The oil boom from the Bakken region in North Dakota and Montana, as well as increased production from the tar sands in Alberta, Canada, has increased the amount of crude oil being shipped throughout the United States. While crude oil is typically transferred by pipeline (inland refineries) or tanker (coastal refineries), rail offers a more flexible transport method from regions not well served by existing pipelines. As a result, crude shipment by rail is increasing.

Nationwide, we have seen an increase from about 9,500 tank cars of crude in 2008 to an estimated 400,000 tank cars of crude in 2013 – a 42-fold increase in only 5 years.

California doesn't have the option to import this crude by pipeline; no crude oil pipelines originating outside the state connect to its current infrastructure. The state is seeing a large increase of crude transported by rail as well. From 2009 to 2013, the number of barrels of crude imported to California by rail increased from just under 45,500 to nearly 6.2 million. The Governor's budget estimates that we will see a significant rise in the amount of crude oil being imported by rail, from about 3 million (6 million by end of 2013) barrels a year to over 150 million barrels a year (MBY) by 2016, which would make up over 25% of all crude refined in California each year.

This figure comes from the planning of several crude-by-rail projects that were estimated to come online by 2016:

Who	**Where**	**Status**	**Barrels/Day (bbl/d)**
Valero	Benicia	Pending permits - EIR delayed until Mar 2014	~1 unit train per day (~70K bbl/d)
Valero	Wilmington	Applied for Permits	~60K bbl/d
Alon USA Energy	Bakersfield	Applied for permits	2 unit trains per day (~150K bbl/d)
Plains All American Pipeline LP	Bakersfield	Purchased facilities, in permitting	Avg 70K bbl/d; capable of processing 140K bbl/d
WesPac	Pittsburg	Construction expected to begin 2014	~1 unit train per day (~70k bbl/d)
Phillips66	San Luis Obispo	Undergoing permit review	41K bbl/d

Together, these projects represent a maximum rail receipt capacity of about 159MBY (26.7% of total refined in CA, which is about 1.63MBD, or about 597MBY.)

The two major railroads that will bring this crude oil into California are Union Pacific and BNSF. These railroads operate on a combined total of 5,412 miles of track in California:

- (YELLOW) Union Pacific Railroad Co. on 3,287 and
- (GREEN) BNSF Railway Co. on 2,125 (as of AAR, 2011)

- 23 other railroads split the remainder of the 6,863 miles of track, or about 1,451 miles of short lines (GREY).

SOR was requested to summarize recent railroad accidents related to transport of crude by rail. According to the Association of American Railroads says that of all hazardous materials transported by train, more than 99.99% make it to their destination without spills or leaks due to accidents. The recent spate of crude-bearing train accidents has caused some concern about the shipment of crude by rail. One of the worst and most visible examples of what could happen was the accident that occurred in July in Lac-Megantic, Quebec, when a 74-car train derailed and tank cars carrying Bakken crude exploded, resulting in 47 deaths, the leveling of the downtown area, and leaking of tens of thousands of gallons of crude oil into the Chaudiere River.

This high-profile accident was followed by several others in rapid succession:

Date	**Who**	**Where**	**Outcome**	**Description**
July 6, 2013	MMA: Montreal, Maine and Atlantic Railway	Lac-Megantic, Quebec, CA	47 deaths, Explosion, 30 buildings destroyed, Fire, 26K gallons into the Chaudiere River	74 cars, unattended tran ran away and derailed. Investigation into cause, which may be related to improper handbrake use. Carrying Bakken crude, labeled as less flammable than actual
Oct 19, 2013	Canadian National	Edmunton, Alberta, CA	3 cars leaked and caught fire	13 cars derailed, 9 petroleum, 4 crude
Nov 8, 2013	Alabama and Gulf Coast Railway (short line)	Aliceville, Alabama	~dozen cars burned	90-car train carrying Bakken crude from North Dakota: 30 cars derailed
Dec 30, 2013	BNSF	Casselton, ND	18/20 cars carry crude exploded and burned, 400K gallons spilled	106-car train collided with grain train that had derailed earlier; 20 oil cars left tracks, 18 exploded and burned. (Train was traveling below speed.)
Jan 7, 2014	Canadian National	Plaster Rock, New Brunswick, CA	5 cars carrying crude exploded	Mixed train carrying crude, propane, and other materials derailed, 17 cars thrown from tracks, 5 carrying crude exploded
Jan 20, 2014	CSX	Philadelphia, PA	7 off back derailed on bridge, no spills	101-car train, the last 7 cars carrying crude derailed on a bridge over the Schulykill River
Feb 13, 2014	Norfolk Southern	Vandergrift, PA	4 cars carrying crude spilled	120-car train, 21 cars left track, 19 carried crude oil

	Corp		3-4K gallons	

Except for the Lac-Megantic tragedy, these accidents did not result in casualties.