



*Independent Statistics & Analysis*  
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# Fuel Oil and Kerosene Sales 2020

February 2022



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## Introduction

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The *Fuel Oil and Kerosene Sales 2020* report provides information, illustrations, and state-level statistical data on energy use sales of kerosene; No. 1, No. 2, and No. 4 distillate fuel oil; and residual fuel oil. State-level kerosene sales include volumes for residential, commercial, industrial, farm, and all other uses. State-level distillate sales include volumes for residential, commercial, industrial, oil company, railroad, vessel bunkering, military, electric power, farm, on-highway, off-highway construction, and other uses. State-level residual fuel oil sales include volumes for commercial, industrial, oil company, vessel bunkering, military, electric power, and other uses.

Our Office of Energy Production, Conversion & Delivery ensures the accuracy, quality, and confidentiality of the published data in the *Fuel Oil and Kerosene Sales 2020*.

Except for the kerosene and on-highway diesel information, data presented in the data tables called Sales of Distillate Fuel Oil by End Use, Sales of Residual Fuel Oil by End Use, and Distillate Fuel Oil and Kerosene Sales by End Use present results of Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*. Other data tables: Sales of Kerosene by End Use, Adjusted Sales of Distillate Fuel Oil by End Use, Adjusted Sales of Residual Fuel Oil by End Use, Adjusted Sales of Kerosene by End Use, and Adjusted Distillate Fuel Oil and Kerosene Sales by End Use—include volumes that are based on the Form EIA-821 survey. We have adjusted these volumes to equal the products supplied volumes as published on the [Supply and Disposition Data Table](#) for 2020.

The Sales of Fuel Oil and Kerosene data tables contain sales estimates resulting from the Form EIA-821 survey for all categories except kerosene and on-highway diesel. For on-highway diesel, we did not expect the survey to yield valid statistics because the sampling frame does not include a comprehensive listing of all truck stops. So, we used state-level data obtained from the Federal Highway Administration instead.

We did not expect kerosene sales data to be complete because a comprehensive listing of kerosene retailers was not available to serve as a sampling frame. We thought that a complete frame would be expensive to construct because many kerosene retailers are convenience stores or other small businesses. Because of these concerns, we published kerosene sales data only after adjusting the sales data so that they add to the U.S. total of kerosene products supplied volume as published on the [Supply and Disposition Data Table](#) for 2020.

In the Adjusted Sales of Fuel Oil and Kerosene data tables, we adjust estimates of distillate fuel oil at the Petroleum Administration for Defense District (PADD) level to equal published [Petroleum Supply Annual](#) (PSA) volume estimates of products supplied. For certain sales categories, we use data obtained from alternative sources instead of the adjusted numbers. See [Technical Note 3 in Technical Notes](#) for further explanation.

We adjust kerosene and residual fuel oil in the Adjusted Sales of Fuel Oil and Kerosene data tables at the national level to equal published PSA products supplied estimates. So, the kerosene figures in the data tables called Sales of Kerosene by End Use as well as Adjusted Sales of Kerosene by End Use are identical.

The Sales of Fuel Oil and Kerosene data tables differ from the Adjusted Sales of Fuel Oil and Kerosene data tables estimates with the exception of kerosene and on-highway diesel for many reasons, including:

- Some products are interchangeable (fungible) and may be supplied as one product and sold as another product. For example, kerosene, low sulfur kerosene type jet fuel, and low sulfur No. 1 fuel oil can be used interchangeably.
- Products supplied into a PADD may be blended before final sale. For example, residual fuel oil and No. 2 distillate fuel may be blended and sold as No. 4 fuel oil or, in colder climates, kerosene may be blended with distillate fuel oil and sold as heating oil.
- Geographic differences can be attributed to the transportation of product by truck or rail from the district of production. Inter-PADD movements of products by these modes of transportation are not accounted for in the Adjusted Sales of Fuel Oil and Kerosene data tables.
- Products may be supplied into a PADD, but the final sale may cross PADD boundaries. For example, a fuel oil dealer in Ohio (PADD 2) may make retail sales into Pennsylvania (PADD 1B) or West Virginia (PADD 1C).
- Drawdowns or buildups in stocks will cause volumes supplied to differ from sales volumes.

## Highlights

### Distillate fuel oil

Total U.S. distillate fuel oil sales decreased 3,969.3 million gallons (6.3%) during 2020. Sales increased in two energy-use sectors (Table 1).

**Table 1. Year-over-year increases in distillate fuel oil sales, 2020**

Sector	Sales increase (million gallons)	Sales increase (percentage)
Farm	279.0	8.1%
Military	29.2	22.5%

Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

In contrast, sales decreased in nine sectors (Table 2).

