Transportation Fuel Overview & Emergency Fuels Set-Aside Program

Western States Petroleum
Shortage Response Workshop
San Diego, CA

April 30, 2019

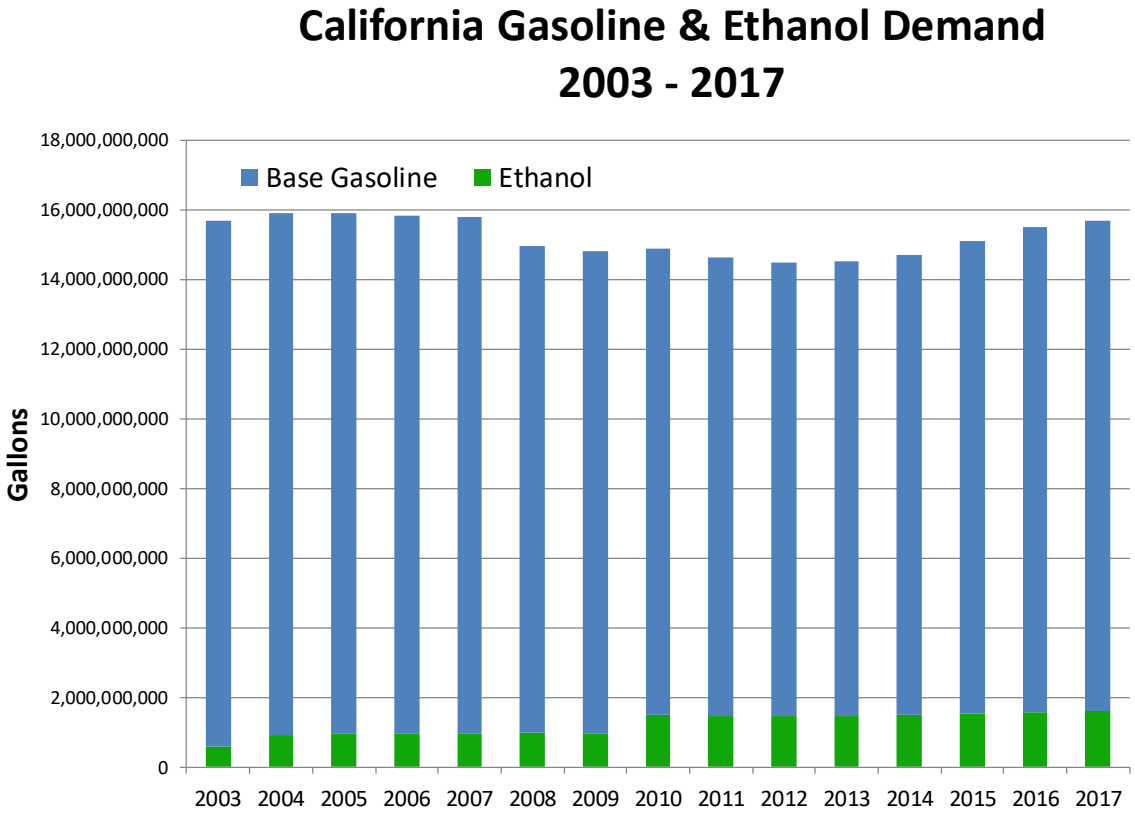
Gordon Schremp
California Energy Commission

gordon.schremp@energy.ca.gov *916-654-4887*

Transportation Fuel Supply - Overview

California Transportation Fuels

- 15.696 billion gallons of gasoline consumed in 2017
- Base gasoline demand up 8.2 percent between 2012 and 2017
  - Ethanol use increasing due to Renewable Fuel Standard
  - Ethanol use up to 1.587 billion gallons during 2017
  - 169 percent increase since 2003
  - Ethanol accounted for 10.11 percent of total gasoline gallon during 2017

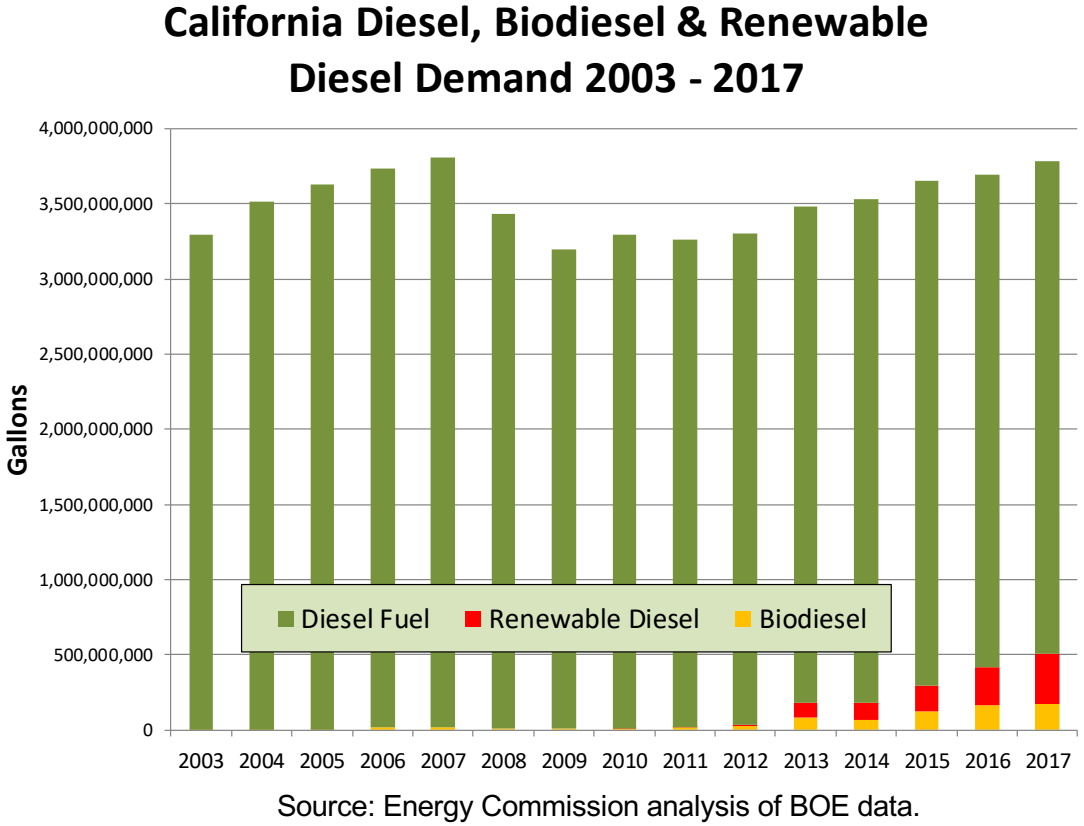


Source: Energy Commission analysis of BOE data.

Ethanol concentration over 10 percent due to increasing E85 sales

California Transportation Fuels

- 3.786 billion gallons diesel consumed during 2017
- Base diesel fuel demand up 2.4 percent between 2013 and 2017
  - Biodiesel use increasing due to Renewable Fuel Standard and the Low Carbon Fuel Standard (LCFS)
    - 171 MM gallons during 2017
  - Renewable diesel fuel use up to 335 MM gallons during 2017 due to LCFS
  - Combined renewable component accounted for 13.4 percent of total diesel gallon



Source: Energy Commission analysis of BOE data.

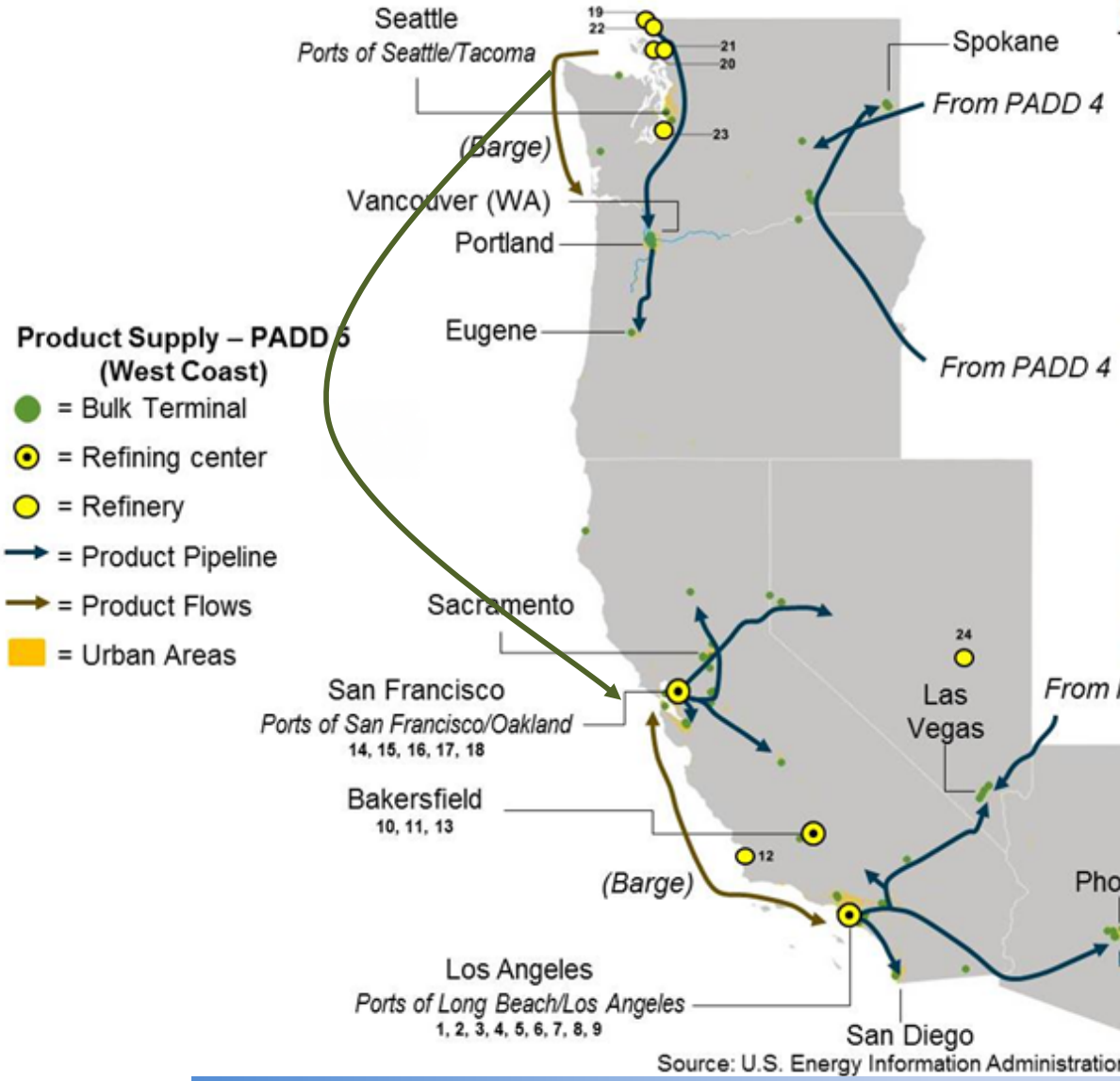
Obligated parties showing preference for renewable diesel over biodiesel

Transportation Fuel Infrastructure

- The transportation fuel "infrastructure" consists of several interconnected assets operated by a combination of refiner and third-party companies
  - Refineries
  - Marine terminals
  - Pipelines
  - Storage tanks
  - Rail
- Crude oil and petroleum product infrastructure assets are separate and distinct from one another – not interchangeable

Western States More Isolated than Rest of U.S.

