



The Fuel and Vehicle Trends Report
February 6, 2019

This report is a summary of the latest fuel prices and other oil industry key statistics. In addition, this report provides the latest trends in vehicle registrations and transportation tax collections for the state of Washington. It also summarizes articles appearing in popular, business, and technical media referring to fuel price, production and supplies as well as vehicle sales and registration trends. At the end of the report is a listing of all articles summarized, with hyperlinks to internet sources where available. Some hyperlinks may require free registration or paid subscriptions to access. The appearance of articles, products, opinions, and links in this summary does not constitute an endorsement by the Washington State Department of Transportation. Photos and other artwork included in the report are either included with permission or are in the public domain. *The Fuel and Vehicle Trends Report* (ISSN 1948-2388) is compiled by Scott Smith, Lizbeth Martin-Mahar, Ph. D., and David Ding, Ph. D., Economic Analysis Section, Budget and Financial Analysis Office of the Washington State Department of Transportation. Contact the editors by email at smithsc@wsdot.wa.gov martinli@wsdot.wa.gov or DingDav@wsdot.wa.gov by telephone at (360) 705-7(360) 705-7942 or (360) 705-7502.

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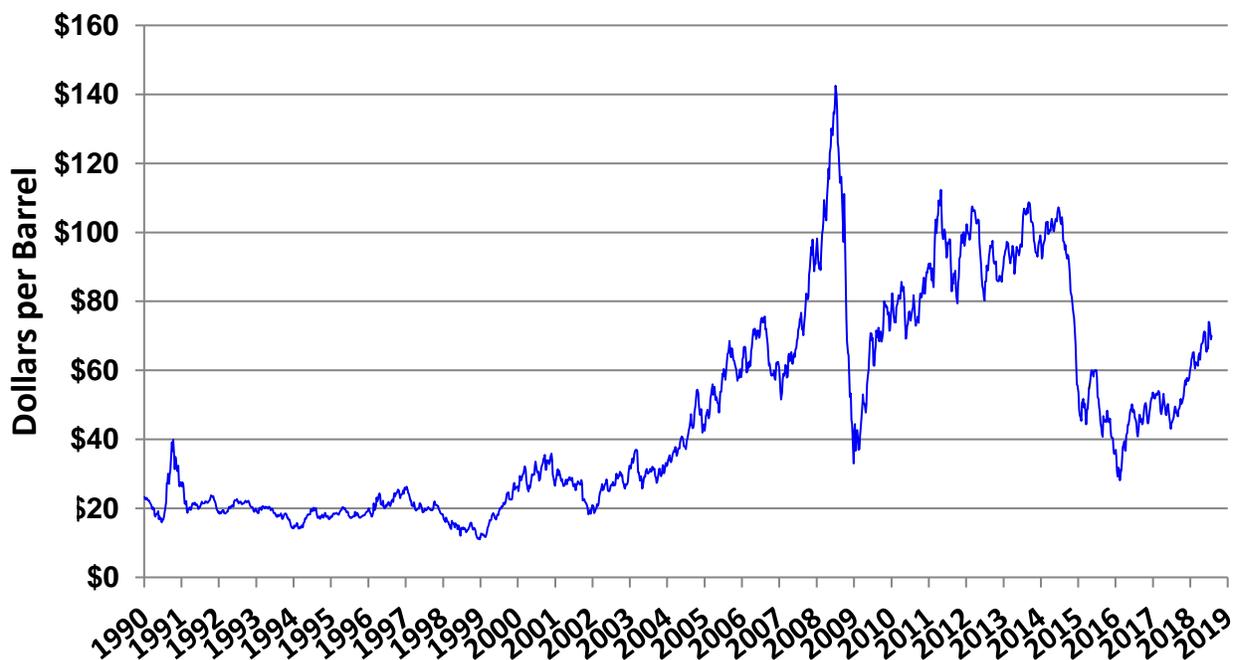
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FUEL PRICE TRENDS: Crude, Gasoline and Diesel Markets
Analysis by Scott Smith

National Prices

West Texas Intermediate (WTI) spot crude prices averaged \$50.99 per barrel in January 2019. This is a \$12.7 lower than the January 2018 average price of \$63.70.

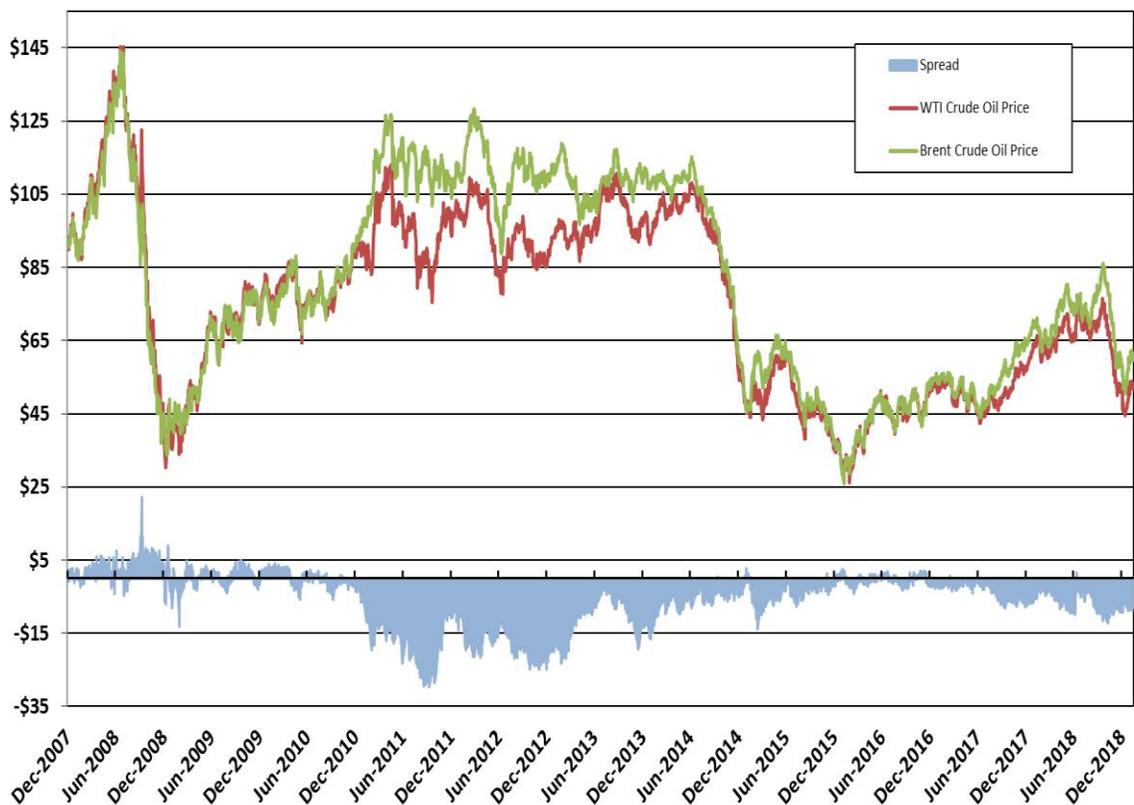
Figure 1: Weekly Cushing, Oklahoma WTI Spot Price: January 1990 to January 2019



Source: Energy Information Administration

The monthly average January 2019 WTI price is slightly higher than the low December crude oil average of \$49 per barrel. Both December and January prices are significantly lower than the average crude price in November of \$58 per barrel. Brent spot oil prices stalled from late November until the middle of December at near \$60 per barrel, sinking to \$51 in late December, before rallying back to the near \$60 in January. December was the weakest month of 2018 for Brent at \$56.78 per barrel down \$7.97 from the November average price.

Figure 2: WTI - Brent Crude Oil Spot Price Spreads
January 2008 to January 2019



Source: Energy Information Administration

Figure 2 shows prices and spreads between WTI and the world benchmark, Brent, which is produced in the North Sea. Note that the spread has very little to do with the general level of oil prices. The spread is better thought of as a basin differential for WTI dependent on local conditions. The spread between WTI and Brent in 2018 averaged about \$6.80 per barrel, and due to logistical constraints, the spread at times hit more than \$10 per barrel. There is simply not enough pipeline capacity to carry oil from the Permian Basin. As a consequence, the US is shipping more oil via rail. An average of 718,000 barrels of crude a day was shipped by railways nationwide in the US, which represents an 88% increase from a year earlier, based on EIA data as of October 2018. This 2018

rail shipment level is still less than a peak average of about 1.1 million barrels shipped in October 2014.

This 2018 average difference for WTI-Brent should decrease in 2019 due to the fact that there will be additional pipeline capacity from the Permian Basin ramps up in the later part of the year. The Energy Information Administration (EIA) forecasts Brent prices will average \$61 in 2019 and \$65 in 2020. IHS Global Insight’s January 2019 forecast projects a WTI crude oil price of \$55 per barrel in 2019 and \$63 per barrel in 2020. As of January 2019, Consensus Economics projects WTI prices at an average of \$59 per barrel in 2019 and \$60.8 per barrel in 2020. EIA’s forecasts a Brent-WTI price spread of \$6.33 per barrel and \$4 per barrel for 2019 and 2020, respectively.

World and US Oil Production

EIA reports U.S. crude oil production averaged 10.93 million barrels per day in 2018. EIA forecasts 12.07 million barrels per day in calendar year 2019 and even higher in 2020 averaging 12.86 million barrels per day. As Figure 3 shows, the vast majority of the production increase originated from the lower 48 excluding the Gulf of Mexico. Production in the lower 48 states grew by 29.5 percent from 6.74 million barrels per day in 2016 to 8.73 million barrels per day in 2018. This trend is expected to continue in a more muted fashion through 2020. The largest amount of U.S. production by far comes from the Permian Basin in West Texas and Eastern New Mexico. The Permian basin produced roughly 3 million barrels per day in 2018 and if the Permian basin were an OPEC country, it would rank number 4th behind Saudi Arabia, Iran, and Iraq. This increase in US crude oil production has a damping effect on US crude oil prices.

