

DOCKETED

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California Gasoline Prices

California Energy Commission

Prepared by Energy Assessments Division Staff



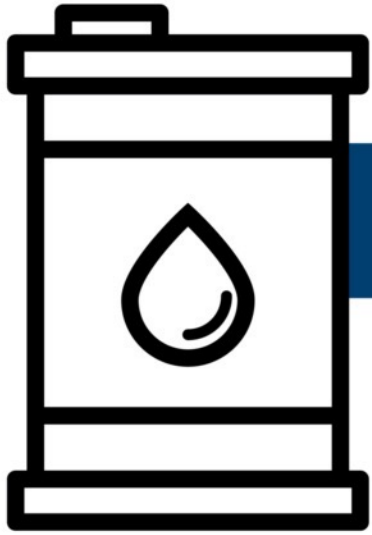


Presentation Overview

- Purpose
 - Overview of recent fuel price trends
 - Factors contributing to elevated prices
- Transportation fuels market – California sources & geographic isolation
- More expensive gasoline – trends & reasons
- 2022 gasoline price spikes
- Factors contributing to elevated prices
 - Refinery operations, inventories, imports & exports
- Closing remarks



California Fuel Sources



Oil Refineries

11 refineries in three primary locations:

Produce transportation fuels that meet California standards

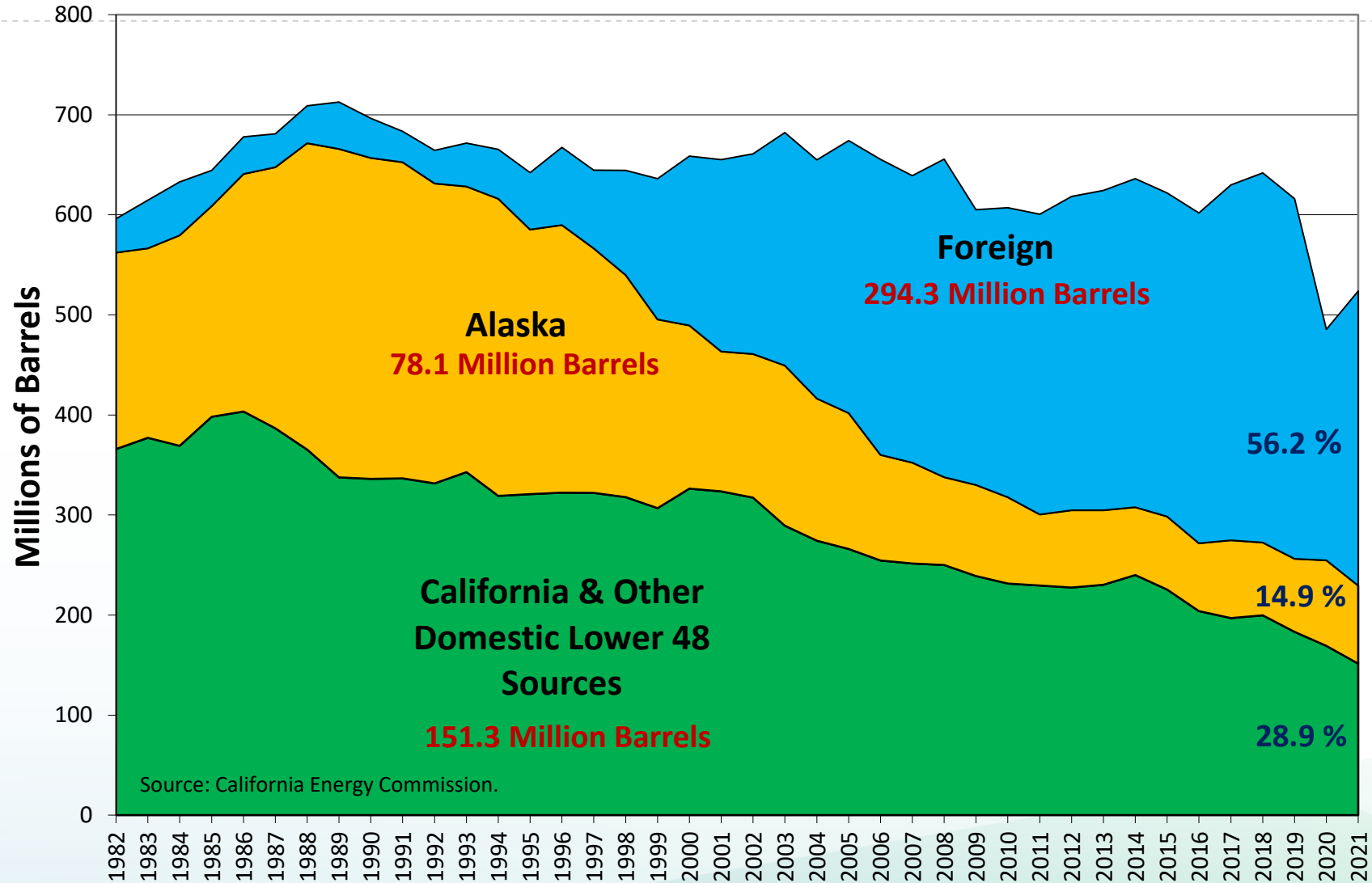
Provide majority of transportation fuels to neighboring states

Process over 1.6 million barrels per day of crude oil





Crude Oil Sources for California Refineries





California Fuel Sources – Local Refineries

California refiners *produce* refined transportation fuels for instate use and export to domestic & foreign destinations.

- Gasoline - 2021
 - 88 percent of production used in state – 314.0 million barrels or 13.2 billion gallons
 - 12 percent exported – 42.9 million barrels or 1.8 billion gallons
- Diesel fuel - 2021
 - 61 percent of production used in state – 65.2 million barrels or 2.7 billion gallons
 - 39 percent exported – 41.8 million barrels or 1.8 billion gallons
- Jet fuel - 2019
 - 80 percent of supply (production + imports) used in state – 104.1 million barrels or 4.4 billion gallons
 - 20 percent exported – 25.6 million barrels or 1.1 billion gallons



California Fuel Sources - Imports

California *imports* refined petroleum fuels for instate use and export to domestic destinations.

- Imports generally provide a smaller portion of overall supply
 - Less than 10 percent for gasoline and diesel fuel
 - More for jet fuel
- Gasoline - 2019
 - 4.5 percent of demand supplied from **foreign** refiners – 14.9 million barrels or 627 million gallons
 - 3.9 percent of demand supplied from **domestic** refiners – 12.8 million barrels or 538 million gallons
- Diesel fuel - 2019
 - 5.3 percent of demand supplied from **foreign** refiners – 4.7 million barrels or 199 million gallons
 - 4.8 percent of demand supplied from **domestic** refiners – 4.3 million barrels or 179 million gallons
- Jet fuel - 2019
 - 21.2 percent of demand supplied from **foreign** refiners – 20.5 million barrels or 861 million gallons
 - 1.3 percent of demand supplied from **domestic** refiners – 1.2 million barrels or 52 million gallons

California Gasoline Consumption

Californians Consumed

13.82 Billion Gallons
of finished gasoline in 2021

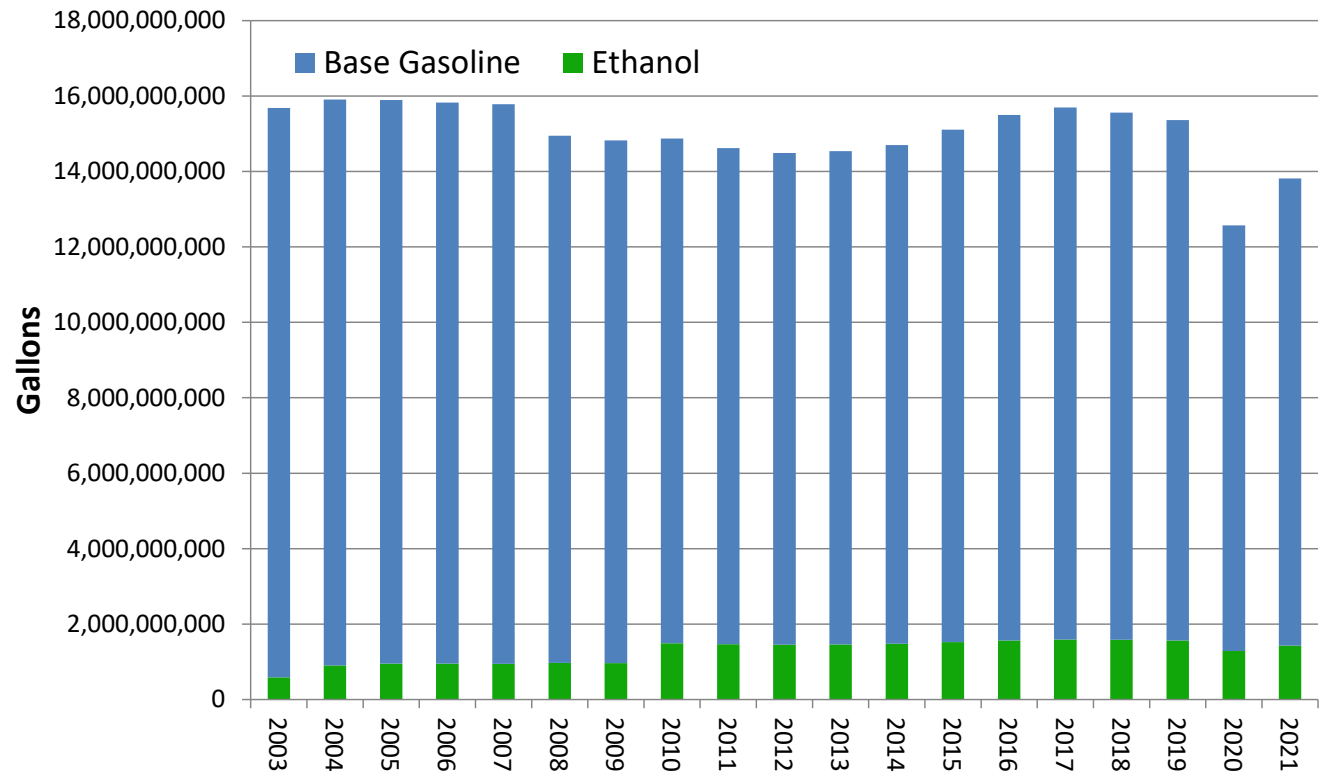
Demand for Base Gasoline

12.4 Billion Gallons
during 2021 (declining since 2017)

Demand for Ethanol

1.4 Billion Gallons
during 2021 (about 10%)

California Gasoline & Ethanol Demand 2003 - 2021





California's Isolated Fuels Market

Isolated Fuels Market

California market is isolated by time and distance from alternative sources of resupply to compensate for loss of output due to unplanned refinery outages

California's transportation fuels market is nearly self-sufficient, so supplies of gasoline & diesel fuel from outside of CA are not routinely needed to balance out supply with demand

Imports of gasoline and blending components account for only 3 to 7 percent of supply

The California market is geographically isolated from other locations in the U.S. that produce refined products

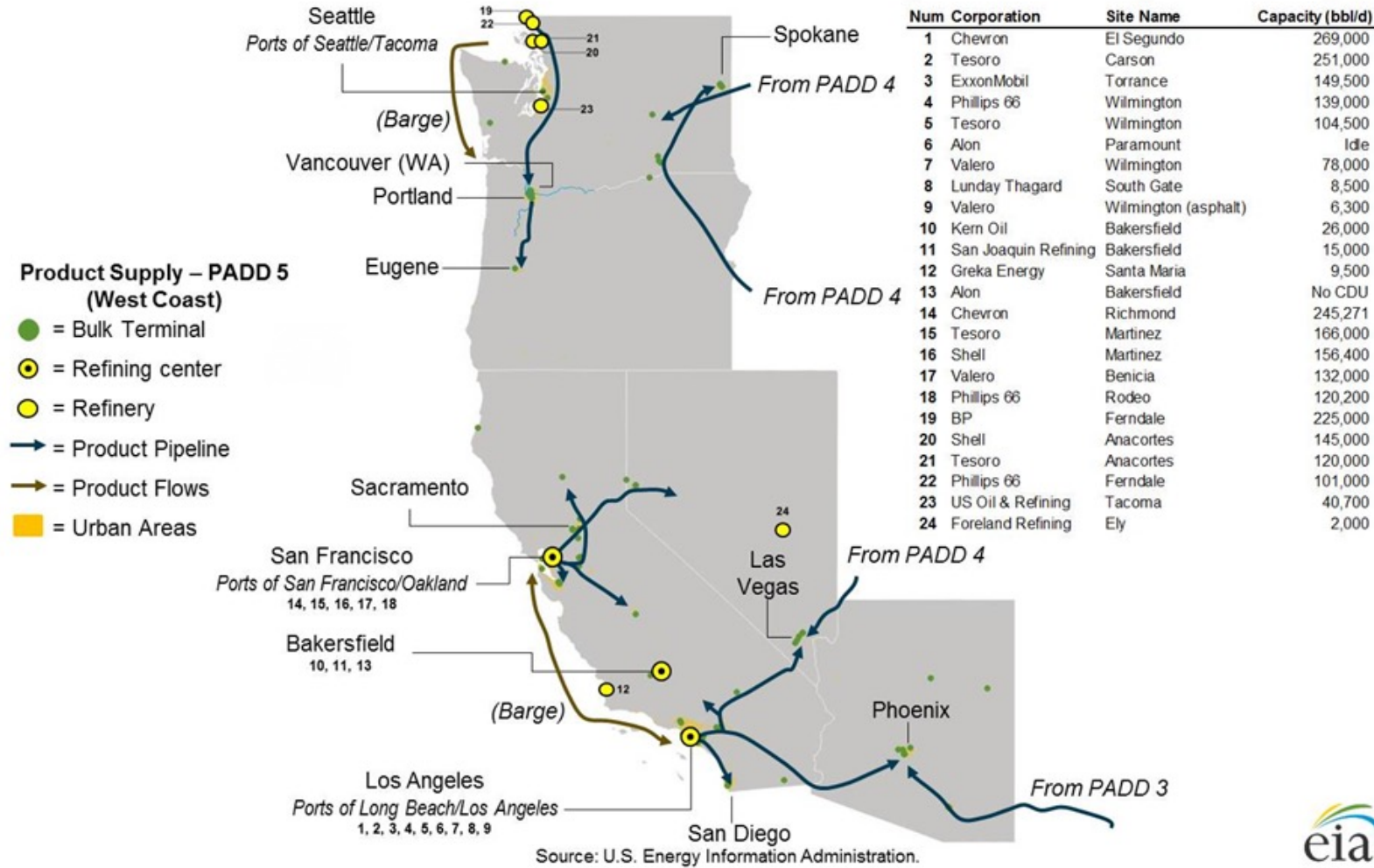
Pipelines connect California refining centers to distribution terminals in Nevada and Arizona, but these pipelines only operate in one direction, sending gasoline and other transportation fuels to these neighboring states





Western States More Isolated than Rest of U.S.

