California Gasoline Price Spike
Market Overview & Contributing Factors

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Objectives

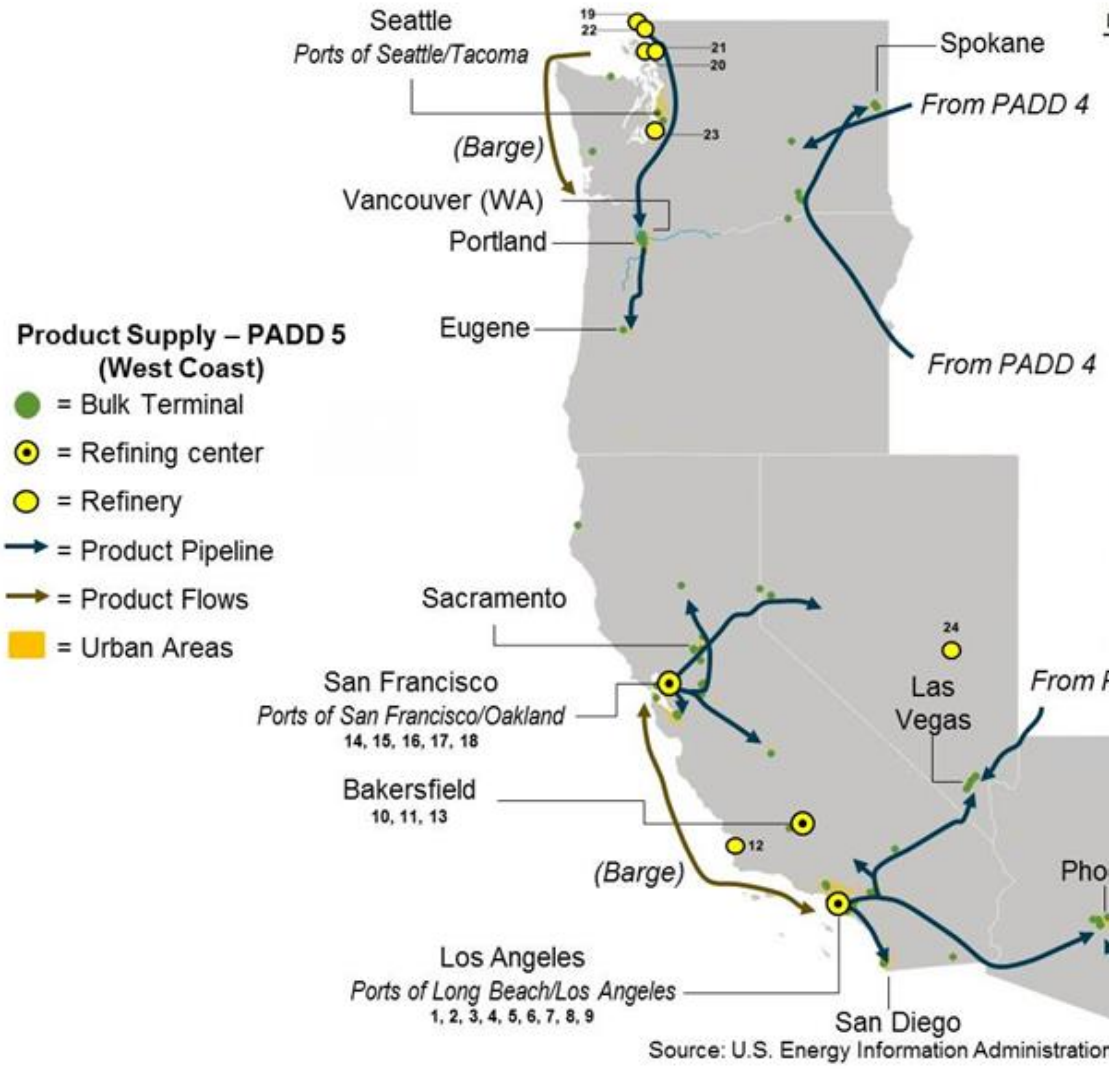
- California gasoline market overview
- Historical perspective on gasoline prices
- Factors that can impact fuel prices
- Reasons why gasoline prices normally increase each spring
- The anatomy of a price spike & highest price increases
- 2015 gasoline price changes & key events
- Breakdown of gasoline price components
- Factors contributing to the 2015 gasoline price spike
- Concluding remarks

California Gasoline Market - Isolated

- California's gasoline market is nearly self-sufficient, so supplies of gasoline from outside of California are not routinely needed to balance out supply with demand
  - Imports of gasoline and blending components account for only 3 to 6 percent of supply
- The California market is geographically isolated from other locations in the United States 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
- California market is isolated by time and distance from alternative sources of re-supply during unplanned refinery outages

Western States More Isolated than Rest of U.S.

West Coast petroleum product supply map



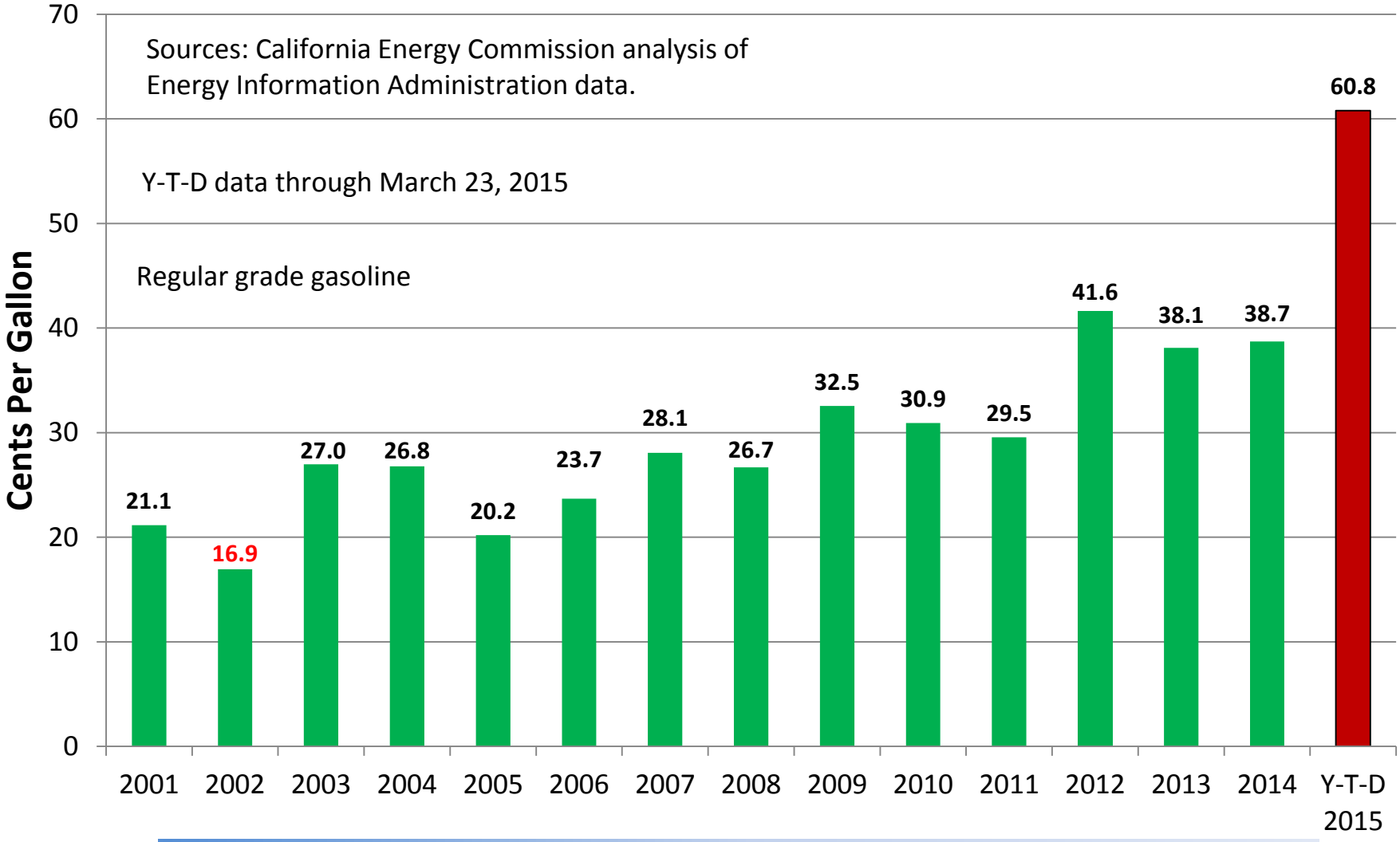
Num	Corporation	Site Name	Capacity (bbl/d)
1	Chevron	El Segundo	269,000
2	Tesoro	Carson	251,000
3	ExxonMobil	Torrance	149,500
4	Phillips 66	Wilmington	139,000
5	Tesoro	Wilmington	104,500
6	Alon	Paramount	Idle
7	Valero	Wilmington	78,000
8	Lunday Thagard	South Gate	8,500
9	Valero	Wilmington (asphalt)	6,300
10	Kern Oil	Bakersfield	26,000
11	San Joaquin Refining	Bakersfield	15,000
12	Greka Energy	Santa Maria	9,500
13	Alon	Bakersfield	No CDU
14	Chevron	Richmond	245,271
15	Tesoro	Martinez	166,000
16	Shell	Martinez	156,400
17	Valero	Benicia	132,000
18	Phillips 66	Rodeo	120,200
19	BP	Ferndale	225,000
20	Shell	Anacortes	145,000
21	Tesoro	Anacortes	120,000
22	Phillips 66	Ferndale	101,000
23	US Oil & Refining	Tacoma	40,700
24	Foreland Refining	Ely	2,000

Source: U.S. Energy Information Administration.

