Short-Term Energy Outlook

October 1997 (Released October 8, 1997)

Energy Information Administration

Short-Term Energy Outlook

Quarterly Projections

Fourth Quarter 1997

Energy Information Administration
Office of Energy Markets and End Use
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Washington, DC 20585

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Preface

The Energy Information Administration (EIA) prepares quarterly short-term energy supply, demand, and price projections for printed publication in January, April, July, and October in the *Short-Term Energy Outlook*. The details of these projections, as well as monthly updates on or about the 6th of each interim month, are available on the internet at: www.eia.doe.gov/emeu/steo/pub/contents.html.

The forecast period for this issue of the *Outlook* extends from the fourth quarter of 1997 through the fourth quarter of 1998. Values for the fourth quarter of 1997, however, are preliminary EIA estimates (for example, some monthly values for petroleum supply and disposition are derived in part from weekly data reported in EIA's Weekly Petroleum Status Report) or are calculated from model simulations that use the latest exogenous information available (for example, electricity sales and generation are simulated by using actual weather data). The historical energy data, compiled in the fourth quarter 1997 version of the Short-Term Integrated Forecasting System (STIFS) database, are mostly EIA data regularly published in the *Monthly Energy Review*, *Petroleum Supply Monthly*, and other EIA publications. Minor discrepancies between the data in these publications and the historical data in this *Outlook* are due to independent rounding.

The STIFS model is driven principally by three sets of assumptions or inputs: estimates of key macroeconomic variables, world oil price assumptions, and assumptions about the severity of weather. Macroeconomic estimates are produced by DRI/McGraw-Hill but are adjusted by EIA to reflect EIA assumptions about the world price of crude oil, energy product prices, and other assumptions which may affect the macroeconomic outlook. By varying the assumptions, alternative cases are produced by using the STIFS model.

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Highlights

The Winter in Prospect: Fuel Supplies Generally Adequate…

Heating fuels markets should produce lower prices this winter compared to last winter. Heating oil and propane stocks are now substantially above 1996 levels at the outset of the heating season. World crude markets are expected to generate relatively stable oil prices about $3-$5 below last winter's levels. Peak residential heating oil prices should average about 10 cents per gallon below last year's high mark, despite expectations of higher domestic demand.

…Natural Gas a Conundrum

Much more uncertainty surrounds natural gas markets this winter. Relative improvements in underground storage over year-earlier levels have not precluded relatively strong winter price expectations. Nonetheless, barring above-normal heating demand this fall, peak winter gas prices at the wellhead are expected to fall well below (20 percent) last year's peak. Still, demonstrated volatility in U.S. gas prices places upper uncertainty ranges above last year's sharp price spike. A strong start to the heating season (October-November) could generate significant pressure on gas prices for December through February because demand expected for that period is sharply above levels seen last year.

Winter Oil Prices Likely To Be Well Below Last Year

World crude oil markets are expected to generate oil prices in the $18-$19 per barrel range. For the upcoming heating season (October-March) average U.S. refiner costs of imported oil are expected to be $3-$4 per barrel below the same period last year. Peak winter prices could be $5 per barrel lower. Relatively strong world demand should hold prices at or above $18 through 1998. However, currently adequate winter fuels supplies and assumed Iraqi production of 1.0-1.1 million barrels per day (through December 5) should contribute to a price path much tamer than the winter run-up seen last year.

Electricity Peak Demand Up Sharply; Coal Units May Get Strenuous Workout

A mild winter followed by a cool summer in 1997 yields expectations of much higher electricity demand in the coming quarters. First quarter 1998 electricity demand is expected to be 4.2 percent higher than the 1997 level, assuming normal weather. While nuclear power availability is expected to be partly recovered from the 1996 downturn by then, hydroelectric power could be significantly less than last year's high levels. Thus, coal plant utilization is expected to be pushed rapidly to new highs early in 1998.

Table HL1. U.S. Energy Supply and Demand Summary

	Year				Annual Percentage Change		
	1995	1996	1997	1998	1995-1996	1996-1997	1997-1998
Real Gross Domestic Product (GDP)							
(billion chained 1992 dollars)	**6742**	**6928**	*7185*	*7358*	**2.8**	*3.7*	*2.4*
Imported Crude Oil Price [a]							
(nominal dollars per barrel)................................	**17.14**	**20.59**	*18.67*	*18.65*	**20.1**	*-9.3*	*-0.1*
Petroleum Supply							
Crude Oil Production [b]	**6.56**	**6.46**	*6.41*	*6.39*	**-1.5**	*-0.8*	*-0.3*
Total Petroleum Net Imports (including SPR)							
(million barrels per day)..................................	**7.89**	**8.50**	*8.92*	*9.21*	**7.7**	*4.9*	*3.3*
Energy Demand							
World Petroleum							
(million barrels per day)..................................	**70.1**	**71.8**	*73.7*	*75.8*	**2.4**	*2.6*	*2.8*
Petroleum							
(million barrels per day)..................................	**17.72**	**18.31**	*18.60*	*18.87*	**3.3**	*1.6*	*1.5*
Natural Gas							
(trillion cubic feet)	**21.58**	**21.93**	*21.85*	*22.78*	**1.6**	*-0.4*	*4.3*
Coal							
(million short tons)	**962**	**1007**	*1017*	*1051*	**4.7**	*1.0*	*3.3*
Electricity (billion kilowatthours)							
Utility Sales [c]	**3013**	**3085**	*3084*	*3196*	**2.4**	*-0.0*	*3.6*
Nunutility Own Use [d]	**158**	**162**	*166*	*169*	**2.5**	*2.5*	*1.8*
Total........................	**3171**	**3246**	*3249*	*3366*	**2.4**	*0.1*	*3.6*
Adjusted Total Energy Demand [e]							
(quadrillion Btu)	**90.6**	**94.1**	*94.3*	*96.4*	**3.8**	*0.2*	*2.3*
Adjusted Total Energy Demand per Dollar of GDP							
(thousand Btu per 1992 Dollar).............................	**13.44**	**13.58**	*13.12*	*13.10*	**1.0**	*-3.4*	*-0.2*
Renewable Energy as Percent of Total.................	**7.8**	**8.0**	*8.2*	*7.5*			

[a]Refers to the refiner acquisition cost (RAC) of imported crude oil.

[b]Includes lease condensate.

[c]Total annual electric utility sales for historical periods are derived from the sum of monthly sales figures based on submissions by electric utilities of Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." These historical values differ from annual sales totals based on Form EIA-861, :Annual Electric Utility Report," reported in several EIA publications, but match alternate annual totals reported in EIA's *Electric Power Monthly*, DOE/EIA-0226.

[d]Defined as the difference between total nonutility electricity generation and sales to electric utilities by nonutility generators, reported on Form EIA-867, "Annual Nonutility Power Producer Report." Data for 1996 are estimates.

[e]The conversion from physical units to Btu is calculated by using a subset of conversion factors used in the calculations performed for gross energy consumption in Energy Information Administration, *Monthly Energy Review* (*MER*). Consequently, the historical data may not precisely match those published in the *MER* or the *Annual Energy Review (AER)*.

SPR: Strategic Petroleum Reserve.

Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Latest data available from Bureau of Economic Analysis and Energy Information Administration; latest data available from EIA databases supporting the following reports: *Petroleum Supply Monthly*, DOE/EIA-0109; *Petroleum Supply Annual*, DOE/EIA-0340/2; *Natural Gas Monthly*, DOE/EIA-0130; *Electric Power Monthly*, DOE/EIA-0226; and *Quarterly Coal Report*, DOE/EIA-0121; *International Petroleum Statistics Report* DOE/EIA-0520; *Weekly Petroleum Status Report* DOE/EIA-0208. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0997.

The Outlook

1997-98 Winter Fuels Outlook

The Base Case Outlook

Demand

Demand for distillate fuel oil for this winter (October-March) is projected to average 3.69 million barrels per day, up 160,000 barrels per day from the previous winter's demand (Table WFO1). This projection assumes a return to normal weather patterns. As a result, weather (in terms of heating degree-days) in the Northeastern United States--the principal market for heating oil--is projected to be 3.6 percent colder than weather last winter. Almost all of that difference is concentrated in the January-March quarter, the peak period for heating oil consumption. During that period, the weather is projected to be 5.9 percent colder than it was last year. Thus, distillate demand for that quarter is projected to be 3.83 million barrels per day, up 250,000 barrels per day from the same period last year.

Total winter natural gas demand is projected to increase by 4 percent, assuming a return to normal winter weather. In first quarter 1998, natural gas requirements are projected to be 81.2 billion cubic feet per day compared to 76.5 billion cubic feet per day last winter. The significant rise in industrial and utility demand, in line with strong economic growth, is a factor, as is weather-related higher residential and commercial demand in first quarter 1998 relative to first quarter 1997.

Electricity demand is projected to grow by 3.4 percent in the coming winter under assumptions of normal weather. Demand in the weather-sensitive residential and commercial sectors is expected to grow by a combined 4 percent.

Supply

Despite the record level of distillate consumption projected for this winter, the three major supply sources--domestic refinery production, net imports, and stock draw--are expected to meet the requirements of a normal winter. Refinery output of distillate is projected to average 3.37 million barrels per day, down 10,000 barrels per day from last winter's output. During the October-December quarter, the period of peak production, refinery output is expected to decline by 90,000 barrels per day from last year. That reflects higher reliance on primary inventories and imports in meeting seasonal demand. Beginning-of-season stocks are projected to be 136 million barrels (Figure 1), up more than 21 million barrels from stocks last year. But end-of-season inventories are projected to be drawn down to 96 million barrels, 6 million *less* than last year. Net imports are expected to average 100,000 barrels per day, up from 75,000 barrels per day last year.
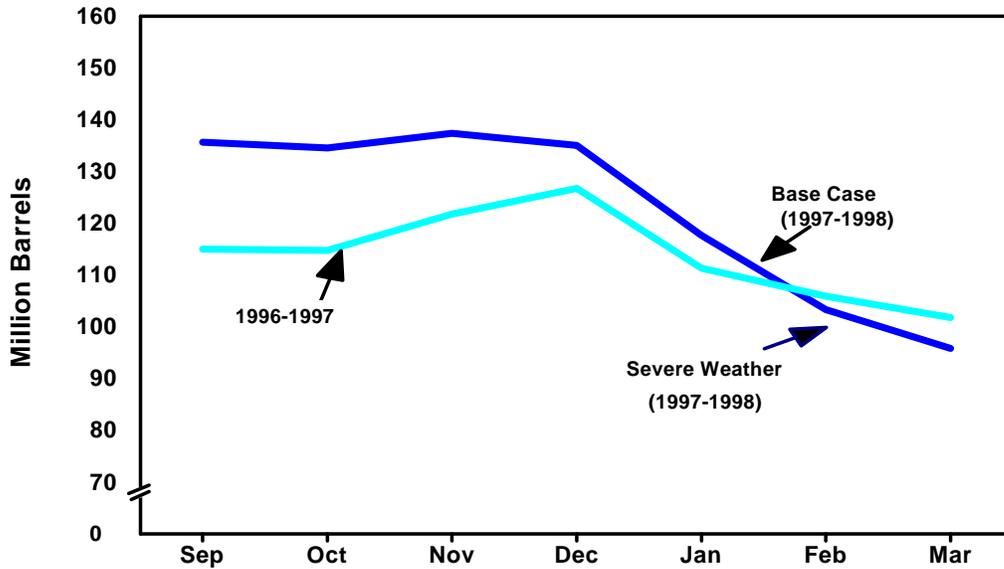
Figure 1. Distillate Winter Stocks

Natural gas supplies are expected to be sufficient to meet demand. Domestic gas production is expected to contribute an average of 53.5 billion cubic feet per day, up from 52.3 billion cubic feet per day last winter. Stock withdrawals are expected to average 9.86 billion cubic feet per day, compared with 8.81 billion cubic feet per day last winter. End-of-season underground stocks are projected to be 5.24 trillion cubic feet, somewhat lower than the 5.32 trillion cubic feet recorded at the end of the mild first quarter of 1997 (Figure 2).
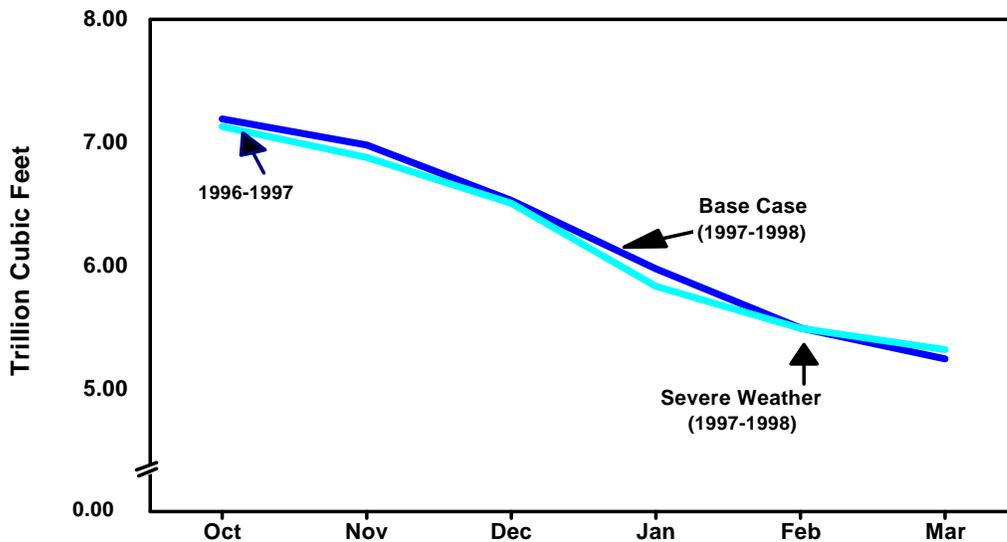
Figure 2. Natural Gas Winter Stocks

Net natural gas imports are expected to average 8.6 billion cubic feet per day compared with last heating season's 8.1 billion cubic feet per day, reflecting in part the limitations of Canadian export pipeline capacity.

Nuclear generation of electricity is expected to rise by 6.2 percent in the first quarter of 1998 compared with what it was in first quarter 1997, as many of the currently downed plants return to service. Hydropower generation is expected to fall by 10.3 percent in the first quarter due to normal rainfall assumptions, and coal generation is expected to make up most of the difference.

Prices
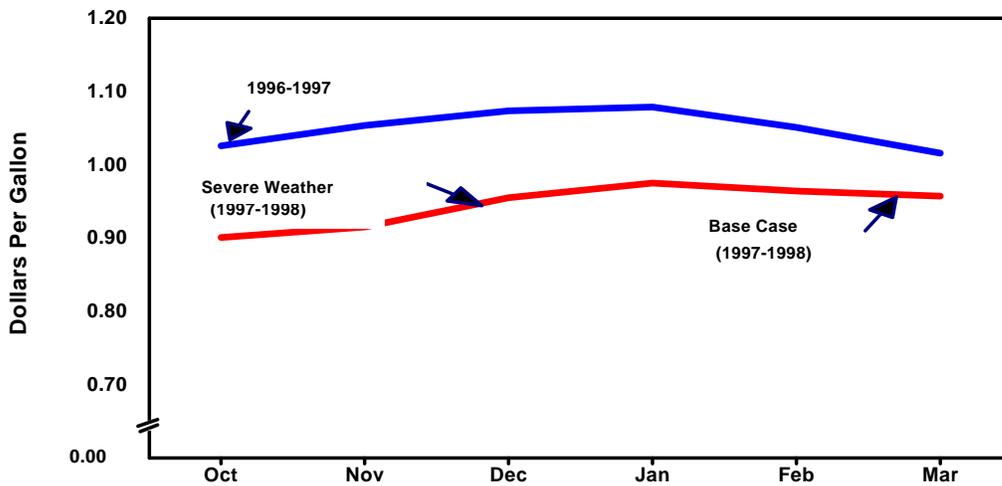
Figure 3. Winter Retail Heating Oil Prices

Reflecting lower crude oil prices, retail heating oil prices for the winter season (fourth quarter 1997 and first quarter 1998) are expected to average $0.95 per gallon, down 10 cents from last year's prices (Figure 3).
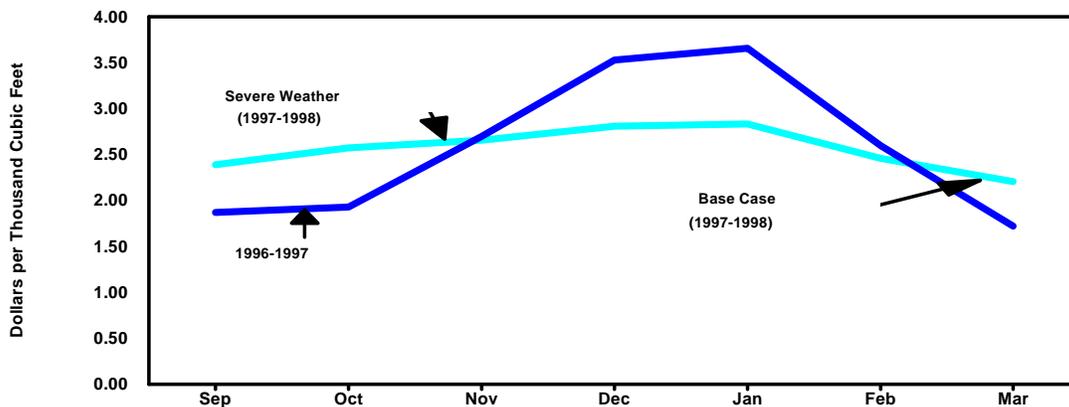
Figure 4. Winter Natural Gas Wellhead Prices

Natural gas wellhead prices are projected to average about 12 cents lower this winter than last year (Figure 4). Residential prices for natural gas are projected to average 32 cents lower compared to last winter. Much of the impetus for lower

prices stems from the relatively higher stock levels through fourth quarter 1997 compared with 1996 levels.

Severe Weather Scenario

This scenario (severe weather) assumes that weather, in terms of heating-degree days, is 10 percent colder than normal (base case) for the January--March quarter. Such a quarter would be 16 percent colder than last year's mild first quarter. To derive the alternative case, this percentage deviation was proportionally distributed throughout the quarter and applied to both the Northeast for heating oil and the U.S. for the other fuels.

Demand and Supply

Distillate fuel demand for the first quarter 1998 would average 3.95 million barrels per day, up 110,000 barrels, or 2.9 percent, from the base case projection-- and 10.3 percent above the mild first quarter of 1997. Refinery output for that quarter would be projected to increase 40,000 barrels per day, resulting in slight increases in refinery utilization rates to 91.7 percent. The average stock drawdown would increase by 40,000 barrels per day, resulting in end-of-season stocks at 92 million barrels, 4 million barrels below the base-case projection. Net imports would average 196,000 barrels per day, up 26,000 barrels from the base case.

Natural gas consumption during the first quarter 1998 could average 84.8 billion cubic feet per day under severe weather conditions compared to 81.2 billion cubic feet per day in the normal weather scenario. The difference would be met mainly by increases in stock drawdown and production. Imports, due to pipeline constraints, would not increase. Expected production would rise by an average of 1.8 billion cubic feet per day relative to the base case. The expected net stockdraw would rise by about 1.7 billion cubic feet per day relative to the base case.

Total electricity sales could increase by 1.5 percent in case of severe weather, and this increased demand would be met mainly by increased coal generation.

Prices

Severe weather would be expected to raise retail heating oil prices to an average of $0.98 for the first quarter, up one cent from the base case but down 6 cents from last year's average for the same period (Figure 3).

Natural gas wellhead prices would be expected to rise somewhat as greater pressure on the overall supply is felt, and they would be expected to remain above the base case for some months because off-season storage injection would have to be increased. For the first quarter, wellhead gas prices could be about 8

cents higher under the 10 percent colder than normal weather scenario than they would be in the base case. This is still 8 cents below the average wellhead price in first quarter of 1997.

Table WF01. U.S. Winter Fuels Outlook: Base Case

	1996-1997			1997-1998			Percent Change			Severe Weather
	Q4	Q1	Winter	Q4	Q1	Winter	Q4	Q1	Winter	Q198
Demand/Supply										
Distillate Fuel (mill. barrels per day)										
Total Demand	3.482	3.577	3.530	3.545	3.831	3.688	1.8%	7.1%	4.5%	3.944
Refinery Output	3.601	3.158	3.378	3.508	3.225	3.366	-2.6%	2.1%	-0.4%	3.266
Net Stock Withdrawal	-0.129	0.271	0.072	0.006	0.426	0.217	-104.7%	57.3%	201.4%	0.471
Net Imports	0.009	0.141	0.075	0.030	0.170	0.100	244.7%	20.1%	33.1%	0.196
Refinery Utilization (percent)	94.4%	89.5%	91.9%	93.0%	90.4%	91.7%				0.909
Natural Gas (bill. cubic feet per day)										
Total Demand	61.76	76.50	69.17	62.63	81.24	71.99	1.4%	6.2%	4.1%	84.83
Net Domestic Production	49.15	55.37	52.28	48.43	58.50	53.49	-1.5%	5.6%	2.3%	60.34
Net Stock Withdrawal	4.65	12.92	8.81	5.67	14.00	9.86	22.0%	8.3%	11.9%	15.75
Net Imports	7.96	8.21	8.08	8.53	8.74	8.64	7.3%	6.5%	6.9%	8.744
Stocks (ending period)										
Distillate Fuel- Beginning (mmb) [a]	115	127	115	136	135	136	17.9%	6.6%	17.9%	135
Distillate Fuel- Ending (mmb)	127	102	102	135	96	96	6.6%	-5.9%	-5.9%	92
Nat. Gas in Und. Storage- Beginning (bcf) [b]	6928	6505	6928	7045	6529	7045	1.7%	0.4%	1.7%	6529
Nat. Gas in Und. Storage- Ending (bcf)	6505	5316	5316	6529	5241	5241	0.4%	-1.4%	-1.4%	5080
Prices										
Imported Crude Oil Price (c/g) [c]	54.9	50.1	52.5	43.0	43.9	43.4	-21.6%	-12.4%	-17.2%	18.4
Retail Heating Oil Price (c/g)	105.8	105.2	105.5	93.3	96.7	95.0	-11.9%	-8.1%	-9.9%	97.6
Wellhead Gas Price ($/mcf)	2.74	2.66	2.70	2.68	2.50	2.58	-2.0%	-6.1%	-4.3%	2.576
Resid. Gas Price ($/mcf)	6.46	6.66	6.58	6.30	6.24	6.26	-2.5%	-6.4%	-5.0%	6.245
Market Indicators										
Industrial Output (index, 1987=1.0)	1.170	1.183	1.177	1.210	1.221	1.216	3.4%	3.2%	3.3%	1.221
Northeast HDDs	2082	2893	4976	2089	3064	5153	0.3%	5.9%	3.6%	3370
Gas-Weighted HDDs	1768	2275	4043	1686	2426	4112	-4.6%	6.6%	1.7%	2669

[a] mmb = million barrels.
[b] bcf = billion cubic feet
[c] Refiners' acquisition cost for imported crude oil.
[d] Percent changes have been adjusted for leap-year effects.
Notes: NM = percentage changes not particularly informative. Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italic. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System. Sources: Historical data: Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109; *Monthly Energy Review*, DOE/EIA-0035. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0797.

