

Explanatory Notes and Detailed Methods Report

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Preface

The *Weekly Petroleum Status Report (WPSR)* provides timely information on supply and prices of crude oil and principal petroleum products. It provides the industry, press, planners, policymakers, consumers, analysts, and State and local governments with a ready, reliable source of current information. The *WPSR* summary of U.S. petroleum supply, demand, and inventories is the only timely government source of consistent petroleum volume data. The Energy Information Administration (EIA) instituted the *WPSR* in April 1979. The *WPSR* was designed to provide prompt information during gasoline shortages that were part of the repercussions arising from the revolution in Iran. Since then, the report has informed a wide audience of the overall petroleum situation on a timely basis with consistent, well-understood, and verifiable data.

The weekly data are used as preliminary estimates in the *Petroleum Supply Monthly (PSM)* and the *Monthly Energy Review (MER)*. While more accurate and detailed data are presented in the *PSM*, the monthly surveys do not capture sudden or rapid changes in petroleum market conditions nor do they provide data that are timely enough to be useful in a shortfall situation. In 2002, EIA instituted “*This Week in Petroleum*” (*TWIP*) as a means to provide data, graphs, and analysis about petroleum supply and prices on the Internet.

Petroleum supply data presented in the *WPSR* describe supply and disposition of crude oil and petroleum products in the United States and major U.S. regions called Petroleum Administration for Defense (PAD) Districts. Geographic coverage in the *WPSR* includes the 50 States and District of Columbia. U.S. territories are treated as import sources but are otherwise excluded from weekly petroleum supply statistics. Petroleum supply data include field production, imports and exports, inputs and production at refineries and blending terminals, production from gas processing plants and fractionators, and inventories at refineries, terminals, pipelines, gas processing plants, and fractionators. Crude oil inventories include Alaskan crude oil in transit by water. Aggregated weekly petroleum supply statistics are used for calculation of products supplied, which is an approximation of U.S. petroleum demand.

The supply data contained in this report are based primarily on company submissions for the week ending 7:00 a.m. the preceding Friday. Selected data are released electronically after 10:30 a.m. each Wednesday.

Price data presented in the *WPSR* include world crude oil contract prices, spot prices of crude oil and major products in major U.S. and world markets, future prices of crude oil and major products on the NYMEX, and retail prices of gasoline and on-highway diesel fuel. During the heating season, wholesale and retail prices of propane and residential heating oil are also provided. Collectively, these price series provide a comprehensive and timely view of current U.S. and world prices of crude oil and major petroleum products.

Weekly price data are collected as of 8:00 a.m. every Monday. Weekly retail gasoline and on-highway diesel prices are first available by 5:00 p.m. on Monday (Tuesday when Monday is a Federal holiday). Wholesale and retail propane and residential heating oil prices are released electronically after 10:30 a.m. each Wednesday. The daily spot and futures prices are provided by Reuters, Inc.

Hard copies of the *WPSR* are available for distribution on Thursday (on demand). For weeks which include holidays, publication of the *WPSR* may be delayed by one day.

Appendices

Three appendices are provided to assist in understanding and interpreting the data presented in this publication:

- Appendix A (Weekly Petroleum Status Report Explanatory Notes) - Information describing data collection, sources, estimation methodology, data quality control procedures, and interpretation of tables.
- Appendix B (Northeast Heating Oil Reserve) – Information describing the Northeast Heating Oil Reserve and showing the current inventories of heating oil on hand at the four designated locations.
- Appendix C (Winter Fuels Heating Prices) – Information on Winter Fuels Prices showing residential and wholesale prices for heating oil and propane by selected regions and states. Includes explanatory notes on sampling methodology and estimation procedures and on terms and definitions for the winter fuels data component of the *WPSR*. Appendix C is included in the *WPSR* during the winter fuels heating season, normally the first week of October through the middle of March.

General information about this document may be obtained from the National Energy Information Center (NEIC) (202) 586-8800, (202) 586-0727 (fax), and email: infoctr@eia.doe.gov.

Overview

The Energy Information Administration's Quality Guidelines

The data contained in the *Weekly Petroleum Status Report (WPSR)* are subject to separate information quality guidelines issued by the Office of Management and Budget (OMB), the Department of Energy (DOE), and Energy Information Administration (EIA). With available resources, EIA continually works to improve its systems in order to provide high quality information needed by public and private policymakers and decision makers. EIA has performance standards to ensure the quality (i.e., objectivity, utility, and integrity) of information it disseminates to the public. Quality is ensured and maximized at levels appropriate to the nature and timeliness of the disseminated information.

Information about EIA's quality program is available at <http://www.eia.doe.gov/smg/EIA-IQ-Guidelines.html>.

Concepts of Product Supply and Demand

Petroleum supply estimates contained in the *WPSR* are often interpreted as an approximation of petroleum demand measured as product supplied. Product supplied is often called “implied” demand because it is a measure of demand that is implied by disappearance of petroleum products from facilities and activities in the “primary” supply chain. Facilities and activities in the primary supply chain include refineries and blending terminals, gas processing plants and fractionators, oxygenate producers, imports, exports, bulk storage terminals, and pipelines. Total product supplied in the *WPSR* may be calculated from petroleum balances reported in tables 1 and 12. Total product supplied for crude oil and petroleum products is equal to crude oil input to refineries (line 10) + natural gas plant liquids production (line 11) + “other” liquids new supply (line 12) + crude oil product supplied (line 13) + refinery processing gain (line 14) + net product imports (line 15) + product stocks withdrawn (line 18). Product supplied for individual products equals production plus imports minus stock change minus exports.

Crude oil product supplied is normally zero because crude oil is processed in refineries and rarely, if ever, used directly. Crude oil product supplied is not calculated as with petroleum products. Instead, crude oil product supplied is a monthly survey value. Crude oil product supplied in weekly reports is estimated to be equal to the last available monthly survey value. The balancing item between crude oil supply and disposition is unaccounted-for crude oil (crude oil “adjustments” in the Petroleum Supply Monthly) rather than product supplied.

The secondary system is that portion of the overall distribution network that falls between producers and end-users. Product typically flows in bulk from the primary supply system into the secondary system before delivery in small quantities to consumers (the tertiary system). The secondary system includes storage at bulk plants; at retail motor fuel outlets, such as service stations, truck stops, and convenience stores; and at retail fuel oil dealers. Bulk plants are wholesale storage facilities that have less than 50,000 barrels of storage capacity and, by definition, receive product only by tank car or truck, not by barge, tanker, or pipeline. Tertiary inventories are held by end users and include fuel in vehicle tanks, heating oil in residential tanks, fuel oil held by utilities, jet fuel stored in facilities operated by end users, and certain proprietary storage of raw materials for the chemical industry (ethylene, propylene, etc.).

Data users sometimes consider demand as sales to the ultimate consumer or as the actual consumption of the product. Since there may be time delays between the movement of product from the primary level into the secondary and tertiary levels of the supply chain and the ultimate purchase or consumption, these definitions of demand require data on changes in secondary and/or tertiary stocks or the assumption that these values either remain constant or are small compared to primary supply. The most recent study of

secondary stocks was done by the National Petroleum Council in 1989. This study revealed that secondary distillate stocks were equal to about 6.9 percent of distillate stocks and 6.7 percent of distillate storage capacity. The study also noted that secondary storage capacity was decreasing due to EPA regulations.