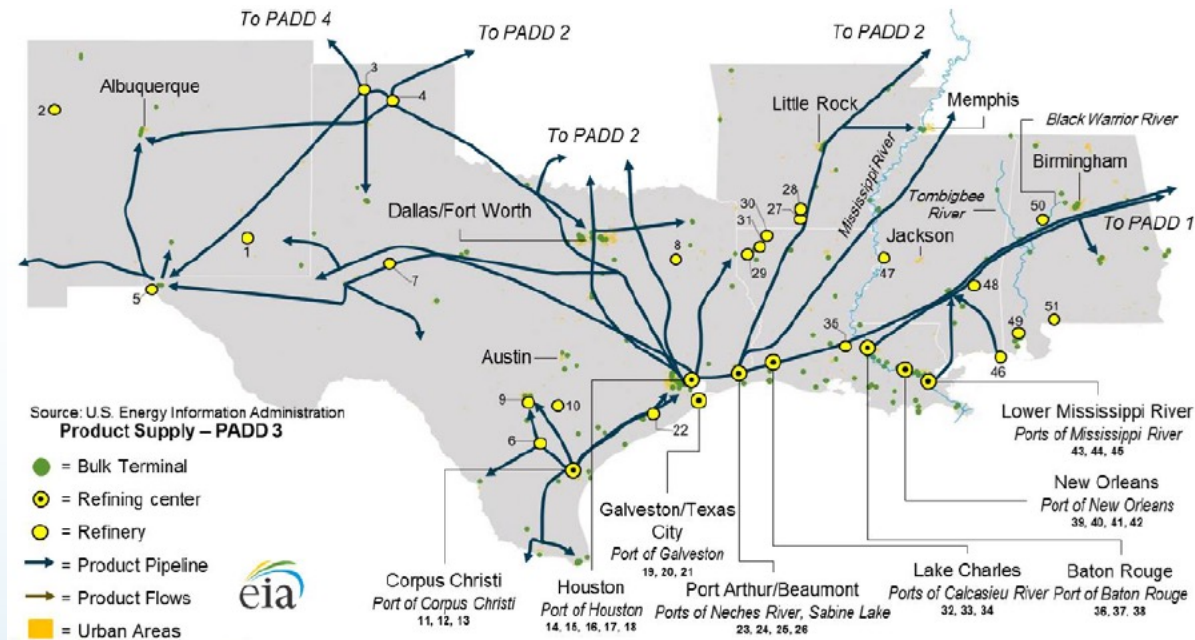
Figure 1. West Coast petroleum product supply map



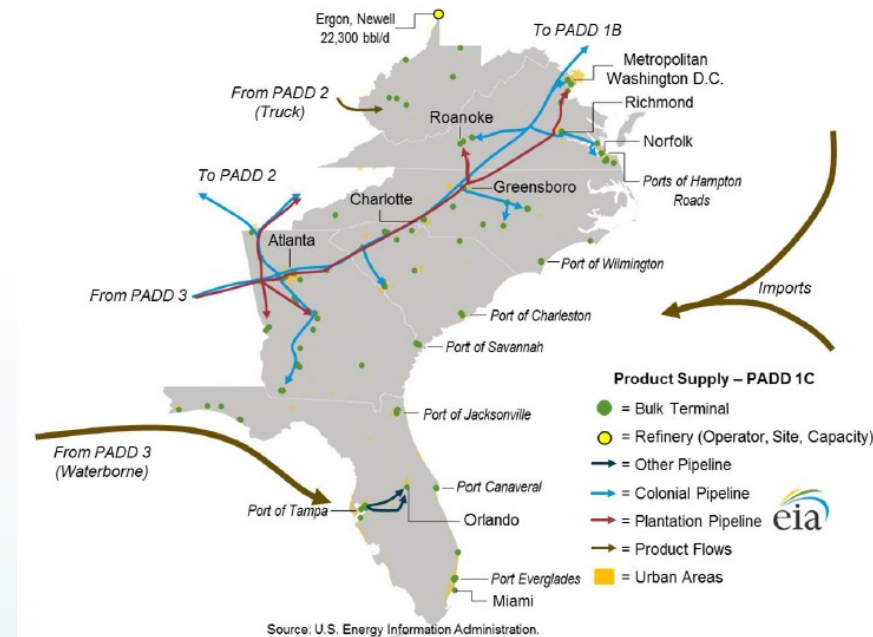


Balance of Other Regions Varies

- California is nearly self-sufficient
 - Primary sources originate *inside* the state
 - More susceptible to price spikes following unplanned outages
- Other regions less prone to price spikes
 - Price spikes following significant unplanned refinery outages less common



Large net *exporting* region



Large net *importing* region



Trends & Reasons Related to More Expensive Gasoline

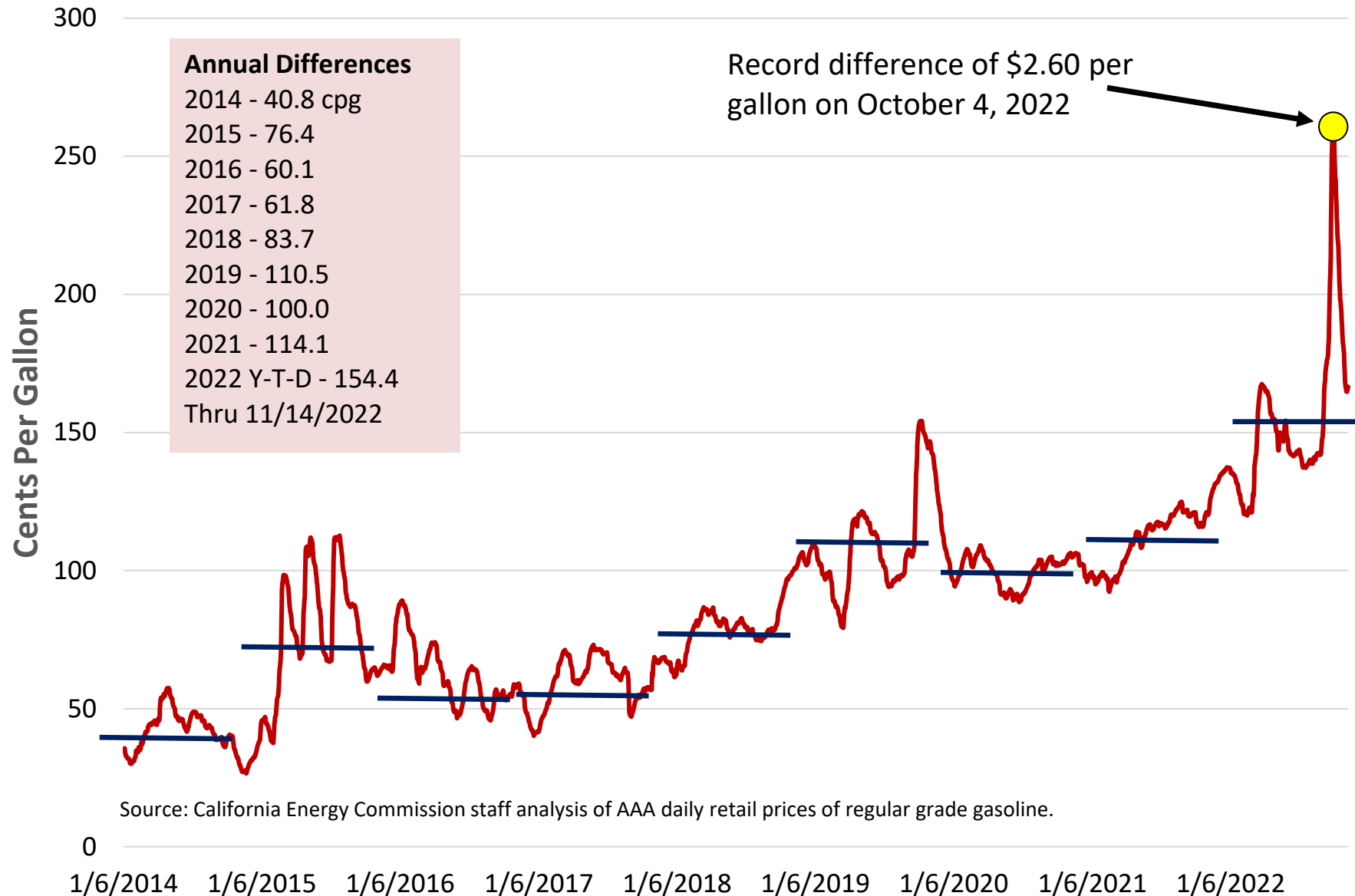


California Gasoline Market – More Expensive

- Market is usually the highest retail gasoline price in U.S.
 - Greater tax burden – state excise and sales tax
 - Higher gasoline production costs
 - Environmental program costs
 - Price spikes associated with an isolated market
 - More expensive crude oil for California refiners
 - Increasing retail margins for more expensive gasoline brands

