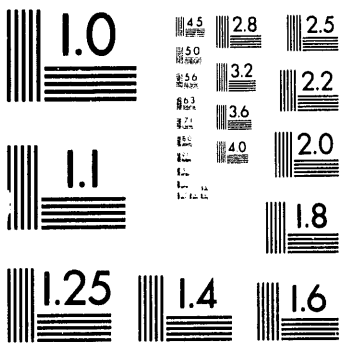
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Winter Fuels Report

Week Ending:
October 15, 1993

Energy Information Administration
Office of Oil and Gas
U.S. Department of Energy
Washington, DC 20585

MASTER

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Short Term Energy Outlook, updated 60 days after the end of the quarter.

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Preface

The *Winter Fuels Report* is intended to provide concise, timely information to the industry, the press, policymakers, consumers, analysts, and State and local governments on the following topics:

distillate fuel oil net production, imports and stocks on a U.S. level and for all Petroleum Administration for Defense Districts (PADD) and product supplied on a U.S. level;

propane net production, imports and stocks on a U.S. level and for PADD's I, II, and III;

natural gas supply and disposition and underground storage for the U.S. and consumption for all PADD's; as well as selected National average prices.

residential and wholesale pricing data for heating oil and propane for those States participating in the joint Energy Information Administration (EIA)/State Heating Oil and Propane Program;

crude oil and petroleum price comparisons for the U. S. and selected cities; and

a 6-10 Day, 30-Day, and 90-Day outlook for temperature and precipitation and U.S. total heating degree-days by city.

The distillate fuel oil and propane supply data are collected and published weekly. The data are based on company submissions for the week ending 7:00 a.m. for the preceding Friday. Weekly data for distillate fuel oil are also published in the *Weekly Petroleum Status Report*. Monthly data for distillate fuel oil and propane are published in the *Petroleum Supply Monthly*.

The residential pricing information is collected by the EIA and the State Energy Offices on a semimonthly basis for the EIA/State Heating Oil and Propane Program. The wholesale price comparison data are collected daily and are published weekly. Residential heating fuel prices are derived from price quotes for home delivery of No. 2 fuel oil and propane. As such, they reflect prices in effect on the dates shown. Wholesale heating oil and propane prices are estimates using a sample of terminal quotes to represent average State prices on the dates given. The Computer Petroleum Corporation, Inc., defines these prices to be prices f.o.b. terminal, excluding taxes, discounts, and hauling allowances. The crude oil and petroleum product prices are from various industries sources as referenced on each table.

The natural gas data are collected and published monthly in the *Natural Gas Monthly*.

This report will be published weekly by the EIA starting the second week in October 1993 and will continue until the second week in April 1994. The data will also be available electronically after 5:00 p.m. on Thursday during the heating season through the EIA Electronic Publication System (EPUB). See page ii for details.

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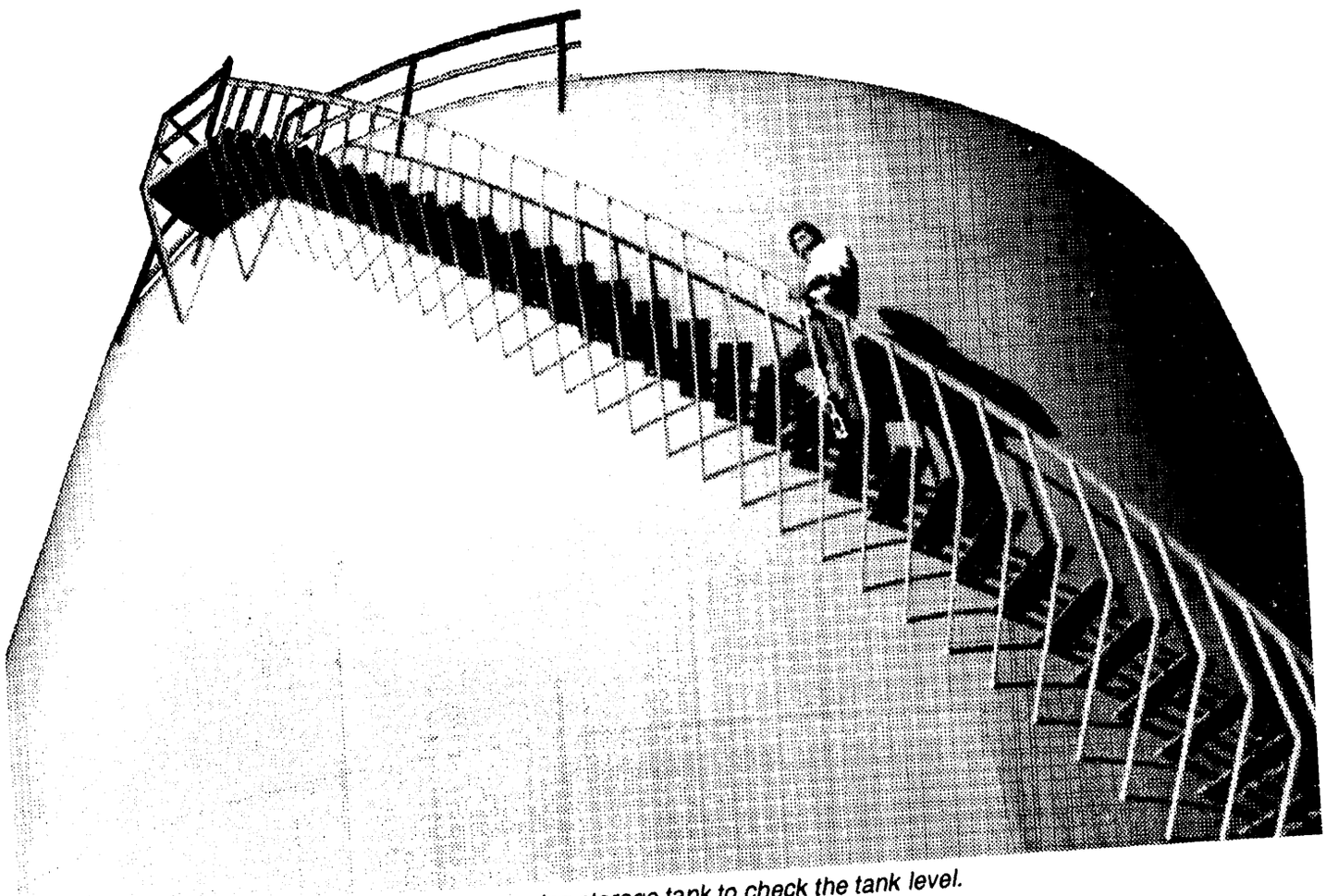


A refinery worker makes his way around a towering storage tank to check the tank level.

Distillate Fuel Oil Outlook for Winter 1993-94

by Irv Chamberlain and Alan Griffith

The outlook for distillate fuel oil next winter is for adequate supply to meet increased demand. Distillate fuel oil stocks are currently at last year's level. Refineries have been operating at very high utilization rates for the first 6 months of 1993 and are expected to continue to do so. Consumption for the winter heating season of October 1993 through March 1994 is projected to be 3.42 million barrels per day, an increase of 4 percent over the last winter. This estimate is taken from the lastest available forecast prepared by the Energy Information Administration (EIA). Two colder-weather alternative scenarios also indicate projected demand can be met.

Both residential heating oil and diesel prices are expected to rise (assuming normal winter weather). Heating oil is forecasted to average 94.9 cents per gallon this winter - the same price as winter 1992-93. The implementation of new low sulfur content requirements for on-highway diesel fuel is expected to contribute to a 6.3-percent increase in diesel prices during the upcoming winter, compared with the previous winter. The diesel price is expected to average $1.22 per gallon for the period. Table FE1 contrasts distillate fuel oil supply and demand factors for the winters of 1990-91 through 1992-93.

Demand Trends

Distillate fuel oil is consumed in four sectors of the economy: industrial, residential and commercial, electric utility, and transportation. It is used primarily for space heating, on-and off-highway diesel engine fuel (including railroad and agricultural machinery), and electric power generation.

Distillate fuel oil demand is primarily a function of weather patterns, changes in the economy, as well as crude oil availability and price. Although the winter of 1993-94 is projected to be about 1.3-percent milder than the comparable period a year ago in the New England and Mid- Atlantic regions, the nation as a whole is projected to experience a 1.3-percent cooler winter, necessitating increased use of heating oil.

Recession and stagnation have slowed growth in the U.S. economy from the last half of 1990 through the first half of 1992. Today, the Nation is continuing the recovery that started in 1992. The Gross Domestic Product (GDP) is expected to grow 2.7 percent in 1993.

Table FE1. Distillate Fuel Oil Demand and Supply Factors, Winters 1990 - 1991 through 1992 - 1993

Factor	History		
	Winter 1990-91	Winter 1991-92	Winter 1992-93
Average Crude Oil Prices (avg. per barrel)	$24.55	$17.49	$17.79
Number of Heating Degree - Days	3,716	3,787	4,016
GDP* Growth Rate (Percent)	-0.10	0.85	2.9
Winter Demand (million barrels per day)	3.03	3.12	3.22
Refinery Production (million barrels per day)	2.89	2.91	3.06
Net Imports (million barrels per day)	-0.06	-0.03	-0.01
Stock Change (million barrels per day)	-0.21	-0.23	-0.17
Stock Levels 9/30-3/31 (million barrels)	136-98	140-98	128-97
Retail Heating Oil Price (avg. per gallon)	$1.17	$0.95	$0.95
Diesel Fuel Oil Price (avg. per gallon)	$1.30	$1.11	$1.11

* GDP = Gross Domestic Product

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

Source: *Short-Term Energy Outlook, Petroleum Supply Monthly/Petroleum Supply Annual, Petroleum Marketing Monthly/Petroleum Marketing Annual.*

Unless otherwise referenced, data in this article are taken from the following: Weekly Petroleum Status Report, DOE/EIA-0208(September 3 (93-36) and predecessor reports); *Petroleum Supply Monthly*, July 1993, DOE/EIA-0109(93/07); *Petroleum Supply Annual 1992*, DOE/EIA-0340, Volumes 1 and 2 and predecessor reports; various issues of the *Petroleum Marketing Monthly*, DOE/EIA-0380; *Short-Term Energy Outlook*, DOE/EIA-0202(93/4Q) and predecessor reports. All data through 1992 are considered final and are not subject to further revision.

The GDP grew 2.6 and 2.9 percent, respectively, in the first two quarters of 1993 from the corresponding quarters in 1992. The projected rates of growth for the third and fourth quarters of 1993 from comparable 1992 quarters are 2.9 and 2.5 percent, respectively. A sharp increase is forecasted for the first quarter of 1994 - 3.3 percent. These growth rates should lead to higher distillate fuel oil consumption in the industrial, transportation and electric utility sectors.

The world oil price (the refiner acquisition cost of imported crude oil) is assumed to average about $17.60 per barrel, about 3% less than the 1992 average price. The projection for 1994 is near $17.19 per barrel. As usual, there are unknown factors. The combination of Iraq potentially restoring their pre-war production levels, markedly higher exports from the former Soviet Union, significantly higher world excess production capacity, and a possible level of crude stocks similar to or above that in 1992 could put downward pressure on world oil prices.

Heating-oil demand is concentrated in the eastern part of the country. The New England and Mid-Atlantic States accounted for 70 percent of 1991 residential sector consumption and 52 percent of 1991 commercial sector consumption of distillate fuel oil. Residential sector consumption was about the same as the previous year, while commercial sector demand rose 3 percent in 1991. These two regions accounted for 23 percent of total distillate fuel oil consumption, the same as 1990.

Supply Trends

Distillate fuel oil is supplied to the consuming sectors by domestic refinery production, net imports (imports less exports) and stock withdrawals.

Refinery Production

Weather, domestic and foreign distillate fuel oil demand, crude oil prices, refinery margins and maintenance conditions all have been favorable to the refining industry this year. Distillate fuel oil production for the first half of 1993 was about 3.5 percent higher than 1992. During this period, refinery operating utilization rates were high, ranging between 91 and 97 percent. It appears that these rates could be sustained indefinitely and existing capacity is expected to be available to meet normal anticipated distillate fuel oil demand. Recently, many refiners increased throughput in order to lower the per unit cost of upgrades necessary to meet mandated environmental requirements.

During the 1992-93 heating season, distillate fuel oil production was at a sustained high level. If there is an additional call for distillate fuel oil supplies this winter, refiners should again be in a favorable position to maximize distillate fuel oil production. This is a consequence of the mandatory addition of oxygenates to gasoline again this winter. Oxygenates actually reduce the need to produce blending components for gasoline production through volume replacement. These components include toluene, reformate and xylenes that are produced in refineries and petrochemical plants. As a consequence, this spare capacity could be used to refine incremental quantities of heating oil if winter demand exceeds current expectations.

Stronger product demand increased refinery throughput and pushed utilization rates higher in 1992. However, operating refining capacity slipped 2 percent last year to average 14.8 million barrels per day. The increase in input coupled with the decline in capacity boosted the operating refinery utilization rate to 91.6 percent. The decrease in capacity may continue as the cost of meeting new environmental regulations could result in further refinery shutdowns.

Imports/Exports

The current distillate fuel oil import/export ratio is similar to the 1991-92 ratio. Exports have averaged 32 percent higher than imports during the first 5 months of 1993. For the comparable periods in 1992 and 1991, exports led imports by 19 and 24 percent, respectively.

However, on an annual basis, the distillate fuel oil import/export ratio has been one of near balance for the past 2 years. Imports averaged 216 thousand barrels per day in 1992. This was the first yearly gain following two declines associated with the economy. Foreign sources accounted for 7 percent of the U.S. demand for distillate fuel oil in 1992, nearly identical to the share in 1991. Combined shipments from Venezuela, the Virgin Islands, and Canada accounted for 93 percent of 1992 imports.

In 1992, exports nearly matched imports as they did in 1991. Countries in the Far East and Central and South America continued to provide a ready market for Petroleum Administration for Defense Districts (PADD) I, III and V distillate fuel oil. Sales of 219 thousand barrels per day to foreign countries were at about the same high level as in 1991. The Far East received 48 percent and countries in Central and South America accounted for 31 percent. Special attention is given to the Asia-Pacific region demand in the first sidebar.

Stocks

Crude stocks provide refiners flexibility to meet demand surges for any product. With utilization rates high in 1993, refiners may have difficulty stepping up throughput to meet unexpected demand surges, even taking into account incremental capacity made available due to oxygenate production. This situation may place additional emphasis on strong distillate fuel oil stock builds.

Refiners began their 1993 distillate fuel oil inventory building season with April stocks 6 million barrels above the observed minimum of April 1992 (92 million barrels). A late winter storm and cold weather in the East resulted in movement of distillate fuel oil stocks from the South Atlantic into the

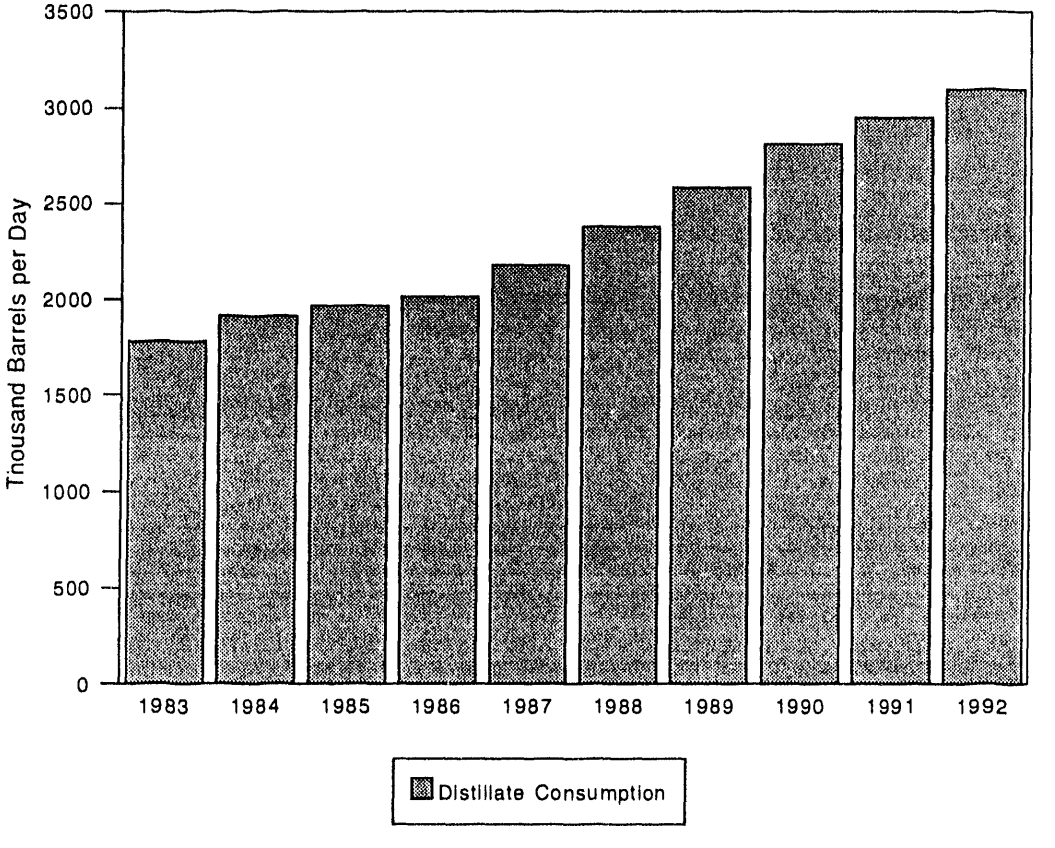
Petroleum Product Demand in the Asia-Pacific Region

U.S. petroleum product exporters have found growing markets in the Asia-Pacific region. The demand for distillate and kerojet fuels has shown strong growth since 1990 and exports to the area have increased due to supply shortfalls. Continued strong petroleum demand growth through the 1990's and supply shortfalls are expected. U.S. exporting regions may feel impacts from this continued strong distillate demand.

The Asia-Pacific countries considered here are Australia, Indonesia, India, Japan, Malaysia, Pakistan, the Philippines, Singapore, South Korea, Taiwan, Thailand, and Vietnam. Despite sluggish economic growth worldwide, these countries have grown at 5 to 6 percent on average or about 1.5 times greater than other regions. These countries increased their demand for petroleum products by 6.3 percent in 1992.[1] Figure FE1 portrays distillate fuel oil consumption growth. Diesel fuel demand alone grew by 7.6 percent. Specifically, petroleum product demand grew 28 percent in Vietnam, 21 percent in the Philippines, 20 percent in Korea, and 11 percent in Thailand. Thailand's increases include a 31.7-percent growth in diesel fuel, mostly for industrial use, and a 3-percent growth in fuel oil for generating electricity.[2]

The demand growth arises from a number of factors. Overall, this is one of the most rapidly industrializing regions of the world. Due to this, the Asia-Pacific region has gained economic independence from large economic centers like the United States and Europe and has not been affected by economic recession in other regions. Different countries provide investment opportunities that stimulate growth and draw investment capital from international sources. The ground and air transportation sectors provide a large proportion of demand growth. Transportation fuels demand is expected to increase from 8 million barrels per day (MMbbl/d) in 1991 to 12 MMbbl/d in 2000. Motor vehicle ownership is expected to grow at an average rate of 4 percent per year.

Figure FE1. Distillate Fuel Consumption in the Asia-Pacific Region 1983 - 1992



Note: 1991 and 1992 are estimated assuming 5% growth in consumption.
Source: Energy Information Administration, *International Energy Annual*, DOE/EIA-0219, (Washington, D.C., various issues).

[1] *Oil and Gas Journal*, May 10, 1993.
[2] *Bloomberg's Oil Buyer's Guide*, June 28, 1993.

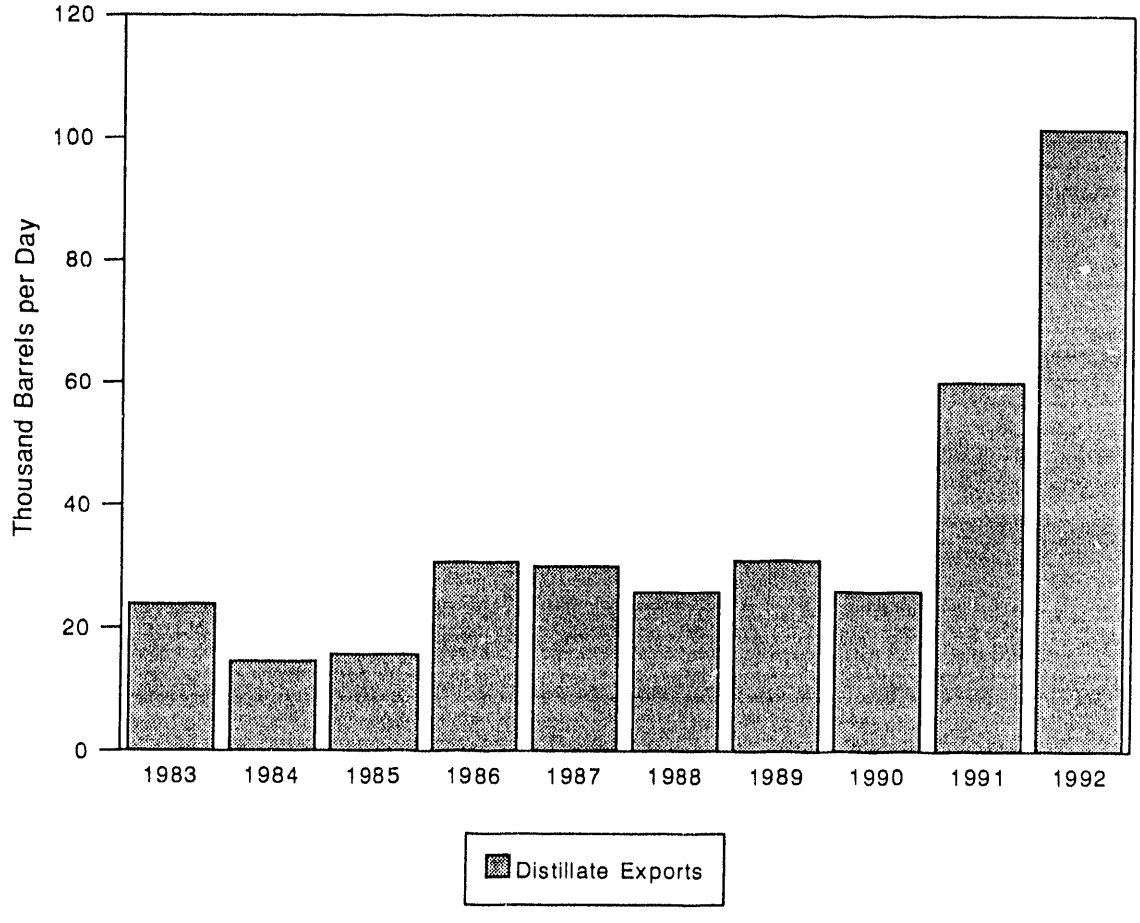
It is expected this level of demand growth may continue in the near future. The region's petroleum product demand was 13.6 MMbbl/d in 1991 and 14.5 MMbbl/d in 1992; estimates are for a demand of 16.4 MMbbl/d by 1995 and 19.1 MMbbl/d in 2000. This is a 6.6-percent yearly demand growth until 1995 and a 3.3-percent demand growth between 1995 and 2000.[3]

In response to these growing demands, the countries of the Asia-Pacific region have considerable planned refinery capacity expansion. One estimate shows a planned capacity expansion of 6 MMbbl/d in the next 7 years.[4] Singapore, Japan, and Thailand are constructing additions to current refineries. Thailand, Malaysia, and Indonesia are among the countries with plans for new refinery construction.

In recent years, Asian petroleum suppliers have had greater difficulty supplying their domestic demand for distillates and other petroleum products and the planned supply additions will fall short of meeting projected demand. Supply growth is estimated to trail demand growth by 1 MMbbl/d through 2000.[5]

The U.S. petroleum industry has felt the effects of the Asia-Pacific region's demand shortfall during the last 3 years. Between 1983 and 1990, U.S. distillate exports to this region have ranged from 14.5 thousand barrels per day (Mbbl/d) to 31.5 Mbbl/d. In contrast, the yearly average exports of distillates in 1991, 1992, and 1993 to date were 60.2 Mbbl/d, 101.5 Mbbl/d, and 75.3 Mbbl/d, respectively. U.S. exports to the Asia-Pacific region (Figure FE2), account for slightly less than 50 percent of the

Figure FE2. U.S. Exports of Distillate Fuel to Asia-Pacific Region 1983 - 1992



Source: U.S. Bureau of the Census.

[3]*Oil and Gas Journal*, May 10, 1993.
[4]*Octane Week*, May 31, 1993.
[5]*Octane Week*, May 31, 1993

region's import increases from 1987 through 1992. Kerojet exports to the Asia-Pacific region have also increased in the last 3 to 4 years.

U.S. exports to the Asia-Pacific region originate in PADDs III and V and thus affect those petroleum product markets. These export levels have contributed to high refinery utilization rates in California and the Gulf Coast. The annual average rates have climbed to 90 percent utilization of operable capacity. During the high distillate export season between August and December 1992, the utilization rate averaged 94 percent in California. These export barrels may also pressure PADD III and V petroleum product markets:

- High distillate demand may compete directly with California diesel and indirectly with East Coast heating oil markets through PADD III exports of distillate fuels.
- Distillate exports may increase the demand for higher distillate yielding crude oils.
- Exports may also come from stocks and affect the inventory cushion available to meet weather related demand increases. In PADD V, production has been steady while exports have increased from 1990 through 1992. The response has been for stocks to generally decrease over the same time period.

In summary, the Asia-Pacific region is one of the highest petroleum product demand growth areas in the world. This is due to high rates of industrialization and transportation sector growth. Consequently, distillate demand grew 7.6 percent in 1992. Regional refinery capacities have not kept pace with demand growth so that imports have increased and are expected to continue to increase. California and PADD III are primary U.S. exporters to this region and continued high exports may affect U.S. markets in the form of high utilization rates, strong stock draws, higher prices, and shifting demand for distillate yielding crude oils.

Mid-Atlantic region of PADD I. This transfer allayed any weather-related supply problems.

For the first 6 months of 1993, distillate fuel oil demand was at a slightly higher level compared with comparable periods over the last 3 years. However, increased production and stable imports placed stock levels higher than a year ago.

As of mid-August 1993, distillate fuel oil stocks were about 120 million barrels which is 6 million barrels above last year's level and within the normal range for this time of year. Inventory building should continue to increase over the next several months in anticipation of the heating season.

Distillate fuel oil stock levels at the beginning of the 1993 heating season are projected to be 128 million barrels, the same level as last year. At the end of March 1994, stocks are forecasted to be 98.6 million barrels. This would be a higher end-of-first-quarter level than levels at the close of each heating season since 1986-87 (Figure FE3).

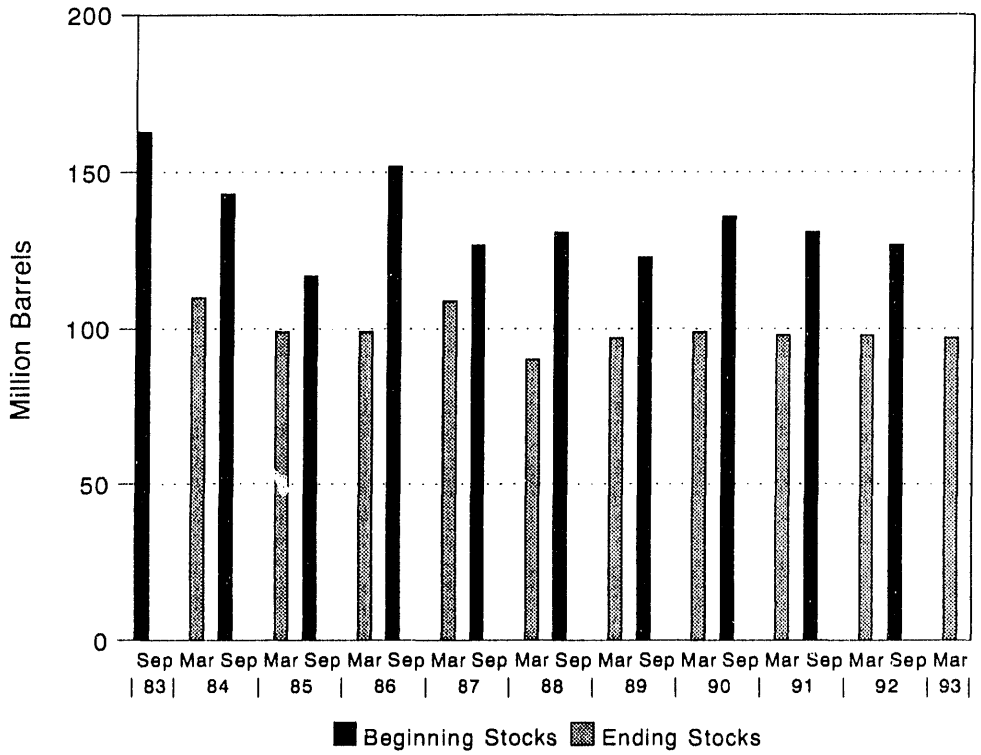
Price Trends

Factors Affecting Heating Oil Prices

Three main factors drive retail heating oil prices during a winter heating season: crude oil prices, normal seasonal weather patterns, and unexpected cold weather. These factors affect underlying supply and demand fundamentals and therefore, they act as good indicators of heating oil prices. Crude oil prices generally peak in the fourth quarter of the year. This seasonal price peak is because of increased demand for heating fuels due to colder temperatures. Cold weather that drives heating oil demand normally falls between November and February. The combination of seasonally high crude prices and cold weather normally yields a heating oil price peak in December, January, or February. Unexpected crude price increases also can affect heating oil price levels. These relationships can be seen in Figure FE4, which shows the correspondence between monthly average residential heating oil price, wholesale heating oil price, and the Refiner Acquisition Cost of Imported Crude Oil.

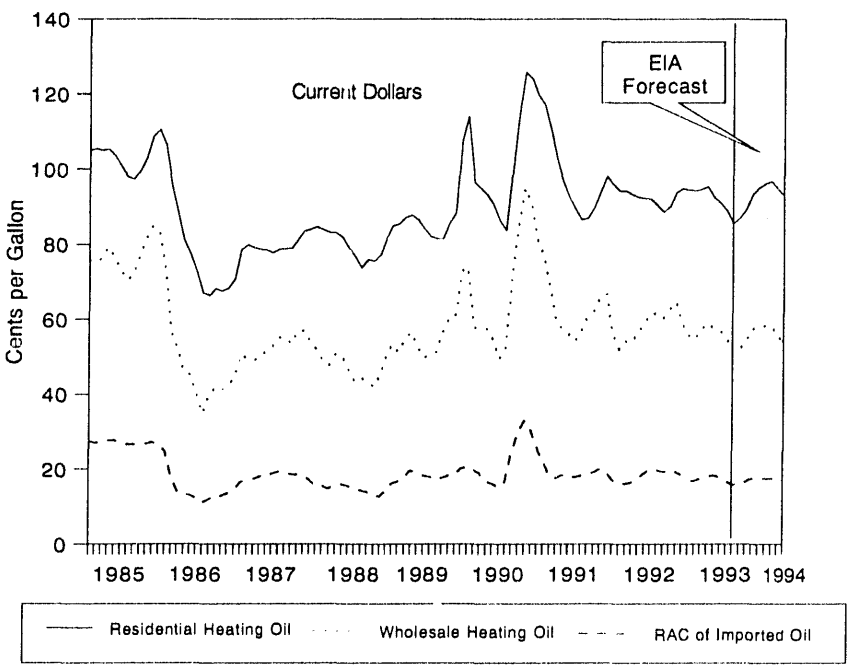
Deviations from this normal pattern move the peak or change the normal pattern of prices over the heating season. The shift from normal patterns is typically due to a sudden strong demand that was not accounted for in stocking patterns or refinery production plans. The 1989-90 and 1991-92 seasons are examples of changes from normal. The New York Harbor daily spot price for No. 2 distillate fuel peaked at 115.2 cents per gallon (cpg) on December 27, 1989. The bi-weekly residential heating oil price peaked on January 2, 1990 at 146.5 cpg in PADD IA and at 137.3 cpg in PADD IB. This was due to 60-year record cold temperatures in the last week of December that turned into unseasonably warm weather in January through

Figure FE3. U.S. Distillate Fuel Oil Stocks, Heating Season 1983 - 1993



Note: Beginning stocks are as of September 30; Ending Stocks are as of March 31.
Source: Energy Infomation Administration, *Petroleum Supply Monthly*, (May 1993), DOE/EIA-0109 (93/05); *Petroleum Supply Annual 1992*, DOE/EIA-0340 (92), and predecessor publications

Figure FE4. U.S. Residential Heating Oil Prices, U.S. Wholesale Heating Oil Prices, and Refiner Acquisition Cost of Imported Oil



Sources: Residential, Wholesale and Refiner's Acquisition Cost: EIA, *Petroleum Marketing Monthly*.

March 1990. During the 1991-92 season, residential heating oil prices peaked in November 1991 at 98 cpg, then quickly dropped to average 93.9 cpg the rest of the heating season. The early heating oil price peak was due to an early crude price peak and below normal temperatures in November 1991.

Distillate fuel oil prices followed the upward price of crude oil for the first quarter of 1993, starting above year-ago levels. A drop in April 1993 distillate fuel oil demand caused a price drop for that month. Residential heating oil prices were about 1 cent per gallon higher than the first 4 months of 1992, due to stronger demand this year.

Forecast for Winter 1993-94

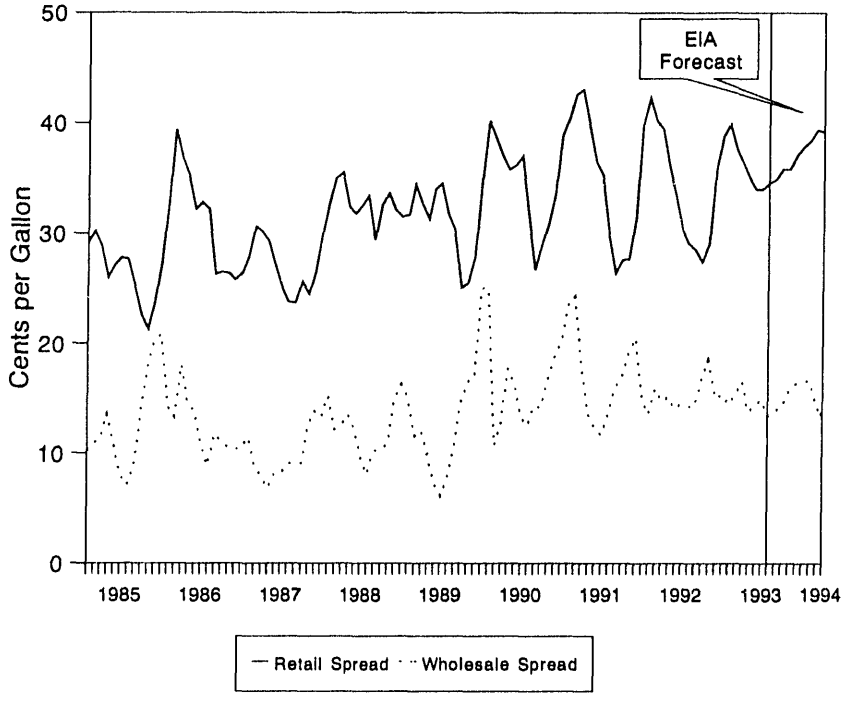
The EIA forecasts a normal price pattern for residential heating oil prices. Residential heating oil prices are expected to average 94.9 cpg this winter, the same average price as winter 1992-93. The forecast shows a price peak of 96.7 cpg in January 1994. This is based upon normal temperature and crude oil price patterns. The EIA assumes normal heating degree day levels and projects an $16.10 per barrel refiner acquisition cost for crude oil in the third quarter of 1993, $17.50 per barrel in the fourth quarter of 1993, and $17.25 per barrel in the first quarter of 1994.

The fourth quarter crude oil price increase and seasonal weather patterns yield this projected retail heating oil price pattern:

- The season starts at 86.9 cpg in August, 1993. This is slightly lower than the August 1992 price of 88.6 cpg and comparable to the August 1991 price of 87.0 cpg.
- Prices rise quickly to the January, 1994 peak of 96.7 cpg. This pattern follows a typical year in which heating oil prices fall to end of summer lows, climb for 3 or 4 months then level off or drop.
- Despite the expected first quarter drop in crude oil prices, heating oil prices fall more slowly than they rose. Prices are maintained due to weather driven demand.
- Prices are projected to hit a low point in June 1994.

Another important price consideration for heating fuel marketers is the price spread between heating fuels and crude oil prices. This provides a simple representation of the profit per gallon or a price mark-up. See Figure FE5 for month average price spreads. Generally, the price spread for all distillate products, both at the wholesale and retail level, increases during the heating season in comparison to the rest of the year because of increased demand. The average heating season retail price spread from 1984 to 1992 was 32.7 cpg. The same average for the non-heating season was 29.7 cpg. The upcoming winter's expected retail price spread is 38.0 cpg or an increase of 2.9 percent over last season. The average wholesale price spread from 1984 to 1992 during the heating season was 14.6 cpg and during the non-heating season was

Figure FE5. Wholesale (U.S. Wholesale Heating Oil less RAC Imported Crude Oil) and Retail (U.S. Residential Heating Oil less U.S. Wholesale Heating Oil) Price Spreads



Sources: Residential, Wholesale and Refiner's Acquisition Cost: EIA, *Petroleum Marketing Monthly.* Calculations using Figure FE4 data.

11.2 cpg. Over the last three heating seasons the average wholesale price spread dropped from 20.2 to 15.9 cpg; this winter's projected wholesale spread is 15.5 cpg.

Low-Sulfur Diesel Fuel and Heating Oil Prices

The Clean Air Act Amendments of 1990 require that all on-highway diesel fuel contain only 0.05-percent sulfur, by weight, as of October 1, 1993. These fuel specification changes, presented in detail in the sidebar "New Low-Sulfur Diesel Fuel Requirements," are expected to cause an increase in the wholesale price spread between heating oil and diesel fuel of about 3 to 4 cpg; therefore, diesel prices are expected to rise 10.0 percent from the previous winter to $1.22 per gallon due partially to implementation of the new requirements. Other contributors to this increase are federal tax increases and crude price increases. Increased storage and transportation costs to retail marketers are expected to be minimal.