West Coast petroleum product supply map



Num	Corporation	Site Name	Capacity (bbl/d)
1	Chevron	El Segundo	269,000
2	Tesoro	Carson	251,000
3	ExxonMobil	Torrance	149,500
4	Phillips 66	Wilmington	139,000
5	Tesoro	Wilmington	104,500
6	Alon	Paramount	Idle
7	Valero	Wilmington	78,000
8	Lunday Thagard	South Gate	8,500
9	Valero	Wilmington (asphalt)	6,300
10	Kern Oil	Bakersfield	26,000
11	San Joaquin Refining	Bakersfield	15,000
12	Greka Energy	Santa Maria	9,500
13	Alon	Bakersfield	No CDU
14	Chevron	Richmond	245,271
15	Tesoro	Martinez	166,000
16	Shell	Martinez	156,400
17	Valero	Benicia	132,000
18	Phillips 66	Rodeo	120,200
19	BP	Ferndale	225,000
20	Shell	Anacortes	145,000
21	Tesoro	Anacortes	120,000
22	Phillips 66	Ferndale	101,000
23	US Oil & Refining	Tacoma	40,700
24	Foreland Refining	Ely	2,000

Source: U.S. Energy Information Administration.

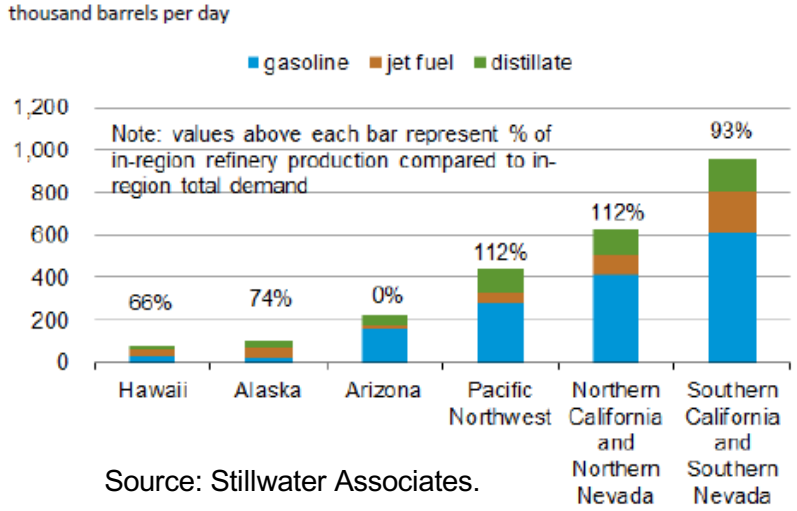
West Coast Fuels Market - Isolated

- West Coast's fuel market is nearly self-sufficient, so supplies of gasoline & diesel fuel from outside the area are not routinely needed to balance out supply with demand
  - Imports of gasoline and blending components account for only 3 to 6 percent of supply – diesel imports are rare
- West Coast market is isolated by time and distance from alternative sources of re-supply during unplanned refinery outages
  - Marine imports 3 to 4 weeks delivery time

Northern California & Washington refining centers are net exporters of gasoline & diesel fuel

- ***WA – 25.8 TBD Gasoline, 18.2 Diesel***
- ***N. Calif. – 34.9 TBD Gasoline, 39.8 Diesel***

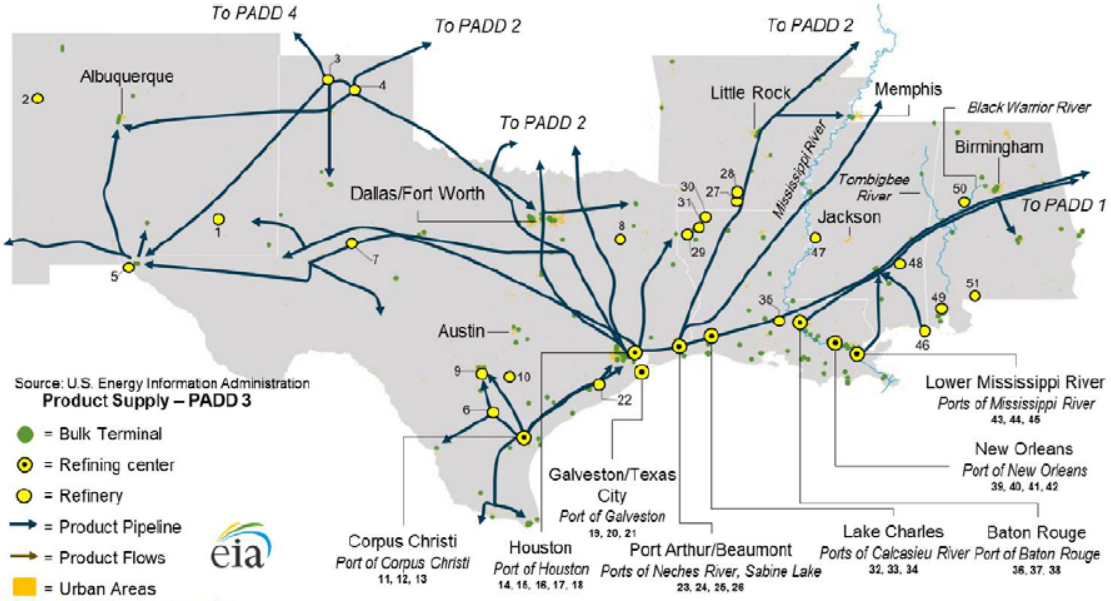
Source: California Energy Commission analysis of U.S. International Trade Commission data.



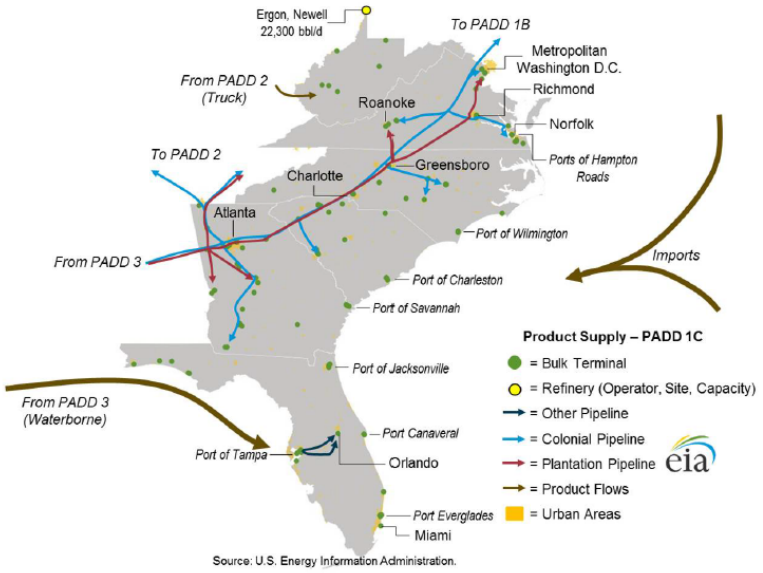
Source: Stillwater Associates.

Balance of Other Regions Varies

- Other areas of the country have unbalanced supply
  - Either excess refining capacity or net short
- Catastrophic disaster in Washington, greater SF Bay Area or Los Angeles Basin directly impacts *source* of fuel supply – local refineries



Large net ***exporting*** region

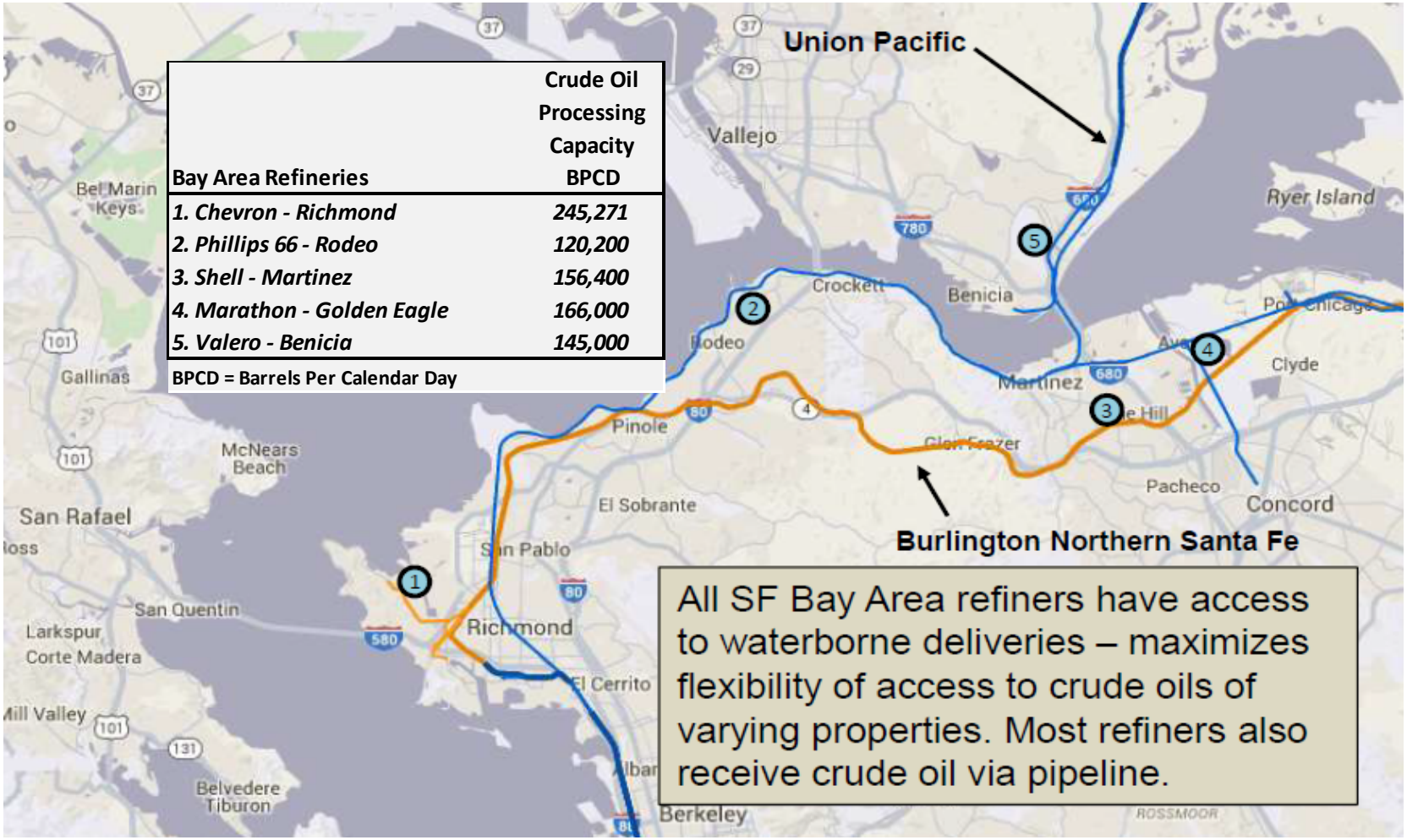


Large net ***importing*** region

Key Elements - Refineries

- 12 refineries produce transportation fuels that meet California standards
  - 42.4 million gallons per day gasoline
  - 10.1 million gallons per day diesel fuel
  - 10.6 million gallons per day jet fuel
- 8 smaller refineries produce asphalt and other petroleum products
- Important source of transportation fuel to neighboring states
  - NV 85 percent, AZ 35 percent
- Processed 1.712 million barrels per day of crude oil during 2017

