West Coast markets reported elevated prices in vertically integrated stations.¹⁰

The rapid increase in California retail gasoline prices was due in part to a reaction to a wholesale price spike related to both the perceived and actual supply shortfalls created by the passages of both Hurricane Katrina and Rita through the Southeast United States.

⁹ “Gasoline Price Changes: The Dynamic of Supply, Demand, and Competition,” Federal Trade Commission, 2005.

¹⁰ Ibid.

Section 2: U.S. Events Influencing Fuel Prices

Various factors played a role in this recent U.S. price spike:

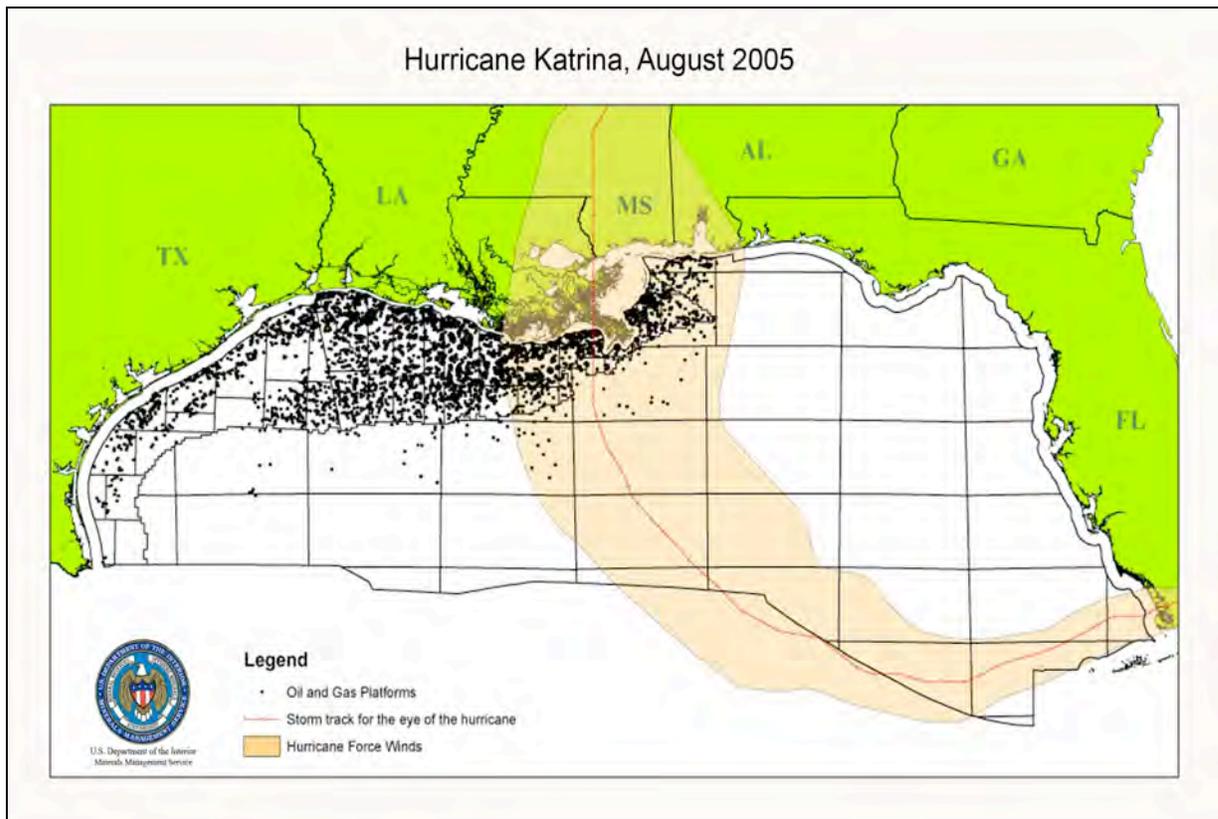
- Decreased crude oil production from the Gulf of Mexico
- Pipeline closures serving Gulf Coast and inland refineries
- Temporary closure of Gulf Coast refineries

These U.S. events were examined to better understand how they may have contributed to the higher retail fuel prices in California.

Decreased Crude Oil Production from the Gulf of Mexico

Hurricane Katrina made landfall in Louisiana on August 29, 2005. **Figure 8** illustrates the path of Hurricane Katrina and the extent of the hurricane-force winds through the zone of off-shore oil and natural gas-producing rigs and platforms.

Figure 8

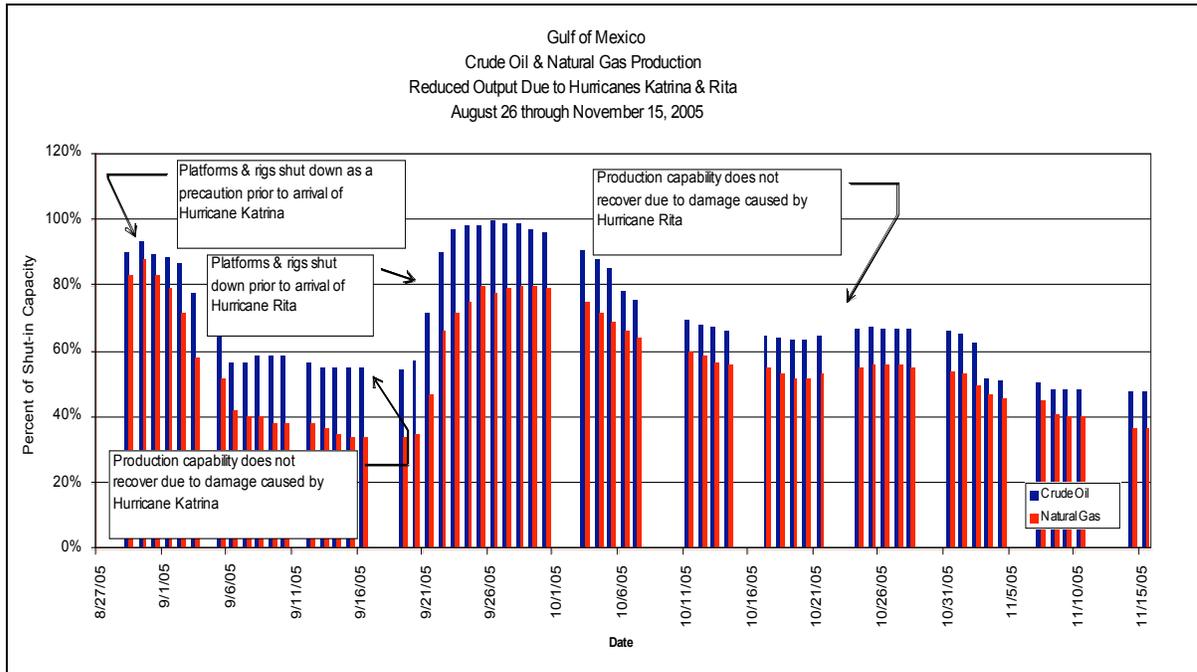


Source: U.S. Department of the Interior, Minerals Management Service

Due to the large number of oil rigs in its path, about 1.4 million barrels per day of crude oil production and 8.8 billion cubic feet per day of natural gas production were curtailed. The Gulf of Mexico was initially impacted by the passage of the hurricane when off-shore rigs and platforms were closed down in a precautionary move. **Figure 9** illustrates the amount of crude oil and natural gas production that was inaccessible two weeks after the passage of Hurricane Katrina: 56 percent of crude oil production and 34 percent of natural gas production in the Gulf of Mexico remained shut-in because some floating rigs were lost and off-shore platforms damaged (such as the Diamond Offshore Drilling Ocean Warwick rig, pictured to the right, and the Mars TLP off-shore platform operated by Shell, pictured on the following page, Mineral Management Service, 2005).