Interpreting Product Supplied

Movements in both spot and futures prices are sometimes attributed to the weekly data release which is closely watched by market analysts. When petroleum markets are particularly tight or when the data are not what the market expects, (e.g. a build in inventories occurs when a decline is expected), the weekly data take on a more significant role in the assessment of petroleum markets, where such assessments affect billions of dollars in the financial markets.

Several factors may introduce error into the weekly data. First, the data are preliminary, which means companies may have revisions that are incorporated into the monthly reports. Data timing from companies can also create variations. While one company may report a cargo of imports during a given week, the increase in inventories associated with that cargo may not be registered on the receiving company's records until the following week. This timing issue would result in over-stated product supplied the first week, followed by an understatement in the second week when the stock increase was recorded. Last, limited time exists in a weekly process for EIA data review, which can lead to misreported data entering the weekly results. Measures of the accuracy of the estimates from the weekly data are published annually in the *Petroleum Supply Monthly (PSM)* in an article entitled “Accuracy of Petroleum Supply Data.”

Components/“Forms” Discussions

The data presented in the *WPSR* include data collected by the EIA on six weekly petroleum supply and two weekly petroleum price surveys and data released by Reuters Ltd. During the heating months (October through mid-March), data from a 3rd weekly price survey are included in Appendix C.

Weekly Petroleum Supply Reporting System

The six weekly petroleum supply surveys are part of the Petroleum Supply Reporting System (PSRS). The PSRS tracks the supply and disposition of crude oil, petroleum products, and natural gas liquids in the United States. The PSRS is organized into two data collection subsystems, the Weekly Petroleum Supply Reporting System (WPSRS) and the Monthly Petroleum Supply Reporting System (MPSRS). The MPSRS includes nine monthly surveys and one annual survey. The WPSRS processes the data from the six weekly surveys. The six weekly supply surveys are:

1. EIA-800, “Weekly Refinery and Fractionator Report,”
2. EIA-801, “Weekly Bulk Terminal Report,”
3. EIA-802, “Weekly Product Pipeline Report,”
4. EIA-803, “Weekly Crude Oil Stocks Report,”
5. EIA-804, “Weekly Imports Report,”
6. EIA-805, “Weekly Terminal Blenders Report.”

Both weekly and monthly surveys are administered at six key points along the petroleum production and supply chain: (1) refineries, fractionators, and gas processing plants, (2) bulk terminals, (3) product pipelines, (4) crude oil stock holders, (5) importers, and (6) blenders. Monthly surveys also include inter-PAD District movements by pipelines, tankers, and barges as well as production and stocks at oxygenate production plants. Weekly surveys do not capture petroleum movements or oxygenate producer activity. Production and stocks at oxygenate producers are included in published weekly statistics as estimates based on monthly survey data (see section D “Additional Sources of Data” for further information). Data collected weekly using Forms EIA-800 through EIA-805 are similar to, though less detailed than, the data collected monthly using Forms EIA-810 through EIA-815. Respondents reporting to the weekly surveys constitute a sample of those reporting on the monthly surveys.

Annual U.S. refinery capacity data are collected on the Form EIA-820, “Annual Refinery Report.” These data were collected and published in Volumes 1 and 2 of the *Petroleum Supply Annual (PSA)*.

Weekly Supply Survey Methodology

Sampling Frame

The EIA weekly reporting system, as part of the Petroleum Supply Reporting System (PSRS), was designed to collect data similar to those collected monthly. The sample of companies that report weekly in the Weekly Petroleum Supply Reporting System (WPSRS) are selected from the universe of companies that report on the corresponding monthly forms.

The sampling frame for Form EIA-800 “Weekly Refinery Report” includes refineries reporting on Form EIA-810 “Monthly Refinery Report” as well as gas processing plants and fractionators reporting on Form EIA-816 “Monthly Natural Gas Liquids Report.” Monthly reports on Form EIA-810 are required from operators of every operating and idle refinery located in the 50 States, District of Columbia, Virgin Islands, Puerto Rico, and other U.S. territories. Monthly reports on Form EIA-816 are required from operators of every operating and idle gas processing plant fractionator, and butane isomerization plant located in the 50 States and the District of Columbia.

The EIA-801 sampling frame consists of all companies reporting on the EIA-811, “Monthly Bulk Terminal Report.” This includes every bulk terminal operating company located in the 50 States, the District of Columbia, Puerto Rico, and the Virgin Islands. A bulk terminal is primarily used for storage and/or marketing of petroleum products and has a total bulk storage capacity of 50,000 barrels or more, and/or receives petroleum products by tanker, barge, or pipeline. Bulk terminal facilities associated with a product pipeline are included.

The EIA-802 sampling frame consists of all companies reporting on the EIA-812, “Monthly Product Pipeline Report.” This includes all petroleum product pipeline companies that transport refined petroleum products (including interstate, intrastate, and intracompany pipeline movements) in the 50 States and the District of Columbia.

The EIA-803 sampling frame consists of all companies reporting on the EIA-813, “Monthly Crude Oil Report.” This includes all companies that carry or store 1,000 barrels or more of crude oil. Included are gathering and trunk pipeline companies (including interstate, intrastate, and intracompany pipelines), crude oil producers, terminal operators, storers of crude oil (except refineries), and companies transporting Alaskan crude oil by water in the 50 States and the District of Columbia.

The EIA-804 sampling frame consists of all companies reporting on the EIA-814, “Monthly Imports Report.” This includes all companies, including subsidiary or affiliated companies, that import crude oil or petroleum products (1) into the 50 States and the District of Columbia, (2) into Puerto Rico, the Virgin Islands, Guam and other U.S. possessions (Midway Islands, Wake Island, American Samoa, and Northern Mariana Islands), and (3) from Puerto Rico, the Virgin Islands and other U.S. possessions into the 50 States and the District of Columbia. Imports into Foreign Trade Zones located in the 50 States and the District of Columbia are considered imports into the 50 States and the District of Columbia and must be reported.

The EIA-805 sampling frame consists of all companies reporting on the EIA-815, “Monthly Terminal Blenders Report.” This includes all storage terminals which produce finished motor gasoline through the blending of various motor gasoline blending components, natural gas liquids, and oxygenates in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam and other U.S. Possessions.

Sample Design

The sampling procedure used for the weekly surveys is the cut-off method. In the cut-off method, companies are ranked from largest to smallest on the basis of quantities reported during some previous period. Companies are chosen for the sample beginning with the largest and adding companies until the total sample covers approximately 90 percent of the total volumes for each item and each geographic region for which data may be published. For example, for distillate fuel oil stocks, the weekly sample includes those respondents whose combined volumes of stocks for distillate fuel oil from refineries, bulk terminals, and pipelines constitute at least 90 percent of the total volume of distillate fuel oil stocks as reported in the corresponding monthly surveys.

Figure 2. Frame and Sample Size for Weekly Supply Surveys

	Weekly Form	Dec. 2008 Frame Size	Weekly Sample Size
Refiners (Refineries)	EIA-800	157	129
Bulk Terminals	EIA-801	249	90
Product Pipelines	EIA-802	73	44
Crude Oil Stock Holders	EIA-803	132	52
Importers	EIA-804	364	77
Terminal Blenders	EIA-805	591	404

To assure 90-percent coverage of the total for each item collected and each geographic region for each weekly survey, a sample control meeting is conducted each month. This meeting focuses on changes in the current monthly data as it relates to the weekly surveys, changes in the weekly surveys that impact the monthly surveys, and changes in respondent reporting patterns. Companies are added or removed from the surveys based on the changes.