The increased price spread between heating oil and diesel fuel, which derives from a combination of increased production costs and capital costs is expected to reflect higher production costs of on-highway diesel fuel of 3 to 4 cpg. This is the sum of about 1 cpg increased variable costs and 2 to 3 cpg to recover investment costs. Increased variable costs come from increased reactor temperatures and pressures, increased catalyst breakdown, and the feedstock blending constraints. Capital investments include new desulfurization units, new hydrogen sources, and new tankage for high/low sulfur feedstock separation.

Downstream storage availability will determine the effects of fuel segregation on retail prices. There may be minimal cost increases downstream to provide tankage for segregated distillate products. These cost increases are expected to pass through to diesel consumers.[6]

Alternative Scenarios

The mid-price case presented in the latest EIA forecast represents the base case for distillate fuel oil demand, supply and price for the 1993-94 heating season assuming a normal winter. To examine how the petroleum industry may respond to unforeseen events, two scenarios were created which assume colder than normal weather over part or all of the heating season.[7,8]

The results of the analysis for the scenarios demonstrate that there is considerable flexibility in the supply system for the next two quarters, and that retail markets through March 1994 are reasonably well cushioned in the event of unforeseen cold weather. Tables FE2 and FE3 summarize the values in the two scenarios and show the resulting impact on distillate stocks and retail prices forecasted in the mid-price case. The monthly estimates for retail prices and stocks for all projections are depicted in Figures FE6 and FE7.

Scenario 1: Colder Heating Season (October 1993 through March 1994)

This scenario differs from the forecasted mid-price case by examining the effects of colder than normal temperatures during the fall and winter. This scenario was developed by

Table FE2. Distillate Stock Outlook for 1993-94 Winter Months
(Million Barrels)

Month	EIA Base Case	Cold Season	Cold Winter
Sep	132.0	132.0	132.0
Oct	133.1	132.0	133.1
Nov	136.5	133.1	136.5
Dec	135.0	128.2	135.0
Jan	127.0	116.2	120.4
Feb	113.0	99.0	101.0
Mar	98.6	82.1	82.2

Source: EIA forecast projections.

Table FE3. Distillate Price Outlook for 1993-94 Winter Months
(Cents)

Month	EIA Base Case	Cold Season	Cold Winter
Sep	89.2	89.2	89.2
Oct	93.1	93.5	93.1
Nov	95.1	96.1	95.1
Dec	96.1	98.6	96.1
Jan	96.7	100.8	102.5
Feb	94.8	99.3	105.7
Mar	93.1	96.7	101.3

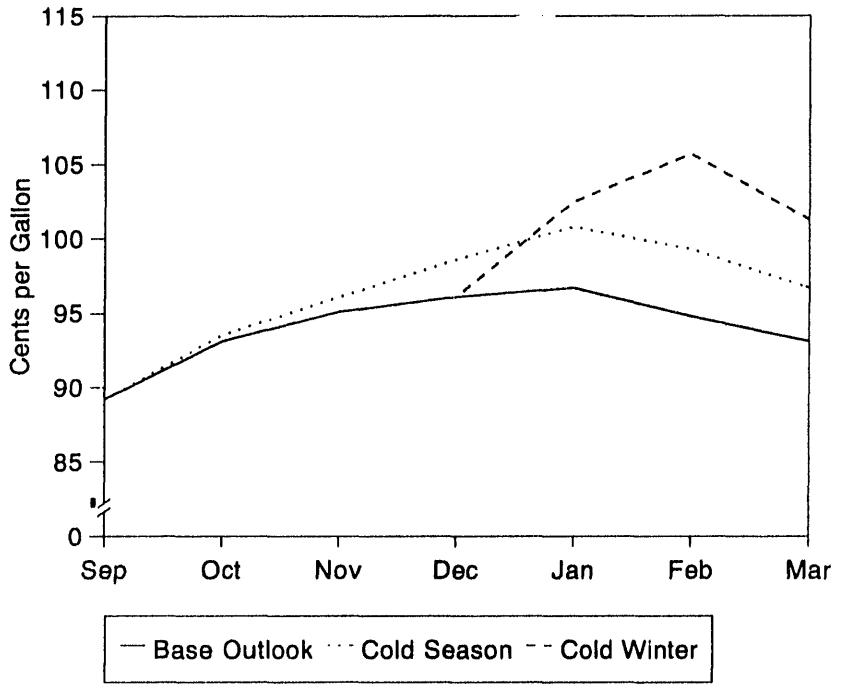
Source: EIA forecast projections.

[6] *Federal Register*, August 31, 1993 Volume 55 No. 162, "Regulation of Fuels and Fuel Additives: Fuel Quality Regulations for Highway Diesel Fuel Sold in 1993 and Later Calendar Years.

[7] To evaluate the outlook scenarios, a model was used to forecast the retail price and demand (product supplied) of distillate fuel oil. The model uses historical monthly data series covering the January, 1986 through July, 1993 time period and also uses a number of variables forecasted by the Short Term Energy Outlook mid-world oil price case for its projections. The model consists of a two-equation system estimated by ordinary least squares with correction for autocorrelation and a provision for the calculation of end-of-month stock levels.

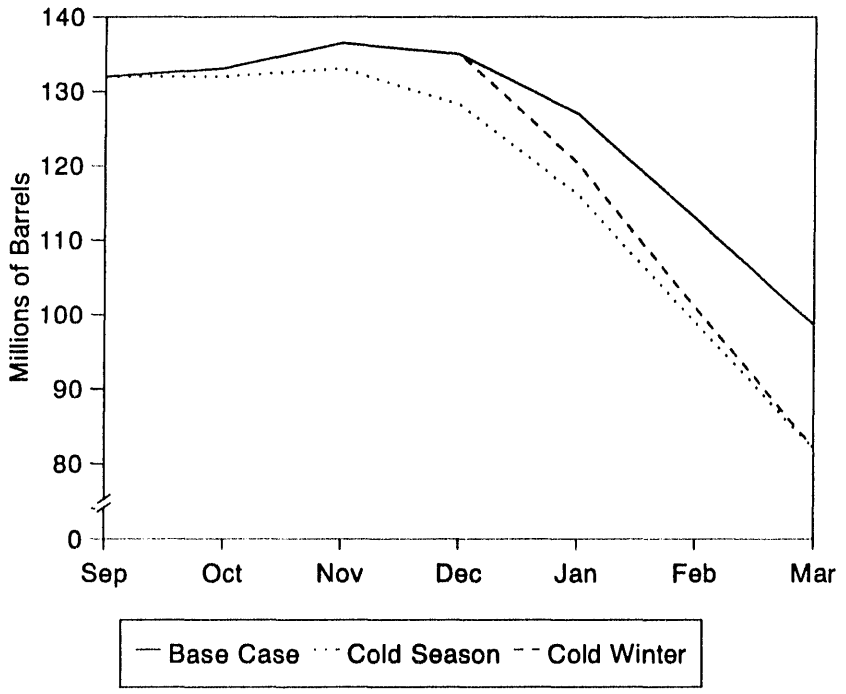
[8] The price equation estimates distillate fuel oil prices using crude oil price, stock level behavior, monthly seasonal dummy variables, and a heating degree-day variable as independent variables; an adjusted R-square of .97 was obtained for the regression in the historical time period. The demand equation estimates product supplied as a function of linear trend, seasonal dummy variables, a business cycle variable, and mean heating degree-days; an adjusted R-square of .88 was obtained using historical data.

Figure FE6. Comparison of Alternative Weather Scenarios on Distillate Price Outlook



Source: Energy Information Administration, estimates derived from regression analysis and EIA estimates.

Figure FE7. Comparison of Alternative Weather Scenarios on Distillate Stock Outlook



Source: Energy Information Administration, estimates derived from regression analysis and EIA estimates.

New Low-Sulfur Diesel Fuel Requirements

This summer, U.S. refiners faced the latest in a series of challenges to reduce air pollution. The Clean Air Act Amendments of 1990 require a maximum sulfur content of 0.05 percent by weight for all on-highway diesel fuel sold after October 1, 1993 - about 80 percent less sulfur than diesel fuel now available. Better vehicle fuel economy and maintenance cost savings may result, including extension of average engine life.

The new standards apply nationwide and are estimated to affect about 46 percent of total U.S. distillate fuel oil demand. Distributors and consumers have voiced concerns because some key refiners may not be able to produce the low sulfur fuel in sufficient quantities by the October 1 deadline. However, Energy Information Administration (EIA) statistics indicate that on-highway diesel fuel stocks have been steadily increasing throughout the country and the outlook for meeting the expected demand is good. About 44 percent of the current output of distillate fuel oil meets the new standard. Over the 7 day period August 28 through September 3, 1993, low-sulfur diesel stocks rose approximately 9 percent to reach 47.6 million barrels, while high-sulfur inventories fell about 1 percent to 79.7 million barrels. These stock trends are developing as expected as refiners prepare for the new, lower sulfur standards.

Producers are expected to make alterations in their process technology to meet these standards. Changes may include:

- increasing reactor severity in existing and new desulfurization units,
- limiting low-sulfur distillate blending operations to low-sulfur streams already existing in the refinery,
- adding desulfurization capacity, and
- segregating low-sulfur and high-sulfur distillate streams.

The California Air Resources Board (CARB) will impose limits on the aromatic hydrocarbon content for their diesel fuel pool, in addition to low sulfur requirements. CARB regulations restrict aromatic hydrocarbon levels to 10 percent by volume. This hydrocarbon level translates to a minimum cetane number of 55. All diesel fuels sold in California must meet these sulfur and aromatics specifications except for railroad and vessel bunkering end uses; this includes on-highway, off-highway, and farm diesel fuel uses.

CARB estimates the demand will be 160 thousand barrels per day (Mbbl/d). The EIA confirms this level of demand for farm, on-highway, and off-highway diesel fuels. Total sales for these uses in California held 68.9 percent of the market share of distillate fuel sales in the state or 152 Mbbl/d[9]. The next largest market share for these three uses was 67.9 percent in all of PADD II. (Figure FE8)

Eight refiners have announced they will produce about 160 Mbbl/d of the new diesel specification product. Projected production volumes are: Chevron (52 Mbbl/d), Unocal (22 Mbbl/d), Kern Oil (20 Mbbl/d), Texaco (20 Mbbl/d), ARCO (15-20 Mbbl/d), Tosco (15 Mbbl/d), Ultramar (15 Mbbl/d), and Exxon (2-3 Mbbl/d).[10] (Mobil and Shell have stated that they will not enter this market and hence must export their diesel fuel production.) In addition to product which meets the prescribed specifications, projected new diesel volumes include two additional types of diesel fuel:

Alternative Formula Fuels

- The limiting factor in the production of California diesel fuel is the low aromatics content. From the outset, refiners said they would not be able to produce the low aromatics specification fuels. Consequently, CARB allows certified alternative formulations of diesel fuel. These alternative fuels need not meet the low sulfur/low aromatics specifications, but, must meet the same tailpipe emissions that are produced by the low sulfur/low aromatic diesel fuels.

Variance Fuels

- The CARB developed a regulation variance procedure for those refiners who wished to produce the new diesel fuel but could not meet the deadline due to "extraordinary circumstances." Upon obtaining a company specific variance, a refiner

[9] *Fuel Oil and Kerosene Sales 1991*, November 1992.
[10] *Bloomberg's Oil Buyer's Guide*, August 23, 1993.

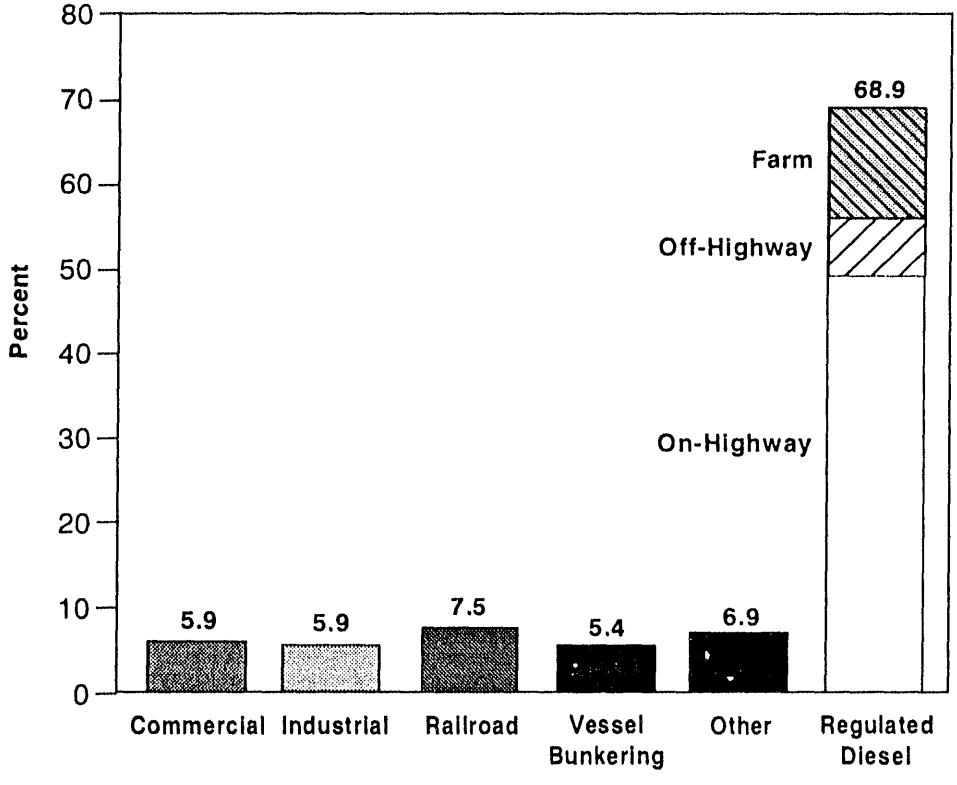
may produce and sell a specific amount of below specification fuel for a specified period of time. The CARB states that most variances will be 6 months to 1 year long. The variance contracts require the refiner to produce the low sulfur/low aromatic diesel or its equivalent, after the period of allowed variance. Variances will cost the refiner 6 cpg the first year of the regulation, 8 cpg the second, and 12 cpg the third. Chevron, Unocal, and Ultramar have been granted variances for unknown percentages of their low-sulfur diesel fuel.

Even with sufficient supplies of the new diesel fuel, high demand for distillate fuels in the Asia-Pacific region could have several effects on California petroleum markets:

- High distillate production may result in extra gasoline production. This could push down gasoline prices.
- PADD V crude demand could shift toward higher distillate yielding crude oils. This might push up crude prices and cut refiner margins.
- Distillate may be pulled out of the diesel market in California, if the Asia-Pacific region prices are conducive. This may place upward price pressure on diesel prices that are expected to be at least 3 to 4 cpg higher than historical levels.
- Inventory drawdowns may provide the export barrels. Historically, inventory drawdowns have tended to precede spot price increases.

Sufficient production of the new, low-sulfur diesel fuels is expected. Even the stricter California requirements should be met with the use of alternative formula fuels and variance fuels. A possible impact on this diesel fuel outlook is the recent high demand for distillates in the Asia-Pacific region.

Figure FE8. End Use of Distillates in California



Note: "Other" category includes Electric Utility, Residential, Oil Company, and Military end-uses.
Source: Form EIA-821, Annual Fuel Oil and Kerosene Sales Reports.

increasing the number of heating degree days for each month in the heating season by 10 percent. Because of the relatively few heating degree days occurring in the first month, it is only in November where stock and price projections begin to differ by any great extent from the base-line case. The scenario estimate would increase the demand for heating fuel by an average of 91 thousand barrels per day over the six month heating season, which results in the retail price rising to peak 4.1 cpg above that in the base case and with end-of-season stocks being 17 million barrels below the base case.

Scenario 2: Colder Winter Season (January 1994 through March 1994)

This scenario differs from the previous scenario by concentrating the cold weather in the months of January through March; the scenario assumes that the 10 percent increase in heating degree days falls into 3 months rather than 6. This projection estimates that the demand for heating oil would increase by about 5 percent during these months over that in the base case, prices would peak 9 cpg higher during the middle of the cold snap, and that end-of-season stock levels would be about 16 million barrels below those in the base case.

Conclusion

Distillate fuel oil supplies are seen to be sufficient to meet a 4-percent increase in winter demand over that of 1992-93. High utilization rates for all of 1993 are expected to continue into the fourth quarter of this year as well as into the beginning of 1994. Augmented by stable imports and high refinery runs, stock levels are expected to end the heating season higher than at any time since the heating season of 1986-87.

On average over the upcoming winter, residential heating oil and diesel prices are seen to be 94.9 and $1.22 per gallon, respectively. The heating oil price is the same as the previous winter and the diesel price shows a 10-percent increase over winter 1992-93.

Propane Outlook for Winter 1993-1994

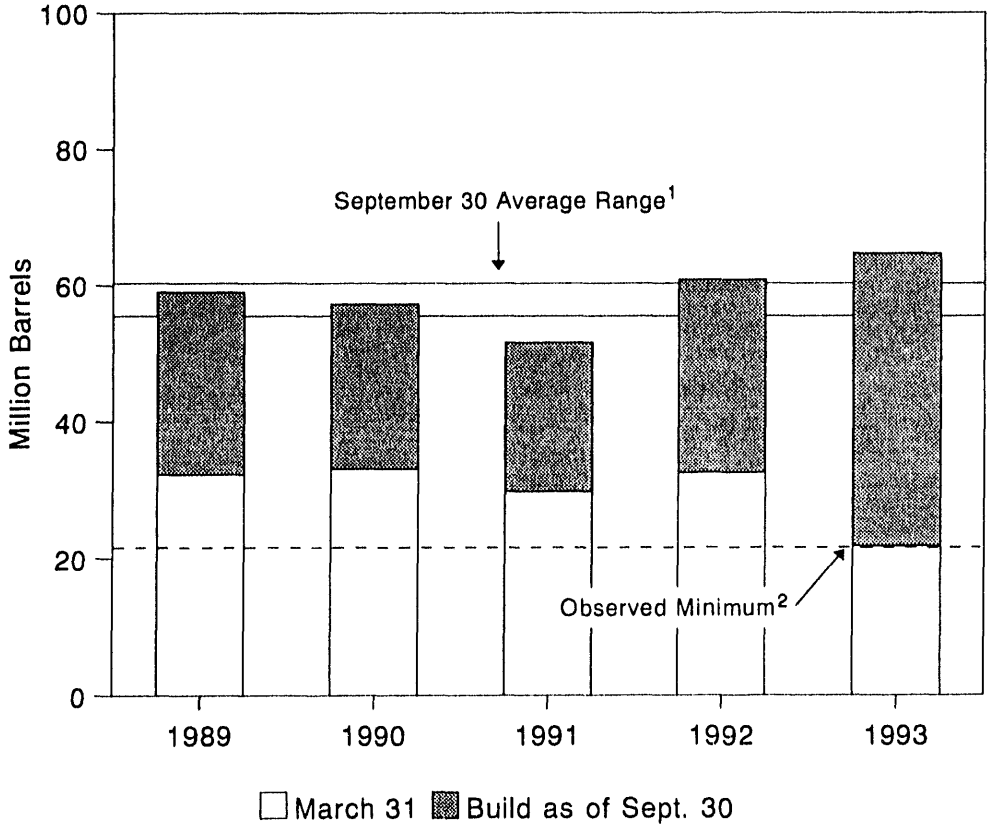
by David Hinton

Summary

The outlook for propane supplies in the United States during the 1993-1994 winter heating season (defined as October through March) is optimistic and continues to improve. Despite the extremely low inventory level reached at the end of last winter, domestic propane supplies have recovered well, and primary stock levels reached over 64 million barrels by the end of September 1993 (Figure FE9). The combination of factors causing the severe inventory depletion in the fall of 1992 is unlikely to be repeated, and typical seasonal demand would only lead to season-ending stocks of about 33 million barrels, about 11 million barrels higher than in spring 1993. Given anticipated supply and demand conditions, average residential prices would be expected to rise about 4 cents per gallon through January, and decline by the end of March.

Even under certain adverse scenarios, U.S. propane supplies appear adequate to serve market needs during the coming winter. Weather is the most likely source of concern, because it affects peak winter demand. Under two different hypothetical severe weather cases (moderately colder all season and severely colder during the peak demand months), domestic inventories were seen to fall to near last season's

Figure FE9. Propane Stocks March 31 and September 30, 1989 - 1993



[1]Average level and width of average range based on 3 years of monthly data: January 1990 - December 1992.

[2]The Observed Minimum for propane stocks is based on final monthly data for the last 36 month period and was 21.8 million barrels, occurring in March 1993.

Sources: Data for 1989 - 1992, Energy Information Administration (EIA), *Petroleum Supply Annual 1989-1992*, DOE/EIA-0340(89-92), Volume 1, Table 2; data for January-July 1993, EIA, *Petroleum Supply Monthly 1993*, DOE/EIA-0109(93/01-09), Table 2; and data for August-September 1993, EIA, Form EIA-807 "Propane Telephone Survey."

ending level, with peak prices at most 4 cents above those in the base case. Potential supply problems are more difficult to model, due to the nearly unlimited possibilities, but the U.S. propane supply system has proven to possess sufficient capacity and diversity to cope with all but the most widespread breakdowns.

One area of potential concern following last winter was inventory levels in Petroleum Administration for Defense (PAD) District II, the Midwestern United States. PAD District II was the hardest hit by last season's supply drawdown, primarily caused by high demand for propane for crop drying. Stocks in the area were rapidly drawn down during fall 1992, reaching record low levels during the late winter, and were slow to recover in the off-season. However, high crop-drying demand is not expected this fall, partly because of extensive flood damage during the summer, and PAD District II stocks reached acceptable levels by the beginning of the peak heating season demand.

This article reviews the major components of propane supply and demand in the United States, and their status entering the 1993-1994 heating season. Other influences on prices are also discussed. Finally, a base case and two adverse scenarios are described for the heating season outlook, focusing on inventory levels and residential prices.

Supply

The three principal sources of propane supply during the winter heating season are domestic production at natural gas processing facilities and at petroleum refineries, withdrawals from inventory, and net imports (imports minus exports) (Table FE4). Since gas plants and refineries, storage facilities, and import terminals are widely dispersed throughout the United States, propane markets rely on interregional movements of propane, primarily by pipeline, railcar, tanker, and barge.

[1]*Gas Processors Report*, June 14, 1993, Houston, Texas, page 2.
[2]Pace Petrochemical Service, June 1993, page 118.

Domestic production has traditionally accounted for the largest share of U.S. domestic propane supply, followed by inventory withdrawals and net imports. During the 1992-1993 heating season (October through March), domestic production accounted for 78 percent of the U.S. supply of propane. During this same period, inventory drawdowns accounted for 17 percent of U.S. propane supply, while net imports provided the remaining 5 percent.

For the first 7 months of 1993, the supply of propane from domestic production remained relatively unchanged compared with the same period during 1992. Breaking with past trends, the share of propane from natural gas plants rose slightly while the supply of propane from refiners fell during this same period. The increase in refinery output of propane the past few years was the result of higher crude oil runs at refineries in association with the increase in production of some products such as motor gasoline. Since propane is essentially a byproduct of other refinery operations, higher refinery production of products such as motor gasoline promotes higher production of propane. The modest increase in propane supply from gas processing plants during the first 7 months of 1993, compared with the same period last year, was the result of several factors. First, the 1993 start-up of two new pipelines in PAD District III greatly facilitated the movement of propane to the Gulf Coast region. With the availability of expanded pipeline capacity in the Gulf Coast region, gas plant production was no longer constrained as in prior years.[1] Secondly, gas plants continued to recover large amounts of propane due to high yields and high natural gas throughput,[2] the latter in response to rising gas prices.

Inventory withdrawals of propane are the second largest source of supply during the heating season. Historically, U.S. propane inventories are built up during the spring and summer months when demand is low, and propane is withdrawn from inventories during the fall and winter months when demand is

Table FE4. Average Propane Supply, Demand, and Price
(Million Barrels per Day Except Where Noted)

Category	Winter 1990-1991	Winter 1991-1992	Winter 1992-1993
Production	0.91	0.94	0.96
Net Imports	0.05	0.06	0.06
Ending Stocks, September and March (Million Barrels)	57.2-29.8	51.6-32.6	60.8-21.8
Product Supplied	1.10	1.10	1.24
Residential Propane Prices (Cents per Gallon)	99.4	89.1	91.8

Note: Averages are calculated using monthly data for the winter heating season months October through March.
Sources: Energy Information Administration, *Petroleum Supply Annual 1992*, DOE/EIA-0340 (92), Volume 2, and predecessor reports; and *Winter Fuels Report*, Week Ending: April 2, 1993, DOE/EIA-0538 (92/93-25), Table 8.

much stronger. Inventory withdrawals during the 1992-1993 heating season supplied a near record 17 percent of total propane supply, the largest share of propane supply since the 1986-1987 heating season. Over the past 5 years, inventory withdrawals have accounted for shares ranging between 9 percent and about 15 percent. Consequently, by the end of the heating season in March 1993, U.S. inventories of propane were drawn down to a 23-year low of 21.8 million barrels.

The smallest component of U.S. supply of propane is net imports. Net imports provide the cushion when consumption rates exceed the rates of available supplies of propane from current domestic production and inventories. During the 1992-1993 heating season, net imports of propane accounted for nearly 5 percent of propane supply. Over the past 5 years, net imports have accounted for shares of total propane supply ranging from 5 percent to 10 percent. Reversing a downward trend of the last 2 years, net imports of propane increased to 58 thousand barrels per day during the first 7 months of 1993, compared with about 42 thousand barrels per day during the same period 1992.

Although Canada traditionally supplies the largest volume of propane to U.S. inventories, Canada's volume of net imports for the first 7 months of 1993 is down about 8 percent from the same period last year. Like the United States, Canada's supply of propane reached record lows last winter; subsequently Canadian stockholders have been busy replenishing local stocks before the onset of winter. As of September 1, 1993, Canadian inventories stood at 5.6 million barrels, nearly 4 percent below the level of specification[3] grade propane in inventory this time last year. However, Canadian propane remains an important source for incremental supplies during both stockbuilding periods and for periods of peak demand during the winter heating season.

The remaining source of non-Canadian imports is mostly waterborne supplies from the Persian Gulf, North Africa, and South America. Waterborne net imports of propane to the United States for the first 7 months of 1993 were nearly triple the volume compared with the same period last year. Algeria and Saudi Arabia accounted for most of the increase in waterborne net imports between the first 7 months of 1993 and the same period during 1992. Although waterborne net imports have been relatively low the past few years, U.S. propane prices during 1993 have been high enough to attract international propane.

Demand

Propane demand in the United States derives from several different sectors, primarily residential/commercial (35 percent), petrochemical (43 percent), and agricultural (8 percent). The remainder of propane demand is made up of industrial, gas utility, and other use sectors.[4] Similar to other energy markets, propane demand is primarily affected by prices, macroeconomic growth, and weather. Moreover, variations exist between both regional and seasonal market sector demand for propane.

The residential and commercial sectors primarily consume propane as a heating and cooking fuel. Because of the predominance of space heating in residential usage, demand in this sector is extremely weather-dependent. Moreover, the concentration of heating demand in the residential sector varies dramatically from region to region. For example, in the Northeast only 17 percent of all residential propane consumers use propane as their main heating fuel. In the South, 63 percent of all residential consumers of propane use it to heat their homes during the winter. In contrast, more than two-thirds of all propane consumers in the Midwest use propane as their main heating fuel, the highest concentration of any region.[5]

Petrochemical industry use of propane comprises the largest sector demand for propane and is mainly concentrated on the Gulf Coast (PAD District III). Propane is used in petrochemical production mainly as a feedstock for ethylene crackers.[6] Propane competes with other potential feedstocks according to the relative price and yield of both feedstocks and products. Therefore, the petrochemical industry will switch a portion of their feedstock requirements, as well as purchases, to alternative, less costly feedstocks, during the winter months when residential heating demand is strongest.

Agricultural demand for propane is primarily concentrated in the Midwest (PAD District II) and includes diverse uses such as crop drying, weed control, poultry breeding, and heating of farm buildings. Crop drying, the largest component of agricultural demand, is not only seasonal, but can vary greatly from year to year depending on crop size and moisture content. This was most evident last fall when heavy rains caused one of the largest and wettest corn harvests in recent years. Additionally, the corn harvest began later than usual, causing the period of peak agricultural demand to overlap the beginning of the residential heating season.

Prices

Propane prices in the United States, like those for all petroleum products, are influenced by a complex set of domestic and international factors. Chief among these are the prices for crude oil and natural gas, competing heating fuels, and alternative petrochemical feedstocks, as well as the domestic and international propane supply/demand balance. Despite this

[3]The National Energy Board of Canada classifies propane inventories as either "specification" grade propane (pure propane) or "mix" grade (propane mixed with ethane or butane).

[4]American Petroleum Institute, *Sales of Natural Gas Liquids and Liquefied Refinery Gases, September 1992*, Table 4, pp. 6 and 7.

[5]Energy Information Administration, *Housing Characteristics 1990*, DOE/EIA-0314(90), Tables 19, pp. 60-61.

[6]Ethylene crackers are the primary petrochemical processing units that convert various feedstocks, such as propane, into the intermediate product ethylene.

range of influences, U.S. propane prices have typically been more stable than those for its raw materials and competing products.

The most widely-watched prices for propane in the United States are those for spot market transactions at the major distribution hubs of Mont Belvieu, Texas, and Conway, Kansas. Mont Belvieu is the center for supplies to the Gulf Coast petrochemical industry and the East Coast via pipeline, while Conway provides pipeline shipments to the Midwest and railcar loadings for other areas. Along with the individual price levels at these two points, the differential between them is significant, providing an indication of the supply balance between the Gulf Coast and Mid-Continent areas. In recent years, Mont Belvieu prices have typically averaged several cents higher than those at Conway. However, since PAD District II inventories (including Conway) were severely reduced last winter, Conway prices have remained near or above those at Mont Belvieu, providing a slight incentive for shipments to the Mid-Continent region.

Prices for crude oil and natural gas, the raw materials from which propane is derived, generally moved in opposite directions over the summer of 1993, leading to uncertain cost influences. Crude oil prices slipped over $3 per barrel from March through September, due to continued oversupply and rekindled uncertainty about Iraq's possible return to world markets. Natural gas prices, by contrast, have gradually risen since early June, primarily due to low pre-season storage levels.

Other significant indicators for U.S. propane markets include prices for propane on international markets and for alternative domestic petrochemical feedstocks. As with other products, a sufficient price differential between the United States and other world markets will have a significant effect on import/export flows. For most of 1993, propane prices in the United States have been several cents above those in European markets, sufficient to maintain average, but not exceptional, U.S. propane imports. The price comparison between propane and other petrochemical feedstocks is more complicated, in that each potential feedstock has not only a different price, but a different ethylene yield and mix of co-products. With crude oil prices currently depressed more than those for propane, gasoil (distillate) becomes a relative bargain compared to propane for petrochemical feedstock purposes.

Outlook Scenarios

Given the recent history and current status of the major supply, demand, and price factors for propane in the United States, the outlook for the winter 1993-1994 heating season appears to be optimistic and improving. The spring and summer stock build in 1993 overcame, for the most part, the inventory depletion of the previous winter, and high domestic production levels allowed this recovery to be completed in time for the start of the heating season. Average prices are moderate, similar to recent years' pre-season levels, with some differences in regional differentials.

Assuming average weather and crop drying, and no unusual and unforeseen events or conditions, propane supplies should be adequate throughout the entire season. Primary stocks at the national level (Figure FE10) began October at over 64 million barrels, and are projected to experience a gradual drawdown over the season to about 33 million barrels, both above the average of recent years.[7,8] The ending level would be about 11 million barrels above that reached in the spring of 1993. Residential prices (Figure FE11) would be expected to increase moderately, beginning at an average of 88 cents per gallon at the end of September, rising to 92 cents in January, and falling back to about 87 cents in March. This represents a slightly higher starting point than last winter's, but lower mid- and late-season price levels, based on less drastic inventory depletion than that seen in 1992-1993.

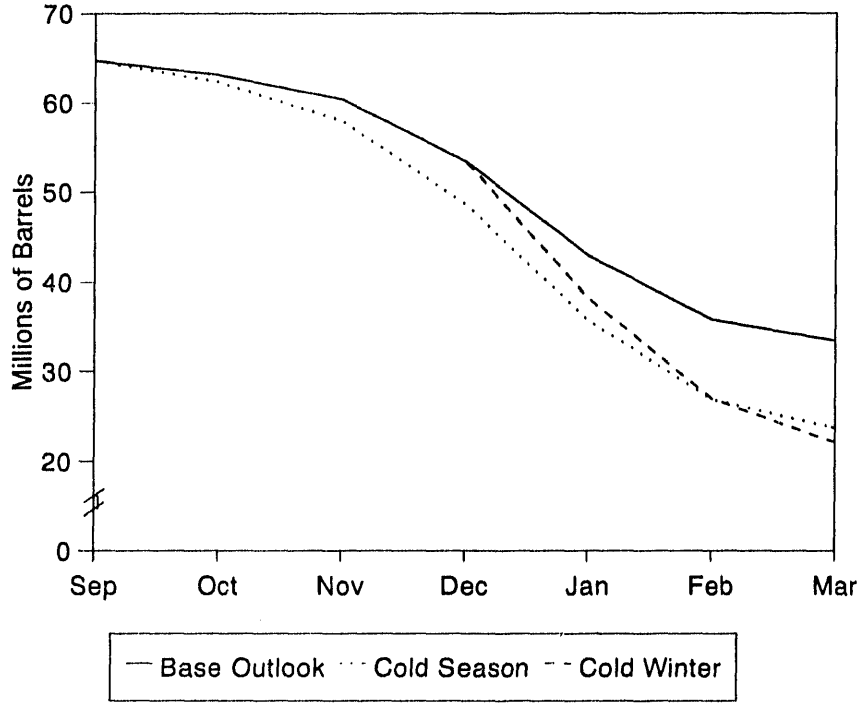
In order to assess the capacity of propane markets to respond to different conditions, various alternate hypothetical scenarios were considered. In evaluating possible alternate scenarios for the heating season, the critical variable is assumed to be weather, as measured by heating degree-days. While other demand or supply factors can have a significant impact, they are more difficult to assess, and generally less pervasive, than extreme and widespread cold weather. Under a scenario of moderately colder weather throughout the Nation and the heating season (10 percent more heating degree-days), the impacts on U.S. propane supplies and prices would be significant, but not critical. Inventory levels would drop at a steadily more rapid pace throughout the season, with primary stocks ending at approximately 24 million barrels, slightly above last season. Residential prices would peak about 3 cents higher in February, at 95 cents, and would only fall back to about 91 cents in March.

However, if the colder weather is concentrated in the peak demand months, rather than spread over the season, market reaction is more dramatic. For example, another potential scenario considers the impact of similarly greater heating demand over the season, but concentrated into the coldest winter months. A 10-percent overall increase in heating degree-days for the season, focused in the months of January through March (amounting to a 17-percent increase for those months), would result in a more drastic stock draw during that

[7]To evaluate the outlook scenarios, a model was used to forecast the retail price and demand (product supplied) of propane. The model uses historical monthly data series covering the January 1989 through July 1993 time period, and also uses EIA forecasts of imported crude oil price for its projections. The model consists of a two-equation system estimated by ordinary least squares with correction for autocorrelation and a provision for the calculation of end-of-month stock levels.

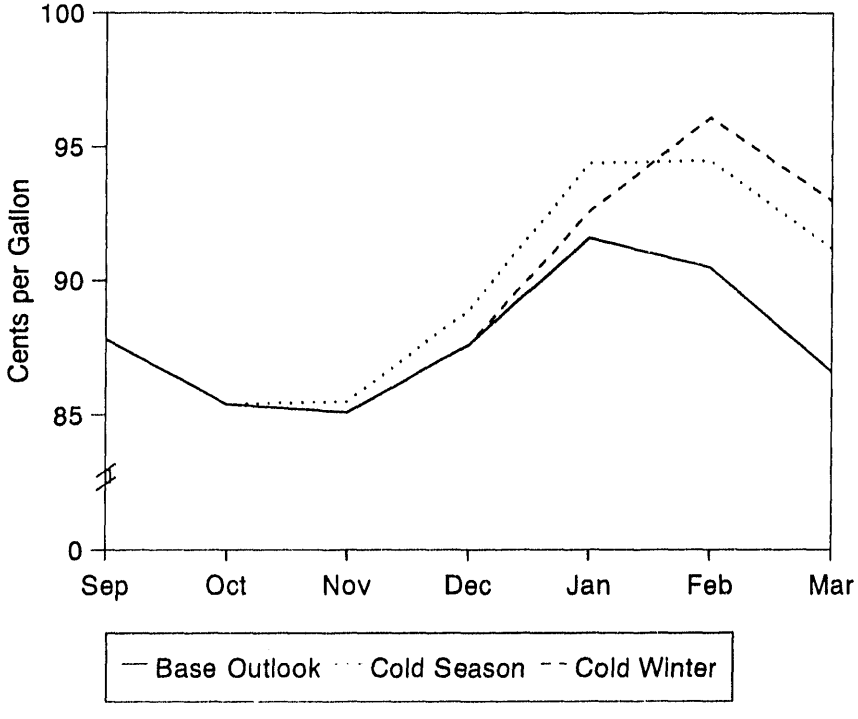
[8]The price equation estimates the average U.S. residential price of propane using crude oil price, stock level behavior, and a heating degree-day variable as independent variables; an adjusted R-square of .89 was obtained for the regression in the historical time period. The demand equation estimates product supplied as a function of seasonal dummy variables and mean heating degree-days; an adjusted R-square of .94 was obtained using historical data.

Figure FE10. Comparison of Alternative Weather Scenarios on Propane Stock Outlook



Sources: September 1993; Energy Information Administration, Form EIA-807, "Propane Telephone Survey", October - March; Estimates derived from regression model.

