fueling CALIFORNIA

Consumer Alliance for Responsible Fuel Policies

What Makes the California Fuel Environment Different in Terms of Policy, Cost, and Vulnerability?

ORANGE COUNTY BUSINESS COUNCIL

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Executive Summary

Fuel serves a vital role in California's economy. Fueling California has commissioned the Orange County Business Council (OCBC) to analyze the factors that impact fuel supply and costs in California. The primary purpose of this report is to examine the crucial relationship between California fuel policies and the related costs and economic impacts borne by California consumers, both households and businesses. This analysis will determine "what makes California different" than other states in terms of fuel standards and policies. Out of this understanding, new policy initiatives can be developed which can help alleviate future "fuel spikes" caused by California's differences from other state and national policies.

The overarching question considered in Fueling California's research is: Why Are California Gasoline Prices Consistently Higher and More Variable Than Those in Other States?

Although price levels rise and fall over time, Energy Information Administration (EIA) (U.S. Department of Energy) data indicate that average retail gasoline prices are routinely much higher in California:

> *"California prices are higher and more variable than prices in other States . . . while gasoline prices, and oil prices in general, are currently high throughout the United States and even worldwide, California has been hit particularly hard. California prices are typically higher than the U.S. average, and thus the run-up this year began from a higher level. In addition, California retail prices often exhibit more volatility than other areas when markets tighten. This year is no exception, as the average retail price in California has risen about 58 cents since the beginning of this year, and stands at $2.56 per gallon, almost 33 cents higher than the national average . . . California has historically seen some of the highest, and most volatile, gasoline prices in the United States. The reasons for the striking differences in the behavior of California gasoline prices, as compared to those in other parts of the United States, are numerous . . . Several major factors contribute to the problem."*
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> *Statement of John Cook, Director, Petroleum Division, Energy Information Administration, U.S. Department of Energy, before the Subcommittee on Energy and Resources, Committee on Government Reform, U.S. House of Representatives, May 9, 2005*

Without an accessible, reliable, and affordable fuel supply, California's economy would suffer, negatively impacting the business community, families, communities, regions, and ultimately the state budget. Yet Californians pay between five and fifteen cents extra per gallon in gasoline due solely to "boutique" fuel standards according to the California Air Resources Board. California also has the second highest state fuel taxes in the country.[1] Multiplied by the billions of gallons consumed by millions of consumers and businesses in a trillion dollar California economy, these excess costs quickly add up. While the cost of crude oil is the single largest factor driving the price of fuel, there are several additional factors causing higher prices that are within the control of policymakers in California. The purpose of this report is to analyze the various standards, policies, and factors existing in California that help create this significant cost difference.

1.California Energy Commission, "Causes for Gasoline & Diesel Price Increases in California," 28 Mar. 2003: 1-11.

Previous Research Studies Examining the California Fuel Environment

Since 2003 four reports—two federal, two state—have examined the reasons why fuel in California is consistently more expensive, especially during price spikes. It should be noted that the findings and conclusions of these four reports are consistent, with near identical trends surfacing from each report:

- On March 13, 2003, Governor Gray Davis asked the California Energy Commission (CEC) to examine the causes of rapid gasoline price increases in California in the years 1999, 2001, and 2003, respectively. The final report, "Causes for Gasoline & Diesel Price Increases in California," (2003 CEC) was released on March 28, 2003.

- Responding to many of the same constituent concerns, on March 27, 2003 Congressman Doug Ose, Chairman of the House Government Reform Subcommittee on Energy Policy, Natural Resources and Regulatory Affairs, asked that the Energy Information Administration (EIA) to examine the causes of the early 2003 increase in the price of California gasoline. The final report, "2003 California Gasoline Price Study Final Report," (2003 EIA) was released November 2003.

- In 2005, responding to requests from Senators Jim Jeffords and Barbara Boxer, the U.S. Government Accountability Office (GAO) looked at how special gasoline blends affect gasoline prices, with a special focus on conditions in California. The final report, "Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices", (2005 GAO), was released on June 17, 2005.