**Table 2. Year-over-year decreases in distillate fuel oil sales, 2020**

Sector	Sales decrease (million gallons)	Sales decrease (percentage)
Off-highway	10.4	0.5%
Electric power	49.4	10.7%
Vessel bunkering	225.0	11.0%
Commercial	345.5	14.5%
Industrial	358.6	19.0%
Residential	415.7	12.1%
Railroad	541.2	15.5%
Oil company	815.6	66.8%
On-highway	1,516.0	3.6%

Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

### Residual fuel oil

Total U.S. residual fuel oil sales decreased 841.5 million gallons (30.5%) in 2020. Sales decreased in all energy-use sectors (Table 3), except for the military energy-use sector. No sales occurred in the military sector.

**Table 3. Year-over-year decreases in residual fuel oil sales, 2020**

Sector	Sales decrease (million gallons)	Sales decrease (percentage)
Commercial	1.0	10.0%
Oil company	10.3	99.9%
Industrial	40.0	25.1%
Electric power	57.7	14.8%
Vessel bunkering	732.5	33.5%

Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*



## Kerosene

Total U.S. kerosene sales increased 11.4 million gallons (11.0%) in 2020.

**Table 4. Year-over-year increases in kerosene sales, 2020**

Sector	Sales increase (million gallons)	Sales increase (percentage)
Industrial	11.8	134.0%
Residential	0.6	0.7%
Farm	0.2	11.1%

Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

Sales to *all other* remained flat, and sales to the commercial energy-use sector decreased by 1.1 million gallons (8.0%).

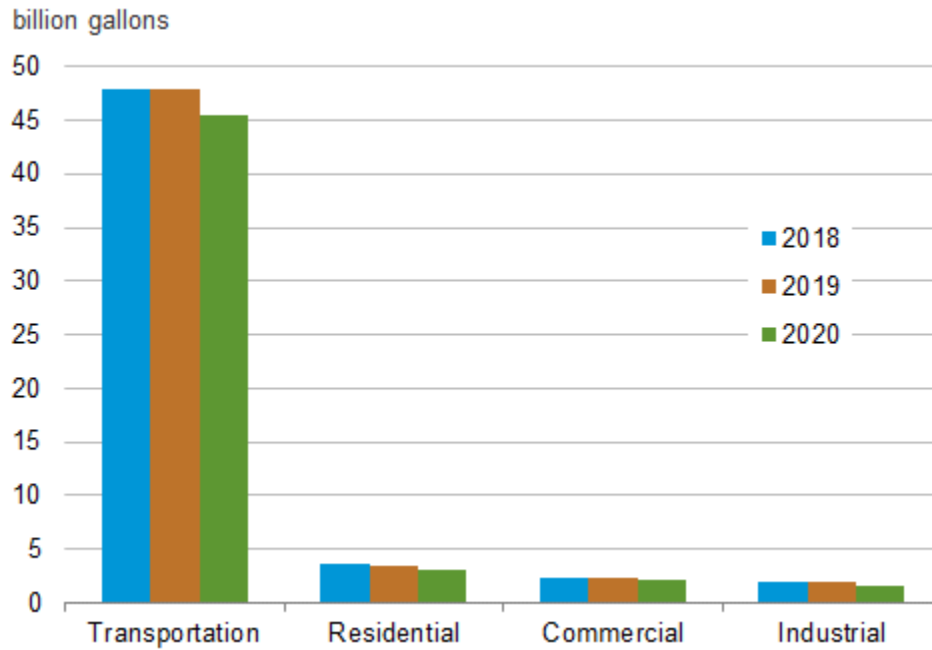
**Table 5. Volume distribution of distillate and residual fuel oils, 2019 and 2020**

Sector	2020 Distillate		2019 Distillate		2020 Residual		2019 Residual	
	Volume (million gallons)	Percentage Share	Volume (million gallons)	Percentage Share	Volume (million gallons)	Percentage Share	Volume (million gallons)	Percentage Share
Residential	3,013	5.1%	3,428	5.4%	—	—	—	—
Commercial	2,038	3.5%	2,384	3.8%	9	0.5%	10	0.4%
Industrial	1,532	2.6%	1,890	3.0%	119	6.2%	159	5.8%
Oil company	405	0.7%	1,221	1.9%	0	0.0%	10	0.4%
Farm	3,731	6.3%	3,452	5.5%	—	—	—	—
Electric power	412	0.7%	461	0.7%	333	17.4%	391	14.2%
Railroad	2,960	5.0%	3,501	5.6%	—	—	—	—
Vessel bunkering	1,817	3.1%	2,042	3.2%	1,457	76.0%	2,189	79.3%
On-highway	40,791	69.1%	42,307	67.1%	—	—	—	—
Military	159	0.3%	130	0.2%	0	0.0%	0	0.0%
Off-highway	2,212	3.7%	2,222	3.5%	—	—	—	—
All other	0	0.0%	3,428	5.4%	0	0.0%	0	0.0%
<b>Total</b>	<b>59,069</b>		<b>63,038</b>		<b>1,918</b>		<b>2,759</b>	

Sources: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*; On-highway diesel data are Federal Highway Administration statistics of highway special fuels use