Figure FE11. Comparison of Alternative Weather Scenarios on Propane Price Outlook

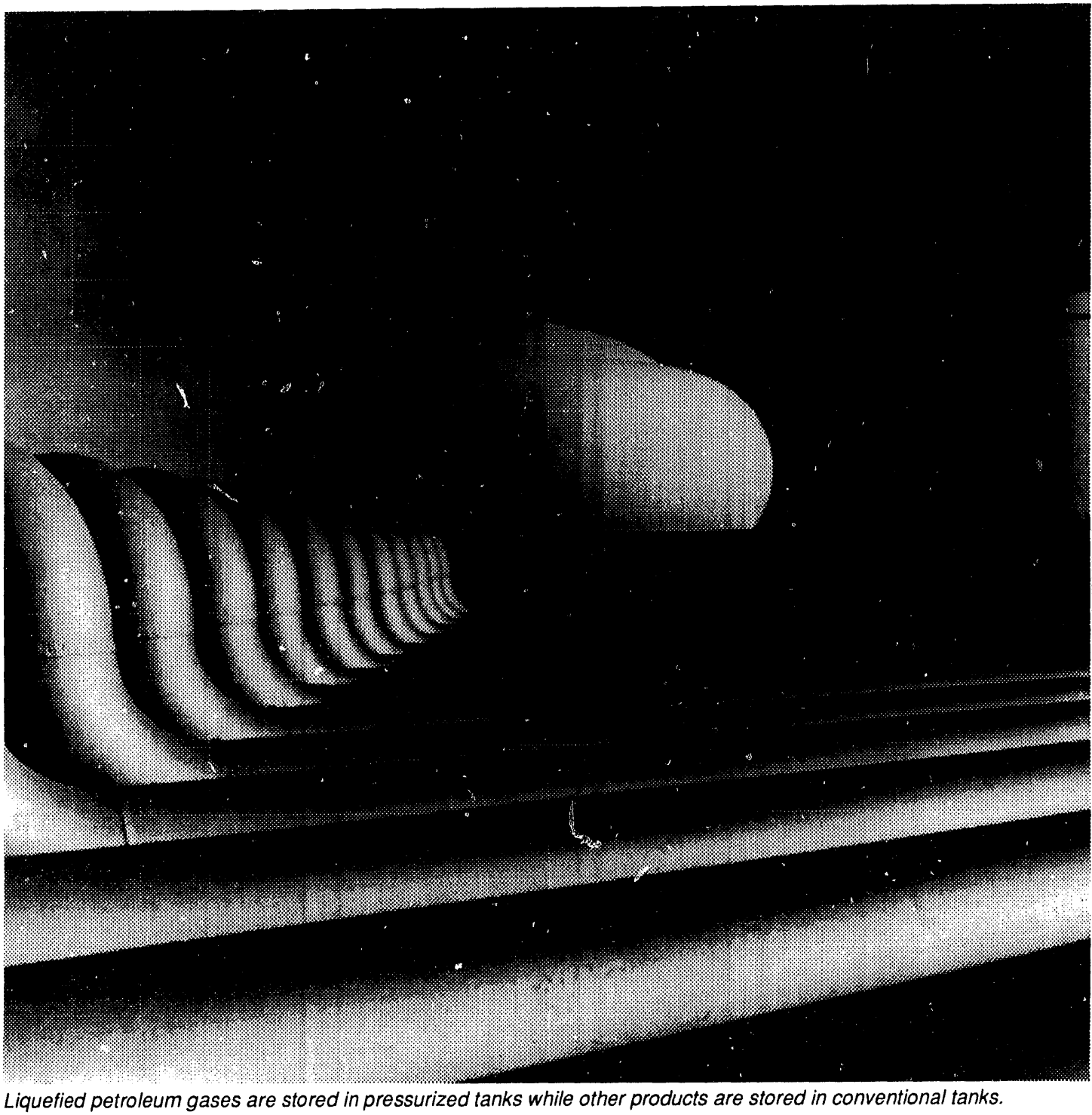


Sources: September 1993; Energy Information Administration, Form EIA-807, "Propane Telephone Survey", October - March; Estimates derived from regression model.

period, culminating in an ending stock level of approximately 22 million barrels, about 2 million barrels less than in the previous case. The price impact of this scenario would likewise be slightly more intense, resulting in a rise to 96 cents in February, and a season-ending price of 93 cents.

In summary, the combination of adequate pre-season inventories, high production levels, and moderate net imports should provide a sufficient supply cushion to weather foreseeable circumstances over the coming heating season. The confluence of heavy crop-drying demand and cold weather seen last year is not expected to recur, due both to the unusual combination of weather factors involved, and the crop damage already experienced due to flooding over the summer in the Midwest.

Highlights



Liquefied petroleum gases are stored in pressurized tanks while other products are stored in conventional tanks.

Highlights

DISTILLATE FUEL OIL

United States distillate fuel oil stocks gained 0.5 MMB last week as refiners reported the highest one-week production levels since January 12, 1990. Total stocks are within their average range; however, higher than usual stocks in PADD I are offsetting lower than normal stocks in PADDs II, III, and V.

Most of the product held in primary inventory in PADD I is heating oil, where only 31% of the total is low-sulfur product suitable for on-highway diesel fuel. PADD II reports 53% of stocks is high-sulfur distillate while PADD III stocks are 55% high/45%low-sulfur.

Table H1. Distillate Fuel Oil
(Thousand Barrels per Day, Except Where Noted)

	Week Ending		
	10/15/92	10/08/93	10/15/93
Production	3,251	3,456	3,528
Imports	263	180	123
Product Supplied	3,056	3,227	3,432
Ending Stocks (million barrels)			
East Coast (PADD I)	58.1	67.6	68.3
Midwest (PADD II)	30.0	27.0	25.9
Gulf Coast (PADD III)	29.4	27.3	27.8
U.S. Total	**131.9**	**132.9**	**133.4**

Source: Energy Information Administration (EIA), Weekly and Monthly Petroleum Supply Reporting Systems.

PROPANE

U.S. stocks of propane continued to increase during the month of October which is noted for being the transitional month into the winter heating season. As of the week ending October 15, 1993, the Nation's inventory level was 66.0 million barrels (MMB). This stock build was approximately 0.9 MMB increase from the level the week ending October 8, 1993.

Regionally, since the week ending October 8, 1993, inventory levels fell in PAD District I while they increased in PAD Districts II and III. The East Coast stock level dropped 0.2 MMB. Midwest stock levels increased by 0.2 MMB while in the Gulf Coast (where approximately one-half of the Nation's primary stocks of propane reside) inventories rose by 0.9 MMB.

Table H2. Propane Stocks by Petroleum Administration for Defense Districts (PADD) I, II, and III
(Thousand Barrels)

PAD Districts	September 1992	October 1992	Week Ending 10/08/93	10/15/93	10/22/93	10/29/93	11/05/93	11/12/93
East Coast (PADD I)	4,329	4,342	E4,602	E4,399				
Midwest (PADD II)	24,568	21,586	E23,460	E23,657				
Gulf Coast (PADD III)	29,761	29,911	E35,412	E36,301				
Total (PADD I-III)	58,658	55,839	E63,474	E64,357				
U.S. Total	60,849	58,124	E65,102	E66,007				

NATURAL GAS

Supply and Disposition

The Energy Information Administration (EIA) estimates that total gas supply available for disposition in July 1993 was an estimated 1,730 billion cubic feet, 2 percent greater than in July 1992. The July 1993 total includes 9 billion cubic feet of supplemental fuel supplies, 192 billion cubic feet of imported gas, and 47 billion cubic feet withdrawn from storage.

On the disposition side, in July 1993, the consumption of 1,310 billion cubic feet was 1 percent less than in July 1992. Total disposition included 405 billion cubic feet of gas injected into underground storage reservoirs and exports of 15 billion cubic feet.

Consumption

Data for the four major end-use sectors indicate that the total amount of gas delivered to all consumers decreased to 1,125 billion cubic feet in June 1993, from 1,135 billion cubic feet in June 1992. Consumption in the industrial sector increased from 575 billion cubic feet in May 1993 to 582 billion cubic feet in June 1993, an increase of 1 percent.

The electric utility sector consumed 255 billion cubic feet in June 1993, which is 53 percent greater than in May 1993 and a 4 percent increase from June 1992.

The residential sector consumed 163 billion cubic feet and the commercial sector consumed 126 billion cubic feet in June 1993.

Natural Gas Prices

In June 1993, major interstate pipeline companies paid an average of $2.03 per thousand cubic feet for gas purchased from domestic producers, 28 percent less than the May's $2.81 total. In June 1993, these pipeline companies paid $1.95 per thousand cubic feet for imported gas. Distributors paid an average of $3.37 per thousand cubic feet for gas at the city gate in June 1993. Residential consumers paid $7.29 per thousand cubic feet in June 1993, 7 percent higher than what they paid in June 1992.

PRICES

October 4, 1993, average heating oil prices, at both the wholesale and residential level, were below comparable year-ago levels. The first residential heating oil price for the 1993-94 heating season was 93.7 cents per gallon, a decline of 2.7 cents from October 5, 1992. Similarly, the wholesale heating oil price was 66.0 cents per gallon, down 7.2 cents. Both the residential and wholesale price decreases were pervasive, ranging from 4.1 cents in the Lower Atlantic region to 8.9 cents in New England for residential. Wholesale heating oil was down 2.0 cents in the Central Atlantic region and 4.3 cents in the Midwest. Depressed world crude oil prices (U.S. spot crude oil was down more than 10 cents per gallon from year-earlier levels on a September to September basis), and increased stock levels of crude oil and distillate contributed to lower heating oil prices.

On a year-to-year basis, wholesale propane prices were down 1.0 cent on October 4, 1993, to 38.2 cents per gallon. Residential propane, however, was up 2.2 cents to 87.1 cents per gallon. Residential prices were up for all regions, with the Central Atlantic having the smallest increase, 1.9 cents, and the Lower Atlantic the largest, 5.8 cents. Stickier prices for propane in the Midwest may have been affected by expectations brought on by last year's record low propane inventories.

Table H3. Residential Heating Oil Prices by Petroleum Administration for Defense Districts
(Cents per Gallon)

PAD Districts	October 1992	November 1992	Week Ending 10/04/93[P]
Average	97.2	98.3	93.7
East Coast	98.6	99.8	95.2
New England	96.3	96.6	91.9
Central Atlantic	100.3	101.9	97.4
Lower Atlantic	93.1	94.6	89.0
Midwest	89.8	90.0	85.8

P=Preliminary data.
Source: Based on data collected by State Energy Offices.

Table H4. Residential Propane Prices by Petroleum Administration for Defense Districts
(Cents per Gallon)

PAD Districts	October 1992	November 1992	Week Ending 10/04/93[P]
Average	85.8	87.2	87.1
East Coast	115.1	115.4	111.2
New England	116.9	116.6	115.2
Central Atlantic	125.2	125.6	122.9
Lower Atlantic	100.2	100.5	93.9
Midwest	70.2	72.1	74.2

P=Preliminary data.
Source: Based on data collected by State Energy Offices.

Distillate Fuel Oil

Overall view of a typical bulk terminal facility.

Table 1. Monthly and Weekly Net Production, Imports, and Stocks of Distillate Fuel Oil by Petroleum Administration for Defense District (PADD) and Product Supplied for the United States

(Thousand Barrels per Day, Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total U.S.												
Net Production[a]												
1991	2,845	2,870	2,865	2,819	2,929	2,941	2,998	2,961	3,055	3,040	3,103	3,107
1992	2,818	2,661	2,749	2,930	2,933	2,995	3,067	2,865	2,983	3,251	3,240	3,179
1993	2,909	2,813	2,918	3,010	2,930	3,095	3,185					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	3,356	3,157	3,082	3,172	3,374	3,293	3,205	3,347	3,287	3,456	3,528	
0.05% Sulf & Under	1,287	1,016	1,207	1,371	1,497	1,523	1,365	1,553	1,556	1,755	1,856	
Greater than 0.05%	2,069	2,141	1,875	1,801	1,877	1,770	1,840	1,794	1,731	1,701	1,672	
Imports												
1991	192	139	206	258	186	209	155	168	237	207	249	252
1992	232	217	238	202	179	157	172	229	237	263	236	229
1993	182	224	235	209	153	168	130					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	201	215	109	142	121	192	129	167	141	180	123	
0.05% Sulf & Under	80	65	62	48	70	112	72	78	38	121	47	
Greater than 0.05%	121	150	47	94	51	80	57	89	103	59	76	
Stocks (Million Barrels)												
1991	111.7	101.6	98.2	102.9	106.9	113.7	124.7	131.4	140.1	138.3	144.5	143.5
1992	126.7	108.8	97.7	92.1	96.4	104.5	114.6	122.8	127.8	136.8	146.3	140.6
1993	130.2	109.4	97.5	98.3	101.6	109.4	120.2					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	121.8	122.9	125.5	124.5	127.2	130.7	131.3	131.5	131.1	132.9	133.4	
0.05% Sulf & Under	30.4	33.9	41.7	43.8	47.6	50.6	53.4	56.6	55.4	53.6	52.0	
Greater than 0.05%	91.4	89.0	83.8	80.8	79.7	80.1	77.9	74.9	75.7	79.4	81.4	
Product Supplied												
1991	3,367	2,976	2,984	2,839	2,765	2,775	2,648	2,770	2,865	3,047	2,921	3,087
1992	3,231	3,219	3,207	3,039	2,753	2,679	2,710	2,705	2,908	3,056	2,929	3,316
1993	3,141	3,478	3,386	2,949	2,624	2,843	2,669					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
	3,338	3,061	2,672	3,305	2,979	2,855	3,122	3,360	3,325	3,227	3,432	
East Coast (PADD I)												
Net Production[a]												
1991	344	373	344	299	339	367	368	359	376	351	383	395
1992	332	292	275	371	355	369	406	352	361	448	426	395
1993	370	335	335	359	322	426	417					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	415	447	424	430	448	474	441	465	481	508	494	
0.05% Sulf & Under	142	98	101	171	121	161	132	215	164	171	223	
Greater than 0.05%	273	349	323	259	327	313	309	250	317	337	271	
Stocks (Million Barrels)												
1991	39.8	31.8	29.8	32.3	35.5	43.6	51.0	56.6	62.3	65.6	66.8	63.4
1992	53.4	43.5	31.0	28.5	30.1	37.5	45.4	53.6	58.1	64.8	68.2	65.1
1993	58.6	43.2	33.1	34.5	37.1	43.2	51.5					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	52.2	54.0	57.3	57.8	59.6	63.2	63.9	65.1	66.9	67.6	68.3	
0.05% Sulf & Under	12.2	14.3	19.0	18.3	18.2	19.7	21.5	23.9	24.5	22.2	20.9	
Greater than 0.05%	40.0	39.7	38.4	39.4	41.5	43.5	42.4	41.2	42.4	45.4	47.4	

See footnotes at end of table.

Table 1. Monthly and Weekly Net Production, Imports, and Stocks of Distillate Fuel Oil by Petroleum Administration for Defense District (PADD) and Product Supplied for the United States (Continued)

(Thousand Barrels per Day, Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
New England (PADD IX)												
Stocks (Million Barrels)												
1991	5.4	3.6	3.5	4.4	5.1	6.5	8.7	9.9	10.8	11.0	11.8	9.9
1992	7.4	6.7	4.4	3.3	4.7	6.8	9.5	11.0	11.2	12.1	11.6	9.9
1993	10.0	8.0	5.8	5.3	5.5	7.7	8.9					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	9.7	9.7	10.7	10.5	11.1	11.8	12.6	12.4	14.6	14.6	15.1	
0.05% Sulf & Under	1.6	2.1	3.3	2.9	2.5	3.1	3.1	3.4	4.0	5.4	4.1	
Greater than 0.05%	8.0	7.6	7.4	7.6	8.6	8.7	9.5	9.0	10.6	9.2	11.0	
Central Atlantic (PADD IY)												
Stocks (Million Barrels)												
1991	22.0	18.1	14.8	17.5	20.0	25.5	30.6	35.7	39.6	42.4	41.8	39.6
1992	34.6	25.8	17.0	15.8	14.8	18.0	24.9	30.9	35.7	40.3	42.8	41.0
1993	34.8	24.0	16.9	19.6	21.0	25.0	31.1					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	31.8	34.9	36.3	36.4	37.9	39.5	33.6	40.9	40.9	41.8	42.0	
0.05% Sulf & Under	9.3	10.9	13.0	11.4	11.9	11.8	13.1	15.3	15.0	11.6	11.8	
Greater than 0.05%	22.4	24.0	23.3	25.0	26.1	27.8	26.5	25.5	25.9	30.2	30.2	
Lower Atlantic (PADD IZ)												
Stocks (Million Barrels)												
1991	12.4	10.0	11.4	10.4	10.3	11.6	11.6	11.0	11.9	12.2	13.3	13.9
1992	11.3	11.0	9.5	9.4	10.6	12.7	11.1	11.7	11.3	12.4	13.7	14.1
1993	13.8	11.1	10.5	9.6	10.6	10.5	11.6					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	10.8	9.4	10.3	10.9	10.6	11.8	11.6	11.8	11.5	11.2	11.2	
0.05% Sulf & Under	1.3	1.3	2.7	4.1	3.8	4.8	5.3	5.2	5.5	5.2	5.0	
Greater than 0.05%	9.5	8.1	7.7	6.8	6.8	7.0	6.3	6.6	6.0	6.0	6.2	
Midwest (PADD II)												
Net Production[a]												
1991	665	679	677	679	724	734	769	711	742	778	746	734
1992	683	685	700	654	722	739	739	743	738	774	779	768
1993	757	692	724	747	733	753	756					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	768	739	664	705	690	774	821	818	769	801	869	
0.05% Sulf & Under	221	138	267	272	240	341	277	327	366	390	465	
Greater than 0.05%	547	601	397	433	450	433	544	491	403	411	404	
Stocks (Million Barrels)												
1991	29.9	29.8	30.0	30.6	31.6	31.2	33.1	33.2	32.1	30.4	32.2	33.0
1992	31.2	29.8	30.1	27.7	27.4	29.0	29.3	31.1	30.8	29.1	31.9	31.3
1993	32.1	29.1	29.0	28.3	26.9	27.7	28.7					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	27.7	27.4	26.4	25.7	26.8	27.7	27.4	27.8	27.5	27.0	25.9	
0.05% Sulf & Under	5.1	6.5	7.2	8.3	10.5	12.0	13.3	13.2	13.7	12.8	12.2	
Greater than 0.05%	22.6	20.9	19.2	17.4	16.3	15.7	14.1	14.6	13.8	14.2	13.7	

See footnotes at end of table.

Table 1. Monthly and Weekly Net Production, Imports, and Stocks of Distillate Fuel Oil by Petroleum Administration for Defense District (PADD) and Product Supplied for the United States (Continued)

(Thousand Barrels per Day, Except Where Noted)

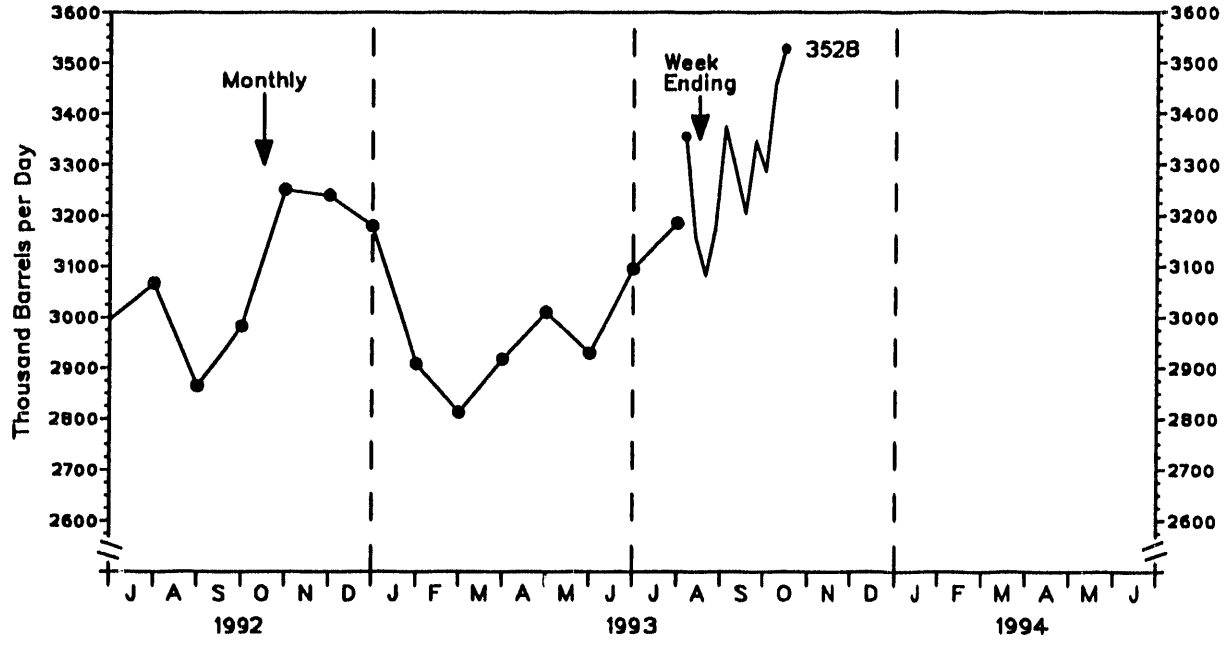
District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gulf Coast (PADD III)												
Net Production[a]												
1991	1,286	1,293	1,328	1,295	1,292	1,264	1,297	1,329	1,344	1,332	1,410	1,422
1992	1,274	1,170	1,220	1,327	1,302	1,314	1,348	1,205	1,323	1,452	1,486	1,462
1993	1,300	1,271	1,315	1,349	1,281	1,342	1,430					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	1,661	1,421	1,436	1,454	1,583	1,406	1,299	1,370	1,410	1,546	1,505	
0.05% Sulf & Under	727	560	583	645	770	661	663	664	680	789	765	
Greater than 0.05%	934	861	853	809	813	745	636	706	730	757	740	
Stocks (Million Barrels)												
1991	27.2	25.9	25.1	26.7	25.5	24.7	27.4	28.6	31.0	28.5	31.2	31.7
1992	28.8	22.5	23.4	24.0	25.6	24.7	27.1	26.4	27.5	31.5	33.2	30.8
1993	27.1	24.6	23.1	23.4	24.1	25.3	26.7					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	28.6	28.4	29.4	28.0	28.4	27.6	27.2	26.5	26.1	27.3	27.8	
0.05% Sulf & Under	8.0	7.6	9.8	10.8	12.2	11.9	11.7	12.7	11.8	12.4	12.5	
Greater than 0.05%	20.6	20.8	19.6	17.1	16.2	15.8	15.5	13.8	14.3	14.9	15.3	
Rocky Mountain (PADD IV)												
Net Production[a]												
1991	118	113	131	122	133	136	147	139	126	136	123	118
1992	112	116	126	117	119	125	128	120	122	131	120	116
1993	103	109	113	109	132	125	121					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	115	107	125	145	170	192	168	187	168	141	143	
0.05% Sulf & Under	28	24	31	47	65	91	82	108	84	78	75	
Greater than 0.05%	87	83	94	98	105	101	86	79	84	63	68	
Stocks (Million Barrels)												
1991	3.2	3.3	3.5	3.1	3.3	3.3	3.2	3.0	2.8	2.6	2.8	3.2
1992	2.7	2.5	2.8	2.3	2.2	2.4	2.5	2.1	2.0	2.3	2.7	2.6
1993	2.5	2.4	2.4	2.0	2.4	2.3	2.4					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	2.3	2.1	2.1	2.1	2.1	2.5	2.6	2.5	2.3	2.3	2.1	
0.05% Sulf & Under	0.4	0.4	0.5	0.5	0.6	1.1	1.2	1.2	1.0	1.1	1.1	
Greater than 0.05%	1.9	1.7	1.7	1.6	1.5	1.4	1.4	1.3	1.3	1.2	1.0	
West Coast (PADD V)												
Net Production[a]												
1991	432	411	385	424	441	440	418	423	467	442	442	438
1992	418	398	427	462	436	448	446	446	441	447	428	438
1993	379	406	432	446	462	450	461					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	397	443	433	438	483	447	476	507	459	460	517	
0.05% Sulf & Under	169	196	225	236	301	269	211	239	262	327	328	
Greater than 0.05%	228	247	208	202	182	178	265	268	197	133	189	
Stocks (Million Barrels)												
1991	11.5	10.9	9.9	10.2	11.1	10.9	10.0	10.0	11.9	11.3	11.5	12.1
1992	10.7	10.4	10.4	9.6	11.1	10.8	10.4	9.6	9.5	9.1	10.3	10.8
1993	9.9	10.1	9.9	10.2	11.0	10.9	10.9					
Week Ending												
1993	**08/06**	**08/13**	**08/20**	**08/27**	**09/03**	**09/10**	**09/17**	**09/24**	**10/01**	**10/08**	**10/15**	
Total	11.0	11.0	10.3	11.0	10.4	9.8	10.2	9.6	8.2	8.7	9.4	
0.05% Sulf & Under	4.7	5.2	5.2	5.9	6.2	6.0	5.7	5.5	4.4	5.0	5.4	
Greater than 0.05%	6.2	5.8	5.0	5.2	4.2	3.7	4.5	4.1	3.8	3.7	4.0	

[a] Net production equals gross production minus input. Negative production will occur when the amount of product produced during the month is less than the amount of that same product reprocessed (input) or reclassified to become another product during the same month.

Notes: • Totals may not equal sum of components due to independent rounding. • Sum of PADD's IX, IY, and IZ may not equal PADD I because of independent estimation.

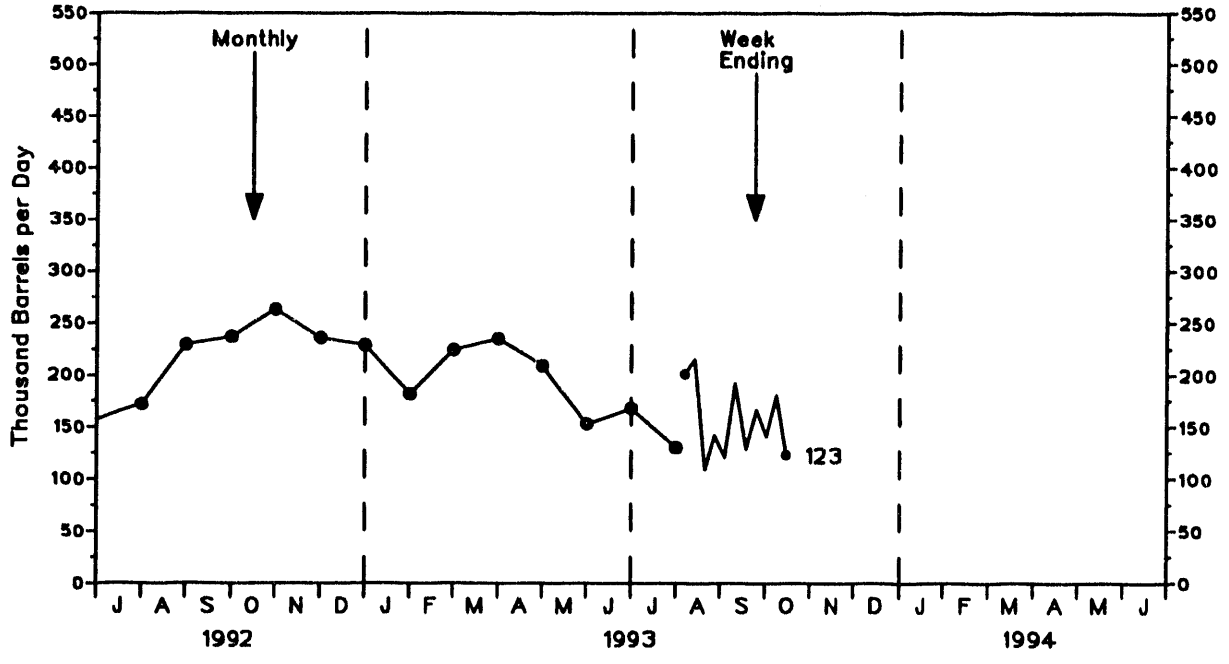
Source: Energy Information Administration, Weekly and Monthly Petroleum Supply Reporting Systems. Magnitudes of revisions to monthly data are published in Appendix C of the *Petroleum Supply Monthly*.

Figure 1. U.S. Distillate Fuel Oil Production



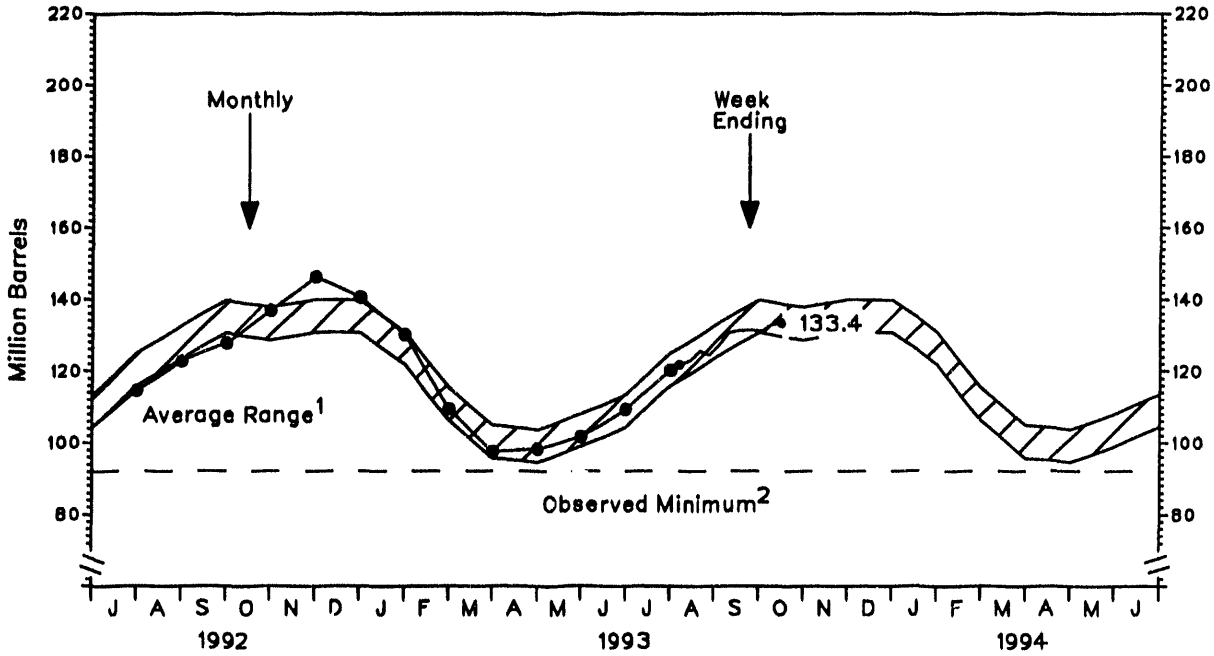
Source: • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Production: Estimates based on weekly data collected on Form EIA-800.

Figure 2. U.S. Distillate Fuel Oil Imports



Source: • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Imports: Estimates based on weekly data collected on Form EIA-804.

Figure 3. U.S. Distillate Fuel Oil Stocks

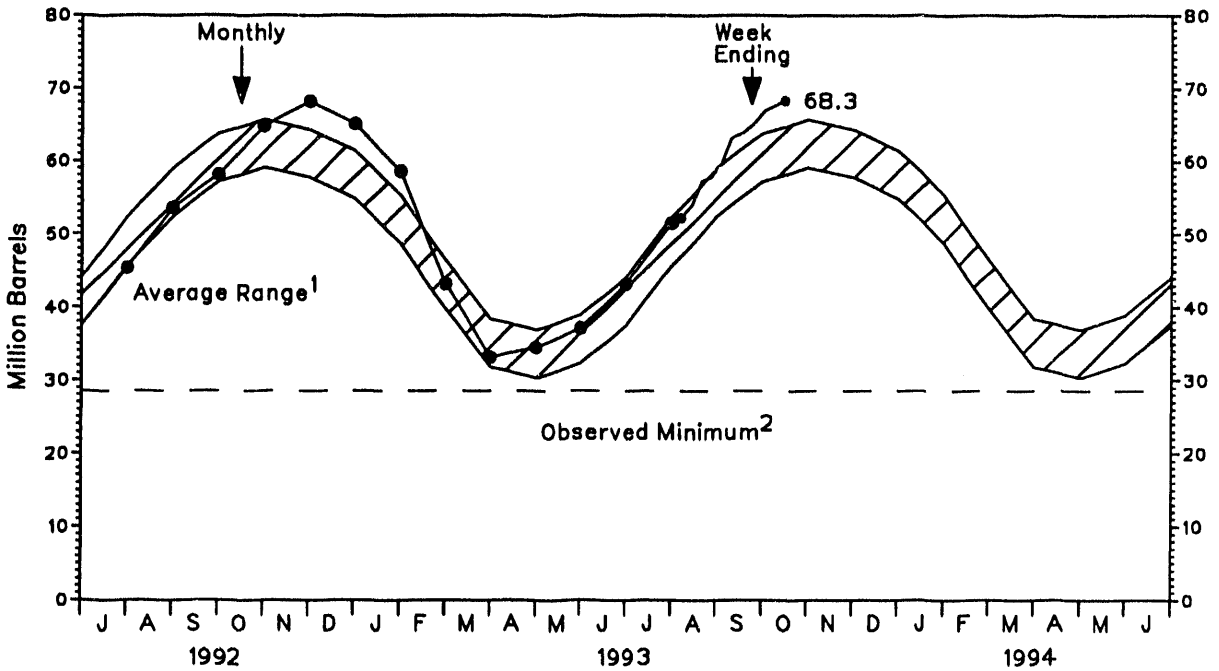


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 92.1 million barrels, occurring in April 1992.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Figure 4. PADD I (East Coast) Distillate Fuel Oil Stocks

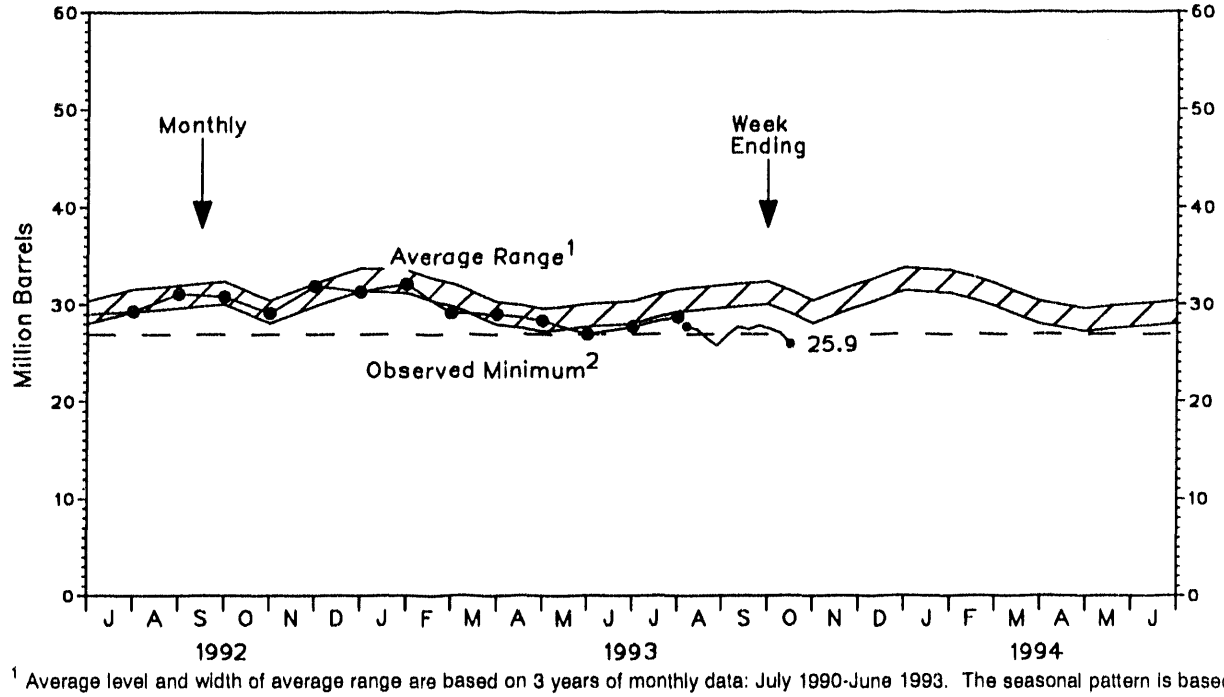


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 28.5 million barrels, occurring in April 1992.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Figure 5. PADD II (Midwest) Distillate Fuel Oil Stocks

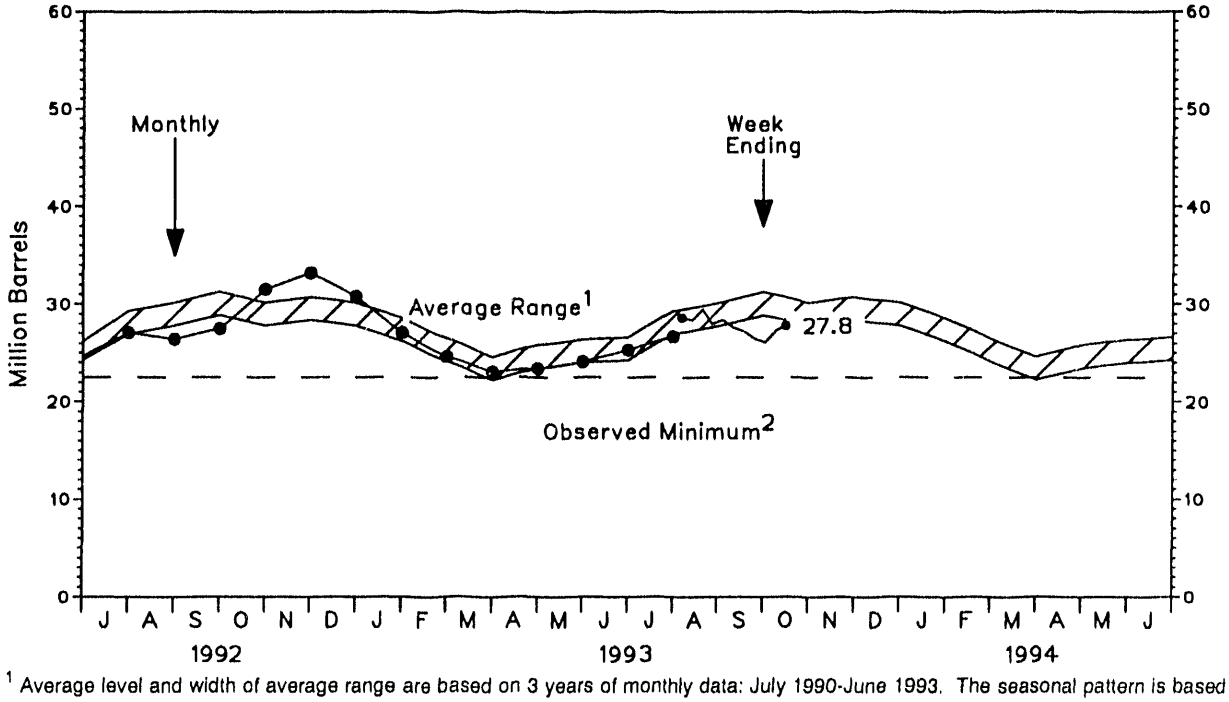


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 26.9 million barrels, occurring in May 1993.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Figure 6. PADD III (Gulf Coast) Distillate Fuel Oil Stocks