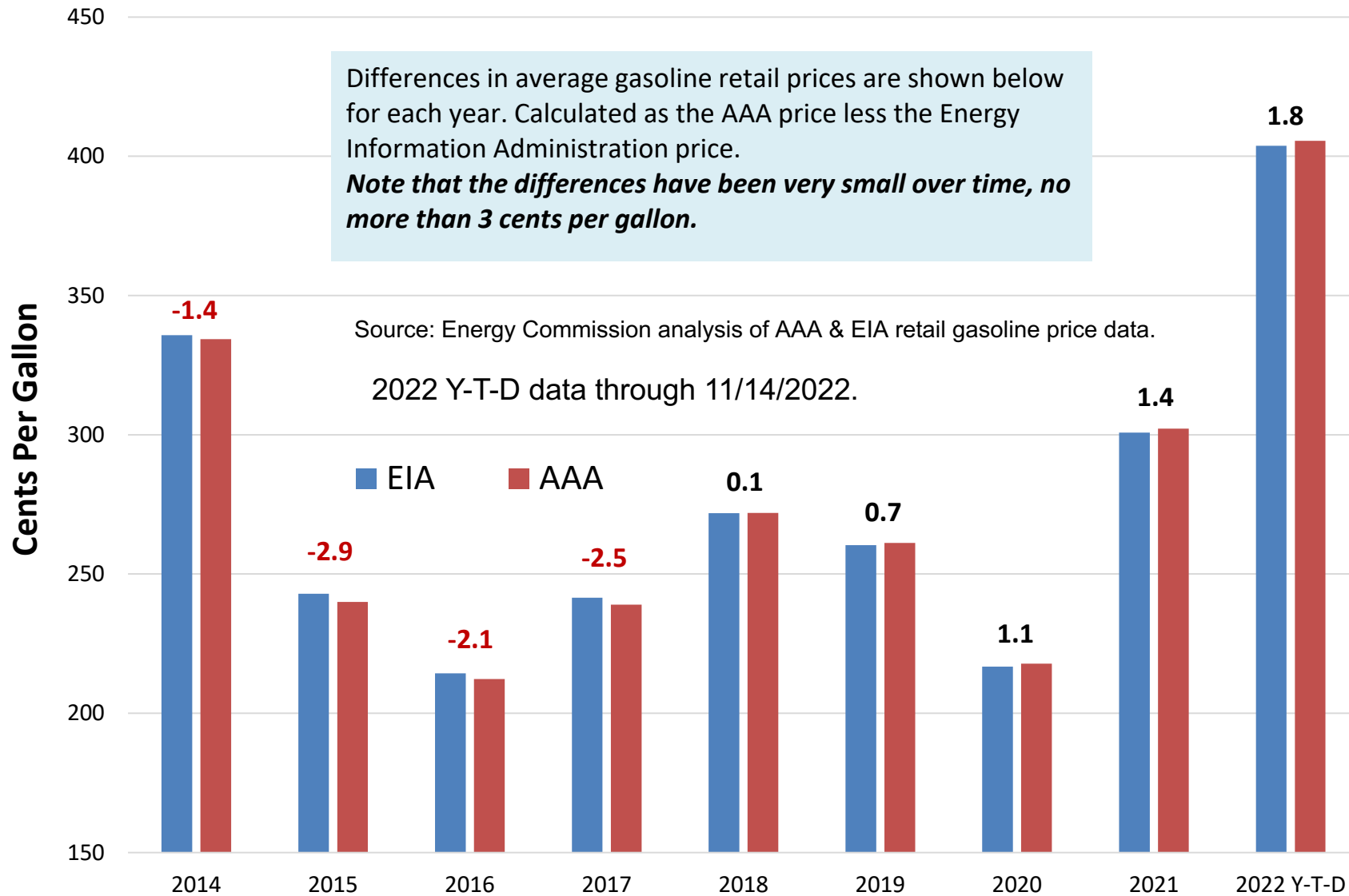


California Less U.S. Retail Gasoline Price



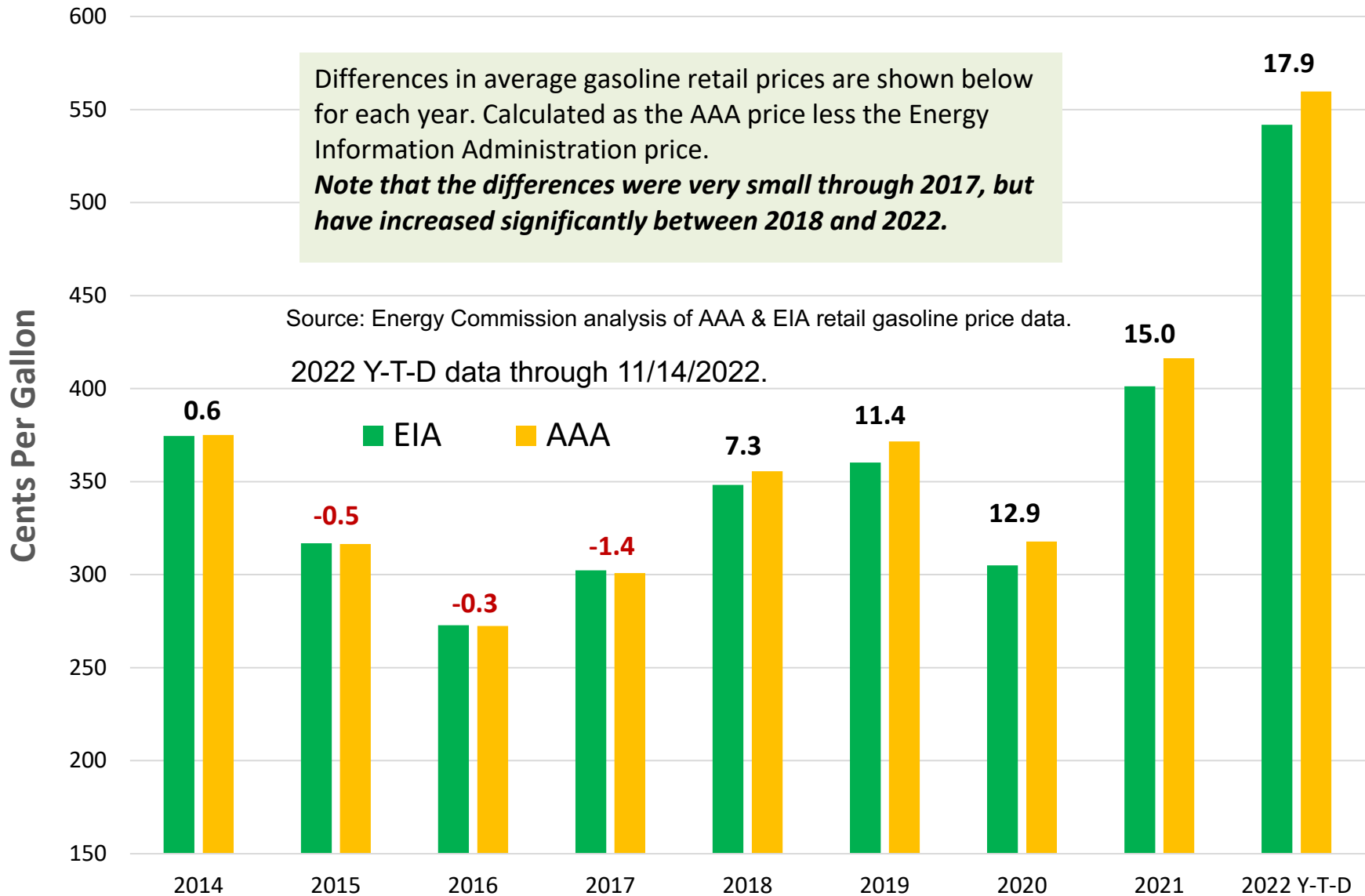


Gasoline Retail Prices - United States



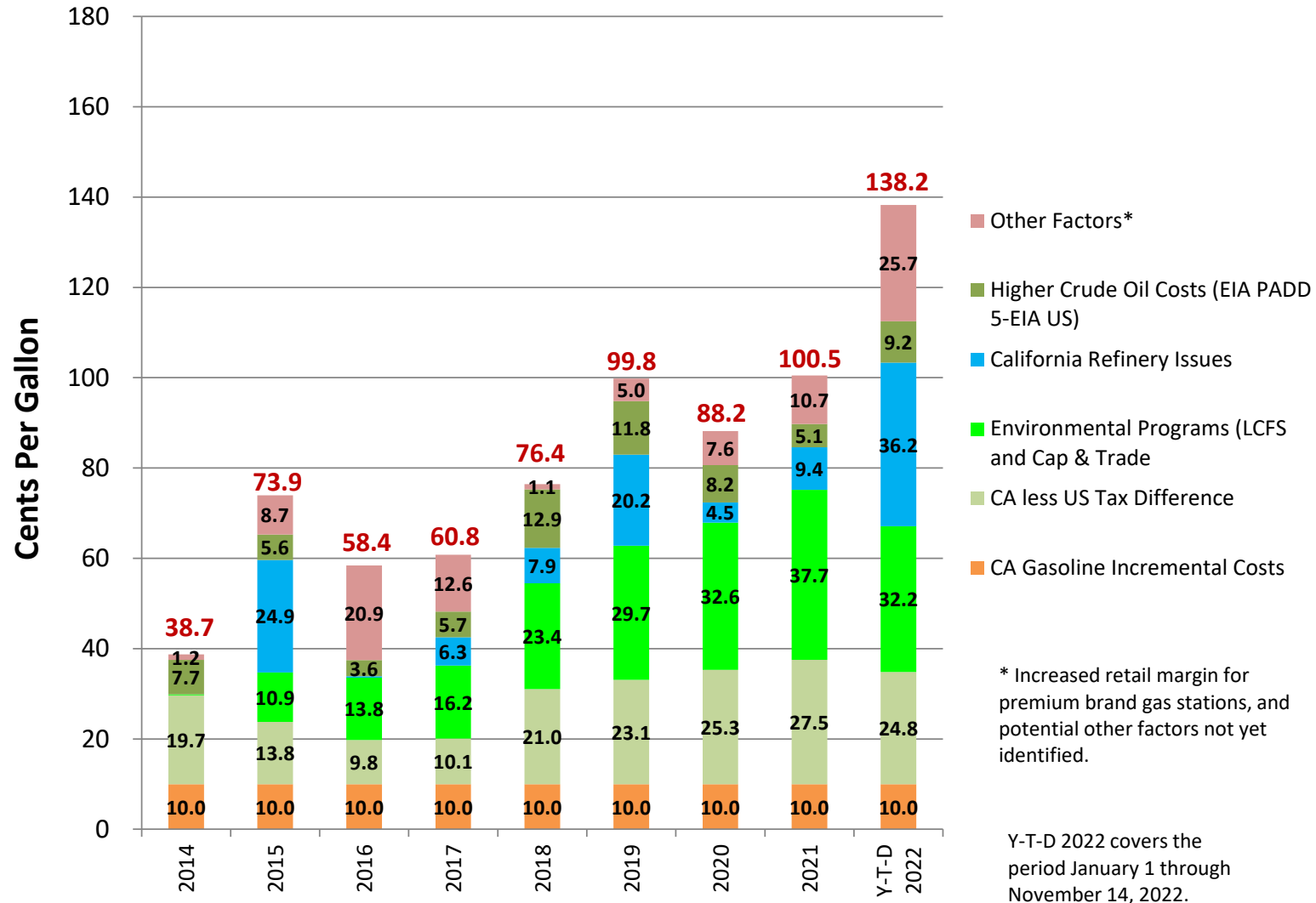


Gasoline Retail Prices - California





CA Difference Factors Using EIA Data



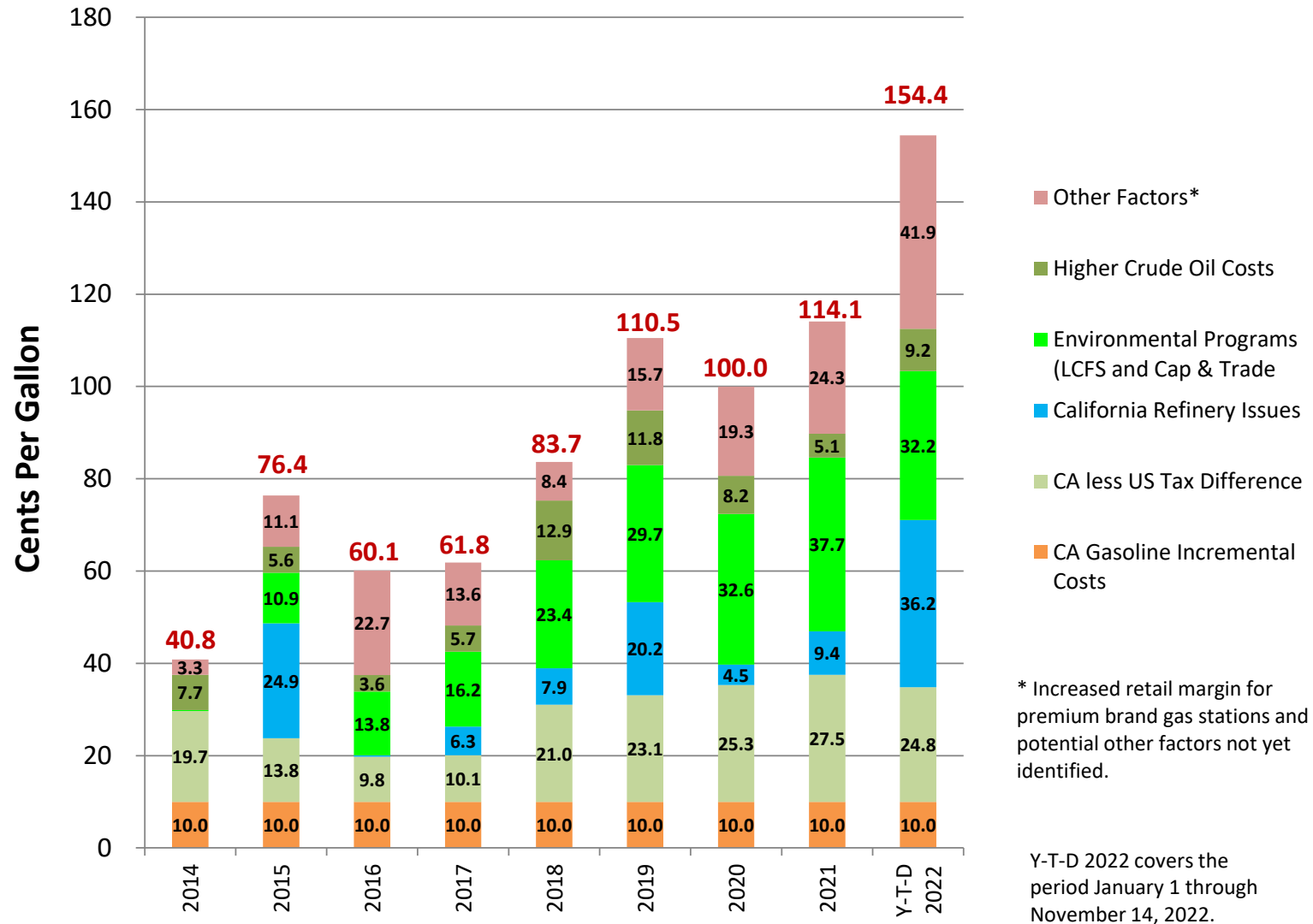
Sources: California Energy Commission analysis of OPIS, EIA, API, and AAA data.

* Increased retail margin for premium brand gas stations, and potential other factors not yet identified.

Y-T-D 2022 covers the period January 1 through November 14, 2022.



CA Difference Factors Using AAA Data



Sources: California Energy Commission analysis of OPIS, EIA, API, and AAA data.

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2022 Gasoline Price Spikes

Gasoline Price Spikes

Gas prices rise for a variety of reasons:



Geopolitical Issues



Isolated Market and Localized refinery issues



Rise in Seasonal Demand

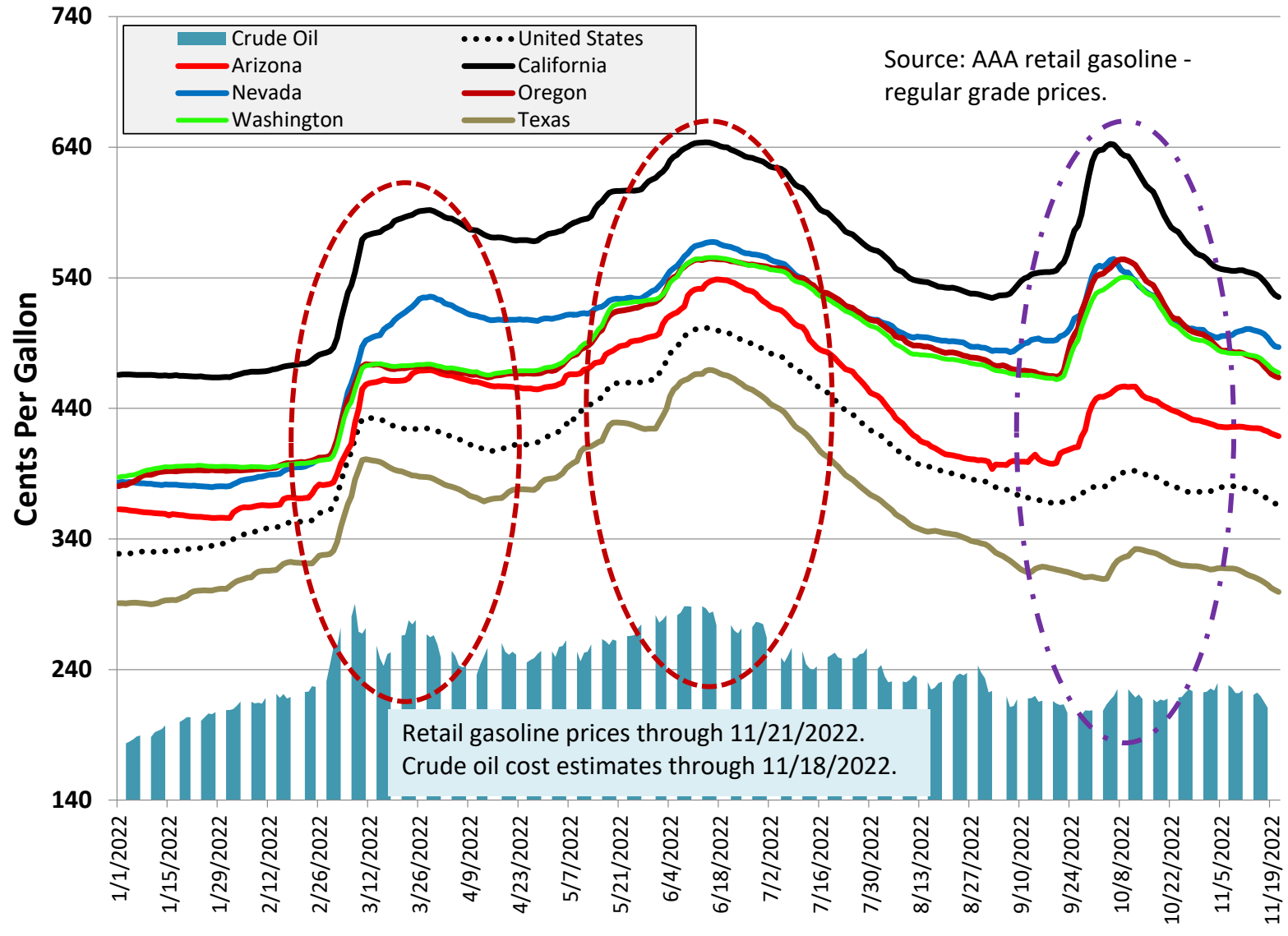
- California market is isolated by time and distance from alternative sources to resupply during unplanned refinery outages
- Price spikes in California can last longer than other places because it takes longer to resupply and at a higher cost