- On April 24, 2006, Governor Arnold Schwarzenegger directed the California Energy Commission (CEC) to investigate the prices of gasoline and diesel fuels, with particular emphasis on retail motor fuel prices, significant changes in prices charged by the petroleum industry for gasoline sold in California, and the reasons for those changes. The final report, "Spring 2006 Petroleum Fuels Price Spike: Report to the Governor," (2006 CEC), was released August 2006.

Research Reveals Similar, Consistent Findings

According to the 2003 California Energy Commission report:

> *"Prior to 1996, California gasoline prices were similar to gasoline prices elsewhere in the U.S. Since 1996, however, the Air Resources Board (ARB) Phase 2 reformulated gasoline (CaRFG 2) regulations have required California refiners to produce a special clean-burning gasoline known as CaRFG. The ARB standards are more rigorous than EPA's setting precise specifications for eight fuel parameters. Due to the higher production costs of this unique blend, California gasoline prices have generally been higher than average U.S. prices since 1996. Prior to the implementation of CaRFG gasoline, the ARB estimated the total increase in production cost would be between 5 and 15 cents per gallon."*

California's differences in fuel standards, taxes, and refining capacity have other consequences—making the state susceptible to shocks and outage risks that have and will continue to bring about significant price spikes unless changes are made. California's vulnerability to external shocks, the likes of which seem to be more frequent since California's fuel standards became dissimilar (the nature of which will be defined and analyzed later in body of the report). The same issues and problems are consistent with each different report.

According to the "California Gasoline Price Study" by the Energy Information Administration in 2003, California is described as follows:

> *"[California is an] isolated market, both geographically and because it uses a unique gasoline that most refineries outside of the State cannot produce. Gasoline price spikes are not unusual in California. Since the mid-1990s, California has experienced gasoline price run-ups that are more frequent and more severe than price spikes in most of the rest of the United States. Demand growth has caught up with the petroleum supply system in California. Refineries, ports, pipelines and distribution terminals are all experiencing constraints. Many times events, such as refinery outages that in the past had little impact, can push the system out of balance long enough to trigger large price increases."*

The 2003 CEC report detailed the major contributing factors to steep price spikes and overall volatility in California:

- "The California refinery system runs near its capacity limits, which means there is little excess capability in the region to respond to unexpected shortfalls;
- California is isolated and lies a great distance from other supply sources (e.g., 14 days travel by tanker from the Gulf Coast or 23 to 30 days from Asia, which prevents a quick resolution to any supply/demand imbalances; and
- The region uses a unique gasoline that is difficult and expensive to make, and as a result, the number of other suppliers who can provide product to the State are limited."

The 2003 EIA report further addresses the issues that arise with difference in California's fuel standards:

> *"The largest difference between California and U.S. average gasoline prices lies in the refining costs and profits element, and this is the component most directly affected by the different gasoline formulation used in California. Refining costs for California include the higher average cost of producing CARB reformulated gasoline in comparison to the mix of conventional, oxygenated, and reformulated gasolines represented in the national average."*

The importance placed on California's unique gasoline blend and fuel isolation is further addressed in the "Report to Congressional Requesters" produced by the US GAO in 2005:

> *"The proliferation of special gasoline blends has put stress on the gasoline supply system and raised costs, affecting operations at refineries, pipelines, and storage terminals. Once produced, different blends must be kept separate throughout shipping and delivery, reducing the capacity of pipelines and storage terminal facilities, which were originally designed to handle fewer products. This reduces efficiency and raises costs. In the past, local supply disruptions could be addressed quickly by bringing fuel from nearby locations; now however, because the use of these fuels is isolated, additional supplies of special blends may be hundreds of miles away."*

The 2006 CEC report also addresses the problem of isolation in California:

> *"The issue of price spikes in California is normally greater in magnitude and longer in duration compared to other regions of the United States due to the fact that alternative sources of supply are several weeks away by marine vessel."*

The 2005 GAO report offers more similarity in its findings:

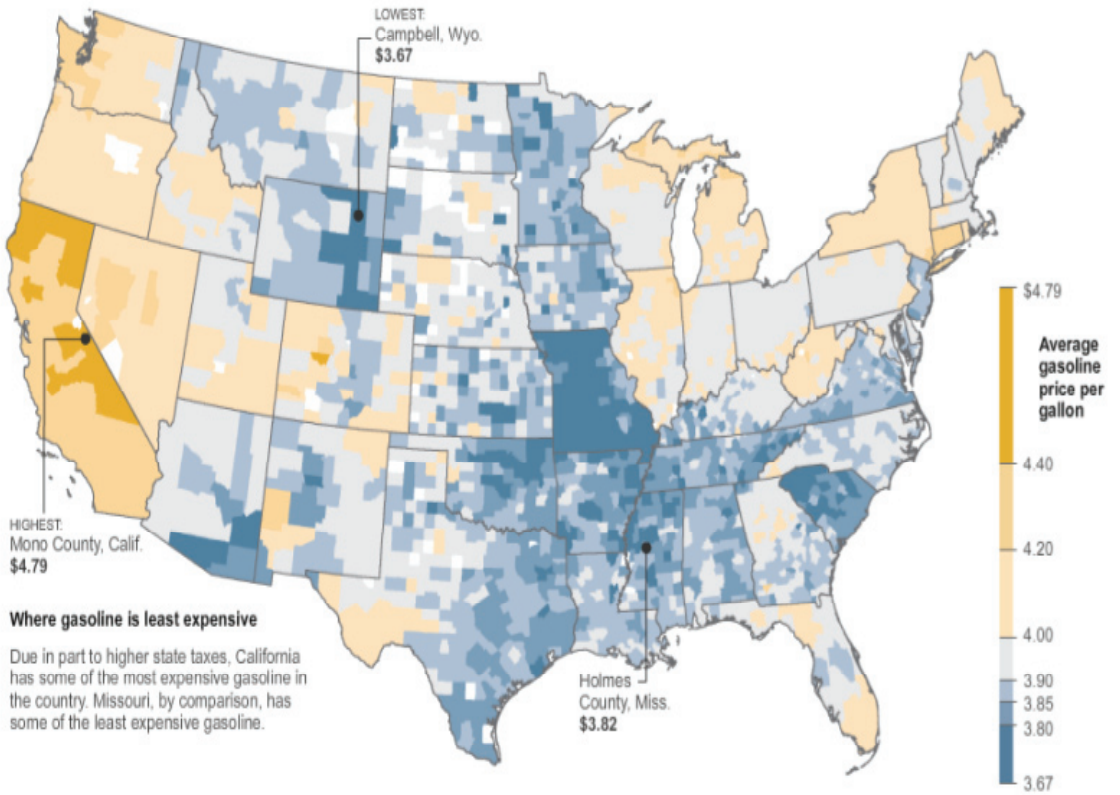
> *"If supplies of California gasoline are disrupted, they would expect prices to rise and it could take weeks for additional supplies to arrive. Nearby suppliers capable of blending California's gasoline blend are generally operating close to their full capacity. In the event that these supplies are disrupted, additional supplies generally come from Western Canada, the Gulf Coast, the Caribbean, or farther away, because there are only a few refineries capable of making this special gasoline blend and, as a result, supplies could take three weeks or more to arrive."*

The 2003 EIA report adds that:

> *"Few refineries outside of the West Coast are able to make CARB gasoline. Refiners must make additional investments to be able to produce this unique gasoline, and despite California's higher margins, most refiners outside the region are unwilling to spend those resources for the occasional cargo they would ship to the region."*

Isolation and fuel differentiation are documented problems for California and these problems become much more apparent when outages and/or shocks to the system occur. The problem is not associated with planned outages, but with external shocks to the system and unplanned refinery outages, both of which will likely continue to occur.

Figure 1: 2008 Gasoline Prices by County



Source: Oil Price Information Service, U.S. Census; Kevin Quealy / New York Times

According to the 2006 CEC report:

> *"Refineries experienced significantly more unplanned outage days in the first six months of 2006 than there were during the first six months of 2005 (175 vs. 58) and the average unplanned outage lasted almost twice as long in the first six months of 2006 compared to the same time in 2005. In turn three consecutive weeks of lower-than-normal gasoline production in California appears to have been a factor that contributed to the formation and magnitude of the April/May price spike for gasoline. Gasoline production in California was lower during this period than it had been in the five previous years."*

The 2005 GAO reported similarly:

> *"Unexpected or unplanned refinery outages, as well as unexpected extensions of planned maintenance outages, probably have a larger impact than planned outages. Unexpected outages have the greatest impact at the beginning of and during the high gasoline-demand summer-driving season when other California refiners may not be able to increase production to help replace lost volumes."*

The latest example of the effect of fuel price spikes on California consumers is from a report as recent as 2008. Demonstrated by a chart from the June 9, 2008 edition of the New York Times showing price differentials for gasoline by county across the United States, California is uniformly higher in price than other parts of the country.