Figure 3: U.S Crude Oil Production By Source of Crude 2017-2020
(million barrels per day)

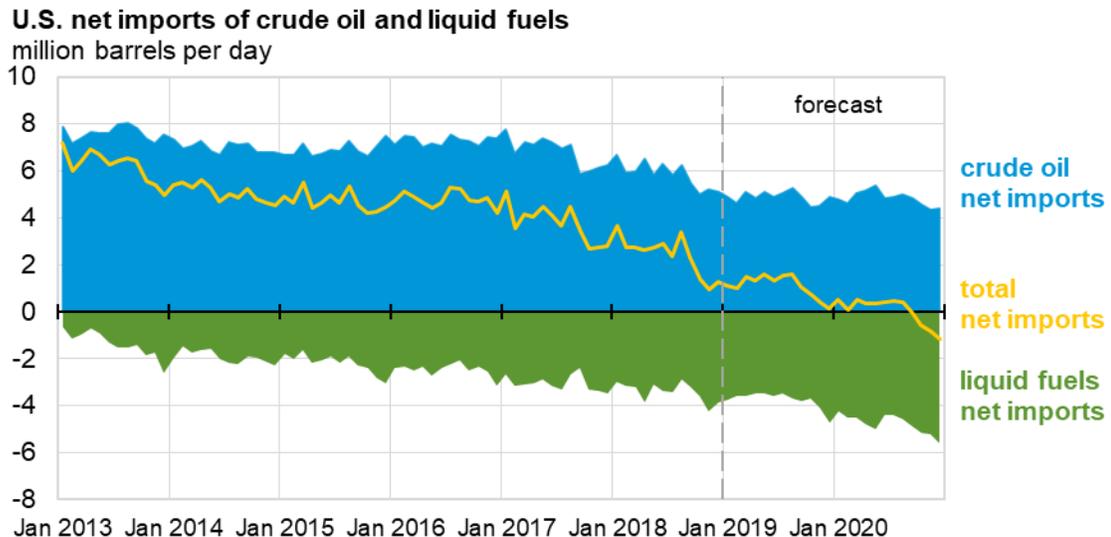
Source of US production	2016	2017	2018	2019	2020
Alaska	0.49	0.49	0.48	0.49	0.49
Federal Gulf of Mexico	1.60	1.68	1.73	1.90	2.19
Lower 48 States (excl GOM)	6.74	7.18	8.73	9.68	10.18
Total U.S. production	8.83	9.35	10.93	12.07	12.86

Source: Short-term Energy Outlook, January 2019

Congress only allowed the export of U.S. crude in 2016, and this has linked WTI to the world market. For the first time in modern history, the U.S. exported more crude and refined products than it imported, hitting this milestone in the week ended Nov. 30, 2018. Blas with the American Petroleum Institute reported that the US has been heading in this direction of becoming a net exporter for years but this last week in November’s dramatic shift came as data showed a sharp drop in imports and a jump in exports. The US should remain a small net importer most of the time. According to broader definitions of net imports of crude oil and other liquid fuels from EIA, they anticipate the US being a net importer of all petroleum products by September 2020 and this trend continuing to grow in the future. With the US having more exports of petroleum products show

expand our demand for our refined commodities and put upward pressure on WTI prices and gasoline and diesel prices in the future.

Figure 4: U.S Net Imports Since January 2013 With January 2019 EIA Forecasts



Note: Liquids fuels include: gasoline, distillate fuels, hydrocarbon gas liquids, jet fuel, residual fuel oil, unfinished oils, other hydrocarbons/oxygenates, and other oils.

Source: Short-Term Energy Outlook, January 2019



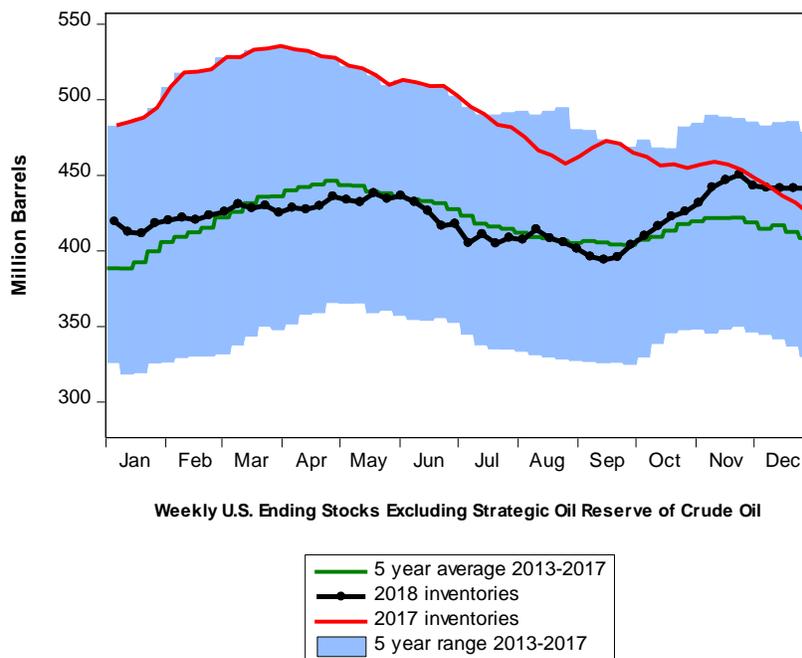
Inventories

Our *Trends Report* uses historical five-year averages for inventories to compare to current inventory levels. Weekly inventories for crude oil, gasoline, and distillate span five years from 2013 to the January 2019. Inventories are often used as a measure of over/undersupply and includes all of the U.S. crude oil and lease condensate (mixture of heavy hydrocarbons and pentanes) currently held at refineries, within pipelines, and at pipeline terminals. Weekly inventories in 2018 were markedly lower than their 2017 counterparts; the trend was reversed only in late November. As of the end of January 2019, U.S. commercial crude oil inventories (excluding those in the Strategic Petroleum Reserve) increased by 0.9 million barrels from the previous week. At 445.9 million barrels, U.S. crude oil inventories are about 7% above the five year average for this time of year. These higher crude oil stocks are having a damping effect on crude oil prices and the future outlook for WTI.

Many industry watchers have begun to question the accuracy of these crude oil inventory figures. The Oil Price Information Service (OPIS) notes:

“The perception as 2019 begins is that oil is oversupplied, but there is disagreement as to what represents a reasonably neutral inventory number. The addition of thousands of miles of pipelines, tanks, strategic storage and other infrastructure renders 20th-century inventory tabulations archaic.”

Figure 5: 2018 Weekly U.S. Ending Inventories of Crude Oil (Excluding Strategic Petroleum Reserve)



Source: Energy Information Administration

The West Coast Oil Market

The Energy Information Administration organizes the country into five Petroleum Administration for Defense Districts (PADDs) and Washington is located within PADD 5. PADD 5 spans the Pacific and most importantly includes Oregon and California. Currently, West Coast (or PADD5) refineries process about 3 million barrels/day. California refineries account for around 2 million of capacity or roughly two-thirds of capacity; the “lower 48” remainder is in Washington. There are no refineries in Oregon and Arizona. Arizona is also connected to Permian basin supplied refineries and responds differently to economic conditions. Northern California is a gasoline exporter. Southern California is a huge gasoline importer and draws on international shipments to meet demand. California refineries are principally supplied by internal production and oil from Alaska’s North Slope. Analysts have often pointed out that the PADD 5 market is very different from the rest of the United States because it is only partially connected to the major sources of U.S. oil production and gulf coast refineries. Figure 6 shows gasoline inventories for the west coast, PADD5. 2018 year-end inventories were well below 2017 levels and the five year averages. Inventories were actually below the bottom of the five year range through most of the fall and end of the year. In November, gasoline inventories spiked up again to be in the lower portion of the 5 year average range. Then in December, the inventories fell again until the following month when

there was another increase in gasoline inventories in January. This increase in January 2019 gasoline inventories is consistent with the sizable drop in Washington average monthly gasoline price during that month.