Shift From Winter to Summer Gas Recipe



2022 – Multiple & Record Gasoline Price Spikes





Retail Gasoline Prices Continue Declining

California Average Prices

Prices updated as of 11/21/2022

	Regular	Mid	Premium	Diesel
Current Avg.	\$5.252	\$5.459	\$5.608	\$6.184
Yesterday Avg.	\$5.269	\$5.489	\$5.627	\$6.202
Week Ago Avg.	\$5.433	\$5.630	\$5.785	\$6.264
Month Ago Avg.	\$5.832	\$6.072	\$6.208	\$6.522
Year Ago Avg.	\$4.704	\$4.889	\$5.018	\$4.838

National Average Prices

Prices updated as of 11/21/2022

	Regular	Mid	Premium	Diesel
Current Avg.	\$3.662	\$4.109	\$4.426	\$5.298
Yesterday Avg.	\$3.671	\$4.120	\$4.435	\$5.307
Week Ago Avg.	\$3.773	\$4.208	\$4.527	\$5.359
Month Ago Avg.	\$3.820	\$4.278	\$4.583	\$5.340
Year Ago Avg.	\$3.408	\$3.763	\$4.036	\$3.645

California retail gasoline price decline has resumed after a brief pause

- **Down 18.1 cpg** since last week
- **Down 58.0 cpg** since last month
- **Up 54.8 cpg** since last year

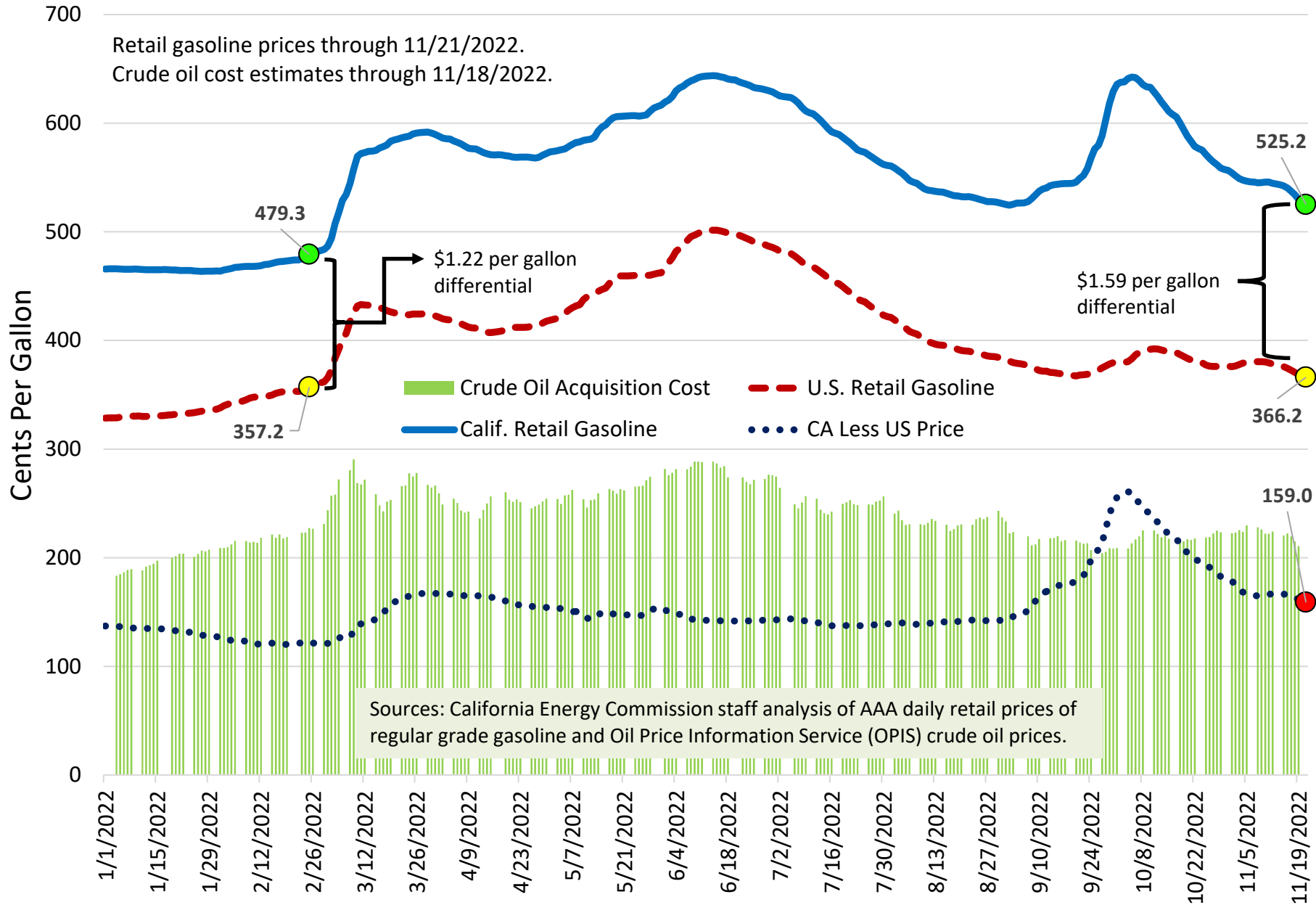
National retail gasoline prices continue lower

- **Down 11.1 cpg** since last week
- **Down 15.8 cpg** since last month
- **Up 25.4 cpg** since last year

California retail prices are expected to continue downward, absent any significant unplanned refinery outages.

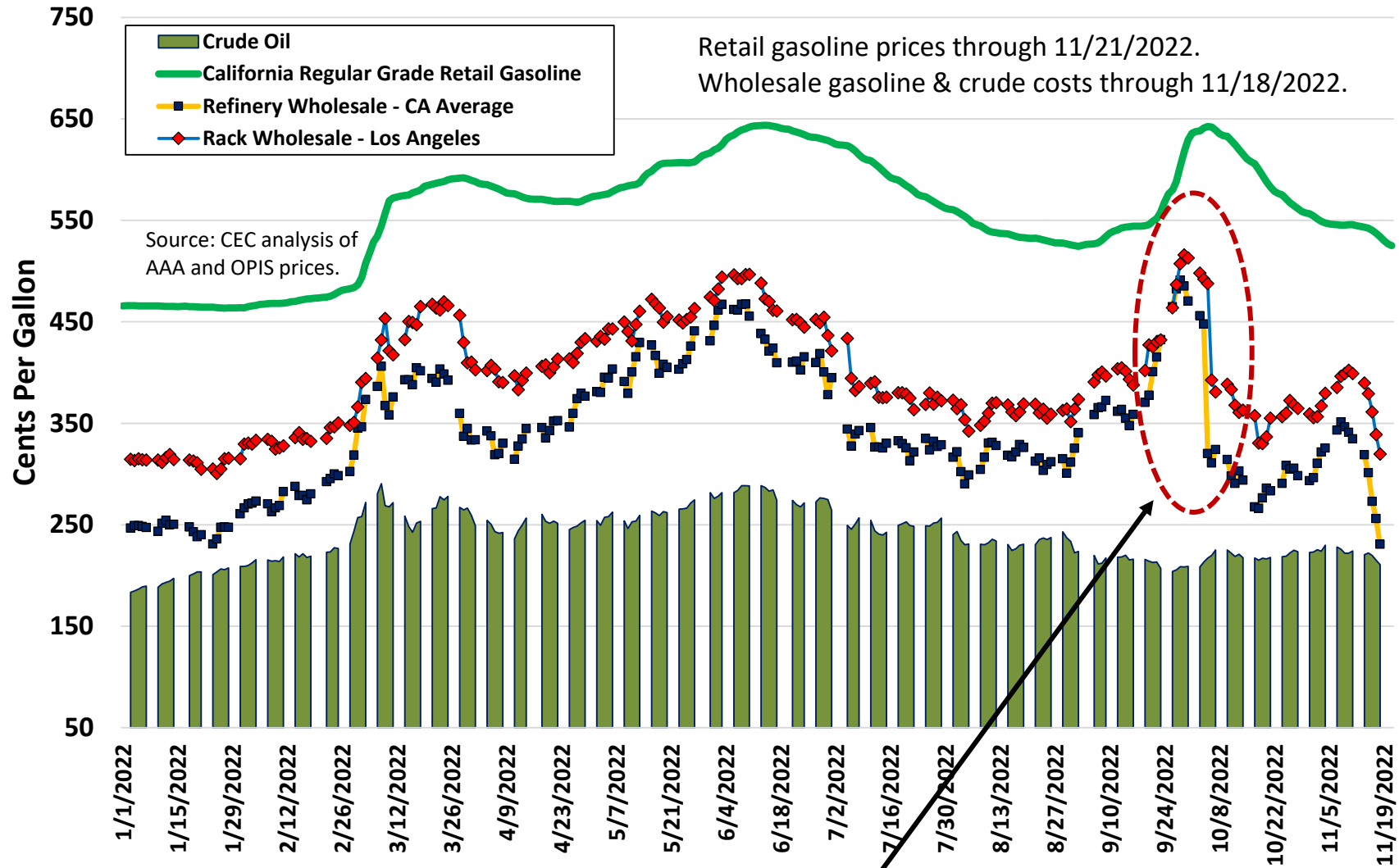


Retail Gasoline Price & Crude Oil Costs





California Gasoline Price Changes Retail, Rack and Refinery Wholesale

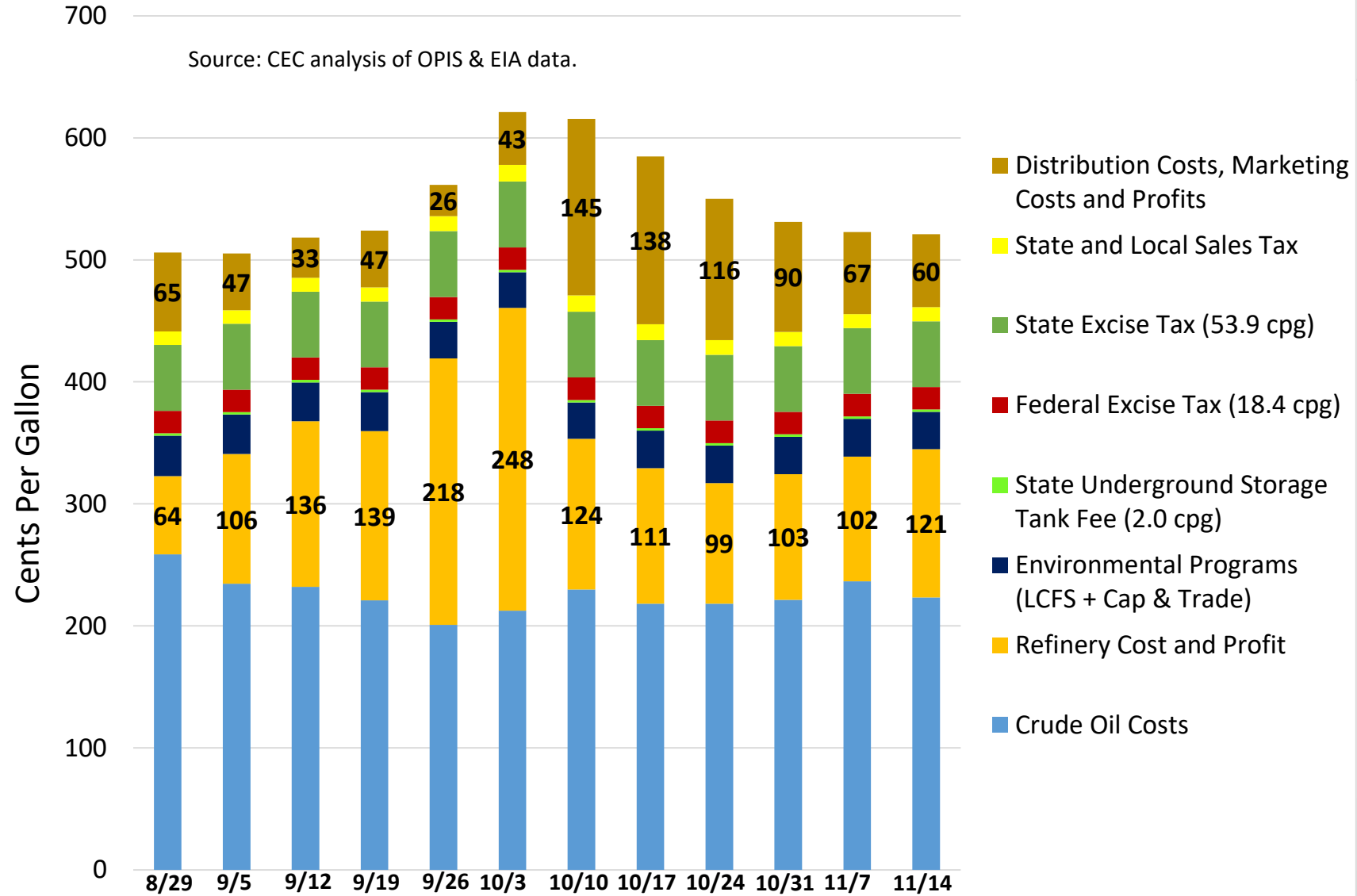


Governor Newsom's executive order for early transition to winter gasoline was primary factor resulting in record one-day declines for refinery & distribution terminal wholesale gasoline prices.



CA Retail Gasoline - Cost Breakdown (2022)

Source: CEC analysis of OPIS & EIA data.





