



The Fuel and Vehicle Trends Report  
January 13, 2017

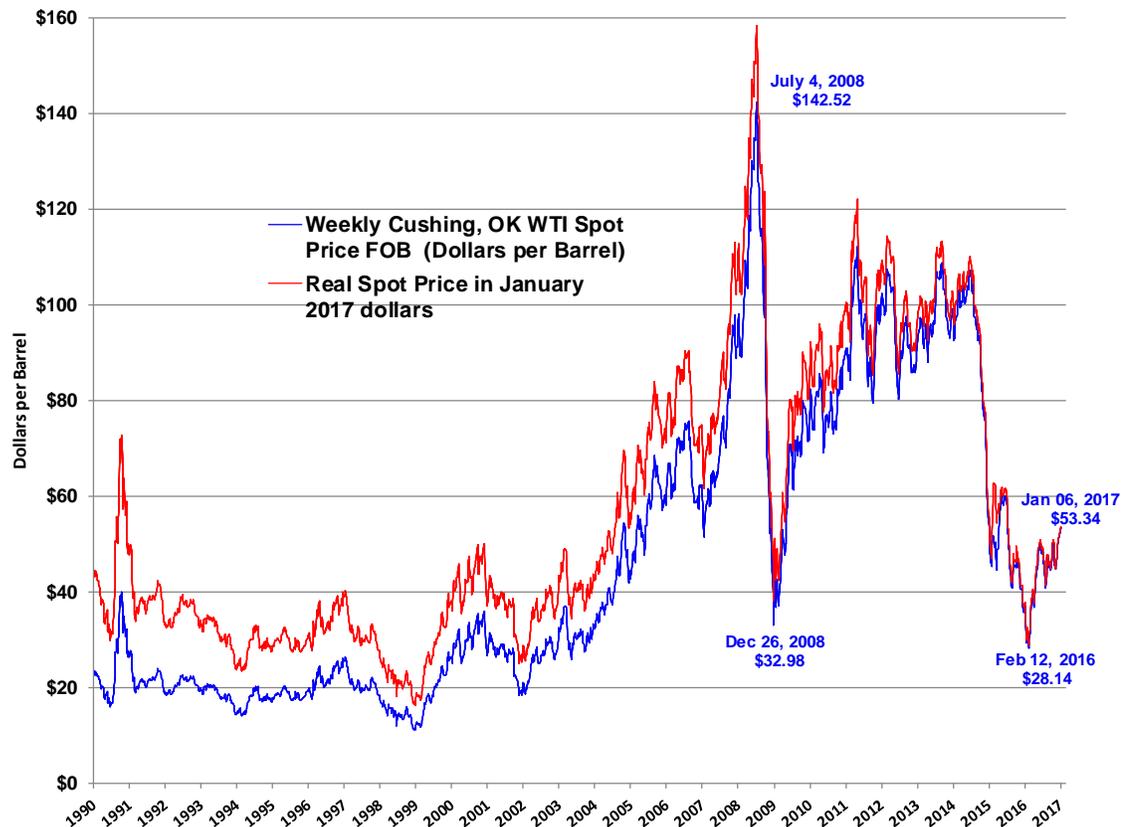
This report is a summary of the latest fuel prices and other oil industry key statistics. In addition, this report provides the latest trends in vehicle registrations and transportation tax collections for the state of Washington. It also summarizes articles appearing in popular, business, and technical 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 Brian L. Calkins, M.S. Agricultural Economics, Lizbeth Martin-Mahar, Ph. D., and Thomas L. R. Smith, Ph. D., Economic Analysis Section, Budget and Financial Analysis Office of the Washington State Department of Transportation. Contact the editors by email at [brian.calkins@wsdot.wa.gov](mailto:brian.calkins@wsdot.wa.gov) or [martinli@wsdot.wa.gov](mailto:martinli@wsdot.wa.gov) or [smithtm@wsdot.wa.gov](mailto:smithtm@wsdot.wa.gov) by telephone at (360) 705-7991 or (360) 705-7942 or (360) 705-7941.

**TABLE OF CONTENTS**

**FUEL PRICE TRENDS: CRUDE, GASOLINE AND DIESEL MARKETS.....1**  
**WASHINGTON RETAIL GAS AND DIESEL PRICES.....5**  
**BIODIESEL FUTURES AND PRICE TRENDS.....8**  
**FUEL PRICE TRENDS COMPARED TO FORECAST.....10**  
**MOTOR VEHICLE FUEL TAX COLLECTION TRENDS COMPARED TO FORECAST .....12**  
**VEHICLE TRENDS .....14**  
**SUBSCRIBING TO THE FUEL AND VEHICLE TRENDS REPORT.....16**  
**ARTICLES REFERENCED.....16**

**FUEL PRICE TRENDS: Crude, Gasoline and Diesel Markets**  
**Analysis by Brian L. Calkins, M.S.**

Figure 1: Weekly Cushing, Oklahoma WTI Spot Price FOB (Dollars Per Barrel) January 1990 to January 2017.



Source: Energy Information Administration (EIA), 2017a

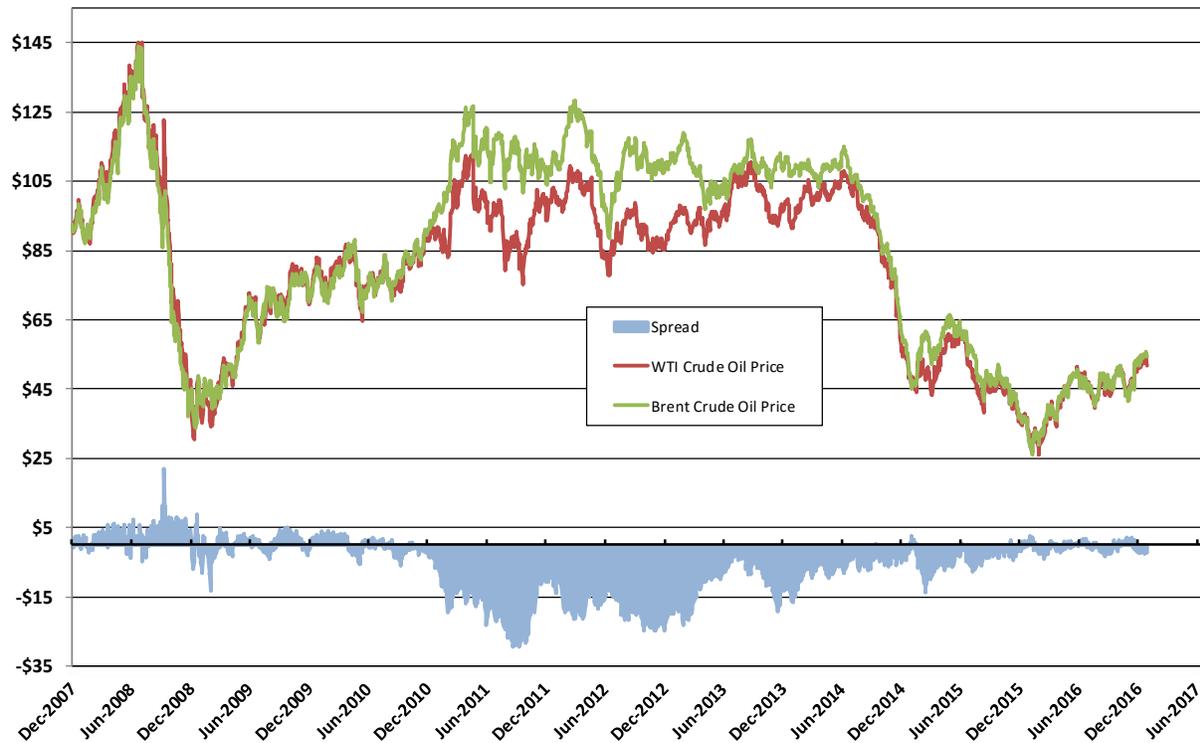
In the last *Trends Report*, WTI crude averaged \$44.72 per barrel for August. Since then, WTI crude oil prices have increase a little in September and October to \$45.3 and \$50 per barrel respectively. In November, WTI crude oil prices averaged \$45.6 per barrel. Recently in December 2016, West Texas Intermediate (WTI) crude oil price rose to an average price of \$51.97 per barrel. A year ago in December 2015, WTI prices were lower at \$37.19 per barrel.