Refinery Locations – Northern California



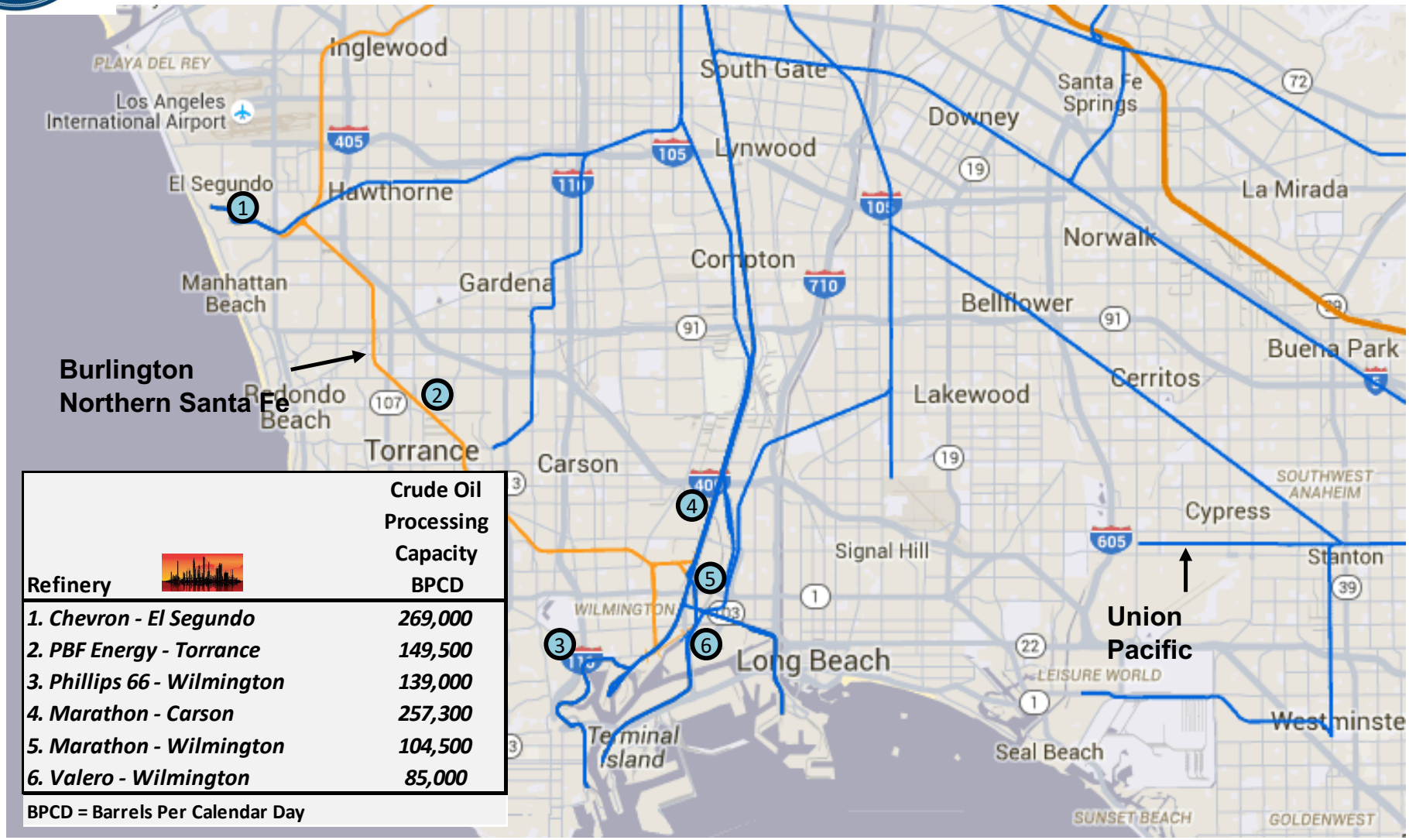
Bay Area Refineries	Crude Oil Processing Capacity BPCD
1. Chevron - Richmond	*245,271*
2. Phillips 66 - Rodeo	*120,200*
3. Shell - Martinez	*156,400*
4. Marathon - Golden Eagle	*166,000*
5. Valero - Benicia	*145,000*

BPCD = Barrels Per Calendar Day

Sources: Oil Change International map, Energy Information Administration refinery data, and Energy Commission analysis

Reopening of marine berths may need to be prioritized to enable resumption of fuel production.

Southern California Refineries



Refinery	Crude Oil Processing Capacity BPCD
1. Chevron - El Segundo	*269,000*
2. PBF Energy - Torrance	*149,500*
3. Phillips 66 - Wilmington	*139,000*
4. Marathon - Carson	*257,300*
5. Marathon - Wilmington	*104,500*
6. Valero - Wilmington	*85,000*

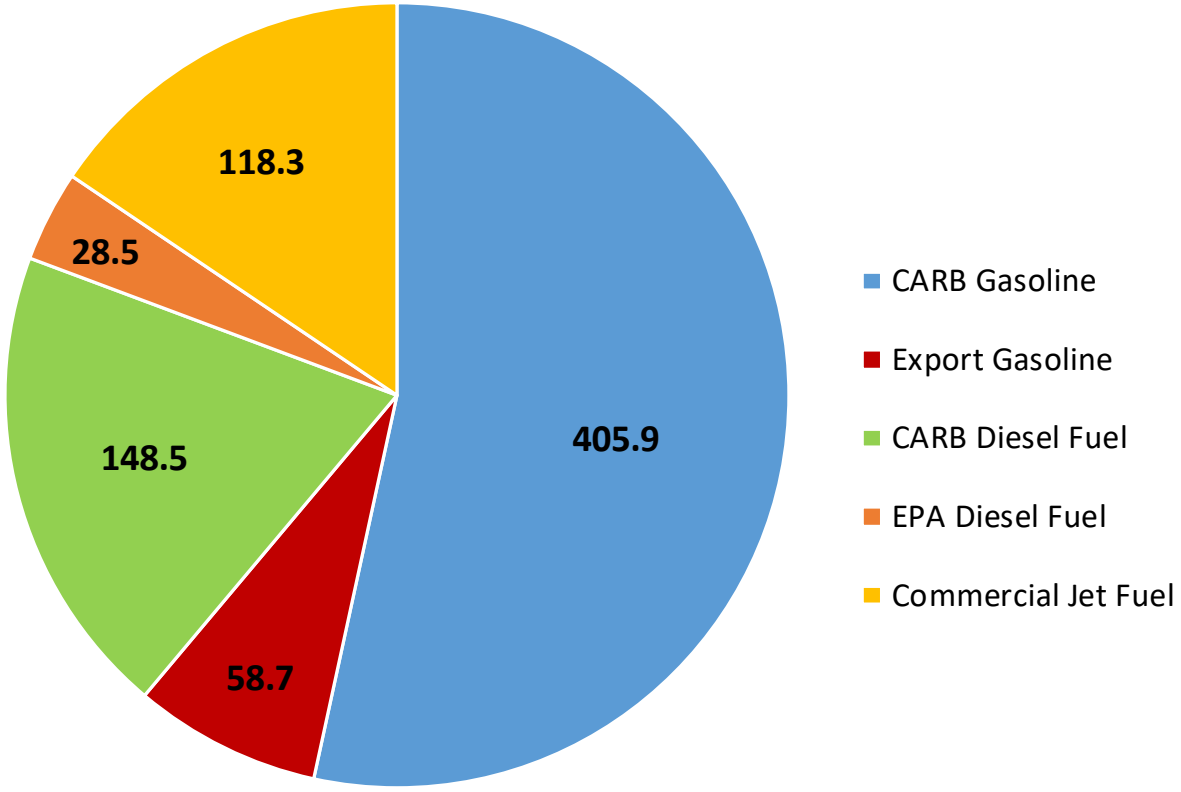
BPCD = Barrels Per Calendar Day

Sources: Oil Change International base map, Energy Information Administration refinery data and California Energy Commission analysis.

Refinery Supply in Northern California

- The minority of transportation fuels used in California are produced in Northern California
- California share
  - CARB Gasoline 45.1 %
  - CARB Diesel 56.4 %
  - Jet Fuel 39.3 %
  - Export Fuel 36.8 %
- Crude oil processing
  - 755.4 TBD

2017 Northern California Refineries
Thousands of Barrels Per Day

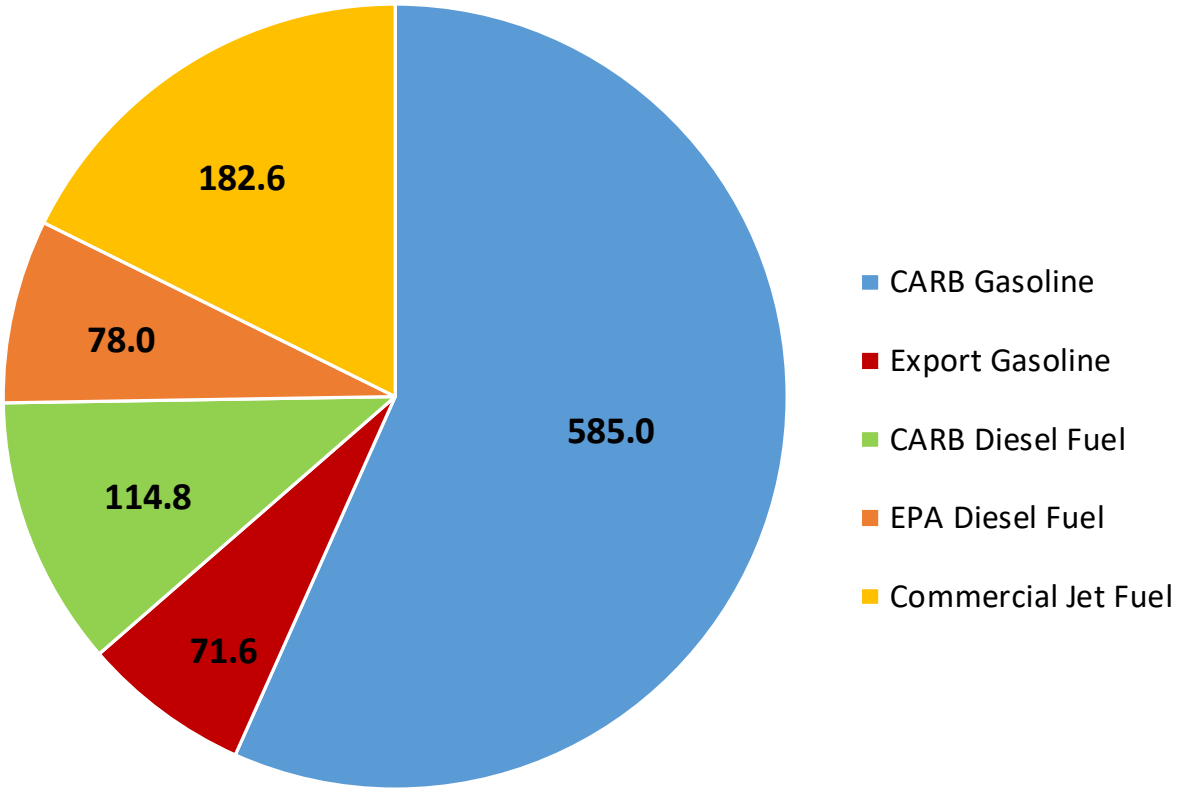


Source: California Energy Commission - Weekly Refinery Reports

Refinery Supply in Southern California

- The majority of transportation fuels used in California are produced in Southern California
- California share
  - CARB Gasoline 54.9 %
  - CARB Diesel 43.6 %
  - Jet Fuel 60.7 %
  - Export Fuel 63.2 %
- Crude oil processing
  - 956.9 TBD

