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 or martinli@wsdot.wa.gov or smithtm@wsdot.wa.gov by telephone at (360) 705-7991 or (360) 705-7942 or (360) 705-7941.

TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Topic</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FUEL PRICE TRENDS: CRUDE, GASOLINE AND DIESEL MARKETS</td>
<td>1</td>
</tr>
<tr>
<td>WASHINGTON RETAIL GAS AND DIESEL PRICES</td>
<td>5</td>
</tr>
<tr>
<td>BIODIESEL FUTURES AND PRICE TRENDS</td>
<td>7</td>
</tr>
<tr>
<td>FUEL PRICE TRENDS COMPARED TO FORECAST</td>
<td>11</td>
</tr>
<tr>
<td>MOTOR VEHICLE FUEL TAX COLLECTION TRENDS COMPARED TO FORECAST</td>
<td>12</td>
</tr>
<tr>
<td>VEHICLE TRENDS</td>
<td>13</td>
</tr>
<tr>
<td>SUBSCRIBING TO THE FUEL AND VEHICLE TRENDS REPORT</td>
<td>16</td>
</tr>
<tr>
<td>ARTICLES REFERENCED</td>
<td>16</td>
</tr>
</tbody>
</table>

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 August 2016.

Source: Energy Information Administration (EIA), 2016a
Crude oil prices have risen a little in recent months but the prices are still unusually low. August 2016’s West Texas Intermediate (WTI) crude oil price rose to an average price of $43.70 per barrel through the week ending August 19. A year ago in August 2015 WTI prices were slightly lower at $42.87 per barrel. In the last Trends Report, WTI crude averaged $40.75 for April. As a Wall Street Journal article notes, crude oil prices have risen this year by 25% but it was on the expectation that the global gut of crude would shrink and so many forecasters think $50 per barrel is the maximum price because they fear future increases in crude inventories with higher prices (Freidman et al., August 2016).

Energy Information Administration’s (EIA) August 2016 Short-term Energy Outlook (STEO) forecasts an average WTI price of $41.16 per barrel for calendar year (CY) 2016 and $51.58 per barrel for CY 2017 (EIA, 2016b), compared to $34.60 per barrel for CY 2016 and $40.58 per barrel for CY 2017 from crude oil prices projected in the April 2016 Trends Report. IHS Global Insight’s August 2016 forecast for WTI crude oil projects $42.71 per barrel in 2016, and $56.17 per barrel in 2017. Consensus Economics projects WTI prices of $43.57 per barrel for 2016 and $53.78 a barrel in 2017 (Consensus Economics Inc., August 2016).

The Brent spot crude oil price averaged $44.37 per barrel through the week ending August 19. Brent is projected by EIA to average $41.47 per barrel for 2016. The daily WTI-Brent crude oil spot price difference decreased from $0.83 per barrel in April 2016 to $0.71 in August 2016 (Figure 2). The WTI price discount to the Brent crude oil price averaged $3.65 per barrel in 2015 and is projected to decline to $0.44 per barrel in calendar year 2016, and the price discount is anticipated to disappear in calendar year 2017. 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.

**Figure 2: WTI - Brent Crude Oil Spot Price Spreads from January 2008 to August 22, 2016**

![Figure 2: WTI - Brent Crude Oil Spot Price Spreads from January 2008 to August 22, 2016](source: EIA 2016a Daily WTI and Brent crude oil spot prices)
EIA reports that U.S. oil production averaged 9.4 million barrels per day (b/d) in 2015 and projects an average 8.7 million b/d in calendar year 2016 and 8.3 million b/d in 2017. EIA’s reported monthly U.S. crude oil production declined by 0.2 million b/d in July 2016 compared to June 2016.

**Inventories**

EIA’s most recent *Weekly Petroleum Status Report* shows U.S. crude oil inventories, excluding Strategic Petroleum Reserve (SPR) stocks, increasing to 525.87 million barrels for the week ending August 26, 2016 (Figure 3). The current storage level is 146.9 million barrels or 38.8 percent higher than the 5-year (2011-2015) historical average of 378 million barrels for this week. Having these historically high stockpiles of crude oil has put downward pressure on oil prices futures (Sider and Salvaterra, August 2016).

