

PETROLEUM WATCH

CALIFORNIA ENERGY COMMISSION

INSIDE

PETROLEUM NEWS

Gasoline Retail Prices by Brand

Diesel Retail Prices by Region

California Petroleum Product Movements

Movement of Products by Marine

Movement of Products by Pipeline

Featured Topic: How Petroleum Products Move

- Chevron El Segundo:** On February 3, unplanned flaring took place due to equipment malfunction.
- Chevron Richmond:** On February 11, flaring took place resulting in precautionary evacuations due to a process upset.

- Marathon Los Angeles:** On February 25, an explosion and fire at the refinery required units to be shut off. The refinery has been experiencing planned and unplanned flaring since the fire.

CALIFORNIA GASOLINE RETAIL PRICES BY BRAND

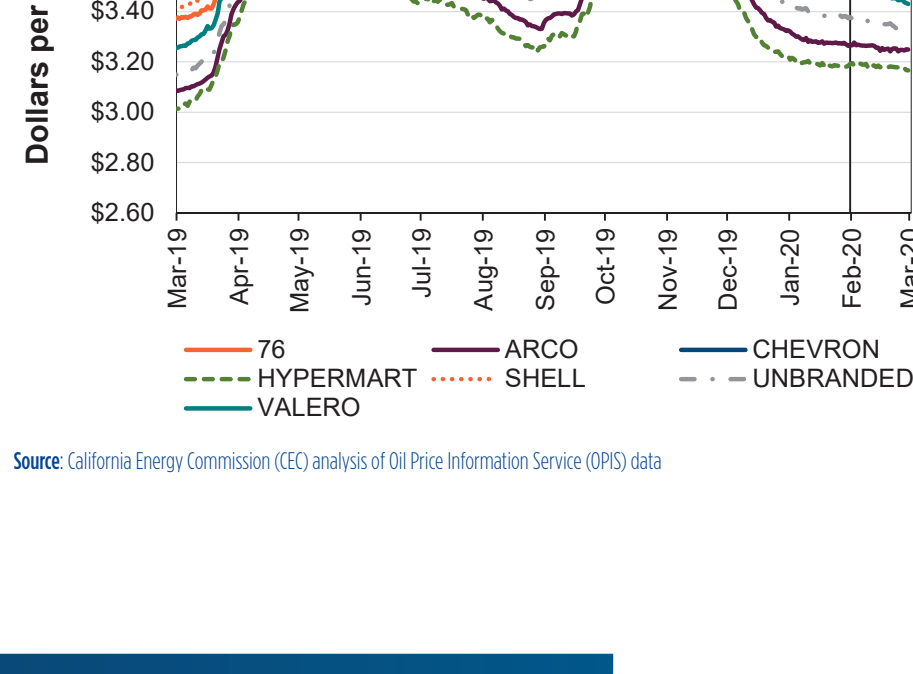
February 2020 vs. 2019

(Percentage Change)

76	7% higher
ARCO	7% higher
Chevron	6% higher
Hypermart	7% higher
Shell	7% higher
Unbranded	8% higher
Valero	7% higher

February 2020 Averages

76	\$3.59
ARCO	\$3.26
Chevron	\$3.68
Hypermart	\$3.18
Shell	\$3.64
Unbranded	\$3.36
Valero	\$3.47



