

Appendix E Example for Calculating Total CWB for a Refinery (CA-CWB)

The following table illustrates the calculation of Total CWB for an example refinery.

	Utilized Capacity	Units of Measure ⁽¹⁾	CWB Factor	FCC Coke on Catalyst, vol %	CWB Factor, FCC Coke on Catalyst	CWB (b/d)
Atmospheric Crude Distillation	214,009	T b/cd	1.00			214,009
Vacuum Distillation	114,933	T b/cd	0.91			104,589
Visbreaker	-	T b/cd	1.60			-
Delayed Coker	73,236	T b/cd	2.55			186,752
Fluid Coking						
Fluid Coker	-	T b/cd	10.3			-
Flexicoker	-	T b/cd	23.6			-
Catalytic Cracking						
FCC	61,510	T b/cd	1.150	4.41	1.041	353,276
Mild Residual FCC	-	T b/cd	0.659	4.41	1.1075	-
Residual FCC	-	T b/cd	-	4.41	1.1765	-
Other FCC	-	T b/cd	4.65			-
Thermal Cracking	-	T b/cd	2.95			-
Naphtha/Distillate Hydrocracker	30,290	T b/cd	3.15			95,412
Residual Hydrocracker (H-Oil; LC-Fining and Hyeon)	-	T b/cd	4.40			-
Naphtha Hydrotreater	95,000	T b/cd	0.91			86,450
Kerosene Hydrotreater	23,100	T b/cd	0.75			17,325
Diesel/Selective Hydrotreater	70,366	T b/cd	0.90			63,329
Residual Hydrotreater	-	T b/cd	1.80			-
VGO Hydrotreater	46,930	T b/cd	1.00			46,930
Reformer – including AROMAX	30,019	T b/cd	3.50			105,066
Solvent Deasphalter	-	T b/cd	2.80			-
Alkylation / Poly / Dimersol	16,720	P b/cd	5.00			83,601
Sulfuric Acid Regeneration	-	ST/cd	37.80			
C ₄ Isomer Production	-	P b/cd	1.25			-
C ₃ /C ₆ Isomer Production – including ISOSIV	-	P b/cd	1.80			-
Coke Calciner	-	ST/cd	96			-
Hydrogen Generation						
Steam-Methane Reforming	-	k SCF/cd	5.70			-
Steam-Naphtha Reforming	-	k SCF/cd	6.70			-
Partial Oxidation	-	k SCF/cd	7.10			-
Sulfur ⁽²⁾	783	LT/cd	140			109,674
Aromatics Production (All)	-	T b/cd	3.30			-
Hydrodealkylation	-	P b/cd	2.50			-
Toluene Disproportionation / Transalkylation	-	P b/cd	1.90			-
Cyclohexane Production	-	P b/cd	2.80			-
Xylene Isomerization	-	P b/cd	1.90			-
Paraxylene Production	-	P b/cd	6.50			-

	Utilized Capacity	Units of Measure ⁽¹⁾	CWB Factor	FCC Coke on Catalyst, vol %	CWB Factor, FCC Coke on Catalyst	CWB (b/d)
Ethylbenzene Production	-	P b/cd	1.60			-
Cumene Production	-	P b/cd	5.00			-
Lubricants						
Solvent Extraction	-	T b/cd	2.20			-
Solvent Dewaxing	-	T b/cd	4.55			-
Catalytic Dewaxing	-	T b/cd	1.60			-
Lube Hydrocracking	-	T b/cd	2.50			-
Lube Hydrofining	-	T b/cd	1.15			-
Wax Deoiling	-	T b/cd	11.80			-
Wax Hydrofining	-	T b/cd	1.15			-
Asphalt Production	-	P b/cd	2.70			-
Oxygenates	-	P b/cd	4.90			-
POX Syngas for Fuel	-	k SCF/cd	2.75			-
Methanol Synthesis	-	P b/cd	(36.00)			-
CO ₂ Liquefaction	-	ST/cd	(160.00)			-
Ammonia Recovery Unit		ST/cd	453			
Desalination	-	k gal/cd	32.70			-
Special Fractionation	25,725	T b/cd	0.80			20,580
Propane/Propylene Splitter (Propylene Production)	-	P b/cd	2.10			-
Cryogenic LPG Recovery	-	k SCF/cd	0.25			
Flare Gas Recovery	-	k SCF/cd	0.13			
Fuel Gas Sales Treating & Compression	-	hp	2.52			
Flue Gas Desulfurizing	-	k SCF/cd	0.02			
Subtotal: Process CWB						1,486,994
Off-Sites and Non-Energy Utilities	Total Throughput	Units of Measure⁽¹⁾	CWB Factor for Throughput		CWB Factor for Process CWB	
Total Input Barrels	248,128	T b/cd	0.327		0.0085	93,777
Non-Crude Sensible Heat	Total Throughput	Units of Measure⁽¹⁾	CWB Factor			
Qual. Non-Crude Input Barrels	20,863	T b/cd	0.44			9,180
Sales and Exports of Steam and Electricity	Thermal Equivalent	Units of Measure⁽¹⁾	CWB Factor			
Steam Transfers to Affiliates	-	k Btu/cd	0.0125			-
Steam Sales	9,165,492	k Btu/cd	0.0125			114,569
Electricity Transfers to Affiliates	-	k Btu/cd	0.0125			-
Electricity Sales	987,240	k Btu/cd	0.0125			12,340
Subtotal: CWB for Sales and Exports of Steam and Electricity						126,909
Total CWB						1,716,860

⁽¹⁾ Units of measure in this column are as follows:

T b/cd – Throughput on feed basis in barrels per calendar day

P b/cd – Throughput on product basis in barrels per calendar day

ST/cd – Throughput in short tons per calendar day; 1 ST = 2,000 lbs

k SCF/cd – Throughput in thousand standard cubic feet (dry @ 60 °F and 14.696 psia or 15 °C and 1 atmosphere) per calendar day

LT/cd – Throughput in long tons per calendar day; 1 LT = 2,240 lbs

k gal/cd – Throughput in thousand gallons (US liquid) per calendar day

hp – Horsepower

k Btu/cd – Thousand British thermal units per calendar day; 1 Btu = 1,055 joules

⁽²⁾ Includes the combined throughput of product sulfur for Sulfur Recovery Unit and Tail Gas Recovery Unit, and sulfur sprung for H₂S Springer Unit.

Appendix F Example for Calculating Total CWT for a Refinery (Solomon EU-CWT)

The following table illustrates the calculation of Total CWT for the same example refinery used in Appendix E.

	Utilized Capacity	Units of Measure ⁽¹⁾	EU-CWT Factor	FCC Coke on Catalyst, wt %	CWT (tonne/d)
Atmospheric Crude Distillation	31,591	tonne/cd	1.00		31,591
Vacuum Distillation	18,525	tonne/cd	0.85		15,746
Visbreaker	-	tonne/cd	1.40		-
Delayed Coker	10,864	tonne/cd	2.20		23,900
Fluid Coking		tonne/cd			
Fluid Coker	-	tonne/cd	7.60		-
Flexicoker	-	tonne/cd	16.60		-
Catalytic Cracking		tonne/cd			
FCC	8,951	tonne/cd	5.50	4.68	49,229
Mild Residual FCC	-	tonne/cd	5.50		-
Residual FCC	-	tonne/cd	5.50		-
Other FCC	-	tonne/cd	4.10		-
Thermal Cracking	-	tonne/cd	2.70		-
Naphtha/Distillate Hydrocracker	4,667	tonne/cd	2.85		13,302
Residual Hydrocracker (H-Oil; LC-Fining and Hycon)	-	tonne/cd	3.75		-
Naphtha Hydrotreater	9,592	tonne/cd	1.10		10,552
Kerosene Hydrotreater	3,006	tonne/cd	0.90		2,706
Diesel/Selective Hydrotreater	9,819	tonne/cd	0.90		8,838
Residual Hydrotreater	-	tonne/cd	1.55		-
VGO Hydrotreater	7,090	tonne/cd	0.90		6,381
Reformer – including AROMAX	3,564	tonne/cd	4.95		17,642
Solvent Deasphalter	-	tonne/cd	2.45		-
Alkylation / Poly / Dimersol	1,858	P tonne/cd	7.25		13,468
C ₄ Isomer Production	-	P tonne/cd	3.25		-
C ₅ /C ₆ Isomer Production – including ISOSIV	-	P tonne/cd	2.85		-
Coke Calciner	-	P tonne/cd	12.75		-
Hydrogen Generation					
Gas Feed	-	tonne/cd	296.00		-
Naphtha Feed	-	tonne/cd	348.00		-

