

Monthly Energy Review

NTISUB/B/127-76/003

March 1976



Federal Energy
Administration

National Energy
Information Center

Washington
D.C. 20461

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The *Monthly Energy Review* is prepared in the office of Policy and Analysis under the general supervision of John D. Curtis, Office of Energy Systems Data.

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Curtailments of Natural Gas Service – January 1976

The cooperation of other government agencies and private establishments which provide much of the data appearing in this publication is gratefully acknowledged.

This periodical is available on a subscription basis from the following:

Subscriptions

National Technical Information Service

5285 Port Royal Road

Springfield, VA 22161

For addresses inside the United States, the cost is \$36 per subscription (12 issues). For addresses outside the United States, the cost is \$50 per subscription.

Correspondence regarding editorial matters should be addressed to:

Editor, Monthly Energy Review

National Energy Information Center

Federal Energy Administration

Washington, D.C. 20461

This Administrator has determined that the publication of this periodical is necessary in the transaction of public business required by law of this Agency. Use of funds for printing this periodical have been approved by the Director of the Office of Management and Budget through June 30, 1976.

Feature Article

HOME HEATING CONSERVATION ALTERNATIVES AND THE SOLAR COLLECTOR INDUSTRY

by

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OVERVIEW OF RESULTS

This article discusses analyses of 20-year costs for retrofitting single family residences with increased amounts of insulation and solar energy systems.

The results of this study indicate that the heating load of the "average" single family dwelling with 2 1/2 inches of ceiling insulation can be reduced up to approximately 35 percent by (1) adding enough ceiling insulation to equal 10 to 12 inches and (2) installing storm windows and doors. This is for a home in an area with solar radiation characteristics similar to those of Washington, D.C.

Twenty-year life cycle cost analyses show that water and space heating via solar collector systems competes favorably with conventional electrical heating systems, but not with conventional gas or oil heating systems except in regions of the country where there are extremely high fossil fuel prices. If solar collectors were mass produced, the competitive advantage might increase because of reduction in costs.

The level of manufacturing activity in the solar collector industry, based on FEA surveys, is also discussed in this report. There are indications of a 400 percent increase in the production of medium-temperature flat plate solar collectors during 1975. Continued rapid expansion will have to occur before solar collectors will have an appreciable impact on the country's total consumption of fossil fuels.

INTRODUCTION

Because of renewed concern over the depletion of our fossil fuel reserves, the United States, during the past few years, has initiated investigations of alternative sources of energy. Legislation has been passed and new executive agencies have been created to implement suitable programs for research, development, and demonstration of alternative energy sources.

Solar radiation is a large potential source of future energy for this country. It is estimated that the amount of solar energy falling on the continental United States in 1 year is 700 times our annual rate of energy

consumption. However, the systems currently available for using solar energy are initially expensive. Before widespread utilization of solar energy can occur, efficient and cost effective means of converting solar radiation into readily consumable modes of energy must be developed.

The six major solar energy conversion areas are:

1. Solar heating and cooling of buildings,
2. Wind energy conversion,
3. Solar thermal conversion,
4. Ocean thermal conversion,
5. Photovoltaic (solar cell) electric power systems,
6. Bioconversion to fuels.

Solar heating and cooling of buildings is generally considered to be the most promising application of solar energy and the most likely to have the earliest widespread residential and commercial use.

Approximately 20 percent of all energy consumed in this country is used for heating and cooling buildings. Large amounts of fossil fuels could be saved with widespread adoption of insulation and solar heating systems. Merely having 10 to 12 inches of ceiling insulation and storm windows and doors will make conventional heating systems more effective. These modifications can be made at moderate costs (see Table 3).

Solar heating systems can also bring about substantial fossil fuel energy savings. However, the current high initial costs, coupled with the public's unfamiliarity with solar collector performance over a period of years, present a major obstacle to the widespread adoption of solar heating systems. The homeowner who has decided to install a solar heating system in an existing home must be prepared to finance the entire capital cost of the system at the time of installation. Also, in the case of a new home, if the bank does not include the added costs of the solar system in the assessed valuation of the home, the individual must pay for the system out of his pocket. (Banks do not uniformly include the cost of the solar system in their mortgages.) In the case of existing homes, financing can be arranged with a home improvement loan if the lender considers solar systems an eligible reason for a loan. The Federal Housing Admin-

istration has not yet issued a ruling on whether solar systems qualify for FHA loans.

SOLAR HEATING SYSTEMS

Most of the components of solar heating systems are off-the-shelf items commonly used for conventional fossil fuel systems. The major exception is the medium-temperature flat plate solar collector used to heat either the liquid or air that serves as the heat distribution medium.

Medium-temperature flat plate solar collectors are usually large rectangular insulated boxes with one or two transparent plates of glass or plastic on the surface and thin tubes of copper, aluminum, or steel attached to an absorber plate below the surface. Liquid or air is circulated through the tubes and heated by the sun's rays. The heat is either piped through the space heating system for immediate use or stored for later use at night or during days when the sun is not shining.

Low-temperature flat plate collectors are used almost exclusively to heat swimming pools. These collectors are usually made of plastic or rubber and are designed to increase the temperature of large streams of rapidly circulating water by 5 to 10° F. These collectors are modestly priced but are not expected to last as long as medium-temperature collectors.

An interesting solar space heating and cooling application that may not present the above capital financing problems is the system installed in a house constructed in Atascadero, California. An evaluation of this house, sponsored by the Department of Housing and Urban Development, indicates that it could be built at little additional cost over the price of a comparable house with a conventional heating and cooling system.¹

The heating and cooling system in the Atascadero house does not utilize flat plate collectors, but instead has huge plastic bags filled with water installed above the roof of the home. An insulation covering is built so that it can be easily pulled on or off the water bags. During the heating season, the insulation cover is removed during the day so that the sun can warm the water filled bags. The heat collected by the water bags then radiates through the metal roof and throughout the house. At night, the moveable insulation covering is pulled over the water bags to keep the heat inside the house and to avoid heat radiation from the water bags into the atmosphere.

During the cooling season, the opposite is done. In the daytime, the insulation cover is kept over the water bags to keep additional heat from entering the house. At night, the insulation cover is removed to allow heat from the house to escape to the atmosphere. A drawback to this type of system is that it can only be used in areas of the country where there is high solar intensity during the heating season and low humidity in the cooling season.

An important factor affecting the utilization of solar heating systems is that solar energy cannot be collected at night or when there is heavy cloud cover or precipitation. There are also many factors that affect the amount of energy that can be collected on sunny days. Temperature, wind velocity, dust, moisture, and various other atmospheric conditions all affect the amount of solar energy that can be collected and utilized. Consequently, solar heating and cooling systems must have either a separate conventional heating and cooling backup system or sufficient storage capability to accommodate the periods when the sun is not shining.

The U.S. Weather Bureau collects data on solar radiation for many locations throughout the country. Table 1

Table 1. Average Daily Solar Radiation (in langleys*)

City	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Annual Daily Average
Fairbanks, Alaska	16	71	213	376	461	504	434	317	180	82	26	6	224
Pittsburgh, Pennsylvania	94	169	216	317	429	491	497	409	339	207	118	77	280
Washington, D.C.	174	266	344	411	551	494	536	446	375	299	211	166	356
Gainesville, Florida	267	343	427	517	579	521	488	483	418	347	300	233	410
Los Angeles, California	248	331	470	515	572	596	641	581	503	373	289	241	463
Phoenix, Arizona	301	409	526	638	724	739	658	613	566	449	344	281	520
China Lake, California	306	412	562	683	772	819	772	729	635	467	363	300	568

*See footnote on page 4 for definition of a langley.

¹ Research Evaluation of a System of Natural Air Conditioning, California Polytechnic State University, HUD Contract No. H2026R, January 1975.

provides the average daily solar radiation for a selected list of cities with widely varying annual averages. For instance, 2.5 times more solar energy can be collected in China Lake, California, than in Fairbanks, Alaska. It should be noted also that the annual daily average in Fairbanks, for example, varies from 16 langleys² in January to 504 langleys in June. Therefore, it would be much more cost effective to install solar collectors for space and water heating in China Lake than in Fairbanks. The decision to install collectors is heavily dependent on the amount of available solar radiation. Sufficient solar radiation has to be available in the region in order to recoup the large initial capital investment in a reasonable period of time. If fossil fuel costs continue to increase at a rapid rate, solar collectors will be the better economic choice over wider geographic areas.

COST ANALYSIS

This section presents estimates of the present value of 20-year costs associated with a number of different energy conservation measures available to the average homeowner. The costs associated with each alternative, at present monetary value, are compared. The assumptions used as a basis for computations in this section are provided in Table 2.

Table 2. Assumptions for the Analysis

Physical Characteristics for an Average House

- "Average" single-family house located in Washington, D.C.
 - 1,200 sq. ft. floor space and 1,100 sq. ft. attic space
 - 157 million Btu annual heating requirements
 - 182 day heating season
- Solar radiation measurements used are for the Washington, D.C., area as shown in Table 1.
- Collectors are installed at 50° angle to horizontal and receive 1.15 times as much solar radiation as a horizontal collector receives.

Comparative Efficiencies of Residential Heating Systems

- Collector efficiency = 50 percent
- Gas and oil furnace efficiency = 67 percent
- Electrical heating efficiency = 100 percent

Cost Parameters

- Solar collector systems on the average cost \$15 per square foot.
- Salvage value of a solar collector system is one-third of its original value.

The "average" data in Table 2 and in succeeding tables represent one estimate in a wide range of possible values. In certain regions of the country, the space and water heating requirements of a 1,200-square-foot house are more than 157 million Btu per year, or the cost of collectors may be \$30 per square foot rather than \$15. These variations need to be taken into account in a cost analysis for a given house or region.

Before computing the size of a solar heating and cooling system needed for a particular building, it is advisable to incorporate as many passive energy conservation techniques as possible. In the past, buildings in this country were designed and constructed on the assumption that cheap fossil fuels would continue to be available. It was easy to ignore energy conservation techniques in construction because the additional amount of fossil fuel needed to heat a poorly insulated building was relatively inexpensive. With available construction techniques, however, it is possible to decrease the amount of energy needed to heat and cool a building by over 50 percent. Maximum insulation over ceilings and in walls, storm windows and doors, use of selective building materials, exposure to the south, placement of rooms, and summer shading all dramatically reduce the amount of energy necessary to heat or cool a building.

The house used in this analysis has one story, 1,200 square feet of floor space, 1,100 square feet of attic space, and requires 157 million Btu of energy to provide water and space heating for a year. The alternative energy conservation methods considered range from adding increasing amounts of insulation to using solar collectors of different sizes. Table 3 indicates that by adding insulation and storm doors (alternatives 2 and 3), the energy required to heat the average house can be reduced 35 percent (from 157 to 102 million Btu). Adding the solar heating systems, as in alternatives 4, 5 and 6, further decreases annual fossil fuel Btu requirements from 102 million to negligible amounts. Installing 100 square feet of collectors for domestic water heating purposes will reduce the amount of fossil fuels used for water heating by 99 percent.

Table 3 also lists the initial capital costs associated with purchasing the various systems. For example, alternative 3 involves the purchase of \$820 worth of insulation and reduces the heating requirements of the average house by 35 percent. Had this insulation not been installed, it would have required \$7,000 worth of solar equipment to provide an equivalent amount of heating. It is advisable, then, to install the maximum amount of useful insulation before adding any solar heating equipment.

It costs approximately \$10,000 to outfit the average house with solar heating equipment. However, this figure

² A langley is a unit of radiation defined as 1 gram calorie per square centimeter. It is equivalent to 3.69 Btu per square foot.

Table 3. Energy Requirements and Initial Equipment Costs for Various Retrofit Alternatives

Retrofit Alternatives	Yearly Energy Requirements*		Percent Reduction in Fossil Fuel Requirement	Initial Equipment Cost		
	Total Energy	Fossil Fuel		Cost of Insulation**	Cost of Solar Equipment***	Total Cost
	(in million Btu)					
Insulation, Solar Space and Water Heating						
Base Case						
2½" Insulation above ceiling (average U.S. home)	157	157	—	—	—	—
Alternatives						
1. 2½" Insulation plus 200 sq. ft. of solar collectors	157	111	29	\$110	\$3,000	\$3,110
2. 6" Insulation plus storm windows and doors	117	117	25	620	—	620
3. 10" to 12" Insulation plus storm windows and doors	102	102	35	820	—	820
4. 10" to 12" Insulation plus storm windows and doors plus 200 sq. ft. of solar collectors	102	57	64	820	3,000	3,820
5. 10" to 12" Insulation plus storm windows and doors plus 400 sq. ft. of solar collectors	102	31	80	820	6,000	6,820
6. 10" to 12" Insulation plus storm windows and doors plus 600 sq. ft. of solar collectors	102	13	92	820	9,000	9,820
Solar Water Heating Only						
Base Case						
Domestic water heating requirement of average U.S. home	27	27	—	—	—	—
Alternatives						
1. 100 sq. ft. of solar collectors	27	1	99	—	1,500	1,500

**Retrofitting Homes for Energy Conservation*, NAHB Research Foundation, indicates that the "average" home used in our calculations requires 130 million Btu for space heating; 27 million Btu were added to this to account for domestic water heating requirements.

**Based on FEA survey of retail stores in D.C. area, March 1975.

***Based on estimate of \$15 per sq. ft. of solar system installed, obtained from FEA semi-annual survey of "Solar Collectors Manufacturing Activity," August 1975.

does not include the potential savings that would result from integrating the solar collector into the physical structure of the house, where it could serve as a roof or wall. Also our estimate does not consider the potential reduction in cost which might result from mass production of solar collectors.

Fossil Fuel Operating Costs

There are great differences in the costs of heating identical houses with different types of heating systems. At the time this analysis was prepared, electricity cost four times more than natural gas or oil. Therefore, the savings provided by various energy conserving alterna-

tives are considerably greater when compared with conventional electric heating than when compared with natural gas or oil systems. Table 4 shows the impact of each alternative on yearly fuel costs for natural gas, oil, and electric heating systems for each of the three price scenarios shown in Table 5. Alternative 3, for example, utilizing PIES³ prices, will save \$224 in annual fuel costs

³ PIES is the Project Independence Evaluation System developed by FEA to forecast energy prices and quantities for 1980, 1985, and 1990. The prices used in this paper are from the 1985 reference case expressed in 1975 dollars assuming deregulation of natural gas, decontrol of domestic oil prices, and a continuation of current real prices for imported oil.

Table 4. Yearly Fuel Costs for Various Retrofit Scenarios (in 1975 Dollars)*

Retrofit Alternatives	Pre-embargo Prices**			PIES Prices***			Highest Current Prices†		
	Natural Gas	Oil	Electricity	Natural Gas	Oil	Electricity	Natural Gas	Oil	Electricity
Insulation, Solar Water and Space Heating									
Base Case									
2½" Insulation above ceiling (average U.S. Home)	\$338	\$429	\$1,353	\$639	\$575	\$1,609	\$1,035	\$733	\$2,758
Alternatives									
1. 2½" Insulation plus 200 sq. ft. of solar collectors	239	303	957	452	406	1,138	731	518	1,950
2. 6" Insulation plus storm windows and doors	252	319	1,009	476	428	1,199	771	546	2,056
3. 10" to 12" Insulation plus storm windows and doors	219	278	879	415	373	1,046	672	476	1,792
4. 10" to 12" Insulation plus storm windows and doors plus 200 sq. ft. of solar collectors	123	156	491	232	209	584	376	266	1,001
5. 10" to 12" Insulation plus storm windows and doors plus 400 sq. ft. of solar collectors	67	85	267	126	113	318	204	145	545
6. 10" to 12" Insulation plus storm windows and doors plus 600 sq. ft. of solar collectors	28	35	112	53	48	133	86	61	228
Solar Water Heating Only									
Base Case									
Domestic Water Heating Requirement of Average U.S. Home	39	49	233	73	66	277	119	84	474
Alternatives									
1. 100 sq. ft. of solar collectors	1	1	3	1	1	3	1	1	6

*Yearly fuel costs = annual thermal load X fuel price in each scenario (see Table 6).
 **Average residential fuel costs during 1972.
 ***Reference scenario prices for 1985 assuming \$13-per-barrel imported oil.
 †Maximum current prices in the United States.

Table 5. Residential Fuel Prices per Million Btu (in 1975 Dollars)

	Pre-embargo	Project Independence Evaluation System (PIES)	Highest Current Price
Natural Gas	\$1.43	\$2.71	\$4.39
Oil	1.82	2.44	3.11
Electricity	8.62	10.25	17.57

for the average house heated by natural gas, \$202 for the house heated by oil, and \$563 for the electrically heated house. Alternative 6, the option with the largest solar collector, will save \$586 in annual fuel costs when replacing natural gas, \$527 when replacing oil, and \$1,476 when replacing electricity. These savings are nearly doubled when the "highest current prices" are used in the analysis.

Table 4 also shows the fossil fuel savings provided by solar water heaters alone. Installing 100 square feet of solar collectors satisfies nearly all domestic hot water

requirements of the average house and reduces the use of fossil fuels for this purpose to negligible amounts.

Present Value of Conservation and Solar Alternatives

Table 6 lists the present values of the six home-heating alternatives under three price scenarios in 1975 dollars. A 6-percent discount rate is used over a 20-year period of analysis. Two-thirds of the capital investment is depreciated linearly over the 20 years.

Table 6 shows that solar heating appears to be only marginally competitive with natural gas and oil heating. Using either pre-embargo or PIES prices, the least expensive option is maximum insulation (alternative 3). In the high price scenario, however, alternative 4 (maximum insulation with 200 square feet of collectors) is the least expensive choice.

In the case of electric heating, all solar alternatives become worthwhile. The present values of the solar alternatives range from 15 percent to 50 percent less than the maximum insulation alternative when using pre-embargo, PIES, or the highest current electricity prices.

Table 6. Present Value of Various Retrofit Alternatives (in 1975 Dollars)**†

Retrofit Alternatives	Natural Gas			Oil			Electricity		
	Pre-embargo Scenario	PIES Scenario	High Price Scenario	Pre-embargo Scenario	PIES Scenario	High Price Scenario	Pre-embargo Scenario	PIES Scenario	High Price Scenario
Insulation, Solar Water and Space Heating									
Base Case									
2½" Insulation above ceiling (average U.S. home)	\$3,877	\$7,329	\$11,871	\$4,921	\$6,595	\$8,408	\$15,519	\$18,455	\$31,634
Alternatives									
1. 2½" Insulation plus 200 sq. ft. of solar collectors	5,430	7,873	11,073	6,164	7,345	8,630	13,665	15,741	25,055
2. 6" Insulation plus storm windows and doors	3,446	6,015	9,399	4,214	5,465	6,818	12,129	14,308	24,138
3. 10" to 12" Insulation plus storm windows and doors	3,247	5,495	8,443	3,923	5,013	6,194	10,817	12,732	21,289
4. 10" to 12" Insulation plus storm windows and doors plus 200 sq. ft. of solar collectors	4,834	6,084	7,736	5,212	5,820	6,474	9,055	10,121	14,904
5. 10" to 12" Insulation plus storm windows and doors plus 400 sq. ft. of solar collectors	6,880	7,556	8,451	7,086	7,407	7,774	9,174	9,759	12,362
6. 10" to 12" Insulation plus storm windows and doors plus 600 sq. ft. of solar collectors	9,121	9,407	9,786	9,201	9,350	9,499	10,084	10,325	11,415
Solar Water Heating Only									
Base Case									
Domestic Water Heating Requirement of Average U.S. Home	<u>443</u>	<u>839</u>	<u>1,360</u>	<u>564</u>	<u>756</u>	<u>963</u>	2,670	3,174	5,441
Alternatives									
1. 100 sq. ft. of solar collectors	1,350	1,355	1,361	1,351	1,354	1,356	<u>1,378</u>	<u>1,384</u>	<u>1,413</u>

*Present value formula used was $PV = \sum_{t=1}^T \frac{TC(t)}{(1+i)^t}$ where V_t = value of system at start of period t ; d_t = depreciation in period t ; $V_{t+1} = V_t - d_t$; P_t = total cost of fuel during period t ; i = interest rate (net of inflation); $TC(t) = (i \times V_t + d_t) + P_t$; the interest rate used was 6 percent; two-thirds of total system costs were depreciated over 20 years and a salvage value of one-third the original value of the system was assumed.
 †Boxes indicate best choice for each fuel and price scenario for insulation, solar space and water heating alternatives. Double underline indicates best choice for solar water heating only alternatives.

In general, Table 6 shows that it is always cost effective to install maximum insulation in any home irrespective of the type of heating fuel. The choice of installing a collector in addition to maximum insulation becomes attractive only in the case of high priced energy. This is due to the high initial capital investment for the collector and the necessary supporting systems. In those sections of the country where fuel costs are high, especially for electrically heated homes, it is always cost effective to install solar heating systems.

Table 6 indicates that solar domestic water heating is highly competitive with electricity but is not yet competitive with either oil or natural gas except for the high price scenario. The present value of a solar water heating system with a 100-square-foot collector is half the cost of an electric system under pre-embargo prices and one-quarter the cost using highest current electricity prices.

SOLAR COLLECTOR SURVEY

In early 1975, FEA began conducting semi-annual telephone surveys of companies that manufacture and sell flat plate solar collectors to determine the overall activity and growth rate of the nascent solar heating and cooling industry. These surveys showed evidence of increased purchases of solar collectors by the public and are in line with the analytical results that indicate a cost advantage for solar systems in certain parts of the country.

The first survey was for all of 1974, the second covered the first 6 months of 1975, and the third covered the last 6 months of 1975.

A master list of possible solar collector manufacturers was compiled from sources in both the public and private sectors involved in solar energy. (The master list

is updated as new manufacturers are identified.) Information collected from a representative of each firm includes the number of square feet of collectors manufactured during the period covered by the survey and the number of square feet of manufactured inventory actually sold during the same time period. Care is taken to avoid double counting of items manufactured by one firm and distributed by another.

Findings

During 1975, production and sales of medium-temperature solar collectors increased over 400 percent compared with production and sales during 1974. The number of firms manufacturing medium-temperature collectors increased from 39 during 1974 to 118 during 1975 (Table 7). The number of square feet of medium-temperature collectors manufactured and sold increased from 136,540 square feet in 1974 to 717,260 square feet in 1975.

Low-temperature solar collector production and sales increased over 200 percent during 1975, compared with 1974 (Table 7). The number of square feet of low-temperature collectors manufactured and sold increased from 1.137 million square feet during 1974 to 3.662 million during 1975. The number of producers rose from 6 to 13 over the same time period.

Analysis

In spite of the dramatic increase in solar collector production between 1974 and 1975, the level of production is still negligible relative to its impact on this country's fossil fuel utilization. As shown in the calculations below, if all 717,260 square feet of the medium-temperature collectors manufactured in 1975 were installed in buildings at optimum angles, only 64 barrels of oil per day would be saved, compared with an average U.S. daily oil consumption of around 16 million barrels.

Average winter insolation for horizontal collector	900 Btu/sq. ft./day
Insolation on 717,260 sq. ft.	646×10^6 Btu/day
Insolation assuming all collectors are at optimal angles (latitude plus 10-15°)	743×10^6 Btu/day
Efficiency assumption for collector	0.5
Useful thermal energy	372×10^6 Btu/day
Oil replacement (5.8 million Btu/bbl)	64 barrels/day

Oil replacement, assuming home heated with oil at 67 percent efficiency	96 barrels/day
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Oil replacement assuming home is heated with electricity at 100 percent efficiency, and that oil is used to generate electricity	212 barrels/day
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The process of generating electricity from fossil fuels has an efficiency of only 30 percent, including generating and transmission losses. As shown above, if we assume that all 717,260 square feet of collectors were used to replace electric heat, the maximum oil equivalent of the useful solar energy absorbed by these collectors is 212 barrels per day. Assuming that there is a requirement of 500 square feet of collectors for the average house, then 1,434 of an estimated 70 million U.S. homes could be heated.

Approximately 557 to 836 barrels a day of fossil fuels could be saved by installing the 3.662 million square feet of low-temperature collectors manufactured in 1975. This calculation is the same as the one above, except that a 60-percent collector efficiency assumption is made and a higher average insolation (including the spring and fall months) is used.

CONCLUSION

Even with conservation efforts, the projected population and industrial growth of this country suggests that our energy demand will continue to increase. Accelerated development of the solar energy industry will insure that some small portion of this growing demand for fossil fuels will be supplied with the abundant and nondepletable energy from the sun.

The FEA solar manufacturing surveys indicate that increasing numbers of small and large firms are beginning to produce solar equipment. Cost analyses show that even using pre-embargo prices, the present cost of solar heating is considerably less than the cost of heating with electricity. Installing solar collectors is particularly desirable in those areas of the country with high fossil fuel prices.

Widespread educational efforts are needed to inform the public about solar energy and the advantages and costs of available systems. Taking into consideration endangered supplies of oil, modest reserves of natural gas and uranium, and environmental constraints of coal utilization, the need for accelerated development of solar energy is clear.

Acknowledgment

The authors would like to express their gratitude to George M. Lady for his helpful comments and suggestions on discounting procedures used in this report.

Table 7. Solar Collector Manufacturing Activity—1974 and 1975

Annual Production Rate (in square feet)	1974			1975			1975			1975		
				January through June			July through December			Total Year		
	No. of Mfrs.	Quantity Manufactured (in sq. ft.)	Percent of Total	No. of Mfrs.	Quantity Manufactured (in sq. ft.)	Percent of Total	No. of Mfrs.	Quantity Manufactured (in sq. ft.)	Percent of Total	No. of Mfrs.	Quantity Manufactured (in sq. ft.)	Percent of Total
Medium-temperature collectors												
Greater than 10,000	1	55,000	40.3	14	211,346	76.5	22	328,517	74.5	19	524,873	73.2
2,000 - 10,000	12	57,400	42.0	21	52,266	18.9	37	92,569	21.0	35	149,097	20.8
1,000 - 1,999	12	16,128	11.8	10	7,225	2.6	17	13,094	3.0	14	19,969	2.8
Less than 1,000	14	8,012	5.9	24	5,629	2.0	26	6,614	1.5	50	23,321	3.2
TOTAL	39	136,540	100.0	69	276,466	100.0	102	440,794	100.0	118	717,260	100.0
Low-temperature collectors	6	1,137,196		6	1,435,994		13	1,589,962		13	3,662,518	

Domestic energy production in January 1976 was 2.8 percent below the production level for the same month in 1975 and 6.5 percent below that for January 1974. Output during the month totaled 5.044 quadrillion Btu, or 28.1 million barrels per day of crude oil equivalent. Compared with January 1975, the following production declines were reported for the major energy sources: crude oil, -2.3 percent; coal, -7.9 percent; and natural gas, -2.3 percent. Only nuclear power showed increased output (18.6 percent).

January imports of fossil fuels were 15 percent higher than imports during the previous month. Crude oil imports increased 10 percent to a record high of almost 5 million barrels per day. Imports of refined petroleum products averaged 2.2 million barrels per day in January, a substantial 33-percent increase over December. Imports of natural gas, however, declined 4 percent. Total fossil fuel imports for January were 4 percent greater than imports for the comparable month in 1975.

The major source of U.S. crude oil imports in January was Saudi Arabia, which supplied 22.9 percent of the total according to Bureau of the Census data. Other large contributors were: Nigeria (16.8 percent), Canada (11.7 percent), Indonesia (9.9 percent), and Libya (8.8 percent). Mexico, which began to increase exports to the United States significantly during 1975, was the source of 1.4 percent of the crude oil imported in January.

In spite of a recent uptrend in refinery input that began in mid-1975, a newly released FEA study¹ estimated that net domestic refinery capacity increased only 146,000 barrels per day during the year. This increase was the smallest since 1965 and was 239,000 barrels per day less than the 1975 capacity growth rate forecasted in June. Most of the growth resulted from numerous small expansions of existing facilities. Among the factors contributing to the smaller than expected capacity increase were uncertainty about long-range government energy policy and soaring refinery construction costs.

¹ *Trends in Refinery Capacity and Utilization*, E. L. Peer and F. V. Marsik, Federal Energy Administration, December 1975.

Energy consumption in the United States declined for the second consecutive year during 1975. Consumption totaled 70.970 quadrillion Btu (the equivalent of 33.5 million barrels per day of crude oil), 2.6 percent below the level for 1974 and 4.8 percent below 1973. During the 10-year period ending 1973, consumption had increased at an average annual rate of 4.3 percent. The most pronounced consumption decline in 1975 was for natural gas, which fell 8 percent during the year. Demand for refined petroleum products decreased 2 percent. Consumption of coal and hydroelectric power were about equal to 1974 levels, but consumption of nuclear electric power was almost 50 percent higher.

Reflecting comparatively colder January weather, aggregate distillate oil heating degree-days for the continental States were 13 percent higher than for January 1975 and 1 percent above the normal for the month. Cumulative degree-days for the period July 1975 through January 1976 were 1.8 percent greater than (colder) the total for the corresponding period a year earlier, but 3.3 percent less than (warmer) normal.

Because of the colder temperatures, distillate fuel oil stocks were drawn down at a rate of nearly 1.3 million barrels per day in January, by far the largest drawdown of the current heating season. Residual fuel oil stocks also declined in January, but only by 102,000 barrels per day. Crude oil stocks, on the other hand, rose 353,000 barrels per day to a post-embargo high of 275.6 million barrels.

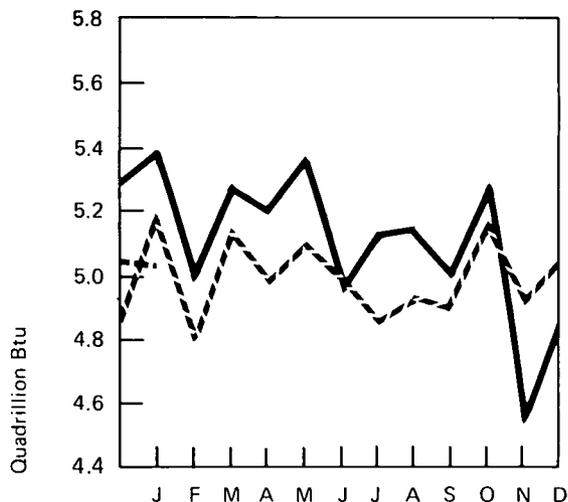
Electric utilities generated 8.2 percent more power during January 1976 than during January 1975. The increase was also attributed to the relatively colder weather. Sales of electricity for the period January through November 1975 showed an increase in residential and commercial usage of 5.9 percent and 6.8 percent, respectively, compared with the usage for the same period in 1974. Sales to industrial users, however, declined 5.4 percent.