Outlook Assumptions
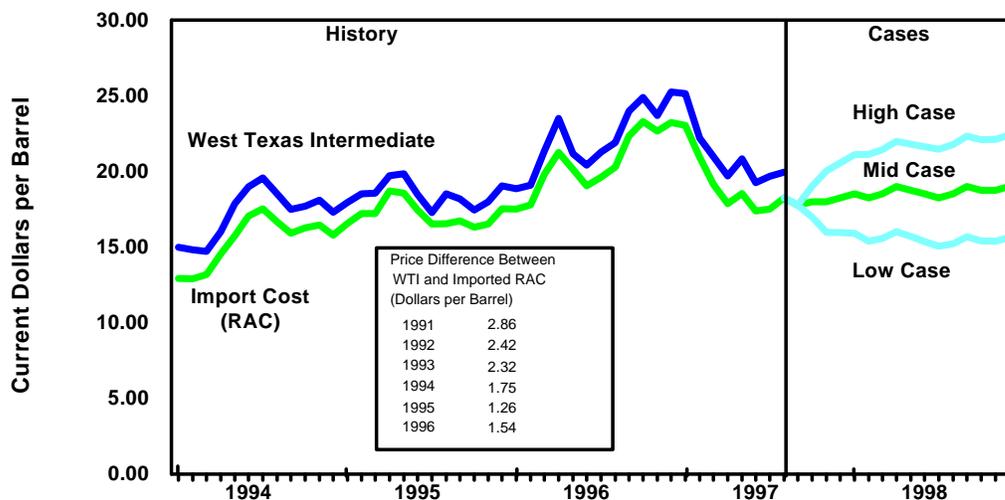
Figure 5. U.S. Monthly Crude Oil Prices

World Oil Prices

This forecast assumes the continuation of Iraqi humanitarian oil sales approved by the United Nations (U.N.) in December 1996. Beginning in early December 1997, it is assumed that the United Nations Security Council will renew Resolution 986 every 6 months, allowing Iraq to continue exporting about 750,000 barrels per day. Prior to early December 1997, it is assumed that Iraq exports about 1.1 million barrels per day to make up for the amount of oil that could not be sold in the previous 90-day period. Please see the International Oil Supply section for more details on Iraqi oil exports.

Our current base price projection calls for a relatively stable oil price path, with prices holding close to the $18-$19 per barrel range through 1998 (Figure 5). Thus, prices this winter should be $3-$5 per barrel below last winter's prices.

The high and low price cases illustrated in Figure 5 represent a typical uncertainty range around our base case forecast.

Economic Outlook

Beginning with our September *Outlook* update, we have been including the new-basis revised industrial production indexes from the Federal Reserve Board. This is in keeping with the output of the DRI/McGraw-Hill U.S. economic

forecasts, which we use as the basis for our macroeconomic inputs. The basis year for the indexes was changed from 1987 to 1992.

U.S. Gross Domestic Product (GDP) growth is expected to average 3.7 percent in 1997 and 2.4 percent in 1998. Growth in disposable income should reach 2.7 percent in 1997 and 3.6percent in 1998 (Figure 6 and Table 1).

Inflation (consumer price index, see Table 2) should remain moderate over the next few years. Consumer price inflation is expected to be 2.4 percent in 1997 and 2.1 percent in 1998 (Table 1).

Manufacturing production growth rises more than GDP, reaching 4.4 percent in 1997, as investment and export growth remain strong. In 1998, manufacturing production growth slows to 3.2 percent as investment growth decelerates. Total employment will increase slowly over the forecast period.

Weather Assumptions

Heating and cooling degree-days are assumed to follow historical norms in the forecast period. This results in projected heating demand being sharply higher during peak periods this winter (8.6 percent higher U.S. heating degree-days during the first quarter of 1998 compared with first quarter 1997.
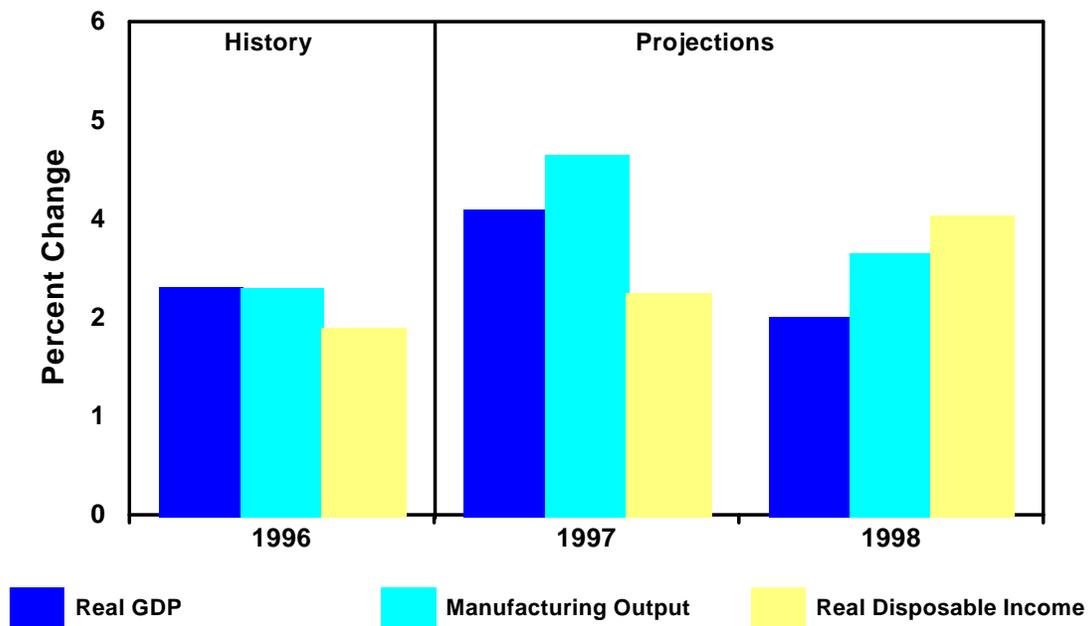
Figure 6. U.S. Macroeconomic Indicators

U.S. Energy Prices
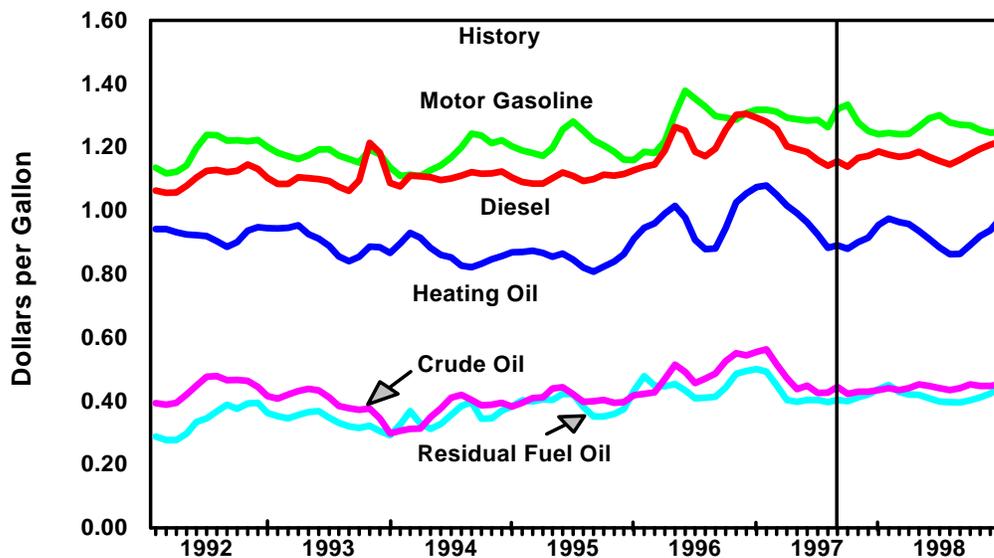
Figure 7. Petroleum Product Prices

Petroleum. Despite the continuation of a relatively flat course for crude oil this summer, U.S. gasoline prices took a sharp turn upward in the late summer. However, the factors that have led to this situation (refinery problems, high demand) have abated sufficiently to reduce prices within the month of September. The accumulated increases in wholesale prices in late July and the first three weeks of August were seen at the retail level in August and the first half of September.

New terms were negotiated that allow Iraq to recapture much of the lost revenue caused by the export delays this summer. This additional amount of Iraqi crude (about 400,000 barrels per day, from now to December 5, above the estimated 750,000 barrels per day that Iraq had been exporting) should keep the average imported price of crude oil to about $18 per barrel for the rest of the year. Because of this incremental production, an unexpected drop in demand, due perhaps to warm winter weather in both the U.S. and Western Europe, would result in a weaker short-term price situation. Conversely, of course, cold winter weather on either or both continents would send crude oil prices higher.

The recent atypical pattern in motor gasoline prices included an average gain of more than 6 cents per gallon from the July 4 holiday through Labor Day. World crude oil price gains accounted for only about 2 cents of the increase. Strained

gasoline supply conditions, coupled with very strong summer demand (particularly evident in July) and continued sluggishness in average efficiency improvements sent average retail prices to above $1.30 per gallon for August and September. The current estimate for the average pump price in September of this year (all grades, all services) is $1.32 per gallon, or 3 cents above the price of one year ago (Table 4). Normally, motor gasoline prices peak in the Spring, as refiners rapidly increase gasoline production in preparation for the driving season.

Pump prices started easing a few weeks after Labor Day, the endpoint of the driving season. Demand for motor gasoline is projected to drop as the heating season begins and continue to fall for the rest of the year, along with prices. Assuming no major supply disruptions, average prices in 1998 are projected to fall a few cents per gallon below the expected annual average for 1997.

Assuming normal weather and moderate crude oil prices, retail heating oil prices should average $0.95 per gallon this winter, compared to $1.06 per gallon last winter.   Not only are world crude prices projected to be much lower for this winter, but stocks of distillate fuel oil at the end of September and going into the heating season are now considerably higher—more than 20 million barrels--than stocks one year ago. Furthermore, almost all of this stock increase—about 18 million barrels--is on the East Coast, where the bulk of the nation's heating oil is consumed. Diesel fuel oil, a distillate fuel, should follow heating oil prices.

Natural Gas.   Current and expected near-term natural gas spot prices have moved up sharply in recent months (Figure 8). More evidence of relatively weak performance in domestic gas production and a somewhat lower-than-expected track for gas inventories have contributed to this development. Estimates for dry gas production in the United States are also somewhat lower than had been expected. Gas storage watchers generally concluded that net injections into underground storage have not been running at completely comfortable levels in recent weeks, and the possibility that storage may fall to, or perhaps below, year-ago levels before the heating season begins in earnest has increased. Still, the gas balance allows for underground storage to remain at or above last year's level for the rest of the year, but not by very much.
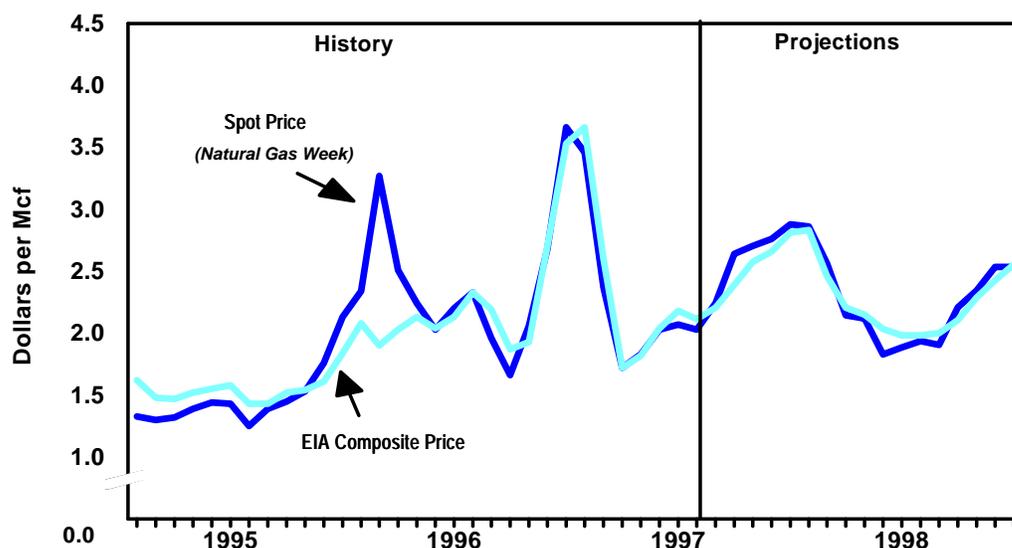
Figure 8. Natural Gas Wellhead Prices: Composite and Spot

Since early August, futures prices for natural gas at the Henry Hub have risen more than 80 cents per thousand cubic feet for the months of December and January. Near month contracts have risen as spectacularly, as concern over inventory levels grows. October futures prices for December and January have been hovering around $3.00 per million Btu, reaching as high as $3.48. About this time last year, natural gas wellhead prices were still under $2.00 per thousand cubic feet, with futures prices for December and January only 30-40 cents higher. Then, considerably colder-than-normal weather last October lowered underground storage levels, which caused a leap in prices that continued through January 1997. Ironically, the average weather for December through February, the coldest months of the year, was warmer than normal. But because inventories *entered* the heating season at low levels, prices responded dramatically.   Given the existing conditions, it looks like prices could be headed in the same direction as they were last winter, although they are not projected to peak nearly as high as they did last December and January ($2.82 per thousand cubic feet vs. $3.60 last winter) Both production and underground storage levels are each up by only small amounts from production and storage one year ago in the third quarter.

Thus, as the heating season begins, a significant potential for gas price volatility looms. Last year, prices didn't start their rapid ascent until October; this year, they began their upward bound two months earlier. Assuming a normal winter *and* a normal fall, natural gas prices at the wellhead are projected to be relatively high, but less than last winter's prices, averaging about $2.60 per thousand cubic feet for the fourth and first quarters. Weather, as always, will be the key factor

in determining the price. If October and November are unusually warm, there will be more confidence in the market about adequate inventory levels. Then the price situation is likely to reverse itself quickly, resulting in a sharp drop in the futures price for the near months. The spot and composite wellhead prices would also respond to a mild heating season, falling along with the futures prices. Conversely, in the unlikely event of a much colder-than-normal fall *and* winter, the current base case price projections would be too low. The weather over the next several weeks will be the major factor in determining the price through the winter.

The expected increase in wellhead prices over the next few months will be passed on to the end-users. Thus, natural gas prices in the winter quarters for residential, commercial, industrial, and electric utility users will be similar to last winter's relatively high prices. Assuming that world crude oil prices remain moderate, residual fuel oil prices should also be tame. Therefore, fuel oil should gain some relative price advantage over natural gas in the industrial and electric power sectors (Figure 9 and Table 4).
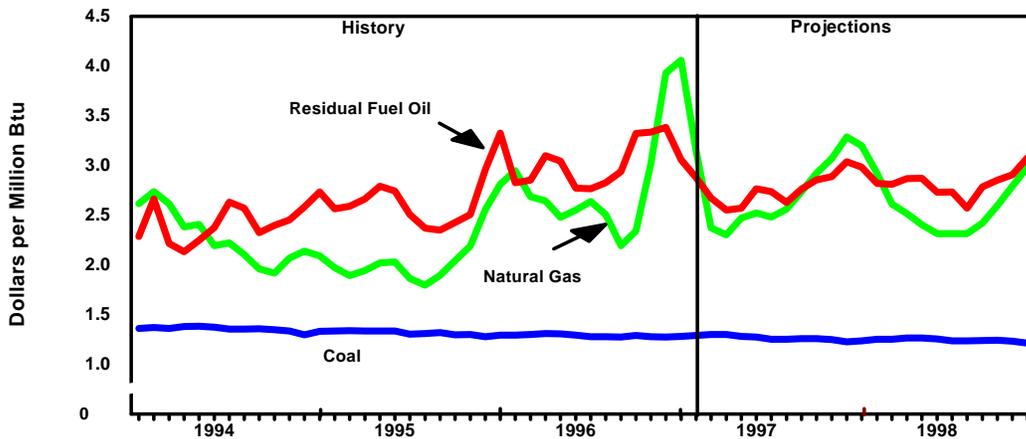
Figure 9. Fossil Fuel Prices to Electric Utilities

International Oil Demand
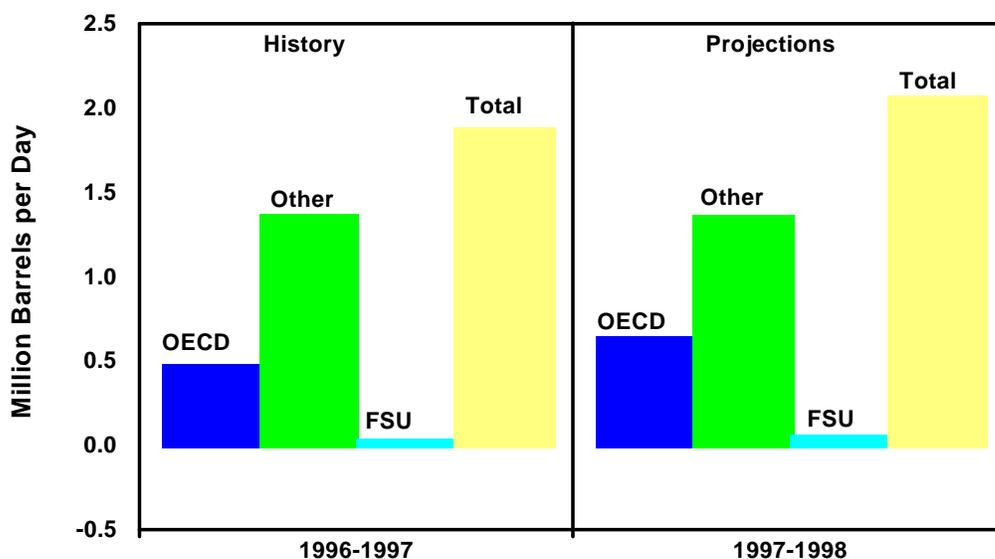
Figure 10. World Oil Demand Changes by Regions

World oil demand is expected to continue to increase through 1998, by which time total world oil demand may average 75.8 million barrels per day (Table 3). All indicators (price, GDP growth, weather) point toward annual increments of 1.9 million barrels per day worldwide in 1997 and 2.1 million barrels per day in 1998. Thus, world oil demand under these assumptions will be growing at an average annual rate of 2.6 percent between 1994-1998 after only growing at an average annual rate of 0.9 percent between 1990-1994. Some reasons for this strong growth include: a growing world economy, relatively low oil prices when discounted for inflation, and stabilization in the economies of some of the former Soviet Union republics (including Russia).

Oil demand in countries of the Organization for Economic Cooperation and Development (OECD) is expected to increase by 500,000 barrels per day in 1997, an average annual rate of 1.2 percent, and nearly 700,000 barrels per day in 1998, an average annual rate of 1.6 percent (Figure 10 and Table 3). The United States' oil demand growth represents about 60 percent of OECD oil demand growth in 1997 but less than half of OECD oil demand growth in 1998.

The major story has been the strong growth in oil demand among non-OECD countries: China, average annual growth rate of at least 6.5 percent in 1997 and 1998; Other Asia, at least 7 percent; Latin America, at least 4 percent (Figure 11).

These are all areas where oil demand growth is expected to exceed the world average growth rate of 2.7 percent between 1996-1998. Significant growth is also expected in Eastern Europe, 3 percent, and Africa, 3 percent, as the economies in these regions begin to exhibit more substantial growth.

Oil demand in the former Soviet Union (FSU) is projected to stabilize in 1997 and begin growing again in 1998, following years of major declines. This increase reflects the expectation that growth in economic activity may be positive for the first time in many years. Demand stood at 8.9 million barrels per day in 1988, reached a low of 4.5 million barrels per day in 1996, and is forecast to remain at 4.5 million barrels per day in 1997 before increasing to 4.6 million barrels per day in 1998 (Table 3).
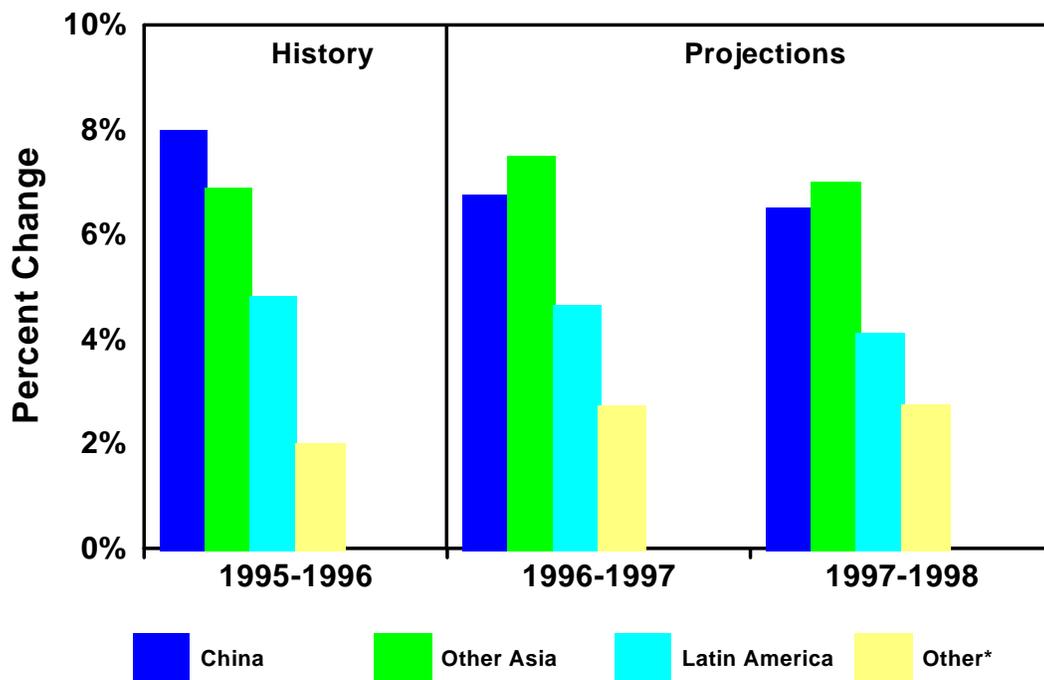
* Includes E. Europe, Middle East, & Africa

Figure 11. Non-OECD Oil Demand by Region

International Oil Supply
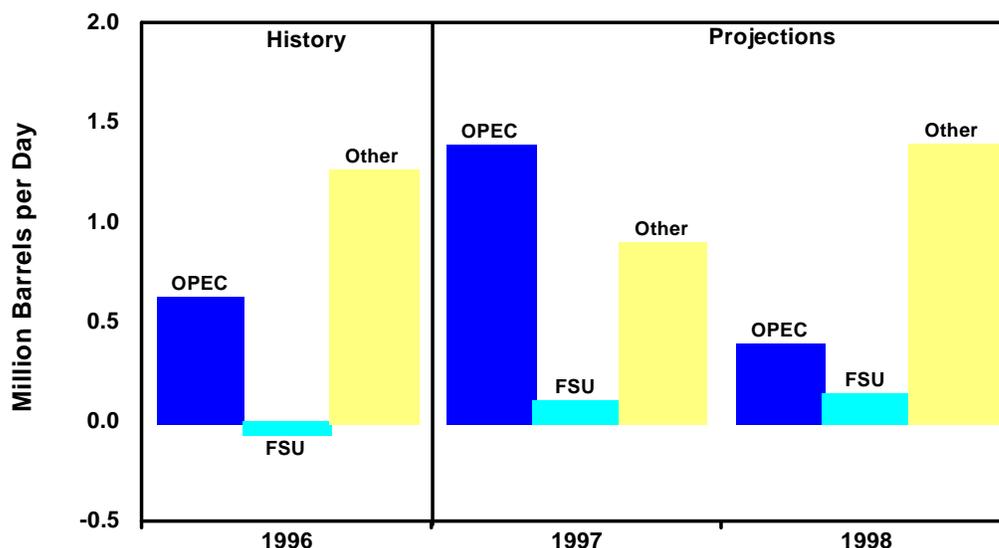
Figure 12. World Oil Supply

(Changes from previous Year)

On December 9, 1996, the United Nations approved additional Iraqi oil exports under U.N. Security Council Resolution 986. These oil sales have added about 750,000 barrels per day of oil to the world market. Resolution 986 was then extended in June 1997 for another 6 months. However, following the extension, Iraq refused to export oil under the terms of Resolution 986, citing delays in receiving the humanitarian aid which a large part of the proceeds from the oil sale were being used to purchase. Under Resolution 986, Iraq is permitted to export up to $1.07 billion every 90 days (the $70 million goes to Turkey as a fee for using the Iraq-Turkey pipeline). The resolution comes up for review every 180 days. But since Iraq did not begin to export oil until mid-August, there was insufficient time for Iraq to receive the full $1.07 billion before the end of the 90-day period on September 5. In early September, the U.N. Security Council agreed to allow Iraq to sell any oil that was unsold in the first 90-day period ending on December 5. This implies Iraqi oil exports of about 1.1 million barrels per day until December 5. Following this period, the forecast assumes that Iraq is exporting its average amount of about 750,000 barrels per day under the original terms of Resolution 986.