Figure 6: 2018 Weekly Ending Gasoline Inventories (West Coast PADD5)

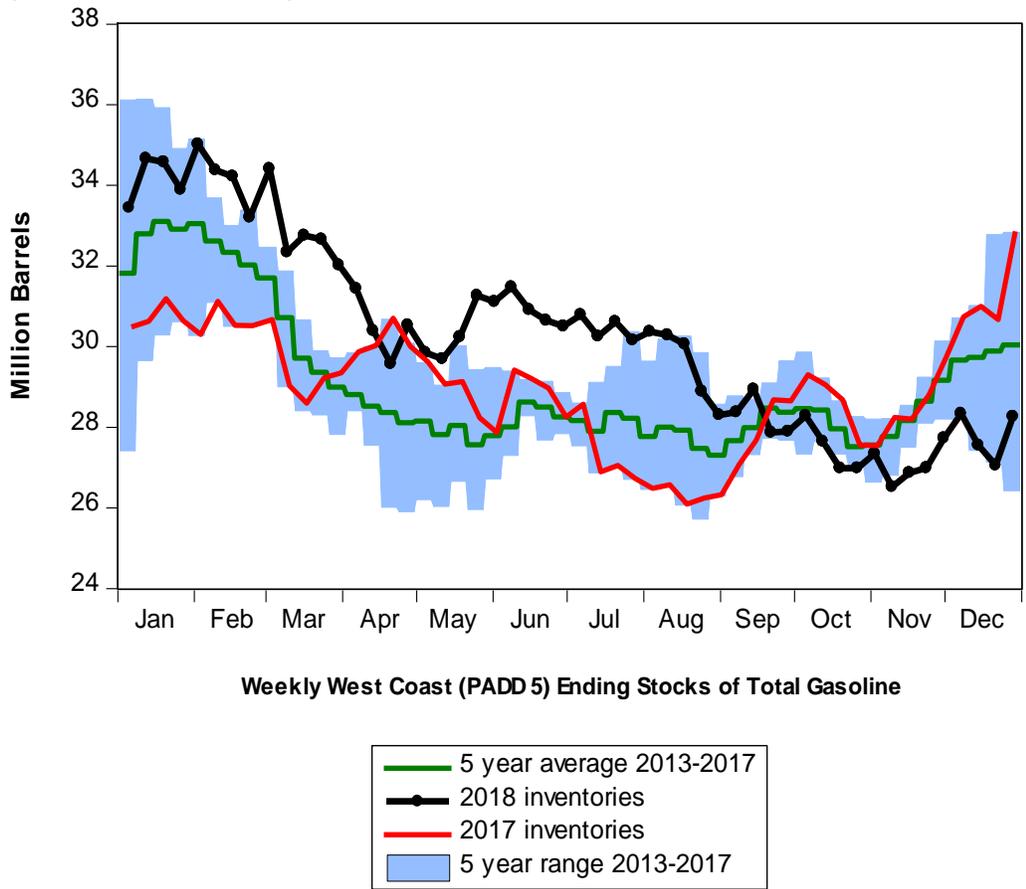
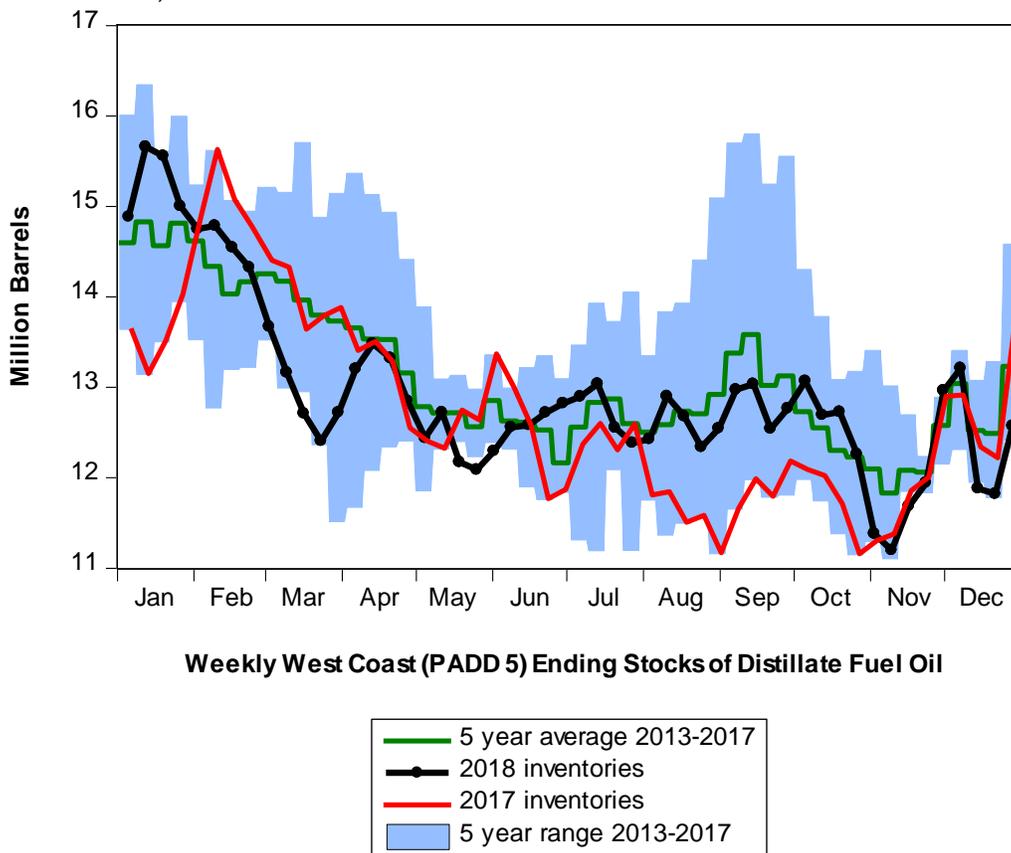


Figure 7 shows west coast (PADD 5) distillate inventories. Since few west coast structures use home heating oil, the vast majority of this production consists of diesel used as transportation fuels. Calendar Year 2018 started the year with higher distillate inventories, at the top part of the 5 year average. As the year continued, distillate inventories dropped but then by April, the inventories spiked up again and then they started to slowly fall again and that decline continued through the remainder of the year. By the end of 2018, distillate inventories fell back to tracking historical patterns but for the most part they tracked the lower portion of the 5 year range of inventories.

Figure 7: 2018 Weekly Ending Distillate Inventories (West Coast PADD5)



Source: Energy Information Administration

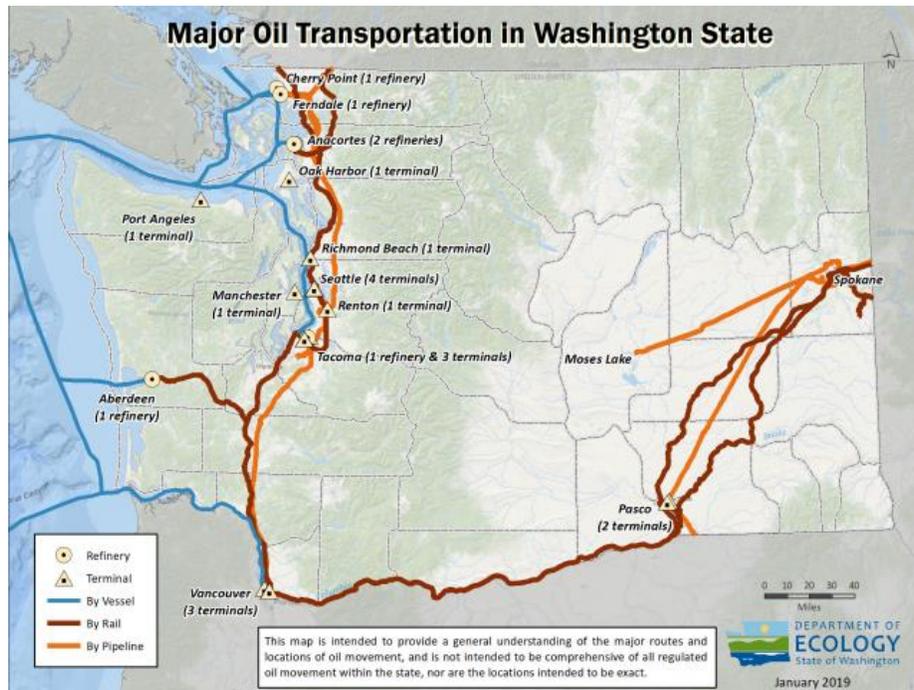
The Washington Oil Market

This next section of the Trends Report is provided to give some background on the delivery and transportation of oil and petroleum products throughout the state. Washington actually has two separate markets for oil and downstream fuels. One market is the eastern part of the state which has no refining capacity. It is principally supplied by a pipeline that runs to Salt Lake City, Utah and responds to the economic conditions found in PADD 4 Utah refineries receive crude oil from Alberta, Canada and the sedimentary basins in western Colorado and eastern Utah. Oil is also brought in by pipeline from refineries in Billings, Montana which is supplied by Alberta, Canada oilfields.

The second market is the western portion of Washington. All five Washington refineries are in the in the Puget Sound region and have a combined capacity of 634 Mb/d. BP, Shell, Tesoro, Phillips 66, and U.S. Oil own these refineries in Washington. The two largest refineries, belonging to majors BP and Shell, each have coking capacity to process heavy crudes. The rest of the refineries mainly process light or medium crude. These five refineries supply the western part of Washington with all its refined petroleum products.

Figure 8 shows the oil transportation and production grid for the state.

Figure 8: Washington Oil & Petroleum Production and Transportation Grid



Source: WA Department of Ecology

Washington refineries are supplied by sea, pipeline, and rail. The shipments by sea carry Alaska North Slope from Valdez. There is only one crude oil pipeline supplying Washington; it originates in Alberta, Canada. The remainder is shipped by rail and mostly originates in the Bakken Field in North Dakota. According to the January 2019 quarterly edition of the Crude Oil Movement report, the Washington Department of Ecology states that there is very little crude oil trans-shipment in the Washington market.

Figure 9 shows the movement of crude oil in the state in 2018. The oil traveling by vessel is mostly light sweet crude from Alaska and abroad. Likewise, Washington State Department of Ecology shows in their quarterly report that rail shipments are light, sweet crude from the Bakken fields in North Dakota. The pipeline contains sour heavy crude from Alberta. The Alaska North Slope Oil comes to Washington via vessel and the current production is around 900 barrels/day and is declining. Faced with the threat of dwindling mainstay crude supplies from Alaska, refiners in Washington State have replaced Alaska North Slope crude with North Dakota Bakken crude moved in by rail as reported in RBN LLC blog.

