

# New Climate Threat: Will Oil Refineries Make California the Gas Station of the Pacific Rim?

Preventing climate disaster requires a global switch from oil before the year 2050.<sup>1</sup> On the U.S. West Coast, where Los Angeles, the Bay Area, and Puget Sound host the 1st, 2nd, and 3rd largest oil refining centers in Western North America,<sup>2</sup> we are using less oil.<sup>3</sup> So we should be leaders in this transition. But instead of switching to sustainable alternatives, as we use less oil, West Coast refiners are boosting production to sell other nations oil-derived fuels.

West Coast demand for finished petroleum products (orange in the charts) dropped from an average of approximately 3.1 million barrels per day in 2007 to  $\approx$  2.8 million b/d in 2014.<sup>3</sup> But at the same time, West Coast refinery production increased.

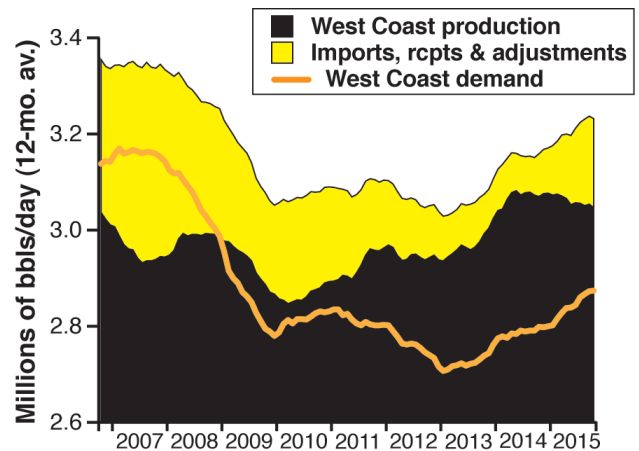
Production of finished petroleum products on the West Coast (black in the charts) increased from  $\approx$  2.9 million b/d in 2007 to  $\approx$  3.1 million b/d in 2014.<sup>3</sup> Production exceeded demand here by late 2008, and this production excess grew large after 2010,<sup>3</sup> as oil refiners made more fuel for export. Foreign exports of finished refined products from the West Coast (brown) nearly doubled, growing by nearly 200,000 b/d, from 2007 to 2014.<sup>3</sup>

Engine fuel exports are driving this excess refinery production. Increased gasoline, distillate/diesel and jet fuel exports account for the vast majority (74 %) of the total increase from 2007 to 2014 in finished petroleum products exports from the West Coast.<sup>3</sup>

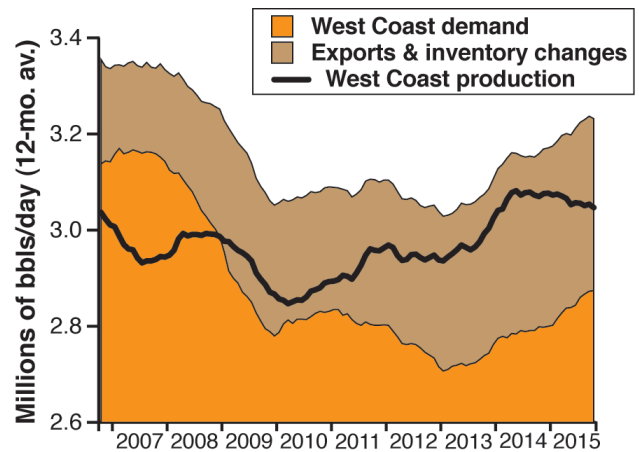
Petroleum coke exports remained the largest share of these exports by volume and also increased from 2007–2014,<sup>3</sup> but pet coke is a byproduct of refining low-quality crude that is exported in part because of air quality controls on this dirty-burning fuel.