With additional Iraqi oil exports, there will be little pressure on OPEC members to increase production in 1997 if capacity expansion plans are realized (Figure 13). Without any major increases in capacity expected--just a continuation of the production creep of the past several years--the additional Iraqi oil will, along with increases in non-OPEC production, be sufficient to supply the market. However, OPEC countries, such as Venezuela and Nigeria, are expected to

increase oil production throughout the forecast period, with Algeria adding significant production in 1998.
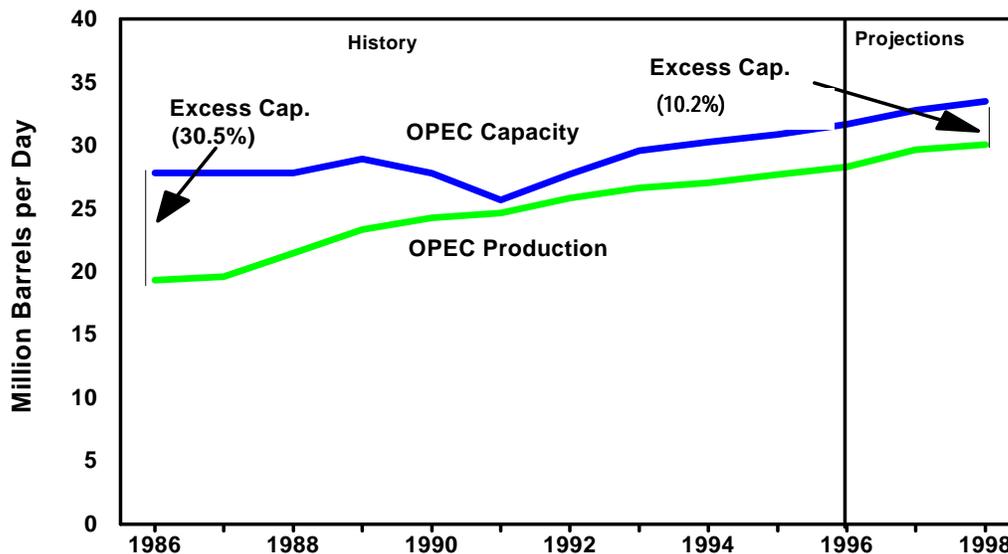
Figure 13. OPEC Oil Production and Capacity

Even Saudi Arabia is realizing increased production from non-crude natural gas liquids, which are excluded from their OPEC quota, and crude oil from the Neutral Zone shared with Kuwait.

Sustained growth of non-OPEC supply is expected to continue for the foreseeable future, both inside and outside of the OECD. The major growth story within the OECD region is North Sea production, which grew by nearly 0.3 million barrels per day in 1996 and is expected to increase an additional 0.2 million barrels per day in 1997 and an additional 0.5 million barrels per day in 1998 (Table 3). Only 4 million barrels of oil per day were produced in the North Sea as recently as 1990; North Sea oil production is expected to average 6.4 million barrels per day in 1997 and 6.9 million barrels per day in 1998. This tremendous growth has been critical in keeping prices stable, given the high rate of world demand growth (Table 3).

Outside the OECD, the non-OPEC growth story is depicted by the "Other" group (Figure 12). Increments from this group are accelerating due to increases from Latin America, Africa, Other Asia, and some slight increases from the Middle East. Privatization efforts are beginning to accelerate growth, particularly in Latin America. Together, the non-OECD, non-OPEC countries, excluding the Former Soviet Union republics (FSU), are expected to increase production by 1.3 million barrels per day between 1996 and 1998 to 18.0 million barrels per day (Table 3), up over 4 million barrels per day since 1990.

Joint ventures in the FSU, although growing slowly due to legal problems and export pipeline constraints, are beginning to foster positive supply prospects. Significant near-term increases are most likely to come from Kazakstan, Russia, and Azerbaijan, rather than from any of the other former republics.

Non-OPEC supply has become a significant source of oil production during the last few years. Since 1994, OPEC production has increased less than world oil demand every year (Figure 14).
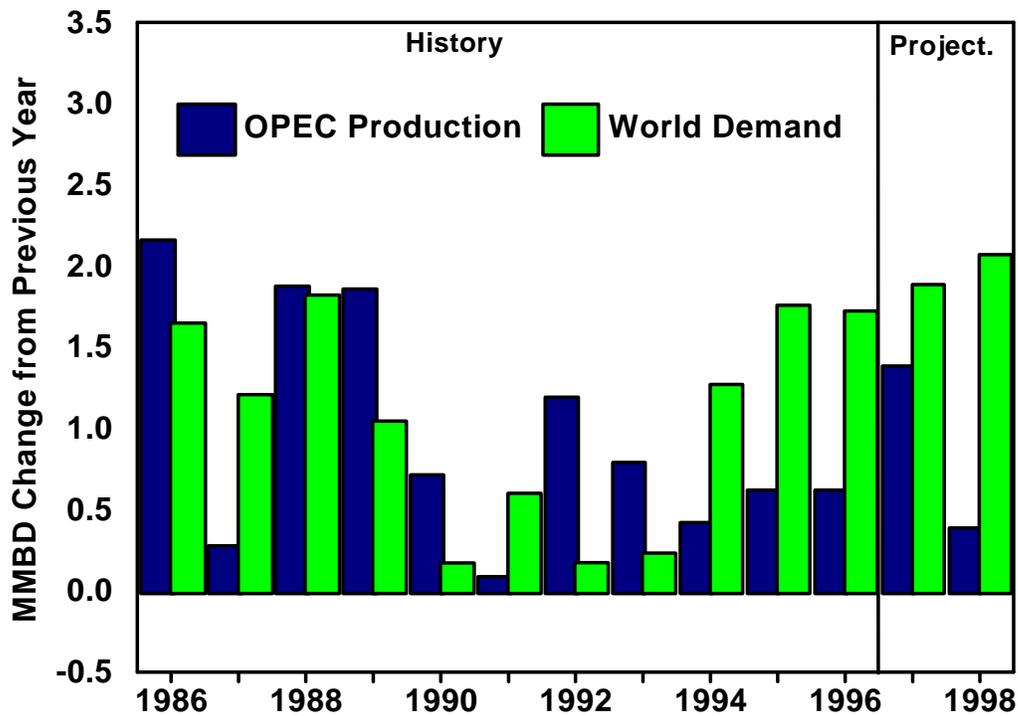
Figure 14. Annual Increases in OPEC Production and World Demand Changes, 1986-1998

World Oil Stocks, Capacity and Net Trade
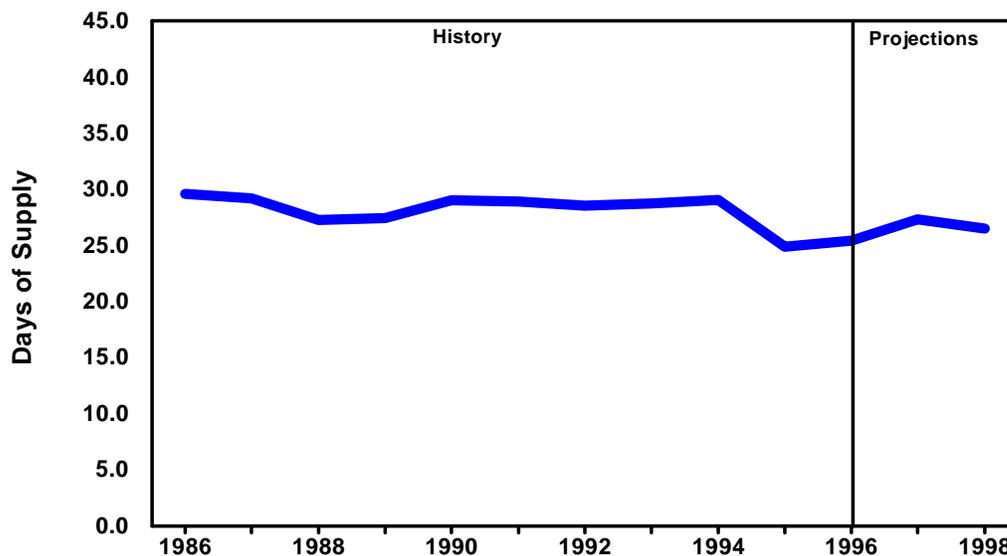
Figure 15. OECD Commercial Oil stocks

Commercial oil inventories in OECD countries are expected to increase significantly in 1997 before dropping some in 1998 (Figure 15). However, OECD commercial inventories at the end of 1998 are still expected to be above the historically low levels seen at the end of 1995 and 1996. The increase in 1997 is in large part due to the increase in oil exports from Iraq and the continued increase in oil supply from non-OPEC regions.

Outside Iraq, about one-half million barrels of capacity expansions are expected in OPEC for both 1997 and 1998. Most of the expansion is expected to take place in Venezuela and Nigeria, with Algeria adding significant capacity in 1998. OPEC excess production capacity, is expected to be 3.1 million barrels per day in 1997; increasing to 3.4 million barrels per day in 1998. Saudi Arabia controls most of the excess, with about 2 million barrels per day of excess production capacity.

Current exports of crude oil worldwide are averaging 34 million barrels per day, with about 60 percent originating from OPEC countries. Saudi Arabia is by far the world's largest exporter, with over 7 million barrels per day of crude exports. Net exports from the FSU are expected to increase slightly in 1997 and 1998. (Figure 16 and Table 3). By 1998, oil production in some of the FSU republics, such as Kazakstan, Azerbaijan and Russia, should begin increasing at more substantial rates. Thus, exports are expected to rise from 2.6 million barrels per day in 1996 to 2.7 million barrels per day in 1997 and 1998. Although FSU exports are much higher than they were immediately following the collapse of

the FSU (2.1 million barrels per day in 1991 and 1992), they are still less than they were before the collapse.

With the Iraqi oil exports allowed by the U.N., exports from the Persian Gulf region are expected to increase in 1997. Oil exports from the rest of the Persian Gulf countries are expected to increase only slightly over the next year as regional consumption increases largely offset production increases.
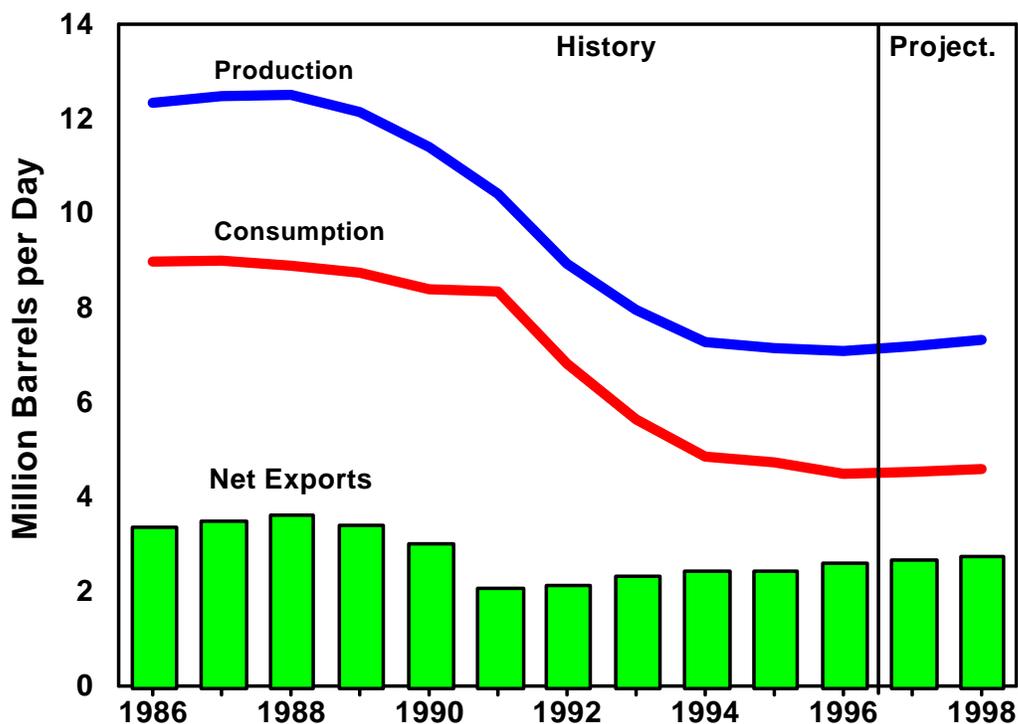
Figure 16. FSU Oil Output, Demand and Net Exports

Energy Information Administration/Short-Term Energy Outlook-- October 1997

U.S. Oil Demand
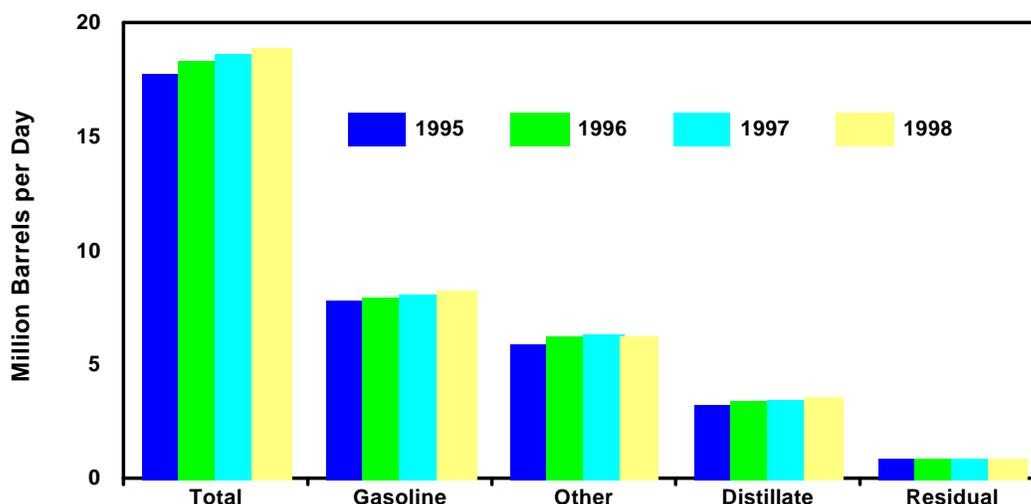
Figure 17. U. S. Petroleum Demand Change

Total petroleum demand for 1997 is projected to increase by 290,000 barrels per day, or 1.6 percent (Figure 17). Mild weather contributed to a year-over-year decline of 150,000 barrels per day in the first quarter; but transportation and petrochemical demand during the rest of the year was grew briskly. Demand in 1998 is projected to increase 270,000 barrels per day, or 1.4 percent.

Gasoline demand is projected to rise 1.8 percent in 1997. Weak first-quarter demand was followed by growth in the 2-percent range during the summer. A sizable, 3.4-percent, increase in disposable income as well as a substantial decline in real fuel costs are both expected to bring about a more robust 2.4-percent increase in motor gasoline demand for 1998.

Due in part to weather-related weakness in the first quarter, distillate demand is projected to increase at only 1.9 percent in 1997, less than half the growth rate in 1996 (Figure 18). Assumptions of normal weather in the first quarter, robust growth in industrial demand, and continued transportation growth are expected to bring about 3.7-percent growth in total distillate demand in 1998.
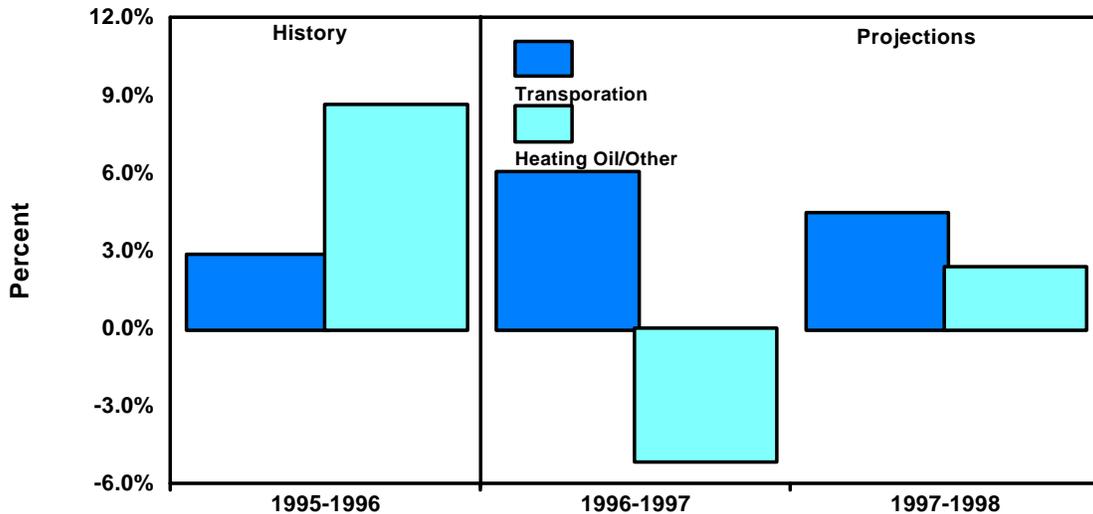
Figure 18. Distillate Demand Growth

Residual fuel oil demand is projected to decline 1.6 percent in 1997 from the already depressed levels of 1996. Growth in electric utility and industrial demand is expected to be more than offset by declines in other (including commercial) sectors. The slight uptick in 1998 results primarily from weather-related strength in utility demand. Displacement from less expensive gas is expected to dampen industrial demand for residual fuel oil.

U.S. Oil Supply
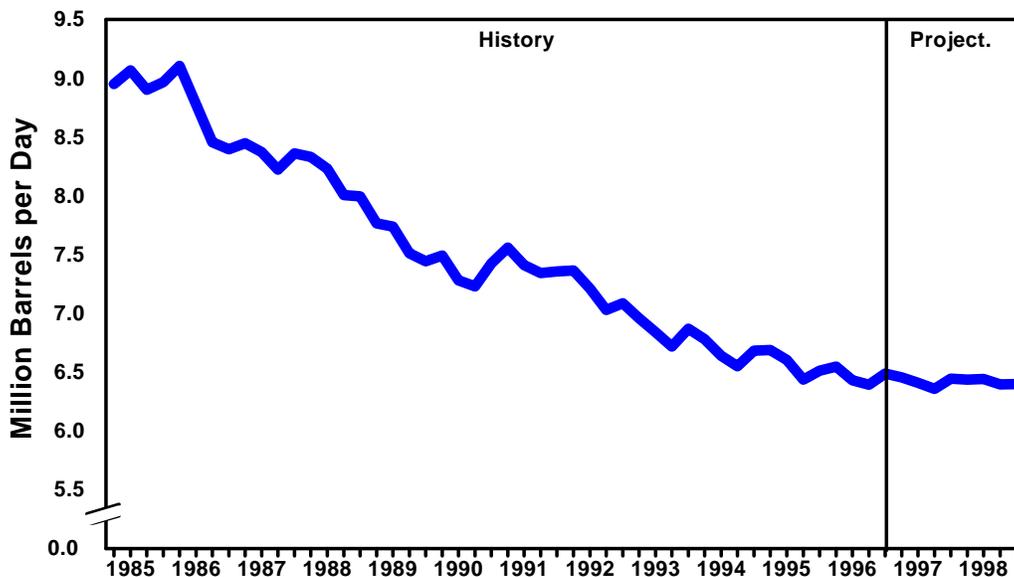
Figure 19. U.S. Crude Oil Production

The domestic crude oil production outlook in this forecast suggests better overall

domestic results for this year and in 1998 than were expected as recently as 2 months ago. The probability of maintaining production levels next year has increased. Although average domestic oil production is expected to decrease by 58,000 barrels per day (bpd), or 0.9 percent in 1997, to a level of 6.4 million bpd, little or no decline is now expected in U.S. oil production in 1998 (Figure 19). If this expectation is realized, it will be the first time annual U.S. oil production has not decreased noticeably in the aggregate since 1991, when the U.S. bolstered domestic production subsequent to the Gulf War.

Lower-48 States oil production is expected to increase on net to about 5.1 million barrels per day in 1997 and to 5.2 million barrels per day in 1998. These increases are due mainly to production from new Federal Offshore fields in the Gulf of Mexico. Included is a 30,000 bpd increase in the Auger production due to facilities improvement (debottlenecking). The Ram-Powell production begins in September 1997, with an accompanying increase of 60,000 bpd in early 1998. British Petroleum has purchased Marathon's Troika sub-sea project and will accelerate production to an adjoining platform in November 1997.   This production will add 80,000 bpd to offshore production in early 1998.

Oil production from the Mars, Ram-Powell, Auger, Troika and Santa Ynez Federal Offshore fields is expected to account for about 8.8 per cent of the lower-48 oil production by the 4th quarter of 1998.

Alaska is expected to account for 20.2 percent of the total U.S. oil production in 1997. Its oil production is expected to decrease by nearly 7 percent in both 1997 and 1998.