Collection

Survey data for the *WPSR* are collected by telephone, facsimile, Internet using secure file transfer, and electronic transmission on a weekly basis. All respondents must submit their data by 5:00 p.m. on the Monday following the end of the report period. The weekly report period begins at 7:01 a.m. on Friday and ends at 7:00 a.m. on the following Friday.

Processing

Data collected through the *WPSRS* are received, logged into an automated Survey Control File, keyed, and processed through an edit program. Cell values determined to be unusual or inconsistent with other cell values are flagged either by automated process or analyst review. The validity of the value of each flagged cell is investigated. From the investigation, some flagged values are either verified or corrected by the respondent. Any remaining flagged values are referred to as unresolved. Imputation is performed for nonrespondents and unresolved data items. The cleansed data are further reviewed at the aggregate level to determine if other data issues exist (see Macro Editing).

A clean data file is available by the close of business Tuesday. Corrections to previous periods, late submissions or resubmissions for the current period received after publication are used in editing and imputation for the following periods (see Revision Policy).

Imputation and Estimation

After company reports have been checked and entered into the weekly database, values are imputed for companies that have not responded, reported incomplete data, or reported data that failed editing and could not be confirmed. The imputed values are calculated using exponentially smoothed means of recent weekly reported values for this specific company.

The equation for the exponential smoothing is:

$$Y_t = \alpha * y_t + (1 - \alpha) * Y_{t-1}$$

where

- Y_t is the prediction for week t+1 (using data through week t),
- y_t is week t's reported value,
- Y_{t-1} is the prediction for week t (using data through week t-1),
- α is a number between 0 and 1, chosen by survey/product/type

In the equation for exponential smoothing, the size of α controls the importance of last week's value relative to the aggregate of all weeks before that as represented by the prediction for last week. For example, if $\alpha = .8$, then last week's value is much more important in predicting this week's value than all the previous week's values are since the weight of last week is .8 and the weight of the previous weeks collectively is .2. In general, the α values for the expected means of the non-zero responses are low for imports (last week is much less important than history) and much higher for production, inputs and stocks.

The imputed values are treated like reported values in the estimation procedure, which calculates ratio estimates of the weekly totals. First, the current week's data for a given product reported by companies in a geographic region are summed (weekly sum, W_s .) Next, the most recent month's data for the product reported by those same companies are summed (monthly sum, M_s .) Finally, the most recent month's data for the product as reported by all companies, including adjustments made in the monthly process, is summed (M_t). The current week's ratio estimate for that product for all companies, W_t , is given by:

$$W_t = (M_t / M_s) * W_s$$

The ratio (M_t / M_s) may be adjusted to account for very unusual events or industry changes not yet reflected in the lagged monthly data. For example, the hurricanes in September 2005 rendered the September data unrepresentative for purposes of applying the ratio to the *WPSR* in December 2005. Note, however, the gasoline and ethanol fuel adjustment is not included in M_t and is treated explicitly.

This procedure is used directly to estimate total weekly inputs to refineries and production. To estimate stocks of finished products, the preceding procedure is followed separately for refineries, bulk terminals, and pipelines. Total estimates are performed by summing over establishment types.

Published values of gasoline production include estimates for refinery and blender production plus a fuel adjustment to account for the imbalance between supply and disposition of motor gasoline blending components and fuel ethanol. For further detail, refer to Additional Sources of Data, Data Obtained from Supplemental Sources (D.2.)

Weekly imports data are highly variable on a company-by-company basis or a week-to-week basis. Therefore, an exponentially smoothed ratio has been developed for weekly imports. The estimate of total weekly imports is the product of the smoothed ratio and the sum of the weekly reported values and imputed values.

For imports, the ratio is smoothed as follows:

$$R_t = \alpha * r_t + (1 - \alpha) * R_{t-1}$$

where

R_t is the smoothed ratio for week t+1 (using ratios through week t),

r_t is week t's ratio of the most recent monthly total for all respondents to the monthly total of respondents from the weekly sample,

R_{t-1} is the smoothed ratio for week t (using ratios through week t-1),

α is a number between 0 and 1, chosen by product but not by PADD/ID.

When $M_s = 0$, then r_t is not defined for the week and the smoothed ratio is not updated, that is, the previous smoothed ratio is used as the multiplier.

Macro Editing

After the flagged respondent data have been resolved, preliminary tables are produced and used to identify anomalies. These tables show U.S. and PADD estimates for the current week and the prior 3 weeks and also show year-ago data for the same week along with 4 week average. Anomalies result in further review of respondent data which in turn may result in additional flagged data and imputation.

Dissemination

The data are published in the *WPSR* and the *TWIP* every Wednesday for the report period ending on the previous Friday. Except when holidays delay data processing schedules, the data

shown in Tables 1 and 11 of the *WPSR* are released to the EIA Web site at 10:30 a.m. (Eastern time) on Wednesday in TXT, CSV, and XLS formats. The entire *WPSR* is released at 1:00 p.m. on Wednesday in PDF and HTML format. For weeks which include holidays, releases are delayed by one day. The *WPSR* tables can be accessed at:

http://www.eia.doe.gov/oil_gas/petroleum/data_publications/weekly_petroleum_status_report/wpsr.html.

Selected data from the weekly supply surveys are also published in the *This Week in Petroleum (TWIP)* generally available at 1:00 p.m. Eastern Time on Wednesdays. The *TWIP* can be accessed at: <http://tonto.eia.doe.gov/oog/info/twip/twip.asp>.

Weekly Price Survey Methodology

EIA price data contained in this report are derived from two weekly telephone surveys, the EIA-878, "Motor Gasoline Price Survey," and the EIA-888, "On-Highway Diesel Fuel Price Survey." These surveys provide timely information on national and regional retail prices of gasoline and on-highway diesel fuel.

Sampling Frame

EIA-878, "Motor Gasoline Price Survey"

The EIA-878 sample was drawn from a frame of approximately 115,000 retail gasoline outlets. The gasoline outlet frame was constructed by combining outlet information purchased from a private commercial source with company-level information contained on existing EIA petroleum product frames and surveys. Outlet names and codes were obtained from the private commercial data source. Company-level retail gasoline sales volumes by State were obtained from EIA surveys. Additional information was obtained directly from companies selling retail gasoline to supplement information on the frame. The individual frame outlets were mapped to counties using their codes. The outlets were then assigned to the published geographic areas using their county assignment. Each outlet is designated as either in an area requiring reformulated gasoline (RFG) based on Environmental Protection Agency (EPA) program requirements or in an area designated as a conventional gasoline area. Reformulated gasoline is required by the EPA in any area that is designated as an ozone nonattainment area. A conventional area is defined as any area that does not require the sale of reformulated gasoline. All formulations of finished motor gasoline may be sold in conventional areas.

EIA-888 "On-Highway Diesel Fuel Price Survey"

The EIA-888 sample used a multi-stage frame and selection procedure. The first stage sampling frame used the EIA-863, "Petroleum Product Sales Identification Survey" frame file combined with data collected on the EIA-821, "Annual Fuel Oil and Kerosene Sales." The EIA-863 survey is conducted every 4

years and collects annual sales volume information by product and State for multiple products and end-use categories, including retail sales of diesel fuel. The frame file includes information for approximately 30,000 companies.