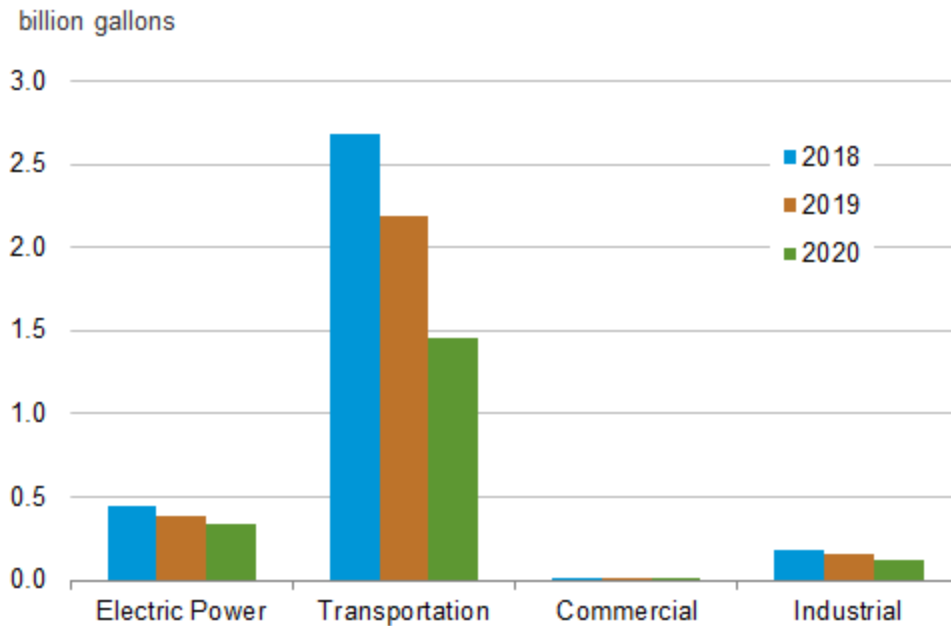
Note: Totals may not equal sum of components due to independent rounding.

**Figure 1. U.S. Distillate fuel oil sales by energy-use sectors, 2018–2020**



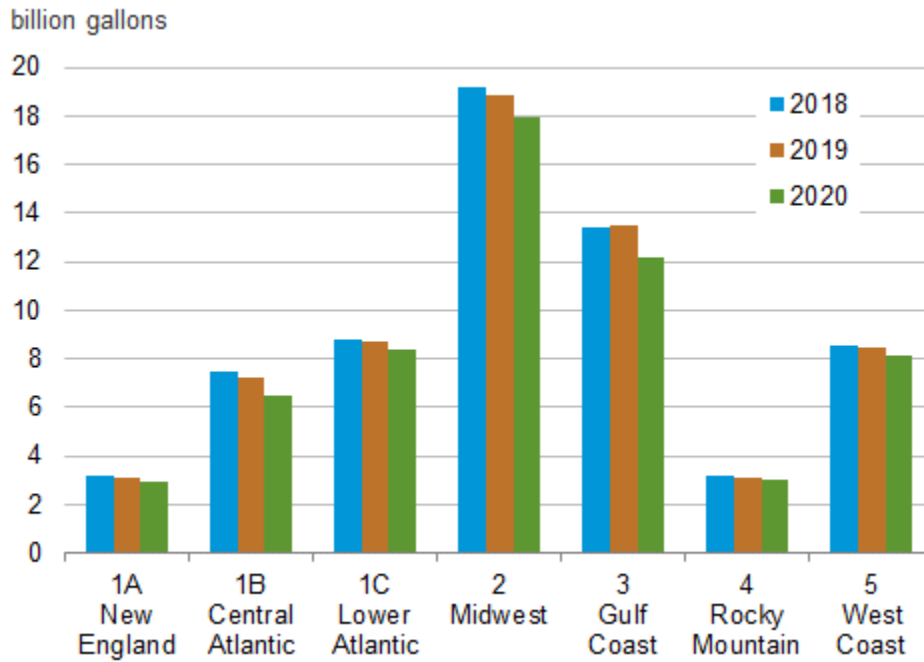
Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*  
 Note: Transportation use refers to the railroad, vessel bunkering, and on-highway diesel energy-use sectors.