EIA's January 2017 Short-term Energy Outlook (STEO) reported an average WTI price of \$43.33 per barrel for calendar year (CY) 2016 and forecasts \$52.50 per barrel for CY 2017 and \$55.18 per barrel in CY 2018 (EIA, 2017b), compared to \$51.58 per barrel for CY 2017 from crude oil prices projected in the August 2016. IHS Global Insight's January 2017 forecast for WTI crude oil price is \$53.20 per barrel in 2017 and \$55.64 per barrel in 2018. Consensus Economics projects WTI prices of \$52.97 a barrel in 2017 and \$57.68 in 2018 (Consensus Economics Inc., December 2016).

EIA projects Brent crude oil price to average \$53.50 per barrel for 2017 and \$56.17 per barrel in 2018. The daily WTI-Brent crude oil spot price difference increased by \$0.20 per barrel from \$1.12 per barrel in August 2016 to \$1.32 per barrel in December 2016 (Figure 2). The WTI price discount to the Brent crude oil price averaged \$0.40 per barrel in 2016 and is projected to increase to \$1.00 per barrel in both calendar years 2017 and 2018. Exports of crude oil out of the US to world markets is the primary reason why there is very little price differential between WTI and Brent crude oil prices.

EIA reports that U.S. oil production averaged 9.4 million barrels per day (b/d) in 2015 and declined to an average of 8.9 million b/d in calendar year 2016. Production is forecasted to increase to an average of 9.0 million b/d in 2017 and 9.3 million b/d in 2018. EIA reports that the increases in production primarily reflect an uptake in federal offshore Gulf of Mexico production.

Figure 2: WTI - Brent Crude Oil Spot Price Spreads from January 2008 to January 9, 2017.



Source: EIA 2017a Daily WTI and Brent crude oil spot prices

## Inventories

This January's *Trends Report* uses newly calculated five year averages for inventories to compare to current inventory levels. Weekly inventories for crude oil, gasoline, and distillate are now updated to the five-year span from 2012 to 2016. EIA published the first data point for 2017 for the week ending January 6. EIA's *Weekly Petroleum Status Report* shows U.S. crude oil inventories, excluding Strategic Petroleum Reserve (SPR) stocks, at 483.109 million barrels for the week ending January 6, 2017 (Figure 3). This storage level is 129.4 million barrels or 37 percent higher than the 5-year (2012-2016) historical average of 354 million barrels for this week and even surpasses record inventories from 2016 by 32 million barrels for this week.

Figure 3: Comparison of Crude Oil Weekly Inventories from January 2012 to January 2017.

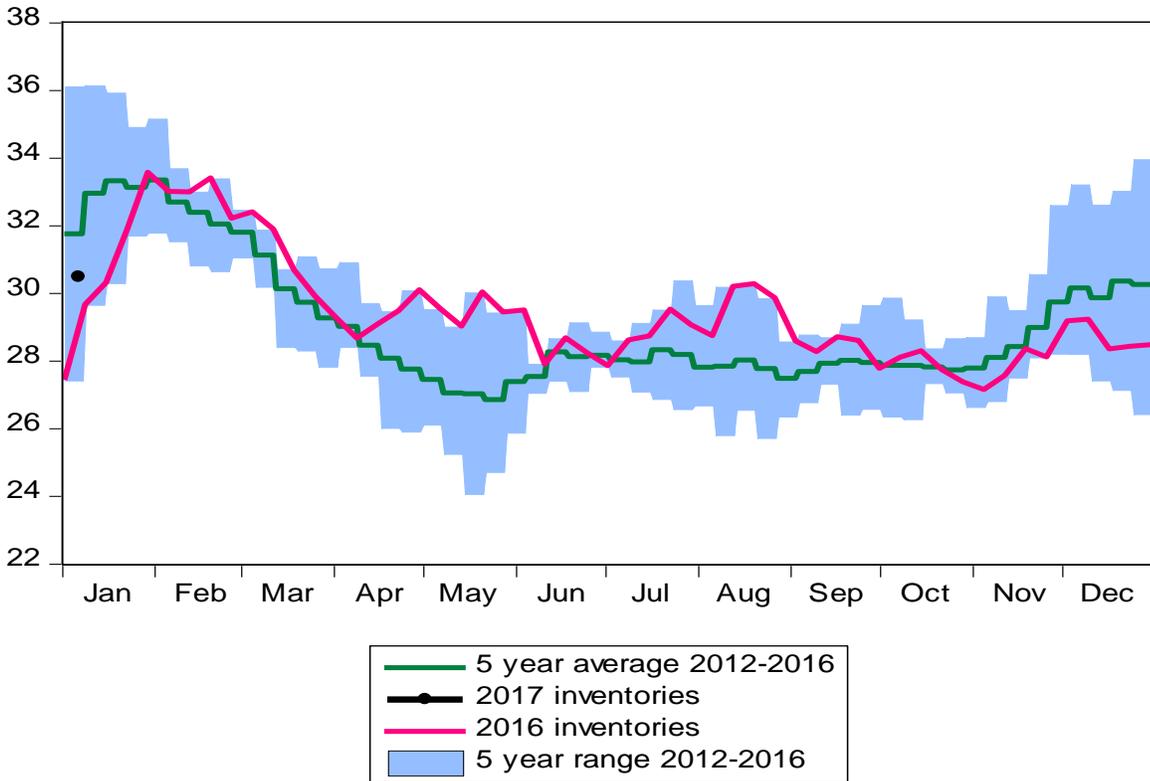


Figure 4: Comparison of Gasoline Weekly Inventories (West Coast PADD5) from January 2011 to January 2017