	Utilized Capacity	Units of Measure ⁽¹⁾	EU-CWT Factor	FCC Coke on Catalyst, wt %	CWT (tonne/d)
Sulfur	796	tonne/cd	18.60		14,805
Aromatics Production (All)	-	P tonne/cd	5.25		-
Hydrodealkylation	-	P tonne/cd	2.45		-
Toluene Disproportionation / Transalkylation	-	P tonne/cd	1.85		-
Cyclohexane Production	-	P tonne/cd	3.00		-
Xylene Isomerization	-	P tonne/cd	1.85		-
Paraxylene Production	-	P tonne/cd	6.40		-
Ethylbenzene Production	-	P tonne/cd	1.55		-
Cumene Production	-	P tonne/cd	5.00		-
Lubricants					
Solvent Extraction	-	tonne/cd	2.10		-
Solvent Dewaxing	-	tonne/cd	4.55		-
Wax Isomerization	-	tonne/cd	1.60		-
Lube Hydrocracking	-	tonne/cd	2.50		-
Wax Deoiling	-	tonne/cd	12.00		-
Lube and Wax Hydrotreating	-	tonne/cd	1.15		-
Asphalt Production	-	P tonne/cd	2.10		-
Oxygenates	-	P tonne/cd	5.60		-
POX Syngas for Fuel		tonne SG/cd	8.20		-
POX Syngas to H ₂ or Methanol	-	tonne SG/cd	44.00		-
Methanol Synthesis	-	P tonne/cd	(36.20)		-
CO ₂ Liquefaction	-	tonne/cd	(19.20)		-
Desalination	-	P tonne/cd	1.15		-
Special Fractionation – Purchased NGL Only	1,153	tonne/cd	1.00		1,153
Propane/Propylene Splitter (Propylene Production)	-	tonne/cd	3.45		-
Solvents					
Solvent Hydrotreating	-	tonne/cd	1.25		-
Solvent Fractionation	-	tonne/cd	0.90		-
Treatment & Compression of Fuel Gas for Sale	-	kW	0.45		-
Air Separation Plant	-	k nm ³ O ₂ /cd	8.80		-
Subtotal: Process EU-CWT					209,312
Off-Sites, Non-Energy Utilities, and Non-Crude Sensible Heat					14,599
Sales and Other Exports of Steam	Thermal Equivalent	Units of Measure	EU-CWT Factor		
Steam Transfers & Sales	9,670	GJ/cd	1.62		15,665
Subtotal: EU-CWT Before Adjustments for Steam Imports and Electricity					239,576
Total CWT – per EU-ETS Boundary ⁽²⁾					140,152

- (1) Units of measure in this column are as follows:
- tonne/cd – Throughput on feed basis in tonnes per calendar day
 - P tonne/cd – Throughput on product basis in tonnes per calendar day
 - ST/cd – Throughput in short tons per calendar day; 1 ST = 2,000 lbs
 - tonne SG/cd – Throughput in tonnes of syngas per calendar day
 - LT/cd – Throughput in long tons per calendar day; 1 LT = 2,240 lbs
 - k gal/cd – Throughput in thousand gallons (US liquid) per calendar day
 - kW – Kilowatts; 1,000 watts
 - k nm³ O₂/cd – Throughput in thousand normal cubic meters of oxygen (dry @ 0 °C and 1 atmosphere) per calendar day
 - GJ/cd – Gigajoules per calendar day; 1 GJ = 109 joules
- (2) The adjustments were made by multiplying Solomon's Electricity Utilization Factor (EUF) and Steam Import Factor.

Appendix G Glossary and Solomon Units of Measure

Solomon Usage	Description
°C	Degrees Celsius
°F	Degrees Fahrenheit
9,090 Btu per kilowatt-hour (kWh)	Conversion Factor for Purchased/Imported Electricity to Thermal Energy
ASTM	American Society for Testing and Materials
b, bbl, barrels	API barrels; 42 US liquid gallons; 0.159 cubic meters
b/cd	Barrels per calendar day
b/sd	Barrels per stream day
bar a	Bar absolute; 14.504 lb-force per square inch absolute; 1.0197 kg-force per m ² absolute; 100 kilopascal absolute; 0.987 atmosphere absolute
bar g	Bar gauge; 14.504 lb-force per square inch gauge; 1.0197 kg-force per m ² gauge; 100 kilopascal gauge; 0.987 atmosphere gauge
bhp	Brake horsepower, 745.7 watts
BS&W	Bottom sediment and water
Btu	British thermal unit; 1,055 joules
CA	California
CA-CWB™	The Complexity-Weighted Barrels Methodology for California Refineries
CDU	Atmospheric Crude Distillation Unit
CEF	CO ₂ Emission Factor; in tonne CO ₂ /MBtu
CEI	Carbon Emissions Index
CO ₂	Carbon Dioxide
CO ₂ e	Carbon Dioxide-Equivalent
Complexity	Configuration Factor; a ratio of Total Equivalent Distillation Capacity (EDC) of the Refinery to its Crude Unit Capacity
CONCAWE	Conservation of Clean Air and Water in Europe
cu ft, ft ³	Cubic feet; 0.02832 cubic meters for liquids & solids. SCF; 0.02679 for NM ³ for gases
CWB	Complexity-Weighted Barrels
CWTB	Complexity-Weighted Throughput Barrels, referred as CWB
CWT	Complexity-Weighted Tonnes
EDC	Equivalent Distillation Capacity
EEF	Electricity Emission Factor
EII	Energy Intensity Index
EU	European Union
EU ETS	European Union Emissions Trading Scheme
EU-CWT	The Complexity-Weighted Tonnes Methodology for European Union Refining Industry

EUF	Electricity Utilization Factor
FCC	Fluid Catalytic Cracking
FOE (bbl)	Fuel Oil Equivalent barrel (Lower Heating Value); 6.05 MBtu; 6,383 MJ
gal	Gallon (US liquid)
GHG	Greenhouse Gas
GJ	Gigajoule; 10 ⁹ joules
hp	Horsepower
k	Thousands of units specified
kg	Kilogram
kg/m ³	Kilograms per cubic meter (density)
k lb/h	Thousand pounds per hour
kW	Kilowatts; 1,000 watts
kWh	Kilowatt-hour
L	Liter
lb	Pound (avoirdupois)
LBG	Low-Btu Gas
LHV	Lower Heating Value; used in Energy Reporting in Solomon Studies
LPG	Liquefied Petroleum Gas
LT	Long ton; 2,240 lb (avoirdupois)
M	Millions of units specified
m ³	Cubic meter; 6.289 bbl
MJ	Megajoule; 10 ⁶ joules
mm	Millimeters
mol %	Molecular fraction (expressed as a percent)
nm ³	Normal cubic meters; dry @ 0 °C and 1 atmosphere
°API	Specific gravity (SG) expressed in °API; ((141.5/SG) – 131.5)
OECD	Organization for Economic Co-operation and Development
POX	Partial Oxidation Unit
ppm (vol)	Parts per million (volume)
ppm (wt)	Parts per million (weight)
psia	Pounds per square inch absolute (pressure)
psig	Pounds per square inch gauge (pressure)
SCF	Standard cubic feet; dry @ 60 °F and 14.696 psia or 15 °C and 1 atmosphere
Solomon	HSB Solomon Associates LLC
ST	Short Ton; 2,000 lb (avoirdupois)
TJ	Terajoule; 10 ¹² joules
US EPA	United States Environmental Protection Agency
vol %	Percent by volume
WBCSD	World Business Council for Sustainable Development
WRI	World Resources Institute
WSPA	Western States Petroleum Association

wt %	Percent by weight
GJ/cd	Gigajoules per calendar day; 1 GJ = 109 joules
k Btu/cd	Thousand British thermal units per calendar day; 1 Btu = 1,055 joules
k gal/cd	Throughput in thousand gallons (US liquid) per calendar day
k gal/cd	Throughput in thousand gallons (US liquid) per calendar day
k nm ³ O ₂ /cd	Throughput in thousand normal cubic meters of oxygen (dry @ 0 °C and 1 atmosphere) per calendar day
k SCF/cd	Throughput in thousand standard cubic feet (dry @ 60 °F and 14.696 psia or 15 °C and 1 atmosphere) per calendar day
LT/cd	Throughput in long tons per calendar day; 1 LT = 2,240 lbs
LT/cd	Throughput in long tons per calendar day; 1 LT = 2,240 lbs
tonne SG/cd	Throughput in tonnes of syngas per calendar day
tonne/cd	Throughput on feed basis in tonnes per calendar day
P b/cd	Throughput on product basis in barrels per calendar day
P tonne/cd	Throughput on product basis in tonnes per calendar day
ST/cd	Throughput in short tons per calendar day; 1 ST = 2,000 lbs
ST/cd	Throughput in short tons per calendar day; 1 ST = 2,000 lbs
T b/cd	Throughput on feed basis in barrels per calendar day
Tonne	Metric Ton; 1 tonne = 1,000 kilograms

