Energy-related Products

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Change from 2017 to 2018:

- **U.S. total exports of energy-related products: Increased by $51.6 billion (35.7 percent) to $195.9 billion**
- **U.S. general imports of energy-related products: Increased by $38.4 billion (19.4 percent) to $236.4 billion**

The value of U.S. total exports of energy-related products grew by $51.6 billion (35.7 percent) from 2017 to 2018, driven by the increase in petroleum prices and the growing volume of U.S. crude petroleum exports. [1] Mexico and Canada remained the top two destinations for U.S. energy-related exports, with exports to both destinations rising about 30 percent in value (table EP.1). Meanwhile, U.S. exports to China were relatively flat (declining by less than 1 percent to $8.8 billion) and were overtaken by other markets; China dropped from the third-largest U.S. export market in 2017 to the seventh largest in 2018.[2] U.S. energy-related exports to South Korea, the Netherlands, and Japan each rose substantially, from less than $6.0 billion in 2017 to over $9.0 billion in 2018.[3] Nearly half of the overall growth in the value of U.S. energy-related exports came from crude petroleum exports (table EP.2), which increased in volume by 309 million barrels (73 percent) from 2017 to 2018.

The value of U.S. imports of energy-related products grew by $38.4 billion (19.4 percent) over the same period. The top suppliers of U.S. energy-related imports were all major producers of crude petroleum and remained the same from 2017 to 2018: Canada, Saudi Arabia, Mexico, Venezuela, and Iraq.[4] Crude petroleum and petroleum products contributed almost all of the increase in U.S. imports, by value. Even

[1] Unless otherwise noted, the export data used in this investigation are for domestic exports. For more information on trade terminology, please refer to USITC, "Special Topic: Trade Metrics," *Shifts in U.S. Merchandise Trade, 2014*, 2015, https://www.usitc.gov/research_and_analysis/trade_shifts_2014/trade_metrics.htm.

[2] Compiled from official statistics of the U.S. Department of Commerce. Table EP.1 shows the top 10 countries by total U.S. trade (both imports and exports) of energy-related products in 2018. As a result, some countries that were large export markets for U.S. energy-related products but relatively small sources of U.S. energy-related imports are not shown in the table.

[3] U.S. exports of energy-related products to Japan rose from $5.7 billion in 2017 to $9.2 billion in 2018. Most U.S. trade of energy-related products experienced a large growth in dollar value due to price increases; flat or small increases in dollar value generally indicate that the volume of trade declined. Brazil also overtook China as an export market, due to increased U.S. crude petroleum and natural gas exports to Brazil. Compiled from official statistics of the U.S. Department of Commerce. See the special topic chapter of this report for further discussion of how U.S. trade with China shifted after the implementation of tariffs in 2018.

[4] Mexico rose from being the fourth-largest source of U.S. energy-related imports in 2017 to the third largest in 2018 (switching places with Venezuela).

though the dollar value of these imports increased, the volume of U.S. imports of crude petroleum and petroleum products actually declined by about 78 million barrels (2 percent) from 2017 to 2018.[5]

The substantial growth of U.S. exports and imports of energy-related products in value from 2017 to 2018 reflected a large increase in average prices for some energy-related products. Prices for crude petroleum and related products rose substantially from 2017 to 2018 and drove shifts in the value of U.S. trade of crude petroleum, petroleum products, and natural gas and components.[6] Compared to the shifts in average prices for crude petroleum and its products, the changes in trade volumes for most of these products (other than crude petroleum exports) were relatively small. The price of Brent, the most widely used international benchmark for crude petroleum, rose from an annual average of $54.12 to $71.34 per barrel (32 percent) from 2017 to 2018.[7] The average annual spot price for U.S.-origin crude of a similar quality—West Texas Intermediate (WTI)—rose from $50.80 to $65.23 (28 percent) during the same period.[8]

[5] Calculated by totaling monthly values and by subtracting U.S. imports of hydrocarbon gas liquids from the total reported by the U.S. Energy Information Administration (EIA) for all U.S. imports of crude oil and products. The Harmonized Tariff Schedule of the United States (HTS) classifies hydrocarbon gas liquids either as natural gas components or as part of a group of chemicals (olefins), rather than as petroleum products. EIA, "U.S. Imports by Area of Entry" (accessed May 10, 2019).