U.S. Natural Gas Demand
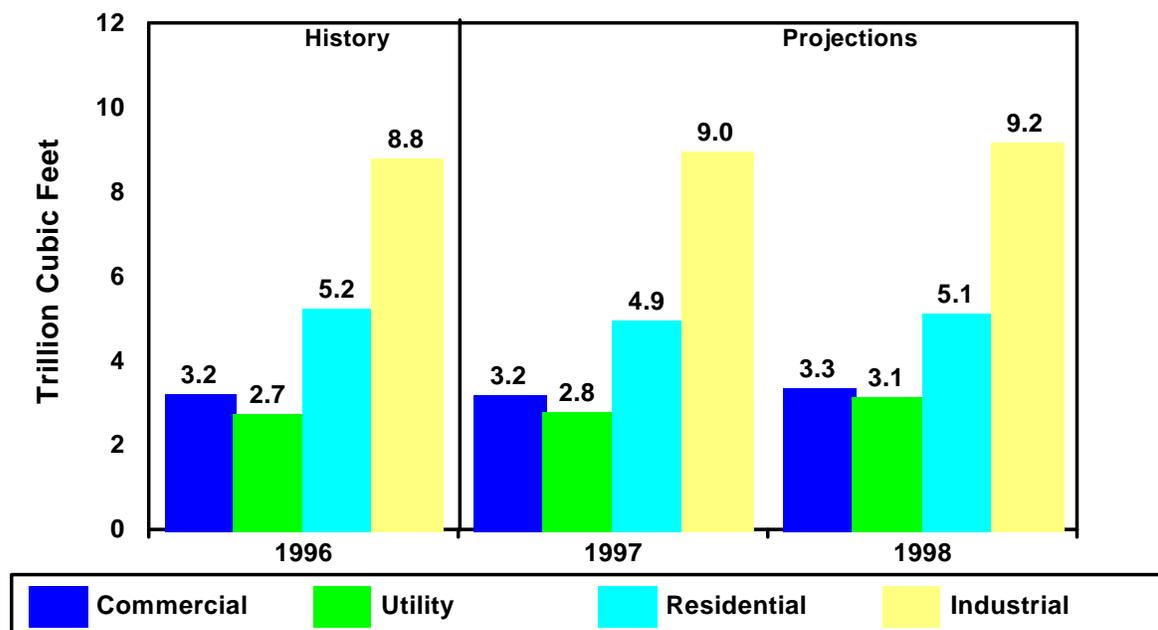
Figure 20. Natural Gas Demand by Sector

Weather's pervasive influence on the natural gas market in 1998 may be setting the United States up for the biggest annual increase in gas demand in over 10 years (Figure 20). Normal weather and an assumed return from extraordinarily high hydroelectric output levels would be mostly responsible for the expected growth in demand of about 1 trillion cubic feet (more than 4 percent). The last similar absolute increase in demand was in 1987, when a recovery in industrial gas use followed the recovery of oil prices from the 1986 crash, which improved the relative attractiveness of natural gas on a price basis. Such an increase follows upon the down year of 1997, which is likely to be the first year of falling gas use since 1990, and only the second time since 1986.

In 1997, positive natural gas demand growth has been evident in the industrial and utility sectors (Table 8), on the basis of current economic assumptions, i.e., rising economic growth; but this growth has not been enough to counteract the negative growth in the residential and commercial sectors. Negative growth in those sectors has stemmed from weather factors, i.e., the mild first quarter, the generally cooler-than-normal summer across most of the U.S., and the assumption of normal fourth quarter temperatures compared with the colder-than-normal fourth quarter of 1996. In 1998, natural gas demand is expected to rise by 4.3 percent due to somewhat moderating natural gas prices, normal weather, and lower hydropower availability in the utility sector leading to increased gas use.

A particularly strong demand growth rate for natural gas (6.2 percent) is expected for the first quarter 1998. This would be lead mostly by increases in residential and commercial gas under normal weather assumptions.

U.S. Natural Gas Supply
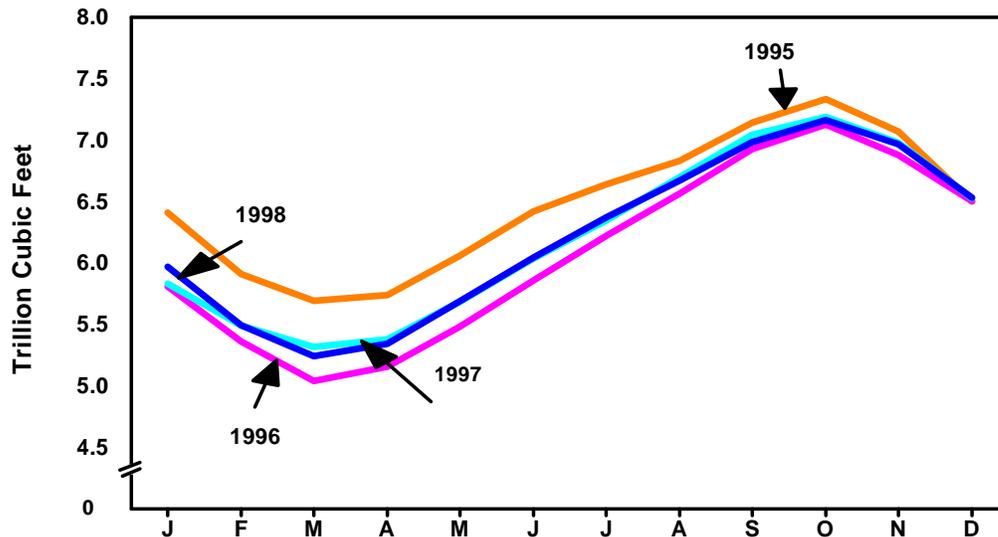
Figure 21. Total Gas in Underground Storage

Underground gas storage levels are expected to begin the heating season (November 1) only slightly higher (1 percent) than they were at the same time last year (Figure 21). The rate of storage refill over July and August slowed from its higher earlier levels as wellhead spot prices rose, but picked up again in September. The risk to the forecast is that weather conditions could cause a lessening of the year-to-year increase in storage, and, if additions to stocks fall behind, gas prices this winter could be even higher than now projected.

The gas industry has been generally maintaining lower storage inventories at the beginning of the heating season in each of the past 3 years. These lower levels reflect changes in the way underground storage is managed, the impact of technological changes in storage facilities, and the development of a more integrated transportation network. While the high demand of the winter months has been met without the high inventory of previous years, it is also clear that higher average prices and much sharper price swings have prevailed since 1995.

The Baker Hughes natural gas rig count for the month of September was 614 rigs, about 61 percent of all rigs actively drilling.

In 1997, net imports could increase by 5.8 percent due to flat U.S. production and favorable price differentials. In 1998, net imports are expected to rise by another 7.6 percent. In 1997 and 1998, a total of about 1 billion cubic feet per day of increased Canadian pipeline export capacity is expected to be added, most of it in 1998.

U.S. Coal Demand and Supply
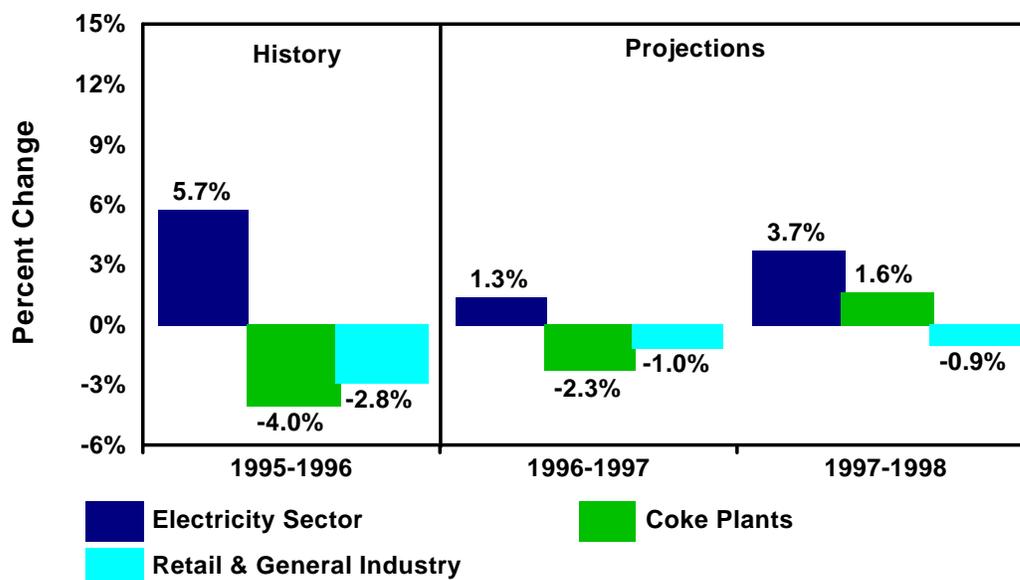
Figure 22. Annual Change in U. S.Coal Demand

Total coal demand is expected to increase by 1.1 percent in 1997 and by 3.3 percent in 1998 (Table 9). Coal demand by utility and nonutility electricity generators grew by 5.7 percent to a record 898.7 million short tons in 1996. High electricity demand, declines in gas-fired electricity generation, and little growth in nuclear generation led to the dramatic rise in coal consumed by the electricity sector. Slower growth in electricity demand (0.1 percent in 1997, compared to 2.4 percent in 1996), will lead to electricity sector coal demand growing by 1.3 percent in 1997 (Figure 22) as growth in gas-fired generation is offset by declines in nuclear electricity generation. In 1998, 3.6 percent growth in electricity demand will lead to similar growth in coal demand by the electricity sector. Significant declines in hydroelectric generation by electric utilities in 1998 (14.9 percent) will spur the increase in coal consumption for electricity generation.

Coal carbonized (consumed) by coke plants fell 4.0 percent in 1996 to 31.7 million short tons. Demand for coal at coke plants is expected to remain around 31 million short tons throughout the forecast period, primarily as a result of coking plant capacity constraints. Another factor hampering the growth of coke plant coal consumption is the use of non-coke methods of steel production (steel recycling and electric arc furnaces) by the iron and steel industry. Electric-arc

production grew by 7.1 percent in 1996, accounting for 41.9 percent of raw steel production. Coal-based raw steel production declined by 3.1 percent in 1996. Demand for coal by the retail and general industry sectors is projected at 75.6 million short tons in 1997, a 1.0 percent decrease from 1996 demand. In 1998, demand is expected to be 75.0 million short tons (Figure 22).

U.S. coal exports are expected to decline in 1997 and rebound in 1998. Exports are projected to be 87.1 million short tons in 1997, a 3.7 percent decrease, and 90.1 million short tons in 1998 (Table 9).

Coal production was a record 1,064 million short tons in 1996. Production is expected to grow by 1.8 percent in 1997, with annual output reaching 1,083 million short tons. Production will grow by an additional 3.2 percent in 1998. Production in the Western region should continue to rise significantly over the forecast period, while production in the Interior declines, and Appalachian production grows slowly.

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U.S. Electricity Demand and Supply
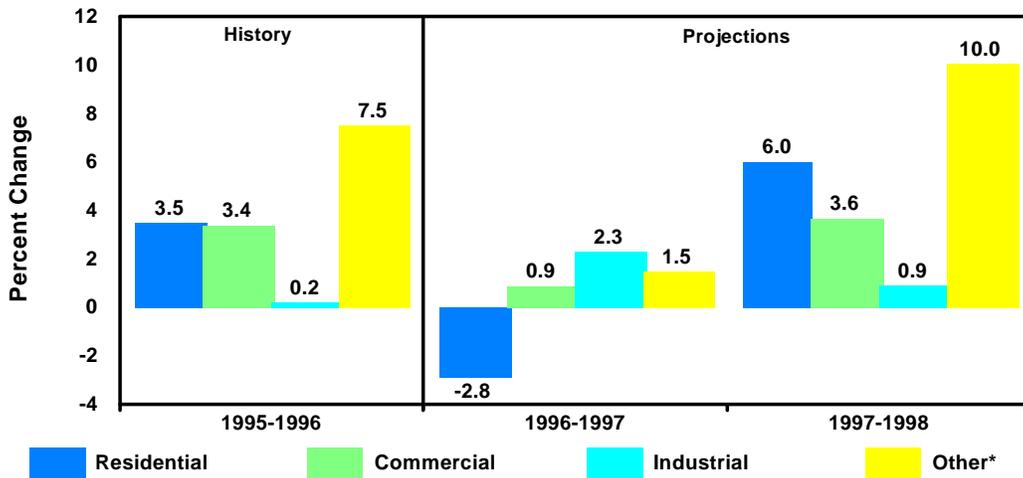
Figure 23. U. S. Electricity Demand

Despite some torrid days, the overall assessment of the summer now ended is that it was, overall, cooler than normal. Reduced air conditioning load meant that cooling degree-days will have been 10.2 percent below normal in the

combined second and third quarters of 1997 (10.5 percent below the same period in 1996). This follows a sharp reduction in heating demand last winter. Total projected electricity demand growth for 1997 has therefore been revised somewhat and is expected to be only 0.1 percent above 1996 levels for the year. The rise in industrial demand for electricity and the associated increase in nonutility own use is almost counterbalanced by the lower residential demand. Electricity demand growth in 1998, however, is expected to rise by 3.6 percent (Figure 23 and Table 10). This is due largely to the increase in residential demand in the first 3 quarters of 1998, when normal weather would cause noticeably greater heating degree-days and cooling degree-days than this year. Continued growth in industrial demand is also a factor.

Nuclear generation in 1997 is expected to be negative (-7.9 percent), due to many nuclear plants being down for maintenance. In 1998, nuclear generation is forecast to recover as some of the downed plants go back on line, but not back up to peak 1996 levels. Coal and natural gas demand for electricity generation are projected to increase in 1997 as these fuels fill in for the deficiency in nuclear generation (Figure 24). Hydroelectric generation for all of 1997 is expected to be higher than last year due to the even higher rain and snowfall levels this year than last, but it is expected to be down by 15 percent in 1998 due to the assumption of normal rain and snow fall in the Pacific Northwest. Sharp increases in fossil fuel use at power generating stations this winter are likely, with most of the load falling on coal. Thus, coal plant utilization is expected to be pushed rapidly to new highs early in 1998.
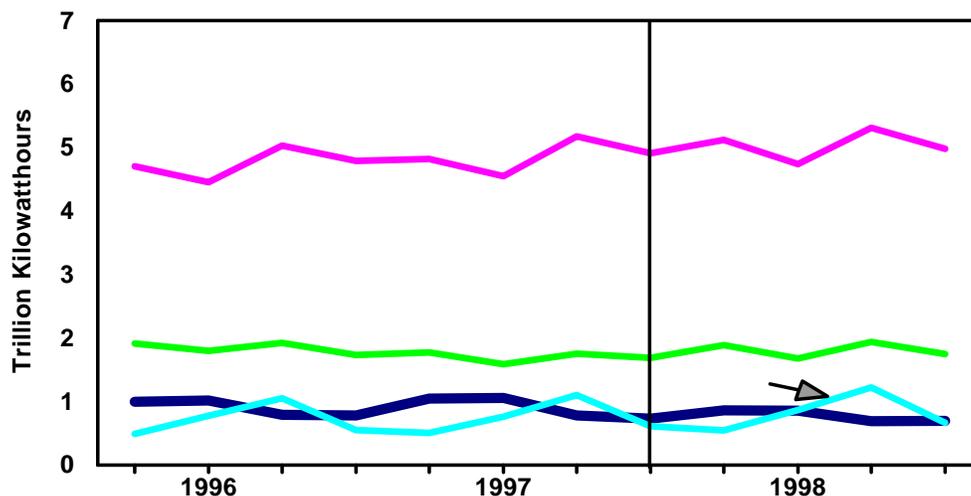
Figure 24. Electricity Generation by Fuel

U.S. Renewable Energy Demand
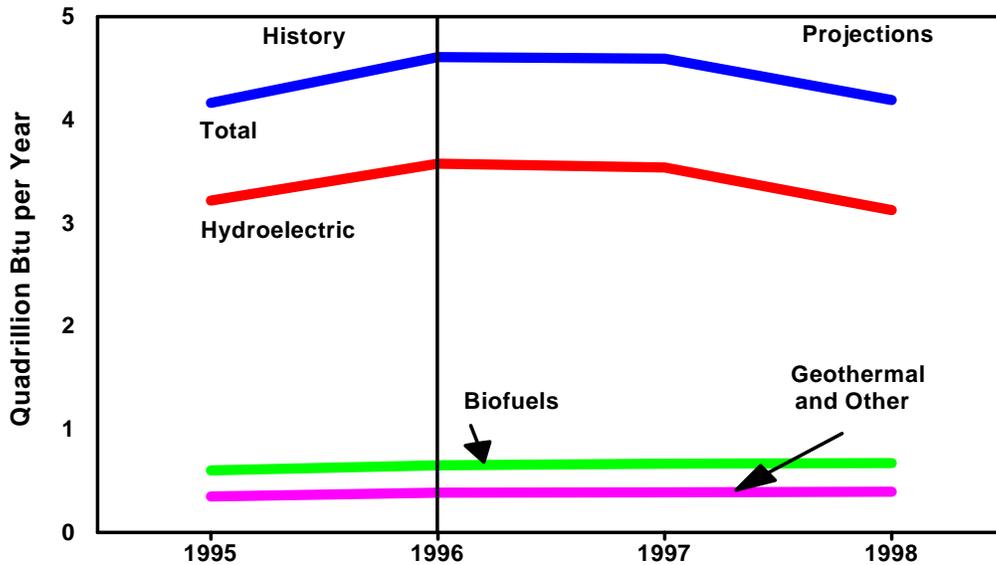
Figure 25. Renewable Energy Use for Electricity

Renewable energy use in the United States amounted to about 7.2 quadrillion Btu (quads), or about 8.0 percent, of total domestic gross energy demand in 1996 (Tables HL1 and 11). In 1996, use of renewables increased by 6.7 percent due to an increase in hydroelectric generation resulting from heavy rainfall. In 1997, renewables use is expected to increase further by an annual average of 2.8 percent, due to a continuation of high water levels in the major hydro-generating areas. Renewables use in 1998 falls by 6.4 percent, as weather is assumed be normal.

More than half of all renewable energy use measured by EIA is associated with the production of electricity. While the biggest component of electricity producers' use of renewables is hydroelectric power generated by electric utilities (Figure 25), a significant and growing portion of renewables use occurs at nonutility generating facilities.

Hydropower generation by electric utilities in 1997 is expected to be even higher than in 1996 because of high water levels in the Pacific Northwest. In 1998, however, weather and rain/snow fall is assumed to be back to normal, leading to lower hydropower availability.

Most of the nonutility use of renewables involves biofuels, principally wood, wood by-products, and waste. However, all of the major forms of renewables used at nonutilities (including hydropower) are projected to grow (Figure 25).

Currently, aside from power generation, the most significant area of renewables use is in the industrial sector, accounting for 21 percent of the total in 1996. This component is principally biofuels.
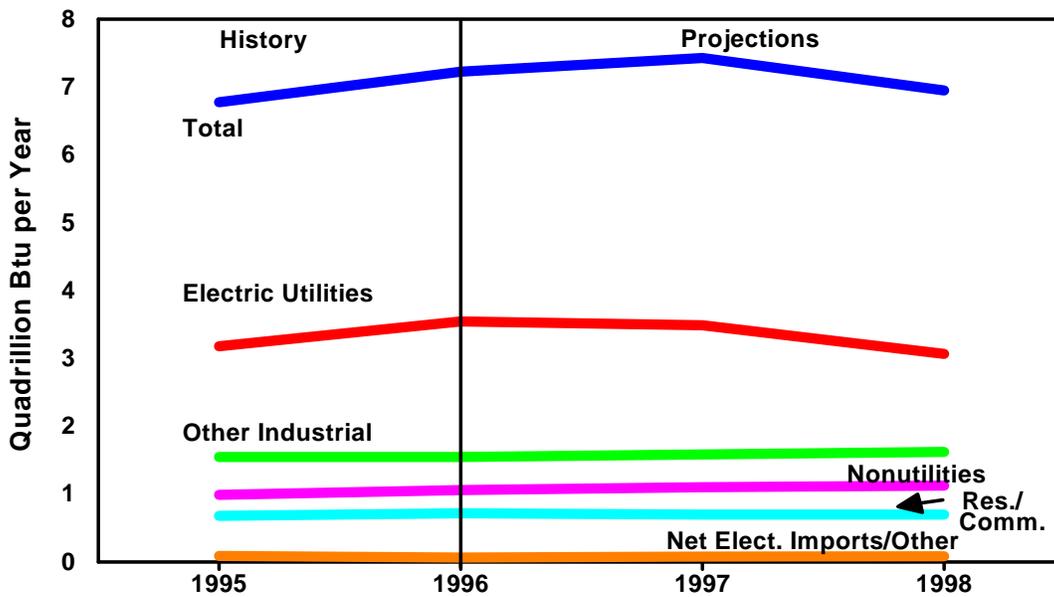
Figure 26. Renewable Energy Use by Sector

Renewables use in the combined residential and commercial sector, at about 0.71 quad in 1996 (Figure 26), generally accounts for about 10 percent of total domestic renewables demand (Table 11). Most of this energy is wood used for home heating, with only a very small amount having to do with solar hot water heating.

U.S. Energy Demand and Supply Sensitivities
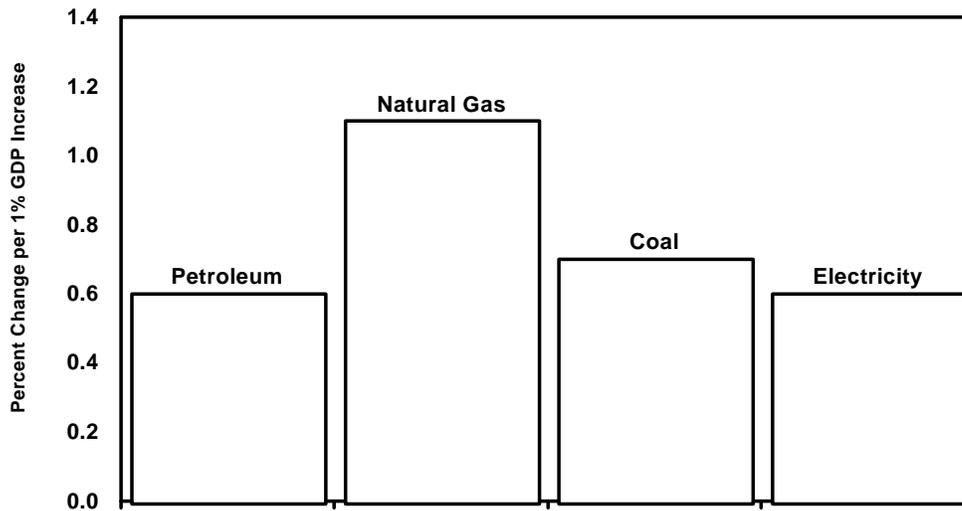
Figure 27. Macro Sensitivities

The petroleum demand and supply outlook for the mid-price case is based on assumed normal temperatures and GDP growth of 3.7 percent per year in 1997 and 1.8 percent in 1998. To enhance the usefulness of the mid-case forecasts, sensitivities of energy demand and supply, using alternative macroeconomic, price and weather assumptions, are also derived. Plausible macroeconomic and weather-related petroleum demand sensitivities are illustrated in Figures 27 and 28 and Table 6.