**Figure 2. U.S. Residual fuel oil sales by energy-use sectors, 2018–2020**



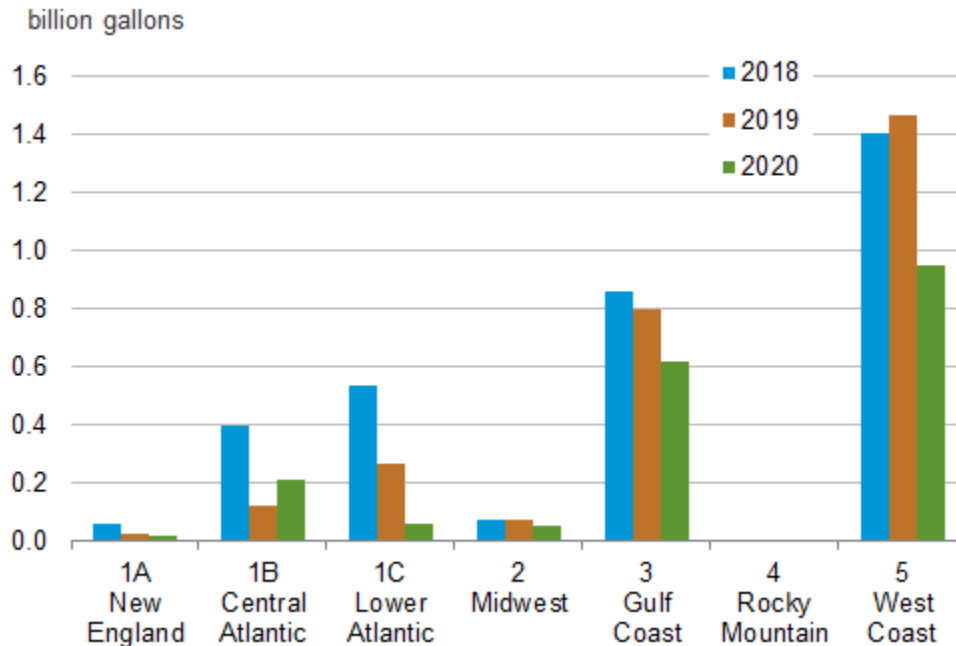
Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*  
 Note: Transportation use refers to the vessel bunkering energy-use sector.

**Figure 3. Distillate fuel oil volume distribution by PADD, 2018-2020**



Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

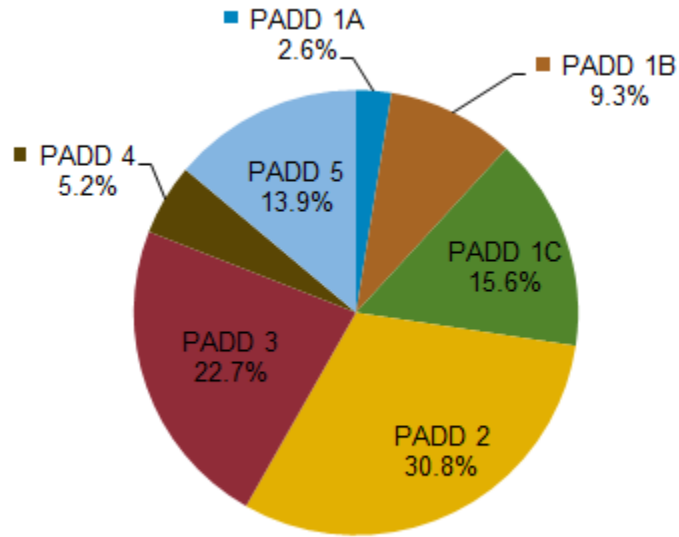
**Figure 4. Residual fuel oil volume distribution by PADD, 2018-2020**



Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

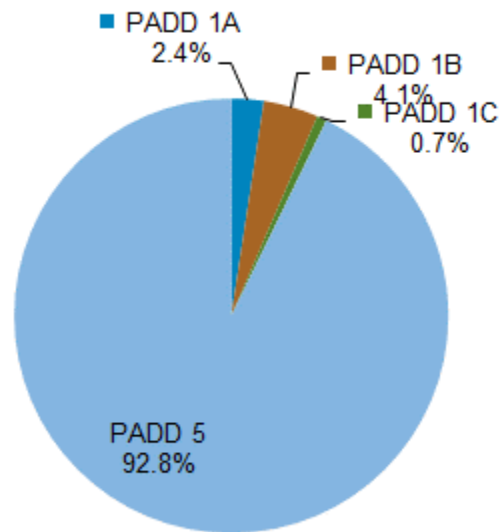
Note: Residual fuel oil sales in PADD 4 are too small to appear in the graph.

**Figure 5. Distillate fuel oil: transportation energy-use sector by PADD, 2020**



Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

**Figure 6. Residual fuel oil: electric power energy-use sector by PADD, 2020**



Source: U.S. Energy Information Administration, Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

Note: No residual fuel oil sales in the electric power sector occurred in PADDs 2, 3, and 4.

## Technical Notes

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### Technical Note 1: Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*

#### ***Background***

We implemented Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*, survey to meet our legislative mandates and data user needs. We use Form EIA-821 to gather data on the sales to energy users of distillate fuel oil, residual fuel oil, and kerosene. We use this data to determine the level of demand by energy-use sectors and product at the state, regional, and national levels. This mandatory report is authorized by the Federal Energy Administration Act of 1974 (P. L. 93-275).

The predecessor survey to Form EIA-821 was Form EIA-172, *Sales Report of Fuel Oil and Kerosene*. We conducted the Form EIA-172 survey for reference years 1979 through 1982. Following a serious deterioration in the sample of respondents during the four-year period, we did not collect Form EIA-172 data for 1983. Instead, we published estimates for 1983, and we designed and selected a new sample of respondents from an improved sampling frame. The Form EIA-821 survey began with reference year 1984.

#### ***Discussion of sampling frame***

The target population for Form EIA-821, *Annual Fuel Oil and Kerosene Sales Report*, is all active companies that sell distillate fuel oil, residual fuel oil, or kerosene in the 50 states and the District of Columbia.