Figure 9



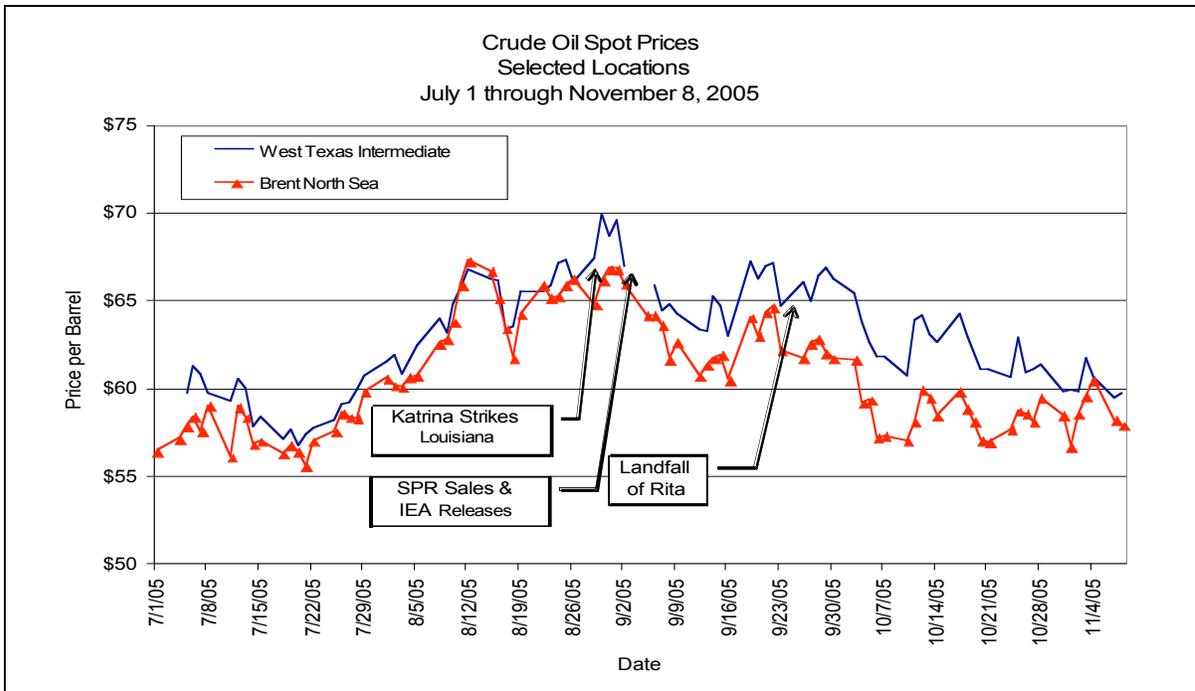
Source: Mineral Management Service, U.S. Department of the Interior



At the height of the shut-in, the loss of 1.4 million barrels per day of crude oil represented 26 percent of the total U.S. crude oil production. Just as the oil and natural gas producers in the Gulf of Mexico were recovering from the damage caused by Hurricane Katrina, another major storm (Hurricane Rita) swept through the Gulf of Mexico destroying and damaging additional off-shore platforms. On a cumulative basis, nearly 83 million barrels of crude oil production has been lost between August 29 and November 10, 2005. Although these losses are significant, the reaction in the crude oil market was

subdued by quick actions taken by International Energy Administration and the Bush administration to provide alternative sources of crude oil to mitigate the decreased output from the Gulf of Mexico. **Figure 10** shows that crude oil prices since the beginning of July spiked briefly. Therefore, it is unlikely that crude oil price increases associated with Hurricane Katrina were an important factor responsible for California's recent gasoline price spike.

Figure 10

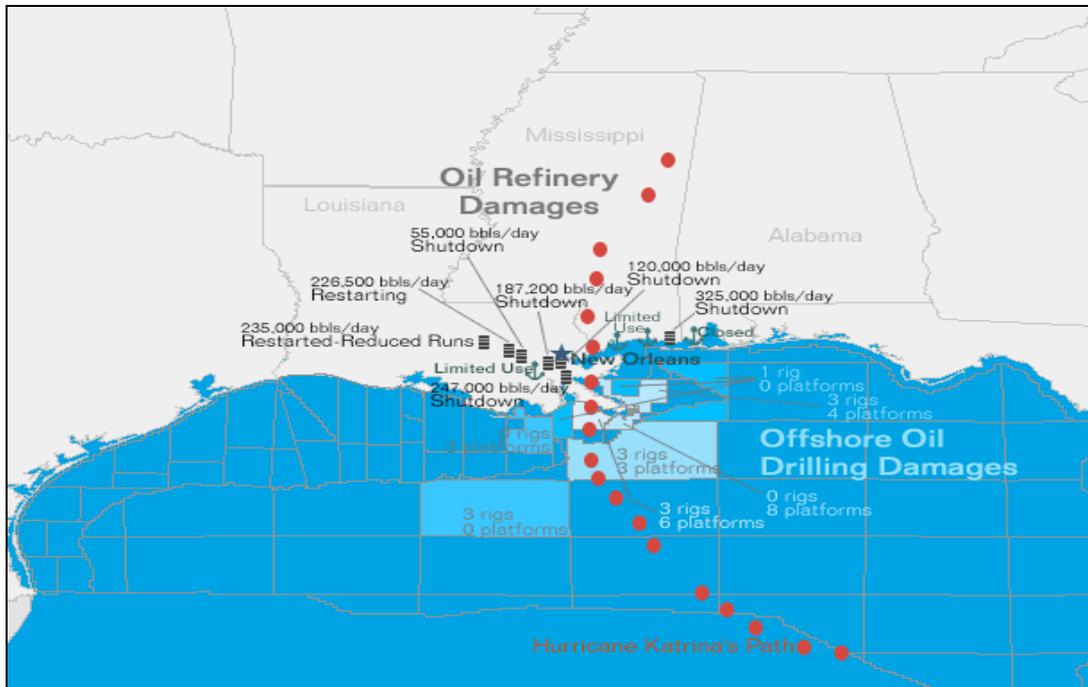


Source: Energy Information Administration

Temporary Closure of Gulf Coast Refineries

As was the case for the off-shore crude oil and natural gas production platforms, refiners implemented precautionary shut-downs to limit subsequent damage to refining assets along the Gulf Coast. **Figure 11** shows the path of Hurricane Katrina and the various refineries directly impacted by the storm.

Figure 11



Source: U.S. Department of Energy, Energy Information Administration

Refining Capacity

After Hurricane Katrina's passage, nearly 4.8 million barrels per day of refining capacity¹¹ was either off-line or operating at reduced rates. This amounts to roughly 28 percent of the refining capacity in the United States. The restoration of electrical power, resumption of crude oil pipeline operations and the return to service of the Colonial and Plantation refined product pipelines enabled most of these refineries to resume near-normal operations within two weeks. By September 15, all but five refineries had resumed operations, leaving only 5 percent of U.S. refining capacity still off-line due to damage caused by Hurricane Katrina. As of November 9, two of the five refineries are still offline. (Photo depicts flooding at Chevron's refinery in Pascagoula, Mississippi, The Associated Press, J.D. Mercer, 8/31/05.)



¹¹ "Capacity" refers to the total volume of crude oil a refinery can input or the total volume of petroleum product a refinery can process for a given period of time.

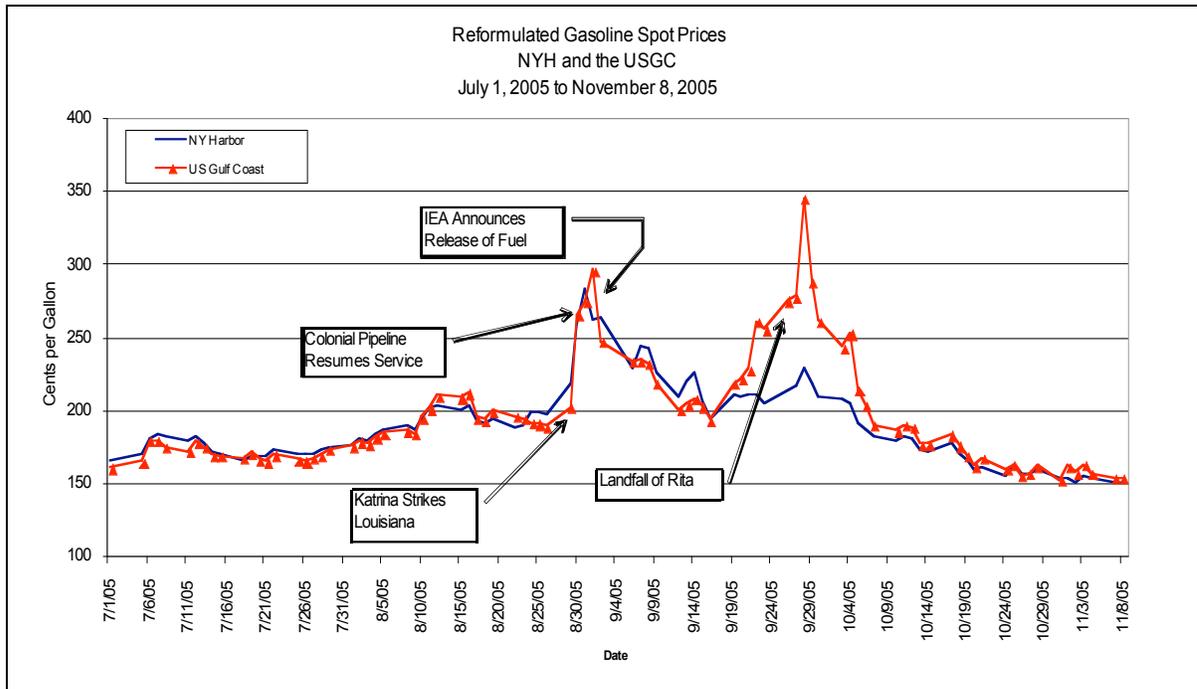
The damage caused by Hurricane Rita on September 24 initially resulted in the temporary closure of 5.0 million barrels per day of U.S. refining capacity. As of November 9, the total refinery capacity off-line from both Hurricane Katrina and Rita was around 804,000 barrels per day, representing nearly 5 percent of the total U.S. refining capacity.