Retail gasoline prices continued to fall in January. The average price for regular gasoline sold at full service retail outlets dropped 0.3 cent to 57.7 cents per gallon. The selling price has declined 1.6 cents since September 1975 when retail gasoline prices reached their highest historical levels.

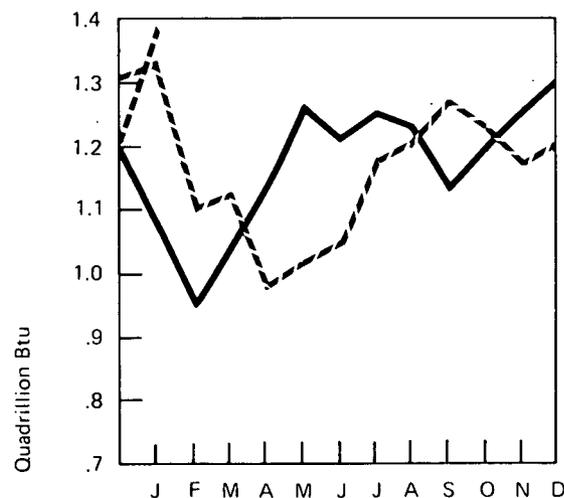
The leading indicators of resource development activity were mixed in January. Although oil and gas drilling posted substantial gains compared with drilling activity for January 1975 (active drilling rigs and well completions were 6 percent and 10 percent higher, respectively), seismic exploration activity declined for the fifth consecutive month. The decline was most evident for marine exploration, which has dropped off 50 percent since last September.

Because of lowered demand for petroleum products, worldwide crude oil production averaged only 53.2 million barrels per day in 1975, about 2.6 million barrels per day less than in 1974 and 1973. OPEC countries were the source of 52 percent of world production during 1975, down from 55 percent for the previous 2 years.

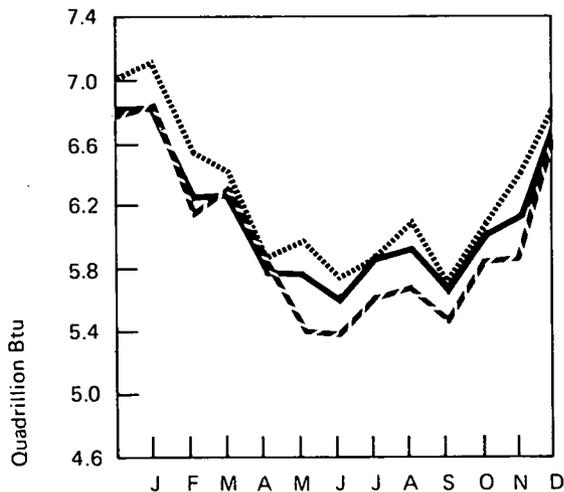
Domestic Production of Energy



Imports of Fossil Fuels



Domestic Consumption of Energy



..... 1973
 ——— 1974
 - - - 1975
 - - - 1976

		Domestic Production of Energy*	Imports of Fossil Fuels**	Domestic Consumption of Energy***
In quadrillion (10 ¹⁵) Btu				
1973	Jan	5.367	1.167	7.140
	Feb	4.937	1.163	6.507
	Mar	5.370	1.303	6.426
	Apr	5.112	1.078	5.857
	May	5.311	1.154	5.987
	June	5.070	1.122	5.707
	July	5.084	1.209	5.851
	Aug	5.382	1.291	6.092
	Sept	5.035	1.217	5.677
	Oct	5.300	1.303	6.080
	Nov	5.138	1.312	6.431
	Dec	5.276	1.199	6.797
		TOTAL	62.373	14.519
1974	Jan	5.393	1.069	6.817
	Feb	4.987	0.945	R6.229
	Mar	5.297	1.042	6.278
	Apr	5.205	1.140	5.782
	May	5.380	1.264	5.778
	June	4.950	1.207	5.570
	July	5.141	1.257	5.886
	Aug	5.159	1.236	5.927
	Sept	5.004	1.133	5.616
	Oct	5.274	1.205	6.087
	Nov	4.543	1.259	6.129
	Dec	4.847	1.302	6.753
		TOTAL	61.180	14.058
1975	Jan	5.187	1.330	R6.848
	Feb	4.799	1.093	6.130
	Mar	5.124	1.128	6.320
	Apr	4.984	0.970	5.800
	May	5.106	1.024	5.398
	June	5.000	1.029	5.356
	July	4.855	1.167	5.603
	Aug	4.950	1.214	5.682
	Sept	4.898	1.272	5.436
	Oct	R5.176	R1.227	R5.858
	Nov	R†4.911	R†1.178	R†5.867
	Dec	R†5.057	R†1.207	†6.672
		TOTAL	R60.045	R13.840
1976	Jan	†5.044	†1.389	

*See Explanatory Note 1.

**See Explanatory Note 2.

***See Explanatory Note 3.

†Preliminary data.

R=Revised data.

CRUDE OIL

Crude oil production during the 3 months ending January 1976 averaged 8.246 million barrels per day, according to the American Petroleum Institute. This amount was 261,000 barrels per day lower than production during the same period 1 year ago.

Crude oil imports continued to rise in January, reaching a record high of nearly 5 million barrels per day.

Crude oil stocks accumulated to a post-embargo high of 275.6 million barrels.

TOTAL PETROLEUM REFINED PRODUCTS

Refined product demand in January rose to 18.485 million barrels per day, a near record high for this month. This was 6.5 percent higher than demand in January 1975 and only 1.2 percent less than the previous January record reported in 1973. Although temperatures in January 1973 and 1976 were similar, the demand patterns for these 2 months were significantly different, as demonstrated in the table below which shows each product as a percentage of total domestic demand:

	1973	1976	Difference
Motor gasoline	32.7	35.1	+2.4
Jet fuel	5.9	5.8	-0.1
Distillate fuel oil	22.1	23.3	+1.2
Residual fuel oil	17.7	15.5	-2.2
Other	21.6	20.3	-1.3
TOTAL	100.0	100.0	

This shift in petroleum end-use patterns suggests increased wintertime highway travel and a substantial decline in residual fuel oil use by electric utilities (which consume 50 percent of the residual fuel used in the U.S.).

DISTILLATE OIL HEATING DEGREE-DAYS

During January 1976, the continental United States accumulated 13.3 percent more distillate oil heating degree-days than during January 1975 and 0.7 percent more degree-days than the normal (1941-70

average) for the month, both reflecting relatively colder temperatures. The Atlantic Coastal States (Petroleum Administration for Defense District I), which depend heavily on distillate oil as a heating fuel, registered 30.1 percent more degree-days than last January and 8.7 percent more than the normal for the month.

On a regional basis, since July 1, 1975, only the far West (PAD District V) has had fewer (warmer temperatures) degree-days than during the same period a year ago. A significant increase (15.6 percent) in the number of degree-days has occurred in the deep South (PAD District III). PAD I has registered a 3.3-percent increase in degree-days compared with last season.

NATURAL GAS LIQUIDS

Domestic demand for natural gas liquids during the first 10 months of 1975 averaged 1.298 million barrels per day, 5.7 percent below the figure reported for the same period in 1974. Demand in October 1975 was 4.3 percent below the level for October 1974.

Production of natural gas liquids for January through October 1975 was down 4.6 percent from the level for the corresponding months of 1974. October production was down 3.1 percent.

Imports for the first 10 months of 1975 were 14.6 percent lower than the amount imported during the corresponding period in 1974. October imports, however, were only 0.9 percent below the October 1974 level.

Stocks of natural gas liquids in October 1975 were down slightly (0.9 percent) from the record high of the previous month, but were 6.5 percent above the level reported for October 1974.

Crude Oil

		Crude Input to Refineries		Domestic Production		Imports		Stocks*	
		In thousands of barrels per day						In thousands of barrels	
		BOM	FEA	BOM	API	BOM	FEA	BOM	FEA
1973	January	12,190		9,176		2,732		224,056	
	February	12,187		9,395		2,873		221,893	
	March	12,201		9,272		3,162		230,696	
	April	12,208		9,292		3,049		235,383	
	May	12,281		9,262		3,215		244,777	
	June	12,862		9,214		3,220		235,846	
	July	12,750		9,217		3,501		230,750	
	August	12,635		9,169		3,593		235,660	
	September	12,560		9,065		3,471		228,280	
	October	12,758		9,224		3,739		233,520	
	November	12,374		9,161		3,452		237,001	
	December	12,150		9,063		2,891		229,504	
	AVERAGE		12,431		9,208		3,244		
1974	January	11,491		8,907		2,382		220,261	
	February	11,102		9,156		2,248		228,004	
	March	11,355		8,950		2,462		231,705	
	April	11,823		8,952		3,267		243,687	
	May	12,333	12,777	8,903		3,908	3,748	256,726	252,270
	June	12,697	12,709	8,777		3,925	3,957	255,762	253,008
	July	12,811	12,905	8,754		4,091	4,167	255,936	252,399
	August	12,644	12,731	8,682		3,924	3,852	251,905	247,040
	September	12,124	12,253	8,432		3,797	3,758	253,623	249,476
	October	12,286	12,430	8,616		3,810	3,936	256,430	255,003
	November	12,332	12,402	8,569		3,958	3,997	258,123	256,271
	December	12,519	12,671	8,514		3,869	3,979	252,158	248,808
	AVERAGE		12,133		8,765		3,477		
1975	January	12,297	12,442	8,439		4,029	3,964	258,163	253,836
	February	12,135	12,144	8,575		3,828	4,061	264,348	264,833
	March	11,905	11,961	8,476		3,656	3,853	267,564	271,410
	April	11,803	11,837	8,440		3,378	3,416	269,294	275,393
	May	11,983	11,985	8,371		3,486	3,493	263,336	274,123
	June	12,417	12,421	8,409		3,905	3,907	262,873	268,564
	July	12,915	13,002	8,327		4,193	4,337	252,035	256,965
	August	13,046	13,120	8,237		4,581	4,661	244,325	250,354
	September	12,945	12,939	8,266		4,689	4,664	247,328	253,597
	October	12,365	12,463	8,310	8,324	4,389	4,416	257,799	260,887
	November		12,766		8,273		4,634		261,869
	December		**12,877		8,224		**4,496		**264,638
	AVERAGE***		R12,457		R8,361		R4,107		
1976	January		12,598		8,242		4,947		275,583

*See definitions.

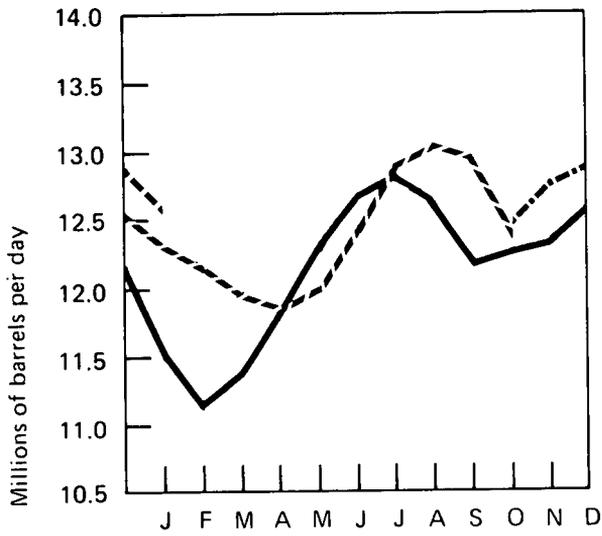
**Preliminary data.

***1975 average for refinery input, imports, and stocks is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December. 1975 average for domestic production is based on BOM data for January through October and American Petroleum Institute (API) data for November and December.

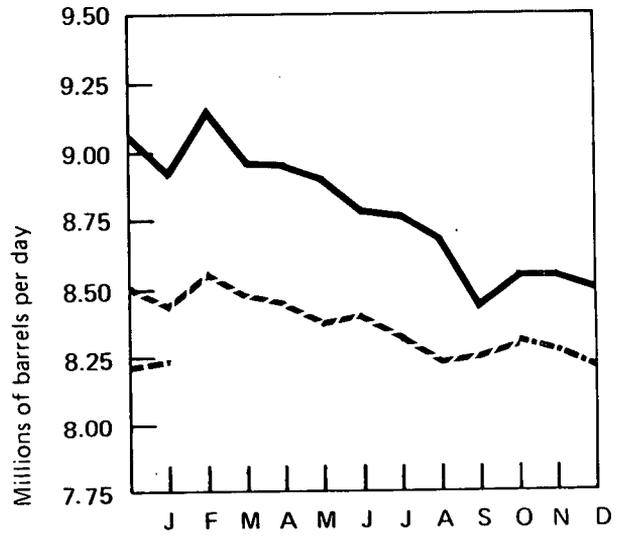
R=Revised data.

Sources: BOM, FEA, and API as indicated. All 1976 data are from API.

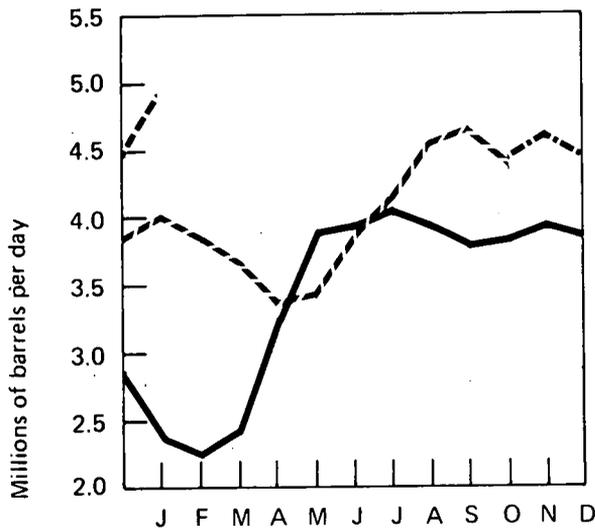
Crude Input to Refineries*



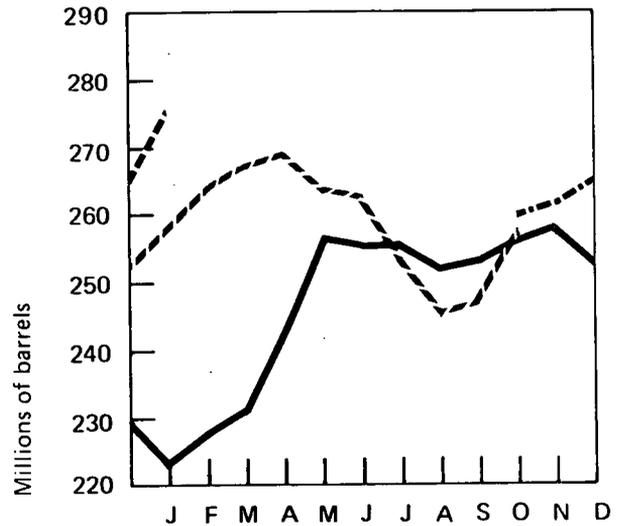
Domestic Production*



Imports*



Stocks*



*See Explanatory Note 4.

— 1974 BOM
 - - 1975 BOM
 . . . 1975 FEA, API
 - . - 1976 API

Total Refined Petroleum Products

	Domestic Demand		Imports*	
	In thousands of barrels per day			
	BOM	FEA	BOM	FEA
1973				
January	18,713		3,125	
February	19,094		3,635	
March	17,216		3,448	
April	15,921		2,545	
May	16,626		2,626	
June	16,481		2,670	
July	16,372		2,678	
August	17,499		2,999	
September	16,656		2,941	
October	17,202		2,894	
November	18,492		3,470	
December	17,538		3,164	
AVERAGE	17,308		3,012	
1974				
January	17,270		2,973	
February	17,371		2,973	
March	16,045		2,753	
April	15,919		2,703	
May	15,720	15,740	2,580	2,454
June	16,176	16,191	2,493	2,218
July	16,301	15,853	2,397	2,140
August	16,546	15,803	2,434	2,281
September	15,994	16,318	2,225	2,180
October	17,025	17,121	2,340	2,361
November	17,214	17,129	2,704	2,581
December	17,997	17,588	2,781	2,638
AVERAGE	16,629		2,611	
1975				
January	17,983	18,112	2,811	2,484
February	17,248	17,370	2,348	2,138
March	16,316	16,567	2,074	1,920
April	16,041	16,105	1,655	1,810
May	15,118	15,306	1,690	1,776
June	15,611	15,688	1,502	1,602
July	15,762	15,880	1,789	1,875
August	15,767	16,241	1,681	1,870
September	15,769	15,798	2,116	2,144
October	16,344	15,830	1,907	1,696
November		15,878		1,605
December		**17,648		**1,678
AVERAGE***	R16,238		R1,903	
1976				
January		18,485		2,235

*See definitions.

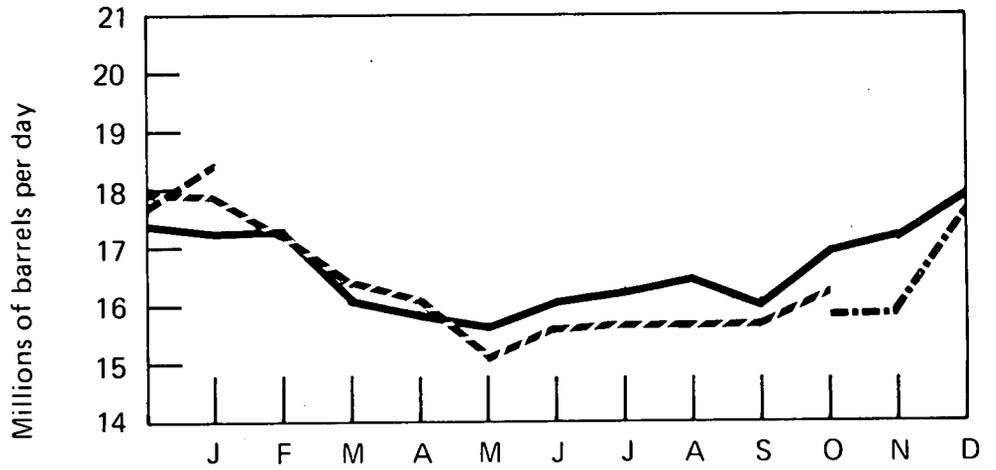
**Preliminary data.

***1975 average is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December.

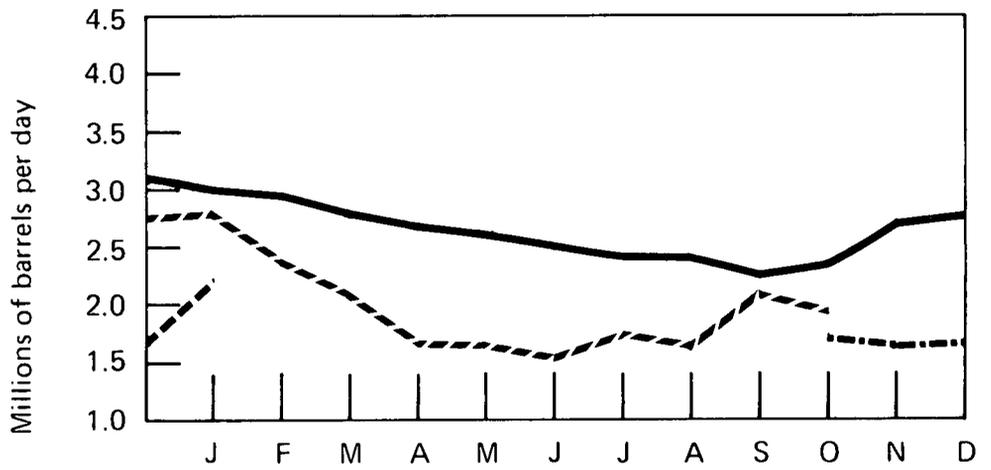
R=Revised data.

Sources: BOM and FEA as indicated. All 1976 data are from API.

Domestic Demand *



Imports *



- 1974 BOM
- - 1975 BOM
- . - 1975 FEA
- . . . 1976 API

See Explanatory Note 4.

Motor Gasoline

	Domestic Demand		Production*		Imports		Stocks*		
	In thousands of barrels per day								
	BOM	FEA	BOM	FEA	BOM	FEA	BOM	FEA	
1973	January	6,118		6,341		59		221,823	
	February	6,437		6,855		95		216,367	
	March	6,513		6,150		71		207,581	
	April	6,541		6,377		63		204,708	
	May	6,907		6,714		101		202,081	
	June	6,964		6,993		174		208,374	
	July	7,023		6,986		133		211,488	
	August	7,257		6,880		164		205,122	
	September	6,581		6,619		127		210,278	
	October	6,677		6,621		194		214,525	
	November	6,823		6,375		216		207,343	
	December	6,237		6,099		202		209,395	
	AVERAGE	6,674		6,527		134			
1974	January	5,804		5,900		163		217,463	
	February	6,100		5,969		184		219,058	
	March	6,162		5,982		225		220,307	
	April	6,457		6,311		260		223,752	
	May	6,745	6,406	6,328	6,301	250	228	218,670	229,878
	June	6,919	6,895	6,663	6,642	211	145	217,381	226,652
	July	6,959	6,941	6,792	6,835	212	122	218,838	227,195
	August	7,061	6,849	6,815	6,776	253	192	218,951	231,015
	September	6,388	6,652	6,453	6,485	202	140	227,031	230,181
	October	6,712	6,542	6,336	6,340	171	175	220,748	229,275
	November	6,547	6,659	6,292	6,257	174	264	218,385	225,226
	December	6,558	6,551	6,419	6,451	141	170	224,719	227,363
	AVERAGE	6,537		6,358		204			
1975	January	6,206	6,228	6,509	6,574	262	203	242,285	244,425
	February	6,096	6,205	6,276	6,279	171	168	251,915	251,189
	March	6,326	6,408	6,070	6,068	150	146	248,685	245,181
	April	6,718	6,574	6,046	5,997	133	127	232,556	231,542
	May	6,871	6,855	6,126	6,063	142	135	213,947	211,183
	June	7,076	6,951	6,669	6,622	177	156	207,114	205,713
	July	7,041	6,957	7,003	6,992	209	167	212,454	211,942
	August	7,008	7,103	6,872	6,843	232	275	215,480	212,370
	September	6,729	6,740	6,822	6,782	269	246	226,447	221,020
	October	6,778	6,593	6,409	6,396	207	178	221,493	220,390
	November		6,422		6,595		129		229,417
	December		**6,760		**6,777		**107		**233,248
	AVERAGE***	R6,673		R6,516		R182			
1976	January		6,488		6,530		129		239,935

*See definitions.

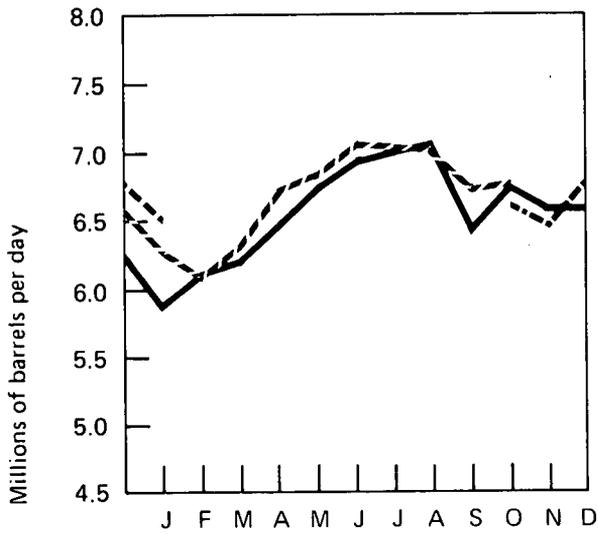
**Preliminary data.

***1975 average is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December.

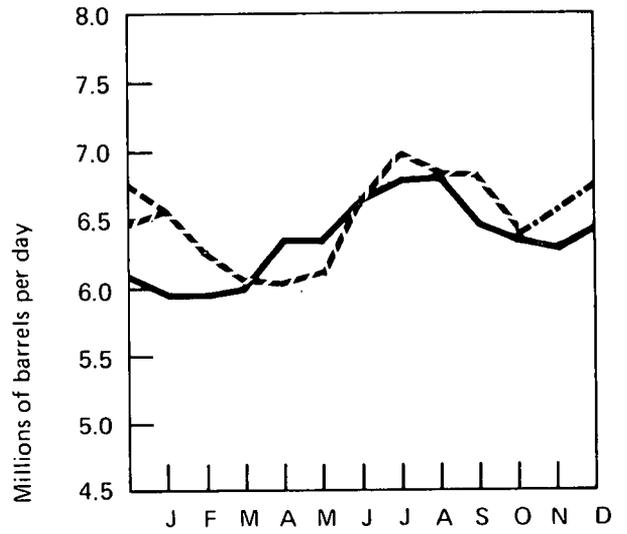
R=Revised data.

Sources: BOM and FEA as indicated. All 1976 data are from API.

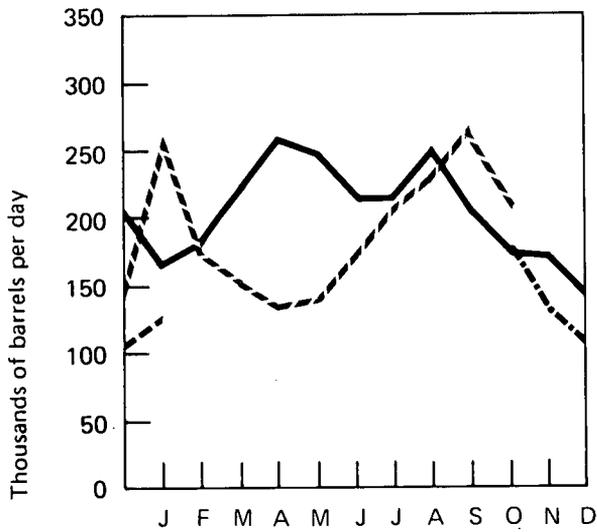
Domestic Demand*



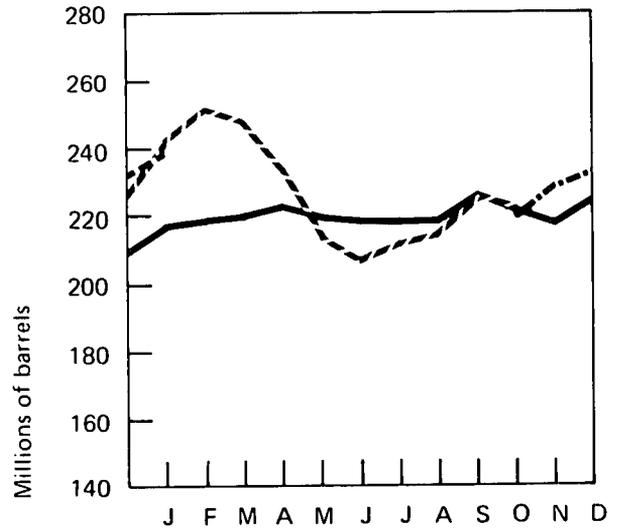
Production*



Imports*



Stocks*



*See Explanatory Note 4.

— 1974 BOM
- - 1975 BOM
- · - 1975 FEA
- - - 1976 API

Jet Fuel

	Domestic Demand		Production		Imports		Stocks	
	BOM	FEA	In thousands of barrels per day				In thousands of barrels	
			BOM	FEA	BOM	FEA	BOM	FEA
1973								
January	1,110		864		231		24,814	
February	1,090		898		221		25,437	
March	994		917		152		27,585	
April	1,015		887		145		27,881	
May	1,112		840		211		25,825	
June	1,007		836		164		25,447	
July	1,046		825		232		25,661	
August	1,049		844		180		24,851	
September	1,070		847		235		25,149	
October	1,104		875		246		25,577	
November	1,025		852		275		28,539	
December	1,087		830		259		28,544	
AVERAGE	1,059		859		212			
1974								
January	895		800		136		29,732	
February	860		783		75		29,617	
March	956		832		139		29,996	
April	941		868		132		31,725	
May	1,053	915	868	873	205	97	32,324	33,574
June	952	1,016	810	886	141	115	32,200	33,128
July	1,028	1,032	802	813	214	188	31,671	32,231
August	1,031	1,076	805	849	206	202	30,989	31,594
September	1,109	1,100	867	883	217	183	30,186	30,587
October	1,011	1,092	868	905	161	216	30,564	31,488
November	1,032	1,055	863	861	140	222	29,616	31,303
December	1,043	1,138	861	908	178	219	29,776	30,957
AVERAGE	993		836		163			
1975								
January	1,041	1,001	831	847	229	164	30,321	31,221
February	1,075	1,032	835	849	200	167	29,133	30,641
March	982	1,018	896	892	130	136	30,456	30,906
April	1,006	1,034	864	863	138	212	30,263	32,083
May	977	996	861	857	133	124	30,719	31,587
June	989	996	839	837	106	112	29,337	30,122
July	954	984	883	880	88	106	29,798	30,167
August	1,046	1,032	958	955	132	108	31,103	31,105
September	1,040	950	907	901	140	116	31,291	33,053
October	997	945	863	814	106	65	30,410	30,978
November		960		860		57		29,634
December		*778		*832		*69		*33,395
AVERAGE**		R986		R869		R127		
1976								
January		1,076		907		124		29,001

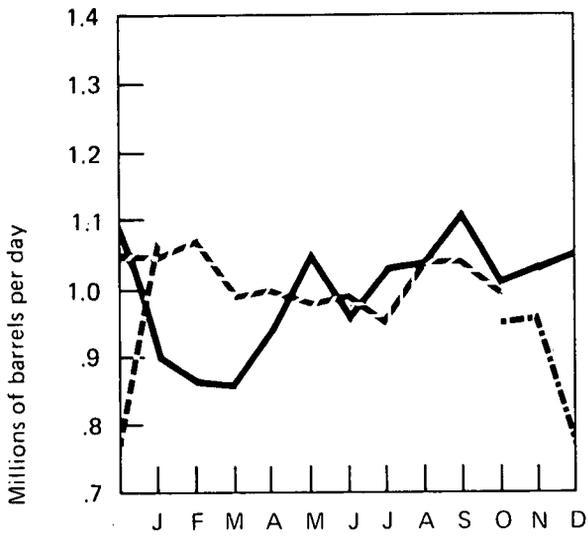
*Preliminary data.

