



April 2020 Fuel and Vehicle Trends Report

May 4, 2020

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) 705-7991 (360) 705-7942 or (360) 705-7502.

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FUEL PRICE TRENDS: Crude, Gasoline and Diesel Markets

Analysis by Scott Smith

National Crude Oil Prices

This section usually starts with a statement that production from the Permian basin in Texas and New Mexico is the balancing factor, which drives U.S. and world prices. With collapse of world oil consumption, this is no longer quite accurate. Figure 1 shows the recent price history for the U.S. benchmark crude, West Texas Intermediate (WTI) in dollars per barrel (bbl) through April 2020.

Figure 1: Weekly WTI Spot Price: January 2006 to April 2020



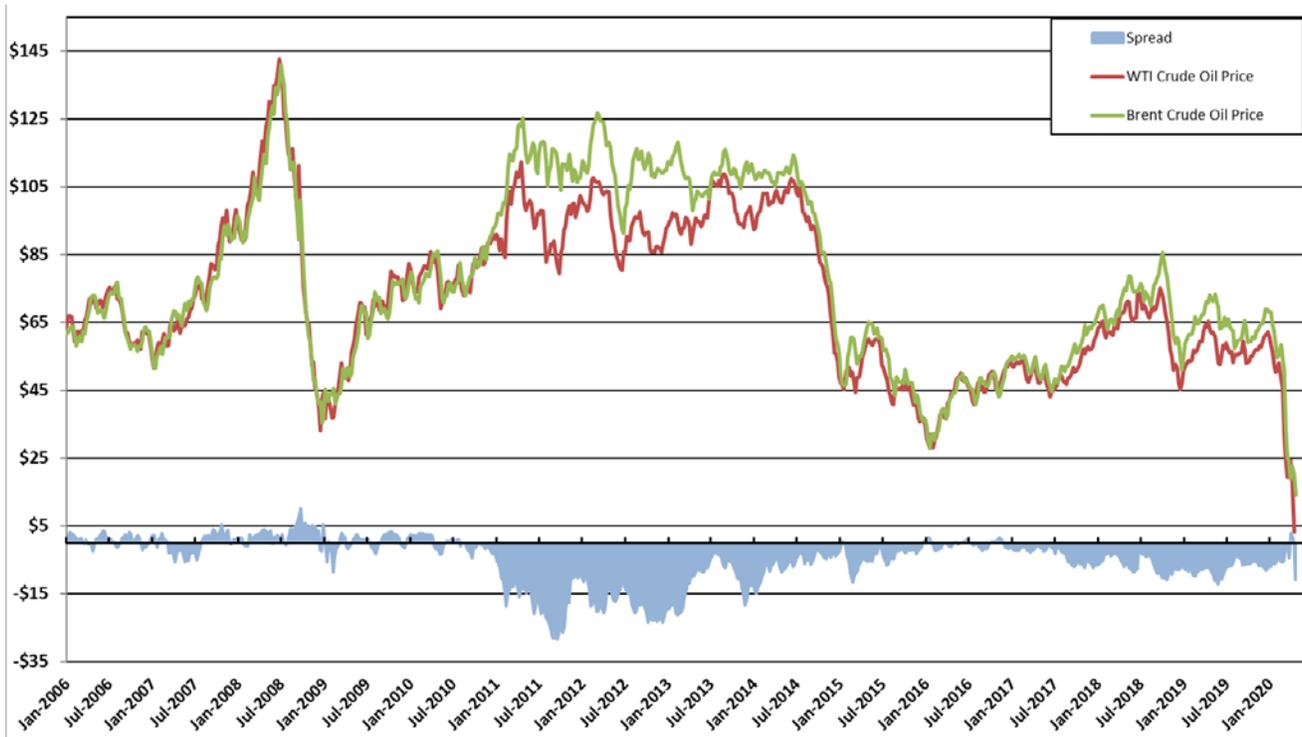
Source: Data from Energy Information Administration

The impacts from COVID-19 reduced demand are quite apparent in the chart above as you see the WTI crude oil prices falling dramatically in March and April but they were declining since the beginning of the year. As noted in prior reports, there was a consensus that the United States and world entered 2020 oversupplied so there was already downward pressure on West Texas Intermediate (WTI) prices. Prices peaked in the last week of December 2019 at \$61.29/bbl (barrel). WTI prices then averaged \$50.67/bbl before the implications of the COVID-19 pandemic were fully understood. Prices then crashed in March and April in concert with the collapse in demand and the Russian-Saudi price war; the spot price crashed to \$22.07/bbl. The last week of April's average WTI price was as low as \$3.32/bbl. Futures prices then actually went negative on April 19, closing at -\$37.63/bbl. Traders

cautioned that this collapse into negative territory was not reflective of the true reality of the physical market. The price of the May oil futures contract detached from later month futures contracts, which continued to trade above \$20 per barrel as reported by Huang, E. & Stevens, P. in CNBC news article. Futures market liquidity issues have also severely affected crude oil pricing in the June contract. The US Oil Fund, a publicly traded exchange traded fund, held more than a quarter of outstanding contracts for June WTI futures, following massive inflows from investors as reported in a WSJ article by Osipovich April 2020. The fund was then forced to sell June contracts by the exchange owner, CME Group. This caused a 25 percent fall in prices on June 27th. CME Group took the extraordinary step of discouraging retail investment. CME has warned oil futures trading is not suitable for retail investors and should only be done by professionals who understand and can manage the risks, including the challenges posed by physical settlement. “The small retail investors are somebody that we do not target. We go for professional participants in our marketplace,” CME chief Terry Duffy said in a television interview with CNBC on April 2 and reported by Kemp in an April 30 Reuters commodities news article.

Figure 2 shows WTI and Brent prices and spreads. The crude oil price of the world benchmark, Brent, is highly correlated to the price of WTI. On March 30, it plunged to \$21.65, the lowest in nearly two decades. Brent prices almost perfectly tracked WTI prices until April. However, the spreads between the two prices actually reversed. Historically, Brent prices have been higher than WTI principally because of transportation costs. As of April, Brent prices actually fell lower than WTI for the first three weeks of April.

Figure 2: WTI - Brent Crude Oil Spot Price Spreads January 2008 to April 2020



Source: Data from Energy Information Administration

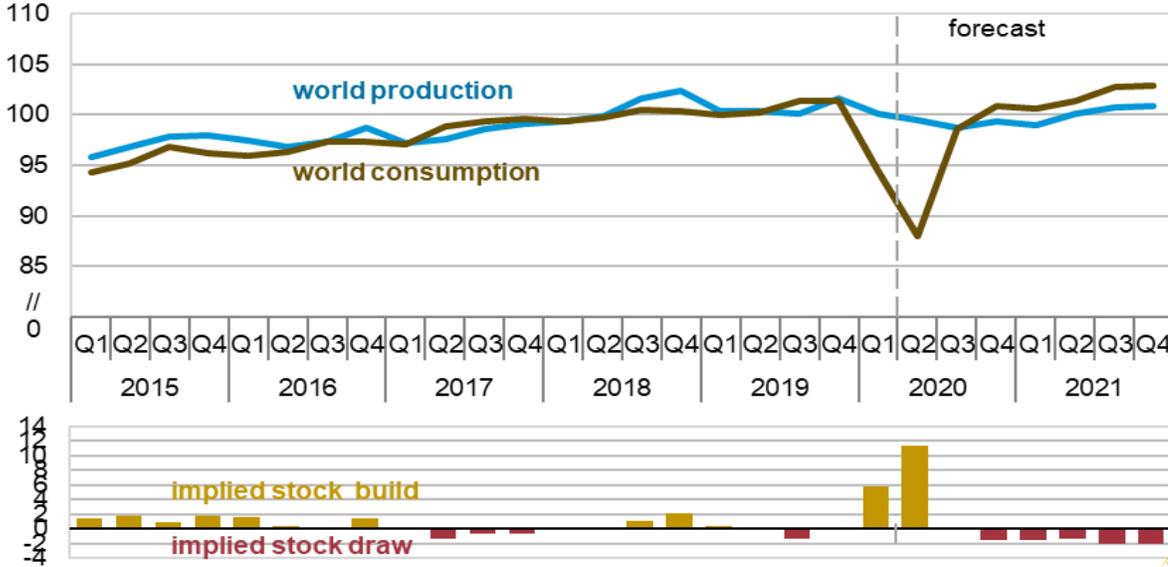
This was due to the lack of storage; supertankers have become the storage containers of last resort. There were fleets of supertankers anchored near Southern California, the U.S. Gulf Coast and Singapore. As reported by

Tuttle in an April 21, 2020 Los Angeles Times article the flotilla in sight of the port of Los Angeles carries enough crude oil to supply 20 percent of daily world consumption. A more recent article by Sheppard and Hume in the Financial Times on May 1st, also started out by describing the creative ways countries are storing crude oil like in salt caverns in Sweden and in rail cars in Chicago. The authors acknowledge that supply cuts agreed by OPEC members and their allies will take effect on May 1st which should reduce the need for storage. It will take some time to get back to a healthier market as Rystad estimates 28 tankers with Saudi oil carrying 43 million barrels of oil will be arriving at US ports between April 24th and May 24th. The Financial Times authors believe the crazy period of storage search for crude oil could soon be over.