Impacts in Other Regions

Hurricane Katrina forced the temporary closure of crude oil marine terminals and pipelines in the Gulf. One of these pipelines, referred to as the Capline, is an important source of crude oil for refineries along the Mississippi River and the Ohio Valley. In reaction to the Capline closure, refiners cut back output to pace the inventory of crude oil they had on hand. These reduced refinery production runs prompted increased purchases of gasoline and diesel fuel inventory, which contributed to significant increases in the spot price of gasoline in Chicago. This is an example of the indirect impact that Hurricane Katrina had on refinery operations far outside the region damaged by the storm. Partial resumption of service by the Capline crude oil and Colonial refined products pipelines on September 1 helped to ease supply pressures leading to a drop in the Chicago spot gasoline price.

The loss of electrical power and refinery shut downs in the Gulf Coast resulted in temporary closure of two important pipelines that are used to transport gasoline and diesel fuel to the upper Midwest, Southeast, and Northeast states. Refiners and other major marketers increased purchases of refined petroleum products in the Gulf Coast to help offset the temporary closure of refineries. At the same time, additional purchases of spot gasoline were occurring in New York Harbor. This is due to the fact that the surrounding region receives an important amount of its gasoline and diesel fuel from the Colonial Pipeline. Refiners and other marketers that use this pipeline to send fuel to the Northeast U.S. knew that the line would be temporarily closed. To help ensure adequate supplies to meet most of their near-term contractual obligations, these companies increased their purchases at the end of the pipeline. **Figure 12** shows the changes in spot prices in the U.S. Gulf Coast (USGC) and New York Harbor (NYH) locations. Once again, the supply and price impacts from Hurricane Katrina were far-reaching.

Figure 12



Source: Energy Information Administration

As can be seen in **Figure 12**, the impacts of Hurricane Rita manifested themselves in the Gulf Coast as prices diverged significantly from the spot prices in New York Harbor. Unlike Hurricane Katrina, the pipelines supplying the Southeast and Northeast U.S. were far less impacted by the landfall of Hurricane Rita.

Section 3: Government Agency Responses, Impacts, and Ongoing Activities

Government agencies at the international, national, and state levels were quick to respond to the temporary petroleum supply problems resulting from Hurricanes Katrina and Rita. This report does not include any analysis of government agency or utility responses to electrical outages, but recognizes that the loss of power did have an impact on pipeline and refinery operations.

International Agency Responses and Impacts

The IEA has 26 countries represented as members. The agency provides, among other things, coordination in the event of an oil supply emergency. The IEA member countries hold approximately 4.1 billion barrels in petroleum stocks (a combination of both crude oil and refined petroleum products). On September 2, 2005, the IEA authorized release of nearly 2.1 million barrels per day of crude oil and refined petroleum products for an initial period of 30 days. The average daily breakdown

was 1.3 million barrels per day of crude oil, 369 thousand barrels per day (TBD) of gasoline, 276 TBD of distillate, and 38 TBD of heating oil.

On September 15, 2005, the IEA decided to continue their releases for another 15 days. This is fortunate in light of the additional crude oil production and refinery capacity that had been temporarily shut down along the Gulf Coast due to Hurricane Rita.

On October 20, the IEA extended its offer of up to 60 million barrels of crude oil. This offer has not yet been taken up but will remain available on the market.¹²

Federal Agency Responses and Impacts

In the wake of Hurricane Katrina, the federal government took action designed to mitigate the supply impacts for transportation fuels. These actions included temporary waivers for fuel specifications and marine shipping rules, and authorizing the use of crude oil from the strategic petroleum reserve.

On August 31, to alleviate possible fuel shortages across the country and to help meet emergency demand, the U.S. EPA granted a nationwide fuel waiver to allow refiners, importers, distributors, carriers and retail outlets to supply gasoline and diesel fuels that do not meet summer standards for emissions. The original temporary waiver was in effect through September 15. U.S. EPA issued three subsequent 20-day waivers valid through October 31, 2005, the last day of California's summer driving season.

In response to the shortage in crude oil, President Bush authorized release of 30 million barrels of crude oil from the Strategic Petroleum Reserve (SPR) for sale or loan to refiners. As of October 24, the U.S. Department of Energy has delivered 9.5 of 10.8 million barrels of crude oil under loan arrangements. An additional 11 million barrels have been awarded to five companies under an on-line competitive sale process.¹³ The quantity of crude oil authorized for release in conjunction with the nearly 40 million barrels of crude oil authorized for release from the IEA inventories does not appear to be of sufficient quantity to offset the loss of production from the Gulf of Mexico (totaling 83 million barrels as of November 10, 2005). These actions, however, have been instrumental in mitigating crude oil price impacts.

President Bush also temporarily waived the Jones Act rules, which limit marine traffic between U.S. ports to U.S. flagged ships, due to disruptions in pipeline and maritime transportation of fuels caused by Hurricane Katrina. The initial waiver would have expired on September 19, but was extended to October 24. The Jones Act waiver allows foreign vessels to be used to help shuttle petroleum products to locations along the Eastern Seaboard that were unable to receive their normal pipeline deliveries from the Colonial and Plantation pipelines. The Energy

¹² International Energy Agency, http://www.iea.org/Textbase/press/pressdetail.asp?PRESS_REL_ID=162

¹³ Department of Energy, http://www.fossil.energy.gov/news/techlines/2005/tl_spr_update_102405.html

Commission does not have data on the effect the Jones Act waiver may have provided consumers on the East Coast.

Other States Responses and Impacts

A number of states have regulations governing fuel formulations that are specific to their state. These states (including California, Arizona, Nevada, and Oregon) were required to undertake various procedural actions before the U.S. EPA waiver could go into effect in their individual jurisdictions. The states each completed their procedural actions to allow the early transition of winter gasoline blending. Arizona, Nevada, and Oregon completed their procedural actions almost immediately after Katrina (California's procedural actions were completed shortly thereafter). As a result, some California refiners were able to shift to winter gasoline, expanding their output of gasoline for export.

California Agency Responses and Impacts

California Air Resources Board. The California Air Resources Board (CARB) conducted an Emergency Hearing on September 8, 2005, to take comment on their proposal to transition early to winter gasoline blending. The CARB proposal was submitted to the California Office of Administrative Law (OAL) on September 9 and approved on September 12, 2005. The Energy Commission analyzed current refinery production and inventory data and provided expert testimony on the potential supply impacts associated with Hurricane Katrina. The Energy Commission also quantified the benefits of an early transition to winter gasoline blending for the state.¹⁴

The early transition to winter gasoline blending that was accomplished through regulatory actions undertaken by the U.S. EPA and the CARB was instrumental in mitigating the supply impacts resulting from the decreased availability of gasoline imports. It also may have influenced production. Over the five weeks from mid-September to mid-October, statewide production was up almost 10 percent from the same period in 2004. There were only two days in which the ozone standard was exceeded. This is fewer days than has been seen in previous years with similar weather patterns.

California Department of Food and Agriculture, Division of Measurement Standards (DMS). Concurrently with the emergency rulemaking at CARB, DMS proposed an emergency amendment to the gasoline Reid Vapor Pressure (RVP) and Vapor Lock Protection Class Vapor/Liquid Ratio (V/L Ratio) standards for

¹⁴ The Energy Commission routinely collects weekly, monthly, and annual information from the petroleum industry. This data is aggregated and published in a number of reports and analysis of this information is used to respond to internal or external events that result in temporary supply imbalances.

gasoline through October 31, 2005. This emergency rulemaking was also approved by the OAL on September 12, 2005.

California Attorney General. On September 2, 2005, the California Attorney General launched an investigation into possible illegal profiteering by gasoline retailers and oil companies in the wake of Hurricane Katrina, announcing he would subpoena records from refiners and probe the pricing practices of gasoline station owners. The Attorney General also established a special website where consumers, oil company employees, gasoline station employees and others can submit information and/or documents about gouging and suspected unlawful conduct.

California Energy Commission. As a result of the impact of Hurricanes Katrina and Rita on price and supply of transportation fuels, the Energy Commission is publishing a weekly "Petroleum Watch" summarizing petroleum supply and price information for the U.S. and California and highlighting significant events. These assessments provide critical information that is designed to prevent panic buying caused by rumors and inaccurate data.

In addition, the Energy Commission provides gasoline conservation tips for consumers on the Energy Commission's Web page (www.energy.ca.gov) to help reduce gasoline demand and partially mitigate the economic burden created by price spikes.

In the days after Hurricane Katrina hit land, instances of price gouging were reported by the media, in some cases service stations charging in excess of \$5 per gallon for gasoline. The Energy Commission established a Web-based consumer complaint form to enable consumers to quickly report instances of extremely high retail fuel prices. The information is passed along to representatives of the California Attorney General's Office, which has the legal authority to investigate and prosecute any cases involving price gouging. Their investigation is ongoing. Note that the complaint Web site has been moved to the Attorney General's Office Web site (caag.state.ca.us). The Energy Commission maintains a link to the site.

Last, the Energy Commission maintains a confidential database of proprietary refinery and industry data acquired through the Petroleum Industry Information Reporting Act. The Energy Commission uses this database to assess and accurately respond to near-term supply constraints.