California refiners account for 67 % of West Coast refining capacity<sup>2</sup> and made  $\approx$  84 % of the money from West Coast refined product exports in 2014.<sup>4</sup>

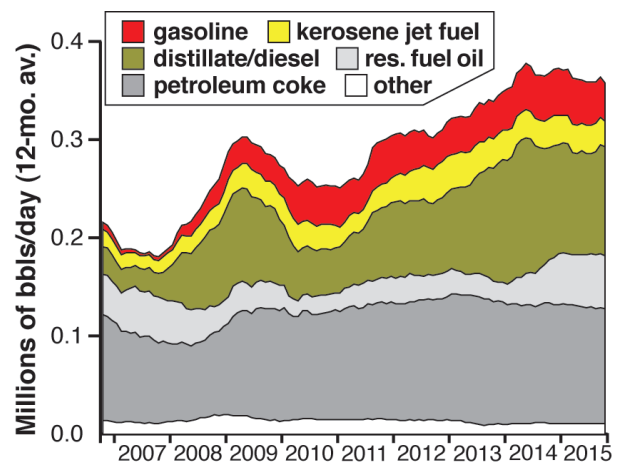
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**West Coast refined products supply exceeds West Coast demand, Oct 2006–Oct 2015<sup>3</sup>**



**West Coast refinery production increased to increase product export, Oct 2006–Oct 2015<sup>3</sup>**



**West Coast exports of distillate/diesel and gasoline increased from Oct 2006–Oct 2015<sup>3</sup>**

# Gas Station of the Pacific Rim? *continued...*

Further, the major California refining centers, in the Los Angeles and San Francisco Bay areas, supply engine fuels to other states on the West Coast.

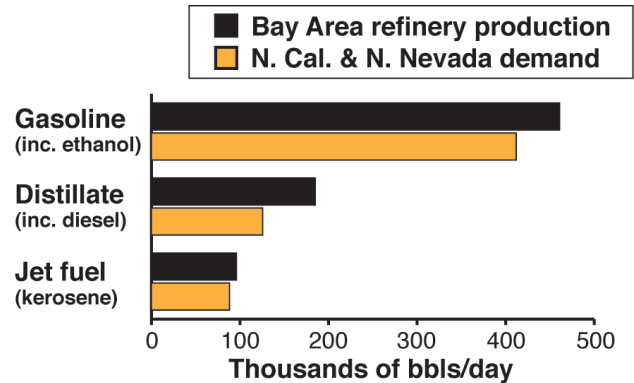
Bay Area refinery production of gasoline, distillate-diesel, and jet fuel exceeds demand in its primary regional markets—northern California and northern Nevada.<sup>5</sup> (*See* bar chart.) LA refinery production (not shown in chart) exceeds demand in its primary regional markets for diesel.<sup>5</sup> Bay Area refineries supply engine fuels to southern California and Oregon as well as to northern California and northern Nevada, while LA Area refineries supply southern California, southern Nevada and Arizona. (*See* map.) In 2013, Bay Area refiners exported  $\approx 71\%$  of the distillate and virtually all the gasoline and jet fuel exported by California refineries.<sup>5</sup>

Across the Pacific, 3.5 billion people live in 21 Asian, Latin American and Oceanic nations that imported 442 million barrels (181%) more oil products from the U.S. in 2014 than in 2007.<sup>6</sup> Their per capita oil demand is low and rising.<sup>6</sup> If it reaches half of today's U.S. per capita demand by 2050 and U.S. exports to them keep growing at half the 2007–2014 rate, total oil demand in these 21 nations, and total U.S. refinery exports to them, could grow by 24 times and 15 times current total West Coast refinery production, respectively.<sup>6</sup>