[6] Natural gas and components includes natural gas liquids (NGLs; also referred to as hydrocarbon gas liquids). These are products such as propane and butane that are present in both natural gas and crude petroleum deposits. NGLs account for the majority of U.S. exports of natural gas and components (by value), and their prices are more directly linked to global crude petroleum prices than prices for natural gas are.

[7] EIA, "Spot Prices" (accessed May 29, 2019).

[8] Crude petroleum prices were above 2017 levels for most of 2018, peaking in the first week of October and then steadily declining in November and December. EIA, "Spot Prices" (accessed May 29, 2019).

Table EP.1 Energy-related products: U.S. exports and general imports, by selected trading partners, 2014–18

	Million $						
Country/item	**2014**	**2015**	**2016**	**2017**	**2018**	**Absolute change, 2017 to 2018**	**% change, 2018 from 2017**
U.S. exports of domestic merchandise:							
Canada	33,663	21,945	17,103	19,997	26,062	6,066	30.3
Mexico	24,631	19,044	19,688	26,874	34,435	7,561	28.1
Saudi Arabia	216	179	165	149	141	-7	-5.0
Venezuela	2,975	2,395	1,705	1,945	4,020	2,076	106.7
Brazil	7,571	3,908	4,941	8,825	9,633	808	9.2
South Korea	2,148	1,377	1,741	4,167	9,977	5,810	139.4
Netherlands	9,840	5,793	5,175	5,868	9,372	3,504	59.7
Iraq	15	11	10	10	15	5	44.4
Colombia	6,178	4,546	2,981	2,645	3,099	453	17.1
United Kingdom	2,603	2,236	1,557	3,748	6,535	2,787	74.4
All other	70,076	47,082	42,053	68,136	90,189	22,053	32.4
Total domestic exports	159,915	108,516	97,121	142,363	193,478	51,115	35.9
Foreign exports	1,840	1,863	1,368	1,955	2,418	463	23.7
Total U.S. exports (domestic and foreign)	161,755	110,379	98,489	144,319	195,897	51,578	35.7
U.S. general imports:							
Canada	117,928	70,837	54,739	73,725	85,260	11,535	15.6
Mexico	30,282	13,674	8,724	11,407	15,901	4,494	39.4
Saudi Arabia	45,930	20,629	15,718	17,611	22,553	4,942	28.1
Venezuela	29,059	14,821	10,419	11,690	12,545	855	7.3
Brazil	6,367	4,546	2,778	4,389	5,187	799	18.2
South Korea	3,067	2,922	2,266	2,874	3,193	319	11.1
Netherlands	3,745	1,937	1,820	1,804	2,759	955	52.9
Iraq	13,702	4,340	5,979	10,747	11,870	1,123	10.4
Colombia	11,964	8,147	7,585	7,701	8,295	595	7.7
United Kingdom	6,286	4,006	3,244	3,255	4,559	1,304	40.1
All other	83,295	48,273	44,511	52,728	64,243	11,516	21.8
Total general imports	351,626	194,132	157,784	197,931	236,366	38,435	19.4

Source: Compiled from official statistics of the U.S. Department of Commerce.
Note: Import values are based on U.S. customs value; export values are based on free alongside ship value, U.S. port of export. Calculations are based on unrounded data. The countries are sorted by those with the largest total U.S. trade (U.S. general imports plus U.S. domestic exports) in these products in the most recent year.