**Figure 3: Comparison of Crude Oil Weekly Inventories from January 2011 to August 2016.**

Figure 4 shows gasoline inventories declining a little from 30.29 million barrels in the week of August 19, 2016 to 29.88 million barrels in the week ending August 26 within the West Coast Petroleum Administration for Defense District (PADD5). For the week ending August 26, total
gasoline inventories averaged 9.2 percent more than the 5-year average of 27.4 million barrels. The minimum of the 5-year range for the week of August 26 is 24.7 million barrels while the maximum is 28.4 million barrels. U.S. total gasoline inventories for the week ending August 26 are tracking at 115 percent above the 5-year minimum for that week.

**Figure 4: Comparison of Gasoline Weekly Inventories (West Coast PADD5) from January 2011 to August 2016**

Weekly West Coast (PADD 5) Ending Inventories of Total Gasoline

Figure 5 shows the weekly distillate inventories for PADD5 (West Coast) for August 26 at 3.4 percent higher than the week ending August 19. Distillate inventories for PADD5 for the week ending August 26 increased to 14.4 million barrels or 16.2 percent higher than the 5-year average of 12.4 million barrels. Comparatively, U.S. distillate inventories for the week ending August 26 were 13.2 percent above the 5-year average.
Figure 5: Comparison of Monthly Distillate Inventories (West Coast PADD5) from January 2011 to August 2016

Washington Retail Gasoline and Diesel Prices

Washington’s current weekly regular gasoline price dropped from $3.04 per gallon or 16.0 percent in August 2015 to $2.55 per gallon a year later in August 2016 (Figure 6). (EIA, 2016d). In 2016 national regular gasoline weekly prices peaked at $2.40 per gallon on June 13, 2016 and have declined in July and August to a low monthly average price of $2.15 per gallon. Prices are projected to decline further to $1.89 per gallon by January 2017 and then will seasonally begin rising in February 2017 according to EIA recent forecasts. The regional price variation showed the West Coast (PADD 5) again having the highest price in August 2016 at $2.64 per gallon of regular gasoline compared to the lowest average price in Gulf Coast (PADD 3) at $2.07 per gallon. The West Coast (PADD5) less California price came in at $2.45 per gallon, 19 cents lower than the average price of all PADD5 states (EIA, 2016d). EIA’s August 2016 STEO forecasts a national average retail regular gasoline price of $2.06 per gallon in calendar year 2016 and $2.26 per gallon in calendar year 2017 (EIA, 2016b).
One year ago in August 2015 the price for regular gasoline in California averaged $3.54 per gallon. California’s regular gasoline price for August 2016 is $2.69 per gallon, 14 cents per gallon higher than Washington’s $2.55 per gallon for August 2016.

Washington retail diesel prices averaged $2.68 per gallon in August 2016. The Washington retail diesel price in August 2016 was 33 cents lower than the August 2015 price of $3.01 per gallon (Figure 6). Nationally, August 2016’s retail diesel price averaged $2.32 per gallon, compared to $2.60 per gallon in August 2015, a 28 cent decline. EIA forecasts a national average retail diesel price of $2.30 per gallon for calendar year 2016 and $2.70 per gallon for calendar year 2017 (EIA, 2016b).

California’s on-road diesel price declined 22 cents to $2.72 per gallon in August 2016 from August 2015’s $2.94 per gallon. Washington’s August 2016 diesel price is only 4 cents lower at $2.68 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 August 29, 2016.
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 beginning at the end of July 2013 through August 2016. Futures have ranged from nearly 44 cents per pound in May 2013 to 28 cents per pound recently in October 2015. The October 2015 soybean futures represent the lowest futures since we started tracking soybean futures three years ago. August 2016 futures start at 33 cents per pound for soybean oil. Over time, the latest futures are not anticipated to rise much at all to 33.6 cents per pound by May 2018 and stays at that price until December 2019. Figure 7 reveals that the latest futures and it is slightly lower than prior futures this year in April and January. The futures slowly grow in price per pound for a couple months and then it flattens for the remaining period.