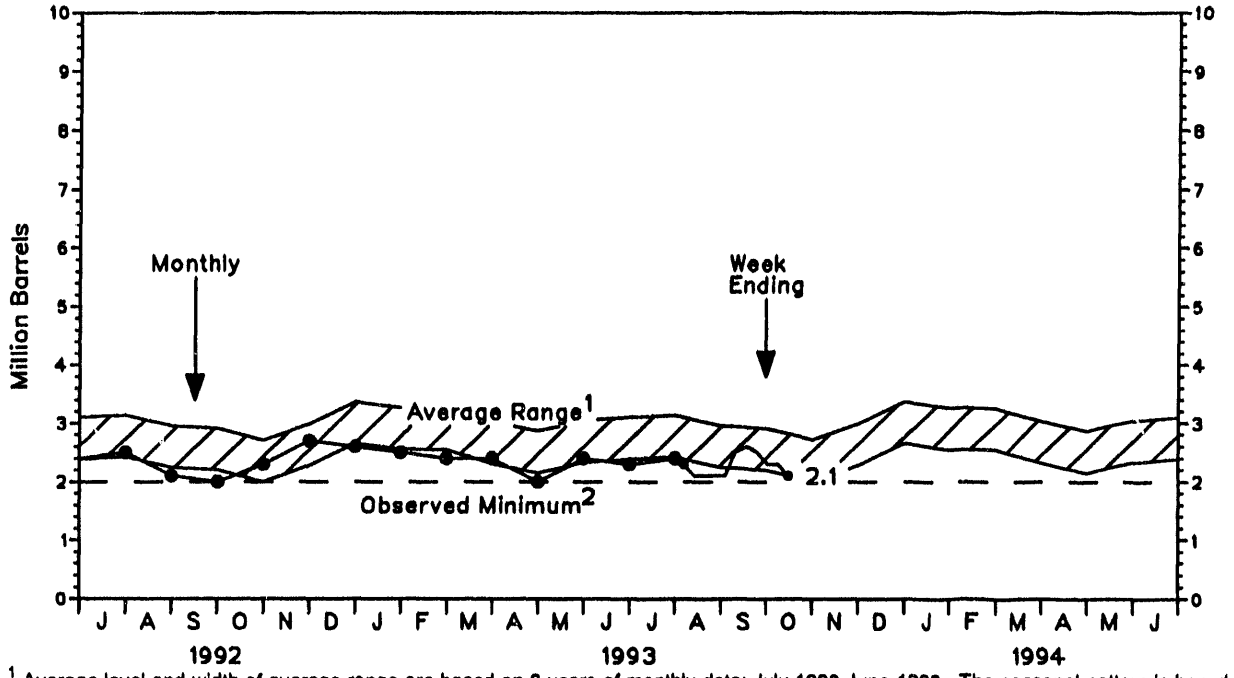


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 22.5 million barrels, occurring in February 1992.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Figure 7. PADD IV (Rocky Mountain) Distillate Fuel Oil Stocks

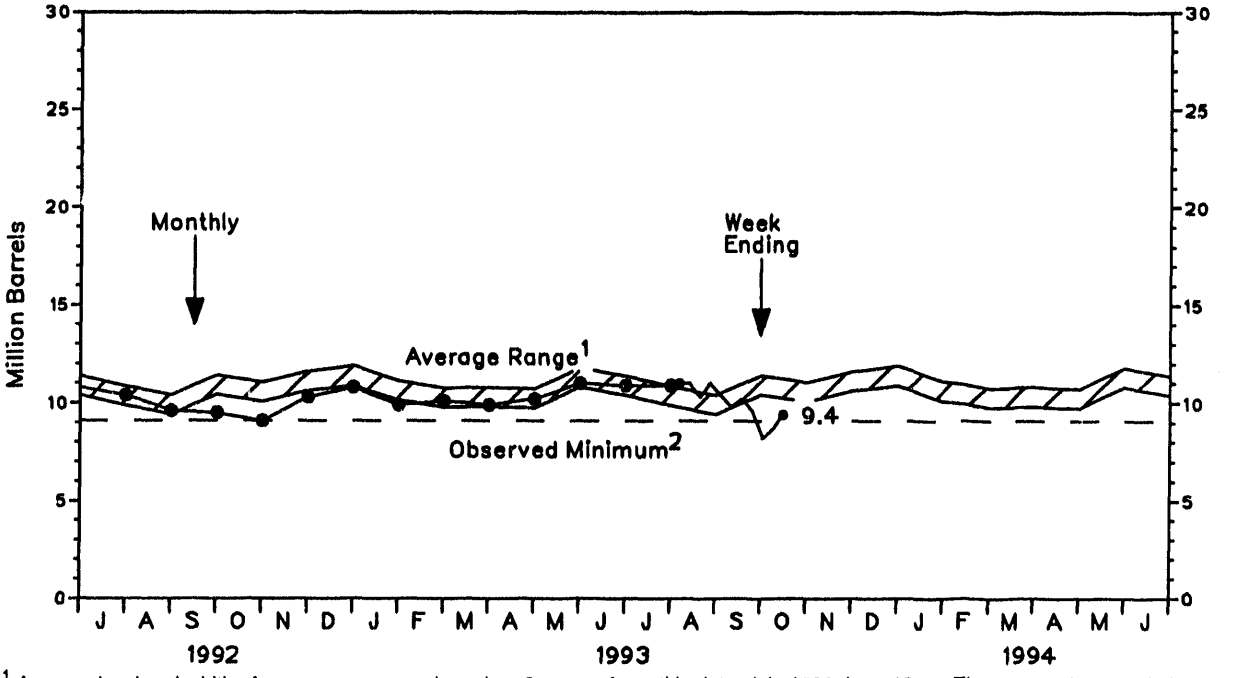


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 2.0 million barrels, occurring in September 1992.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Figure 8. PADD V (West Coast) Distillate Fuel Oil Stocks

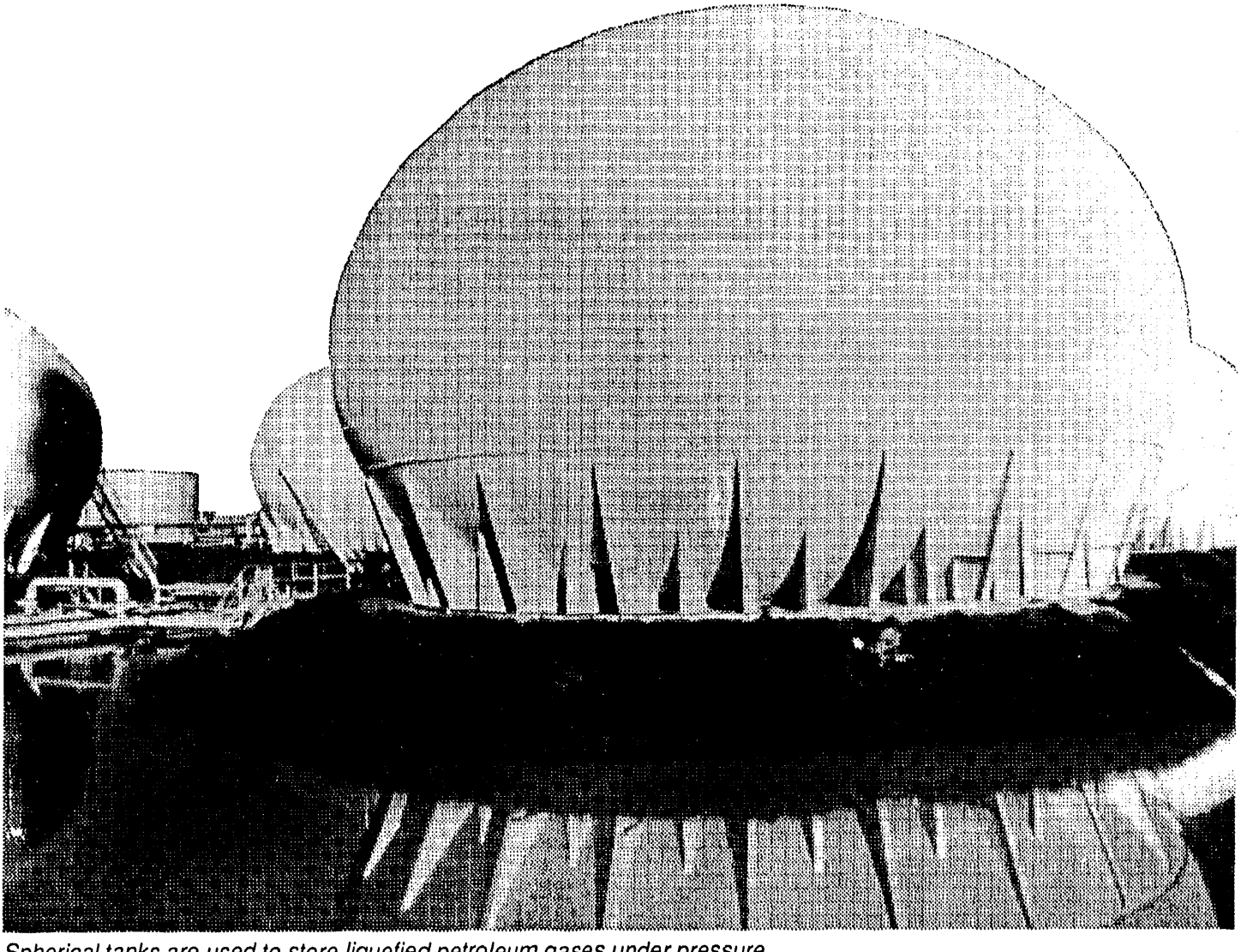


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for distillate fuel oil stocks in the last 36 month period was 9.1 million barrels, occurring in October 1992.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on weekly data collected on Forms EIA-800, -801, and -802.

Propane



Spherical tanks are used to store liquefied petroleum gases under pressure.

Table 2. Monthly and Weekly Net Production, Imports, and Stocks of Propane/Propylene by Petroleum Administration for Defense Districts (PADD) I, II, and III

(Thousand Barrels per Day, Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Total U.S.												
Net Production [a]												
1991	920	923	912	900	922	906	901	891	905	902	930	964
1992	949	955	940	961	977	978	964	946	931	933	964	977
1993	965	959	971	973	942	958	956					
Imports												
1991	105	90	56	101	90	81	91	73	92	146	82	86
1992	90	86	68	80	72	66	68	85	71	104	99	131
1993	72	78	85	112	96	75	105					
Stocks (Million Barrels)												
1991	35.0	30.1	29.8	35.2	41.8	48.5	51.0	52.3	51.6	52.7	51.6	47.6
1992	38.9	33.1	32.6	36.2	44.1	50.3	55.7	59.3	60.8	58.1	50.8	38.9
1993	33.5	26.2	21.8	28.8	36.9	44.9	52.1	E 59.7	E 64.7			
Week Ending												
1993	10/08	10/15										
	E 65.1	E 66.0										
East Coast (PADD I)												
Net Production [a]												
1991	55	54	56	47	54	52	50	47	49	48	50	58
1992	60	60	60	56	52	60	56	54	54	63	63	65
1993	57	55	53	53	52	59	56					
Week Ending												
1993	10/08	10/15										
	E 56	E 60										
Imports												
1991	24	17	18	16	7	15	3	4	22	13	18	26
1992	23	27	19	14	13	16	8	11	15	12	27	22
1993	21	23	16	23	4	17	8					
Week Ending												
1993	10/08	10/15										
	E 37	E 8										
Stocks (Million Barrels)												
1991	4.1	3.5	3.8	4.2	4.1	4.2	3.9	3.3	3.6	4.1	4.2	4.1
1992	2.9	2.6	2.4	2.4	2.7	3.1	3.5	4.0	4.3	4.3	4.7	3.7
1993	3.2	2.0	1.6	2.1	2.5	3.8	4.3	E 4.6	E 4.5			
Week Ending												
1993	10/08	10/15										
	E 4.6	E 4.4										

See footnotes at end of table.

Table 2. Monthly and Weekly Net Production, Imports, and Stocks of Propane/Propylene by Petroleum Administration for Defense Districts (PADD) I, II, and III (Continued)

(Thousand Barrels per Day Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
New England (PADD 1X)												
Net Production [a]												
1991	0	0	0	0	0	0	0	0	0	0	0	0
1992	0	0	0	0	0	0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0					
Week Ending												
1993	**10/08**	**10/15**										
	E 0	E 0										
Imports												
1991	16	11	13	13	1	13	1	1	13	8	8	14
1992	12	18	7	7	7	7	5	8	8	1	13	9
1993	10	11	5	14	2	15	2					
Week Ending												
1993	**10/08**	**10/15**										
	E 1	E 2										
Stocks (Million Barrels)												
1991	0.5	0.3	0.3	0.6	0.2	0.4	0.3	0.1	0.4	0.4	0.4	0.5
1992	0.3	0.5	0.4	0.3	0.3	0.3	0.3	0.5	0.5	0.3	0.5	0.5
1993	0.5	0.3	0.1	0.4	0.2	0.7	0.5	E 0.3	E 0.6			
Week Ending												
1993	**10/08**	**10/15**										
	E 0.7	E 0.6										
Central Atlantic (PADD 1Y)												
Net Production [a]												
1991	42	42	43	36	43	45	42	38	39	39	40	47
1992	48	49	49	45	45	49	45	42	43	51	51	52
1993	46	42	40	41	42	47	45					
Week Ending												
1993	**10/08**	**10/15**										
	E 48	E 53										
Imports												
1991	5	6	5	3	2	1	2	3	2	5	7	7
1992	8	9	8	7	6	3	3	3	4	10	10	9
1993	11	12	11	4	3	2	2					
Week Ending												
1993	**10/08**	**10/15**										
	E 4	E 7										
Stocks (Million Barrels)												
1991	1.7	1.4	1.2	1.3	1.6	1.9	1.8	1.8	2.0	2.0	1.8	1.6
1992	1.1	0.9	0.9	0.8	1.2	1.5	1.9	2.0	2.1	2.2	2.1	1.5
1993	1.2	0.6	0.6	0.6	1.1	1.8	2.2	E 2.6	E 2.2			
Week Ending												
1993	**10/08**	**10/15**										
	E 2.1	E 2.0										

See footnotes at end of table.

Table 2. Monthly and Weekly Net Production, Imports, and Stocks of Propane/Propylene by Petroleum Administration for Defense Districts (PADD) I, II, and III (Continued)
(Thousand Barrels per Day Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Lower Atlantic (PADD 1Z)												
Net Production [a]												
1991	12	11	13	12	12	7	8	10	10	10	10	11
1992	12	11	11	11	7	11	11	11	11	12	13	13
1993	12	13	14	12	9	12	11					
Week Ending												
1993	**10/08**	**10/15**										
	E 8	E 7										
Imports												
1991	3	0	0	0	4	0	0	0	7	0	4	5
1992	3	0	3	0	0	6	0	0	3	0	4	3
1993	0	0	0	5	0	0	5					
Week Ending												
1993	**10/08**	**10/15**										
	E 32	E 0										
Stocks (Million Barrels)												
1991	1.9	1.8	2.3	2.3	2.3	1.9	1.8	1.4	1.2	1.7	2.0	2.0
1992	1.4	1.1	1.2	1.2	1.1	1.3	1.2	1.5	1.7	1.9	2.1	1.6
1993	1.5	1.0	0.9	1.1	1.3	1.4	1.6	E 1.7	E 1.7			
Week Ending												
1993	**10/08**	**10/15**										
	E 1.8	E 1.8										
Midwest (PADD II)												
Net Production [a]												
1991	217	229	219	214	215	208	214	211	210	213	217	231
1992	231	234	216	210	214	223	214	223	216	212	227	222
1993	228	212	222	225	209	217	207					
Week Ending												
1993	**10/08**	**10/15**										
	E 215	E 212										
Imports												
1991	63	59	33	40	44	41	34	47	49	52	45	53
1992	59	55	47	43	42	40	32	45	43	60	61	74
1993	44	43	47	41	41	29	45					
Week Ending												
1993	**10/08**	**10/15**										
	E 28	E 40										
Stocks (Million Barrels)												
1991	12.9	11.1	11.7	13.8	17.1	20.2	21.8	23.3	22.9	22.6	20.3	17.7
1992	14.3	12.9	13.4	15.4	18.4	20.9	23.4	24.5	24.6	21.6	16.3	11.6
1993	10.7	7.7	7.4	9.9	12.7	15.5	18.4	E 21.2	E 23.4			
Week Ending												
1993	**10/08**	**10/15**										
	E 23.5	E 23.7										

See footnotes at end of table.

Table 2. Monthly and Weekly Net Production, Imports, and Stocks of Propane/Propylene by Petroleum Administration for Defense Districts (PADD) I, II, and III (Continued)

(Thousand Barrels per Day Except Where Noted)

District/Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Gulf Coast (PADD III)												
Net Production [a]												
1991	545	544	535	539	549	543	539	533	553	540	562	575
1992	560	559	563	584	602	590	587	569	559	558	569	586
1993	577	590	590	593	583	585	595					
Week Ending												
1993	**10/08**	**10/15**										
	E 539	E 565										
Imports												
1991	7	7	0	41	36	22	51	16	15	73	8	0
1992	0	0	0	20	14	7	26	28	10	29	7	29
1993	0	7	19	45	48	27	50					
Week Ending												
1993	**10/08**	**10/15**										
	E 44	E 83										
Stocks (Million Barrels)												
1991	17.2	14.8	13.6	16.5	19.7	22.9	23.9	23.9	22.9	23.6	24.7	23.9
1992	20.5	16.5	15.7	17.4	21.6	24.7	27.0	28.7	29.8	29.9	27.8	22.1
1993	18.8	15.9	12.2	16.2	20.7	24.3	28.0	E 32.3	E 35.2			
Week Ending												
1993	**10/08**	**10/15**										
	E 35.4	E 36.3										

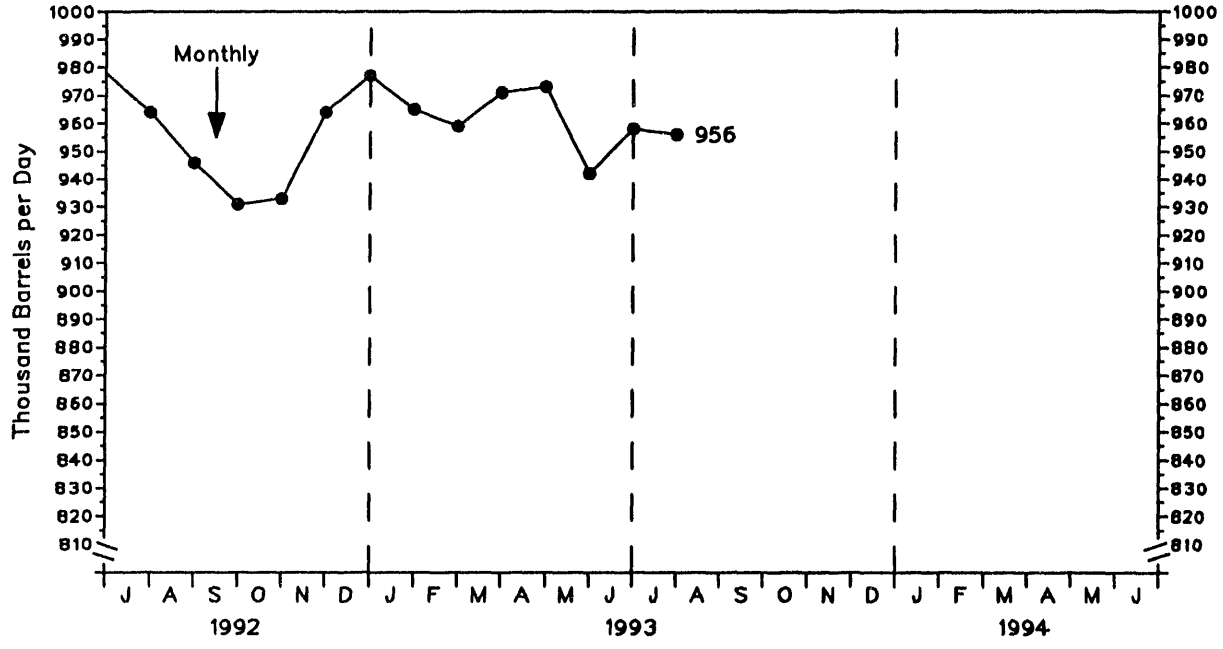
[a] Net production equals gross production minus input. Negative production will occur when the amount of product produced during the month is less than the amount of that same product reprocessed (input) or reclassified to become another product during the same month.

E=Estimated data.

Note: • This table presents weekly data, derived from a cut-off sample of refineries and fractionators that produce propane and from companies that import or store propane, which have been extrapolated to the universe of companies reporting in PADD's I, II, and III. • Totals may not equal sum of components due to independent rounding.

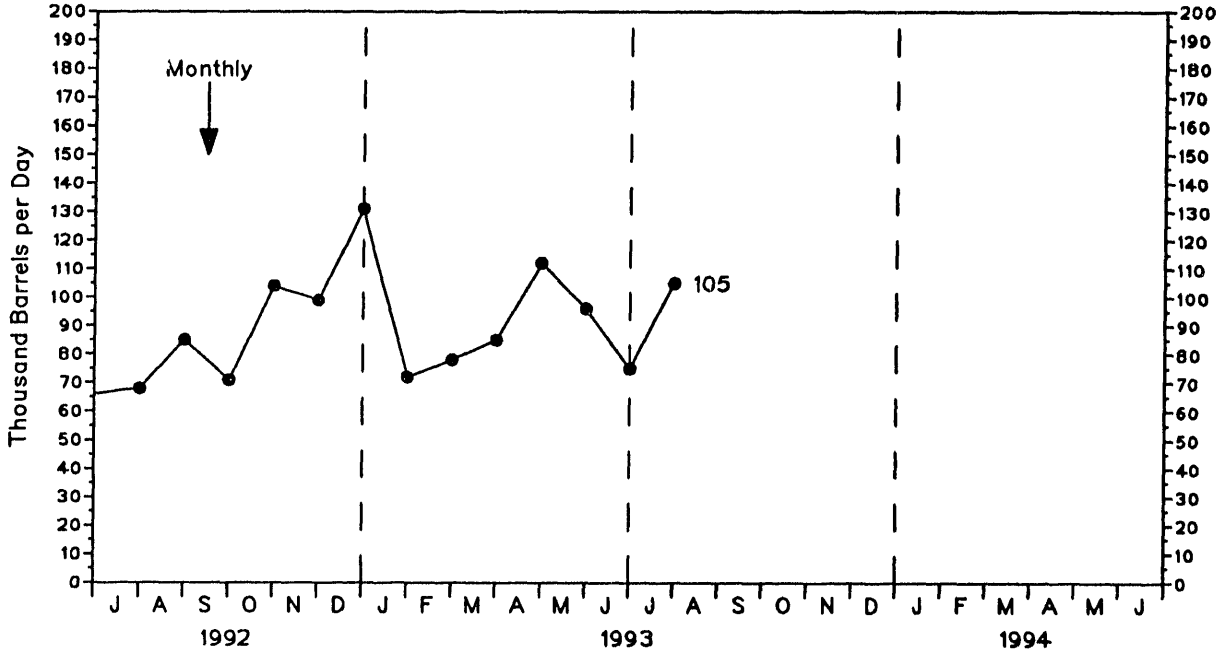
Source: Energy Information Administration (EIA), Monthly Petroleum Supply Reporting System and data collected on Form EIA-807, "Propane Telephone Survey." Magnitudes of revisions to monthly data are published in Appendix C of the *Petroleum Supply Monthly.*

Figure 9. U.S. Propane Production



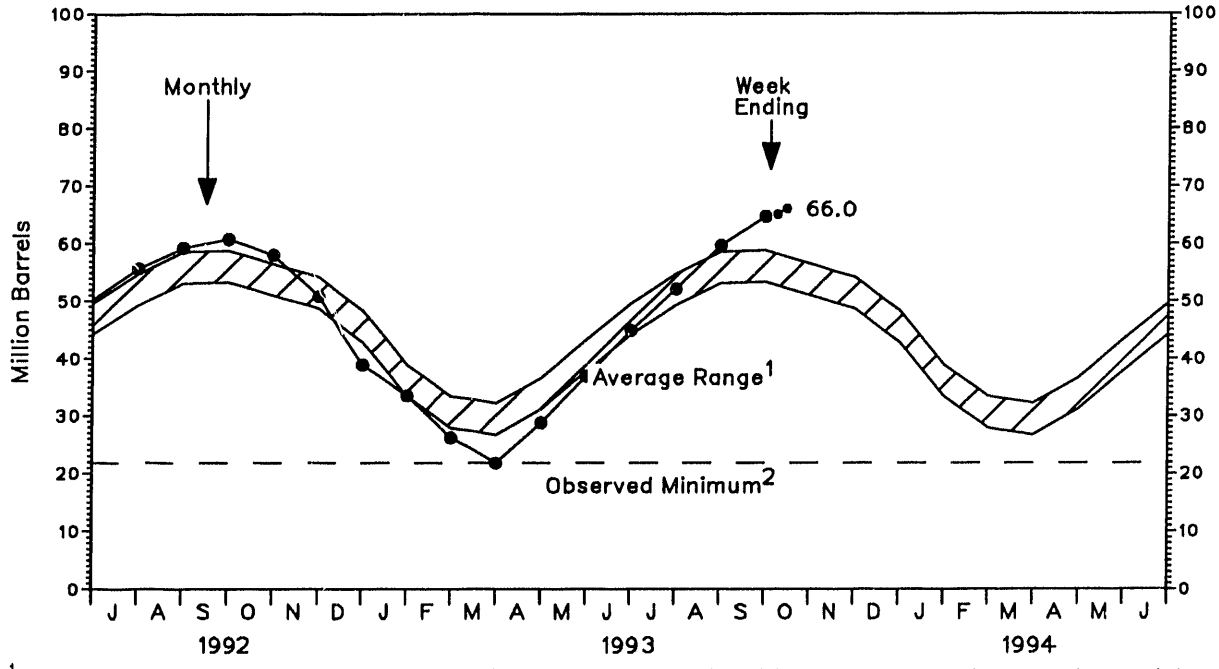
Source: 1992, EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.*

Figure 10. U.S. Propane Imports



Source: 1992, EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.*

Figure 11. U.S. Propane Stocks

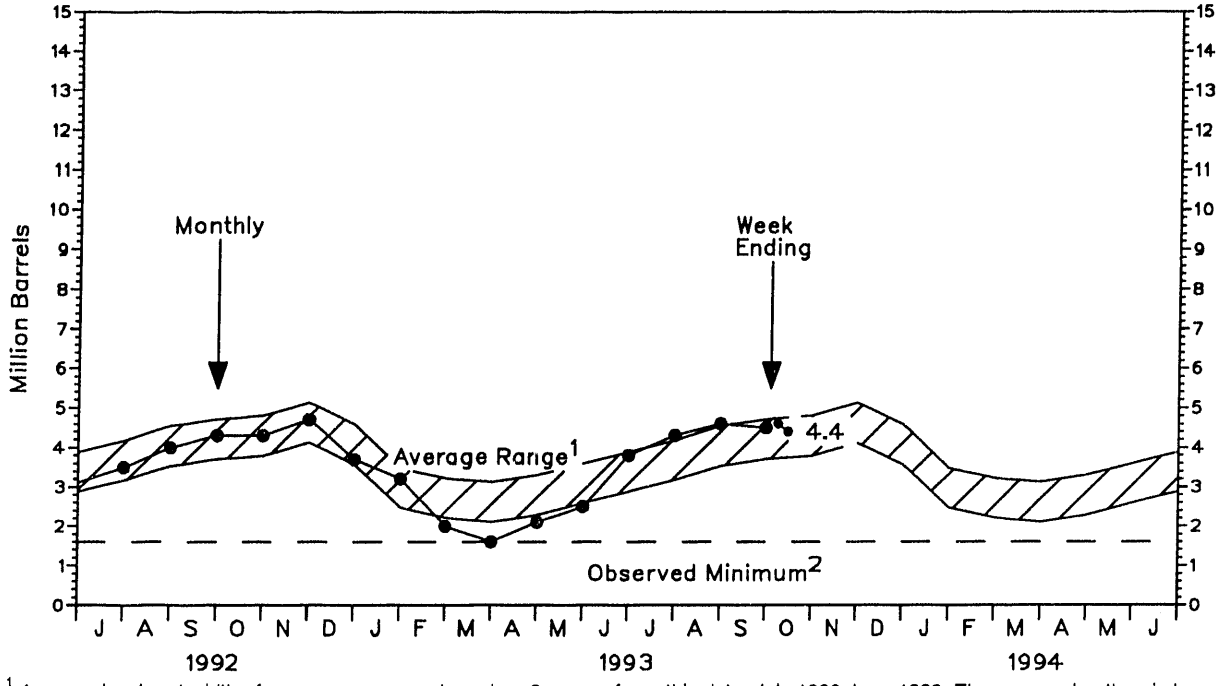


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for propane stocks in the last 36 month period was 21.8 million barrels, occurring in March 1993.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on data from Table H1.

Figure 12. PADD I (East Coast) Propane Stocks

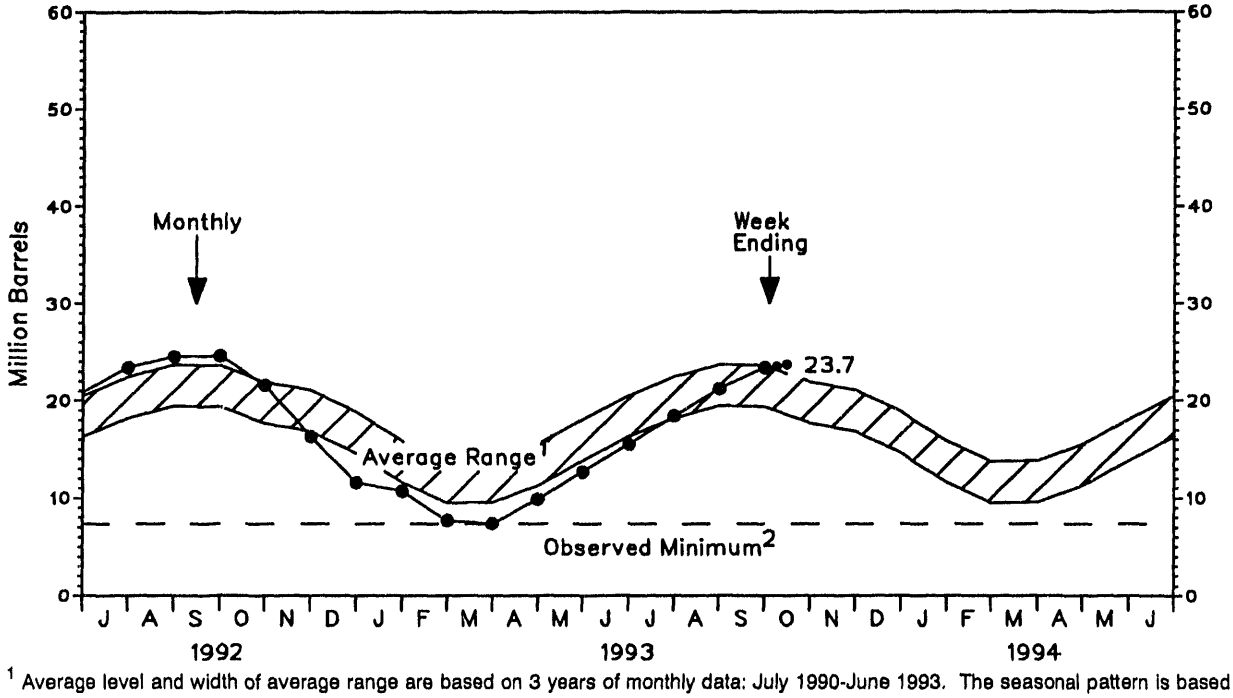


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for propane stocks in the last 36 month period was 1.6 million barrels, occurring in March 1993.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992 , EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on data collected on Form EIA-807, "Propane Telephone Survey."

Figure 13. PADD II (Midwest) Propane Stocks

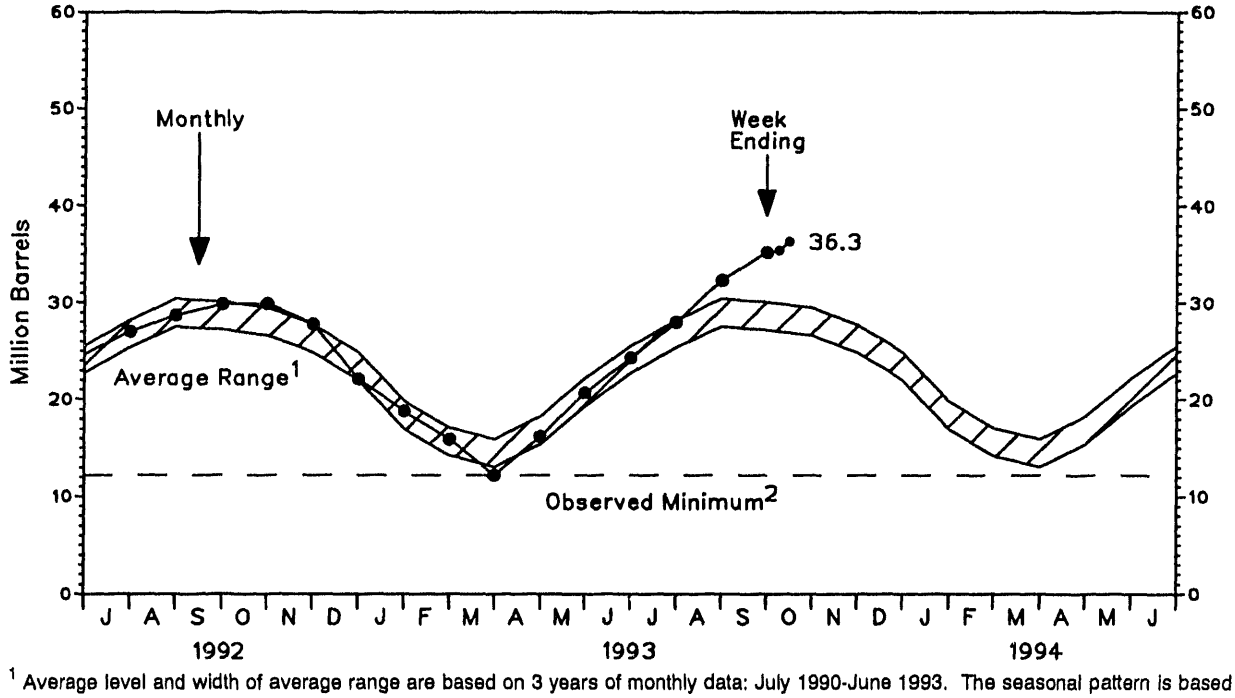


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for propane stocks in the last 36 month period was 7.4 million barrels, occurring in March 1993.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on data collected on Form EIA-807, "Propane Telephone Survey."

Figure 14. PADD III (Gulf Coast) Propane Stocks

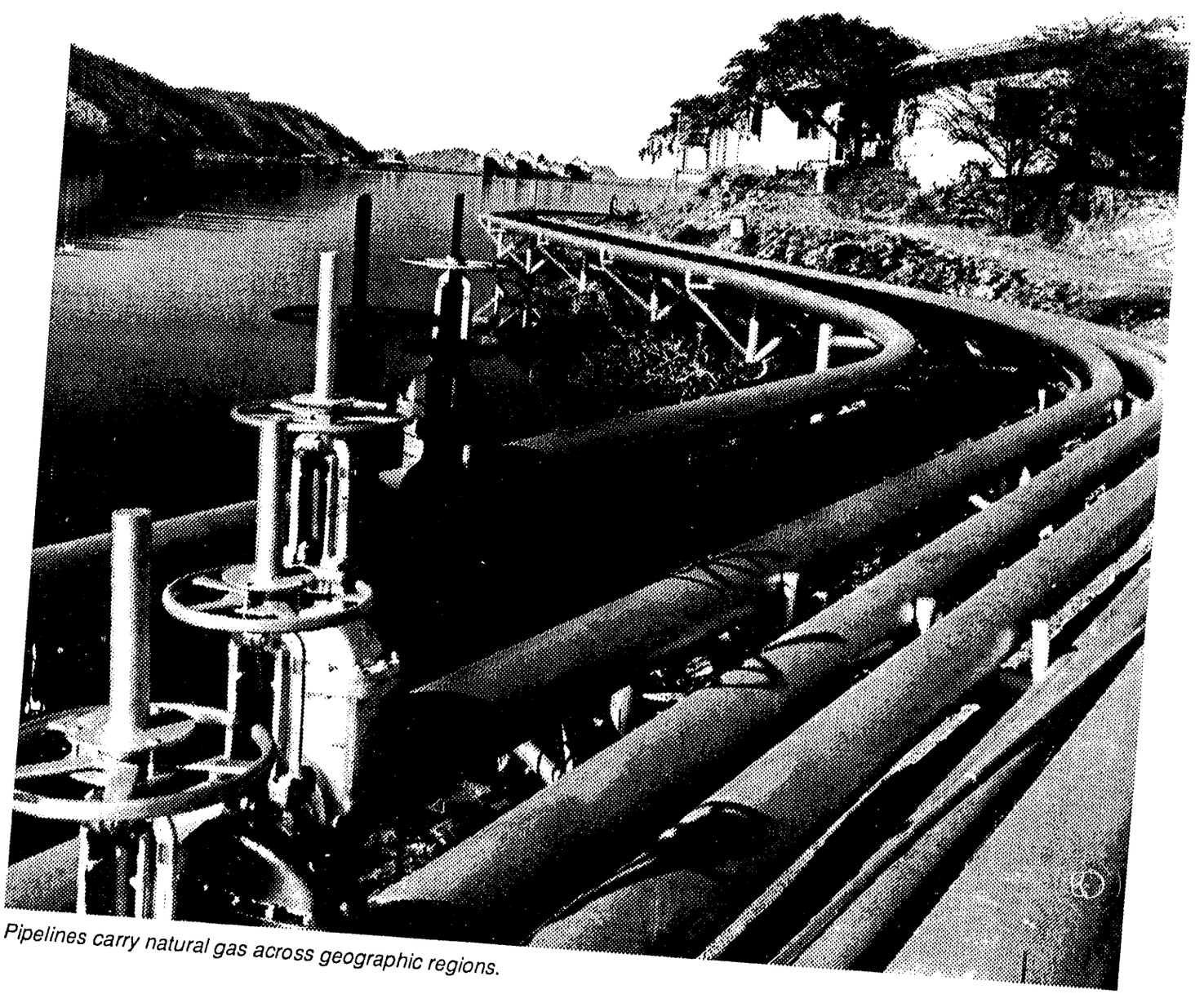


[1] Average level and width of average range are based on 3 years of monthly data: July 1990-June 1993. The seasonal pattern is based on 7 years of monthly data.