Section 4: Factors Influencing California Fuel Prices

Within the same period that the U.S. was experiencing the effects of Hurricane Katrina, other factors within California also influenced fuel prices. These factors include:

- Increased NYMEX futures prices and the link to the California market
- California refinery operations
- Imports and exports
- Consumer demand for gasoline

Retail dealer's apparent cost and profit margin and taxes comprise the remainder of the cost of gasoline at the pump. Recent California and U.S retail prices will be presented along with a monthly breakdown of retail cost components.

NYMEX Futures Prices and the Link to California Market

Wholesale purchases (25,000-barrel minimum) of transportation fuels by refiners and other marketers in California are referred to as spot pipeline transactions. Two major common carrier refined product pipeline systems serve California. Both systems are operated by the Kinder Morgan Pipeline Company, but they are not physically linked. One originates in the Los Angeles Basin, and the other originates in the San Francisco Bay Area. Daily estimates of transactions are quoted by various trade publications and petroleum price monitoring organizations. The Energy Commission subscribes to the Oil Price Information Service (OPIS) which posts spot prices for Los Angeles (LA) and the San Francisco Bay Area (SF).

Spot prices for transportation fuels are posted five days a week. A final price range for California is calculated by adding the premium being paid by refiners and other marketers each day relative to specific benchmarks (unleaded gasoline or heating oil futures contract values) posted by the NYMEX at the close of the market each day. The premiums paid relative to NYMEX futures contracts indicate the relative scarcity or abundance of supply in California's market at the time of the transaction. Marketers are willing to pay a higher premium if supply in the California market is perceived to be limited. Conversely, declining premiums are paid relative to the NYMEX if supplies appear to be higher than normal. **Figure 13** illustrates how a rapid increase in the NYMEX can lift California's spot prices.

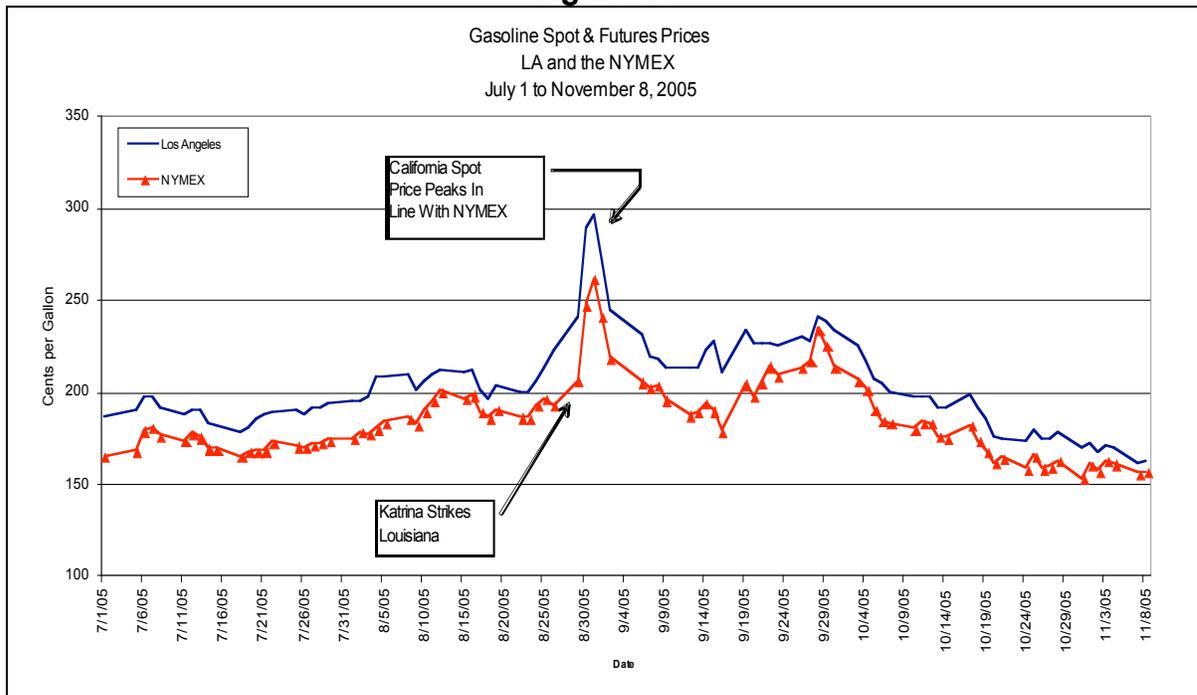
Refiners and other marketers in California use the NYMEX as a benchmark relative to some premium, instead of an absolute price, because these companies enter into other financial arrangements (referred to as hedging transactions) that allow some increased protection from price volatility in the petroleum market.

The NYMEX is also used as a benchmark for New York Harbor and the Gulf Coast. Using a single benchmark for transactions in California, the Gulf Coast and New York Harbor allows merchant refiners from any location to determine which port should be their ultimate destination to maximize a return on their gasoline cargo. For this reason buyers and sellers of California products carefully watch these prices.

As stated earlier, refiners and other major marketers increased purchases of refined petroleum products available from the Gulf Coast before Hurricane Katrina hit to help offset the loss of production due to the temporary closure of refineries. At the

same time, additional purchases of prompt supply¹⁵ were occurring in New York Harbor to ensure adequate supplies were on hand to meet most of their near-term contractual obligations; these companies increased their purchases at the end of the pipeline. Increased purchases of prompt gasoline and increasing premiums fueled concerns that Katrina's impacts would be longer lasting. This perception was likely responsible for increased purchases of NYMEX futures contracts for unleaded gasoline at higher and higher prices. Therefore, although there was no immediate production, supply, or inventory constraint within California, the spike in the NYMEX gasoline market appears to have raised California gasoline prices.

Figure 13



Source: Energy Information Administration

California Refinery Operations

While crude oil prices comprise the majority of the wholesale fuel price, refineries located in California must produce gasoline within a fairly unique set of constraints:

- The California petroleum infrastructure is self-contained in the sense that no pipeline products flow into the state from other regions in the U.S.
- Refineries in the state produce most of the finished transportation fuels consumed in the state.

¹⁵ “Prompt supply” in this context refers to purchases of gasoline for the current month or pipeline cycle (usually 7 to 8 days in length). This type of transaction is near-term, rather than the nature of futures contract purchases which are at least one or more months out in the future.

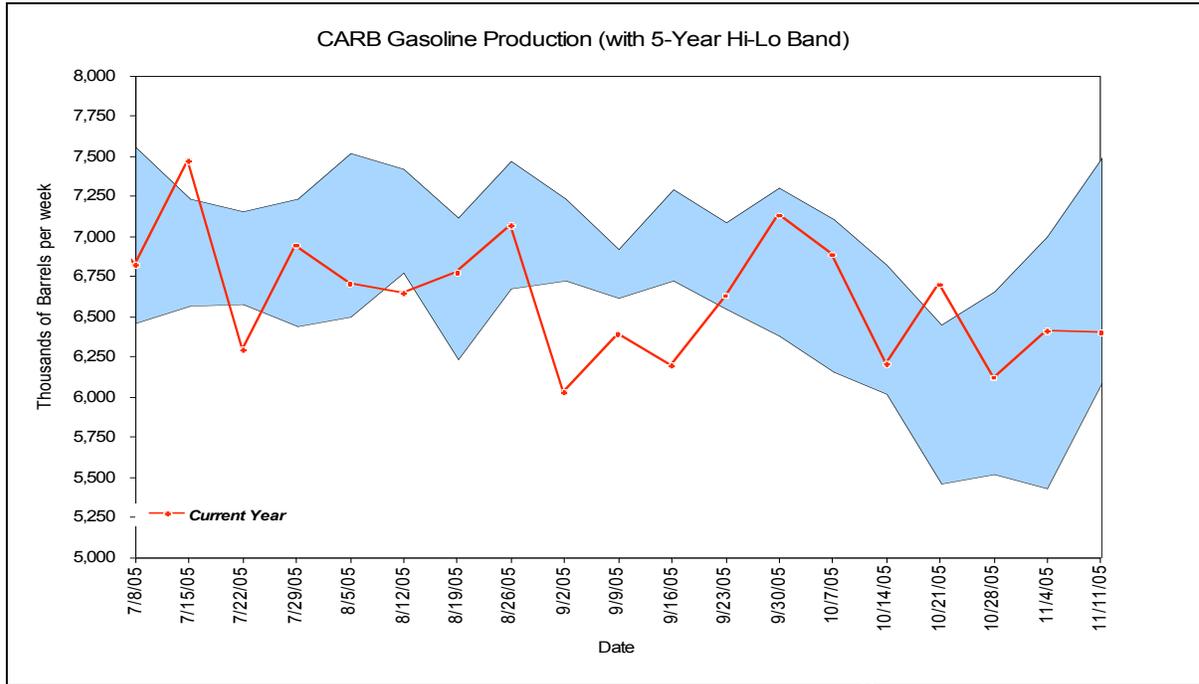
- In 1997, California transitioned from a net exporter of finished products to a net importer. Scheduled imports have steadily increased over the years while port infrastructure to receive increased volumes of imports has not changed.
- Because California uses cleaner burning reformulated gasoline, securing alternate sources of gasoline and blending components is difficult and costly, with delays ranging from one to six weeks for delivery.
- California refineries provide transportation fuels to Western markets.