Since the mid 1990's, California has adopted a series of policies to reduce air pollution, the state's carbon footprint and dependence on non-renewable sources of energy, namely crude oil. California residents and businesses have complemented these efforts by engaging in individual behaviors that are among the most progressive, environmentally sensitive and proactive in reducing oil consumption, conserving energy, and adopting fuel efficient practices. California has achieved remarkable success in many of these policy goals with resulting widespread positive outcomes.

However, in the midst of pursuing these admirable goals, other impacts of disparate fuel policies, perhaps unintended consequences, have arisen. While pursuing the aforementioned goals, California has developed several potential side effects influencing the cost of living and the cost of doing business in California. Over the same time period that policies have been put in place to fulfill fuel efficiency or environmental goals, the price of fuel throughout California has been creeping upward and is persistently the highest in the nation. Because of the high inelasticity of fuel—people and businesses need it to work, play, and transport goods—the increased cost for fuel is ultimately borne by the consumer. The result of higher fuel prices has been increased costs for consumers and businesses in California in comparison to other parts of the country.

Seven Key Factors Affecting California's High Fuel Costs

Why do California drivers consistently pay more for fuels than most other people in America? A series of related factors account for the high cost of fuel—gasoline, diesel, jet fuel—in the state:

- Currently, Californians pay between five and fifteen cents extra per gallon in gasoline according to the California Energy Commission and California Air Resources Board due to the increased refining costs for special blends required in California. In addition, California has some of the highest state taxes in the country.[2] Few refineries have the ability to

2. California Energy Commission, "Causes for Gasoline & Diesel Price Increases in California," 28 Mar. 2003: 1-11 found in 2003 California Gasoline Price Study: Preliminary Findings, Office of Oil and Gas Energy Information Administration, U.S. Department of Energy, May 2003.

make the California blend of gasoline thus the limited competition results in higher prices, greater volatility in prices (as refineries experience breakdowns and maintenance closures) and lower overall availability.[3]

- California state gasoline taxes—which total approximately 35.3 cents per gallon [4] —are 43% higher than the national average of state gasoline taxes. Only consumers in the State of New York pay higher gasoline tax rates. Californians pay both excise tax on gas and sales tax as well.

- California has among the most demanding set of environmental fuel policies in the world, leading to a myriad of distinct fuel standards. Given the economic inelasticity of fuel to most Californians, the cost of complying with these standards is ultimately passed on to the California consumer. New rules for the percentage of ethanol in fuel and demands on which kind of ethanol is blended into fuels results in confusion disruption. Refineries making these blends require additional distillation equipment and the blended fuel must be kept separate throughout the shipping and delivery process. [5] What's more, there are relatively few supply sources of the unique California blend of gasoline outside the state, so the fuel that Californians consume is distinctly differentiated from the "commodity" blend used by most Americans.

- California is a "fuel island" and has no pipelines linking it to out-of-state petroleum or crude oil supplies. This means all fuel must be imported in tankers, which are costly, slower and more prone to accident. Exacerbating the costliness of delivering fuel to California ports is their limited capacity to store fuel. In fact, the state has lost six million barrels of crude oil storage capacity over the last fifteen years.

- The state's refining capacity has stagnated for decades despite a rapidly growing demand for gasoline. A new refinery has not come online in California since 1969. In fact, twenty refineries have closed since 1980—including four since 1995. To keep up with growing demand, the efficiency of refineries has increased, stretching current capacity. Nevertheless, while capacity among California refineries grew by only 0.5% from 1995 to 2006, total sales of gasoline increased by 18%. [6] Demand for refined oil is expected to continue its upward trajectory, which has led the California Energy Commission to project that gasoline prices in 2030 will be between $3.34 and $4.78 in real terms [7] —compared to the $2.16 state average at the time of this writing. [8]

- California's "differentiated" fuel standards cause a continual risk of "supply outages". As California's fuel standards become more differentiated from surrounding states and the rest of the nation, it will likely become more difficult to find relief sources that are compliant with state regulations. This means that Californians are likely to become more vulnerable to price surges if there are supply outages. The state's growing population—which will lead to increased demand for gasoline—combined with the prevalence of earthquakes and other disasters underscore the long-term likelihood of such price surges in the future.