Figure 3 shows the US Energy Information Administration (EIA) forecast of the world oil market. As noted above, pre-Pandemic level forecasts implied that world production will fully supply or oversupply the market during 2020. Oversupply of oil has been compounded by a collapse in world consumption. A comparison of EIA's November 2019 and April 2020 forecasts crystalizes the state of affairs in the world market. EIA revised the 2020 world consumption from 102 million barrels/day to 96 million barrels/day, or 7 percent. The comparable numbers for production are 103 million barrels/day to 99 million barrels/day, or 3 percent down.

Figure 3: Fuel Production and Consumption: Since 2014 Through 2020

World liquid fuels production and consumption balance
million barrels per day



Source: Short-Term Energy Outlook, April 2020



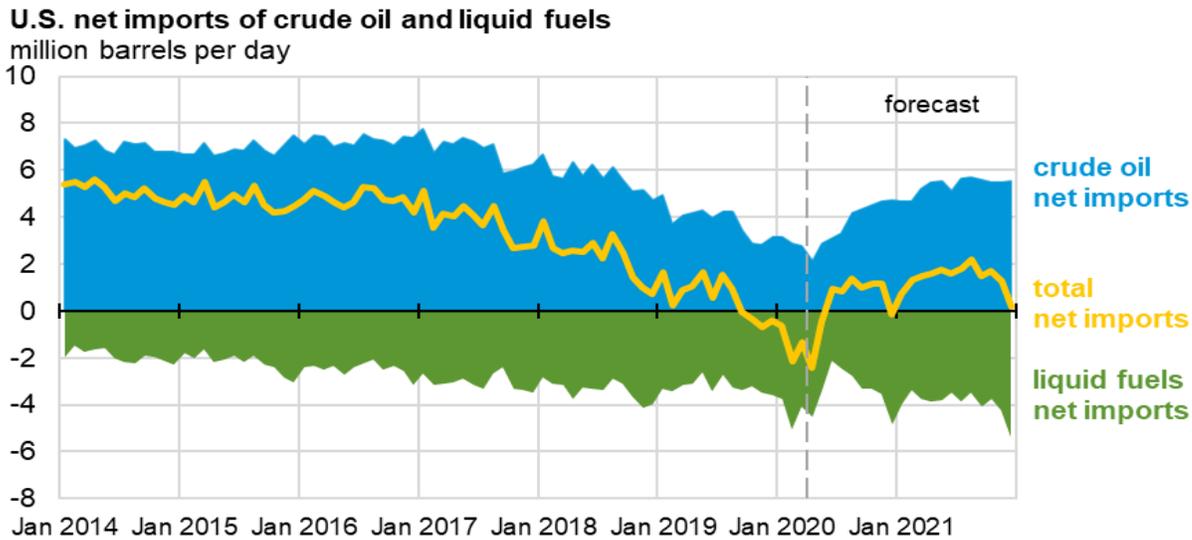
As noted in the popular press, the price war between Saudi Arabia and Russia has affected supply. For the past month through mid-April, Saudi Arabia had pumped every possible barrel for sale at rock-bottom prices, punishing Russia for refusing to support deeper OPEC+ output cuts in early March. As of May 1, Moscow and Riyadh will both reduce daily production by millions of barrels, spearheading a global agreement between almost all the world's major oil producers to rein in output. However, recent future prices shown that markets are not impressed with the production cuts.

The imbalance also has in part to do with the nature of oil production. Generally, production cannot be turned off at the wellhead like a faucet. Crude oil is contained in complex and imperfect geological formations under tremendous pressure. The act of process of shutting in and opening up a conventional well is quite

expensive and risky. If the formation is improperly fractured, the formation will lose the pressure necessary to lift it out of the ground. As outlined in an article by Redaction on April 6, 2020 in Aliqtisadia.com, producer’s first response has been to shut down older wells whose low pressure increases the lifting cost. The problem is that these marginal wells are also marginal producers. However; producers are ultimately responsive to prices and have been limiting output. Production cut specifics will be discussed further in the production section of this report.

Figure 4 shows the recent U.S. import /export history and EIA’s April 2020 forecast. Notably, the new April forecast no longer anticipates the U.S. becoming a net exporter in the immediate future. EIA notes that this is a result of higher net imports of crude oil and lower net exports of petroleum products. Net crude oil imports are expected to increase because as U.S. crude oil production declines, there will be fewer barrels available for export. On the petroleum product side, net exports will be lowest in the third quarter of 2020, when U.S. refinery runs are expected to decline significantly.

Figure 4: EIA History and Forecasts of U.S. Net Imports of Crude Oil and Liquid Fuels



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, April 2020



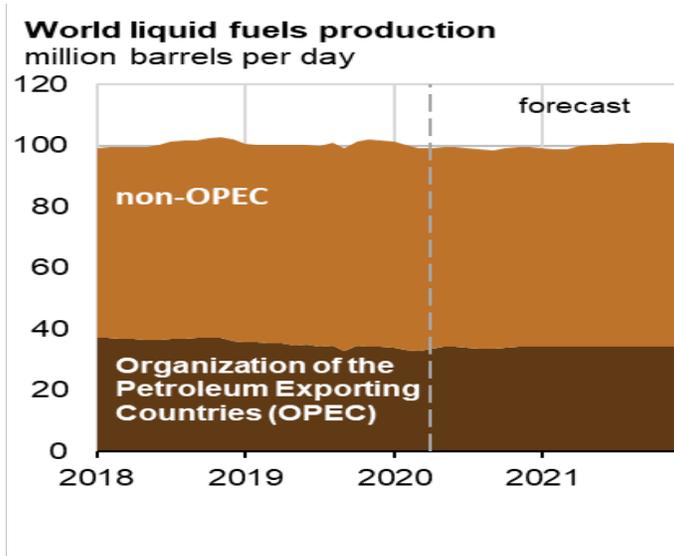
World and US Oil Production

Past *Fuel Price and Vehicle Trends Reports* have noted that the major tension in world oil markets is interplay between the OPEC+ Russia cartel and shale oil (fracking) producers in the Permian Basin. Figure 5 shows OPEC and Non OPEC production as a share of the world total. That tension was crystalized when Russia refused to agree to OPEC+ proposed cuts in March 2019. Several sources reported that the reason the Russians refused to agree with the Saudi proposal for cuts stemmed from a desire to damage U.S. shale oil producers. The Financial Times reported that “Moscow also eyed an opportunity to damage rival US shale producers and the wider American economy”, said three people familiar with the discussions in Vienna. “Russia has had enough of the shale guys living off Opec-plus,” said one person familiar with negotiations, referring to the cartel and allied non-

members. The Kremlin has also been ruled by recent US sanctions on the trading arm of Russian energy major Rosneft and Nord Stream 2, the proposed new gas pipeline between Russia and Europe, said two people familiar with the Vienna talks.”

Figure 5 shows World production by OPEC and non-OPEC countries. While the increase in Saudi production certainly ravaged March prices in the later part of the month, its effects on OPEC production share was somewhat muted. OPEC world production share was 33 percent in the each of the first three months of 2020. It is expected to be 34 percent of the world production in April of 2020.

Figure 5: World Liquid Fuels Production: 2017-2020



Source: Energy Information Administration

Figure 6 shows annual U.S. crude oil production by source. Production averaged 12.23 million barrels/day (mbd) in 2019. In April, EIA now forecasts a year over year decline of 3.6 percent to 11.76 million bbd in calendar year 2020. Compared to the November forecast of 2020 US oil production at 12.29 million bbd, this is a 4 percent decrease of 1.53 million bbd in 2020. EIA expects the decline in oil production to be borne primarily by producers in the lower 48 states excluding the Gulf of Mexico; production was revised down from November by 1.50 million bbd, or 13 percent. For 2021, EIA anticipates a year over year decline of 0.7 million bbd, with lower 48 producers responsible for almost all the decline.

Figure 6: U.S. Crude Oil Production by Source With April 2020 Forecast

	U.S. crude oil production (million barrels/day)				
	2017	2018	2019	2020	2021
Alaska	0.49	0.48	0.47	0.48	0.49
Federal Gulf of Mexico	1.68	1.76	1.88	1.93	1.92
Lower 48 States (excl GOM)	7.18	8.75	9.88	9.34	8.62
total U.S. production	9.35	10.99	12.23	11.76	11.03

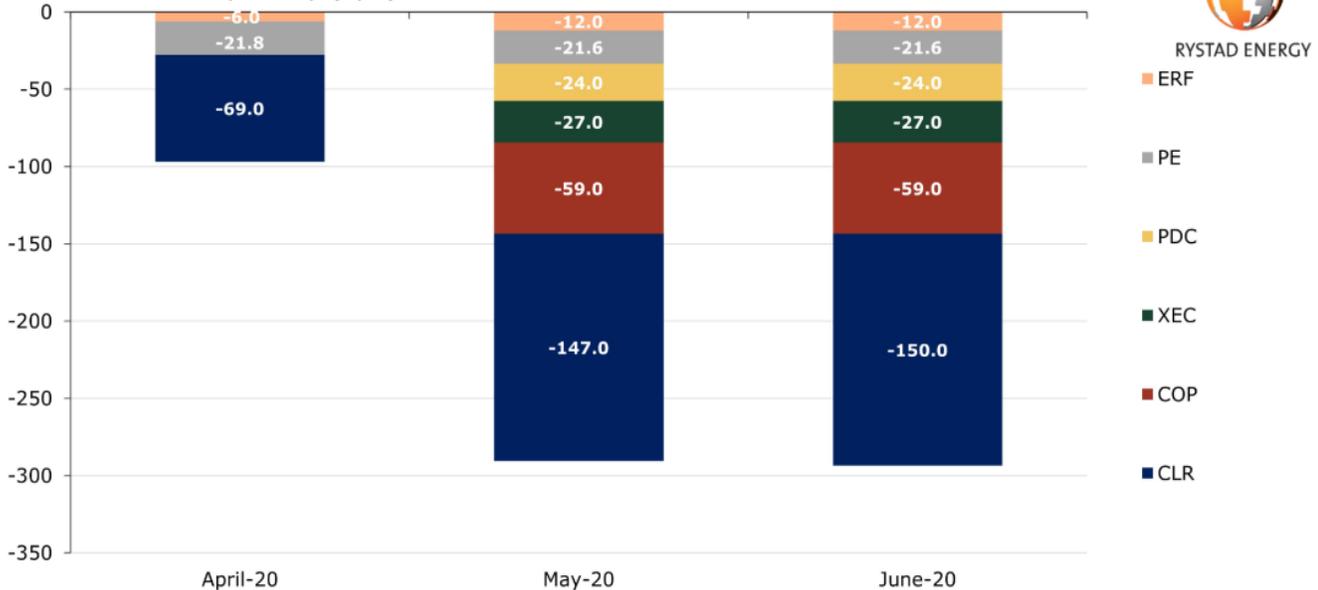
Source: April 2020 Energy Information Administration

This variability, in large part, has to do with the nature of oil production in the Permian basin and its interplay with capital markets. IHS Markit had reported in November and December 2019 that capital markets have been reluctant to finance new production for some time. They noted, “Unless intentionally choked back, new, individual unconventional wells in the US decline very rapidly, often 65 percent to 85 percent in the first year, so oil companies with many young wells in their inventory see significant declines in production compared to companies with a balance of younger and older wells.” Perversely, this actually worked in favor of Permian producers given current conditions. Given that, it is vastly less expensive to “frack” a well versus conventional drilling; producers need only to reduce current operating budgets to significantly curtail production. However this price collapse is so severe that this natural attrition is likely insufficient. As of April 29, most of the shut-ins seem to have affected North Dakota’s Bakken formation. Earlier in April, official data from the state’s administration showed a quarter of all oil wells had been shut in, cutting production by some 260,000 bpd. This was before Continental Resources and Oasis Petroleum announced that they suspended drilling and started shutting in operating wells as reported by Slav in April 29, 2020 in Oilprice.com. In addition, Davis in an April 16 NGI Daily gas price index article announced that Conoco-Phillips would reduce lower 48 production by 25 percent. The New Mexico State Land Office has proposed a voluntary holiday for oil production, suspending the requirements in its operating leases as outlined by Gerstein in the April 3, 2020 Santa Fe New Mexican news article. The Railroad Commission of Texas, the agency that regulates the state’s oil and gas industry, could vote Tuesday on a proposal to cut oil production by 20 percent, or about 1 million barrels per day. The proposal, as described by Chapa in the April 29, 2020 Houston Chronicle article, exempts small companies, would fine producers \$1,000 for every barrel pumped in excess of the limit. Figure 7 summarizes the announced oil production cuts by month by operator, as reported by Rystad Energy on April 28, 2020. Rystad analysts calculated that current announced cuts amount to 300 thousand bbd by June.

Figure 7: Production Curtailments by Month by Operator

Guided oil production curtailments by month and operator

Thousand barrels per day (bpd)



Source: Company reporting, Rystad Energy research and analysis

Recent news articles have announced several oil company departures and/or reductions in dividends to shareholders. Spencer and French reported in Business News on April 29, 2020 that Chesapeake Energy Corp,

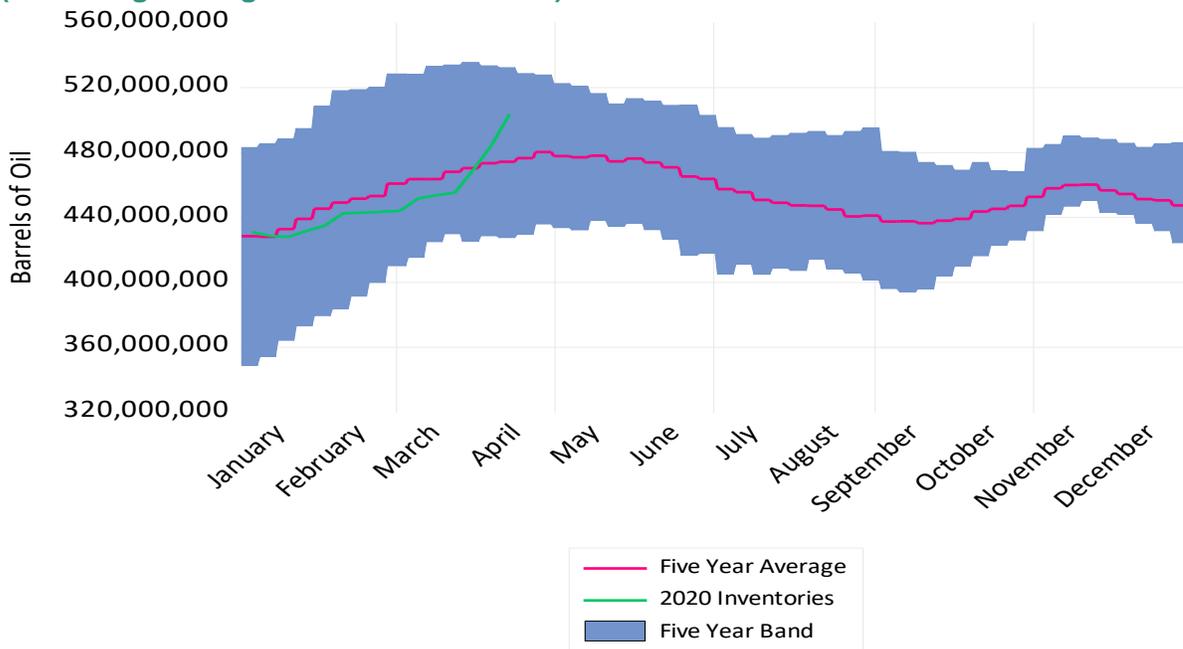
the oil and gas exploration and production company, was at the forefront of the past decade's U.S. shale boom. The company is now preparing a potential bankruptcy filing as it grapples with an unprecedented rout in energy prices. Another MarketWatch article by Kilgore on April 1, 2020 announced that Whiting Petroleum sought bankruptcy petition on April 1. Royal Dutch Shell, a major Permian producer, has slashed its dividend by 66% for the first time since World War II as outlined by Bromels in a May 1, 2020 article.

US Crude Oil Inventories

This *Fuel Price and Vehicle Trends Report* employs five-year averages and bands of inventories to compare to current inventory levels. Weekly inventories for crude oil, gasoline, and distillate span five years from 2013 to December 2019. Inventories have traditionally been seen 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.

Figure 8 shows monthly crude oil inventories. Given the accumulation of crude oil inventories in recent months, May crude oil inventories will approach their maximum in the sense of conventional storage. This was one of the major factors contributing to negative future prices earlier in April. Cushing, Oklahoma storage was 70 percent filled but 100 percent reserved as of April 17. The federal government already leased out 23 million barrels worth of storage space in the Strategic Petroleum Reserve to nine energy companies, and oil is already flowing into the SPR. In April, over 1 million barrels were sent to the SPR. On April 30th, the federal government announced that the U.S. is working on ways to expand storage space to add several hundred million more barrels to it, Treasury Secretary Steven Mnuchin said at a White House briefing, as quoted by Slav in an April 30, 2020 in Oilprice.com. EIA expects inventories to hover near historic highs for much of 2021. As noted earlier, producers prefer paying for storage as opposed to lowering production.

Figure 8: Weekly 2020 U.S. Ending Inventories of Crude Oil (Excluding Strategic Petroleum Reserve)



Source: Energy Information Administration

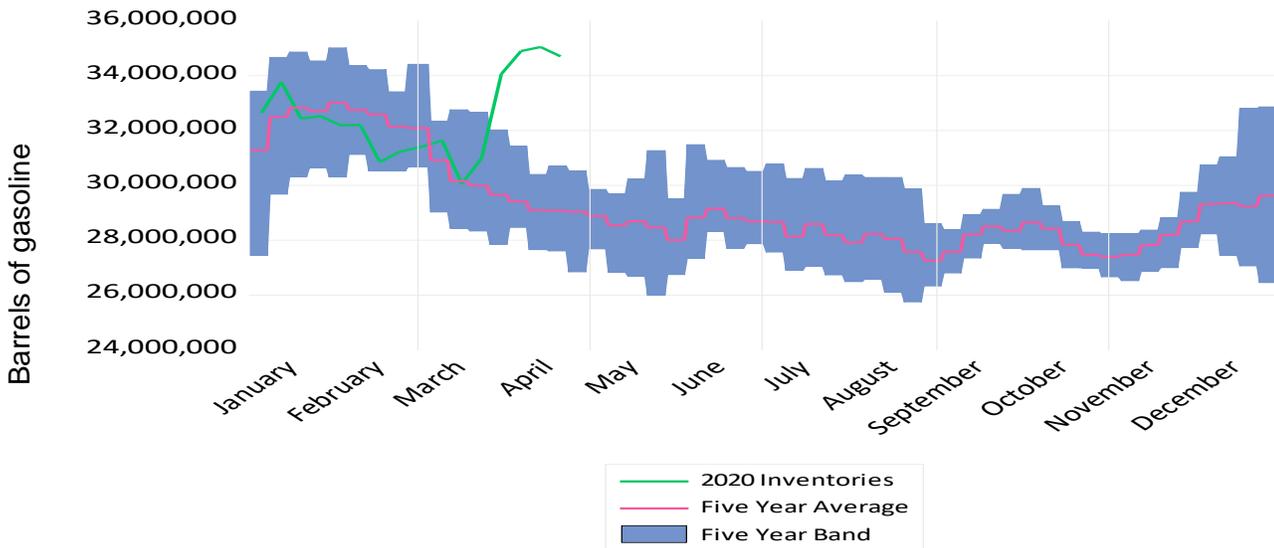
Petroleum Products Inventories: The West Coast Oil Market