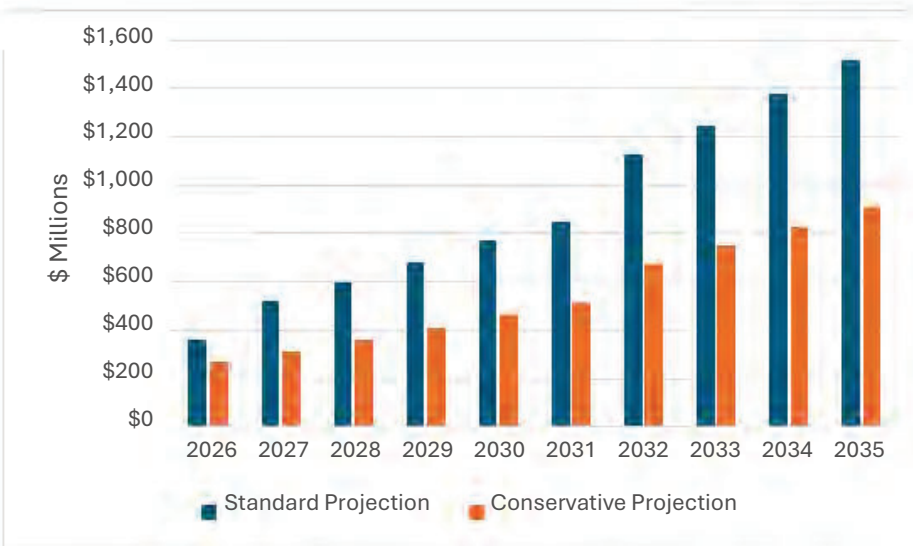
Impact of Proposed Cap-and-Invest Regulations on California Refiners

The brief discusses the impact of the proposed cap-and-invest regulations on compliance costs to California refiners from 2026 to 2035. Our estimates focus on stationary compliance costs only – that is, the costs imposed on refiners related to emissions from the refining of fuel. They do not include compliance costs for gasoline and diesel combustion (cap-at-the-rack).

Estimated Stationary Compliance Costs to California Refiners

Our projections of annual compliance costs of the proposed regulations are summarized in **Figure 1**. These projections are based on publicly available data. Annual compliance costs increase from \$357 million in 2026 to \$1.5 billion in 2035 under our standard projection, and from \$267 million to \$908 million over the same period under our conservative projection. **The cumulative cost to the industry over the 10-year period would range from \$5.4 billion to \$9.0 billion.**

Figure 1
Annual Cap-and-Invest Stationary Compliance Costs – Refining Industry



Factors Behind the Increase in Compliance Costs

The increase in compliance costs over the next decade is due to (1) a more-than-50 percent decline in free allowance allocations (which leads to a corresponding increase in number of allowances that must

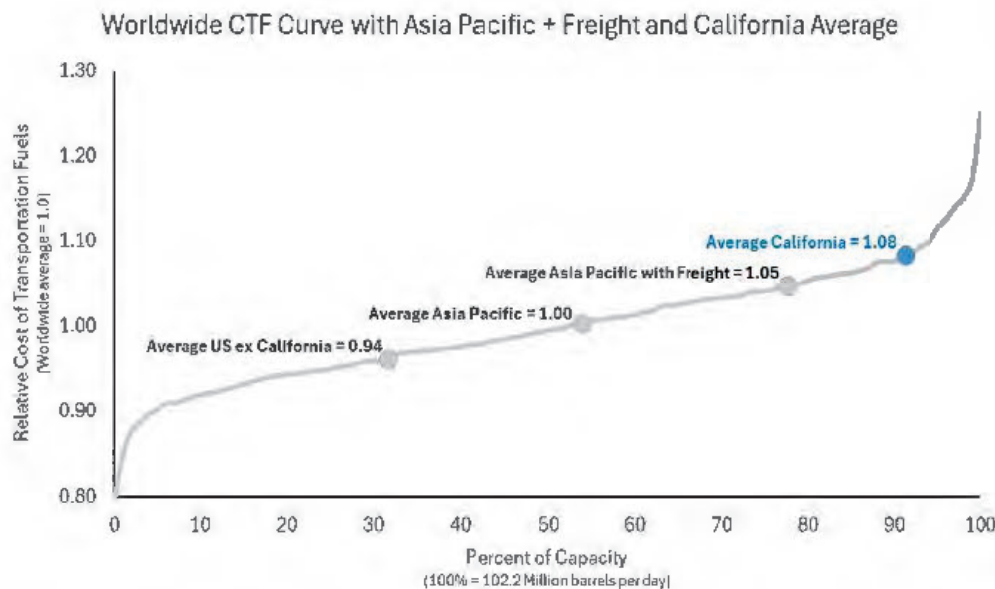
be purchased¹ at auction), and (2) a near doubling of the average allowance price under the proposed regulation. The main steps in our calculation, along with the underlying assumptions and sources, are provided in the Appendix. The difference between the standard and conservative projection is solely due to different assumptions about future allowance prices. Other inputs are identical between the two projections, as they are either specified in the regulation itself or are tied to California Air Resources Board (CARB) assumptions.

Why Increases in Stationary Compliance Costs Matter

The projected increase in stationary compliance costs is especially significant because out-of-state refiners do not have to purchase allowances associated with their emissions. This puts California refiners at a further competitive disadvantage compared to out-of-state refiners, and it increases the risk of further closures and losses of in-state gasoline, diesel and jet fuel supplies.

California refineries are under considerable pressure from high operating costs and tight operating margins. In 2024, HSB Solomon Associates, LLC (Solomon) compared the costs of producing transportation fuels (gasoline, diesel, and jet fuel) for 300 refineries across the globe representing 85 percent of total worldwide capacity.² The study found that California production costs were among the highest in the world, and well above counterparts in other U.S. regions and Asia (**Figure 2**).

Figure 2
Solomon Estimate of Relative Costs of Producing Transportations Fuels
Worldwide Distributions, 2024



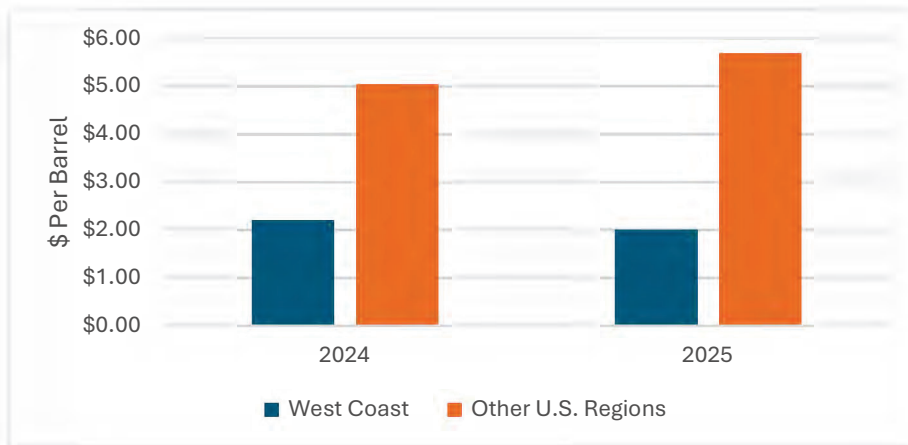
CTF = Cost per barrel of transportation fuels (gasoline, diesel, and jet fuel). CTF includes costs of raw materials, operating expenses, and the cost to purchase biofuels.