[2] The Observed Minimum for propane stocks in the last 36 month period was 12.2 million barrels, occurring in March 1993.

Source: • Data for Ranges and Seasonal Patterns: 1985-1992, Energy Information Administration (EIA), *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Monthly Data: 1992, EIA, *Petroleum Supply Annual;* 1993, EIA, *Petroleum Supply Monthly.* • Week-Ending Stocks: Estimates based on data collected on Form EIA-807, "Propane Telephone Survey."

Natural Gas



Pipelines carry natural gas across geographic regions.

Table 3. Supply and Disposition of Dry Natural Gas in the United States
(Billion Cubic Feet)

Year and Month	Supply						Disposition		
	Total Dry Gas Production	Withdrawals from Storage[a]	Supplemental Gaseous Fuels	Imports	Balancing Item[b]	Total Supply/ Disposition[c]	Additions to Storage[a]	Exports	Consumption[d]
1987 Total	16,621	1,905	101	993	-444	19,176	1,911	54	17,211
1988 Total	17,103	2,270	101	1,294	-453	20,315	2,211	74	18,030
1989 Total	17,311	2,854	107	1,382	-218	21,435	2,528	107	18,801
1990 Total	17,810	1,986	123	1,532	-149	21,302	2,499	86	18,716
1991									
January	1,616	682	11	163	-39	2,433	115	10	2,308
February	1,420	409	10	138	67	2,044	112	11	1,920
March	1,539	297	11	151	-11	1,987	129	10	1,848
April	1,467	104	10	144	69	1,793	234	9	1,550
May	1,458	58	9	141	17	1,683	331	8	1,344
June	1,389	42	8	133	-34	1,538	326	7	1,206
July	1,403	75	9	135	-25	1,597	299	8	1,291
August	1,408	82	9	127	-44	1,582	290	10	1,281
September	1,402	78	8	134	-69	1,552	304	11	1,238
October	1,513	103	10	157	-85	1,698	258	14	1,426
November	1,533	360	9	169	-207	1,864	150	15	1,699
December	1,603	461	10	181	-95	2,160	125	18	2,018
Total	17,751	2,752	113	1,773	-457	21,932	2,672	129	19,129
1992									
January	1,578	571	12	165	-5	2,321	55	16	2,249
February	1,398	433	11	175	90	2,107	48	14	2,045
March	1,468	370	11	180	18	2,048	71	23	1,955
April	1,437	141	10	176	121	1,884	159	18	1,708
May	1,475	51	9	174	70	1,779	322	19	1,438
June	1,447	35	8	162	-8	1,645	353	18	1,274
July	1,477	52	8	167	-12	1,693	351	16	1,326
August	1,442	59	9	175	-34	1,651	355	18	1,278
September	1,420	52	9	166	-23	1,624	336	18	1,269
October	1,521	81	10	176	-121	1,667	262	19	1,385
November	1,536	267	11	210	-226	1,799	93	19	1,688
December	1,574	537	12	209	-133	2,200	57	19	2,124
Total	17,775	2,649	120	2,138	-264	22,418	2,463	216	19,739
1993									
January	1,610	605	13	198	-75	2,351	50	E 18	2,283
February	1,426	581	11	183	13	2,215	30	E 15	2,169
March	1,564	384	12	199	78	2,238	80	E 18	2,139
April	1,527	111	10	E 185	71	1,905	219	11	1,675
May	1,545	25	8	E 148	5	1,731	447	E 13	1,270
June	E 1,496	43	E 9	E 193	-46	1,696	416	E 13	1,267
July	E 1,543	47	E 9	E 192	-62	1,730	405	E 15	E 1,310
1993 YTD	10,713	1,797	71	1,298	-15	13,864	1,647	105	22,916
1992 YTD	10,281	1,653	69	1,200	273	13,477	1,360	123	22,662
1991 YTD	10,292	1,668	67	1,006	44	13,075	1,545	61	21,643

[a] Monthly and annual data for 1987 through 1992 include underground storage and liquefied natural gas storage. Data for January 1993 forward include underground storage only. See Appendix A, Explanatory Note 7 of the *Natural Gas Monthly* (NGM) for discussion of computation procedures.

[b] Represents quantities lost and imbalances in data due to differences among data sources. See Appendix A, Explanatory Note 10 of the *NGM* for full discussion.

[c] Total data for 1987 through 1992 do not equal equivalent data in Table 1 of the *Natural Gas Annual* (NGA) 1992 due to the exclusion of intransit receipts and deliveries in the *NGM*.

[d] Consists of pipeline fuel use, lease and plant fuel use, and deliveries to consuming sectors as shown in Table 3 of the *NGM*.

E = Estimated data.

Notes: • Data for 1987 through 1992 are final. All other data are preliminary unless otherwise indicated. • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: • Total Dry Gas Production: EIA, *NGA* 1992, 1987 through 1992; IOGCC, MMS reporting, and EIA estimates, January 1993 through current month. See Appendix A, Explanatory Note 3 of the *NGM* for estimation procedures and revision policy. • Withdrawals from and Additions to Storage: EIA, *NGA* 1992, 1987 through 1992; for EIA-191, January 1993 through current month. • Supplemental Gaseous Fuels: EIA, *NGA* 1992, 1987 through 1992; and EIA computations, January 1993 through current month. See Appendix A, Explanatory Note 2 of the *NGM* for discussion of procedures and revision policy. • Imports and Exports: Form FPC-14, 1987 through 1992; and estimates, January 1993 through the current month. See Appendix A, Explanatory Note 4 of the *NGM* for discussion of procedures and revision policy. • Consumption and Balancing Item: EIA, *NGA* 1992, 1987 through 1992; and EIA computations, January 1993 through current month. See Appendix A, Explanatory Notes 5 and 10 of the *NGM* for discussion of computation procedures and revision policy.

Table 4. Underground Natural Gas Storage in the United States (All Operators)
(Billion Cubic Feet)

Year and Month	Natural Gas in Underground Storage at End of Period			Change in Working Gas from Same Period Previous Year		Storage Activity		
	Base Gas	Working Gas	Total [b]	Volume	Percent	Injections	Withdrawals	Net [c]
1987 Total[a]	3,792	2,756	6,548	7	0.3	1,887	1,881	6
1988 Total[a]	3,800	2,850	6,650	94	3.4	2,174	2,244	-69
1989 Total[a]	3,812	2,513	6,325	-337	-11.8	2,491	2,804	-313
1990 Total[a]	3,868	3,068	6,936	555	22.1	2,433	1,934	499
1991								
January	3,911	2,362	6,273	92	4.1	115	659	-545
February	3,908	2,063	5,972	59	2.9	112	397	-285
March	3,895	1,912	5,806	37	2.0	129	291	-162
April	3,898	2,037	5,935	91	4.7	228	104	124
May	3,931	2,273	6,204	93	4.3	319	58	261
June	3,939	2,553	6,492	68	2.7	314	42	272
July	3,942	2,771	6,713	-20	-.7	289	75	214
August	3,949	2,978	6,927	-93	-3.0	282	82	200
September	3,950	3,201	7,151	-120	-3.6	294	78	216
October	3,961	3,369	7,330	-98	-2.8	251	103	148
November	3,952	3,148	7,100	-324	-9.3	150	352	-202
December	3,954	2,824	6,778	-244	-8.0	125	448	-323
Total	--	--	--	--	--	2,608	2,689	-80
1992								
January	4,060	2,216	6,276	-146	-6.2	55	571	-515
February	4,056	1,837	5,893	-226	-10.9	48	433	-385
March	4,045	1,545	5,590	-367	-19.2	71	370	-300
April	4,037	1,573	5,610	-464	-22.8	159	141	18
May	4,043	1,848	5,891	-425	-18.7	322	51	271
June	4,049	2,153	6,202	-400	-15.7	353	35	318
July	4,063	2,460	6,523	-311	-11.2	351	52	300
August	4,061	2,761	6,822	-217	-7.3	355	59	295
September	4,060	3,044	7,104	-157	-4.9	336	52	285
October	4,064	3,223	7,287	-146	-4.3	262	81	181
November	4,060	3,054	7,113	-94	-3.0	93	267	-174
December	4,043	2,597	6,639	-227	-8.1	57	537	-479
Total	--	--	--	--	--	2,463	2,649	-186
1993								
January	4,039	2,045	6,084	-170	-7.7	50	605	-556
February	4,013	1,519	5,531	-319	-17.4	30	581	-552
March	3,992	1,237	5,228	-308	-19.9	80	384	-304
April	3,998	1,335	5,333	-238	-15.1	219	111	108
May	4,016	1,737	5,754	-111	-6.0	447	25	423
June	4,028	2,100	6,127	-53	-2.5	416	43	372
July	4,029	2,473	6,502	13	.5	405	47	358

[a] Total as of December 31.

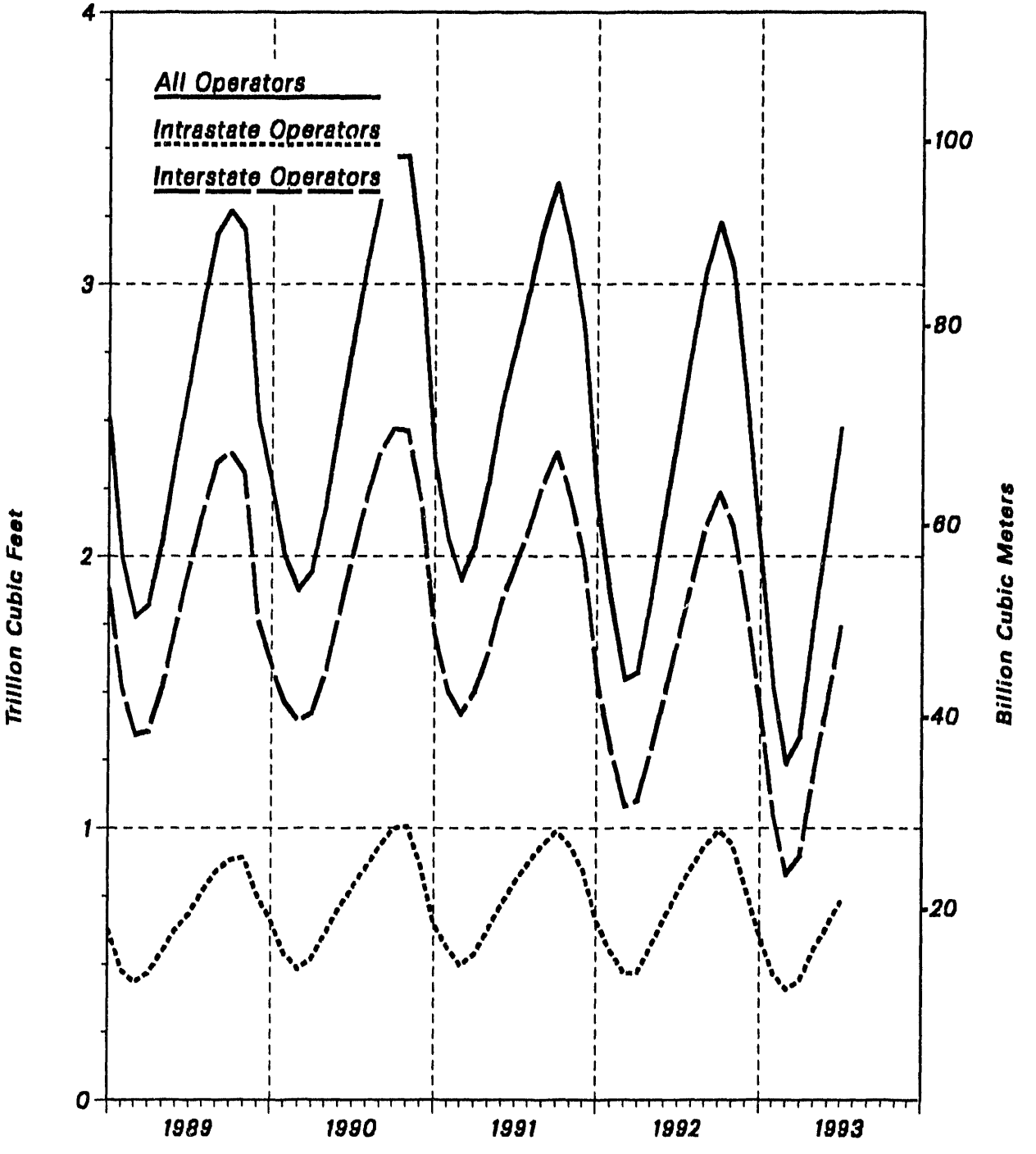
[b] Total underground storage capacity at the end of each calendar year (in billion cubic feet): 1987, 1988, and 1989 - 8,124; 1990 - 8,125; 1991 - 7,993; and 1992 - 7,932.

[c] Positive numbers indicate the volume of injections in excess of withdrawals. Negative numbers indicate the volume of withdrawals in excess of injections.

Notes: • Data for 1987 through 1992 are final. All other data are preliminary unless otherwise noted. See Appendix A, Explanatory Note 7 of the *Natural Gas Monthly* for discussion of revision policy. • Gas in storage at the end of a reporting period may not equal the quantity derived by adding or subtracting net injections or withdrawals during the period to the quantity of gas in storage at the beginning of the period. This is due to changes in the quantities of native gas included in base gas and/or losses in base gas due to migration from storage reservoirs. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Sources: Form EIA-191, Form FERC-8, and Form EIA-176.

Figure 15. Underground Natural Gas Storage in the United States, 1989 - 1993



Source: Energy Information Administration (EIA), Form EIA-191/FERC-8, "Underground Natural Gas Storage Report," and Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," *Natural Gas Annual*, and *Natural Gas Monthly*.

Table 5. Natural Gas Consumption by Petroleum Administration for Defense District (PADD)
(Billion Cubic Feet)

Year and Month	New England				Central Atlantic			
	Residential	Commercial	Industrial	Electric Utilities	Residential	Commercial	Industrial	Electric Utilities
1991								
January	27	14	9	2	145	76	52	15
February	26	14	9	0	131	69	45	12
March	23	13	10	2	117	61	46	17
April	17	9	11	4	80	46	45	23
May	10	6	12	4	44	28	40	33
June	6	4	11	5	26	22	37	35
July	5	6	8	8	23	22	36	44
August	4	4	9	9	21	20	37	44
September	5	4	9	5	24	21	38	27
October	8	5	11	5	43	29	44	22
November	14	8	11	2	78	44	46	19
December	21	12	11	0	118	66	48	16
Total	166	97	122	47	850	504	514	306
1992								
January	50	15	11	0	150	77	55	11
February	30	16	11	0	148	77	56	15
March	27	15	11	1	130	70	57	22
April	32	12	18	4	98	55	53	24
May	19	8	11	4	55	32	48	24
June	11	5	15	6	31	22	47	30
July	8	5	10	8	25	21	47	42
August	8	5	14	5	23	21	47	31
September	5	4	10	5	25	22	48	28
October	9	6	10	4	50	32	52	16
November	16	9	11	4	82	46	57	14
December	24	13	11	0	128	69	59	13
Total	192	109	131	45	944	546	630	271
1993								
January	30	15	12	0	147	75	61	12
February	31	17	12	0	155	80	60	13
March	29	16	12	3	151	77	63	16
April	20	11	11	4	93	51	56	16
May	11	6	11	3	45	28	50	14
June	7	5	11	3	31	23	49	26
July	8	6	14	5	23	22	46	42

See footnotes at end of table.

Table 5. Natural Gas Consumption by Petroleum Administration for Defense District (PADD) (Continued)
(Billion Cubic Feet)

Year and Month	Lower Atlantic				PAD District I			
	Residential	Commercial	Industrial	Electric Utilities	Residential	Commercial	Industrial	Electric Utilities
1991								
January	46	28	47	15	218	118	108	32
February	40	26	42	14	197	109	96	26
March	33	23	45	16	173	97	101	35
April	18	16	43	17	115	71	99	44
May	10	12	43	20	64	46	95	57
June	8	11	41	21	40	37	89	61
July	7	10	41	26	35	38	85	78
August	7	11	43	26	32	35	89	79
September	7	11	43	21	36	36	90	53
October	12	13	45	19	63	47	100	46
November	28	19	44	15	120	71	101	36
December	39	25	44	14	178	103	103	30
Total	254	206	522	225	1,270	807	1,158	578
1992								
January	50	30	46	14	250	122	112	25
February	44	28	46	15	222	121	113	30
March	34	24	51	19	191	109	119	42
April	25	19	47	20	155	86	118	48
May	14	14	46	21	88	54	105	49
June	9	11	45	23	51	38	107	59
July	7	11	47	26	40	37	104	76
August	7	11	45	22	38	37	106	58
September	7	11	45	22	37	37	103	55
October	14	14	49	13	73	52	111	33
November	28	19	47	13	126	74	115	31
December	44	28	46	11	196	110	116	24
Total	285	218	558	220	1,421	873	1,319	536
1993								
January	48	29	51	13	225	119	124	25
February	50	30	50	14	236	127	122	27
March	46	29	53	14	226	122	128	33
April	28	20	49	14	141	82	116	34
May	12	13	46	17	68	47	107	34
June	8	11	49	21	46	39	109	50
July	7	10	52	25	38	38	112	72

See footnotes at end of table.

Table 5. Natural Gas Consumption by Petroleum Administration for Defense District (PADD) (Continued)
(Billion Cubic Feet)

Year and Month	PAD District II				PAD District III			
	Residential	Commercial	Industrial	Electric Utilities	Residential	Commercial	Industrial	Electric Utilities
1991								
January	385	189	203	16	84	45	262	87
February	292	152	178	13	64	36	230	68
March	245	125	173	16	48	30	241	95
April	147	76	152	20	29	24	244	112
May	87	49	142	27	18	18	252	132
June	49	32	134	29	15	17	241	140
July	43	35	136	39	14	18	265	168
August	40	35	140	36	13	16	269	159
September	52	37	142	26	14	14	257	118
October	102	57	156	22	18	17	273	127
November	224	110	172	19	41	28	268	95
December	295	147	185	16	60	36	280	81
Total	1,964	1,047	1,913	279	419	300	3,081	1,382
1992								
January	318	164	194	16	76	40	299	81
February	289	146	186	16	68	35	257	77
March	251	122	185	20	43	27	295	96
April	173	96	166	20	33	24	286	109
May	96	53	152	20	20	19	279	116
June	57	34	137	20	16	16	263	139
July	44	34	139	25	15	19	278	168
August	43	34	135	22	14	18	267	138
September	53	35	140	21	14	16	272	130
October	111	61	160	13	16	17	271	103
November	207	107	182	13	35	26	264	89
December	316	157	194	15	67	37	279	84
Total	2,007	1,044	1,942	218	418	291	3,398	1,330
1993								
January	368	179	201	14	77	43	269	77
February	334	166	198	14	68	39	258	73
March	310	155	198	15	59	35	281	95
April	196	100	169	14	39	29	269	87
May	92	49	152	14	18	20	234	94
June	62	35	146	20	16	21	252	146
July	42	31	133	34	14	22	282	188

See footnotes at end of table.

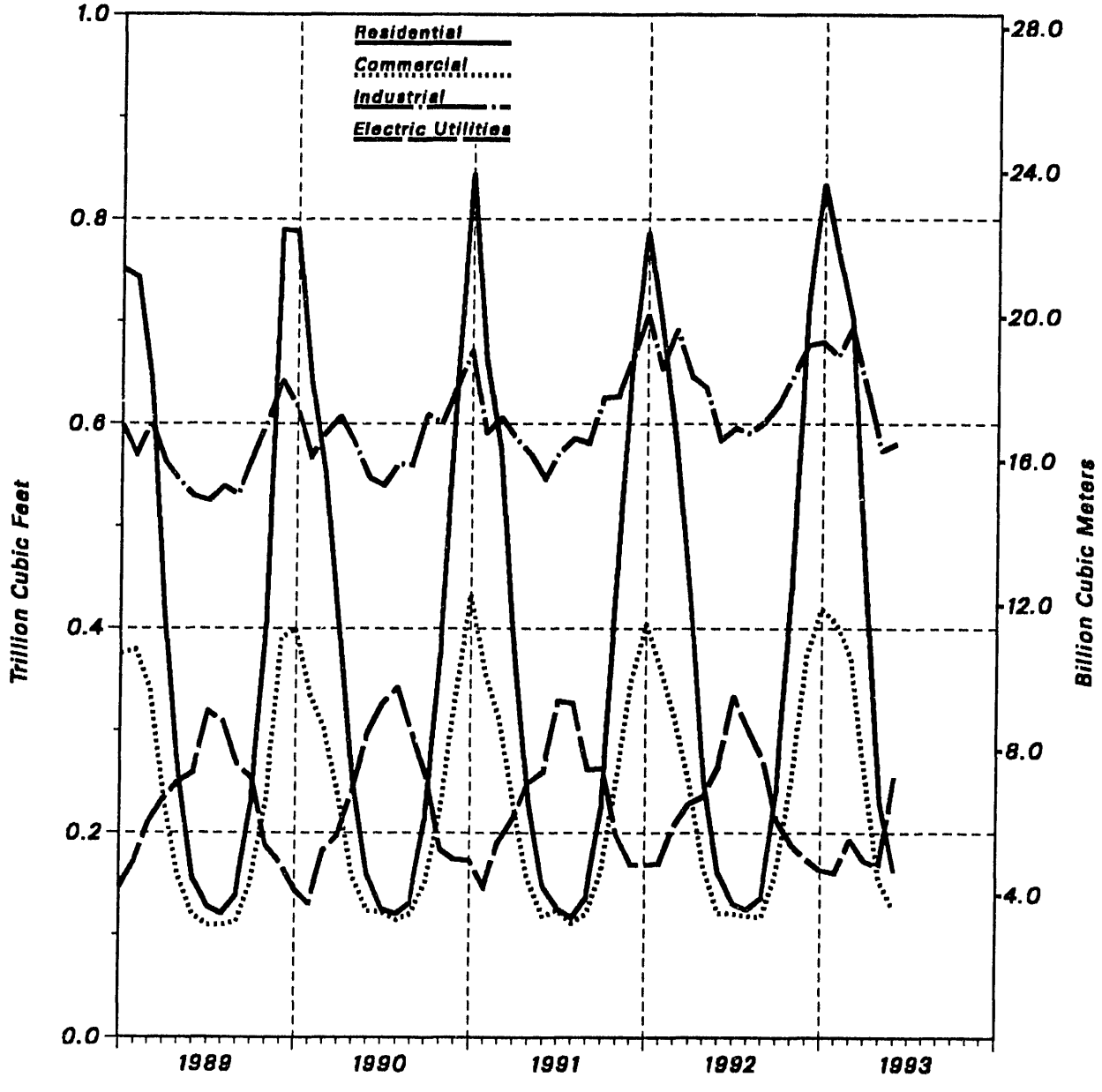
Table 5. Natural Gas Consumption by Petroleum Administration for Defense District (PADD) (Continued)
(Billion Cubic Feet)

Year and Month	PAD District IV				PAD District V			
	Residential	Commercial	Industrial	Electric Utilities	Residential	Commercial	Industrial	Electric Utilities
1991								
January	49	29	23	1	108	51	76	36
February	38	23	20	1	72	39	66	38
March	30	18	21	1	77	40	71	46
April	22	13	19	1	60	41	73	38
May	16	10	18	1	44	31	65	32
June	9	6	17	1	35	28	65	29
July	6	4	17	2	29	29	69	44
August	6	4	17	2	26	23	71	53
September	9	5	19	1	27	29	74	64
October	11	7	21	2	31	34	75	68
November	25	15	23	2	50	31	64	47
December	39	22	25	2	86	43	71	42
Total	257	157	240	15	646	419	839	536
1992								
January	41	24	23	1	101	56	74	46
February	37	22	22	1	80	39	66	46
March	28	16	21	1	62	37	60	48
April	21	13	20	1	48	29	47	51
May	12	7	19	1	35	35	68	50
June	9	6	19	1	29	29	58	46
July	7	5	19	1	26	28	56	62
August	6	4	19	2	25	28	62	82
September	7	5	24	1	26	26	63	66
October	11	7	22	1	31	27	57	62
November	23	15	24	1	48	31	63	56
December	41	25	26	1	98	46	63	52
Total	241	148	258	14	611	411	740	668
1993								
January	48	28	29	1	115	49	58	47
February	41	24	27	1	88	50	61	48
March	37	22	25	1	70	39	62	43
April	25	14	24	1	49	32	58	38
May	15	9	23	1	38	29	59	24
June	9	6	21	1	31	24	55	37
July	7	5	22	2	28	26	64	38

Notes: • Data for 1991 through 1992 are final. All other data are preliminary unless otherwise indicated. • Geographic coverage is the 50 States and the District of Columbia. • Totals may not equal sum of components due to independent rounding.

Sources: All data except electric utility: EIA, *Natural Gas Annual* 1992, 1991 through 1992; and Form EIA-857 and computations January 1993 through current month. See Appendix A, Explanatory Note 5 of the *Natural Gas Monthly* for computation procedures and revision policy. Electric utility data: Form EIA-759, "Monthly Power Plant Report: (formerly Form FPC-4).

Figure 16. Natural Gas Deliveries to Consumers in the United States, 1989 - 1993



Sources: Energy Information Administration (EIA), Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," Form EIA-759, "Monthly Power Plant Report," *Natural Gas Annual* and *Natural Gas Monthly.*

Table 6. Selected National Average Natural Gas Prices in the United States
(Dollars per Thousand Cubic Feet)

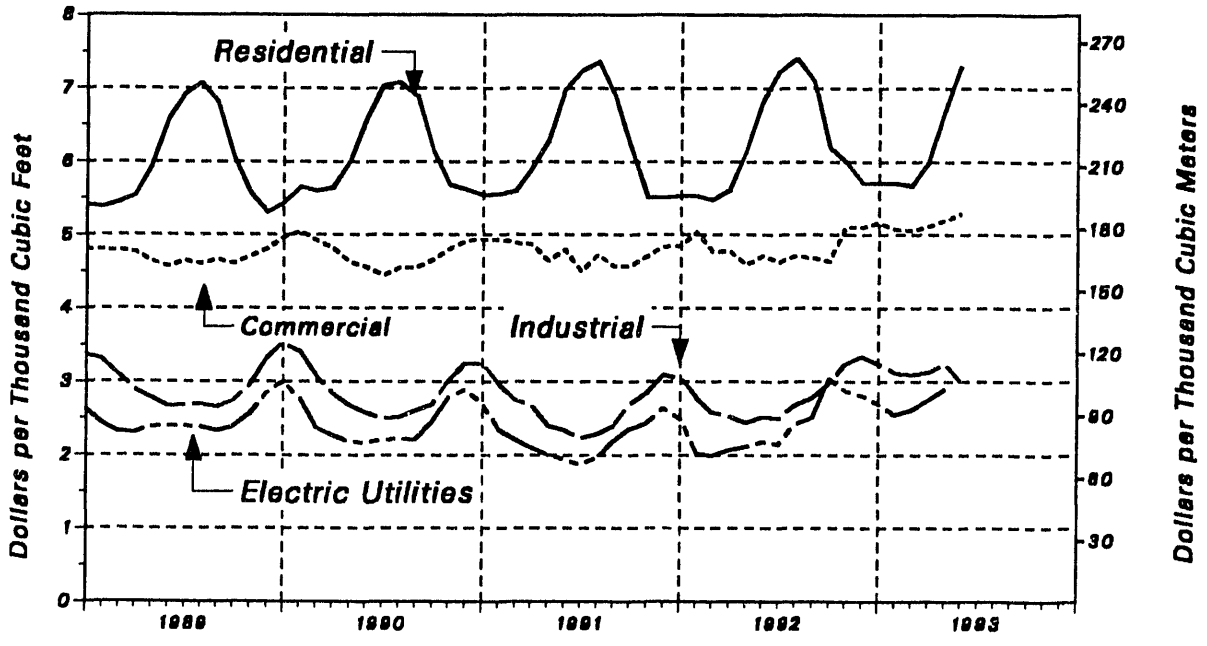
Year and Month	Wellhead Price[a]	Major Interstate Pipeline Companies		City Gate	Delivered to Consumers			
		Imports[b]	Purchased from Producers[b]		Residential	Commercial	Industrial	Electric Utilities[c]
1987 Annual Average	1.67	2.17	2.10	2.87	5.54	4.77	2.94	2.32
1988 Annual Average	1.69	2.00	2.13	2.92	5.47	4.63	2.95	2.33
1989 Annual Average	1.69	2.04	2.18	3.01	5.64	4.74	2.96	2.43
1990 Annual Average	1.71	2.03	2.19	3.03	5.80	4.83	2.93	2.39
1991								
January	1.96	2.20	2.19	3.08	5.54	4.94	3.25	2.70
February	1.62	2.10	1.93	2.94	5.56	4.94	2.97	2.35
March	1.49	1.92	2.02	2.78	5.60	4.89	2.75	2.21
April	1.50	2.03	1.87	2.74	5.90	4.87	2.68	2.10
May	1.48	1.99	1.96	2.76	6.28	4.65	2.40	2.01
June	1.43	2.03	1.75	2.86	6.98	4.80	2.34	1.94
July	1.34	2.11	1.79	2.74	7.23	4.50	2.23	1.88
August	1.43	1.71	1.71	2.78	7.36	4.73	2.29	1.96
September	1.59	1.84	1.76	2.91	6.92	4.57	2.40	2.19
October	1.82	2.00	1.94	2.92	6.20	4.58	2.69	2.35
November	1.89	2.20	2.02	2.92	5.51	4.71	2.84	2.43
December	2.00	2.09	2.11	3.05	5.51	4.84	3.09	2.64
Annual Average	1.64	2.02	1.92	2.90	5.82	4.81	2.69	2.18
1992								
January	1.73	2.20	2.10	2.90	5.53	4.85	3.05	2.49
February	1.31	1.98	1.70	2.71	5.53	5.04	2.79	2.03
March	1.40	1.45	1.90	2.62	5.48	4.77	2.58	1.99
April	1.47	2.01	1.73	2.75	5.61	4.78	2.53	2.07
May	1.57	1.79	1.99	2.90	6.14	4.59	2.44	2.11
June	1.68	2.03	2.16	3.01	6.82	4.72	2.52	2.18
July	1.61	1.89	1.36	3.01	7.23	4.63	2.50	2.15
August	1.91	1.82	2.14	3.18	7.40	4.72	2.68	2.42
September	1.99	2.05	2.13	3.24	7.11	4.69	2.78	2.51
October	2.46	2.13	2.69	3.49	6.20	4.64	2.98	3.04
November	2.20	2.32	2.37	3.33	5.99	5.11	3.24	2.87
December	2.14	1.92	2.40	3.17	5.71	5.11	3.34	2.81
Annual Average	1.80	1.97	2.10	3.01	5.86	4.87	2.81	2.37
1993								
January	2.05	2.02	2.17	3.10	5.71	5.17	3.25	2.70
February	1.79	1.91	1.94	2.94	5.71	5.08	3.12	2.55
March	1.97	1.78	2.20	3.06	5.67	5.06	3.09	2.61
April	2.11	2.15	2.34	3.24	5.99	5.12	3.13	2.75
May	2.40	2.13	2.81	3.57	6.70	5.20	3.24	2.90
June	2.12	1.95	2.03	3.37	7.29	5.29	3.00	NA
1993 YTD	2.07	1.99	2.25	3.15	5.89	5.12	3.14	2.14
1992 YTD	1.53	1.91	1.93	2.80	5.66	4.83	2.67	2.13
1991 YTD	1.58	2.05	1.95	2.89	5.74	4.88	2.77	2.24

[a] See Appendix A, Explanatory Note 8 of the *Natural Gas Monthly* (NGM) for discussion of wellhead price.
[b] See Appendix A, Explanatory Note 9 of the *NGM* for discussion of major interstate pipeline company data.
[c] Includes all stream electric utility generating plants with a combined capacity of 50 megawatts or greater.
NA = Not Available.

Notes: • Data for 1987 through 1992 are final. All other data are preliminary unless otherwise indicated. • Geographic coverage is the 50 States and the District of Columbia. • Prices for gas delivered to industrial consumers for 1987 and 1988 imputed averages for volumes of gas delivered for the account of others. From 1988 on, prices reflect on-system sales prices only. The change in the series in 1988 affects the commercial, and industrial sector prices.

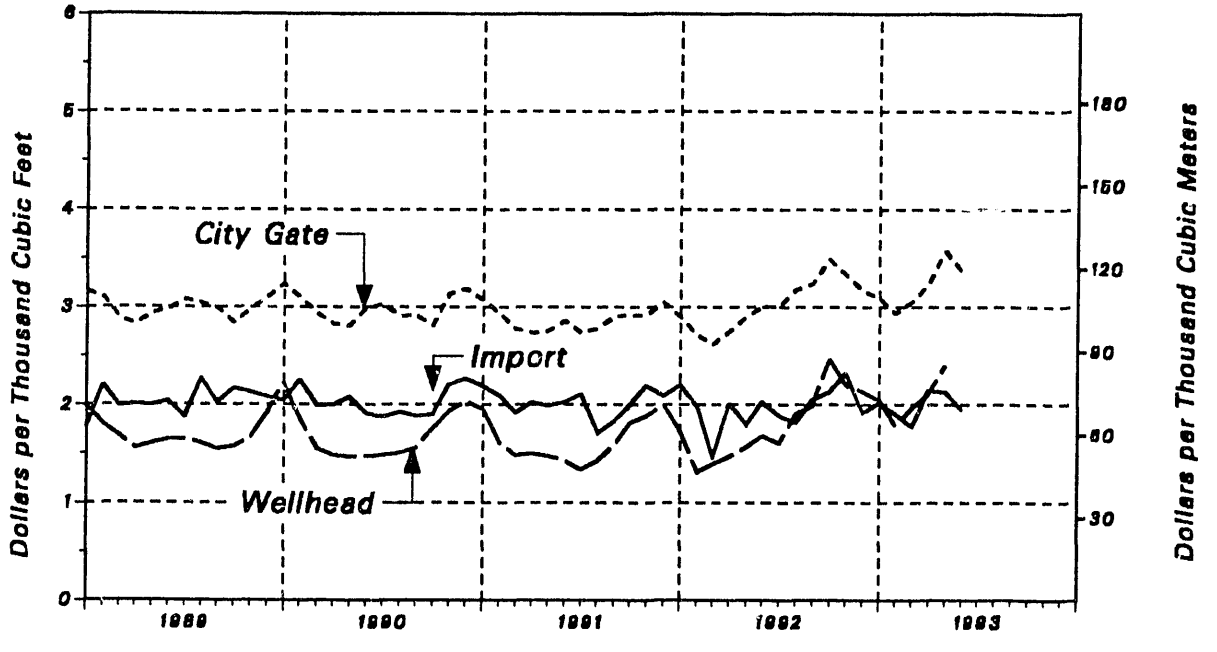
Sources: • Average wellhead price: EIA, *Natural Gas Annual* 1992, 1987 through current month. See Appendix A, Explanatory Note 8 of the *NGM* for estimation procedures and revision policy. • Imports and Interstate Pipeline Company Purchases: Form FERC-11. • Average City Gate, Residential, Commercial and Industrial average prices for 1987 through current month from Form EIA-857. See Appendix A, Explanatory 5 of the *NGM* for discussion of revision policy. • Electric Utilities averages from Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants."

Figure 17. Average Price of Natural Gas Delivered to Consumers in the United States, 1989 - 1993



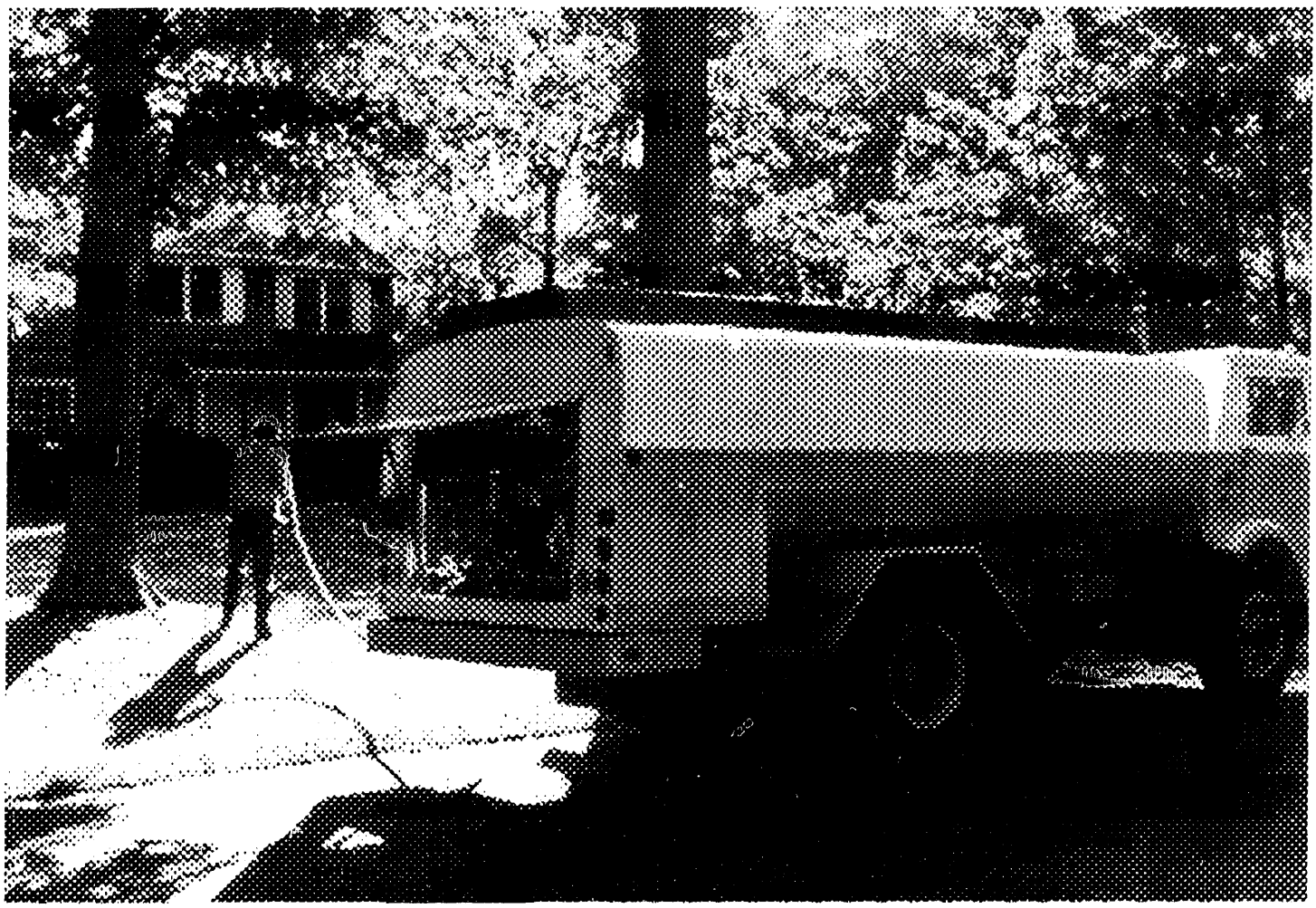
Sources: Energy Information Administration (EIA), Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," Form FERC-423, "Monthly Report of Cost and Quality of Fuels for Electric Plants," *Natural Gas Annual.*

Figure 18. Average Price of Natural Gas in the United States, 1989 - 1993



Sources: Energy Information Administration (EIA), Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," Form FERC-11, "Natural Gas Pipeline Company Monthly Statement," *Natural Gas Annual.*

Prices



Distillate fuel oil and propane are two sources of residential heating in the United States.