Figure 7: Futures Prices for Soybean-oil (July 2013 through August 2016)
Recent Trends Washington B100 Biodiesel Prices

January’s B100 biodiesel price started at $5.12 per gallon. Since then, B100 prices in Tacoma have fallen 41 percent over the past eight months. The B100 price was $3.03 per gallon by August. This August 2016 B100 price represents the lowest price 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 August the B100 price premium from regular diesel was only 13% or $0.35 per gallon. Even though B100 biodiesel prices have fallen recently, the decline has not been as significant as the B99 biodiesel prices. This new trend for Washington to have low B100 prices appears to be continuing.

Biodiesel Prices: Comparison of Historical B99 Biodiesel Prices for Tacoma and Portland

In January 2016, the average monthly Tacoma B99 price was $3.58 per gallon. Like B100, B99 prices have been falling past over the past eight months. By August 2016, B99 biodiesel prices had fallen to new low price of $1.55 per gallon. This is the lowest price it has ever been since we started tracking B99 biodiesel prices in September 2011.

As Figure 8 indicates, since January 2014, there was a significant difference in weekly B99 biodiesel prices in Tacoma versus Portland. Now in recent months, since around April 2016, the differential between Portland and Tacoma B99 prices is minimal. In the first week of August, the average B99 price in Tacoma was $1.53 per gallon and in Portland it was $1.41 per gallon. This is only a $0.12 per gallon difference. This trend of significantly lower B99 biodiesel prices in Tacoma has continued now for five months and appears to be the new normal for biodiesel prices.

Figure 8: Comparison of Tacoma B99 and Portland B99 Biodiesel Prices
As Figure 9 exposes, Tacoma and Portland B5 prices are also very close and have been closely tracking each other since we started reporting these two weekly prices in January 2015. In August, B5 weekly average price for the first week in Tacoma was $1.45 per gallon while B5 prices in $1.43 per gallon in Portland.

Given that Tacoma’s B5 and B99 biodiesel prices now both mirror the Portland B5 and B99 prices, there is little need to report on the comparison to the Portland B99 and B5 biodiesel prices. We will continue to track the Portland biodiesel prices but we won’t report on them in this publication unless there are significant differences. That was the whole reason we started reporting on these different cities’ prices was because of the differences at the time we started tracking it.

As we reported in the April 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. This has never occurred since we started tracking biodiesel prices nearly 5 years ago. As a result, the B99 price premium is no longer a premium but a discount like B5 biodiesel prices. In June, the B99 price discount was $0.44 per gallon or 19% and by August, the B99 discount was $0.68 per gallon or nearly 30% below regular diesel. Given the sharp decline in B99 prices, the B99 prices and discounts in the summer months of 2016 are now significantly less than last year’s prices and premium level. The B99 prices in June through August 2016 are more than $2 per gallon lower than a year ago.
### Recent Trends in Washington B5 Biodiesel Prices

In the last *Fuel and Vehicle Trends Report*, we noted that since we started tracking B5 biodiesel prices in 2011, we have never seen such a low price for B5 biodiesel at $1.15 per gallon as we did at the start of this year in February 2016. Since then, the monthly average B5 biodiesel price in Tacoma had hovered around $1.15 and $1.20 per gallon and started to rise so by August 2016 the price had risen to $1.54 per gallon. Now B99 and B5 prices in Tacoma are nearly equal with a B99 average price of $1.55 per gallon versus $1.54 per gallon for B5. This is very unusual that B5 and B99 biodiesel prices should be nearly identical given the very different make up of fuel.
The low B5 prices rose in June month over month to $1.77 per gallon but fell back to $1.54 per gallon in July and August while regular diesel prices have risen only minimally. As a result, the B5 biodiesel discount has grown to 32.8% in July but fell back to 31% in August. This current B5 biodiesel price discount is nearly the same as a year ago at -28% in August 2015.

