

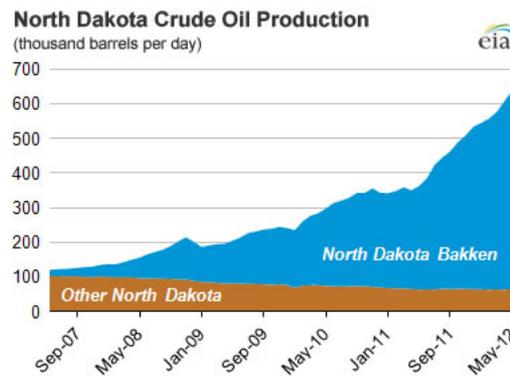
# Bakken Crude & Oil Shipments by Rail into California



Presented on behalf of the Director

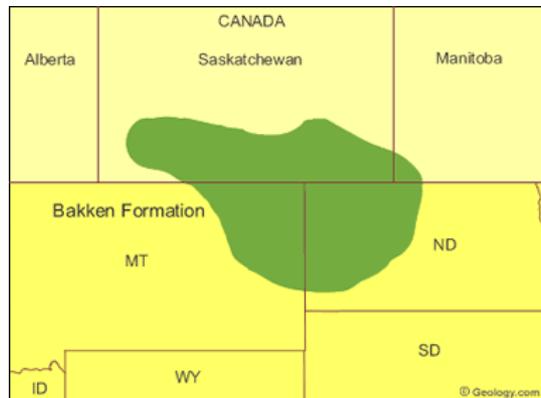
# What is Bakken Crude?

- ▶ “North Dakota Sweet” or “North Dakota Light”
  - Low Sulfur (“sweet”) light crude oil
- ▶ Similar to West Texas Intermediate
- ▶ Very desirable crude
  - 95% refined into gas, diesel, jet fuel



# Bakken Field

- ▶ ND, Montana, Saskatchewan
- ▶ 7.4 billion barrels of recoverable oil
- ▶ 2013 – 10% of US oil production