Figure 9: Crude Oil Movement by Mode January 1, 2018 Thru December 31, 2018

Method of Transport	Amount (million barrels per second)	Percent of total (%)	Crude Oil Prices (enter date 2/6/2019) (\$ per barrel)
Vessel (ANS West Coast)	99.5	44.6%	\$63.30
Pipeline (Western Canadian Select)	59.2	27.6%	\$42.66
Rail (Williston Sweet)	59.6	27.8%	\$45.00
Total	218.3	100.0%	\$52.52 (weighted avg)

Source: WA Department of Ecology

Figure 9 also shows the prices of various crude oil imported into Washington by method of transport as of February 6, 2019. By multiplying these prices by their shares yields a weighted average price of \$52.52 a barrel which is slightly less than the national benchmark price of West Texas Intermediate of \$53.96 per barrel. In summary, our weighted average crude oil price in Washington state is slightly less than the benchmark WTI price for this current date of February 6, 2019. However, this does not take into account the costs of rail transport. While Washington figures are not available, the Association of Pipelines website notes that it is roughly four times more costly to ship Bakken crude to Houston, TX by rail rather than pipeline. Unfortunately, estimates for shipping by vessel are not available.

The five refineries in the Washington generally perform better than rivals on the East Coast for two main reasons. First, the changing pattern of North American crude supply has worked to their advantage because they have also enjoyed access to discounted crude supplies from Western Canada. Second, Washington refiners face less competition for refined products than refineries on the East and Gulf coasts. In other words, the Washington refineries have a captive market for gasoline and diesel that often translates to higher margins. We believe that this pricing power contributes to the relatively high level of gasoline prices compared to the national prices discussed later in this paper.

Washington refineries also supply Oregon and California markets. There is one pipeline distributing refined products in Western Washington. The Olympic pipeline is roughly 400 miles long and connects four of the Puget Sound’s refineries. It transports gasoline, diesel and jet fuel and has a southern terminus at Portland, Oregon. Refined products are also shipped to the California market by fuel tanker. Currently Washington’s refined products are not being exported internationally. Exports to the neighboring states to the south are using all our refined products.

Figure 10: The Olympic Pipeline



Source: BP Corporation

Washington Retail Gasoline and Diesel Prices

For the most part in the past, Washington’s monthly gasoline prices have followed national and California price trends. California has typically had higher prices than the nation or Washington state gasoline prices. Figure 11 shows the history of the monthly gasoline prices for the Washington, California and the National market since 2004 ex tax. Note that in the past two most recent years in particular, the U.S. average gasoline price has been much lower than California and Washington prices due to most of US oil supply east of the Rocky Mountains. In the past three months (November – January 2019), the US gasoline prices have been significantly below Washington’s gasoline prices. In November, the US average regular gas price for the month was \$2.65 per gallon while Washington state average gasoline price was \$3.36 per gallon, which is \$0.71 per gallon higher which represents a 21% increase over national prices. In December, the national average gasoline price decline to \$2.37 per gallon while Washington average gas prices declined to \$3.08 per gallon and the difference was 23% higher which was similar to November. In January 2019, the national gasoline monthly average price declined again to \$2.25 per gallon while Washington’s average price dropped to \$2.84 per gallon and the difference declined to \$0.59 per gallon or 20.8% higher in Washington than the national prices. These recent last few months show a larger price differential between Washington and national prices than was seen in the other 10 months of 2018 which had on average only a 13.7% differential between the US average gasoline price and Washington state.

Washington prices are closer to California prices but consistently lower than California. The reason for this is because the costs to receive petroleum products from neighboring states for California is higher. California has strong demand for oil and their refining capacity is insufficient

to meet demand which drives up their prices. At the beginning of 2018, Washington’s gasoline prices were lower than California’s prices by double digits. Between January and April 2018, Washington gasoline prices were on average nearly 12% below California prices. Since April 2018, Washington’s gasoline prices have grown close to California gas prices and the difference has been on average 7% below California prices for the rest of calendar year 2018. In January, the difference between California and Washington gas prices grew again. In January, Washington gas prices averaged \$2.84 per gallon while California gas prices averaged \$3.16 per gallon which represented a difference of \$0.32 per gallon or 11% below California prices.

Figure 12 shows Washington regular gasoline and diesel prices since January 2006. As the chart describes in recent months (October through January 2019) gasoline and diesel prices in Washington have been falling pretty dramatically. In October, the average monthly Washington gas price was \$3.39 per gallon. Reuters reported in October that this monthly price was unusually high due to a natural gas pipeline fire that interrupted power supplies to three of the five Washington refineries. Prices have subsequently fallen 1.1% in November and 8% each month in December and January 2019 to a low of \$2.84 per gallon or 16.3% lower than 4 months ago.

Washington diesel prices also started to fall after October’s average monthly price of \$3.58 per gallon was hit. It fell only minimally 0.3% in November; 5.3% and 5.5% in December and January respectively. Between October and January 2019, diesel prices fell by 10.5% which was less than the fall in gasoline prices for the same time period.

Figure 11: Retail Gasoline Prices: WA, CA & the U.S. Since January 2004

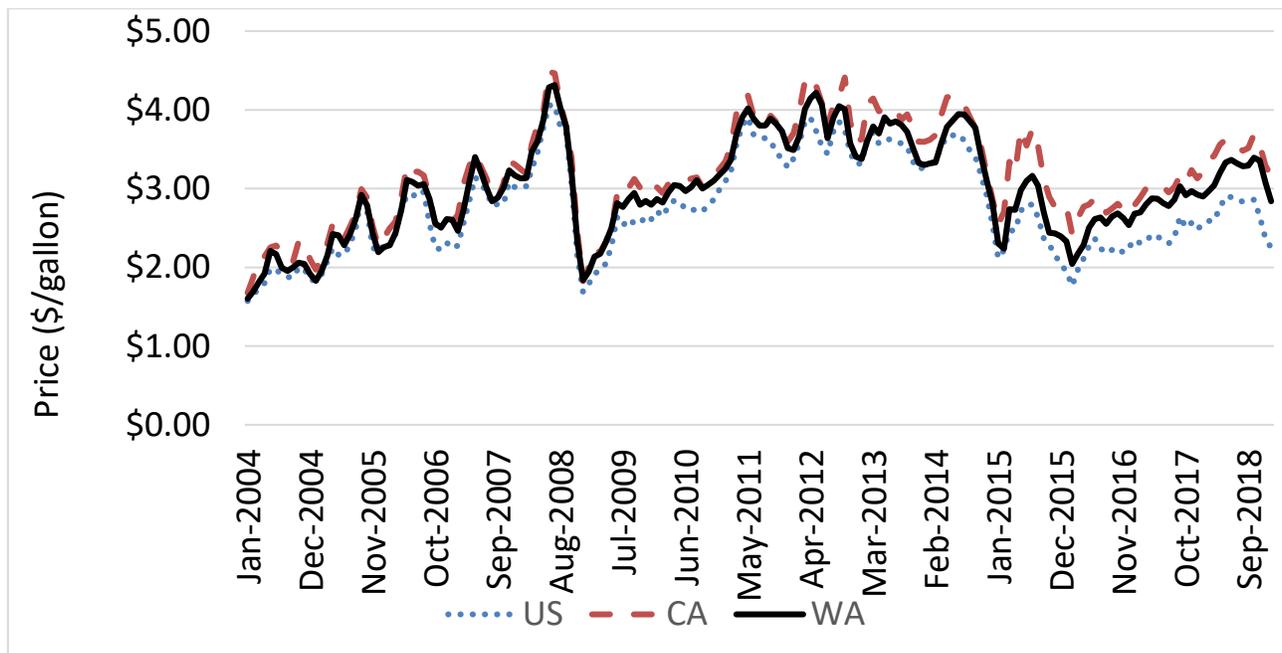
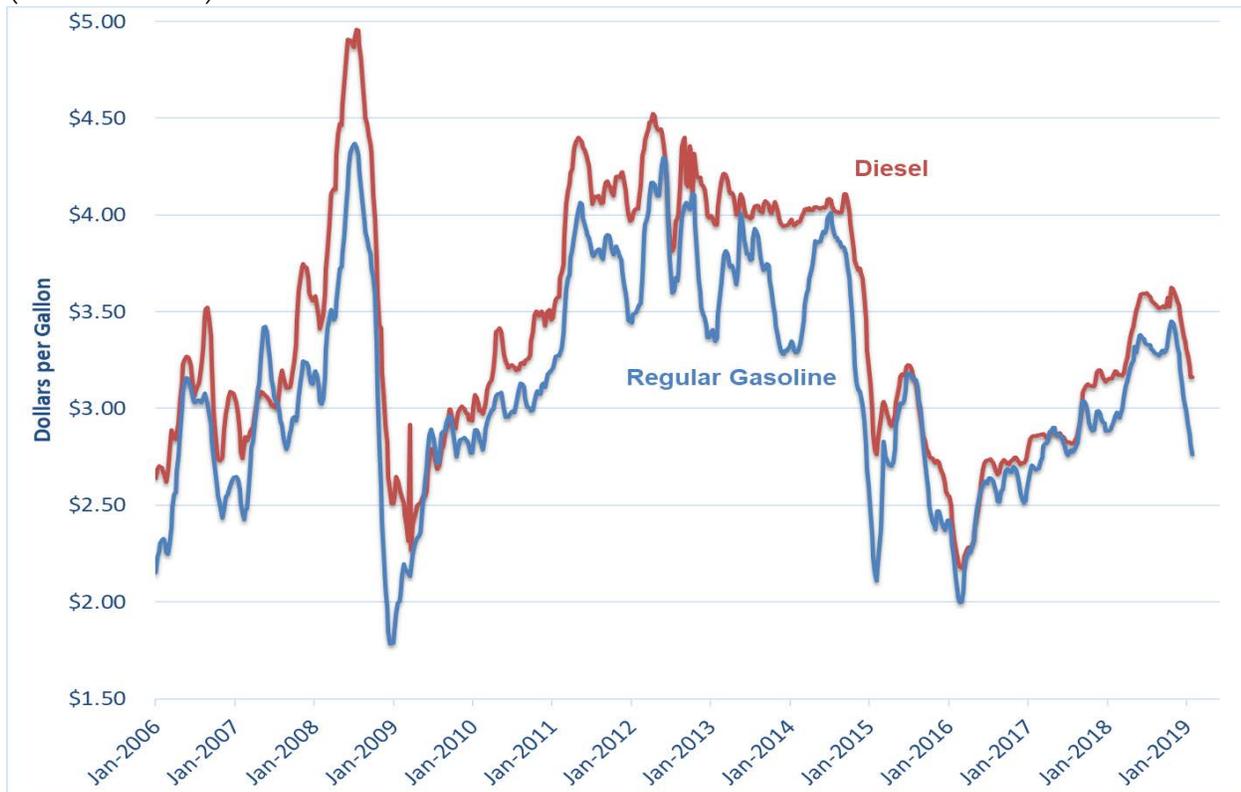