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 couple editions of the Fuel and Vehicle Trends Report, we discussed the continuing low crude oil prices but things have changed some in recent months. In the last three months, June through August, crude oil prices have risen some and have come in close or above the June forecast. In June, actual crude oil prices averaged 10 percent higher than projections. In July, crude oil prices averaged slightly less, 1.7 percent, than the third quarter average of $46 per barrel. In August, crude oil prices of $46.7 per barrel were 1.5 percent higher than projections for the third quarter of 2016. The WTI crude oil price has declined some from $49 per barrel in June to $46.7 per barrel by August but these prices are much less than the June 2016 baseline forecast. The WTI prices in June came in more than $14 per barrel below the second quarter of 2016 June price forecast of $44.5 per barrel. In July, the WTI price came in $8.53 per barrel less than the third quarter average price forecast. In August, the WTI price came in, again, well below forecast by 15 percent or $6.84 per barrel from June’s third quarter projection of $39 per barrel. See Figure 11 for more detail.

Consistent with the recent trend in WTI crude oil prices being above forecast, Washington retail gasoline prices also came in above the second and third quarter projections of $2.46 and $2.47 per gallon respectively. In the month of June, retail gas prices averaged $2.62 per gallon which was 6 percent above June’s second quarter of 2016 projection. In July 2016, retail gas prices came in about the same at $2.63 per gallon which was also 6.6 percent below the third quarter June forecast. In August, retail gas prices came in at $2.55 per gallon which was 3.3 percent below the June third quarter forecast for 2016.

The recent trends for retail diesel repeat crude oil and retail gas price trends. During the last three months, retail diesel prices have risen slightly and then lowered slightly so by August, the price change was minimal. In June, retail diesel prices came in above the forecast by 15.5 percent, from the second quarter June forecast of $2.35 per gallon. In July, retail diesel prices increased a little to $2.73 per gallon. The difference from projections was 3.4 percent above the forecast. Finally, in August, retail diesel prices declined slightly $2.68 per gallon. The difference from the last forecast narrowed again to 1.6 percent above the June third quarter 2016 forecasted price.

In the last three months we have seen the difference between retail gas and diesel prices grow slightly from $0.9 to $0.13 per gallon by August 2016. This trend is the result of diesel prices rising faster now than retail gas prices in the last three months.
Since the adoption of the June 2016 forecast, two months of fuel tax collections have been reported. Overall fuel tax collections came in at $126.5 and $143.1 million in June and July, respectively, which for both months combined, was nearly dead on with the June forecast (Figure 12). In June, gas tax collections came in at $106.9 million, which was $2.21 million or 2 percent, below the forecast of $109.1 million. Diesel tax collections came in at $19.6 million and 22.6 percent or $5.7 million below the forecast that same month. The Department of Licensing (DOL) reported that in June not all the tax returns received were processed in that month so June actuals were incomplete. Some of June’s tax returns were report in the June fuel tax collection report. This is due to DOL starting to use a new fuel tax collection reporting system.

In July, gas tax collections came in at $112.3 million, which was $2.05 million, or 1.9 percent, higher than the forecast of $110.3 million. Diesel tax collections came in well above the forecast at $30.8 million, which was $5.28 million, above the June forecast of $25.5 million. Clearly in July, additional tax returns from June were reported in July due to not being processed in time.

Overall for both months, gas tax collections came in $0.16 million below the June forecast and diesel tax collections came in slightly under forecast by $0.43 million. Total fuel tax collections
are down very minimally $0.59 million (0.2 percent) from the last forecast. After two months, we are tracking our last forecast very well.

Figure 12: Motor Vehicle Fuel Tax Collections in June and July 2016 Compared to the June 2016 Revenue Forecast.