A 1-percent increase in real GDP raises petroleum demand by about 0.6 percent; natural gas demand by 1.1 percent; coal demand by 0.7 percent; and electricity demand by 0.6 percent (Figure 27). The impact of shifts in economic growth varies, depending upon distribution of incremental growth across energy-intensive and non-energy-intensive sectors.

A 10 percent increase in crude oil prices, assuming no price response from non-petroleum energy sources, reduces petroleum demand by 0.3 percent. A 10 percent increase in gas prices at the wellhead, assuming no price response for other fuels, reduces natural gas demand by 0.4 percent.
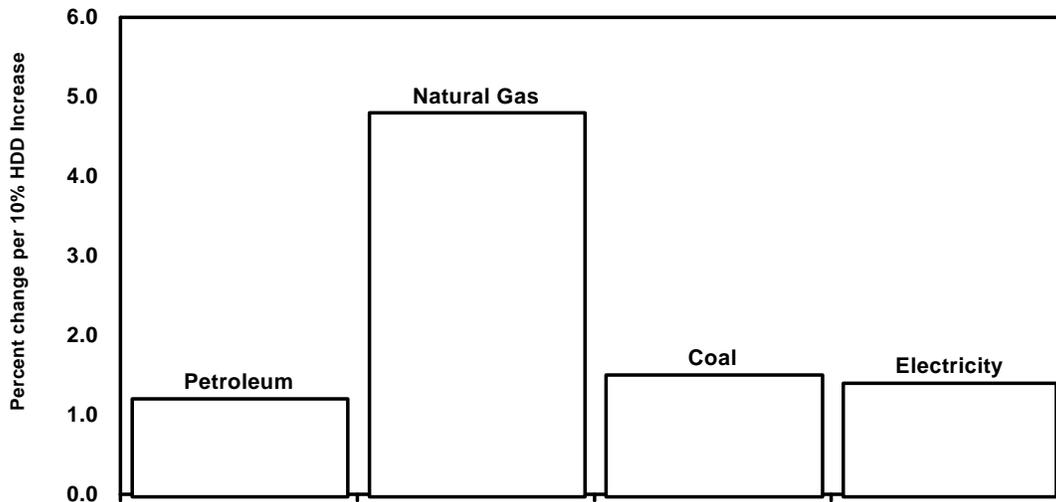
Figure 28. Weather Sensitivities

A 10 percent increase in heating degree-days increases winter petroleum demand by 1.2 percent; natural gas demand by 4.8 percent; coal demand by 1.5 percent; and electricity demand by 1.4 percent (Figure 28). The impact of heating degree-day deviations from normal may not be symmetrical. Extremely cold weather could result in indirect effects on fuel oil markets due to potential natural gas supply constraints.

A 10-percent increase in cooling degree-days increases summer petroleum demand by about 0.1 percent, other fuels by 1.4 percent.

A $1 per barrel increase in crude oil prices boosts domestic oil supply(crude oil and natural gas liquids production) by about 69,000 barrels per day (Table 7).

Summary of Important Terms

PETROLEUM PRICES

Refiner acquisition cost of crude oil (RAC): The average monthly cost of crude oil to U.S. refiners, including transportation and fees. The composite cost is the weighted average of domestic and imported crude oil costs. Typically, the imported RAC is about $1.50 per barrel below the monthly average spot price of West Texas Intermediate (WTI) crude oil and is within about $0.20 per barrel of the average monthly spot price of Brent crude oil. Unless otherwise stated, the imported RAC is what is referred to in this report as the "world oil price" or "average crude oil price."

Retail motor gasoline prices: The average pump price of gasoline (all services, all grades) for the United States. Unless otherwise stated, the average gasoline retail price is based on the composite gasoline price average computed by the Bureau of Labor Statistics (BLS) in conjunction with the construction of the Consumer Price Index (CPI). Those prices are collected in 85 urban areas selected to represent all urban consumers--about 80 percent of the total U.S. population.

Wholesale motor gasoline price: The monthly average price to refiners of motor gasoline (all types) sold to resellers; it is reported monthly on Table 4 of EIA's *Petroleum Marketing Monthly*.

Retail heating oil price: The cost of Number 2 distillate fuel oil to residences (less taxes). The retail heating oil price referred to in this report is from Table 18 of EIA's *Petroleum Marketing Monthly*.

PETROLEUM DEMAND and SUPPLY

Petroleum Demand (consumption/petroleum products supplied): For each product (gasoline, distillate, etc.), the amount supplied is calculated by summing production, imports, and net withdrawals from primary stocks and subtracting exports. Thus, petroleum demand is represented by the "disappearance" of product from the primary supply system. This demand definition coincides exactly with the term "product supplied" as used in EIA's *Petroleum Supply Monthly.*

Petroleum Stocks, primary: Stocks of crude oil or petroleum products held in storage at (or in) leases, refineries, natural gas processing plants, pipelines, tank arms, and bulk terminals. Crude oil that is in transit from Alaska or that is stored on Federal leases or in the Strategic Petroleum Reserve is included. These are the only stocks included in this report when petroleum inventories or inventory

changes are discussed. Excluded are stocks of foreign origin that are held in bonded warehouse storage.

NATURAL GAS

Natural gas wellhead price: The wellhead price of natural gas is calculated by dividing the total reported value at the wellhead by the total quantity produced as reported by the appropriate agencies of individual producing States and the U.S. Minerals Management Service, Department of the Interior. The price includes all costs prior to shipment from the lease, including gathering and compression costs, in addition to State production, severance, and similar charges.

Natural gas spot price: A transition price for natural gas concluded "on the spot," that is, on a one-time prompt (immediate) basis, as opposed to a longer-term contract price which obligates the seller to deliver the product at an agreed price over an extended period of time.

MACROECONOMIC

Gross Domestic Product (GDP): The total value of goods and services produced by labor and property located in the United States. As long as the labor and property are located in the United States, the supplier may be either U.S. residents or residents of foreign countries. Nominal GDP refers to current dollar value; real GDP refers to GDP corrected for inflation.

GDP Implicit Price Deflator: A byproduct of the price deflation of gross domestic product (GDP). It is derived as the ratio of current- to constant-dollar GDP. It is a weighted average of the detailed price indexes used in the deflation of GDP, but these indexes are combined using weights that reflect the composition of GDP in each period. Thus, changes in the implicit price deflator reflect not only changes in prices but also changes in the composition of GDP. Corresponding current- and constant-dollar series are published by the U.S. Bureau of Economic Analysis, National Income and Product Accounts. The current base year for the deflator is 1992.

Manufacturing Production Index: A measure of nondurable and durable manufacturing production expressed as a percentage of output in a reference period (currently 1987). Data are published by the Federal Reserve System in the Federal Reserve Bulletin.

Employment: Employment data refer to persons on establishment payrolls who received pay for any part of the pay period which includes the 12th of the month (or the last day of the calendar month for government employees). The data exclude proprietors, the self-employed, unpaid volunteer or family workers, farm workers, and domestic workers. Salaried officers of corporations are

included. Employment statistics are published by the U.S. Bureau of Labor Statistics in the Employment and Earnings report.

Consumer Price Index: A measure of the average change in prices paid by urban consumers for a fixed market basket of goods and services. The consumer price index is based on the prices of food, clothing, shelter, fuel, drugs, transportation fares, doctors and dentists fees, and other goods and services that people buy for day-to-day living. All taxes directly associated with the purchase and use of items are included in the index. The consumer price index is published by the U.S. Bureau of Labor Statistics in the *Monthly Labor Review*.

Degree-days, cooling (CDD): For one day, the number of degrees that the average temperature for that day is above 65 degrees Fahrenheit. The daily average temperature is the mean of the maximum and minimum temperatures for a 24-hour period. As covered in this report, cooling degree-days in a period represent the sum of daily degree-day calculations over the period. Thus, national cooling-degree-days for a month represent the weighted-average of the daily cooling degree-days for the States, summed across all days in the month. The weights used are population shares unless otherwise noted.

Degree-days, heating (HDD): For one day, the number of degrees that the average temperature is below 65 degrees Fahrenheit. The daily average temperature is the mean of the maximum and minimum temperatures for a 24-hour period. As covered in this report, heating degree-days in a period represent the sum of daily degree-day calculations over the period. Thus, national heating-degree-days for a month represent the weighted-average of the daily heating degree-days for the states, summed across all days in the month. The weights used are population shares unless otherwise noted.

British thermal unit (Btu): The quantity of heat required to raise the temperature of 1 pound of water by 1 degree Fahrenheit. In this report, Btu-equivalent energy values are calculated by multiplying estimated thermal content coefficients per physical unit for various products by the respective quantities. These are then aggregated across products to obtain, for example, total energy demand or supply variables.

TOTAL ENERGY

Total energy demand: The sum of fossil fuel consumed by the five sectors (residential, commercial, industrial, transportation, and electric utility), plus hydroelectric power, nuclear electric power, net imports of coal coke, and electricity generated for distribution from wood, waste, geothermal, wind, photovoltaic, and solar thermal energy.

Adjusted Total Energy Demand: Total Energy Demand (as defined above), plus estimated renewable energy use in the residential, commercial and industrial

sectors not included in the definition of Total Energy Demand. This adjustment amounted to an estimated 3.4 quadrillion Btu (about 4 percent) over and above Total Energy Demand in 1995.

GEOGRAPHICAL

Other Asia includes: Afghanistan, American Samoa, Bangladesh, Bhutan, Brunei, Burma, Cambodia, Cook Islands, Fiji, French Polynesia, Hong Kong (prior to July 1, 1997), India, Indonesia, Kiribati, North Korea, South Korea, Laos, Macau, Malaysia, Maldives, Mongolia, Nauru, Nepal, New Caledonia, Niue, Pakistan, Papua New Guinea, Philippines, Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Tonga, U.S. Pacific Islands, Vanuatu, Vietnam, Wake Island, Western Samoa.

Latin America is defined as including all of the countries of Central and South America, plus Mexico, but excluding Puerto Rico and the U.S. Virgin Islands.

The States in the Appalachian region are: Alabama, Georgia, Eastern Kentucky, Maryland, Ohio, Pennsylvania, Tennessee, Virginia, and West Virginia.

The Interior region is composed of: Arkansas, Illinois, Indiana, Iowa, Kansas, Western Kentucky, Louisiana, Missouri, Oklahoma, and Texas.

The Western region States are: Alaska, Arizona, California, Colorado, Montana, New Mexico, North Dakota, Utah, Washington, and Wyoming.

Table 1. U.S. Macroeconomic and Weather Assumptions

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Macroeconomic[a]															
Real Gross Domestic Product (billion chained 1992 dollars - SAAR)	6826	6926	6944	7017	7102	7165	7213	7262	7309	7342	7371	7409	6928	7185	7358
Percentage Change from Prior Year	1.8	3.2	2.7	3.3	4.0	3.5	3.9	3.5	2.9	2.5	2.2	2.0	2.8	3.7	2.4
Annualized Percent Change from Prior Quarter	1.8	5.8	1.0	4.2	4.8	3.6	2.7	2.7	2.6	1.8	1.6	2.0			
GDP Implicit Price Deflator (Index, 1992=1.000)	1.093	1.099	1.106	1.111	1.118	1.122	1.128	1.134	1.139	1.144	1.150	1.156	1.102	1.125	1.147
Percentage Change from Prior Year	2.2	2.2	2.4	2.3	2.2	2.1	2.0	2.0	1.9	2.0	2.0	1.9	2.3	2.1	1.9
Real Disposable Personal Income (billion chained 1992 Dollars - SAAR)	5048	5061	5095	5104	5161	5198	5225	5271	5352	5393	5424	5444	5077	5214	5403
Percentage Change from Prior Year	2.2	2.4	2.4	2.0	2.2	2.7	2.5	3.3	3.7	3.7	3.8	3.3	2.3	2.7	3.6
Manufacturing Production (Index, 1992=1.000)	1.141	1.158	1.172	1.184	1.200	1.211	1.219	1.228	1.240	1.251	1.259	1.264	1.164	1.215	1.253
Percentage Change from Prior Year	0.9	2.7	3.3	4.2	5.2	4.6	4.0	3.7	3.3	3.3	3.3	2.9	2.8	4.4	3.2
OECD Economic Growth (percent) [b]													2.5	2.7	2.5
Weather [c]															
Heating Degree-Days															
U.S.	2406	552	89	1666	2143	669	113	1636	2327	524	89	1636	4713	4561	4576
New England	3361	933	151	2234	3119	1078	240	2269	3267	915	171	2269	6679	6706	6621
Middle Atlantic	3120	750	87	2029	2814	887	142	2026	2993	716	105	2026	5986	5869	5839
U.S. Gas-Weighted	2501	636	135	1768	2275	711	115	1686	2426	539	81	1686	5040	4787	4732
Cooling Degree-Days (U.S.)	21	368	725	66	29	275	714	72	30	334	758	72	1180	1090	1193

[a]Macroeconomic projections from DRI/McGraw-Hill model forecasts are seasonally adjusted at annual rates and modified as appropriate to the mid world oil price case.

[b]OECD: Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member but is not yet included in OECD data.

[c]Population-weighted degree days. A degree day indicates the temperature variation from 65 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures) weighted by 1990 population. Normal is used for the forecast period and is defined as the average number of degree days between 1961 and 1990 for a given period.

SAAR: Seasonally-adjusted annualized rate.

Note: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: latest data available from: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, National Oceanic and Atmospheric Administration; Federal Reserve System, *Statistical Release G.17(419)*. Projections of OECD growth are based on WEFA Group, "World Economic Outlook," Volume 1. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0997.

Table 2. U.S. Energy Indicators: Mid World Oil Price Case

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Macroeconomic[a]															
Real Fixed Investment															
(billion chained 1992 dollars-SAAR)..............	**1002**	**1036**	**1061**	**1069**	**1079**	**1113**	*1130*	*1149*	*1171*	*1189*	*1198*	*1205*	**1042**	*1118*	*1191*
Real Exchange Rate															
(index)......................	**0.998**	**1.013**	**1.017**	**1.030**	**1.085**	**1.096**	*1.107*	*1.110*	*1.108*	*1.104*	*1.102*	*1.097*	**1.015**	*1.100*	*1.103*
Business Inventory Change															
(billion chained 1992 dollars-SAAR)..............	**12.5**	**0.6**	**14.3**	**12.3**	**20.9**	**29.9**	*24.9*	*15.8*	*9.0*	*2.8*	*0.4*	*-1.3*	**9.9**	*22.9*	*2.7*
Producer Price Index															
(index, 1980-1984=1.000)............................	**1.263**	**1.275**	**1.282**	**1.288**	**1.285**	**1.269**	*1.272*	*1.278*	*1.280*	*1.281*	*1.284*	*1.288*	**1.277**	*1.276*	*1.283*
Consumer Price Index															
(index, 1980-1984=1.000)............................	**1.551**	**1.564**	**1.575**	**1.588**	**1.597**	**1.601**	*1.610*	*1.619*	*1.627*	*1.636*	*1.645*	*1.655*	**1.570**	*1.607*	*1.641*
Petroleum Product Price Index															
(index, 1980-1984=1.000)............................	**0.632**	**0.727**	**0.702**	**0.744**	**0.722**	**0.675**	*0.654*	*0.638*	*0.656*	*0.649*	*0.646*	*0.653*	**0.701**	*0.672*	*0.651*
Non-Farm Employment															
(millions)	**118.5**	**119.3**	**119.9**	**120.5**	**121.1**	**121.9**	*122.6*	*123.2*	*123.9*	*124.5*	*124.9*	*125.4*	**119.5**	*122.2*	*124.7*
Commercial Employment															
(millions)	**80.1**	**80.8**	**81.4**	**81.9**	**82.6**	**83.2**	*83.7*	*84.4*	*85.0*	*85.5*	*85.9*	*86.3*	**81.0**	*83.5*	*85.7*
Total Industrial Production															
(index, 1992=1.000)..................................	**1.131**	**1.148**	**1.157**	**1.170**	**1.183**	**1.194**	*1.201*	*1.210*	*1.221*	*1.230*	*1.239*	*1.244*	**1.152**	*1.197*	*1.233*
Housing Stock															
(millions)	**110.6**	**111.0**	**111.4**	**111.8**	**112.1**	**112.5**	*112.9*	*113.3*	*113.6*	*114.0*	*114.4*	*114.7*	**111.2**	*112.7*	*114.2*
Miscellaneous															
Gas Weighted Industrial Production															
(index, 1992=1.000)..................................	**1.077**	**1.087**	**1.102**	**1.119**	**1.125**	**1.135**	*1.132*	*1.133*	*1.135*	*1.138*	*1.142*	*1.146*	**1.096**	*1.131*	*1.140*
Vehicle Miles Traveled [b]															
(million miles/day)................................	**6181**	**7014**	**7142**	**6639**	**6445**	**7098**	*7294*	*6815*	*6634*	*7373*	*7539*	*7044*	**6745**	*6915*	*7150*
Vehicle Fuel Efficiency															
(index, 1995=1.000)..................................	**0.961**	**1.028**	**1.040**	**0.983**	**0.997**	**1.023**	*1.037*	*0.985*	*1.002*	*1.037*	*1.050*	*0.993*	**1.004**	*1.011*	*1.021*
Real Vehicle Fuel Cost															
(cents per mile)...........................	**3.96**	**4.13**	**3.94**	**4.13**	**4.07**	**3.88**	*3.85*	*3.89*	*3.76*	*3.74*	*3.63*	*3.75*	**4.04**	*3.92*	*3.72*
Air Travel Capacity															
(mill. available ton-miles/day)........................	**382.0**	**400.1**	**413.9**	**402.6**	**401.7**	**411.1**	*433.6*	*430.5*	*428.7*	*445.1*	*463.7*	*453.5*	**399.7**	*419.3*	*447.8*
Aircraft Utilization															
(mill. revenue ton-miles/day)	**213.0**	**233.4**	**244.8**	**232.0**	**230.4**	**243.9**	*259.9*	*244.6*	*239.4*	*256.1*	*271.5*	*256.0*	**230.8**	*244.8*	*255.8*
Aircraft Yield															
(cents per ton-mile).................................	**14.10**	**13.98**	**13.19**	**13.36**	**14.16**	**13.61**	*12.88*	*13.79*	*14.64*	*14.20*	*13.32*	*14.10*	**13.66**	*13.61*	*14.06*
Raw Steel Production															
(millions tons)	**26.55**	**26.05**	**25.62**	**25.67**	**26.18**	**26.89**	*26.17*	*27.85*	*28.21*	*28.20*	*27.68*	*28.37*	**103.89**	*107.09*	*112.46*

[a]Macroeconomic projections from DRI/McGraw-Hill model forecasts are seasonally adjusted at annual rates and modified as appropriate to the mid world oil price case.

[b]Includes all highway travel.

SAAR: Seasonally-adjusted annualized rate.

Note: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: latest data available from: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, National Oceanic and Atmospheric Administration; Federal Reserve System, *Statistical Release* G.17(419); U.S. Department of Transportation; American Iron and Steel Institute. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0997.

Table 3. International Petroleum Supply and Demand: Mid World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Demand[a]															
OECD															
U.S. (50 States)	18.4	18.0	18.2	18.7	18.2	18.5	18.8	18.9	18.8	18.6	18.9	19.2	18.3	18.6	18.9
U.S. Territories	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Canada	1.8	1.7	1.8	1.8	1.8	1.7	1.8	1.9	1.9	1.7	1.9	1.9	1.8	1.8	1.8
Europe	14.5	13.7	14.3	14.6	14.2	13.9	14.6	14.9	14.4	14.1	14.8	15.1	14.3	14.4	14.6
Japan	6.4	5.2	5.4	6.0	6.4	5.3	5.4	6.1	6.5	5.4	5.6	6.2	5.8	5.8	5.9
Australia and New Zealand	1.0	0.9	0.9	0.9	0.9	1.0	0.9	1.0	1.0	1.0	0.9	1.0	0.9	0.9	1.0
Total OECD	42.3	39.7	40.7	42.3	41.8	40.6	41.7	42.9	42.7	41.1	42.2	43.6	41.3	41.7	42.4
Non-OECD															
Former Soviet Union	4.8	4.3	4.3	4.7	4.8	4.3	4.3	4.7	4.8	4.4	4.4	4.8	4.5	4.5	4.6
Europe	1.4	1.3	1.3	1.4	1.5	1.3	1.3	1.4	1.5	1.3	1.3	1.4	1.3	1.4	1.4
China	3.5	3.6	3.6	3.7	3.8	3.8	3.8	3.9	4.0	4.1	4.1	4.1	3.6	3.8	4.1
Other Asia	8.6	8.3	7.9	9.1	9.2	8.9	8.5	9.7	9.8	9.6	9.1	10.4	8.5	9.1	9.7
Other Non-OECD	12.5	12.8	12.5	12.8	12.9	13.3	13.0	13.3	13.4	13.7	13.4	13.7	12.7	13.1	13.6
Total Non-OECD	30.7	30.3	29.6	31.5	32.1	31.7	31.0	33.0	33.6	33.1	32.3	34.5	30.5	31.9	33.4
Total World Demand	73.0	70.0	70.3	73.8	74.0	72.2	72.6	75.9	76.3	74.1	74.5	78.1	71.8	73.7	75.8
Supply[b]															
OECD															
U.S. (50 States)	9.4	9.4	9.4	9.6	9.4	9.4	9.3	9.4	9.4	9.5	9.4	9.4	9.4	9.4	9.4
Canada	2.4	2.4	2.5	2.6	2.6	2.5	2.6	2.7	2.7	2.7	2.7	2.8	2.5	2.6	2.7
North Sea [c]	6.2	6.1	6.1	6.5	6.5	6.1	6.5	6.8	6.9	6.7	7.0	7.2	6.2	6.4	6.9
Other OECD	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.7	1.6	1.6	1.6
Total OECD	19.6	19.5	19.6	20.2	20.1	19.6	20.0	20.5	20.6	20.5	20.7	21.0	19.7	20.0	20.7
Non-OECD															
OPEC	28.1	28.1	28.3	28.7	29.5	29.6	29.4	30.1	29.9	30.0	30.1	30.2	28.3	29.7	30.1
Former Soviet Union	7.1	7.1	7.1	7.1	7.1	7.2	7.2	7.3	7.3	7.3	7.4	7.4	7.1	7.2	7.3
China	3.1	3.1	3.1	3.2	3.2	3.2	3.3	3.3	3.3	3.3	3.3	3.4	3.1	3.3	3.3
Mexico	3.3	3.4	3.3	3.3	3.4	3.4	3.4	3.4	3.5	3.5	3.5	3.5	3.3	3.4	3.5
Other Non-OECD	10.1	10.2	10.2	10.4	10.4	10.5	10.7	10.7	11.0	11.1	11.2	11.3	10.2	10.6	11.2
Total Non-OECD	51.7	51.8	52.0	52.6	53.6	54.0	54.0	54.8	54.9	55.2	55.5	55.8	52.0	54.1	55.3
Total World Supply	71.3	71.3	71.6	72.8	73.7	73.5	74.0	75.3	75.5	75.6	76.2	76.8	71.7	74.1	76.0
Stock Changes															
Net Stock Withdrawals or Additions (-)															
U.S. (50 States including SPR)	0.9	-0.7	-0.1	0.5	-0.1	-0.7	0.1	0.5	0.3	-0.7	-0.3	0.5	0.2	-0.1	-0.0
Other	0.9	-0.7	-1.2	0.6	0.4	-0.6	-1.4	0.2	0.4	-0.8	-1.4	0.8	-0.1	-0.4	-0.2
Total Stock Withdrawals	1.8	-1.4	-1.2	1.0	0.3	-1.3	-1.4	0.6	0.8	-1.5	-1.7	1.3	0.1	-0.4	-0.3
Closing Stocks, OECD only (billion barrels)	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.8	2.7	2.8	2.8	2.8	2.7	2.8	2.8
Non-OPEC Supply	43.2	43.3	43.3	44.1	44.2	43.9	44.6	45.2	45.6	45.6	46.1	46.6	43.5	44.5	46.0
Net Exports from Former Soviet Union	2.4	2.8	2.8	2.4	2.3	2.9	2.9	2.5	2.4	2.9	3.0	2.6	2.6	2.7	2.7

[a]Demand for petroleum by the OECD countries is synonymous with "petroleum product supplied," which is defined in the glossary of the EIA *Petroleum Supply Monthly,* DOE/EIA-0109. Demand for petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

[b]Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources.