Figure 12: Washington Retail Regular Gasoline and Diesel Prices (Includes Tax)



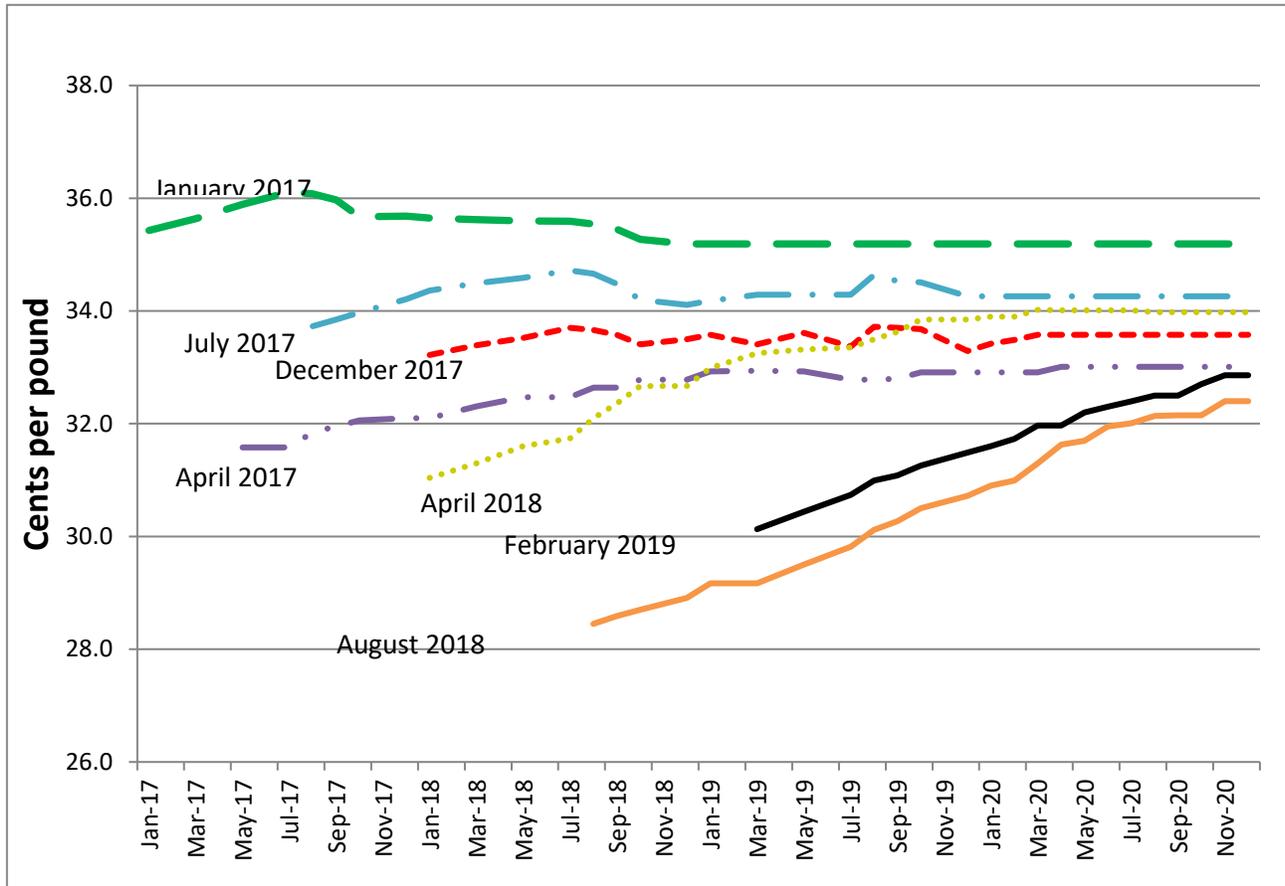
BIODIESEL PRICE PREMIUM TRENDS
Analysis by Lizbeth Martin-Mahar, Ph.D.

Soybean Oil Futures and Biodiesel Prices

Soybean Oil Futures

Biodiesel prices are dependent in a large part on the cost of the feedstock used in producing biodiesel. Since soybean oil is the predominant feedstock for biodiesel, an examination of the futures prices for soybean oil was completed. Figure 13 shows the latest futures for soybean oil for the past beginning in January 2017 through February 2019. In the past, futures have ranged from a low of 28.9 cents per pound for August 2018 future prices to 36 cents per pound projected in January 2017. Now in February 2019, the soybean oil future prices have increased a little to starting at about 30 cents and rising to nearly 32.9 cents by January 2021. These latest February 2019 soybean oil futures are higher than in August but lower than any other period in 2017 and 2018. The future increases of the current futures prices is steeper than in prior forecasts. Given the recent tariffs put on US soybeans from China in 2018, the current soybean oil future prices have fallen 10 percent since the beginning of the year for future in March 2019.

Figure 13: Futures Prices for Soybean-oil (January 2017 through February 2019)

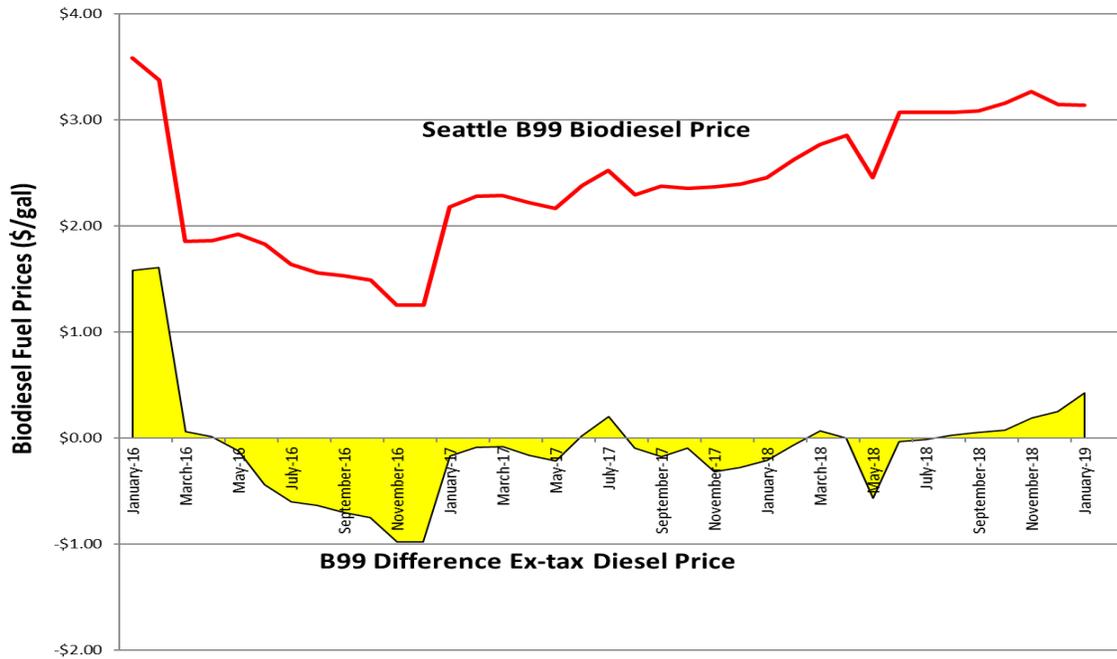


Biodiesel Prices: Comparison of Historical and Recent Prices

Recent Trends: Washington B99 Biodiesel Prices

Since January 2017, the average monthly B99 biodiesel price has been stable at around \$2.30 per gallon each month throughout calendar year 2017. In the first seven months of calendar year 2018, B99 prices have increased some from an average \$2.31 per gallon in CY 2017 to \$2.91 per gallon average for CY 2018. Recently since October 2018, the B99 price in Seattle has had very little change. In October the average price was \$3.16 per gallon. It increased slightly in November to \$3.26 per gallon but dropped down again in December to \$3.15 per gallon and it remained at nearly that price in January with an average price of \$3.13 per gallon. Figure 14 shows the B99 price and the price premium since January 2016. This chart reveals a negative trend through calendar year 2016. During calendar year 2017 and 2018, B99 biodiesel prices have risen for the most part except for a slight drop in May 2018. Now at the end of calendar year 2018 and beginning 2019, B99 prices have remained fairly stable at around \$3.10 per gallon. In recent months, the B99 price premium has grown a little because retail diesel prices fell at the end of calendar year 2018 and in January 2019.