<table>
<thead>
<tr>
<th>Change from June 16 Forecast ($ millions)</th>
<th>Percent Change</th>
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<tr>
<td><strong>Gasoline</strong></td>
<td>-0.1%</td>
</tr>
<tr>
<td><strong>Diesel</strong></td>
<td>-0.8%</td>
</tr>
<tr>
<td><strong>All Motor Fuel</strong></td>
<td>-0.2%</td>
</tr>
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* June 2016 actuals do not include all tax returns submitted that month. That month was unusually low because it was incomplete. Some returns from June were placed in July fuel tax collections. Source: Washington Transportation Revenue Forecast Council June 2016 Forecast and State Treasurer’s Office monthly fuel reports

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

Vehicle Registrations and Revenue

In our previous report, we detailed how our forecasts had been too conservative. Actuals for the first months of 2016 were coming in 9 percent over forecast. Because of that, we raised the forecast in February, exceeded that forecast, and then raised it again in June. That may have been one increase too many. In the June forecast, we estimated that 435,200 cars would register in June; however, only 423,00 showed up on the rolls. While that was within the plus or minus 3% we strive
for, July numbers were well outside that range. We predicted 451,500 passenger car registrations, but only 415,900 registered. For the two months, we were 5.3% below forecast.

Truck registrations present a similar story. In two consecutive forecasts, we under-forecasted, so we bumped up the forecast for trucks in June. Again, it was a forecast too far. For June, we forecasted 130,000 trucks would register, but only 128,400 trucks registered. In July, we predicted 136,500 trucks would register, but only 126,600 did. For the two months, we missed truck registrations by 5% (Figure 13).

Figure 13: Vehicle registrations, June and July 2016, Forecast vs. Actual.

While we discussed registrations for just June and July, because of the lag of processing accounting data, we will discuss three months of revenue data, May, June, and July. Regular readers of this Report will recall that we begin most of our reports with a statement that revenue does not always (rarely) aligns with vehicle registrations. This month’s Report is true to the rule. For basic fee vehicles (which includes passenger cars, motorcycles, motor homes, and various trailers), May revenue was just $1.04 million (6.9%) below the forecast of $13.96 million. In June; however, revenue collections were off the forecast by $1.79 million (11.7%) above the forecast of $15.27 million. In July, we missed the forecast by just $1.35 million below forecast (-0.1%). For the three months, registration revenue for $30 vehicles was just 1.3% below forecast.

Truck revenue just did not cooperate at all in these last three months, largely because of the new fee increases for trucks. In May, truck revenue was $2.76 million more than the $10.39 million we predicted. In June, revenue was $8.43 million more than the $10.47 million we forecasted. We believe that there are two reasons for the discrepancy: 1) while our prediction for truck registrations was low, the trucks that did register were heavier than expected, increasing the revenue collected; and 2) the legislature increased truck fees in the 2015 legislative session, and some of the revenue collected in June represents collections from trucks that registered early. Truck revenue for July, however, was just about right. We forecasted $14.99 million, but received $14.89 million.

Finally, total License, Permit, and Fee (LPF) revenue was above forecast by 4.8% for the past three months. We forecasted $42.55 million in May, but received $45.46 million. For June, we forecasted $46.3 million, while realizing $57.93 million; and for July, we forecasted $57.69 million while collecting only $50.24 million.
New Car and Truck Registrations from Sales

After months of strong month-over-month and year-over-year growth in new vehicle markets, we see some tapering off and declines for June and July. New car sales in June 2016 were nearly flat from June 2015, with 11 fewer new cars registered. In July 2016, however, new cars were down by 2,365 units from July 2015. Truck registrations were stronger. June 2016 sales exceed the previous June by 803 trucks, but July 2016 truck sales were 81 trucks below 2015. These seem to mirror national trends.

Figure 15: New vehicle registrations Comparisons

![New vehicle registrations comparisons chart]

Source: Department of Licensing Report 14.

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ARTICLES REFERENCED

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

Fuel Trends:

AAA. http://fuelgaugereport.opisnet.com/WAavg.asp
CME group. 2016a. Soybean Futures Prices.
http://www.cmegroup.com/trading/agricultural/grain-and-oilseed/soybean-
oil_quotes_settlements_futures.html


http://www.eia.gov/dnav/pet/pet_pri_spt_s1_d.htm

http://www.eia.doe.gov/emeu/steo/pub/contents.html

http://www.eia.gov/petroleum/supply/weekly/

http://www.eia.gov/dnav/pet/pet_pri_gnd_dcus_nus_w.htm

http://www.eia.gov/dnav/pet/pet_stoc_wstk_a_epd0_sae_mbbl_m.htm


Vehicle trends:
