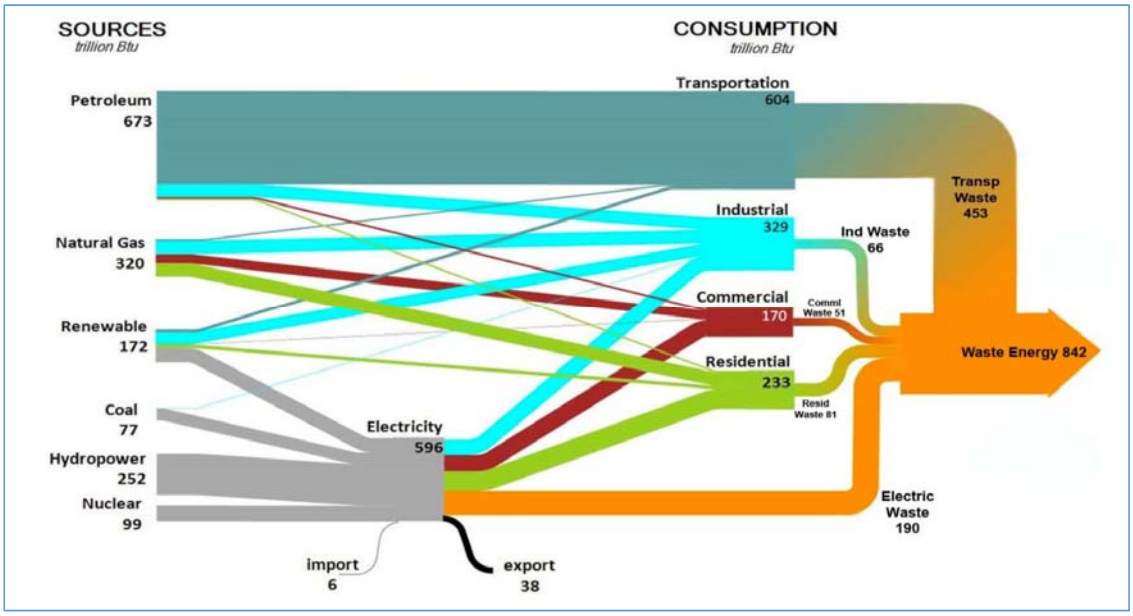
Understanding the Fuel Supply and Demand within the greater Tacoma area

Sources and Consumers of Energy within Washington



Source: Washington Department of Commerce: 2017 Biennial Energy Report and State Energy Strategy Update

Pacific Northwest Petroleum Production Overview

The State of Washington is situated within the Pacific Northwest Region (PNW) of Petroleum Administration for Defense District 5 (PADD5). The refining complex within Washington demands ~635 MB/day of Crude per day. What products aren't sold and delivered within Washington and Oregon are delivered to Alaska, California, Mexico and South America markets who are net short supply.

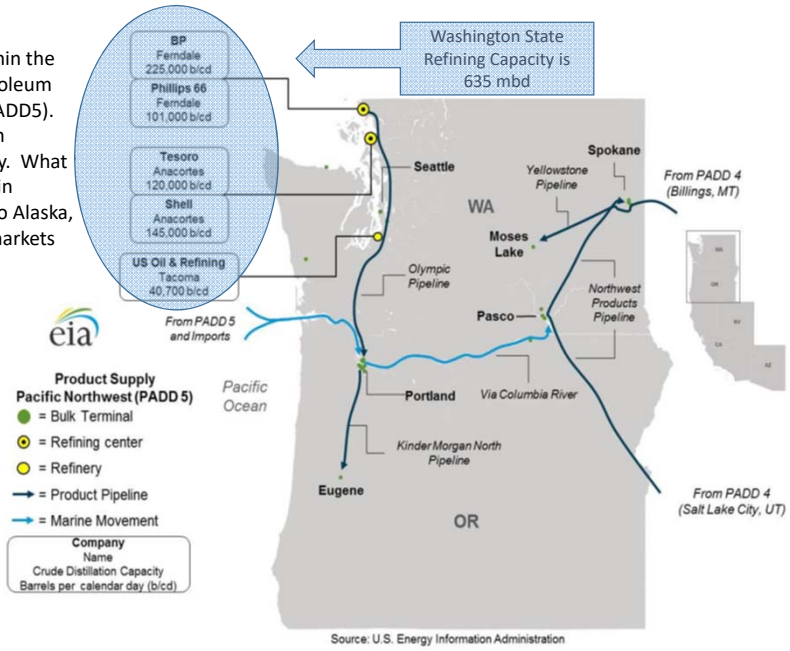
2017 EIA estimate of fuel demand:

Washington

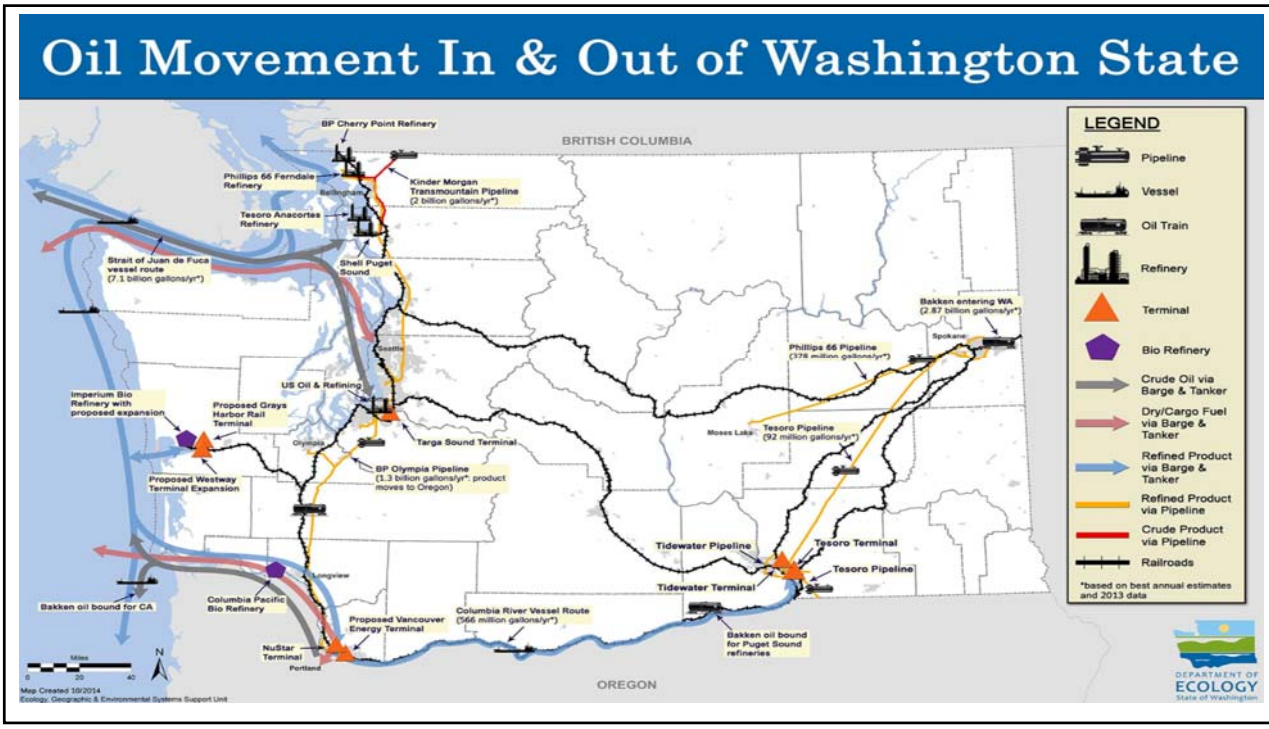
- Gasoline 185 mbd
- Distillate 75 mbd
- Jet 57 mbd
- **WA Total 317 mbd**