**1975 average is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December.

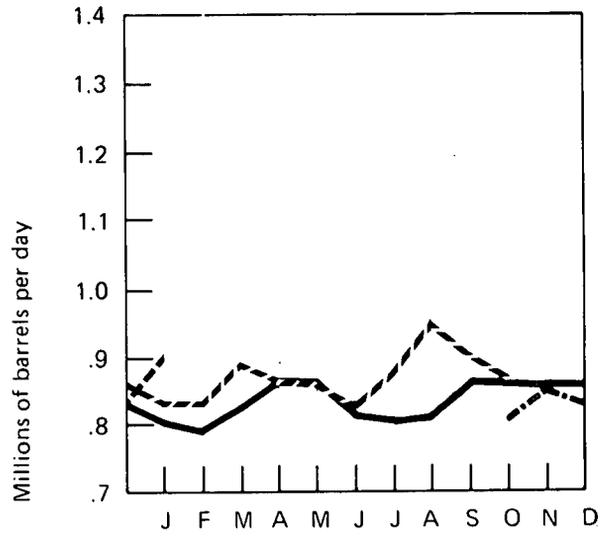
R=Revised data.

Sources: BOM and FEA as indicated. All 1976 data are from API.

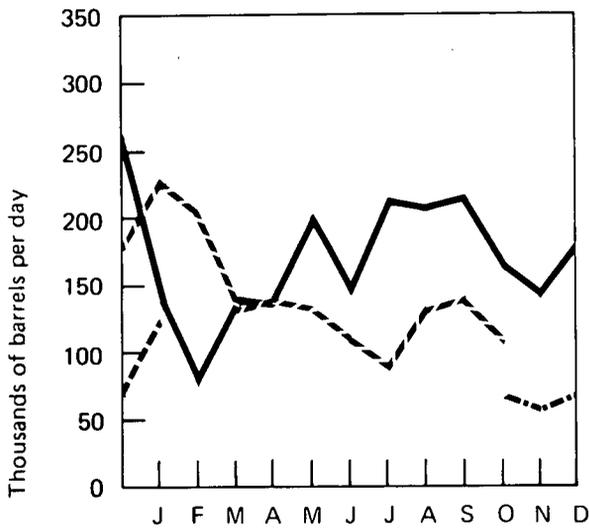
Domestic Demand*



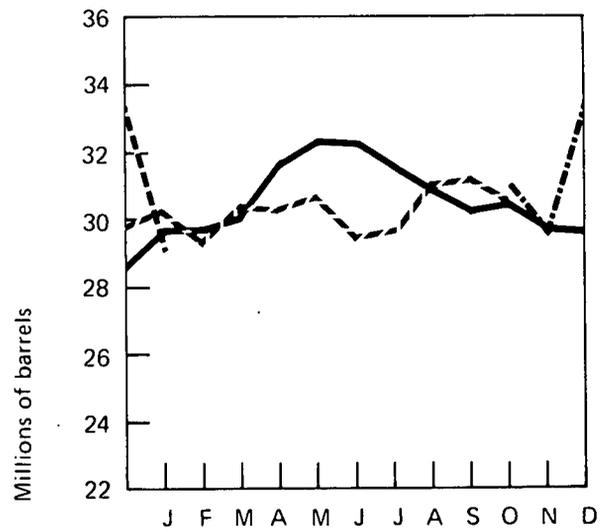
Production*



Imports*



Stocks*



*See Explanatory Note 4.

— 1974 BOM
- - 1975 BOM
- . - 1975 FEA
- - - 1976 API

Distillate Fuel Oil

	Domestic Demand		Production*		Imports		Stocks*		
	In thousands of barrels per day								
	BOM	FEA	BOM	FEA	BOM	FEA	BOM	FEA	
1973	January	4,138		3,028		364		130,958	
	February	4,302		2,937		731		113,276	
	March	3,337		2,667		602		111,270	
	April	2,635		2,510		240		114,698	
	May	2,673		2,544		268		119,104	
	June	2,419		2,825		222		137,844	
	July	2,328		2,752		318		160,869	
	August	2,555		2,801		288		177,271	
	September	2,675		2,813		313		190,171	
	October	2,930		2,911		451		202,965	
	November	3,508		2,922		492		200,182	
	December	3,690		3,136		439		196,421	
	AVERAGE	3,092		2,820		392			
1974	January	3,820		2,880		449		181,179	
	February	3,835		2,399		293		149,125	
	March	3,145		2,226		267		128,822	
	April	2,848		2,522		216		125,553	
	May	2,453	2,616	2,704	2,741	271	288	141,806	151,345
	June	2,386	2,249	2,783	2,818	228	175	160,645	173,639
	July	2,302	2,251	2,792	2,881	214	168	182,458	198,374
	August	2,295	2,271	2,704	2,779	111	112	198,673	217,632
	September	2,377	2,473	2,551	2,655	144	143	208,269	227,069
	October	2,863	2,816	2,770	2,787	213	264	209,908	234,257
	November	3,145	3,058	2,801	2,883	443	403	212,875	241,125
	December	3,855	3,923	2,924	3,028	517	466	223,717	227,877
	AVERAGE	2,939		2,668		281			
1975	January	3,953	4,055	2,852	2,954	324	350	199,715	204,576
	February	3,967	4,004	2,679	2,707	302	295	176,696	176,530
	March	3,293	3,460	2,531	2,614	256	217	161,111	156,980
	April	3,094	3,103	2,486	2,532	110	131	146,214	143,714
	May	2,382	2,435	2,431	2,496	136	144	152,027	150,068
	June	2,266	2,272	2,574	2,639	68	74	163,306	163,252
	July	2,112	2,147	2,589	2,659	106	124	181,472	182,975
	August	2,173	2,237	2,592	2,650	92	91	197,323	198,539
	September	2,163	2,184	R2,812	2,844	129	111	220,732	221,659
	October	2,675	2,631	2,744	2,778	103	106	226,113	229,439
	November		2,643		2,853		94		238,562
	December		**3,932		**2,893		**151		**210,976
	AVERAGE***	R2,883		R2,669		R155			
1976	January		4,320		2,725		264		171,609

*See definitions.

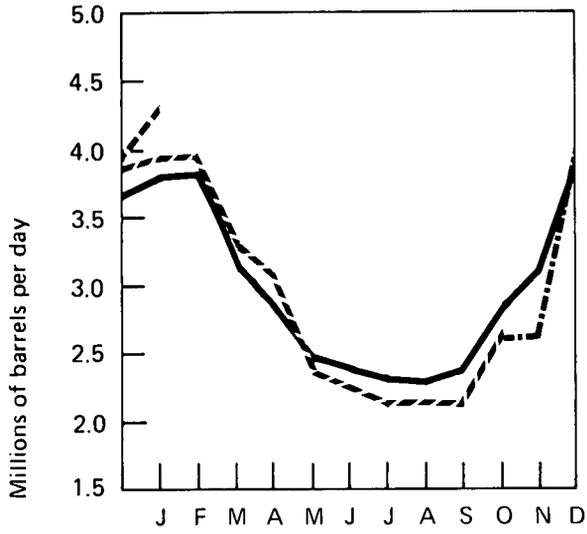
**Preliminary data.

***1975 average is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December.

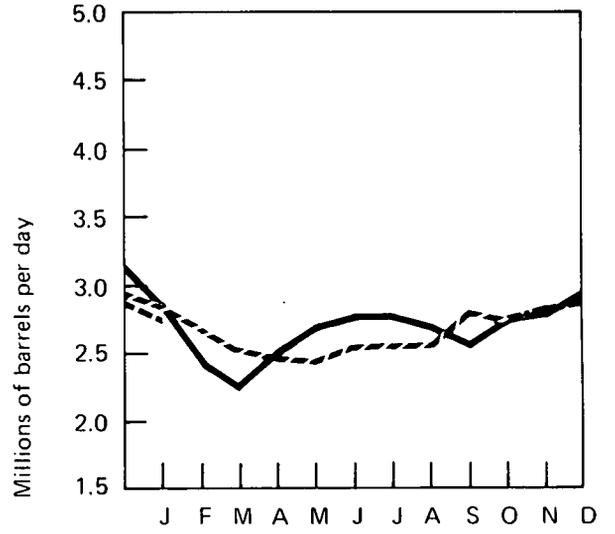
R=Revised data.

Sources: BOM and FEA as indicated. All 1976 data are from API.

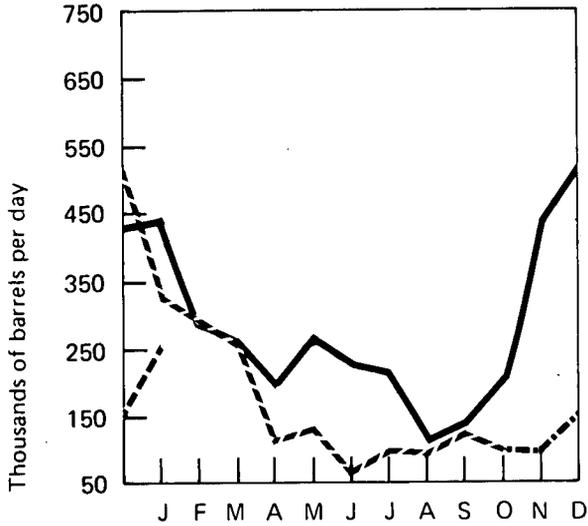
Domestic Demand*



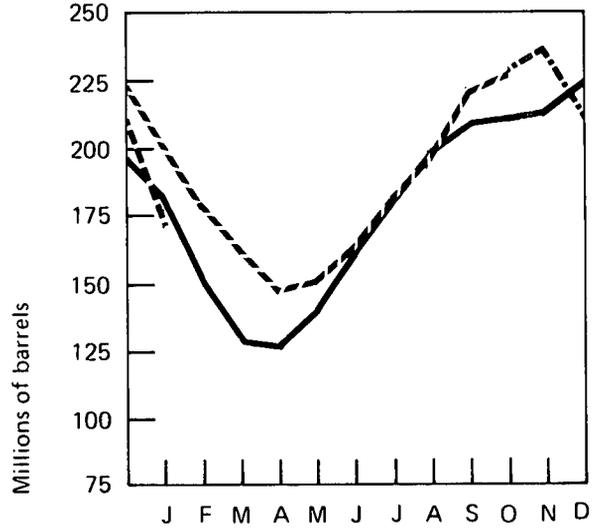
Production*



Imports*



Stocks*



— 1974 BOM
 - - 1975 BOM
 . . . 1975 FEA
 - - 1976 API

*See Explanatory Note 4.

Oil Heating Degree-Days

OIL HEATING DEGREE-DAYS*

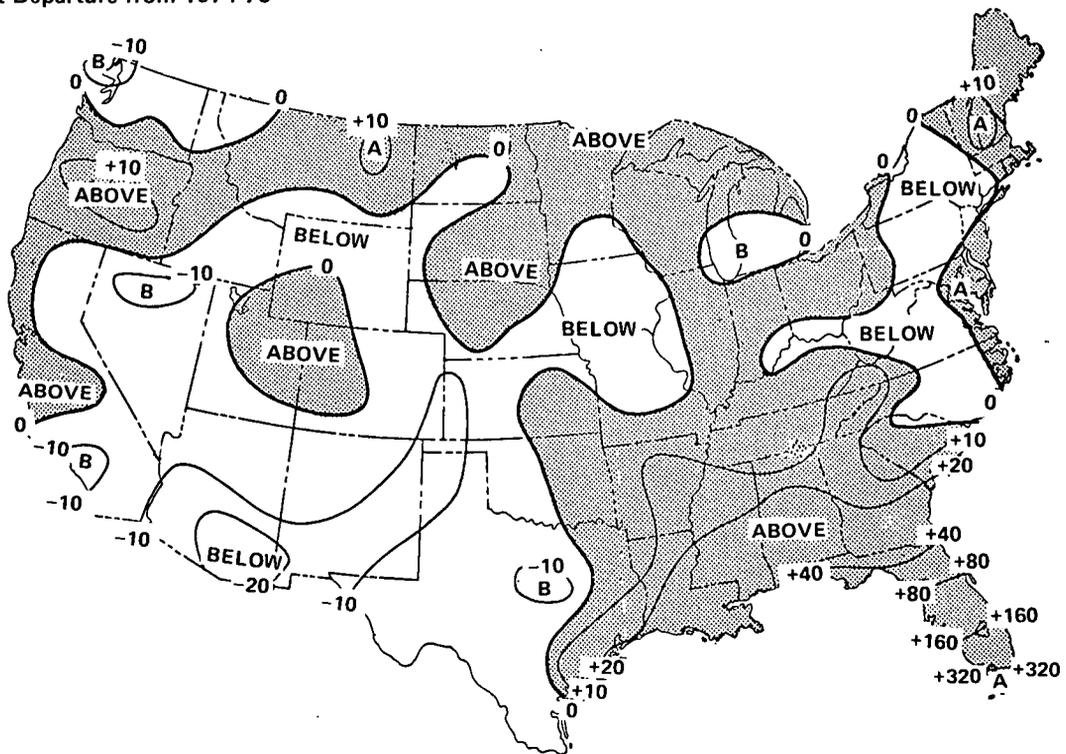
Petroleum Administration for Defense (PAD) Districts	JANUARY (December 29 - February 1)			Cumulative Since July 1, 1975		
	1976	1975**	Normal (1941-70)**	1975-76	1974-75**	Normal (1941-70)**
PAD District I	1,161.7	893.1 (30.1)	1,068.3 (8.7)	2,641.3	2,557.4 (3.3)	2,695.1 (-2.0)
New England Conn., Maine, Mass., N.H., R.I., Vt.	1,652.4	1,328.5 (24.4)	1,475.2 (12.0)	3,990.9	3,842.9 (3.9)	3,897.1 (2.4)
Middle Atlantic Del., Md., N.J., N.Y., Pa.	1,222.7	969.8 (26.1)	1,153.1 (6.0)	2,676.5	2,628.2 (1.8)	2,845.4 (-5.9)
Lower Atlantic Fla., Ga., N.C., S.C., Va., W.Va.	803.2	550.5 (45.9)	734.0 (9.4)	1,797.6	1,713.8 (4.9)	1,815.8 (-1.0)
PAD District II	1,402.1	1,258.5 (11.4)	1,414.7 (-0.9)	3,539.4	3,471.6 (2.0)	3,644.0 (-2.9)
Ill., Ind., Iowa, Kans., Ky., Mich., Minn., Mo., Nebr., N. Dak., Ohio, Okla., S. Dak., Tenn., Wisc.						
PAD District III	782.5	543.2 (44.1)	736.5 (6.2)	1,795.4	1,553.6 (15.6)	1,743.8 (3.0)
Ala., Ark., La., Miss., N. Mex., Tex.						
PAD District IV	1,226.9	1,349.8 (-9.1)	1,320.4 (-7.1)	3,483.5	3,470.5 (0.4)	3,671.4 (-5.1)
Colo., Idaho, Mont., Utah, Wyo.						
PAD District V	477.6	575.6 (-17.0)	581.0 (-17.8)	1,260.3	1,398.0 (-9.8)	1,434.3 (-12.1)
Ariz., Calif., Nev., Oreg., Wash.						
U.S. TOTAL	1,344.1	1,186.6 (13.3)	1,334.3 (0.7)	3,312.9	3,255.2 (1.8)	3,426.5 (-3.3)

*See Explanatory Note 5 for explanation of oil heating degree-days.

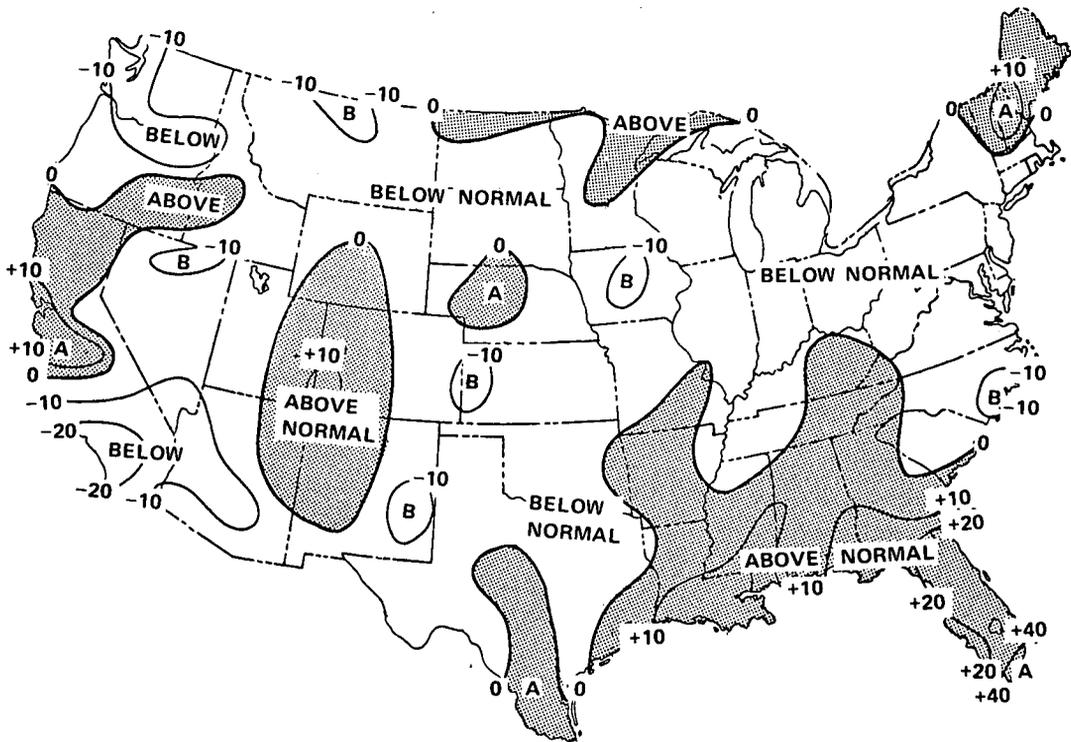
**Percentage change in parenthesis.

Heating Degree-Days Accumulated from July 1, 1975 through February 1, 1976

Percent Departure from 1974-75



Percent Departure from Normal (1941-70)



NOTE: Above normal heating degree-days correspond to below normal temperatures.
 Source: Department of Commerce—NOAA.

Residual Fuel Oil

	Domestic Demand		Production		Imports		Stocks	
	BOM	FEA	In thousands of barrels per day				In thousands of barrels	
			BOM	FEA	BOM	FEA	BOM	FEA
1973								
January	3,306		1,112		2,019		49,154	
February	3,382		1,038		2,147		43,058	
March	3,084		955		2,196		44,711	
April	2,477		877		1,705		47,044	
May	2,521		948		1,668		49,207	
June	2,607		915		1,761		51,811	
July	2,412		882		1,597		53,363	
August	2,755		851		1,913		53,586	
September	2,676		878		1,849		55,091	
October	2,590		984		1,597		54,964	
November	3,158		1,061		1,979		51,985	
December	2,944		1,158		1,826		53,480	
AVERAGE	2,822		971		1,853			
1974								
January	3,035		1,072		1,732		46,548	
February	3,010		1,029		1,923		45,004	
March	2,516		912		1,674		47,222	
April	2,432		984		1,587		51,339	
May	2,251	2,111	995	992	1,353	1,250	54,356	64,548
June	2,455	2,177	1,026	1,058	1,549	1,260	57,891	68,646
July	2,432	2,135	1,056	1,091	1,433	1,197	59,787	73,066
August	2,539	2,368	1,067	1,126	1,530	1,342	60,988	76,011
September	2,454	2,419	1,032	1,070	1,400	1,274	60,251	72,723
October	2,610	2,501	1,099	1,112	1,464	1,369	58,679	72,090
November	2,819	2,631	1,229	1,226	1,636	1,453	60,363	73,581
December	2,965	2,881	1,335	1,350	1,612	1,561	74,939	74,521
AVERAGE	2,624		1,070		1,572			
1975								
January	3,242	3,103	1,415	1,399	1,647	1,529	60,233	68,628
February	2,849	2,723	1,354	1,304	1,402	1,308	66,495	65,061
March	2,668	2,589	1,299	1,244	1,292	1,252	64,148	61,891
April	2,225	2,184	1,245	1,204	1,047	1,069	66,340	64,121
May	2,049	1,909	1,151	1,113	1,123	1,068	73,498	72,088
June	2,179	2,201	1,152	1,118	904	953	69,660	67,641
July	2,239	2,141	1,155	1,160	1,144	1,110	71,526	71,358
August	2,118	2,217	1,146	1,151	982	1,044	71,857	70,489
September	2,329	2,388	1,183	1,178	1,312	1,319	76,938	73,471
October	2,238	2,025	1,165	1,142	1,221	1,153	81,858	81,192
November		2,412		1,231		1,154		79,908
December		*2,683		*1,340		*1,159		*73,805
AVERAGE**	R2,434		R1,236		R1,198			
1976								
January		2,865		1,373		1,373		70,650

*See definitions.

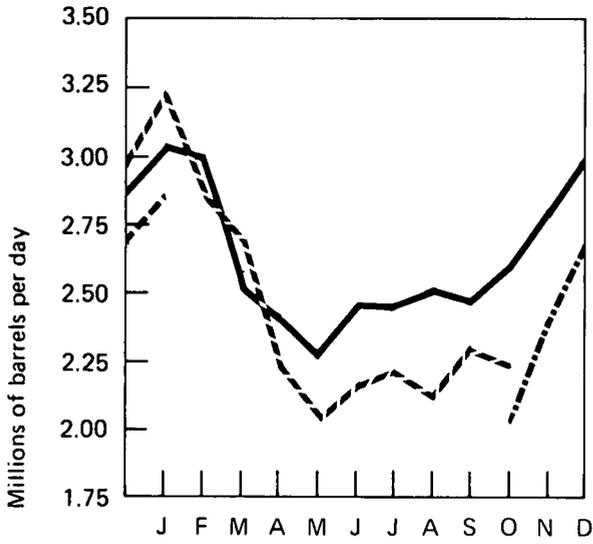
**Premiminary data.

***1975 average is based on Bureau of Mines (BOM) data for January through October and Federal Energy Administration (FEA) data for November and December.

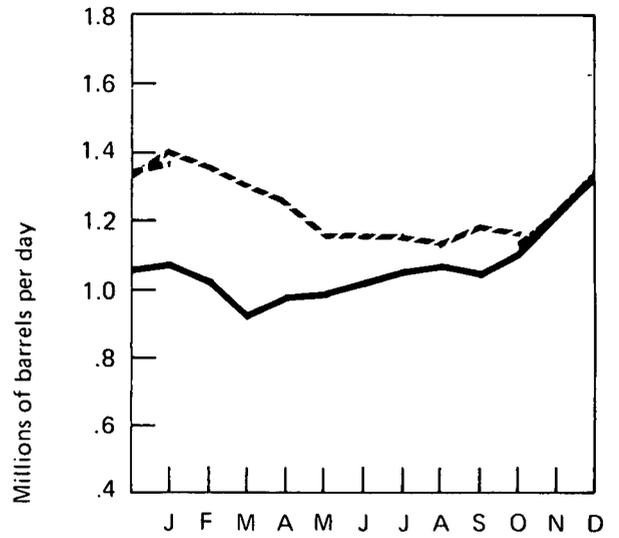
R=Revised data.

Sources: BOM and FEA as indicated. All 1976 data are from API.

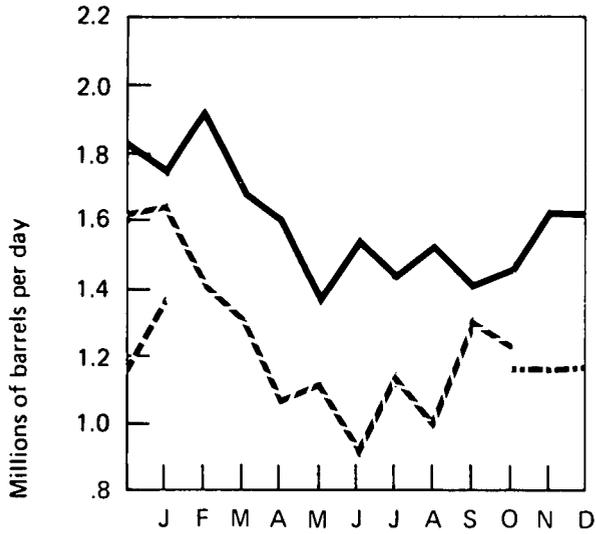
Domestic Demand*



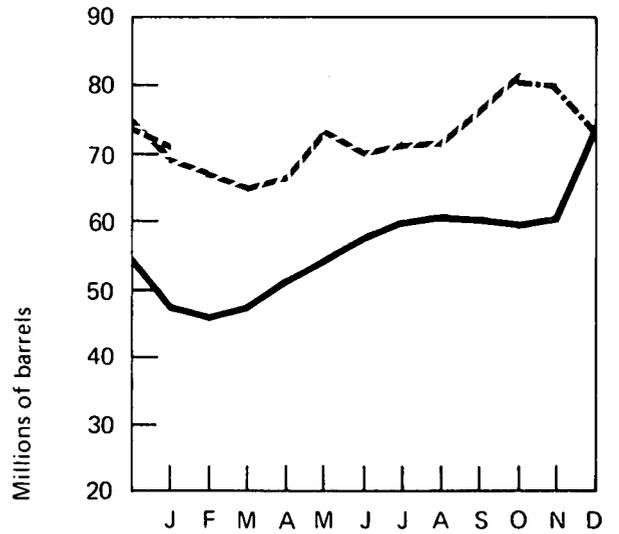
Production*



Imports*



Stocks*



- 1974 BOM
- - 1975 BOM
- · - 1975 FEA
- - - 1976 API

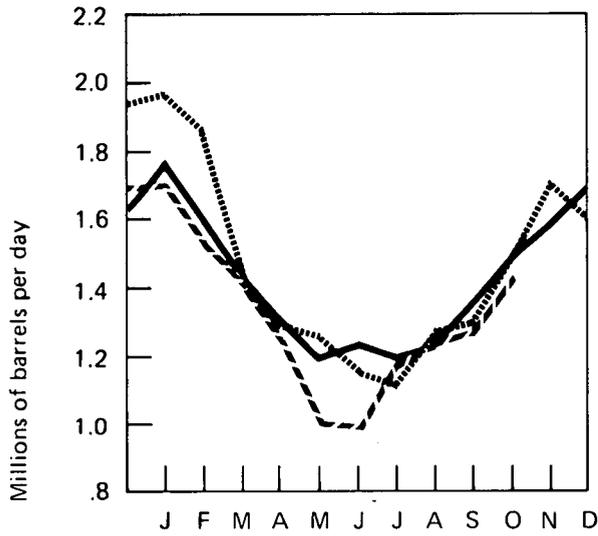
*See Explanatory Note 4.

Natural Gas Liquids

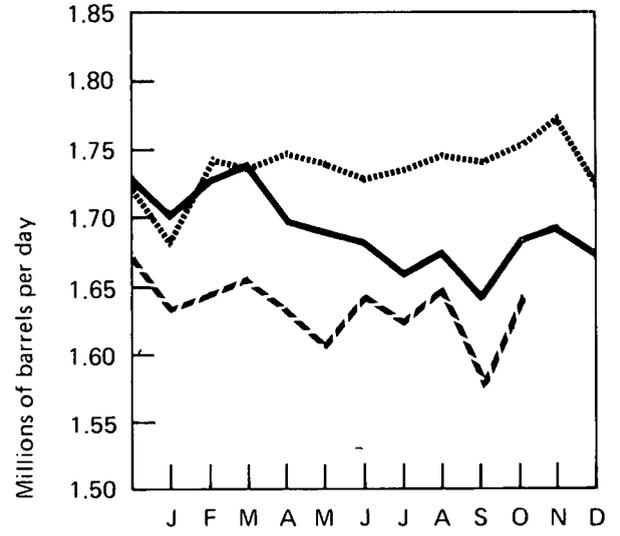
	Domestic Demand*	Production*		Used at Refineries*	Imports	Stocks*
		At processing plants	At refineries			
		In thousands of barrels per day				
						In thousands of barrels
1973						
January	1,994	1,680	361	839	312	68,792
February	1,857	1,745	359	836	312	60,606
March	1,407	1,734	378	790	260	63,873
April	1,299	1,750	373	733	201	71,266
May	1,270	1,739	421	733	217	80,650
June	1,149	1,727	388	757	163	89,433
July	1,109	1,737	410	849	199	99,631
August	1,281	1,748	390	858	240	105,068
September	1,297	1,741	370	833	206	110,002
October	1,499	1,756	377	835	249	109,639
November	1,703	1,774	331	876	286	104,192
December	1,607	1,729	338	842	232	98,940
AVERAGE	1,454	1,738	375	815	239	
1974						
January	1,778	1,699	327	794	304	91,210
February	1,593	1,728	337	777	294	90,145
March	1,408	1,741	341	720	224	94,817
April	1,321	1,696	353	690	215	101,352
May	1,180	1,690	340	678	182	110,881
June	1,242	1,684	368	718	199	117,915
July	1,187	1,657	364	723	163	125,427
August	1,221	1,676	361	742	163	131,675
September	1,360	1,638	348	738	166	133,215
October	1,493	1,686	330	788	200	130,557
November	1,596	1,694	301	795	199	124,447
December	1,692	1,670	286	796	230	114,295
AVERAGE	1,422	1,688	338	746	211	
1975						
January	1,708	1,630	307	756	257	105,400
February	1,512	1,646	296	734	181	100,945
March	1,404	1,658	280	731	178	99,168
April	1,242	1,635	273	667	176	100,408
May	1,002	1,607	299	628	97	112,737
June	998	1,646	323	659	166	125,215
July	1,191	1,621	336	701	173	131,359
August	1,227	1,650	357	690	163	137,074
September	1,278	1,577	326	703	209	140,278
October	1,429	1,643	310	729	198	138,981
AVERAGE (10 months)	1,298	1,631	311	700	180	

*See Explanatory Note 6.
Source: Bureau of Mines.