Table EP.2 Energy-related products: Leading changes in U.S. exports and imports, 2014–18

Industry/commodity group (USITC code)	Million $						
	2014	2015	2016	2017	2018	Absolute change, 2017 to 2018	% change, 2017 to 2018
U.S. domestic exports:							
Increases:							
Crude petroleum (EP004)	11,617	8,232	9,360	22,211	46,381	24,170	108.8
Petroleum products (EP005)	118,567	80,300	67,705	84,624	102,541	17,916	21.2
Natural gas and components (EP006)	17,879	11,997	13,866	23,532	29,893	6,361	27.0
Coal, coke, and related chemical products (EP003)	10,277	6,944	5,540	11,311	13,770	2,459	21.7
All other	1,575	1,043	649	685	894	209	30.5
Total	159,915	108,516	97,121	142,363	193,478	51,115	35.9
U.S. general imports:							
Increases:							
Crude petroleum (EP004)	246,969	126,073	101,845	133,193	157,353	24,160	18.1
Petroleum products (EP005)	79,764	51,513	41,130	48,522	62,742	14,220	29.3
All other	24,893	16,546	14,809	16,216	16,271	55	0.3
Total	351,626	194,132	157,784	197,931	236,366	38,435	19.4

Source: Compiled from official statistics of the U.S. Department of Commerce.
Note: Import values are based on U.S. customs value; export values are based on free alongside ship value, U.S. port of export. Calculations are based on unrounded data.

US. Exports

U.S. energy-related exports increased in value across every product group from 2017 to 2018, with nearly half of the overall growth coming from crude petroleum exports (table EP.2). U.S. production of crude petroleum, natural gas, and natural gas liquids has generally been increasing for over a decade. This production increase is a result of continued advances in technology for extracting hydrocarbons from low-permeability formations (such as hydraulic fracturing and horizontal drilling in shale rock). This trend of increased production continues to spur investments in U.S. energy infrastructure, including additions of natural gas exporting capacity and export-oriented petroleum refining capacity.[9]

U.S. exports of crude petroleum more than doubled in value from 2017 to 2018 (table EP.2), due, in part, to continued growth of U.S. crude production and resulting export volumes. U.S. production of crude petroleum grew by 598 million barrels (17 percent) from 2017 to 2018, rising to 4.0 billion barrels.[10] Meanwhile, U.S. exports of crude petroleum rose by about 309 million barrels (73 percent) to 731 million barrels over the same period.[11] For decades, most of the United States' domestically produced crude petroleum was subject to national restrictions banning it from export to countries other

[9] Friedman, "Energy-related Products," October 2018.
[10] EIA, "Crude Oil Production" (accessed June 21, 2019).
[11] EIA, "Exports" (accessed June 21, 2019).

than Canada. The removal of the restrictions in late 2015 opened U.S. crude exports to more global markets.[12]

Limited infrastructure capacity to transport crude from the main source of new U.S. production—the Permian Basin in Texas—to overseas markets has constrained these exports. However, additional pipeline and port capacity in the U.S. Gulf Coast started to enable larger volumes of overseas crude exports in 2018.[13] In particular, the Louisiana Offshore Oil Port (LOOP) completed modifications in early 2018 to become the first U.S. facility capable of directly and fully loading crude exports onto very large crude carriers, or VLCCs (vessels with a capacity to transport about 2 million barrels of crude petroleum).[14]

While Canada remains the top country destination, a growing share of U.S. crude exports went to Asia in 2018. Directly exporting crude in VLCCs made longer trade routes, such as the route from the U.S. Gulf Coast to East Asia, more cost effective. China was the top destination for U.S. crude exports in the first half of 2018 (ahead of Canada), but the threat of Chinese tariffs, added to changes in global crude petroleum prices, prompted these exports to drop precipitously in the second half of the year.[15] (For more information, see the final chapter—Special Topic: Section 232 and 301 Trade Actions in 2018.) U.S. crude exports to China fell from $853 million in July 2018 to zero from August to October and just $174 million in the last two months of the year.[16] At the same time, U.S. crude exports to South Korea, India, Taiwan, and Canada rose substantially in the last five months of 2018.[17] The combination of more cost-effective transportation to Asia in 2018, higher crude prices, and displaced U.S. exports to China enabled U.S. crude exports to South Korea to rise by $4.5 billion (407 percent) from $1.1 billion in 2017 to $5.6 billion in 2018. For similar reasons, U.S. crude exports to India, Taiwan, and Canada each increased by just over $2.5 billion from 2017 to 2018.[18]

Petroleum products continued to contribute the largest dollar value of U.S. energy-related product exports (table EP.2), but export volume growth from 2017 to 2018 was relatively small compared to