Oregon

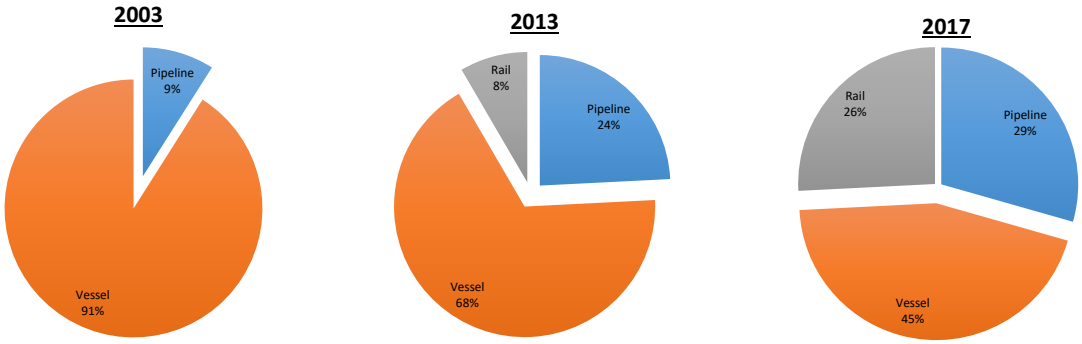
- Gasoline 115 mbd
- Diesel 48 mbd
- Jet 14 mbd
- **OR Total 177 mbd**



Source: U.S. Energy Information Administration



Comparison of Crude Oil Transportation Modes in Washington
Department of Ecology State of Washington

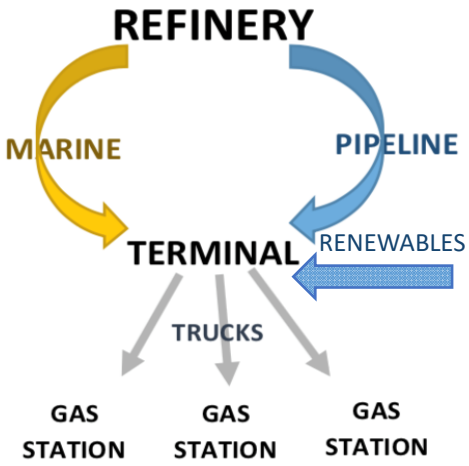


MMB Per Year

	2003	2013	2017*
Vessel	185	137	93
Pipeline	18	49	61
Rail	0	17	53
Total	**203**	**203**	**207**

* volumes for the period of 7/1/17 - 6/30/18

Washington State Department of Commerce
Finished Petroleum Supply and Use in Washington State



Fuel produced at WA refineries is transported in bulk to area product terminals via pipeline, barge and vessel. Fuels are then distributed via tanker truck to retail locations.

Olympic Pipeline: Washington and Oregon's lifeline to daily transportation fuel supply

Source: BP. "Olympic Overview." <http://www.olympicpipeline.com/maps/olympic.pdf>

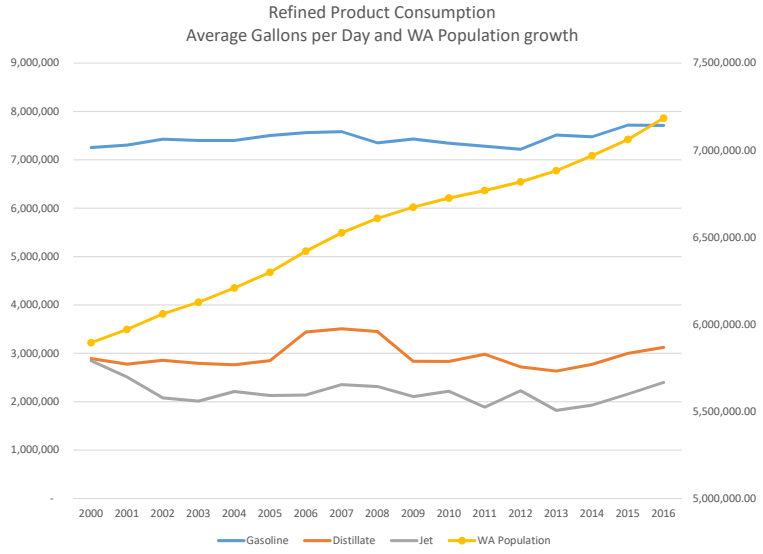
- Originating in Blaine, WA and terminating in Portland, OR
- Approx.400 mile interstate petroleum products pipeline
- Capacity of approx. 300 mbd products per day
  - ~150 mbd Gasoline
  - ~110 mbd Diesel
  - ~ 40 mbd Jet
- Supplies 100% of SeaTac's 37mbd Jet demand (and growing)
- Does not accept or ship Ethanol or Biodiesels (rail dependent)
- Pipeline is and has remained fully allocated; provides transportation for ~50% of the refined product production from the four northern Washington refineries. The balance of production is moved via tanker trucks, barging and vessel movements to other markets
- Interruptions in pipeline supply is countered by an increase in truck, barge and vessel supply.
- Any interruption in refinery production is countered by an increase in truck and barge movements from other refineries as well as vessel imports into the PNW.