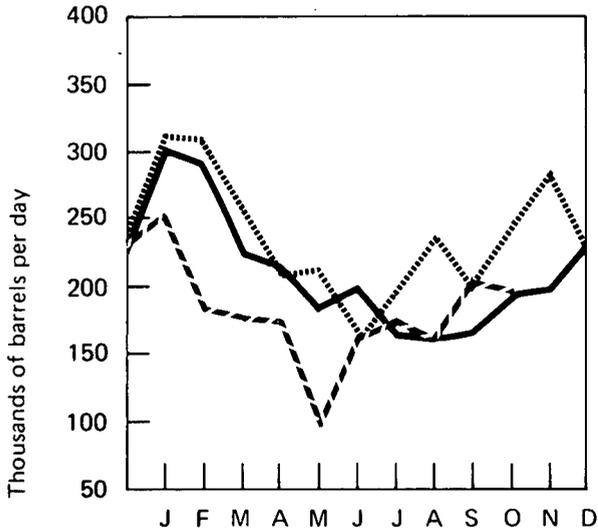
Domestic Demand



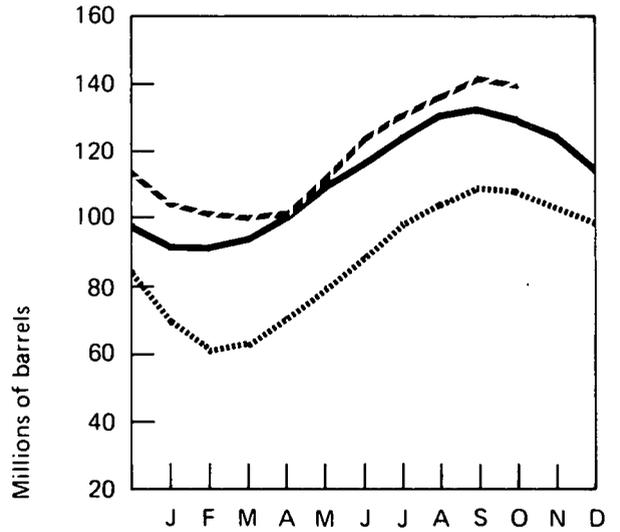
Production at Processing Plants



Imports



Stocks



..... 1973
 ——— 1974
 - - - 1975

NATURAL GAS

Domestic consumption and marketed production of natural gas in January 1976 were estimated to be about 2.0 percent below the levels reported for January 1975. Imports, on the other hand, were expected to be 1.2 percent higher.

Domestic producer sales to major interstate pipeline companies during November 1975 fell 7.4 percent below the volumes sold during November 1974. Sales for the first 11 months of 1975, totaling 9,749 billion cubic feet, were 7.2 percent below the volumes sold by domestic producers during the same period in 1974.

UNDERGROUND NATURAL GAS STORAGE

Eighty companies* (37 interstate, 43 intrastate), operating 375 storage reservoirs with a total reservoir capacity of 6,364 billion cubic feet reported that as of November 1, 1975, total gas volumes in storage in the United States were 6.2 percent above the volume in storage a year earlier. The volume of working gas in storage (gas available for withdrawal as needed) was 10.1 percent above the November 1, 1974, level.

As of December 31, 1975, a total of 5,422 billion cubic feet of natural gas was in underground storage. Of the total, 3,173 billion cubic feet were base gas (gas needed to provide adequate reservoir pressure to maintain required deliverability rates) and 2,249 billion cubic feet were working gas.

A total of 140 billion cubic feet was injected into storage and 545 billion cubic feet withdrawn from storage during November and December, the first 2 months of the 1975-76 withdrawal season. The resultant storage drawdown for these 2 months, of 405 billion cubic feet, was equivalent to 15.6 percent of the working gas in storage as of the beginning of the withdrawal season (November 1, 1975). Comparable information is not available for the same months in 1974.

*These 80 companies comprise virtually all of the companies holding underground natural gas storage in the United States.

Natural Gas

		Domestic Consumption*	Marketed Production*	Domestic Producer Sales to Major Interstate Pipelines	Imports
In billion cubic feet					
1973	January	2,348	1,994	1,069	93
	February	2,126	1,821	963	84
	March	2,015	1,952	1,052	91
	April	1,835	1,864	1,007	88
	May	1,729	1,898	1,026	86
	June	1,534	1,839	963	79
	July	1,558	1,880	999	80
	August	1,582	1,896	994	85
	September	1,527	1,840	956	82
	October	1,708	1,875	1,001	91
	November	1,905	1,863	1,000	85
	December	2,182	1,926	1,038	89
	TOTAL	22,049	22,648	12,067	1,033
1974	January	2,230	1,929	1,033	86
	February	2,054	1,759	941	79
	March	2,003	1,886	1,027	85
	April	1,691	1,793	987	83
	May	1,608	1,846	981	80
	June	1,439	1,740	928	74
	July	1,514	1,818	947	74
	August	1,510	1,790	932	76
	September	1,537	1,755	R870	70
	October	1,706	1,767	936	83
	November	1,827	1,729	921	82
	December	2,104	1,790	959	87
	TOTAL	21,223	21,601	R11,462	959
1975	January	2,123	1,771	950	81
	February	1,943	1,635	867	75
	March	1,904	1,733	948	83
	April	1,651	1,669	906	83
	May	1,335	1,681	898	81
	June	1,255	1,626	859	78
	July	1,310	1,669	873	79
	August	1,370	1,668	882	76
	September	1,372	1,596	836	74
	October	1,560	R1,656	877	81
	November	1,700	R**1,626	853	R81
	December	2,020	***1,720		R***85
	TOTAL	19,543 (12 months)	R20,050 (12 months)	9,749 (11 months)	R957 (12 months)
1976	January	2,080	***1,730		

*See Explanatory Note 7.

**Preliminary data.

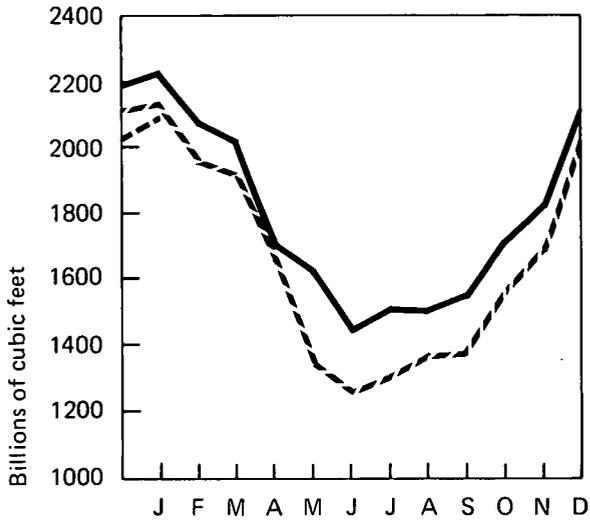
***Projected data.

R=Revised data.

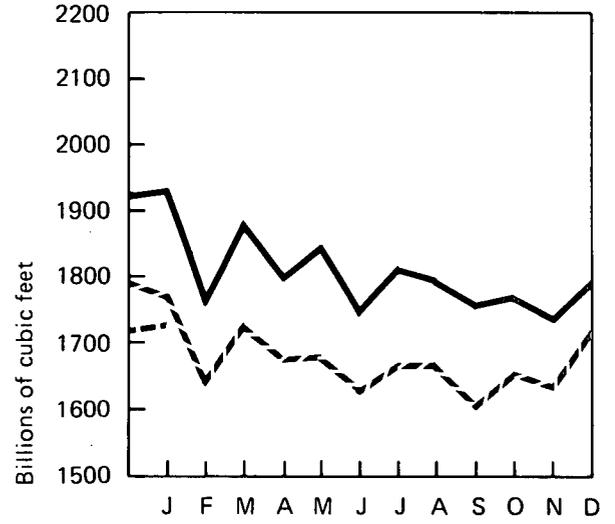
Note: All monthly Domestic Consumption data are estimated.

Sources: Consumption, Marketed Production, and Imports—Bureau of Mines; Domestic Producer Sales—Federal Power Commission.

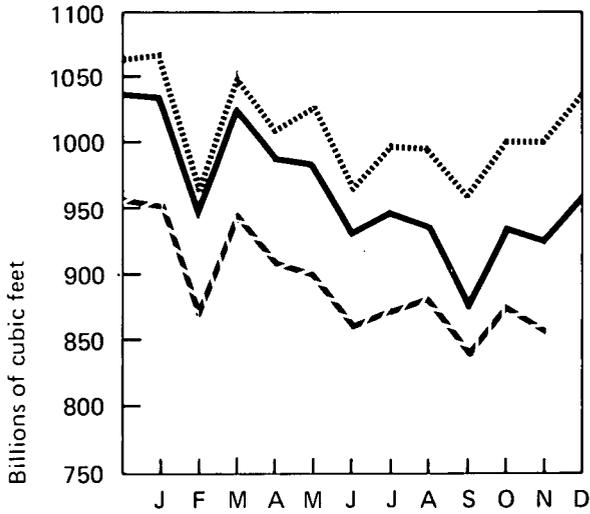
Domestic Consumption



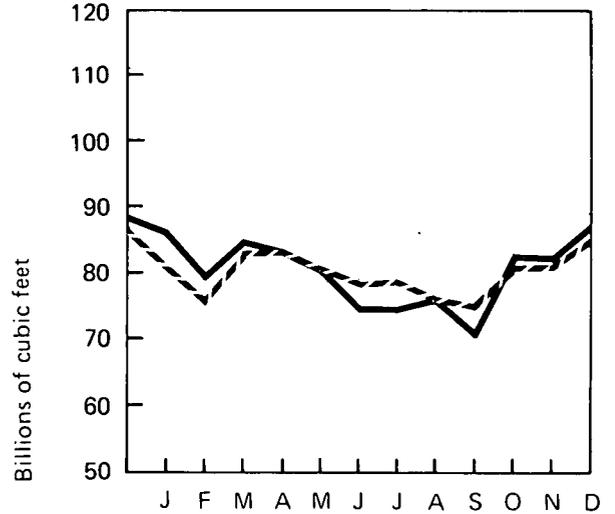
Marketed Production



Domestic Producer Sales to Major Interstate Pipelines



Imports



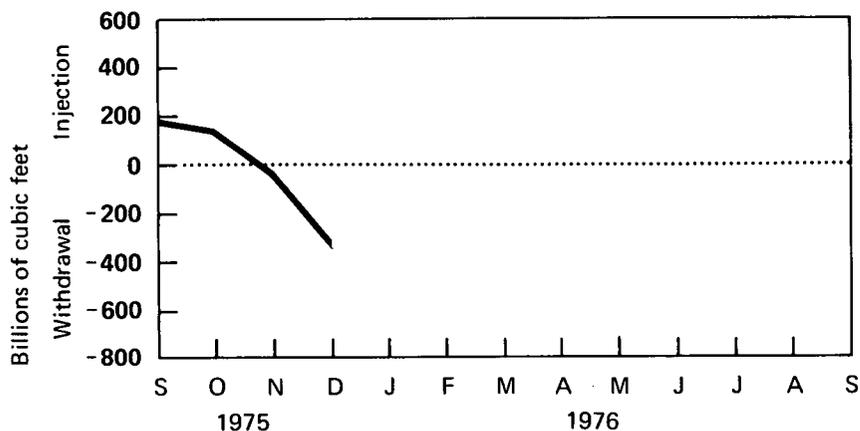
..... 1973
 ——— 1974
 - - - 1975
 - - - 1976

Natural Gas (Continued)

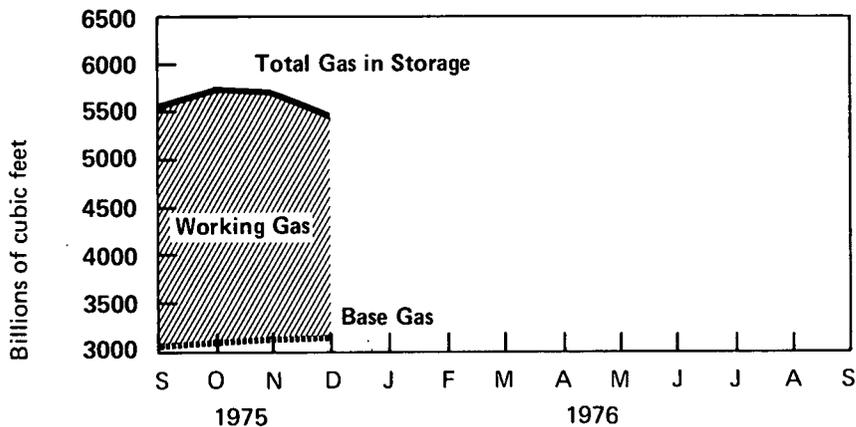
Natural Gas in Underground Storage*

		Total Gas in Storage	Base Gas	Working Gas	Storage Injections	Storage Withdrawals	Net Storage Injections
In billion cubic feet							
1974	October**	5,445	3,042	2,403	***	***	***
1975	September	5,558	3,084	2,474	232	38	194
	October	5,770	3,128	2,642	185	51	134
	November	5,760	3,172	2,588	99	150	-51
	December	5,422	3,173	2,249	51	395	-354

Net Storage Injections



Gas in Storage



*See Explanatory Note 8.

**Data reported as of November 1, 1974.

***Between November 1, 1974, and August 31, 1975, a total of 1,658 billion cubic feet of gas was injected into storage and 1,686 billion cubic feet was withdrawn, for net storage injections of -28 billion cubic feet.

Sources: Federal Energy Administration and Federal Power Commission.

COAL

Production of bituminous coal and lignite totaled 50.5 million tons during January 1976. This reflects a decrease of 8.0 percent from the January 1975 figure, and a 6.0-percent decrease from the level for January 1974.

Domestic consumption of bituminous coal and lignite for January through November 1975 was 504.3 million tons, slightly below (0.2 percent) consumption for the same months in 1974.

Coal exports for 1975 totaled 65.7 million tons, an increase of 9.6 percent above the export level for 1974.

1975 production of Pennsylvania anthracite was 6.0 million tons, 9.5 percent below the 1974 level. Consumption for 1975 also declined (by 14.9 percent).

Bituminous and Lignite

		Domestic Consumption*	Production*	Exports	Stocks
		In thousands of short tons			
1973	January	49,838	49,379	2,954	111,120
	February	44,652	45,893	2,669	108,870
	March	44,814	50,547	3,377	111,490
	April	42,689	46,999	5,063	112,585
	May	43,628	51,420	5,140	116,890
	June	45,115	46,613	4,969	109,960
	July	47,715	43,801	4,188	107,390
	August	48,840	55,874	5,133	106,910
	September	45,471	48,338	3,424	106,230
	October	46,427	54,382	5,882	107,490
	November	46,703	49,826	5,214	107,169
	December	50,130	48,666	4,889	103,022
	TOTAL**	556,022	591,738	52,903	
1974	January	50,046	53,712	2,813	97,836
	February	44,929	50,053	4,627	95,812
	March	45,858	51,278	3,179	101,568
	April	43,595	54,402	4,944	107,167
	May	44,951	57,662	6,032	112,882
	June	44,315	48,065	6,369	111,935
	July	48,605	49,392	5,307	106,160
	August	48,579	51,808	5,088	105,478
	September	43,844	52,686	4,893	109,173
	October	45,868	60,495	7,342	118,670
	November	44,598	33,702	6,744	109,192
	December	47,521	40,151	2,587	95,528
	TOTAL**	552,709	603,406	59,926	
1975	January	49,841	54,885	4,254	96,024
	February	45,726	51,135	4,470	97,164
	March	47,253	51,910	5,653	97,904
	April	43,567	53,135	6,159	102,745
	May	42,683	55,370	7,011	109,796
	June	44,887	55,730	6,269	115,041
	July	47,485	45,560	4,691	109,313
	August	49,091	51,160	5,859	108,680
	September	43,818	55,560	4,529	112,102
	October	R44,561	61,000	4,647	R120,116
	November	***45,407	53,035	7,593	***124,809
	December		51,520	4,534	
	TOTAL**	504,319 (11 months)	640,000 (12 months)	65,669 (12 months)	
1976	January		***50,495		

*See Explanatory Note 9.

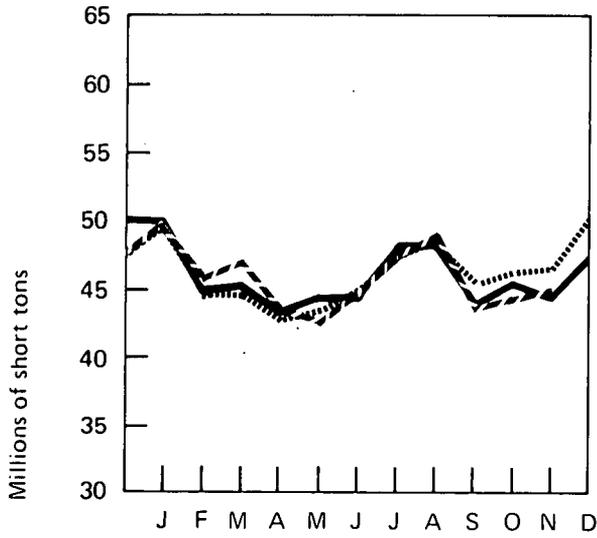
**Totals may not add due to rounding.

***Preliminary data.

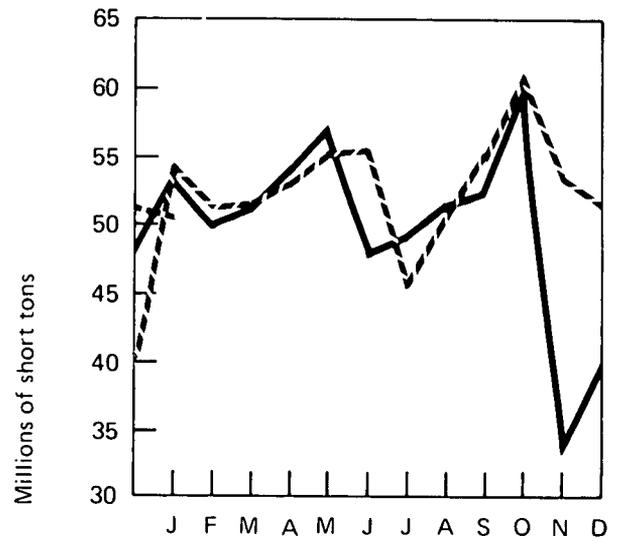
R=Revised data.

Source: Bureau of Mines.

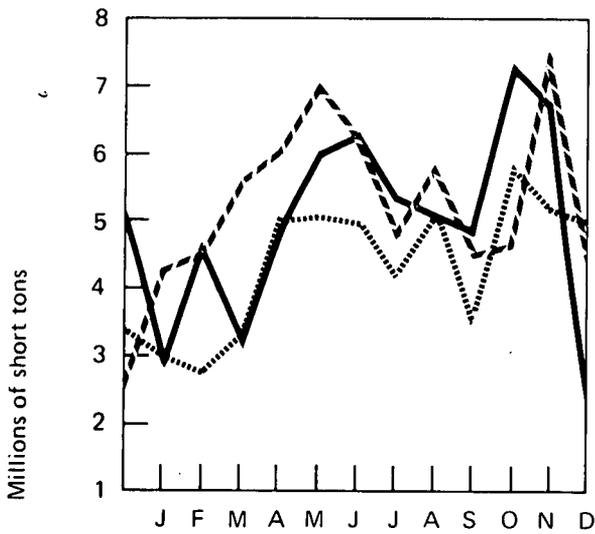
Domestic Consumption



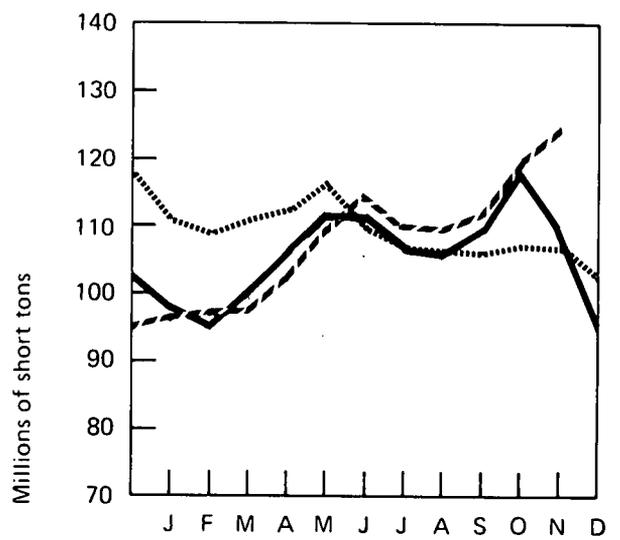
Production



Exports



Stocks



..... 1973
— 1974
- · - 1975
- - - 1976

Anthracite

Production Domestic
Consumption

In thousands of short tons

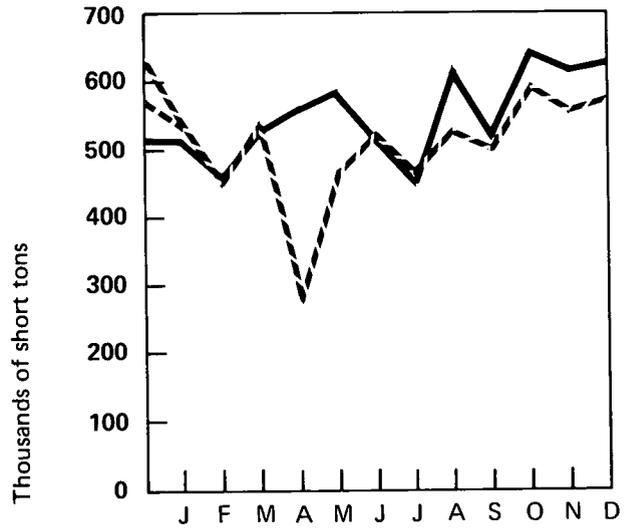
Year	Month	Production	Domestic Consumption
1973	January	522	485
	February	568	542
	March	641	513
	April	581	435
	May	641	524
	June	609	485
	July	434	373
	August	587	441
	September	532	457
	October	614	493
	November	582	464
	December	519	459
TOTAL		6,830	5,671

1974	January	516	466
	February	458	441
	March	531	457
	April	563	437
	May	589	435
	June	505	412
	July	443	360
	August	620	526
	September	516	441
	October	641	522
	November	610	463
	December	625	488
TOTAL		6,617	5,488

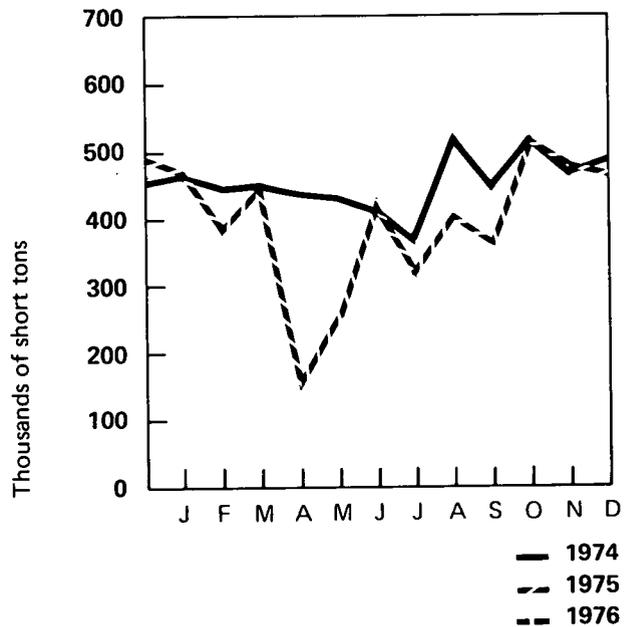
1975	January	535	470
	February	445	376
	March	540	453
	April	270	145
	May	470	261
	June	525	431
	July	460	310
	August	530	409
	September	495	360
	October	595	513
	November	550	479
	December	575	461
TOTAL		5,990	4,668

1976 January 530

Production



Domestic Consumption



Sources: Production and annual consumption data are from Bureau of Mines; monthly consumption data are FEA estimates based on figures provided by Bureau of Mines.

ELECTRIC UTILITIES

Based on Edison Electric Institute data, January 1976 production of electricity by utilities totaled 176.9 billion kilowatt hours, 8.2 percent above the level for January 1975. The increase was attributed to relatively colder weather.

Coal stockpiles at powerplants dropped from a 99-day supply at the end of November to a 92-day supply at the end of December; oil stockpiles declined from a 103- to an 83-day supply. Declines of this magnitude are normal during the winter heating season. December coal inventories represented a 32.3-percent increase over the inventory level for December 1974; oil stocks grew 11.6 percent during the same 12-month period.

Sales of electricity to residential and commercial customers during the first 11 months of 1975 totaled 934.7 billion kilowatt hours, an increase of 5.9 percent for residential customers and 6.8 percent for commercial customers above sales for the similar period of 1974. Sales to industry, however, of 634.2 billion kilowatt hours, were 5.4 percent below the level for the first 11 months of 1974.

Electric Utilities

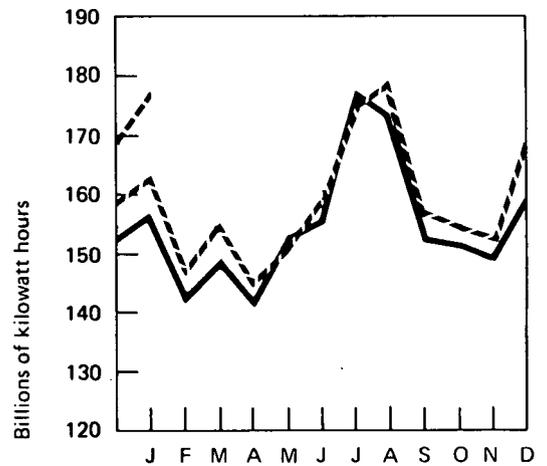
Total Net Production

Percentage Produced from Each Source

In millions of kilowatt hours

			Coal	Oil	Gas	Nuclear	Hydro-electric	Other*
1973	January	159,320	47.2	19.4	13.1	3.9	16.3	0.1
	February	143,109	47.4	18.2	14.1	4.1	16.1	0.1
	March	147,754	45.7	16.2	16.2	4.5	17.3	0.1
	April	139,273	46.1	14.4	17.9	4.2	17.3	0.1
	May	147,021	44.3	14.7	20.2	3.9	16.8	0.1
	June	160,962	43.3	16.1	21.6	4.2	14.7	0.1
	July	173,461	43.9	16.5	22.6	4.0	12.9	0.1
	August	177,022	44.4	17.3	21.9	4.4	11.9	0.1
	September	156,294	45.7	17.3	21.1	4.9	10.9	0.1
	October	153,797	45.6	17.7	19.9	4.9	11.8	0.1
	November	147,823	47.2	17.6	16.1	5.5	13.5	0.1
	December	153,284	47.9	16.3	13.3	5.3	17.0	0.2
	TOTAL	1,859,120	AVERAGE 45.7	16.8	18.3	4.5	14.6	0.1
1974	January	156,906	47.0	16.6	13.3	4.8	18.2	0.1
	February	142,371	46.6	15.7	13.3	5.6	18.6	0.2
	March	149,933	45.3	14.6	15.8	5.8	18.4	0.1
	April	141,914	44.5	13.9	16.9	4.9	19.6	0.2
	May	153,439	44.3	14.7	18.4	4.2	18.2	0.2
	June	156,027	43.3	14.7	20.3	4.4	17.1	0.2
	July	177,798	42.9	15.6	20.9	5.6	14.8	0.2
	August	173,699	43.1	15.6	20.3	7.0	13.8	0.2
	September	152,084	42.9	16.4	19.3	7.1	14.1	0.2
	October	151,786	44.3	16.7	18.6	7.0	13.2	0.2
	November	149,581	44.9	18.4	15.2	7.2	14.1	0.2
	December	159,309	45.6	19.3	12.4	8.1	14.4	0.2
	TOTAL	1,864,847	AVERAGE 44.5	16.1	17.2	6.0	16.1	0.1
1975	January	163,498	45.8	18.7	12.1	8.1	15.2	0.1
	February	146,338	46.0	17.0	12.3	8.3	16.3	0.1
	March	154,932	44.6	15.0	13.0	9.2	18.1	0.1
	April	145,289	44.2	14.6	14.0	8.7	18.3	0.2
	May	151,168	42.5	13.9	16.9	8.2	18.3	0.2
	June	159,963	43.4	14.3	18.0	7.2	16.9	0.2
	July	175,856	43.1	14.2	19.4	8.6	14.5	0.2
	August	179,202	43.9	15.6	19.0	8.7	12.6	0.2
	September	156,802	44.8	13.7	19.1	9.1	13.1	0.2
	October	154,748	44.6	14.2	17.0	9.4	14.6	0.2
	November	152,334	46.0	14.2	14.3	9.3	16.0	0.2
	December	R168,654	46.5	15.9	12.3	9.7	15.4	0.2
	TOTAL	1,908,784	AVERAGE 44.6	15.1	15.7	8.7	15.7	0.2
1976	January	176,932						

Total Net Production



*Includes electricity produced from geothermal power, wood, and waste.

R=Revised data.

Sources: Federal Power Commission.

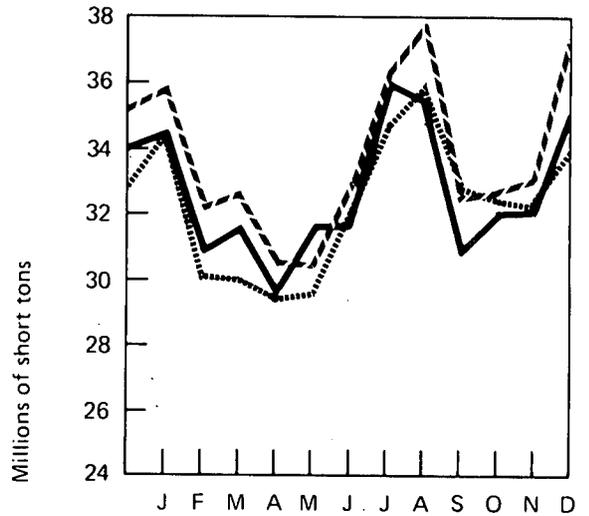
Production data for latest month are from Edison Electric Institute.

