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Additional Analysis on Gasoline Prices in California

California Energy Commission

October 21, 2019

I. Executive Summary

In 2018, Californians paid an average of 30 cents more per gallon of gasoline at higher-priced retail outlets such as 76, Chevron, and Shell, than the average American paid for gasoline in other states. This is equivalent to an extra \$4.50 to fill up a 15-gallon gasoline tank.

Although name-brand retail gasoline outlets represent that they sell higher-quality gasoline than lower-priced outlets, given the high standards of all gasoline in California there is no apparent difference in the quality of gasoline at retail outlets in the state. The name-brand stations, therefore, are charging higher prices for what appears to be the same product. The CEC received no response from the name-brand retailers in response to a request for information to support their product claims. This is an issue the California Department of Justice is well equipped to investigate.

Background

On April 22, Governor Gavin Newsom asked the California Energy Commission (CEC) for an in-depth analysis of the causes of the increased differential between national and California gasoline prices. On May 15, the CEC submitted a preliminary report that described the factors that contribute to California gas prices. The differential between national and California prices has gotten as high as \$1.00 per gallon in April 2019.

After accounting for a number of readily explainable factors like California's additional program costs, the CEC found an unexplained residual price increase over the last five years. The CEC's May 15, 2019, analysis pointed to possible causes, including refiner margins, refiner outages, crude oil prices, retail margins and other factors, and requested time to expand its analysis. The Governor agreed and directed the CEC to submit a revised analysis by October 15, 2019.

Since May, the CEC has further examined the variety of possible causes of the residual price increase outlined in the preliminary report. The analysis shows that while refinery outages have an impact on prices, which are reflected in higher refiner margins, these spikes are short term in duration (months) and do not account for the sustained price elevation seen over the past five years. With the exception of these outage-driven spikes, there has

been little to no growth in the difference between the United States and California refiner margin, ruling out refinery price margins as the cause of the residual price increase. Likewise, the analysis ruled out higher crude oil prices in California as a possible cause.

The CEC has concluded that **the primary cause of the residual price increase is simply that California's retail gasoline outlets are charging higher prices** than those in other states. While all retailers in California have increased their retail margins above the national average, higher-priced brands such as 76, Chevron, and Shell have increased those margins far beyond their competitors. The overall California increase in retail margins, above that experienced by the rest of the U.S. has resulted in California gasoline consumers paying an estimated additional \$1.5 billion in 2018 and \$11.6 billion over the last five years.

In a competitive marketplace of similar products, when one retailer increases prices, consumers tend to buy more from lower-priced retailers. However, when these gasoline brands significantly increased their prices, they did not lose market share. This is evidence of market power. There are a number of possible reasons why consumers continued to buy higher-priced gasoline including station location, the acceptance of credit cards, and brand loyalty. There may also be perceived differences in gasoline quality based on retailers' claims regarding gasoline specifications or additive packages. These are all legitimate reasons why consumers are continuing to purchase these higher-priced brands.