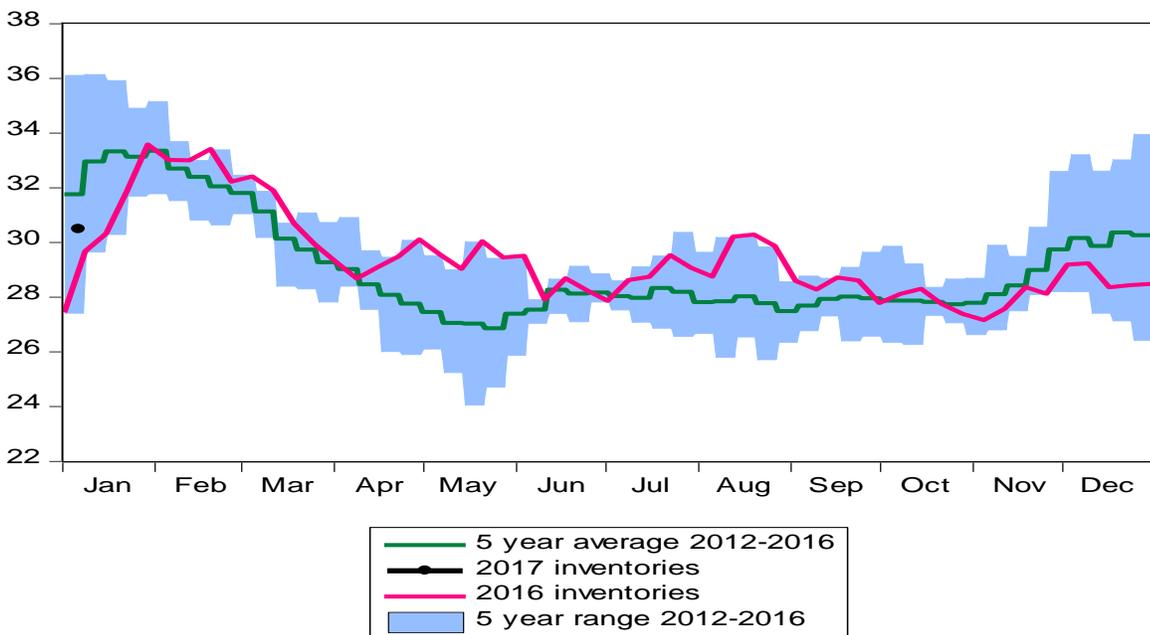
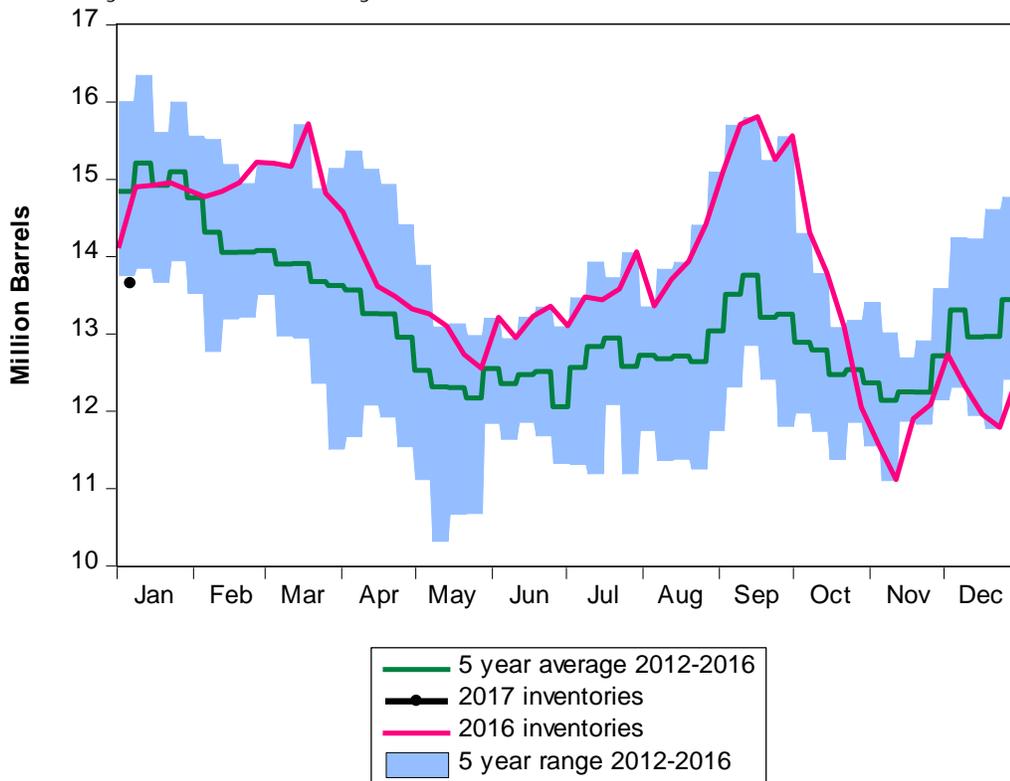


Figure 4 shows gasoline inventories increasing from 28.49 million b/d in the last week of 2016, to 30.49 million barrels in the first week of 2017 within the West Coast Petroleum Administration for Defense District (PADD5). This first inventory volume report for 2017 is also 11.1 percent above the 27.4 million b/d for the first week of 2016 but it is still below the 5-year average of 31.8 b/d. For comparison, U.S. total gasoline inventories for the week ending January 6, 2017 are tracking within 1 million b/d for the same week in 2016, the year that had the highest inventories in the last 5 years.

Figure 5 shows the weekly distillate inventories for PADD5 (West Coast) for January 6, 2017 at 9.8 percent lower than the previous week ending December 30, 2016. Figure 5 also shows distillate inventories were lower than average for most of November and December 2016.

Figure 5: Comparison of Monthly Distillate Inventories (West Coast PADD5) from January 2011 to January 2017



### Washington Retail Gasoline and Diesel Prices

Since the last *Trends Report*, Washington’s monthly average gasoline prices have remained between \$2.62 and \$2.68 per gallon for September through November. In December 2016, the weekly average for the month was \$2.54 per gallon. Washington’s weekly regular gasoline price dipped to a low of \$2.51 per gallon on December 12, 2016, the lowest price since May 9, 2016, and

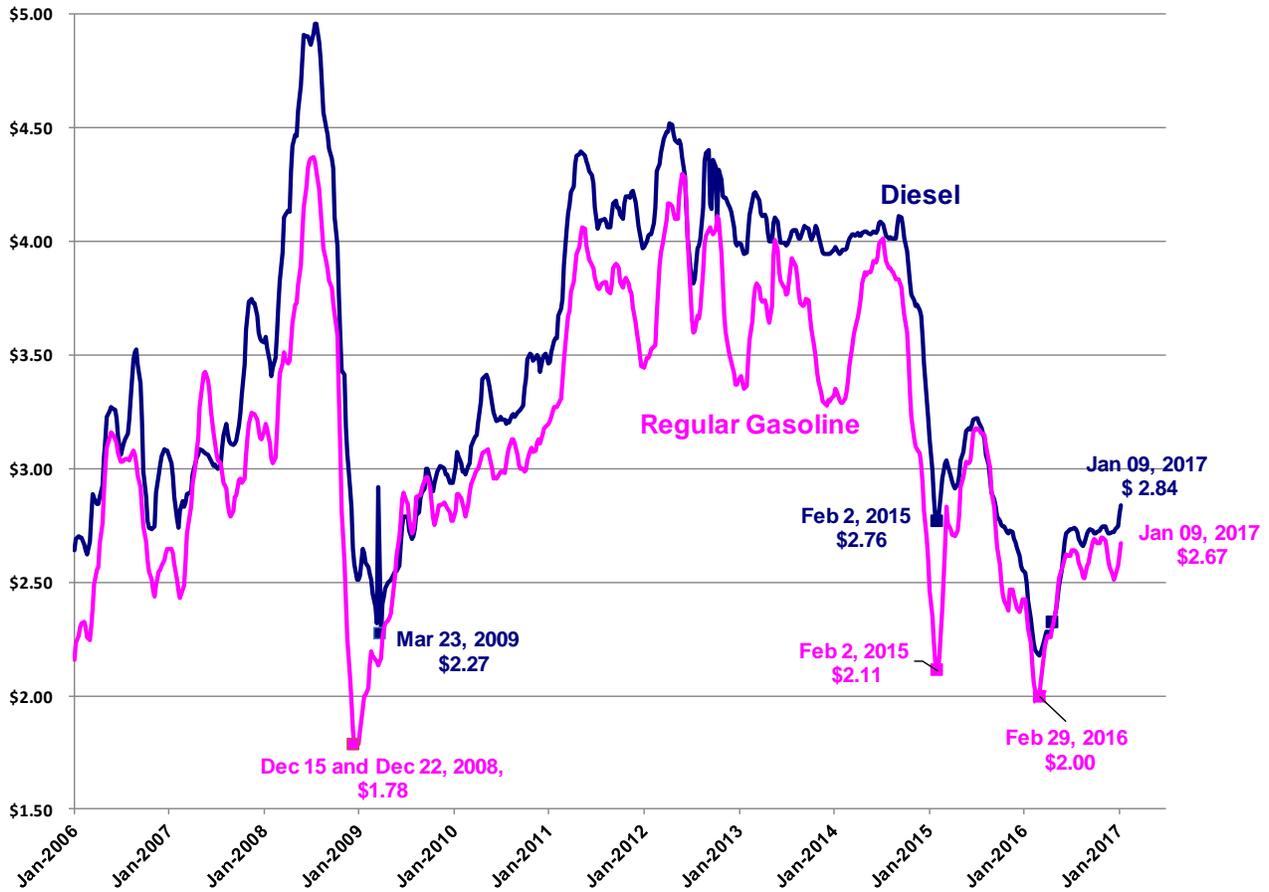
then steadily increased to \$2.67 per gallon on January 9, 2017. (Figure 6). (EIA, 2017d). The year-to-year change in the Washington price for regular gasoline averaged \$2.39 per gallon in December 2015 and \$2.64 per gallon in December 2016. In 2016 national regular gasoline weekly prices peaked at \$2.40 per gallon on June 13, 2016 and recorded a low of \$1.72 per gallon on February 15, 2016. The regional price variation showed the West Coast (PADD 5) again having the highest price in all of 2016 at \$2.65 per gallon of regular gasoline compared to the lowest average price in Gulf Coast (PADD 3) at \$2.02 per gallon. The West Coast (PADD5) less California price came in at \$2.40 per gallon, 25 cents lower than the average price of all PADD5 states (EIA, 2017d). EIA's January 2017 STEO forecasts a national average retail regular gasoline price of \$2.38 per gallon in calendar year 2017 and \$2.41 per gallon in calendar year 2018 (EIA, 2017b).