California Gasoline Market – More Expensive

- California has one of the more expensive retail gasoline and diesel fuel prices in the United States
- Reasons why California retail prices are more expensive:
  - Greater tax burden – 15 cents
  - Higher production costs – 10 cents
  - Fuels-under-the-cap obligation costs – 10 cents
  - An isolated market – 10 cents and more
- Since January of 2001, annual average prices are *at least:*
  - 17 cents per gallon higher than the average U.S. retail gasoline price
  - 12 cents per gallon higher than the average U.S. retail diesel price
- Between 2009 and 2014, differentials have averaged
  - 35.2 cents per gallon higher for gasoline
  - 19.9 cents per gallon higher for diesel fuel

Retail Gasoline Price Differences
California Less U.S. Average



Factors Impacting Fuel Prices

- Transportation fuel prices are primarily impacted by:
  - Changes in crude oil price
  - Changes in wholesale price
- Crude oil is a global commodity & prices fluctuate due to:
  - Increasing supply from non-OPEC countries, such as the United States
  - Geopolitical events that increase risk of supply disruption
  - Rising or falling global demand for oil
  - Heightened activity in the futures market as an alternative investment opportunity
  - Value of U.S. dollar to other currencies, a stronger dollar will place downward pressure on global crude oil prices

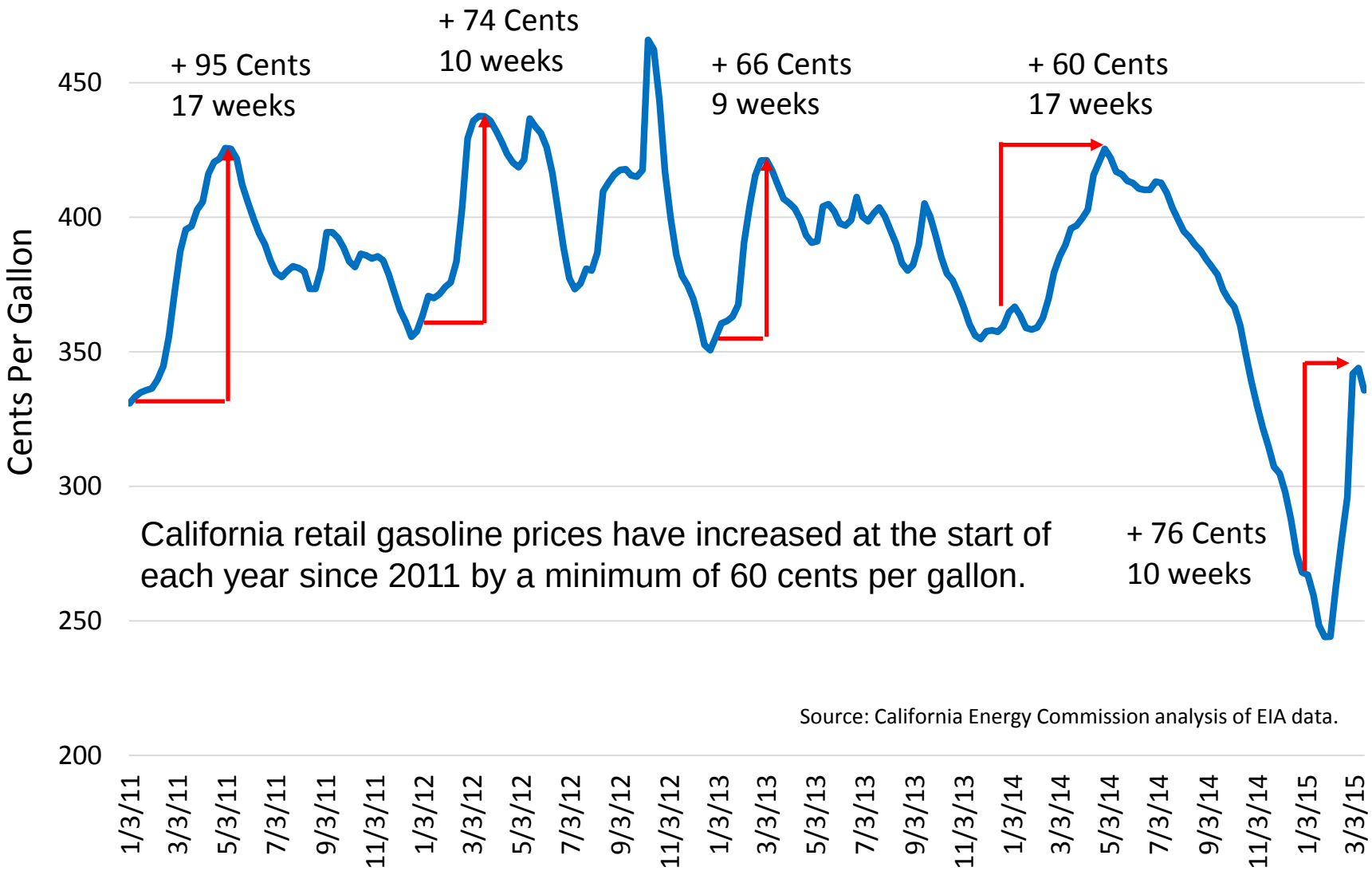
Factors Impacting Fuel Prices (cont)

- Wholesale fuel prices impacted by:
  - ↑ Unplanned refinery outages
  - ↑ Return-to-service delays by refineries undergoing planned maintenance
  - ↑ Transition from winter to summer gasoline recipe that decreases gasoline production capability of refineries
  - ↑ 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
  - ↕ Changes in the level of taxes on fuels
  - ↓ Transition from summer to winter gasoline recipe that increases gasoline production capability of refineries
  - ↓ Resumption of operations by temporarily idled refineries

Factors Related to Seasonal Rise

- California gasoline prices normally increase at the start of each year due to a number of factors:
  - Demand for gasoline is usually at the low point during January and steadily increases up through the summer months
  - Transition from winter to summer gasoline decreases gasoline production capability of refineries by 5 to 8 percent
    - This change begins during the second week of February for Southern California and a month later for Northern California
  - Planned refinery maintenance work that takes longer than anticipated, delaying resumption of fuel production and decreasing inventories
  - All of these factors place upward pressure on gasoline prices
  - Declining crude oil prices, however, can mask the normal rise in retail gasoline prices

Seasonal Gasoline Price Increase



California retail gasoline prices have increased at the start of each year since 2011 by a minimum of 60 cents per gallon.

Source: California Energy Commission analysis of EIA data.

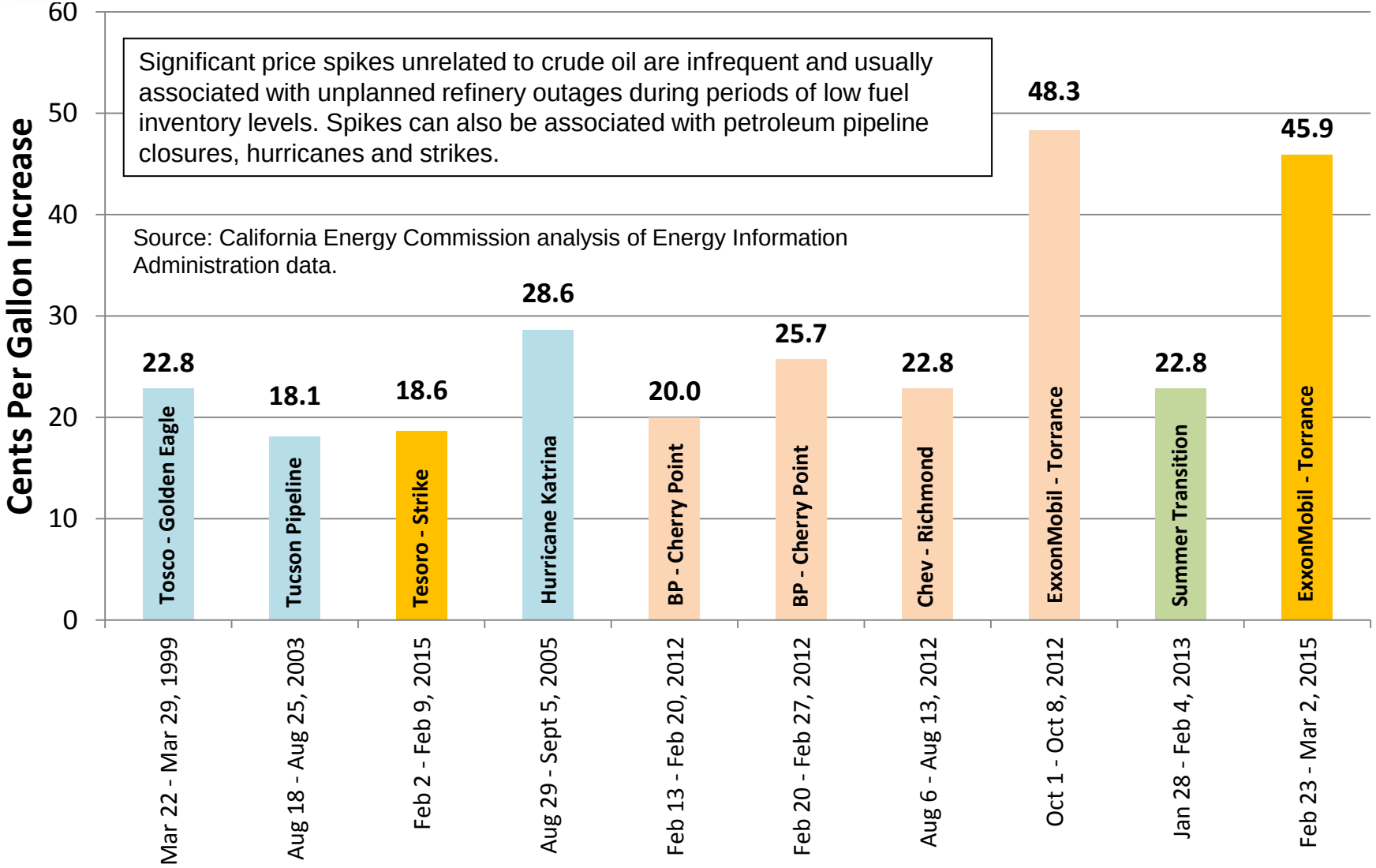
Anatomy of a Price Spike

- California's gasoline market is nearly self-sufficient, so supplies of gasoline from outside of California are not routinely needed to balance out demand with imported supplies
- This means that when a significant unplanned refinery outage occurs in California, the isolated nature of our gasoline market precludes rapid resupply from outside the state
- Refiners have contractual obligations to supply roughly 80 to 95 percent of what they normally produce
- The refiner that experienced the unplanned outage must therefore acquire alternative sources of gasoline from other refiners and gasoline marketers in the state who are willing to sell a portion of their gasoline inventory at a higher price to cover their near-term contractual obligations

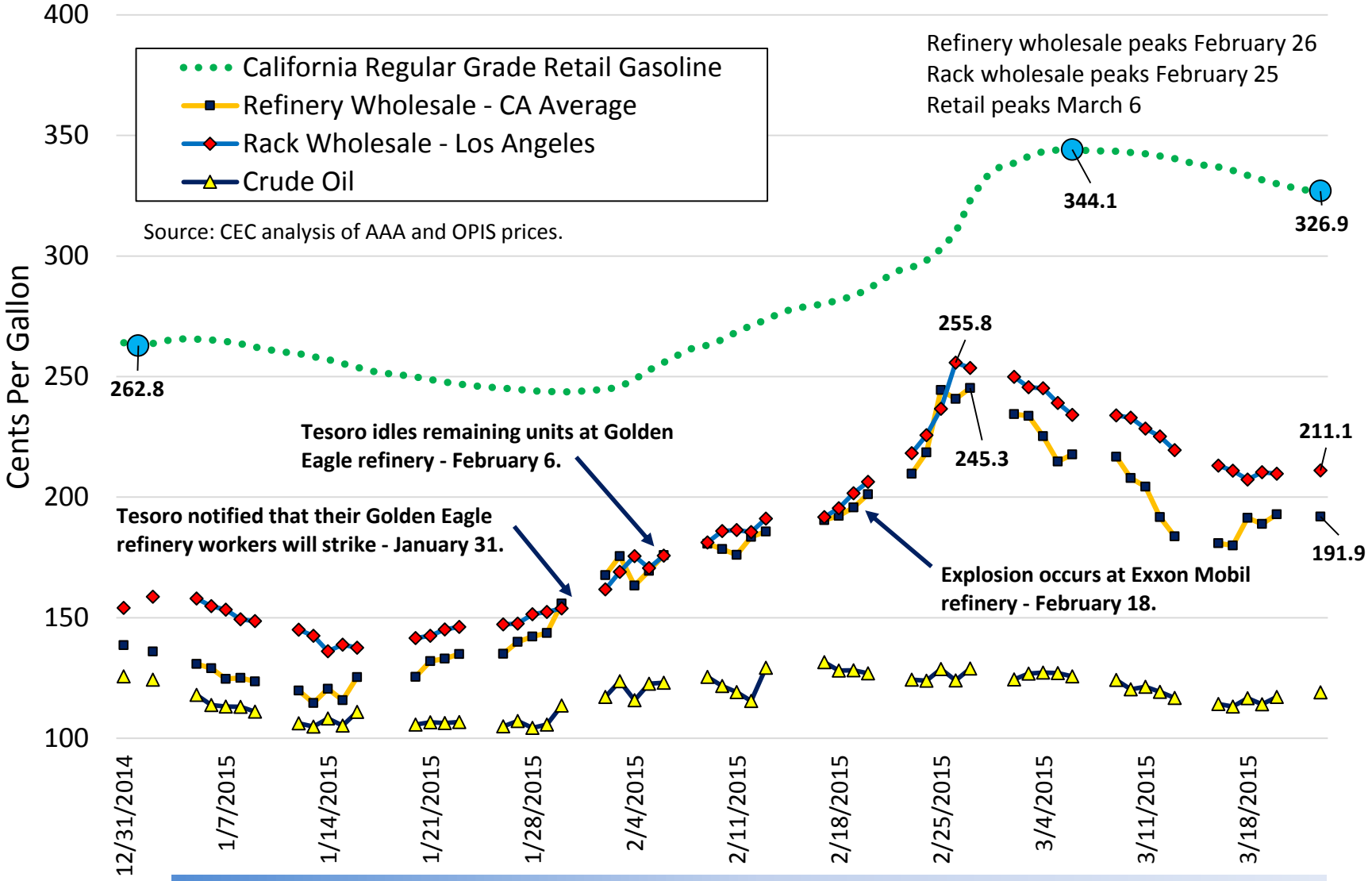
California Retail Gasoline Highest Weekly Price Spikes

Significant price spikes unrelated to crude oil are infrequent and usually associated with unplanned refinery outages during periods of low fuel inventory levels. Spikes can also be associated with petroleum pipeline closures, hurricanes and strikes.

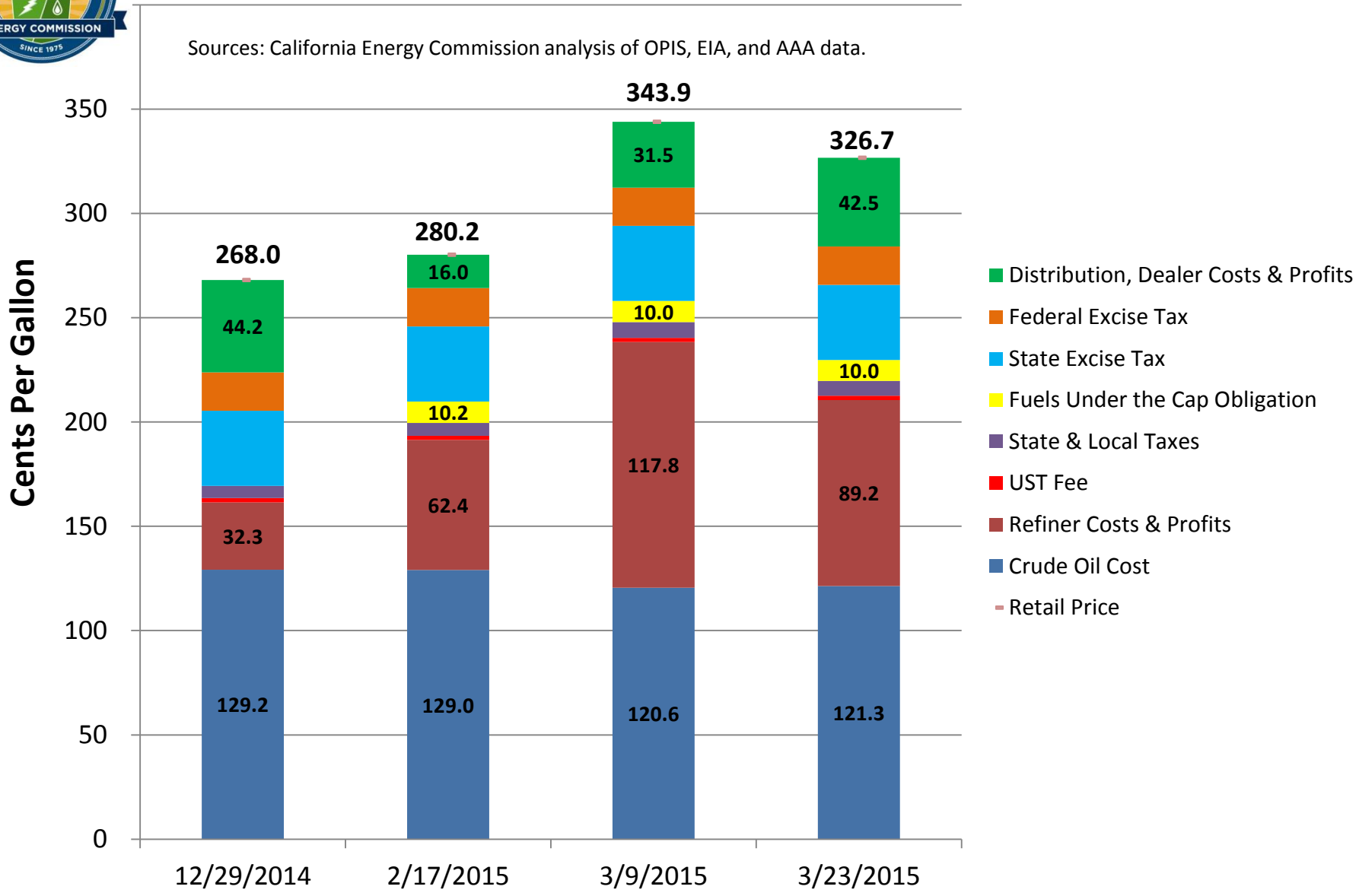
Source: California Energy Commission analysis of Energy Information Administration data.



California Gasoline Price Changes
Retail, Rack and Refinery Wholesale



California Retail Gasoline Components



2015 Gasoline Price Spike - Factors

	Upward Pressure on Prices	Downward Pressure on Prices	
✓	Unplanned Refinery Closure		
✓	Refiner Delayed from Returning from Planned Maintenance		
✓	Transition from Winter to Summer Gasoline	Transition from Summer to Winter Gasoline	
	New Environmental Fee		
	Increased Fuel Tax	Decreased Fuel Tax	
	Change in Fuel Regulations		
✓	Lower-than-normal Inventories	Higher-than-normal Inventories	

- Two refineries impacted – 17.6 percent of California refining capacity for those facilities that produce California spec. gasoline

Strike Prevents Refinery Restart – Feb. 1st

- Tesoro Golden Eagle refinery in Martinez, CA given strike notice – Feb. 1
- Refinery was conducting planned maintenance on half of process units
- Company announces decision to idle remaining process units rather than attempt to restart idle units – Feb. 2
- Tesoro announces that all refinery units have been safely idled and the facility will be operated as a terminal – Feb. 6
  - **9.3 percent of state refining capacity**
- National refinery worker strike reaches a new four-year agreement – March 12
- Once the new contract is ratified, workers will return, enabling Tesoro to restart the facility – will benefit supply