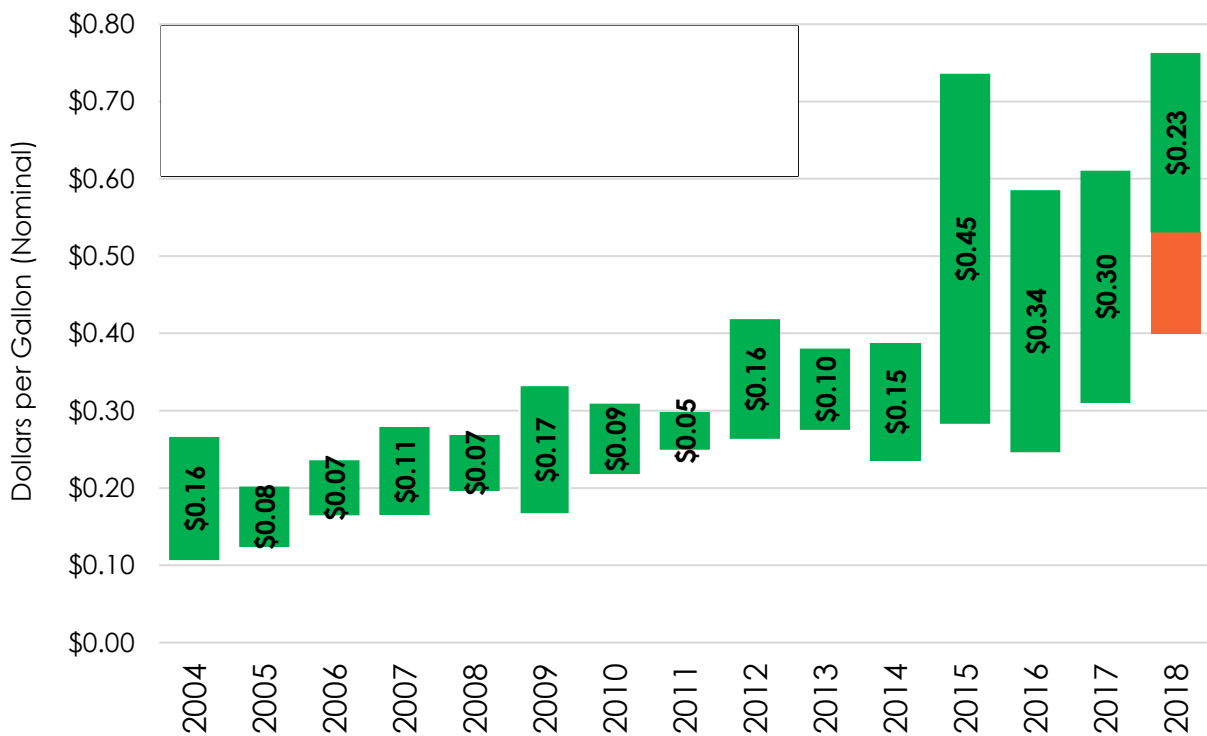
There are also certain illegitimate business practices that could lead to higher prices for similar products, such as price fixing and false advertising. The CEC requested the gasoline industry to provide any research comparing the quality of gasoline that meets the minimum quality standards required by California law and brands that advertise superior quality, but the industry provided none. The CEC also independently sought other available research that would substantiate this, but found none.

The CEC does not have any evidence that gasoline retailers fixed prices or engaged in false advertising. Moreover, the CEC lacks the expertise to determine whether such behavior occurred. The California Department of Justice is well equipped to conduct an appropriate investigation.

II. A Change in California’s Gasoline Market

Similar to its May 15 preliminary analysis, the CEC performed a revised gap analysis, shown in Figure 1, which accounts for cost differences between California and average national gasoline taxes (blue bars).¹ This updated analysis accounts for differences associated with access to different types of crude oil (orange bars). By extending the analysis back to 2004, the remaining gap (green bars) can be attributed directly to two separate segments of the petroleum market – the retail margin and the refiner margin.² The CEC performed additional analysis comparing California margins to national margins to determine the cause of the residual price difference in California gasoline prices.

Figure 1: Annual Gasoline Price Gap Between California and the United States from 2004 to 2018



Source: CEC analysis of Energy Information Agency (EIA) and American Petroleum Institute (API) information (tax and crude oil differences are between the U.S. and California)

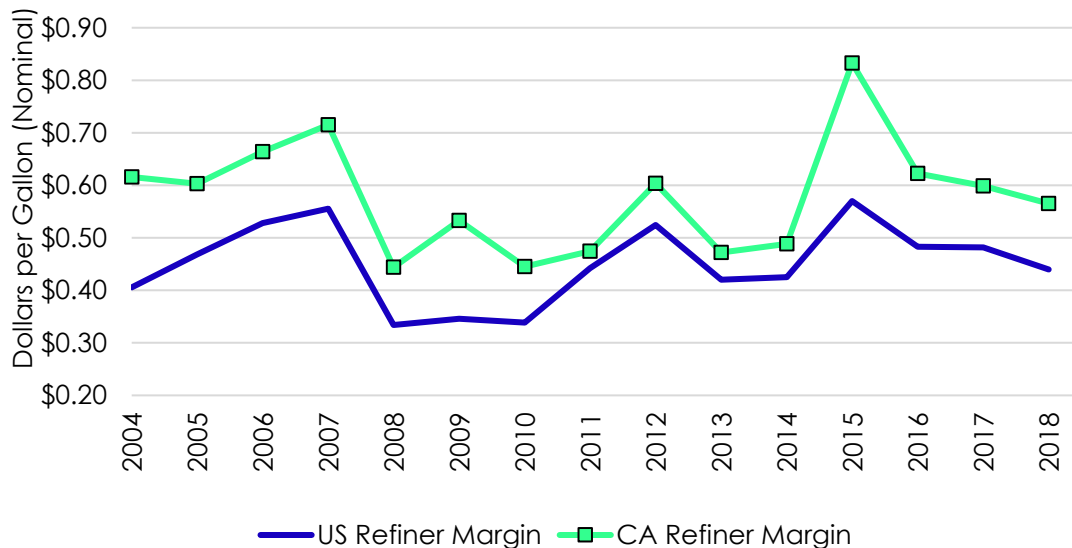
¹ Tax differences between California and the national average include environmental program costs from the Low Carbon Fuel Standard and Cap-and-Trade Program.