One year ago in December 2015 the price for regular gasoline in California averaged \$2.72 per gallon. California's regular gasoline price for December 2016 was \$2.68 per gallon, 14 cents per gallon higher than Washington's \$2.54 per gallon for December 2016.

Since the last *Trends Report*, Washington's retail diesel prices have been remarkably flat at \$2.73 per gallon for September through December 2016. Washington's retail diesel price average of \$2.73 per gallon in December was \$0.72 lower than the December 2015 price of \$3.45 per gallon (Figure 6). Nationally, December 2016's retail diesel price averaged \$2.51 per gallon, compared to \$2.31 per gallon in December 2015, a \$0.20 increase. EIA forecasts a national average retail diesel price of \$2.73 per gallon for calendar year 2017 and \$2.84 per gallon for calendar year 2018 (EIA, 2017b).

California's diesel price increased \$0.21 per gallon to \$2.85 per gallon in December 2016 from December 2015's \$2.64 per gallon. Washington's December 2016 diesel price was \$0.12 lower at \$2.73 per gallon than California's price for the same month.

Figure 6: Washington Retail *Regular* Gasoline and Diesel Prices (\$ per gallon): January 2, 2006 to January 9, 2017.



Source: AAA Fuel Gauge Report for Washington Retail Diesel Prices and EIA 2017d Weekly Retail Gasoline Prices

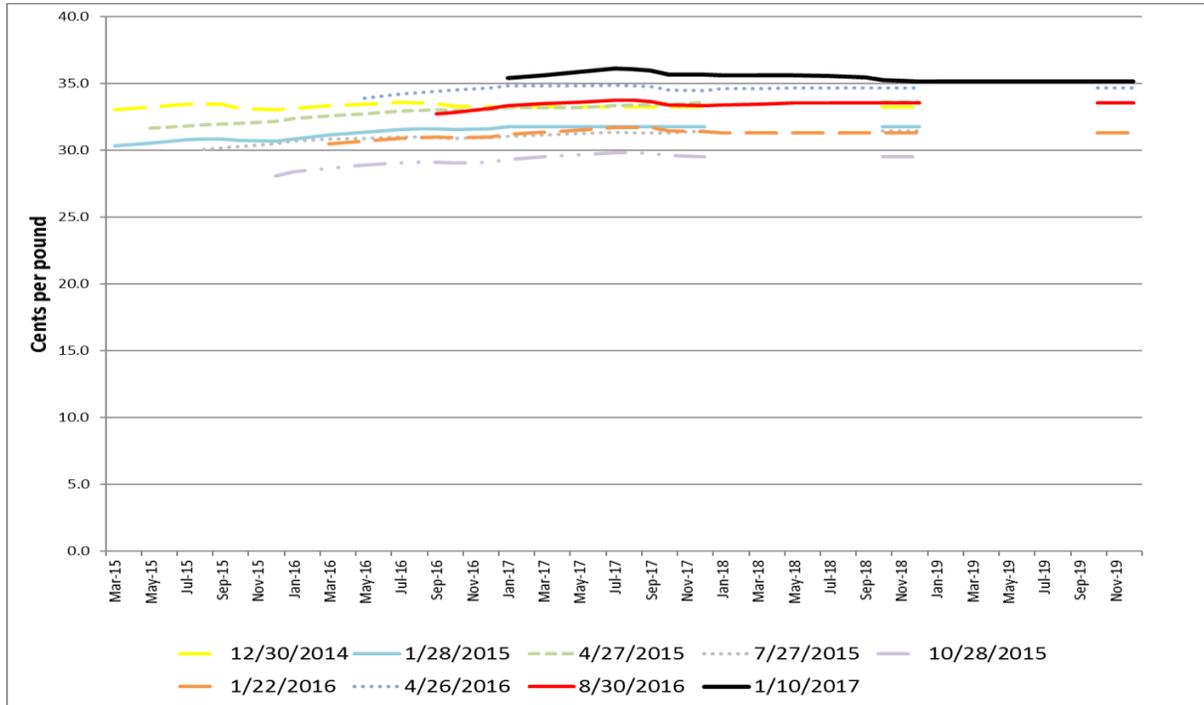
**BIODIESEL PRICE PREMIUM TRENDS**  
**Analysis by Lizbeth Martin-Mahar, Ph.D.**

**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, the futures for soybean oil have been examined in past *Fuel and Vehicle Trends Reports*. Figure 7 shows the latest futures for soybean oil for the past 2 years beginning in December 2014 through January 2017. Futures have ranged from 28 cents per pound in October 2015 to 36 cents per pound recently projected in January 2017 for July 2017. The January 2017 soybean futures represent the highest futures since we started tracking soybean futures four years ago. January 2017 futures start at 35 cents per pound for soybean oil. Over time, the latest futures are not anticipated to rise much at all to 36 cents per pound by July 2017 and then it drops back to 35 cents per pound and stays at that price until December 2019. Figure 7 reveals that the latest futures trend line is higher than prior futures prices.