Figure 9 shows gasoline inventories for the west coast, PADD5. Clearly, West Coast gasoline inventories have skyrocketed in April 2020 to nearly 35 million gallons, which reflected the decline in consumption. Inventories are building because demand declined more than anticipated. Late spring and summer traditionally are peak draw-down periods while the current level of inventories are more in line with winter consumption.

Refineries are facing the prospect of shutting down. Powell reported in Bloomberg.com that simply running at minimum rates of utilization might not be sufficient given the collapse in demand. “Slowing down a refinery isn’t like turning down the fire on a gas range when the water threatens to boil over. A refinery is a complex web of interconnected units, so once the amount of crude being processed in the distillation unit falls too low, secondary units don’t have enough feedstock to keep running. Since many units operate under high pressure as well as high temperature, it becomes more difficult to maintain the proper conditions for operation”

Gasoline production is responding to collapsing refinery profit margins or “crack spreads”. EIA defines crack spreads as differences between wholesale petroleum product prices and crude oil prices. These spreads are often used to estimate refining margins. Crack spreads are a simple measure based on one or two products produced in a refinery (usually gasoline and distillate fuel). They do not take into consideration all refinery product revenues and exclude refining costs other than the cost of crude oil.

Figure 9: 2020 Weekly Ending Gasoline Inventories (West Coast PADD5)

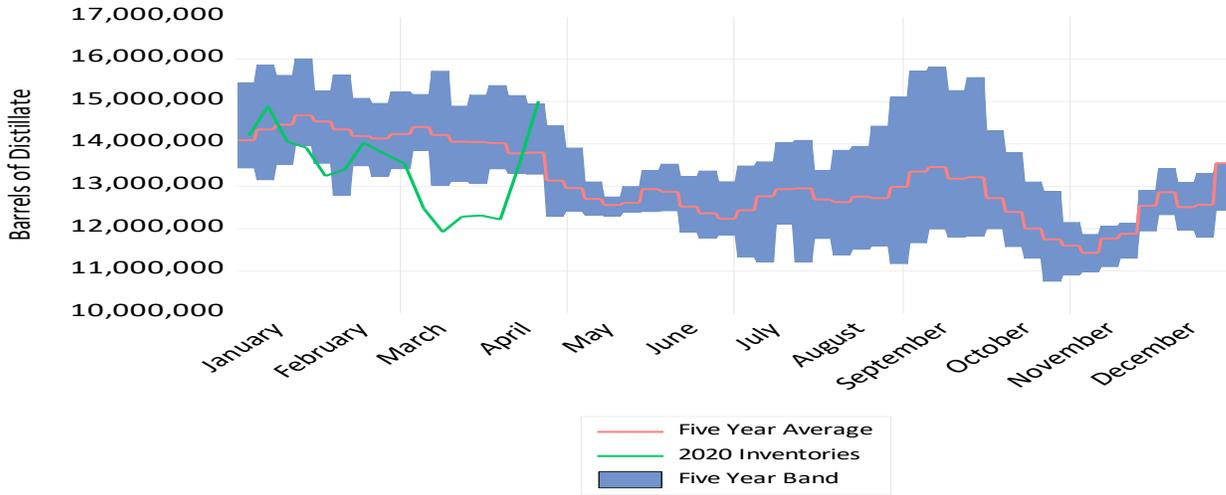


Source: Energy Information Administration

Figure 10 shows West Coast distillate inventories. Since few West Coast structures use home heating oil, the vast majority of this production consists of diesel used as transportation fuels. Diesel inventories have been gyrating wildly in their levels in March and April. At least by the end of April, the West Coast distillate inventory level was still within and at the top of the 5-year band at 15 million barrels of distillate. This distillate inventory level was not as high as the gasoline inventories grew to as shown in Figure 9. Significant distillate inventory drawdowns/increases are signs that producers are trying to gauge unanticipated demand. Analysts speculate that

demand was initially strong for distillates because of the surge for home-related goods. Once demand for certain goods was fulfilled and store supplies were replenished, there was a drop off in demand for distillate because of the overall collapse in demand for most products.

Figure 10: 2020 Weekly Ending Diesel Inventories (West Coast PADD5)

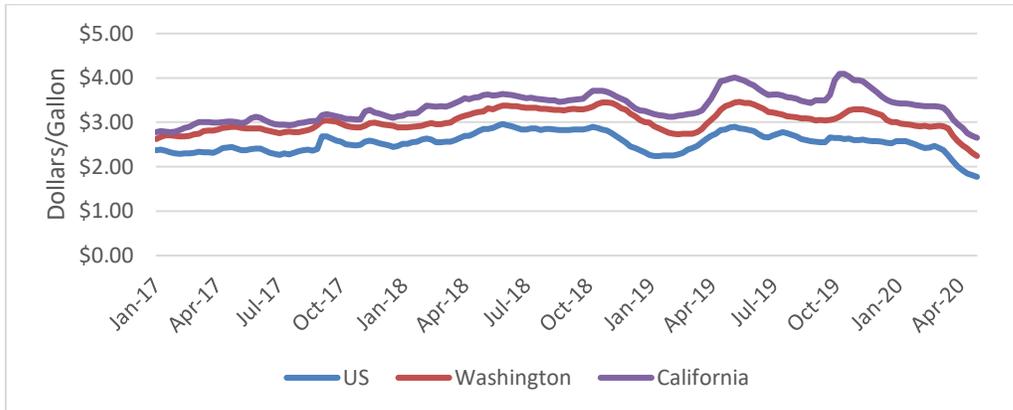


Source: Energy Information Administration

Washington Retail Gasoline and Diesel Prices

Washington is tightly integrated into the West Coast fuel market. The five Washington refineries are major exporters to California, Alaska and Hawaii. Figure 11 shows the history of the monthly ex tax gasoline prices for the Washington, California and the national market since 2010. Both California and Washington follow the inflections in national price trends. This makes sense since the major determinant of the national prices trends are crude oil prices. Prices have fallen in tandem with the collapse in demand.

Figure 11: Retail Gasoline Prices: WA, CA & the U.S. January 2008- April 2020

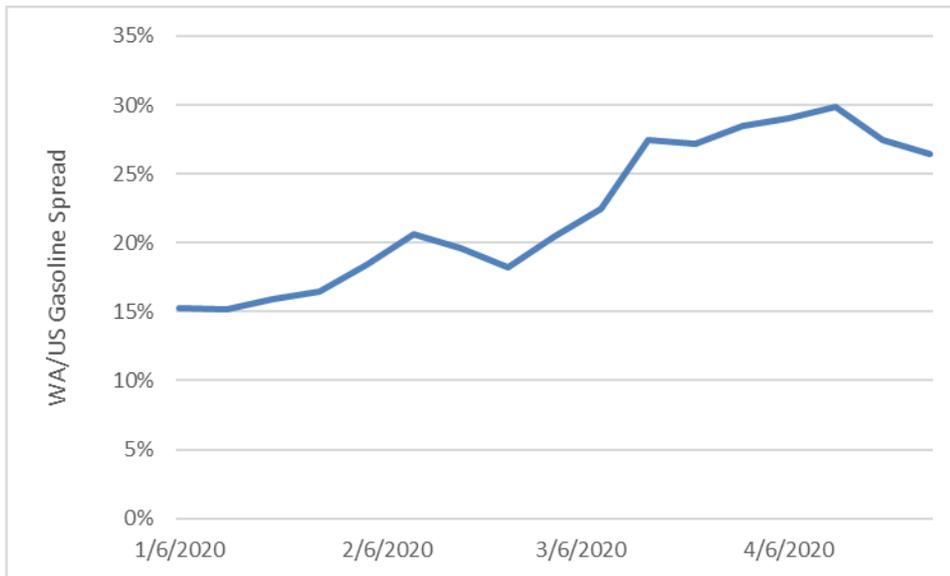


Source: Energy Information Administration US, WA and CA gas prices

The recent forecasts of US gasoline consumption published since mid-March that address the COVID-19 shutdowns nationwide have shown sharp drops in consumption. Krishnamoorti reported that companies like IHS Markit are now predicting gasoline consumption declining by 55 percent in March and April and jet fuel also being cut in half over the same time period. The report also stated that diesel demand should be less impacted by COVID-19 shutdowns because of its use in freight transportation. The Vice President of IHS Markit also stated that the magnitude of gasoline demand decline will be much greater than the impact of the 2008 recession and could be further delayed depending on how effective social distancing measures are at controlling the spread of COVID-19. In a March 2020 Oil & Gas Journal article, IHS Markit also acknowledge that there may be long-term impacts on remote working patterns and personal mobility choices that will affect future gasoline consumption but the overall impacts are still unclear.