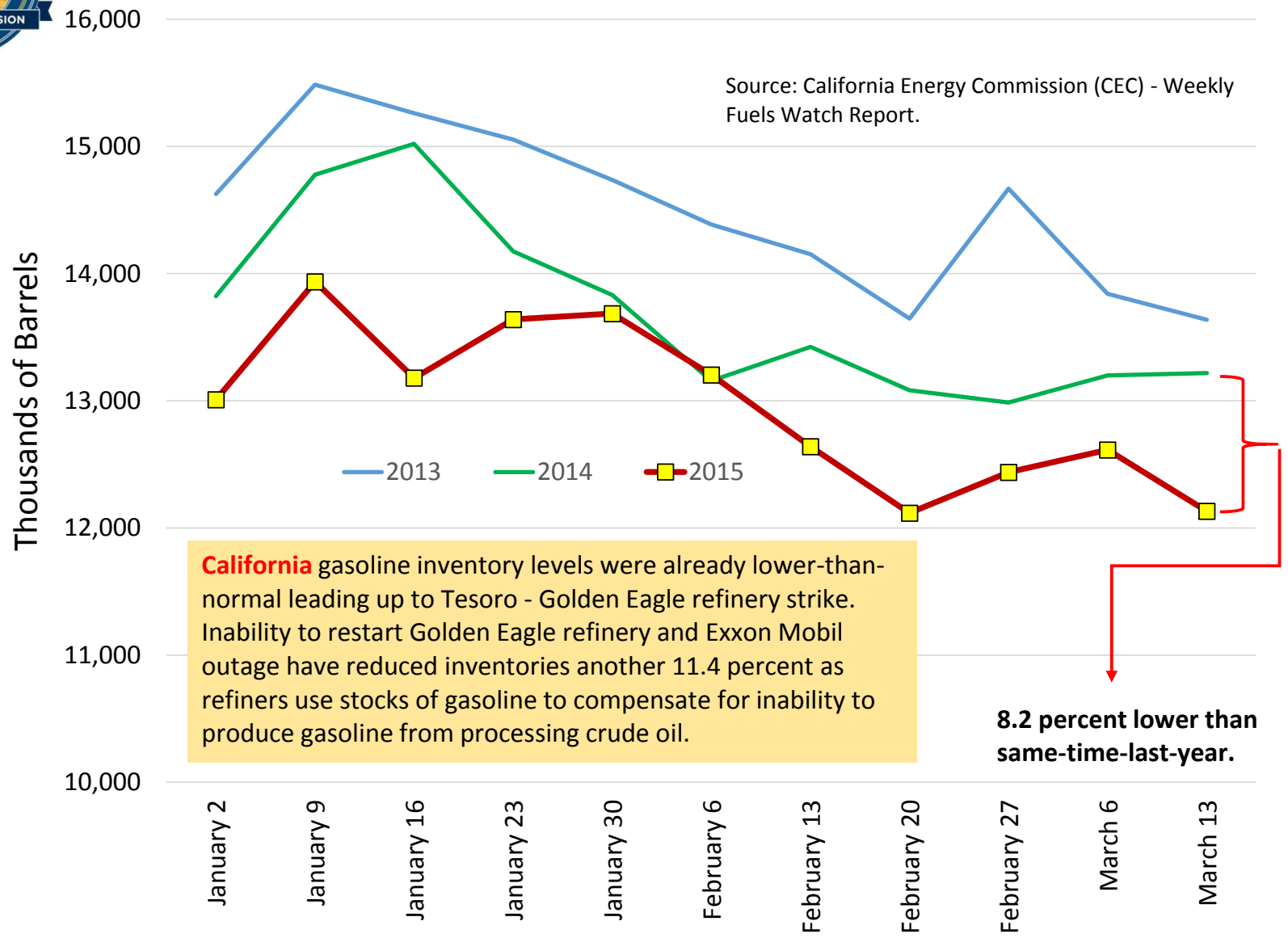
Source: Susan Tripp Pollard/Bay Area News Group.

Exxon Mobil Refinery Explosion – Feb. 18th

Source: Bob Riha, Reuters.

- Explosion occurs at Exxon Mobil refinery in the morning
- Involves electrostatic precipitator (ESP), pollution control device
- Refinery gasoline units unable to operate following ESP outage
  - **8.3 percent of state refining capacity**
- According to company, supplies nearly 10 percent of gasoline to the state
- Trade publication reports refinery could resume operation of gasoline units, at reduced rates, using older ESP unit after being refurbished – uncertain return date
- This action will benefit supply

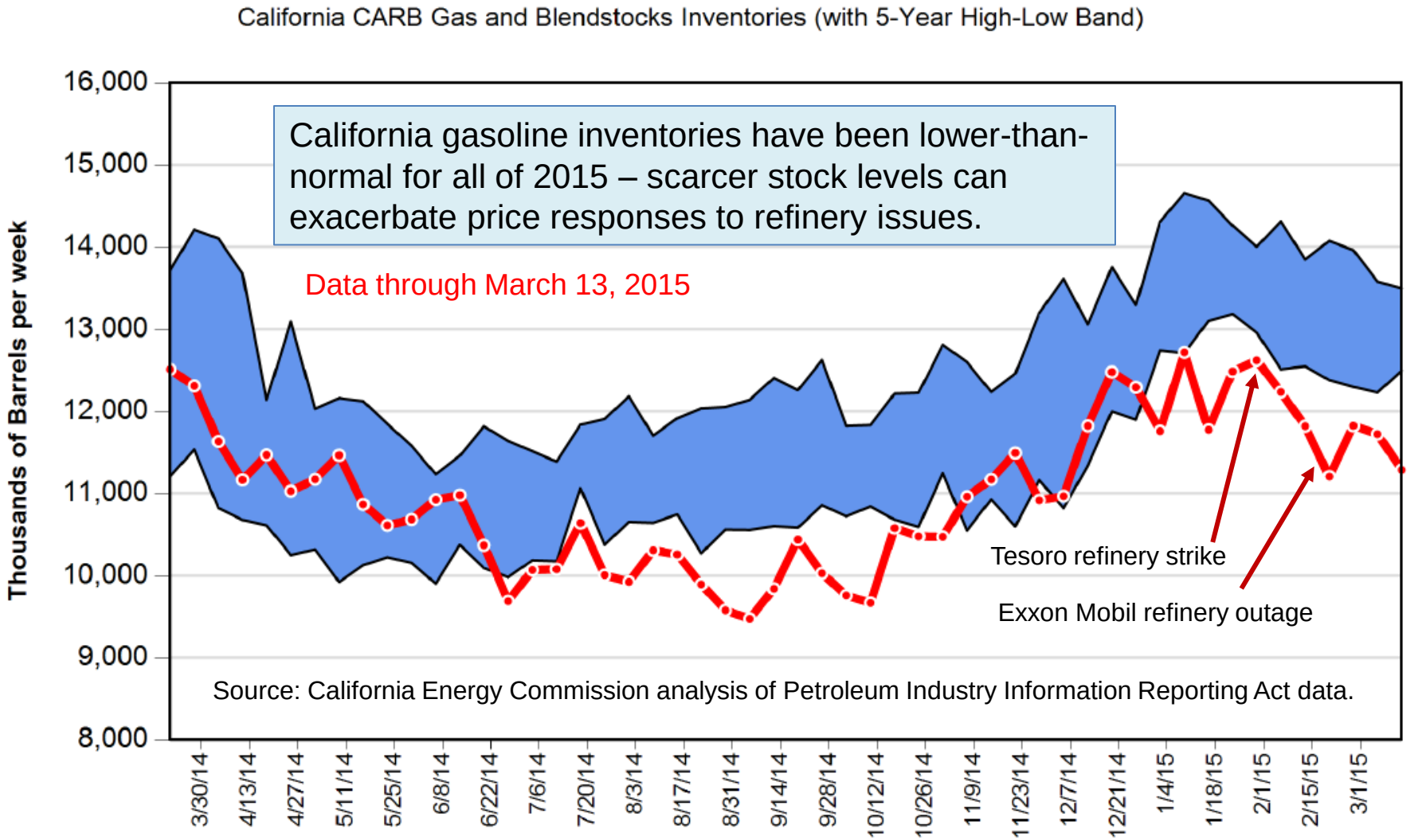
California Gasoline Inventories



California gasoline inventory levels were already lower-than-normal leading up to Tesoro - Golden Eagle refinery strike. Inability to restart Golden Eagle refinery and Exxon Mobil outage have reduced inventories another 11.4 percent as refiners use stocks of gasoline to compensate for inability to produce gasoline from processing crude oil.

8.2 percent lower than same-time-last-year.

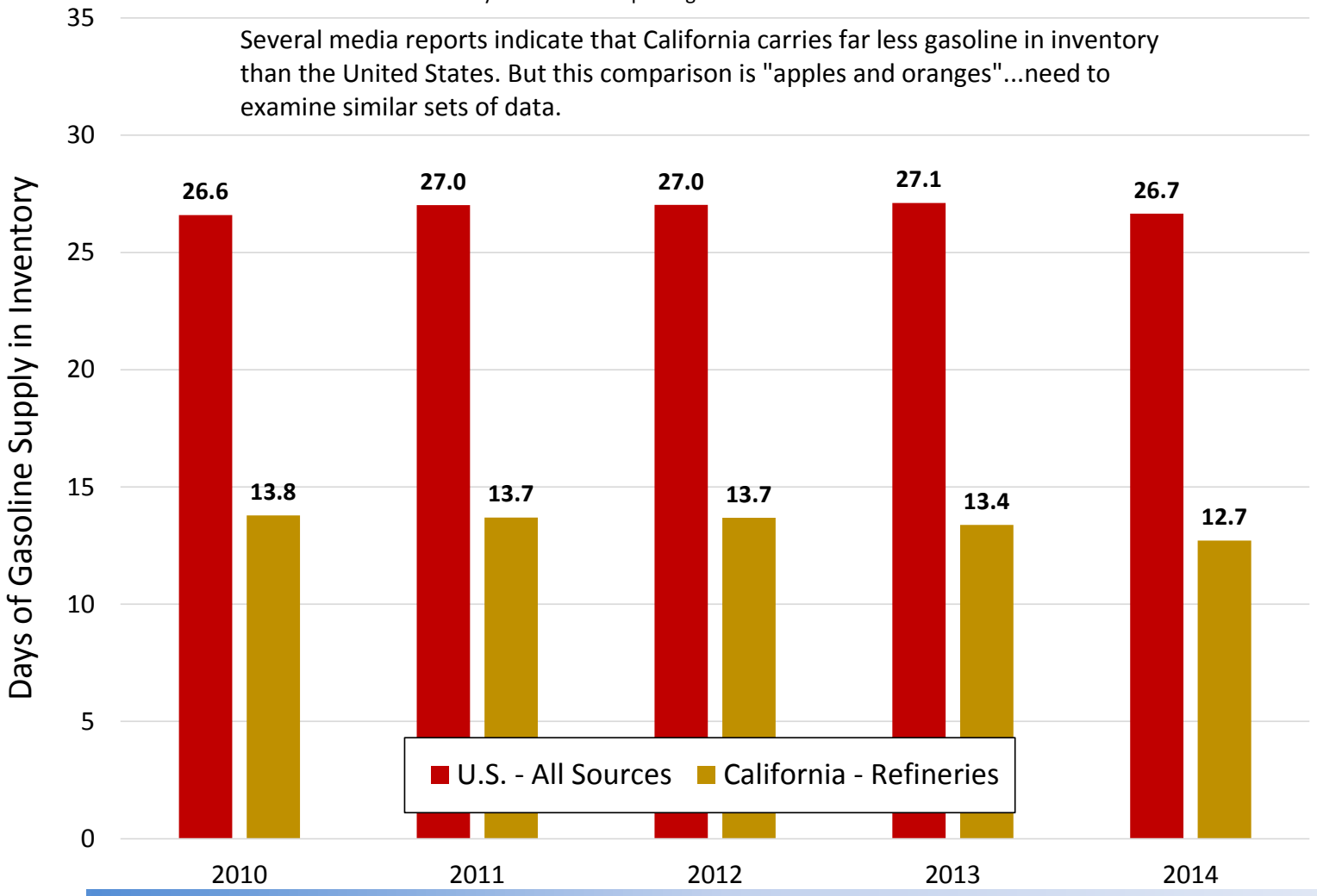
California Gasoline Inventory Levels
Current vs. 5-year High-Low Band



Gasoline Inventory Levels
"Days of Supply" Comparisons

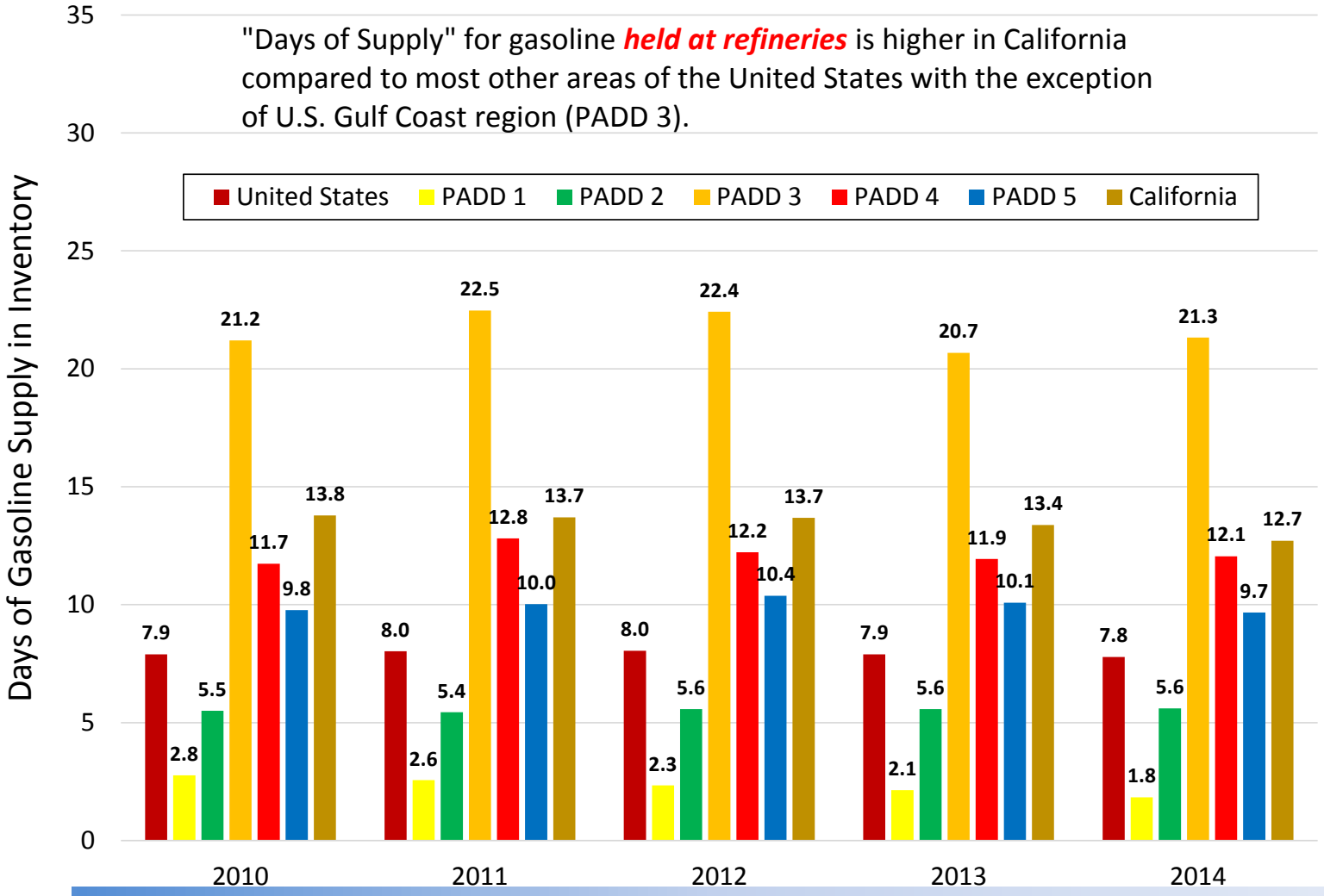
Sources: California Energy Commission analysis of Energy Information Administration and Petroleum Industry Information Reporting Act data.

Several media reports indicate that California carries far less gasoline in inventory than the United States. But this comparison is "apples and oranges"...need to examine similar sets of data.

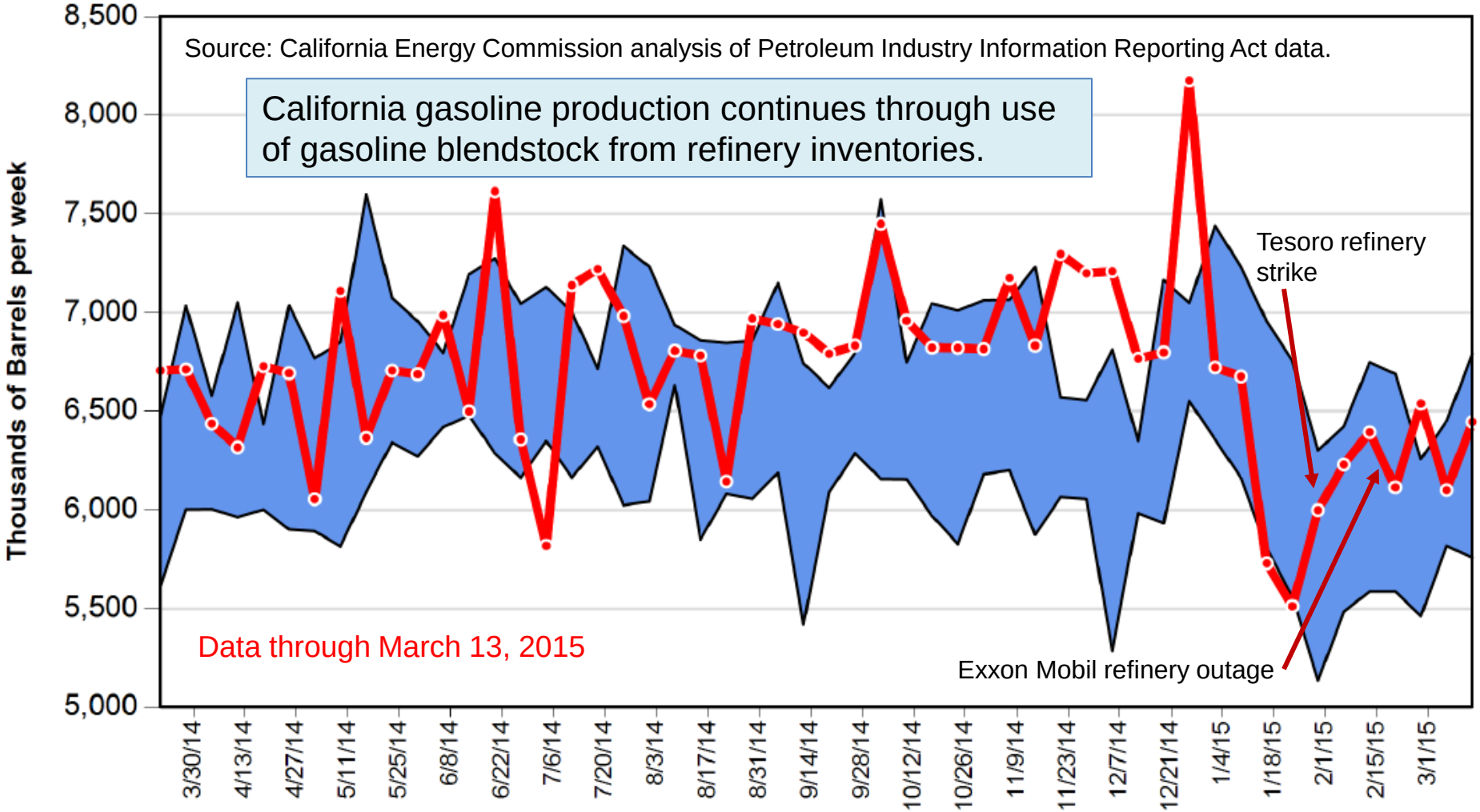


Gasoline Inventory Levels
"Days of Supply" Comparisons

Sources: California Energy Commission analysis of Energy Information Administration and Petroleum Industry Information Reporting Act data.