Figure 7: Futures Prices for Soybean-oil (December 2014 through January 2017)



*Biodiesel Prices: Comparison of Historical and Recent Prices*Recent Trends: Washington B100 Biodiesel Prices

In January 2016, B100 biodiesel price started at \$5.12 per gallon. Since then, B100 prices in Tacoma have fallen 38 percent throughout 2016. The B100 price was \$3.19 per gallon by December. This December 2016 B100 price was not the lowest monthly average price in calendar year 2016. The monthly average B100 price in September was \$2.99 per gallon which was the lowest price in 2016 and even since January 2009 when we first started tracking B100. In the past B100 biodiesel prices have been significantly higher than regular diesel prices, but by December the B100 price premium from regular diesel was only \$1 per gallon. Even though B100 biodiesel prices have fallen recently, the decline has not been as significant as the B99 biodiesel prices.

Recent Trends: Washington B99 Biodiesel Prices

In January 2016, the average monthly Tacoma B99 price was \$3.58 per gallon. Like B100, B99 prices have been falling over the past year. By December 2016, B99 biodiesel prices had fallen to a new low price of \$1.255 per gallon. That low price was seen in both November and December 2016. This is the lowest price it has ever been since we started tracking B99 biodiesel prices in September 2011.

As we reported in the last edition of the *Fuel and Vehicle Trends Report*, the recent decline in Tacoma B99 prices has fallen so far that is now below regular retail diesel prices and B5 biodiesel prices. As a result, the B99 price premium is no longer a premium but a discount like B5 biodiesel prices. In November and December, the B99 price discount was \$1 per gallon or 45% below diesel prices which is larger than the B5 biodiesel discount. Given the sharp decline in B99 prices, the B99 prices and discounts in the late fall and winter months of 2016 are now significantly less than last year's prices and premium level. The B99 prices in October December 2016 are more than \$2.5 per gallon lower than a year ago.

One last point on the recent trends in B99 prices is that since the beginning of 2017, two weeks ago, the January 2017 B99 price has risen by \$1 per gallon so now it is at \$2.255 per gallon. It is believed that this is a reaction to the lost in the federal B99 producer tax credit.

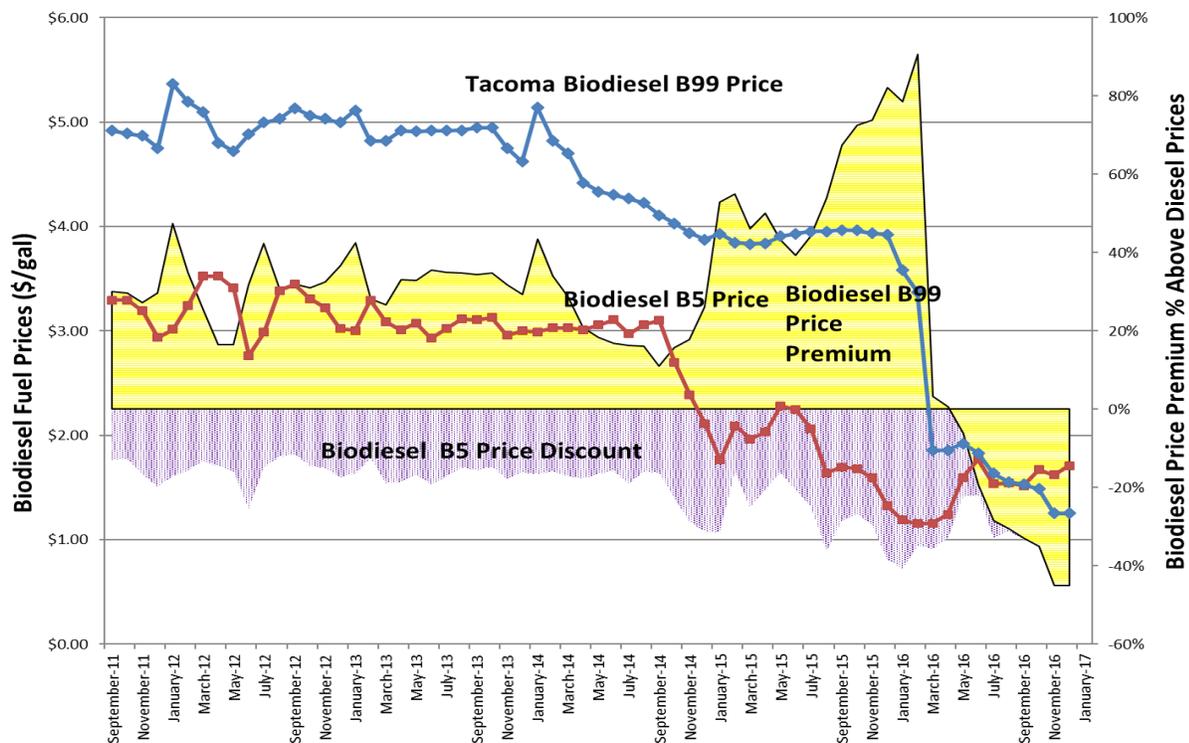
Recent Trends: Washington B5 Biodiesel Prices

B5 biodiesel prices in Seattle have risen a little since the summer months. In August 2016, B5 biodiesel prices averaged \$1.54 per gallon. In October through December, B5 monthly average price has been between \$1.62 and \$1.71 per gallon. Now B5 prices are higher than monthly average B99 price in October through December. This is very unusual that B5 biodiesel prices should be higher than B99 biodiesel prices.

Since the B5 prices rose in recent months while regular diesel prices have been flat, the B5 biodiesel discount is still low at around \$0.6 per gallon from regular diesel prices. This current B5 biodiesel price discount is nearly the same as a year ago in October and November at -26 percent and -29 percent respectively below regular diesel prices. In December, the B5 price discount dropped to -25 percent this year where last December, the price discount rose to 38 percent.

Figure 8: Washington OPIS B99 and B5 Biodiesel Prices in Seattle

Monthly Average Price	B99 (Combined Feedstock Biodiesel)			B5 SME Biodiesel		
	Price (\$/gal)	\$ Diff from State Avg Diesel Price	% Change from State Avg Diesel Price	Price (\$/gal)	\$ Diff from State Avg Diesel Price	% Change from State Avg Diesel Price
October 2015	3.96	1.67	72.6%	1.68	-0.61	-26.7%
October 2016	1.49	-0.80	-35.0%	1.67	-0.61	-26.8%
November 2015	3.93	1.67	73.9%	1.59	-0.67	-29.6%
November 2016	1.27	-1.03	-45.0%	1.62	-0.66	-28.9%
December 2015	3.93	1.77	82.2%	1.33	-0.83	-38.4%
December 2016	1.26	-1.03	-45.1%	1.71	-0.57	-25.4%



Source: B99 and B5 biodiesel price data - OPIS Fuel Price Survey for various locations in Washington State.

