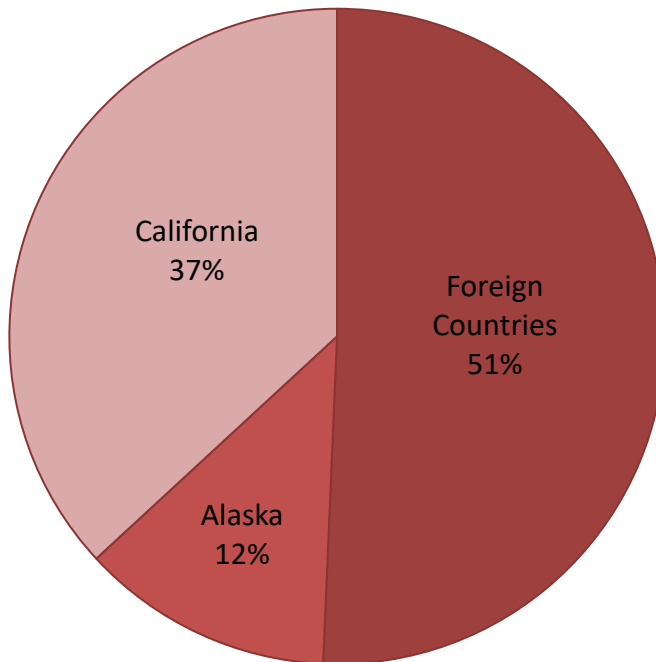


Crude Oil Supply Sources to California Refineries



- California appetite for oil is substantial and driven almost entirely by transportation fuels
- Annual oil demand is approximately 620 million barrels
- Only 37% of California's annual oil appetite is produced in California
- There are no pipelines that supply oil into California so the remaining 63% of oil is delivered by tanker each year (550-700 oil tankers annually)
- Railcar delivery to California is expanding, but is only currently around 1.2 million barrels/year or 0.002%

Carbon Intensity of Imported Sources of Oil

- When considering foreign sources of oil there are a number of key factors that affect the carbon intensity
- Several foreign sources of oil can be produced with much less energy use however their CI is mostly affected by VVF (venting, flaring & fugitives) and transportation
- For example, Iraq has higher CIs mostly because the production methods have a lot of VVF related emissions
- On the other hand, Saudi Arabia has a much lower CI and their oil is easier to produce and their production methods better capture VVF emissions

Import Source	Barrels	% of Imports	CI (gCO ₂ /MJ)
SAUDI ARABIA	78,153,000	20.92%	6.79
ECUADOR	54,222,000	14.51%	8.77
IRAQ	52,526,000	14.06%	12.08
COLOMBIA	34,279,000	9.17%	6.49
ANGOLA	14,931,000	4.00%	8.47
CANADA	14,245,000	3.81%	18.99
BRAZIL	10,137,000	2.71%	7.00
RUSSIA	9,528,000	2.55%	12.09
KUWAIT	4,659,000	1.25%	5.65
PERU	2,566,000	0.69%	6.05
VENEZUELA	2,370,000	0.63%	21.98
OMAN	1,645,000	0.44%	12.30
ALGERIA	1,310,000	0.35%	11.40
OTHERS	6,719,000	1.80%	11.40
ALASKA	86,362,000	23.11%	12.81
	373,652,000	100.00%	10.058