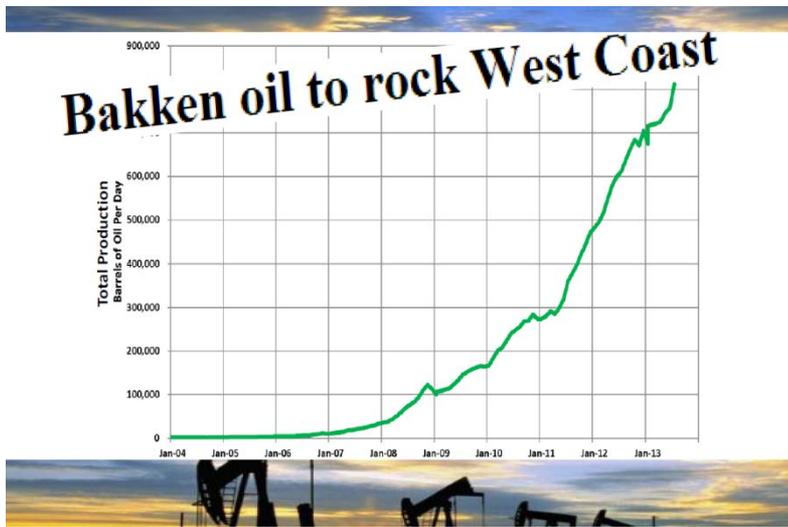


# Classification

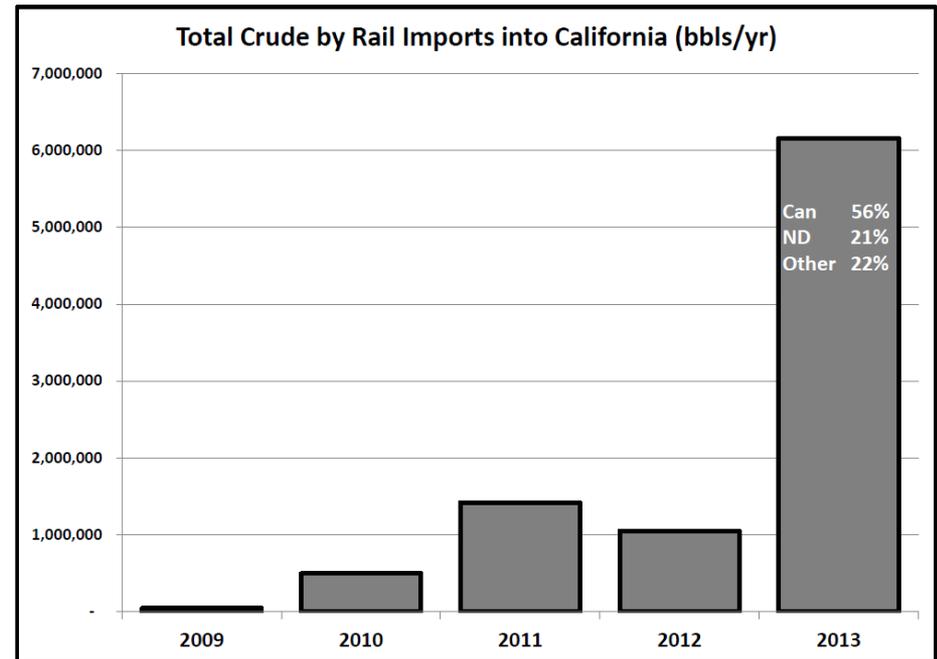
- ▶ Similar to WTI Crude
  - SDSs identical
  - Same Packing Group
- ▶ US DOT Operation Classification
  - UN 1267 Petroleum crude oil (Packing Group I or II)
- ▶ New Standard for DOT-111 (2011)
  - AAR Estimates 92,000 Tank Cars on Rails
  - 78,000 Need Retrofit