California currently has 15 refineries that produce transportation fuels that meet the state's standards and 6 smaller refineries that produce distillate, jet fuel and asphalt products. A recent Energy Commission study indicates that existing port infrastructures are inadequate to handle the increasing need for feedstock and finished product imports.

These factors create a high level of interdependence with external markets. Along with these limitations, refineries in California are running near capacity. This means that there is little margin for unplanned refinery outages or interruption of the steady stream of imports.

Figure 14 depicts weekly gasoline production from California's refineries since July 8, 2005. Refinery problems and loss of imports due to Hurricane Katrina are reflected in the lower-than-normal production levels between September 2 and September 16, 2005. The early transition to winter blend gasoline starting September 12, 2005, enabled California refiners to increase their gasoline production by an estimated 7 to 8 percent and helped prevent the drop in production from being even greater.

Figure 14



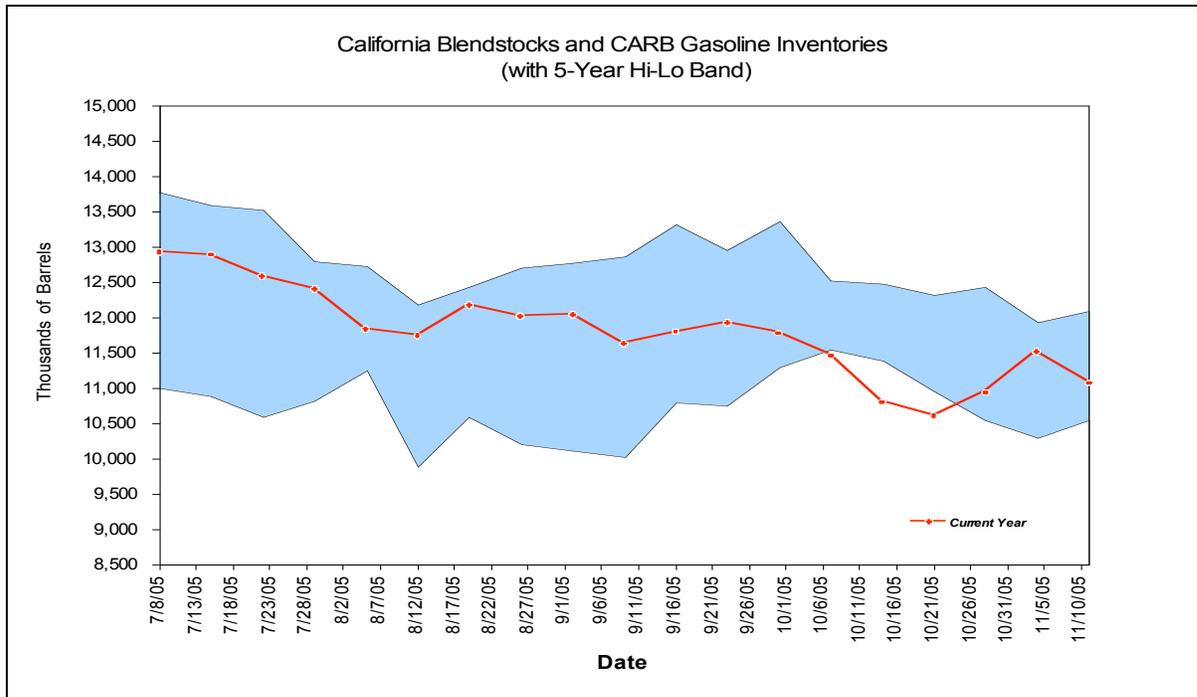
Source: California Energy Commission – PIIRA¹⁶ Data

The upswing in production seen during the week ending September 9, 2005, was partially interrupted during the week ending September 16, 2005, by unplanned refinery outages.

The power outage in Southern California on September 12, 2005, temporarily disabled three refineries that produce gasoline. The continued drop in total production reveals these refinery production losses, even though production increased at other refineries (as a result of the U.S. EPA and CARB winter gasoline waiver). Inventory levels have gradually declined through the last three months (**Figure 15**).

¹⁶ PIIRA refers to the Petroleum Industry Information Reporting Act authorized by Public Resources Code, Section 25300 et seq. This Act requires refineries and other sectors of the petroleum product industries to provide proprietary data such as production and inventory to the Energy Commission.

Figure 15

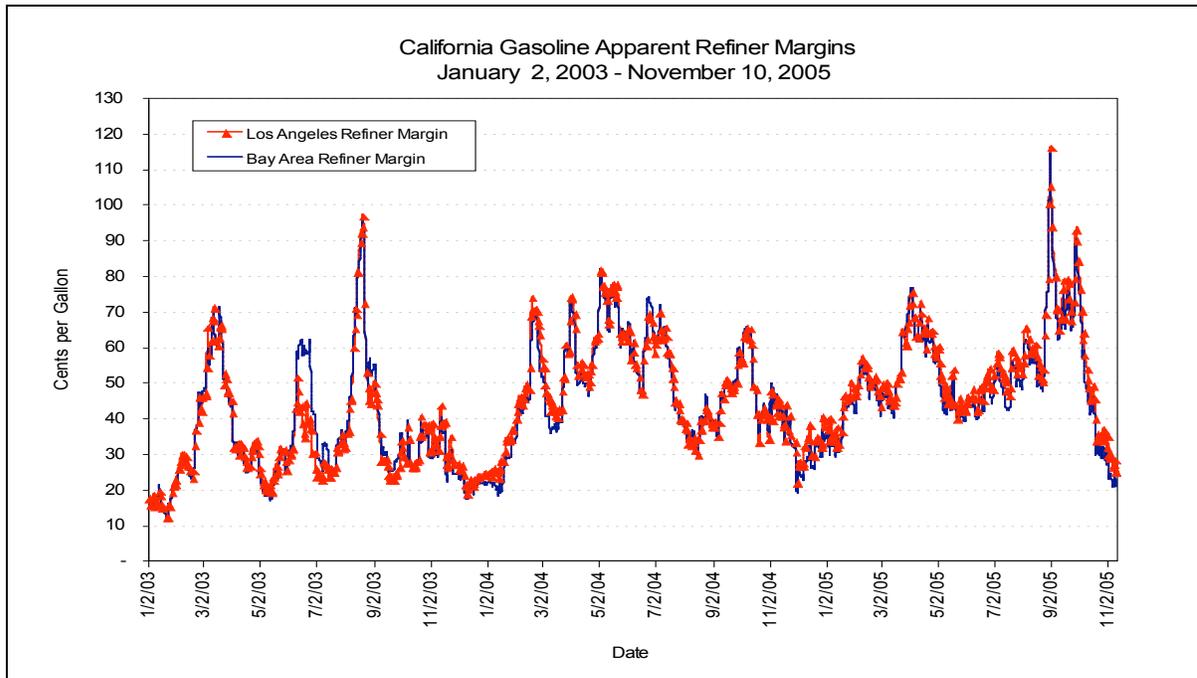


Source: California Energy Commission – PIIRA Data

Market indicators related to refinery operations are typically presented as refining margins. A refining margin summarizes both the costs and profit of refining crude oil into a finished product. It is typically calculated as the difference between the spot price of gasoline as it leaves the refinery gate and the average market price of crude oil purchased by refiners. In these calculations, Alaska North Slope crude oil prices are used as a median crude oil price for California refiners.

Margins are also referred to as “crack spreads” within the industry and are often calculated to include a diesel price component. For the sake of simplicity, a simple 1-1 crack spread (1 barrel of crude oil = 1 barrel of gasoline) has been used here to calculate the refiner gasoline margin. In this case, the margin is defined as the difference between the wholesale spot price of gasoline and the ANS spot price of crude oil.