Using this frame file and data from the previous years' EIA-782B and EIA-821 samples, a sample of motor gasoline, distillate fuel oil, and residual fuel oil resellers and retailers was designed and selected for the EIA-782B, "Resellers'/Retailers' Monthly Petroleum Product Sales Report" survey. The sample size for the most recent EIA-782B sample is 1,531 companies representing 2,207 Company/State units (CSUs). The EIA-782B sample was used in the construction of the second stage sampling frame.

The second stage sampling frame consisted of a listing of companies responding to the EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report" and the EIA-782B sample survey along with their annualized retail diesel fuel sales volume by State. The second stage frame contained State-level retail diesel fuel sales volume data for approximately 1,635 companies. This frame was used to select the companies required to report on the EIA-888.

Sample Design

EIA-878, "Motor Gasoline Price Survey"

The design is based on the definitions of publication cells and sampling cells. A publication cell is defined by geography (PADD, State, and city) and attainment status (reformulated or conventional gasoline). Hence, New York State reformulated gasoline is a publication cell. New York City, conventional gasoline in PADD 1A (New England), and all of the United States are also publication cells. A sampling cell is defined as the smallest basic geographical unit formed by the boundaries of the geographic and formulation areas for which average prices are published. Thus, the part of New York State where reformulated gasoline is required, but is not in New York City, would be a sampling cell. Every county in the U.S. was assigned to a sampling cell. Sampling cells are mutually exclusive and collectively exhaustive. EIA-888 "On-Highway Diesel Fuel Price Survey"

The gasoline outlet sample is an area sample consisting of a sample of outlets from the previous EIA-878 sample and an augmentation sample of outlets from the new outlet frame described above. The previous sample employed an entirely different sample design and frame using a selection of companies within a State and then a selection of outlets within the selected companies for that State. The new sample includes approximately 50 percent of the noncertainty sample from the previous sample to insure continuity in the historical data series. The augmentation outlets were obtained by first sampling counties and then sampling the outlets from the gasoline outlet frame within those counties. After the counties were assigned to a sample cell, the standard deviations of gasoline prices for these sampling cells were estimated using the prices from the previous sample of the gasoline survey. These

standard deviations and the number of stations from the Census Bureau's County Business Patterns (CBP) were used to determine the required number of outlets to be sampled. The statistical technique used was the Chromy allocation algorithm, an iterative procedure to determine the number of units required for each sampling cell. A Goodman-Kish PPS sampling method was used to select counties, ordering counties within sampling cells by number of stations. The required number of stations was randomly selected from the outlet frame file within each selected county. Once this augmentation portion of the sample was obtained, standard deviations were re-estimated, combining the previous gasoline sample outlets and newly sampled outlets. The Chromy algorithm was applied again to determine the revised sample cell requirements. The previous sample's outlets were then sub-sampled to insure a self-weighting sample within each stratum, and allocations satisfied by sampling half from each of the self-weighting sub-sample and the old sample.

In determining the required sample size, the target coefficient of variation for publication cells was set for 0.4 cents for the United States, 0.55 for PADDs and U.S. formulations, 0.70 for sub-PADDs and the PADD formulations, 0.85 for cities and states, and 1.0 for the remaining published cells (i.e. state and sub-PADD formulations). The sample size is approximately 800 outlets.

EIA-888 "On-Highway Diesel Fuel Price Survey"

The EIA-888 sample was designed to yield price estimates at the national, PADD and sub-PADD level and for the State of California. A standard error of one cent was targeted for PADDs 1, 2 and 3, and one and a half cents of PADDs 4, 5, sub-PADDs 1A, 1B, 1C, and the State of California. A sample size of 350 outlets was required to meet these targets.

To determine the sample allocations across regions, average standard errors across reporting periods for the previous year of weekly diesel fuel survey prices were calculated for each of the cells. An average sample size for each cell was first determined using these standard errors. In addition, a second allocation based on proportional representation within the next larger cell (i.e., the more aggregated level cell that the original cell would contribute to) was also obtained. The maximum of these two allocations for each cell was then designated as the cell allocation.

The sample design used a two-step sample selection procedure. The first step selected the Company State Unit (CSU) required to report (i.e. the sampling unit is a company and a State - a company may have sales in multiple States and be selected to report sales for one or more States in which they do business). The sample design used annual State retail diesel fuel sales volumes for two sample cycles from the EIA-782A and EIA-782B surveys divided by the unit's probability of selection in the monthly survey as a measure of size for Probability Proportionate to Size sampling. This resulted in a sample of 282 company/state units.

The second step selected the actual outlets required to report. The companies selected during the first step were contacted and required to construct a frame of their outlets for the State(s) selected. The companies sorted their outlets by code within the State and randomly selected the required number of outlets within each State. The companies provided EIA the outlet telephone numbers and addresses for the outlets selected in each State. If the CSU was sampled more times than the company had outlets in that State, an outlet was counted more than once. A total of 350 outlets were selected.

Collection

Each Monday, the individual gasoline and diesel outlets are called and asked to report the pump price of their products as of 8:00 a.m. local time. If Monday is a holiday, the calls are made on the next business day; however, the Monday price is still recorded. The collection takes place using a computer assisted telephone interview (CATI) with built in editing. Companies who prefer to report through their headquarters on behalf of their selected outlets are allowed to do so. Companies preferring to report by fax or email are also permitted to report by that method. Data obtained through non-phone methods are entered into the CATI system and treated the same as phone collected prices. Nonrespondent firms are telephoned up to three times. The data are collected more frequently during emergency situations.

Beginning in 2007, on-highway diesel prices are collected for two types of diesel fuel, ultra low sulfur and low sulfur. This dual collection is in keeping with the industry's implementation of new EPA requirements and will continue during the period in which two types of on-highway diesel fuel are sold. The diesel price web page cited below contains the U.S. level ultra low and low sulfur diesel prices.

Processing and Micro Editing

The data are edited when they are entered into the CATI system, normally during the phone interview. Respondents are asked to verify prices that fail edits. If prices are outside a certain range or fail other criteria (e.g. the price of a station's fuel grade is the same or cheaper than the price of a lower grade), respondents are also asked to explain the reason for the extreme deviation in price. Data obtained through non-phone methods are also entered into the CATI system. If the data fail the edits, the respondents are called and asked to verify their reported price(s). Imputation is used for outliers and nonrespondents.

A model that uses the latest weighted average motor gasoline spot prices to predict the direction and amount of change in the U.S., PADD, sub-PADD and the State of California retail prices is run on both Fridays and Mondays. If the survey results differ significantly from the model results, additional verification of the reported prices is done.

In addition, in the middle of the weekly data collection, interviewing stops in order to run a pre-check report on data which

has already been collected. This is done to test the integrity of the current data, check for severe fuel price changes (i.e. bogus records), and re-set any records which have been resolved. Bogus records discovered during the pre-check are re-called to recheck or correct these prices. Once all the bogus records have been confirmed or corrected, any prices which have been corrected can be fixed. Any edits introduced to the data by this process will be applied when another pre-check or final processing is run.

Final processing takes place once all records in the CATI sample have been resolved. Many of the same tasks of the pre-check process are performed and final price estimates are created.

