



June 24, 2019

Michael E. Manchak
President/CEO
Economic Vitality Corporation (EVC) of San Luis Obispo

Dear Mr. Manchak:

This responds to your request that we identify the key reasons for high gasoline prices in California in general and in the City of San Luis Obispo in particular.

Gasoline Prices in California Are Well Above the National Average

The average price of regular gasoline in California was \$3.85 per gallon in late May, which was about \$1.04 or about 37 percent above the national average of \$2.81 per gallon for the same period.¹ About 43 percent of the difference is due to above-average taxes, fees and emission-related environmental charges, and the other 57 percent is attributable to regulatory and market factors.

- **Taxes, fees, and emission-related charges.** California state and local governments impose both sales and excise taxes on gasoline that are much higher than the national average. These taxes account for slightly over 50 cents per gallon in California, or about 25 cents more than in the rest of the U.S. In addition to taxes and fees, California refiners are subject to unique environmental charges that are estimated to add 20 cents per gallon to the price of gasoline. This includes about 12 cents per gallon for carbon emission allowances purchased under California's cap and trade program, and about 8 cents for the state's low carbon fuel standard.²
- **Regulatory and market factors.** California's market for refined transportation fuels is precariously balanced and highly susceptible to shortages and price spikes. This reflects two main factors:
 - **Refinery Consolidation.** The refinery industry in California has consolidated over the past three decades. Currently, there are 15 active refineries in California involved in the manufacture of gasoline and diesel, down from 25 active refineries in 1985. The consolidation was driven by high costs associated with environmental regulations adopted in California. These include standards for reformulated gasoline adopted by the California Air Resources Board (so-called CARB gasoline), which are more stringent and costly than U.S. Environmental Protection Agency (EPA) standards. The impact of this consolidation is a 20-percent loss of California gasoline production capacity. Replacement of that capacity is highly unlikely given the high costs and environmental restrictions in California.³

¹ Source: U.S. Energy Information Administration, Petroleum & Other Liquids. Gasoline and Diesel Fuel Update. <https://www.eia.gov/petroleum/gasdiesel/>

² "Trying to unpack California's Mystery Gasoline Surcharge." Severin Borenstein, in Energy Institute Blog, October 15, 2018. <https://energyathaas.wordpress.com/2018/10/15/trying-to-unpack-californias-mystery-gasoline-surcharge/>

³ Source: "California's Oil Refineries," California Energy Commission. https://www.energy.ca.gov/almanac/petroleum_data/refineries.html

- **Isolation.** California's markets for both crude oil and refined oil products are isolated from other parts of the U.S, meaning that most imports into this state must come from remote foreign sources. On the crude oil side, the isolation is due to the lack of interstate crude oil pipelines and the high costs and safety concerns surrounding rail shipments of crude oil from mid-continent producing locations.⁴ On the refined fuels side, the lack of imports from other states reflects the lack of production capacity for transportation fuels meeting CARB specifications for reformulated gasoline.

Importance of Local Oil Production

California producers currently supply slightly less than 30 percent of crude oil used by California refiners, which in turn produce the great majority of the refined petroleum products consumed in this state. While this reflects a reduction of nearly 40 percent in California oil production over the last two decades, the remaining supplies are still a critical component of the petroleum supply network in the state. They provide a reliable supply of crude oil inputs to refiners, thereby sharply reducing the odds of supply shortages and drastic price increases at the pump.

Despite the state's increasingly stringent fuel efficiency standards and the increase in electric vehicles, consumer demand for gasoline remains strong, growing by 4 percent between 2010 and 2017, before retreating a marginal 0.04 percent in 2018. This implies that California oil production will remain a crucial component of California petroleum supplies in the future.

Given the isolated nature of California crude oil markets relative to the rest of the continental U.S., the loss of local crude oil production would necessitate a major increase in expensive waterborne imports from remote foreign countries. The industry would require major increases in capital expenditures to facilitate such a shift. There would be challenges associated with port capacity to handle the added volume of crude oil shipments, which would add up to about 450 additional ocean going oil tankers per year. Refiners would need to develop additional storage and pipeline capacity to move the crude oil from ports to the site of their operations, and refinery operations would need to be reconfigured to handle these new input flows. It is highly questionable whether it would be possible for refiners to secure such permits given current environmental restrictions. Refiners unable to secure adequate access to ports may go out of business, resulting in less refinery capacity and further consolidation of the industry.