The 2006 Form EIA-863 database provided a base sampling frame for the Form EIA-821 survey. We mailed Form EIA-863, *Petroleum Product Sales Identification Survey*, to approximately 24,000 companies in January 2007 to collect 2006 state-level sales volume data for No. 2 distillate fuel, residual fuel oil, motor gasoline, and propane. Companies also indicated if they sold kerosene. We further categorized the No. 2 distillate fuel data by residential No. 2 fuel oil and by nonresidential retail and wholesale for No. 2 fuel oil and No. 2 diesel fuel. We divided the residual fuel oil data into retail and wholesale. In addition, company- and state-level volumes for distillate fuel, residual fuel oil, and kerosene from the 2008 Form EIA-821 survey, 2008 Form EIA-782A, *Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report*, and 2008 Form EIA-782B, *Resellers'/Retailers' Monthly Petroleum Product Sales Report* were also merged with the 2006 Form EIA-863 data. We then used the integrated and comprehensive frame to design and select the 2009 Form EIA-821 sample, on which the 2020 survey is based.

#### ***Discussion of sample design***

To select a sample for the Form EIA-821 survey, we merged subsidiaries and parents of a company by adding the volumes of parents and subsidiaries in a cluster (in other words, parent-subsidiary combination) to represent the company. We drew the sample from a multi-attribute frame with four target variables: No. 2 residential fuel oil, No. 2 nonresidential fuel oil, No. 2 nonresidential diesel fuel, and No. 2 wholesale distillate fuel.

We classified a company as a certainty company for the sample if it meets one of the following criteria:

- The company (or one of its subsidiaries) was a refiner as identified in the 2008 Form EIA-782A survey.
- The company had residual fuel oil sales.
- The company sold any Form EIA-821 product in at least five states.
- The sum of maximum percentage of the four distillate products at the state level across states was 5% or more.
- The company reported over 5% of the total weighted volume in any state for any specified product by end-use category on the 2008 Form EIA-821 survey.

We used a systematic probability proportional to size design (PPS) to sample noncertainty companies. Company State Units (CSUs) were the sampling units. A CSU selected by the sampling procedure was referred as a *basic* CSU. We included a company in the sample if it had at least one *basic* CSU. We referred to all *non-basic* CSUs of a sampled company as *volunteer CSUs*.

For each state, we used the Dalenius-Hodges procedure to stratify CSUs (with each of the four target distillate variables) into zero, low, medium, and high volume strata. We used Neyman allocation to obtain the sample size for each stratum to meet target coefficient of variation of 5%. We then divided the population of CSUs into mutually exclusive cells by crossing the four stratifications such that every CSU in a particular cell was in the same stratum for each of the four stratifications. We assigned each CSU a probability of selection, which was the largest sample proportion across all four stratifications. All CSUs within a cell had the same probability of selection. We then drew systematic PPS samples of CSUs for the state.

This design produced a final sample of approximately 4,000 companies. The survey asked selected companies to report sales by end-use categories for distillate fuel, residual fuel oil, and kerosene.

### ***Imputation and estimation***

Survey data gathered from the respondents may contain incomplete reporting, total nonresponse, or values that fail editing. Missing data are estimated or implicitly imputed for using the strata means and are treated the same as reported data. The survey defines the weighted estimate as follows:

$$\hat{V} = \sum_h N_h \left( \sum_i W_{hi} V_{hi} / \sum_i W_{hi} \right)$$

where:

$\hat{V}$  = total estimated volume

$\sum_h$  = denotes summation over strata

$N_h$  = stratum population for stratum h

$\sum_i$  = denotes summation over units within stratum h

$V_{hi}$  = volume reported for unit i in stratum h

$W_{hi}$  = weight attached to unit i in stratum h

where:  $W_{hi}$  is inversely proportional to the probability of inclusion in the linked sample.

The degree of imputation by product and energy-use sectors at the U.S. total level ranged as follows for the 2020 Form EIA-821 data:

- Distillate—4.5% for military use to 43.8% for farm use
- Residual fuel oil—0.0% for oil company use to 5.2% for vessel bunkering use
- Kerosene—25.8% for commercial use to 34.1% for all other use

### ***Collection methods***

We sent Form EIA-821 in March 2021 to all companies selected for participation in the 2020 reference year survey. The completed form was due to us on May 7, 2021. Nonrespondent follow-up began approximately one month after the filing deadline. We wrote emails and made telephone calls to collect outstanding data and to verify reported data. We processed late submissions and resubmissions when we received them.

### ***Data processing***

As we received the forms, we logged them into an automated Survey Control File that maintains company identification and survey form status information for each company selected to participate in the survey. We reviewed the data manually, entered the data into the computer files, and then processed the data through an automated edit program, which detected missing data and outlying values. We resolved the data that failed the edits by contacting the data reporters, and we entered corrections onto the computer files. We generated and processed preliminary estimates through a series of validation procedures to flag and rectify potential misreporting of data. We produced statistical reports, including publication tables, using only acceptable and verified data.