Imputation and Estimation

EIA-878, "Motor Gasoline Price Survey"

To estimate average prices, sample weights were constructed based on the sampled outlet's number of pumps as a proxy for sales volume. These weights are applied each week to the reported outlet gasoline prices to obtain averages for the specific formulations, grades and geographic areas. Weights used in aggregating across grades, formulations, and geographic areas were derived using volume data from the EIA-782C "Monthly Report of Prime Supplier Sales of Petroleum Products Sold for Local Consumption," and demographic data from the Bureau of the Census and Department of Transportation on population, number of gasoline stations, and number of vehicles. A "Coefficient of Variation of Price Report" is published weekly at: http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/sampling_error_report.html.

EIA-888 "On-Highway Diesel Fuel Price Survey"

Since sample allocations were derived at the cell level, cell averages are simple averages of the CSU prices (the weights from the first and second phases cancel). The U.S. average is a weighted average of the cell/PADD averages where the weights were derived by taking the inverse of the probability proportional to the PADD weighted volumes. Imputation for a station is calculated using the average change in price from the previous week for all responding stations in the same geographic area. The average change is added to the previous week's price for the station to estimate the current price for the outlet. A "Coefficient of Variation of Price Report" is published weekly at: http://tonto.eia.doe.gov/oog/info/wohdp/Sampling_Error.html.

Macro Editing and Validation

EIA-878, "Motor Gasoline Price Survey"

Once the motor gasoline price data have been processed, the data are checked through a validation program. The program outputs the outliers in price changes from a week ago and actual prices by grade and region. Significant outliers are investigated and verified

by calling the respondent(s) and/or checking the fax or email from the respondent.

EIA-888 “On-Highway Diesel Fuel Price Survey”

After processing, the outlet level prices are checked by a diesel validation program. The program identifies outliers and allows the analyst to further examine the data. Significant outliers are investigated and verified by calling the respondent(s) and/or checking the fax or email from the respondent. Also, credit card transaction prices are obtained from a private source and used to estimate a U.S. and PADD level price for on-highway diesel fuel. If the survey results differ significantly from these sources, additional verification of the reported prices is done.

Dissemination

The retail gasoline and diesel prices are processed and released by 5 p.m. each Monday, except on Federal holidays, in which case the data are released on Tuesday (but still represent Monday’s price). Retail gasoline prices are released on EIA’s website: http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/mogas_home_page.html and diesel fuel prices on: <http://tonto.eia.doe.gov/oog/info/wohdp/diesel.asp>.

The data are also available through email notification to those customers who sign up for that service. The U.S., PADD, and sub-PADD level regular gasoline and diesel fuel average prices are available on EIA’s prerecorded telephone hotline at (202) 586-6966 and in this publication, the *Weekly Petroleum Status Report*.

Additional Sources of Data

Due to the tight time constraints in publishing weekly petroleum supply statistics and the desire to reduce industry response burden, some of the statistics published in the *WPSR* are obtained from sources other than the 6 weekly supply surveys. These other sources include models to data and data from supplemental sources such as the *PSM* or the Bureau of the Census.

Data Obtained Through Models

Domestic Crude Oil Production

Since weekly crude oil production data are unavailable, a model is used to estimate weekly crude oil production. The weekly production estimates are based on historical production patterns and, where available, other data such as pipeline runs from the Alaskan North Slope during the week. These weekly estimates are presented as the weekly and 4-week average crude oil production volumes shown in this publication. Cumulative crude oil production volumes shown in the U.S. Petroleum Balance Sheet, Table 12 of the *WPSR*, include revised estimates (published in the *PSM*.)

Exports (Tables 1, 8, 11, 12)

Official U.S. exports statistics for crude oil and petroleum products are compiled by the U.S. Bureau of the Census and are published in the *PSM*. The EIA obtains these data on a monthly basis approximately 10 weeks after the close of the reporting month. Weekly, per day estimates of exports for crude oil and petroleum products are forecast using an autoregressive integrated moving-average (ARIMA) procedure. The weekly estimate is updated when a new monthly estimate is calculated for the *PSM*. The ARIMA procedure models a value as a linear combination of its own past values and present and past values of other related time series. The most recent 5 years of past data are used to obtain the exports forecast. In addition, for the major products and crude oil, 5 years of related price data are used. The price data include some U.S. and some foreign series. The weekly estimate is replaced when a new monthly estimate is calculated for the *PSM*.

Since the inputs to the model are based on export volumes that are 2 to 3 months old, analysts review the estimate to determine if current factors such as hurricanes or other severe weather require an adjustment to the estimate.

Stocks of Other Oils - Tables 1, 3, 11, 12

Stocks of minor products (referred to as “other oils”) are not collected on the weekly survey forms (Forms 800 through 805). An estimate of weekly stocks of minor products is derived by first computing an average daily rate of stock change for the minor products for each month based on monthly data for the past 6 years (Table 1 of *PSM*). The daily stock change for a month is estimated by subtracting the prior month’s end of month other oils stocks from the current month’s end of month other oils stocks and dividing by the number of days in the current month. This average daily rate and the minor stock levels from the most recent *PSM* are then used to estimate the minor product stock level for the current week.

Since most of the components of the stocks of other oils are based on values from past monthly data, analysts review the estimate to determine if factors such as recent increases or decreases in crude runs or reported outlier data require an adjustment to the estimate of stocks of minor products.

Minor products include aviation gasoline, kerosene, natural gas liquids and LRGs (except propane/propylene), other hydrocarbons and oxygenates, aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphtha, lube oils, waxes, coke, asphalt, road oil, and miscellaneous oils.

Processing Gain - Tables 1 and 12, line 14

Processing gain is the volumetric amount by which total output is greater than input for a given period of time. This difference is due to the processing of crude oil into products which, in total, have a lower specific gravity than the crude oil processed.

Processing gain in the *WPSR* is calculated by converting processing gain from Table 28 of the *PSM* to thousands of barrels per day and dividing by Refinery and Blender Net Inputs of Crude Oil in thousands of barrels per day from Table 3 of *PSM* for each of the latest 12 months of the *PSM*. The 12 values are added and divided by 12. The result is then multiplied by this week's crude input value in Table 11 of the *WPSR* to obtain the processing gain value for the week.

Stocks of Crude Oil on Leases (*PSM* Table 53, *WPSR* Tables 1, 3, 11,12)

The EIA-803 collects end of week crude oil stocks by PADD which is a combination of stocks in pipelines and tank farms, terminals, and on leases operated by the reporting company. Small, independent producers of crude oil on federal leases are not required to report on the EIA-803. An adjustment is made to the PADD 3 and PADD 4 stocks to correct for the understatement of lease crude oil stocks. Values used for the adjustment are 10,300 thousand barrels in PAD District 3 and 330 thousand barrels in PAD District 4.

Data Obtained from Supplemental Sources

Natural Gas Liquids Production - Table 1 and 12

The volume shown for "Natural Gas Liquids Production" is estimated from Table 3, "U.S. Daily Average Supply and Disposition of Crude Oil and Petroleum Products" of the latest Petroleum Supply Monthly (PSM). In addition to the estimate of field production of natural gas plant liquids, data identified as natural gas liquids production on *WPSR* tables 1 and 12 also include estimated volume of "Finished Petroleum Products, Adjustments." For further information see the explanatory notes in the appendix of the Petroleum Supply Monthly available at: http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_monthly/psm.html.

Other Liquids New Supply - Table 1 and 12

Other Liquids New Supply is taken from the Other Liquids Adjustments column of Table 3 of the *PSM*. Other Liquids New Supply includes estimated production of fuel ethanol, other oxygenates, "other hydrocarbons", and hydrogen. Motor gasoline blending components adjustments are also included. For further information see the explanatory notes in the appendix of the Petroleum Supply Monthly available at: http://www.eia.doe.gov/oil_gas/petroleum/data_publications/petroleum_supply_monthly/psm.html.