Figure 14: Monthly B99 Biodiesel Prices since January 2016



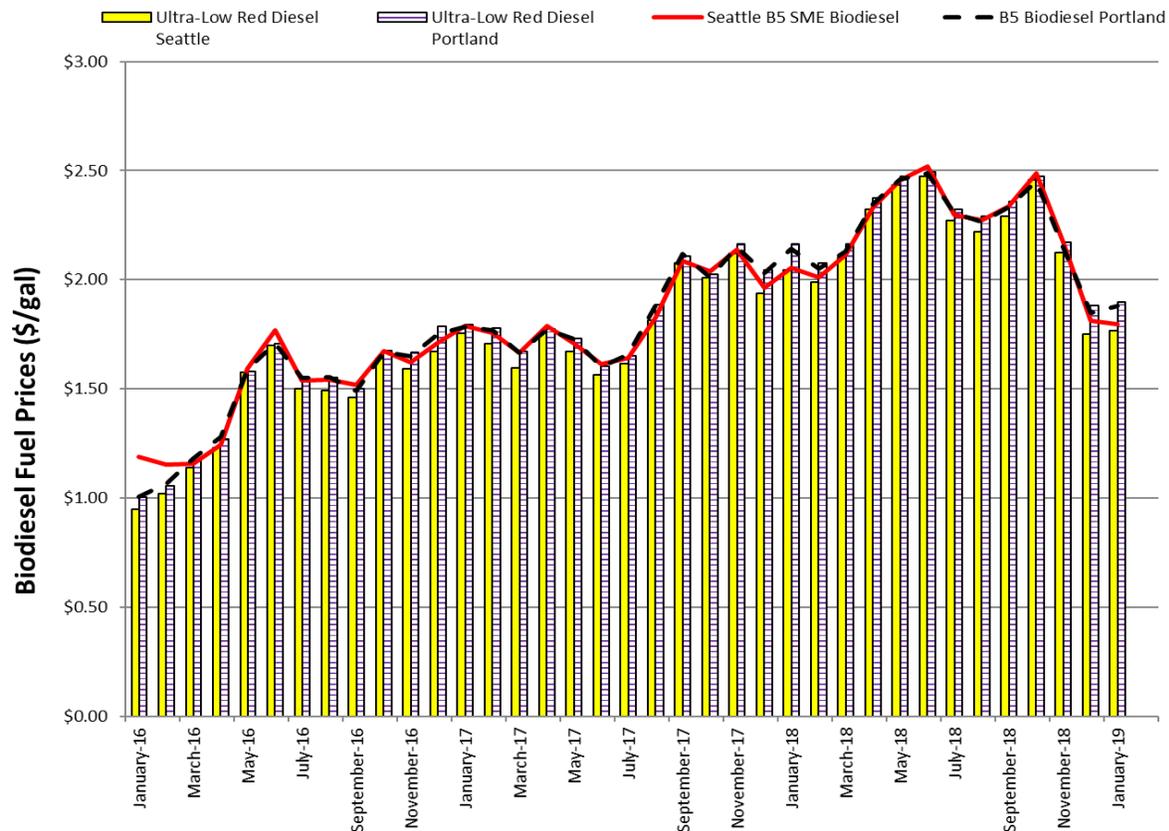
Source: B99, Seattle biodiesel price data - OPIS Fuel Price Survey.

Recent Trends: Seattle and Portland B5 Biodiesel Prices

In this Fuel and Vehicle Trends Report, we will be highlighting both Seattle and Portland B5 prices because the Washington State Ferries new contract for fuel purchases is based on Portland B5 prices. We are also comparing the B5 red dyed diesel price with red dyed diesel as well. Figure 15 reveals that B5 prices in Portland and Seattle are typically pretty close in price. In addition, the changes in the B5 biodiesel prices can also be seen in the changes in the red dyed diesel prices as well. In the first half of 2018, B5 prices and red dyed prices were rising in tandem in both Portland and Seattle. In July and August, B5 and red dyed diesel prices dropped about 20 cents for a couple months and then went back up to nearly \$2.50 per gallon by September 2018. Then prices started to fall for both B5 and red dyed diesel in both locations. Since November, B5 prices have been relative constant but Portland red dyed diesel prices have been consistently higher than Seattle red dyed diesel by more than 13 cents in December and January 2019.

Figure 16 compares recent B5 price trends in Portland and Seattle. B5 prices in Portland are slightly higher than Seattle B5 prices and the difference has grown to 4.4% by January 2019.

Figure 15: Seattle and Portland OPIS Red Dyed Diesel and B5 Biodiesel Prices: Since January 2016



Source: Seattle and Portland red dyed diesel and B5 biodiesel price data - OPIS Fuel Price Survey.

Figure 16: Seattle and Portland OPIS B5 Biodiesel Prices: October - January 2019

Monthly Average Price	B5 Prices		
	Portland Price (\$/gal)	Seattle Price (\$/gal)	% Difference Portland vs Seattle Prices
October 2017	\$2.01	\$2.04	-1.5%
October 2018	\$2.45	\$2.49	-1.6%
November 2017	\$2.15	\$2.14	0.5%
November 2018	\$2.15	\$2.17	-0.9%
December 2017	\$2.03	\$1.96	3.6%
December 2018	\$1.85	\$1.81	2.2%
January 2018	\$2.14	\$2.06	3.9%
January 2019	\$1.88	\$1.80	4.4%

Source: B5, Seattle and Portland biodiesel price data - OPIS Fuel Price Survey.

FUEL PRICES AND CRUDE OIL PRICE TRENDS COMPARED TO RECENT FORECASTS: US crude oil prices, Washington retail prices of gasoline and diesel
Analysis by Lizbeth Martin-Mahar, Ph.D.

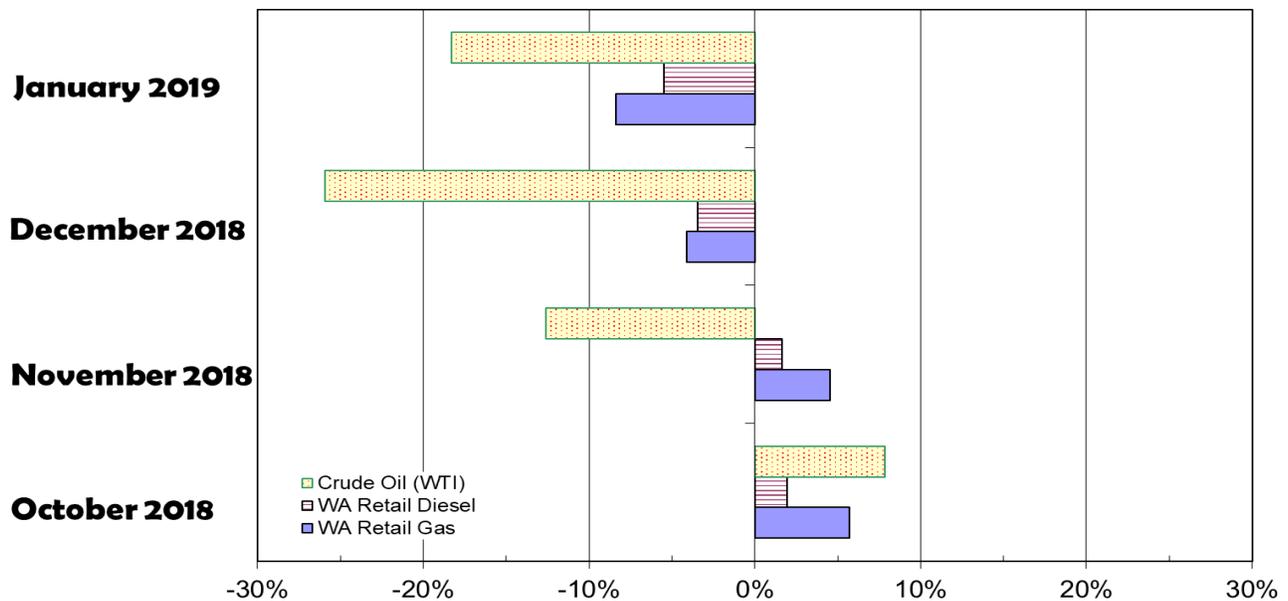
In this edition of the *Fuel and Vehicle Trends Report*, we have seen West Texas Intermediate (WTI) crude oil prices fall well below our last projections in November 2018. October was the only exception for WTI crude oil prices. In October 2018, WTI crude oil price averaged \$71.4 per barrel and the price dropped quickly in the next three months. Then in November, WTI crude oil prices dropped more than \$13.5 per barrel to \$57.9 per barrel. This decrease continued in December with the average crude oil price of \$49.1 per barrel. Recently in January 2019, the crude oil price remained nearly the same month over month at \$50.7 per barrel. When comparing these actual prices to our November forecast, only in October did the WTI actual prices come in above the fourth quarter 2018 forecast by 7.8%. Then in November, the average monthly crude oil price were 12.6% below the fourth quarter forecast. In December, it was even worse at coming in 25.9% below forecast. Finally, in January, the WTI monthly average price was 18.3% below the first quarter of 2019 average month price in the November forecast. See Figure 13 for more detail.

Consistent with the recent trend in WTI crude oil prices being well below the latest forecast for two of the four months, Washington retail gasoline prices also have come in below the fourth quarter 2018 and first quarter 2019 projections in December and January 2019. The difference was not as dramatic as crude oil. Gasoline price projections in the November forecast were \$3.21 and \$3.10 per gallon for the fourth quarter 2018 and first quarter of 2019. In the month of October, retail gas prices averaged \$3.39 per gallon, which was only 5.7 percent above the November's fourth quarter 2018 projection. In November 2018, retail gas prices came in at \$3.36 per gallon which was also above the forecast by 4.5 percent. In December, retail gas prices came in lower than the forecast average at \$3.08 per gallon, which was down by 4.1% below the forecast. Finally, in January 2019, retail gas prices came in even lower than in December so the difference from the forecast was larger, -8.4%. In general in the last two months, retail gasoline prices have come in much below the last forecast.