While California transportation fuel suppliers could directly increase imports of refined gasoline and related products from abroad, past experience suggests that this would be an expensive option. Moreover, increased gasoline imports would involve logistical and permitting issues that are similar to those associated with expanded crude oil imports - constraints on port capacity in Southern California as well as the need for new storage capacity and pipelines.

Even in a best case scenario where California fuel suppliers are able to secure the necessary permits and related environmental approvals to handle increased imports, of either crude oil or refined gasoline, the additional investment-related expenses would almost certainly be passed along to consumers in the form of higher product prices. The major risk, however, is that the necessary changes would not be approved, and that as a result the state would not be able to fully replace the lost California production. Such a development would lead to significant product shortages and sharply higher prices. While the exact magnitude of price increases is uncertain, we are confident that the current \$1 dollar per gallon price differential between California and the U.S. average would expand substantially.

Beyond the price impacts on California consumers, increased reliance on imports would mean that California would be exporting tens of thousands of high-paying oil industry jobs to foreign countries, and

⁴ Total shipments into California by rail were 3.2 million barrels in 2017, representing only 0.5 percent of total crude oil demand in the state. See "Oil Imports by Rail, 2017," California Energy Commission. https://www.energy.ca.gov/almanac/petroleum_data/statistics/2017_crude_by_rail.html

would inevitably be relying on crude oil and/or refined transportation fuels produced under less stringent environmental and labor regulations. Tight supplies, high production costs, and the isolated nature of California fuel markets has led to constant upward pressure on gasoline prices, and has made California fuel prices highly susceptible to supply disruptions or unexpected shifts in demand.

Gas Prices in San Luis Obispo Well Above the California Statewide Average

In order to determine the price margin in San Luis Obispo relative to the rest of the state, we sampled prices of regular grades of gasoline in 26 California cities on three different days in May 2019 — May 21, May 28 and May 31. The cities were selected to include a range of locations, population sizes and densities, and economic characteristics. For each city, we estimated the median price displayed on the website, www.gasbuddy.com. The results are displayed on Table 1 (below).

Table 1
CMC Sample of Regular Gas Prices
(Average of Three Days in May 2019)

City	<u>Nominal</u>		<u>Net of Local Taxes</u>	
	Median Price	Percent of Sample Average	Median Price	Percent of Sample Average
Stockton	\$3.72	94.9%	\$3.66	94.2%
El Centro	\$3.73	95.1%	\$3.69	95.1%
Barstow	\$3.81	97.3%	\$3.76	96.8%
Sacramento	\$3.82	97.5%	\$3.76	97.0%
Fresno	\$3.80	97.0%	\$3.78	97.3%
Anaheim	\$3.81	97.1%	\$3.79	97.6%
Los Angeles	\$3.90	99.4%	\$3.81	98.2%
San Bernardino	\$3.84	98.0%	\$3.81	98.2%
Santa Barbara	\$3.90	99.5%	\$3.84	99.0%
Salinas	\$3.92	100.0%	\$3.84	99.1%
Bakersfield	\$3.88	99.1%	\$3.84	99.1%
Red Bluff	\$3.86	98.4%	\$3.85	99.2%
Marysville	\$3.89	99.2%	\$3.85	99.2%
Ft. Bragg	\$3.92	100.1%	\$3.86	99.5%
Redding	\$3.89	99.2%	\$3.89	100.2%
Oxnard	\$3.92	99.9%	\$3.90	100.4%
Susanville	\$3.92	100.0%	\$3.90	100.5%
Santa Rosa	\$3.98	101.5%	\$3.91	100.8%
Chico	\$3.91	99.8%	\$3.91	100.9%
Bishop	\$3.96	101.0%	\$3.94	101.6%
Monterey	\$4.02	102.6%	\$3.96	102.2%
San Diego	\$4.00	102.0%	\$3.98	102.5%
Oakland	\$4.07	103.8%	\$3.99	102.8%
South Lake Tahoe	\$4.09	104.3%	\$4.07	104.9%
Eureka	\$4.18	106.7%	\$4.13	106.5%
San Luis Obispo	\$4.18	106.6%	\$4.16	107.1%
Mean of Sample	\$3.92	100.0%	\$3.88	100.0%