This *Fuel Price and Vehicle Trends Report* has often noted that Washington refineries have considerable market power because they are insulated from east coast competition and the rest of the west coast states are undersupplied by in-state refineries as reported in Slav's April Oilprice.com article. Figure 12 shows 2020 Washington/National retail gasoline price spreads in percentage terms. The Washington/U.S. gas price spread averaged 20 percent in 2019. Prior to March 2020 spreads averaged 17 percent. Since then, spreads have climbed roughly coincident with the pandemic as high as 30 percent and then fell after the first week of April to around 25 percent.

Figure 12: WA/US 2020 Price Retail Gasoline Price Spreads



Source: Energy Information Administration

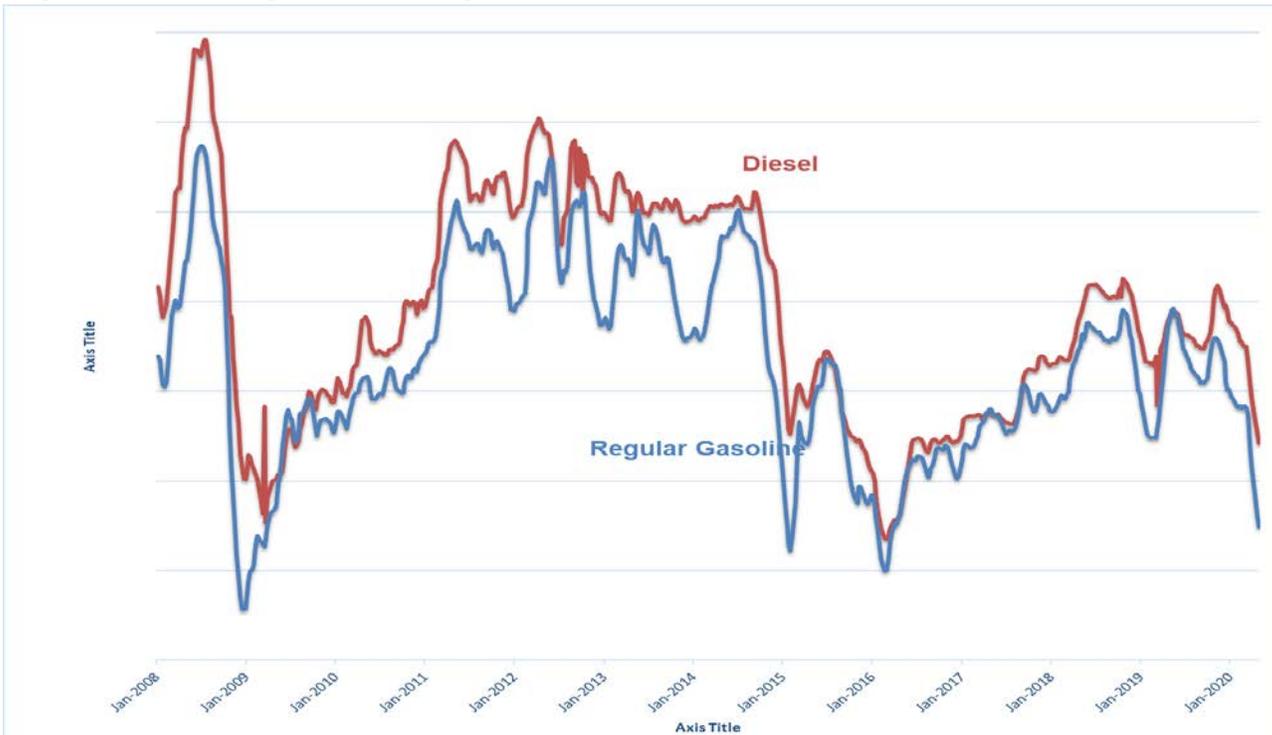
Figure 13 shows Washington regular retail gasoline and diesel prices since January 2006. Even though crude oil prices have seen dramatic declines in prices in March and April, retail gas and diesel prices have seen declines but not of the sheer magnitude as crude oil price declines. As expected, both WA retail gas and diesel prices followed the same trajectory and have declined since the onset of the pandemic in recent months. However, diesel prices have not collapsed as much as gasoline prices. At the beginning of 2020, regular gas prices average just under \$3 per gallon at \$2.95 per gallon. In February, WA gas prices fell only a little to \$2.91 per gallon but by

March, the weekly average WA retail gas price fell another 4 percent month over month to \$2.79 per gallon. Then in April, retail gas prices fell 15 percent more from the prior month to a weekly average of \$2.36 per gallon. The weekly average price for April represented a 20 percent decline from the start of the year but this decline pales in comparison to the recent drops in the crude oil prices.

Washington retail diesel prices started 2020 at \$3.36 per gallon. Diesel prices declined month over month \$0.08 per gallon in February to \$3.28 per gallon. In March, Washington retail diesel prices fell 4.5 percent to \$3.13 per gallon. Finally, in April, Washington diesel prices fell another 10 percent to \$2.80 per gallon. This represented a total decline of 16.7 percent from the weekly average January 2020 retail diesel price. This was a smaller overall decline for diesel than the 20 percent drop seen in Washington retail gas prices since the beginning of the year.

The spread between retail gasoline and diesel averaged 9 percent in 2019. Prior to March 2020 spreads averaged 13 percent. Since March, spreads have averaged 16 percent. However, gasoline/diesel spreads have climbed to the low 20 percent range through April. As with the diesel inventories shown in Figure 10, this data allows some optimism, that commerce has not collapsed as much as passenger traffic.

Figure 13: Washington Retail Regular Gasoline and Diesel Prices 2006-2020



Source: AAA, Energy Information Administration

BIODIESEL PRICE PREMIUM TRENDS

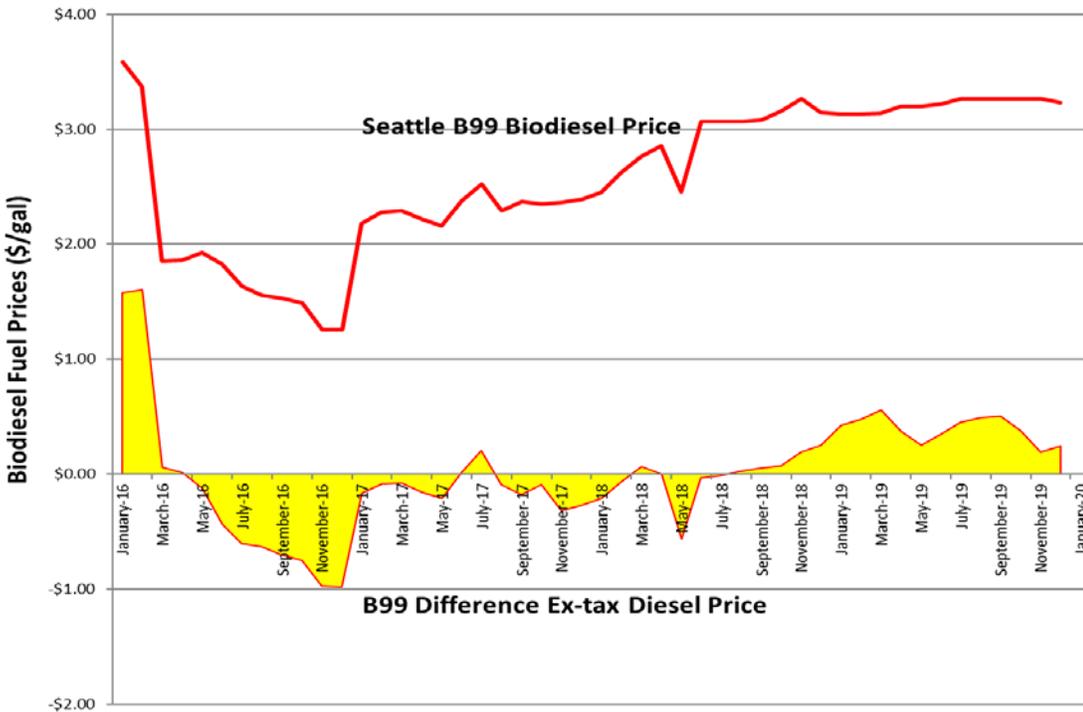
Analysis by Lizbeth Martin-Mahar, Ph.D.

Biodiesel Prices: Comparison of Historical and Recent Prices

Recent Trends: Washington B99 Biodiesel Prices

Since January 2019, the B99 price has remained at an average price of \$3.13 per gallon. In April, the B99 biodiesel price did increase slightly to \$3.20 per gallon. In June, the B99 biodiesel price increased to \$3.22 per gallon and by July the average B99 monthly price was \$3.27 per gallon. It has remained at that price through November and fell a little to an average of \$3.23 per gallon in December. Figure 13 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 rose for the most part except for a slight drop in May 2018. Now in calendar year 2019, the B99 price premiums above the regular diesel prices have grown to as high as \$0.55 per gallon in March 2019 and then it fell back again. Currently in November and the first weeks of December the B99 price premium was \$0.2 and \$0.24 respectively.

