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Energy and Natural Resources Committee

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Chairman Murkowski, Ranking Member Manchin, and Members of the Committee, I appreciate the opportunity to testify about the U.S. Energy Information Administration's (EIA) view of the effects that the upcoming International Maritime Organization (IMO) 2020 regulations may have on the global oil market as presented in our November *Short-Term Energy Outlook* (STEO).

The upcoming IMO 2020 regulations, set to take effect on January 1, 2020, will limit the sulfur content in marine fuels that ocean-going vessels use to 0.5% by weight, a reduction from the previous limit of 3.5%, which was established in 2012. The change in sulfur limits has wide-ranging repercussions for not only the global refining and shipping industries, but also for petroleum supply, demand, trade flows, and prices. The shipping and refining industries have already prepared for and invested in modifications to accommodate the IMO 2020 regulations. We anticipate that the IMO 2020 regulations will put upward pressure of about $2 per barrel on light, sweet crude oil prices in 2020, which will moderate in the following years. However, the regulations will have a longer-term effect on petroleum supply, demand, and trade flows.

We expect the IMO 2020 regulations to put upward pressure on light, sweet crude oil prices in 2020 because of increased demand for that crude oil to produce lower-sulfur marine fuels. As a result, we are forecasting the price difference between light, sweet crude oil and heavy, sour crude oil to be wider next year. However, as a result of the slowing growth in global gross domestic product and the resulting slower growth in global oil demand, we expect global oil inventories to increase and, in general, put downward pressure on oil and petroleum product prices. As a result, our November STEO forecasts Brent crude oil prices to average slightly higher than $60 per barrel in 2020, compared with an average of $64 per barrel in 2019. We expect the effects of IMO 2020 regulations on crude oil prices to be less significant than the effects on petroleum product prices.

Although the regulations do not go into effect until January 1, preparations are already affecting oil markets, and we expect further market changes into 2020. The bunker fuel market accounts for a relatively small share of both global and U.S. liquid fuels. However, demand in the global bunker fuel market has shifted from high-sulfur fuel oil to low-sulfur fuel oil and low-sulfur distillate fuel in anticipation of the upcoming regulations. Because petroleum product prices are set in the global market, the new regulations have placed upward pressure on prices for low-sulfur refined products in the United States. In the U.S. Gulf Coast, the price differential between low-sulfur fuel oil and high-sulfur fuel oil increased as ship operators began storing and purchasing low-sulfur marine fuels in place of high-sulfur fuels to prepare for the specification change. Trade press reports indicate that the price differential between low-sulfur fuel oil and

high-sulfur fuel oil on the U.S. Gulf Coast has increased more than threefold between June and November 2019. Similar trends have emerged at trading locations around the world. The price effects from this shift in demand for marine fuels are most visible in low-sulfur and high-sulfur residual fuel oil markets, but other refined petroleum products such as diesel fuel, gasoline, and jet fuel may already be showing some small price increases as well.

In general, price premiums for lower-sulfur refined products through 2020 are most evident at the wholesale (refinery and bulk terminal) level in the form of higher refining margins for low-sulfur products, such as diesel fuel. In our *Annual Energy Outlook* (AEO2019), we project that diesel refining margins will gradually decrease after 2020. Because the retail prices that consumers pay are a function of both crude oil prices and refining margins, we expect that generally lower crude oil prices in 2020 will mostly offset the effects of the higher refining margins related to the regulations. We expect that prices at the pump for gasoline and diesel next year will be similar to prices in 2019.

The prevailing high refining margins have provided plenty of economic incentive for global refiners to increase refinery runs and maximize the upgrading of high-sulfur heavy fuel oil into low-sulfur distillate fuel to create compliant bunker fuels. These same trends are evident in the United States, where refiners are producing more diesel fuel by increasing not only diesel yields but also refinery runs. Refineries in the United States, where much of the refining capacity has downstream units that upgrade residual oils into more valuable and lower-sulfur products such as diesel, are well positioned to supply the global marine-fuel market with low-sulfur bunker fuel. We expect that gross inputs into refineries will increase to a record level in 2020, resulting in an average utilization rate of more than 90%, a high rate by historical comparison.