# Increased Oil by Rail



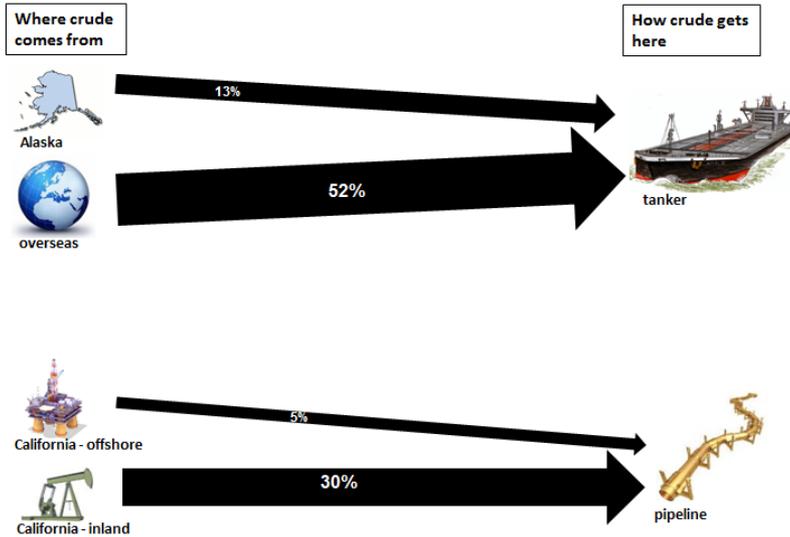
Information Courtesy of DFW-OSPR



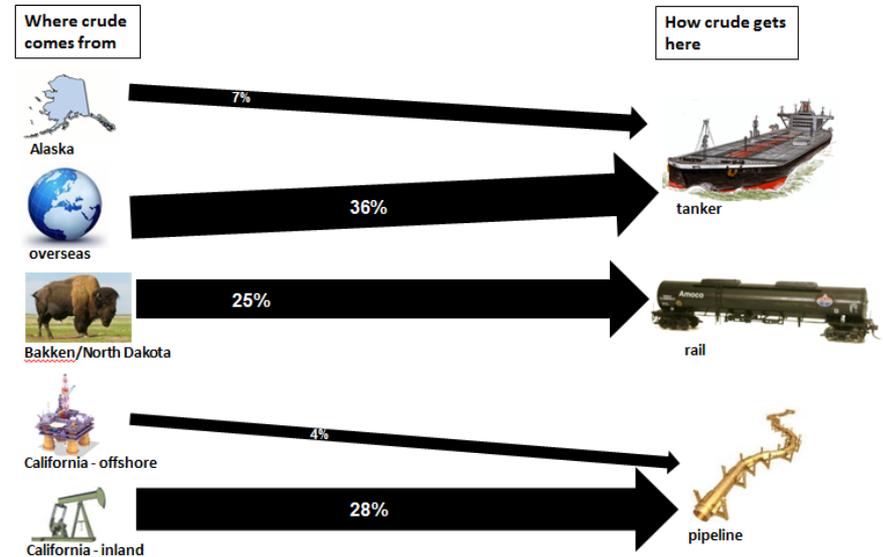
Source: California Energy Commission

# Increased Oil by Rail (Cont)

## California's Crude Oil Supply in 2012



## California's Crude Oil Supply in future



Information Courtesy of DFW-OSPR

# Where in California Does it Go?

- ▶ SF Bay Area (Benicia)
  - 5 Refineries
- ▶ Wilmington (Long Beach)
  - 10 Refineries
- ▶ Bakersfield
  - 3 Refineries

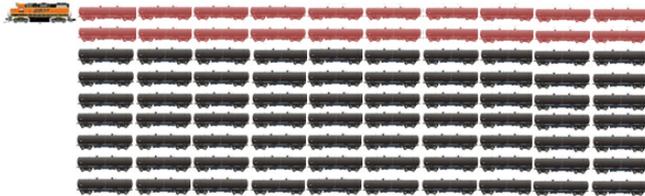


# How it Gets There?

- ▶ “Unit Trains”
  - 100 car trains of oil
- ▶ DOT-111 Tank Car

Typical crude oil “unit train”

- 75-100 DOT-111 tank cars
- 30,000 gal per car = 2.7M gallons per train



- Average accident size in 2013 = 20 tank cars



# How it Gets There? (CONT)

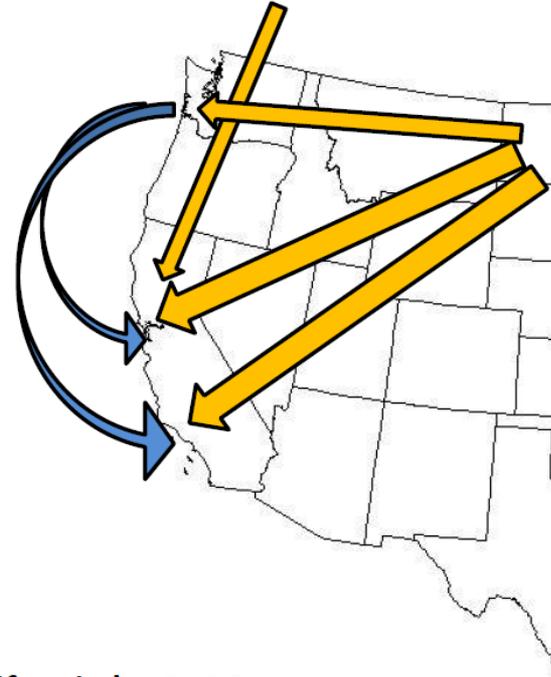
## Projected Crude-by-Rail Deliveries to California

### ➔ Direct by rail-to-refinery or rail-to-pipeline-to-refinery

Valero (Benecia)	25.6
Valero (Wilmington)	21.9
Tesoro (Martinez)	2.0
Plains (Bakersfield)	25.6
Alon (Bakersfield)	54.8
Kern (Bakersfield)	unknown
Phillips 66 (Santa Maria)	13.5
<b>TOTAL</b>	<b>143 million bbls/yr</b> ~6 trains/day

➔ Rail-to-barge via Portland/Vancouver area  
Capacity will be ~200 million bbls/yr,  
some of which will be shipped to California via barge

➔ Total projected crude-by-rail deliveries to California by 2016  
**100 to 200 million bbls/yr**  
(Note: 150 million bbls/yr = 25% of Calif's crude oil supply)



Information Courtesy of DFW-OSPR

# Oil by Rail Incidents

2013: 5 major crude-by-rail accidents



Information Courtesy of DFW-OSPR

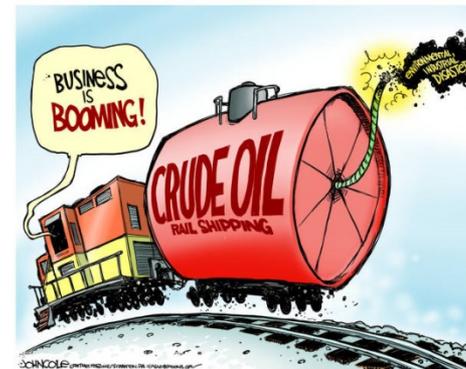
# NTSB Recommendations

- ▶ Expand Hazardous Materials Route Planning
- ▶ Develop Program to Audit Response Plans
- ▶ Audit shippers and rail carriers of crude oil