Gasoline Adjustments (finished motor gasoline product supplied adjustment, Fuel Ethanol adjustment, and MGBC adjustment)

Production of finished motor gasoline reported in Tables 2 and 11 of the *WPSR* includes refinery production, blender production, and

adjustments to account for imbalances between supply and disposition of motor gasoline blending components and fuel ethanol. Gasoline production in the *PSM* is reported separately for refineries and blenders with the adjustment as a separate item, but weekly gasoline production always includes the adjustment. Gasoline production adjustments are needed because there typically is more supply than disposition reported for motor gasoline blending components and fuel ethanol in monthly data. Since there is no end-user demand for motor gasoline blending components or fuel ethanol, the imbalance is typically interpreted as unreported gasoline production at blenders. Gasoline production adjustments are included in all types of finished gasoline production and in all PAD Districts reported in the *WPSR*. Adjustment values included in weekly production are typically equal to the last available finished motor gasoline adjustments calculated from data in the *PSM*. Weekly gasoline adjustments are occasionally changed from the last available value from the Petroleum Supply Monthly. Such changes are prompted by information from more current weekly data when weekly data suggest significant deviation from the gasoline adjustment value that would otherwise be used. Additional details concerning gasoline adjustments are available in Appendix B, "Detailed Statistics Explanatory Notes" and Table B1, "Finished Motor Gasoline Product Supplied Adjustment" of the *PSM*.

Quality

General Discussion

Response Rates

The response rate for the weekly supply surveys is generally 95 to 100 percent. Chronic nonrespondents and late filing respondents are contacted by telephone and reminded of their requirement to report. Nearly all of the major companies report on time. The nonresponse rate for the published estimate is usually between 1 percent and 2 percent. The response rates on Forms EIA-878, and EIA-888 are usually 98 to 100 percent.

Timing Issues

Timing of reported data can impact published results. For example, the calculation of product supplied includes imports and change in stock levels. Normally imports would add volumes to stock levels. However, respondents recording inventories are frequently different than the respondents reporting imports. The accounting system of one respondent may lag that of another, resulting in the imports and associated stocks being reported in different weeks. These timing differences result in weekly variations in product supplied.

Sampling and Non-sampling Errors

There are two types of errors usually associated with data produced from a survey: non-sampling errors and sampling errors.

Sampling Errors

Sampling errors are those errors that occur when survey estimates are based on a sample rather than being derived from a complete census of the frame. Tables showing data from the EIA-878 and EIA-888 surveys utilize a sample of resellers and retailers and, therefore, have sampling error. The particular sample used for each of the EIA-878 and EIA-888 surveys is one of a large number of all possible samples that could have been selected using the same design. Estimates derived from the different possible samples would differ from each other. The average of these estimates would be close to the estimate derived from a complete enumeration of the population (a census), assuming that a complete enumeration has the same nonsampling errors as the sample survey. The sampling error, or standard error of the estimate, is a measure of the variability among the estimates from all possible samples of the same size and design and, thus, is a measure of the precision with which an estimate from a particular sample approximates the results of a complete enumeration. Estimates of the sampling error for the EIA-878 can be found at: http://www.eia.doe.gov/oil_gas/petroleum/data_publications/wrgp/sampling_error_report.html. Estimates of the sampling error for the EIA-888 can be found at: http://tonto.eia.doe.gov/oog/info/wohdp/Sampling_Error.html.

Non-sampling Errors

Non-sampling errors may arise from a number of sources including: (1) the inability to obtain data from all companies in the frame or sample (non-response and the method used to account for non-response), (2) response errors, (3) differences in the interpretation of questions or definitions, (4) mistakes in recording or coding of the data obtained from respondents, and (5) other errors of collection, response, coverage, and estimation.

Resubmissions

Resubmissions are required whenever an error greater than 5 percent of the true value is discovered or if requested by EIA. Late submissions or resubmissions received after the publication date are used for editing and imputation for future periods. In rare instances, the data are used to publish a revised estimate. See Revision Policy below.

Revision Policy

EIA will disseminate revised weekly data only if the revision is expected to substantively affect understanding of U.S. petroleum supply. The decision to disseminate a revision to weekly data will be based on EIA's judgment of the revision's expected effect. While revisions are expected to be rare, if one is necessary, it will be disseminated in the next regularly scheduled release of the weekly products.

Petroleum Stock Bands

The petroleum stock bands contained in Figures 2 through 7 have been developed as a graphic aid for users of the *WPSR* in the interpretation of stock levels. The *WPSR* contains stock bands for U.S. and PADD-level crude oil and petroleum products, crude oil, total motor gasoline, distillate fuel oil, residual fuel oil, and propane. In addition to the stock band (comprising the shaded area on the graphs labeled "Average Range"), the graphs also display data points for published monthly totals and the week-ending estimates (labeled "Monthly" and "Weekly".) The Average Range enables the user to compare current inventory levels with past inventory levels.

Derivation of Average Range Stock Levels

The graphs displaying stock level and the average range provide the reader with actual inventory data compared to an average range for the most recent 5-year period running from January through December or from July through June. The ranges also reflect seasonal variation for the past 7 years. The seasonal factors, which determine the shape of the upper and lower curves, are estimated with a seasonal adjustment technique developed at the Bureau of Census (Census X-11). The seasonal factors are assumed to be stable (i.e., the same seasonal factor is used for each January during the 7-year period) and additive (i.e., the series is deseasonalized by subtracting the seasonal factor for the appropriate month from the reported inventory levels). The intent of deseasonalization is to remove annual variation from the data. Thus, deseasonalized series would contain the same trends, cyclical components, and irregularities as the original data. The seasonal factors are updated annually in October, using the 7 most recent years of final monthly data. The seasonal factors are used to deseasonalize data from the most recent 5-year period (January-December or July-June) in order to determine a deseasonalized average band. The average of the deseasonalized 60-month series is the midpoint of the band and the width is two standard deviations of the series (adjusting first for outliers). When the seasonal factors are added back in, the average range shown on the graphs reflects the actual data. The ranges are updated every 6 months in April and October (Table A1, "Upper and Lower Limits of Average Ranges in Inventory Graphs").

In summary, the upper band is the midpoint plus one standard deviation plus the seasonal factor and the lower band is the midpoint minus one standard deviation plus the seasonal factor:

$$\begin{aligned} \text{Upper Band}_m &= \text{mean DS} + \text{SD} + \text{SF}_m & m &= \text{Jan, Dec} \\ \text{Lower Band}_m &= \text{mean DS} - \text{SD} + \text{SF}_m & m &= \text{Jan, Dec} \end{aligned}$$

where:

mean DS = the monthly average of 60 months of deseasonalized stocks,

SD = standard deviation of 60 months of deseasonalized stocks after adjusting for outliers, and

SF_m = seasonal factor for month m, m=January thru December.

Seasonal factors are updated once a year in October. The seasonal factors are estimated with a seasonal adjustment technique developed at the Bureau of Census (Census X-11).

Data Assessment

The principal objective of the Petroleum Supply Reporting System is to provide an accurate picture of petroleum industry activities and of the availability of petroleum products nationwide from primary distribution channels. The weekly data, which are based on sample estimates stemming largely from preliminary company data, serve as leading indicators of the monthly data. The weekly data are not expected to have the same level of accuracy as the preliminary monthly data when compared with final monthly data. However, the weekly data are expected to exhibit like trends and product flow characteristic of the preliminary and final monthly data.