Factors Contributing to Spikes



Crude Oil Price Impacts

- Changes in crude oil prices impact transportation fuel prices
- Crude oil is a global commodity. Prices fluctuate due to:
 - Increasing supply from non-OPEC countries
 - Geopolitical events increase risk of supply disruption
 - Changing global demand for oil
 - Heightened activity in futures market as alternative investment opportunity
 - Value of U.S. dollar to other currencies, a stronger dollar will place downward pressure on global crude oil prices

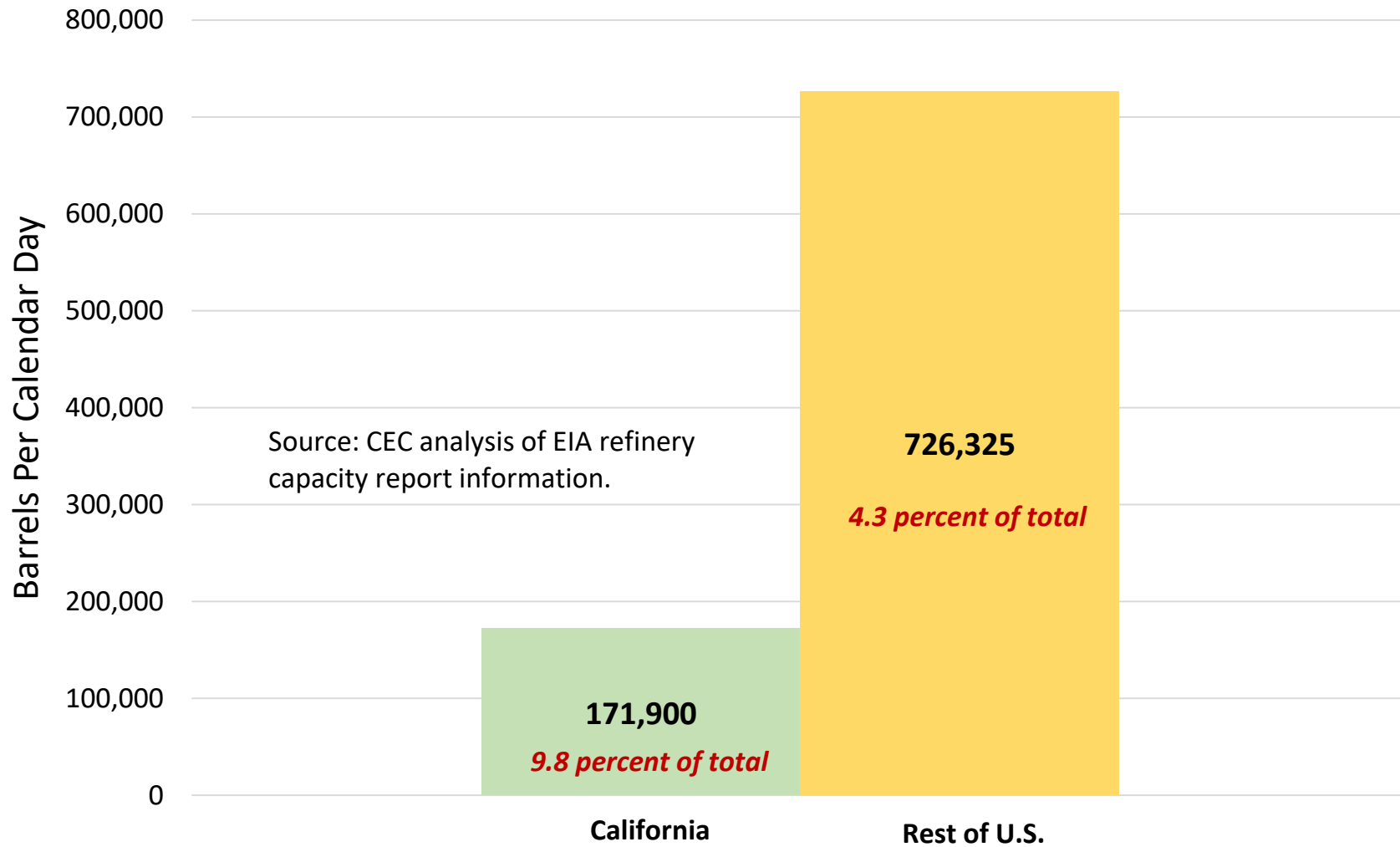


Wholesale Price Impacts

- Changes in wholesale prices impact transportation fuel prices, factors include:
 - ↑ Unplanned refinery outages
 - ↑ Refinery closures
 - ↑ Return-to-service delays by refineries undergoing planned maintenance
 - ↑ Transition from winter to summer gasoline recipe decreases refinery production capability
 - ↑ Introduction of new environmental fees
 - ↑ Changes in fuel regulations, such as reformulated gasoline and transition away from MTBE
 - ↕ Changes in futures contract prices linked to wholesale prices
 - ↕ Unusually high or low fluctuations of fuel inventory levels
 - ↕ Marine imports that are either higher-than-normal or lower-than-normal
 - ↕ Changes in the level of taxes on fuels
 - ↓ Transition from summer to winter gasoline recipe increases refinery production capability
 - ↓ Resumption of operations by temporarily idled refineries



Loss of Refining Capacity 2022 vs. 2019 California and the Rest of the U.S.





Refinery Maintenance

- Puts upward pressure on wholesale fuel prices
 - Especially unplanned or longer than expected maintenance
- Maintenance limits refiner's ability to increase gasoline output when higher price signals beyond planned rates
- Refiners do not report planned maintenance schedule to CEC
- CEC relies on inconsistent proprietary reports for information on planned and unplanned maintenance
 - Limits CEC's ability to foresee impacts on gasoline output



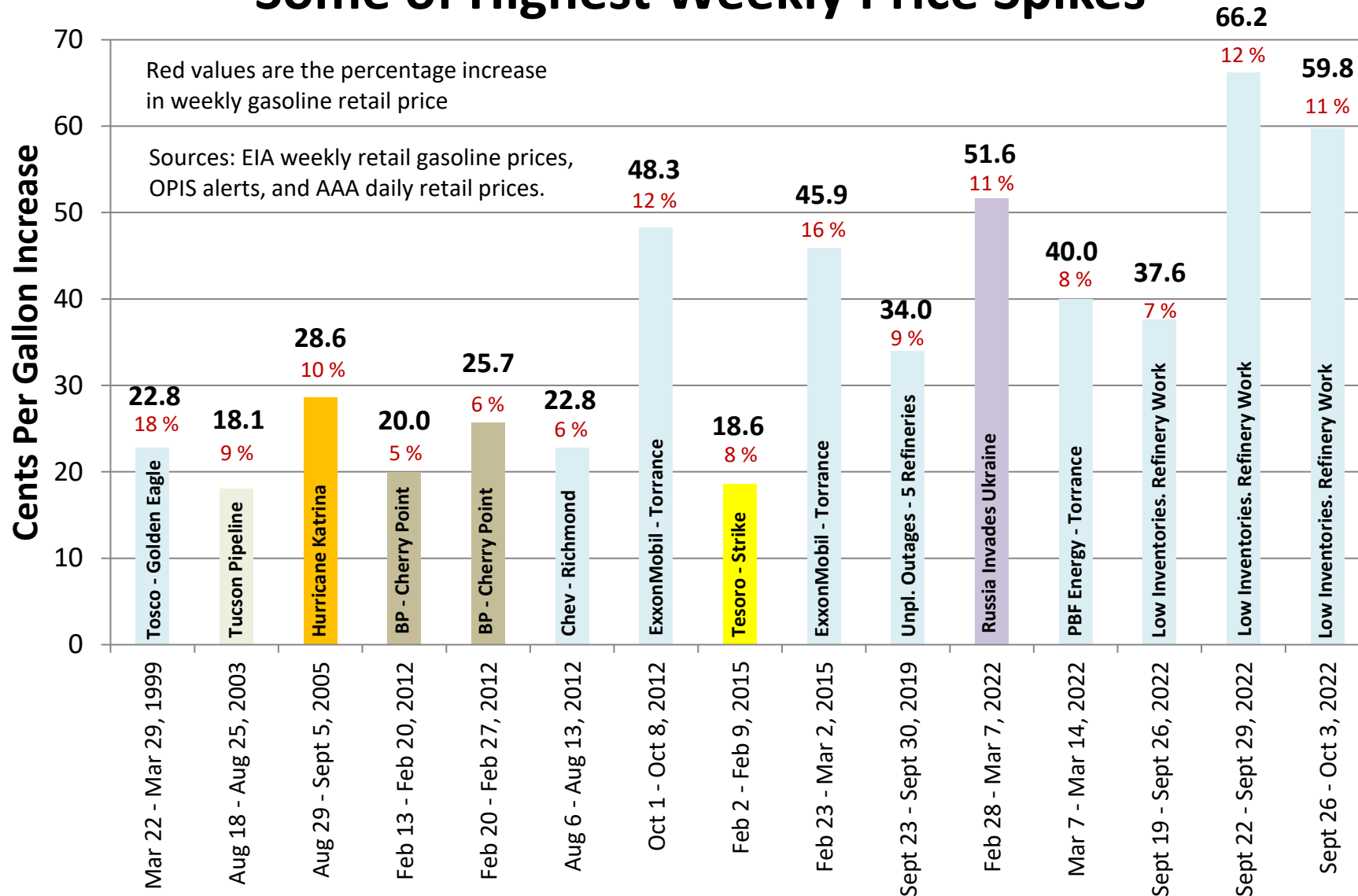
Refinery Maintenance Price Impacts

- In September and October 2022, four California refiners conducted planned maintenance
- Decreased gasoline production capability by approximately 55 thousand barrels per day, or 6 percent of estimated statewide gasoline demand
- Loss of gasoline production helped push California U.S. price difference up 85 cents per gallon, new record differential of \$2.61 per gallon



California Retail Gasoline

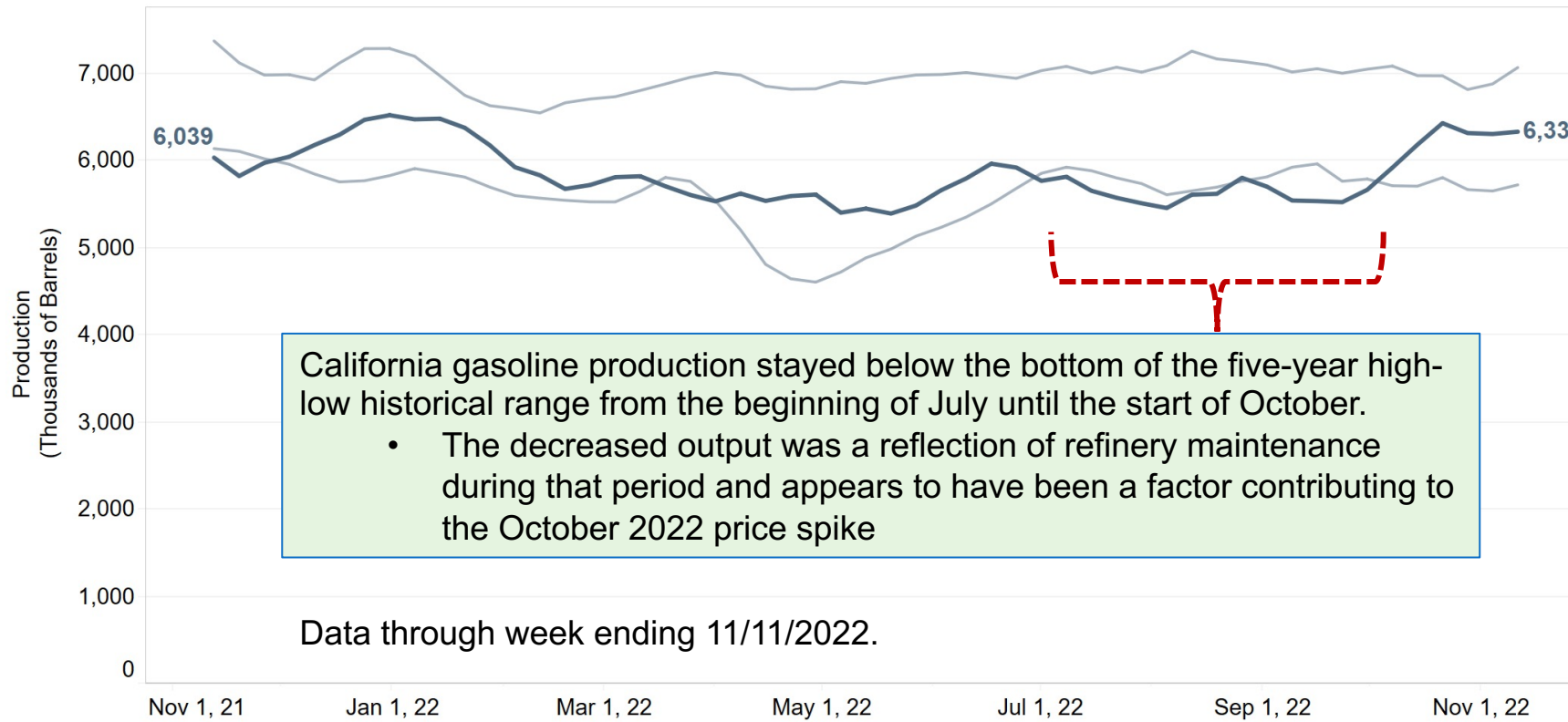
Some of Highest Weekly Price Spikes





California Refinery Inputs and Production

Weekly Inputs and Production



California gasoline production stayed below the bottom of the five-year high-low historical range from the beginning of July until the start of October.

- The decreased output was a reflection of refinery maintenance during that period and appears to have been a factor contributing to the October 2022 price spike

Data through week ending 11/11/2022.