# US DOT/FRA Activities

- ▶ US DOT Looking at the Regulations
  - Term “Crude Oil”
  - Packaging of “Bakken Crude”
  - Real Time Information from the Trains
- ▶ AAR 2012 HazMat Rail Report
  - 99.997% of All HazMat Shipped by Rail Reach Destination without incident





# US DOT/FRA Activities

- ▶ DOT Emergency Order
  - Issued 7 May 2014
  - Effective 7 June 2014
  - Shipping information provided to SERC
  - Still considered confidential information

# California Senate Hearing

- ▶ DFW–OSPR
  - Requesting to increase statewide capabilities
- ▶ Cal EPA
  - Requesting to revitalize the RAPID Program
- ▶ Cal OES
  - Proposing a Regional HazMat Team concept





# California Senate Hearing

- ▶ California Senate Hearing
  - 19<sup>th</sup> of June
    - SB-506
  - AB-380

# Regional HazMat Teams

- ▶ Strategically Located
- ▶ Strengthen HazMat Response Capabilities
- ▶ Provide Sustained Response
- ▶ Sustain in perpetuity capabilities for
  - Equipment
  - Resources
  - Training (Initial & Refresher)
- ▶ Fire Control 4A & 4B Flammable Gas & Liquid  
Fire Life Fire Training



# Cal OES HazMat Bulletin

- ▶ HazMat Section Monthly Bulletin
  - Historical Information on Bakken Crude
  - Safety Updates
  - State & Federal Updates
  - First Responder Information
  - Legislation
  - Important Websites
  - Contact Information

CAL OES Fire & Rescue Division, HazMat Section  
Oil by Rail Update 

**APRIL 2014:**  
*This update includes updated information to the following sections:*

- Bakken Crude Oil
- Safety Updates
- State and Federal Updates
- First Responders
- Legislation
- Important Websites

**I. Bakken Crude Oil**

**a. Analysis of Crude Oil Samples**  
The Transportation Safety Board of Canada (TSB) released "Analysis of Crude Oil Samples" on February 6, 2014, based on samples collected from the train derailment that occurred July 6, 2013, in Lac-Mégantic, Quebec. The flash point obtained from analysis was significantly less than 23° C and the initial boil point (IBP) ranged from 43.9 to 50.0° C. Based on this analysis, TSB stated oil samples met the federal regulatory criteria for being classified as a flammable liquid of Class 3, Packing Group II. Full report can be found at:  
<http://www.tsb.gc.ca/eng/enquetes-investigations/rail/2013/R1300054/lab/20140306/01482013.pdf>

**ii. Safety Updates**

**a. PHMSA**  
Pipeline and Hazardous Materials Safety Administration (PHMSA) published a SAFETY ALERT on January 2, 2014, to draw attention to Bakken crude oil and its projected impact on rail transportation, packaging, and the need to understand more clearly many of the unique chemical and physical characteristics of Bakken Crude. Bakken Crude is a "light sweet" crude, with unusually higher flash points, higher content of dissolved gases, and a higher corrosiveness. A copy of the Safety Advisory can be found at:  
<http://www.phmsa.dot.gov/portal/site/PHMSA/menuitem.ebdc7a8a7e39f2e55cf2031050245a0c/?vgnextoid=c5efec1c60f23410Vgnvcm100000d2c073999RCRD&vgnextchannel=d248724d87d6c010Vgnvcm100000080e8a8c0RCRD&vgnextfmt=print>

**b. NTSB**  
The National Transportation Safety Board (NTSB) issued a Safety Recommendation to the Federal Railroad Administration (FRA) on January 23 2014, following the NTSB investigation of the July 6, 2013, Lac-Mégantic, Quebec train derailment. The recommendations are as follows: 1) Work with the Pipeline and Hazardous Materials Safety Administration to expand hazardous materials route planning and selection requirements. 2) Develop a program to audit response plans for rail carriers of petroleum products to ensure that adequate provisions are in place to respond to

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APRIL 2014 Page 1