¹ While refiners could, in theory, avoid allowance purchases by investing in emission-reduction technologies, the reality is that such technologies (e.g., carbon capture and sequestration) are extremely expensive, would require long lead times for permitting and construction, and would be extremely difficult to justify financially given California’s high costs, comparatively low operating margins, and the state’s plan to phase out use of gasoline and diesel over the next two decades.

² Source: *Solomon CEI & CTF Sensitivities*. HSB Solomon Associates LLC. February 2026

Our review of recent 10-Q financial reports submitted to the U.S. Security and Exchange Commission indicates that average operating margins for West Coast refineries (almost exclusively located in California) were less than one-half of the average margin of their counterparts in the Gulf Coast, Midwest, and Atlantic regions of the U.S. in both 2024 and 2025 (**Figure 3**).³ It is important to note that operating margins exclude depreciation, interest, and other special charges – and thus overstate actual profits earned by refiners.

Figure 3
Operating Margins Reported by Refiners, by U.S. Region



The lower margins are primarily due to much higher operational expenses in California, which are, on average, nearly double those in other states. These costs reflect the higher expense of producing reformulated fuels meeting California’s standards as well as high costs of other regulations, electricity, materials, labor, and insurance in the state.

These costs have contributed to the closure or conversion to biofuel production of several California refiners in the past six years. Most recently, Phillips 66 closed its complex in Wilmington and Carson in late 2025, citing lack of sustainability of the refinery’s operations, and Valero is closing its Benicia refinery in early 2026, citing high operating costs, stringent California environmental regulations and significant financial losses. The remaining refiners face challenges associated with declining domestic crude oil supplies, mandated inventory requirements, challenging regulatory requirements by regional air boards, and (after a 5-year hiatus) ongoing threats from penalties on “excessive” profits (with no offsets for down years).

The additional compliance costs resulting from the proposed Cap-and-Invest regulations, imposed on top of California’s already-tough operating environment, would likely eliminate a significant portion, if not all, of California refiners’ future annual net earnings. The implication is an extremely high “leakage” risk, where further shutdowns in California refinery operations result in additional CO₂ emission from the refining and lengthy transport of refined fuels from foreign regions that have less stringent environmental standards. Greater reliance on imports also implies losses of thousands of high-paying jobs in refining, building-and-trades, and other related industries, as well as greater fuel supply challenges and risks, likely resulting in higher prices at the pump for households and businesses in this state.

³ Capitol Matrix Consulting Calculations based on 10-Q reports for 2025:4, which include annual totals for 2024 and 2025, for the following companies: [Valero Energy Corp](#); [Phillips 66](#); [Marathon Petroleum](#); and [PBF Energy Inc](#). Excludes Chevron U.S.A. Inc because its results are not broken out by region.

Appendix: Key Factors in the Compliance Cost Projection

The stationary cost of compliance to the refinery industry is equal to the number of emission allowances that must be purchased each year times the average cost per allowance. The specific steps in the calculation are shown in Table 1. The headers for each column are described below:

- **Refiner Emissions.** We assume a total of 22.9 million metric tons (mt) are emitted each year by refineries and their associated hydrogen production facilities. This is based on average emissions shown in the California Air Resources Board (CARB) reports for 2021 through 2024 of the remaining operating refineries in the state.⁴
- **Cap Adjustment Factor.** This factor is specified for each year in Table 9-2 of the proposed regulation.⁵ The CAF declines from 65 percent of covered allowances in 2026 to 25 percent by 2035.
- **Emissions Covered by Allowance Allocation** each year is equal to total emissions (in metric tons) *times* the CAP *times* 90 percent. The 90 percent is based on the benchmark factor used by CARB in its allowance allocation methodology, which is set at 90 percent of average industry emissions per unit of output.⁶
- **Remaining Emissions Not Covered by Allowance Allocation** is the difference between total refiner emissions and emissions covered by the allowance allocation.
- **Average Allowance Price.** Under the standard projection, the average price each year is the mid-point between the floor price and the allowance price containment reserve tier 1 (APCR1) price. This is consistent with the assumption used by CARB in its Standardized Regulatory Impact Analysis (SRIA) of the extended cap-and-invest program.⁷ Our conservative projection assumes that the allowance price is equal to the floor purchase price for each year of the projection. The reason that average allowance prices increase each year is that the proposed regulation specifies that both the floor price and APCR1 price increase each year by 5 percent plus inflation.⁸
- **Compliance Cost to Sector** is equal to emissions not covered by free allowances times the average price per allowance.

⁴ See CARB, Mandatory CHG Reporting – Reported Emissions. <https://ww2.arb.ca.gov/mrrr-data>

⁵ See CARB, Proposed Regulation Order, Page 218.

https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2026/cap_invest/nc_app%20a-1.pdf

⁶ See CARB, Initial Statement of Reasons for the Cap-and-Trade Program, Appendix J, page 35.

<https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2010/capandtrade10/capv4appj.pdf>. For a more general discussion of CARB’s allowance allocation process for refineries and other industrial facilities, see “Allowance Allocation to Industrial Facilities.”

<https://ww2.arb.ca.gov/our-work/programs/cap-and-trade-program/allowance-allocation/allowance-allocation-industrial>

⁷ See Table 50 of CARB’s April 2024 Standardized Regulatory Impact Assessment for the extended Cap-and-Invest Program.

https://dof.ca.gov/media/docs/forecasting/economics/major-regulations/major-regulations-table/nc-Cap-and-Trade_SRIA2024.pdf

⁸ Specifically, the inflation is defined in the regulation to be the annual percent change in the U.S. Consumer Price Index for all Urban Consumers (CPIU). Our estimate of CPIU increases averages 2.4 percent per year through 2035. The estimate is consistent with the Department of Finance January 2026 forecast through 2030 and extended at an annual rate of 2.3 percent thereafter.

<https://dof.ca.gov/forecasting/economics/economic-forecasts-u-s-california-counties>.

Table 1
Stationary Emissions Compliance Costs to California's Refinery Industry
Standard and Conservative Projection

	Refiner Emissions (Million mt)	Cap Adjustment Factor	Covered by Allocation (Million mt)	Not Covered by Allocation (Million mt)	Standard Projection		Conservative Projection	
					Average Allowance Price (\$/mt)	Compliance Cost to Sector (\$ Millions)	Average Allowance Price (\$/mt)	Compliance Cost to Sector (\$ Millions)
2026	22.9	0.647	13.3	9.6	\$37	\$357	\$28	\$267
2027	22.9	0.613	12.6	10.3	\$50	\$515	\$30	\$309
2028	22.9	0.579	11.9	11.0	\$54	\$592	\$32	\$355
2029	22.9	0.545	11.2	11.7	\$58	\$676	\$35	\$405
2030	22.9	0.511	10.5	12.4	\$62	\$769	\$37	\$461
2031	22.9	0.494	10.2	12.7	\$67	\$848	\$40	\$508
2032	22.9	0.348	7.2	15.7	\$71	\$1,125	\$43	\$674
2033	22.9	0.324	6.7	16.2	\$77	\$1,245	\$46	\$746
2034	22.9	0.301	6.2	16.7	\$82	\$1,375	\$49	\$824
2035	22.9	0.279	5.8	17.2	\$88	\$1,516	\$53	\$908
10-Year Total	---	---	---	---	---	\$9,018	---	\$5,457

[Home Table of Contents](#)**§ 15126.2. Consideration and Discussion of Significant Environmental Impacts.**

14 CAADC § 15126.2

Barclays Official California Code of Regulations

Barclays California Code of Regulations**Title 14. Natural Resources****Division 6. Resources Agency****Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (Refs & Annos)****Article 9. Contents of Environmental Impact Reports**

14 CCR § 15126.2

§ 15126.2. Consideration and Discussion of Significant Environmental Impacts.**Currentness**

(a) **The Significant Environmental Effects of the Proposed Project.** An EIR shall identify and focus on the significant effects of the proposed project on the environment. In assessing the impact of a proposed project on the environment, the lead agency should normally limit its examination to changes in the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time environmental analysis is commenced. Direct and indirect significant effects of the project on the environment shall be clearly identified and described, giving due consideration to both the short-term and long-term effects. The discussion should include relevant specifics of the area, the resources involved, physical changes, alterations to ecological systems, and changes induced in population distribution, population concentration, the human use of the land (including commercial and residential development), health and safety problems caused by the physical changes, and other aspects of the resource base such as water, historical resources, scenic quality, and public services. The EIR shall also analyze any significant environmental effects the project might cause or risk exacerbating by bringing development and people into the area affected. For example the EIR should evaluate any potentially significant direct, indirect, or cumulative environmental impacts of locating development in areas susceptible to hazardous conditions (e.g., floodplains, coastlines, wildfire risk areas), including both short-term and long-term conditions, as identified in authoritative hazard maps, risk assessments or in land use plans, addressing such hazardous areas.