The recent trends for retail diesel prices were similar to retail gas price trends. In the month of October, retail diesel prices averaged \$3.58 per gallon, which was close to forecast by 1.9 percent above the November's fourth quarter 2018 projection. In November 2018, retail diesel prices came in nearly the same as in October at \$3.57 per gallon which was also minimally above the forecast by 1.7 percent. In December, retail diesel prices also fell a lot to \$3.39 per gallon which was 3.4% below the forecast average. Finally, in January 2019, retail diesel prices came in even lower than in December at \$3.20 per gallon so the difference from the forecast was larger, -5.5%.

In the last four months (October through January), we have seen the difference between retail gas and diesel prices grow from as little as \$0.19 per gallon in October to \$0.36 per gallon in January. Retail diesel prices continue to show a significant price premium per gallon over gasoline prices. This trend is the result of gasoline prices falling more than diesel prices over this time period.

Figure 17: Percent Change in October - January 2019 Average Fuel Prices Compared to the November 2018 Price Forecast



Source: Washington Transportation Revenue Forecast Council November 2018 Forecast, EIA and AAA weekly fuel prices

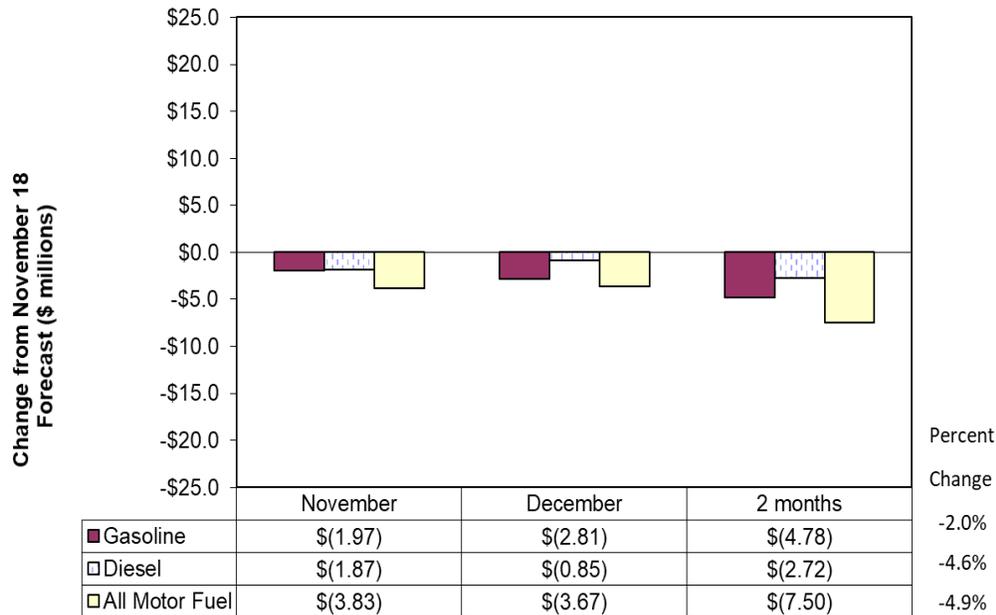
WA MOTOR VEHICLE FUEL TAX COLLECTION TRENDS COMPARED TO RECENT FORECASTS: Gasoline and Diesel Tax Collections

Analysis by Lizbeth Martin-Mahar, Ph.D.

Since the adoption of the November 2018 forecast, two months of fuel tax collections have been reported. The November and December collection report from the Department of Licensing have shown less revenue than forecasted in both months and for both fuel types. In November, gasoline tax collections came in at \$123.4 million which was down from projections by nearly \$2 million. Diesel tax collections came in at \$30.7 million which was also down \$1.9 million from the November forecast. For both fuel types, November collections are down from the November forecast by \$3.8 million.

As Figure 18 reveals, in December, both gasoline and diesel tax collections also came in below projections with a total of \$141.8 million, reflecting a decline of \$3.7 million below the November forecast. Both gasoline and diesel tax collections came in below forecast by 4.9%. Gasoline actual tax collections reported by DOL was only \$106.78 million versus a forecast of \$145.5 million. This December gasoline tax collection variance was \$2.8 million from the forecast. Special fuel tax collections in December came in at \$25.5 million or \$0.85 million below the forecast. For both months, gasoline tax collections came in below forecasts by \$4.8 million or 2%. Also diesel tax collections came in below projections by \$2.7 million or 4.6% for both months.

Figure 18: Motor Vehicle Fuel Tax Collections in November and December 2018 Compared to the November 2018 Revenue Forecast



Source: Washington Transportation Revenue Forecast Council November 2018 Forecast and State Treasurer’s Office monthly fuel reports

VEHICLE TRENDS

Analysis by David Ding, Ph.D.

Vehicle Registrations and Revenue

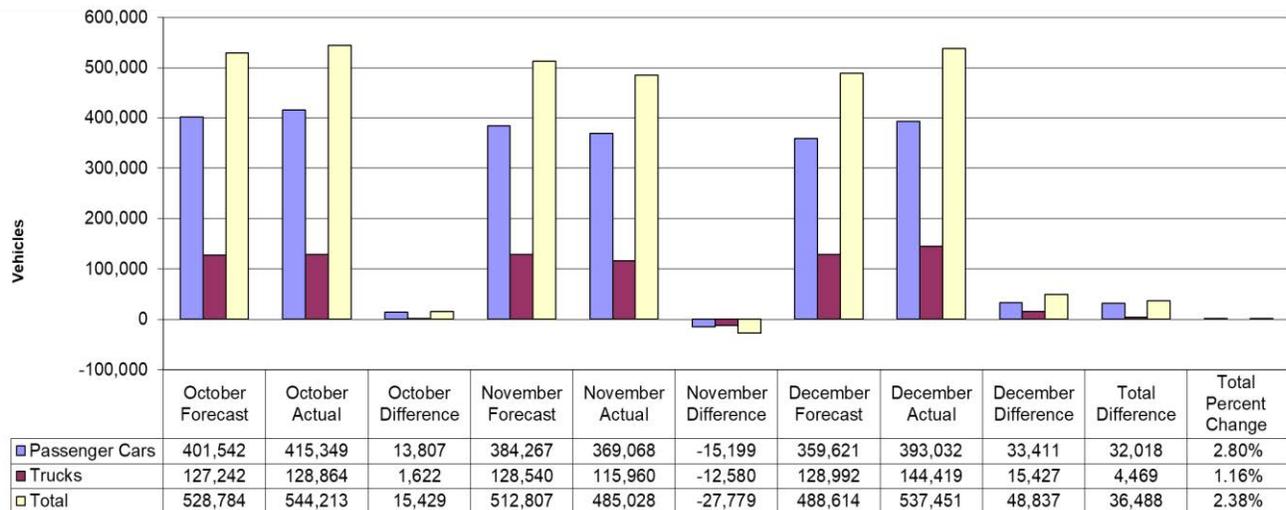
For the three months of licensing registrations and revenue data we have received since the November forecast, vehicle registrations were up for October and December, but down for November see Figure 19. Passenger car registrations came in at 415,349, 369,068 and 393,032 for October, November and December respectively. These actuals were 3.4 percent, -4.0 percent and 9.3 percent different from projections in the November forecast for those months. The higher actual registrations in December of 33,411 registraton or 9.3 percent above forecast looks odd. It may be due to collecting some late registrations in November or picking up early registrations in January. For all three months combined, passenger car registrations were up 2.8 percent over the November forecast, which showed the continued growth in passenger car registrations.

Truck registrations have a similar pattern to passenger cars. The truck registrations were reported as 128,864, 115,960 and 144,419 vehicles for October through December respectively. These latest actual registrations were above the last forecast by 1.3 percent and 12 percent in

October and December, but down 9.8 percent for November. Just like car registrations, the December truck registration actual being 12 percent above the November projection may be due to collecting late registrations in November or picking up early registrations in January as well. For all three months combined, truck registrations were up 1.16 percent over the November forecast.

For both passenger cars and trucks combined for all three month, vehicle registrations came in 36,488 vehicles above the November forecast. This was 2.38 percent above the forecast.

Figure 19: Vehicle registrations, October through December 2018, Forecast vs. Actual.



Source: Washington Transportation Revenue Forecast Council November 2018 Forecast and Department of Licensing Reports 13, October – December 2018.