## **Technical Note 2: Reliability of the data**

Two types of errors are associated with data produced from a sample survey: sampling errors and nonsampling errors. Sampling errors occur because the estimates are based on a sample rather than on a census. The particular sample used for the Form EIA-821 survey is one of a large number of samples of equal size that could have been selected from the sampling frame using the same sample design. Each of these samples would produce a different estimate. If the estimates were averaged over all possible samples, the result would be the same as the estimate derived from a census of the sampling frame. The sampling error is a measure of variability among the estimates from all possible samples and thus is a measure of the precision with which an estimate from a particular sample approximates the results of a census.

Nonsampling errors and biases can arise from a number of sources:

- Inability to obtain information about all cases in the sample
- Response errors
- Differences in the interpretation of questions or definitions
- Mistakes in recording or coding of the data obtained
- Other errors of collection, response, coverage, and estimation for missing data

Bias is the difference between (1) the average of the estimates over all possible samples of the same size and design and (2) the true value being estimated. It is not possible to estimate bias using the results of one sample.

Data obtained from alternative sources are not subject to sampling errors, but the data may be subject to nonsampling errors—the magnitudes of which are unknown. Nonsampling errors for survey estimates and estimates adjusted to alternative sources cannot be determined, but attempts are made throughout survey processing to minimize this type of error.

We base the data in the Sales of Fuel Oil and Kerosene tables on survey data that are subject to sampling errors. Coefficients of variation (CV), which are estimates of sampling errors, are estimated by:

$$CV(\hat{V}) = \frac{\sqrt{VAR(\hat{V})}}{\hat{V}}$$

where:

$$VAR(\hat{V}) = \sum_h n_h \left(1 - \frac{n_h}{N_h}\right) S_h^2$$

$$S_h^2 = \frac{\sum_{i=1}^{n_h} W_i^2 V_i^2 + \bar{V}_h^2 \sum_{i=1}^{n_h} W_i^2 - 2\bar{V}_h \sum_{i=1}^{n_h} W_i^2 V_i}{n_h - 1}$$

$$\bar{V}_h = \frac{\sum_{i=1}^{n_h} W_i V_i}{\sum_{i=1}^{n_h} W_i}$$

$\hat{V}$  = total estimated volume

$N_h$  = stratum population for stratum h



$n_h$  = number of sample units in stratum h

$V_i$  = volume for unit i

$W_i$  = weight for unit i

Response rates also indicate the reliability and comprehensiveness of survey results. For the 2020 Form EIA-821 survey, the overall response rate (the number of submissions received, divided by the number of submissions solicited and expected, times 100) was 85.1%.

### Technical Note 3: Data adjustments

#### *Alternative source data*

After all preliminary tabulations were verified, we compared the survey results and available alternative source data. We replaced the following energy-use sectors with alternative source data at the U.S., PADD, or state level:

#### *Sales of fuel oil and kerosene data tables*

**On-highway diesel.** We calculated distillate fuel oil by state from the Federal Highway Administration's data on-highway use of special fuels. Of the 2020 special fuels, more than 98.2% is diesel.

#### *Adjusted sales of fuel oil and kerosene data tables*

These tables contain estimates of distillate fuel oil that we adjusted at the PADD level to equal our published volume estimates of petroleum products supplied in the U.S. marketplace. We adjusted the kerosene and residual fuel oil sales estimates at the national level. We published the products supplied volumes in the [Supply and Disposition Data Table](#) for 2020. In addition, we used electric power generation data and on-highway diesel data instead of adjusted survey results.

**Electric power.** We calculated national-level distillate and residual fuel oil sales for electric power use from annual aggregations of data collected on Form EIA-923, *Power Plant Operations Report*. Form EIA-923 utility and non-utility, NAICS 22 companies, consumption data were added to the stock change of both distillate and residual fuel oils, respectively. We based allocations at the state level on the Form EIA-821 survey.

**On-highway diesel.** We calculated distillate fuel oil by state from the Federal Highway Administration data on-highway use of special fuels. Of the 2020 special fuels, more than 98.2% is diesel.

#### *2020 adjustments*

Total domestic adjusted sales of fuel oil and kerosene decreased 8.5% from 67.2 billion gallons in 2019 to 61.5 billion gallons in 2020. Adjusted sales of distillate fuel oil and residual fuel oil decreased 7.5% and 24.2%, respectively, while kerosene sales increased 11.0% in 2020.

According to the 2020 survey, kerosene sales totaled 185,590 thousand gallons at the national level. The products supplied volume at the national level was 115,206 thousand gallons. Therefore, the adjustment factor at the national level for 2020 was 0.6%.