- Legend
- CARB Reformulated ..
- Product Category Gasoline
- Product Type All
- Level of Detail Fuel Type
- Region All
- Date Range End 11/11/2022
- Current Years 1 Year
- Historical Years 5
- Moving Average 4-Week
- Historical Analysis 90th/10thPercentile

Comparison Table

	2 Years Previous	1 Year Previous	2 Weeks Previous	Previous Week	Latest Date in Range
CARB Reformulated Gasoline	5,871	6,039	5,542	6,421	6,560
Non-California Gasoline	725	725	834	714	573
Grand Total	6,596	6,764	6,376	7,135	7,133

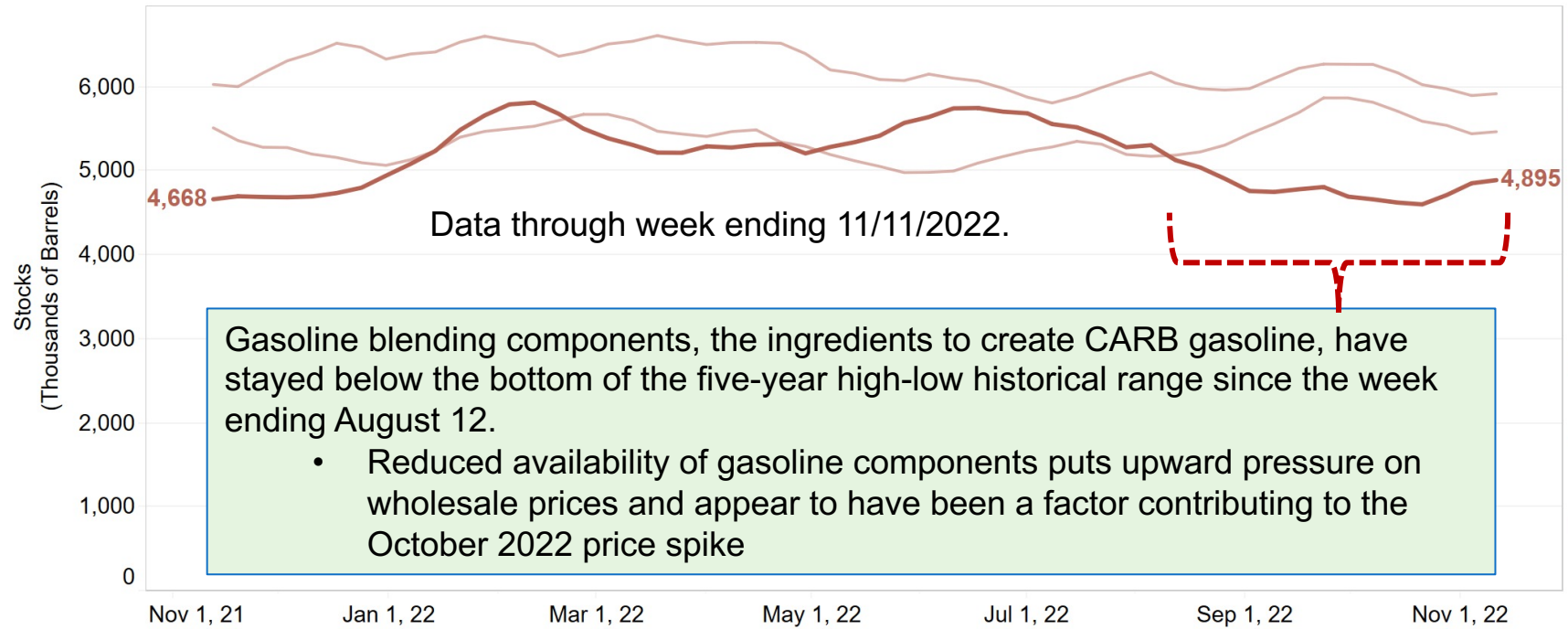
For additional information about the data and how to cite this visualization, see [Weekly Fuels Watch Refinery Inputs and Production](#).





California Refinery Stocks

Weekly Stocks



- Legend
- Gasoline Blending C..
- Product Category
Gasoline
- Product Type
All
- Level of Detail
Fuel Type
- Region
All
- Date Range End
11/11/2022
- Current Years
1 Year
- Historical Years
5
- Moving Average
4-Week

Comparison Table

	2 Years Previous	1 Year Previous	2 Weeks Previous	Previous Week	Latest Date in Range
CARB Reformulated Gasoline	4,898	5,049	5,458	6,110	5,872
Gasoline Blending Components	5,501	4,668	4,780	5,113	5,015
Non-California Gasoline	1,193	1,089	942	950	969
Grand Total	11,592	10,806	11,180	12,173	11,856

Historical Analysis
90th/10thPercentile



For additional information about the data and how to cite this visualization, see [Weekly Fuels Watch Refinery Stocks](#). Please note: The graph has been revised to correct the axis of the historical analysis bands. Values are unaffected. Graph revised on June 21, 2022.

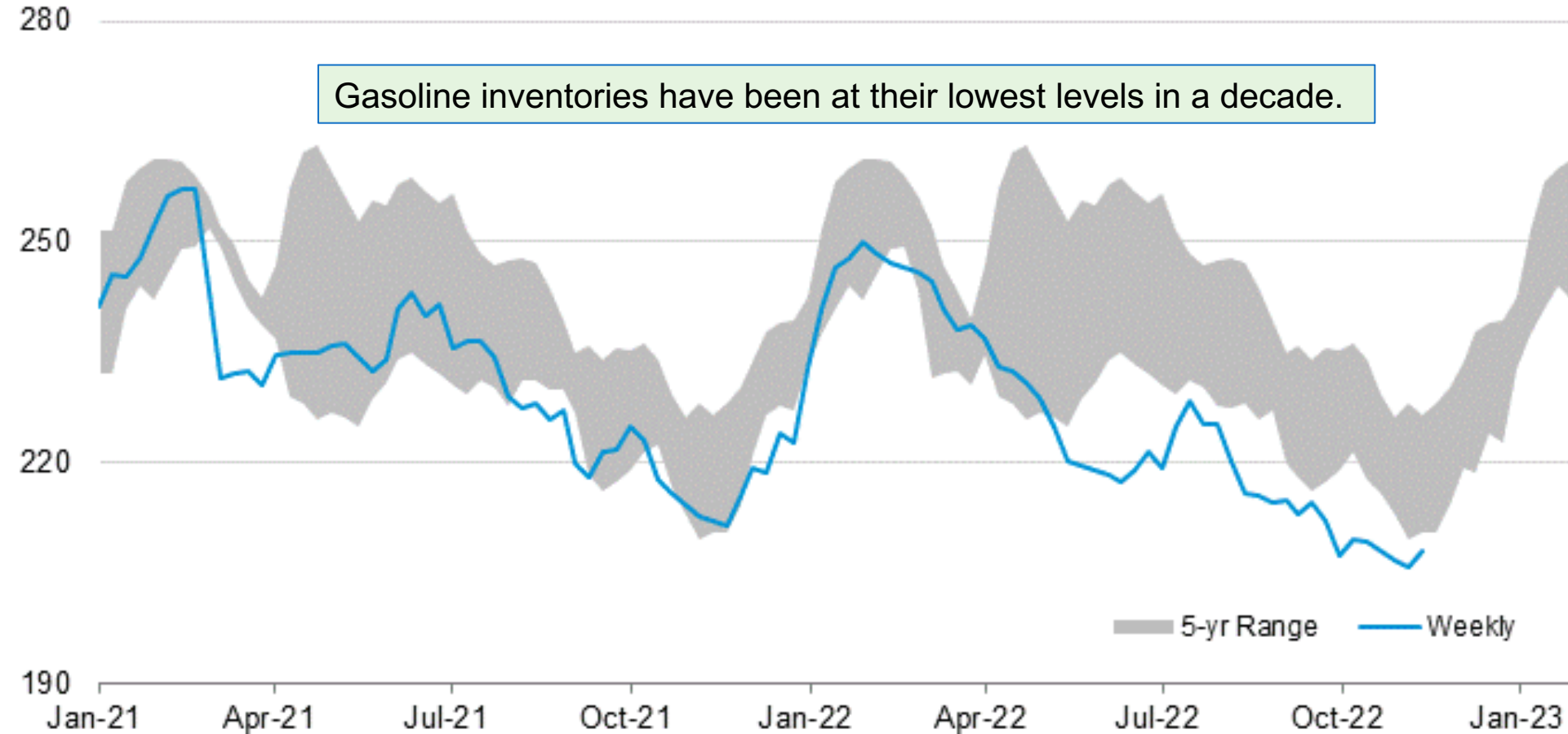


Gasoline Inventories Low Since Summer

U.S. gasoline stocks
million barrels



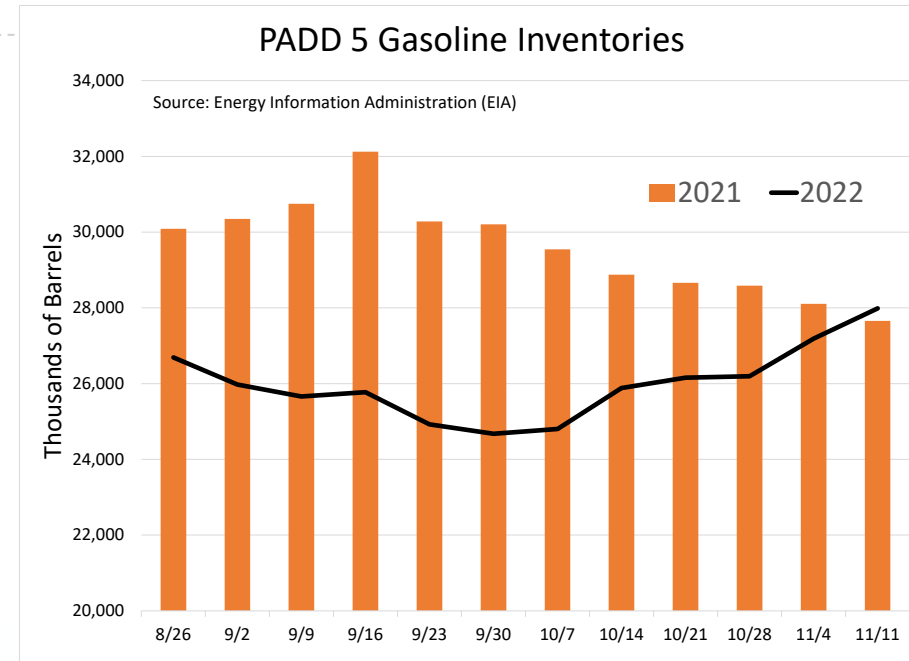
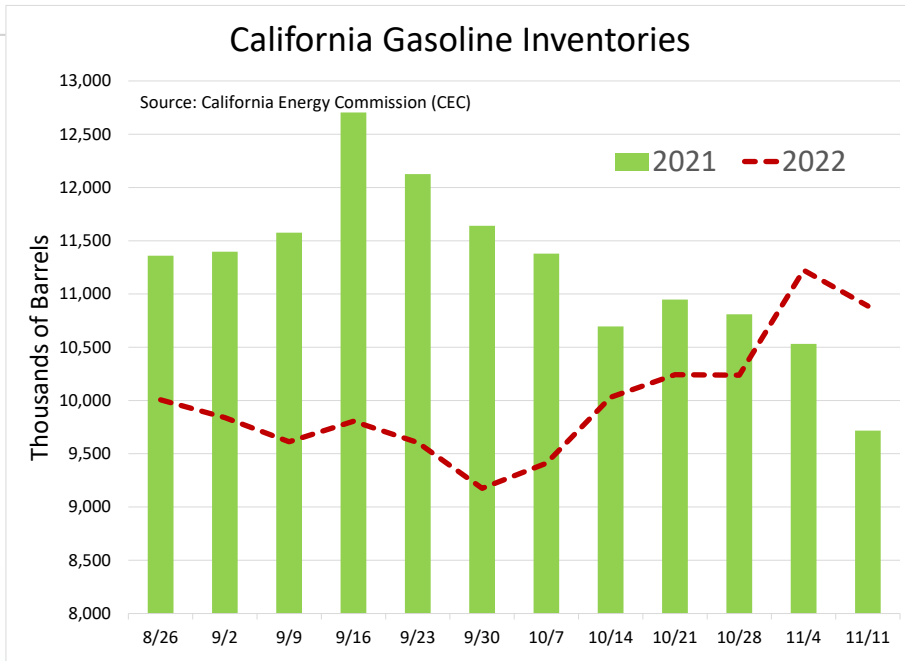
Gasoline inventories have been at their lowest levels in a decade.



Data source: U.S. Energy Information Administration



Gasoline Inventories – CA & West Coast



Compared to last month

- CA up 0.9 million barrels or 8.5 percent
- West Coast up 2.1 million barrels or 8.1 percent

Compared to last year

- CA up 1.2 million barrels or 12.0 percent
- West Coast up 0.3 million barrels or 1.2 percent

Lower-than-normal inventory levels put upward pressure on prices.