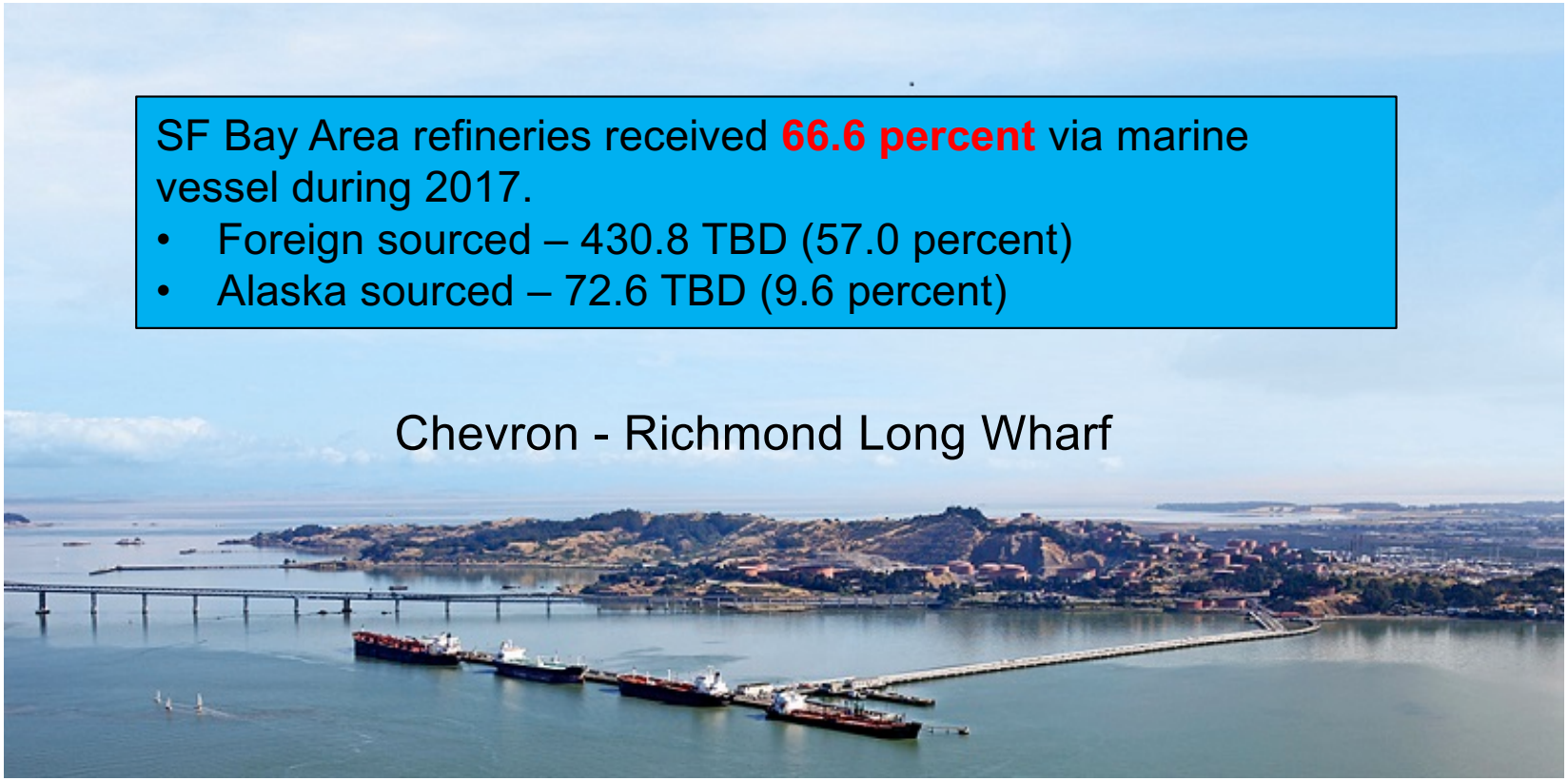
2017 Southern California Refineries
Thousands of Barrels Per Day



Source: California Energy Commission - Weekly Refinery Reports

Crude Oil - Marine Movements

- **68.8 percent** of crude oil transported by marine vessel in 2017
  - Foreign sourced – 968.7 TBD (56.4 percent)
  - Alaska sourced – 211.2 TBD (12.3 percent)



Source: Quazoo.com.

Crude Oil - Marine Movements

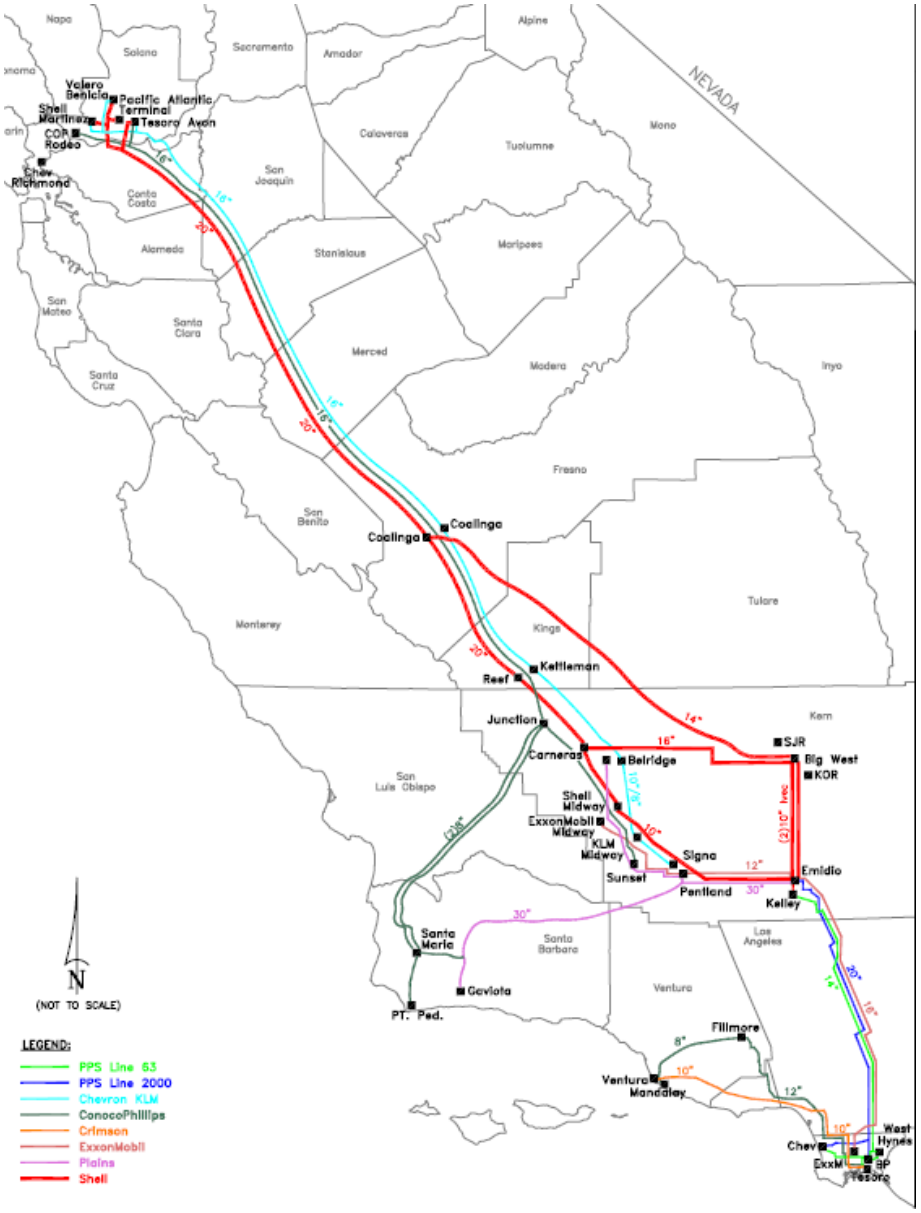
Southern California refineries received **70.4 percent** via marine vessel during 2017.

- Foreign sourced – 537.9 TBD (56.0 percent)
- Alaska sourced – 138.5 TBD (14.4 percent)

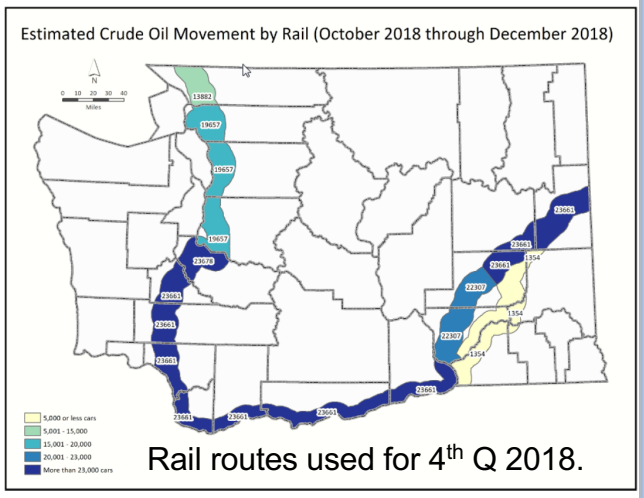
Source: General Steamship Agencies – Oil tanker Nissos Kythnos operated by Andeavor Maritime.