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

CALIFORNIA DIESEL RETAIL PRICES BY REGION

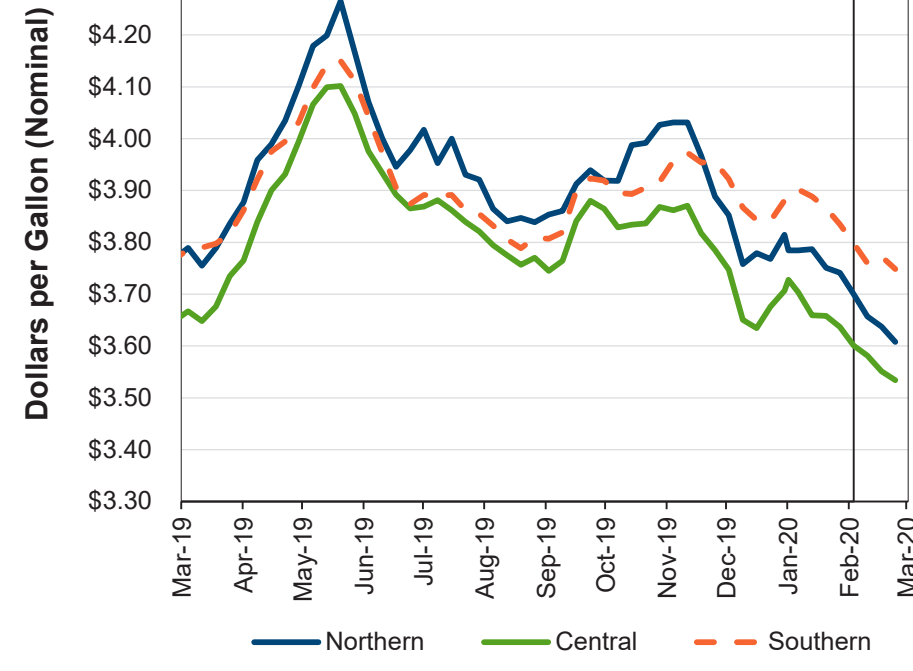
February 2020 vs. 2019

(Percentage Change)

Northern CA	1% lower
Central CA	no change
Southern CA	1% higher

February 2020 Averages

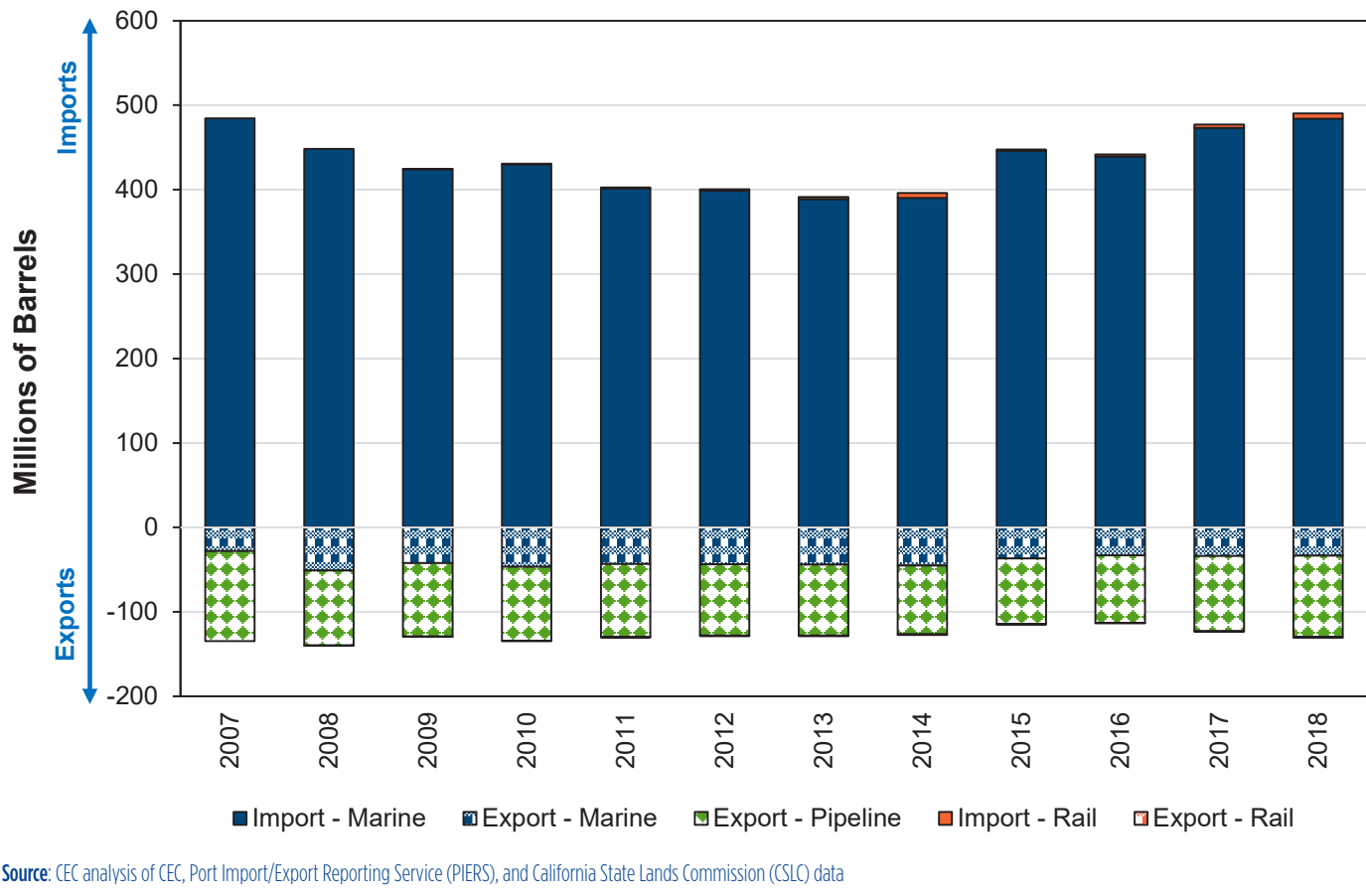
Northern CA	\$3.65
Central CA	\$3.57
Southern CA	\$3.77