[12] Friedman, "Energy-related Products," October 2018.
[13] Pipeline projects designed to improve capacity for bringing domestically produced crude to U.S. ports and storage hubs started coming online in late 2018, but did not completely alleviate bottlenecks. Pipeline takeaway capacity for the Permian Basin is expected to continue to grow through late 2021. Eaton, "Texas Oil Pipeline to Start in November," September 21, 2018; Domm, "This Texas Area Is Expected to Double Oil Output," March 8, 2019.
[14] EIA, "The U.S. Exported 2 Million Barrels per Day," April 15, 2019.
[15] The differential between Brent crude prices and West Texas Intermediate (WTI) crude prices narrowed by about $3 per barrel from June to July in 2018, making U.S. crude exports relatively less competitive. Despite the sharp drop after July 2018, U.S. crude exports to China still increased in value by nearly $1 billion from 2017 to 2018. EIA, "The U.S. Exported 2 Million Barrels per Day," April 15, 2019; EIA, "For One Week in November," December 12, 2018; USITC DataWeb/USDOC, HS 2709 (accessed June 12, 2019).
[16] USITC DataWeb/USDOC, HS 2709 (accessed June 12, 2019). China announced plans to impose tariffs on crude petroleum in June 2018, but ultimately excluded crude petroleum from the list of implemented tariffs in August 2018. It takes about one and a half months for tankers carrying U.S. crude exports from the Gulf Coast to reach China. Tan and Meng, "Exclusive: China's Unipec to Resume Oil Purchases," August 24, 2018.
[17] For example, average monthly U.S. crude exports to South Korea rose from $256 million in the first seven months of 2018 to $753 million for the rest of the year. USITC DataWeb/USDOC, HS 2709 (accessed June 12, 2019).
[18] In percentage terms, U.S. crude exports to Canada increased by only about 38 percent, while exports to India and Taiwan each more than sextupled from their 2017 values. Compiled from official statistics of the U.S. Department of Commerce.

2016–17. U.S. exports of petroleum products increased in volume by about 61 million barrels (4 percent) in 2017 to 1.5 billion barrels in 2018—indicating that the increase in dollar value for these exports ($17.9 billion, or 21.2 percent) primarily reflects higher prices.[19]

The top two categories of U.S. petroleum product exports are both transportation fuels: distillate fuel oils (primarily ultra-low-sulfur diesel, or ULSD) and motor gasoline. U.S. exports of distillate fuel oils declined in volume by 29 million barrels (6 percent) to 475 million barrels, likely due to rising U.S. demand that resulted in an increase of 85 million barrels (also 6 percent) in domestic consumption of ULSD.[20] On the other hand, U.S. demand for motor gasoline—which is largely driven by passenger vehicles rather than freight transportation—was flat from 2017 to 2018, allowing more of the increased production to be exported. U.S. exports of motor gasoline increased by 51 million barrels (19 percent) to 324 million barrels, which more than offset reduced ULSD exports.[21]

Mexico and Canada remained the top two destinations for U.S. exports of petroleum products, while exports to some other countries shifted considerably. U.S. petroleum product exports to Mexico increased in value by $6.8 billion (31 percent) as Mexico continued to be the primary export market for U.S. gasoline.[22] Since 2016, Mexico has gradually phased in reforms allowing increased competition in its gasoline and diesel markets; at the same time, the gap between Mexico's declining gasoline production and growing gasoline consumption has widened, creating even more opportunity for U.S. exports.[23] U.S. exports of petroleum products to Canada also increased in both volume and value, driven by substantial exports of unfinished oils and naphthas.[24] Naphthas are an intermediate product typically derived from crude petroleum; one of their common applications is to dilute heavy crude petroleum from Canada.