²The California refiner margin has Cap-and-Trade Program costs removed and the retail margin has Low Carbon Fuel Standard costs removed.

Refiner Margins

Refiner margins for both California and the United States maintained a steady relationship from 2010 to 2018. With the exception of 2015, California and national refiner margins rose and fell together, as shown in Figure 2. From 2004 to 2014, the difference between California and national refiner margins averaged about 11 cents, which is close to the industry's estimate (10 cents) of the cost of producing gasoline to meet California's specifications. In 2015, the California refiner margin spiked, reaching an average of 83 cents for the year, caused by a Torrance Refinery outage. Thereafter, the steady relationship between the margins returned. With little to no growth in the difference between the United States and California refiner margins, the CEC concludes that refiner margins are not the cause of the residual price increase in California.

Figure 2: Monthly Refiner Margins for California and U.S., 2004 to 2018

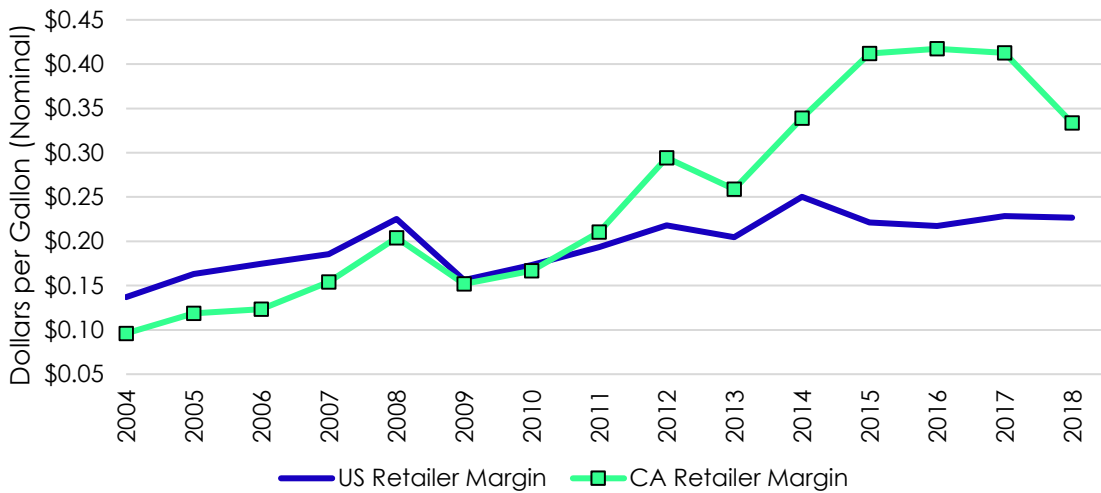


Source: California Energy Commission analysis of EIA information

Retail Margins

Growth of the average retail margin in California has exceeded growth of the national margin, especially since 2012, as shown in Figure 3. From 2004 to 2010, the average retail margin in California was either equivalent to or below the national margin. From 2015 to 2017, however, the California retail margin increased to an average of 19 cents above the national margin. This growth has been pronounced since 2012. In addition, retail margins for higher-priced gasoline retailers in the state are nearly double the retail margins of lower-priced retailers as explained below.