We found that San Luis Obispo's median price was the highest among the 26 cities sampled on all three survey dates. Based on the three samples combined, the median price for regular gasoline was \$4.18 per gallon in the city. This was 26 cents more than the average of the cities we sampled, 46 cents higher than the

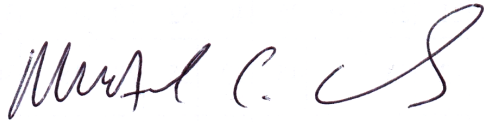
city with the lowest prices in our sample (Stockton), and fully \$1.50 per gallon above the U.S. average. When differences in local sales tax rates are accounted for, the underlying price differential was slightly greater, about 28 cents, or about 7 percent.

Factors Behind Higher-Than-Average Prices In SLO

In order to measure the potential impact of various factors contributing to the price differential, we collected data for a variety of geographic, demographic, and economic factors for each of the cities in our sample. We then conducted a regression-based analysis of the relative contributions of these potential factors to the price differential. We identified the following factors as having statistically significant impacts. (*See the Appendix for a listing of all the data discussed below.*)

- **Trucking costs.** Of the cities we sampled, San Luis Obispo is one of the furthest from major wholesale gasoline supply hubs (the local refinery does *not* produce gasoline, rather it produces an intermediate product that is refined elsewhere) . It is located over 190 miles from the major network of refineries, gasoline pipelines, and supply centers in Northern and Southern California. This implies significant trucking costs, which we estimate adds about 12 cents relative to the other cities in our survey.
- **Other factors.** While relative distance from major supply hubs was the most significant explanatory variable in our model, we found positive statistical relationships between several other factors we examined and gasoline prices:
 - **Real Estate Prices.** The most significant explanatory variable, other than distance from the nearest distribution hub, was real estate prices, which were positively correlated with gasoline prices in the 26 cities we examined. San Luis Obispo was at the higher end of the range of real estate prices among the cities we sampled, with the average price of a single-family home (the best proxy we could find for overall real estate prices) of \$591,000, or about two-thirds higher than in the other cities we sampled. This suggests that service stations pass through higher real estate expenses to customers.
 - **Household Income.** We also found a weak, but positive relationship between the price of gasoline and median household incomes among our entire sample. However, San Luis Obispo was an outlier in this regard, since its average household income of \$49,640 was about 6 percent below the average household income among the cities we sampled while its gasoline prices were well above average. It is possible that college and agricultural workers bring down the city's average income, but that the remaining, wealthier residents have a more significant market impact on the price of gasoline in the city, although the data we have is not sufficient to test that hypothesis.
 - **Through Traffic.** We created a measure of the percentage of traffic in each city that is local versus through and we found a positive, but weak relationship between that and gasoline prices. Again, San Luis Obispo was somewhat of an outlier in this regard. It had a ratio of local to through traffic that was near the average of the cities we sampled. On the other hand, it is located on a major north/south freeway and many consumers traveling through the city may feel that they have little choice but to fill their gas tanks there since there are not major cities close by in either direction on the freeway. This theory seems plausible in light of the comparable situation in South Lake Tahoe, which also has high gasoline prices but a near average ratio of local to through traffic and is remote from any large city.
- **Overall effect.** We estimate roughly two thirds of the 26-cent price differential between San Luis Obispo and the sample average can be explained by distance from major supply centers and land costs. While household incomes and the ratio of through-to-local traffic had some explanatory value over our entire data set, they did not seem significant for San Luis Obispo, although that could be due to other factors not addressed in our data base. The remaining portion of the difference may include differences in concentration of gas station ownership, dealer volume, and storage capacity of stations in the various

cities surveyed. The good news is that we found a large range of prices in San Luis Obispo, with the lowest prices offered by stations in the region only about 3 percent above the average of the lowest prices found in the 26 cities we sampled. This implies that residents of San Luis Obispo can benefit from looking for discount outlets and other outlets not frequented by through travelers.