[c]Includes offshore supply from Denmark, Germany, the Netherlands, Norway, and the United Kingdom.

OECD: Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member, but is not yet included in OECD data.

OPEC: Organization of Petroleum Exporting Countries: Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

SPR: Strategic Petroleum Reserve

Former Soviet Union: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Notes: Minor discrepancies with other published EIA historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Energy Information Administration: latest data available from EIA databases supporting the following reports: *International Petroleum Statistics Report*, DOE/EIA-0520; Organization for Economic Cooperation and Development, Annual and Monthly Oil Statistics Database.

Table 4. U. S. Energy Prices
(Nominal Dollars)

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Imported Crude Oil [a]															
(dollars per barrel)	18.38	20.12	20.70	23.06	21.03	17.93	17.84	18.08	18.42	18.75	18.58	18.83	20.59	18.67	18.65
Natural Gas Wellhead															
(dollars per thousand cubic feet)	2.01	2.10	2.13	2.74	2.66	2.01	2.24	2.68	2.50	2.06	2.03	2.42	2.25	2.40	2.25
Petroleum Products															
Gasoline Retail [b]															
(dollars per gallon)	1.20	1.35	1.31	1.30	1.31	1.29	1.30	1.26	1.24	1.29	1.27	1.25	1.29	1.29	1.26
No. 2 Diesel Oil, Retail															
(dollars per gallon)	1.16	1.23	1.21	1.30	1.25	1.18	1.15	1.18	1.17	1.17	1.16	1.21	1.23	1.19	1.18
No. 2 Heating Oil, Wholesale															
(dollars per gallon)	0.59	0.61	0.63	0.72	0.65	0.57	0.55	0.57	0.56	0.53	0.54	0.59	0.64	0.59	0.56
No. 2 Heating Oil, Retail															
(dollars per gallon)	0.96	0.98	0.91	1.06	1.05	0.97	0.88	0.93	0.97	0.92	0.88	0.95	0.99	0.99	0.95
No. 6 Residual Fuel Oil, Retail [c]															
(dollars per barrel)	19.29	18.12	17.64	20.72	19.00	16.84	16.77	17.80	18.21	17.18	16.69	17.94	18.97	17.66	17.55
Electric Utility Fuels															
Coal															
(dollars per million Btu)	1.30	1.30	1.28	1.28	1.29	1.28	1.25	1.24	1.25	1.26	1.24	1.23	1.29	1.27	1.24
Heavy Fuel Oil [d]															
(dollars per million Btu)	3.01	2.93	2.83	3.35	2.91	2.66	2.71	2.94	2.88	2.81	2.69	2.96	3.01	2.80	2.83
Natural Gas															
(dollars per million Btu)	2.81	2.55	2.46	2.96	3.11	2.45	2.58	3.07	2.89	2.40	2.35	2.77	2.64	2.74	2.53
Other Residential															
Natural Gas															
(dollars per thousand cubic feet)	5.74	6.66	8.35	6.46	6.66	6.90	8.02	6.30	6.24	6.61	7.60	6.11	6.29	6.70	6.36
Electricity															
(cents per kilowatthour)	7.90	8.52	8.83	8.31	8.04	8.65	8.85	8.36	7.98	8.55	8.81	8.33	8.39	8.48	8.42

[a] Refiner acquisition cost (RAC) of imported crude oil.
[b] Average for all grades and services.
[c] Average for all sulfur contents.
[d] Includes fuel oils No. 4, No. 5, and No. 6 and topped crude fuel oil prices.
   Notes: Data are estimated for the third quarter of 1997. Prices exclude taxes, except prices for gasoline, residential natural gas, and diesel. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
   Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Petroleum Marketing Monthly*, DOE/EIA-0380; *Natural Gas Monthly*, DOE/EIA-0130; *Monthly Energy Review*, DOE/EIA-0035; *Electric Power Monthly*, DOE/EIA-0226.

Table 5. U.S. Petroleum Supply and Demand: Mid World Oil Price Case
(Million Barrels per Day, Except Closing Stocks)

	1996 1st	1996 2nd	1996 3rd	1996 4th	1997 1st	1997 2nd	1997 3rd	1997 4th	1998 1st	1998 2nd	1998 3rd	1998 4th	Year 1996	Year 1997	Year 1998
Supply															
Crude Oil Supply															
Domestic Production [a]	6.55	6.43	6.39	6.49	6.45	6.41	6.34	6.42	6.42	6.42	6.37	6.37	6.46	6.41	6.39
Alaska	1.46	1.38	1.35	1.39	1.36	1.30	1.23	1.29	1.26	1.20	1.18	1.20	1.39	1.29	1.21
Lower 48	5.09	5.06	5.04	5.10	5.09	5.11	5.12	5.13	5.16	5.22	5.19	5.17	5.07	5.11	5.18
Net Imports (including SPR) [b]	6.96	7.68	7.63	7.32	7.32	8.11	8.12	7.71	7.36	8.07	8.17	7.82	7.40	7.81	7.86
Other SPR Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
SPR Stock Withdrawn or Added (-)	0.03	0.05	0.12	0.09	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.07	0.01	0.00
Other Stock Withdrawn or Added (-)	0.04	-0.16	0.13	0.20	-0.34	-0.08	0.20	-0.03	-0.07	-0.01	0.06	0.02	0.05	-0.06	0.00
Product Supplied and Losses	-0.01	-0.01	-0.01	-0.01	-0.00	-0.00	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01	-0.01
Unaccounted-for Crude Oil	0.13	0.44	0.16	0.14	0.24	0.41	0.27	0.27	0.27	0.28	0.28	0.27	0.22	0.30	0.28
Total Crude Oil Supply	13.70	14.43	14.42	14.22	13.71	14.84	15.01	14.36	13.97	14.75	14.87	14.47	14.19	14.48	14.52
Other Supply															
NGL Production	1.74	1.83	1.85	1.90	1.87	1.84	1.82	1.86	1.84	1.85	1.85	1.88	1.83	1.85	1.86
Other Hydrocarbon and Alcohol Inputs	0.33	0.29	0.30	0.33	0.31	0.34	0.32	0.30	0.32	0.31	0.31	0.31	0.31	0.32	0.31
Crude Oil Product Supplied	0.01	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Processing Gain	0.79	0.84	0.85	0.87	0.78	0.84	0.84	0.86	0.82	0.87	0.89	0.86	0.84	0.83	0.86
Net Product Imports [c]	1.01	1.19	1.05	1.16	1.30	1.22	0.91	1.02	1.38	1.51	1.31	1.20	1.10	1.11	1.35
Product Stock Withdrawn or Added (-) [d]	0.82	-0.60	-0.31	0.20	0.26	-0.62	-0.15	0.51	0.41	-0.69	-0.35	0.46	0.03	-0.00	-0.04
Total Supply	18.39	17.98	18.18	18.68	18.23	18.46	18.76	18.92	18.75	18.61	18.90	19.20	18.31	18.59	18.87
Demand															
Motor Gasoline	7.55	8.01	8.06	7.93	7.59	8.15	8.26	8.13	7.77	8.35	8.43	8.33	7.89	8.03	8.22
Jet Fuel	1.61	1.52	1.59	1.60	1.57	1.56	1.66	1.66	1.61	1.58	1.64	1.68	1.58	1.61	1.63
Distillate Fuel Oil	3.63	3.23	3.12	3.48	3.58	3.33	3.26	3.54	3.83	3.42	3.36	3.63	3.37	3.43	3.56
Residual Fuel Oil	0.98	0.77	0.83	0.82	0.90	0.77	0.78	0.90	0.98	0.82	0.79	0.87	0.85	0.83	0.86
Other Oils [e]	4.62	4.45	4.58	4.85	4.61	4.65	4.80	4.69	4.56	4.45	4.67	4.70	4.63	4.69	4.60
Total Demand	18.39	17.98	18.18	18.68	18.24	18.46	18.76	18.92	18.75	18.61	18.90	19.20	18.31	18.60	18.87
Total Petroleum Net Imports	7.97	8.87	8.67	8.47	8.62	9.32	9.03	8.73	8.74	9.57	9.48	9.02	8.50	8.92	9.21
Closing Stocks (million barrels)															
Crude Oil (excluding SPR)	300	314	302	284	314	322	303	306	312	313	307	305	284	306	305
Total Motor Gasoline	203	205	200	195	200	205	192	191	203	207	206	200	195	191	200
Finished Motor Gasoline	158	164	161	157	154	164	152	150	162	167	165	159	157	150	159
Blending Components	44	41	39	38	46	41	40	40	42	40	41	41	38	40	41
Jet Fuel	34	39	43	40	39	43	44	42	40	41	42	42	40	42	42
Distillate Fuel Oil	90	102	115	127	102	118	136	135	96	109	126	130	127	135	130
Residual Fuel Oil	32	35	38	46	41	39	35	37	33	38	39	42	46	37	42
Other Oils [e]	235	267	280	250	253	286	299	254	249	290	304	261	250	254	261
Total Stocks (excluding SPR)	893	962	978	942	949	1013	1008	964	934	997	1024	980	942	964	980
Crude Oil in SPR	589	584	574	566	563	563	563	563	563	563	563	563	566	563	563
Total Stocks (including SPR)	1482	1547	1551	1507	1512	1577	1572	1528	1497	1561	1587	1543	1507	1528	1543

[a] Includes lease condensate.
[b] Net imports equals gross imports plus SPR imports minus exports.
[c] Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.
[d] Includes crude oil product supplied, natural gas liquids, liquefied refinery gas, other liquids, and all finished petroleum products except motor gasoline, jet fuel, distillate, and residual fuel oil.
[e] Includes stocks of all other oils, such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.
  SPR: Strategic Petroleum Reserve
  NGL: Natural Gas Liquids
  Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
  Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Petroleum Supply Monthly*, DOE/EIA-0109, and *Weekly Petroleum Status Report*, DOE/EIA-0208.

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Table 6. Approximate Energy Demand Sensitivities[a] for the STIFS[b] Model
(Percent Deviation Base Case)

Demand Sector	+1% GDP	+ 10% Prices		+ 10% Weather[e]	
		Crude Oil[c]	N.Gas Wellhead[d]	Fall/Winter[f]	Spring/Summer[f]
Petroleum					
Total................................ ...	0.6%	-0.3%	0.1%	1.1%	0.1%
Motor Gasoline	0.1%	-0.3%	0.0%	0.0%	0.0%
Distillate Fuel.....................	0.8%	-0.2%	0.0%	2.7%	0.1%
Residual Fuel....................	1.6%	-3.4%	2.6%	2.0%	2.7%
Natural Gas					
Total................................ ...	1.1%	0.3%	-0.4%	4.4%	1.0%
Residential........................	0.1%	0.0%	0.0%	8.2%	0.0%
Commercial	0.9%	0.0%	0.0%	7.3%	0.0%
Industrial...........................	1.7%	0.2%	-0.5%	1.3%	0.0%
Electric Utility	1.8%	1.6%	-1.5%	1.0%	4.0%
Coal					
Total................................ ...	0.7%	0.0%	0.0%	1.7%	1.7%
Electric Utility	0.6%	0.0%	0.0%	1.9%	1.9%
Electricity					
Total................................ ...	0.6%	0.0%	0.0%	1.5%	1.7%
Residential........................	0.1%	0.0%	0.0%	3.2%	3.6%
Commercial	0.9%	0.0%	0.0%	1.0%	1.4%
Industrial...........................	0.8%	0.0%	0.0%	0.3%	0.2%

[a]Percent change in demand quantity resulting from specified percent changes in model inputs.
[b]Short-Term Integrated Forecasting System.
[c]Refiner acquisitions cost of imported crude oil.
[d]Average unit value of marketed natural gas production reported by States.
[e]Refers to percent changes in degree-days.
[f]Response during fall/winter period(first and fourth calendar quarters) refers to change in heating degree-days.
Response during the spring/summer period refers to change in cooling degree-days.

Table 7. Forecast Components for U.S. Crude Oil Production
(Million Barrels per Day)

	High Price Case	Low Price Case	Difference		
			Total	Uncertainty	Price Impact
United States...............................	6.55	6.09	0.46	0.09	0.37
Lower 48 States...............................	5.34	4.90	0.43	0.08	0.36
Alaska............................	1.21	1.18	0.03	0.01	0.01

Note: Components provided are for the fourth quarter 1998. Totals may not add to sum of components due to independent rounding.
Source: Energy Information Administration, Office of Oil and Gas, Reserves and Natural Gas Division.

Table 8. U.S. Natural Gas Supply and Demand: Mid world Oil Price Case
(Trillion cubic Feet)

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Supply															
Total Dry Gas Production............................	4.74	4.70	4.73	4.85	4.70	4.68	4.74	4.80	4.76	4.75	4.81	4.88	19.02	18.92	19.21
Net Imports........................	0.70	0.68	0.67	0.73	0.74	0.70	0.73	0.79	0.79	0.77	0.78	0.84	2.78	2.95	3.17
Supplemental Gaseous Fuels....................	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.03	0.03	0.04	0.13	0.12	0.13
Total New Supply.................................	5.48	5.42	5.42	5.61	5.47	5.41	5.49	5.62	5.59	5.55	5.61	5.76	21.94	21.98	22.51
Underground Working Gas Storage															
Opening..	6.50	5.04	5.86	6.93	6.51	5.32	6.04	7.05	6.53	5.24	6.05	6.99	6.50	6.51	6.53
Closing...	5.04	5.86	6.93	6.51	5.32	6.04	7.05	6.53	5.24	6.05	6.99	6.53	6.51	6.53	6.53
Net Withdrawals	1.46	-0.82	-1.07	0.42	1.19	-0.72	-1.01	0.52	1.29	-0.80	-0.94	0.45	-0.00	-0.02	-0.00
Total Supply..........................	6.94	4.60	4.36	6.04	6.66	4.68	4.48	6.14	6.88	4.74	4.67	6.21	21.93	21.96	22.50
Balancing Item [a]	0.14	0.26	-0.05	-0.36	0.23	0.14	-0.10	-0.38	0.43	0.23	-0.08	-0.31	-0.00	-0.11	0.28
Total Primary Supply	7.08	4.86	4.31	5.68	6.89	4.82	4.38	5.76	7.31	4.97	4.59	5.91	21.93	21.85	22.78
Demand															
Lease and Plant Fuel................................ ...	0.31	0.31	0.31	0.32	0.31	0.31	0.32	0.33	0.33	0.32	0.32	0.33	1.25	1.26	1.28
Pipeline Use	0.23	0.16	0.14	0.18	0.22	0.16	0.16	0.20	0.23	0.17	0.16	0.20	0.71	0.73	0.75
Residential...	2.46	0.91	0.38	1.48	2.28	0.88	0.37	1.41	2.45	0.86	0.38	1.43	5.23	4.94	5.11
Commercial	1.32	0.61	0.39	0.89	1.26	0.62	0.41	0.89	1.39	0.62	0.42	0.91	3.21	3.18	3.33
Industrial (Incl. Cogenerators)....................	2.25	2.09	2.04	2.22	2.29	2.09	2.06	2.31	2.36	2.15	2.11	2.36	8.60	8.75	8.97
Cogenerators [b]	0.56	0.51	0.52	0.60	0.56	0.54	0.57	0.65	0.58	0.56	0.59	0.68	2.20	2.32	2.41
Electricity Production															
Electric Utilities	0.46	0.73	1.01	0.53	0.47	0.72	1.01	0.58	0.51	0.81	1.16	0.63	2.73	2.78	3.12
Nonutilities (Excl. Cogen.).........................	0.05	0.04	0.05	0.05	0.05	0.05	0.05	0.06	0.05	0.05	0.05	0.06	0.19	0.20	0.21
Total Demand..	7.08	4.86	4.31	5.68	6.89	4.82	4.38	5.76	7.31	4.97	4.59	5.91	21.93	21.85	22.78

[a]The balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

[b]Quarterly estimates and projections for gas consumption by nonutility generators are based on estimates for quarterly gas-fired generation at nonutilities, supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867 (Annual Nonutility Power Producer Report). Annual projections for nonutility gas consumption, as well as the detail on independent power producers' share of gas consumption, are provided by CNEAF.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Natural Gas Monthly*, DOE/EIA-0130; *Electric Power Monthly*, DOE/EIA-0226; Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Oil and Gas, Reserves and Natural Gas Division.

Table 9. U.S. Coal Supply and Demand: Mid World Oil Price Case
(Million Short Tons)

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Supply															
Production	259.8	263.4	272.1	268.6	273.9	263.5	267.3	277.8	283.3	273.0	279.0	281.8	1063.9	1082.5	1117.1
Appalachia...	111.5	113.9	111.3	115.1	119.0	111.8	106.9	116.8	121.1	113.5	109.0	116.3	451.9	454.5	459.9
Interior..	44.0	42.7	43.9	42.2	42.9	41.1	41.2	41.6	42.8	41.0	40.9	40.1	172.8	166.8	164.8
Western	104.3	106.7	116.9	111.3	112.0	110.5	119.3	119.4	119.4	118.5	129.1	125.4	439.1	461.3	492.4
Primary Stock Levels [a]															
Opening	34.4	36.9	37.3	33.8	31.1	37.5	37.0	33.0	31.0	34.0	34.0	32.0	34.4	31.1	31.0
Closing...	36.9	37.3	33.8	31.1	37.5	37.0	33.0	31.0	34.0	34.0	32.0	30.0	31.1	31.0	30.0
Net Withdrawals	-2.4	-0.5	3.6	2.7	-6.5	0.5	4.0	2.0	-3.0	(S)	2.0	2.0	3.4	0.1	1.0
Imports..	1.7	1.6	2.1	1.8	1.3	1.7	1.9	1.9	1.8	1.8	1.8	1.8	7.1	6.8	7.3
Exports...	20.5	23.0	23.5	23.4	20.0	20.6	23.3	23.2	22.0	22.6	22.8	22.7	90.5	87.1	90.1
Total Net Domestic Supply.....................	238.5	241.4	254.2	249.7	248.8	245.1	249.9	258.5	260.2	252.2	260.0	262.9	983.9	1002.3	1035.3
Secondary Stock Levels [b]															
Opening	134.6	124.8	134.3	127.6	123.0	119.8	128.5	114.2	116.1	115.8	124.3	110.5	134.6	123.0	116.1
Closing...	124.8	134.3	127.6	123.0	119.8	128.5	114.2	116.1	115.8	124.3	110.5	112.0	123.0	116.1	112.0
Net Withdrawals	9.9	-9.5	6.7	4.6	3.2	-8.7	14.3	-1.9	0.4	-8.6	13.8	-1.5	11.6	6.9	4.1
Total Supply...........................	248.4	231.9	260.9	254.2	251.9	236.4	264.3	256.6	260.6	243.7	273.7	261.4	995.5	1009.2	1039.5
Demand															
Coke Plants	8.0	8.0	8.0	7.8	7.6	7.7	7.6	8.2	7.8	7.7	7.8	8.2	31.7	31.0	31.5
Electricity Production															
Electric Utilities	215.0	203.2	233.6	222.9	218.2	207.4	235.1	224.2	228.8	214.1	244.3	229.0	874.7	884.8	916.2
Nonutilities (Excl. Cogen.) [c]	6.0	6.0	6.0	6.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0	7.0	24.0	26.0	28.0
Retail and General Industry [d]	20.3	18.0	17.9	20.3	20.1	17.5	17.7	20.4	19.8	17.7	17.5	20.0	76.4	75.6	75.0
Total Demand...........................	249.2	235.1	265.5	256.9	252.3	239.0	266.9	259.2	263.4	246.5	276.5	264.2	1006.8	1017.4	1050.7
Discrepancy [e]	-0.8	-3.2	-4.6	-2.7	-0.4	-2.6	-2.6	-2.6	-2.8	-2.8	-2.8	-2.8	-11.3	-8.2	-11.2

[a]Primary stocks are held at the mines, preparation plants, and distribution points.
[b]Secondary stocks are held by users.
[c]Consumption of coal by Independent Power Producers (IPPs). In 1995, IPP consumption was estimated to be 5.290 million tons per quarter. Quarterly estimates and projections for coal consumption by nonutility generators are based on estimates for annual coal-fired generation at nonutilities, supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867 (Annual   Nonutility Power Producer Report). Data for second quarter 1997 are estimates.
[d]Synfuels plant demand in 1993 was 1.7 million tons per quarter and is assumed to remain at that level in 1994, 1995, 1996, 1997 and 1998.
[e]Historical period discrepancy reflects an unaccounted-for shipper and receiver reporting difference. Estimated IPP consumption not included in production (waste coal) has been netted out of the discrepancy. The estimated annual consumption for 1995 is 8.496 million tons, 9.600 million tons in 1996, and the forecast for 1997 is 10.400 million tons, and 11.200 million tons in 1998.
(S) indicates amounts of less than 50,000 tons in absolute value.
Notes: Rows and columns may not add due to independent rounding.   Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Quarterly Coal Report*, DOE/EIA-0121, and *Electric Power Monthly*, DOE/EIA-0226. Projections: Energy Information Administration,   Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

Table 10. U.S. Electricity Supply and Demand: Mid World Oil Price Case
(Billion Kilowatthours)