Figure 16

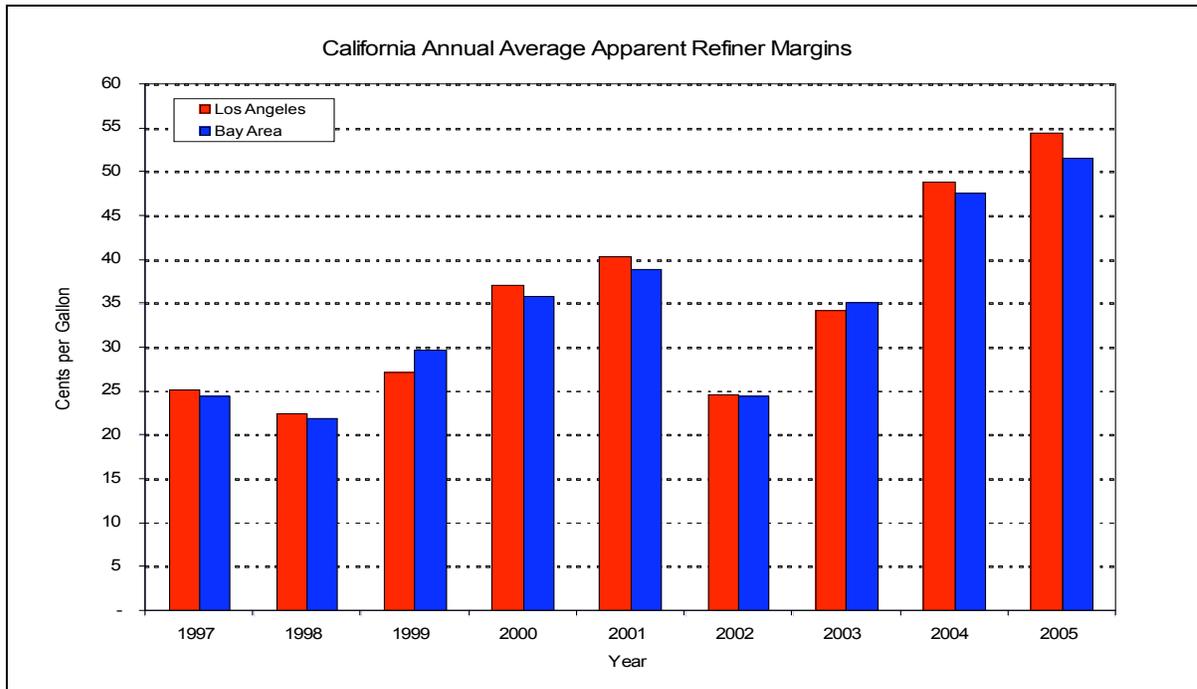


Source: Oil Price Information Service and the Wall Street Journal

The crude oil cost component of gasoline includes all costs of production and profit for upstream cost centers. This represents the market price oil producers would receive on world markets if they chose to sell instead of refine the oil. It is often misunderstood as to why domestic production should be priced at world market price levels and not simply at their production cost. Only in the case of “stranded” oil production where the oil cannot practically be delivered to another market would market prices be substantially different than those on the world market. In certain regions of the world, natural gas is considered “stranded gas” though liquefied natural gas (LNG) is now beginning to open up those markets. Oil, however, is rarely limited to a single market.

Figure 17 illustrates that average California apparent refining margins for reformulated gasoline have consistently reached levels that meet or exceed the levels California experienced in 2003. Unlike past periods (2003 and earlier), the lowest apparent refiner margin in the past year was 19 cents per gallon on December 1, 2004. Prior to this, the 19 cent level was last reached on January 16, 2004. Contrast this to 2003 when steep increases in average apparent refiner margins were closely followed by corresponding equal declines. This does not appear to be the case in 2004 and during the first 10 months of 2005.

Figure 17



Source: Oil Price Information Service and the Wall Street Journal

From late January to late September 2005, a sustained and increasing apparent refiner margin above 40 cents per gallon is seen. A decrease in apparent refiner margins is seen in October and early November of 2005.

Compared to the average refining margins for gasoline in the United States, California's apparent refiner margins for gasoline in California have been increasing and the gap between California and the U.S. apparent refiner gasoline margin has also been growing.

Imports and Exports

Refiners in California depend on imports of gasoline and blending components from a variety of domestic and foreign sources in order to produce adequate supplies of transportation fuels to meet local demand. These imports normally represent between 10 and 15 percent of our total gasoline supply. The temporary loss of refinery capacity in the Gulf Coast reduced availability of gasoline supplies that could be shipped to California from that region. In addition, some cargoes of gasoline that would normally have been available for use in California were diverted to other destinations in the East and Southeast United States. Since marine tankers require two weeks or more to transit from their point of origin to California, the full recovery from decreased availability of gasoline imports was not immediate.

The Energy Commission monitors the quantity of product imported to California's ports. This information is available from the Port Import/Export Reporting Service (PIERS) in the form of monthly reports of shipping records. The diversion of imports

into the state is extrapolated as decreased imports relative to seasonal averages. This data should be available by mid-December 2005.

Refiners in California produce gasoline mainly for use in this state, but some facilities produce gasoline that is exported to Nevada and Arizona via petroleum product pipelines. Arizona also receives deliveries of gasoline and other transportation fuels from refineries located in West Texas (El Paso) and New Mexico. On average, Arizona receives nearly half of its gasoline from shipments originating in California. Temporary supply problems for refiners in El Paso or New Mexico, rapid demand increases in Arizona, and interruption of pipeline service can sometimes result in additional gasoline shipments from California. In the four weeks following the landfall of Hurricane Katrina, shipments of gasoline into Arizona from California increased by about 45 percent. This temporary shift to a higher volume of gasoline originating from California may have contributed to some upward pressure on wholesale prices.

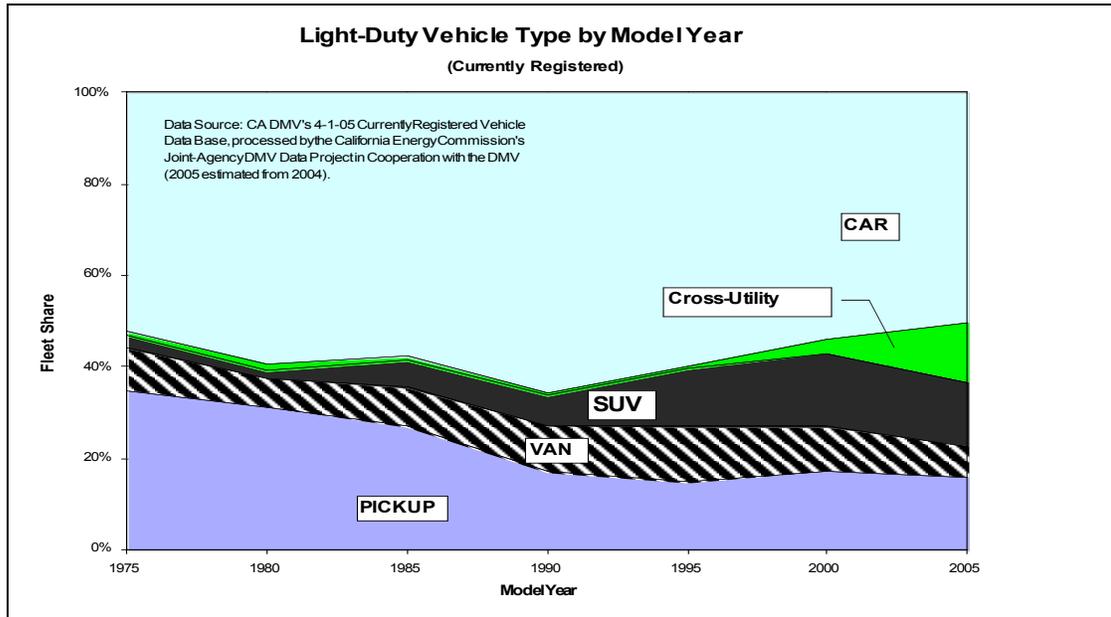
Consumer Demand for Gasoline

Current data on fuel consumption in California during the period immediately after Hurricane Katrina is not available. However, it should be noted that Hurricane Katrina occurred in the weeks just before the normal peak-driving season: Labor Day Weekend. With more than 25 million registered vehicles that average around 20 miles to the gallon, the demand for gasoline in California was probably at one of its highest levels shortly after the hurricane.

Demand for transportation fuels in California continues to rise. In the past several years, demand has grown by 2 to 3 percent per year. This is partially due to population movements into the state and to the increased purchases (see **Figure 18**) of lower mileage vehicles such as minivans, sport utility vehicles, and light duty trucks. Demand in California is expected to increase by 1.6 to 2.5 percent per year over the near term.¹⁷

¹⁷ California's Gasoline Market Post MTBE Phaseout & the Summer Ahead, EIA-OEA-NASEO Summer Transportation Fuels Outlook Conference, Gordon Schremp.
<http://www.naseo.org/Events/summer/2004/presentations/Schremp.pdf#search='Imports%20into%20California%2C%20finished%20oil.'>

Figure 18



Californians consume more than 43 million gallons of gasoline every day.¹⁸ The average on-road fuel economy of gasoline-powered vehicles in California is about 20.08 miles per gallon. In 2005, Californians will travel about 319 billion miles in their vehicles.

The Energy Commission currently obtains monthly motor vehicle fuel distributions from the California Board of Equalization. Based on the most recent data available, gasoline demand is up by 0.4 percent for the first six months of 2005. This lower-than-historical demand increase could be a reaction to sustained high prices in 2005. In contrast, diesel fuel demand is up by 3.8 percent. This large increase could indicate strong growth in California's economy and the movement of goods in the state. More detailed demand data will be needed to perform supply-demand studies related to the recent price changes in the state.

California and U.S. Retail Prices

Retail gasoline prices in the U.S. have steadily increased for most of 2005 (see **Figure 19**). From the beginning of the year to April 11, the average price of regular grade gasoline rose from \$1.78 per gallon to a peak of \$2.28 per gallon. By May 30, U.S. prices decreased to \$2.10. This was followed by another sustained increase in prices.