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

Seattle and Portland B5 red dyed biodiesel prices are tracked because the Washington State Ferries contract for fuel purchases is based on the Portland B5 red dyed biodiesel prices. We have also compared the B5 red dyed biodiesel price with red dyed diesel as well. Figures 15 and 16 reveal the significant declines in B5 prices beginning in February through April mostly due to COVID-19 shutdowns beginning during the last few weeks of March. The results also reveal that B5 prices in Portland and Seattle are typically moving in the same direction with similar declines and both B5 prices have declined significantly from a year ago. Beginning in January 2020, B5 prices were both below \$2 per gallon and very close in price at \$1.92 and \$1.90 per gallon for Portland and Seattle respectively. January 2020 Portland B5 prices were only 2% higher than a year ago. In February, both B5 prices in Portland and Seattle fell nearly \$0.20 month over month to \$1.73 and \$1.72 per gallon in Portland and Seattle respectively. The February 2020 B5 prices in Portland and Seattle were also, 15.6% and 13.1% lower than the prior year's prices. In March, with the impacts of COVID-19 shutdowns occurring in the last two weeks of the month, the B5 prices fell \$0.38 and \$0.42 per gallon from the February 2020 prices in Portland and Seattle respectively. In addition, the March 2020 B5 prices were 35% lower than a year ago in those two cities. Finally, in April B5 prices have fallen even further to below \$1 per gallon on average for the month with all the lower demand for fuel with the Governor's "Stay home" order in place for the entire month. Portland and Seattle B5 prices in April averaged \$0.93 and \$0.91 per gallon respectively, which is a decline of more than 58% in prices from a year ago.

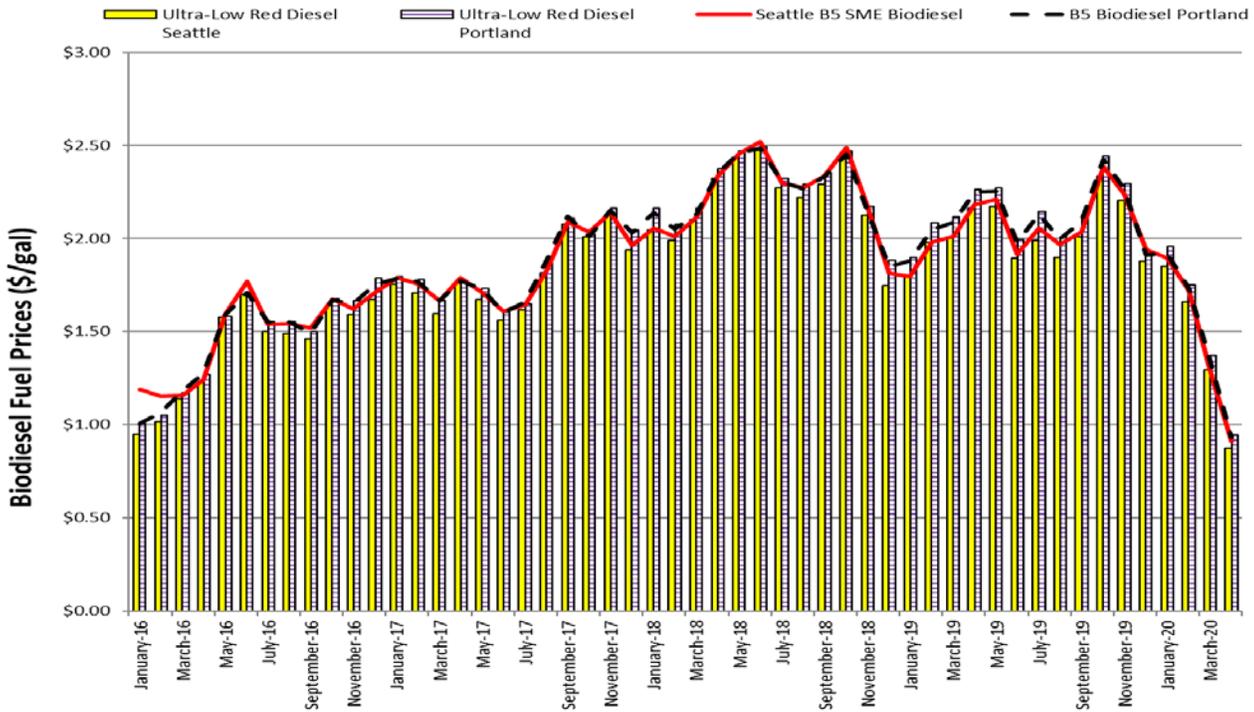
Figure 15: Seattle and Portland OPIS B5 Biodiesel Prices: January – April 2020

B5 Prices			
Monthly Average Price	Portland Price (\$/gal)	Seattle Price (\$/gal)	% Difference Portland vs Seattle Prices
January 2020	\$1.92	\$1.90	1.0%
Jan. 2020 - % Change Jan 2019	2.1%	5.5%	
February 2020	\$1.73	\$1.72	0.6%
Feb. 2020 - % Change Feb. 2019	-15.6%	-13.1%	
March 2020	\$1.35	\$1.30	3.7%
Mar. 2020 - % Change Mar. 2019	-35.4%	-35.3%	
April 2020	\$0.93	\$0.91	2.2%
Apr. 2020 - % Change Apr. 2019	-58.7%	-58.3%	

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

In addition, the recent declines in B5 red dyed biodiesel prices in both cities are also revealed in Figure 15. The difference in red dyed diesel prices between the two cities in recent months is minor and mirrors the difference in B5 biodiesel price trends. Over the past four months beginning in 2020, Portland B5 dyed diesel prices have averaged 1.6% below the red dyed diesel price in Portland. Portland and Seattle dyed diesel prices are similar with Portland dyed diesel prices being on average \$0.09 per gallon higher than the Seattle dyed diesel prices over the past four months. Furthermore, B5 and dyed diesel prices in Portland and Seattle have each declined 52% over the past four months, January through April 2020.

Figure 16: 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.

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 April edition of the *Fuel and Vehicle Trends Report*, we have seen significant drops in West Texas Intermediate (WTI) crude oil prices in the later part of March and continuing through April 2020 since our last projections in February 2020. The recent dramatic fall in crude oil prices is due to the significant reduction in worldwide demand from the COVID-19 shutdowns and stay home orders throughout the world. During the pre-COVID-19 shutdown period, January and February, the monthly average crude oil prices were \$58 and \$50 per barrel respectively. January WTI monthly average crude oil price was actually 9.8 percent above the February forecast for 2020 Q1 and the February average price was 4 percent below the 2020 Q1 projection. By March, WTI crude oil prices started to decline quickly. The March monthly average crude oil price dropped to \$30 per barrel average on the month, which represented a 42.5 percent decline from the 2020 Q1 forecasted price. Then in April, the WTI monthly average price fell even further to \$22 per barrel, which was 57.7 percent lowered than the April forecasted price for 2020 Q2. See Figure 17 for more detail.

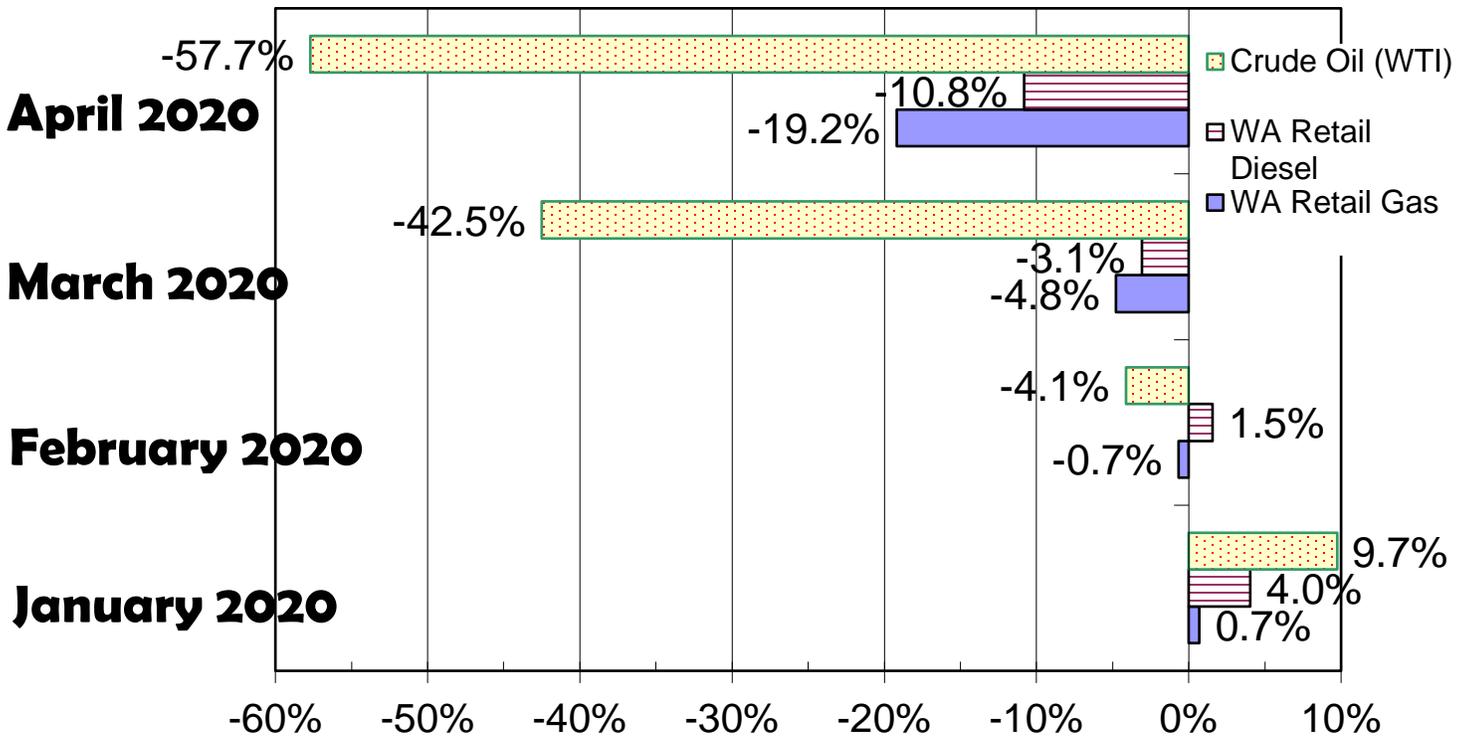
Even though WTI crude oil prices declined dramatically in March and April, retail gas and diesel prices have not fallen as much. The pre-COVID-19 January and February monthly average retail gas prices were \$2.95 and