**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 the last edition of the *Fuel and Vehicle Trends Report*, we discussed that crude oil prices rose in the summer months of 2016. Since then, WTI crude oil prices have remained pretty low and flat with only a minor increase over the last four months. In September 2016, the average monthly

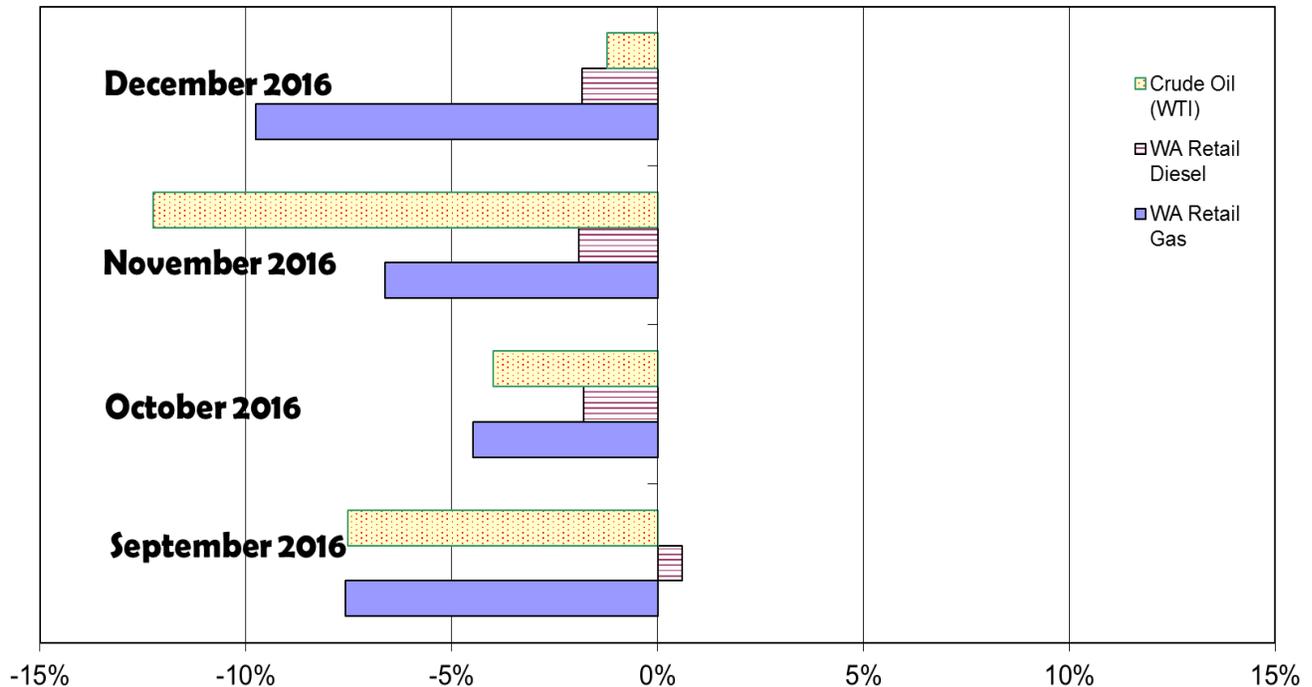
WTI price was \$45.31 per barrel and it rose \$6 per barrel to \$51.35 per barrel by December. In comparing the monthly crude oil prices with the latest forecast in November, it was determined that actual crude oil prices are below the forecast every month between September and December. September was below the third quarter 2016 forecast of \$49 per barrel by 7.5 percent. In October, that monthly price was 4 percent below the fourth quarter projection of \$52 per barrel price. In November, the actual monthly average crude oil price was 12 percent below projections and in December, the monthly average crude oil price was only 1 percent below the fourth quarter average price projection. See Figure 9 for more detail.

Consistent with the recent trend in WTI crude oil prices being below the latest forecast, Washington retail gasoline prices also came in below the third and fourth quarter projections of \$2.86 and \$2.81 per gallon respectively. In the month of September, retail gas prices averaged \$2.64 per gallon which was 7.6 percent below November's third quarter of 2016 projection. In October 2016, retail gas prices came in about the same at \$2.68 per gallon which was also 4.5 percent below the fourth quarter November forecast. In November, retail gas prices came in again at \$2.62 per gallon which was 6.6 percent below the November fourth quarter forecast for 2016. In December, the average monthly gas price fell nearly 10 cents to \$2.54 per gallon, which was nearly 10 percent below the projected price for the fourth quarter.

The recent trends for retail diesel repeat crude oil and retail gas price trends. During the last four months, retail diesel prices have been flat at \$2.73 per gallon and below the latest projections except for September when the average retail diesel price was 0.6 percent above the third quarter 2016 projection. Each month from October through December, the actual monthly average diesel price was 1.8 or 1.9 percent below fourth quarter projections.

In the last three months (October through December), we have seen the difference between retail gas and diesel prices rise from \$0.05 to \$0.19 per gallon by December 2016. This trend is the result of diesel prices being flat while retail gas prices have fallen slightly in the last three months.

Figure 9: Percent Change in September through December 2016 Average Fuel Prices Compared to the November 2016 Price Forecast



Source: Washington Transportation Revenue Forecast Council November 2016 Forecast, EIA and AAA weekly fuel prices

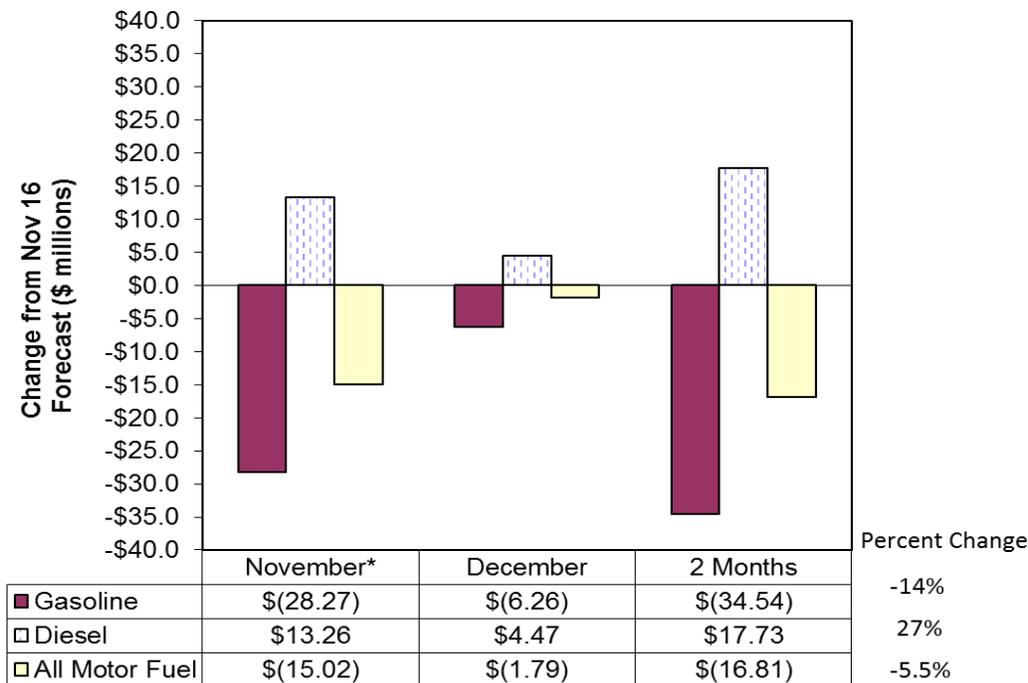
**WA MOTOR VEHICLE FUEL TAX COLLECTION TRENDS COMPARED TO RECENT FORECASTS: Gasoline and Diesel Tax Collections**  
Analysis by Lizbeth Martin-Mahar, Ph.D.

Since the adoption of the November 2016 forecast, two months of fuel tax collections have been reported. Overall fuel tax collections came in at \$149.2 million in November, which for both fuel types combined, was below the overall projection of \$164.2 million for that month by \$15.02 million, see Figure 10. In November, gas tax collections after adjustments came in at \$98.83 million which was well below, \$28.3 million or 22.2 percent, the November forecast of \$127.1 million. Diesel tax collections after adjustments came in at \$50.34 million and above forecast by \$13.3 million or 35.7 percent. The Department of Licensing (DOL) reported that in November, motor vehicle fuel tax collections were adjusted for prior months' tax collections being too high in motor fuel and too low in diesel tax collections. As a result, DOL adjusted the November fuel tax collection totals to reflect prior months' incomplete reporting. This is due to the new DOL fuel tax reporting system putting the unprocessed tax returns information into the motor fuel tax category first and not moving the fuel taxes to the special fuel tax category until the tax returns have been processed.