For distillate fuel oil, the adjustment factors at the PADD level for 2020 are as follows:

- PADD 1: 1.0%
- PADD 2: 1.1%
- PADD 3: 0.6%
- PADD 4: 1.0%
- PADD 5: 0.9%

In the tables, total sales at the PADD level equal the products supplied volumes as published on the [Supply and Disposition Data Table](#) for 2020. For example, the 2020 survey yielded a volume for distillate residential use in PADD 2 of 156,391 thousand gallons. The total distillate volume for PADD 2 was 5,189,276 from the survey, after subtracting the volume coming from alternative sources. The products supplied total distillate volume for PADD 2 was 5,728,394 after removing alternative source volume. So, the adjusted 2020 estimate of distillate for residential use in PADD 2 was  $(5,728,394/5,728,394) \times 156,391 = 156,391$ . For distillate fuel, we made the PADD adjustments to each state and product-use category except on-highway diesel and electric power uses.

For residual fuel oil, the 2020 survey yielded 1,917,760 gallons of residual fuel oil, while the products supplied volume at the national level was 3,196,368 thousand gallons. So, the adjustment factor at the national level for 2020 was 1.8%, after subtracting the volumes coming from alternative sources. For residual fuel oil, we adjusted each state and energy-use sector except electric power.

## Technical Note 4: Energy use descriptions and petroleum product definitions

### *Energy-use descriptions*

**All other.** Sales for all other energy-consuming sectors not included elsewhere.

**Commercial.** An energy-consuming sector that consists of service-providing facilities and equipment of nonmanufacturing businesses; federal, state, and local governments; and other private and public organizations, such as religious, social, or fraternal groups. The commercial sector includes institutional living quarters. Common uses of energy associated with this sector include space heating, water heating, air-conditioning, lighting, refrigeration, cooking, and running a wide variety of other equipment.

**Electric power.** An energy-consuming sector that consists of electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public (in other words, NAICS 22 plants). Volumes directly imported and used by the electric power companies are included.

**Farm.** An energy-consuming sector that consists of establishments where the primary activity is growing crops, raising animals, or both. Energy use by all facilities and equipment at these establishments is included, whether or not it is directly associated with growing crops or raising animals. Common types

of energy-using equipment include tractors, irrigation pumps, crop dryers, smudge pots, and milking machines. Facility energy use encompasses all structures at the establishment, including the farmhouse.

**Industrial.** An energy-consuming sector that consists of all facilities and equipment used for producing, processing, or assembling goods. The industrial sector encompasses manufacturing and mining. Overall energy use in this sector is largely for process heat and cooling and powering machinery, with lesser amounts used for facility heating, air-conditioning, and lighting. Fossil fuels are also used as raw material inputs to manufactured products.

**Military.** An energy-consuming sector that consists of the U.S. Armed Forces, Defense Energy Support Center (DESC), and all branches of the Department of Defense (DOD).

**Off-highway.** An energy-consuming sector that consist of:

1. **Construction.** An energy-consuming subsector that consist of all facilities and equipment including earthmoving equipment, cranes, generators, air compressors, etc.
2. **Other.** An energy-consuming subsector that consists of all off-highway uses other than construction. Includes logging, scrape and junk yards, and refrigeration units on trucks.

**Oil company.** An energy-consuming sector that consists of drilling companies, pipelines, or other related oil companies not engaged in the selling of petroleum products. This category includes fuel oil that was purchased or produced and used by company facilities to power drilling equipment, other field or refinery operations, and space heating at petroleum refineries, pipeline companies, and oil-drilling companies. Sales to other oil companies for field use are included, but sales for use as refinery charging stocks are excluded.

**On-highway diesel.** An energy-consuming sector that consists of motor vehicles: automobiles, trucks, and buses. Vehicles used in the marketing and distribution of petroleum products are also included.

**Railroad.** An energy-consuming sector that consists of all railroads for any use, including that used for heating buildings operated by railroads.

**Residential.** An energy-consuming sector that consists of living quarters for private households. Common uses of energy associated with this sector include space heating, water heating, air-conditioning, lighting, refrigeration, cooking, and running a variety of other appliances. Sales to farmhouses are reported under *Farm*, and sales to apartment buildings are reported under *Commercial*.

**Vessel bunkering.** An energy-consuming sector that consists of commercial or private boats such as pleasure craft, fishing boats, tugboats, and ocean-going vessels, including vessels operated by oil companies. Excluded are volumes sold to the U. S. Armed Forces.

### ***Definitions of petroleum products and other related terms***

**ASTM.** American Society for Testing and Materials.

**Distillate fuel oil.** A general classification for one of the petroleum fractions produced in conventional distillation operations. It includes diesel fuels and fuel oils. Products known as No. 1, No. 2, and No. 4

diesel fuel are used in on-highway diesel engines, such as those in trucks and automobiles, as well as off-highway engines, such as those in railroad locomotives and agricultural machinery. Products known as No. 1, No. 2, and No. 4 fuel oils are used primarily for space heating and electric power generation.