To assess the accuracy of weekly statistics, monthly estimates derived from weekly estimates are compared with the final monthly aggregates published in the *Petroleum Supply Annual*. Although final monthly data are still subject to error, they have been thoroughly reviewed and edited, they reflect all revisions made during the year, and they are considered to be the most accurate data available. The mean absolute percent error provides a measure of the average revisions relative to the aggregates being measured for a variable. The mean absolute percent error for 2005 weekly data was less than 2 percent for 22 of the 61 major petroleum variables analyzed. Many of the variables with mean absolute percent errors of 2 percent or more were for refined products imports series. The mean absolute percent error for total weekly refined products imports was 7.31 percent for 2005. It should be noted that products imports data are highly variable and cannot be estimated from a sample with the same precision as other petroleum variables. Weekly estimates for refined products imports are almost always low because small companies, which are not in the weekly sample, generally import large volumes of finished products only a few times during the year.

Calculation of World Oil Price

The weighted average international price of oil, shown in the Highlights and in Table 13, is an average calculated using specific crude oil prices weighted by the estimated crude oil export volume for each oil-producing country. To develop Table 13, a list of major oil producing/exporting countries was chosen. For each country, the contract selling price of one or more representative crude oils was determined by investigating a number of industry publications (i.e., Platts Oilgram Price Report, Wall Street Journal, and Canadian Ministry of Natural Resources) and by contacting oil market analysts. Then, the appropriate crude oil exporting volumes to be used as weighting factors for each country were determined. These volumes are estimates based on a number of sources which provide data on production, consumption, and petroleum product exports for these countries. Export volumes for a number of smaller producing/exporting countries, not listed in the table, are included in the weighting factors. After the export volumes had been determined, simple mathematical weighted averages were calculated to arrive at the Total OPEC, Total Non-OPEC, and Total World prices. The average United States (FOB) import price is derived by the same basic procedure as the world oil price that is, taking the representative contract crude oil price of a specific crude oil from a particular country and weighting this price by a certain volume of crude oil. In this case, the weighting factors are the volumes of crude oil imported into the U.S. from pertinent countries. Import volumes from a number of smaller producing/exporting countries, not listed in the table, are included in the weighting factors.

All the import, export, and production volumes are preliminary or estimated. Due to their origin, these estimates cannot be fully verified. These volumes are updated monthly, or more frequently, when changes in oil market conditions make updating appropriate.

Table FE1. Average Coverage for Weekly Surveys, 2005 and 2004 (Percent of Final Monthly Volumes Included in Monthly-from-Weekly Sample)

Product	Stocks						Production		Imports	
	Refinery		Bulk Terminal		Pipeline		2005	2004	2005	2004
	2005	2004	2005	2004	2005	2004				
Total Motor Gasoline	99	98	95	94	97	96	98	98	95	95
Jet Fuel	98	98	95	94	99	98	98	98	97	93
Distillate Fuel Oil	97	97	94	93	98	97	97	97	95	95
Residual Fuel Oil	95	95	93	92	–	–	94	94	77	82
Crude Oil	97	97	–	–	–	–	–	–	97	97

– = Not Applicable.

Source: Energy Information Administration, Petroleum Supply Reporting System.

Confidentiality - Data protection and disclosure

Weekly Supply Surveys

The information reported on Forms EIA-800 through EIA-805 is kept confidential and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. §552, the DOE regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905. The Energy Information Administration (EIA) protects this information in accordance with its confidentiality and security policies and procedures.

The Federal Energy Administration Act requires the EIA to provide company-specific data to other Federal agencies when requested for official use. The information reported on these forms may also be made available, upon request, to another component of the Department of Energy (DOE); to any Committee of Congress, the General Accounting Office, or other Federal agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order. The information may be used for any nonstatistical purposes such as administrative, regulatory, law enforcement, or adjudicatory purposes.

Disclosure limitation procedures are not applied to the statistical data published from these surveys' information. Thus, there may be some statistics from forms EIA-800 through EIA-805 that are based on data from fewer than three respondents, or that are dominated by data from one or two large respondents. In these cases, it may be possible for a knowledgeable person to estimate the information reported by a specific respondent.

Company specific data are also provided to other DOE offices for the purpose of examining specific petroleum operations in the context of emergency response planning and actual emergencies.

Weekly Price Surveys

The information reported on the weekly price survey Forms EIA-878 and EIA-888 is considered confidential in accordance with the Confidential Information Protection and Statistical Efficiency Act of 2002 (P.L. 107-347) and the information will be used solely for statistical purposes. Instructions to the forms include the following:

“The information you provide will be used for statistical purposes only. In accordance with the Confidential Information Protection provisions of Title 5, Subtitle A, Public Law 107-347 and other applicable Federal laws, your responses will be kept confidential and will not be disclosed in identifiable form to anyone other than employees or agents without your consent. By law, every EIA employee as well as every agent has taken an oath and is subject to a jail term, a fine of up to \$250,000, or both if he or she discloses ANY identifiable information about you.”

Notes

Note 1

The spot prices that are shown in Tables 14 and 15 are calculated by taking an unweighted average of the daily closing spot prices for a given product over a specified time period, such as a week or month.

Note 2

The futures prices shown in Table 16 are the official daily closing prices at 2:30 p.m. from the trading floor of the New York Mercantile Exchange (NYMEX) for a specific delivery month for each product listed in Table 16.

Note 3

The futures price differentials shown in Figure 13 show the market premium for the first NYMEX delivery month contract over the second. For example, the data for September show the difference between October and November futures contract prices for crude oil and petroleum products, indicating the relative values placed by markets on commodities to be delivered during those two months. This differential, if negative and large enough, provides incentive for refiners and traders to hold product in storage, and if positive, to defer purchases until some future point in time.

Note 4

The retail gasoline prices shown in Table 17 reflect sales of reformulated gasoline (RFG) in those areas where required by Federal or State law and conventional gasoline elsewhere (see Figure A1). Areas requiring RFG may change over time due to the ozone non-attainment status of an area being re-designated by the Environmental Protection Agency (EPA), a State opting in or out of an EPA clean fuel program, or a State adopting its own specific clean fuel program. EIA reclassifies the outlets reporting retail gasoline prices each time an area shifts in or out of a reformulated gasoline program. Conventional areas include areas where oxygenated gasoline may be required for all or part of the year.