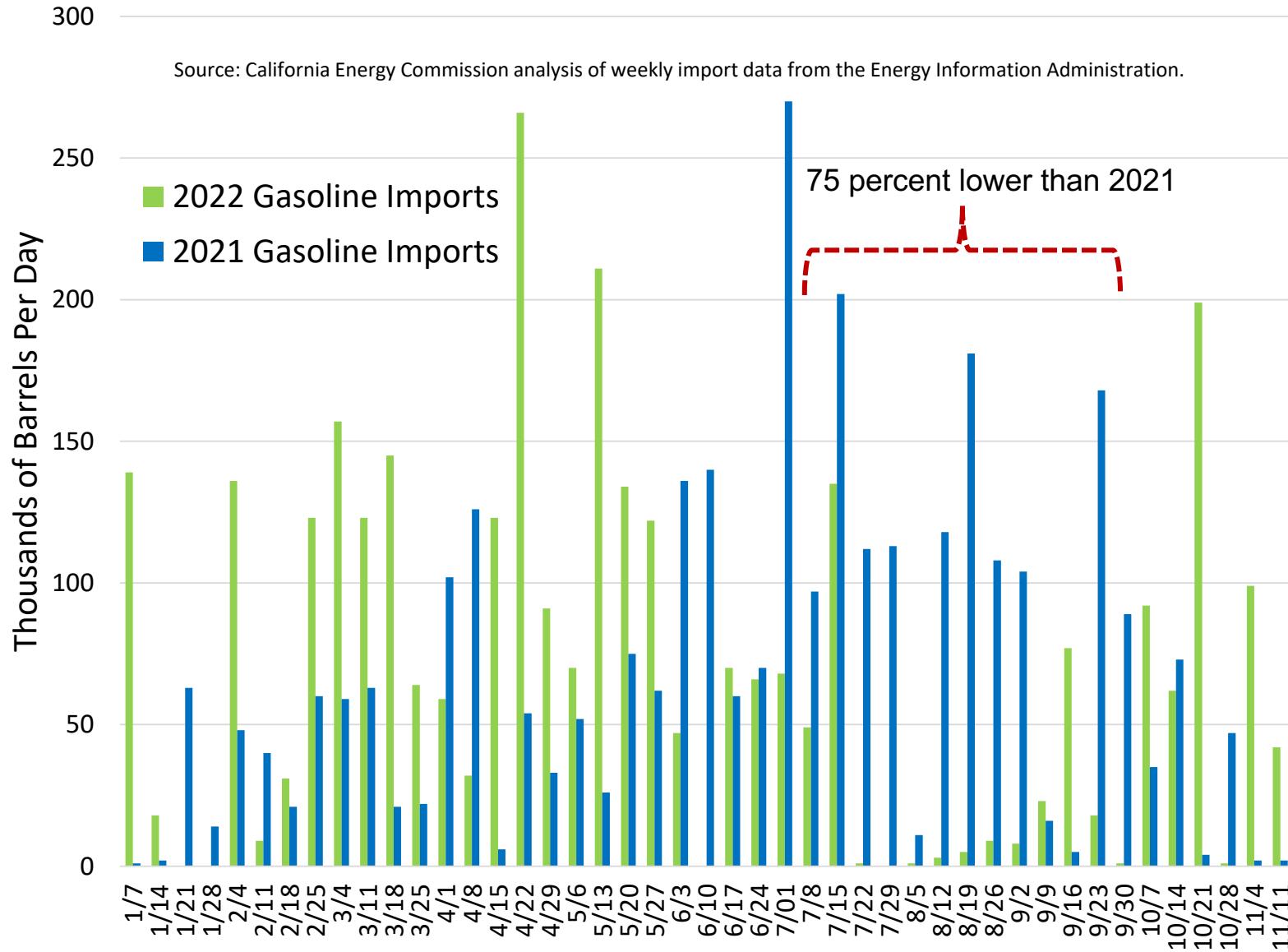
- Data for the week ending 11/11/2022.

Gasoline inventories continue improving and are now above year-ago levels in California and the West Coast.



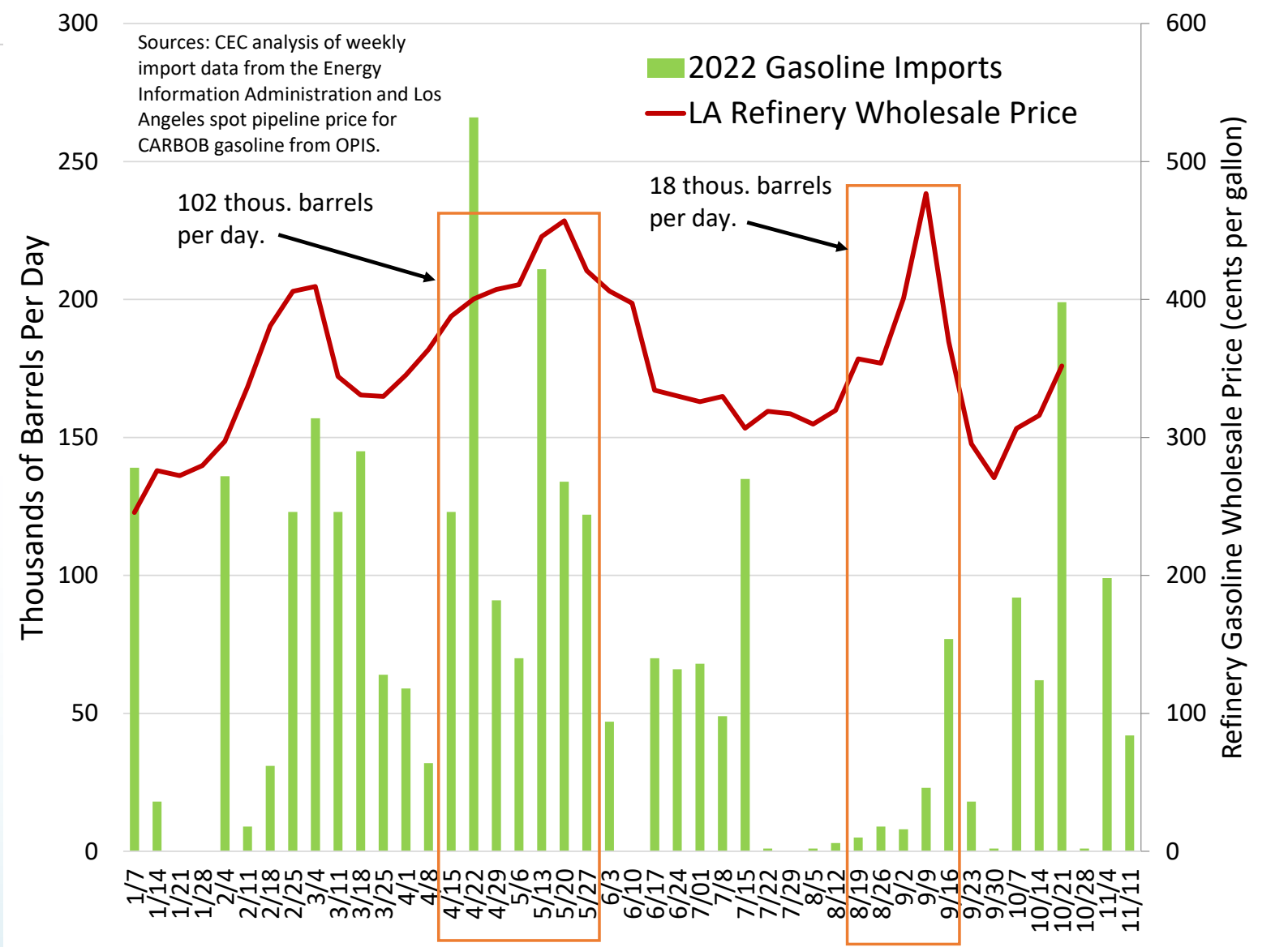
West Coast Foreign Gasoline Imports

Source: California Energy Commission analysis of weekly import data from the Energy Information Administration.



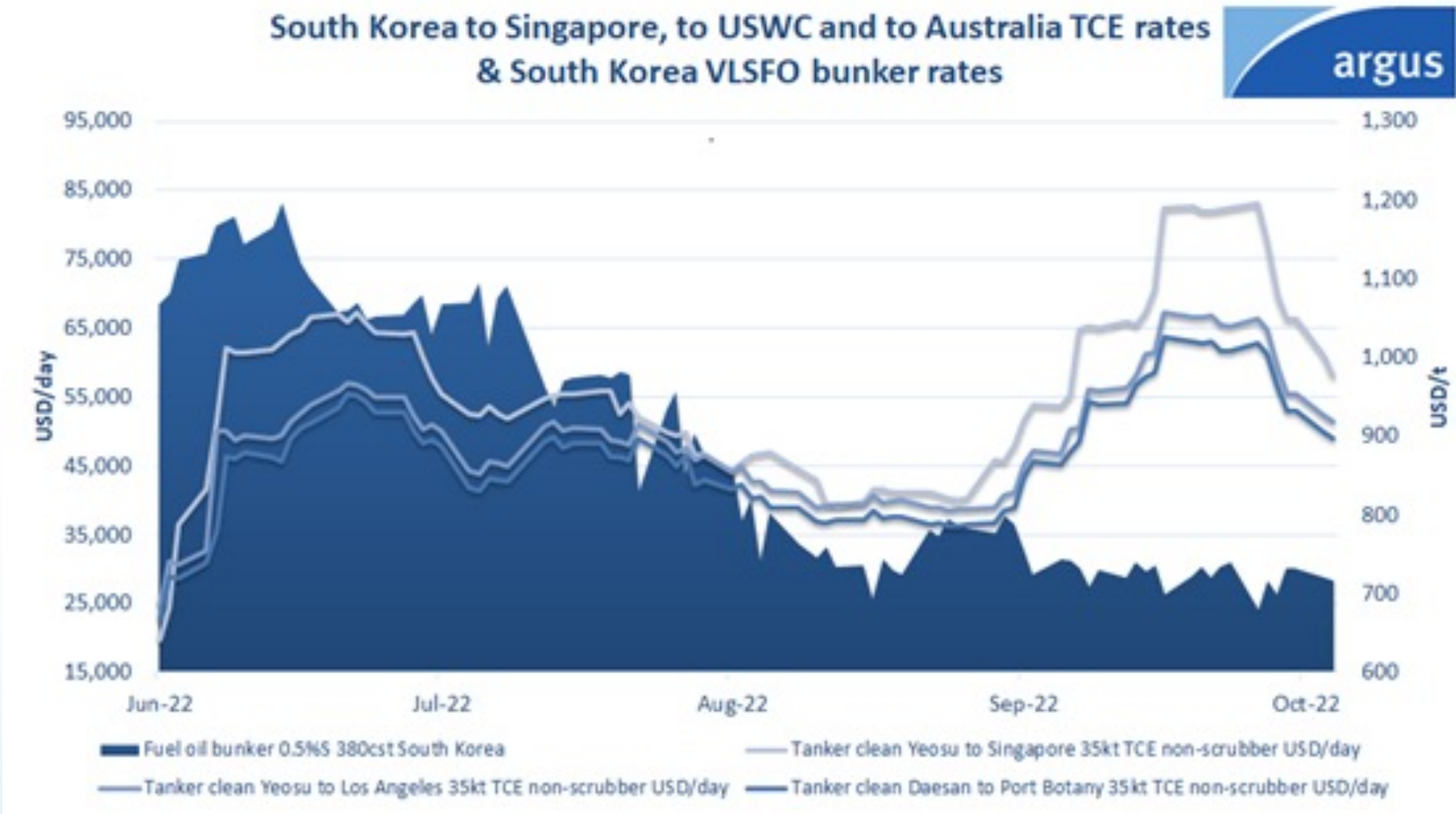


Gasoline Price Signals and Import Response



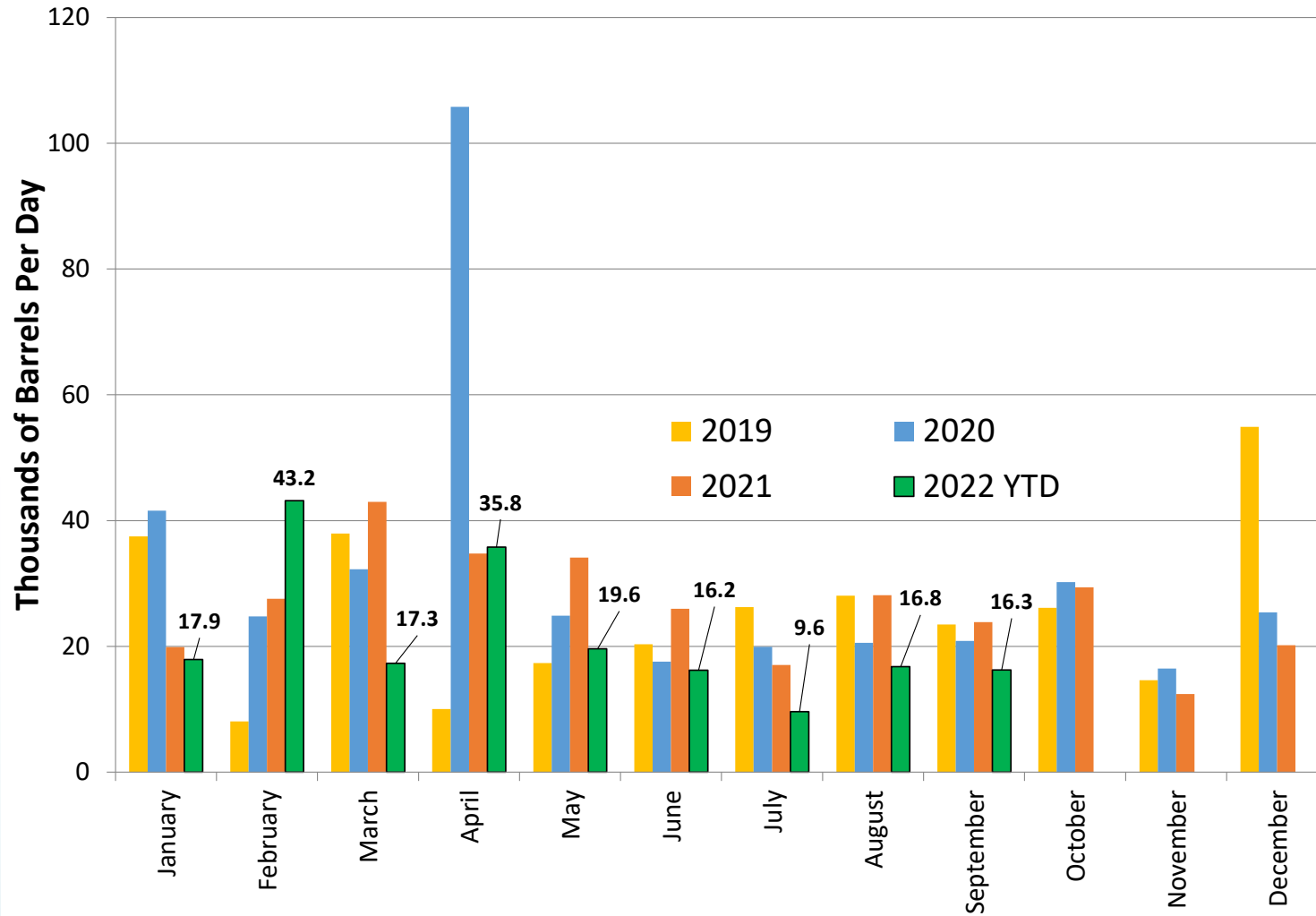


Higher Product Tanker Costs





California Foreign Gasoline Exports



Source: California Energy Commission analysis of the International Trade Commission's Interactive Tariff and Trade DataWeb.