1. **No. 1 Distillate.** A light petroleum distillate that can be used as either a diesel fuel or a fuel oil.
  - a. **No. 1 Diesel Fuel.** A light distillate fuel oil that has distillation temperatures of 550°F at the 90% recovery point and meets the specifications defined in ASTM specification D 975. It is used in high-speed diesel engines generally operated under frequent speed and load changes, such as those in city buses and similar vehicles.
  - b. **No. 1 Fuel Oil.** A light distillate fuel oil that has distillation temperatures of 400°F at the 10% recovery point and 550°F at the 90% point and meets the specifications defined in ASTM Specification D 396. It is used primarily as fuel for portable outdoor stoves and portable outdoor heaters.
2. **No. 2 Distillate.** A petroleum distillate that can be used as either a diesel fuel or a fuel oil.
  - a. **No. 2 Diesel Fuel.** A fuel that has distillation temperatures of 400°F at the 10% recovery point and 640°F at the 90% recovery point and meets the specifications defined in ASTM Specification D 975. It is used in high-speed diesel engines that are generally operated under uniform speed and load conditions such as those in railroads locomotives, trucks, and automobiles.
    - i. **Diesel 15 parts per million (ppm) Sulfur and Under (No. 2 Diesel  $\leq$  15 ppm Sulfur, Ultra Low).** No. 2 diesel fuel that has a sulfur level no higher than 15 ppm by weight.
    - ii. **Diesel Greater than 15 to 500 ppm Sulfur (No. 2 Diesel  $>$  15 and  $\leq$  500 ppm Sulfur, Low).** No. 2 diesel fuel that has a sulfur level higher than 15 and equal to or lower than 500 ppm by weight.
    - iii. **Diesel 500 ppm Sulfur and Under (No. 2 Diesel  $\leq$  500 ppm Sulfur, Low).** No. 2 diesel fuel that has a sulfur level lower than 500 ppm by weight. This fuel includes ultra-low sulfur diesel.
    - iv. **Diesel Greater than 500 ppm Sulfur (No. 2 Diesel  $>$  500 ppm Sulfur, High).** No. 2 diesel fuel that has a sulfur level above 500 ppm by weight.
  - b. **No. 2 Fuel Oil (Heating Oil).** A distillate fuel oil that has distillation temperatures of 400°F at the 10% recovery point and 640°F at the 90% recovery point and meets the specification defined in ASTM specification D 396. It is used in atomizing type burners for domestic heating or for moderate capacity commercial/industrial burner units.
3. **No. 4 Fuel.** A distillate fuel oil made by blending distillate fuel oil and residual fuel oil stocks. It conforms with ASTM Specification D 396 or Federal Specification VV-F-815C and is used extensively in industrial plants and in commercial burner installations that are not equipped with preheating facilities. It also includes No. 4 diesel fuel used for low- and medium-speed diesel engines and conforms to ASTM Specification D 975.

**Note:** Respondents to the Form EIA-821 survey were instructed to report all volumes in accordance with what the product was sold as, regardless of the actual specifications of that product. For example, if a

No. 2 distillate was sold as a heating oil or fuel oil, the volume would be reported in the category *No. 2 Fuel Oil* even if the product conformed to the higher specifications of a diesel fuel.

**Kerosene.** A light petroleum distillate that is used in space heaters, cook stoves, and water heaters and is suitable for use as a light source when burned in wick-fed lamps. Kerosene has a maximum distillation temperature of 400°F at the 10% recovery point, a final boiling point of 572°F, and a minimum flash point of 100°F. Included are No. 1-K and No. 2-K, the two grades of kerosene called range or stove oil, which have properties similar to those of No. 1 fuel oil.

**Petroleum Administration for Defense Districts (PADD).** A geographic aggregation of the 50 states and the District of Columbia into five districts. PADD 1 is further split into three subdistricts. The PADDs are organized as follows:

1. PADD 1 (East Coast):
  - a. **PADD 1A (New England):** Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont
  - b. **PADD 1B (Central Atlantic):** Delaware, District of Columbia, Maryland, New Jersey, New York, and Pennsylvania
  - c. **PADD 1C (Lower Atlantic):** Florida, Georgia, North Carolina, South Carolina, Virginia, and West Virginia
2. **PADD 2 (Midwest):** Illinois, Indiana, Iowa, Kansas, Kentucky, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, Oklahoma, South Dakota, Tennessee, and Wisconsin
3. **PADD 3 (Gulf Coast):** Alabama, Arkansas, Louisiana, Mississippi, New Mexico, and Texas
4. **PADD 4 (Rocky Mountain):** Colorado, Idaho, Montana, Utah, and Wyoming
5. **PADD 5 (West Coast):** Alaska, Arizona, California, Hawaii, Nevada, Oregon, and Washington

**Residual fuel oils.** A general classification for the heavier oils, known as No. 5 and No. 6 fuel oils that remain after the distillate fuel oils and lighter hydrocarbons are distilled away in refinery operations. It conforms to ASTM Specification D 396 and D 975 and Federal Specification VV-F-815C. No. 5, a residual fuel oil of medium viscosity, is also known as Navy Special and is defined in Military Specification MIL-F859E, including Amendment 2 (NATO Symbol F-77). It is used in steam-powered vessels in government service and inshore power plants. No. 6 fuel oil includes Bunker C fuel oil and is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes.

**United States.** The 50 states and the District of Columbia.