Figure 3: Annual California and U.S. Retail Margins, 2004 to 2018



Source: California Energy Commission analysis of EIA information

Higher-Priced vs Lower-Priced Gasoline

At roughly the same time that California retail margins were increasing, the difference between higher- and lower-priced brands of gasoline also began to increase.³ Table 1 shows the amount by which different brands have increased the retail margins of their gasoline from 2010 to 2018. The national average growth in retail margins was 6 cents per gallon and all brands listed nearly matched or exceeded that growth. However, within California, retail brands such as 76, Chevron, and Shell increased their margins by roughly twice the amount of all other listed brands. These price increases occurred without significant changes in the overall market share of these brands at the retail level.

³ Because the relationships between wholesale and refinery operations are steady, the average California wholesale price is used here as a proxy to determine retail margins by brand.

Table 1: California Annual Average Retail Margin by Brand (2010 to 2018, Nominal)

| | Higher-Priced Brands | | | Unbranded Retail Margin | Lower-Priced Brands | | Average US Retailer Margin | Average CA Retailer Margin |
|---------------------|----------------------|-----------------------|---------------------|-------------------------|---------------------|--------------------------|----------------------------|----------------------------|
| | 76 Retail Margin | Chevron Retail Margin | Shell Retail Margin | | ARCO Retail Margin | Hypermart* Retail Margin | | |
| 2010 | \$0.23 | \$0.26 | \$0.25 | \$0.17 | \$0.09 | \$0.07 | \$0.17 | \$0.17 |
| 2011 | \$0.24 | \$0.28 | \$0.25 | \$0.17 | \$0.10 | \$0.07 | \$0.19 | \$0.21 |
| 2012 | \$0.33 | \$0.36 | \$0.34 | \$0.24 | \$0.16 | \$0.12 | \$0.22 | \$0.29 |
| 2013 | \$0.33 | \$0.36 | \$0.33 | \$0.22 | \$0.14 | \$0.10 | \$0.20 | \$0.26 |
| 2014 | \$0.41 | \$0.44 | \$0.41 | \$0.28 | \$0.18 | \$0.15 | \$0.25 | \$0.34 |
| 2015 | \$0.54 | \$0.54 | \$0.51 | \$0.33 | \$0.25 | \$0.16 | \$0.22 | \$0.41 |
| 2016 | \$0.53 | \$0.56 | \$0.52 | \$0.31 | \$0.21 | \$0.14 | \$0.22 | \$0.42 |
| 2017 | \$0.52 | \$0.57 | \$0.53 | \$0.31 | \$0.20 | \$0.13 | \$0.23 | \$0.41 |
| 2018 | \$0.51 | \$0.56 | \$0.52 | \$0.30 | \$0.20 | \$0.12 | \$0.23 | \$0.33 |
| Growth 2010 to 2018 | \$0.28 | \$0.30 | \$0.27 | \$0.13 | \$0.11 | \$0.05 | \$0.06 | \$0.16 |

Source: Energy Commission analysis of Oil Price Information Service (OPIS) data.

*Hypermarts include outlets like Costco and Safeway.

Figure 4 provides estimates of California's retail gasoline market share.⁴ By combining these estimates with total gasoline sales information,⁵ along with the retail margin estimates above, the CEC has calculated the amount of revenue gained from the change in pricing strategy. Key findings include:

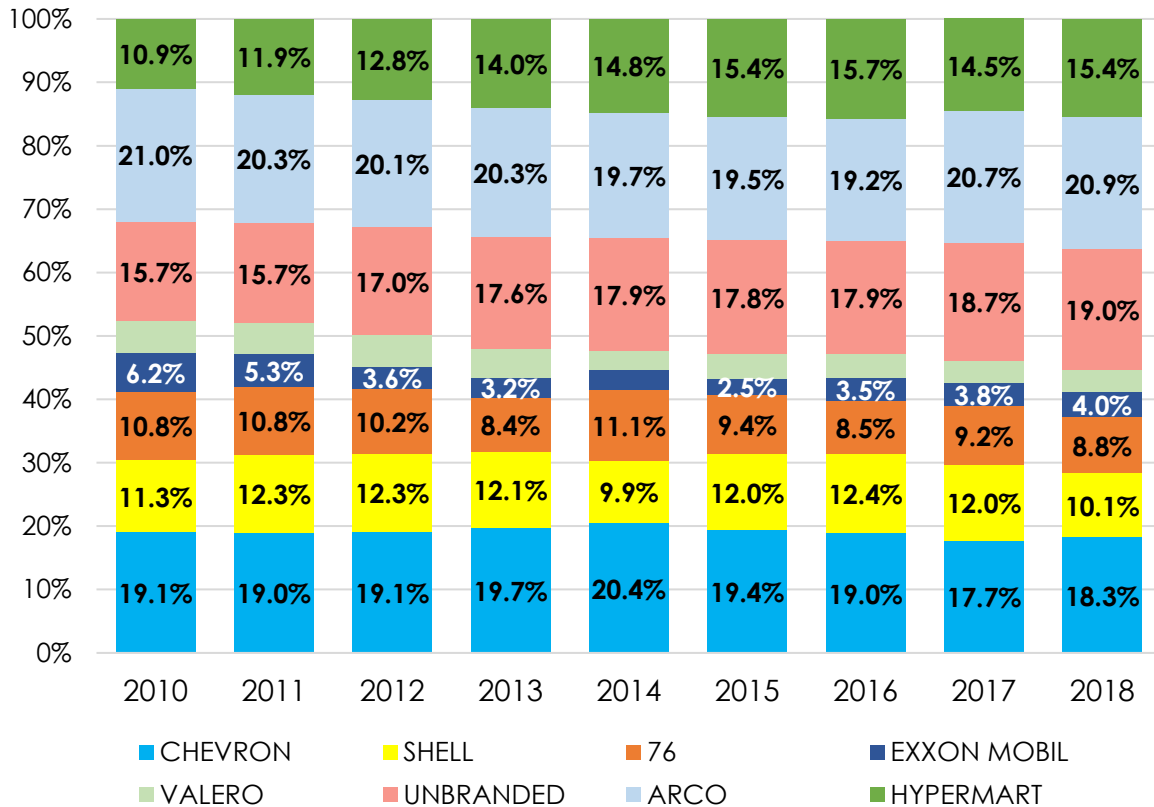
- Total annual revenue from California's retail gasoline supply chain increased from \$2.5 billion in 2010 to \$5.1 billion in 2018 (peaking in 2016 at \$6.5 billion).
- Total annual revenue of 76's California retail gasoline supply chain increased from \$368 million in 2010 to \$697 million in 2018 (peaking in 2014 at \$767 million).
- Total annual revenue of Chevron's California retail gasoline supply chain increased from \$739 million in 2010 to \$1.59 billion in 2018 (peaking in 2016 at \$1.64 billion).

⁴ Staff used information from the CEC's California Retail Fuel Outlet Annual Report data collection effort to calculate market shares. This figure has been updated since May by adding 2018 numbers.

⁵ Gasoline sales estimates come from the California Department of Tax and Fee Administration.

- Total annual revenue of Shell's California retail gasoline supply chain increased from \$421 million in 2010 to \$818 million in 2018 (peaking in 2016 at \$999 million).

Figure 4: California Retail Gasoline Market Share, 2010 to 2018



Source: Energy Commission staff

Consumer Preferences

In a competitive marketplace, when one retailer increases prices, consumers generally buy more product from lower-priced retailers. However, when several gasoline brands increased their prices significantly in California, they did not lose market share. There are a number of possible reasons why consumers continued to buy higher-priced gasoline.

One explanation is that California consumer preferences have changed in favor of the products and services offered by the higher-priced brands.

The National Association of Convenience Stores (NACS) conducts an annual consumer survey of the most important factors that contribute to gasoline consumer purchasing decisions. According to this survey, the percentage of Americans that view price as the most important factor in selecting a gasoline outlet dropped from 71 percent in 2015 to 59 percent in 2019.

The data also show that consumers in western states are less concerned with price. As the importance of price has declined, the importance of both location and brand has increased. The importance of location in the western region is noticeably higher than the other surveyed regions. Additionally, the survey asked if customers have any brand preference when purchasing gasoline. Since 2015, the percentage of California consumers that answer yes has risen from 48 to 59 percent.

Possible Industry Practices

CEC's analysis did not reveal the exact reasons why California consumers continue to purchase higher-priced gasoline. It is possible that they simply prefer the products and services these brands offer. Although the CEC found no evidence of unlawful activities by the higher-priced gasoline retailers, the CEC could not rule out the possibility.

The CEC's analysis focused on identifying the source of the residual price increase in California relative to the rest of the country. The data show that the increase in retail margins was consistent throughout California.⁶ However, the increase in retail margins between higher-priced retail brands (such as 76, Chevron, and Shell) versus lower-priced brands (such as Arco and hypermarkets like Costco or Safeway) is almost twice the California average and almost five times the national average.