At the same time, U.S. petroleum product exports to Venezuela more than doubled in value overall, with elevated naphtha exports leading the $2.0 billion increase.[25] Venezuela's economic crisis has reduced utilization of its petroleum upgraders and refineries, increasing demand for imports in 2018 even as overall consumption declined.[26] Like Canada, Venezuela mostly produces viscous crude petroleum that is difficult to transport and refine unless it has been "upgraded" at a facility or diluted

[19] EIA, "Exports by Destination" (accessed May 28, 2019).
[20] Product supplied is a proxy for domestic consumption of petroleum products. EIA, "Exports by Destination" (accessed May 28, 2019); EIA, "Product Supplied" (accessed June 21, 2019).
[21] EIA, "Product Supplied" (accessed June 21, 2019); EIA, "Exports by Destination" (accessed May 28, 2019).
[22] Compiled from official statistics of the U.S. Department of Commerce; EIA, "Exports by Destination" (accessed August 21, 2019).
[23] U.S. gasoline exports supplied more than half of Mexico's gasoline consumption in 2018. Mexico's refineries have experienced declining utilization rates due to challenges in processing domestically available heavy crude, equipment outages, and increased competition with imports following market reforms. EIA, "U.S. Energy Trade with Mexico," April 22, 2019; EIA, "Mexican Gasoline Market Reforms," January 25, 2017.
[24] EIA, "Exports by Destination" (accessed June 21, 2019); USITC/USDOC, HS 2710 (accessed May 29, 2019).
[25] Naphtha exports contributed about $900 million of the increase. The United States issued several rounds of sanctions targeting Venezuela in 2018, but did not target Venezuela's oil sector or block U.S. exports of naphtha and other diluents (diluting agents) until January 2019. Compiled from official statistics of the U.S. Department of Commerce; USITC DataWeb/USDOC, SB 2710.12.2500 (accessed May 15, 2019); Parraga, "Venezuela's Oil Exports Drop," February 28, 2019; U.S. Department of the Treasury, "Venezuela-related Sanctions" (accessed September 19, 2019).
[26] Mower, "Factbox: Venezuela's Near Collapse Takes Toll," June 18, 2018.

with lighter hydrocarbons such as naphtha. Upgrader outages increased the country's demand for naphtha, used to dilute its crude production before export.[27]

U.S. exports of natural gas and components grew at a faster rate than petroleum products, reflecting expanding U.S. export infrastructure and global demand for these products (table EP.2). While U.S. pipeline exports of natural gas were flat from 2017 to 2018, exports of liquefied propane and liquefied natural gas (LNG) each grew by about $2.5 billion.[28] Liquefied propane remained the highest-value export in the product group, but U.S. LNG exports grew more sharply, rising by 69.2 percent to $5.8 billion.[29] Unlike most energy-related products, natural gas must be substantially pressurized and/or cooled (i.e., liquefied) for overseas transport. U.S. capacity for LNG exports is growing: the first large U.S. liquefaction terminal, located in Sabine Pass, Louisiana, started operating in 2016. The Sabine Pass terminal has gradually ramped up, adding more capacity in early and late 2017. A second liquefaction terminal in Cove Point, Maryland, began operations in early 2018, allowing U.S. LNG exports to more cost-effectively reach European markets.[30]

Mexico remained the top market for U.S. natural gas and component exports, due to relatively stable and substantial exports of natural gas (mostly via pipeline) and liquefied propane. U.S. exports to Asia continued to grow from 2017 to 2018, reflecting Asia's vast energy import demand and limited access to pipeline gas.[31] U.S. exports to Japan and South Korea increased by about $3 billion, more than offsetting the $716 million (29 percent) decrease in exports to China.[32] China announced in April 2018 that propane would potentially face 25 percent tariffs and implemented the tariff in August 2018. U.S. propane exports to China were lower throughout 2018 than 2017 they had been the previous year, but fell further behind year-over-year 2017 values in the last quarter of 2018, after the tariffs went into effect. Overall, U.S. propane exports to China fell by $770 million from 2017 to 2018.[33] U.S. LNG exports to China rose moderately ($90 million) despite China's imposition of a 10 percent tariff on U.S.-produced LNG in September 2018. However, this moderate increase was driven by relatively high U.S. exports in the first half of 2018 (before the tariff went into effect).[34]

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[27] Upgrading refers to a method of improving the quality of viscous and very dense crude petroleum, typically by separating the crude into its components and chemically treating them to remove impurities. Upgraded crude has a lower density, lower sulfur content, and lower heavy metals content than most naturally occurring crude petroleum, but is otherwise effectively identical. *Oil Sands Magazine*, "From Diluted Bitumen to Synthetic Crude: Upgrading Explained" (accessed June 12, 2019).