Source: CEC analysis of OPIS data

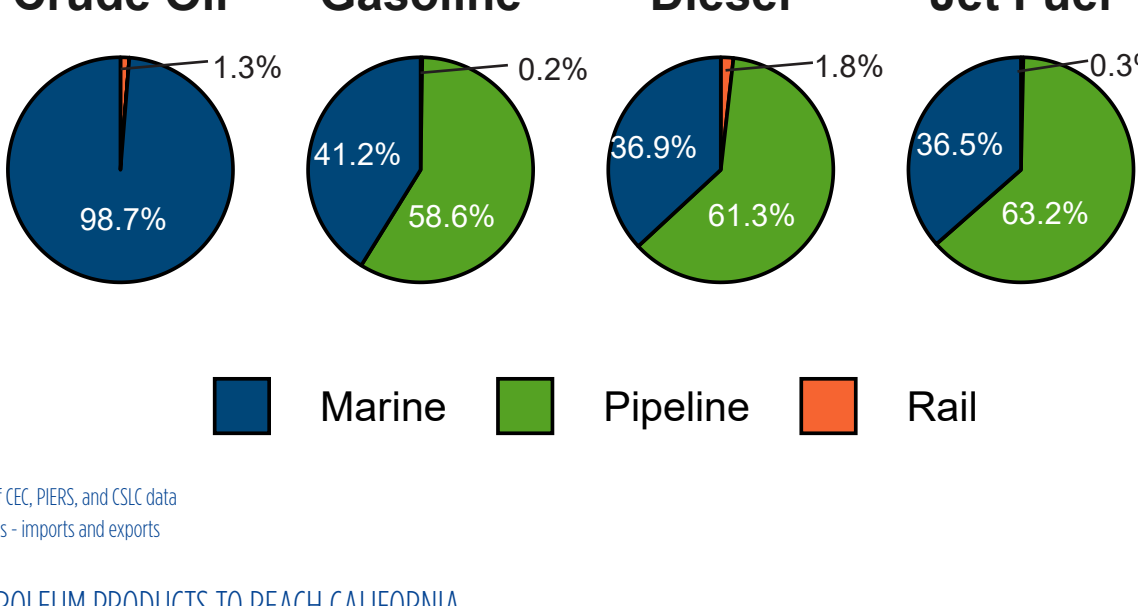
CALIFORNIA PETROLEUM PRODUCT MOVEMENTS

IMPORTS AND EXPORTS BY TRANSPORTATION TYPE



Source: CEC analysis of CEC, Port Import/Export Reporting Service (PIERS), and California State Lands Commission (CSLC) data
Note: Imports shown as positive values, exports shown as negative values

2018 PRODUCT IMPORTS AND EXPORTS BY TRANSPORTATION TYPE



Source: CEC analysis of CEC, PIERS, and CSLC data
Note: Total movements - Imports and exports