(b) **Energy Impacts.** If analysis of the project's energy use reveals that the project may result in significant environmental effects due to wasteful, inefficient, or unnecessary use of energy, or wasteful use of energy resources, the EIR shall mitigate that energy use. This analysis should include the project's energy use for all project phases and components, including transportation-related energy, during construction and operation. In addition to building code compliance, other relevant considerations may include, among others, the project's size, location, orientation, equipment use and any renewable energy features that could be incorporated into the project. (Guidance on information that may be included in such an analysis is presented in Appendix F.) This analysis is subject to the rule of reason and shall focus on energy use that is caused by the project. This analysis may be included in related analyses of air quality, greenhouse gas emissions, transportation or utilities in the discretion of the lead agency.

(c) **Significant Environmental Effects Which Cannot be Avoided if the Proposed Project is Implemented.** Describe any significant impacts, including those which can be mitigated but not reduced to a level of insignificance. Where there are impacts that cannot be alleviated without imposing an alternative design, their implications and the reasons why the project is being proposed, notwithstanding their effect, should be described.

(d) **Significant Irreversible Environmental Changes Which Would be Caused by the Proposed Project Should It be Implemented.** Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified. (See Public Resources Code section 21100.1 and Title 14, California Code of Regulations, section 15127 for limitations to applicability of this requirement.)

(e) **Growth-Inducing Impact of the Proposed Project.** Discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of a waste water treatment plant might, for example, allow for more construction in service areas). Increases in the population may tax existing community service facilities, requiring construction of new facilities that could cause significant environmental effects. Also discuss the characteristic of some projects which may encourage and facilitate other activities that could significantly affect the environment, either individually or

cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.

Credits

NOTE: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Sections 21002, 21003 and 21100, Public Resources Code; *CBIA v. BAAQMD* (2015) 62 Cal.4th 369; *Ukiah Citizens for Safety First v. City of Ukiah* (2016) 248 Cal. App. 4th 256; *Tracy First v. City of Tracy* (2009) 177 Cal.App.4th 912; *Citizens of Goleta Valley v. Board of Supervisors*, (1990) 52 Cal.3d 553; *Laurel Heights Improvement Association v. Regents of the University of California*, (1988) 47 Cal.3d 376; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; *Laurel Heights Improvement Association v. Regents of the University of California* (1993) 6 Cal.4th 1112; and *Goleta Union School Dist. v. Regents of the Univ. of California* (1995) 37 Cal. App.4th 1025.

HISTORY

1. New section filed 10-26-98; operative 10-26-98 pursuant to Public Resources Code section 21087 (Register 98, No. 44).
2. Change without regulatory effect amending NOTE filed 10-6-2005 pursuant to section 100, title 1, California Code of Regulations (Register 2005, No. 40).
3. Amendment of subsections (a) and (c) and NOTE filed 2-16-2010; operative 3-18-2010 (Register 2010, No. 8).
4. Amendment of subsection (a), new subsection (b), subsection relettering and amendment of NOTE filed 12-28-2018; operative 12-28-2018 pursuant to Government Code section 11343.4(b)(3) (Register 2018, No. 52).

This database is current through 2/27/26 Register 2026, No. 9.

Cal. Admin. Code tit. 14, § 15126.2, 14 CA ADC § 15126 .2

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[Home Table of Contents](#)**§ 15130. Discussion of Cumulative Impacts.**

14 CAADC § 15130

Barclays Official California Code of Regulations

Barclays California Code of Regulations**Title 14. Natural Resources****Division 6. Resources Agency****Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (Refs & Annos)****Article 9. Contents of Environmental Impact Reports**

14 CCR § 15130

§ 15130. Discussion of Cumulative Impacts.**Currentness**

(a) An EIR shall discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable, as defined in section 15065(a)(3). Where a lead agency is examining a project with an incremental effect that is not "cumulatively considerable," a lead agency need not consider that effect significant, but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable.

(1) As defined in Section 15355, a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

(2) When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. A lead agency shall identify facts and analysis supporting the lead agency's conclusion that the cumulative impact is less than significant.

(3) An EIR may determine that a project's contribution to a significant cumulative impact will be rendered less than cumulatively considerable and thus is not significant. A project's contribution is less than cumulatively considerable if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact. The lead agency shall identify facts and analysis supporting its conclusion that the contribution will be rendered less than cumulatively considerable.

(b) The discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion should be guided by the standards of practicality and reasonableness, and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact. The following elements are necessary to an adequate discussion of significant cumulative impacts:

(1) Either:

(A) A list of past, present, and probable future projects producing related or cumulative impacts, including, if necessary, those projects outside the control of the agency, or

(B) A summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect. Such plans may include: a general plan, regional transportation plan, or plans for the reduction of greenhouse gas emissions. A summary of projections may also be contained in an adopted or certified prior environmental document for such a plan. Such projections may be supplemented with additional information such as a regional modeling program. Any such document shall be referenced and made available to the public at a location specified by the lead agency.

(2) When utilizing a list, as suggested in paragraph (1) of subdivision (b), factors to consider when determining whether to include a related project should include the nature of each environmental resource being examined, the location of the project and its type. Location may be important, for example, when water quality impacts are at issue since projects outside the watershed would probably not contribute to a cumulative effect. Project type may be important, for example, when the impact is specialized, such as a particular air pollutant or mode of traffic.

- (3) Lead agencies should define the geographic scope of the area affected by the cumulative effect and provide a reasonable explanation for the geographic limitation used.
- (4) A summary of the expected environmental effects to be produced by those projects with specific reference to additional information stating where that information is available, and
- (5) A reasonable analysis of the cumulative impacts of the relevant projects. An EIR shall examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects.
- (c) With some projects, the only feasible mitigation for cumulative impacts may involve the adoption of ordinances or regulations rather than the imposition of conditions on a project-by-project basis.
- (d) Previously approved land use documents, including, but not limited to, general plans, specific plans, regional transportation plans, plans for the reduction of greenhouse gas emissions, and local coastal plans may be used in cumulative impact analysis. A pertinent discussion of cumulative impacts contained in one or more previously certified EIRs may be incorporated by reference pursuant to the provisions for tiering and program EIRs. No further cumulative impacts analysis is required when a project is consistent with a general, specific, master or comparable programmatic plan where the lead agency determines that the regional or areawide cumulative impacts of the proposed project have already been adequately addressed, as defined in section 15152(f), in a certified EIR for that plan.
- (e) If a cumulative impact was adequately addressed in a prior EIR for a community plan, zoning action, or general plan, and the project is consistent with that plan or action, then an EIR for such a project should not further analyze that cumulative impact, as provided in Section 15183(j).

Credits

NOTE: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Sections 21003(d), 21083(b), 21093, 21094 and 21100, Public Resources Code; *Whitman v. Board of Supervisors*, (1979) 88 Cal. App. 3d 397; *San Franciscans for Reasonable Growth v. City and County of San Francisco* (1984) 151 Cal.App.3d 61; *Kings County Farm Bureau v. City of Hanford* (1990) 221 Cal.App.3d 692; *Laurel Heights Homeowners Association v. Regents of the University of California* (1988) 47 Cal.3d 376; *Sierra Club v. Gilroy* (1990) 220 Cal.App.3d 30; *Citizens to Preserve the Ojai v. County of Ventura* (1985) 176 Cal.App.3d 421; *Concerned Citizens of South Cent. Los Angeles v. Los Angeles Unified Sch. Dist.* (1994) 24 Cal.App.4th 826; *Las Virgenes Homeowners Fed'n v. County of Los Angeles* (1986) 177 Cal.App.3d 300; *San Joaquin Raptor/Wildlife Rescue Ctr v. County of Stanislaus* (1994) 27 Cal.App.4th 713; *Fort Mojave Indian Tribe v. Cal. Dept. Of Health Services* (1995) 38 Cal.App.4th 1574; *Santa Monica Chamber of Commerce v. City of Santa Monica* (2002) 101 Cal.App.4th 786; *Communities for a Better Environment v. California Resources Agency* (2002) 103 Cal.App.4th 98; and *Ass'n of Irrigated Residents v. County of Madera* (2003) 107 Cal.App.4th 1383.