A month later in December, fuel tax collections came in at \$141.5 million for both gas and diesel combined which was below the overall November forecast by \$1.8 million. Gas tax collections came in at \$107.51 million which was below the November forecast by \$6.3 million. Diesel tax collections totaled \$33.98 million which was above the November forecast by \$4.5 million.

For both months, gas tax collections have come in below forecast by \$34.54 million while diesel tax collections have come in above the November forecast by \$17.73 million. Overall, total motor fuel tax collections were below the last forecast by 5.5 percent or \$16.81 million. Given these two months of fuel tax collections, we do not anticipate having to adjust the next March 2017 forecast by this amount. The reason why is because for the entire fiscal year 2017, in the last quarterly forecast, our fuel tax forecast anticipated lower than usual motor fuel tax collection and higher diesel tax collections in the last month of the biennium to reflect prior months' adjustments. It was unclear which month the prior months' adjustments would be made by DOL but it was included by the end of the fiscal year. When we consider the entire fiscal year's fuel tax collections, our current year's projections should need only minor adjustments for the remainder of fiscal year 2017.

Figure 10: Motor Vehicle Fuel Tax Collections in November and December 2016 Compared to the November 2016 Revenue Forecast.



\* November motor fuel tax collections are really low while diesel fuel tax collections are unusually high because DOL corrected for past months' unprocessed tax returns

Source: Washington Transportation Revenue Forecast Council November 2016 Forecast and State Treasurer's Office monthly fuel reports

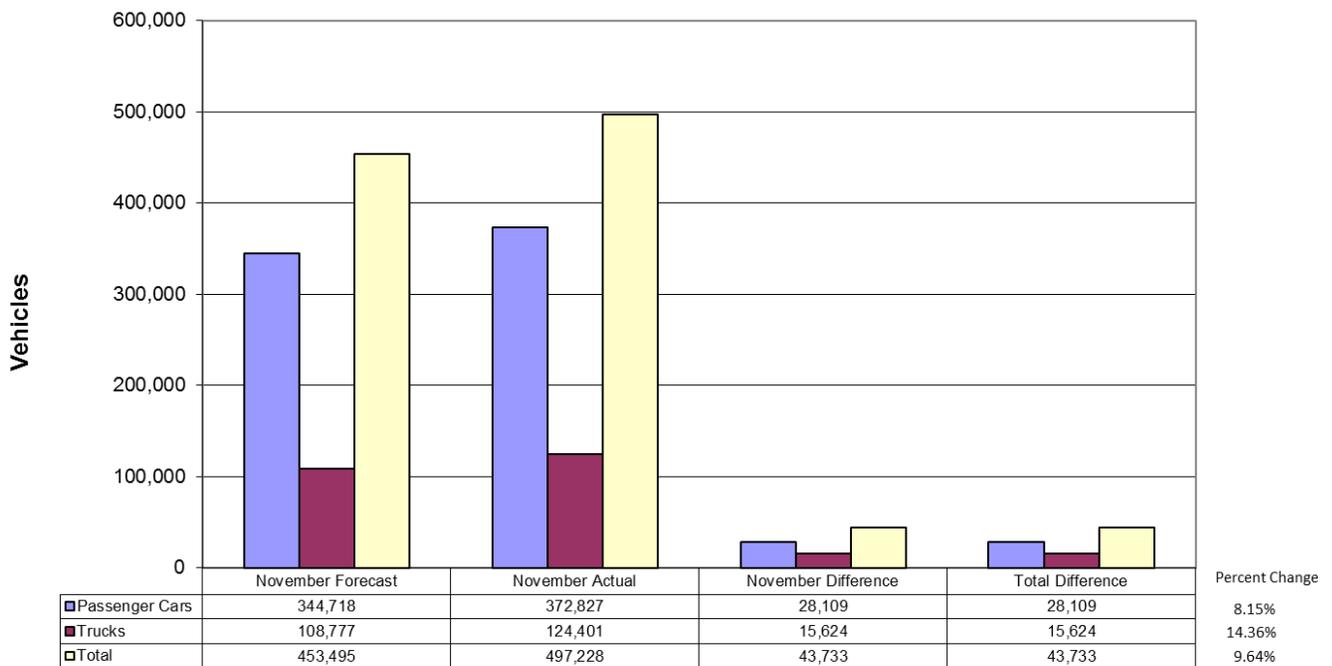
## VEHICLE TRENDS

Analysis by Thomas L. R. Smith, Ph. D.

### Vehicle Registrations and Revenue

For the one month of data we have since the November forecast, vehicle registrations are up for the month of November. Passenger car registrations came in at 372,827 for November. We forecasted that only 344,718 vehicles would register. November is usually the lowest month for vehicle registrations. While 372,000 is still the lowest monthly registration total we've seen in this fiscal year, it is still significantly higher than one would expect for November. It is quite possible that we are seeing early registrations from December. Truck registrations were also significantly higher than forecasted, with 124,401 trucks registering, when only 108,777 were expected to register. Like passenger cars, November is usually the lowest month for truck registrations. It is also possible that we are seeing early registrations.

Figure 11: Vehicle registrations, November 2016, Forecast vs. Actual.