— 1974
 - - 1975
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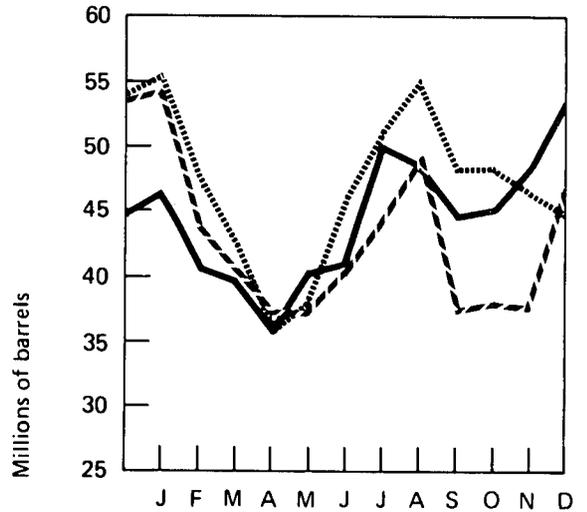
Fuel Consumption

	Coal	Oil	Gas
	In thousands of short tons	In thousands of barrels	In millions of cubic feet
1973			
January	34,591	55,773	219,270
February	30,921	46,978	212,983
March	30,746	42,701	255,314
April	29,209	35,845	267,151
May	29,683	38,097	316,989
June	31,951	46,421	371,221
July	34,863	51,352	422,396
August	36,093	55,356	419,507
September	32,814	48,103	353,040
October	32,470	48,188	328,630
November	32,154	46,420	252,341
December	34,141	44,850	216,988
TOTAL	389,636	560,084	3,635,830
1974			
January	34,599	46,745	219,338
February	30,857	40,687	201,587
March	31,638	39,645	254,175
April	29,679	35,959	259,313
May	31,700	40,831	306,945
June	31,719	41,227	346,584
July	36,111	50,119	403,391
August	35,555	48,970	380,585
September	30,989	44,550	313,079
October	32,127	45,268	298,109
November	32,211	48,525	238,908
December	35,176	53,648	207,095
TOTAL	392,361	536,174	3,429,109
1975			
January	35,853	54,169	204,931
February	32,104	43,670	188,684
March	32,783	40,399	210,283
April	30,452	37,099	213,580
May	30,410	37,015	271,790
June	33,058	40,791	306,147
July	36,367	44,329	359,160
August	37,839	49,262	359,117
September	32,488	37,207	315,165
October	32,811	38,099	274,122
November	33,185	37,604	227,070
December	37,324	46,727	213,246
TOTAL	404,674	506,371	3,143,295

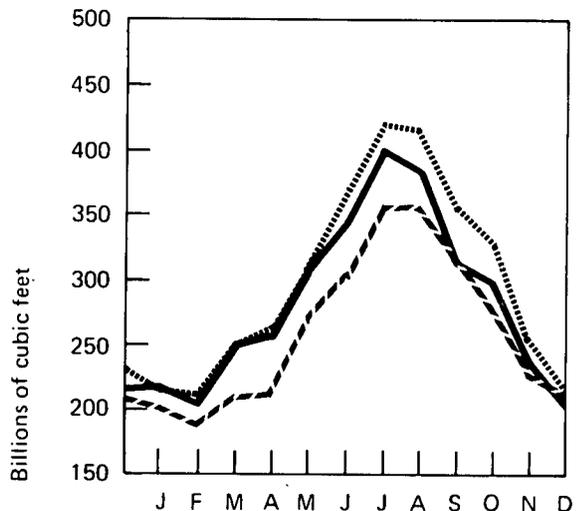
Coal Consumption



Oil Consumption



Gas Consumption



..... 1973
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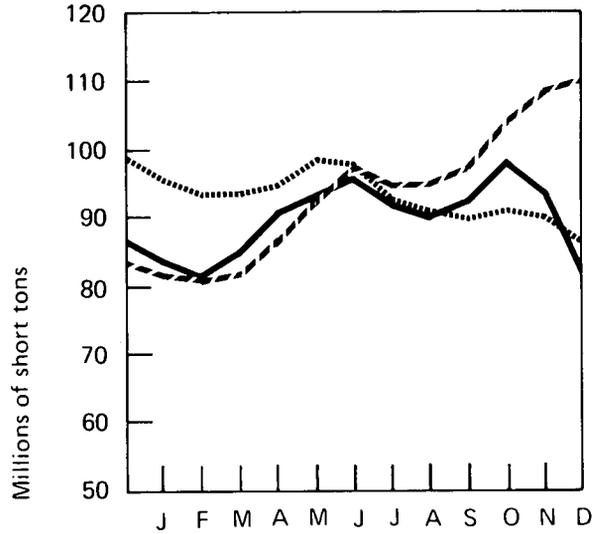
Source: Federal Power Commission.

Electric Utilities (Continued)

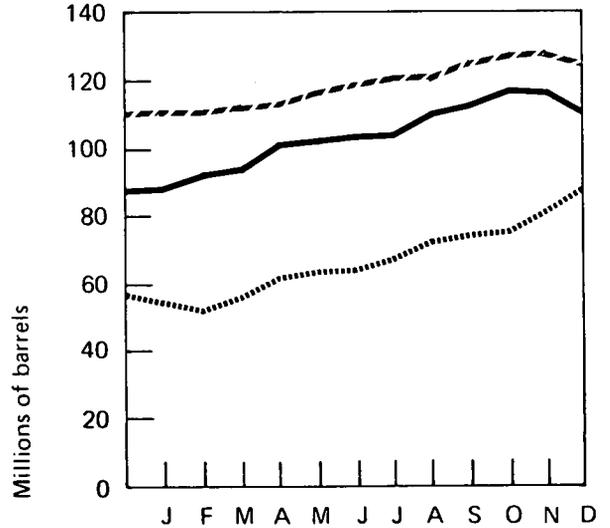
Stocks at End of Month

		Coal	Oil
		In thousands of short tons	In thousands of barrels
1973	January	95,017	53,691
	February	92,993	50,858
	March	93,986	54,885
	April	94,991	62,411
	May	98,722	64,259
	June	97,995	65,003
	July	92,215	67,987
	August	91,356	73,259
	September	90,156	74,863
	October	91,428	76,343
	November	90,369	81,224
	December	86,880	88,228
1974	January	83,366	89,053
	February	80,962	92,645
	March	84,257	94,187
	April	90,901	100,210
	May	93,628	103,606
	June	95,811	104,316
	July	91,616	105,919
	August	89,691	110,997
	September	92,704	113,570
	October	98,373	117,564
	November	93,825	116,558
	December	83,652	111,990
1975	January	81,429	110,304
	February	81,065	111,581
	March	81,872	113,377
	April	86,656	113,930
	May	93,027	116,940
	June	97,834	119,653
	July	94,067	121,076
	August	94,107	120,601
	September	97,790	126,137
	October	104,776	128,338
	November	109,065	129,629
	December	110,688	125,028

Coal Stocks



Oil Stocks

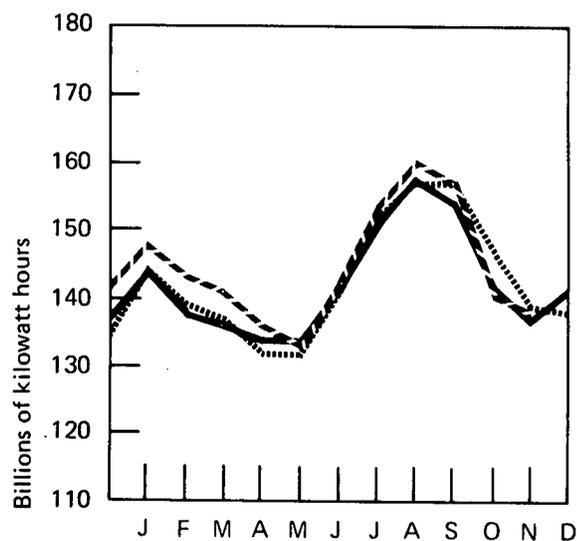


..... 1973
 ——— 1974
 - - - 1975

Sales

		Residential	Commercial	Industrial	Other*	Total
In millions of kilowatt hours						
1973	January	52,840	31,182	55,274	5,209	144,505
	February	49,601	30,445	54,591	4,909	139,546
	March	46,315	30,100	55,866	4,822	137,103
	April	41,821	29,038	55,937	4,571	131,367
	May	39,825	30,060	56,838	4,638	131,361
	June	44,967	33,194	57,368	4,764	140,293
	July	54,123	36,147	57,152	5,140	152,562
	August	56,742	36,820	58,865	5,054	157,481
	September	56,210	36,711	59,178	5,211	157,310
	October	47,207	33,289	60,514	5,032	146,042
	November	43,175	31,363	58,464	5,085	138,087
	December	46,442	29,788	56,190	4,896	137,316
	TOTAL	579,268	388,137	686,237	59,331	1,712,973
1974	January	52,846	30,608	55,754	4,995	144,203
	February	47,832	29,542	54,978	4,708	137,060
	March	46,154	29,309	55,999	4,693	136,155
	April	43,294	28,986	56,497	4,610	133,387
	May	41,215	29,876	57,386	4,685	133,162
	June	46,596	32,800	58,077	4,641	142,114
	July	53,435	35,229	57,899	4,965	151,528
	August	56,558	36,414	59,803	5,069	157,844
	September	53,252	35,830	60,366	4,983	154,431
	October	44,177	32,112	60,053	4,792	141,134
	November	42,773	30,968	57,361	4,969	136,071
	December	50,368	31,757	53,878	4,974	140,977
	TOTAL	578,500	383,431	688,051	58,084	1,708,066
1975	January	55,547	33,026	54,280	5,245	148,098
	February	52,185	32,441	53,142	4,984	142,752
	March	49,974	32,005	53,182	4,914	140,075
	April	46,883	31,335	52,526	4,737	135,481
	May	43,226	31,608	53,364	4,745	132,943
	June	48,461	35,266	54,104	4,777	142,608
	July	56,829	37,891	53,973	5,052	153,745
	August	59,979	38,768	56,067	5,223	160,037
	September	56,982	37,550	56,797	5,320	156,650
	October	45,142	33,329	56,486	5,194	140,151
	November	44,019	32,288	56,174	5,235	137,716
	TOTAL	559,227	375,507	600,095	55,426	1,590,255

Total Sales



*Includes street lighting and trolley cars.
Source: Federal Power Commission.

..... 1973
— 1974
- - - 1975

NUCLEAR POWER

The 51 domestic nuclear reactors in commercial operation, with a total maximum dependable capacity of 32,675 net electrical megawatts, performed at 63 percent of capacity in January, a decrease from 67 percent in December.

The average power level for all nuclear plants in commercial and power ascension status in January was 21,170 megawatts, second only to the record high level of 21,822 megawatts attained during the previous month. Nuclear generation constituted 8.9 percent of total U.S. production of electricity for January.

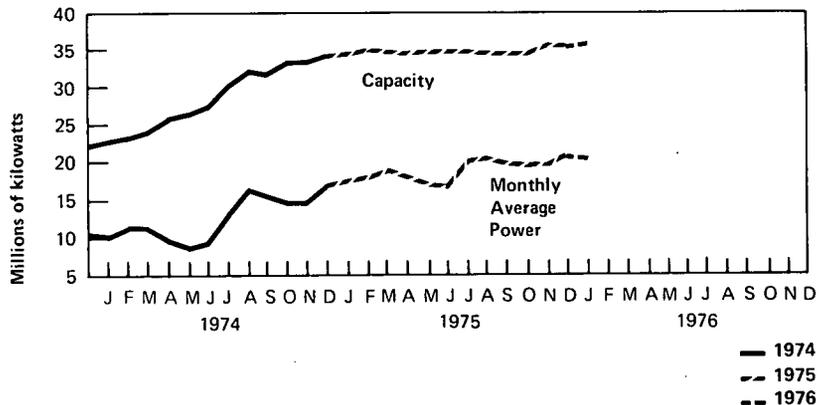
Beaver Valley 1, an 852-megawatt pressurized water reactor, was issued an operating license on January 30. The Beaver Valley plant, owned by the Duquesne Light Company, is located near Shippingport, Pennsylvania, where the Nation's first commercial nuclear reactor began operating in 1957.

By direction of the U.S. District Court, Eastern District, Virginia, the Westinghouse Corporation will distribute its entire inventory of 14.9 million pounds of uranium to the 16 domestic and 3 foreign utilities bringing suit against the Corporation for default on uranium contracts; original contract prices of between \$8 and \$11 per pound of uranium concentrate will be honored.

U.S. Nuclear Powerplant Operations*

		Maximum Dependable Capacity	Average Power	Percent of Total Domestic Electricity Generation
In thousands of net kilowatts				
1973	January	13,594	8,395	3.9
	February	13,594	8,821	4.1
	March	14,382	8,991	4.5
	April	15,253	8,161	4.2
	May	16,126	7,657	3.9
	June	17,827	9,429	4.2
	July	17,827	9,355	4.0
	August	19,349	10,463	4.4
	September	20,400	10,815	4.9
	October	20,400	10,036	4.9
	November	21,271	11,308	5.5
	December	22,826	10,543	5.3
	AVERAGE	17,761	9,513	4.5
1974	January	23,156	10,194	4.8
	February	23,926	11,992	5.6
	March	24,455	11,715	5.8
	April	26,012	9,826	4.9
	May	26,820	8,791	4.2
	June	27,898	9,740	4.4
	July	30,524	13,577	5.6
	August	32,195	16,442	7.0
	September	31,759	15,159	7.1
	October	33,614	14,409	7.1
	November	33,630	14,528	7.2
	December	34,467	17,375	8.1
	AVERAGE	29,071	12,865	6.0
1975	January	34,841	17,843	8.1
	February	35,049	18,063	8.3
	March	34,836	19,091	9.2
	April	34,167	17,516	8.7
	May	34,167	16,613	8.2
	June	34,472	16,097	7.2
	July	34,746	20,297	8.6
	August	34,739	20,618	8.7
	September	34,690	19,892	9.1
	October	34,690	19,464	9.4
	November	35,902	R19,586	R9.3
	December	35,574	R21,985	9.7
	AVERAGE	34,823	R18,926	8.7
1976	January	*35,950	*21,170	*8.9

U.S. Nuclear Powerplants



*Includes all units licensed to operate, whether in commercial operation or power ascension status.

**Preliminary data.

R=Revised data.

Sources: Average Power for latest month and Capacity are from U.S. Nuclear Regulatory Commission; Percent of Total Domestic Electricity Generation for latest month is based on data from Edison Electric Institute; remaining data are from Federal Power Commission.

Status of Nuclear Powerplants — January 31, 1976

Status	Number of Plants				Total	Design Capacity
	Boiling Water Reactors	High-Temperature Gas Reactors	Pressurized Water Reactors	Other*		In Net Electrical Megawatts
Licensed to operate	23	1	33	0	57	40,000
Construction permit granted	19	0	49	0	68	70,000
Construction permit pending	24	0	44	5	73	80,000
Orders placed for plant	5	0	14	0	19	22,000
Publicly announced	—	—	—	19	19	24,000
TOTAL	71	1	140	24	236	236,000

*Includes 1 Liquid Metal Fast Breeder Reactor and 23 announced intentions to order for which a reactor type has not been chosen.

Source: U.S. Nuclear Regulatory Commission.

U.S. Uranium Enrichment — January 1976

	Domestic Customers	Foreign Customers	Total
Separative Work Performed (in metric tons of separative work units)	331.550	165.663	497.213
Cost (in millions of dollars)	20.208	9.112	29.320
Product Quantity (in metric tons of uranium)	76.672	54.822	131.494
Average Enrichment (in percent U-235)	2.901	2.392	2.689
Feed Requirement (in metric tons of uranium)	427.143	235.176	662.319

Source: U.S. Energy Research and Development Administration.

Nuclear Power Generation by Major Non-Communist Countries — January 1976

Country	Number of Reactors	Capacity	Generation of Electricity			
			Generation January	Percent of Design Capacity		
				January	1974	1975
		In thousands of gross electrical kilowatts	In millions of gross kilowatt hours			
Canada	5	2,380	1,318	74	74	64
Federal Republic of Germany	7	3,450	2,193	85	57	72
France	10	3,070	1,571	69	57	68
Great Britain	29	6,140	**2,788	**67	61	57
India	3	620	333	72	55	46
Italy	3	640	384	81	61	69
Japan	10	5,280	2,432	62	61	36
Spain	3	1,120	666	80	75	77
Sweden	5	3,310	1,521	62	20	44
Switzerland	3	1,050	757	97	76	84
United States	55	39,400	16,997	58	57	60
TOTAL	133	66,560	30,960	63	58	58

*Includes only operational units, i.e., those which have generated electricity during, or prior to, the current month.

**Figures are for 4-week operating period.

Source: *Nucleonics Week*.

Summary of Monthly Nuclear Fuel Cycle – December 1975

Fuel Cycle Activity	Product	Processed Material* In MTU except where noted	Percent Utilization of Industry Capacity	Energy Content of Processed Material**	Energy Consumed in Fuel Cycle Activity***	Cost Contribution to Electric Power† In mills per kilowatt hour
Milling	Yellowcake (U ₃ O ₈) Deliveries	115	9	39,000	60	0.54
Conversion	Uranium Hexafluoride (UF ₆) Deliveries	68	5	23,000	15	0.07
Enrichment	Enriched UF ₆ Deliveries	258 (874 MT-SWU)	††	528,000	7,500	0.86
Fabrication	Finished Fuel Assemblies Produced	161	75	330,000	250	0.46
Powerplant Operation	New Fuel Receipts	101	—	207,000	—	—
	Electricity Generated	17,649 (million kWhe)	63	175,000	3,100	8.37
	Spent Fuel Discharged	75	—	—	—	—
Reprocessing	Spent Fuel Received	2	—	—	—	0.02
	Spent Fuel Reprocessed	0	—	—	—	—

*Units of measure are discussed in Explanatory Notes 10 and 11.

** Assumes 25,000 MWD/MTU for heat content of enriched uranium and a 6:1 feed-to-product ratio at the enrichment plant.

*** Energy requirements for processing are obtained from U.S.A.E.C. Report No.WASH 1248.

† Cost contribution is computed from unit prices paid for current month's production and requirement for a model 1000-MWe reactor operating at 80 percent capacity factor, given in U.S.A.E.C. Report No.WASH 1174-74. Because of the long lead time required for nuclear fuel processing, the sum of the numbers in this column does not necessarily reflect the fuel cost of current electricity production.

†† EDRA's enrichment plants are presently operating at maximum utilization of available electric power, with the excess production being placed in the "preproduction stockpile" in anticipation of high demand for enriched uranium in the 1980's.

Source: FEA.

ENERGY CONSUMPTION

Domestic energy consumption in December 1975 totaled 6.672 quadrillion Btu, 1.2 percent below the December 1974 level of 6.753 and 1.8 percent below the December 1973 level of 6.797. No sectoral breakdown is available for the month as yet.

The revised consumption figure for November 1975 was 5.867 quadrillion Btu. Of the total, 2.007 quadrillion Btu was consumed by the residential and commercial sector, 3.5 percent below the level for November 1974 and 7.9 percent below November 1973. Direct consumption of primary fuels amounted to 53.2 percent of this sector's total consumption (coal was 0.7 percent, dry natural gas, 26.1 percent, and petroleum products, 26.4 percent). Consumption of electricity accounted for the remaining 46.8 percent.

The industrial sector consumed 2.403 quadrillion Btu in November, 4.7 percent below the amount consumed during November 1974 and 9.1 percent below the November 1973 level. Coal accounted for 13.8 percent of the total, 38.6 percent was dry natural gas, 20.1 percent was petroleum products, and 27.5 percent was electricity.

Consumption in the transportation sector was 1.457 quadrillion Btu, 4.7 percent below the November 1974 level and 9.3 percent below November 1973. Petroleum products comprised 95.1 percent of the energy consumed by this sector. Natural gas used for pipeline transportation and electricity used by railroads and for street and highway lighting accounted for the balance.

PETROLEUM CONSUMPTION AND FORECAST

Total domestic demand for petroleum products during January 1976 was 18.485 million barrels per day. This was 574,000 barrels per day (3.2 percent) above the forecast level and 502,000 barrels per day (2.8 percent) above the demand level for January 1975.

Domestic demand for motor gasoline in January was 6.488 million barrels per day, which was 330,000 barrels per day (5.4 percent) above the forecast level of 6.158 million barrels per day. Gasoline demand

was also 282,000 barrels per day (4.5 percent) greater than demand during January 1975.

Domestic demand for distillate fuel oil was 4.320 million barrels per day in January. This was 473,000 barrels per day (12.3 percent) above the forecast level and 367,000 barrels per day (9.3 percent) more than distillate demand during January 1975.

Domestic demand for residual fuel oil during January was 2.865 million barrels per day, which was 385,000 barrels per day (11.8 percent) below the forecast level of 3.250 million barrels per day and 377,000 barrels per day (11.6 percent) lower than demand for January 1975.

Energy Consumption by Economic Sector and Primary Source – November 1975 [In quadrillion (10¹⁵) Btu]

Sector ¹	Primary Energy Source					Primary Energy Consumption	Electricity Distributed ⁷	Net Energy Consumption	Electrical Energy Loss Distributed ⁸	Ultimate Energy Disposition
	Coal ²	Natural Gas (dry) ³	Petroleum ⁴	Hydroelectric ⁵	Nuclear ⁶					
Residential and Commercial	0.015	0.523	0.530	—	—	1.068	0.273	1.341	0.666	2.007
Industrial	0.331	0.927	0.483	0.003	—	1.744	0.192	1.935	0.468	2.403
Transportation	0.001	0.053	1.385	—	(⁹)	1.438	0.006	1.444	0.014	1.457
Electric Utilities	0.740	0.233	0.230	0.264	0.150	1.617	—	—	—	—
TOTAL	1.086	1.736	2.628	0.267	0.150	5.867	0.470	4.720	1.148	5.867

¹ See Explanatory Note 12 for definitions of the Residential and Commercial, Industrial, Transportation, and Electric Utilities Sectors.

² Data are from the Bureau of Mines. Includes anthracite and bituminous coal and lignite.

³ Aggregate data are from the Bureau of Mines. FPC provided data on natural gas consumed by electric utilities. Data from the American Gas Association are used for the Residential and Commercial Sector, adjusted to include a portion of the AGA "Other" category. Natural gas used in transportation, mostly for pipeline use, is estimated to be 3.5 percent of total natural gas consumption less electric utilities. This percentage is derived from 1974 Bureau of Mines data on consumption. The Industrial Sector is then the difference between the total and the sum of the other sectors.

⁴ Aggregate petroleum data are from the Bureau of Mines. FPC provided data on oil consumed by electric utilities.

Petroleum consumed in transportation was calculated based on Department of Transportation data as follows: Motor gasoline - 100 percent; naphtha jet fuel - 100 percent; kerosine jet fuel - 97 percent; distillate fuel oil - 30.3 percent; residual fuel oil - 11.2 percent; all other products - 4.7 percent. The remainder is distributed to economic sectors using the following percentage shares, derived from 1974 Bureau of Mines data on consumption: Residential and Commercial - 52.3 percent; Industrial - 47.7 percent.

⁵ FPC hydroelectric power production plus net imports of electricity from Canada. These imports, estimated at 0.011 quadrillion Btu per month, were assumed to be from hydroelectric power sources. Monthly industrial hydroelectric power consumption is estimated to be one-twelfth of the preliminary Bureau of Mines annual figure for 1974.

⁶ FPC nuclear power production.

⁷ Electricity was distributed using FPC and Edison Electric Institute data on kilowatt-hour sales to ultimate customers. Electrical energy consumed by railroads and for street and highway lighting was distributed to the Transportation Sector. All "other" sales, largely for use in government buildings, were distributed to the Residential and Commercial Sector.

⁸ In generating electricity with nuclear or fossil fuels, approximately 65 percent of the energy is lost in the form of heat. Transmission and distribution losses consume about an additional 3 percent of the energy inputs of the utility industry. In order to fully account for all energy consumed both directly and indirectly (i.e., ultimate energy disposition), the electricity losses are allocated to the final end-use sectors in proportion to their direct kilowatt-hour usage.

⁹ Negligible.

Percent Changes in Energy Consumption for November 1975 by Sources and Economic Sectors

	November 1975 Consumption	Percent Change from November 1974	Cumulative Percent Change from 1974 (January through November)
	In quadrillion (10 ¹⁵) Btu		
Refined Petroleum Products	2.628	-7.8	-2.1
Motor Gasoline	1.011	-1.9	+2.0
Jet Fuel	0.161	-7.0	+1.7
Distillate	0.462	-16.0	-2.4
Residual	0.455	-14.4	-7.0
Other Petroleum Products	0.539	-6.3	-6.7
Natural Gas (Dry)	1.736	-7.0	-8.3
Coal (Anthracite, bituminous, and lignite)	1.086	+1.8	-0.3
Electricity (Sales)	0.470	+1.2	+1.5
TOTAL ENERGY USE	5.867	-4.3	-2.7
Economic Sector Consumption			
Residential and Commercial	2.007	-3.5	+2.2
Industrial	2.403	-4.7	-9.4
Transportation	1.457	-4.7	+0.7

Energy Consumption (Continued)

Energy Consumption by the Residential and Commercial Economic Sector¹

	Coal	Natural Gas (dry)	Petroleum ²	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use
In quadrillion (10 ¹⁵) Btu							
1973							
January	0.038	1.257	0.707	0.299	0.716	3.017	3.017
February	0.032	1.113	0.653	0.285	0.610	2.693	5.710
March	0.025	0.925	0.620	0.272	0.629	2.471	8.181
April	0.016	0.745	0.527	0.253	0.569	2.109	10.290
May	0.017	0.539	0.562	0.250	0.612	1.980	12.270
June	0.017	0.354	0.511	0.279	0.714	1.873	14.143
July	0.017	0.279	0.503	0.321	0.814	1.934	16.077
August	0.018	0.253	0.560	0.332	0.835	1.997	18.074
September	0.024	0.276	0.538	0.330	0.690	1.859	19.933
October	0.028	0.344	0.592	0.287	0.651	1.902	21.835
November	0.031	0.610	0.658	0.266	0.615	2.180	24.015
December	0.033	0.882	0.648	0.271	0.665	2.500	26.515
TOTAL	0.295	7.577	7.077	3.445	8.120	26.515	
1974							
January	0.041	1.158	0.663	0.296	0.705	2.863	2.863
February	0.035	1.027	0.593	0.275	0.607	R2.536	R5.399
March	R0.028	0.902	0.567	0.268	0.650	R2.416	R7.816
April	R0.019	0.754	0.532	0.258	0.602	2.164	R9.980
May	0.017	0.499	0.499	0.254	0.661	1.930	R11.909
June	0.016	0.357	0.510	0.282	0.692	1.857	R13.766
July	0.015	0.293	0.506	0.315	0.852	1.981	R15.747
August	0.021	0.265	0.522	0.330	0.817	1.954	R17.701
September	0.026	0.278	0.513	0.316	0.659	1.793	R19.493
October	0.028	0.395	0.591	0.271	0.643	R1.929	R21.422
November	0.028	0.569	0.575	0.263	0.644	2.079	R23.501
December	0.032	0.930	0.630	0.292	0.745	2.629	R26.130
TOTAL	0.310	7.427	6.701	3.420	8.277	R26.130	
1975							
January	R0.037	1.124	0.651	0.315	0.774	2.900	2.900
February	0.023	1.105	0.556	0.300	0.661	2.645	5.545
March	0.025	1.018	0.568	0.291	0.708	2.611	8.156
April	0.011	0.905	0.508	0.278	0.647	2.350	10.506
May	0.011	0.522	0.459	0.267	0.678	1.937	12.443
June	0.015	0.332	0.454	0.297	0.754	1.854	14.297
July	0.017	0.293	0.484	0.336	0.873	2.004	16.301
August	0.014	0.264	0.463	0.350	0.890	1.981	18.282
September	0.015	0.281	0.503	0.336	0.703	1.837	20.119
October	0.015	0.353	R0.558	0.280	R0.685	R1.892	R22.011
November	0.015	0.523	0.530	0.273	0.666	2.007	24.017
TOTAL (11 months)	0.198	6.719	5.737	3.322	8.041	24.017	

Energy Consumption by the Industrial Economic Sector¹

		Coal	Natural Gas (dry)	Petroleum ³	Hydroelectric	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use	
		In quadrillion (10 ¹⁵) Btu								
1973	January	0.393	0.832	0.640	0.003	0.189	0.452	2.508	2.508	
	February	0.362	0.764	0.591	0.003	0.186	0.399	2.305	4.813	
	March	0.369	0.802	0.561	0.003	0.191	0.441	2.366	7.179	
	April	0.363	0.794	0.477	0.003	0.191	0.430	2.257	9.436	
	May	0.369	0.846	0.508	0.003	0.194	0.475	2.395	11.831	
	June	0.351	0.787	0.462	0.003	0.196	0.502	2.301	14.132	
	July	0.345	0.836	0.455	0.003	0.195	0.494	2.328	16.459	
	August	0.340	0.888	0.506	0.003	0.201	0.505	2.444	18.903	
	September	0.329	0.876	0.487	0.003	0.202	0.422	2.320	21.223	
	October	0.363	1.010	0.535	0.003	0.206	0.469	2.587	23.809	
	November	0.374	1.012	0.595	0.003	0.199	0.460	2.644	26.453	
	December	0.412	1.046	0.586	0.003	0.192	0.470	2.708	29.161	
		TOTAL	4.370	10.493	6.403	0.036	2.341	5.518	29.161	
1974	January	R0.391	0.824	0.605	0.003	0.190	0.452	2.465	2.465	
	February	0.366	0.798	0.541	0.003	0.188	0.414	R2.310	R4.775	
	March	0.370	0.821	0.518	0.003	0.191	0.463	R2.366	R7.140	
	April	0.364	0.657	0.485	0.003	0.193	0.451	2.153	R9.293	
	May	R0.355	0.783	0.455	0.003	0.196	0.510	2.301	R11.594	
	June	0.337	0.719	0.465	0.003	0.198	0.486	R2.209	R13.803	
	July	R0.337	0.802	0.462	0.003	0.198	0.535	2.335	R16.138	
	August	0.347	0.848	0.476	0.003	0.204	0.505	2.384	R18.522	
	September	R0.337	0.928	0.468	0.003	0.206	0.430	2.372	R20.894	
	October	R0.360	0.992	0.539	0.003	0.205	0.486	R2.584	R23.478	
	November	R0.324	0.996	0.525	0.003	0.196	0.479	2.521	R25.999	
	December	0.320	0.939	0.575	0.003	0.184	0.470	2.490	R28.490	
		TOTAL	R4.207	10.108	6.111	0.036	2.348	5.679	R28.490	
1975	January	0.356	0.767	0.594	0.003	0.185	0.456	R2.361	R2.361	
	February	0.355	0.625	0.507	0.003	0.181	0.399	2.070	4.431	
	March	0.378	0.651	0.518	0.003	0.181	0.441	2.173	6.604	
	April	0.353	0.510	0.464	0.003	0.179	0.417	1.926	R8.531	
	May	0.333	0.525	0.419	0.003	0.182	0.463	1.925	R10.456	
	June	0.314	0.601	0.414	0.003	0.185	0.468	1.986	12.442	
	July	0.298	0.642	0.442	0.003	0.184	0.479	2.049	14.491	
	August	0.305	0.730	0.422	0.003	0.191	0.486	2.138	16.629	
	September	0.304	0.759	0.459	0.003	0.194	0.406	2.125	R18.754	
	October	0.318	0.913	R0.509	0.003	0.193	R0.471	R2.407	R21.161	
	November	0.331	0.927	0.483	0.003	0.192	0.468	2.403	23.564	
		TOTAL (11 months)	3.645	7.650	5.232	0.033	2.048	4.956	23.564	

Energy Consumption (Continued)

Energy Consumption by the Transportation Economic Sector¹

		Coal	Natural Gas (dry) ⁴	Petroleum	Electricity Distributed	Electrical Energy Loss Distributed	Total Energy Use	Cumulative Total Energy Use
		In quadrillion (10 ¹⁵) Btu						
1973	January	0.001	0.085	1.511	0.005	0.013	1.615	1.615
	February	0.001	0.076	1.417	0.005	0.011	1.510	3.125
	March	0.001	0.070	1.502	0.005	0.012	1.589	4.714
	April	0.001	0.062	1.412	0.005	0.010	1.490	6.204
	May	0.001	0.056	1.540	0.004	0.011	1.612	7.816
	June	0.001	0.046	1.471	0.004	0.011	1.533	9.350
	July	0.001	0.045	1.528	0.004	0.011	1.589	10.939
	August	0.001	0.046	1.588	0.005	0.011	1.651	12.590
	September	0.001	0.047	1.437	0.005	0.010	1.499	14.089
	October	0.001	0.055	1.520	0.005	0.011	1.592	15.681
	November	0.001	0.066	1.523	0.005	0.012	1.607	17.288
	December	0.001	0.078	1.491	0.005	0.013	1.589	18.877
	TOTAL		0.009	0.733	17.940	0.058	0.137	18.877
1974	January	0.001	0.072	1.398	0.005	0.013	1.489	1.489
	February	0.001	0.066	1.300	0.005	0.011	1.384	2.873
	March	0.001	0.063	1.416	0.005	0.012	1.496	4.369
	April	0.001	0.051	1.397	0.005	0.011	1.465	5.834
	May	0.001	0.047	1.484	0.005	0.012	1.547	7.381
	June	0.001	0.039	1.449	0.005	0.011	1.505	8.885
	July	0.001	0.040	1.513	0.005	0.012	1.570	10.456
	August	0.001	0.040	1.532	0.005	0.012	1.590	12.046
	September	0.001	0.044	1.392	0.005	0.010	1.452	13.497
	October	0.001	0.050	1.506	0.005	0.012	1.574	15.072
	November	0.001	0.057	1.453	0.005	0.013	1.529	16.600
	December	0.001	0.068	1.546	0.006	0.014	1.634	18.234
	TOTAL		0.007	0.636	17.386	0.060	0.145	18.234
1975	January	0.001	0.069	1.499	0.006	0.014	1.587	1.587
	February	0.001	0.063	1.334	0.005	0.012	1.415	3.002
	March	0.001	0.061	1.456	0.005	0.013	1.536	4.538
	April	0.001	0.051	1.456	0.005	0.012	1.524	6.062
	May	0.001	0.038	1.481	0.005	0.012	1.536	7.598
	June	0.001	0.034	1.466	0.005	0.012	1.517	9.115
	July	0.001	0.034	1.498	0.005	0.013	1.550	10.665
	August	0.001	0.036	1.510	0.005	0.012	1.563	12.228
	September	0.001	0.038	1.420	0.005	0.010	1.474	13.702
	October	0.001	0.046	R1.495	0.005	0.013	R1.560	R15.261
	November	0.001	0.053	1.385	0.006	0.014	1.457	16.719
	TOTAL (11 months)		0.006	0.521	15.999	0.056	0.136	16.719

¹ See Explanatory Note 12 for definitions of the Residential and Commercial, Industrial, and Transportation Sectors. The methodology used for sector calculations is provided in the footnotes of the previous table. Printed totals may differ slightly from the sum of their row/column components due to independent rounding.