Closing Remarks



2022 Gasoline Price Spikes - Factors

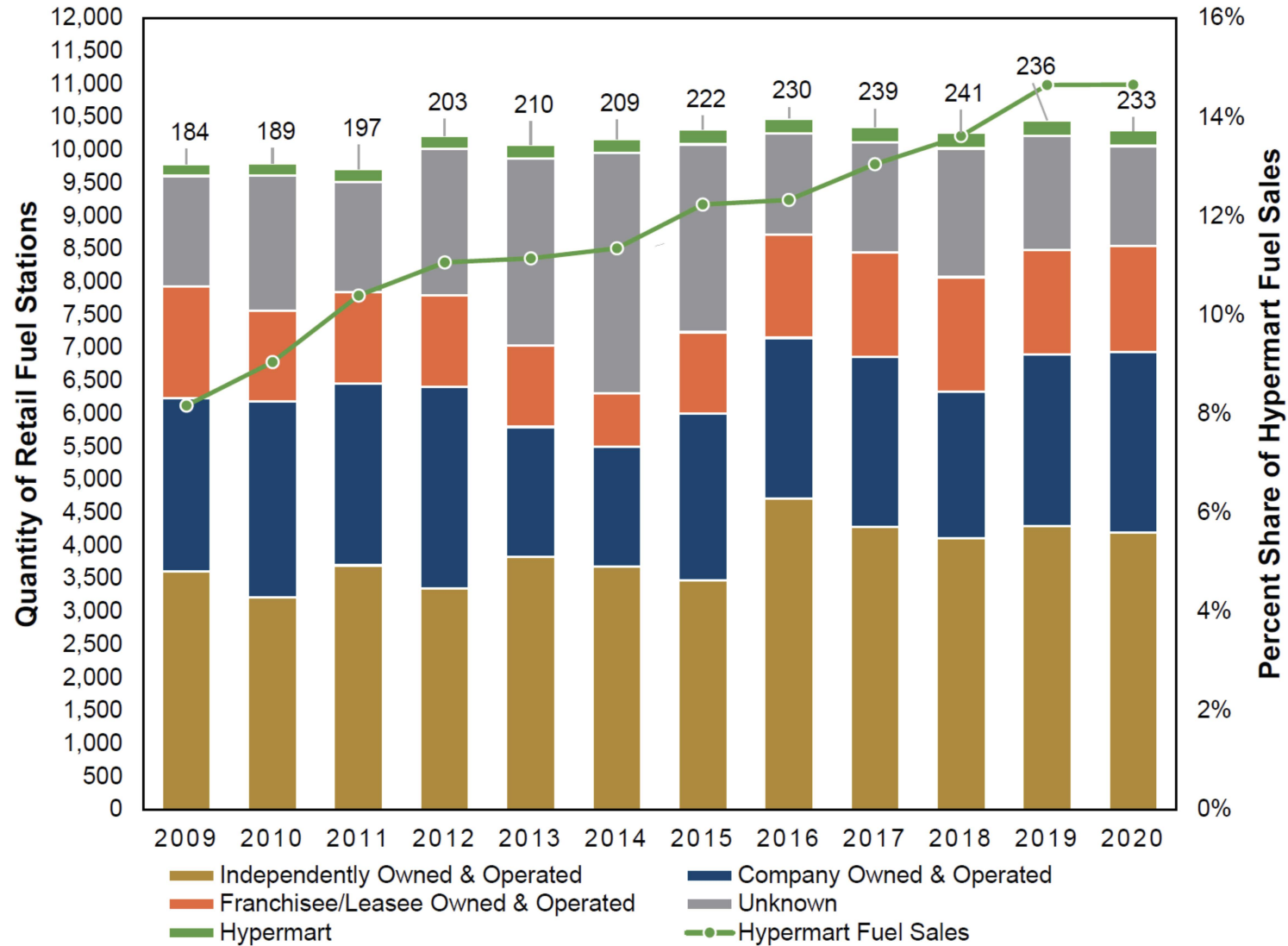
Upward Pressure on Prices			Downward Pressure on Prices	
	Winter to summer gasoline transition	X		Summer to winter gasoline transition
X	Lower-than-normal inventories			Higher-than-normal inventories
X	Lower-than-normal fuel imports	X		Marine imports of fuel
X	Reduced refinery capacity			Decrease in fuel taxes
X	Unplanned refinery outages			
X	Planned maintenance delays			
	New environmental fees			
	Increase in fuel taxes			
	Changes in fuel regulations			



Additional Information



California Station Counts by Ownership

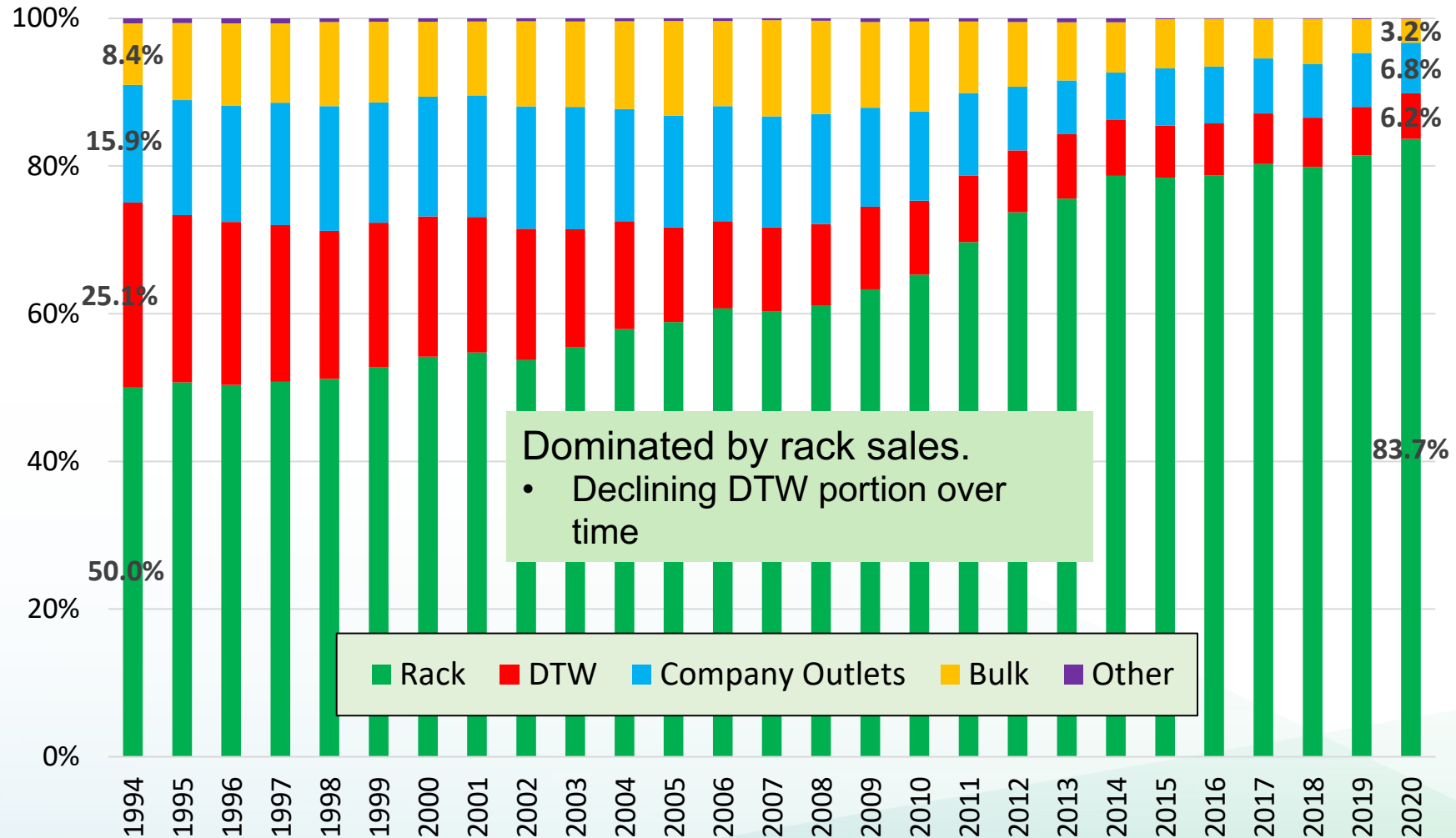




U.S. Gasoline Sales Breakdown

120%

Source: California Energy Commission analysis of Energy Information Administration data.

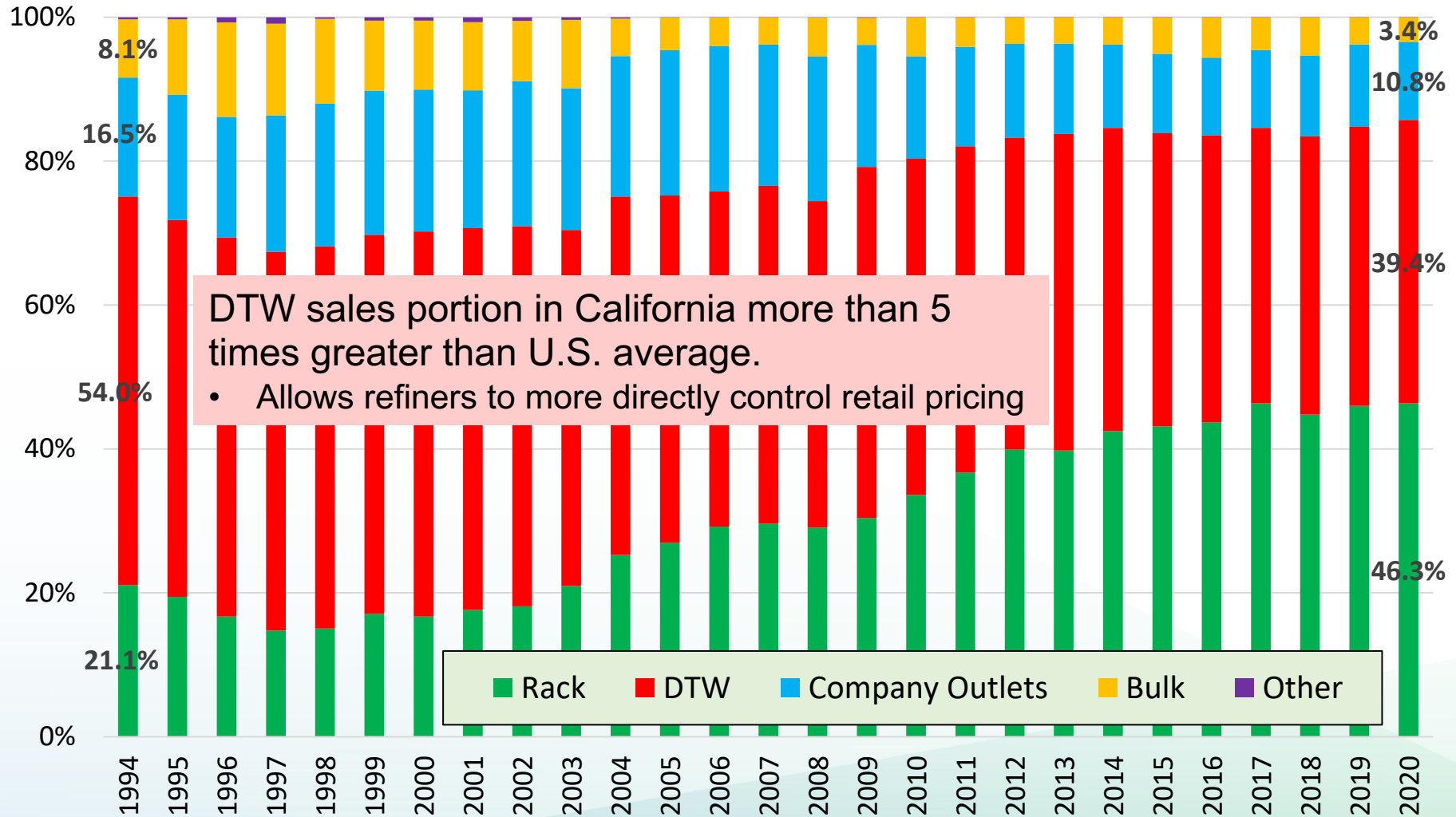




California Gasoline Sales Breakdown

120%

Source: California Energy Commission analysis of Energy Information Administration data.

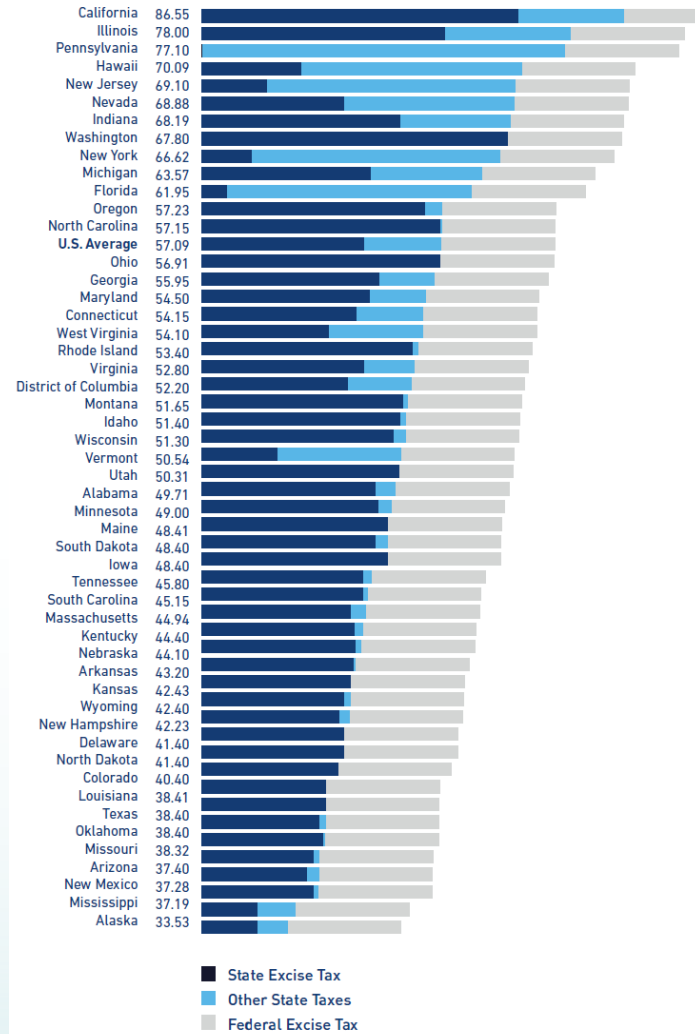




California Gasoline Market - Taxes

GASOLINE MOTOR FUEL TAXES BY STATE

(cents per gallon)





Thank You!