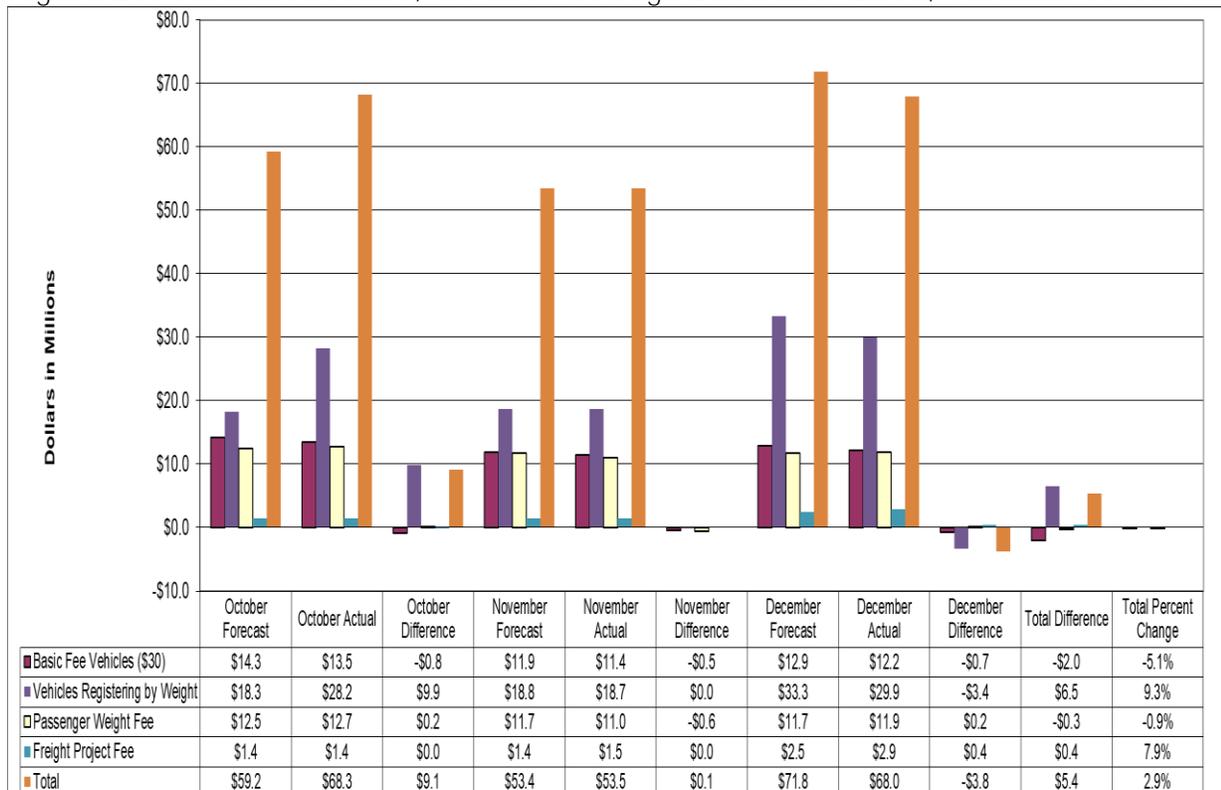
We also have three months of revenue to discuss in this report (Figure 20). For \$30 basic license fees, the revenue came in at \$13.5 million, \$0.8 million shy of the \$14.3 million forecasted. In November, the \$30 license fee revenue came in lower than the forecast by \$0.5 million. In December, the revenue collections were also below the forecast by \$0.7 million. For all three months combined, the passenger vehicle \$30 fee revenue came in lower for \$2.0 million or -5.1 percent difference from the last forecast. The percentage decrease of combined revenue for all three months was different from the registrations percentage increase for that same period. We don't know why this have happened and have addressed this issue with DOL regarding why the trend of the revenue is not in line with the trend of the registration.

In contrast to the \$30 basic license fee revenue, the revenue for truck weight fees came in higher than expected for October by \$9.9 million, which was 54.3 percent more than the last forecast. After further examination of the revenue data, it was discovered that DOL did a correcting JV in that month that added \$10.2 million from the suspense account to truck weight fees account. In November, the combined license fee truck revenue collection of \$18.72 million was almost right on the target with the forecasted revenue of \$18.75 million. In December, the combined truck weight fee revenue came in at \$29.9 million which was \$3.4 million less than the last forecast of \$33.3 million. For all three months combined, the truck weight fees came in at \$6.5 million or 9.3

percent above the last projection. If one ignored the suspense account transfer of \$10.2 million correcting for past revenue errors, the actual three months revenue for truck weight fees would be \$3.7 million or 5.2 percent less than the November forecast. This result contradicts the 1.16 percent growth in truck registrations.

Figure 20 also reveals that the revenue from the passenger weight fee came in a little bit lower than forecast and the freight project fee collection is above forecast for those three months. The passenger weight fee in October came in at \$12.7 million which was \$0.2 million above the forecast. In November, the passenger weight fee came in at \$11 million, which was \$0.6 million shy than the forecast. In December, the revenue was above the forecast by \$0.2 million. For all months combined, the passenger weight fee was \$0.3 million or 0.9 percent below the forecast. The freight project fee in October came in at \$1.4 million which was right on target with the forecast. In November, the actual freight project fee revenue was again right on target with projection as \$1.4 million. In December, the freight project fee revenue came in \$2.9 million, \$0.4 million higher than the projection. Altogether, the freight project fee is \$0.4 million or 7.9 percent more than the last forecast for those months. Freight project fee revenue growth coming in higher than truck registration growth could be the result of heavier trucks registering in those months than projected.

Figure 20: Vehicle revenue, October through December 2018, Forecast vs. Actual.



Source: Washington Transportation Revenue Forecast Council November 2018 Forecast and Department of Licensing ARFS Revenue Reports, October – December 2018.

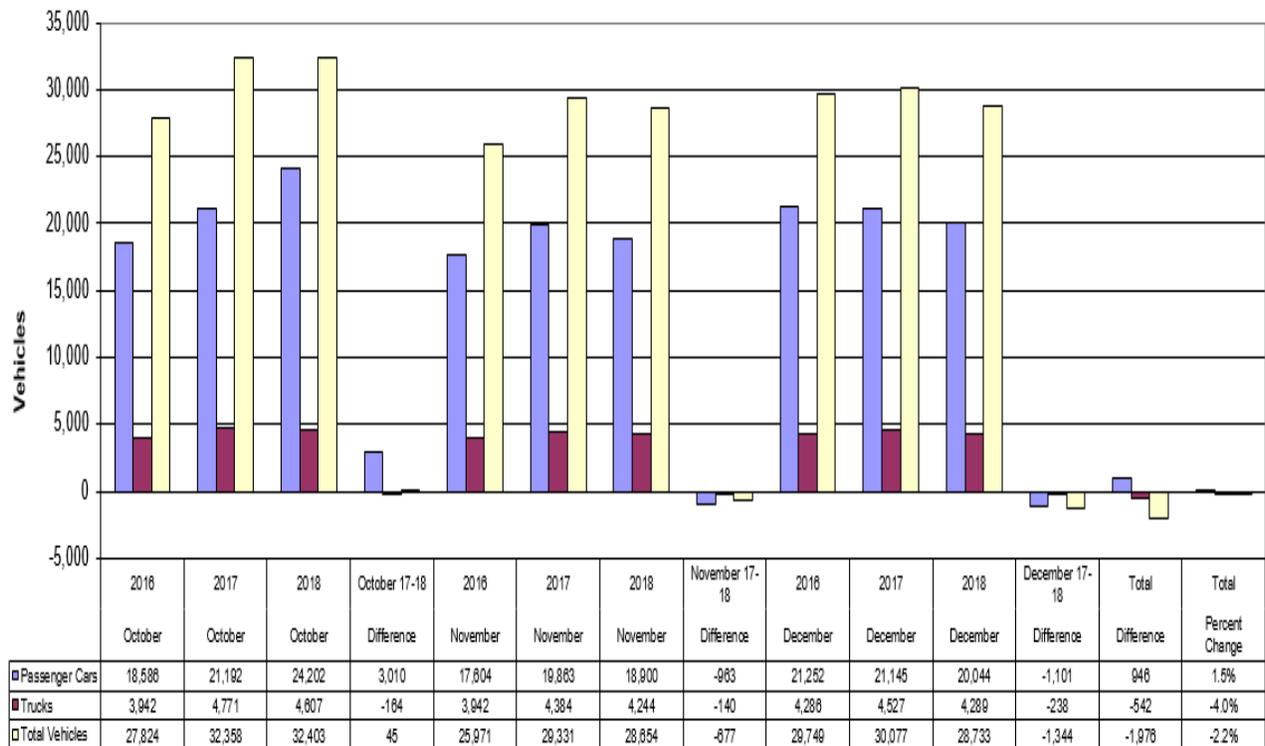
Finally, total License, Permit, and Fee (LPF) revenues were 2.9 percent or \$5.4 million ahead of the forecast for all the three months combined. We forecasted \$59.2 million for the month of October, but received \$68.3 million instead, with the truck registration fees being the largest increase due to correcting JV. For November, total LPF revenue was forecasted at \$53.4 million, while collections came in at \$53.5 million, almost right with November projection. In December, total LPF revenue projections were \$71.8 million, but actual collections were lower at \$68.0 million.

New Car and Truck Registrations from Sales

In this report, it covers new car registrations for October, November and December of 2018, see Figure 21. In October 2018, new car registrations were 3,010 vehicles more than the registrations in the same period a year ago. In November 2018, new car registrations were 963 vehicles below registrations of a year ago. In December, new car registration went down by 1,101 vehicles compared with December 2017. For three months together, total car registrations were up by 946 vehicles, which was 1.5 percent over the previous year.

New truck registrations in Washington State showed decrease during the month of October 2018. The registrations went down by 164 trucks compared with the previous year monthly total, which represents a 3.4 percent decrease over last year. In November, the new truck registrations decreased by 140 trucks from actuals in November 2017. The decreasing trend in new truck registrations continued in December and the new truck registrations dropped by 238 vehicles that month compared with a year ago. For the three months combined, the new truck registrations dropped by 542 vehicles, which is 4.0 percent decrease from the previous year. This result indicates that the new truck registrations are decreasing year over year and may reflect the decreased demand Washington residents have for new trucks. Overall, total new vehicle registrations decreased by 1,976 vehicles or 2.2 percent, year over year.

Figure 21: New vehicle registrations Comparisons



Source: Department of Licensing Report 14 for various months and years.

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