The United States represents a relatively small share of demand in the global bunker fuel market. We believe that U.S. refiners will export much of the increased production of diesel fuel and other refined products that will result from higher refinery runs. As U.S. refiners export diesel and low-sulfur residual fuel oil to supply an increasing share of the global demand for low-sulfur bunker fuel, we anticipate that exports will continue to grow in 2020. In fact, we estimate that in September of this year, U.S. exports of crude oil and petroleum products started exceeding imports. We expect that U.S. net exports will continue to grow in 2020 and that low-sulfur fuels will provide a large share of the increased exports.

In the longer term, our AEO2019 projects that U.S. net exports of diesel will largely decrease from 2021 to 2025 as the global shipping industry demands less diesel because of increased scrubber adoptions. Beyond 2025, we project that the number of ships that run on liquefied natural gas (LNG) will also increase as economic and regulatory factors increase the rate at which LNG-based technologies are incorporated into new ship construction. Although we expect limited effects on the price of crude oil as a result of the IMO 2020 regulations, many unknowns remain about how the global refining and shipping industries will respond, and actual outcomes of these industry decisions will affect crude oil prices.

Furthermore, smaller, more remote ports across the world may face logistical and fuel availability issues in the short term. Although the largest and most active ports have supplies of both high-sulfur and low-sulfur fuels, these fuel availability concerns are real at smaller or more

remote ports. However, we believe that new logistical supply patterns will develop over time, and ship owners will adjust to these potential short-term dislocations of fuel.

As noted earlier, despite the upward pressure on prices from the IMO 2020 regulations, we expect crude oil prices to average slightly higher than $60 per barrel in 2020. In effect, our view is that downward oil price pressure from slowing global economic growth will outweigh concerns of the IMO 2020 regulations next year.

Chairman Murkowski and Members of the Committee, thank you for the opportunity to present this information. This concludes my testimony, and I look forward to answering your questions.