² The percentage share used in calculating Residential and Commercial consumption of petroleum was 52.5 percent for 1973 and 52.3 percent for 1974 and 1975.

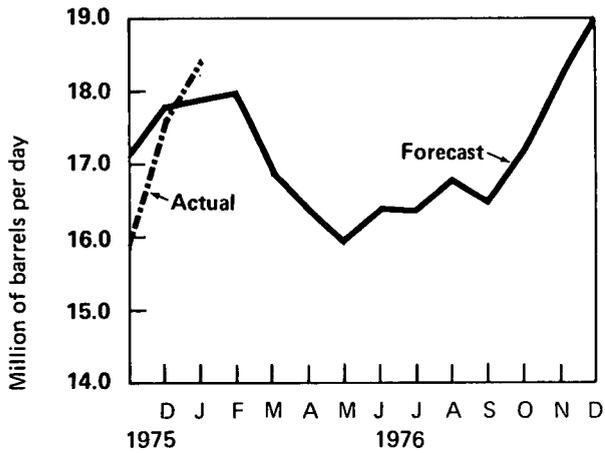
³ The percentage share used in calculating Industrial consumption of petroleum was 47.5 percent for 1973 and 47.7 percent for 1974 and 1975.

⁴ The percentage share used in calculating Transportation consumption of natural gas was 3.9 percent for 1973 and 3.5 percent for 1974 and 1975.

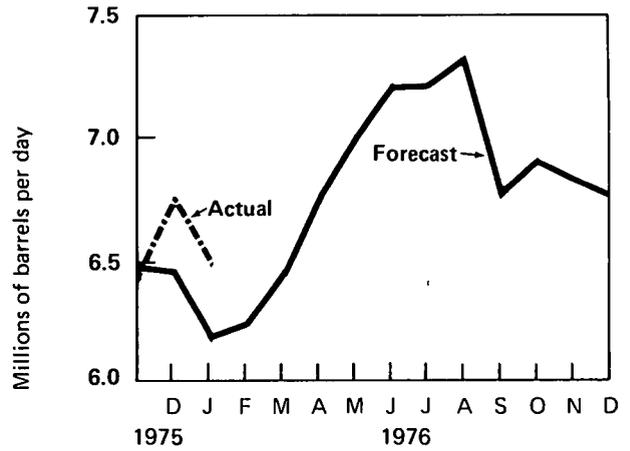
R=Revised data.

Petroleum Consumption and Forecast

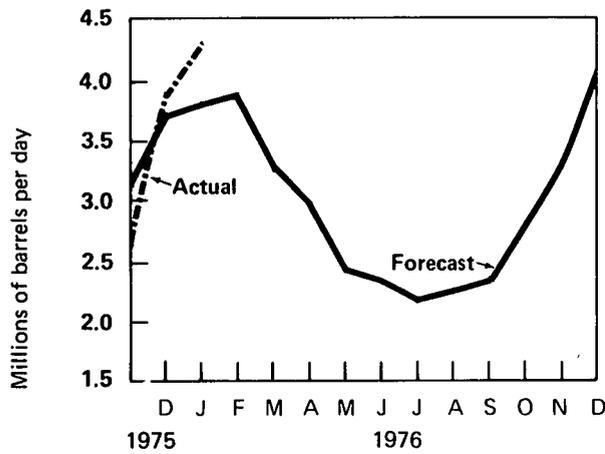
Total Domestic Demand for Petroleum Products



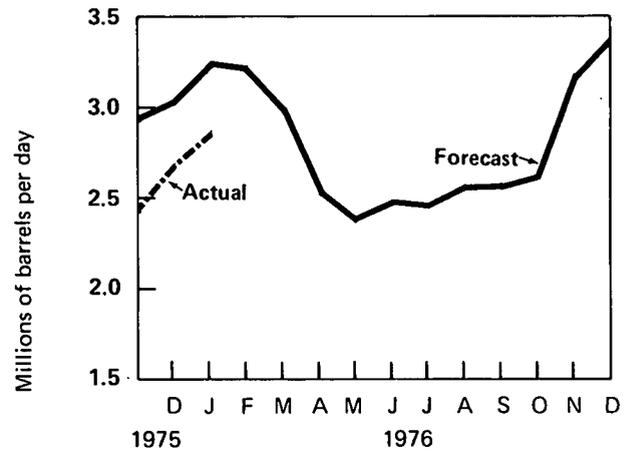
Domestic Demand for Motor Gasoline



Domestic Demand for Distillate Fuel Oil



Domestic Demand for Residual Fuel Oil



Notes:

Domestic Demand – Demand for products, in terms of real consumption, is not available; production plus imports plus withdrawals from primary stocks is used as a proxy for consumption. Secondary stocks, not measured by FEA, are substantial for some products.

Actuals – Based on FEA data for December and API data for January.

Forecast – See Explanatory Note 13 for discussion of basic assumptions of forecast.

OIL AND GAS EXPLORATION

The average number of rotary rigs drilling for oil and gas dropped to 1,710 in January, a decrease of 83 rigs from the number operating in December. This decrease reflects normal seasonal patterns. Compared with January 1975, the current rig count represented a 95-rig increase.

There were 3,292 wells drilled during January 1976, 10 percent more than in January 1975 and 54 percent more than in January 1974.

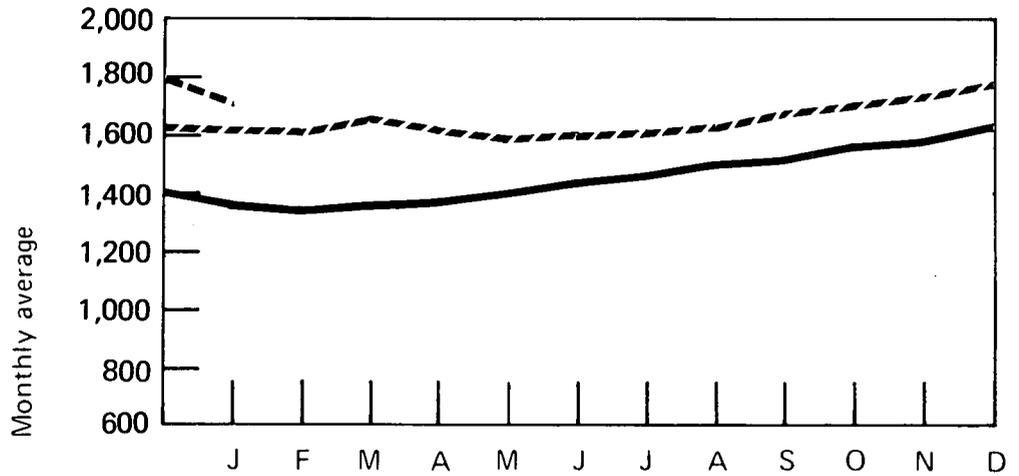
Seismic exploration continued to decline during the month. The January 1976 crew count total (252) represented the fifth consecutive month of decline and a drop of 16 percent from the total reported for the same month in 1975. The number of active marine crews (20) was the lowest since the monthly crew count was instituted in May 1974. During the past 4 months, marine crews have declined 50 percent.

Oil and Gas Exploration

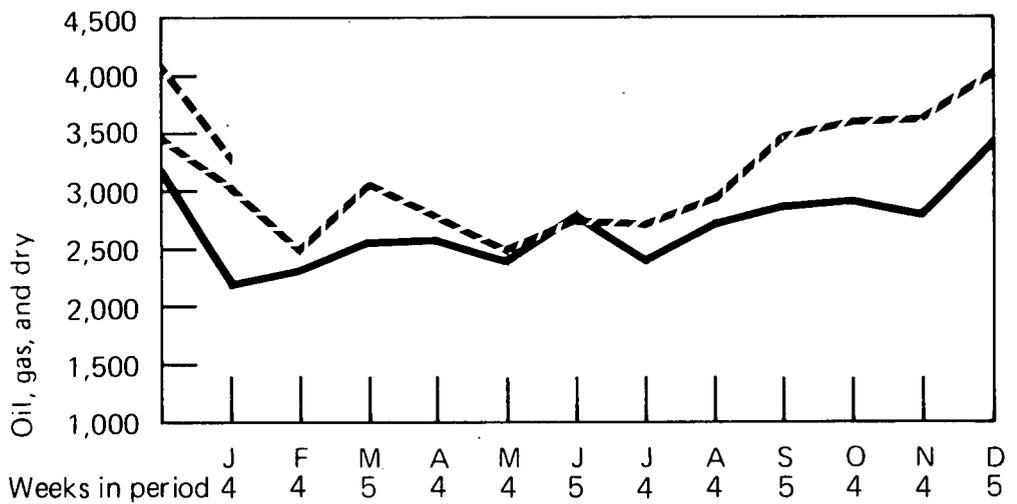
		Rotary Rigs in Operation		Wells Drilled			Total Footage of Wells Drilled
		Monthly average	Oil	Gas	Dry	Total	In thousands of feet
1973	January	1,219	758	406	899	2,063	10,973
	February	1,126	777	487	765	2,029	10,656
	March	1,049	953	504	909	2,366	12,318
	April	993	699	489	777	1,965	10,434
	May	1,046	749	407	647	1,803	9,622
	June	1,118	767	432	795	1,994	10,815
	July	1,155	912	504	840	2,256	10,996
	August	1,222	724	456	739	1,919	9,633
	September	1,266	854	690	940	2,484	12,075
	October	1,334	790	554	958	2,302	11,694
	November	1,390	822	606	865	2,293	11,823
	December	1,405	1,087	827	1,208	3,122	15,530
	AVERAGE	1,194	TOTAL* 9,902	6,385	10,305	26,592	136,391
1974	January	1,372	763	577	803	2,143	10,392
	February	1,355	901	600	816	2,317	12,160
	March	1,367	936	638	1,003	2,577	12,844
	April	1,381	947	700	945	2,592	13,349
	May	1,412	957	520	870	2,347	11,460
	June	1,432	1,238	586	982	2,806	12,976
	July	1,480	1,008	461	884	2,353	11,802
	August	1,518	1,210	555	968	2,733	12,410
	September	1,527	1,200	600	1,091	2,891	12,676
	October	1,584	1,131	551	1,241	2,923	14,081
	November	1,596	1,088	626	1,053	2,767	11,795
	December	1,643	1,339	791	1,274	3,404	15,707
	AVERAGE	1,475	TOTAL* 12,784	7,240	11,674	31,698	150,551
1975	January	1,615	1,299	655	1,040	2,994	13,189
	February	1,611	1,097	458	933	2,488	12,071
	March	1,651	1,341	658	1,091	3,090	15,472
	April	1,604	1,181	506	1,071	2,758	13,545
	May	1,592	1,100	451	891	2,442	12,054
	June	1,613	1,246	509	1,022	2,777	13,540
	July	1,616	1,229	557	920	2,706	12,545
	August	1,645	1,272	587	1,122	2,981	14,221
	September	1,699	1,504	831	1,165	3,500	15,636
	October	1,716	1,633	682	1,310	3,625	16,689
	November	1,757	1,619	776	1,270	3,665	15,788
	December	1,793	1,817	832	1,424	4,073	17,556
	AVERAGE	1,662	TOTAL* 16,336	7,505	13,251	37,092	172,284
1976	January	1,710	1,465	772	1,055	3,292	14,517

*Totals reflect subsequent data revisions and therefore may not agree with cumulative monthly data.
Sources: Rotary Rigs - Hughes Tool Company; Wells - American Petroleum Institute.

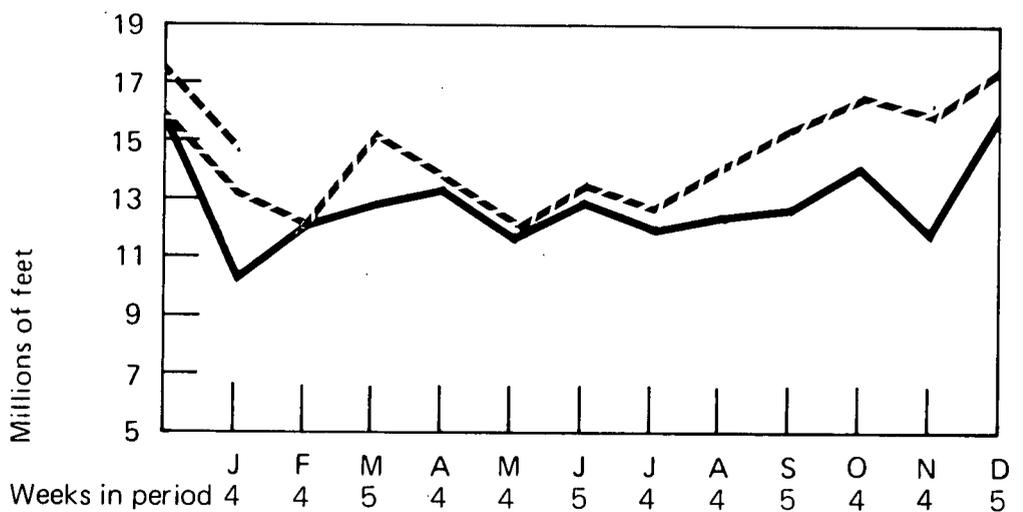
Rotary Rigs in Operation



Total Wells Drilled



Total Footage of Wells Drilled

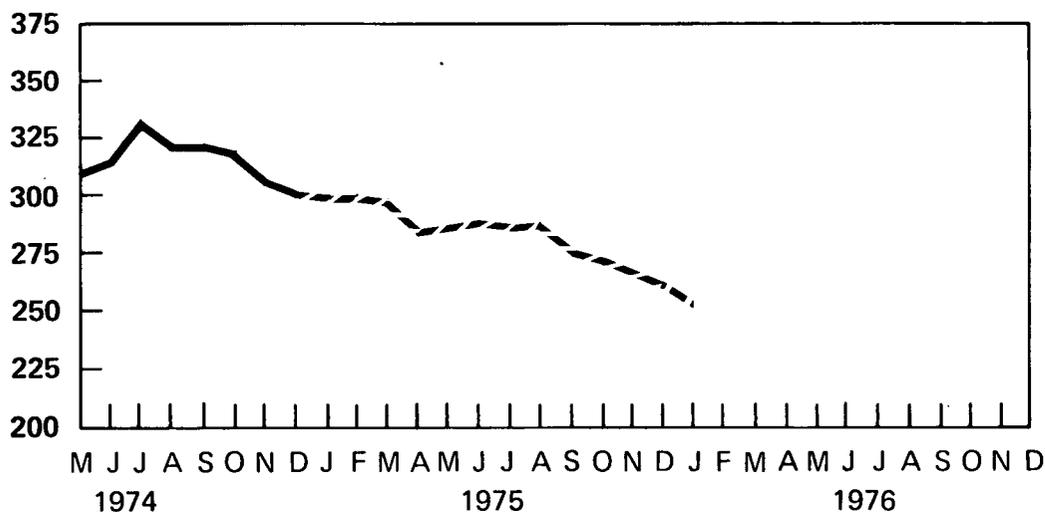


— 1974
 - - 1975
 - · - 1976

Oil and Gas Exploration (Continued)

	Crews Engaged in Seismic Exploration			Line Miles of Seismic Exploration		
	Offshore	Onshore	Total	Offshore	Onshore	Total
1972 Monthly Average	12	239	251	10,306	9,333	19,639
1973 Monthly Average	23	227	250	21,579	10,597	32,175
1974 Monthly Average	31	274	305	28,482	13,219	41,701
1975 Monthly Average	30	253	283	*27,360	*12,206	*39,566
1974 January-April	NA	NA	NA			
May	35	278	313			
June	38	279	317			
July	35	299	334			
August	34	287	321			
September	34	287	321			
October	32	288	320			
November	30	276	306			
December	25	275	300			
1975 January	27	274	301			
February	24	278	302			
March	23	276	299			
April	23	260	283			
May	32	254	286			
June	38	251	289			
July	37	249	286			
August	40	249	289			
September	40	234	274			
October	29	241	270			
November	27	238	265			
December	26	233	259			
1976 January	20	232	252			

Total Seismic Crews



*See Explanatory Note 14.

Source: Society of Exploration Geophysicists.

— 1974
 - - 1975
 - . - 1976

MOTOR GASOLINE

The national average selling price of regular gasoline at full service retail outlets declined 0.3 cent in January to 57.7 cents per gallon. This decrease continues the downward trend that began in October 1975. The average price that retailers paid for regular gasoline also decreased 0.3 cent, to 49.6 cents per gallon, leaving the dealer margin unchanged at 8.1 cents per gallon.

HEATING OIL

The average price of heating oil sold to residential customers during January was unchanged at 40.1 cents per gallon. The price normally rises during January.

CRUDE OIL

During December, the average domestic "new" oil price was \$12.95 per barrel, 6.0 cents above the November price.

The preliminary estimate for the average cost of domestic crude purchased by refiners during December was \$8.66 per barrel, 1.0 cent below the cost for the previous month.

The preliminary estimate for the refiner acquisition cost of imported crude during December was \$14.81 per barrel, 23.0 cents below the November price. This decrease reflects in part the elimination of the \$2 import fee on December 22, 1975, as refiners were required to pay fees only on the crude imported prior to that date.

The preliminary estimate for the composite cost of crude petroleum purchased by refiners during December was \$10.98 per barrel, 7.0 cents lower than the November figure.

UTILITY FOSSIL FUELS

The national average cost of fossil fuels delivered to utilities during October 1975 was 101.2 cents per million Btu, 2.5 cents below the cost for September. The South Atlantic region experienced the largest regional fuel cost decrease (6.0 cents per million Btu). The decrease was the result of both a continued shift from oil to coal and a decline in the costs of coal and residual fuel.

The national average cost of coal declined 0.6 cent per million Btu in October. The contract price for coal decreased slightly to \$16.72 per ton in October while the spot price rose slightly to \$22.52 per ton. This price relationship is counter to the trend during recent months when contract prices were rising and spot prices were falling.

The national average cost of residual fuel declined 3.5 cents in October to 197.0 cents per million Btu.

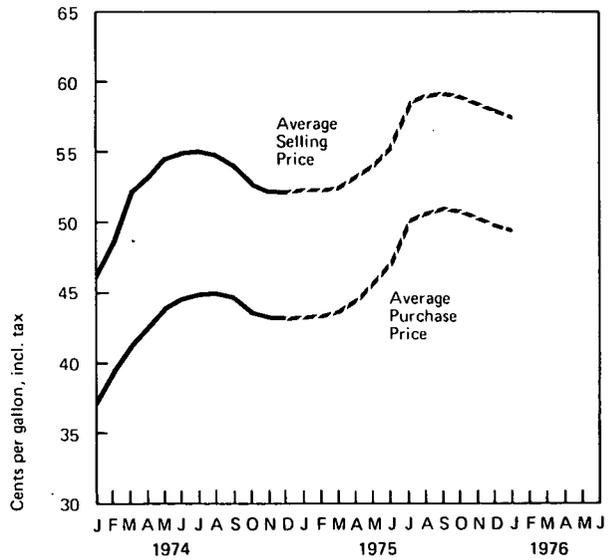
The national average cost of natural gas delivered to utilities continued its gradual upward trend during October, climbing 1.7 cents to 85.5 cents per million Btu. During the past 2 months, for the first time, the utility cost per Btu of natural gas has surpassed the cost of coal.

Motor Gasoline

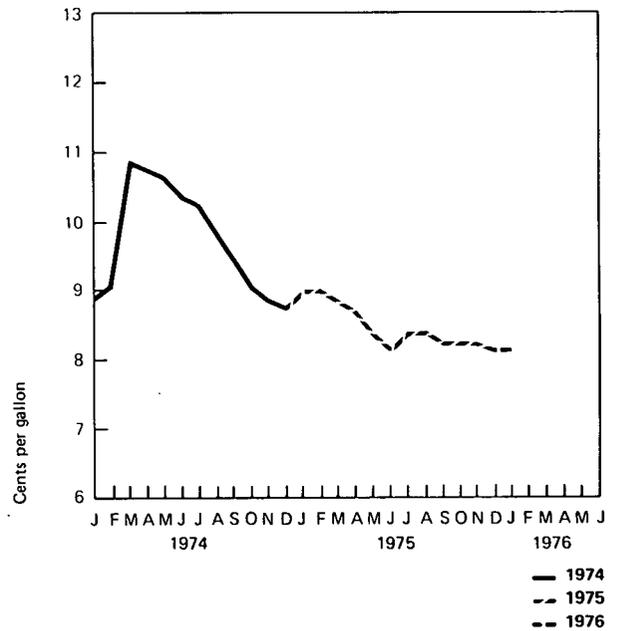
Regular Gasoline at Full Service Retail Outlets

		Average Selling Price	Average Purchase Price	Average Dealer Margin
Cents per gallon, including tax*				
1973	January	37.3	30.5	6.8
	February	36.8	30.1	6.7
	March	37.9	30.8	7.1
	April	38.3	31.0	7.3
	May	38.5	31.2	7.3
	June	38.8	31.2	7.6
	July	38.8	31.2	7.6
	August	38.8	31.2	7.6
	September	38.7	31.1	7.6
	October	39.7	32.2	7.5
	November	41.3	33.6	7.7
	December	43.3	35.1	8.2
AVERAGE		39.0	31.6	
1974	January	46.3	37.4	8.9
	February	48.8	39.7	9.1
	March	52.3	41.4	10.9
	April	53.4	42.7	10.7
	May	54.7	44.1	10.6
	June	55.1	44.8	10.3
	July	55.2	45.0	10.2
	August	54.9	45.1	9.8
	September	54.2	44.8	9.4
	October	52.4	43.4	9.0
	November	52.0	43.2	8.8
	December	52.0	43.3	8.7
AVERAGE		52.8	43.1	
1975	January	52.4	43.4	9.0
	February	52.5	43.5	9.0
	March	52.6	43.8	8.8
	April	53.5	44.9	8.6
	May	54.3	46.0	8.3
	June	55.6	47.5	8.1
	July	58.7	50.3	8.4
	August	59.2	50.8	8.4
	September	59.3	51.1	8.2
	October	58.9	50.7	8.2
	November	58.4	50.2	8.2
	December	58.0	49.9	8.1
1976	January	57.7	49.6	8.1

Average Retail Prices For Regular



Average Margins For Regular



*To derive prices excluding taxes, 12.0 cents per gallon may be deducted for 1973 and 12.2 cents per gallon may be deducted for 1974 and 1975.

Sources: *Platts Oilgram* through September 1973; FEA from October 1973 through December 1974; Lundberg Survey, Inc., from January 1975 forward.

Average Selling Prices at Major and Independent Retail Dealers – January 1976

	Cents per gallon, including tax		Cents per gallon, including tax
Regular Gasoline-Full Service		Regular Gasoline-Self Service	
Major	58.6	Major	55.5
Independent	53.5	Independent	52.7
National Average	57.7	National Average	54.7
Premium Gasoline-Full Service		Premium Gasoline-Self Service	
Major	63.4	Major	60.8
Independent	57.8	Independent	56.6
National Average	62.7	National Average	59.6
Diesel Fuel-Truck Stops*		Diesel Fuel-Service Stations*	
Major	53.8	Major	54.1
Independent	49.6	Independent	51.2
National Average	52.0	National Average	52.5

*See Explanatory Note 15.

Source: Lundberg Survey, Inc.

Average Margins for Major and Independent Retail Dealers – January 1976

	Cents per gallon		Cents per gallon
Regular Gasoline-Full Service		Regular Gasoline-Self Service	
Major	8.5	Major	5.3
Independent	6.7	Independent	5.7
National Average	8.1	National Average	5.4
Diesel Fuel-Truck Stops*		Diesel Fuel-Service Stations*	
Major	6.6	Major	6.1
Independent	5.2	Independent	8.2
National Average	5.6	National Average	7.2

*See Explanatory Note 15.

Source: Lundberg Survey, Inc.

Average Regional Retail Selling Prices and Dealer Margins for Regular Gasoline at Full Service Retail Outlets – January 1976

FEA Region	Selling Price	Margin
	Cents per gallon, including tax	
1A New England	57.2	7.9
1B Mid Atlantic	59.3	8.0
1C Lower Atlantic	58.4	8.4
2 Mid Continent	57.4	7.4
3 Gulf Coast	55.2	9.4
4 Rock Mountain	58.5	9.9
5 West Coast	59.3	8.5
NATIONAL AVERAGE	57.7	8.1

Source: Lundberg Survey, Inc.

Motor Gasoline (Continued)

Retail Gasoline Price Changes for 21 Leading Refiners During January 1976
and Entitlement Position* During December 1975

Company	Effective Date of Change	Amount of Change Cents per gallon	Entitlement Position (December)
Amerada Hess	January 1	- 1.00	Seller
American Petrofina		None	Seller
Ashland		None	Seller
Atlantic Richfield		None	Seller
B.P.**	January 29	- 1.00	Seller
Cities Service		None	Buyer
Champlin		None	Buyer
Continental		None	Buyer
Exxon	January 17	- 1.00	Seller
Getty	January 8	- 1.00	Seller
Gulf	January 27	- 1.00	Buyer
Kerr-McGee		None	Buyer
Mobil	January 31	- 1.00	Buyer
Phillips		None	Seller
Shell	January 21	- 1.00	Buyer
Standard Oil of California	January 30	- 1.00	Seller
Standard Oil of Indiana		None	Buyer
Standard Oil of Ohio**	January 29	- 1.00	Seller
Sun		None	Buyer
Texaco		None	Buyer
Union Oil of California		None	Buyer

*See definitions.

**Price change represents Company-operated stations only.

Source: FEA.