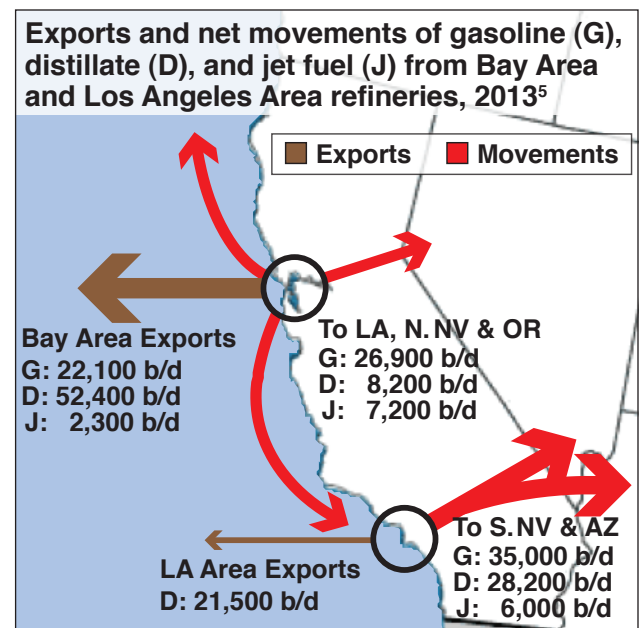
California is not yet the Pacific rim's gas station, and switching to solar electric cars can avoid that climate-killing scenario. But *allowing* oil refining for export to worsen air pollution from refineries here and from tailpipes everywhere *allows* oil to compete unfairly with this urgently needed solution.

## Bay Area refiners got more money exporting than other West Coast refining centers, 2014.

Refining Center	Exports in 2014 <sup>4</sup>
San Francisco Bay Area	\$ 4,376,000,000
Los Angeles Area	\$ 3,519,000,000
Puget Sound Area, WA	\$ 1,369,000,000
Bakersfield Area, CA	\$ 650,000,000
Other areas (AK & HI)	\$ 290,000,000



## Exports and net movements of gasoline (G), distillate (D), and jet fuel (J) from Bay Area and Los Angeles Area refineries, 2013<sup>5</sup>



**Notes.** (1) *See* IPCC AR 5; and Williams et al., 2011. DOI: 10.1126/science.1208365. (2) Data from *Oil & Gas Journal* "2016 Worldwide Refining Survey." (3) Finished petroleum products data for AK, AZ, CA, HI, NV, OR and WA from *West Coast (PADD 5) Supply and Disposition*; Energy Information Admin. (EIA), 2015; [www.eia.gov/dnav/pet/pet\\_sum\\_snd\\_d\\_r50\\_mbbldpd\\_m\\_cur.htm](http://www.eia.gov/dnav/pet/pet_sum_snd_d_r50_mbbldpd_m_cur.htm). (4) Brookings Institute, 2015. *Export Monitor 2015*; data for petroleum & coal products exports produced by metro area (note that CA refining centers do not produce coal); [www.brookings.edu/research/interactives/2015/export-m](http://www.brookings.edu/research/interactives/2015/export-m). (5) Data from EIA, 2015. *PADD 5 Transportation Fuels Markets*; [www.eia.gov/analysis/transportationfuels/padd5](http://www.eia.gov/analysis/transportationfuels/padd5). (6) Australia, Chile, China, Colombia, Costa Rica, Ecuador, El Salvador, Guatemala, India, Indonesia, Japan, Korea, Mexico, New Zealand, Nicaragua, Panama, Peru, Philippines, Singapore, Taiwan and Venezuela: per capita demand (3.17 b/y collectively in these nations v. 21.87 b/y in U.S.) based on 2013 data from [databank.worldbank.org](http://databank.worldbank.org) (population) and [www.eia.gov/cfapps/ipdb-project/IEDIndex3.cfm?tid=5&pid=5&aid=2](http://www.eia.gov/cfapps/ipdb-project/IEDIndex3.cfm?tid=5&pid=5&aid=2) (pet. consumption); U.S. oil products exports to these nations from EIA's *Total Products Exports by Destination*; [www.eia.gov/dnav/pet/pet\\_move\\_expc\\_a\\_epp0\\_eex\\_mbbldpd\\_a.htm](http://www.eia.gov/dnav/pet/pet_move_expc_a_epp0_eex_mbbldpd_a.htm); 2014 WC refinery production  $\approx 3.1$  million b/d (note 3).