Typical marine oil tanker delivering 63% of California's oil



Carbon Intensity of California Oil Production

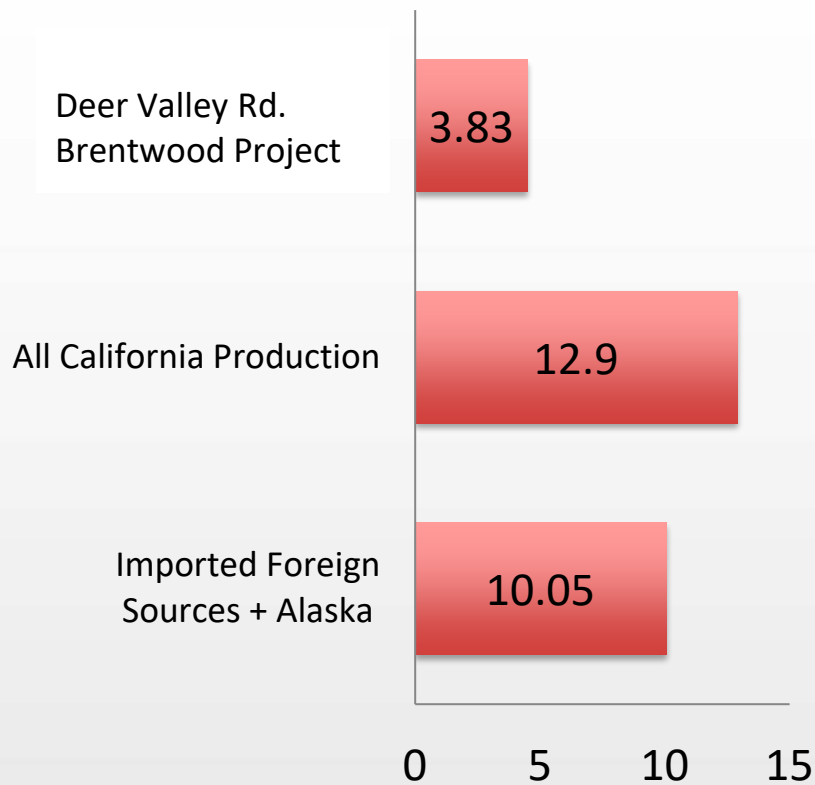


- Ironically, production of crude oil in California does not always result in a lower CI compared to the average CI for imported sources
- The weighted average CI for all of California oil production is 12.9 gCO₂/MJ which is slightly higher than the weighted average of imports
- California production has a very broad range in carbon intensity
- The top ten producing fields range from 4.27 to 28.82 in CI
- Key factors affecting this CI range can be predominantly characterized by production methods (e.g. steam flood methods are very energy intensive and will have a higher CI)

Top Producing Fields in California

Field	Production (BOPD)	CI (gCO ₂ e/MJ)
Midway-Sunset	88,788	21.18
Kern River	75,004	9.55
Belridge, South	72,522	14.49
Cymric	42,399	19.91
Wilmington	36,577	6.36
Elk Hills	35,548	5.36
Lost Hills	31,321	11.40
San Ardo	16,571	28.82
Coalinga	15,448	25.36
Brentwood	200	3.83

Comparison of Carbon Intensity by Source



- The estimated carbon intensity of the existing Brentwood Project is **62% less** than imported foreign sources + Alaska and **70% less** than all California production
- Major differences in these CIs can be mostly characterized by the following factors:
 - Imported foreign sources + Alaska are mostly affected by VFF (venting, flaring & fugitives) and transportation
 - California's onshore production has higher CI and is mostly affected by water cut and energy intensive production methods such as steam flood

Brentwood Greenhouse Gas Savings in Context



With the difference in carbon intensity and direct displacement of imports total GHG saving associated with Sunset's current Deer Valley Rd. Project is 60,000 tons of CO2 over the life of the project and 1,000 – 6,000 tons of CO2 annually.

	Deer Valley Rd. Project CO2 Savings	Savings in the Context of Vehicle Carbon Footprint Annually*	Savings in the Context of Carbon Footprint per Capita for a California Annually**
Life of Project (15 Years)	60,000 tons CO2	5,000 cars	2,777 people
Annually	1,000 – 6,000 tons CO2	333 cars	185 people

* Annual vehicle CO2 emissions for a average passenger vehicle is approximately 5 tons

** Per capita CO2 emission for an average Californian is approximately 9 tons