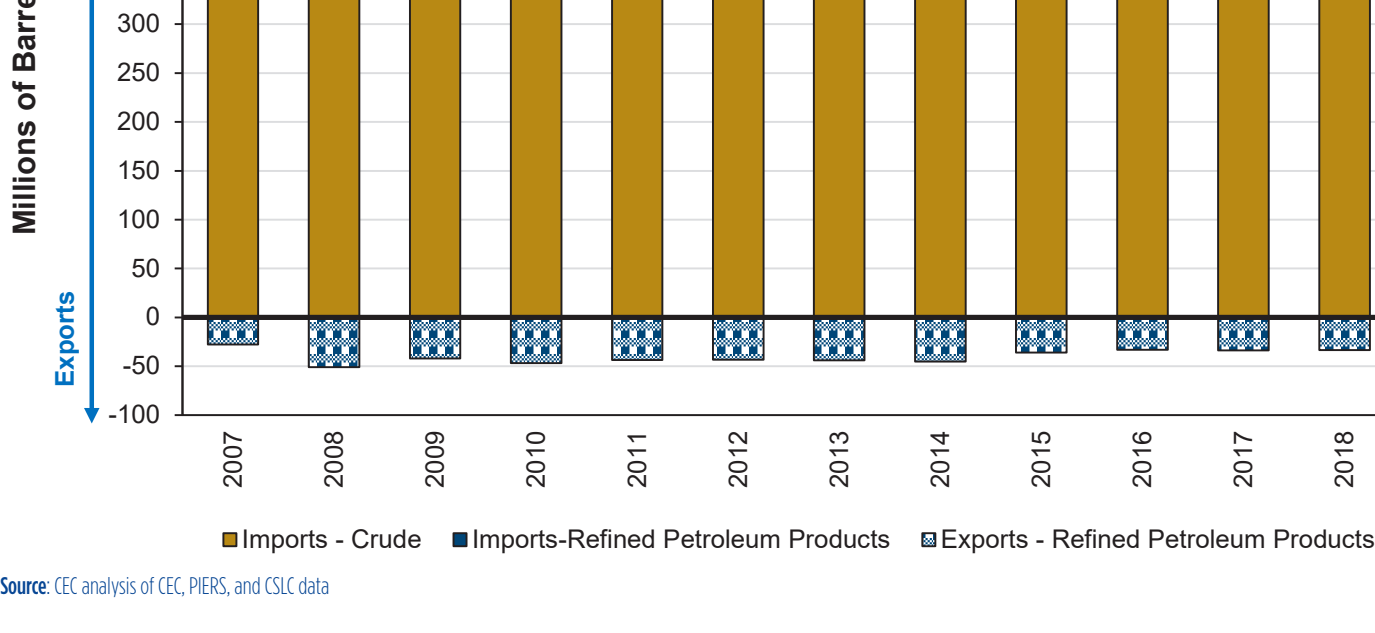
TIME FOR PETROLEUM PRODUCTS TO REACH CALIFORNIA

Transportation Type	Origin	Product	Days to Reach California (minimum)
Marine	Middle East	Crude Oil	30
Marine	Ecuador	Crude Oil	14
Marine	Alaska	Crude Oil	14
Marine	Singapore	Other Petroleum Products	19
Marine	South Korea	Other Petroleum Products	13
Rail	Alberta, Canada	Crude Oil	5
Rail	Wyoming	Crude Oil	3
Rail	New Mexico	Crude Oil	2