Michael C. Genest
Founder and Chairman
Capitol Matrix Consulting



Brad Williams
Senior Partner and Chief Economist
Capitol Matrix Consulting

Appendix – Regression Analysis Explanatory Variables

	Miles from Gasoline Distribution Hub		Median Housing Price		Median Household Income		Through Traffic Ratio
Stockton	0	Barstow	\$99,900	Red Bluff	\$31,119	Oakland	13.3
El Centro	0	Red Bluff	\$158,000	Barstow	\$36,606	Red Bluff	12.7
Fresno	0	Marysville	\$161,600	Eureka	\$38,720	Fresno	12.7
San Bernardino	0	Susanville	\$168,400	San Bernardino	\$41,027	Marysville	12.5
Barstow	0	El Centro	\$172,800	El Centro	\$43,581	Eureka	12.2
Los Angeles	0	San Bernardino	\$202,100	Fresno	\$44,853	San Diego	12.0
Sacramento	0	Fresno	\$206,800	So.Lake Tahoe	\$45,223	Redding	11.6
Bakersfield	0	Stockton	\$220,600	Chico	\$45,337	Los Angeles	9.7
Chico	0	Bakersfield	\$228,400	Marysville	\$45,646	San Bernardino	9.7
Oakland	0	Redding	\$245,100	Redding	\$46,389	San Luis Obispo	9.4
San Diego	0	Eureka	\$249,300	Stockton	\$48,396	Barstow	9.4
Anaheim	30	Chico	\$286,700	San Luis Obispo	\$49,640	Anaheim	9.3
Marysville	42	Sacramento	\$287,600	Susanville	\$51,105	Santa Rosa	8.4
Red Bluff	43	Salinas	\$342,100	Sacramento	\$54,615	El Centro	8.2
Santa Rosa	59	So.Lake Tahoe	\$374,600	Salinas	\$54,864	Bakersfield	8.0
Oxnard	65	Oxnard	\$390,000	Bakersfield	\$60,058	Sacramento	7.9
Redding	73	Santa Rosa	\$458,500	Los Angeles	\$61,015	Stockton	7.8
Salinas	98	Anaheim	\$491,400	Oakland	\$63,251	Santa Barbara	7.7
Santa Barbara	98	San Diego	\$523,600	Oxnard	\$64,837	Chico	7.1
Susanville	101	Los Angeles	\$549,800	Anaheim	\$65,313	Salinas	7.1
So .Lake Tahoe	103	Oakland	\$564,500	Santa Rosa	\$67,144	Monterey	7.1
Monterey	110	San Luis Obispo	\$590,800	Santa Barbara	\$71,160	Oxnard	6.9
San Luis Obispo	190	Monterey	\$696,200	San Diego	\$71,535	So. Lake Tahoe	6.3
Eureka	271	Santa Barbara	\$934,500	Monterey	\$73,942	Susanville	5.7
Mean of Sample	53		\$358,471		\$53,141		9.3

Attachment 1 - Biographical Sketches

Mike Genest founded Capitol Matrix Consulting (originally Genest Consulting) in 2010 after concluding a 32-year career in state government, which culminated as Director of the California Department of Finance (DOF) under Governor Arnold Schwarzenegger. Prior to his four-year stint as the Governor's chief fiscal policy advisor, Mr. Genest held top analytical and leadership positions in both the executive and legislative branches of government. These included Undersecretary of the Health and Human Services Agency, Staff Director of the Senate Republican Fiscal Office, Chief of Administration of the California Department of Corrections and Rehabilitation, and Director of the Social Services section of California's Legislative Analyst's Office.

Brad Williams joined Capitol Matrix Consulting (CMC) in 2011, after serving in various positions in California state government for 33 years. Mr. Williams worked for over a decade as the chief economist for the Legislative Analyst's Office, where he was considered one of the state's top experts on the tax system, the California economy, and government revenues. He was recognized by the Wall Street Journal as the most accurate forecaster of the California economy in the 1990s, and has authored numerous studies related to taxation and the economic impacts of policy proposals. Immediately prior to joining Capitol Matrix Consulting, Mr. Williams served as a consultant to the Assembly Appropriations Committee, where he advised leadership of the majority party on proposed legislation relating to taxation, local government, labor, and banking.