HISTORY

1. Amendment of section heading, new subsection (d) and amendment of NOTE filed 5-27-97; operative 5-27-97 pursuant to Government Code section 11343.4(d) (Register 97, No. 22).
2. Amendment of section and NOTE filed 10-26-98; operative 10-26-98 pursuant to Public Resources Code section 21087 (Register 98, No. 44).
3. Change without regulatory effect amending subsection (d) filed 2-1-2001 pursuant to section 100, title 1, California Code of Regulations (Register 2001, No. 5).
4. Change without regulatory effect repealing subsection (a)(4), amending subsection (b)(1)(B), redesignating former subsection (b)(1)(B)1. as subsection (b)(2), repealing former subsection (b)(1)(B)2., renumbering subsections and amending NOTE filed 7-22-2003 pursuant to section 100, title 1, California Code of Regulations (Register 2003, No. 30).
5. Change without regulatory effect amending NOTE filed 10-6-2005 pursuant to section 100, title 1, California Code of Regulations (Register 2005, No. 40).
6. Amendment of subsections (a), (b)(1)(B) and (d) and NOTE filed 2-16-2010; operative 3-18-2010 (Register 2010, No. 8).

This database is current through 2/27/26 Register 2026, No. 9.

Cal. Admin. Code tit. 14, § 15130, **14 CA ADC § 15130**

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[Home Table of Contents](#)**§ 15126.6. Consideration and Discussion of Alternatives to the Proposed Project.**

14 CAADC § 15126.6

Barclays Official California Code of Regulations

Barclays California Code of Regulations

Title 14. Natural Resources

Division 6. Resources Agency

Chapter 3. Guidelines for Implementation of the California Environmental Quality Act (Refs & Annos)

Article 9. Contents of Environmental Impact Reports

14 CCR § 15126.6

§ 15126.6. Consideration and Discussion of Alternatives to the Proposed Project.**Currentness**

(a) **Alternatives to the Proposed Project.** An EIR shall describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives. An EIR need not consider every conceivable alternative to a project. Rather it must consider a reasonable range of potentially feasible alternatives that will foster informed decisionmaking and public participation. An EIR is not required to consider alternatives which are infeasible. The lead agency is responsible for selecting a range of project alternatives for examination and must publicly disclose its reasoning for selecting those alternatives. There is no ironclad rule governing the nature or scope of the alternatives to be discussed other than the rule of reason. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553 and *Laurel Heights Improvement Association v. Regents of the University of California* (1988) 47 Cal.3d 376).

(b) **Purpose.** Because an EIR must identify ways to mitigate or avoid the significant effects that a project may have on the environment (Public Resources Code Section 21002.1), the discussion of alternatives shall focus on alternatives to the project or its location which are capable of avoiding or substantially lessening any significant effects of the project, even if these alternatives would impede to some degree the attainment of the project objectives, or would be more costly.

(c) **Selection of a range of reasonable alternatives.** The range of potential alternatives to the proposed project shall include those that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects. The EIR should briefly describe the rationale for selecting the alternatives to be discussed. The EIR should also identify any alternatives that were considered by the lead agency but were rejected as infeasible during the scoping process and briefly explain the reasons underlying the lead agency's determination. Additional information explaining the choice of alternatives may be included in the administrative record. Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are: (I) failure to meet most of the basic project objectives, (II) infeasibility, or (III) inability to avoid significant environmental impacts.

(d) **Evaluation of alternatives.** The EIR shall include sufficient information about each alternative to allow meaningful evaluation, analysis, and comparison with the proposed project. A matrix displaying the major characteristics and significant environmental effects of each alternative may be used to summarize the comparison. If an alternative would cause one or more significant effects in addition to those that would be caused by the project as proposed, the significant effects of the alternative shall be discussed, but in less detail than the significant effects of the project as proposed. (*County of Inyo v. City of Los Angeles* (1981) 124 Cal.App.3d 1).

(e) "No project" alternative.

(1) The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project. The no project alternative analysis is not the baseline for determining whether the proposed project's environmental impacts may be significant, unless it is identical to the existing environmental setting analysis which does establish that baseline (see Section 15125).

(2) The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the "no project" alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives.

(3) A discussion of the "no project" alternative will usually proceed along one of two lines:

(A) When the project is the revision of an existing land use or regulatory plan, policy or ongoing operation, the "no project" alternative will be the continuation of the existing plan, policy or operation into the future. Typically this is a situation where other projects initiated under the existing plan will continue while the new plan is developed. Thus, the projected impacts of the proposed plan or alternative plans would be compared to the impacts that would occur under the existing plan.

(B) If the project is other than a land use or regulatory plan, for example a development project on identifiable property, the "no project" alternative is the circumstance under which the project does not proceed. Here the discussion would compare the environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved. If disapproval of the project under consideration would result in predictable actions by others, such as the proposal of some other project, this "no project" consequence should be discussed. In certain instances, the no project alternative means "no build" wherein the existing environmental setting is maintained. However, where failure to proceed with the project will not result in preservation of existing environmental conditions, the analysis should identify the practical result of the project's non-approval and not create and analyze a set of artificial assumptions that would be required to preserve the existing physical environment.

(C) After defining the no project alternative using one of these approaches, the lead agency should proceed to analyze the impacts of the no project alternative by projecting what would reasonably be expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services.

(f) Rule of reason. The range of alternatives required in an EIR is governed by a "rule of reason" that requires the EIR to set forth only those alternatives necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project. Of those alternatives, the EIR need examine in detail only the ones that the lead agency determines could feasibly attain most of the basic objectives of the project. The range of feasible alternatives shall be selected and discussed in a manner to foster meaningful public participation and informed decision making.

(1) Feasibility. Among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries (projects with a regionally significant impact should consider the regional context), and whether the proponent can reasonably acquire, control or otherwise have access to the alternative site (or the site is already owned by the proponent). No one of these factors establishes a fixed limit on the scope of reasonable alternatives. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553; see *Save Our Residential Environment v. City of West Hollywood* (1992) 9 Cal.App.4th 1745, 1753, fn. 1).

(2) Alternative locations.

(A) Key question. The key question and first step in analysis is whether any of the significant effects of the project would be avoided or substantially lessened by putting the project in another location. Only locations that would avoid or substantially lessen any of the significant effects of the project need be considered for inclusion in the EIR.

(B) None feasible. If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR. For example, in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location.

(C) Limited new analysis required. Where a previous document has sufficiently analyzed a range of reasonable alternative locations and environmental impacts for projects with the same basic purpose, the lead agency should review the previous document. The EIR may rely on the previous document to help it assess the feasibility of potential project alternatives to the extent the circumstances remain substantially the same as they relate to the alternative. (*Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 573).

(3) An EIR need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative. (*Residents Ad Hoc Stadium Committee v. Board of Trustees* (1979) 89 Cal. App.3d 274).

Credits

NOTE: Authority cited: Section 21083, Public Resources Code. Reference: Sections 21002, 21002.1, 21003 and 21100, Public Resources Code; *Citizens of Goleta Valley v. Board of Supervisors*, (1990) 52 Cal.3d 553; *Laurel Heights Improvement Association v. Regents of the University of California*, (1988) 47 Cal.3d 376; *Gentry v. City of Murrieta* (1995) 36 Cal.App.4th 1359; and *Laurel Heights Improvement Association v. Regents of the University of California* (1993) 6 Cal.4th 1112.

HISTORY

1. New section filed 10-26-98; operative 10-26-98 pursuant to Public Resources Code section 21087 (Register 98, No. 44).
2. Change without regulatory effect amending NOTE filed 10-6-2005 pursuant to section 100, title 1, California Code of Regulations (Register 2005, No. 40).

This database is current through 2/27/26 Register 2026, No. 9.