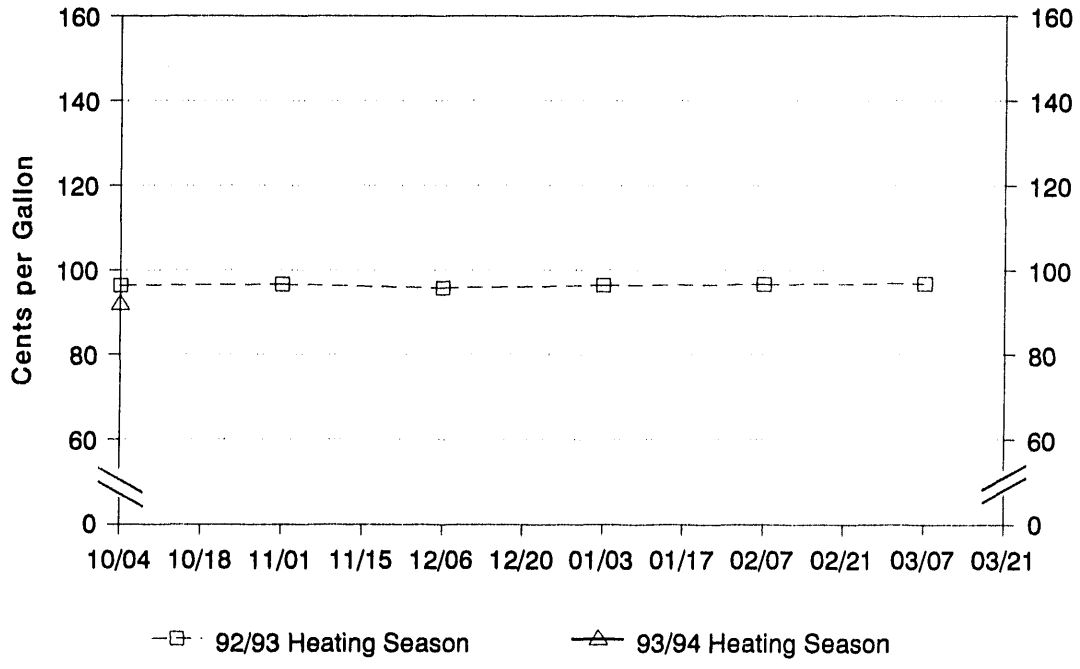
Table 7. Residential Heating Oil Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season					
	October	November	December	January	February	March
Average	97.2	98.3	97.3	97.5	97.6	98.1
East Coast (PADD I)	98.6	99.8	99.1	99.3	99.5	99.9
New England (PADD IX)	96.3	96.6	95.7	96.3	96.6	96.8
Central Atlantic (PADD IY)	100.3	101.9	101.3	101.5	101.7	102.2
Lower Atlantic (PADD IZ)	93.1	94.6	93.8	93.4	93.3	93.4
Midwest (PADD II)	89.8	90.0	87.7	87.1	87.0	88.0

Region/State	1993/94 Heating Season											
	10/04[P]	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21
Average	93.7											
East Coast (PADD I)	95.2											
New England (PADD IX)	91.9											
Connecticut	95.3											
Maine	83.2											
Massachusetts	92.5											
New Hampshire	86.6											
Rhode Island	95.3											
Vermont	91.3											
Central Atlantic (PADD IY)	97.4											
Delaware	NA											
District of Columbia	105.4											
Maryland	97.9											
New Jersey	97.8											
New York	103.4											
Pennsylvania	86.4											
Lower Atlantic (PADD IZ)	89.0											
North Carolina	89.5											
Virginia	88.3											
Midwest (PADD II)	85.8											
Indiana	85.4											
Iowa	78.9											
Michigan	86.6											
Minnesota	88.9											
Ohio	84.2											
Wisconsin	85.4											

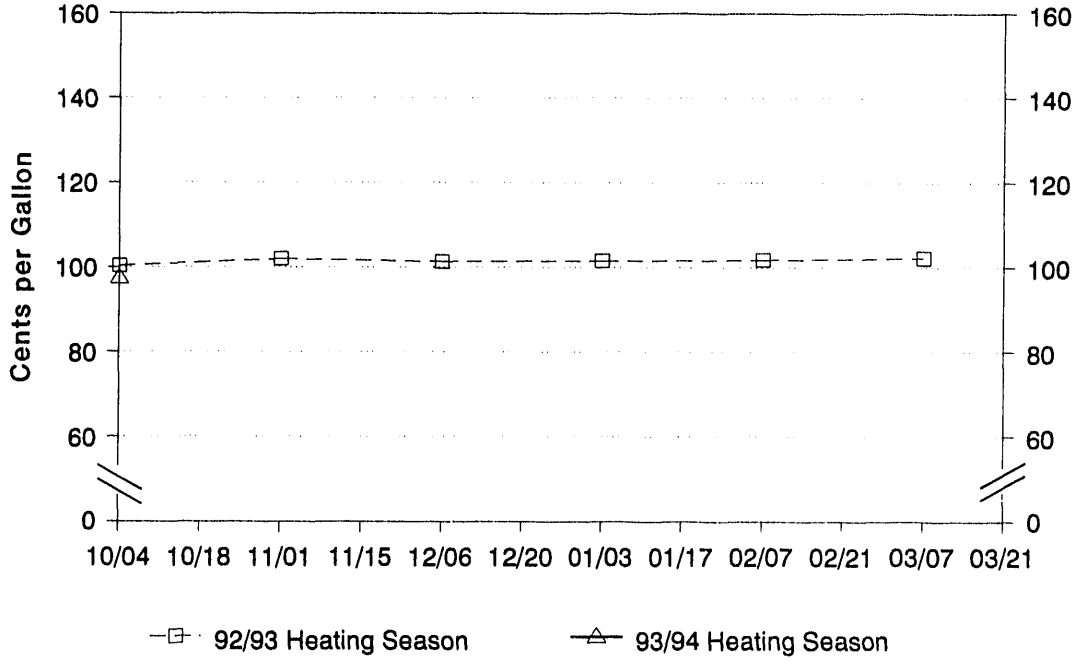
NA=Not available.
P=Preliminary data.
Source: Based on data collected by State Energy Offices.

Figure 19. Residential Heating Oil Prices, New England



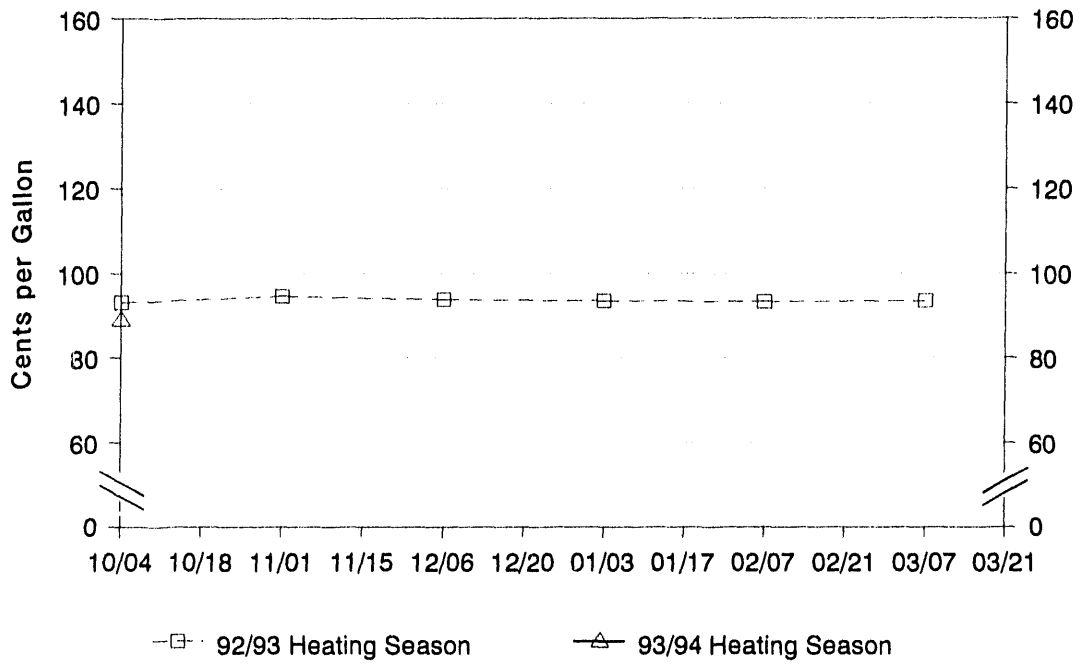
Source: Based on data collected by State Energy Offices.

Figure 20. Residential Heating Oil Prices, Central Atlantic



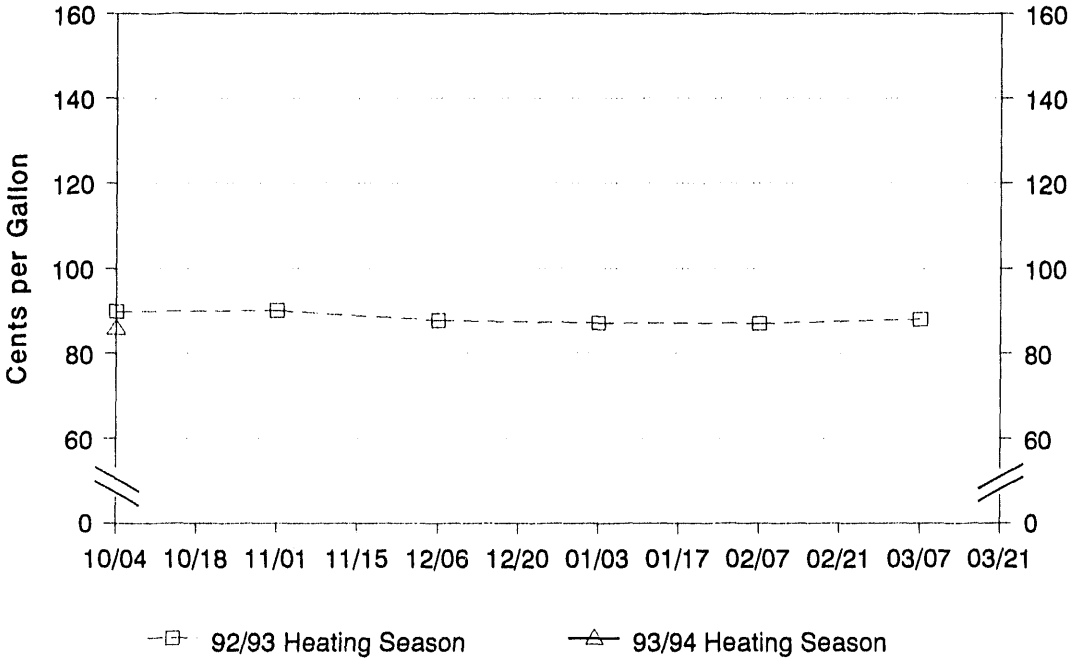
Source: Based on data collected by State Energy Offices.

Figure 21. Residential Heating Oil Prices, Lower Atlantic



Source: Based on data collected by State Energy Offices.

Figure 22. Residential Heating Oil Prices, Midwest



Source: Based on data collected by State Energy Offices.

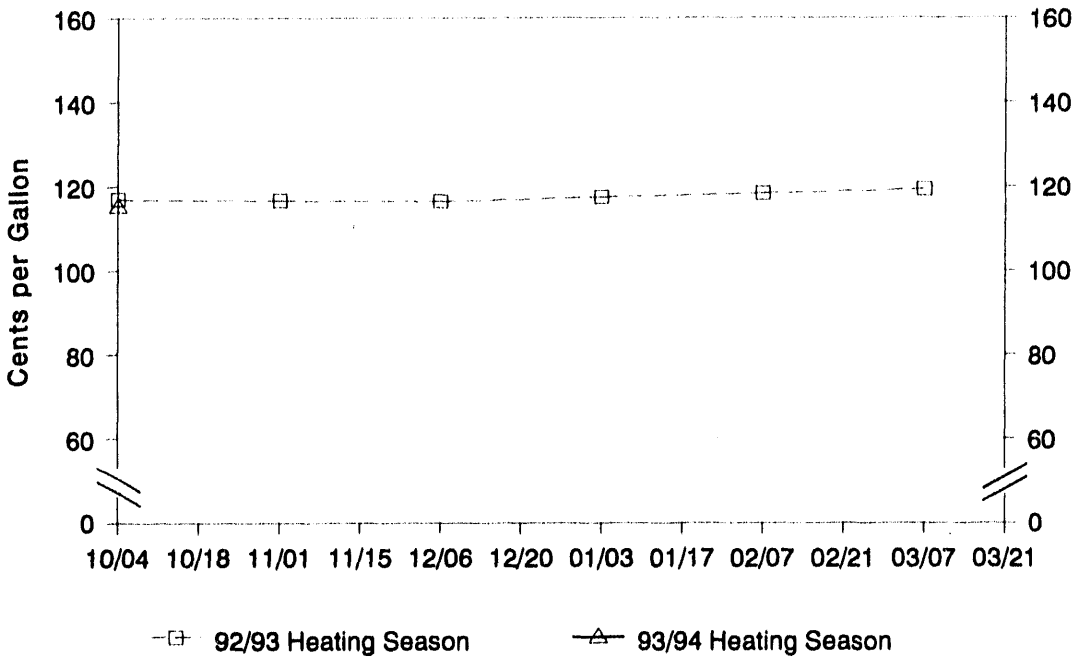
Table 8. Residential Propane Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season					
	October	November	December	January	February	March
Average	85.8	87.2	89.5	97.9	94.6	95.6
East Coast (PADD I)	115.1	115.4	115.7	116.7	116.9	118.1
New England (PADD IX)	116.9	116.6	116.4	117.4	118.3	119.3
Central Atlantic (PADD IY)	125.2	125.6	126.4	127.3	127.0	129.8
Lower Atlantic (PADD IZ)	100.2	100.5	100.8	102.2	102.0	101.3
Midwest (PADD II)	70.2	72.1	75.3	87.7	82.3	83.3

Region/State	1993/94 Heating Season											
	10/04[P]	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21
Average	87.1											
East Coast (PADD I)	111.2											
New England (PADD IX)	115.2											
Connecticut	114.0											
Maine	122.6											
Massachusetts	114.8											
New Hampshire	109.4											
Rhode Island	132.5											
Vermont	114.7											
Central Atlantic (PADD IY)	122.9											
Delaware	NA											
Maryland	118.7											
New Jersey	118.6											
New York	136.6											
Pennsylvania	113.1											
Lower Atlantic (PADD IZ)	93.9											
North Carolina	91.4											
Virginia	103.9											
Midwest (PADD II)	74.2											
Indiana	81.9											
Iowa	59.7											
Kansas	61.4											
Michigan	84.2											
Minnesota	75.5											
Missouri	70.5											
North Dakota	61.4											
Ohio	85.0											
South Dakota	61.2											
Wisconsin	77.3											

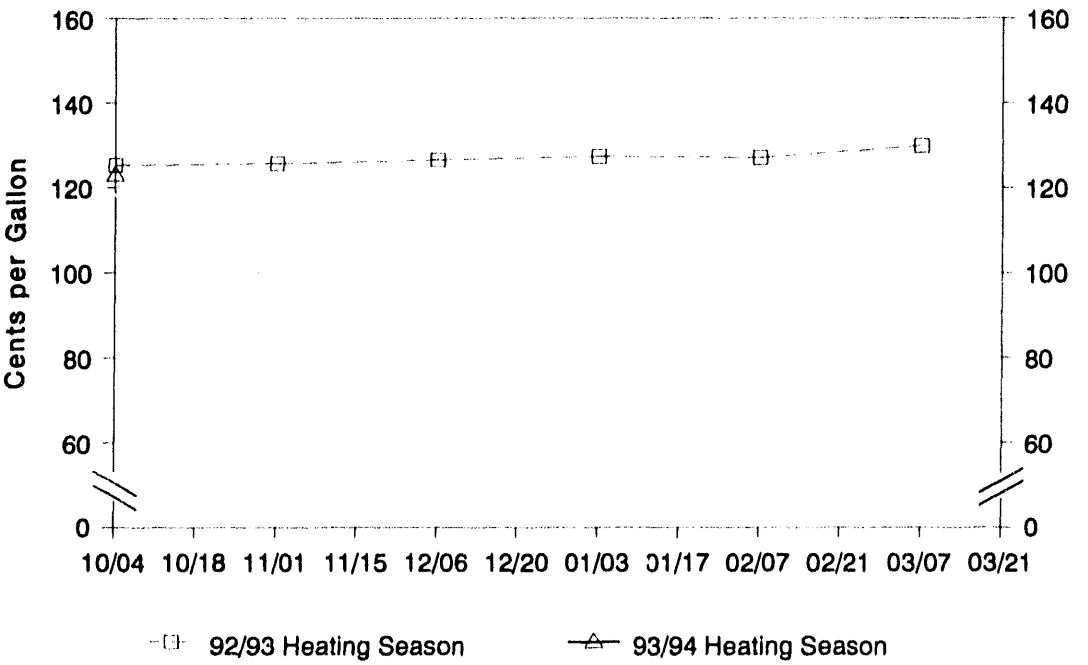
NA=Not available.
P=Preliminary data.
Source: Based on data collected by State Energy Offices.

Figure 23. Residential Propane Prices, New England



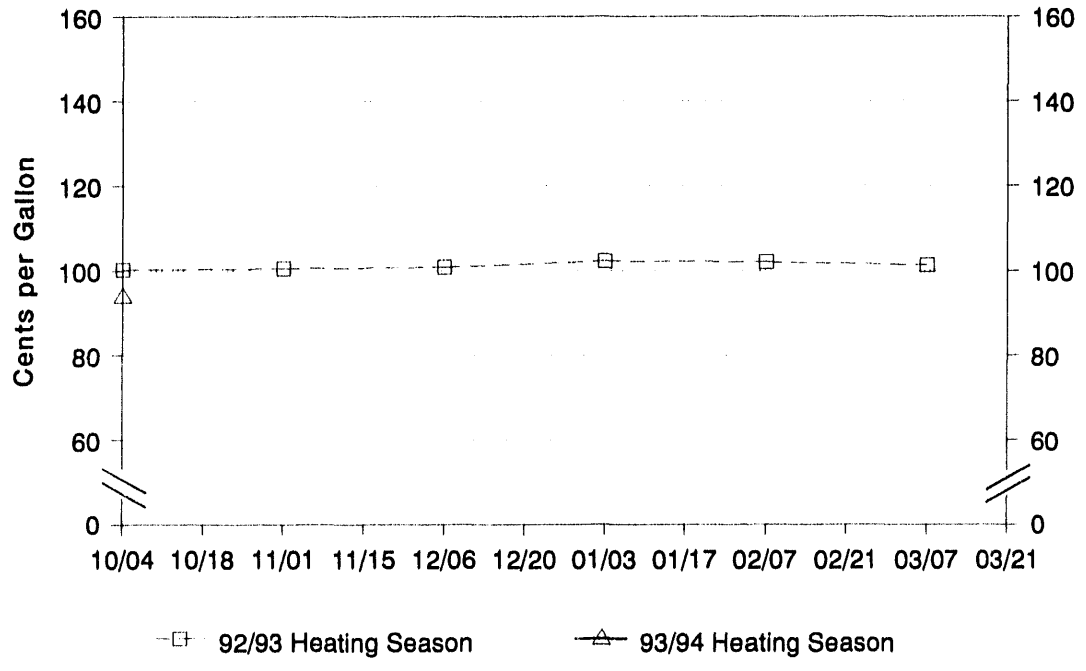
Source: Based on data collected by State Energy Offices.

Figure 24. Residential Propane Prices, Central Atlantic



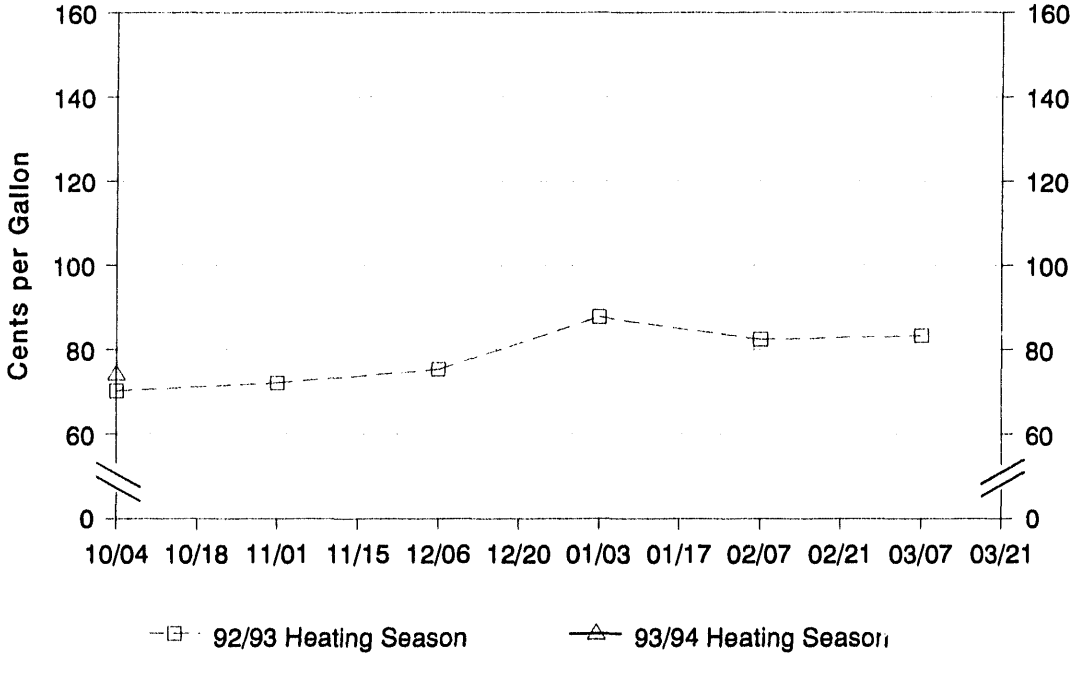
Source: Based on data collected by State Energy Offices.

Figure 25. Residential Propane Prices, Lower Atlantic



Source: Based on data collected by State Energy Offices.

Figure 26. Residential Propane Prices, Midwest



Source: Based on data collected by State Energy Offices.

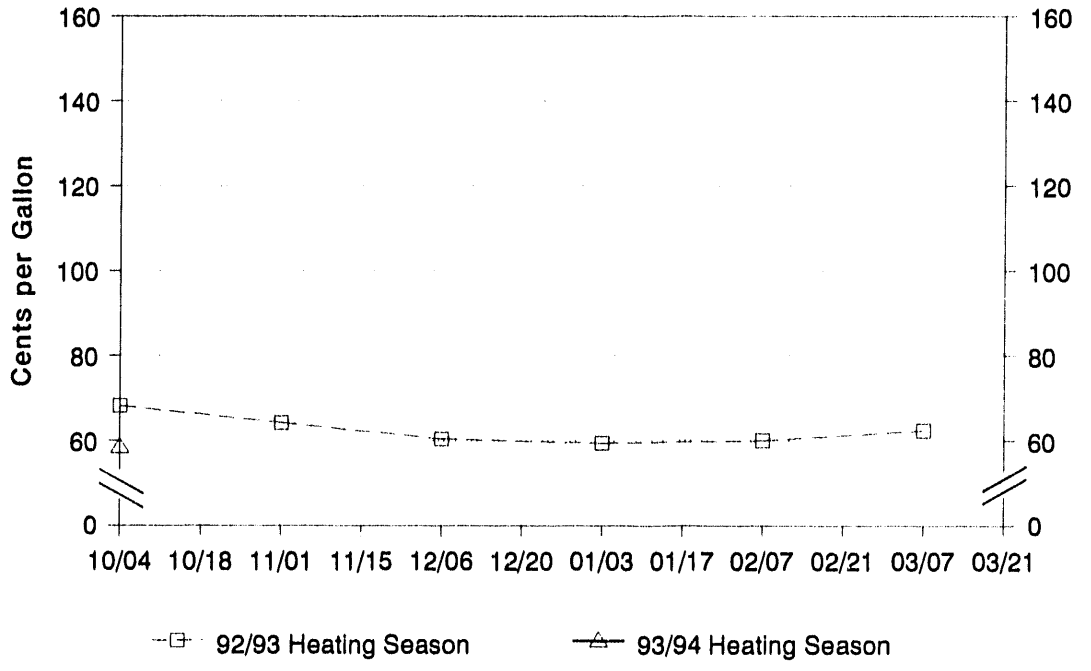
Table 9. Wholesale Heating Oil Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season					
	October	November	December	January	February	March
Average	66.7	61.6	57.3	56.3	58.3	61.0
East Coast (PADD I)	66.8	61.9	58.1	56.9	58.7	61.1
New England (PADD IX)	68.2	64.2	60.4	59.4	60.0	62.3
Central Atlantic (PADD IY)	66.2	60.9	57.1	55.8	58.3	60.7
Lower Atlantic (PADD IZ)	65.9	60.0	55.8	54.8	57.1	59.4
Midwest (PADD II)	66.6	60.7	54.8	54.4	57.3	60.4

Region/State	1993/94 Heating Season											
	10/04[P]	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21
Average	58.8											
East Coast (PADD I)	58.1											
New England (PADD IX)	58.5											
Connecticut	58.9											
Maine	59.3											
Massachusetts	58.4											
New Hampshire	57.8											
Rhode Island	58.3											
Central Atlantic (PADD IY)	58.1											
Delaware	57.0											
District of Columbia	56.9											
Maryland	56.9											
New Jersey	57.6											
New York	58.7											
Pennsylvania	58.8											
Lower Atlantic (PADD IZ)	57.1											
North Carolina	57.6											
Virginia	56.7											
Midwest (PADD II)	61.1											
Illinois	61.1											
Indiana	58.9											
Iowa	64.1											
Kansas	64.7											
Michigan	57.2											
Minnesota	63.4											
Missouri	61.9											
North Dakota	65.8											
Ohio	60.9											
South Dakota	67.7											
Wisconsin	61.5											

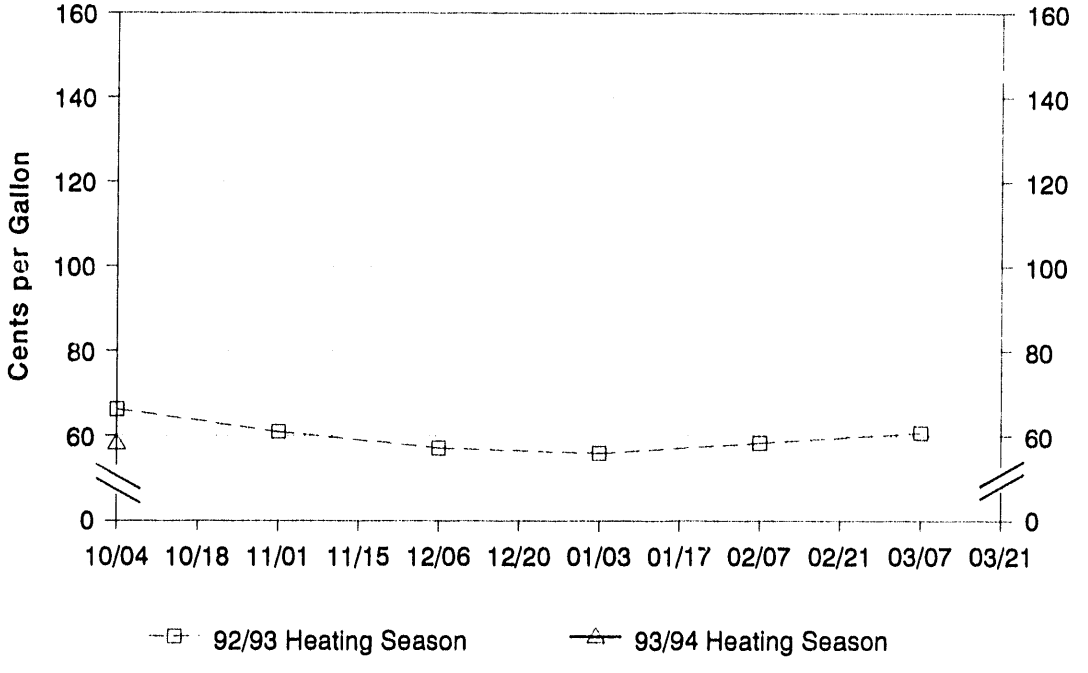
P=Preliminary data.
Source: Based on terminal quotes collected by the Computer Petroleum Corporation, Inc.

Figure 27. Wholesale Heating Oil Prices, New England



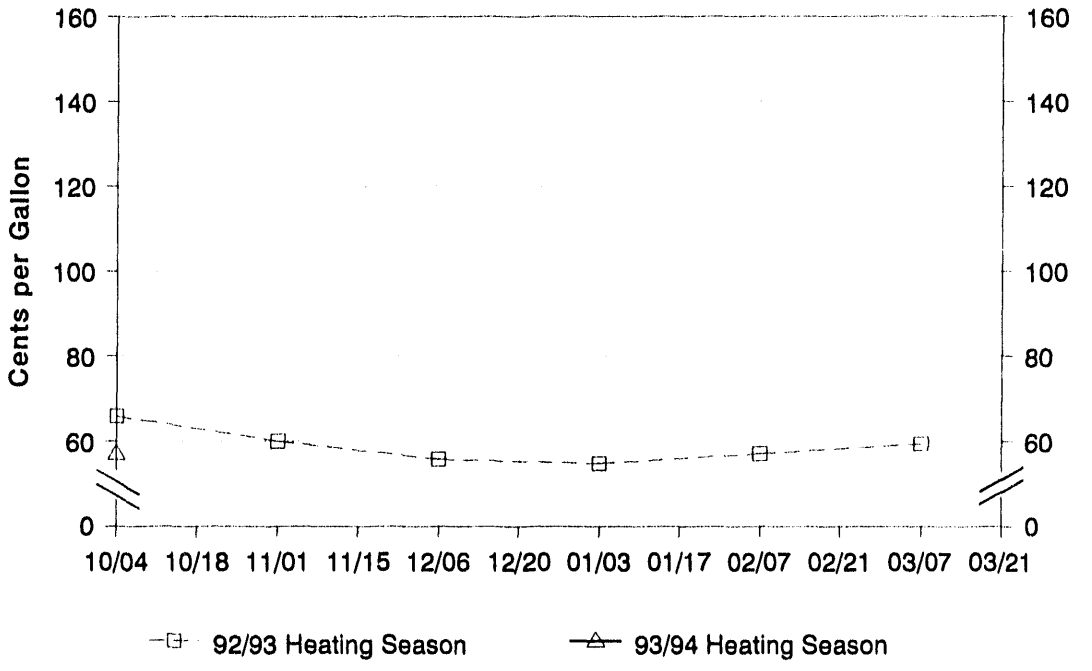
Source: Based on terminal quotes collected by the Computer Petroleum Corporation, Inc.

Figure 28. Wholesale Heating Oil Prices, Central Atlantic



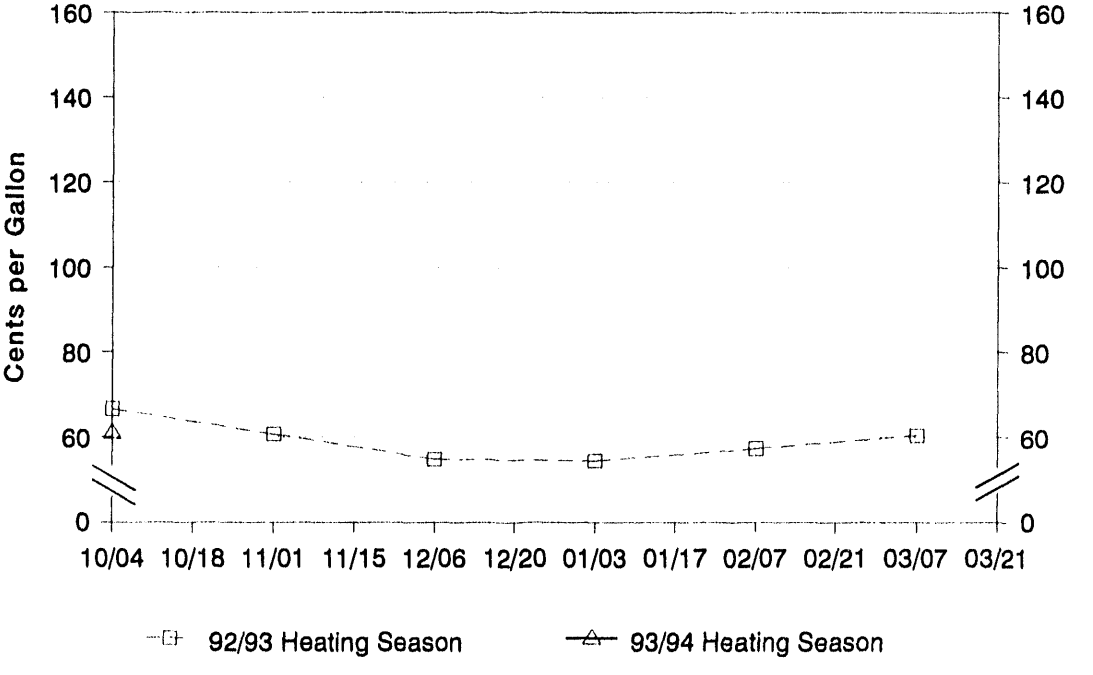
Source: Based on terminal quotes collected by the Computer Petroleum Corporation, Inc.

Figure 29. Wholesale Heating Oil Prices, Lower Atlantic



Source: Based on terminal quotes collected by the Computer Petroleum Corporation, Inc.

Figure 30. Wholesale Heating Oil Prices, Midwest



Source: Based on terminal quotes collected by the Computer Petroleum Corporation, Inc.

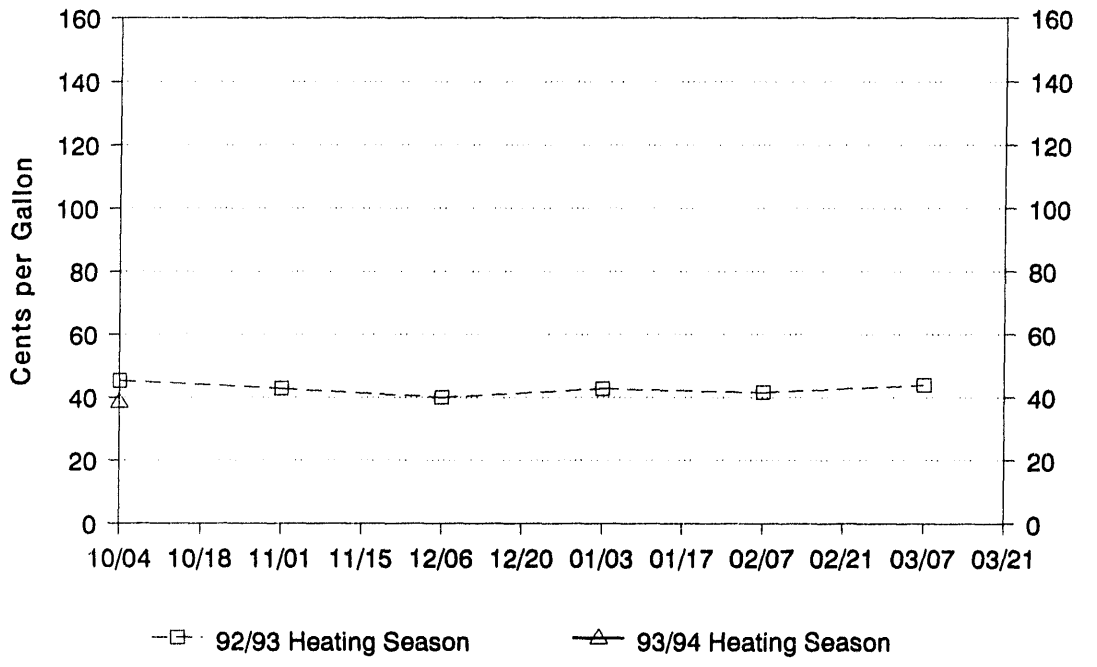
Table 10. Wholesale Propane Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season					
	October	November	December	January	February	March
Average	38.9	38.8	39.7	48.5	39.2	47.1
East Coast (PADD I)	45.1	42.6	39.7	42.1	40.8	42.8
Central Atlantic (PADD IY)	45.3	42.9	40.0	42.8	41.6	43.9
Lower Atlantic (PADD IZ)	45.0	42.2	39.1	41.2	39.4	41.2
Midwest (PADD II)	37.5	37.8	39.6	50.0	38.8	48.1

Region/State	1993/94 Heating Season											
	10/04[P]	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21
Average	38.2											
East Coast (PADD I)	37.9											
Central Atlantic (PADD IY)	38.6											
New York	38.9											
Pennsylvania	38.3											
Lower Atlantic (PADD IZ)	36.9											
North Carolina	36.9											
Midwest (PADD II)	38.3											
Illinois	39.9											
Indiana	36.8											
Iowa	39.0											
Kansas	36.3											
Minnesota	39.2											
Missouri	38.6											
North Dakota	38.4											
Ohio	37.0											
South Dakota	39.6											
Wisconsin	41.3											

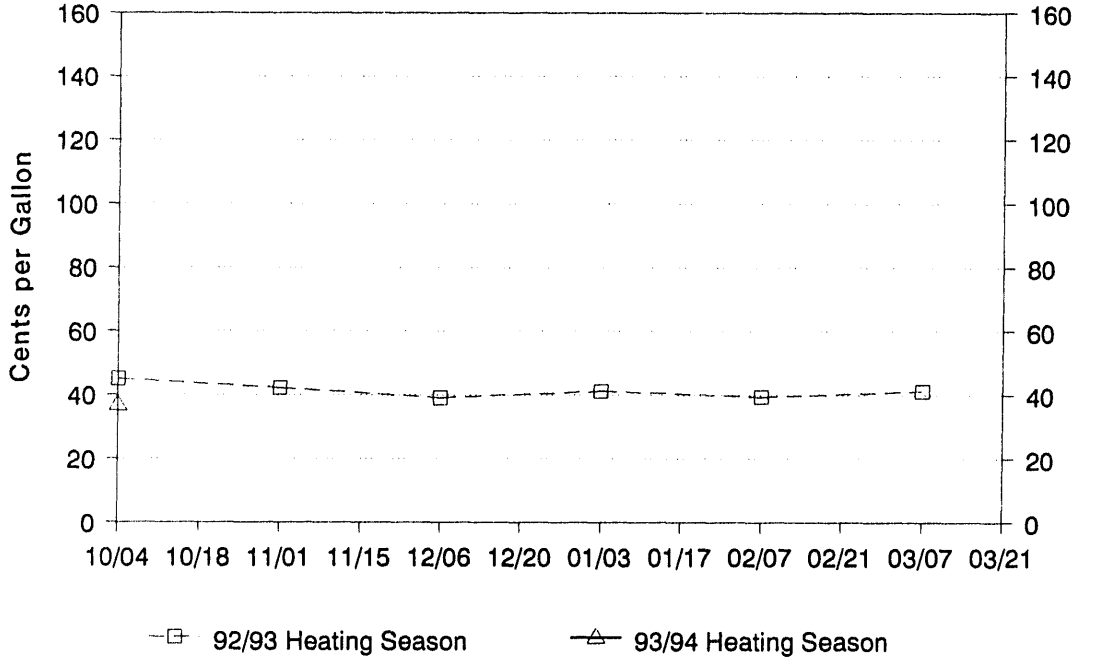
P=Preliminary data.
Source: These data are average prices collected by the Computer Petroleum Corporation, Inc.