Appendix

Figure 1. U.S. diesel and crude oil prices, 2016-2020

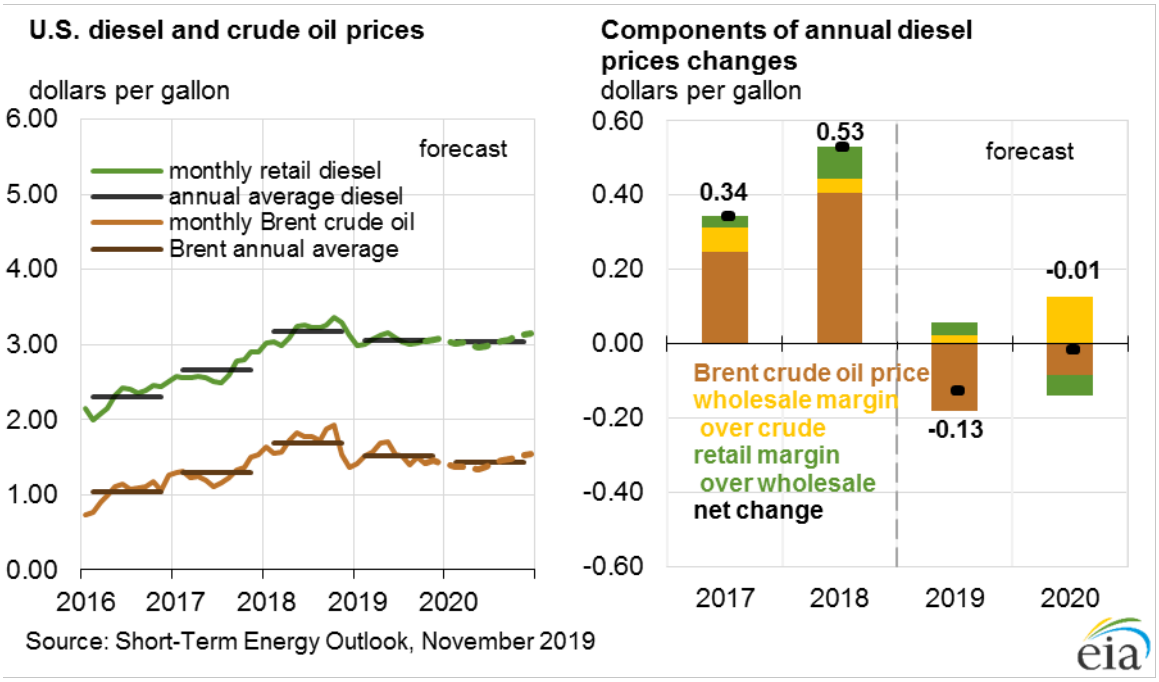


Figure 2. U.S. gasoline and crude oil prices, 2016-2020

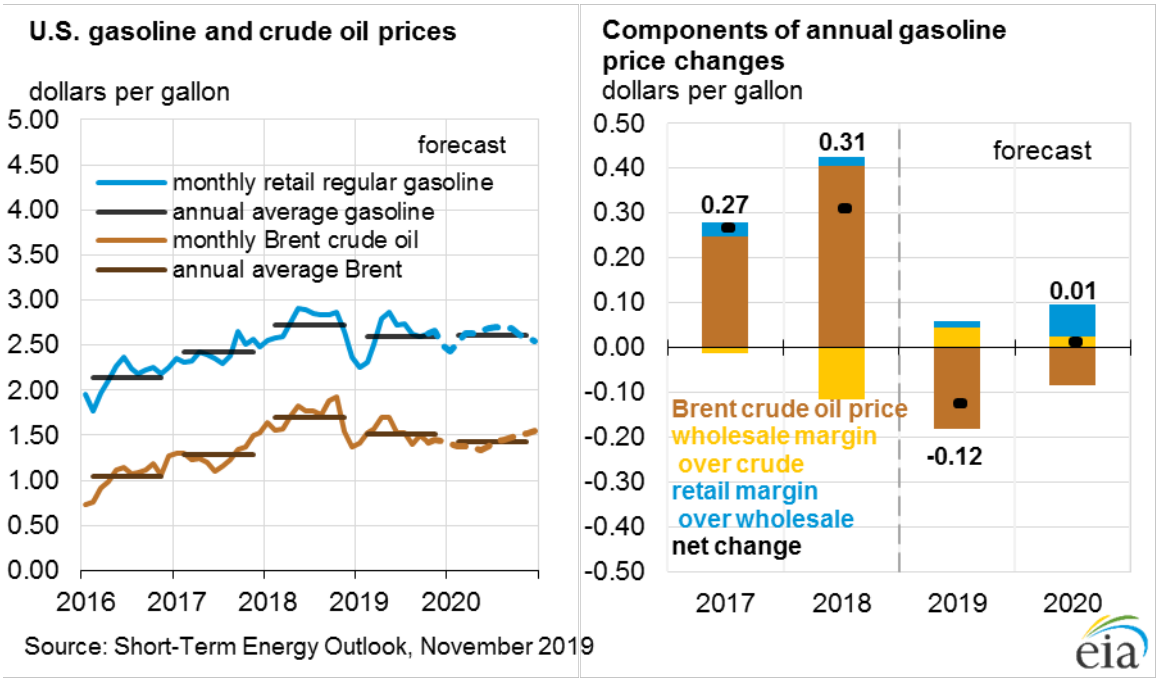
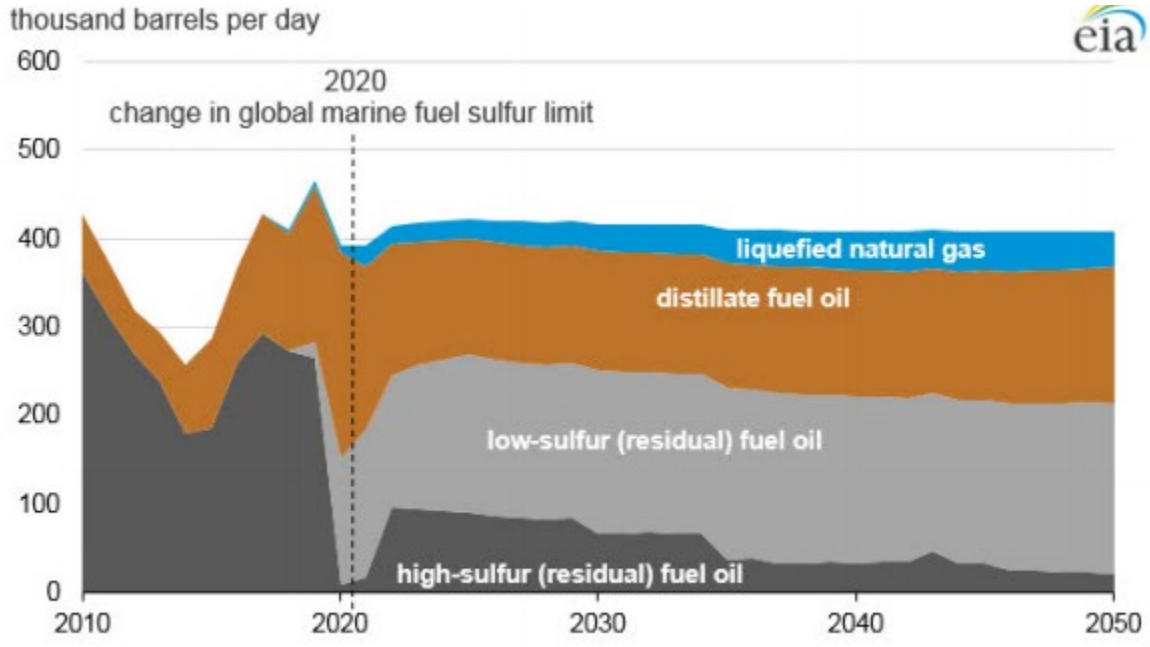
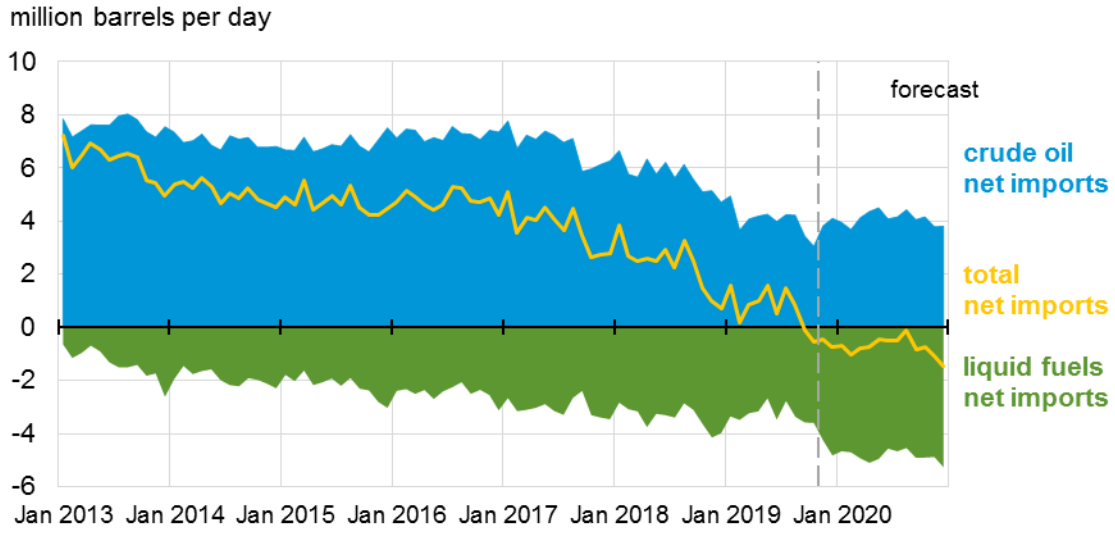


Figure 3. International marine shipping consumption by ocean-going vessel bunkering at U.S. ports



Source: U.S. Energy Information Administration, AEO2019 Reference case

Figure 4. 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, November 2019

Figure 5. U.S. refinery margins