California Gasoline Production
Current vs. 5-year High-Low Band



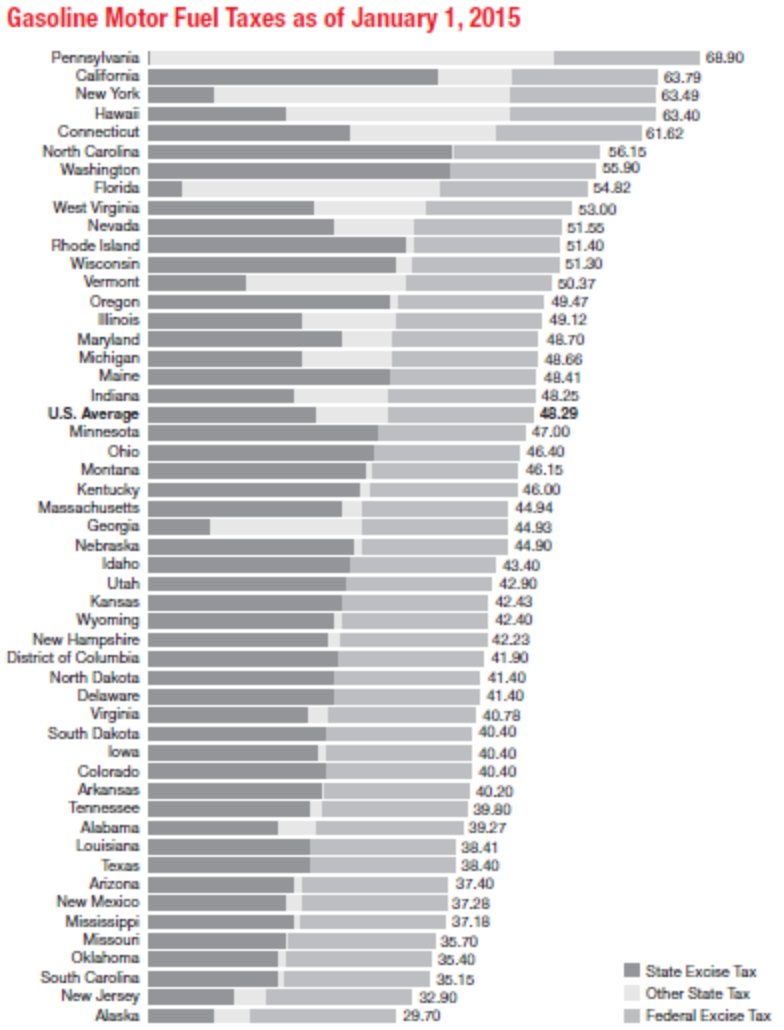
Concluding Remarks

- California has experienced one the largest gasoline price spikes in recent history
- The rapid price increase is not surprising after 17.6 percent of California's refining capacity is temporarily unable to operate in conjunction with lower-than-normal inventory levels and a transition from winter to summer gasoline recipe
- The price spike is over and retail prices continue to slowly decline
- Additional downward pressure on gasoline prices should continue with:
  - Arrival of 1.7 million barrels of gasoline from foreign sources over the next couple of weeks
  - Restart of the Tesoro Golden Eagle refinery following return of striking workers
  - Restart of gasoline-producing process units at the Exxon Mobil refinery at reduced rates sometime over the next several months

Background Slides

California Gasoline Market - Taxes

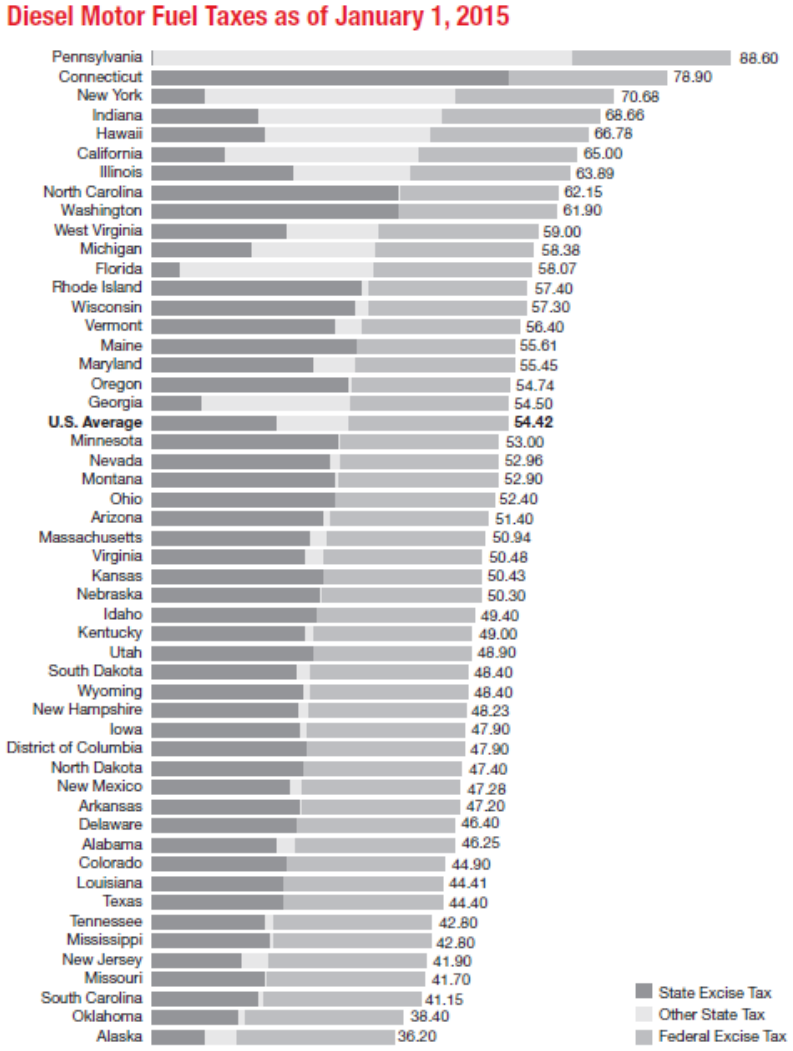
- The amount of tax levied on a gallon of gasoline in California is usually higher than nearly every other state
- As of January 1, 2015, California retail gasoline taxes accounted for 63.8 cents per gallon
- The U.S. average was 48.3 cents per gallon so California's retail gasoline tax burden was 15.0 cents per gallon higher than the U.S. average



Source: American Petroleum Institute

California Diesel Fuel Market - Taxes

- The amount of tax levied on a gallon of diesel fuel in California is usually higher than nearly every other state
- As of January 1, 2015, California retail diesel fuel taxes accounted for 65.0 cents per gallon
- The U.S. average was 54.4 cents per gallon so California's retail gasoline tax burden was 10.6 cents per gallon higher than the U.S. average



Source: American Petroleum Institute

Breakdown of Retail Gallon

- Components of California Retail Gasoline:
  - **Refiner Margin** - Refiner Margin (costs and profits) is calculated by subtracting the market price for crude oil from the wholesale price of gasoline. The result is a gross refining margin which includes the cost of operating the refinery as well as the profits for the refining company.
    - **Crude Oil Price**: The daily market price of Alaska North Slope (ANS) crude oil is used as a proxy for the crude oil acquisition cost for California refineries.
    - **Refinery Costs and Profits**: The costs associated with refining and terminal operations, crude oil processing, oxygenate additives, product shipment and storage, oil spill fees, depreciation, purchases of gasoline to cover refinery shortages, brand advertising, and profits.

Breakdown of Retail Gallon

- Components of California Retail Gasoline:
  - **Distribution Margin** - Distribution margin (distribution costs, marketing costs, and profits) is calculated by subtracting the branded wholesale gasoline price, taxes (state sales tax, state excise tax, federal excise tax, and a state underground storage tank fee), and environmental costs (fuels under the cap obligation) from the average retail sales price. The branded wholesale gasoline price is based on the average statewide branded refined "rack" price, information obtained from the Oil Price Information Service (OPIS).
    - **Wholesale Gasoline Price**: The average wholesale gasoline price is the average of 13 branded wholesale prices at various wholesale fuel loading racks around the state. This average price is for a single day. The wholesale gasoline price is calculated for the same day as EIA's weekly average gasoline price.
      - Branded Gasoline: Branded gasoline refers to fuel that is sold under a brand name (such as BP, Shell, Exxon, Chevron, and Valero). Branded gasoline will include proprietary fuel additives.

Breakdown of Retail Gallon

- Components of California Retail Gasoline:
  - **State Underground Storage Tank Fee**: The UST fee is currently 2.0 cents per gallon. Fee was 1.4 cents per gallon during 2014.
  - **State and Local Sales Tax**: An average state sales tax rate of 2.25% percent is used in the calculation of the distribution margin although the actual sales tax rate does vary throughout California.
  - **State Excise Tax**: The California state excise tax is currently 36.0 cents per gallon.
  - **Federal Excise Tax**: The federal excise tax is currently 18.4 cents per gallon.
  - **Fuels-Under-the-Cap Obligation**: The cost for fuel distributers for compliance with the AB 32 Cap & Trade obligations downstream of refineries. A daily calculation of the obligation is published by the Oil Price Information Service (OPIS). Calculated costs vary by the value of carbon credits and the carbon intensity of the transportation fuel (gasoline, diesel fuel, and propane).

Market Snapshots and Factors Contributing to Price Increases

- Dates:
  - **December 29, 2014** – Monday prior to the imposition of the fuels-under-the-cap obligation for California fuel distributers. Crude oil prices had already declined by over 50 percent from their peak in May of 2014. Supplies of gasoline were ample creating conditions for lower-than-normal refiner margins and higher-than-normal dealer margins. No significant refinery issues.
  - **February 17, 2015** – Tuesday prior to the explosion at the Exxon Mobil refinery in Torrance (Southern California) on the morning of February 18. Crude oil prices were virtually unchanged from late December. Supplies of gasoline had already tightened after the Tesoro Golden Eagle refinery in Martinez (Northern California) did not resume operations following planned maintenance due to a strike of refinery workers targeting that facility in early February. There were also a number of unplanned outages that also contributed to tighter supply conditions. As a consequence, refiner margins improved and dealer margins contracted. The FUTC obligation is now a component of the finished gasoline price.

Market Snapshots and Factors Contributing to Price Increases

- Dates:
  - **March 9, 2015** – Crude oil prices had eased a bit from mid-February. Supplies of gasoline have become scarcer with nearly 17.6 percent of the state's refining capacity out of service (Tesoro Golden Eagle refinery still idled by striking workers and the Exxon Mobil refinery producing little to no gasoline following the explosion at that facility). Loss of refining capacity and declining inventory levels have placed a premium on wholesale gasoline prices resulting in higher-than-normal refiner margins and higher-than-normal dealer margins.
  - **March 23, 2015** – Retail prices continue to drop, down 17.2 cpg since March 9. Crude oil prices are nearly unchanged since March 9. Gasoline inventories continue to fall as the two refineries still are not back in operation. Loss of refining capacity and declining inventory levels keep a premium on wholesale gasoline prices resulting in higher-than-normal refiner margins, while dealer margins have returned to late December levels.