Figure 31. Wholesale Propane Prices, Central Atlantic



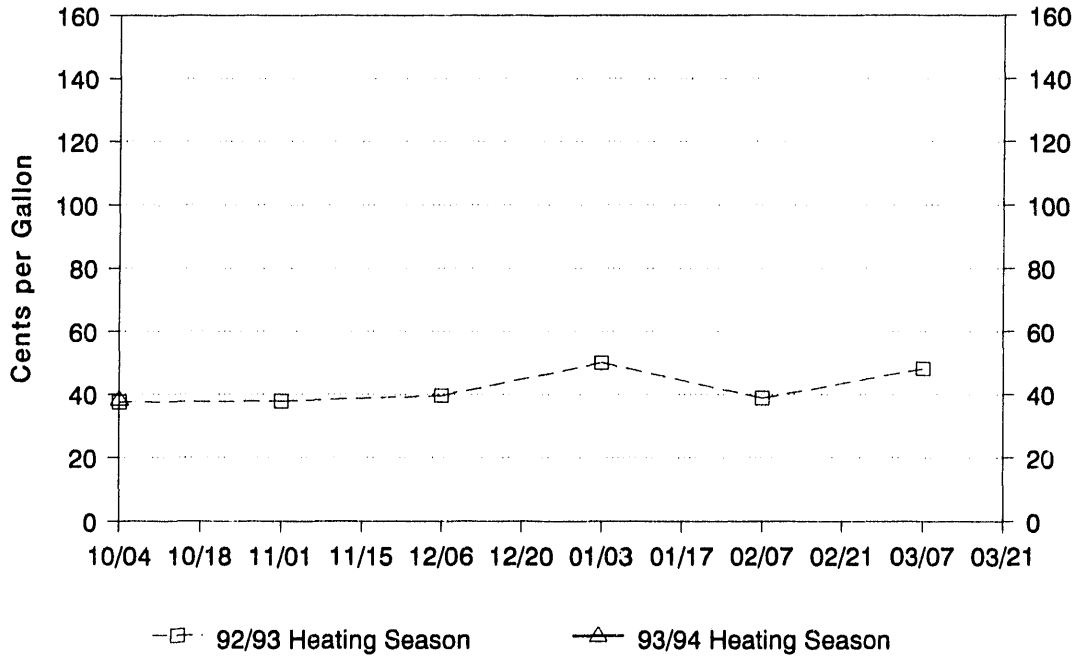
Source: Based on data collected by the Computer Petroleum Corporation, Inc.

Figure 32. Wholesale Propane Prices, Lower Atlantic



Source: Based on data collected by the Computer Petroleum Corporation, Inc.

Figure 33. Wholesale Propane Prices, Midwest



Source: Based on data collected by the Computer Petroleum Corporation, Inc.

Table 11. U.S. Crude Oil and Petroleum Product Prices

(Cents per Gallon, Except Where Noted)

Report Period	Crude WTI (Dollars per Barrel)	No. 2 Distillate				Propane		
		Spot	Terminal	Residential	Diesel Retail	Spot	Terminal	Residential
Monthly								
10/92	21.70	60.0	66.1	98.2	123.9	34.7	38.1	86.7
11/92	20.33	55.2	60.5	97.8	123.7	31.3	38.1	88.3
12/92	19.39	54.3	59.2	97.4	122.6	32.1	42.0	94.8
01/93	19.04	54.4	57.8	97.4	122.1	33.1	46.0	97.5
02/93	20.08	56.8	60.4	97.7	121.9	33.3	40.8	95.2
03/93	20.31	57.5	62.2	98.3	122.2	34.2	40.6	93.8
04/93	20.25	55.2	59.4	NA	122.9	NA	37.6	92.8
05/93	19.95	54.0	58.2	NA	122.7	NA	37.9	NA
06/93	19.09	51.9	56.3	NA	122.3	NA	37.1	NA
07/93	17.90	49.6	53.8	NA	119.6	NA	36.0	NA
08/93	18.02	51.3	55.7	NA	118.4	NA	36.6	NA
09/93	17.48	52.0	56.4	NA	118.6	NA	37.6	NA
Week Ending								
08/20/93	17.84	51.9	56.2	NA	118.2	NA	37.2	NA
08/27/93	18.49	52.6	56.7	NA	NA	NA	37.2	NA
09/02/93	18.19	50.1	56.8	NA	NA	NA	38.1	NA
09/10/93	17.02	50.4	56.0	NA	118.6	NA	38.0	NA
09/17/93	16.93	51.3	56.1	NA	NA	NA	37.4	NA
09/24/93	17.67	52.7	56.7	NA	NA	NA	37.3	NA
10/01/93	18.30	55.0	NA	NA	NA	NA	NA	NA
10/08/93	18.35	55.1	59.3	93.7	NA	NA	38.1	87.1
Daily								
09/27/93	17.76	53.3	NA	NA	NA	NA	NA	NA
09/29/93	18.07	54.9	NA	NA	NA	NA	NA	NA
09/30/93	18.72	56.0	NA	NA	NA	NA	NA	NA
10/01/93	18.63	55.9	NA	NA	NA	NA	NA	NA
10/04/93	17.90	55.2	NA	NA	NA	NA	NA	NA
10/05/93	18.43	54.8	NA	93.7	NA	NA	NA	87.1
10/06/93	18.43	55.1	NA	NA	NA	NA	NA	NA
10/07/93	18.49	55.1	59.3	NA	NA	NA	38.1	NA
10/08/93	18.53	55.3	59.3	NA	NA	NA	38.1	NA
10/11/93	NA	NA	59.3	NA	NA	NA	38.5	NA
10/12/93	18.70	55.2	59.3	NA	NA	NA	38.5	NA
10/13/93	18.65	55.0	59.4	NA	NA	NA	38.4	NA
10/14/93	18.50	54.9	59.4	NA	NA	NA	38.3	NA
10/15/93	18.24	54.1	59.5	NA	NA	NA	38.3	NA
10/18/93	18.13	53.4	59.0	NA	NA	NA	38.2	NA

NA=Not available.

Source: • Spot West Texas Intermediate (WTI) at Cushing, Oklahoma; No. 2 distillate in New York Harbor from Reuters. • Computer Petroleum Corp. rack (terminal) prices. • Residential No. 2 distillate and propane prices from State Heating Oil and Propane Program. • Diesel Retail prices from *Lundberg PS.* • Mt. Belvieu, Texas, spot propane prices from *Platts' Oilgram Price Report.*

Table 12. Petroleum Product Prices for Selected Cities
(Cents per Gallon)

Report Period	Chicago			Houston		
	No. 2 Distillate		Propane	No. 2 Distillate		Propane
	Spot	Terminal	Terminal	Spot	Terminal	Terminal
Monthly						
10/92	59.7	62.4	36.9	59.1	61.9	37.8
11/92	53.7	56.2	39.1	54.2	56.0	32.6
12/92	51.3	53.3	45.1	52.8	54.9	32.6
01/93	52.0	53.6	48.8	51.7	53.3	35.4
02/93	55.2	57.5	43.7	53.8	55.8	35.6
03/93	56.4	59.2	42.2	55.3	57.0	36.9
04/93	55.5	57.2	37.7	53.5	55.5	36.6
05/93	55.3	57.0	37.2	53.0	55.6	34.9
06/93	52.5	54.5	39.0	50.3	53.0	34.5
07/93	46.1	48.6	37.6	47.9	49.9	33.8
08/93	47.0	48.3	38.8	50.7	52.0	33.1
09/93	50.9	52.2	39.7	49.9	51.8	32.7
Week Ending						
08/20/93	47.2	48.4	39.4	50.1	52.8	33.0
08/27/93	49.7	50.8	39.5	52.1	53.6	33.2
09/02/93	50.3	51.9	40.7	50.3	52.7	33.3
09/10/93	49.1	51.2	40.3	48.6	51.3	33.2
09/17/93	49.7	51.0	39.6	49.0	51.1	32.5
09/24/93	53.2	53.8	39.2	51.3	52.6	32.5
10/01/93	NA	NA	NA	NA	NA	NA
10/08/93	NA	59.9	40.4	NA	56.4	32.9
Daily						
09/27/93	NA	NA	NA	NA	NA	NA
09/29/93	NA	NA	NA	NA	NA	NA
09/30/93	NA	NA	NA	NA	NA	NA
10/01/93	NA	NA	NA	NA	NA	NA
10/04/93	NA	NA	NA	NA	NA	NA
10/05/93	NA	NA	NA	NA	NA	NA
10/06/93	NA	NA	NA	NA	NA	NA
10/07/93	NA	59.7	40.4	NA	56.4	32.9
10/08/93	NA	60.2	40.4	NA	56.4	32.9
10/11/93	54.8	61.7	40.3	54.1	56.9	32.6
10/12/93	54.3	61.5	40.3	53.8	56.9	32.6
10/13/93	53.7	62.2	40.5	53.2	56.7	32.6
10/14/93	53.3	62.3	40.5	53.2	56.7	32.6
10/15/93	52.2	66.7	40.4	52.1	56.4	32.6
10/18/93	51.7	61.9	40.3	51.5	56.7	32.6

See footnotes at end of table.

Table 12. Petroleum Product Prices for Selected Cities (Continued)

(Cents per Gallon)

Report Period	Los Angeles			New York		
	No. 2 Distillate		Propane	No. 2 Distillate		Propane
	Spot	Terminal	Terminal	Spot	Terminal	Terminal
Monthly						
10/92	62.5	69.9	38.6	60.0	66.1	45.0
11/92	57.8	62.5	40.3	55.2	60.5	42.2
12/92	55.1	61.8	42.0	54.3	59.2	42.0
01/93	53.7	59.4	47.0	54.4	57.8	44.0
02/93	56.2	60.9	43.1	56.8	60.4	43.6
03/93	59.3	62.9	41.0	57.5	62.2	45.4
04/93	59.4	63.5	37.4	55.2	59.4	44.2
05/93	58.3	63.2	35.4	54.0	58.2	42.1
06/93	56.6	59.7	33.0	51.9	56.3	41.6
07/93	54.4	57.8	33.6	49.6	53.8	40.6
08/93	56.1	57.6	36.1	51.3	55.7	39.9
09/93	59.9	64.1	41.5	52.0	56.4	39.5
Week Ending						
08/20/93	56.0	57.6	36.0	51.9	56.2	39.8
08/27/93	58.0	58.8	36.0	52.6	56.7	40.0
09/02/93	58.9	62.4	40.0	50.1	56.8	40.1
09/10/93	58.7	62.3	40.7	50.4	56.0	40.0
09/17/93	59.3	63.8	42.0	51.3	56.1	39.5
09/24/93	61.2	65.9	42.0	52.7	56.7	39.1
10/01/93	NA	NA	NA	55.0	NA	NA
10/08/93	NA	66.6	44.0	55.1	59.3	40.0
Daily						
09/27/93	NA	NA	NA	53.3	NA	NA
09/29/93	NA	NA	NA	54.9	NA	NA
09/30/93	NA	NA	NA	56.0	NA	NA
10/01/93	NA	NA	NA	55.9	NA	NA
10/04/93	NA	NA	NA	55.2	NA	NA
10/05/93	NA	NA	NA	54.8	NA	NA
10/06/93	NA	NA	NA	55.1	NA	NA
10/07/93	NA	66.6	44.0	55.1	59.3	40.0
10/08/93	NA	66.6	44.0	55.3	59.3	40.0
10/11/93	83.0	66.6	45.0	NA	59.3	40.2
10/12/93	82.0	66.6	45.0	55.2	59.3	40.2
10/13/93	81.0	66.6	45.0	55.0	59.4	40.2
10/14/93	81.0	66.6	45.0	54.9	59.4	40.2
10/15/93	69.5	66.6	45.0	54.1	59.5	39.7
10/18/93	72.0	66.6	46.0	53.4	59.0	40.0

NA=Not available.

Source: • No. 2 distillate spot prices in Chicago, Houston, and Los Angeles, are from Telerate; New York spot prices are from Reuters. • No. 2 distillate terminal prices in Chicago, Houston, Los Angeles, and New York are from Computer Petroleum Corp. • Propane terminal prices in Lemont, Illinois; Mt. Belvieu, Texas; Los Angeles, California; and Selkirk, New York are from Computer Petroleum Corp.

United States Weather Summary

6-10 Day Outlook- October 26 Through October 30, 1993

Temperatures are expected to be above normal over Washington, Oregon, Idaho, California, the western half of Montana, most of Nevada, the southern two-thirds of Texas, most of Louisiana, the southern two-thirds of Alabama and Mississippi, the southern third of Georgia and the northern portion of Florida. Much above normal temperatures are expected over most of northern California, part of western Nevada, extreme southern Texas, and most of the Florida Peninsula. Below normal average temperatures are expected for most of the Great Lakes, New York and New England, Ohio, Illinois, most of the upper Mississippi Valley, the eastern portions of South Dakota and Nebraska, parts of north central and western Kansas, southern Colorado and Utah, and east central Nevada. Near normal temperatures are indicated for unspecified areas.

Little or no precipitation is expected west of the Continental Divide except for above normal amounts over the northeastern third of Nevada, southwestern Utah, the northeastern two-thirds of Arizona and western New Mexico. No precipitation is expected for the northern Rockies, northern High Plains and the western two-thirds of the Dakotas, as well as most of western Texas, most of the Gulf Coast region from Texas to the Florida Panhandle, and parts of central Tennessee and western Georgia. Below normal amounts are indicated for extreme northeastern Illinois, northern Indiana, and most of Ohio. Above normal amounts are also indicated for much of New Mexico, portions of central and eastern Colorado, central Texas, the Oklahoma panhandle region, most of the Florida Peninsula, the coast of South Carolina, over central New England, and portions of central and northeastern New York. In unspecified areas, near normal amounts of precipitation are expected.

(Refer to Figures 34 and 35).

30 Day Outlook - Mid-October Through Mid-November 1993

Calls for at least a 55 percent chance of below normal temperatures for extreme Southern California, western Washington, northwestern Oregon, the Great Lakes, Pennsylvania, the coastal regions of Virginia, Maryland, Delaware, New Jersey, New York, and New England. Above normal temperatures are expected with at least a 55 percent probability for northwestern Montana. In unspecified areas temperature probabilities are not expected to depart significantly from climatological values.

(Refer to Figure 36).

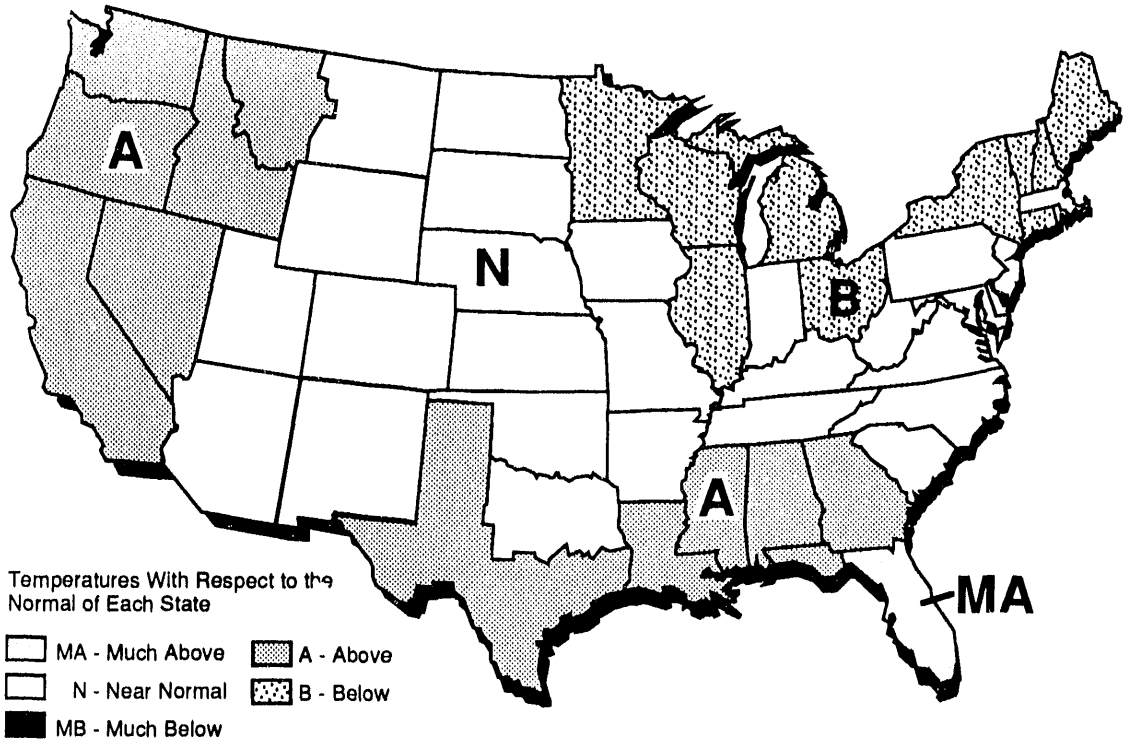
90 Day Outlook - October 1993 Through December 1993

Specifies above normal temperatures with at least a 55 percent chance in the southeast bounded by a line from central Virginia to southwest Louisiana and in the southwest which encompasses southwest Arizona and southern California as well as coastal California to the north. The probability increases to over 65 percent for the Florida Peninsula. There is at least a 55 percent chance for temperatures below normal over the interior northern half of the Nation bounded by a line extending roughly from western Montana and interior Idaho southeastward into north central Texas and then northeastward to the eastern Great Lakes and moving eastward to include the northern regions of New York and New England. The likelihood for sub-normal temperatures rises to over 65 percent from north central Kansas north to the Canadian border and northeastward to Lake Superior. In unspecified areas temperature probabilities are not expected to depart significantly from climatological values

(Refer to Figure 37).

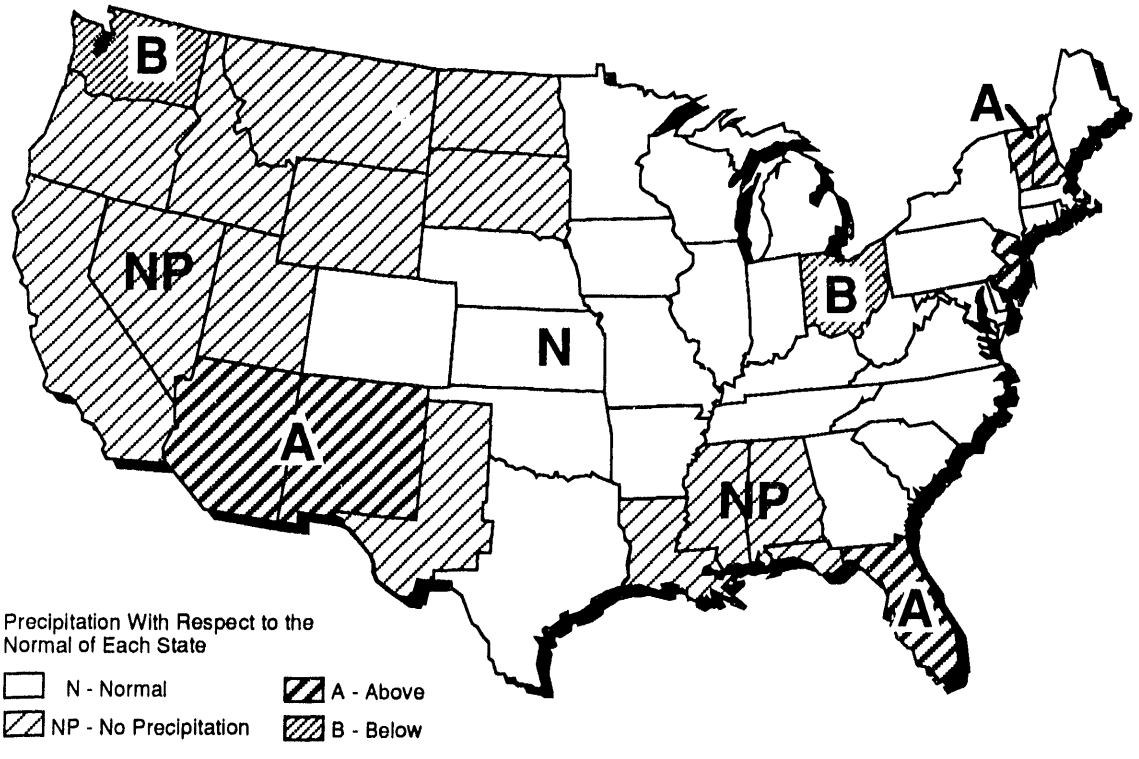
Source: National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Figure 34. 6 - 10 Day Temperature Outlook for October 26 Through October 30, 1993



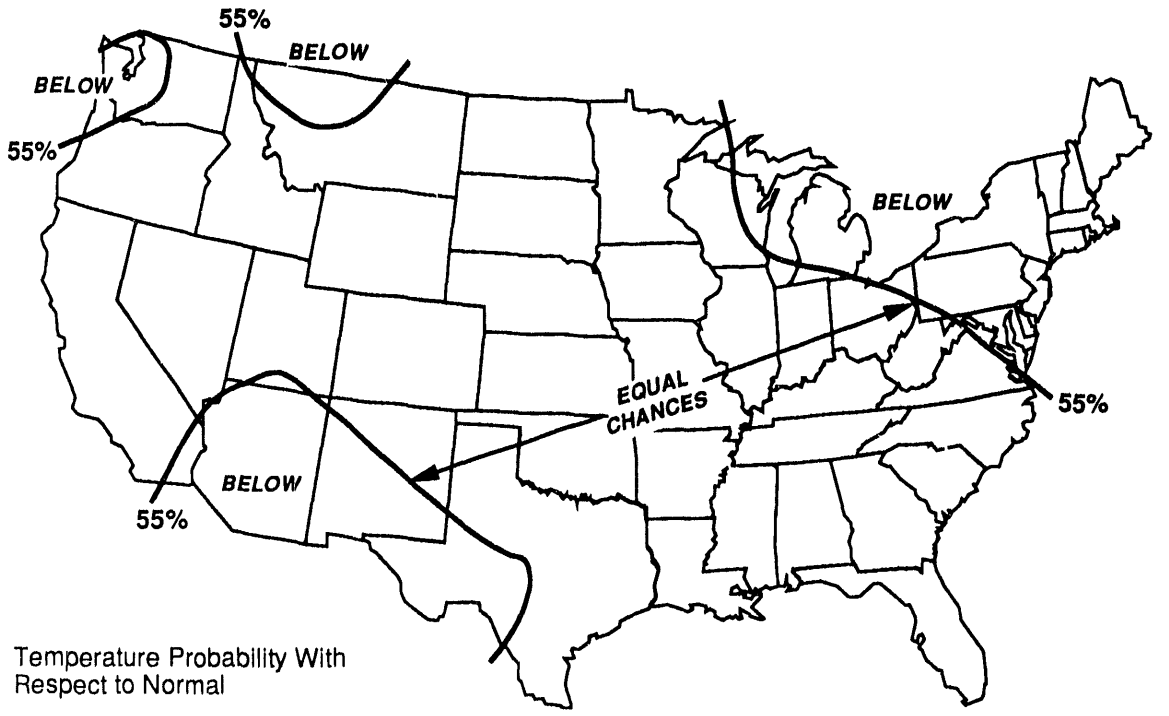
Source: National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Figure 35. 6 - 10 Day Precipitation Outlook for October 26 Through October 30, 1993



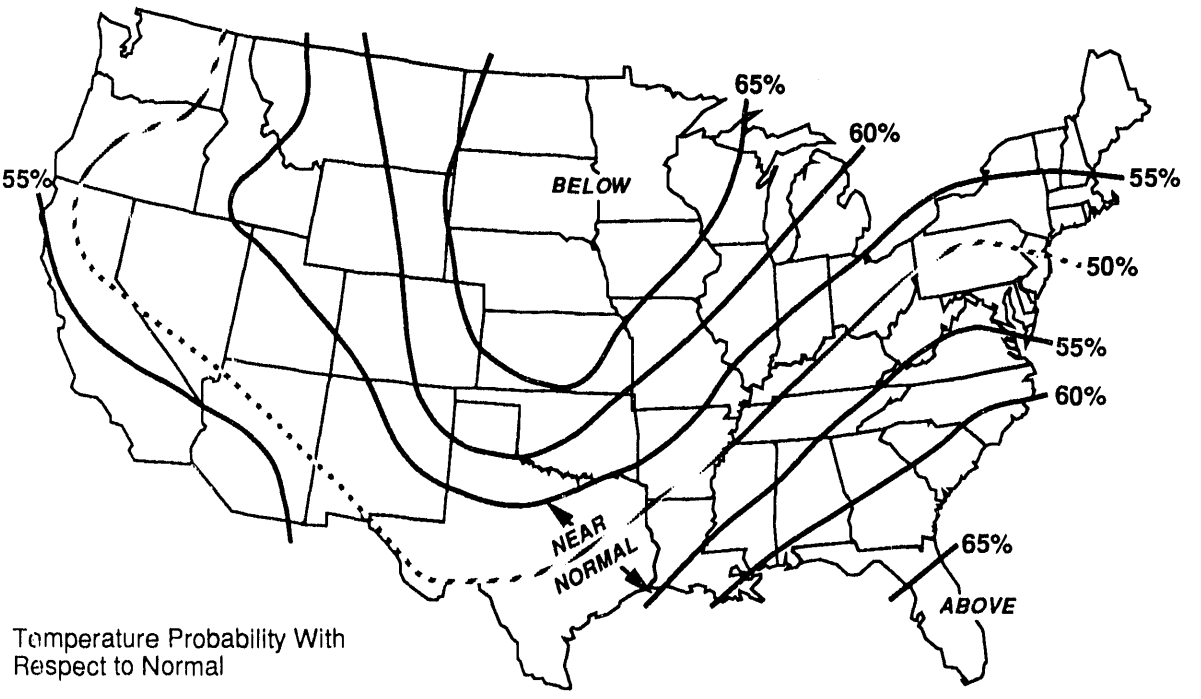
Source: National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Figure 36. 30 Day Temperature Outlook for Mid-October Through Mid-November 1993



Source: National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Figure 37. 90 Day Temperature Outlook for October 1993 Through December 1993



Source: National Weather Service, National Oceanic and Atmospheric Administration, U.S. Department of Commerce.

Table 13. U.S. Total Heating Degree Days by City
(Population Weighted Heating Degree-Days, Except Where Noted)

City	1993	1992-1993	Normal	Percent Change 1993 vs. 1992-1993	Percent Change 1993 vs. Normal
July 1 - June 30		4,663	4,689	--	--
July 1 - October 16	248	247	183	0	36
Albuquerque	60	51	106	18	-43
Amarillo	111	91	105	22	6
Asheville	186	187	189	-1	-2
Atlanta	42	73	56	****	****
Billings	648	559	508	16	28
Boise	328	330	358	-1	-8
Boston	289	295	208	-2	39
Buffalo	466	407	333	14	40
Cheyenne	673	545	569	23	18
Chicago	406	354	261	15	56
Cincinnati	260	244	183	7	42
Cleveland	341	308	271	11	26
Columbia, SC	58	69	54	****	****
Denver	342	272	321	26	7
Des Moines	372	301	230	24	62
Detroit	354	378	300	-6	18
Fargo	675	683	558	-1	21
Hartford	382	351	266	9	44
Houston	0	1	4	****	****
Jacksonville, FL	1	3	7	****	****
Kansas City	236	194	165	22	43
Las Vegas	1	0	13	****	****
Los Angeles	0	0	37	****	****
Memphis	49	43	53	****	****
Miami	0	0	0	****	****
Milwaukee	352	393	353	-10	0
Minneapolis	596	489	406	22	47
Montgomery	30	32	29	****	****
New York	179	131	126	37	42
Oklahoma City	79	58	55	****	****
Omaha	335	297	241	13	39
Philadelphia	141	133	142	6	-1
Phoenix	0	0	0	****	****
Pittsburgh	312	296	281	5	11
Portland, ME	504	503	464	0	9
Providence	303	269	248	13	22
Raleigh	114	113	76	****	****
Richmond	120	130	113	-8	6
St. Louis	152	115	108	32	41
Salem, OR	267	309	386	-14	-31
Salt Lake City	233	201	256	16	-9
San Francisco	156	120	293	30	-47
Seattle	388	358	442	8	-12
Shreveport	20	17	16	****	****
Washington, DC	137	125	84	****	****

****=Normal heating degree-days 100 or less, or ratio incalculable.

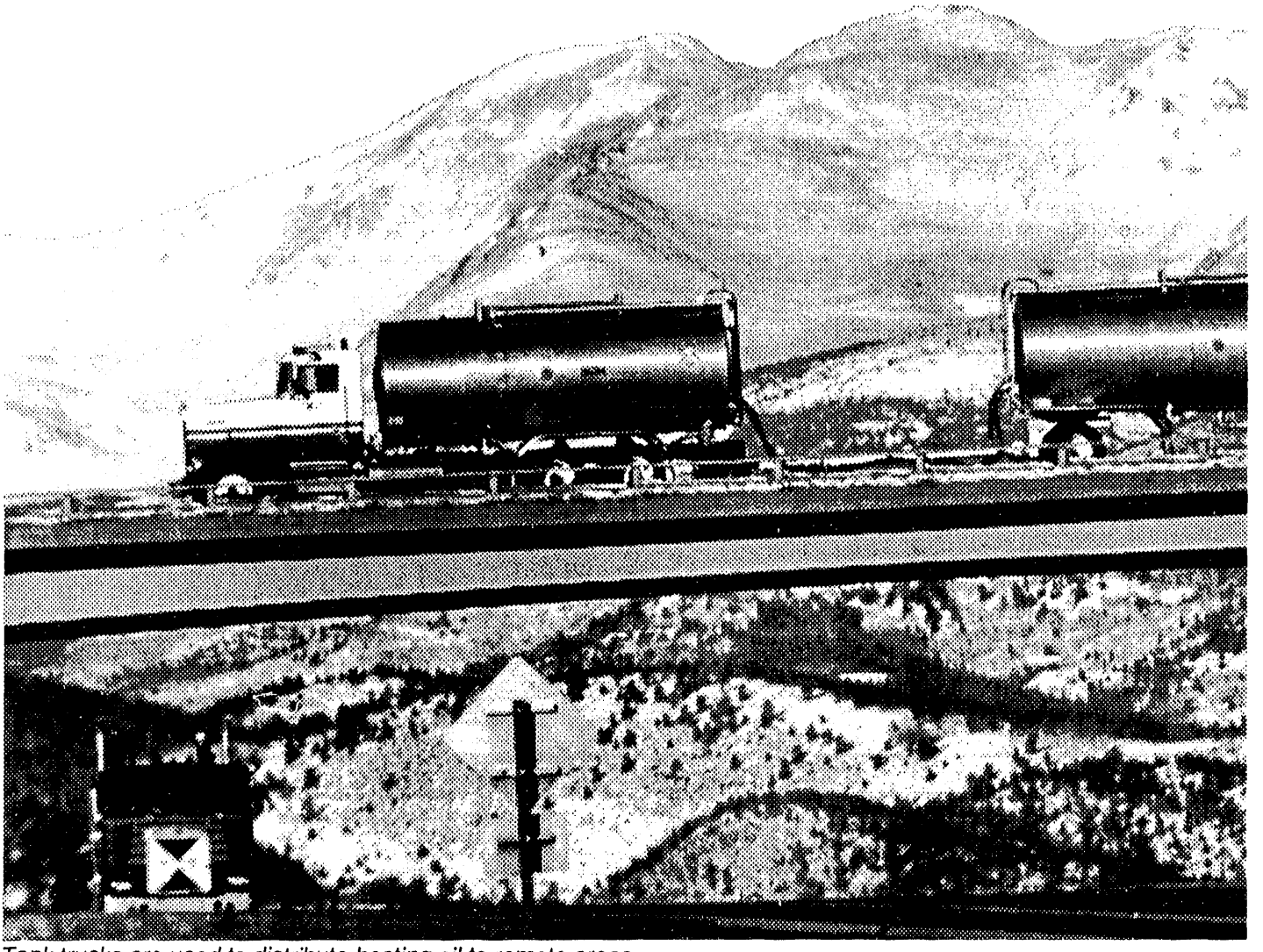
Note: • The weather for the Nation, as measured by population-weighted heating degree-days from July 1, 1993, through October 16, 1993 has been the same as last year and 36 percent cooler than normal.

• Heating degree-days is defined as the number of degrees per day the daily average temperature is below 65 degrees Fahrenheit. The daily average temperature is the mean of the maximum and minimum temperature for a 24-hour period.

Source: Weather data reported in the *Winter Fuels Report* are taken directly from a computerized system implemented by the National Oceanic and Atmospheric Administration, Department of Commerce. The National Oceanic and Atmospheric Administration (NOAA)/NWS, as a U.S. Government Agency, does not endorse any consumer information services.

Appendix A

District Descriptions and Maps



Tank trucks are used to distribute heating oil to remote areas.

Appendix A

District Descriptions and Maps

The following are the Petroleum Administration for Defense (PAD) Districts.

PAD District I

East Coast: District of Columbia and the States of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, Florida, and the following counties of the State of New York: Cayuga, Tompkins, Chemung, and all counties east and north thereof. Also the following counties in the State of Pennsylvania: Bradford, Sullivan, Columbia, Montour, Northumberland, Dauphin, York, and all counties east thereof.

Appalachian No. 1: The State of West Virginia and those parts of the States of Pennsylvania and New York not included in the East Coast District.

Sub-PAD District I

New England (PADD 1X): The States of Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, and Vermont.

Central Atlantic (PADD 1Y): The District of Columbia and the States of Delaware, Maryland, New Jersey, New York, and Pennsylvania.

Lower Atlantic (PADD 1Z): The States of Florida, Georgia, North Carolina, South Carolina, Virginia, and West Virginia.

PAD District II

Indiana-Illinois-Kentucky: The States of Indiana, Illinois, Kentucky, Tennessee, Michigan, and Ohio.

Minnesota-Wisconsin-North and South Dakota: The States of Minnesota, Wisconsin, North Dakota, and South Dakota.

Oklahoma-Kansas-Missouri: The States of Oklahoma, Kansas, Missouri, Nebraska, and Iowa.

PAD District III

Texas Inland: The State of Texas except the Texas Gulf Coast District.

Texas Gulf Coast: The following counties of the State of Texas: Newton, Orange, Jefferson, Jasper, Tyler, Hardin, Liberty, Chambers, Polk, San Jacinto, Montgomery, Harris, Galveston, Waller, Fort Bend, Brazoria, Wharton, Matagorda, Jackson, Victoria, Calhoun, Refugio, Aransas, San Patricio, Nueces, Kleberg, Kenedy, Willacy, and Cameron.

Louisiana Gulf Coast: The following parishes of the State of Louisiana: Vernon, Rapides, Avoyelles, Pointe Coupee, West Feliciana, East Feliciana, Saint Helena, Tangipahoa, Washington, and all parishes south thereof. Also the following counties of the State of Mississippi: Pearl River, Stone, George, Hancock, Harrison, and Jackson. Also the following counties of the State of Alabama: Mobile and Baldwin.

North Louisiana-Arkansas: The State of Arkansas and those parts of the States of Louisiana, Mississippi, and Alabama not included in the Louisiana Gulf Coast District.

New Mexico: The State of New Mexico.