Jobber Prices for Regular Gasoline Sold by 21 Leading Refiners

		Northeast	Mid-Atlantic	Southeast	Central	Western	Southwest	Pacific	National Average
Cents per gallon, excluding tax									
1974	January	21.4	21.4	21.1	21.3	22.2	20.1	21.0	21.2
	February	23.7	23.6	22.5	23.9	23.5	22.5	22.6	23.2
	March	25.4	25.2	24.1	25.3	24.5	24.2	25.2	24.8
	April	26.7	26.1	24.8	26.0	25.6	24.7	25.0	25.6
	May	28.5	28.4	26.8	28.2	27.7	26.3	26.3	27.5
	June	29.8	29.4	28.0	29.3	29.3	27.1	27.2	28.6
	July	29.9	29.3	28.0	29.4	28.9	27.8	28.0	28.8
	August	29.7	29.4	28.6	29.6	29.1	28.1	28.6	29.0
	September	29.3	28.9	28.0	28.8	28.7	27.4	27.8	28.4
	October	28.0	27.2	26.6	27.5	27.0	26.2	26.6	27.0
	November	27.8	27.3	26.6	27.5	27.5	26.3	27.3	27.2
	December	27.7	27.6	26.9	27.7	27.9	26.7	27.3	27.4
	AVERAGE								26.7
1975	January	27.8	27.8	27.4	28.2	28.5	27.2	27.8	27.8
	February	28.4	28.2	27.8	28.7	28.3	27.6	27.5	28.1
	March	28.9	28.8	28.4	29.1	29.0	27.8	28.0	28.6
	April	29.6	29.9	29.4	30.4	29.8	29.2	29.8	29.7
	May	30.9	31.0	30.5	31.6	31.2	30.4	31.0	30.9
	June	32.4	32.5	32.0	33.1	32.6	31.6	32.6	32.4
	July	34.4	34.6	33.9	34.9	34.5	33.4	33.7	34.2
	August	35.3	35.1	34.6	35.6	35.2	34.1	34.5	34.9
	September	35.2	35.1	34.5	35.4	35.0	34.1	34.5	34.8
	October	34.3	34.6	34.0	34.9	34.3	33.8	34.2	34.3
	November	34.1	34.3	33.9	34.6	34.3	33.6	34.0	34.1
	December	33.7	34.1	33.6	34.3	33.8	33.3	33.7	33.8
1976	January	33.3	33.9	33.2	34.0	33.2	33.1	33.5	33.5

Source: FEA.

Heating Oil

Retail Heating Oil Price Changes for 21 Leading Refiners During January 1976

Company	Effective Date	Amount of Change
		Cents per gallon
Amerada Hess		None
American Petrofina		None
Ashland		None
Atlantic Richfield		None
B.P.		None
Cities Service		None
Champlin		None
Continental	January 15, 31	-1.00, 1.00
Exxon	January 17	.50
Getty		None
Gulf		None
Kerr-McGee		None
Mobil		None
Phillips		None
Shell		None
Standard Oil of California	January 10	.50
Standard Oil of Indiana		None
Standard Oil of Ohio		None
Sun	January 23	.90
Texaco		None
Union Oil of California		None

Source: FEA.

Residential Heating Oil Prices

		Average Selling Price	Average Purchase Price	Average Dealer Margin
		In cents per gallon		
1974	January	31.1	23.4	7.7
	February	32.8	25.4	7.4
	March	33.8	25.9	7.9
	April	34.0	25.9	8.1
	May	35.1	26.8	8.3
	June	35.3	27.5	7.8
	July	35.2	28.1	7.1
	August	35.8	28.1	7.7
	September	36.3	28.7	7.6
	October	35.6	28.9	6.7
	November	37.9	29.1	8.8
	December	36.9	28.5	8.4
	AVERAGE	34.7	26.9	
1975	January	37.4	29.1	8.3
	February	37.0	28.7	8.3
	March	36.6	28.4	8.2
	April	36.1	29.3	6.8
	May	36.7	30.0	6.7
	June	36.1	30.3	5.8
	July	37.2	30.6	6.6
	August	38.0	31.2	6.8
	September	38.4	31.0	7.4
	October	39.3	31.8	7.5
	November	39.4	32.1	7.3
	December	40.1	32.4	7.7
1976	January	40.1	32.4	7.7

Source: FEA.

Residential Heating Oil Prices by Region

		New England	Mid Atlantic	Southeast	East North Central	East South Central	West North Central	West South Central	Mountain	West Coast
		In cents per gallon								
1974	January	31.9	31.6	30.8	30.3	29.8	31.3	NA	30.4	30.5
	February	33.8	33.5	32.8	30.9	32.0	32.9	NA	37.2	32.8
	March	31.9	33.7	33.9	34.2	30.6	34.5	NA	NA	NA
	April	34.3	34.8	32.5	33.5	33.7	30.1	NA	34.2	32.6
	May	34.8	35.6	36.2	34.2	34.4	32.6	NA	34.8	37.8
	June	35.9	36.2	35.8	34.9	31.1	33.6	NA	35.9	39.1
	July	35.2	35.5	35.6	34.4	30.2	34.9	NA	36.1	36.3
	August	36.3	36.1	37.8	35.1	33.7	35.2	NA	NA	35.9
	September	37.2	36.5	36.1	35.0	33.6	35.8	NA	32.3	35.1
	October	36.7	35.9	36.9	33.3	34.1	33.8	NA	35.6	36.3
	November	39.0	38.7	37.4	36.4	35.3	35.6	NA	37.3	36.4
	December	38.3	38.7	36.8	34.2	34.7	33.5	NA	35.8	33.9
1975	January	40.2	38.9	36.5	33.2	34.7	34.0	NA	37.5	38.0
	February	39.2	38.4	36.8	33.4	34.7	33.3	NA	36.6	37.7
	March	38.0	37.8	36.4	34.2	33.2	34.3	NA	NA	36.8
	April	37.4	36.8	36.8	33.2	33.7	34.5	NA	38.9	36.8
	May	37.6	36.9	36.4	35.1	34.7	35.4	NA	37.0	37.8
	June	37.7	37.7	36.4	35.8	NA	35.9	NA	37.6	37.6
	July	37.9	36.9	36.9	36.4	34.7	36.8	NA	NA	38.8
	August	38.8	38.2	37.9	36.3	35.7	36.3	NA	41.3	39.3
	September	39.4	38.7	37.6	36.5	35.7	36.8	NA	38.9	40.1
	October	40.3	39.9	38.3	37.4	36.6	37.9	NA	39.0	41.0
	November	41.0	39.6	38.7	37.9	NA	38.1	NA	40.2	41.3
	December	41.0	41.1	39.0	38.5	34.1	38.0	NA	44.8	40.9
1976	January	41.3	40.6	39.9	38.6	NA	39.0	NA	40.2	42.0

NA=Not available.
Source: FEA.

Average Distributor Purchase Prices for Heating Oil by Region

		New England	Mid Atlantic	Southeast	East North Central	East South Central	West North Central	West South Central	Mountain	West Coast
In cents per gallon										
1974	January	22.3	23.4	23.3	23.8	23.5	24.0	NA	22.5	23.0
	February	24.9	25.5	25.3	24.8	25.2	26.4	NA	29.7	25.3
	March	24.9	25.0	26.3	25.6	24.0	27.0	NA	NA	NA
	April	25.7	26.0	26.0	27.1	26.3	24.0	NA	26.8	26.0
	May	26.3	27.0	27.5	27.3	27.4	25.8	NA	27.1	26.2
	June	27.5	27.6	27.8	29.0	25.4	27.4	NA	27.3	28.0
	July	28.1	28.2	28.3	27.5	25.2	28.5	NA	28.2	29.1
	August	28.1	28.2	27.9	27.5	29.3	28.8	NA	NA	28.2
	September	29.2	28.9	28.5	27.8	28.2	28.4	NA	29.3	28.8
	October	29.9	29.4	28.8	27.7	28.3	27.4	NA	29.9	29.2
	November	29.8	29.7	28.8	27.8	29.1	27.6	NA	27.9	29.8
	December	29.3	29.4	28.4	27.4	28.8	26.7	NA	29.3	27.0
1975	January	30.3	29.7	28.5	27.2	28.8	27.5	NA	28.5	29.7
	February	29.6	29.3	28.6	27.2	28.8	27.3	NA	29.4	28.5
	March	29.5	29.3	29.1	28.1	26.8	28.1	NA	NA	27.6
	April	29.4	29.5	29.7	28.3	27.8	29.5	NA	29.0	28.5
	May	30.5	30.0	30.0	30.0	28.8	29.4	NA	30.9	28.7
	June	30.4	30.2	30.6	30.5	NA	30.7	NA	31.8	29.0
	July	30.7	30.1	29.9	31.6	28.8	31.4	NA	NA	30.4
	August	31.6	30.8	30.9	31.2	29.8	30.2	NA	31.6	32.8
	September	31.4	30.9	30.7	30.6	29.8	30.6	NA	31.9	31.4
	October	32.0	31.9	31.3	31.5	31.1	31.4	NA	34.4	32.5
	November	32.5	31.7	32.0	32.1	NA	32.0	NA	34.1	32.3
	December	32.9	32.7	31.8	32.0	29.4	R31.4	NA	33.9	32.8
1976	January	32.5	32.5	31.9	32.3	NA	32.3	NA	33.6	32.9

NA=Not available.

R=Revised data

Source: FEA.

Crude Oil

Percentage of Domestic Production Sold at Controlled and Uncontrolled Prices

		Controlled	Uncontrolled		
		Old Oil	New Oil	Released	Stripper
1974	January	60	17	10	13
	February	62	15	10	13
	March	60	16	11	13
	April	60	16	11	13
	May	62	15	10	13
	June	63	15	9	13
	July	64	15	9	12
	August	66	14	8	12
	September	67	13	8	12
	October	66	14	8	12
	November	67	13	8	12
	December	66	14	8	12
		AVG.	64	15	9
1975	*January	58	19	10	12
	*February	61	17	9	12
	March	60	18	10	12
	April	61	17	9	12
	May	62	17	8	13

*Total does not add to 100 due to rounding.

Source: FEA.

Domestic Crude Petroleum Prices at the Wellhead*

		Old	New
		Dollars per barrel	
1974	January	5.25	9.82
	February	5.25	9.87
	March	5.25	9.88
	April	5.25	9.88
	May	5.25	9.88
	June	5.25	9.95
	July	5.25	9.95
	August	5.25	9.98
	September	5.25	10.10
	October	5.25	10.74
	November	5.25	10.90
	December	5.25	11.08
	AVG.	5.25	10.13
1975	January	5.25	11.28
	February	5.25	11.39
	March	5.25	11.47
	April	5.25	11.64
	May	5.25	11.69
	June	5.25	11.73
	July	5.25	12.30
	August	5.25	12.38
	September	5.25	12.46
	October	5.25	12.73
	November	5.25	12.89
	December	5.25	**12.95

*See Explanatory Note 16.

**Preliminary figure based on early reports.

Source: FEA.

Crude Oil (Continued)

Refiner Acquisition Cost of Crude Petroleum*

	Domestic**	Imported	Composite	
Dollars per barrel				
1974	January	6.72	9.59	7.46
	February	7.08	12.45	8.57
	March	7.05	12.73	8.68
	April	7.21	12.72	9.13
	May	7.26	13.02	9.44
	June	7.20	13.06	9.45
	July	7.19	12.75	9.30
	August	7.20	12.68	9.17
	September	7.18	12.53	9.13
	October	7.26	12.44	9.22
	November	7.46	12.53	9.41
	December	7.39	12.82	9.28
AVERAGE	7.18	12.52	9.07	
1975	January	7.78	12.77	9.48
	February	8.29	13.05	10.09
	March	8.38	13.28	9.91
	April	8.23	13.26	9.83
	May	8.33	13.27	9.79
	June	8.33	14.15	10.33
	July	8.37	14.03	10.57
	August	8.48	14.25	10.81
	September	8.49	14.04	10.79
	October	8.68	14.66	10.85
	November	8.67	15.04	11.05
	December	***8.66	***14.81	***10.98

*See Explanatory Note 17.

**See Explanatory Note 16.

***Preliminary data.

Source: FEA.

Estimated Landed Cost of Imported Crude Petroleum From Selected Countries*

	Algeria	Canada	Indonesia	Iran	Nigeria	Saudi Arabia	U. A. Emirates	Venezuela	
Dollars per barrel									
1974	January	NA	6.70	NA	8.53	12.13	NA	10.28	
	February	NA	10.90	NA	12.11	12.74	NA	11.31	
	March	NA	11.14	12.13	13.02	13.26	NA	11.78	
	April	13.63	11.02	12.49	12.83	13.67	11.59	NA	11.38
	May	14.67	11.47	12.95	13.84	13.83	11.53	NA	11.28
	June	14.43	12.56	13.21	13.44	13.03	11.32	13.06	10.39
	July	13.65	12.65	13.77	13.02	12.75	11.97	12.34	10.64
	August	13.96	12.49	14.38	12.31	12.70	12.16	12.69	11.20
	September	13.83	12.51	13.42	11.87	12.28	11.45	NA	11.01
	October	13.20	12.53	14.24	12.07	12.12	11.51	12.84	10.95
	November	13.43	12.33	13.45	12.15	12.83	12.15	13.54	11.15
	December	13.08	12.15	14.15	11.63	12.88	11.75	14.59	11.37
1975	January	12.72	12.43	13.30	12.11	12.07	12.07	13.14	11.37
	*February	12.11	12.15	13.52	11.86	12.18	11.94	12.67	11.56
	*March	12.46	12.79	13.94	12.08	12.56	11.78	13.40	11.66
	*April	12.36	12.95	13.71	12.34	12.46	12.16	12.55	11.61
	*May	12.41	12.08	13.71	11.93	12.34	12.27	13.29	11.54
	*June	12.37	11.90	13.73	12.51	12.49	11.93	12.48	11.51
	*July	12.69	12.15	13.98	11.83	12.37	12.08	12.78	11.46
	*August	12.68	12.27	13.85	12.17	12.32	12.10	12.60	11.44
	*September	12.52	12.63	13.75	11.97	12.42	12.17	12.49	11.42
	*October	13.45	13.02	14.00	12.27	13.18	12.64	12.85	12.08
	November	13.28	14.00	13.81	12.47	13.37	12.58	13.23	12.38
	*†December	13.46	13.96	13.92	13.01	13.57	12.93	13.21	12.31

NA=Not available.

*See Explanatory Note 17.

†Preliminary data.

Source: FEA.

**Total Unrecouped Costs* for all Refined Products
for 30 Largest Refiners**

		Billions of dollars
1975	January	1.3
	February	1.4
	March	1.4
	April	1.6
	May	1.5
	June	1.2
	July	1.0
	August	1.2
	September	1.3
	October	R1.3
	November	R1.5
	December	1.5

*See definitions.

R=Revised data.

Source: FEA.

Entitlement Prices*

		Dollars
1974	November	5.00
	December	5.00
1975	January	6.00
	February	6.75
	March	7.31
	April	7.29
	May	7.39
	June	7.82
	July	8.13
	August	8.31
	September	8.31
	October	8.62
	November	8.94
	December	8.55

*See definitions.

Source: FEA.

Natural Gas

Natural Gas Prices Reported by Major Interstate Pipeline Companies

		PURCHASES			SALES		
		From Domestic Producers	From Canadian and Mexican Sources	Total Purchases	To Industrial Users*	To Resellers**	Total Sales
		Cents per thousand cubic feet					
1974	January	24.3	42.7	25.7	48.1	55.0	55.1
	February	25.4	43.2	26.8	49.8	56.4	56.4
	March	25.7	43.2	27.0	50.8	56.9	56.9
	April	25.8	46.4	27.4	49.3	57.6	57.4
	May	25.7	49.3	27.5	49.9	58.6	57.9
	June	26.0	47.7	27.5	50.8	59.4	58.5
	July	26.3	58.7	28.6	52.5	62.0	61.1
	August	26.1	57.5	28.4	55.2	64.4	63.5
	September	27.3	58.8	29.5	54.7	65.2	64.3
	October	27.5	58.9	29.9	56.3	64.4	64.0
	November	28.5	70.9	31.7	58.7	66.8	66.6
	December	32.6	74.5	35.8	60.3	67.2	67.4
1975	January	29.8	104.0	35.2	67.6	71.1	71.4
	February	29.5	105.8	35.2	70.1	74.1	74.4
	March	31.6	102.5	37.0	70.4	77.8	77.9
	April	32.9	102.8	38.3	71.1	82.3	81.9
	May	34.7	100.6	39.8	71.1	83.7	82.8
	June	35.3	98.3	40.2	72.2	85.2	84.0
	July	36.9	101.1	41.8	73.9	84.7	83.6
	August	35.5	141.0	43.3	73.4	85.6	84.3
	September	36.5	141.2	44.5	72.8	85.9	84.6
	October	36.1	140.1	44.3	77.2	86.1	85.6
	November	36.5	162.5	46.7	77.8	86.9	86.6

*Represents direct sales by pipelines to industrial users. Does not include sales to industrial users by resellers.

**Includes the cost of gas to the distributing utility at entrance of distribution system or point of receipt.

Source: Federal Power Commission.

Average Retail Prices for Natural Gas Sold to Residential Customers for Heating Use

	Price
	Cents per thousand cubic feet
1974 January	113.3
February	115.2
March	116.9
April	118.2
May	119.9
June	120.3
July	122.0
August	124.2
September	125.6
October	127.4
November	131.4
December	134.2
1975 January	137.9
February	141.3
March	142.7
April	147.1
May	150.1
June	152.1
July	151.1
August	151.8
September	155.7
October	156.3
November	162.3
December	166.2
1976 January	167.4

Source: Bureau of Labor Statistics.

Utility Fossil Fuels

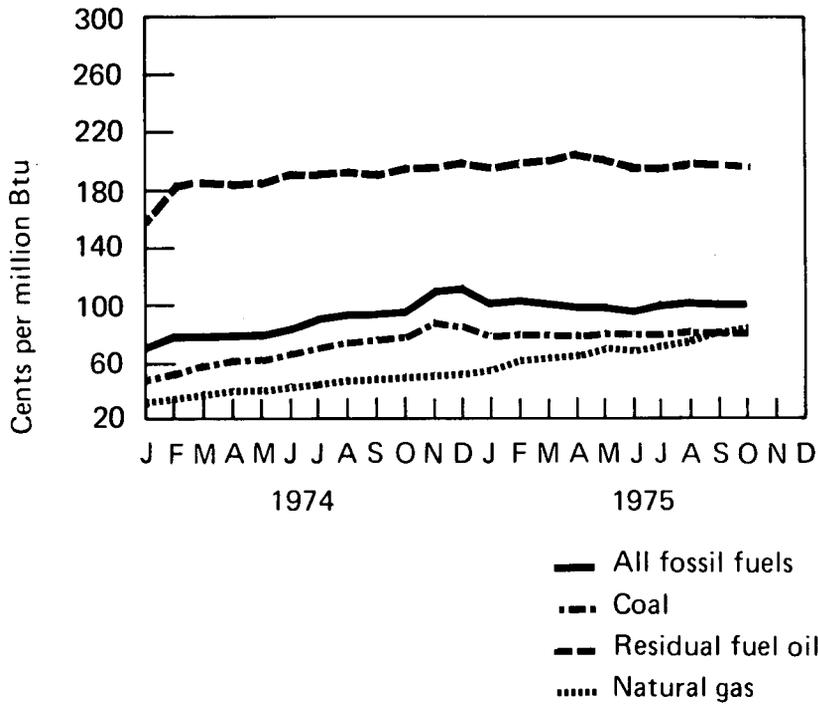
COST OF FOSSIL FUELS DELIVERED TO STEAM-ELECTRIC UTILITY PLANTS

All Fossil Fuels*

Region	1974					1975					AUG	SEPT	OCT
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY			
New England	192.6	198.7	196.6	193.6	198.8	192.2	196.3	190.5	192.7	189.5	188.0	182.9	182.3
Middle Atlantic	139.1	170.7	181.6	145.2	147.1	141.3	138.3	138.5	140.4	154.5	144.5	132.7	133.7
East North Central	84.6	102.0	100.9	86.6	85.6	86.9	86.6	87.4	87.5	89.2	90.1	88.2	87.0
West North Central	50.0	60.0	63.3	63.5	69.0	85.5	64.5	60.3	62.8	63.0	62.7	63.9	62.6
South Atlantic	128.4	144.3	144.2	125.1	120.2	120.4	120.4	120.1	122.5	126.8	125.2	124.4	118.4
East South Central	75.2	86.7	86.4	79.4	83.1	83.0	83.0	84.8	85.3	86.2	84.5	85.2	83.8
West South Central	53.7	58.0	57.5	59.8	67.4	68.9	70.0	72.9	71.2	76.0	77.5	79.1	79.6
Mountain	47.8	45.8	46.8	54.6	62.9	54.5	51.7	52.1	50.9	51.8	50.4	55.0	50.1
Pacific	132.8	157.7	191.3	190.0	194.4	196.3	209.7	187.3	154.5	147.1	171.3	174.5	177.2
NATIONAL AVG.	97.7	111.3	114.7	104.3	106.4	104.2	101.5	101.0	99.3	102.5	103.8	103.7	101.2

*See Explanatory Note 18.

National Average



Coal													
Cents per million Btu													
Region	1974				1975								
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
New England	110.3	108.0	93.5	113.0	134.8	126.9	135.4	125.7	116.5	119.2	127.3	120.4	128.7
Middle Atlantic	94.6	117.4	114.4	99.1	104.7	99.7	98.2	101.7	101.6	105.5	103.8	98.6	101.8
East North Central	79.5	95.0	92.2	80.0	78.4	79.3	80.4	82.0	82.4	82.3	84.3	83.4	82.1
West North Central	48.7	57.0	56.0	56.7	57.9	59.4	60.9	57.7	58.9	60.8	60.7	61.3	61.2
South Atlantic	112.6	126.8	125.8	102.3	97.0	97.4	100.8	98.8	98.4	101.6	101.4	102.4	98.6
East South Central	69.7	77.8	80.7	76.3	79.5	80.1	80.1	81.5	80.5	79.5	79.1	80.8	80.7
West South Central	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	21.0	24.0	24.0	24.0	24.0
Mountain	26.7	28.3	26.4	27.9	30.6	32.0	30.3	31.1	31.0	33.1	32.2	32.8	31.7
Pacific	38.5	38.6	38.5	38.4	57.7	57.2	56.8	57.0	58.4	58.2	58.8	58.9	58.4
NATIONAL AVG.	80.9	90.3	88.9	80.9	81.7	80.6	80.5	81.8	81.4	80.8	82.1	82.1	81.5

Residual Fuel Oil*													
Cents per million Btu													
Region	1974				1975								
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
New England	202.0	207.5	207.5	202.5	204.1	204.3	202.9	200.1	201.7	196.3	192.6	187.9	184.1
Middle Atlantic	205.4	205.7	211.5	202.7	204.1	204.4	203.2	200.1	201.5	200.4	199.3	191.2	192.2
East North Central	161.3	167.1	164.6	144.9	165.0	163.4	183.1	157.0	168.3	185.2	191.7	205.9	189.7
West North Central	179.5	190.7	190.6	189.6	182.3	171.5	167.8	163.9	165.5	161.1	157.5	150.3	153.5
South Atlantic	183.3	182.2	182.2	180.9	181.6	186.8	188.9	187.7	189.3	185.4	183.8	181.5	180.7
East South Central	171.8	167.9	172.0	174.0	171.6	163.4	159.7	161.0	165.5	167.8	175.0	174.4	175.5
West South Central	186.0	179.7	171.7	177.1	178.2	175.8	191.5	177.7	182.0	186.2	185.2	174.4	168.4
Mountain	185.0	185.1	180.0	192.3	192.4	190.3	206.0	198.0	199.0	209.1	221.3	223.7	210.3
Pacific	223.8	219.5	233.0	223.6	235.0	241.1	261.1	260.6	245.6	253.8	258.1	257.9	255.5
NATIONAL AVG.	198.2	198.9	202.1	197.7	202.0	204.8	209.3	205.6	200.0	198.9	200.8	200.5	197.0

Natural Gas**													
Cents per million Btu													
Region	1974				1975								
	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEPT	OCT
New England	NA	NA	NA	NA	NA	97.1	112.4	110.8	121.7	122.1	154.1	137.7	135.6
Middle Atlantic	64.8	70.0	64.3	86.1	84.5	82.4	101.7	98.3	92.7	91.2	87.6	87.6	90.5
East North Central	83.3	80.3	93.9	91.0	92.7	93.0	105.5	120.8	111.6	103.4	104.6	114.0	120.2
West North Central	43.0	44.8	42.3	43.6	43.8	51.5	54.5	58.6	58.1	59.2	56.9	57.8	55.4
South Atlantic	58.5	60.2	64.7	60.3	68.5	72.6	70.2	71.2	72.2	68.9	69.7	76.4	79.6
East South Central	74.3	76.9	87.8	76.2	79.5	82.2	82.7	76.4	77.0	91.0	95.9	110.3	105.5
West South Central	47.8	51.5	52.2	55.6	63.0	64.5	67.0	71.3	69.2	72.7	75.7	77.9	79.7
Mountain	55.7	56.6	70.7	66.9	66.7	63.7	67.4	68.1	69.6	71.8	71.1	78.6	82.0
Pacific	65.9	64.0	68.4	83.2	83.6	80.5	90.1	82.4	84.1	89.7	111.1	115.2	122.4
NATIONAL AVG.	53.2	54.0	55.0	58.2	65.2	66.4	68.9	72.6	71.3	74.8	79.1	83.8	85.5

NA=Not available.

*See Explanatory Note 18.

**Includes small quantities of coke oven gas, refinery gas, and blast furnace gas.

Source: Federal Power Commission.

Utility Fossil Fuels (Continued)

U.S. Average Delivered Prices of Coal at Utilities

		Contract	Spot
In dollars per short ton			
1973	January	8.09	9.91
	February	8.31	10.01
	March	8.42	10.07
	April	8.43	10.44
	May	8.51	10.24
	June	8.62	10.43
	July	8.44	10.40
	August	8.45	10.44
	September	8.71	10.67
	October	8.86	11.24
	November	9.13	12.05
	December	9.19	13.34
1974	January	9.83	17.02
	February	10.40	20.57
	March	10.63	22.54
	April	11.28	23.70
	May	11.80	24.21
	June	11.87	25.84
	July	12.05	27.99
	August	12.50	28.87
	September	12.89	30.64
	October	13.30	30.67
	November	14.16	31.95
	December	14.20	31.05
1975	January	14.57	28.12
	February	15.71	25.93
	March	15.68	25.02
	April	15.88	24.52
	May	16.45	23.78
	June	16.40	23.36
	July	16.06	22.35
	August	16.65	22.39
	September	16.76	22.46
	October	16.72	22.52

Source: Federal Power Commission.

PETROLEUM CONSUMPTION

November 1975 petroleum consumption data are available now for six nations belonging to the International Energy Agency (United States, Japan, West Germany, United Kingdom, Canada, Italy) and for France. These countries showed an average consumption decline of 7.2 percent compared with consumption for November 1974. The reduction is even more significant when compared with the level for November 1973 (15.1 percent).

CRUDE OIL PRODUCTION

Crude oil production in OPEC countries averaged 27.7 million barrels per day during December 1975, an increase of 800,000 barrels per day over the November production level. Arab OPEC members reported a 1-million-barrel-per-day production increase. The December total OPEC production figure was very close to the 1975 annual average of 27.6 million barrels per day, but represents a drop of about 3 million barrels per day below the averages reported for 1973 and 1974.

Worldwide crude oil production rose slightly in December to 53.9 million barrels per day. Daily production during the year averaged 53.2 million barrels, about 2.6 million barrels per day less than the averages for 1973 and 1974.

Petroleum Consumption

Petroleum Consumption for Major Free World Industrialized Countries

		Total IEA*	Japan**	West Germany	France***	United Kingdom	Canada	Italy†	Other IEA††
In thousands of barrels per day									
1973	Jan	35,100	4,121	2,868	2,743	2,315	1,667	1,781	3,681
	Feb	36,800	4,532	2,850	2,687	2,313	1,747	1,866	4,551
	Mar	33,500	4,450	2,707	2,528	2,271	1,584	1,710	3,585
	Apr	31,000	4,008	2,809	2,296	2,038	1,431	1,420	3,371
	May	30,900	3,822	2,546	1,890	1,939	1,486	1,285	3,219
	June	30,600	3,950	2,674	1,685	1,697	1,474	1,255	3,079
	July	29,600	3,783	2,196	1,566	1,637	1,490	1,303	2,855
	Aug	31,600	3,790	2,738	1,495	1,615	1,557	1,255	3,232
	Sept	31,000	3,813	2,618	1,932	1,727	1,427	1,462	3,333
	Oct	33,600	4,212	2,969	2,482	2,150	1,680	1,610	3,777
	Nov	35,200	4,562	2,883	2,593	2,258	1,801	1,551	3,653
	Dec	33,700	4,716	2,481	2,768	1,906	1,828	1,698	3,533
	AVG.	32,692	4,144	2,693	2,219	1,974	1,597	1,525	3,482
1974	Jan	33,200	4,273	2,556	2,523	2,045	1,823	1,755	3,478
	Feb	33,200	4,708	1,969	2,389	2,127	1,863	1,751	3,411
	Mar	31,200	4,508	2,173	2,249	2,133	1,658	1,621	3,062
	Apr	30,200	3,804	2,539	1,970	1,899	1,560	1,396	3,083
	May	29,600	3,718	2,403	1,915	1,704	1,572	1,349	3,134
	June	29,600	3,710	2,414	2,103	1,545	1,455	1,290	3,010
	July	29,900	3,573	2,548	1,703	1,531	1,534	1,368	3,045
	Aug	30,100	3,787	2,476	1,506	1,513	1,463	1,237	3,078
	Sept	30,600	3,868	2,473	1,996	1,663	1,414	1,487	3,701
	Oct	32,300	3,843	2,613	2,045	2,049	1,680	1,536	3,554
	Nov	32,600	4,086	2,432	2,260	2,108	1,713	1,587	3,459
	Dec	33,700	4,401	2,261	2,492	1,983	1,831	1,707	3,520
	AVG.	31,341	4,019	2,408	2,094	1,857	1,630	1,521	3,294
1975	Jan	32,900	3,850	2,183	2,185	1,993	1,691	1,725	3,475
	Feb	33,000	4,242	2,455	2,238	1,913	1,870	1,737	3,535
	Mar	30,300	3,978	2,234	1,948	1,773	1,558	1,482	2,959
	Apr	30,200	3,448	2,431	2,202	1,872	1,592	1,403	3,413
	May	27,700	3,296	2,253	1,640	1,488	1,474	1,171	2,900
	June	28,200	3,325	2,106	1,643	1,404	1,550	1,194	3,010
	July	28,300	3,437	2,319	1,483	1,324	1,536	1,135	2,787
	Aug	28,600	3,397	2,360	1,294	1,200	1,445	1,021	3,410
	Sept	NA	3,573	2,309	1,776	1,474	1,475	1,341	NA
	Oct	NA	3,626	2,328	1,895	1,690	1,544	1,613	NA
	Nov	NA	3,998	2,361	2,073	1,702	1,543	1,588	NA
		AVG.	29,867	3,647	2,302	1,848	1,624	1,568	1,398
	(through last avail- able date)								

Note: All recent figures are estimates.

*The 18 signatory nations of the International Energy Agency (IEA) are: Austria, Belgium, Canada, Denmark, Federal Republic of Germany, Ireland, Italy, Japan, Luxembourg, Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, Turkey, United Kingdom, and United States. Except for the United States, inland consumption excludes bunkers, refinery fuel, and losses.