California Oil Sources – Pipelines

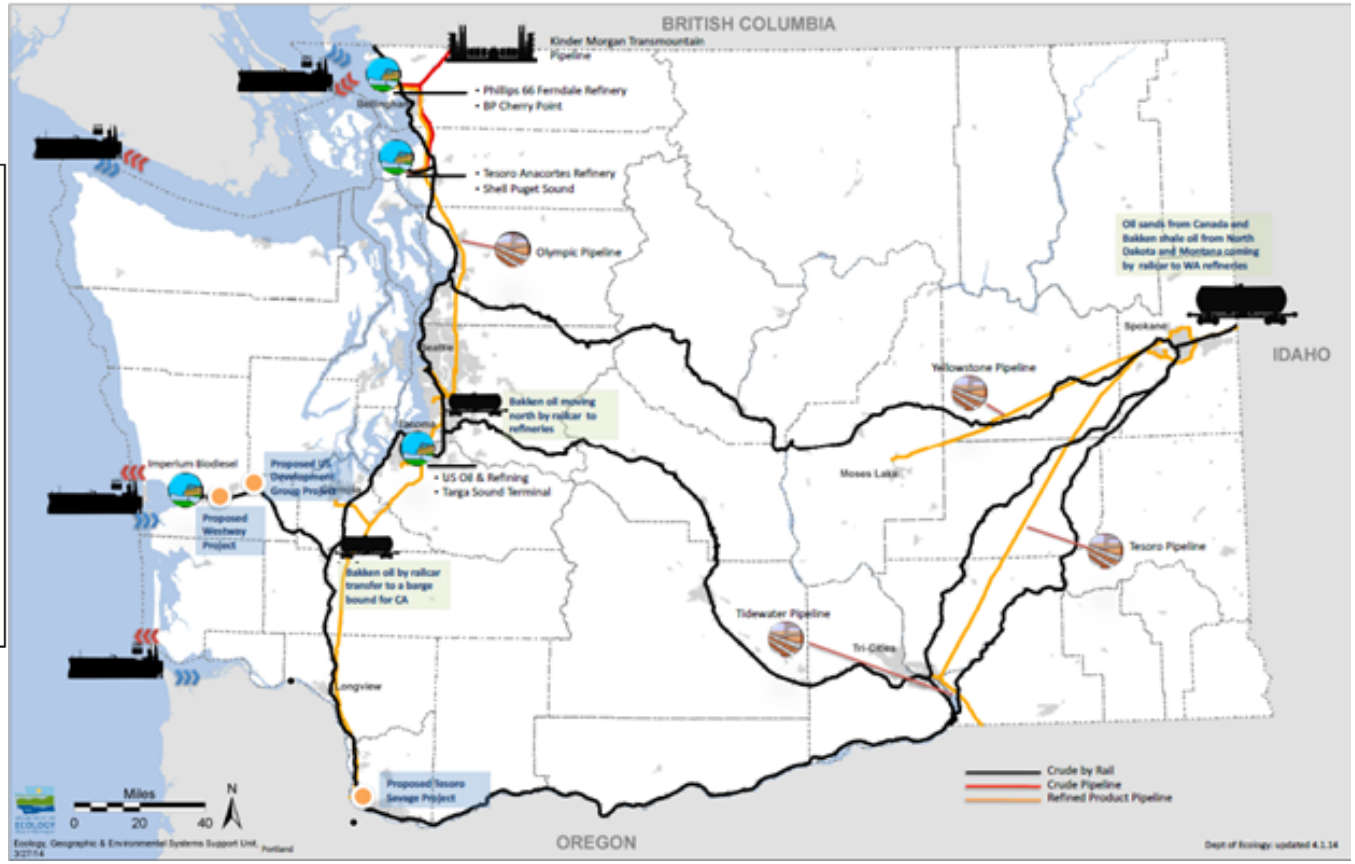
- **31.0 percent** of crude oil received by all California refineries transported via pipelines – 532.5 thousand barrels per day during 2017
  - SF Bay Area refineries received 252.0 thousand barrels per day of CA crude oil via three main trunk lines from southern San Joaquin Valley – **33.4 percent** of total receipts during 2017
  - Southern California & Bakersfield refineries received 280.5 thousand barrels per day of CA crude via local & main trunk lines from southern San Joaquin Valley – **29.2 percent** of total receipts during 2017



WA Crude Oil Imports Via Rail Tank Cars



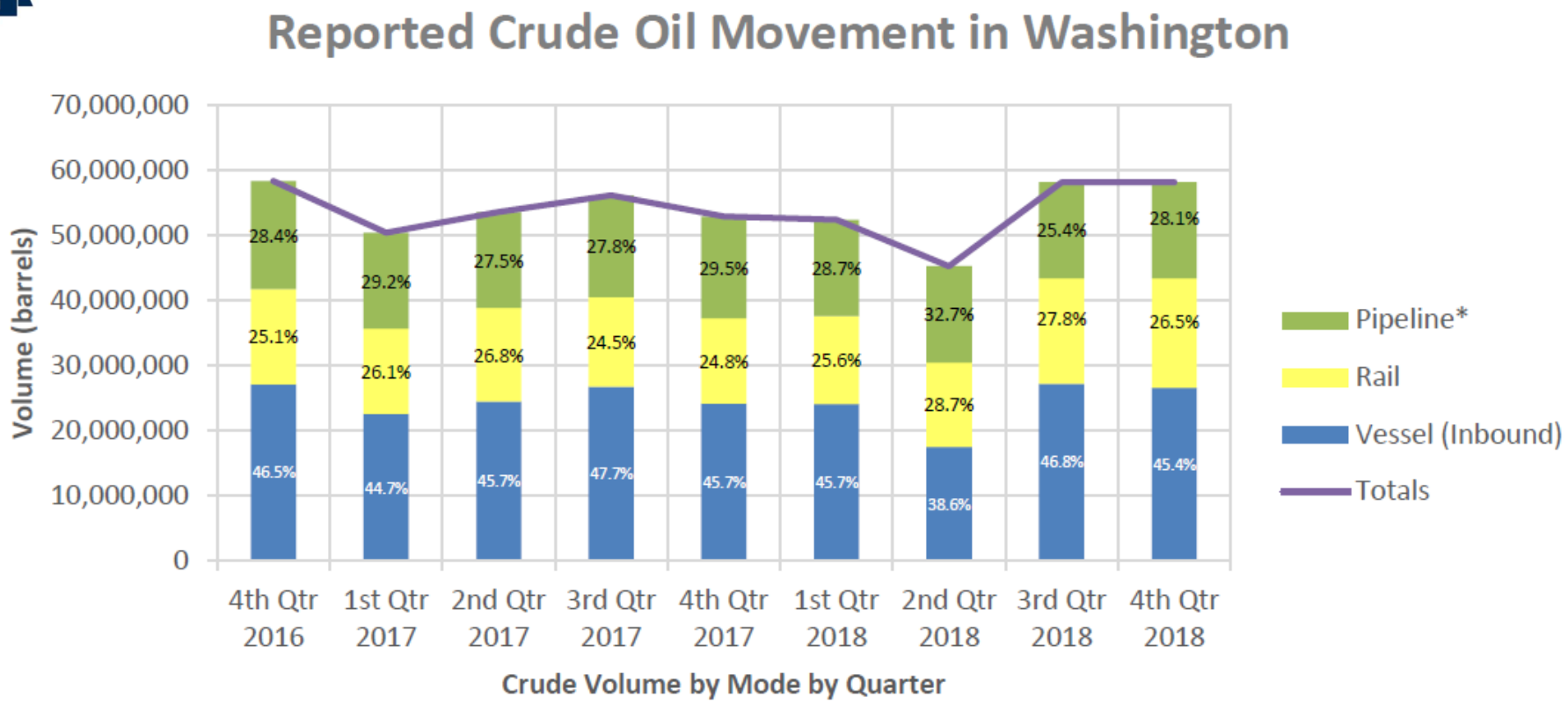
Rail routes used for 4th Q 2018.



Source: Washington Department of Ecology.

Washington refiners received approximately 27.5 percent of their oil via rail last year. Tesoro-Savage project, if approved and constructed, could be used to supply CA refiners with additional quantities of crude oil from Canada and domestic sources.

WA Crude Oil Imports Via Rail Tank Cars



Source: Washington Department of Ecology.

Balance of crude oil delivered to Washington refineries transported via pipelines and marine tankers primarily sourced from Alaska with declining waterborne movements from non-Canadian foreign sources.

California Crude-by-Rail (CBR)

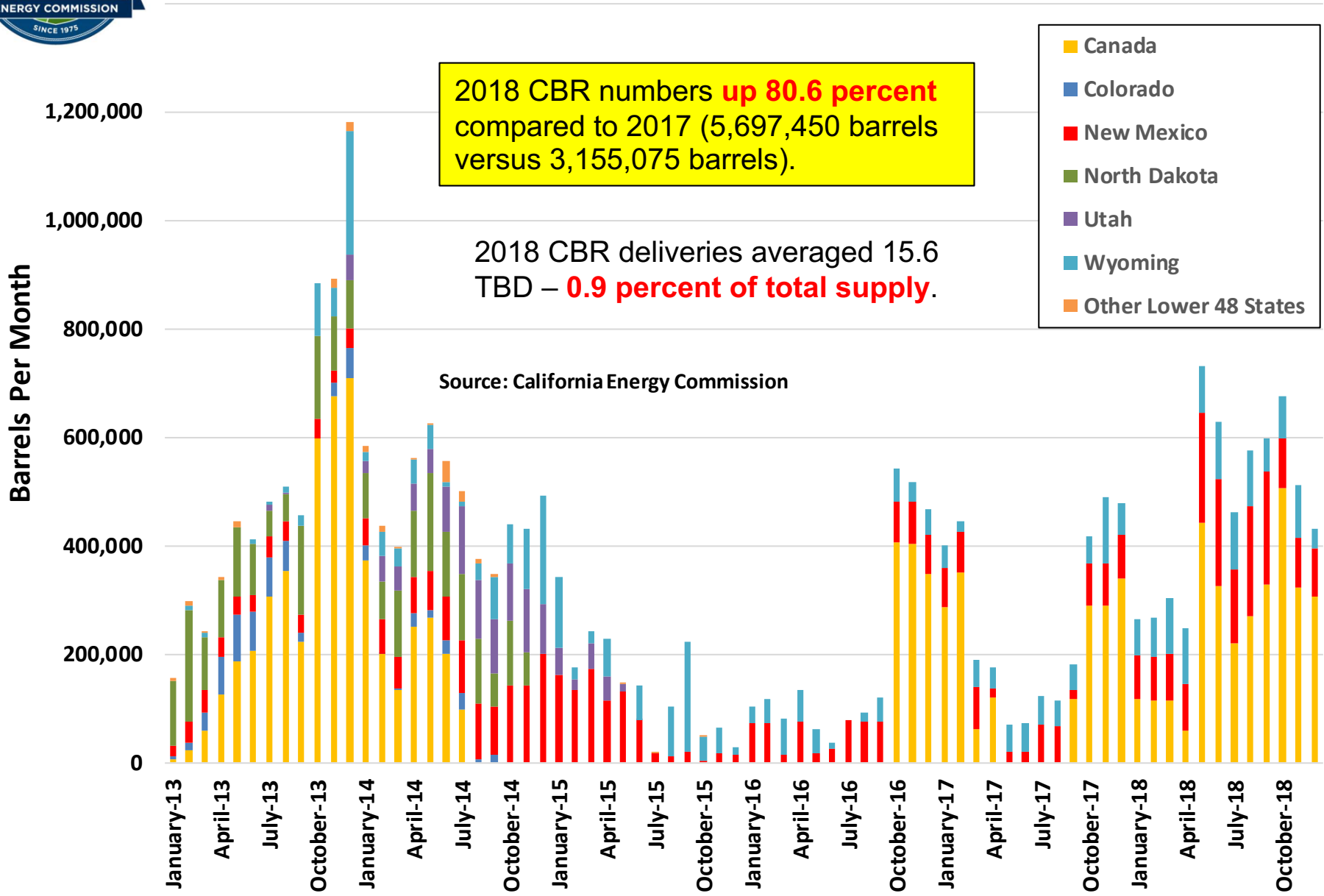
PROPOSED FACILITIES (all large) – Receipt Capability in Thousands of Barrels Per Day		
WesPac-Pittsburg	50	*Permit abandoned* late 2015
Valero-Benicia (SP)	70	*Permit denied* September 20, 2016
Phillips66-Santa Maria (SP)	37	*Permit denied* by the County Planning Commission March 17, 2017 Notice of Final County Action Delivered to Phillips 66
Alon-Bakersfield (APNC)	150	Permit issued September 9, 2014 – No construction initiated at this time

ALREADY OPERATIONAL FACILITIES		
SAV Patriot-Sacramento (PR)	10	Permit rescinded
KinderMorgan-Richmond	16	Permit rescinded
Kern Oil-Bakersfield	26	
Plains-Bakersfield	65	**Operational November 2014**
Tesoro-Carson	3	
Alon-Long Beach	10	
ExxonMobil-Vernon	3	

Current receipt capability	107,000 barrels per day (BPD)
Approved projects – not started construction (APNC)	150,000 BPD
Permit rescinded (PR)	26,000 BPD
Permit denied (PD)	107,000 BPD
No Longer Seeking Permit	50,000 BPD

Construction of California CBR infrastructure curtailed due to permit denial.