\$2.91 per gallon respectively and they were both real close the 2020 Q1 February projection for retail gas price of \$2.93 per gallon. The March monthly average price started to show the impact of lower crude oil prices and lower demand from COVID-19 shutdowns. The March average retail gas price of \$2.79 per gallon was lower by \$0.12 per gallon than in February. This was also below the projected February price by 4.8 percent. Finally, in April, the monthly average price dropped \$0.43 per gallon or 15 percent in a month to \$2.36 per gallon. This April average retail gas price was 19 percent below the projected 2020 Q2 retail gas price of \$2.92 per gallon.

The recent trends in retail diesel prices are similar to the retail gas price trends but the declines in diesel prices is even smaller than the retail gas price declines. The pre-COVID-19 January and February monthly average retail diesel prices were \$3.36 and \$3.28 per gallon respectively and they were both above the 2020 Q1 February projection for retail diesel price of \$3.23 per gallon by 4 and 1.5 percent respectively. The March monthly average diesel price started to show the impact of lower crude oil prices and lower demand from COVID-19 shutdowns. The March average retail diesel price of \$3.13 per gallon was lower by \$0.15 per gallon than in February. This was also below the projected February price by 3.1 percent. In April, the monthly average diesel price declined by \$0.33 per gallon or 10 percent to \$2.80 per gallon.

In the past four months (January through April), we have seen the difference between retail gas and diesel prices go from \$0.41 per gallon in January and decline to \$0.37 and \$0.34 per gallon respectively in February and March. Then in April, the difference between retail gas and diesel shot up again to \$0.44 per gallon. The reason for the bump up in the retail price difference in April is due to retail diesel prices not falling by as much as retail gas prices.

Figure 17: Percent Change in 2020 Monthly Average Fuel Prices Compared to the February Forecast



Source: Washington TRFC February 2020 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 February 2020 forecast, two months of fuel tax collections have been reported. Please note that these recent fuel tax collections do not yet include the negative impacts from COVID-19 shutdowns in the state during March and April. That is because of the 2-month delay in receiving reports on fuel sales activities. The February fuel tax collection report from the Department of Licensing show \$136.9 million in total fuel tax revenue, which was below the February forecast by \$3 million for both fuel types. In February, gasoline tax collections came in at \$119 million, which was below the February projections by \$4.2 million or 3.7 percent. Diesel tax collections came in at \$26.9 million, which was \$1.2 million or 4.6 percent above the February forecast. For the following month, March collections for all motor fuel came in at \$137.7 million, which was \$4.8 million or 3.6 percent above the forecast. Gas tax collections in March were \$3.5 million above the last forecast and diesel tax collections were above by \$1.3 million. Overall, for both February and March collections combined, gas tax collections are down by \$0.74 million or -0.3 percent and diesel tax collections are up by \$2.5 million or 4.8 percent from the last forecast. Overall, for both fuel types, collections are up by \$1.78 million or 0.7 percent, which is pretty close to our last forecast in February. Figure 18 reveals the February and March 2020 results.

Figure 18: Motor Vehicle Fuel Tax Collections in February and March 2020 Compared to the February 2020 Revenue Forecast



Source: Washington TRFC February 2020 Forecast and State Treasurer's Office monthly fuel reports

VEHICLE TRENDS

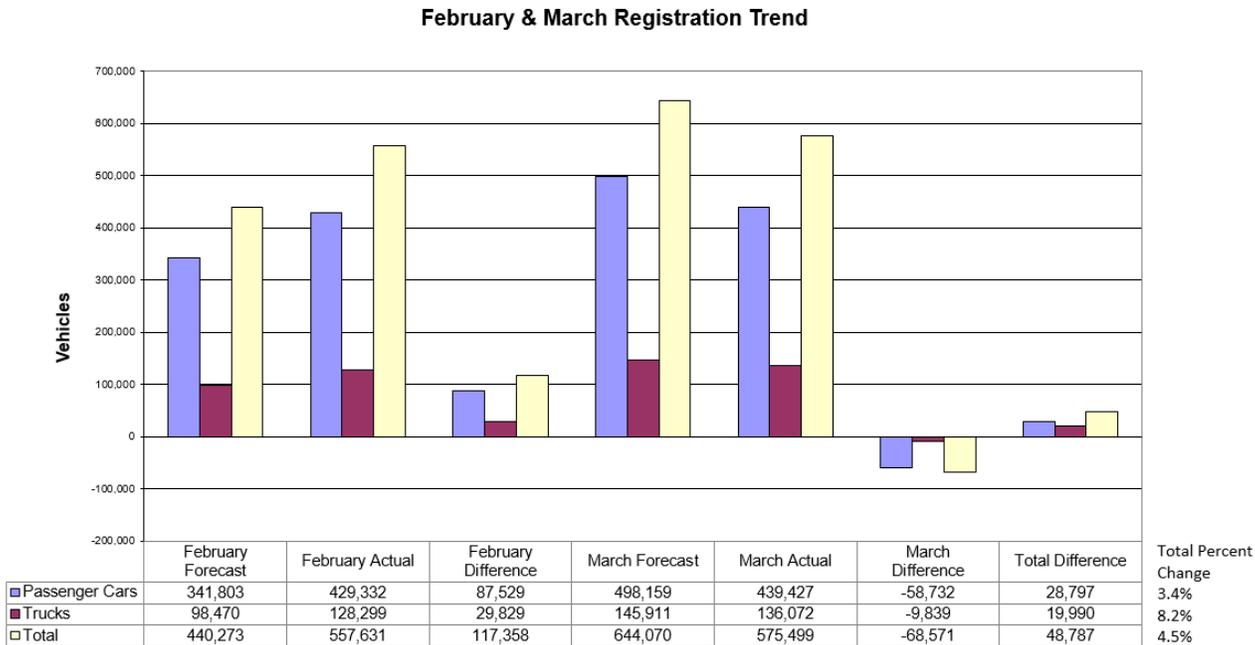
Analysis by David Ding, Ph.D.

For the two months of licensing registrations and revenue data we have received since the February forecast, vehicle registrations were up for all months, see Figure 19. Passenger car registrations came in at 429,332 and 439,427 for February and March respectively. These actuals were 25.6 percent higher and 11.8 percent lower than projected in February for those months. The higher actual registrations in February of 25.6 percent registration growth above the last forecast looks odd. It may be due to collecting some late registrations in January or picking up early registrations in March. For both months combined, passenger car registrations were up 3.4 percent over the February forecast, which showed the continued growth in car registrations.

Truck registrations had a similar pattern to passenger cars. The truck registrations were reported as 128,299 and 136,072 vehicle for February and March respectively. These latest actual registrations were above the forecast by 30.2 percent in February and below the forecast by 6.7 percent in March. Just like the car registrations, the February truck registration actual being 30.2 percent above the February projections may be due to collecting late registrations in January or picking up early registrations in March as well. For both months combined, truck registrations were up 8.2 percent over the February forecast.

For both passenger cars and trucks combined for this period, vehicle registrations came in 48,787 vehicle above the February forecast, which translates to a 4.5 percent increase.

Figure 19: Vehicle registrations, February and March 2020, Forecast vs. Actual



Source: Washington Transportation Revenue Forecast Council February 2020 Forecast and Department of Licensing Reports 13, February – March 2020

We also have two months of revenue to discuss in this report (Figure 20). In February, for \$30 basic license fees, the revenue came in at \$13 million, \$0.3 million more than the \$12.7 million forecasted. In March, the revenue collection was below the forecast by \$0.7 million or 4.3 percent. For both months combined, the passenger vehicles' \$30 fee revenue came in very close to forecast at \$0.4 million less or 1.4 percent lower from the last forecast. This is contrary to the increase of the passenger car registrations, which is 3.4 percent higher than that same period.