	1996				1997				1998				Year		
	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1st	2nd	3rd	4th	1996	1997	1998
Supply															
Net Utility Generation															
Coal	428.3	405.7	462.6	440.8	434.0	414.0	466.6	448.5	459.7	429.8	487.8	458.2	1737.5	1763.1	1835.5
Petroleum	22.2	12.8	18.8	13.6	17.6	15.4	21.6	14.9	20.7	15.9	19.9	14.5	67.3	69.4	71.0
Natural Gas	44.6	70.8	96.6	50.8	45.6	69.1	97.3	55.4	49.2	78.2	111.9	61.0	262.7	267.4	300.3
Nuclear	174.3	163.5	177.0	159.9	160.0	144.4	161.7	155.5	169.9	153.0	178.5	161.2	674.7	621.6	662.6
Hydroelectric....................................	90.9	92.3	72.9	71.9	94.3	96.0	78.6	72.3	79.3	80.7	65.7	64.6	328.0	341.2	290.3
Geothermal and Other [a]	1.5	1.5	2.2	2.1	1.6	1.8	1.7	1.7	1.7	1.6	1.7	1.7	7.2	7.0	6.6
Subtotal	761.9	746.4	830.1	739.1	753.1	740.8	827.5	748.3	780.4	759.3	865.5	761.2	3077.4	3069.7	3166.3
Nonutility Generation [b]															
Coal	16.1	14.7	15.1	17.4	15.9	15.5	16.3	18.7	16.4	16.0	16.8	19.3	63.3	66.4	68.5
Petroleum	4.4	4.0	4.1	4.7	4.5	4.4	4.6	5.3	4.9	4.8	5.0	5.7	17.3	18.8	20.4
Natural Gas	52.3	47.9	49.1	56.5	52.3	50.8	53.3	61.2	54.2	52.7	55.3	63.6	205.8	217.6	225.9
Other Gaseous Fuels [c]	3.2	2.9	3.0	3.4	3.0	2.9	3.1	3.5	3.0	2.9	3.1	3.5	12.5	12.5	12.6
Hydroelectric....................................	3.9	3.6	3.7	4.2	4.0	3.8	4.0	4.6	4.1	4.0	4.2	4.9	15.3	16.4	17.3
Geothermal and Other [d]	20.5	18.7	19.2	22.1	19.9	19.4	20.3	23.4	20.2	19.7	20.6	23.7	80.5	83.0	84.3
Subtotal	100.3	91.8	94.2	108.3	99.6	96.9	101.6	116.7	103.0	100.1	105.0	120.7	394.7	414.7	428.8
Total Generation......................................	862.2	838.3	924.3	847.4	852.7	837.7	929.1	865.0	883.3	859.4	970.5	881.9	3472.2	3484.5	3595.1
Net Imports [e]	7.1	9.5	13.0	8.4	7.3	9.3	12.6	7.7	6.5	9.1	12.5	8.0	38.0	36.9	36.1
Total Supply..	869.3	847.8	937.4	855.7	860.0	846.9	941.7	872.8	889.8	868.5	983.0	889.9	3510.2	3521.4	3631.2
Losses and Unaccounted for [f]	55.0	78.3	59.1	71.4	57.4	80.8	65.4	68.2	53.2	74.3	68.6	69.5	263.7	271.9	265.5
Demand															
Electric Utility Sales															
Residential..	290.7	239.2	302.1	246.5	276.8	226.0	291.9	253.4	295.8	242.5	312.5	259.9	1078.5	1048.0	1110.7
Commercial	212.3	215.8	248.1	215.4	214.5	215.4	248.8	220.5	222.7	224.6	259.9	224.9	891.6	899.2	932.0
Industrial	245.6	252.5	262.8	253.4	248.0	262.1	268.5	258.7	251.3	261.6	272.2	261.4	1014.3	1037.3	1046.5
Other...	24.6	24.3	26.6	24.7	23.4	23.8	26.6	25.5	26.2	25.8	28.3	26.6	100.2	99.3	106.9
Subtotal	773.2	731.9	839.6	740.0	762.8	727.4	835.7	758.0	795.9	754.5	872.9	772.7	3084.7	3083.9	3196.2
Nonutility Gener. for Own Use [b]	41.1	37.6	38.6	44.4	39.8	38.7	40.6	46.6	40.7	39.6	41.5	47.7	161.8	165.6	169.5
Total Demand....................................	814.3	769.5	878.3	784.4	802.5	766.1	876.3	804.6	836.6	794.1	914.4	820.4	3246.4	3249.5	3365.7
Memo:															
Nonutility Sales to															
Electric Utilities [b]	59.2	54.2	55.6	63.9	59.8	58.2	61.0	70.1	62.3	60.6	63.5	73.0	232.9	249.1	259.3

[a]"Other" includes generation from wind, wood, waste, and solar sources.

[b]Electricity from nonutility sources, including cogenerators and small power producers. Quarterly estimates and projections for nonutility net sales, own use, and generation by fuel source supplied by the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration (EIA), based on annual data reported to EIA on Form EIA-867, "Annual Nonutility Power Producer Report."

[c]Includes refinery still gas and other process or waste gases, and liquefied petroleum gases.

[d]Includes geothermal, solar, wind, wood, waste, nuclear, hydrogen, sulfur, batteries, chemicals and spent sulfite liquor.

[e]Data for 1996 are estimates.

[f]Balancing item, mainly transmission and distribution losses.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Electric Power Monthly*, DOE/EIA-0226. Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

Table 11. U.S. Renewable Energy Use by Sector: Mid World Oil Price Case
     (Quadrillion Btu)

	Year				Annual Percentage Change		
	1995	1996	1997	1998	1995-1996	1996-1997	1997-1998
Electric Utilities							
Hydroelectric Power [a]	3.063	3.411	3.549	3.020	11.4	4.0	-14.9
Geothermal, Solar and Wind Energy [b]	0.099	0.110	0.104	0.098	11.1	-5.5	-5.8
Biofuels [c]	0.017	0.020	0.021	0.020	17.6	5.0	-4.8
Total	3.179	3.541	3.673	3.138	11.4	3.7	-14.6
Nonutility Power Generators							
Hydroelectric Power [a]	0.152	0.158	0.169	0.177	3.9	7.0	4.7
Geothermal, Solar and Wind Energy [b]	0.248	0.276	0.287	0.295	11.3	4.0	2.8
Biofuels [c]	0.585	0.628	0.645	0.653	7.4	2.7	1.2
Total	0.985	1.061	1.101	1.125	7.7	3.8	2.2
Total Power Generation	4.165	4.602	4.775	4.263	10.5	3.8	-10.7
Other Sectors							
Residential and Commercial [d]	0.677	0.713	0.695	0.697	5.3	-2.5	0.3
Industrial [e]	1.545	1.546	1.586	1.620	0.1	2.6	2.1
Transportation [f]	0.088	0.063	0.076	0.083	-28.4	20.6	9.2
Total	2.310	2.322	2.357	2.399	0.5	1.5	1.8
Net Imported Electricity [g]	0.300	0.307	0.298	0.291	2.3	-2.9	-2.3
Total Renewable Energy Demand........................	6.774	7.231	7.430	6.953	6.7	2.8	-6.4

[a]Conventional hydroelectric power only. Hydroelectricity generated by pumped storage is not included in renewable energy.

[b]Also includes photovoltaic and solar thermal energy.

[c]Biofuels are fuelwood, wood byproducts, waste wood, municipal solid waste, manufacturing process waste, and alcohol fuels.

[d]Includes biofuels and solar energy consumed in the residential and commercial sectors.

[e]Consists primarily of biofuels for use other than in electricity cogeneration.

[f]Ethanol blended into gasoline.

[g]Represents 78.6 percent of total electricity net imports, which is the proportion of total 1994 net imported electricity (0.459 quadrillion Btu) attributable to renewable sources (0.361 quadrillion Btu).

  (S) Less than 500 billion Btu.

  NM indicates percent change calculations are not meaningful or undefined at the precision level of this table.

  Notes: Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold, forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

  Sources: Historical data: Estimates derived from Energy Information Administration,   Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels Energy Information Administration,   *Renewable Energy Annual, 1995*; Projections: Renewables growth in sectors other than electric utilities taken from Energy Information Administration,   *Annual Energy Outlook* database and Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration.

Table A1. Annual U.S. Energy Supply and Demand

	Year														
	1984	**1985**	**1986**	**1987**	**1988**	**1989**	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**
Real Gross Domestic Product (GDP) (billion chained 1992 dollars)	5140	5324	5488	5649	5865	6062	6136	6079	6244	6390	6611	6742	6928	*7185*	*7358*
Imported Crude Oil Price [a] (nominal dollars per barrel)	28.88	26.99	14.00	18.13	14.57	18.08	21.75	18.70	18.20	16.14	15.52	17.14	20.59	*18.67*	*18.65*
Petroleum Supply															
Crude Oil Production [b] (million barrels per day)	8.88	8.97	8.68	8.35	8.14	7.61	7.36	7.42	7.17	6.85	6.66	6.56	6.46	*6.41*	6.39
Total Petroleum Net Imports (including SPR) (million barrels per day)	4.72	4.29	5.44	5.91	6.59	7.20	7.16	6.63	6.94	7.62	8.05	7.89	8.50	*8.92*	*9.21*
Energy Demand															
World Petroleum (million barrels per day)	59.9	60.2	61.8	63.1	64.9	65.9	66.0	66.6	66.8	67.0	68.3	70.1	71.8	*73.7*	*75.8*
U.S. Petroleum (million barrels per day)	15.76	15.78	16.33	16.72	17.34	17.37	17.04	16.77	17.10	17.24	17.72	17.72	18.31	*18.60*	*18.87*
Natural Gas (trillion cubic feet)	17.95	17.28	16.22	17.21	18.03	18.80	18.72	19.03	19.54	20.28	20.71	21.58	21.93	*21.85*	*22.78*
Coal (million short tons)	791	818	804	837	884	891	897	894	907	944	951	962	1007	*1017*	*1051*
Electricity (billion kilowatthours)															
Utility Sales [c]	2286	2324	2369	2457	2578	2647	2713	2762	2763	2861	2935	3013	3085	*3084*	*3196*
Nonutility Own Use [d]	NA	NA	NA	NA	NA	108	113	122	132	138	150	158	162	*166*	*169*
Total...	NA	NA	NA	NA	NA	2755	2826	2884	2895	3000	3085	3171	3246	*3249*	*3366*
Total Energy Demand [e] (quadrillion Btu)	74.1	74.0	74.3	76.9	80.2	81.3	81.3	81.1	82.1	83.9	85.6	87.2	89.9	*90.4*	*92.7*
Total Energy Demand per Dollar of GDP (thousand Btu per 1992 Dollar)	14.42	13.90	13.54	13.61	13.68	13.42	13.24	13.34	13.15	13.13	12.95	12.93	12.97	*12.58*	*12.60*
Adjusted Total Energy Demand [e] (quadrillion Btu)	NA	NA	NA	NA	NA	NA	84.2	84.1	85.3	87.0	88.9	90.6	94.1	*94.3*	*96.4*
Adjusted Total Energy Demand per Dollar of (thousand Btu per 1992 Dollar)	NA	NA	NA	NA	NA	NA	13.72	13.83	13.65	13.62	13.45	13.44	13.58	*13.12*	*13.10*

[a]Refers to the imported cost of crude oil to U.S. refiners.

[b]Includes lease condensate.

[c]Total annual electric utility sales for historical periods are derived from the sum of monthly sales figures based on submissions by electric utilities of Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." These historical values differ from annual sales totals based on Form EIA-861, reported in several EIA publications, but match alternate annual totals reported in   EIA's *Electric Power Monthly* , DOE/EIA-0226.

[d]Defined as the difference between total nonutility electricity generation and sales to electric utilities by nonutility generators, reported on Form EIA-867, "Annual Nonutility Power Producer Report." Data for 1996 are estimates.

[e]"Total Energy Demand" refers to the aggregate energy concept presented in Energy Information Administration,   *Annual Energy Review* , 1995, DOE/EIA-0384(95), Table 1.1 for the period 1960 to 1989. Adjusted "Total Energy Demand" refers to the aggregate energy demand concept reported in the same table for 1990 and beyond. The former concept is extended here in order to provide a more consistent long -term energy demand series. The latter concept is more comprehensive and is intended as the primary energy demand aggregate for assessing energy intensity trends since 1990. The adjusted measure incorporates information on renewable energy consumption among households, commercial establishments, and electricity generating facilities other than electric utilities (including industrial cogenerators). The conversion from physical units to Btu is calculated using a subset of conversion factors used in the calculations performed for gross energy consumption in Energy Information Administration, *Monthly Energy Review* (*MER*). Consequently, the historical data may not precisely match those published in the *MER* or the *AER*.

Notes: SPR: Strategic Petroleum Reserve. Minor discrepancies with other published EIA historical data are due to independent rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Latest data available from Bureau of Economic Analysis; Energy Information Administration; latest data available from EIA databases supporting the following reports: *Petroleum Supply Monthly* , DOE/EIA-0109; *Petroleum Supply Annual* , DOE/EIA-0340/2; *Natural Gas Monthly* , DOE/EIA-0130; *Electric Power Monthly* , DOE/EIA-0226; and *Quarterly Coal Report* , DOE/EIA-0121; *International Petroleum Statistics Report* DOE/EIA-520; *Weekly Petroleum Status Report* DOE/EIA-0208. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0997.

Table A2. Annual U.S. Macroeconomic and Weather Indicators

	Year														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Macroeconomic															
Real Gross Domestic Product															
(billion chained 1992 dollars)........................	5140	5324	5488	5649	5865	6062	6136	6079	6244	6390	6611	6742	6928	*7185*	*7358*
GDP Implicit Price Deflator															
(Index, 1992=1.000).................................	0.759	0.786	0.806	0.831	0.861	0.897	0.936	0.973	1.000	1.026	1.051	1.078	1.102	*1.125*	*1.147*
Real Disposable Personal Income															
(billion chained 1992 Dollars)........................	3855	3972	4101	4168	4332	4417	4498	4500	4627	4704	4805	4964	5077	*5214*	*5403*
Manufacturing Production															
(Index, 1987=1.000).................................	0.838	0.857	0.881	0.928	0.971	0.990	0.985	0.962	1.000	1.037	1.094	1.132	1.164	*1.215*	*1.253*
Real Fixed Investment															
(billion chained 1992 dollars)........................	762	799	805	799	818	832	806	741	783	843	916	962	1042	*1118*	*1191*
Real Exchange Rate															
(Index, 1990=1.000).................................	NA	NA	NA	NA	NA	NA	1.000	1.006	1.012	1.056	1.033	0.960	1.015	*1.100*	*1.103*
Business Inventory Change															
(billion chained 1992 dollars).....................	28.9	-4.5	-4.2	5.1	9.5	19.2	6.6	-6.1	-9.2	6.1	11.1	7.8	9.9	*22.9*	*2.7*
Producer Price Index															
(index, 1980-1984=1.000)	1.037	1.032	1.002	1.028	1.069	1.122	1.163	1.165	1.172	1.189	1.205	1.248	1.277	*1.276*	*1.283*
Consumer Price Index															
(index, 1980-1984=1.000)	1.039	1.076	1.097	1.137	1.184	1.240	1.308	1.363	1.404	1.446	1.483	1.525	1.570	*1.607*	*1.641*
Petroleum Product Price Index															
(index, 1980-1984=1.000)	0.874	0.832	0.532	0.568	0.539	0.612	0.748	0.671	0.647	0.620	0.591	0.608	0.701	*0.672*	*0.651*
Non-Farm Employment															
(millions)	94.4	97.4	99.3	102.0	105.2	107.9	109.4	108.3	108.6	110.7	114.1	117.2	119.5	*122.2*	*124.7*
Commercial Employment															
(millions)	58.0	60.8	62.9	65.2	67.8	70.0	71.3	70.8	71.2	73.2	76.1	78.8	81.0	*83.5*	*85.7*
Total Industrial Production															
(index, 1987=1.000).................................	0.866	0.880	0.890	0.931	0.973	0.990	0.989	0.969	1.000	1.034	1.086	1.121	1.152	*1.197*	*1.233*
Housing Stock															
(millions)	94.5	96.3	98.0	99.8	101.6	102.9	103.5	104.5	105.5	106.8	108.2	109.8	111.2	*112.7*	*114.2*
Weather[a]															
Heating Degree-Days															
U.S................................	4514	4642	4295	4334	4653	4726	4016	4200	4441	4700	4483	4531	4713	*4561*	*4576*
New England	6442	6571	6517	6546	6715	6887	5848	5960	6844	6728	6672	6559	6679	*6706*	*6621*
Middle Atlantic	5777	5660	5665	5699	6088	6134	4998	5177	5964	5948	5934	5831	5986	*5869*	*5839*
U.S. Gas-Weighted	4704	4856	4442	4391	4779	4856	4139	4337	4458	4754	4659	4707	5040	*4787*	*4732*
Cooling Degree-Days (U.S.)	1214	1194	1249	1269	1283	1156	1260	1331	1040	1218	1220	1293	1180	*1090*	*1193*

[a]Population-weighted degree days. A degree day indicates the temperature variation from 65 degrees Fahrenheit (calculated as the simple average of the daily minimum and maximum temperatures) weighted by 1990 population. Normal is used for the forecast period and is defined as the average number of degree days between 1961 and 1990 for a given period.

Notes: Historical data are printed in bold; forecasts are in italics.

Sources: Historical data: latest data available from: U.S. Department of Commerce, Bureau of Economic Analysis; U.S. Department of Commerce, National Oceanic and Atmospheric Administration; Federal Reserve System, *Statistical Release* G.17(419); U.S. Department of Transportation; American Iron and Steel Institute. Macroeconomic projections are based on DRI/McGraw-Hill Forecast CONTROL0997.

Table A3. Annual International Petroleum Supply and Demand Balance
(Millions Barrels per Day, Except Closing Stocks)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Demand[a]															
OECD															
U.S. (50 States)	15.8	15.8	16.3	16.7	17.3	17.4	17.0	16.8	17.1	17.2	17.7	17.7	18.3	*18.6*	*18.9*
Europe [b]	12.1	12.0	12.5	12.6	12.7	12.8	12.9	13.4	13.6	13.5	13.6	14.1	14.3	*14.4*	*14.6*
Japan................................	4.6	4.4	4.4	4.5	4.8	5.0	5.1	5.3	5.4	5.4	5.7	5.7	5.8	*5.8*	*5.9*
Other OECD	2.5	2.5	2.5	2.5	2.6	2.7	2.7	2.7	2.7	2.8	2.9	3.0	2.9	*2.9*	*3.0*
Total OECD	34.9	34.7	35.7	36.3	37.5	37.9	37.8	38.1	38.8	39.0	39.9	40.5	41.3	*41.7*	*42.4*
Non-OECD															
Former Soviet Union............................	8.9	9.0	9.0	9.0	8.9	8.7	8.4	8.3	6.8	5.6	4.8	4.7	4.5	*4.5*	*4.6*
Europe	1.8	1.9	1.8	1.8	1.8	1.8	1.7	1.4	1.3	1.3	1.3	1.3	1.3	*1.4*	*1.4*
China	1.7	1.9	2.0	2.1	2.3	2.4	2.3	2.5	2.7	3.0	3.1	3.3	3.6	*3.8*	*4.1*
Other Asia................................	3.7	3.7	3.9	4.1	4.4	4.9	5.3	5.7	6.2	6.8	7.3	7.9	8.5	*9.1*	*9.7*
Other Non-OECD	8.9	9.1	9.5	9.7	10.0	10.3	10.5	10.6	11.0	11.4	11.8	12.3	12.7	*13.1*	*13.6*
Total Non-OECD	25.0	25.5	26.1	26.7	27.4	28.0	28.2	28.5	28.0	28.1	28.4	29.5	30.5	*31.9*	*33.4*
Total World Demand	59.9	60.2	61.8	63.1	64.9	66.0	66.0	66.6	66.8	67.0	68.3	70.1	71.8	*73.7*	*75.8*
Supply[c]															
OECD															
U.S. (50 States)	11.1	11.2	11.0	10.7	10.5	9.9	9.7	9.9	9.8	9.6	9.4	9.4	9.4	*9.4*	*9.4*
Canada................................	1.8	1.8	1.8	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.5	*2.6*	*2.7*
North Sea [d]	3.4	3.6	3.9	3.9	3.9	3.9	4.0	4.2	4.6	4.8	5.5	6.0	6.2	*6.4*	*6.9*
Other OECD	1.3	1.4	1.2	1.3	1.3	1.2	1.4	1.4	1.4	1.3	1.4	1.4	1.6	*1.6*	*1.6*
Total OECD	17.6	18.1	17.9	17.9	17.8	17.1	17.1	17.5	17.9	18.0	18.7	19.2	19.7	*20.0*	*20.7*
Non-OECD															
OPEC	18.4	17.2	19.3	19.6	21.5	23.3	24.5	24.6	25.8	26.6	27.0	27.7	28.3	*29.7*	*30.1*
Former Soviet Union............................	12.2	11.9	12.3	12.5	12.5	12.1	11.4	10.4	8.9	8.0	7.3	7.1	7.1	*7.2*	*7.3*
China	2.3	2.5	2.6	2.7	2.7	2.8	2.8	2.8	2.8	2.9	2.9	3.0	3.1	*3.3*	*3.3*
Mexico	3.1	3.0	2.8	2.9	2.9	2.9	3.0	3.2	3.2	3.2	3.2	3.1	3.3	*3.4*	*3.5*
Other Non-OECD	6.1	11.0	6.8	6.9	7.4	7.7	8.0	8.1	8.3	8.7	9.1	9.8	10.2	*10.6*	*11.2*
Total Non-OECD	42.0	41.2	43.9	44.6	47.0	48.9	49.7	49.1	49.1	49.3	49.6	50.7	52.0	*54.1*	*55.3*
Total World Supply	59.6	59.3	61.8	62.5	64.8	65.9	66.8	66.7	67.0	67.3	68.2	69.9	71.7	*74.1*	*76.0*
Total Stock Withdrawals............................	0.3	0.9	0.0	0.6	0.1	-0.0	-0.8	-0.1	-0.2	-0.3	0.1	0.2	0.1	*-0.4*	*-0.3*
Closing Stocks, OECD only (bilion barrels)&	2.7	2.6	2.7	2.7	2.6	2.6	2.7	2.7	2.7	2.8	2.8	2.7	2.7	*2.8*	*2.8*
Net Exports from Former Soviet Union.........	3.3	3.0	3.4	3.5	3.6	3.4	3.0	2.1	2.1	2.3	2.4	2.4	2.6	*2.7*	*2.7*

[a]Demand for petroleum by the OECD countries is synonymous with "petroleum product supplied," which is defined in the glossary of the EIA   *Petroleum Supply Monthly*, DOE/EIA-0109. Demand for petroleum by the non-OECD countries is "apparent consumption," which includes internal consumption, refinery fuel and loss, and bunkering.

[b]OECD Europe includes the former East Germany.

[c]Includes production of crude oil (including lease condensates), natural gas plant liquids, other hydrogen and hydrocarbons for refinery   feedstocks, refinery gains, alcohol, and liquids produced from coal and other sources.

[d]Includes offshore supply from Denmark, Germany, the Netherlands, Norway, and the United Kingdom.

  OECD: Organization for Economic Cooperation and Development: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom, and the United States. Mexico is also a member but OECD data do not yet include Mexico.

  OPEC: Organization of Petroleum Exporting Countries: Algeria, Gabon, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.

  SPR: Strategic Petroleum Reserve

  Former Soviet Union: Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

  Notes: Minor discrepancies with other published EIA historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the   Short-Term Integrated Forecasting System.

  Sources: Energy Information Administration: latest data available from EIA databases supporting the following reports: *International Petroleum Statistics Report*, DOE/EIA-0520, and Organization for Economic Cooperation and Development, Annual and Monthly Oil Statistics Database.