Cal. Admin. Code tit. 14, § 15126.6, 14 CA ADC § 15126.6

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As Reliance on Imported Gasoline Rises, California Adapts to a 'New World'

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As Reliance on Imported Gasoline Rises, California Adapts to a 'New World'

November 4, 2025

As Reliance on Imported Gasoline Rises, California Adapts to a 'New World'

California's gasoline imports over the first 10 months of 2025 have already exceeded totals for any year since at least 2004, according to Energy Information Administration data.

The higher level of imports comes at a time when Phillips 66 winds down operations at its 156,000 b/d Los Angeles refinery and Valero Energy remains on course to shutter its 150,000 b/d Benicia refinery in Northern California by the end of April.

The closures of the two plants, which account for 17% of the state's refining capacity, is reshaping the state's fuel market, according to analysts and traders.

"It's going to be interesting to see where we go from here," one West Coast market participant said. "It's going to be a new world."

According to the EIA data, 2025 gasoline imports into the West Coast (PADD 5) as of Oct. 24 averaged

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Phillips wrapped up crude processing at its LA refinery in mid-October and said it remains on schedule to shut the facility by year's end. And Valero officials last week said the company will shutter the Benicia plant as planned, despite efforts by California officials to persuade company officials to keep it open or find another company willing to operate it.

While the West Coast market does not typically experience sizable shipments of imported gasoline during the lower-demand period from October through March, this year has broken that pattern, the market source said.

A second West Coast trader agreed, saying "boats and boats" of Imports are headed to the region.

OPIS in October reported a sharp rise in fuel tanker traffic from Asia Pacific refineries to the West Coast, with the October voyage count rising by 60% from September.

In addition, seaborne imports of finished gasoline into the region this year have more than doubled since 2023 to 13.27 million bbl, with another 1.95 million bbl expected to land at West Coast ports this month, according to data from ship tracking firm Vortexa.

Imports of alkylate, a major component of California's CARBOB blend, have also risen from 2023 to 6.9 million bbl in 2025. That's more than five times what the region imported in all of 2018, the Vortexa data showed.

India over the last two years has been the largest supplier to California over the last two years, sending roughly 6.56 million bbl of finished gasoline, according to Vortexa, followed by about 3.77 million bbl from Canada and 3.47 million bbl from South Korea.

So far this year, India has sent 2.94 million bbl of alkylates to California, followed by South Korea at 2.77 million bbl, The Bahamas at 524,200 bbl, Taiwan, China, at nearly 411,000 bbl and the U.K., which shipped 217,200 bbl).

The cost of shipping clean petroleum products on a 40,000-mt tanker from Asia to the West Coast so far this year has been below that in 2024. The cost of moving unleaded gasoline from Yoseau, South Korea, to Los Angeles this year averaged at about \$41.45/mt, down from about \$56.05/mt last year and \$55.50/mt in 2023, according to Baltic Exchange data.

Over the last 10 years, PADD 5 gasoline imports were the lowest in 2018, when cargoes into the region were at about 8.4 million bbl, the EIA data showed.

The agency said PADD 5 imports in 2020 averaged about 9.9 million bbl.

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The data also showed gasoline imports rebounded in 2021, rising by 124% from 2020 to 22.6 million bbl, followed by a 7% increase in 2022 to 23.8 million bbl.

"A lot of refineries went offline permanently because they weren't making enough money," Ryan Cummings, chief of staff at the Stanford Institute for Economic Policy Research, said. "Then, people were looking out in the future, saying that gasoline demand isn't going to be that high. So it had a lot of capacity to go offline."

Marathon Petroleum in April 2020 began closing its 157,000 b/d Martinez refinery and Phillips 66 that same year announced plans to convert its 128,000-b/d Rodeo refinery near San Francisco into a renewable fuels facility.

Cummings said the demand, which fell sharply during the Covid-19 pandemic, came "roaring back," but the state's refining capacity had declined as other countries built more advanced refineries.

He added that the drop in California's refining capacity has turned California into a net importer of gasoline, leading to a situation where prices are set by the most expensive refiner abroad rather than in the state.

"Everybody talks about, 'Oh, if we don't have this, we're gonna have less supply,'" he said, adding that any shortfalls will be filled by non-U.S. refiners.

Stillwater Associates President Megan Boutwell said 2024 and 2025 have been "an anomaly" for gasoline imports into California and could mean the state needs to improve its capacity to handle higher volumes of imports if that trend continues.

"There are dock facilities that, in some cases, are going to need to be totally redone," she said. "There's going to be a need for way more storage."

Boutwell added that while imports will help to meet demand and won't lead to oversupply, reliance on imports can exacerbate problems when unplanned refinery outages occur.

"Then the market gets short and you have to call South Korea, which will then take six weeks, and that creates a problem," Boutwell said.

That occurred in early October when a fire in a jet fuel processing unit at Chevron's El Segundo refinery sent spot prices up by more than 30cts/gal in West Coast markets, as traders were forced to turn to Northern California refineries for jet fuel.

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California legislators have tried to address price volatility in the market by encouraging more in-state oil production. A bill (SB 237) was signed into law in September that would allow Kern County to issue up to 2,000 drilling permits and streamline the process of sinking new wells. The measure also requires California's governor to temporarily suspend the state's CARBOB gasoline blend standards during periods of sharp price spikes.

A third West Coast trader said state requirements that refiners maintain certain levels of fuel in storage will continue to squeeze fuel producers.

"What it does is it just trickles down because refiners are like, 'Okay, California, are you doing this to us? We'll just take it out on the consumers,'" the third trader said.

The source added that the increase in imports is "the new normal for California."

"Refiners cannot bring gasoline into California from other states, because those refineries have fuel that is not California compliant and so they have to import it," he added.

With Valero's Benicia plant still scheduled to close early next year, the trader said he "wouldn't be surprised" to see the facility converted into an import terminal.

"What's valuable for these refiners is the line they have to either the Concord gathering point or the Watson gathering point," the trader added. "So, it wouldn't surprise me if Valero turns Benicia into a terminal and they just import barrels."

The U.S. economy also will play a role in determining the future of fuel imports into the West Coast, according to Carl Larry, vice president of Energy Futures Clearing at international brokerage Marex.

"If interest rates are only 5% or 4.5%, consumers can afford a more expensive fuel. Is it painful? Sure, but I can afford it," he said.

"But if you can't afford it, that's when you get into [a situation] where everything comes together in a bad way."

While gasoline demand in California is projected to continue to decline, Boutwell said she believes the rate of the descent will slow slightly during the Trump administration, making marine imports a significant contributor to the fuel supply.

Given the state's limited import capacity by rail from refiners in the Gulf Coast and Midcontinent,

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OPIS Demand Pro data showed weekly gasoline demand in the West Coast as of Oct. 11 was down 4.3% from the same period of 2024. That's well above the 1.7% year-to-year decline estimated for the same period of last year.

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West Coast liquid fuels weekly average demand so far this year is down 4.4% from 2024 and average weekly demand last year was 2.9% below 2023. That followed a 4.5% drop in 2023 from 2022's average.

-Reporting by Shaheer Naveed, snaveed@opisnet.com and Eric Weiser, eweiser@opisnet.com; Editing by Jeff Barber, jbarber@opisnet.com

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OPIS West Coast Spot Market Report



BENCHMARK GASOLINE, DIESEL AND JET FUEL PRICING WITH EXPERT MARKET COMMENTARY

Nearly every gallon of gasoline, diesel and jet fuel sold on the West Coast references OPIS spot prices.

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**GOVERNMENT CODE - GOV****TITLE 2. GOVERNMENT OF THE STATE OF CALIFORNIA [8000 - 22980]** (Title 2 enacted by Stats. 1943, Ch. 134.)**DIVISION 3. EXECUTIVE DEPARTMENT [11000 - 15990.3]** (Division 3 added by Stats. 1945, Ch. 111.)**PART 1. STATE DEPARTMENTS AND AGENCIES [11000 - 11908]** (Part 1 added by Stats. 1945, Ch. 111.)**CHAPTER 3.5. Administrative Regulations and Rulemaking [11340 - 11361]** (Heading of Chapter 3.5 amended by Stats. 1994, Ch. 1039, Sec. 2.)**ARTICLE 5. Public Participation: Procedure for Adoption of Regulations [11346 - 11348]** (Heading of Article 5 amended by Stats. 1994, Ch. 1039, Sec. 19.)