Washington State Consumption
EIA State Energy Data System

Thousand Barrels[1] per Year

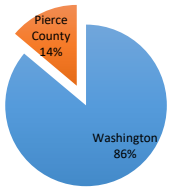
Year	Gasoline	Distillate	Jet
2000	63,053	25,122	24,726
2001	63,492	24,128	21,815
2002	64,544	24,826	18,076
2003	64,317	24,266	17,493
2004	64,302	24,003	19,219
2005	65,216	24,753	18,480
2006	65,712	29,918	18,588
2007	65,893	30,471	20,451
2008	63,891	29,996	20,110
2009	64,569	24,658	18,293
2010	63,817	24,624	19,259
2011	63,269	25,919	16,386
2012	62,725	23,636	19,356
2013	65,300	22,874	15,816
2014	64,960	24,107	16,756
2015	67,072	26,053	18,742
2016	67,014	27,147	20,839

1 Barrel = 42 US Gallons

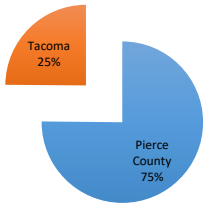


Tacoma and its Demand for Transportation Fuels as a % of Washington State.

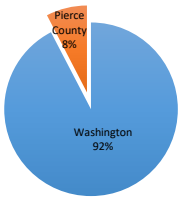
Pierce County Gasoline



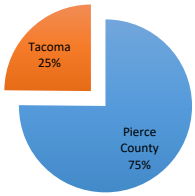
Tacoma Gasoline



Pierce County Diesel

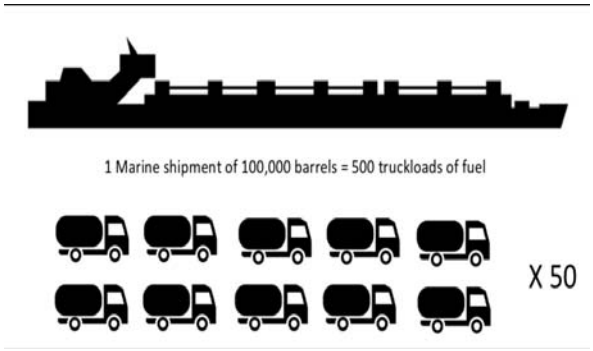


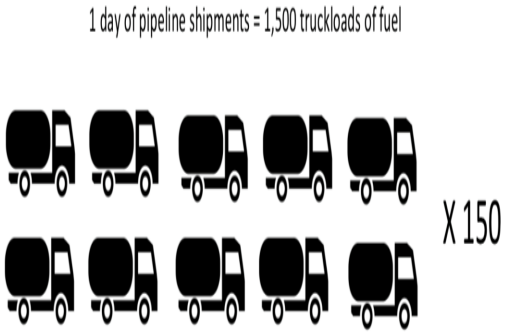
Tacoma Diesel



- The Tacoma Tideflats are strategically located in the South Puget Sound with a deep water port, pipeline connections and refined product terminals. USOR, NuStar, P66 and Targa supply gasoline, diesel, jet fuel and asphalt to a large geographic area including Pierce, Thurston, Grays Harbor, Kitsap Counties and the Olympic Peninsula.
- Total gasoline demand in the State of Washington is ~185mbd, or 7.7MMGPD
  - Pierce County represents ~14% of that demand or roughly 1MMGPD
  - Within Pierce County, Tacoma represents ~25% of the counties demand, or roughly 270mgpd
- Total diesel demand in the State of Washington is ~75mbd, or 3.1MMGPD
  - Pierce County represents ~8% of that demand or roughly 240mgpd
  - Within Pierce County, Tacoma represents ~25% of the counties demand, or roughly 60mgpd
- Jet Fuel demand in the State of Washington is ~57mbpd
  - SeaTac consumes ~40mbd
  - Military demand is ~10 mbd
    - JBLM demand is roughly 1,800 b/d
  - Other regional facilities account for the balance
- Marine Bunker fuel demand in the Puget Sound is ~25mbd of HSFO
  - This demand will change to LSFO in 2020
  - USOR supplies ~70mgpd of MGO to marine operators in the Commencement Bay area

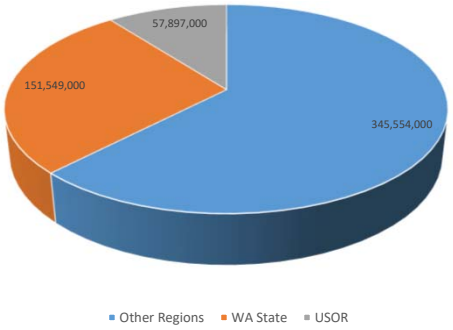
In the event of an interruption in the supply infrastructure of the tideflats, fuel demand for the surrounding areas would be met via tanker trucks carrying fuel from the northern refiners as well as from the Portland area. This increase in truck traffic with further congest WA state highways while increasing emissions at a time when the industry is working towards reducing emissions.



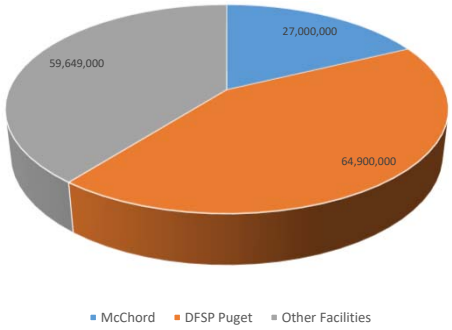


How important is Military Demand to Washington State?

2018 DLA JAA RMW Solicitation 555MMGY



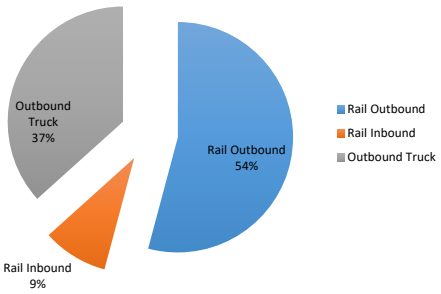
2018 DLA Washington State JAA Demand 152 MMGY



Washington State represents 27% of the Military Jet A Fuel consumed by the Military within Rocky Mountain West Region. (AK, WA, ID, MT, WY, CO, OR, CA, NM, TX, NV, UT, HI, AZ)

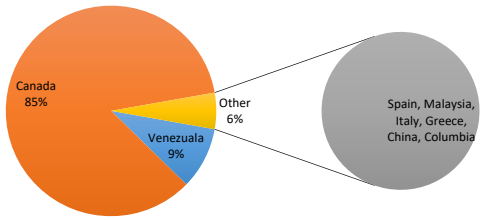
Asphalt Supply and Demand (estimated)

Tacoma Average Monthly Asphalt Demand (BBLs)



While waterborne asphalt into the Puget Sound is a rare occurrence, on occasions cargoes of 10 to 20kst have arrived.

Total U.S. Average Monthly Asphalt Imports (BBLs)

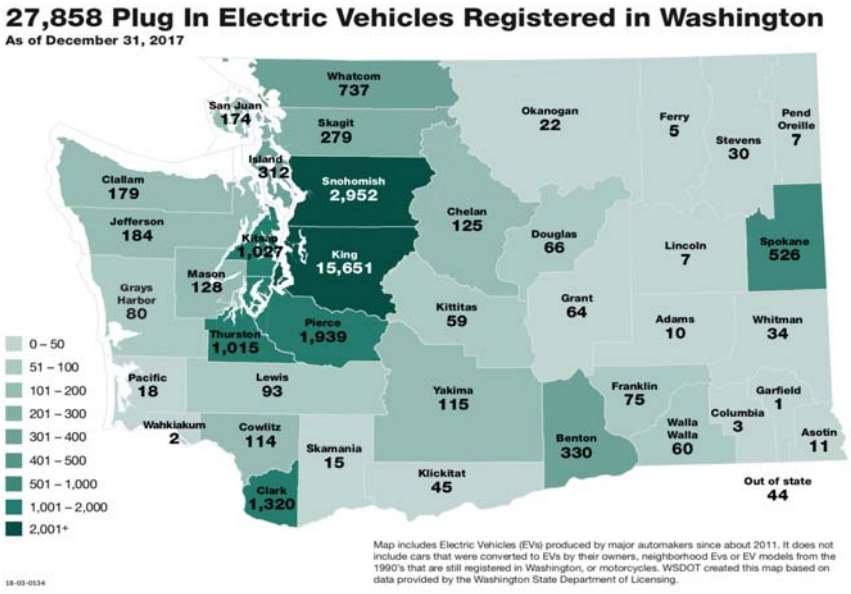


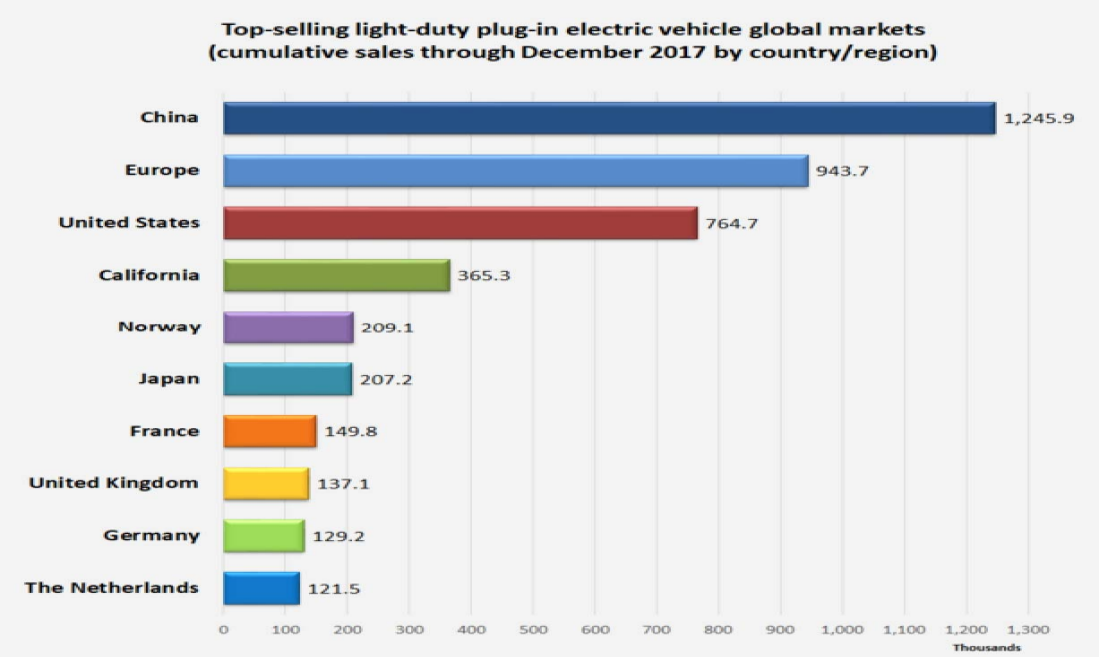
Over the course of the last decade the U.S. has imported an average of 860MBPD of asphalt. Current political and economic issues in Venezuala have reduced that countries proportion to nearly zero. This coupled with domestic production issues has created a very tight supply in the U.S.

Sudden Supply Interruptions and Impacts

- In 2015 the XOM Torrence, CA refinery experienced a fire in their FCC unit. This resulted in a year long interruption in production, the consequence of which was an increase in vessel/barge movements into the Southern California market:
  - an increase of 220% YoY of finished gasoline imports into the USWC
  - An increase of 300% YoY of Gasoline Blend Stocks
  - An increase of 12% YoY of gasoline moving from the PNW and SFB to LA
  - A 30% increase in the volume of gasoline moving from Canada into the USWC
  - Imports of ULSD increased 120% YoY

Penetration and Promulgation of Electrical Vehicles in Washington State




Top-selling light-duty plug-in electric vehicle global markets
(cumulative sales through December 2017 by country/region)
China
Europe
United States
California
Norway
Japan
France
United Kingdom
Germany
The Netherlands
1,245.9
943.7
764.7
365.3
209.1
207.2
149.8
137.1
129.2
121.5
0
100
200
300
400
500
600
700
800
900
1,000
1,100
1,200
1,300
Thousands