Source: CEC analysis of CEC, PIERS, and CSLC data

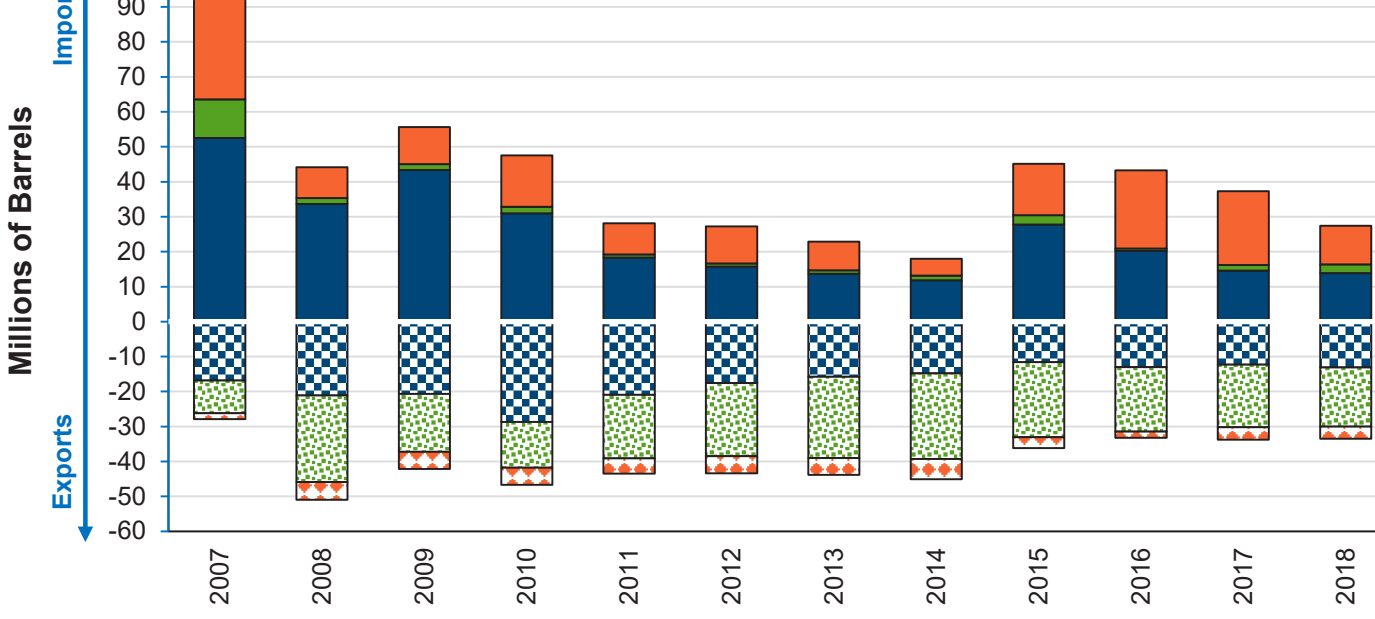
MOVEMENT OF PRODUCTS BY MARINE

IMPORTS AND EXPORTS OF ALL PETROLEUM PRODUCTS



Source: CEC analysis of CEC, PIERS, and CSLC data

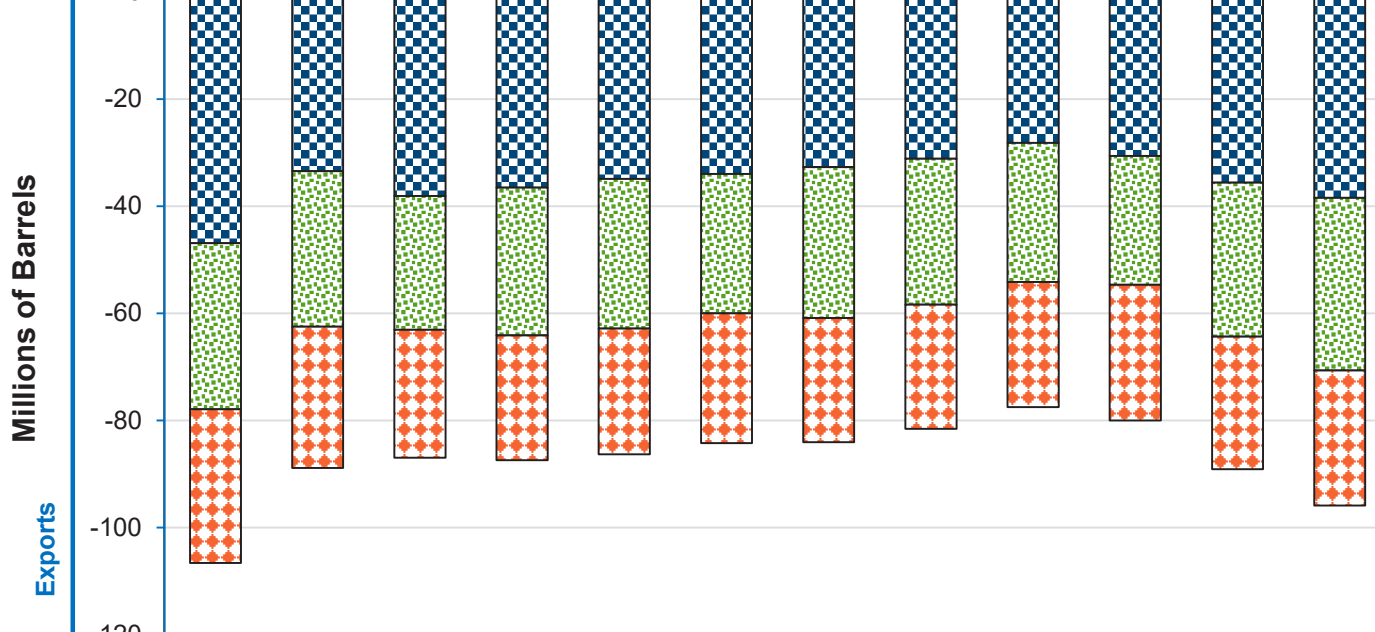
IMPORTS AND EXPORTS OF REFINED PRODUCTS



Source: CEC analysis of CEC, PIERS, and CSLC data

MOVEMENT OF PRODUCTS BY PIPELINE

EXPORTS OF REFINED PRODUCTS



Source: CEC analysis of CEC, PIERS, and CSLC data

FEATURED TOPIC

HOW PETROLEUM PRODUCTS MOVE

California is the second-largest consumer of petroleum products in the United States, according to U.S. Energy Information Administration. This market needs an equally large network for transporting products to and from California, as shown in Movement of Petroleum Products. The California Energy Commission (CEC) tracks four methods of moving products: marine, pipeline, rail, and truck. Large tanker ships and barges that move petroleum products are referred to as marine movements. Petroleum pipelines move large volumes of products over land. Rail is the movement of products using trains. Trucks move products within California and across its borders.

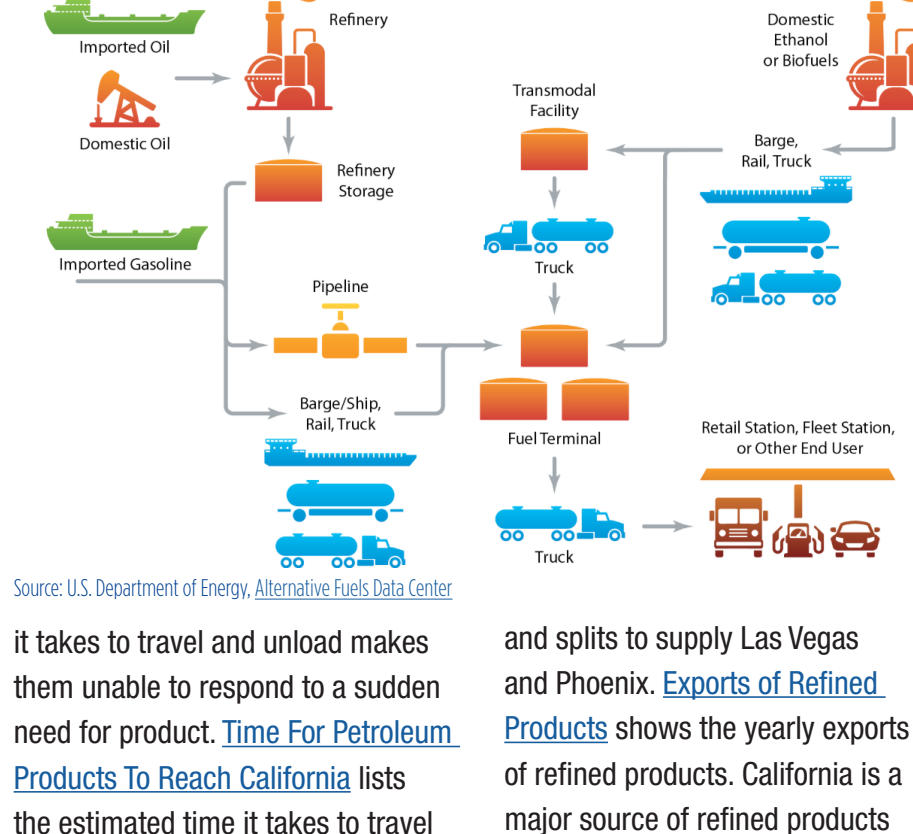
CALIFORNIA MARINE INFRASTRUCTURE

Shipping crude and refined products (gasoline, diesel, and jet fuel) by marine is the most important method of transportation for California. Imports and Exports of All Petroleum Products shows that in 2018, 484 million barrels of products were imported and 34 million barrels were exported. This means that 83 percent of fuels came into or left California by ship. There are no pipelines to bring crude into California. The only way for California to receive large amounts of crude and refined products is by marine.