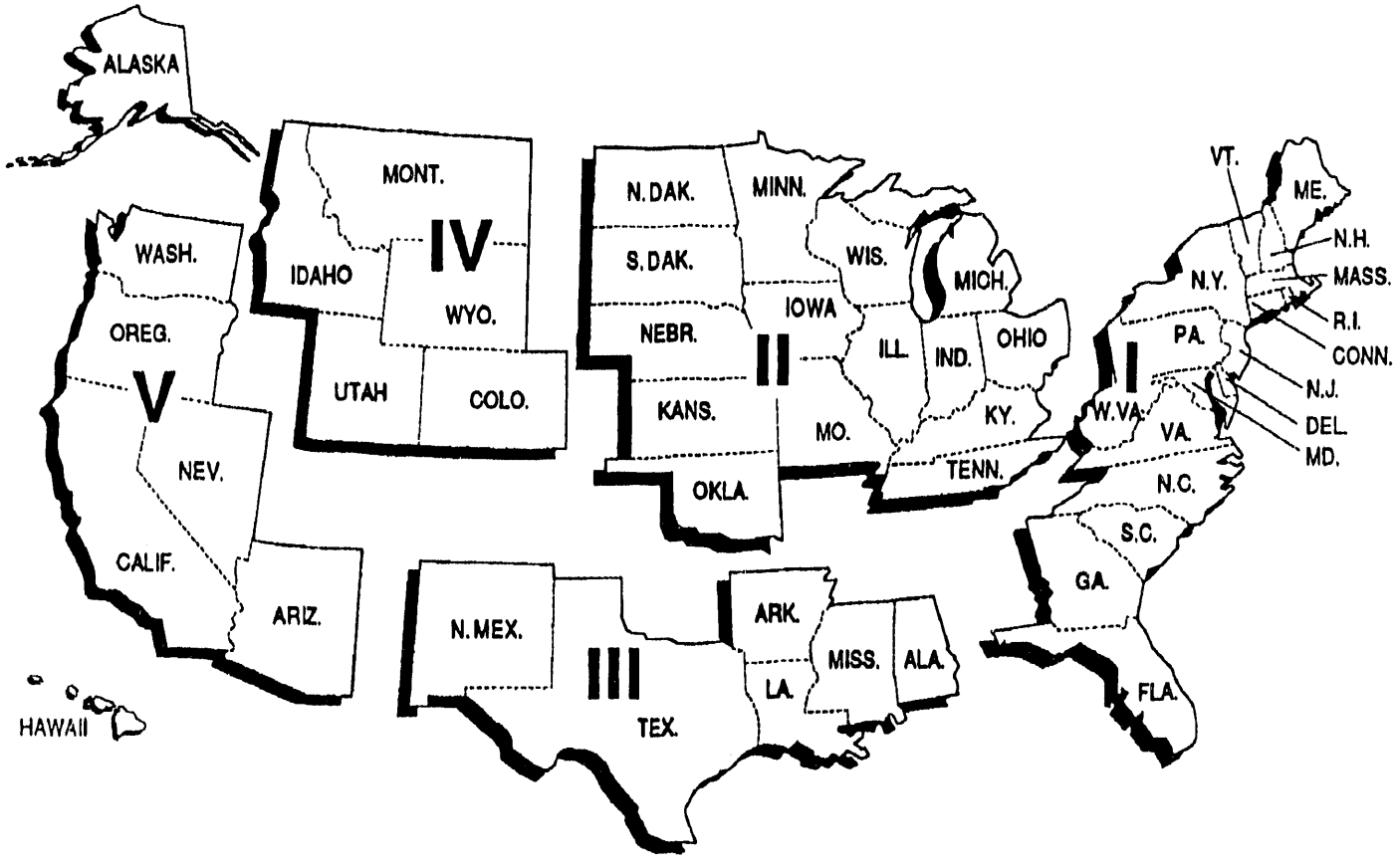
PAD District IV

Rocky Mountain: The States of Montana, Idaho, Wyoming, Utah, and Colorado.

PAD District V

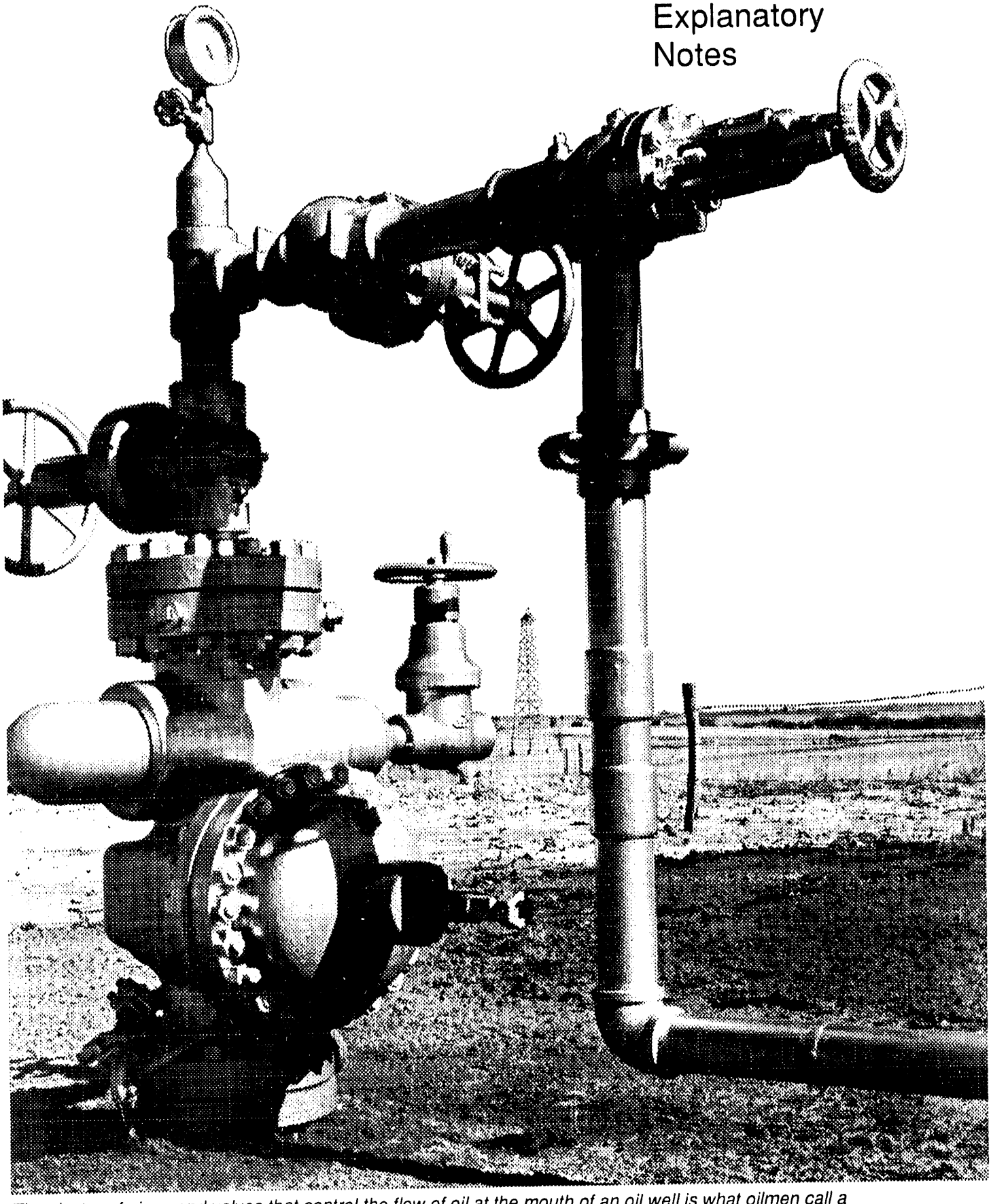
West Coast: The States of Washington, Oregon, California, Nevada, Arizona, Alaska, and Hawaii.

Petroleum Administration for Defense (PAD) Districts



Appendix B

Explanatory Notes



The cluster of pipes and valves that control the flow of oil at the mouth of an oil well is what oilmen call a "Christmas Tree."

Appendix B

Explanatory Notes

The following Explanatory Notes are provided to assist in understanding and interpreting the data presented in this publication.

- Note 1. Distillate Fuel Oil
- Note 2. Propane
- Note 3. Figures
- Note 4. Natural Gas
- Note 5. Prices
- Note 6. Provisions Regarding Confidentiality of Information

Note 1. Distillate Fuel Oil

Data on distillate fuel oil are collected within two time frames: weekly and monthly. Data from the Weekly Petroleum Supply Reporting System (WPSRS) are used to develop estimates for distillate fuel oil on a weekly basis. The forms that comprise the WPSRS are:

Form Number	Name
EIA-800	*Weekly Refinery Report*
EIA-801	*Weekly Bulk Terminal Report*
EIA-802	*Weekly Product Pipeline Report*
EIA-803	*Weekly Crude Oil Report*
EIA-804	*Weekly Imports Report*

Monthly data are extracted from selected surveys in the Monthly Petroleum Supply Reporting System (MPSRS). The forms that comprise the MPSRS are:

Form Number	Name
EIA-810	*Monthly Refinery Report*
EIA-811	*Monthly Bulk Terminal Report*
EIA-812	*Monthly Product Pipeline Report*
EIA-814	*Monthly Imports Report*
EIA-816	*Monthly Natural Gas Liquids Report*

Refer to Explanatory Note 2 in the *Petroleum Supply Monthly* for a detailed discussion of the MPSRS.

Sample Frame

A sample of all petroleum companies report weekly data to the Energy Information Administration (EIA) on crude oil and petroleum product stocks, refinery inputs and production, and crude oil and petroleum product imports. The sample of companies that report weekly is selected from the universe of companies that report on the comparable monthly surveys.

Sampling

The sampling procedure used for the weekly system is the cut-off method. In the cut-off method, companies are ranked from largest to smallest on the basis of the quantities reported during some previous period. Companies are chosen for the sample beginning with the largest and adding companies until the total sample covers about 90 percent of the total, for each item and each geographic region for which weekly data are published.

Collection Methods

Data are collected by mail, mailgram, telephone, Telex, Telefax, and electronic transmission on a weekly basis. All canvassed firms must file by 5 p.m. on the Monday following the close of the report week, 7 a.m. Friday.

Resubmissions

During the processing week, company corrections of the prior week's data are also entered. This revised data is used to edit the current processing week's data.

Estimation and Imputation

After the company reports have been checked and entered into the weekly data base, explicit imputation is done for companies which have not yet responded. The imputed values are exponentially smoothed means of recent weekly reported values for this specific company. 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. (Call this weekly sum, W_s.) Next, the most recent month's data for the product reported by those same companies are summed. (Call this monthly sum, M_s.) Finally, let M_t be the sum of most recent month's data for the product as reported by all companies. Then, the current week's ratio estimate for that product for all companies, W_t, is given by:

$$W_t = \frac{M_t}{M_s} \cdot W_s$$

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 formed by summing over establishment types.

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

Response Rates

The response rate as of the day after the filing deadline is about 80 percent for the EIA-800, 75 percent for the EIA-801, 95 percent for the EIA-802, 80 percent for the EIA-803, and greater than 95 percent for the EIA-804. However, more forms are received the next day, bringing the final response rates up. Late respondents are contacted by telephone. Nearly all of the major companies report on time. The nonresponse rate for the published estimate is usually between 1 percent and 2 percent.

Note 2. Propane

The Form EIA-807, "Propane Telephone Survey," was implemented in April 1990 as the result of the 1989 propane supply disruption. The hardships experienced by propane users during the December 1989 cold-snap in the Northeast and Mid-Continent areas made the need for timely supply information imperative. During 1990, propane data was collected and provided to Congress and others upon request. Because of the overwhelming demand for continuous monitoring of propane supply, the *Winter Fuels Report* was implemented in September 1990. This report publishes weekly data on propane as well as other heating fuels.

Respondent Frame

The Form EIA-807, "Propane Telephone Survey," collects data on production, stocks, and imports of propane. The sample of companies that report weekly is selected from the universe of companies that report on the comparable monthly surveys. These surveys are:

Form Number	Name
EIA-810	*Monthly Refinery Report*
EIA-811	*Monthly Bulk Terminal Report*
EIA-812	*Monthly Product Pipeline Report*
EIA-814	*Monthly Imports Report*
EIA-816	*Monthly Natural Gas Liquids Report*

Sampling

The sampling procedure used for the EIA-807 is the cut-off method. In the cut-off method, facilities are ranked from largest to smallest on the basis of quantities reported for propane production, imports, and stocks. Companies are chosen for the sample beginning with the largest and adding companies until the total sample covers about 90 percent of the total for each item and each geographic region (Petroleum Administration for Defense Districts I (IX, IY, IZ), II and III) for which data are published. A bench mark factor is used to capture the remaining 10 percent of the propane industry.

The sample frame for the EIA-807 is re-evaluated on an annual basis to assure 90 percent coverage of the total for each item collected and each geographic region. However, when necessary the sample frame is updated more frequently.

Collection Methods

Data are collected by telephone or facsimile. No written confirmation of the data submission is necessary. For weekly data collections, telephone calls to the respondents start on the Monday following the end of the report period. For monthly data collections, telephone calls to respondents start on the third working day following the end of the report period.

Resubmissions

Resubmissions are any changes to originally submitted data. A determination is made on whether to process the resubmissions based on the magnitude of the revision. Cell entries on publication tables are marked with an "R" for revised.

Revision Error

Summary information on the revision error between preliminary weekly data and final monthly data will be incorporated in the feature article in the *Petroleum Supply Monthly* entitled, "Timeliness and Accuracy of Petroleum Supply Data." The last article was published in the August 1993 issue and evaluated the accuracy of the data for 1992 compared with previous years.

From October 1992 through March 1993, the difference between preliminary and final data for propane stocks remained within six percent. No difference in preliminary and final data was found for imports and production of propane.

Estimation and Imputation

After the company reports have been checked and entered into the EIA-807 data base, imputation is done for companies which have not yet responded. The imputed values are equal to the latest reported data for a particular reporting unit. Response rates are over 90 percent so very little imputation is done.

After the data files have been edited and corrected, aggregation is done for net production, imports, and stocks by each geographic region. Estimation factors, which were derived from 1992 reported data, are then applied to each cell to generate published estimates.

Response Rate

The response rate 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.

Note 3. Figures

The national inventory (stocks) graphs for distillate fuel oil and propane include features to assist in comparing current inventory levels with past inventory levels and with judgments of critical levels. Methods used in developing the average inventory levels and minimum operating levels are described below.

Average Inventory Levels

The charts displaying inventory levels of distillate fuel oil and propane (Figures 1 through 14) provide the reader with actual inventory data compared to an "average range" for the most recent 3-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., unchanging from year to year) 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 only 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' final monthly data.

The seasonal factors are used to deseasonalize data from the most recent 3-year period (January-December or July-June). The average of the deseasonalized 36-month series determines the midpoint of the "average range." The standard deviation of the deseasonalized 36 months is then calculated after adjusting for extreme data points. The upper curve of the "average range" is defined as average plus the seasonal factors plus the standard deviation. The lower curve is defined as the average plus the seasonal factors minus the standard deviation. Thus, the width of the "average range" is twice the standard deviation. The ranges are updated every 6 months in April and October.

The lines labeled "observed minimum" on the stock graphs are the lowest inventory levels observed during the most recent 36-month period as published in the *Petroleum Supply Monthly*.

Note 4. Natural Gas

Data contained in tables in the Natural Gas Section are from tables published in the *Natural Gas Monthly*. Data are collected from the following surveys:

Form EIA-191

The Form EIA-191, "Underground Natural Gas Storage Report," collects storage data by State, field, and reservoir. There are approximately 400 operating reservoirs in the United States, owned by 97 companies. It is a multipart form that reports the quantities of gas in storage, injections and withdrawals, and the location (State and county) and capacity of underground storage reservoirs along with peak day sendout during the reporting period.

The response rate as of the filing deadline is approximately 20 percent. Data from the remaining 80 percent of respondents are received in writing and/or by telephone within 3 to 4 days after the filing deadline. All data supplied by telephone are subsequently filed in writing, generally within 15 days of the filing deadline. The final response rate is 100 percent.

Form FERC-11

The Form FERC-11, "Natural Gas Pipeline Company Monthly Statement," is a monthly regulatory reporting form. Form FERC-11 is filed by major interstate natural gas pipeline companies whose combined sales for resale and gas transported interstate or stored for a fee exceeded 50 billion cubic feet in the previous calendar year. Approximately 50 pipeline companies report data on Form FERC-11. Information is collected monthly by mail. Historically, the response rate has been 100 percent.

Form FPC-14

The Form FPC-14, "Annual Report for Importers and Exporters of Natural Gas," is filed annually by each organization or individual having authorization to import and export natural gas regardless of whether any imports or exports took place during the reporting year. In 1992, 375 companies met the reporting criteria, only 143 reported imports or exports of natural gas.

Form EIA-857

The Form EIA-857, "Monthly Report of Natural Gas Purchases and Deliveries to Consumers," is a mandatory report. Data collected on the Form EIA-857 include both price and volume data and are considered proprietary. A sample of 391 natural gas companies including interstate pipelines, intrastate pipelines, and local distribution companies report on the Form EIA-857. The sample is selected independently for each of the 50 States and the District of Columbia.

Form EIA-176

The Form EIA-176, "Annual Report of Natural and Supplemental Gas Supply and Disposition," survey universe includes approximately 1,800 companies and 2,096 responses. These companies are interstate and intrastate natural gas pipeline companies, investor and municipally owned natural gas distributors, synthetic natural gas plant operators, and field, well,

or processing plant operators that deliver natural gas directly to consumers (including their own industrial facilities) and/or that transport gas to, across, or from a State border through field or gathering facilities.

Note 5. Prices

The residential No. 2 heating oil and propane prices (excluding taxes) for a given State are based on the results of telephone surveys of a sample of marketers and refiners. Data are collected under the Energy Information Administration (EIA) State Heating Oil and Propane Program.

Sampling Methodology and Estimation Procedures

To estimate aggregate propane and No. 2 heating oil price data for a State, the sample weight and volume sales data were applied to the reported price, summed and divided by the sum of the weighted volume:

$$\sum_{j=1}^{s}\sum_{i=1}^{n_j} w_{ij}\, v_{ij}\, p_{ij} \Big/ \sum_{j=1}^{s}\sum_{i=1}^{n_j} w_{ij}\, v_{ij}, \qquad \text{where } w =$$

sample weight, v = volume, p = price, i = respondent, n_j = sample size of stratum j, and s = number of strata, to obtain a volume weighted price.

The volume used for No. 2 heating oil is the company's residential sales volume for 1988 as reported on the EIA-863 "Petroleum Product Sales Identification Survey." The volume used for propane is the company's residential propane sales volume for the previous year obtained by Form EIA-877, "Winter Heating Fuels Telephone Survey," during the first pricing period.

These fixed volume weights indicate the relative importance of the individual companies according to the size of their sales. Therefore, changes in the average price across time reflect only the change in the price being offered by the company, and not changes in the amounts sold. Price indexes constructed using fixed volumes, such as these annual sales, are known as Laspeyres Indexes. The alternative method of weighting, current weights, would require each company to report the number of gallons sold at the reported price each pricing period. This method is more burdensome on the companies and reflects prices over a period of time as compared to a point in time. Therefore, the calculation of average prices tends to lag behind the reference period. Indexes constructed from current period weights are known as Paasch Indexes.

Both methods of weighting are correct; they do, however, vary when current weights are changing. It has been argued that during periods of change, the Laspeyres method has a tendency to overestimate price changes, while the Paasche method tends to underestimate price changes.

In this survey, it is expected that the relative change in volumes monthly is small. Residential sales are not bulk in nature and do not tend to reflect discounts on price for large volume purchases. Absolute changes in volume within a year's time would more likely reflect demand and be consistent across companies within a geographical area.

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 EIA-877 survey is one of a large number of samples of equal size which 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 can be attributed to many sources: (1) inability to obtain complete information about all cases in the sample (i.e., nonresponse), (2) response errors, (3) definitional difficulties, (4) differences in the interpretation of questions, (5) mistakes in recording or coding the data obtained, and (6) other errors of collection, response, coverage, and estimation for missing data. These nonsampling errors also occur in complete censuses.

Although no direct measurement of the biases due to nonsampling errors can be obtained, precautionary steps were taken in all phases of the frame development and data collection, processing, and tabulation processes, in an effort to minimize their influence.

Data in Tables B1 and B2 are based on survey data which are subject to sampling errors. Coefficients of variation, which are estimates of sampling errors, are presented for the propane and No. 2 heating oil prices in the following tables for the 1993/94 survey. The coefficients of variation (CV) were estimated by:

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

where:

$$VAR(\hat{P}) = \frac{1}{\hat{V}^2}\sum_k N_k^2\left(\frac{1-f_k}{n_k}\right)S_k^2$$

$$S_k^2 = S_{kq}^2 + \hat{P}^2 S_{kv}^2 - 2\hat{P}S_{kqv}^2$$

for heating oil:

$$S_{kq}^2 = \frac{\sum_{i=1}^{n_k}(P_{ik}V_{ik} - \bar{P}_k\bar{V}_k)^2}{n_k - 1}$$

$$S_{kv}^2 = \frac{\sum_{i=1}^{n_k}(V_{ik} - \bar{V}_k)^2}{n_k - 1}$$

$$S^2_{kqv} = \frac{\sum_{i=1}^{n_k}(P_{ik}V_{ik} - \overline{P_kV_k})(V_{ik} - \overline{V_k})}{n_k - 1}$$

but for propane:

$$S^2_{kq} = \frac{\sum_{i=1}^{n_k - 1}(P_{ik}V_{ik} - P_{i+1,k}V_{i+1,k})^2}{2(n_k - 1)}$$

$$S^2_{kv} = \frac{\sum_{i=1}^{n_k - 1}(V_{ik} - V_{i+1,k})^2}{2(n_k - 1)}$$

$$S^2_{kqv} = \frac{\sum_{i=1}^{n_k - 1}(P_{ik}V_{ik} - P_{i+1,k}V_{i+1,k})(V_{ik} - V_{i+1,k})}{2(n_k - 1)}$$

n_k= number of respondents in stratum k

N_k= number of population units in stratum k

V_{ik}= reported volume for unit i in stratum k

$\overline{V}_k$= average volume for sample units in stratum k

$P_{ik}V_{ik}$ = reported revenue for unit i in stratum k

$\overline{P_kV_k}$= average revenue for sample units in stratum k

$\hat{P}$= weighted average price for each State

Residential No. 2 Heating Oil

For the No. 2 heating oil price data, a sample design similar to that used for the EIA Form EIA-782B, "Resellers'/Retailers' Monthly Petroleum Product Sales Report," sample design was used. The sampling frame was an extract of approximately 11,000 companies from the Form EIA-863, "Petroleum Product Sales Survey," conducted in 1989 and containing 1988 sales volume information. A one-way stratified sample design using No. 2 residential distillate frame sales volumes by State, for each of the 27 States to be sampled, was used. Stratum boundaries were determined by the Dalenius-Hodges procedure. Sample weights were calculated as the inverse of the probability (N/n). Certainty strata were established based on sales volumes and the number of States in which the company has sales. The expected price coefficient of variation is one to two percent.

Residential Propane

Since no volume sales information existed to predetermine the volume sales of propane dealers, two strata for propane dealers was used. A certainty stratum of the known, large, multi-State dealers was created. These companies were identified using establishment lists obtained in deriving the frame. All other dealers were in a second stratum and a random sample from this stratum was selected. Sample weights were calculated as the inverse of the probability (N/n). The name and address list sampling frame was constructed by first extracting from the Form EIA-863, "Petroleum Product Sales Identification Survey," companies who marked the box on the survey indicating they sell propane. This was augmented by companies on the Office of Oil and Gas Master File who have the words propane or liquefied petroleum gas (LPG) in their name. In addition, companies who file the Form EIA-782A, "Refiners'/Gas Plant Operators' Monthly Petroleum Product Sales Report," and report retail propane or the Form EIA-782C, "Monthly Report of Petroleum Products Sold into States for Consumption," and report propane, as well as companies that were active on the Form EIA-174, "Liquefied Petroleum Gas Survey," prior to its discontinuance, were included.

After unduplicating these companies, the initial frame file contained approximately 5,100 companies. Additional companies were obtained from an extract of a current Dun and Bradstreet file of SIC code 5984(9903), primary and secondary retail propane dealers, containing 3,283 names and addresses. Removal of duplicates within this file and between it and the initial frame file was performed using tailored automated match programs with manual review, and resulted in approximately 1,000 potential adds to the initial file. Similarly, additional names and addresses were furnished by industry associations and journals and by State Energy Offices, yielding another 7,429 names. Again, removal of duplicates through the match programs yielded an approximate potential add of 900 companies. Another 800 companies were identified as residing on the Master File but not previously selected as potential propane sellers. Further matching, merging and unduplicating reduced the final total frame count to approximately 6,000 companies. Reseller/retailer propane price data were unavailable to calculate a target coefficient of variation. However, it was expected that residential propane price variances were similar to heating oil. Increases in variances were expected as a result of lack of detailed stratification, but were only expected to reach three to four percent.

Revision Error

The numbers in Tables B3 and B4 display revision errors for heating oil and propane prices collected during the 1992/93 survey season. Numbers may be revised in the publication based on data received late or receipt of revised data. Numbers are published as preliminary and final. The difference between preliminary and final data is called the revision error.

Response Rate

Response rates are generally 95 to 100 percent.

Table B1. Coefficients of Variation for Residential Heating Oil Prices by Region and State
(Cents per Gallon)

Region/State	1993/94 Heating Season											
	10/04	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21

Coefficients of Variation for Residential Heating Oil Prices by Region and State for October 5, 1993 will appear in the publication for the week ending October 22, 1993.

Source: Based on data collected by State Energy Offices.

Table B2. Coefficients of Variation for Residential Propane Prices by Region and State
(Cents per Gallon)

Region/State	1993/94 Heating Season											
	10/04	10/18	11/01	11/15	12/06	12/20	01/03	01/17	02/07	02/21	03/07	03/21

Coefficients of Variation for Residential Propane Prices by Region and State for October 5, 1993 will appear in the publication for the week ending October 22, 1993.

Source: Based on data collected by State Energy Offices.

Table B3. Revision Rates for Residential Heating Oil Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season											
	10/05	10/19	11/02	11/16	12/07	12/21	01/04	01/18	02/01	02/15	03/01	03/15
Average	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
East Coast (PADD I)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New England (PADD IX)	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Connecticut	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maine	0.0	0.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Massachusetts	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
New Hampshire	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.0	0.3	0.0	0.0	0.0
Rhode Island	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Vermont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central Atlantic (PADD IY)	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Delaware	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
District of Columbia	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maryland	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Jersey	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New York	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pennsylvania	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Lower Atlantic (PADD IZ)	0.0	1.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
North Carolina	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Virginia	0.0	2.6	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Midwest (PADD II)	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Indiana	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Iowa	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Michigan	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minnesota	0.0	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Ohio	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wisconsin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Source: Based on data collected by State Energy Offices.

Table B4. Revision Rates for Residential Propane Prices by Region and State
(Cents per Gallon)

Region/State	1992/93 Heating Season							
	10/05	10/19	11/02	11/16	12/07	12/21	01/04	01/11
Average	0.0	0.2	0.2	0.0	0.1	0.0	0.0	0.0
East Coast (PADD I)	0.0	0.4	0.1	0.1	0.0	0.0	0.0	0.0
New England (PADD IX)	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0
Connecticut	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maine	0.0	0.1	0.4	0.1	0.0	0.0	0.0	0.0
Massachusetts	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
New Hampshire	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Rhode Island	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
Vermont	0.0	0.0	0.0	1.9	0.0	0.0	0.0	0.0
Central Atlantic (PADD IY)	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Delaware	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maryland	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
New Jersey	0.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0
New York	0.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0
Pennsylvania	0.0	1.8	0.6	0.0	0.0	0.0	0.0	0.0
Lower Atlantic (PADD IZ)	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
North Carolina	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Virginia	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0
Midwest (PADD II)	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Indiana	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Iowa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kansas	0.0	1.0	1.1	0.0	0.0	0.0	0.0	0.0
Michigan	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Minnesota	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Missouri	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
North Dakota	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ohio	0.0	3.3	0.0	0.0	0.0	0.0	0.0	0.0
South Dakota	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0
Wisconsin	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0

Region/State	1992/93 Heating Season							
	01/18	01/25	02/01	02/15	03/01	03/15	04/05	04/19
Average	0.1	0.0	0.0	0.1	0.2	0.0	0.1	0.0
East Coast (PADD I)	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0
New England (PADD IX)	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0
Connecticut	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0
Maine	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0
Massachusetts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Hampshire	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Rhode Island	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
Vermont	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Central Atlantic (PADD IY)	0.1	0.0	0.0	0.0	1.4	0.0	0.0	0.0
Delaware	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maryland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
New Jersey	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
New York	0.0	0.0	0.0	0.0	3.9	0.0	0.0	0.0
Pennsylvania	0.2	0.0	0.1	0.3	0.0	0.0	0.0	0.0
Lower Atlantic (PADD IZ)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Carolina	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Virginia	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Midwest (PADD II)	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Indiana	1.4	0.0	0.0	0.0	0.0	0.0	2.6	0.0
Iowa	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Kansas	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Michigan	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minnesota	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Missouri	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
North Dakota	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ohio	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
South Dakota	0.0	0.0	0.0	0.0	0.1	0.0	2.5	0.0
Wisconsin	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0

Note: • Due to significant wholesale prices increases between January 4 and January 11, 1993, stemming from low propane stocks in the Midwest, EIA initiated weekly collection of State propane prices to monitor prices at the retail level. • Data in table appear in absolute values.
Source: Based on data collected by State Energy Offices.

Note 6. Provisions Regarding Confidentiality of Information

The Office of Legal Counsel of the Department of Justice concluded on March 20, 1991, that the Federal Energy Administration Act requires the Energy Information Administration to provide company-specific data to the Department of Justice, or to any Federal agency when requested for official use, which may include enforcement of Federal law. The information contained on this form 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 Congressional agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order.

The information contained on this form will be 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. section 552, the DOE regulations, 10 C.F.R. section 1004.11, implementing the FOIA, and the Trade Secrets ACT, 18 U.S.C. section 1905.

Upon receipt of a request for this information under the FOIA, the DOE shall make a final determination whether the information is exempt from disclosure in accordance with the procedures and criteria provided in the regulations. To assist us in this determination, respondents should demonstrate to the DOE that, for example, their information contains trade secrets or commercial or financial information whose release would be likely to cause substantial harm to their company's competitive position. A letter accompanying the submission that explains (on an element-by-element basis) the reasons why the information would be likely to cause the respondent substantial competitive harm if released to the public would aid in this determination. A new justification does not need to be provided each time information is submitted on the form, if the company has previously submitted a justification for that information and the justification has not changed.

Glossary

Downstream processing units are used to upgrade petroleum products.

Definitions of Petroleum Products and Other Terms

Balancing Item. Represents differences between the sum of the components of natural gas supply and the sum of the components of natural gas disposition. These differences may be due to quantities lost or to the effects of data reporting problems. Reporting problems include differences due to the net result of conversions of flow data metered at varying temperatures and pressure bases and converting to a standard temperature and pressure base; the effect of variations in company accounting and billing practices; differences between billing cycle and calendar period time frames; and imbalances resulting from the merger of data reporting systems that vary in scope, format, definitions, and type of respondents.

Barrel. A volumetric unit of measure for crude oil and petroleum products equivalent to 42 U.S. gallons. This measure is used in most statistical reports.

Bulk Terminal. A facility used primarily for the storage and/or marketing of petroleum products which has a total bulk storage capacity of 50,000 barrels or more and/or receives petroleum products by tanker, barge, or pipeline.

Commercial Consumption. Gas used by nonmanufacturing establishments or agencies primarily engaged in the sale of goods or services. Included are such establishments as hotels, restaurants, wholesale and retail stores and other service enterprises; gas used by establishments engaged in agriculture, forestry, and fisheries; and gas used by local, State, and Federal agencies engaged in nonmanufacturing activities.

Degree-Day Normals. Simple arithmetic averages of monthly or annual degree-days over a long period of time (usually the 30-year period 1951-1980). These may be simple degree-day normals or population-weighted degree-day normals.

Distillate Fuel Oil. A general classification for one of the petroleum fractions produced in conventional distillation operations. It is used primarily for space heating, on-and-off-highway diesel engine fuel (including railroad engine fuel and fuel for agricultural machinery), and electric power generation. Included are products known as No. 1, No. 2, and No. 4 fuel oils; No. 1, No. 2, and No. 4 diesel fuels. Distillate fuel oil is reported in the following sulfur categories: 0.05% sulfur and under and Greater than 0.05% sulfur.

No. 1 Distillate. A petroleum distillate which meets the specifications for No. 1 heating or fuel oil as defined in ASTM D 396 and/or the specifications for No. 1 diesel fuel as defined in ASTM Specification D 975 with distillation temperatures of 420° F at the 10-percent recovery point and 550° F at the 90-percent recovery point, and kinematic viscosities between 1.4 and 2.2 centistokes at 100° F.

No. 2 Distillate. A petroleum distillate which meets the specifications for No. 2 heating or fuel oil as defined in ASTM D 396 and/or the specifications for No. 2 diesel fuel as defined in ASTM Specification D 975 with distillation temperatures of 540° and 640° F at the 90-percent recovery point, and kinematic viscosities between 2.0 and 4.3 centistokes at 100° F.

No. 4 Fuel Oil. A fuel oil for commercial burner installations not equipped with preheating facilities. It is used extensively in industrial plants. This grade is a blend of distillate fuel oil and residual fuel oil stocks that conforms to ASTM Specification D396 or Federal Specification VV-F-815C; with minimum and maximum kinematic viscosities between 5.8 and 26.4 centistokes at 100° F. Also included is No. 4-D, a fuel oil for low and medium-speed diesel engines that conforms to ASTM Specification D975.

Dry Natural Gas Production. Marketed production less extraction loss.

Electric Utility Consumption. Gas used as fuel in electric utility plants.

Ending Stocks. Primary stocks of crude oil and petroleum products held in storage as of the end of a specific report period. For the monthly report period this is as of 12 midnight on the last day of the month. For the weekly report period, 7 a.m. each Friday. Primary stocks include crude oil or petroleum products held in storage at (or in) leases, refineries, natural gas processing plants, pipelines, tank farms, and bulk terminals that can store at least 50,000 barrels of petroleum products or that can receive petroleum products by tanker, barge, or pipeline. Crude oil that is in-transit by water from Alaska, or that is stored on Federal leases or in the Strategic Petroleum Reserve is included. Primary stocks exclude stocks of foreign origin that are held in bonded warehouse storage.

Exports. Shipments of goods from the 50 States and the District of Columbia to foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories.

Heating Degree-Days. The number of degrees per day the daily average temperature is below 65 degrees F. The daily average temperature is the mean of the maximum and minimum temperature for a 24-hour period.

Imports. Receipts of goods into the 50 States and the District of Columbia from foreign countries, Puerto Rico, the Virgin Islands, and other U.S. possessions and territories.

Industrial Consumption. Natural gas used by manufacturing and mining establishments for heat, power, and chemical feedstock.

Liquefied Natural Gas (LNG). Natural gas (primarily methane) that has been liquefied by reducing its temperature to minus 260 degrees Fahrenheit at atmospheric pressure.

Natural Gas. A mixture of hydrocarbon compounds and small quantities of various nonhydrocarbons existing in the gaseous

phase or in solution with crude oil in natural underground reservoirs at reservoir conditions.

Natural Gas Processing Plant. A gas processing plant is a facility designed (1) to achieve the recovery of natural gas liquids from the stream of natural gas which may or may not have been processed through lease separators and field facilities, and (2) to control the quality of the natural gas to be marketed. Cycling plants are classified as gas processing plants.

Net Production. Petroleum products produced at a refinery, natural gas processing plant, or blending plant. Published production of these products equals production minus input. Negative production will occur when the amount of a product produced during the month is less than the amount of that same product that is reprocessed (input) or reclassified to become another product during the same month.

Pipeline. Crude oil and product pipelines used to transport crude oil and petroleum products respectively, (including interstate, intrastate, and intracompany pipelines) within the 50 States and the District of Columbia.

Population-Weighted Degree-Days. Heating or cooling degree-days weighted by the population of the area in which the degree-days are recorded. To compute national population-weighted degree-days, the Nation is divided into nine Census regions comprised of from three to eight States which are assigned weights based on the ratio of the population of the region to the total population of the Nation. Degree-day readings for each region are multiplied by the corresponding population weight for each region and these products are then summed to arrive at the national population weighted degree-day figure.

Product Supplied. Approximately represents consumption of petroleum products because it measures the disappearance of these products from primary sources, i.e., refineries, natural gas processing plants, blending plants, pipelines, and bulk terminals. In general, product supplied of each product in any given period is computed as follows: field production, plus refinery production, plus imports, plus unaccounted for crude oil, (plus net receipts when calculated on a PAD District basis), minus stock change, minus crude oil losses, minus refinery inputs, minus exports.

Propane (C3H8). A normally gaseous straight-chain hydrocarbon. It is a colorless paraffinic gas that boils at a temperature of -43.67 degrees F. It is extracted from natural gas or refinery gas streams. It includes all products designated in ASTM Specification D1835 and Gas Processors Association Specifications for commercial propane and HD-5 propane.

Propylene (C3H6). An olefinic hydrocarbon recovered from refinery processes or petrochemical processes.

Refinery. An installation that manufactures finished petroleum products from crude oil, unfinished oils, natural gas liquids, other hydrocarbons, and alcohol.

Report Dates. The official report dates for the residential and wholesale price surveys are the first and third Mondays. The official day for the primary stock survey is 7 a.m. on the Friday preceding the report date.

Residential Consumption. Gas used in private dwelling, including apartments, for heating, air conditioning, cooking, water heating, and other household uses.

Residential Heating Oil Price. The price charged for home delivery of No. 2 heating oil, exclusive of any discounts such as those for prompt cash payment. Prices do not include taxes paid by the consumer.

Residential Propane Price. The "bulk keep full" price for home delivery of consumer grade propane intended for use in space heating, cooking, or hot water heaters in residences.

Storage Additions. Volumes of gas injected or otherwise added to underground natural gas reservoirs or liquefied natural gas storage.

Storage Withdrawals. Volumes of gas withdrawn from underground storage or liquefied natural gas storage.

Supplemental Gaseous Fuels Supplies. Synthetic natural gas, propane-air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

Underground Storage. The storage of natural gas in underground reservoirs at a different location from which it was produced.

Underground Storage Injections. Gas from extraneous sources put into underground storage reservoirs.

Underground Storage Withdrawals. Gas removed from underground storage reservoirs.

United States. For the purpose of this report, the 50 States and the District of Columbia. Data for the Virgin Islands, Puerto Rico, and other U.S. territories are not included in the U.S. Totals.

Wholesale Price. The rack price charged for No. 2 heating oil; that is, the price charged customers who purchase No. 2 heating oil free-on-board at a supplier's terminal and provide their own transportation for the product.

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12/13/93
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