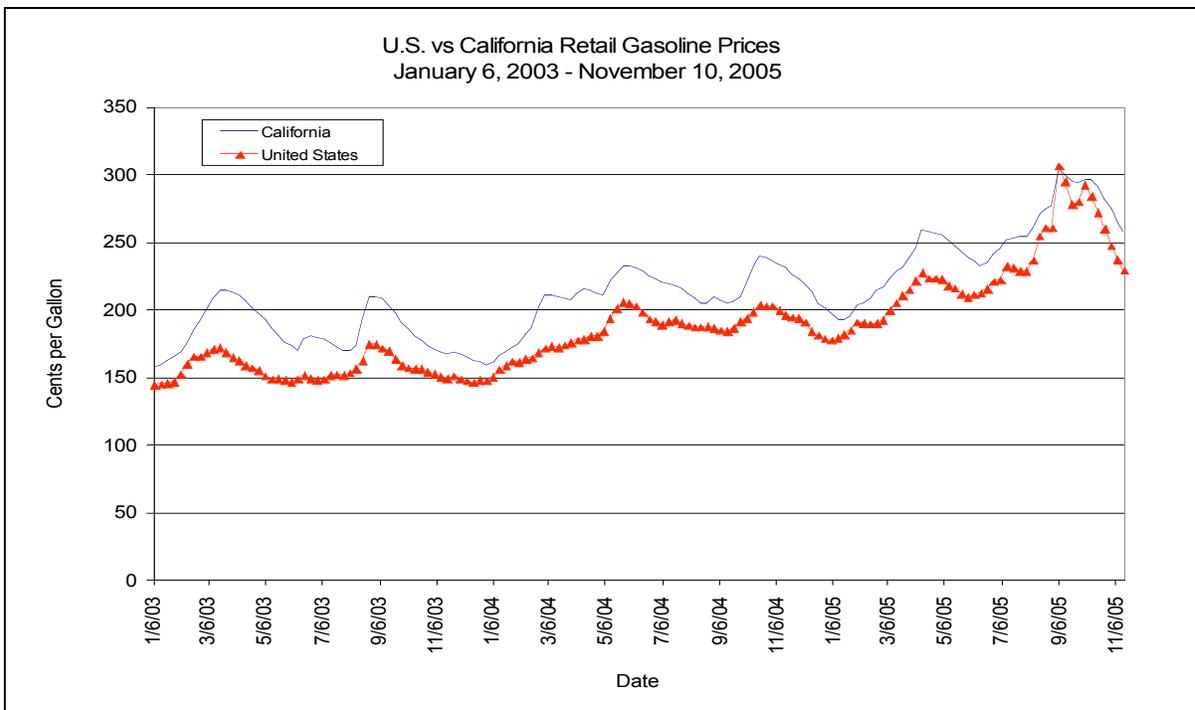
Prices in California follow the same trends as those seen in the U.S. The difference between U.S. and California prices are commonly attributed to several factors. First,

¹⁸ Taxable Sales Data, Board of Equalization (includes all taxable use of gasoline and diesel, including on-road and off-road use).

California has cleaner burning requirements on reformulated gasoline than federal reformulated gasoline. This California formulation is more costly to manufacture. This increased refining cost is passed through to the retail level. Also, California is a net importer of gasoline and blending components. This adds to the supply cost. In addition, there is a steady increase in demand in the state for transportation fuels.

Demand in the state has also been shown to be relatively inelastic. A sustained period of elevated prices is required to produce a significant change in demand. This is seen in the relatively slow demand growth in the first six months of 2005. Any imbalance of supply and demand results in elevated gasoline prices. Another factor influencing price is that California refineries run at near capacity with limited inventory levels. Thus, any loss to supply or inventories in the state is typically followed by price spikes. This constrained supply situation tends to produce higher levels of price volatility than is seen in other parts of the U.S. Finally, California has higher than average fuel taxes. These taxes are described at the end of this section.

Figure 19



Source: Energy Information Administration

To better understand situations where the California retail prices diverge significantly from U.S. retail prices, a further breakdown of average retail gasoline prices within the state is required.

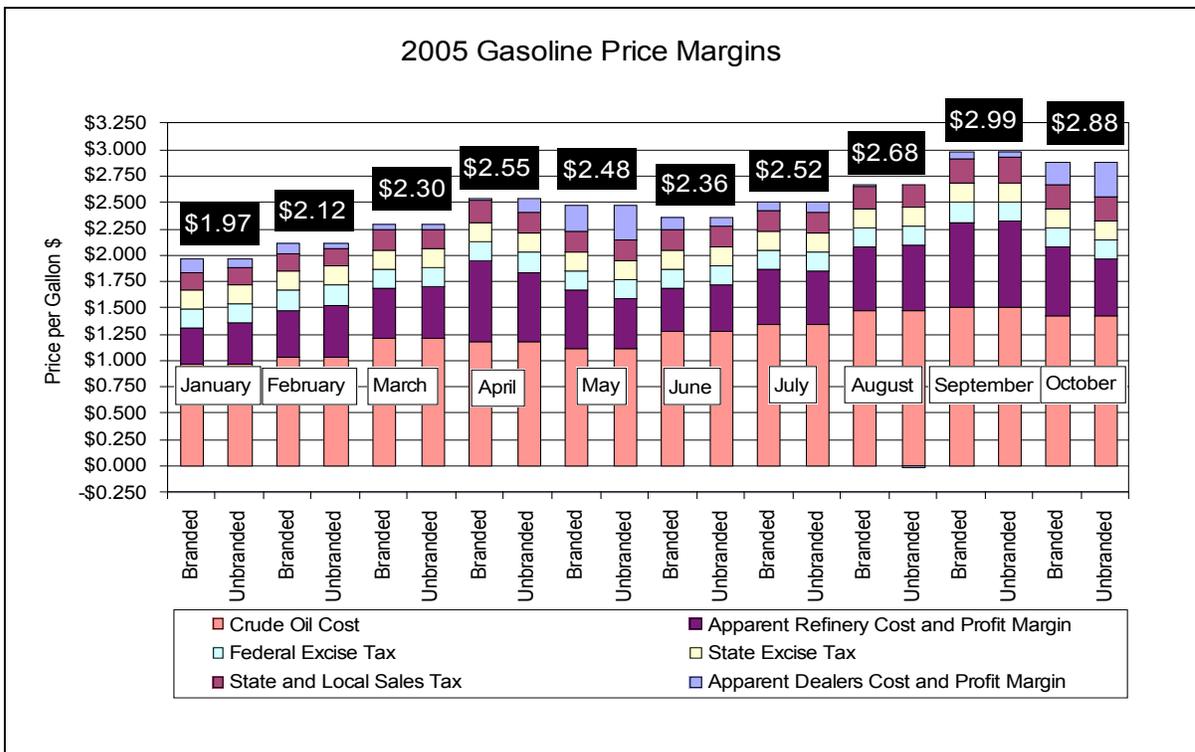
Figure 20 shows all the components of the monthly average retail gasoline prices for the first nine months of 2005. The crude oil price component is the average monthly ANS market price. The apparent refiner margin is the difference between the spot pipeline price and the average crude oil market price. This margin

represents the costs and profits associated with the refining of crude oil. The distribution and marketing component of the cost is defined as the retail gasoline price excluding taxes less the apparent refiner margin. Note that the dealer cost and profit margin can sometimes take on negative values. This occurs when the crude oil price and the apparent refiner margin is greater than the retail price less taxes. State and Federal taxes follow the numbers outlined in the following section.

Dealer cost and profit margins are comprised of costs associated with the distribution from terminals to stations and retailing of gasoline, including but not limited to: franchise fees, and/or rents, wages, utilities, supplies, equipment maintenance, environmental fees, licenses, permitting fees, credit card fees, insurance, depreciation and advertising and profits.

Refinery Cost and Profits includes all non-crude oil costs associated with refining and terminal operation, crude oil processing, oxygenate additives, product shipment and storage, oil spill fees, depreciation, purchases of gasoline to cover refinery shortages, brand advertising and profits.

Figure 20



Source: Oil Price Information Service, the Wall Street Journal and EIA

The price of a gallon of gasoline in California includes federal and state excise taxes and state and local sales taxes. The federal excise tax is 18.4 cents per gallon for conventional gasoline. California also applies an excise tax of 18 cents per gallon on each gallon of gasoline.

Sales tax is assessed on gasoline sold within California. Sales tax is applied on a percentage basis. The current state sales tax is 7.25 percent, of which 6 percent is the state portion and 1.25 percent is the local government portion. Many communities collect an additional local sales tax, resulting in sales taxes ranging from 7.25 percent to 8.75 percent in different areas of California. Thus, an increase in gasoline prices of 60 cents per gallon would include from 4.4 cents to 5.3 cents per gallon of additional state and local sales tax revenue. For simplicity, an average sales tax of 8 percent is used in this report, unless otherwise specified.