[28] USITC DataWeb/USDOC, HS 2711.11, 2711.12, and 2711.21 (accessed June 21, 2019).

[29] USITC DataWeb/USDOC, HS 2711.11 and 2711.12 (accessed June 21, 2019).

[30] A third U.S. liquefied natural gas (LNG) export terminal (Corpus Christi)—as well as an additional expansion at Sabine Pass (train 5)—entered into service in late 2018 but did not have first commercial deliveries until 2019. EIA, "Existing and Under Construction," May 23, 2019.

[31] For example, 75 percent of global LNG import demand in 2018 came from Asia-Pacific markets, with China, India, and South Korea as some of the largest and fastest-growing markets. BP Statistical Review of World Energy, "Natural Gas: LNG Imports," June 2019.

[32] Compiled from official statistics of the U.S. Department of Commerce.

[33] See the special topic chapter of this report for further discussion of tariffs and shifts in U.S. trade with China in 2018. USITC DataWeb/USDOC, HS 2711.12 (accessed May 30, 2019); Peng, "China Slashes U.S. LPG Imports," October 9, 2018; He, "U.S.-China Trade Dispute," April 16, 2019.

[34] China raised the tariff on U.S. LNG to 25 percent in 2019. USITC DataWeb/USDOC, HS 2711.11 (accessed May 30, 2019); DiSavino, "U.S. Liquefied Natural Gas Shipments," May 13, 2019.

The European Union (EU) was also a large and growing market for U.S. natural gas and components, with U.S. exports increasing by $1.4 billion (83 percent).[35] The rapid growth in export value to the EU reflected a combination of higher prices, export diversion from China, and U.S. production and export capacity growth for both propane and LNG.[36]

U.S. Imports

U.S. energy-related product imports primarily consist of crude petroleum and, to a lesser degree, petroleum products. The continued growth in the value of U.S. imports of crude petroleum and petroleum products reflects rising petroleum prices (as described above), as well as the U.S. petroleum refining sector's use of imported crude petroleum to support high export volumes of petroleum products.[37] Other product groups for U.S. energy-related imports were relatively flat between 2017 and 2018, each increasing or decreasing by less than $200 million.[38]

U.S. imports of crude petroleum rose $24.2 billion in value from 2017 to 2018, but actually declined by about 77 million barrels (2.7 percent) in volume.[39] The net decline in the volume of crude imports reflected the strong growth in U.S. crude production, which outpaced the modest increase in crude processing at U.S. refineries.[40] U.S. crude imports from members of the Organization of the Petroleum Exporting Countries (OPEC) fell considerably, declining by 195 million barrels to 943 million barrels in 2018. In particular, U.S. crude imports from Nigeria and Venezuela each fell by more than 40 million barrels (43 percent and 18 percent, respectively), while imports from Iraq and Saudi Arabia each fell by about 29 million barrels (14 and 8 percent).[41] Saudi Arabia remained the largest source of U.S. imports from OPEC, supplying about 318 million barrels in 2018.[42]

U.S. crude imports from non-OPEC countries rose to 1.9 billion barrels in 2018, with almost all of the increase coming from Canada and Mexico. Canada remains the top source of U.S. crude imports,