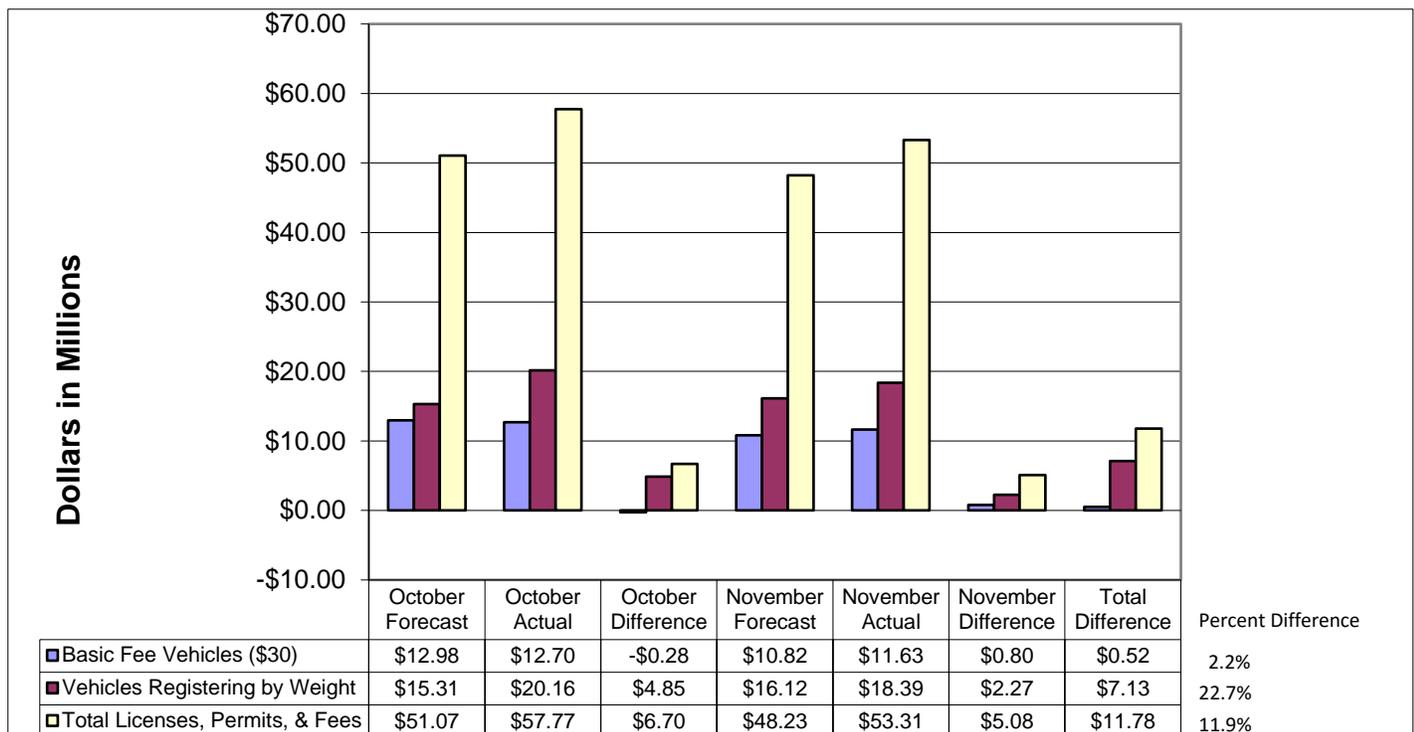


Source: Washington Transportation Revenue Forecast Council November 2016 Forecast and Department of Licensing Reports 7, November 2016.

We have two months of revenue to discuss in this report: October and November, see Figure 12. Revenue from \$30 basic fee vehicles was \$12.7 million, just \$280,000 shy of the forecasted \$12.98 million. November revenue made up the October shortfall and then some. The Department

of Licensing collected \$11.63 million, \$800,000 more than the \$10.82 million we forecasted. While the overage is reflected in the higher than expected vehicle registrations discussed earlier, we would really expect higher revenue for November based on those counts. The Department of Licensing (DOL) is revamping their vehicle registration and revenue computer system. It is likely that the last four days of revenue for November will appear in December collection reports since DOL turned off the old reporting system early to accommodate the change over. Revenue for trucks was higher than expected for both October and November. October’s collections of \$20.16 million exceeded the expected \$15.31 million by \$4.85 million. November’s collections of \$18.39 million exceeded forecasted revenue by \$2.27 million. While this higher revenue does align with the higher than expected truck counts, it is possible that some of the revenue reported as truck revenue could have been misreported. We will be investigating this and other reporting issues further with DOL as the transition to the new vehicle reporting system is underway.

Figure 12: Vehicle revenue for October and November 2016, Forecast vs. Actual.



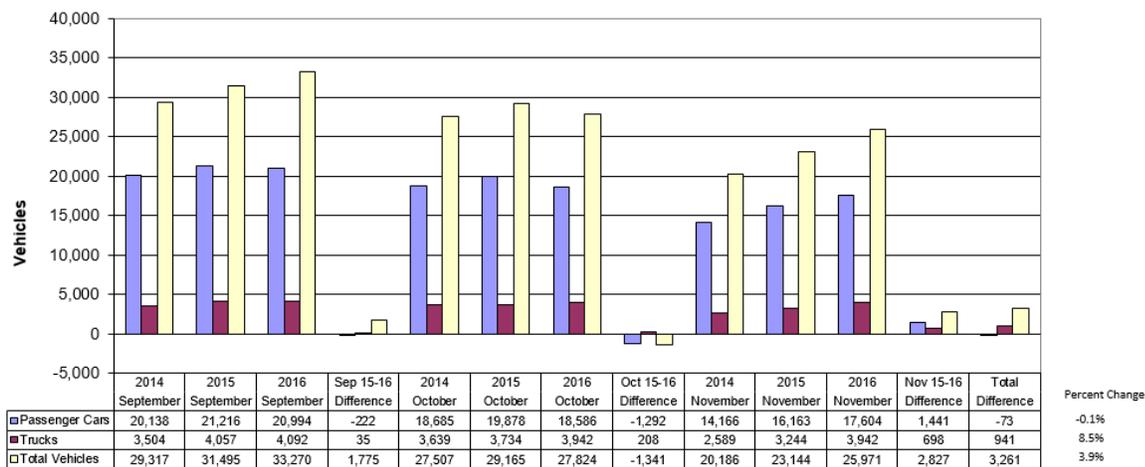
Source: Washington Transportation Revenue Forecast Council November 2016 Forecast and Department of Licensing Balance Forward, October and November 2016.

Finally, total License, Permit, and Fee (LPF) revenue was above forecast by 11.9% for October and November. We forecasted \$51.07 million in October, but received \$57.77 million. For November, we forecasted \$48.23 million, while realizing \$53.31 million.

## New Car and Truck Registrations from Sales

In our last *Trends Report*, we said that after months of strong month-over-month and year-over-year growth in new vehicle markets, we saw some tapering off and declines for new car registrations. In this report, which covers new registrations for September, October and November, we've seen year over year declines for two of the three months. In September 2016, new car registrations were 222 vehicles below registrations for September 2015. In October, they were 1,292 vehicles lower than the prior year. November 2016 was much higher than 2015, which followed national trends, but the 1,441 extra vehicles did not quite make up the short fall. Truck registrations were stronger. September 2016 new truck registrations exceed the previous September by a mere 35 trucks, but October 2016 new truck registrations were 208 trucks above 2015. November was even higher, exceeding the previous November by 941 trucks. These results seem to mirror national trends and may also reflect the move from passenger cars to trucks as gas prices remain relatively low.

Figure 13: New vehicle registrations Comparisons



Source: Department of Licensing Report 14.

**SUBSCRIBING TO THE FUEL AND VEHICLE TRENDS REPORT.** *The Fuel and Vehicle Trends* is available at this [link](#). From there, you can download the current report in a PDF, look at back issues, or subscribe to a notification service that lets you know when the next report is available. You may also click this [link](#) to subscribe.

## ARTICLES REFERENCED

Transportation Revenue Forecast Council. November 2016 Transportation and Revenue Forecasts.

## Fuel Trends:

AAA. <http://fuelgaugereport.opisnet.com/WAavg.asp>

CME Group. 2017a. Soybean Futures Prices.

[http://www.cmegroup.com/trading/agricultural/grain-and-oilseed/soybean-oil\\_quotes\\_settlements\\_futures.html](http://www.cmegroup.com/trading/agricultural/grain-and-oilseed/soybean-oil_quotes_settlements_futures.html)

Consensus Economics Inc. December 12, 2016. *Energy & Metals Consensus Forecasts*.

Energy Information Administration. 2017a. January 2017. *Spot Prices for Crude Oil and Petroleum Products*. [http://www.eia.gov/dnav/pet/pet\\_pri\\_spt\\_s1\\_d.htm](http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm)

Energy Information Administration. 2017b. January 10, 2017. *Short-Term Energy Outlook*. <http://www.eia.doe.gov/emeu/steo/pub/contents.html>

Energy Information Administration. 2017c. January 11, 2017. *Weekly Petroleum Status Report*. <http://www.eia.gov/petroleum/supply/weekly/>

Energy Information Administration. 2017d. January 9, 2017. *Weekly Retail Gasoline and Diesel Prices* [http://www.eia.gov/dnav/pet/pet\\_pri\\_gnd\\_dcus\\_nus\\_w.htm](http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm)

IHS Global Insight. 2017. January, 2017. U.S. Economy – Models and Databanks

## Vehicle trends:

Washington State Department of Licensing. September, October and November 2016. State of Washington Vehicle Registration Reports 7 and 14.

Washington State Department of Licensing. November 2016. Balance Forward Reports.