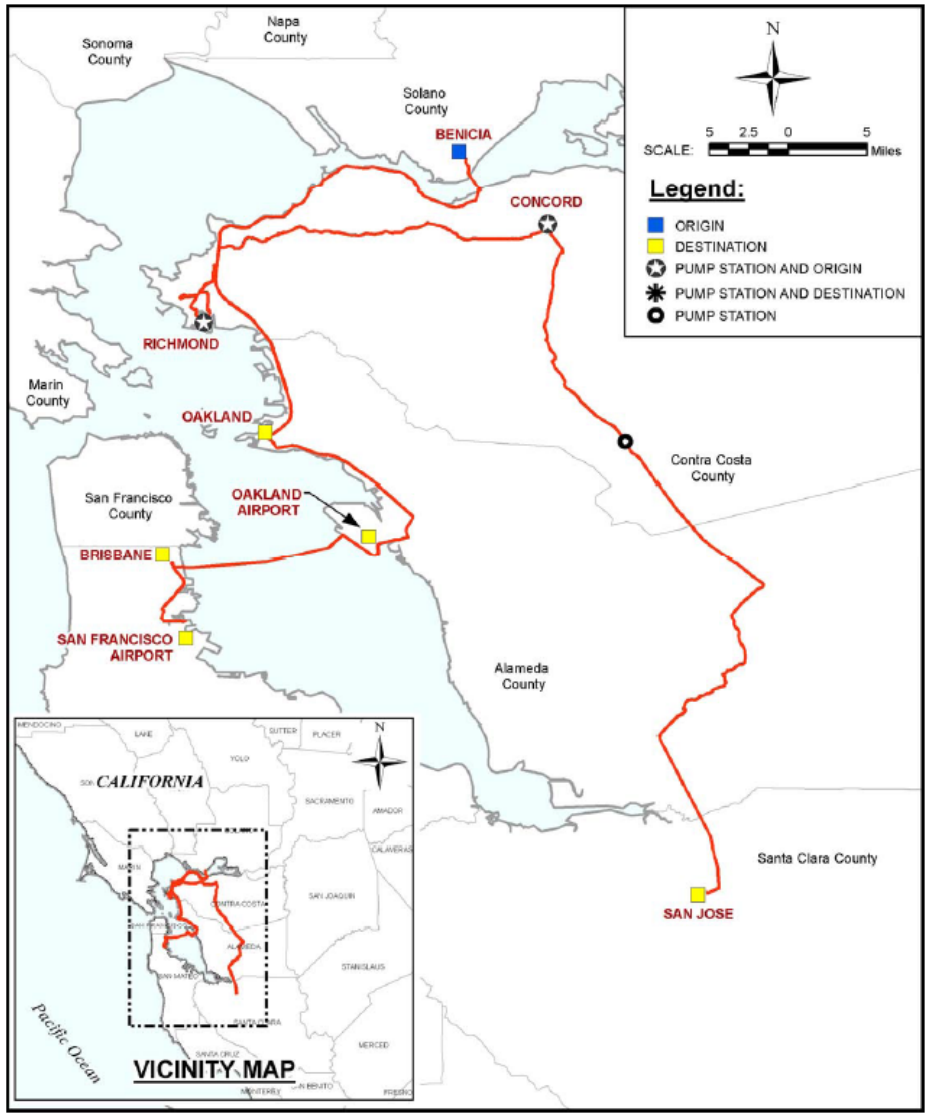
California CBR Imports



Product Pipelines – Northern California

- The pipeline infrastructure in California is controlled by a combination of common carrier and private companies
- Kinder Morgan is the sole common carrier of petroleum product pipelines in the State and transports the majority of fuels through its system every day
- Other companies, such as Chevron, PBF, Shell, and Andeavor operate proprietary systems or segments that handle the balance of transportation fuels

Bay Area – Kinder Morgan Lines



- The sole source of fuels for most Bay Area airports
- Trans-bay crossing to Brisbane & SFO
- Distribution to Brisbane and San Jose terminals augments supply from truck racks linked to Bay Area refineries
- 75 to 85 percent of gasoline and diesel fuel is transported through pipelines from refineries to distribution terminals

Inability of pipeline system to operate creates two problems

- ***Terminals begin to run out of fuel***
- ***Refineries curtail or cease operations if they are unable to send out fuel via pipeline system***

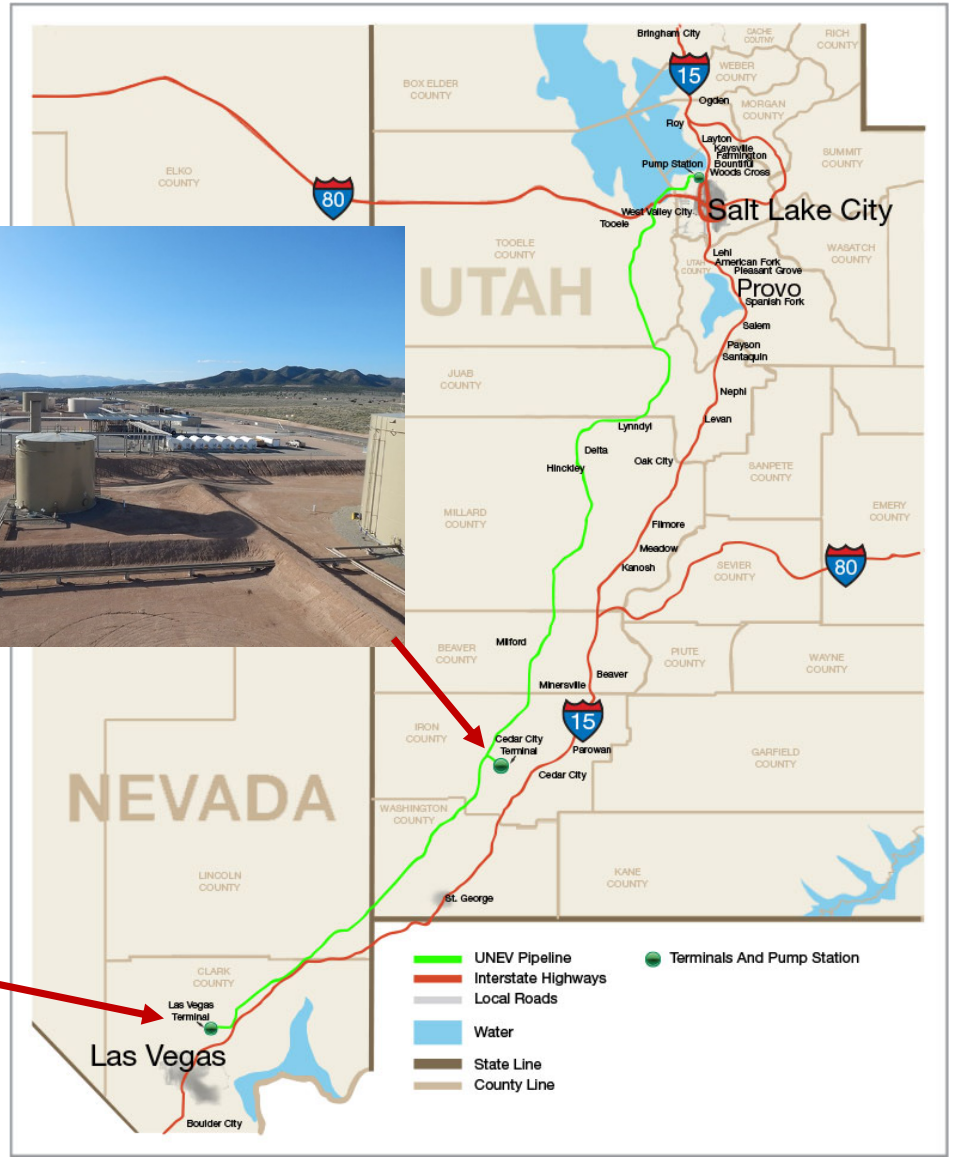
Key Elements – Pipelines – S. Calif.

- Southwestern system includes portions to deliver transportation fuels into Southern Nevada and Arizona
  - NV – Over 85% of supply
  - AZ – Over 40% of supply
- Dependency on Southern California refineries lessened by deliveries from West Texas and Utah

Pipeline systems only operate in one direction

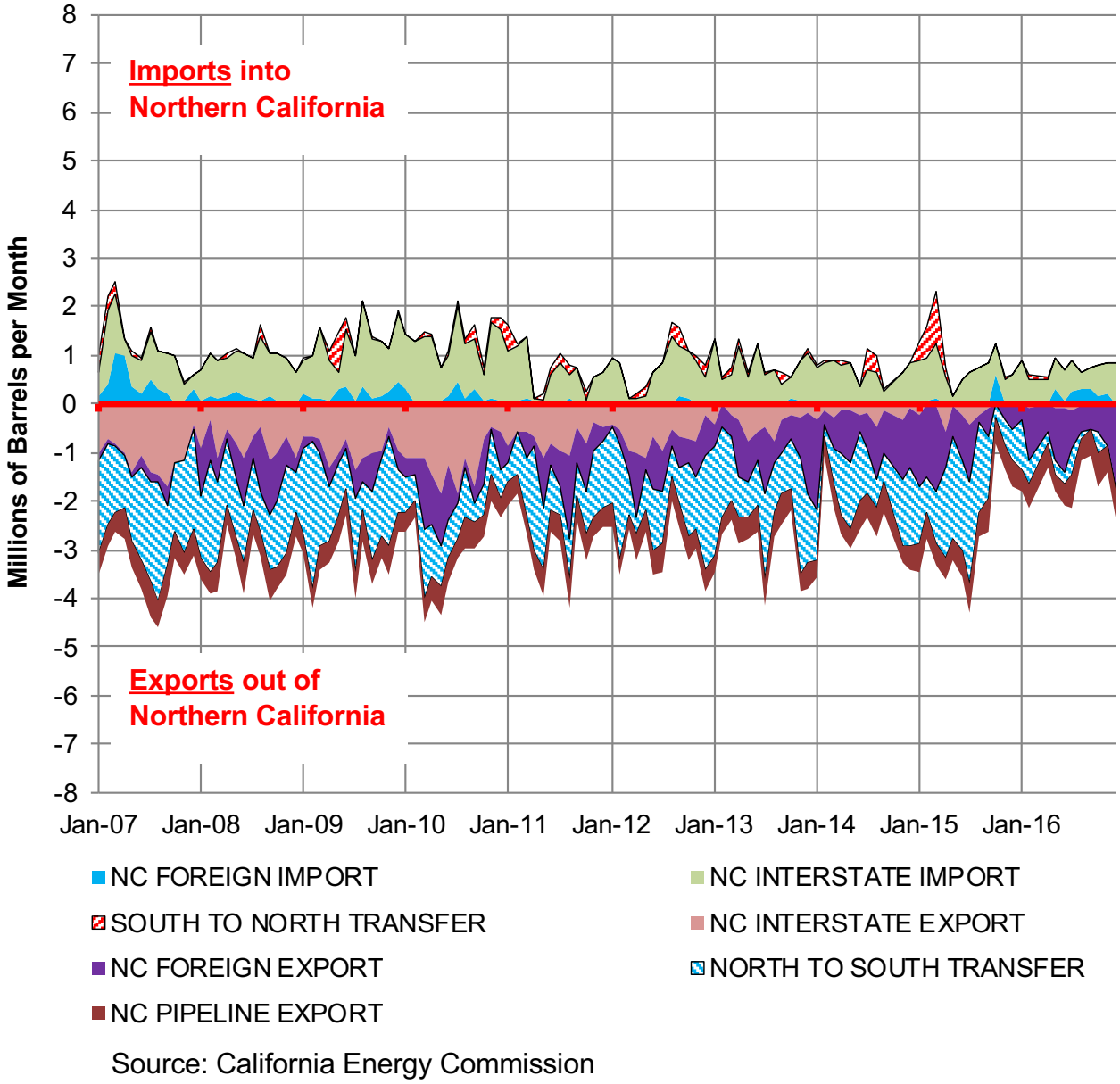
UNEV System – Utah to Las Vegas

- 427-mile, 12-inch refined products pipeline – 60,000 bpd capacity
- 600,000 bbls storage capacity
- Cedar City, UT
  - 2 truck loading bays & rail receipt
- North Las Vegas, NV
  - 2 truck loading bays & truck receipt



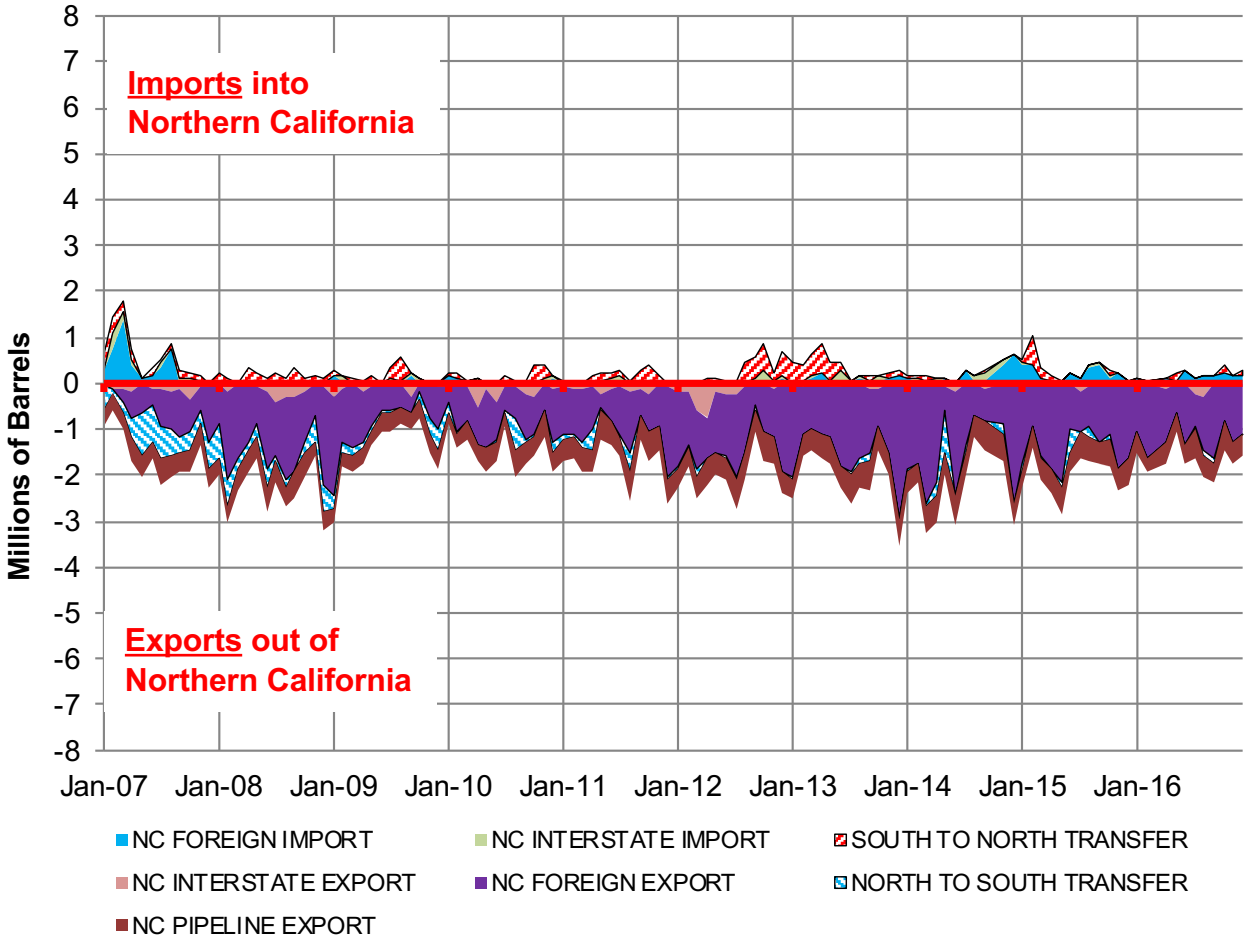
Gasolines Flows – Northern California

- Net exporter
- Foreign imports rare
- Domestic imports from WA refiners – steady
- Imports from S. Calif. intermittent & small – refinery outages
- Pipeline exports to Reno
- Foreign exports growing
- Domestic exports to PNW declined – replaced by WA refiners
- Exports to S. Calif. normal portion of their supply – volumes fluctuate based on refinery outages



Source: California Energy Commission

Diesel Flows – Northern California



- Large net exporter
- Foreign imports rare
- Domestic imports from WA refiners – not needed
- Imports from S. Calif. Intermittent & small – refinery outages
- Pipeline exports to Reno
- Foreign exports growing
- Domestic exports to PNW small – replaced by WA refiners
- Exports to S. Calif. unusual

Source: California Energy Commission

Distribution Terminals & Tanker Trucks

- Output from the refineries is usually placed in intermediate tanks prior to blending the finished products
- The majority of gasoline, diesel and jet fuel is shipped from the refinery by pipeline to over 60 distribution terminals
- Tanker trucks then transport fuel to retail & non-retail stations
- Several truck trips during 2018
  - Gasoline – 42.4 MM gal/day
    5,300 tanker deliveries/day
  - Diesel fuel – 10.2 MM gal/day
    1,280 tanker deliveries/day

Insufficient number of tanker trucks and driving time to obtain sufficient quantities of fuel from Texas refineries

Rail Logistics – Other Uses

- Refiners use rail cars to routinely ship propane and seasonally send out and receive butane
- Rail cars are also used to deliver refinery feedstock such as gas oils and sulfuric acid for alkylation units
- More recently, California refiners have been using rail cars to import crude oil from Canada and domestic sources outside the state but this activity is less than 1 percent of supply due to poor transportation economics & less developed infrastructure compared to Washington

Interdependencies

- Most California refineries have cogeneration capability
- But depend on other outside services to sustain operations
  - Source water for process steam
  - Wastewater discharge handling requirements
  - Natural gas to augment still gas fuel production
  - Hydrogen from merchant producers to enable operations of desulphurization processing equipment
  - Acid deliveries for operation of alkylation facilities
- Retail fuel stations provide majority of gasoline and diesel fuel to the public
- Retail stations need electricity to operate dispensers
- Even with back-up power, stations need telecommunication capability to process transactions

CEC's Role for Emergency Fuel

California Emergency Fuel Supplies

- The Energy Commission does not own any emergency fuel supply
- Rather, the California Energy Commission (CEC) has the authority to ***hold inventories & redirect*** refined product supplies from private-sector refineries & distribution terminals when the Fuels Set-Aside Program (FSAP) is triggered
- CEC works in coordination with the California Office of Emergency Services (OES) and key partners to: identify private-sector sources of fuel & communicate with industry on what portion of their inventory must be held to be ***used for emergency response and critical functions*** fuel-related mission tasks
- Liquid transportation fuels, not electricity or natural gas
  - Gasoline, diesel fuel, Jet A, aviation gasoline & propane

FSAP is not designed nor intended to provide adequate supplies of transportation fuels for all end-users, including the public, following a catastrophic loss of local refinery production & distribution operations.

CEC Emergency Response Role: Transportation Fuel Supplies

- The Office of Emergency Services (CalOES) is the lead State agency in an emergency
- CEC Role is outlined in the Energy Commission's Emergency Plan:
  http://www.energy.ca.gov/emergencies/plan.html
- How is the Fuels Set-aside Program (FSAP) triggered?
  - Governor declares a state of emergency
  - Chair of the Energy Commission recommends activation of the FSAP based on severity of impact to transportation fuel supplies
  - Governor issues Emergency Order, empowering the Energy Commission to hold control of and redirect petroleum stocks needed to ensure the health, safety and welfare of the public

To date no emergency declaration in the state has necessitated that the FSAP be triggered on a formal basis – what type of event could?