Marine transporters dedicate ships for either crude or refined products. Ships rarely switch products, as switching forces transporters to pay and use valuable time to convert the ship for the other product. As Californian and Alaskan oil fields produce less crude, more foreign crude has to come in by marine. Imports and Exports of All Petroleum Products shows that in 2018, 457 million barrels of crude were imported. This means that roughly seven out of every ten gallons of gasoline are made from crude sourced outside of California. California refineries produce most of the fuel needed in the state and they import refined products to cover supply gaps. Imports and Exports of Refined Products shows that California imported 27 million barrels of refined product in 2018, up to 4 percent of California's consumption.

While ships can carry large amounts of crude and refined products, the time

MOVEMENT OF PETROLEUM PRODUCTS



Source: U.S. Department of Energy, Alternative Fuels Data Center

it takes to travel and unload makes them unable to respond to a sudden need for product. Time For Petroleum Products To Reach California lists the estimated time it takes to travel from common petroleum exporting countries and to fully unload at California ports. Most of that time is spent crossing the Pacific Ocean. Some of the time is spent clearing customs, in port traffic, or because of the weight of the ship. Trucks cannot receive the ships that are too heavy or too large. Unloading these ships takes additional time because the products must be transferred to smaller ships to ferry the fuel. Sending fuel by ship can take anywhere from 13 days to more than 30 days.

CALIFORNIA PIPELINE INFRASTRUCTURE

Pipelines are the quickest way to move products within and out of California. Pipelines are typically buried for protection and use pumping stations to keep a constant pressure to push products through. Refineries move to communal storage tanks at terminals located along the pipeline.

Pipelines are the least expensive and most reliable way to send products. Refineries buy space and time on the pipeline, which runs a strict weekly schedule. Refineries that cannot send product on schedule must trade spots with another refinery or lose their ability to send product by pipeline for the week.

California has two major pipeline systems for refined products with one in Northern California and one in Southern California. The pipeline in Northern California starts in the San Francisco Bay Area, supplying terminals along the way, and ends in Reno. The pipeline in Southern California begins in Los Angeles

and splits to supply Las Vegas and Phoenix. Exports of Refined Products shows the yearly exports of refined products. California is a major source of refined products by pipeline for Reno and jet fuel for Las Vegas. Pipeline deliveries of products to these areas totaled 56 million barrels in 2018.

CALIFORNIA RAIL AND TRUCKING INFRASTRUCTURE

Trains use tank cars to move crude and refined products by rail. Tank cars hold up to 820 barrels of crude or refined products. The amount of products moved by rail are dwarfed by marine, however, trains can move sizeable volumes. For example, a 100-tank car train can hold 70,000 barrels of crude. Shipping by rail is like going to a water well and filling multiple buckets on a cart instead of having a direct pipe from the well to a kitchen faucet. The appeal of rail is that it can access areas that do not have pipelines or marine ports. Rail accounts for 1 percent of total movements in 2018, of which 80 percent was crude.

Moving refined products by truck is usually the last step to get products to consumers. Trucks pick up diesel or gasoline from truck racks located at fuel terminals to fill storage tanks at local gas stations. Typically, a truck has a maximum capacity of 10,000 gallons based on applicable safety laws. Long distance trucking is rarely done except for in times of emergency, as trucks are one of the most expensive ways to move fuel.

Gavin Newsom
Governor

David Hochschild
Chair

Janea A. Scott, J.D.
Vice Chair

Karen Douglas, J.D.
J. Andrew McAllister, Ph.D.
Patty Monahan
Commissioners

Drew Bohan
Executive Director

FOR MORE INFORMATION
California's Petroleum Market
Weekly Fuels Watch
Subscribe

SPECIAL THANKS
Transportation Fuels Data Unit



CALIFORNIA ENERGY COMMISSION