In addition, there is a federal fee of 0.1 cent per gallon to finance a trust fund to address leaking underground storage tanks.

Section 5: Staff Findings

- The inter-relationship between California wholesale prices and the NYMEX prices appears to be the primary driver for the recent price spike in California.
- Recent crude oil price changes did not significantly impact the retail price spike of gasoline in California during late August and early September.
- Another important factor responsible for the recent spike in wholesale gasoline prices for California between August 29 and September 10 was the temporary shortfall of supply created by the passage of Hurricane Katrina through the Southeast United States.
- A 45 percent increase in pipeline exports of gasoline from California during the four weeks following Hurricane Katrina may have contributed to a tightening of the market.
- California refinery production declined during the last week of August and the first two weeks of September. These declines are partially due to unplanned refinery outages and decreased imports into the state. Inventories remained flat through this time period. A power outage in Southern California on September 12, 2005, resulted in the shutdown of three refineries, which may have contributed to a temporary increase in wholesale prices from September 13 to September 15, 2005.
- Relatively rapid actions undertaken by international, federal, and state agencies helped ameliorate temporary supply shortfalls of crude oil and refined petroleum products. These actions resulted in additional supply to augment the market and were largely responsible for a subsequent rapid decrease in wholesale prices throughout the United States, including California.
- Retail prices, especially for gasoline, are expected to continue declining if these wholesale price decreases are sustained over the next several weeks.

- The recurrence of a strong hurricane landfall along the Gulf Coast could adversely impact crude oil, natural gas, and transportation fuel production. Case in point, the recent passage of Hurricane Rita through the Gulf of Mexico and into Texas and Louisiana resulted in temporary supply shortfalls and resulting spikes of wholesale prices on a national level.
- Based on a review of all the information available to the Energy Commission, including the information gathered on its Web site, the Energy Commission found no evidence indicating a widespread or lengthy pattern of retail price increases significantly beyond the magnitude of wholesale price increases.

Section 6: Options for State Action

Staff has identified a number of measures which the state could take to address gasoline price spikes in the state in both the short-term and the long-term.

Short-term actions include:

- The Energy Commission and CARB should conduct a meeting with West Coast states' energy representatives to ensure that rapid and efficient steps are defined in the issuing of emergency waivers of fuel regulations. California's refineries produce fuel in California for other states (Arizona, Nevada, and Oregon). These fuels are designed to meet their local air quality requirements. Each of these states and California were affected by the supply constraints caused by the hurricanes and each had a variety of regulatory and administrative actions that had to be taken to respond, particularly the change to winter-specification fuel blends. To ensure that lessons are learned from this disaster, a West Coast states meeting could help to clarify steps and improve future responses.
- The Governor and Legislature should consider establishing a public goods charge assessment on petroleum product manufacturers, distributors, storers, and marketers in California. Funds from this assessment could be used in several ways: to assist low-income households most affected by higher fuel prices, provide incentives toward purchase of new alternative fuel and high-efficiency vehicles, and provide funding for research and projects designed to reduce California's vulnerability to price spikes and supply disruptions.
- The Energy Commission should expand its outreach and public information program to collect information on specific fuel price complaints from members of the public. The Energy Commission should continue to work with the California Attorney General's Office to investigate gasoline price abuses and also continue to identify causes that may contribute to high regional fuel prices.
- The Energy Commission should provide more outreach and information to California households on vehicles that can provide higher levels of fuel economy. Outreach to new vehicle purchasers to encourage purchase of fuel-efficient vehicles will help to reduce the impact of price spikes on Californians' budgets. It

will also help reduce demand for petroleum product over the long run. For those drivers not in the market for a new car, the Energy Commission can provide advice on how to reduce fuel consumption through other options (such as speed reduction, maintenance, tire pressure, carpooling, etc.).

- The Energy Commission should consider securing more detailed price data to perform analysis of regional, zonal, and branding price differences in the state. One of the greatest concerns expressed in California has been retail fuel prices. The Energy Commission does not currently have access to data on regional fuel prices differences (such as urban and rural differences). In addition, the Energy Commission does not currently have access to data that would provide price difference data between branded and independent fueling stations. This data would improve the ability of the state to identify whether price gouging is occurring at wholesale and retail levels and whether there are significant fuel price differences within regional communities.
- The Energy Commission should pursue securing more timely and detailed demand data from the California Board of Equalization. This data will be used to analyze supply-demand behaviors within the industry.

The Board of Equalization publishes data on the sales taxes collected through fueling stations. The published data lags real-time by three months. It is currently not possible to determine what effect price increases are having on fuel demand. Because of this delay, it is difficult for the state to determine if fuel reduction measures are helping to relieve fuel supply constraints.

- The Energy Commission should implement the revisions to the Petroleum Industry Information Reporting Act to provide detailed data on product movements (imports, exports, and intrastate), as well as data on sales volumes and prices. The Energy Commission is in the process of completing a rulemaking to adopt regulations that will require more detailed data on product movements, sales volumes, and prices than is currently collected. These regulations should be implemented as quickly as possible. With this data the Energy Commission would be able to determine the effect of fuel demand in neighboring states on fuel supplies and also determine the effects that delivery of imported products have on fuel supplies and prices.

Longer term actions include:

- The Energy Commission should secure funding to support transportation-related work at the Energy Commission, particularly activities that would reduce California's dependence on petroleum.

Currently, the transportation programs that perform data collection, analysis, and research do not obtain funding. The Energy Commission has only extremely limited resources available to fund research into alternative fuels, alternative fuel vehicles, increasing fuel economy, and implementing of petroleum reduction strategies.

- The Energy Commission should perform a comprehensive economic analysis on the relationship between California wholesale prices and the NYMEX. It is clear that NYMEX futures prices had a significant impact on California fuel prices during the events described in this report, particularly with respect to Hurricane Katrina. A detailed study of the effects of NYMEX futures prices on California wholesale gasoline prices can be used to anticipate future price movements in response to external events and identify actions that could be taken to reduce the impact of these events on fuel prices.
- The Energy Commission should conduct a more comprehensive study of retail pricing. This study should closely examine the pricing differences between branded and unbranded retail fueling outlets. The results of this study would enhance the state's ability to quickly identify unusually high fuel prices and take appropriate actions.

This study will also be used to examine competitive practices within the industry. Most studies of retail fuel pricing practices cannot offer conclusive information on the competitive practices of the wholesale and retail fuel providers because data on these practices is proprietary and confidential. There are allegations regarding price controls and incentive programs offered to branded retailers that are not available to unbranded retailers that may cause unfair competition and higher retail fuel prices. Through the Energy Commission's existing authority to collect and hold industry data confidential, the Energy Commission is in a unique position to collect data on and analyze these pricing practices. A comprehensive analysis would provide decision makers with accurate information for future policies to address fuel price problems.

- The state should implement the recommendations in the 2003 and the upcoming 2005 Energy Report recommending a "best practices" siting process for refinery and infrastructure expansions. Expansion of existing marine infrastructure capacity for both crude oil and refined petroleum products is needed to maintain a sufficient supply of crude oil for refiners and an adequate supply of transportation fuels for California's consumers.
- The Energy Commission should support opportunities to expand pipeline infrastructure to increase the capacity to transport petroleum product within the state. The Energy Commission has analyzed California's fuel supplies and demand in the Integrated Energy Policy Reports. While California's demand for fuels has increased, refinery production capacity has not kept up with the growth in demand. As a result, California relies on imports to meet growing fuel demand. Demand for imports is growing. In addition, California's neighboring states are increasing their demand for fuel and their products must also be delivered to California and shipped through the state to Arizona and Nevada via pipelines. As a result, California must address and implement actions to increase its ability to receive and transfer greater volumes of imported petroleum products. Specifically, port capacity must increase to accommodate greater volumes of ship traffic, intermediate storage capacity must increase to store

products from these shipments, and pipeline distribution infrastructure must increase to accommodate greater volumes of shipments within California and to neighboring states.

- The Energy Commission should investigate increasing the use of contract fuel purchases for public agencies, private fleets, and consumers to reduce the impact of fuel price spikes. Large volume fuel users can contract their fuel purchases in advance, which helps reduce exposure to fuel price spikes because the fuel prices were established before a fuel price spike occurred. Programs that can expand contract fuel purchases to public agencies, private fleets, businesses and consumers could help those affected groups to mitigate the adverse economic effect of fuel price spikes. One industry that may be well suited to demonstrate such a program is California's agricultural industry. Agriculture has been hard-hit by rapid increases in fuel prices and these costs will increase food prices to Californians. It may also force farms out of operation. A program to demonstrate the efficacy of fuel price contracts could help mitigate the adverse effects of fuel price spikes.
- The Energy Commission should develop a dynamic system model to better quantify how multiple events, such as those described in this report affect the consumers, business, and the California economy. Dynamic system models are used in the private sector to help anticipate adverse events and improve reactions to mitigate the effects of those events. The Energy Commission could develop a dynamic system model to quantify the impacts of multiple events, such as those described in this report. With this model, the Energy Commission could analyze the cause and effect of various solutions to address fuel price and supply problems.