Catastrophic Earthquake

- Unprecedented event - ***not experienced in our lifetimes***

- Business-as-usual will not suffice
- Large portion of fuel supply will be lost or unavailable
- Demand outside the impacted region will experience varying degrees of panic-buying
- ***There will be a fuel shortage for California, Arizona & Nevada***

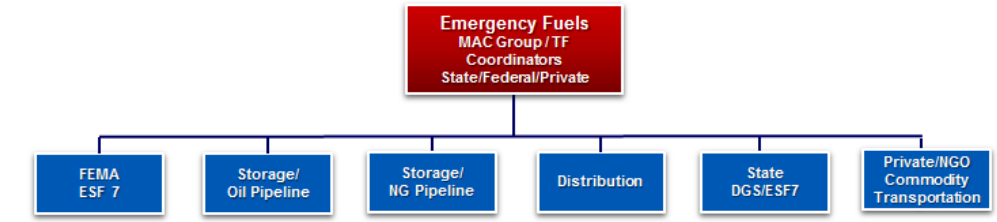
FSAP – Function

- Prioritize and support the goals and objectives set by the Unified Coordination Group
- California Energy Commission Responsibilities
  - Transportation fuel supply situational awareness
  - Filling emergency fuel requests
  - Mission approvals in context of scarce resources/capabilities
- CEC personnel stationed at the SOC supporting Emergency Response
  - Reporting on locations where fuel is available
  - Reporting on status of refineries & petroleum pipelines
    - Return to service estimates
    - Interdependencies that are preventing restart
      - Water, natural gas, hydrogen or electricity
  - Waiver recommendations
    - Increasing fuel supplies, reducing logistic delays & demand reduction
- CEC personnel stationed at the Energy Commission
  - Obtaining information from industry, twice-daily basis
    - Inventory levels by fuel type & location
  - Communicating with industry stakeholders

Emergency Fuels Coordination

Emergency Preparedness & Planning Activities

- Identify potential Emergency Fuels stakeholders for a Multi Agency Coordination Group or Task Force
- Work with stakeholders to identify roles and responsibilities
- Work with stakeholders to identify key issues and potential solutions



MAC Group/Stakeholders

Local	State(s)	Federal	NGO
• County OESs • AQMDs (W) • POLA/POLB/POSD	• Cal OES* • DGS (CA-ESF 7)* • CEC* • CNG* • Cal EPA • CARB (W) • CAL FIRE* • Caltrans* • Cal OSHA-DIR • CPUC (W) • CalRecycle • CDCR • SLC* • OSPR* • OSFM (Pipeline Safety Division) • California W&M (W) • Arizona GO/W&M (W) • Nevada GO/W&M (W)	• FEMA (ESF 7)* • DHS/USCG* • US EPA (W) • USACE* • MARAD* (W) • DOD* • DLA* • DHS/CBP (W) • USDOT • DOE (W) • NTSB • IRS (W) • FERC (W) • GSA*	• WSPA • CIOMA • NASEO • NACS **Private** • CUEA* • Refinery, pipeline, & terminal operators • Fuel transporters • BNSF, UP & KCS • Hypermarketers • Foster Fuels (FEMA) • Pinnacle Petroleum (DGS)
* Personnel at SOC W – Waiver Activity			

* Example MAC Group/TF Stakeholders

Waivers

Purpose of Waivers

- There will not be sufficient transportation fuel supplies to meet normal demand following a catastrophic earthquake
  - Steps will need to be undertaken to increase fuel supply & decrease demand
- Waivers will provide an ability to maximize alternative sources of transportation fuel supplies and minimize timelines to deliver to emergency-related activities is contingent on the rapid approval of a variety of fuel specification, logistics, and emission limit waivers from federal, state, and local entities

Not all waiver processes have been previously utilized

Some waiver processes & participants need to be verified

Fuel Waivers

- Purpose - intended to waive certain specifications that would enable the use of any type of gasoline, diesel fuel or aviation fuels in the aftermath of a catastrophic event. Maximize alternative sources of transportation fuels, regardless of local or regional specification requirements.
  - California fuel specifications (CA reformulated gasoline and CA ultra-low sulfur diesel fuel)
  - Arizona and Nevada fuel specifications (state specific gasoline standards unique to the region)
  - Federal fuel specifications (federal reformulated gasoline & federal ultra-low sulfur diesel fuel)
  - Gasoline Rvp limits (allow switch from summer to winter recipe)
  - Red dye diesel use (allow tax exempt diesel to be used in on-road application)

Responsible entities – CARB, US EPA, DOE (EIA), AZ & NV W&M, AQMDs and IRS

Logistics Waivers

- Purpose - intended to waive certain restrictions to increase availability of fuel transportation assets (marine tankers, rail tank cars, and tanker trucks) and decrease delivery timelines.
  - Jones Act (allow foreign-flagged marine tankers to transport fuel)
  - Truck weight limits (allow heavier-than-permitted loads of fuel to be transported)
  - Driver hour limitations (allow truck drivers to operate for longer periods)
  - Pipeline product codes (allow other types of fuel to be dispensed through petroleum product pipeline systems)

Responsible entities – DHS, DOE, MarAD, DoD, CHP, FERC and CPUC

Emission Limit Waivers

- Purpose - intended to waive certain restrictions of equipment to enable operations that could exceed maximum allowable emissions in excess of existing permit limits.
  - Emergency generator operational limits (allow back-up generation sets to operate continuously until electrical service is restored)
  - Floating roof fuel storage tanks (allow tank levels to decrease lower than normally permitted)
  - Vapor recovery limits related to fuel transfer operations (allow equipment to exceed permit limits)

Responsible entities – CARB, and AQMDs

Decreased Fuel Demand Activities

- Purpose - intended to diminish hyper-demand and hoarding of transportation fuels in the aftermath of a catastrophic event of sufficient consequence to necessitate activation of the Fuel Set Aside Program.
  - Odd-even rationing (limit the ability for acquisitions of non-emergency related transportation fuel to every other day)

Responsible entities – Governor's offices in CA, AZ, & NV and law enforcement

- ***Optimal implementation of odd-even rationing not yet determined***
- ***Enforcement difficult for most retail locations that no longer have attendants***
- ***Multiple strategies required to disseminate aspects to consumers & businesses***

Plate inspection in odd-even line – Photo Credit: Norman Lono, NY Daily News

Transportation Fuels Working Group

Transportation Fuels Working Group

- A Fuels Working Group has been created at state level to improve preparedness for response to a catastrophic event
  - OES, Cal NG, CUEA, DGS & CEC core members
  - Participation from FEMA, Cal EPA & DLA
- Purpose
  - Identify specific goals and work solutions
- Areas of focus
  - Quantify fuel demand & geographic scope for emergency needs
  - Alternative sources of fuel for National Guard activities
  - Strategies for maximizing fuel delivery from outside California
    - Rail, marine & aviation resupply
  - Fuel supply inside impacted zones
    - Trapped first responders still need fuel
    - ***Local Operating Areas (OAs) can control & extend period of fuel self-sufficiency***

Areas of Focus – Quantify Fuel Demand

Operating Areas – Quantify Fuel Need

- Operating Areas (OAs)
  - Need to quantify emergency & critical fuel demand by activity
  - Survivor movement
  - Mass care & shelter
  - Other response activities
    - ✓ Fire, police & ambulance response
    - ✓ Search & rescue operations
    - ✓ Utility response convoy ingress and sustained operations
    - ✓ Lifeline route clearance
    - ✓ Critical commodity goods movement
    - ✓ Other back-up generation needs
      - Telecommunications
      - Water & wastewater facilities
      - Points of Distribution (PODs)
- Fuel self-sufficiency goal should target a minimum of **10 to 14 days** of emergency fuel response need

Quantify Fuel Need – Survivor Movement

- A significant portion of self-evacuation survivors will not reach intended destination
  - ✓ Up to 25 percent of self-evacuees will have ¼ or less fuel in tank - range could be as little as 10 to 40 miles
  - ✓ Nearly all self-evacuees will require at least one fill-up to reach outside perimeter of power outage/damaged areas & avoiding undamaged fuel shortage areas
  - ✓ Potential for hundreds of thousands of self-evacuees to experience fuel run-outs along each of the movement corridors

- Functionality of smart phones & other communication devices may be degraded
  - ✓ Motorists will have limited ability to identify potential open fuel sites
  - ✓ Determine feasibility of AM/FM messaging

- Severity of congestion along self-evacuation corridors will impede fuel resupply movement
  - ✓ Reverse flow ingress may be preferable for fuel deliveries & stranded motorists
  - ✓ One roadside fuel tanker limited to 500 fueling events of 10 gallons
  - ✓ Ability to meet all requests in timely manner doubtful – lack of tankers
  - ✓ Could require escort to ensure delivery but this resource could be limited if using law enforcement

Quantify Fuel Need – Mass Care & Shelter

- Scale of need & distribution challenges could slow fuel resupply effectiveness
  - ✓ Emergency fuel response capability could be overwhelmed by scope of need for back-up generation resupply
  - ✓ Route clearance & degraded site access

- Fuel resupply missions for life saving back-up generation
  - ✓ Lack of information on back-up generation at hospitals & other critical care facilities
  - ✓ Daily burn rates, access requirements & current suppliers
  - ✓ Need assistance from OAs to quantify these estimates & better hone response prioritization & optimal access strategies

- Fuel supply for emergency generators at all shelters & points of distribution possibly infeasible due to scale
  - ✓ Unknown how many of these sites already have power self-sufficiency

- Other fuel types needed at shelters not yet identified and/or quantified
  - ✓ Propane for fork lifts as one example

Areas of Focus – Replacement Fuel

Replacement Fuel – Outside Impacted Area

- Northern CA & WA refineries via barge & marine tanker – days
  - Marine barge availability could be limited
  - Marine terminals ability to receive could be compromised
  - Foreign cargoes leaving region by marine tanker could be diverted to impacted region – requires federal and state waivers
  - Typical product tanker holds 12 million gallons of gasoline or diesel fuel
- US Gulf Coast refineries via rail tank car – days to weeks
  - Rail transloading enables use of local fuel transportation trucks
  - Locations TBD
  - Security
  - Transload crews
  - Supply sources TBD
- Foreign refineries via marine tankers – 3 weeks+
  - Longer-term resupply option
  - Requires ability to receive at marine terminal
  - Supply source could be sustained long-term

Replacement Fuel – Inside Impacted Area

- State, county, and municipal fuel storage locations/yards
  - ✓ CalTrans & other state yards that store fuel
  - ✓ City /county fuel storage sites
  - ✓ Ability to ***dispense*** fuel may be hindered by lack of power
  - ✓ Ability to access fuel from storage tanks may be limited
- Local distribution terminals
  - ✓ Possible from locations without power or telcom
  - ✓ Alternative means of safe tanker truck loading TBD
- Retail stations – access "trapped" fuel
  - ✓ Increases likelihood of immediate access to emergency fuel, post event – for emergency response & critical needs determined by OA
  - ✓ Can provide buffer until additional fuel begins to arrive from outside the impacted region
  - ✓ Various access options
    - Pre-wired with transfer switches to receive portable generation and operate entire site
    - Extract fuel from UST without power – requires specialized vehicle/equipment – can fuel vehicles at that location or transport to another more secure, higher priority site
  - ✓ Large retail locations, such as hypermarts, can also be used as PODs

Urban Gas Stations – Average Sales

Should consider focusing efforts on stations with greatest throughput, storage tank capacity and dispensers - hypermarts

Analysis of A15 Retail Survey Data From CY 2015

California Bay Area County	Non Hypermarts Retail Sites	Average Gasoline Throughput Gallons/Month	Hypermart Retail Sites	Average Gasoline Throughput Gallons/Month
Alameda	222	126,061	8	804,629
Contra Costa	179	118,890	6	658,161
Marin	47	131,715	1	757,435
Napa	29	122,255	1	644,748
San Francisco	63	143,922		
San Mateo	125	133,649	3	1,170,999
Santa Clara	271	151,959	8	890,772
Subtotals	936	134,569	27	830,643
LA Basin				
Los Angeles	1,356	151,098	35	769,073
Orange	462	162,536	15	1,080,881
Riverside	383	143,833	22	636,461
San Bernardino	407	124,929	14	718,372
San Diego	562	138,533	16	968,118
Ventura	137	138,430	2	1,168,740
Subtotals	3,307	145,974	104	817,476

Additional Questions?

Gaslamp District in 1887, view from 5th & Island, San Diego, CA. Photo courtesy San Diego Historical Society.