- California is isolated and lies a great distance away from other supply sources (e.g., 14 days travel by tanker from the Gulf

3. United States General Accounting Office, "Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices," Jun. 2005.
4. This includes a 6% sales tax, 1.25% county tax, plus additional local sales taxes and a 1.2 cpg state UST fee; "Notes to State Motor Fuel Excise and Other Taxes," American Petroleum Institute, 2009.
5.United States General Accounting Office, "Gasoline Markets: Special Gasoline Blends Reduce Emissions and Improve Air Quality, but Complicate Supply and Contribute to Higher Prices," Jun. 2005.
6.Energy Information Administration, California Total Gasoline All Sales/Deliveries by Prime Supplier (Thousand Gallons per Day)
7.Energy Information Administration, California Total Gasoline All Sales/Deliveries by Prime Supplier (Thousand Gallons per Day)
8."Transportation Energy Statistics," CA Gov. Energy Almanac, California Energy Commission, 2009 <http://energyalmanac.ca.gov/transportation/index.html>.

Coast. When a shortage occurs, extra supplies take a long time to arrive and the uncertainty created by such a lag causes prices to be higher as a hedge against this risk.

Some of these factors are obviously difficult to address cost-effectively, such as California's geographical location. Policies regarding fuel standards, however, can be changed with sufficient understanding of their true impacts on California's consumers and California's economy. During a time of severe recession in the California economy, the state may wish to reconsider the economic impact of, or at least the timing of, worthwhile environmental policy goals. Without economic recovery, the state is at risk of being unable to afford the worthwhile environmental policy goals it desires. Our hope is that Californians can enact progressive fuel policy initiatives and generate sufficient government revenue from taxing fuels while at the same time providing stable and affordable fuel prices for California residents and businesses. Policy options could include lowering gas taxes during periods of supply disruption, allowing an easing of special blend requirements temporarily if prices rise above a certain pre-determined point, and easing the regulatory difficulty to build and expand storage and refining capacity. Needed infrastructure investments can be made in pipelines to move oil or fuel to California more efficiently.

Because unplanned outages and "shocks to the system" will realistically never go away, California's current fuel standard differentiation puts the state in a continual risky, precarious position. Consequently, there will continue to be consumer outrage, media reports, and other negative ramifications over high and lengthy fuel price spikes unless there are constructive measures taken to address policy impacts outlined in this report.

For example, on June 15, 2009 the headline on the Los Angeles Times's business section was "Gas prices may imperil a recovery." Dr. Edward Leamer, Director of UCLA's Anderson Forecast, was quoted saying, "The gasoline rise is like a tax we feel very painfully every time we go to a gas station. It will tend to retard the economic recovery and make it less powerful."
With the statewide unemployment rate at 11.5% in May 2009, there has never been a more critical moment to assess the impact of the state's transportation fuel policies on the broader economy. This report is aimed at providing Californians with a balanced, accurate assessment of the cost associated with "fueling" our transportation, goods movement, and mobility needs under current and proposed policies, as well as an overview of how the state's unique fuel supply chain structure has developed over time.

This study examines the importance of accessible and affordable fuel for California's economy, identifies and explains the costs of fuel in California through examining the supply chain for fuel in California, and identifies policies and taxes that make California fuels more expensive. A balanced understanding of the opportunities and barriers for California fuel supply will ultimately result in a needed dialogue about the precipitating causes of high fuel prices in California. Furthermore, understanding how particular California policies, such as differentiated fuel standards and the state's fuel tax and fee structure, drive up the cost of fuel can also shed light on why California consumers pay more for gasoline on a consistent basis. Understanding the costs of these policies as well as knowing the exacerbating factors of supply chain issues for California constitutes an essential pillar to a better informed dialogue on the current and future cost of living and working in California. Understanding the fairness and true economic impact of California fuel policies, such as whether certain residents are paying a disproportionate share of fuel policy costs, is also critically important.