**Excludes liquefied petroleum gases and condensates.

***Not a member of IEA.

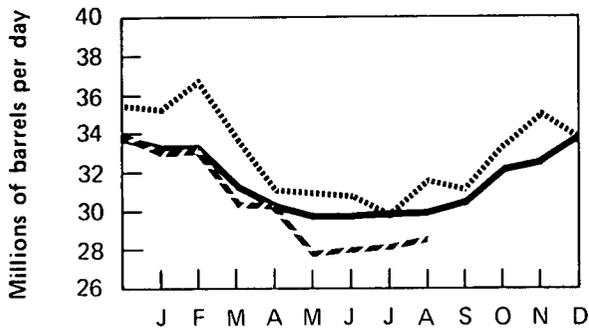
†Principal products only.

††Excludes the United States.

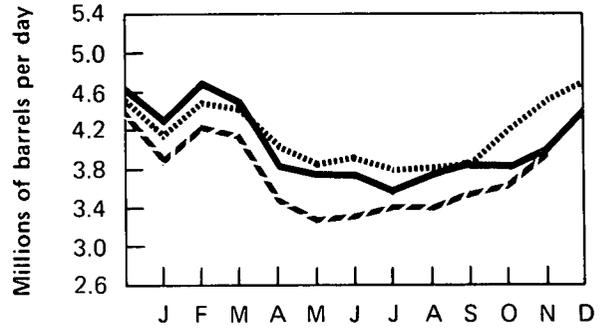
NA=Not available.

Source: Central Intelligence Agency.

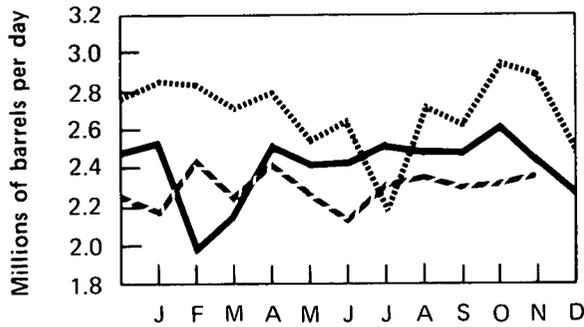
Total IEA



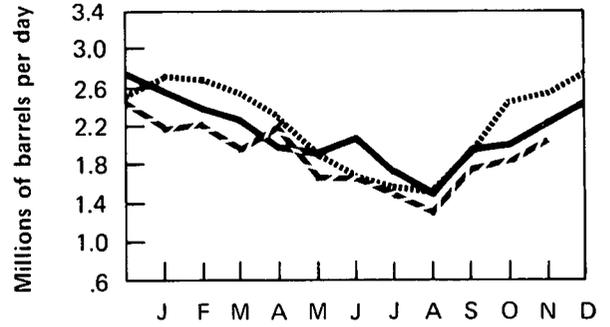
Japan*



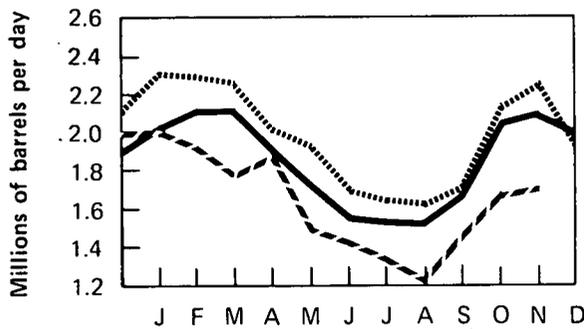
West Germany



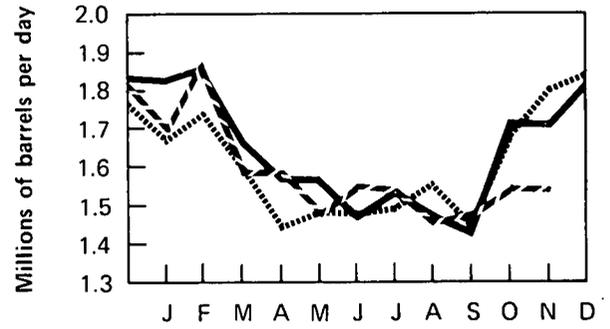
France**



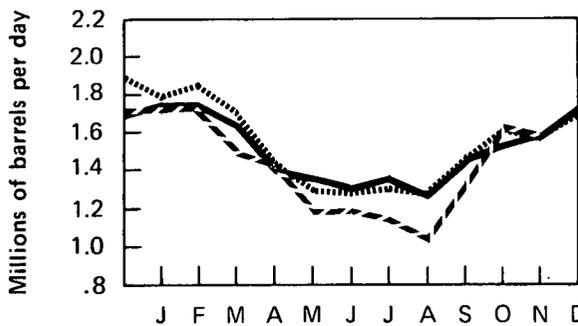
United Kingdom



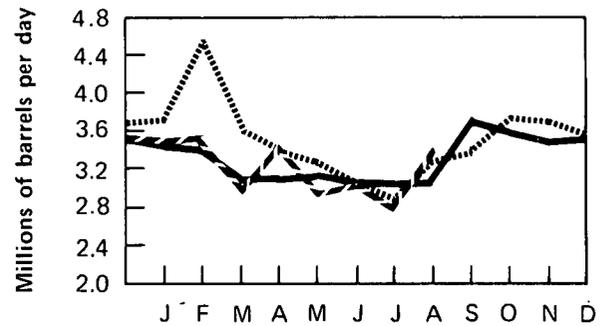
Canada



Italy***



Other IEA†



*Excludes liquefied petroleum gases and condensates.

**Not a member of IEA.

***Principal products only.

†Excludes the United States.

..... 1973
 — 1974
 - - - 1975

Crude Oil Production

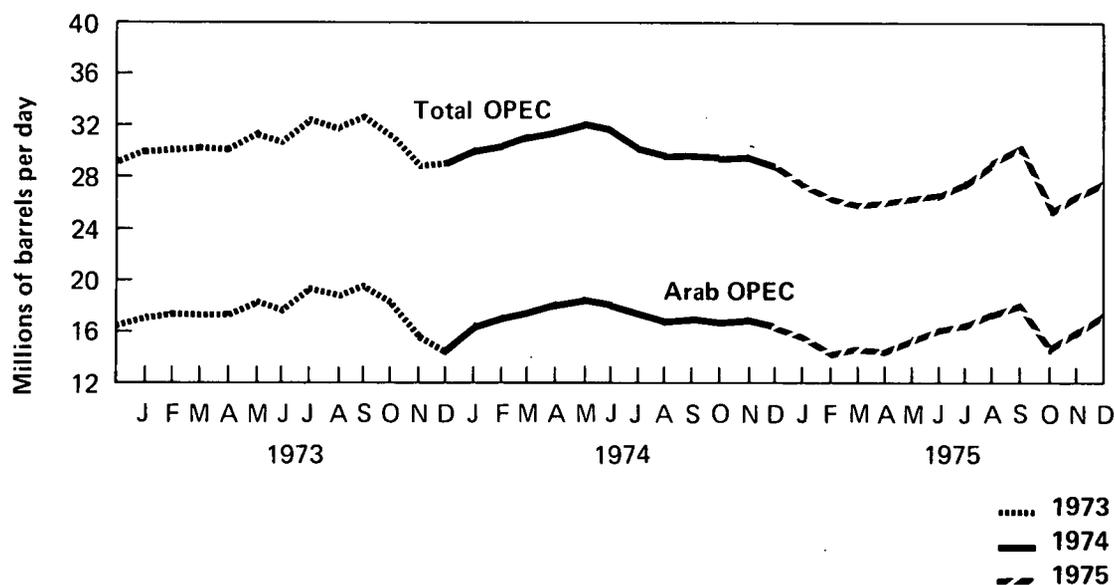
Crude Oil Production for Major Petroleum Exporting Countries – December 1975

Country	Production				Production Capacity December	Production Shut in December
	1973	1974	1975	December		
	In thousands of barrels per day					In percent
Algeria	1,070	940	950	950	1,000	5.0
Iraq	1,964	1,820	2,252	2,080	3,000	30.7
Kuwait*	3,024	2,550	2,085	2,100	3,500	40.0
Libya	2,187	1,520	1,525	1,900	2,500	24.0
Qatar	570	520	435	610	700	12.8
Saudi Arabia*	7,607	8,480	7,499	7,590	11,500	34.0
United Arab Emirates	1,518	1,680	1,696	2,080	2,340	11.1
Subtotal: Arab OPEC	17,940	17,510	16,368	17,310	24,540	29.5
Ecuador	204	160	166	190	250	24.4
Gabon	147	180	207	210	250	16.0
Indonesia	1,339	1,380	1,312	1,420	1,700	16.5
Iran	5,861	6,040	5,422	4,860	6,800	28.5
Nigeria	2,053	2,260	1,785	1,980	2,500	20.8
Venezuela	3,364	2,970	2,346	1,770	3,000	41.0
Subtotal: Non-Arab OPEC	12,968	12,990	11,238	10,430	14,500	28.1
Total: OPEC	30,908	30,500	27,605	27,740	39,040	28.9
Canada	1,798	1,695	1,469	1,640	2,016	18.6
Mexico	465	580	770	820	850	3.5
Total: OPEC, Canada Mexico	33,171	32,775	29,844	30,200	41,906	27.9
Total World	55,715	55,855	53,170	53,900		

*Includes about one-half of Neutral Zone production which amounted to approximately 400,000 barrels per day in December.

Source: Central Intelligence Agency.

OPEC Countries Crude Oil Production



Definitions

Base Production Control Level

The total number of barrels of domestic crude petroleum produced from a particular property in the corresponding month of 1972.

Branded Independent Marketer

A firm which is engaged in the marketing or distribution of refined petroleum products pursuant to (1) an agreement or contract with a refiner (or a firm which controls, is controlled by, or is under common control with such refiner) to use a trademark, trade name, service mark, or other identifying symbol or name owned by such refiner (or any such firm), or (2) an agreement or contract under which any such firm engaged in the marketing or distribution of refined petroleum products is granted authority to occupy premises owned, leased, or in any way controlled by a refiner (or firm which controls, is controlled by, or is under common control with such refiner), but which is not affiliated with, controlled by, or under common control with any refiner (other than by means of a supply contract, or an agreement or contract described in parts (1) or (2) of this definition), and which does not control such refiner.

Ceiling Price

The maximum permissible selling price for a particular grade of domestic crude petroleum in a particular field is the May 15, 1973, posted price plus \$1.35 per barrel.

Controlled Crude Oil

Domestically produced crude petroleum that is subject to the ceiling price for crude oil. For a particular property which is not a stripper-well lease, the volume of controlled oil equals the base production control level minus an amount of released oil equal to the new oil production from that property.

Crude Oil Domestic Production

The volume of crude oil flowing out of the ground. Domestic production is measured at the wellhead and includes lease condensate, which is a natural gas liquid recovered from lease separators or field facilities.

Crude Oil Imports

The monthly volume of crude oil imported which is reported by receiving refineries, including crude oil entering the U.S. through pipelines from Canada.

Crude Oil Input to Refineries

Total crude oil used as input for the refining process, less crude oil lost or used for refinery fuel.

Crude Oil Stocks

Stocks held at refineries and at pipeline terminals. Does not include stocks held on leases (storage facilities adjacent to the wells), which historically total approximately 13 million barrels.

Dealer Tankwagon (DTW) Price

The price at which a retail dealer purchases gasoline from a distributor or a jobber.

Distillate Fuel Oil

The lighter fuel oils distilled off during the refining process. Included are products known as ASTM grades Nos. 1 and 2 heating oils, diesel fuels, and No. 4 fuel oil. The major uses of distillate fuel oils include heating, fuel for on- and off-highway diesel engines, and railroad diesel fuel. Minor quantities of distillate fuel oils produced and/or held as stocks at natural gas processing plants are not included in this series.

Domestic Demand for Refined Petroleum Products

A calculated value, computed as domestic production plus net imports (imports less exports), less the net increase in primary stocks. It, therefore, represents the total disappearance of refined products from primary supplies.

Domestic Uncontrolled Crude Oil

That portion of domestic crude oil production including new, released, and stripper oil which may be sold at a price exceeding the ceiling price.

Electricity Production

Production at electric utilities only. Does not include industrial electricity generation.

Entitlement Position

The monthly "entitlement" position of a refiner indicates whether he bought or sold entitlements in that month. An entitlement is the right to purchase "old" oil. A refiner must purchase entitlements for the amount of "old" oil he processes in excess of the national "old" oil supply ratio, defined as total "old" oil purchases by refiners as a percent of total crude runs to stills.

Entitlement Price

The price of an entitlement, fixed by FEA, is the exact differential as reported for the month between the average cost to refiners per barrel of old oil and the weighted average cost per barrel of new, released, stripper well, and imported crude oil.

Firm Natural Gas Service

High priority gas service in which the pipeline company is under contract to deliver a specified volume of gas to the customer on a non-interruptible basis. Residential

and small commercial facilities usually fall into this category.

Interruptible Natural Gas Service

Low priority gas service in which the pipeline company has the contractual option to temporarily terminate deliveries to customers by reason of claim of firm service customers or higher priority users. Large commercial facilities, industrial users, and electric utilities usually fall into this category.

Jet Fuel

Includes both naphtha-type and kerosine-type fuels meeting standards for use in aircraft turbine engines. Although most jet fuel is used in aircraft, some is used for other purposes, such as for generating electricity in gas turbines.

Jobber

A petroleum distributor who purchases refined product from a refiner or terminal operator for the purpose of reselling to retail outlets and commercial accounts or for the purpose of retailing through his own retail outlets.

Jobber Margin

The difference between the price at which a jobber purchases refined product from a refiner or terminal operator and the price at which the jobber sells to retail outlets. This does not reflect margins obtained by jobbers through retail sales or commercial accounts.

Jobber Price

The price at which a petroleum jobber purchases refined product from a refiner or terminal operator.

Landed Cost

The cost of imported crude oil equal to actual cost of crude at point of origin plus transportation cost to the United States.

Limited Work Authorization

A Limited Work Authorization (LWA) may be granted by the Atomic Safety and Licensing Board of the Nuclear Regulatory Commission to an applicant who wants to construct a nuclear powerplant providing that the project has been cleared for all requirements of the National Environmental Protection Act and that the geologic and topographic suitability of the reactor site has been found satisfactory. The LWA allows an applicant to proceed with site excavation, install temporary construction and service facilities, construct service roads, and erect structures and components not subject to normal quality assurance inspections. It may save a utility from 6 to 8 months in total construction time. However, because the ultimate approval of a construction permit is based on all evidence revealed during the

licensing hearings, the successful award of an LWA is no guarantee that a construction permit will also be granted.

Line Miles of Seismic Exploration

The distance along the earth's surface that is covered by seismic traverses.

Major Brand

Lundberg Survey, Inc., defines major brand as an integrated company that produces, refines, transports, and markets in Interstate Commerce under its own brand(s) in 20 or more States.

Motor Gasoline Production

Total production of motor gasoline by refineries, measured at refinery outlet. Relatively small quantities of motor gasoline are produced at natural gas processing plants, but these quantities are not included.

Motor Gasoline Stocks

Primary motor gasoline stocks held by gasoline producers. Stocks at natural gas processing plants are not included.

Natural Gas Liquids (NGL)

Products obtained from natural gasoline plants, cycling plants, and fractionators after processing the natural gas. Included are ethane, liquefied petroleum (LP) gases (propane, butane, and propane-butane mixtures), natural gasoline, plant condensate, and minor quantities of finished products such as gasoline, special naphthas, jet fuel, kerosine, and distillate fuel oil.

New Oil

The volume of domestic crude petroleum produced from a property in a specific month which exceeds the base production control level for that property.

Nonbranded Independent Marketer

A firm which is engaged in the marketing or distribution of refined petroleum products, but which (1) is not a refiner, (2) is not a firm which controls, is controlled by, is under common control with, or is affiliated with a refiner (other than by means of a supply contract), and (3) is not a branded independent marketer.

Old Oil

Same as controlled crude oil.

Power Ascension Nuclear Powerplant

A nuclear powerplant that has been licensed by the Nuclear Regulatory Commission to operate, but which is in the initial testing phase during which production of electricity may not be continuous. In general, when the electric utility is satisfied with the plant's performance, it

formally accepts the plant from the manufacturer, and places it in "commercial operation" status. A request is then submitted to the appropriate utility rate commission to include the powerplant in the rate base calculation.

Primary Stocks of Refined Petroleum Products

Stocks held at refineries, bulk terminals, and pipelines. They do not include stocks held in secondary storage facilities, such as those held by jobbers, dealers, independent marketers, and consumers.

Refined Petroleum Products Imports

Imports (into the 50 States and the District of Columbia) of motor gasoline, naphtha-type jet fuel, kerosine-type jet fuel, kerosine, distillate fuel oil, residual fuel oil, liquefied petroleum gases, petrochemical feedstocks, special naphtha, lubricants, waxes, asphalt, natural gas, plant condensate, and unfinished oils. Included are imports of fuels into bonded storage and receipts from U.S. territories.

Refiner Acquisition Cost

The cost to the refiner, including transportation and fees, of crude petroleum. The composite cost is the average of domestic and imported crude costs and represents the amount of crude cost which refiners may pass on to their customers.

Released Oil

That portion of the base production control level for a property which is equal to the volume of new oil produced in that month and which may be sold above the ceiling price. The amount of released oil may not exceed the base production control level for that property.

Residual Fuel Oil

The heavier oils that remain after the distillate fuel oils and lighter hydrocarbons are boiled off in refinery operations. Included are products known as ASTM grades Nos. 5 and 6 oil, heavy diesel oil, Navy Special Oil, Bunker C oil, and acid sludge and pitch used as refiner fuels. Residual fuel oil is used for the production of electric power, for heating, and for various industrial purposes.

Rotary Rig

Machine used for drilling wells that employs a rotating tube attached to a bit for boring holes through rock.

Separative Work Unit (SWU)

The measure of work required to produce enriched uranium from natural uranium. Enrichment plants separate natural uranium feed material into two groups, an enriched product group with a higher percentage of U-235 than the feed material and a depleted tails group with a

lower percentage of U-235 than the feed material. To produce 1 kilogram of enriched uranium containing 2.8 percent U-235, and a depleted tails assay containing 0.3 percent U-235, it requires 6 kilograms of natural uranium feed and 3 kilograms of separative work units (3 SWU).

Stripper Well Lease

A property of which the average daily production of crude petroleum and petroleum condensates, including natural gas liquids, per well did not exceed 10 barrels per day during the preceding calendar year.

Synthetic Natural Gas (SNG)

A product resulting from the manufacture, conversion, or reforming of petroleum hydrocarbons which may be easily substituted for or interchanged with pipeline quality natural gas.

Unrecouped Costs

Costs which have not been recovered in the current month's product prices but which have been "banked" for later use.

Well

Hole drilled for the purpose of finding or producing crude oil or natural gas or providing services related to the production of crude oil or natural gas. Wells are classified as oil wells, gas wells, dry holes, stratigraphic tests, or service wells. This is a standard definition of the American Petroleum Institute.

Explanatory Notes

1. Domestic production of energy includes production of crude oil and lease condensate, natural gas (wet), and coal (anthracite, bituminous, and lignite), as well as electricity output from hydroelectric and nuclear powerplants and industrial hydroelectric power production. The volumetric data were converted to approximate heat contents (Btu-values) of the various energy sources using conversion factors listed in the Units of Measure.

2. U.S. imports of fossil fuels include imports of crude oil, refined petroleum products, and natural gas (dry).

3. Domestic consumption of energy includes domestic demand for refined petroleum products, consumption of coal (anthracite, bituminous, and lignite) and natural gas (dry), electricity output from hydroelectric and nuclear powerplants, industrial hydroelectric power production, and imports of electric power. Approximate heat contents (Btu-values) were derived using conversion factors listed in the Units of Measure. Electricity imports were converted using the Btu-content of hydroelectric power. 1975 electricity imports were estimated on the basis of imports levels during 1974.

4. Graphic presentations of petroleum volumetric data show Bureau of Mines (BOM) figures for 1973 through October 1975 and FEA (or API) figures for November 1975 forward. FEA monthly data for May 1974 through March 1975 were based on the *Weekly Petroleum Statistics Report* which presented volumetric data on domestic petroleum receipts and imports for all refiners and bulk terminal operators, as well as production and stock levels for each major petroleum product. In April 1975, the FEA weekly report was replaced by the *Monthly Petroleum Statistics Report* which presents essentially the same data on a monthly basis.

Conceptually, the major difference between FEA and BOM data occurs in the "Stocks" series. Stock levels reported by FEA for the major petroleum products are higher than those reported by BOM, because the FEA series includes stocks of independent terminal operators not counted by BOM. Beginning in December 1974, however, BOM data reflect the inclusion of approximately 100 additional bulk terminals in the coverage of primary stocks, bringing the data base for the 2 series into closer agreement.

In the current issue, cumulative 1973 and 1974 petroleum data presented in the text are based on BOM figures. Discussions of cumulative 1975 data are based on BOM figures for January through October and FEA (or API) figures for November and December.

5. Oil heating degree-days relate demand for distillate heating fuel to outdoor air temperature. Heating degree-days are defined as deviations of the mean daily temperature at a sampling station below a base temperature equal to 65° F by convention. Numerous studies have shown that when the outside temperature is 65°, most buildings can maintain an indoor air temperature of 70° without the use of heating fuels.

Mean daily temperature information is forwarded to the National Oceanic and Atmospheric Administration, Department of Commerce, from approximately 200 weather stations around the country. These data are used to calculate statewide heating degree-day averages based on population. The population-weighted State figures are aggregated into Petroleum Administration for Defense Districts and the national average, using a weighting scheme based on each State's consumption of distillate fuel oil per degree-day (1974 data base).

6. Domestic demand figures for natural gas liquids (NGL) as reported by BOM and reproduced in this publication do not include amounts utilized by refineries for blending purposes in the production of finished products, principally gasoline. Use of NGL at refineries is reported in a separate column. The production series cited in this publication shows both NGL produced at processing plants and liquefied gases produced at refineries. NGL produced at refineries is extracted from crude oil and hence, to avoid double counting, should not be included in calculations of total U.S. production of petroleum liquids. The NGL stock series shown in this volume includes liquids held as stocks at both natural gas processing plants and at refineries.

7. Domestic consumption of natural gas includes the quantities sold to consumers plus the gas used for plant and pipeline fuel, after the natural gas liquids have been extracted. All monthly consumption data are estimated.

Marketed production of natural gas includes gross withdrawals from the ground less the quantities used for repressuring and the amount vented and flared, before the natural gas liquids have been extracted.

8. The Federal Energy Administration and Federal Power Commission began the coordinated collection and compilation of monthly underground storage information from all underground storage operators in the United States in October 1975. Initial storage information reported was for the month of September 1975. Comparable monthly information for total U.S. storage operations is not available for prior periods.

The total gas in storage is the total volume of gas (base gas plus working gas) in storage reservoirs as of the end

of the month. Base gas is the volume of gas, including all native gas in place at the time of conversion to storage, needed as a permanent inventory to maintain adequate reservoir pressures and deliverability rates throughout the withdrawal season. Base gas includes the volumes which will not be recoverable upon termination of storage operations. Working gas is the volume of gas above the designated base gas level available for withdrawal.

9. Bituminous coal and lignite consumption are reported by the Bureau of Mines are derived from information provided by the Federal Power Commission, Department of Commerce, and reports from selected manufacturing industries and retailers. Domestic consumption data in this series, therefore, approximate actual consumption. This is in contrast to domestic demand reported for petroleum products, which is a calculated value representing total disappearance from primary supplies.

Bituminous coal and lignite production is calculated from the number of railroad cars loaded at mines, based on the assumption that approximately 60 percent of the coal produced is transported by rail. Production data are estimated by the Bureau of Mines from Association of American Railroads reports of carloadings.

10. Quantities of uranium are measured by various units at different stages in the fuel cycle. At the mill, quantities are usually expressed as pounds or short tons of U_3O_8 . After the conversion stage, the units of measure are either metric tons (MT) of UF_6 or metric tons of uranium (MTU). The latter designation expresses only the elemental uranium content of UF_6 .

Following the enrichment stage, the same units are used, but the U-235 content has been enhanced at the expense of loss of material. At the fabrication stage, UF_6 is changed to UO_2 , and the standard unit of measure is the MTU. We have chosen to present all uranium quantities as MTU; conversion factors to other units are given in the section on Units of Measure.

11. The units used to describe power generation at nuclear plants are all based on the watt, which is a unit of power. (Power is energy produced per unit of time.) As with fossil-fueled plants, nuclear plants have three design power ratings. The thermal rating (expressed in thermal megawatts) is the rate of heat production by the reactor core. The gross electrical rating (expressed in electrical megawatts, MWe) is the generator capacity at the stated thermal rating of the plant. The net electrical rating (also expressed in MWe) is the power available as input to the electrical grid after subtracting the power needed to operate the plant. (A typical nuclear plant needs 5 percent of its generated electricity for its own operation.)

The electrical energy produced by a plant is expressed either as megawatt hours (MWh) or kilowatt hours (KWh). Tables in the nuclear section show generated electricity as average electrical power. This enables a more direct comparison to design capacity and to previous months' performances. To obtain the quantity of electricity generated during a given time period (in megawatt hours), multiply the average power level (in megawatts) by the number of hours during that period.

The energy extracted from uranium fuel is expressed as thermal megawatt days per metric ton of uranium (MWD/MTU). The production of plutonium in the fuel rods is expressed as kilograms of plutonium per metric ton of discharged uranium (kg/MTU).

12. The Residential and Commercial Sector consists of housing units, non-manufacturing business establishments (e.g., wholesale and retail businesses), health and educational institutions, and government office buildings. The Industrial Sector is made up of construction, manufacturing, agriculture, and mining establishments.

The Transportation Sector consists of both private and public passenger and freight transportation, as well as government transportation, including military operations. The Electric Utilities Sector is made up of privately- and publicly-owned establishments which generate electricity primarily for resale.

13. The petroleum short-term demand forecasting model uses historical data to construct a regression equation of demand for each of eight major petroleum products. Each equation attempts to capture the relationship between final demand for that product and the relevant factors influencing that demand. The explanatory factors used in predicting product demand include (a) macroeconomic variables such as disposable personal income and gross national product (GNP), (b) real product prices, (c) variables representing the effects of weather and other seasonal variations in demand, and (d) other factors relevant to a particular product.

The assumptions underlying the current short-term forecast are as follows:

- (1) Normal weather;
- (2) Real GNP growth rate of 8.4 percent for 1976;
- (3) Implementation of the Energy Policy and Conservation Act. Specifically, the composite price of domestic crude oil is set at \$7.66 per barrel beginning February 1976. This price ceiling is allowed to rise by 10 percent per year to account for inflation and other factors;

- (4) Elimination of the \$2.00-per-barrel crude import fee beginning January 1976; and
- (5) OPEC maintains a constant real crude oil price from April 1976 through the end of the forecast interval.

14. Monthly mileage estimates for 1974 and 1975 are based on the average number of miles traversed per crew day in 1974.

15. Prior to January 1975, diesel fuel prices were obtained from retail gasoline dealers that also sold diesel fuel. Beginning in January 1975, the diesel fuel survey was expanded to include selected truck stops plus additional retail gasoline dealers that sold diesel fuel. Consequently, diesel fuel prices for January 1975 forward are not exactly comparable to prior data. Selling price estimates are based on a survey of 31 cities. Margins are based on a survey of 10 cities.

16. The domestic crude petroleum wellhead price represents the first sale price for crude oil and lease condensates. The refiner acquisition cost of domestic crude petroleum is the price paid by refiners for domestic crude petroleum, unfinished oils, and natural gas liquids and includes transportation costs from the wellhead to the refinery.

17. The refiner acquisition cost of imported crude petroleum is the average landed cost of imported crude petroleum to the refiner and represents the amount which may be passed on to the consumer. It incorporates transportation costs and fees (including the supplemental import fees) and any other costs incurred in purchasing and shipping crude oil to the United States.

The estimated landed cost of imported crude petroleum from selected countries does not represent the total cost of all imported crude. Prior to March 1975, imported crude costs to U.S. company-owned refineries in the Caribbean were not included in the landed cost, and costs of crude petroleum from countries which export only small amounts to the United States were also excluded. Beginning in March 1975, however, coverage was expanded to include U.S. company-owned refineries in the Caribbean. Landed costs do not include supplemental fees.

18. The weighted average utility fuel cost for the total United States includes distillate fuel oil delivered to utilities whereas the regional breakdown for residual fuel oil prices represents only No. 6 fuel oil prices.

Units of Measure

Weight

1 metric ton *contains* 1.102 short tons

Conversion Factors for Crude Oil

Average gravity

1 barrel (42 gallons) *weighs* 0.136 metric tons
(0.150 short tons)

1 metric ton *contains* 7.33 barrels

1 short ton *contains* 6.65 barrels

Conversion Factors for Uranium

1 short ton (U₃O₈) *contains* 0.769 metric tons of uranium

1 short ton (UF₆) *contains* 0.613 metric tons of uranium

1 metric ton (UF₆) *contains* 0.676 metric tons of uranium

Approximate Heat Content of Various Fuels

Petroleum

Crude Oil 5.800 million Btu/barrel

Refined products

Imports, average 6.000 million Btu/barrel

Consumption, average 5.517 million Btu/barrel

Gasoline 5.248 million Btu/barrel

Jet Fuel, average 5.592 million Btu/barrel

Naphtha-type 5.355 million Btu/barrel

Kerosine-type 5.670 million Btu/barrel

Distillate fuel oil 5.825 million Btu/barrel

Residual fuel oil 6.287 million Btu/barrel

Natural gas liquids 4.031 million Btu/barrel

Natural gas

Wet 1,093 Btu/cubic foot

Dry 1,021 Btu/cubic foot

Coal

Bituminous and lignite

Production 24.01 million Btu/short ton

Consumption 23.65 million Btu/short ton

Anthracite 25.40 million Btu/short ton

Electricity Conversion Heat Rates

Fossil fuel steam-electric

Coal 10,176 Btu/kilowatt hour

Gas 10,733 Btu/kilowatt hour

Oil 10,826 Btu/kilowatt hour

Nuclear steam-electric 10,660 Btu/kilowatt hour

Hydroelectric 10,389 Btu/kilowatt hour

Electricity Consumption 3,412 Btu/kilowatt hour

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