Table A4. Annual Average U.S. Energy Prices
(Nominal Dollars)

	Year														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Imported Crude Oil[a]															
(dollars per barrel)...	28.88	26.99	14.00	18.13	14.57	18.08	21.75	18.70	18.20	16.14	15.52	17.14	20.59	*18.67*	*18.65*
Natural Gas Wellhead															
(dollars per thousand cubic feet).........................	2.65	2.51	1.94	1.66	1.69	1.69	1.71	1.64	1.74	2.04	1.85	1.55	2.25	*2.40*	*2.25*
Petroleum Products															
Gasoline Retail [b]															
(dollars per gallon)...	1.20	1.20	0.93	0.96	0.96	1.06	1.22	1.20	1.19	1.17	1.17	1.21	1.29	*1.29*	*1.26*
No. 2 Diesel Oil, Retail															
(dollars per gallon)...	1.16	1.16	0.88	0.93	0.91	0.99	1.16	1.12	1.10	1.11	1.11	1.10	1.23	*1.19*	*1.18*
No. 2 Heating Oil, Wholesale															
(dollars per gallon)...	0.82	0.78	0.49	0.53	0.47	0.56	0.70	0.62	0.58	0.54	0.51	0.51	0.64	*0.59*	*0.56*
No. 2 Heating Oil, Retail															
(dollars per gallon)...	1.09	1.05	0.84	0.80	0.81	0.90	1.06	1.02	0.93	0.91	0.89	0.87	0.99	*0.99*	*0.95*
No. 6 Residual Fuel Oil, Retail [c]															
(dollars per barrel)...	28.89	25.57	14.46	17.76	14.04	16.20	18.66	14.32	14.21	14.00	14.79	16.49	18.97	*17.66*	*17.55*
Electric Utility Fuels															
Coal															
(dollars per million Btu).......................................	1.66	1.65	1.58	1.51	1.47	1.44	1.45	1.45	1.41	1.38	1.36	1.32	1.29	*1.27*	*1.24*
Heavy Fuel Oil [d]															
(dollars per million Btu).......................................	4.81	4.26	2.40	2.98	2.41	2.85	3.22	2.49	2.46	2.36	2.40	2.60	3.01	*2.80*	*2.83*
Natural Gas															
(dollars per million Btu).......................................	3.58	3.43	2.35	2.24	2.26	2.36	2.32	2.15	2.33	2.56	2.23	1.98	2.64	*2.74*	*2.53*
Other Residential															
Natural Gas															
(dollars per thousand cubic feet).........................	6.12	6.12	5.83	5.55	5.47	5.64	5.80	5.82	5.89	6.17	6.41	6.06	6.29	*6.70*	*6.36*
Electricity															
(cents per kilowatthour)......................................	7.6	7.8	7.4	7.4	7.5	7.6	7.8	8.1	8.2	8.3	8.4	8.4	8.4	*8.5*	*8.4*

[a]Refiner acquisition cost (RAC) of imported crude oil.
[b]Average for all grades and services.
[c]Average for all sulfur contents.
[d]Includes fuel oils No. 4, No. 5, and No. 6 and topped crude fuel oil prices.
Notes: Prices exclude taxes, except prices for gasoline, residential natural gas, and diesel. The forecasts were generated by simulation of the   Short-Term Integrated Forecasting System.
Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Petroleum Marketing Monthly*, DOE/EIA-0380; *Natural Gas Monthly*, DOE/EIA-0130; *Monthly Energy Review*, DOE/EIA-0035; *Electric Power Monthly*, DOE/EIA-0226.

Table A5. Annual U.S. Petroleum Supply and Demand
(Million Barrels per Day, Except Closing Stocks)

	Year														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Supply															
Crude Oil Supply															
Domestic Production [a]	8.88	8.97	8.68	8.35	8.14	7.61	7.36	7.42	7.17	6.85	6.66	6.56	6.46	*6.41*	*6.39*
Alaska	1.72	1.83	1.87	1.96	2.02	1.87	1.77	1.80	1.71	1.58	1.56	1.48	1.39	*1.29*	*1.21*
Lower 48	7.16	7.15	6.81	6.39	6.12	5.74	5.58	5.62	5.46	5.26	5.10	5.08	5.07	*5.11*	*5.18*
Net Imports (including SPR) [b]	3.25	3.00	4.02	4.52	4.95	5.70	5.79	5.67	5.99	6.69	6.96	7.14	7.40	*7.81*	*7.86*
Other SPR Supply	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	*0.00*	*0.00*
Stock Draw (Including SPR)	-0.20	-0.05	-0.08	-0.12	-0.00	-0.09	0.02	-0.01	0.01	-0.06	-0.02	0.09	0.05	*-0.06*	*0.00*
Product Supplied and Losses	-0.07	-0.06	-0.05	-0.03	-0.04	-0.03	-0.02	-0.02	-0.01	-0.01	-0.01	-0.01	-0.01	*-0.01*	*-0.01*
Unaccounted-for Crude Oil	0.18	0.15	0.14	0.14	0.20	0.20	0.26	0.20	0.26	0.17	0.27	0.19	0.22	*0.30*	*0.28*
Total Crude Oil Supply	12.04	12.00	12.72	12.85	13.25	13.40	13.41	13.30	13.41	13.61	13.87	13.97	14.19	*14.48*	*14.52*
Other Supply															
NGL Production	1.63	1.61	1.55	1.59	1.62	1.55	1.56	1.66	1.70	1.74	1.73	1.76	1.83	*1.85*	*1.86*
Other Hydrocarbon and Alcohol Inputs	0.08	0.11	0.11	0.12	0.11	0.11	0.13	0.15	0.20	0.25	0.26	0.30	0.31	*0.32*	*0.31*
Crude Oil Product Supplied	0.06	0.06	0.05	0.03	0.04	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	*0.01*	*0.01*
Processing Gain	0.55	0.56	0.62	0.64	0.66	0.66	0.70	0.71	0.77	0.76	0.77	0.77	0.84	*0.83*	*0.86*
Net Product Imports [c]	1.47	1.29	1.41	1.39	1.63	1.50	1.38	0.96	0.94	0.93	1.09	0.75	1.10	*1.11*	*1.35*
Product Stock Withdrawn or Added (-)	-0.08	0.15	-0.12	0.09	0.03	0.13	-0.14	-0.04	0.06	-0.05	0.00	0.15	0.03	*-0.00*	*-0.04*
Total Supply	15.76	15.78	16.33	16.72	17.33	17.37	17.05	16.76	17.10	17.25	17.72	17.72	18.31	*18.59*	*18.87*
Demand															
Motor Gasoline [d]	6.69	6.78	6.94	7.19	7.36	7.40	7.31	7.23	7.38	7.48	7.60	7.79	7.89	*8.03*	*8.22*
Jet Fuel	1.18	1.22	1.31	1.38	1.45	1.49	1.52	1.47	1.45	1.47	1.53	1.51	1.58	*1.61*	*1.63*
Distillate Fuel Oil	2.84	2.87	2.91	2.98	3.12	3.16	3.02	2.92	2.98	3.04	3.16	3.21	3.37	*3.43*	*3.56*
Residual Fuel Oil	1.37	1.20	1.42	1.26	1.38	1.37	1.23	1.16	1.09	1.08	1.02	0.85	0.85	*0.83*	*0.86*
Other Oils [e]	3.68	3.71	3.75	3.90	4.03	3.95	3.95	3.99	4.20	4.17	4.41	4.36	4.63	*4.69*	*4.60*
Total Demand	15.76	15.78	16.33	16.72	17.34	17.37	17.04	16.77	17.10	17.24	17.72	17.72	18.31	*18.60*	*18.87*
Total Petroleum Net Imports	4.72	4.29	5.44	5.91	6.59	7.20	7.16	6.63	6.94	7.62	8.05	7.89	8.50	*8.92*	*9.21*
Closing Stocks (million barrels)															
Crude Oil (excluding SPR)	345	321	331	349	330	341	323	325	318	335	337	303	284	*306*	*305*
Total Motor Gasoline	243	223	233	226	228	213	220	219	216	226	215	202	195	*191*	*200*
Jet Fuel	42	40	50	50	44	41	52	49	43	40	47	40	40	*42*	*42*
Distillate Fuel Oil	161	144	155	134	124	106	132	144	141	141	145	130	127	*135*	*130*
Residual Fuel Oil	53	50	47	47	45	44	49	50	43	44	42	37	46	*37*	*42*
Other Oils [f]	261	247	265	260	267	257	261	267	263	273	275	258	250	*254*	*261*

[a] Includes lease condensate.
[b] Net imports equals gross imports plus SPR imports minus exports.
[c] Includes finished petroleum products, unfinished oils, gasoline blending components, and natural gas plant liquids for processing.
[d] For years prior to 1993, motor gasoline includes an estimate of fuel ethanol blended into gasoline and certain product reclassifications, not reported elsewhere in EIA. See Appendix B in Energy Information Administration, *Short-Term Energy Outlook*, EIA/DOE-0202(93/3Q), for details on this adjustment.
[e] Includes crude oil product supplied, natural gas liquids, liquefied refinery gas, other liquids, and all finished petroleum products except motor gasoline, jet fuel, distillate, and residual fuel oil.
[f] Includes stocks of all other oils, such as aviation gasoline, kerosene, natural gas liquids (including ethane), aviation gasoline blending components, naphtha and other oils for petrochemical feedstock use, special naphthas, lube oils, wax, coke, asphalt, road oil, and miscellaneous oils.
SPR: Strategic Petroleum Reserve
NGL: Natural Gas Liquids
Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold, forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Petroleum Supply Monthly*, DOE/EIA-0109, and *Weekly Petroleum Status Report*, DOE/EIA-0208.

Table A6. Annual U.S. Natural Gas Supply and Demand
(Trillion Cubic Feet)

	Year														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Supply															
Total Dry Gas Production.................................	17.47	16.45	16.06	16.62	17.10	17.31	17.81	17.70	17.84	18.10	18.82	18.60	19.02	*18.92*	*19.21*
Net Imports	0.79	0.89	0.69	0.94	1.22	1.27	1.45	1.64	1.92	2.21	2.46	2.69	2.78	*2.95*	*3.17*
Supplemental Gaseous Fuels..............................	0.11	0.13	0.11	0.10	0.10	0.11	0.12	0.11	0.12	0.12	0.11	0.11	0.13	*0.12*	*0.13*
Total New Supply..	18.36	17.47	16.86	17.66	18.42	18.69	19.38	19.45	19.88	20.42	21.40	21.40	21.94	*21.98*	*22.51*
Underground Working Gas Storage															
Opening	6.44	6.71	6.45	6.57	6.55	6.65	6.33	6.94	6.78	6.64	6.65	6.97	6.50	*6.51*	*6.53*
Closing...........................	6.71	6.45	6.57	6.55	6.65	6.33	6.94	6.78	6.64	6.65	6.97	6.50	6.51	*6.53*	*6.53*
Net Withdrawals..	-0.26	0.26	-0.12	0.02	-0.10	0.33	-0.61	0.16	0.14	-0.01	-0.32	0.46	-0.00	*-0.02*	*-0.00*
Total Supply	18.10	17.73	16.74	17.68	18.32	19.02	18.77	19.61	20.02	20.42	21.08	21.86	21.93	*21.96*	*22.50*
Balancing Item [a]	-0.15	-0.45	-0.52	-0.47	-0.29	-0.22	-0.05	-0.58	-0.47	-0.14	-0.37	-0.28	-0.00	*-0.11*	*0.28*
Total Primary Supply..................................	17.95	17.28	16.22	17.21	18.03	18.80	18.72	19.03	19.54	20.28	20.71	21.58	21.93	*21.85*	*22.78*
Demand															
Lease and Plant Fuel.......................................	1.08	0.97	0.92	1.15	1.10	1.07	1.24	1.13	1.17	1.17	1.12	1.22	1.25	*1.26*	*1.28*
Pipeline Use...............................	0.53	0.50	0.49	0.52	0.61	0.63	0.66	0.60	0.59	0.62	0.69	0.70	0.71	*0.73*	*0.75*
Residential	4.56	4.43	4.31	4.31	4.63	4.78	4.39	4.56	4.69	4.96	4.85	4.85	5.23	*4.94*	*5.11*
Commercial.......................................	2.52	2.43	2.32	2.43	2.67	2.72	2.62	2.73	2.80	2.86	2.90	3.03	3.21	*3.18*	*3.33*
Industrial (Incl. Nonutilities).............................. ...	6.15	5.90	5.58	5.95	6.38	6.82	7.02	7.23	7.53	7.98	8.17	8.58	8.80	*8.95*	*9.18*
Cogenerators [b]	NA	NA	NA	NA	NA	1.12	1.30	1.41	1.67	1.80	1.98	2.18	2.20	*2.32*	*2.41*
Other Nonutil. Gen. [b]	NA	NA	NA	NA	NA	0.06	0.09	0.16	0.18	0.22	0.17	0.17	0.19	*0.20*	*0.21*
Electric Utilities...	3.11	3.04	2.60	2.84	2.64	2.79	2.79	2.79	2.77	2.68	2.99	3.20	2.73	*2.78*	*3.12*
Total Demand	17.95	17.28	16.22	17.21	18.03	18.80	18.72	19.03	19.54	20.28	20.71	21.58	21.93	*21.85*	*22.78*

[a]The balancing item represents the difference between the sum of the components of natural gas supply and the sum of components of natural gas demand.

[b]Annual projections for nonutility gas consumption, as well as the detail on independent power producers' share of gas consumption, are provided by the office of Coal, Nuclear, Electric and Alternative Fuels, Energy Information Administration.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the   Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Natural Gas Monthly*, DOE/EIA-0130; *Electric Power Monthly*, DOE/EIA-0226; Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Oil and Gas, Reserves and Natural Gas Division.

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Table A7. Annual U.S. Coal Supply and Demand
(Million Short Tons)

	Year														
	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Supply															
Production	895.9	883.6	890.3	918.8	950.3	980.7	1029.1	996.0	997.5	945.4	1033.5	1033.0	1063.9	*1082.5*	*1117.1*
Appalachia	NA	NA	NA	NA	NA	464.8	489.0	457.8	456.6	409.7	445.4	434.9	451.9	*454.5*	*459.9*
Interior	NA	NA	NA	NA	NA	198.1	205.8	195.4	195.7	167.2	179.9	168.5	172.8	*166.8*	*164.8*
Western	NA	NA	NA	NA	NA	317.9	334.3	342.8	345.3	368.5	408.3	429.6	439.1	*461.3*	*492.4*
Primary Stock Levels [a]															
Opening	33.9	34.1	33.1	32.1	28.3	30.4	29.0	33.4	33.0	34.0	25.3	33.2	34.4	*31.1*	*31.0*
Closing	34.1	33.1	32.1	28.3	30.4	29.0	33.4	33.0	34.0	25.3	33.2	34.4	31.1	*31.0*	*30.0*
Net Withdrawals	-0.2	1.0	1.0	3.8	-2.1	1.4	-4.4	0.4	-1.0	8.7	-7.9	-1.2	3.4	*0.1*	*1.0*
Imports	1.3	2.0	2.2	1.7	2.1	2.9	2.7	3.4	3.8	7.3	7.6	7.2	7.1	*6.8*	*7.3*
Exports	81.5	92.7	85.5	79.6	95.0	100.8	105.8	109.0	102.5	74.5	71.4	88.5	90.5	*87.1*	*90.1*
Total Net Domestic Supply	815.6	793.9	808.0	844.7	855.3	884.2	921.6	890.9	897.8	886.9	961.8	950.4	983.9	*1002.3*	*1035.3*
Secondary Stock Levels [b]															
Opening	168.7	197.2	170.2	175.2	185.5	158.4	146.1	168.2	167.7	163.7	120.5	136.1	134.6	*123.0*	*116.1*
Closing	197.2	170.2	175.2	185.5	158.4	146.1	168.2	167.7	163.7	120.5	136.1	134.6	123.0	*116.1*	*112.0*
Net Withdrawals		27.0	-5.0	-10.2	27.0	12.3	-22.1	0.5	4.0	43.2	-15.7	1.5	11.6	*6.9*	*4.1*
Total Supply	815.6	820.8	803.1	834.4	882.3	896.5	899.4	891.4	901.8	930.2	946.1	951.9	995.5	*1009.2*	*1039.5*
Demand															
Coke Plants	44.0	41.1	35.9	37.0	41.9	40.5	38.9	33.9	32.4	31.3	31.7	33.0	31.7	*31.0*	*31.5*
Electricity Production															
Electric Utilities	664.4	693.8	685.1	717.9	758.4	766.9	773.5	772.3	779.9	813.5	817.3	829.0	874.7	*884.8*	*916.2*
Nonutilities (Excl. Cogen.)	NA	NA	U	NA	NA	0.9	1.6	6.0	14.8	17.8	20.9	21.2	24.0	*26.0*	*28.0*
Retail and General Industry [c]	82.9	83.2	83.3	82.1	83.4	82.3	83.1	81.5	80.2	81.1	81.2	78.6	76.4	*75.6*	*75.0*
Total Demand [d]	791.3	818.0	804.2	836.9	883.6	890.6	897.1	893.6	907.3	943.7	951.1	961.8	1006.8	*1017.4*	*1050.7*
Discrepancy [e]	24.3	2.8	-1.2	-2.5	-1.3	5.9	2.4	-2.3	-5.4	-13.5	-4.9	-9.9	-11.3	*-8.2*	*-11.2*

[a]Primary stocks are held at the mines, preparation plants, and distribution points.
[b]Secondary stocks are held by users.
[c]Synfuels plant demand in 1993 was 1.7 million tons per quarter and is assumed to remain at that level in 1994, 1995, 1996, 1997 and 1998.
[d]Total excludes any shipments to independent power producers (IPPs) not calculated in Retail and General Industry for years prior to 1993.
[e]Historical period discrepancy reflects an unaccounted-for shipper and receiver reporting difference. It also includes any shipment to IPPs not captured in Retail and General Industry and consumption by IPPs not included in production (waste coal).
 (S) indicates amounts of less than 50,000 tons.
 Notes: Rows and columns may not add due to independent rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.
 Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Quarterly Coal Report*, DOE/EIA-0121, and *Electric Power Monthly*, DOE/EIA-0226. Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

Table A8. Annual U.S. Electricity Supply and Demand
(Billion Kilowatthours)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
Supply															
Net Utility Generation															
Coal	1341.7	1402.1	1385.8	1463.8	1540.7	1553.7	1559.6	1551.2	1575.9	1639.2	1635.5	1652.9	1737.5	*1763.1*	*1835.5*
Petroleum	119.8	100.2	136.6	118.5	148.9	158.3	117.0	111.5	88.9	99.5	91.0	60.8	67.3	*69.4*	*71.0*
Natural Gas	297.4	291.9	248.5	272.6	252.8	266.6	264.1	264.2	263.9	258.9	291.1	307.3	262.7	*267.4*	*300.3*
Nuclear	327.6	383.7	414.0	455.3	527.0	529.4	576.9	612.6	618.8	610.3	640.4	673.4	674.7	*621.6*	*662.6*
Hydroelectric	321.2	281.1	290.8	249.7	222.9	265.1	279.9	275.5	239.6	265.1	243.7	293.7	328.0	*341.2*	*290.3*
Geothermal and Other [a]	8.6	10.7	11.5	12.3	12.0	11.3	10.7	10.1	10.2	9.6	8.9	6.4	7.2	*7.0*	*6.6*
Subtotal	2416.3	2469.8	2487.3	2572.1	2704.3	2784.3	2808.2	2825.0	2797.2	2882.5	2910.7	2994.5	3077.4	*3069.7*	*3166.3*
Nonutility Generation [b]	NA	NA	NA	NA	NA	191.3	221.8	253.7	296.0	325.5	354.9	374.4	394.7	*414.7*	*428.8*
Total Generation	NA	NA	NA	NA	NA	2975.6	3030.0	3078.7	3093.2	3208.1	3265.6	3369.0	3472.2	*3484.5*	*3595.1*
Net Imports	39.7	40.9	35.9	46.3	31.8	11.0	2.0	22.3	28.3	28.4	44.6	37.6	38.0	*36.9*	*36.1*
Total Supply	NA	NA	NA	NA	NA	2986.6	3032.0	3101.0	3121.6	3236.5	3310.3	3406.6	3510.2	*3521.4*	*3631.2*
Losses and Unaccounted for [c]	NA	NA	NA	NA	NA	231.4	206.1	217.1	226.6	236.9	225.5	235.4	263.7	*271.9*	*265.5*
Demand															
Electric Utility Sales															
Residential	780.1	793.9	819.1	850.4	892.9	905.5	924.0	955.4	935.9	994.8	1008.5	1042.5	1078.5	*1048.0*	*1110.7*
Commercial	582.6	606.0	630.5	660.4	699.1	725.9	751.0	765.7	761.3	794.6	820.3	862.7	891.6	*899.2*	*932.0*
Industrial	837.8	836.8	830.5	858.2	896.5	925.7	945.5	946.6	972.7	977.2	1008.0	1012.7	1014.3	*1037.3*	*1046.5*
Other	85.2	87.3	88.6	88.2	89.6	89.8	92.0	94.3	93.4	94.9	97.8	95.4	100.2	*99.3*	*106.9*
Subtotal	2285.8	2324.0	2368.8	2457.3	2578.1	2646.8	2712.6	2762.0	2763.4	2861.5	2934.6	3013.3	3084.7	*3083.9*	*3196.2*
Nonutility Own Use [b]	NA	NA	NA	NA	NA	108.4	113.4	121.9	131.6	138.1	150.2	157.9	161.8	*165.6*	*169.5*
Total Demand	NA	NA	NA	NA	NA	2755.2	2825.9	2883.9	2895.0	2999.6	3084.8	3171.2	3246.4	*3249.5*	*3365.7*
Memo:															
Nonutility Sales to Electric Utilities [d]	18.0	26.0	39.9	50.0	68.0	83.0	108.5	131.9	164.4	187.4	204.7	216.5	232.9	*249.1*	*259.3*

[a] Other includes generation from wind, wood, waste, and solar sources.

[b] For 1989 to 1991, estimates for nonutility generation are estimates made by the Energy Markets and Contingency Information Division, based on Form EIA-867 data. Historical data and Projections for the same items are from the Office of Coal, Nuclear, Electric and Alternate Fuels, Energy Information Administration, based on Form EIA-867 (Annual Nonutility Power Producer Report).

[c] Balancing item, mainly transmission and distribution losses.

[d] Historical data for nonutility sales to electric utilities are from the Energy Information Administration, *Annual Energy Review*, DOE/EIA-0389, Table 8.1, for 1982 to 1988; from Form EIA-867 (Annual Nonutility Power Producer Report) for 1989 to 1995.

Notes: Minor discrepancies with other EIA published historical data are due to rounding. Historical data are printed in bold; forecasts are in italics. The forecasts were generated by simulation of the Short-Term Integrated Forecasting System.

Sources: Historical data: Energy Information Administration: latest data available from EIA databases supporting the following reports: *Electric Power Monthly*, DOE/EIA-0226. Projections: Energy Information Administration, Short-Term Integrated Forecasting System database, and Office of Coal, Nuclear, Electric and Alternate Fuels.

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