11346.3. (a) A state agency proposing to adopt, amend, or repeal any administrative regulation shall assess the potential for adverse economic impact on California business enterprises and individuals, avoiding the imposition of unnecessary or unreasonable regulations or reporting, recordkeeping, or compliance requirements. For purposes of this subdivision, assessing the potential for adverse economic impact shall require agencies, when proposing to adopt, amend, or repeal a regulation, to adhere to the following requirements, to the extent that these requirements do not conflict with other state or federal laws:

(1) The proposed adoption, amendment, or repeal of a regulation shall be based on adequate information concerning the need for, and consequences of, proposed governmental action.

(2) The state agency, before submitting a proposal to adopt, amend, or repeal a regulation to the office, shall consider the proposal's impact on business, with consideration of industries affected including the ability of California businesses to compete with businesses in other states. For purposes of evaluating the impact on the ability of California businesses to compete with businesses in other states, an agency shall consider, but not be limited to, information supplied by interested parties.

(3) An economic impact assessment prepared pursuant to this subdivision for a proposed regulation that is not a major regulation or that is a major regulation proposed before November 1, 2013, shall be prepared in accordance with subdivision (b), and shall be included in the initial statement of reasons as required by Section 11346.2. An economic assessment prepared pursuant to this subdivision for a major regulation proposed on or after November 1, 2013, shall be prepared in accordance with subdivision (c), and shall be included in the initial statement of reasons as required by Section 11346.2.

(b) (1) A state agency proposing to adopt, amend, or repeal a regulation that is not a major regulation or that is a major regulation proposed before November 1, 2013, shall prepare an economic impact assessment that assesses whether and to what extent it will affect the following:

(A) The creation or elimination of jobs within the state.

(B) The creation of new businesses or the elimination of existing businesses within the state.

(C) The expansion of businesses currently doing business within the state.

(D) The benefits of the regulation to the health and welfare of California residents, worker safety, and the state's environment.

(2) This subdivision does not apply to the University of California, the college named in Section 92200 of the Education Code, or the Fair Political Practices Commission.

(3) Information required from a state agency for the purpose of completing the assessment may come from existing state publications.

(4) (A) For purposes of conducting the economic impact assessment pursuant to this subdivision, a state agency may use the consolidated definition of small business in subparagraph (B) in order to determine the number of small businesses within the economy, a specific industry sector, or geographic region. The state agency shall clearly identify the use of the consolidated small business definition in its rulemaking package.

(B) For the exclusive purpose of undertaking the economic impact assessment, a "small business" means a business that is all of the following:

(i) Independently owned and operated.

(ii) Not dominant in its field of operation.

(iii) Has fewer than 100 employees.

(C) Subparagraph (A) shall not apply to a regulation adopted by the Department of Insurance that applies to an insurance company.

(c) (1) Each state agency proposing to adopt, amend, or repeal a major regulation on or after November 1, 2013, shall prepare a standardized regulatory impact analysis in the manner prescribed by the Department of Finance pursuant to Section 11346.36. The standardized regulatory impact analysis shall address all of the following:

(A) The creation or elimination of jobs within the state.

(B) The creation of new businesses or the elimination of existing businesses within the state.

(C) The competitive advantages or disadvantages for businesses currently doing business within the state.

(D) The increase or decrease of investment in the state.

(E) The incentives for innovation in products, materials, or processes.

(F) The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency.

(2) This subdivision shall not apply to the University of California, the college named in Section 92200 of the Education Code, or the Fair Political Practices Commission.

(3) Information required from state agencies for the purpose of completing the analysis may be derived from existing state, federal, or academic publications.

(d) Any administrative regulation adopted on or after January 1, 1993, that requires a report shall not apply to businesses, unless the state agency adopting the regulation makes a finding that it is necessary for the health, safety, or welfare of the people of the state that the regulation apply to businesses.

(e) Analyses conducted pursuant to this section are intended to provide agencies and the public with tools to determine whether the regulatory proposal is an efficient and effective means of implementing the policy decisions enacted in statute or by other provisions of law in the least burdensome manner. Regulatory impact analyses shall inform the agencies and the public of the economic consequences of regulatory choices, not reassess statutory policy. The baseline for the regulatory analysis shall be the most cost-effective set of regulatory measures that are equally effective in achieving the purpose of the regulation in a manner that ensures full compliance with the authorizing statute or other law being implemented or made specific by the proposed regulation.

(f) Each state agency proposing to adopt, amend, or repeal a major regulation on or after November 1, 2013, and that has prepared a standardized regulatory impact analysis pursuant to subdivision (c), shall submit that analysis to the Department of Finance upon completion. The department shall comment, within 30 days of receiving that analysis, on the extent to which the analysis adheres to the regulations adopted pursuant to Section 11346.36. Upon receiving the comments from the department, the agency may update its analysis to reflect any comments received from the department and shall summarize the comments and the response of the agency along with a statement of the results of the updated analysis for the statement required by paragraph (10) of subdivision (a) of Section 11346.5.

(Amended by Stats. 2022, Ch. 478, Sec. 59. (AB 1936) Effective January 1, 2023.)

DAILY ENERGY POSTS / BLOG

Mixed Signals – While Many U.S. Refiners Face a Gloomy Outlook, Things Look Brighter in PADD 3

Friday, 01/09/2026

Published by: Jason Lindquist

REFINED FUELS

The U.S. refining industry has been on a real rollercoaster ride in recent years, as the disastrous COVID shutdown period of 2020 — which led to the closure of many refineries — was closely followed by the “Platinum Age” margins experienced when demand recovered in 2021 and 2022. Since then, the trend has been mostly downhill, as demand growth has slowed and new refining capacity has come online from projects that were delayed during the pandemic. But while many of these trends were felt across the U.S. (and even globally), there have been major regional differences in refiner market performance, a dynamic we expect to continue as we head toward an uncertain future, made even more so by the recent events in Venezuela. In today’s RBN blog, we take a region-by-region look at the future of the U.S. refining industry and explain why reductions in refining capacity are expected in some areas while others may be in a position to thrive.

Before we get into the regional outlook, let’s take the 50,000-foot view of where things stand today at the global level. Since 2010, global refinery net capacity has increased by about 700 Mb/d per year, with significant year-to-year volatility (see Figure 1 below). A decades-high level of net refining capacity additions of 2.1 MMb/d took place in 2023,

the largest annual increase since 1977, followed by a still-significant 1.15 MMb/d of net additions in 2024. While our preliminary estimates show an addition of more than 1 MMb/d in 2025, they were negated by an even-larger level of refinery closures, resulting in a *net capacity decrease* of about 200 Mb/d (which excludes all the temporary loss of operating capacity in Russia). Most of the capacity growth in recent years has come from projects that suffered pandemic-related pauses or slowdowns, with large projects in the Middle East, Asia Pacific and Africa (primarily the [Dangote refinery in Nigeria](#)) leading the way. In our upcoming [Future of Fuels](#) report we will include a forecast for net

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About the song

“Mixed Signals” was written by Ruth Berhe (Ruth B.) and appears as the first song on Ruth B.’s debut studio album, *Safe Haven*. The song is sampled on American rapper Rod Wave’s song “Street Runner,” which uses it as the background for the scenario of communications between two lovers. Wave released “Street Runner” as the first single from his third studio album, *Soulfly*, and it went to #16 on the Billboard Hot 100 Singles chart and has been certified Platinum by the Recording Industry Association of America. Personnel on “Mixed Signals” was: Ruth B (vocals, acoustic piano).

Safe Haven is the debut studio album of Canadian singer-songwriter Ruth B. It is the follow-up to her first EP, *The Intro*, released in November 2015. Ruth B. wrote all the songs on the album. Produced by Joel Little, Mike Elizondo and Ruth B., the album was recorded between 2016 and 2017. Ruth B. stated, “I have put the last two years of my life

into this album. I hope the songs will resonate with listeners and find homes in their hearts." The album was released in May 2017 and went to #13 on the Billboard Heatseekers Albums chart. Two singles were released from the LP, "Lost Boy" received over 175 million views for its video, and "Superficial Love" received over 50 million views. *Safe Haven* has been certified Platinum by the RIAA.

Ruth B. (Ruth Berhe) is a Canadian singer, songwriter and pianist from Edmonton, AB. She has had great success with videos viewed on TikTok and with her music streamed on various streaming services. She has released two studio albums, two EPs and seven singles. She continues to record and occasionally perform live.

"About the Song" -- written by [Mickey McMahan](#) , RBN Director of Musicology

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