[35] Compiled from official statistics of the U.S. Department of Commerce.
[36] For example, competitive U.S. propane exports encouraged European Union petrochemical manufacturers to use more propane as inputs, rather than naphtha. As described above, U.S. LNG export capacity has been rapidly growing since 2016. Argus Media, "Viewpoint: NWE LPG Market," December 12, 2018.
[37] The United States maintains a high level of both imports and exports for crude petroleum and petroleum products. These two-way trade flows reflect (1) low barriers to cross-border trade (in terms of both pipeline transportation costs and tariffs), (2) differences in the density and sulfur content of U.S. crude imports and exports, and (3) differences in the ratios of petroleum products demanded in the U.S. market versus other countries, among other factors. Rapier, "No, the U.S. Is Not a Net Exporter," December 9, 2018.
[38] The other product groups included in energy-related products are electrical energy; nuclear materials; coal, coke, and related chemical products; and natural gas and components. Compiled from official statistics of the U.S. Department of Commerce.
[39] EIA, "U.S. Imports by Country of Origin" (accessed May 30, 2019).
[40] U.S. refineries processed 138 million more barrels of crude in 2018 than 2017 (production increased by 309 million barrels). EIA, "Refinery Net Input" (accessed June 26, 2019).
[41] Nigerian crude has very similar properties to major U.S. crude grades and has been largely displaced in the U.S. market by domestic production. Remaining U.S. importers of Nigerian crude are primarily East Coast refineries, which switch between processing Nigerian imports or North Dakota crude transported by rail based on fluctuations in prices (creating occasional swings in the trade data). Renshaw and Kumar, "Philadelphia-area Crude Rail Terminal Reawakened," September 25, 2018; Kearney, Renshaw, and Browning, "PES Refinery Expected to Shut Remaining Units," July 17, 2019; EIA, "U.S. Imports by Country of Origin" (accessed May 30, 2019).
[42] EIA, "U.S. Imports by Country of Origin" (accessed May 30, 2019).

supplying 1.3 billion barrels (nearly half of all U.S. imports) in 2018.[43] Many of the largest U.S. refineries are configured to more efficiently process very heavy (i.e., dense) crude petroleum, even though growth in domestic crude production has mostly consisted of relatively light crude petroleum. Canada, Mexico, and Venezuela are some of the top producers of heavy crude petroleum, but declining production in both Mexico and Venezuela has increased U.S. imports from Canada.[44]

The United States imports a wide variety of petroleum products, including heavy fuel oils, gasoline, jet fuel, diesel, fuel blending stock, and unfinished oils. Overall, U.S. imports of petroleum products grew substantially—rising by $14.2 billion (29.3 percent)—but mostly due to price increases rather than substantial changes in the volume of imports (table EP.2). One notable exception was imports of ultra-low-sulfur diesel (ULSD), which rose by $1.9 billion in value (76 percent) and increased in volume by 18 million barrels (50 percent) from 2017 to 2018.[45] As discussed above, U.S. consumption of ULSD increased by about 85 million barrels in 2018.

Canada and Russia remained the top two sources of U.S. petroleum product imports in 2018, even though the growth in imports (by value) from each country trailed price increases. U.S. imports from Saudi Arabia sharply rebounded in 2018—rising $1.0 billion from less than $100 million in 2017.[46] Saudi Arabia has expanded its petroleum refining capacity and its global exports of petroleum products, even as the country adheres to joint crude petroleum output cuts that it helped negotiate with other OPEC members and some non-OPEC members.[47] First negotiated in December 2016, these "OPEC+" crude petroleum output cuts were agreed to among both OPEC members and a group of non-OPEC crude-producing countries including Russia. Participants had agreed to extend the cuts through the end of 2018, but relaxed the cuts in June 2018 due to overcompliance, rising crude prices, and political developments.[48] U.S. imports from Venezuela also rose sharply, growing by nearly $900 million to $2.1 billion in 2018.[49] As a result of the economic crisis, Venezuela's state-run oil company Petróleos de Venezuela (PDVSA) ran low on cash and reportedly used product swaps instead of cash to continue purchasing U.S. products—exchanging Venezuelan crude and petroleum products for billions of dollars' worth of other petroleum product imports.[50]

[43] EIA, "U.S. Imports by Country of Origin" (accessed May 30, 2019).
[44] EIA, "Changing Crude Quality Mix," August 23, 2017; Friedman, "Energy-related Products," October 2018.
[45] USITC DataWeb/USDOC, HTS 2710.19.1102 (accessed May 8, 2019); EIA, "U.S. Imports by Area" (accessed May 30, 2019).
[46] Compiled from official statistics of the U.S. Department of Commerce.
[47] Calcuttawala, "Saudi Arabia Boosts Diesel and Gasoline Exports," March 19, 2018.
[48] Meredith, Domm, and DiChristopher, "OPEC Ministers Agree to Raise Oil Production," June 22, 2018; Friedman, "Energy-related Products," October 2018.
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