**Table A1. Upper and Lower Limits of Average Ranges in Inventory Graphs
(Million Barrels)**

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
UPPER LIMIT												
Total Petroleum.....	1,018.4	1,003.0	999.5	1,015.2	1,040.9	1,051.1	1,055.7	1,047.7	1,047.3	1,049.3	1,050.3	1,024.9
Crude Oil.....	322.1	328.4	339.2	346.0	345.5	340.9	332.3	324.8	320.8	330.8	326.9	319.2
PADD 1.....	14.0	16.1	16.1	15.8	16.5	16.3	16.5	16.0	15.6	16.1	15.4	15.1
PADD 2.....	67.5	68.5	71.9	72.8	72.1	70.3	70.3	68.2	66.7	68.6	69.4	69.2
PADD 3.....	173.4	175.3	182.6	187.5	186.3	185.0	178.8	175.9	173.7	179.8	176.8	169.4
PADD 4.....	14.0	13.9	14.4	14.8	14.7	14.3	13.5	13.7	13.5	13.9	13.9	14.0
PADD 5.....	53.8	56.1	56.9	57.1	57.9	57.6	55.1	53.0	52.2	54.6	53.3	53.6
Motor Gasoline.....	223.6	221.9	212.7	214.5	217.7	218.0	213.9	207.1	210.0	206.2	214.0	216.6
PADD 1.....	60.6	59.4	57.6	59.4	61.4	61.5	59.7	55.2	56.5	54.9	56.4	57.9
PADD 2.....	56.4	56.2	53.1	51.8	53.3	53.4	53.9	51.6	53.0	51.5	54.0	54.3
PADD 3.....	69.3	70.4	66.5	67.9	67.8	67.8	66.8	64.7	66.1	66.7	67.5	67.5
PADD 4.....	7.5	7.4	6.9	6.0	6.2	6.3	5.9	5.7	6.2	6.3	6.7	6.9
PADD 5.....	33.2	31.7	30.9	31.0	31.3	31.4	31.1	30.8	30.8	29.5	31.1	32.6
Distillate Fuel Oil....	136.0	126.4	118.9	117.5	123.8	128.8	136.5	140.6	138.1	135.4	140.1	142.8
PADD 1.....	57.2	51.0	44.8	42.4	45.8	51.6	57.4	61.7	63.0	62.6	65.2	63.7
PADD 2.....	32.3	31.5	29.6	29.5	30.4	30.8	30.9	31.1	30.5	27.1	28.5	31.7
PADD 3.....	32.7	32.4	31.6	32.4	33.8	33.4	35.3	34.9	32.3	32.8	33.6	33.9
PADD 4.....	3.4	3.2	3.2	3.1	3.4	3.2	2.9	2.8	2.9	2.9	3.3	3.5
PADD 5.....	12.9	12.3	12.3	12.7	13.1	12.4	12.5	12.2	12.3	12.5	12.7	13.5
Residual Fuel Oil.....	42.7	42.2	41.1	39.5	39.8	40.4	39.4	37.8	38.8	39.9	42.8	42.2
PADD 1.....	17.0	16.5	15.4	15.3	16.8	16.3	15.5	15.2	15.4	16.6	17.7	18.2
PADD 2.....	2.0	1.9	1.8	2.0	1.9	1.9	2.1	2.1	2.0	1.9	1.9	1.9
PADD 3.....	18.0	18.2	18.0	16.7	16.5	16.7	16.4	15.6	16.5	16.3	17.9	17.2
PADD 4.....	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
PADD 5.....	6.2	6.4	6.6	6.3	6.1	5.9	6.3	6.0	5.7	6.1	6.2	5.9
Propane.....	45.5	33.6	30.5	35.9	43.5	51.9	60.1	65.0	69.4	70.1	68.3	58.8
PADD 1.....	4.1	3.4	3.2	3.4	4.0	4.5	5.1	5.1	5.2	5.6	5.9	5.4
PADD 2.....	16.4	11.9	10.5	12.7	15.7	18.7	21.4	23.8	25.0	24.7	24.3	21.8
PADD 3.....	24.1	18.5	17.5	20.2	23.8	28.3	32.6	34.5	37.6	37.9	36.4	31.1
LOWER LIMIT												
Total Petroleum.....	946.6	931.2	927.8	943.5	969.2	979.4	983.9	976.0	975.5	977.6	978.5	953.2
Crude Oil.....	282.9	289.2	300.0	306.8	306.3	301.7	293.1	285.6	281.6	291.6	287.7	280.0
PADD 1.....	12.4	14.5	14.5	14.2	15.0	14.7	14.9	14.4	14.1	14.5	13.8	13.6
PADD 2.....	59.1	60.0	63.5	64.4	63.7	61.8	61.9	59.8	58.2	60.2	61.0	60.7
PADD 3.....	145.5	147.4	154.7	159.6	158.4	157.1	150.9	148.0	145.8	151.9	148.9	141.5
PADD 4.....	12.2	12.2	12.7	13.0	12.9	12.6	11.8	11.9	11.8	12.2	12.1	12.3
PADD 5.....	50.4	52.7	53.6	53.8	54.6	54.3	51.7	49.7	48.9	51.3	50.0	50.2
Motor Gasoline.....	212.0	210.3	201.2	202.9	206.1	206.4	202.4	195.5	198.5	194.6	202.5	205.0
PADD 1.....	54.9	53.7	52.0	53.7	55.7	55.8	54.1	49.5	50.9	49.3	50.8	52.3
PADD 2.....	53.3	53.2	50.0	48.7	50.2	50.3	50.8	48.6	50.0	48.5	50.9	51.2
PADD 3.....	64.4	65.6	61.6	63.0	62.9	62.9	61.9	59.8	61.3	61.9	62.7	62.7
PADD 4.....	6.9	6.9	6.3	5.5	5.7	5.7	5.4	5.2	5.7	5.7	6.1	6.4
PADD 5.....	30.9	29.4	28.5	28.7	28.9	29.1	28.8	28.4	28.4	27.1	28.8	30.3
Distillate Fuel Oil....	123.1	113.5	106.0	104.6	110.9	115.9	123.6	127.7	125.2	122.5	127.2	130.0
PADD 1.....	46.7	40.5	34.4	31.9	35.4	41.2	47.0	51.2	52.5	52.2	54.8	53.3
PADD 2.....	29.7	28.9	27.0	26.9	27.8	28.2	28.3	28.5	27.9	24.5	25.9	29.2
PADD 3.....	29.0	28.8	28.0	28.8	30.1	29.7	31.7	31.3	28.6	29.2	29.9	30.2
PADD 4.....	2.9	2.8	2.8	2.7	2.9	2.8	2.5	2.3	2.4	2.5	2.9	3.1
PADD 5.....	11.4	10.8	10.9	11.3	11.7	11.0	11.1	10.7	10.9	11.1	11.3	12.1
Residual Fuel Oil.....	38.4	37.9	36.9	35.2	35.6	36.2	35.2	33.5	34.5	35.6	38.6	38.0
PADD 1.....	13.9	13.5	12.3	12.2	13.7	13.2	12.5	12.1	12.4	13.5	14.6	15.2
PADD 2.....	1.4	1.3	1.2	1.4	1.3	1.3	1.5	1.5	1.4	1.3	1.3	1.3
PADD 3.....	15.7	15.9	15.7	14.4	14.2	14.4	14.1	13.2	14.2	14.0	15.6	14.9
PADD 4.....	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
PADD 5.....	5.5	5.6	5.8	5.6	5.4	5.2	5.6	5.3	5.0	5.4	5.5	5.2
Propane.....	38.2	26.3	23.2	28.6	36.2	44.6	52.8	57.7	62.1	62.8	61.1	51.5
PADD 1.....	3.3	2.5	2.4	2.5	3.2	3.6	4.3	4.3	4.4	4.8	5.0	4.6
PADD 2.....	14.1	9.5	8.1	10.4	13.3	16.4	19.0	21.5	22.6	22.2	21.9	19.4
PADD 3.....	17.7	12.1	11.1	13.7	17.4	21.9	26.1	28.1	31.2	31.4	30.0	24.7

Figure A1. Gasoline Formulation Required by Area as of June 1, 2004



Source: U.S. Environmental Protection Agency and State environmental offices.