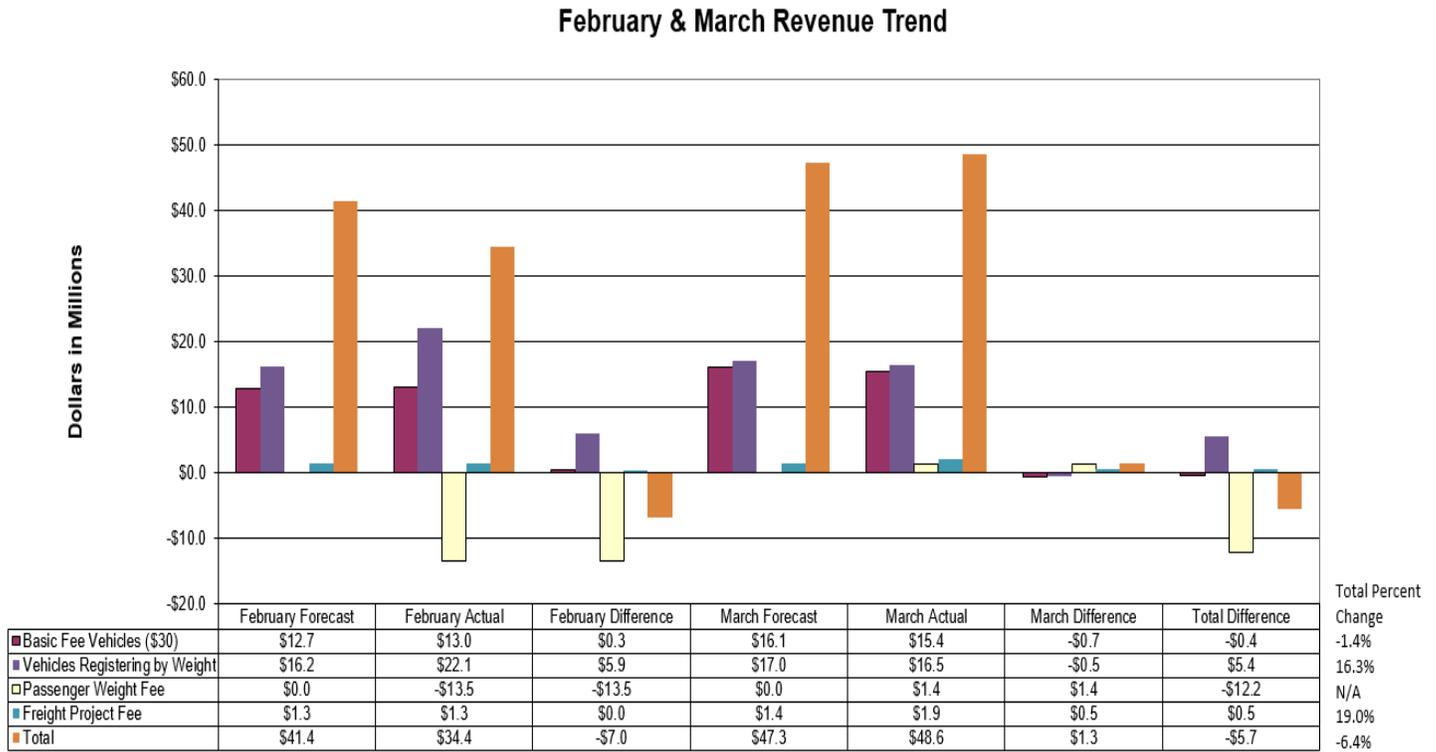
Revenue for truck weight fees were also higher than expected for February by \$5.9 million, which was 36 percent more than the last forecast. In March, the truck weight fee revenue came in at \$16.5 million which was \$0.5 million below the last forecast of \$17 million. For both months combined, the truck weight fees came in at \$5.4 million or 16.3 percent above the last projections. The 16.3 percent percentage increase in truck weight fee revenue is higher than the 8.2 percent growth in truck registrations. Revenues coming in higher than truck registrations could be the result of more heavier trucks registering that month than projected for February.

Figure 20 also reveals that in both February and March, there are revenues posted for the passenger weight fee. Note that the February baseline forecast included the impact of Initiative I-976 and that result required all passenger weight fees to be eliminated after December 5, 2019. In February, this revenue is -\$13.5 million but this decline was due to a DOL accounting adjustment for the prior month for I-976 revenue. In March, the revenue posted at \$1.4 million but the forecast had the passenger weight fee being eliminated by March. For all remaining months, we should not see any passenger weight fees due to the passage of I-976.

The freight project fee in February came in at \$1.3 million which was right on target with our projection. In March, the freight project fee revenue came in \$1.9 million, \$0.5 million higher than the projection. Altogether, the freight project fee is \$0.5 million or 19 percent more than the last forecast for those months. The percentage increase in freight project fee is about in the same level as the truck weight fees increase, which is 16.3 percent above the forecast.

Finally, total License, Permit, and Fee (LPF) revenues were 6.4 percent or \$5.7 million below the forecast for the two months combined. We forecasted \$41.4 million for the month of February, but received \$34.4 million instead with the -\$13.5 million passenger weight fee JV adjustment being the largest decrease in actuals beyond February's projections. For March, total LPF revenue was projected at \$47.3 million, while collections came in at \$48.6 million, up \$1.3 million from February's projections.

Figure 20: Vehicle revenue, February and March 2020, Forecast vs. Actual.



Source: Washington Transportation Revenue Forecast Council February 2020 Forecast and Department of Licensing AFRS Revenue Reports, February – March 2020.

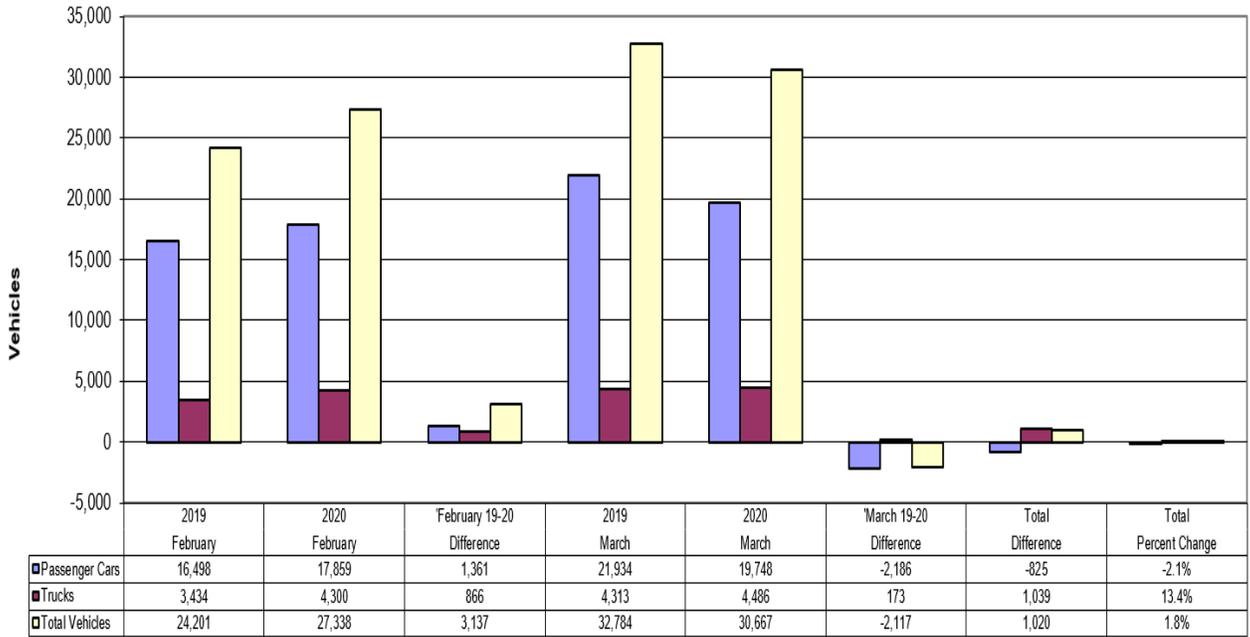
New Car and Truck Registrations from Sales

In this report, which covers new vehicle registrations for February and March of 2020, we see a year over year increase for all categories in February. In March, we see a decline for new passenger car sales, see Figure 21. In February, new car registrations were 1361 vehicles above registrations of a year ago. In March, new car registrations went down by 2186 vehicles compared with March 2019. This decrease is likely related to the broad shutdown in the state caused by COVID-19. Meanwhile, DOL also closed their licensing offices in the last week of March, which might also contribute to the reduction of the registration. For both months, together, total car registrations were down by 825 vehicles, which was -2.1 percent over the previous year.

New truck registrations in Washington State showed strong growth during the month of February 2020. The registrations exceeded the previous year monthly total by 866 trucks, which represents a 25 percent growth over last year. In March, the new truck registrations increased by only 173 trucks from same period last year. Similar to the reduced passenger car registration, the small increase for new trucks maybe because of the impact of the COVID-19. Otherwise, the number of new truck registrations might be higher than this. For the two months combined, the new truck registrations increased by 1039 vehicles, which is 13.4 percent increase from the previous year. This result indicates that the new truck registrations are still growing year over year. Overall, total new vehicle registrations increased by 1020 vehicles or 1.8 percent, year over year. Looking ahead, we are not

sure if the new car sales will keep growing year after year, since we already see the sign of reduction. Because the impact of COVID-19 persists, we will likely see further reductions for new car registrations in the future months once we see March new car registrations.

Figure 21: New vehicle registrations Comparisons



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

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