Fuels-Under-the-Cap (FUTC) Tracking

- Fuels-Under-the-Cap regulation went into effect January 1, 2015
- The Oil Price Information Service (OPIS) calculates a value for the FUTC obligation each business day, California Cap-at-the-Rack (CAR)
- Assessment valuation uses price of carbon x carbon intensity of the transportation fuel
  - Winter CARB reformulated gasoline with 10 percent ethanol
  - Summer CARB reformulated gasoline with 10 percent ethanol
  - CARB diesel fuel
- Majority of fuel providers have elected to use the daily OPIS CAR calculation for inclusion in their bills of lading at the distribution terminal
  - Either as a line item or embedded in the price
- Some marketers are calculating their own FUTC assessment and including in the overall price of the fuel

Fuels-Under-the-Cap (FUTC) Tracking

- Assuming a California Carbon Allowance price of $11.80/mt
- CAR calculation for 1 gallon of winter CARB gasoline delivered at the rack would be:
  - CAR = (((0.00891 x 0.9) x 11.80) + ((0.00022 x 0.1) x 11.80)) x 100
  - CAR = 9.488cts/gal
- CAR calculation for 1 gallon of summer CARB gasoline delivered at the rack would be:
  - CAR = (((0.00893 x 0.9) x 11.80) + ((0.00022 x 0.1) x 11.80)) x 100
  - CAR = 9.510cts/gal
- CAR calculation for 1 gallon of CARB diesel delivered at the rack would be:
  - CAR = (0.01024 x 11.80) x 100
  - CAR = 12.083cts/gal

Fuels-Under-the-Cap (FUTC) Tracking

- Energy Commission staff have been monitoring daily fuel prices
  - Refinery wholesale or “spot” prices
    - San Francisco, Los Angeles and Pacific Northwest
  - Retail prices in several states
    - California, Washington, Oregon, Nevada, Arizona, Texas, Illinois, Florida
- When prices are declining due to a drop in crude oil it is more difficult to observe an impact of an FUTC assessment being passed through to retail
  - One approach is to examine the difference in retail prices between California and other locations to see if a change has occurred and been sustained
  - Also helpful to examine regional refinery markets for potential changes in scarcity or relative abundance of supply

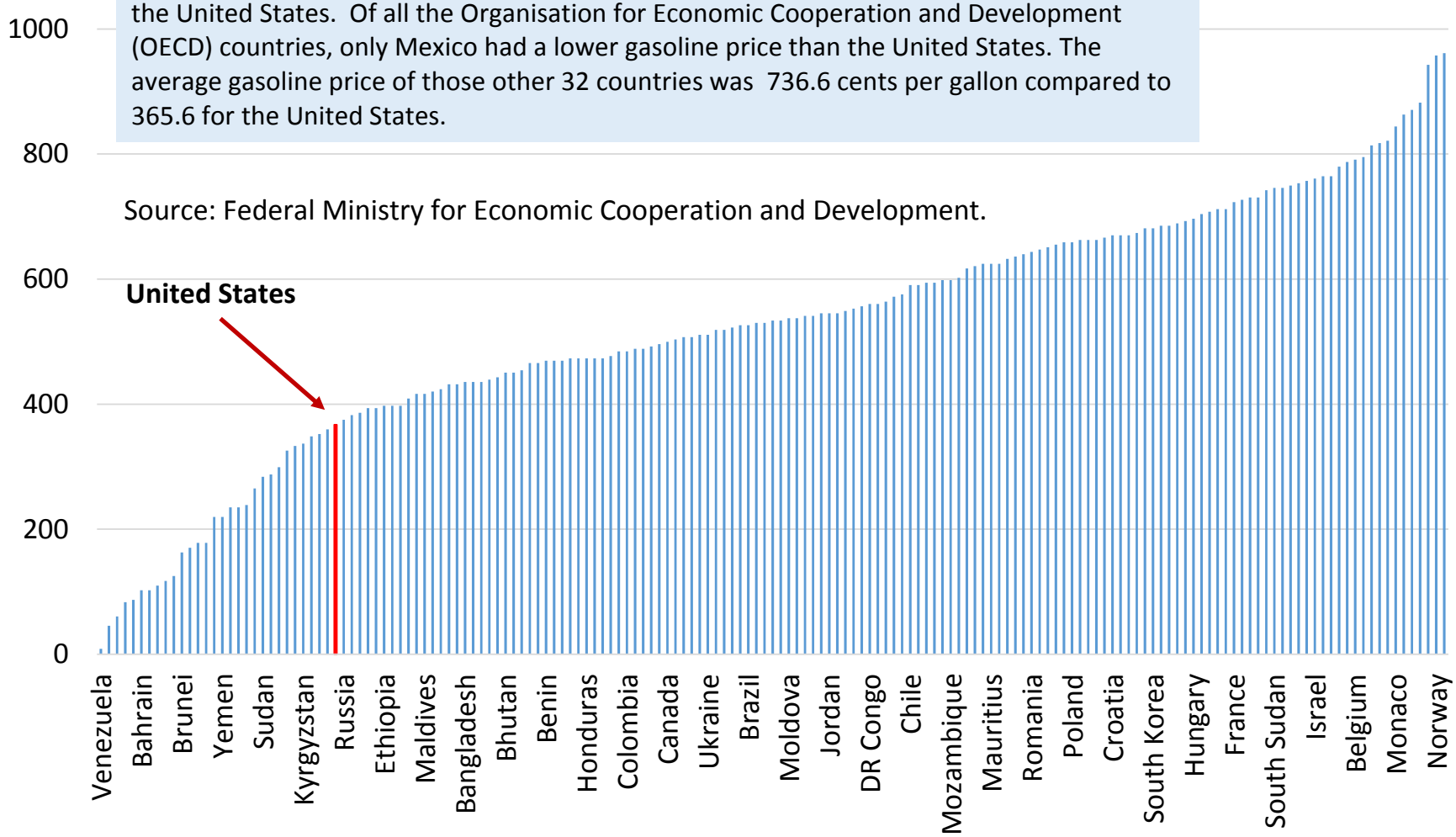
Retail Fuel Price Tracking Observations

- Gasoline
  - The gap between California retail gasoline price and other Western states has increased between **31.8 and 43.7 cents per gallon** from December 31, 2014 to March 19, 2015
  - The calculated FUTC assessment by OPIS has averaged 10 cents per gallon over the same period and lies below the range of increased retail price differential
  - Even greater differentials are attributed to increased tightness in the California gasoline market caused by refinery issues - crude oil prices remain at levels similar to the beginning of the year and thus not a contributing factor to this price spike
- Diesel Fuel
  - The gap between California retail diesel fuel price and other Western states has increased between **10.7 and 28.8 cents per gallon** from December 31, 2014 to March 19, 2015
  - The calculated FUTC assessment by OPIS has averaged 13 cents per gallon over the same period and lies within the range of increased retail price differential

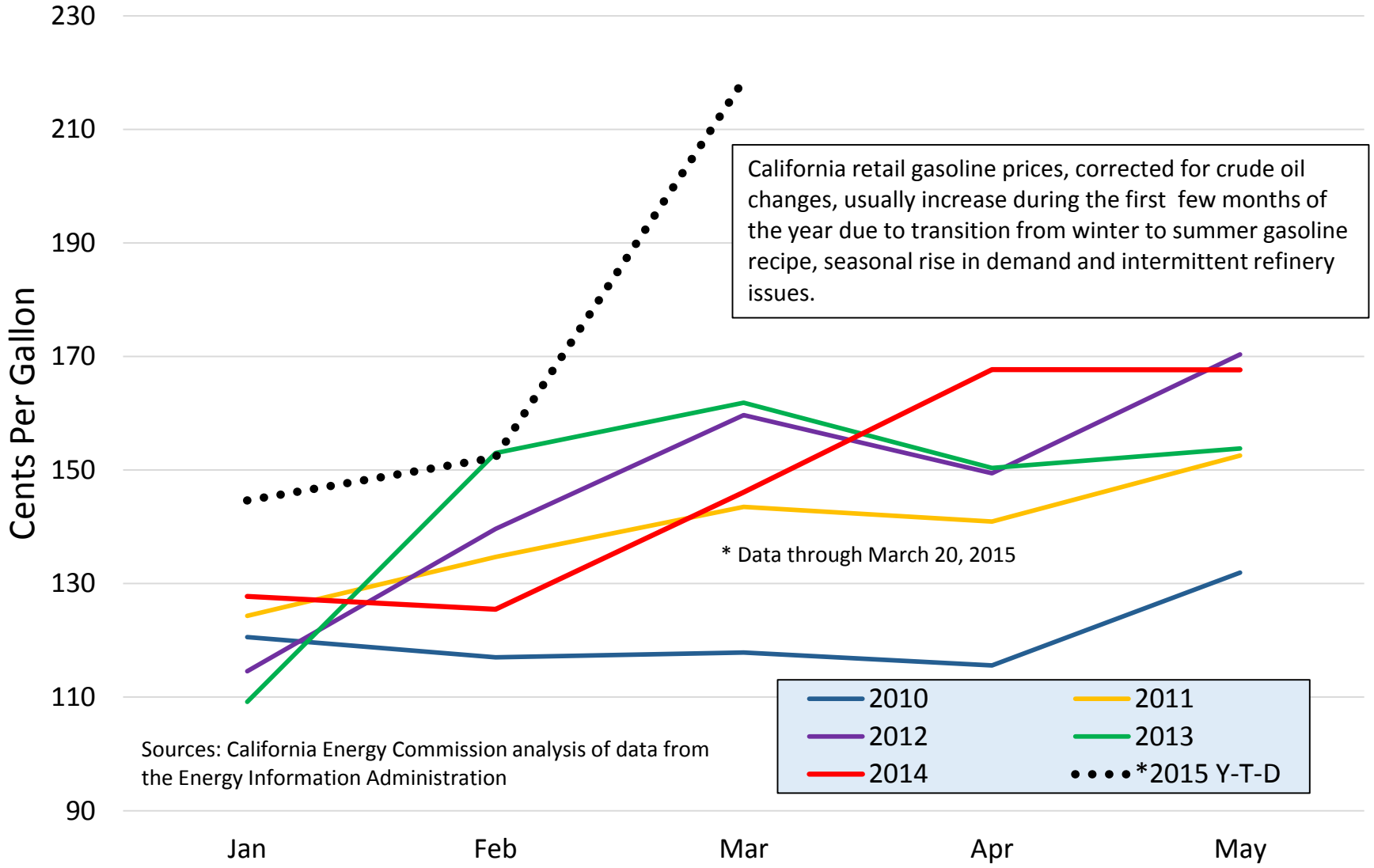
International Gasoline Prices - Nov. 2012

Gasoline prices in the United States are less expensive than the majority of countries in the world. As of November 2012, there were 137 countries that had gasoline prices higher than the United States. Of all the Organisation for Economic Cooperation and Development (OECD) countries, only Mexico had a lower gasoline price than the United States. The average gasoline price of those other 32 countries was 736.6 cents per gallon compared to 365.6 for the United States.

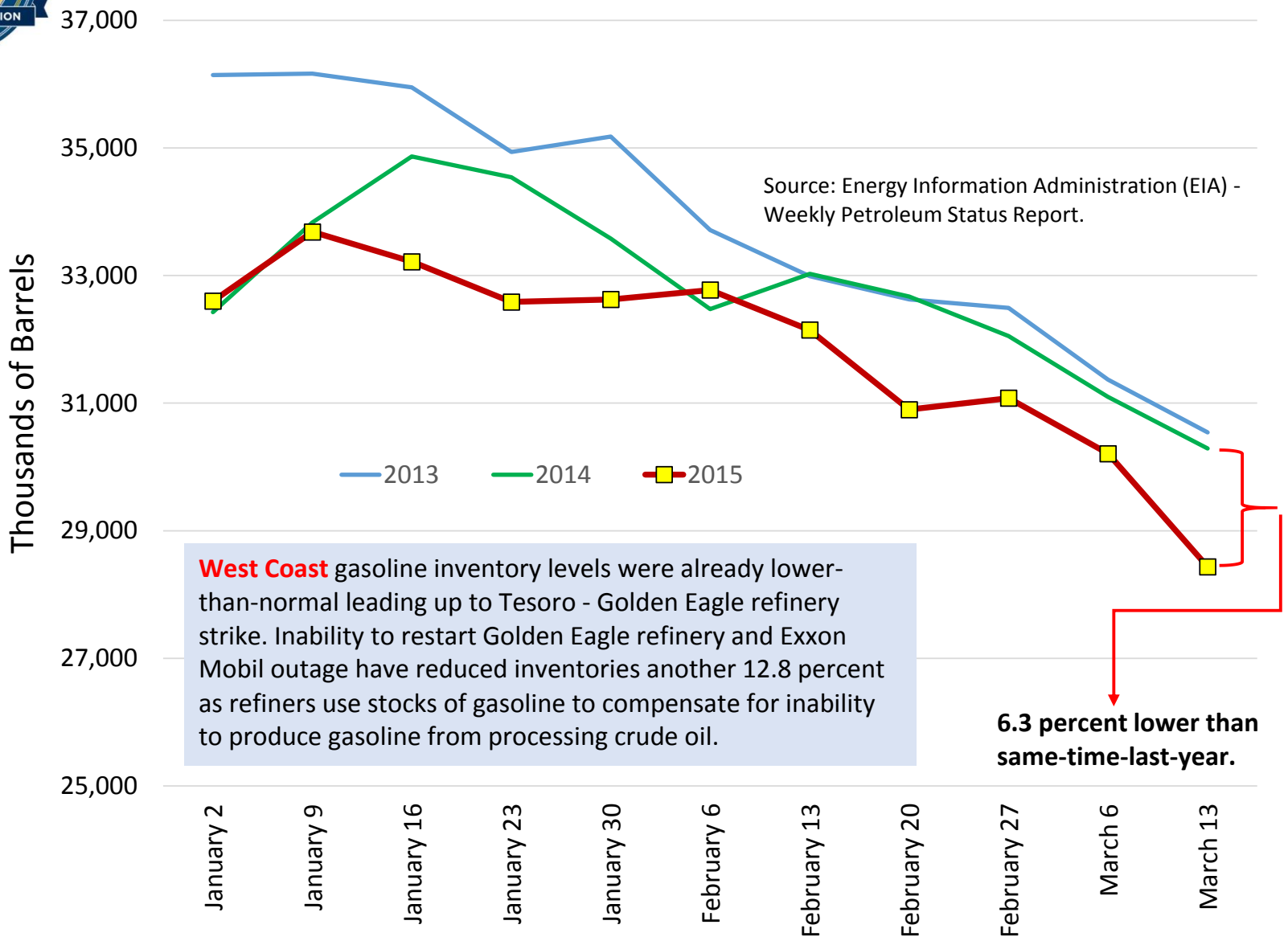
Source: Federal Ministry for Economic Cooperation and Development.



California Gasoline Seasonal Price Change
Retail Less Crude Oil Refinery Acquisition Cost



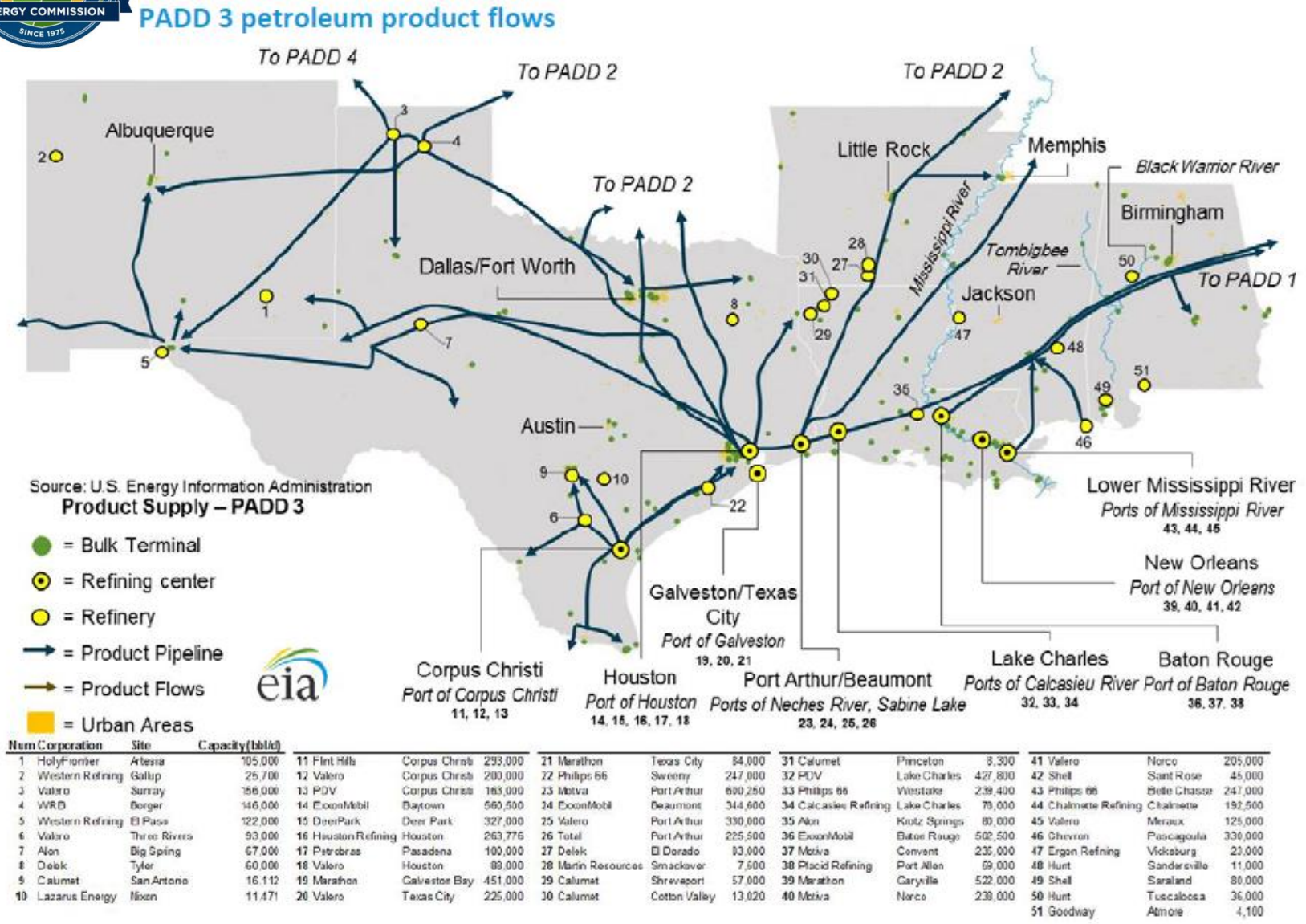
West Coast Gasoline Inventories



West Coast gasoline inventory levels were already lower-than-normal leading up to Tesoro - Golden Eagle refinery strike. Inability to restart Golden Eagle refinery and Exxon Mobil outage have reduced inventories another 12.8 percent as refiners use stocks of gasoline to compensate for inability to produce gasoline from processing crude oil.

6.3 percent lower than same-time-last-year.

U.S. Gulf Coast is Large Exporter



Num	Corporation	Site	Capacity (bbl/d)
1	HollyFrontier	Artesia	105,000
2	Western Refining	Gallup	25,700
3	Valero	Sunray	158,000
4	WRB	Borger	146,000
5	Western Refining	El Paso	122,000
6	Valero	Three Rivers	93,000
7	Alon	Big Spring	67,000
8	Delek	Tyler	60,000
9	Calumet	San Antonio	16,112
10	Lazarus Energy	Nixon	11,471
11	Flint Hills	Corpus Christi	293,000
12	Valero	Corpus Christi	200,000
13	PDV	Corpus Christi	168,000
14	ExxonMobil	Baytown	560,500
15	DeerPark	Deer Park	327,000
16	Houston Refining	Houston	263,776
17	Petrobras	Pasadena	100,000
18	Valero	Houston	89,000
19	Marathon	Galveston Bay	451,000
20	Valero	Texas City	225,000
21	Marathon	Texas City	84,000
22	Phillips 66	Sweeny	247,000
23	Motiva	Port Arthur	600,250
24	ExxonMobil	Beaumont	344,600
25	Valero	Port Arthur	330,000
26	Total	Port Arthur	225,500
27	Delek	El Dorado	83,000
28	Martin Resources	Smackover	7,500
29	Calumet	Shreveport	57,000
30	Calumet	Cotton Valley	13,020
31	Calumet	Princeton	8,300
32	PDV	Lake Charles	427,800
33	Phillips 66	Westlake	239,400
34	Calcasieu Refining	Lake Charles	78,000
35	Alon	Krotz Springs	80,000
36	ExxonMobil	Baton Rouge	502,500
37	Motiva	Convent	235,000
38	Placid Refining	Port Allen	69,000
39	Marathon	Garyville	522,000
40	Motiva	Norco	238,000
41	Valero	Norco	205,000
42	Shell	Saint Rose	45,000
43	Phillips 66	Belle Chasse	247,000
44	Chalmette Refining	Chalmette	192,500
45	Valero	Meraux	125,000
46	Chevron	Pascagoula	330,000
47	Ergon Refining	Vicksburg	23,000
48	Hunt	Sandersville	11,000
49	Shell	Saraland	80,000
50	Hunt	Tuscaloosa	36,000
51	Goodway	Atmore	4,100

U.S. Gulf Coast Produces Excess Gasoline