The price of gasoline in California is unregulated and companies are free to charge prices based on what consumers are willing to pay. California consumers continue to purchase higher-priced brands despite having many options. Consumers may be purchasing higher-priced gasoline brands for convenience, credit card acceptance, or other reasons. However, if competitors decide collectively to fix prices, this may be unlawful. According to the Federal Trade Commission,⁷ price fixing requires a "plain agreement among competitors to fix prices." The CEC found no evidence of any such agreement.

Possible False Advertising

In the gasoline market, retailers often make claims about the superior quality of their gasoline, either stating that it meets higher fuel specifications or that

⁶ Brand split behavior was studied In previous analysis found at: https://www.energy.ca.gov/sites/default/files/2019-05/2017-11_Petroleum_Watch.pdf. It should be noted that overall gasoline prices are typically more expensive in southern California.

⁷ Federal Trade Commission, Price Fixing, August 15, 2019. <https://www.ftc.gov/tips-advice/competition-guidance/guide-antitrust-laws/dealings-competitors/price-fixing>.

their proprietary additive packages provide superior consumer benefits. If these advertised claims are false, they may be illegal.

The California Air Resources Board (CARB) requires all gasoline sold in California to meet specified detergent requirements. The TOP TIER® Licensing Program⁸ has similar requirements and states that its fuel quality standard is recommended by automobile brands such as Audi, BMW, GM, Ford, Honda, Toyota, Mercedes-Benz, and Volkswagen.

Chevron, Shell, Exxon, 76, Valero, Costco, and ARCO advertise their gasoline as TOP TIER® certified. However, it is not apparent that TOP TIER® gasoline is superior to other gasoline sold in California that meets CARB's stringent standards. The CEC requested research from the gasoline industry to substantiate this point, but none was provided.

Some California gasoline brands include a proprietary additive package. Examples include Techron (Chevron⁹) and V-Power NiTRO+ (Shell¹⁰). On their websites, Chevron and Shell describe purported benefits of these specific additive packages. Chevron's website states, "Techron can remove up to 50% of harmful carbon deposits." Shell's website states that V-Power NiTRO+ "removes an average of 70% of baked-in deposits left by lower-quality premium gasoline." The 76 website¹¹ claims 76's additive package "has 3 times more detergent than the minimum required by the EPA and 30% more than the minimum specified in the TOP TIER® Detergent Gasoline standard recommended by major car manufacturers."

The clear implication of these claims is that certain gasoline is superior in quality to other brands that are required by law to meet California's strict fuel quality standards. The CEC also requested research from the gasoline industry to substantiate this point and again, none was provided.

The CEC independently searched for studies to verify these claims but found none.

Conclusion

CEC staff concluded that the primary cause of the residual price increase is simply that California's retail gasoline outlets are charging higher prices than those in other states. While all California retailers have increased their retail

⁸ <https://toptiergas.com/>

⁹ <https://www.techron.com/#performance>

¹⁰ https://www.shell.us/motorist/shell-fuels/shell-v-power-nitro-plus-premium-gasoline.html?gclid=EAlaIqobChMI7YSQ-66t4wIVybjACh3cUwtnEAAYASAAEgLthvD_BwE&gclsrc=aw.ds

¹¹ <https://www.76.com/top-tier-gas>

margins above the national average, brands such as 76, Chevron, and Shell have increased those margins far beyond their competitors.

The price of gasoline in California is unregulated and companies can charge prices based on what consumers are willing to pay. However, if competitors fix prices or employ false advertising practices, this may be unlawful. Additional investigation is necessary to determine whether either has occurred.

The CEC lacks the expertise to determine whether such behavior occurred. The California Department of Justice is well equipped to investigate possible price fixing or false advertising.

Data Sources:

CEC Information

CEC-A15:

https://ww2.energy.ca.gov/almanac/transportation_data/gasoline/piira_retail_survey.html

EIA Information

Retail: https://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm

Wholesale: https://www.eia.gov/dnav/pet/pet_pri_refoth_dcus_nus_m.htm

Crude Oil: https://www.eia.gov/dnav/pet/pet_pri_rac2_dcus_nus_m.htm